HP Scitex FB500 / FB700



Service Manual

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Table of Contents

Printer orientation **12**
Required tools **13**

Parts List for Field Replaceable Modules **14**

Exploded Views **31**
Exploded views: Off-head supply assemblies **31**
OHS part numbers 31
Ink pumps, Exploded view 32
Vacuum pump assembly exploded view 33
Vacuum reservoir, Exploded view 34
Ink homogenizer, Exploded view 35
Exploded views: Carriage assemblies **36**
Trolley assembly (upper and lower) exploded view 36
Carriage assembly, exploded views 37
Carriage assembly brackets, exploded view 37
Carriage pen plate, exploded view 38
Carriage reservoirs, exploded views 39
Printhead interface plate's alignment pin, exploded view 39
Carriage back plate, exploded view 40
Carriage side attachments, exploded views 41
Exploded views: Carriage-drive assemblies **48**
Exploded views: Service station assemblies **49**
Exploded views: Track assemblies **52**
Track attachment at carriage 52
Exploded views: Media-drive assemblies **54**
Media-drive assemblies exploded views 54
Media-drive assemblies part numbers 57
Exploded views: Media-drive actuator assemblies **58**
Media-drive actuator assemblies exploded views 58

Theory of operation and component identification **65**
Off-Head Supply Assemblies **65**
About the OHS (off-head supply) 65
About the vacuum assembly 65
Vacuum assembly diagram 66
Vacuum assembly air flow diagram 67
About the vacuum pump 68
About the vacuum regulator 68
About the vacuum air-inlet filter 68
About the vacuum accumulator 68
About the vacuum restrictor 69
About the vacuum sensor 69
About the vacuum assembly power supply 69
About the pressure pump 70
About the pressure sensor 70
About the ink pumps 71
About the ink-pump check valve 72
About the permanent ink filters 72
About the ink 73
About the tubes 73
About the ink boxes 73
About the profilers 74
About the white ink option 74
About the ink homogenizer (shaker) 75
About the ink-box filters 75
About the OHS controller 76
Carriage **76**
Wiring diagram for FB500 Carriage Assembly 77
Wiring diagram for FB700 Carriage Assembly 78
About the carriage head height 79
About the lamps 79
About the lamp bulbs 80
About the camera 80
About the air manifold 81
About the carriage ink filters 81
About the printhead reservoirs 82
About the thermistors 83

About the vacuum tubes 84
About the vacuum tubes, split 84
About the printheads 85
About the printhead interface plate 86
About printhead serial numbers 87
About printhead y-axis and x-axis positioning 87
About printhead saber angle 87
About carriage (gross) saber angle 87
About the carriage headboard 87
About the carriage headboard lights 88
About the encoder reader 89
About the carriage home sensor 89
About the carriage trolley assembly 90
About the upper carriage trolley assembly 90
About the lower carriage trolley assembly 90
Service station 91
About the service station 91
About ink purges 91
About the Shop-Vac 91
About the float Sensor 92
About the service station wipers 93
About the wiper-carriage home sensor 93
About the gap sensor 94
About the service station access sensor 94
About the service station actuator (up-down motor) 94
About the service station encoder 94
About the service station encoder reader 95
About the waste-ink jug 96
Carriage-drive 97
About the carriage-drive assembly 97
About the carriage-drive smooth pulley 97
About the carriage-drive shaft 97
About the carriage-drive timing belt 97
About the carriage-drive motor 98
About the Carriage Idler 98
About the carriage-drive belt 98
About the carriage-drive belt length and tension 99
About the rail strips 99
About the carriage encoder strip 100
Track assemblies 101
About the track assembly 101
About the ink tubes 101
About the LVDS cable 102
About the headboard power cables 102
About the H-block clamp 102
Media drive 104
About the media-drive motor 104
About the media-drive motor coupling 104
About the media-drive motor encoder 105
About the high-resolution encoder ring 105
About the high-resolution belt encoder reader 105
About the media-drive belt 108
About the media-drive roller 108
About the idler roller 109
About the adjustment bearing block assembly 109
About the vacuum trays 110
About the airflow plate 111
About the ionizer 111
About the N-up pins 111
About the actuator motors 112
About the media alignment bar 113
About the input roller 113
About the output roller 114
About the media thickness sensor 114
About the media detection sensor 114

Roll-to-roll 115
About the roll-to-roll assembly 115
Lift and press foam rollers 115
About the supply assemblies 115

Mid-spool support for heavy media rolls 116
About the takeup assemblies 117
About the limit switches 118
Electronics 119
Wiring diagram for the FB500 printer 119
Wiring diagram for FB500 main electronics 120
Wiring diagram for the FB700 printer 121
Wiring diagram for FB700 main electronics 122
About the main electronics box 123
Electronics box components identified 123
About the motor control board 124
About the 38v/24v power supply 125
About the AC power distribution board 125
About the AC filter 125
About the AC relay 126
About the ATX power supply 126
About the hard disk 126
About the motherboard 126
About the UV power supply 126
About the I/O board 128
About the main power cable 129
Uninterrupted power supply 130
Cable Pinouts 131

Troubleshooting printer components 142
Troubleshooting carriage-drive assemblies 142
Carriage motion failures 142
Troubleshooting carriage motion failures 142
Troubleshooting the carriage-drive smooth pulley 144
Troubleshooting the carriage-drive shaft 144
Troubleshooting the carriage-drive timing belt 144
Troubleshooting the carriage-drive motor 144
Troubleshooting the carriage-drive belt 145
Troubleshooting the rail strips 145
Troubleshooting the carriage encoder strip 145
Troubleshooting Carriage Assemblies 146
Troubleshooting carriage head height 146
Troubleshooting the lamps 146
Troubleshooting the camera 146
Troubleshooting the air manifold 146
Troubleshooting the carriage ink filters 147
Troubleshooting printhead reservoirs 147
Troubleshooting thermistors 147
Troubleshooting the vacuum tube 147
Troubleshooting split vacuum tubes 147
Troubleshooting printheads 147
Troubleshooting the printhead interface plate 148
Troubleshooting the carriage headboard 148
Troubleshooting the carriage encoder reader 148
Troubleshooting the home sensor 149
Troubleshooting the upper trolley 149
Troubleshooting the lower trolley 149
Troubleshooting the OHS assemblies 150
Troubleshooting the vacuum assembly 150
Troubleshooting the vacuum pump 150
Troubleshooting the vacuum regulator 150
Troubleshooting the vacuum accumulator 150
Troubleshooting the vacuum restrictor 151
Troubleshooting the vacuum sensor 151
Troubleshooting vacuum power supply 151
Troubleshooting the pressure pump 151
Troubleshooting the ink pumps 151
Troubleshooting the ink-line check valve 151
Troubleshooting profilers 152
Troubleshooting the ink shaker 152
Troubleshooting ink-box filters 152
Troubleshooting the OHS controller 152
Troubleshooting maintenance system 153
Troubleshooting the service station 153
Troubleshooting the printhead wipers 153

Troubleshooting the service station encoder and encoder reader 153
Troubleshooting the waste ink jug 154
Troubleshooting the track assemblies 155
Troubleshooting the track assembly 155
Troubleshooting the LVDS cable and LVDS error 155
Detecting a damaged LVDS chip 156
Troubleshooting error: Failed to Program FPGA 157
Troubleshooting the media-drive assemblies 159
Troubleshooting the media-drive motor coupling 159
Troubleshooting the media-drive motor encoder 159
Troubleshooting the high-resolution media-drive encoder 159
Troubleshooting the media-drive belt 160
Troubleshooting the ionizer 160
Troubleshooting the media alignment bar 160
Troubleshooting the rail actuator motor 160
Troubleshooting the media thickness sensor 160
Troubleshooting the media detection sensor 160
Troubleshooting the supply spool 161
Troubleshooting the electronic assemblies 162
Troubleshooting the motor control board 162
Troubleshooting the I/O board 162
Troubleshooting the 38/24v power supply 162

Printer's Service Menus 163
TOOLS > USER CLEANING AND MAINTENANCE 163
Menu: Maintenance reminders 163
Menu: Replace UV lamp bulb or bulbs 163
Menu: Clean rail encoder strip 163
Menu: Clean ionizer needles 163
Menu: Clean and lube rail strips 163
Menu: Clean print head orifice plates 163
Menu: Clean/lube service station rails 163
Menu: Clean service station wiper 163
Menu: Clean carriage wheels 164
Menu: Vacuum bottom of carriage 164
Menu: Clean carriage home sensor 164
Menu: Replace UV lamp filters 164
Menu: Clean electronics box filters 164
Menu: Replace service station wiper 164
Menu: Drain waste from service station 164
Menu: Clean media thickness sensor roller 164
TOOLS > USER DIAGNOSTICS 165
Menu: Carriage motion 165
Menu: Rail motion 165
Menu: Calibration 165
Menu: Verify H2H Y Alignment 165
Menu: Print quality 165
Menu: Service station 165
Vacuum pressure 165
Menu: Hard drive 165
Menu: LVDS 165
Menu: Print diagnostic plot 165
Menu: Print jet statistics 166
Menu: Warnings and actions list 166
Menu: Error history 166
Menu: Log error history 166
Menu: Log system info 166
TOOLS > SERVICE PRINTER > DEVICE TESTS 167
Menu: Device test wizard 167
Menu: Vacuum fan test 167
Menu: Media thickness sensor test 167
Menu: Rail-height motor test 168
Menu: Roller, alignment bar, sensor and switch test 168
Menu: Carriage home sensor test 168
Menu: Profiler test 168
Menu: Service station tests 169
Menu: Cabinet fans test 169
Menu: Carriage cooling fan test 169
Menu: Ionizer relay test 170
Menu: UV lamp test 170

Menu: Media motion velocity test 170
Menu: Test media drive control system 171
TOOLS > SERVICE PRINTER > DEVICE TESTS > IMAGE SENSOR TESTS 172
Menu: Visually examine LEDs 172
Menu: Whitepoint 172
Menu: Take picture of white paper 172
Menu: Take raw picture of dots 173
Menu: Take enhanced picture of dots 173
TOOLS > SERVICE PRINTER > DEVICE TESTS 174
Menu: Open loop actuator test 174
Menu: Open loop service station test 174
Menu: Pod test 174
Menu: Hard drive file system check 174
TOOLS > SERVICE PRINTER > PRINT TESTS 175
Menu: Print prime bars 175
Menu: Print test 175
Menu: Belt & rail parallel test 175
Menu: Media feed accuracy test, one 175
Menu: Media feed accuracy test, all 176
Menu: Horizontal dot accuracy 176
Menu: Vertical dot accuracy 176
Menu: Print test page 176
Menu: Print faux 662 176
Menu: Comb banding ramps 176
TOOLS > SERVICE PRINTER > INK SYSTEM TESTS 176
Menu: Air valves 176
Menu: Prime ink pumps 176
Menu: Ink pumps 177
Menu: Ink / air thermistors 177
Menu: Pressure pump 177
Menu: Vacuum pump 177
Menu: Turn ON / OFF white ink shaker 178
Menu: Initial ink fill 178
Menu: Prep for shipping 178
Menu: Disable on-head system 178
TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS 179
Menu: Calibration wizard 179
TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS 180
Menu: LCD touchscreen calibration 180
Menu: Head height calibration 180
Menu: Media thickness sensor calibration 180
Menu: Service station calibration 181
Menu: Input roller home calibration 181
Menu: Output roller home calibration 182
Menu: Alignment bar home calibration 182
Menu: UV lamps shutter calibration 182
Menu: Image sensor height & position 183
Menu: Printhead Y calibration 183
Menu: Media feed calibration 184
Menu: Manual bidi calibration 184
Menu: Auto head X calibration 185
Menu: Pin & alignment bar position 185
Menu: Media sensor position calibration 185
Menu: Media alignment bar alignment 185
TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS 186
Menu: Invalidate calibration 186
TOOLS > SERVICE PRINTER > RESET HOME POSITIONS 187
Menu: Reset carriage home position 187
Menu: Reset rail home position 187
Menu: Home service station 187
Menu: Home UV shutters 187
Menu: Home input roller 188
Menu: Home output roller 188
Menu: Home alignment bar 188
TOOLS > SERVICE PRINTER 189
Menu: Measure media width 189
Menu: Replace printhead 189
Menu: Fill replaced printhead 189
Menu: Set head vacuum 189

Menu: Reset image sensor 190
Menu: Prep for shipping 190
Menu: Install shipping restraint 190
Menu: Set clock 190
Menu: Raise rail, bar, and rollers 191
Menu: Restore hard drive to defaults 191
Menu: Support roll fed: yes 191
Menu: Roll fed media control: method a 191
Menu: Configure warming attns 191
Menu: Carriage control 191
Menu: Show autoH2H Y calibration 192
Menu: UV current sense method 192
Menu: Auto printhead service 192
Error codes, warnings and actions 193
Menu: ERRORS 193
Menu: ACTIONS 194
Menu: WARNINGS 195

Cleaning and Maintenance 196
Schedule of tasks normally completed by printer's operator 196
Schedule of cleaning and maintenance performed by service provider 197
Replacing UV lamp filters 199
Cleaning the printheads 199
Clean the electronics box fan filters 202
Clean and grease the service station wiper slide rails 203
Replace the service station wipers 205
Clean service station wiper 206
Clean and oil rail carriage-wheel strips 206
Clean the rail encoder strip 208
Clean carriage wheels 208
Clean bottom of carriage 210
Clean ionizer tips with brush 211
Service station empty / close 212
Waste-ink jug's open and closed positions 212
Clean media thickness sensor roller 213
Clean the carriage home sensor 213
Cleaning the high-resolution encoder hub 214

Replacement of field replaceable modules (FRMs) 216
Managing Power Off Scenarios 216
Enclosures 217
Remove the user-end and service-end enclosures 217
Installing the user and service-end enclosure 217
Removing the output-side, user-end belt enclosure 218
Removing the input-side, user-end belt enclosure 218
Removing the light-blocking tray 218
Installing the light-blocking tray 219
Disconnecting the OHS Cabinet 219
Removing the output-side top door 220
Installing the output-side top door 222
Removing a fan from the output-side door 222
Installing a fan in the output-door 223
Carriage FRM Assemblies 224
Carriage assembly cover 224
Removing printheads 224
Releasing the service station latch 225
Installing Printheads 226
Install the flex cables 229
Post printhead-replacement calibrations 230
Removing the carriage headboard 230
Disconnecting the carriage pressure sensor tube 230
Removing the headboard (with mounting plate) 231
Installing the carriage headboard (with mounting plate) 231
Headboard cable connection chart 232
Removing the carriage camera board 233
Installing the carriage camera board 234
Removing a thermistor set 235
Power off printer and unplug power cords 235
Removing the printhead reservoir cover 235

Clamp vacuum tubes to service printhead components 236
Installing a thermistor set 237
Removing the carriage air manifold 238
Removing the pressure and vacuum tube 239
Installing the carriage air manifold 240
Removing the carriage encoder reader 240
Installing the carriage encoder reader 242
Removing the carriage from the rail 242
Disconnecting the lamp power cables 243
Disconnecting the ink tube from the ink reservoir 243
Remove the trolley attachment bracket 244
Installing the carriage on the rail 244
Reconnecting tubes using tube joiner (tube mender) 245
Removing the upper trolley plate 246
Installing the upper trolley plate 248
Removing the home sensor 249
Installing the home sensor 249
Removing the home sensor flag 250
Installing the home sensor flag 250
Carriage Lamp Assemblies 251
Remove the user-end lamp cover 251
Installing the user-end lamp cover 252
Remove the service-end lamp cover 252
Install the service-end lamp cover 252
Removing the UV Lamp Bulb 253
Installing the UV Lamp Bulb 254
Removing the Lamp Glass 255
Installing the lamp glass 256
Removing the lamp fan assembly 256
Installing the lamp fan 257
Removing a single lamp fan 257
Installing a single lamp fan 258
Carriage-drive assemblies 259
Releasing the carriage-drive belt tension 259
Removing the carriage-drive idler 259
Installing the carriage-drive idler 259
Removing the carriage-drive belt 260
Installing the carriage-drive belt 260
Remove the carriage-drive motor 261
Remove the carriage-drive timing belt 262
Install the carriage-drive motor 262
Remove the carriage-drive shaft 262
Remove the carriage-drive assembly housing 263
Remove the rail encoder strip 264
Installing the rail encoder strip 264
Removing rail wheel strips 266
Installing a rail wheel strip 267
Media-drive media-drive assemblies 270
Removing the high-resolution encoder 270
Installing the high-resolution encoder 273
Set the high-resolution encoder's readhead spacing 274
Aligning the high-resolution encoder 275
Turning off AGC (Automatic Gain Control) 276
Align readhead with AGC turned off 277
High-resolution encoder incremental signal calibration 278
Activate high-resolution encoder calibration mode 279
Set the reference mark for the high-resolution encoder 279
Turning AGC on for the high-resolution encoder interface 279
Removing the media-drive motor 280
Loosening the media-drive belt tension 280
Removing the media-drive motor 283
Installing the media-drive motor 284
Torque conversion 287
Tensioning the media-drive belt 288
Removing the media-drive motor's encoder 288
Installing the media-drive motor's encoder 290
Remove an input roller actuator assembly 291
Install an input actuator assembly 293
Calibrate the input roller assembly 293
Remove an alignment bar actuator assembly 294

Install an alignment bar actuator assembly 295
Calibrate the alignment bar 295
Replace an output-roller actuator assembly 296
Remove the output roller 296
Install an output-roller actuator assembly 297
Calibrate the output-roller 297
Rail exploded views 297
Remove a rail actuator 298
Install a rail actuator assembly 301
Removing the optional foot switch 302
Installing the replacement foot switch 302
Media-drive fan arrays 303
Fan array exploded views 303
Removing the output-side vacuum fan array 304
Installing the output-side vacuum fan array 305
Removing the middle vacuum fan array 305
Installing the middle vacuum fan array 306
Removing the input-side fan array 307
Installing the input-side fan array 308
Replacing a fan-array fan 309
Media-drive belt, Removal 311
Installing the media-drive belt 318
Center the media rollers 320
Center the driver roller 320
Begin idler roller centering 321
Checking media-drive belt tension 321
Belt tension specification 323
Make sure media rollers are parallel 324
Check belt tracking 324
Measure roller tracking with a dial indicator 325
Move the belt using the velocity test 325
Lap the belt 326
Media Sensors 327
Remove the media thickness sensor 327
Install the media thickness sensor 327
Calibrate the Media Thickness Sensor 328
Remove the media detection sensor 328
Install the media detection sensor 328
Roll-to-roll assemblies 329
Fasteners for roll-to-roll assemblies 329
Optional roll-to-roll box contents 330
Installation of optional roll-to-roll kit 331
Required tools 331
Configure printer for roll-to-roll 331
Level the printer 331
Install the roll-to-roll supply arms 332
Roll-to-roll alignment tool configurations 334
Assemble tool for supply and/or takeup spools 334
Roll-to-roll alignment tool configurations for supply and/or takeup 335
Roll-to-roll alignment tool configuration for foam rollers 335
Roll-to-roll alignment tool configurations for foam roller tool configuration 335
Align the roll-to-roll supply spool 336
Align the service-end supply spool position 337
Tighten the supply arm turnbuckle bolts 341
Align the foam roller racks 342
Center the foam rollers between the foam roller collars 345
Roll-to-roll Takeup 348
Remove the output roller 348
Set the takeup roller position 348
Tighten the takeup arm's turnbuckle bolts 350
Install the roll-to-roll moveable dancer bar 352
Install the fixed bar into the dancer rack 354
Takeup motor power 355
Verify movement of dancer bar 356
Verify takeup motor turn-off trigger point 356
Verify takeup motor's turn-on trigger point 357
Adjusting takeup switch positions 358
Install the output roller 359
Loading roll-to-roll media 360

Media loading overview ... 360
Prepare the printer ... 361
Center the media on the supply spool ... 361
Initiate LOAD MEDIA from printer's menu ... 363
Mid-spool support for heavy media rolls ... 366
Electronic assembly FRMs ... 367
Removing the fan's air filter ... 367
Installing the fan filter cover ... 367
Removing the electronics box covers ... 368
Installing the electronics box covers ... 368
Removing the motor control board ... 368
Installing the motor control board ... 370
Removing the FB 500 ebox UV power output cables ... 370
Installing the FB 500 ebox UV power output cables ... 372
Removing the ebox ionizer power-out cable ... 372
Installing the ebox ionizer power-out cable ... 374
Removing the ebox ShopVac power-out cable ... 374
Installing the ebox ShopVac power-out cable ... 376
Removing the ebox main input-power cable ... 376
Installing the ebox main input-power cable ... 378
Removing the AC distribution board ... 378
Installing the AC distribution board ... 379
Removing the FB500 UV power supply ... 379
Installing the FB500 UV power supply ... 380
Removing the FB700 UV power supply ... 380
Installing the FB700 UV power supply ... 382
Removing an AC relay ... 382
Installing an AC relay ... 383
Removing the IO controller board ... 383
Installing the IO controller board ... 385
Removing the ebox motherboard ... 385
Installing the ebox motherboard ... 387
Motherboard BIOS configuration ... 388
Removing the ebox hard disk ... 390
Installing the ebox hard disk ... 390
Removing the ATX power supply ... 390
Installing the ATX power supply ... 391
Removing an electronics box fan ... 392
Installing an electronics box inlet fan ... 392
Maintenance assemblies ... 393
Removing the service station ... 393
Service station cables ... 393
Service station bolts ... 394
Installing the service station ... 394
Disconnecting the service station drain hose ... 394
Install the service station drain hose ... 395
Installing complete drain hose kit ... 395
Remove the service station actuator ... 398
Install the service station actuator ... 398
Remove the service station wiper motor ... 399
Install the service station wiper motor ... 399
OHS assemblies ... 400
Tube joiners and plugs ... 400
Removing a permanent ink filter ... 401
Cutting the ink tube for removal ... 401
Installing the permanent ink filter ... 402
Removing the OHS controller board ... 402
Installing the OHS controller board ... 402
Adjusting vacuum level ... 403
Track assemblies ... 405
Replacing the complete track assembly ... 405
Overview ... 405
Things to do first for track replacement ... 406
Print a prime bar pattern ... 406
Access the password protected service menu ... 406
Empty the carriage of ink ... 406
Remove both endcap enclosures ... 406
Included fasteners, plugs and joiners ... 407
Included tube joiners and plugs for track replacement ... 407
Included fasteners for track replacement ... 407

Prepare the replacement track....408
Cut off unneeded ends of ink tubes on new track....408
Cut off unneeded ends of ink tubes at carriage-end of new track....409
Install tube joiners into both ends of new ink tubes....409
Install tube joiners into the user-end of all six ink tubes....409
Label tubes connected to original track that will remain in printer....410
Label tubes that connect to permanent ink filters....411
Power off the printer and remove power cords....411
Power off the printer....411
Unplug the main power cable....412
Disconnecting all track cables and tubes from carriage....413
Disconnect cables from the carriage....413
Remove the carriage cover....413
Disconnect cables from the headboard....413
Disconnect tubes from the carriage....414
Removing the air tubes from the air manifold....416
Remove the track from the carriage....417
Remove the trolley attachment bracket....417
Removing the track from the rail-attachment bracket....417
Clean area under track....418
Installing the new track assembly onto the rail....418
Attaching the track bracket to the rail....419
Disconnecting and connecting the user-end of the track assembly....419
Cutting and connecting air tubes....420
Cutting the vacuum tube....420
Cutting the pressure tube....421
Cutting and connecting user-end ink tubes one at a time....421
Connect the new track to the ink-pump tubes....423
Disconnecting user-end cables....423
Disconnect the remaining track cables....423
Cable looms....425
Loom for LVDS and headboard power cables....425
Ink and air tube cable looms....425
Connecting the track assembly to the carriage....428
Connect track ink tubes to carriage ink tubes....429
Resolution for too-short tubes....430
Extending the track tubes if too short....430
Connecting the headboard cables....430
Check for grounding strap....431
Install the user-end grounding strap....432
Installing the service-end grounding strap....433
Powering up the printer....434
Connect the power cables....434
Fill the printheads with ink....435
Finishing up track replacement....435
Drain and clean the service station....435
Print a prime bar pattern....435
Replacing an ink tube bundle....436
Ink tube replacement overview....436
Ink tube bundle replacement, first things....437
Print a prime bar pattern....437
Access the password protected service menu....437
Empty the carriage of ink....437
Remove both endcap enclosures....437
Prepare the new tube bundle for replacement....437
Tape the braided cover to the tubes....437
Cut off end sections of ink tubes in new tube bundle....438
Install tube joiners into the OHS-end of all six tubes....438
Label tubes that will be cut but will remain in printer....438
Label tubes that connect to permanent ink filters....439
Power off printer and remove power cables....439
Disconnect tubes from the carriage....439
Cutting ink tubes at carriage for tube bundle replacement....440
Plug tube that is being removed....441
Connect the new tube bundle to the original tube bundle....441
Release the H-block tube clamp at carriage end....442
Release the mid-rail cable clamp....442
Connect the new and original tube bundles together....443

Connect the power cables ... 444
Fill the printheads with ink ... 444
Drain and clean the service station ... 444
Print a prime bar pattern ... 445
Miscellaneous ... 446
Installing Firmware ... 446
FTPing to the printer ... 447
Manually FTPing the software BIN to the printer's hard disk ... 448
Accessing the password protected service menu ... 449

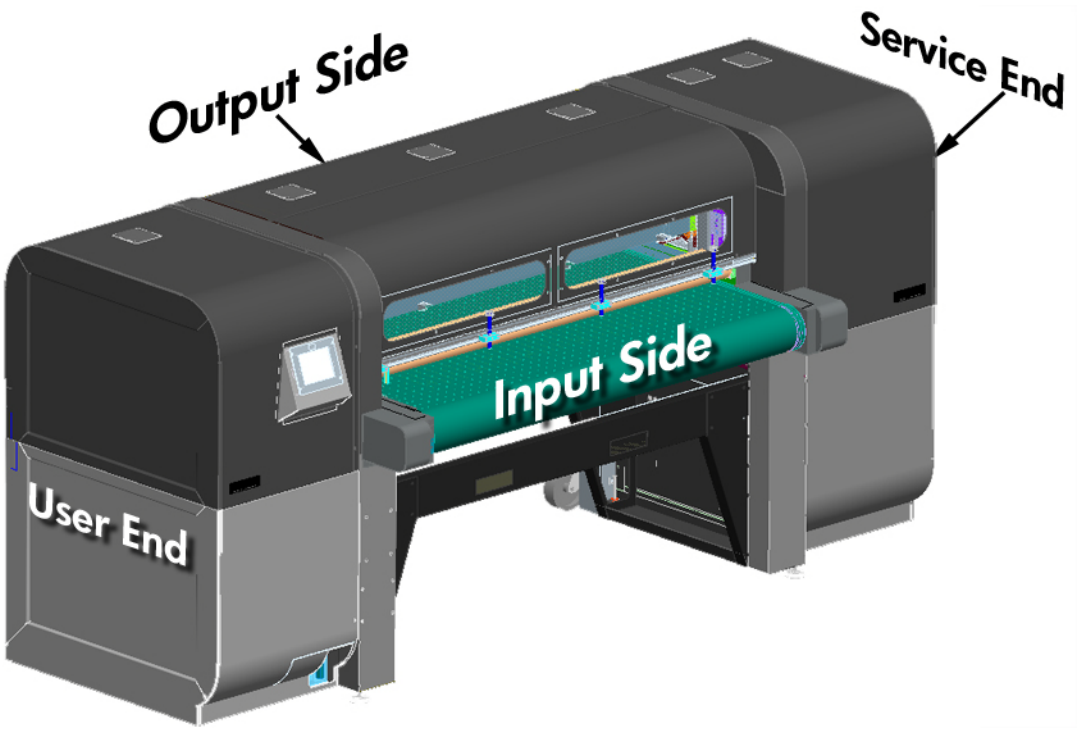
Calibrations ... 450
Carriage and printhead calibrations ... 450
Printhead y-axis calibration ... 450
Examine the H2H Y Pattern ... 451
Adjusting the printhead y-axis position ... 454
Measure H2H Y Offsets ... 458
Run the auto BIDI calibration ... 460
Calibrate the printhead saber angle ... 460
Checking carriage front-to-back tilt ... 462
Calibrating Carriage Front-To-Back Tilt ... 463
Front-to-back calibration of the service-end of the carriage ... 464
Front-to-back calibration of the user-end of the carriage ... 464
Calibrate the media-thickness sensor ... 465
Calibrate the camera focus ... 465
Fixing Carriage Twist ... 466
Verifying the gross saber angle ... 467
Changing the Carriage Saber Angle ... 468
Head height calibration ... 470
Reconnect the door-open switch ... 474
Maintenance calibrations ... 475
Calibrating the service station wipers ... 475
Calibrating Wiper Height ... 475
Calibrating wiper y-axis alignment ... 475
Calibrating wiper left/right tilt ... 476
Check output-side wiper tilt ... 476
Check input-side wiper tilt ... 478
Check the wiper height on the input side of the carriage ... 478
Calibrating wiper x-axis alignment ... 478
Leveling the printer ... 480
Install the printer's wheels ... 480
Check height difference between user and service-end of printer ... 480
Check height difference between input and output-side of printer ... 481
Adjusting leveling pads ... 481
Remove printer wheels ... 482
Attaching and Leveling the tables ... 482
Set table-to-belt distance ... 485

Special Tools ... 486
Carriage and printhead special tools ... 486
Long hex wrench to set y-axis ... 486
Torque screwdriver and bit set ... 486
Gross saber angle dial indicator ... 486
Vacuum tube clamps ... 487
L-shaped ratchet screwdriver ... 487
Tube cutter ... 487
Media-drive special tools ... 488
Torque wrench for media-drive motor coupling ... 488
High-resolution readhead alignment tool ... 488
Dial indicator for high-resolution encoder hub ... 488
Ionizer point cleaning brush ... 489
Alcohol swabs ... 489
Dial indicator belt tensioning tool ... 489
Roll-to-roll alignment tool ... 490
C-ring pliers ... 490
Calipers ... 490
Flexible tape measure ... 491
Index ... 492

Printer orientation

This manual often refers to the following four printer locations: the user end, the service end, the input side and the output side.

Fig. 1. Orientation



Required tools

Each procedure lists the tools required to complete the task. Below are a list of tools commonly used to service the printer. Additional "special tools" (some that must be ordered as service tools) are listed in the section "Special Tools" on page 486.

- Gloves, such as latex
- Protective eye wear
- Paper towels
- Apron to protect clothing from ink
- Drop cloth to protect floor from dripping ink
- Metric sockets from 10 mm - 17 mm
- Socket extensions (8 cm and 20 cm or 3-in and 8-in)
- Metric open-end wrenches (set)
- 5/8-in open-end wrench (service station drain replacement)
- Metric hex wrench (such as Allen wrench hex keys) set 2 mm - 8 mm (including 2.5 mm and a 3 mm L-shaped)
- 3/32-in hex wrench (carriage calibration)
- 1/16-in or a 1.5 mm hex wrench (to loosen the screw that secures the encoder wheel to the shaft of the media-drive motor).
- #1 and #2 phillips screwdriver (including a ten-inch #2 and a short #2)
- Flat-blade screwdriver
- 10 X Lighted Loupe (y-axis calibration)
- Flexible tube clamps, such as hemostat clamps (minimum of two clamps for any printhead work).
- Large adjustable wrench, such as a Crescent wrench (for media-drive belt tension)
- Medium-sized adjustable wrench, such as a Crescent wrench
- Internal C-ring pliers (removing c-ring from input-side media-drive bearings - see Fig. 695. on page 490)
- Calipers (used with media-drive belt calibration - see Fig. 696. on page 490)
- Razor knife
- Needle-nosed pliers (lamp fan replacement)
- Head height gauge (ships in accessory box with each printer)
- Long level (1 meter or about 3 feet)
- Short level (30 cm about 1 foot)
- Low-adhesive tape, such as painter's tape
- Flashlight
- Dial indicator (see special tools on page 487).

Parts List for Field Replaceable Modules

The follow part numbers are the orderable parts for service procedures. Replacement instructions for these parts can be found on the page numbers listed to the right of the part number description.

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
3160-4231	GUARD,FIN-GER,FAN,92.2MM SQ,30PPI FILTER	Elec	This is the 92.2mm fan guard with integrated filter holder. Used on the main electronics box intake fan. This kit contains one filter holder with filter media included.	page 367
8120-6895	PWR-CORD OPT-N/S 3-COND 4.5-M-LG ROHS	Elec	This is the power cord that has no plug. The three wires are exposed for attachment of local plug or wiring directly to the facility circuit.	page 129
8120-6899	PWR-CORD OPT-902 3-COND 4.5-M-LG ROHS	Elec	'This is the IEC 60309, 16/20 Amp, 250 V, 3 pin, single phase European power cable. This power cord plugs into a IEC 6030 9, 16/20 Amp, 250 V, 3 pin, single phase wall outlet	page 129
8120-6903	PWR-CORD OPT-930 3-COND 4.5-M-LG ROHS	Elec	'The North America/Japan power cable is rated to handle 16 amps at a nominal 220 VAC. This power cord plugs into a NEMA L6-20 wall receptacle.	page 129
0500014	ASSY,CBL,HAM-MERHD,OHS_DATA	Elec	This is the braided ribbon cable from OHS board to I/O board. Common to 500-700, FB910, FB950.	page 402
0500148	ASSY,CBL,HEADBD-UV_HSNG_CTRL	Elec	This is the cable between the carriage headboard and the UV lamps. Qty. 2 are used on the printer; this is the part number for Qty 1. Common to 500-700, FB950, H-Series.	page 243
0505984	ASSY,CBL,HEADBD-UV_HSNG_CTRL	Carr	This go/no-go gauge is used to set the carriage (rail) height to 0.085" above the surface of the media.	page 471
0507663-301	ASSY,PROFILER,ANA-CONDA,CYAN UV_CURE,3_LTR	OHS	Ink profiler for Cyan (3L)	page 74
0507663-302	ASSY,PROFILER,ANA-CONDA,MAGENTA UV_CURE,3_LTR	OHS	Ink profiler for Magenta (3L)	page 74
0507663-303	ASSY,PROFILER,ANA-CONDA,YELLOW UV_CURE,3_LTR	OHS	Ink profiler for Yellow (3L)	page 74
0507663-304	ASSY,PROFILER,ANA-CONDA,BLACK UV_CURE,3_LTR	OHS	Ink profiler for Black (3L)	page 74
0507663-305	ASSY,PROFILER,ANA-CONDA,LT_CYAN UV_CURE,3_LTR	OHS	Ink profiler for Light Cyan (3L)	page 74
0507663-306	ASSY,PROFILER,ANA-CONDA,LT_MAG UV_CURE,3_LTR	OHS	Ink profiler for Light Magenta (3L)	page 74
0507774	FLAG,RAIL,ANA-CONDA,SENSOR_HOME	Carr Drv	Home sensor flag that attaches to the rail at the service end. Common to 500-700 and FB950.	page 249
0602834	HAN-DLE,FLUSH,PANEL_MOUNT,SNAP_IN	Encl	Recessed plastic hand-hold as used in the enclosures for FB910 and FB950, FB500 and FB700.	

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
0603114	FUN-NEL,32_OZ,6.5"_TOP_OD ,0.625"_SPOUT_OD,HDPE	OHS	This is the funnel to facilitate emptying ShopVac waste ink into waste ink bottle	
0900710	FRM,BLT,CARRDRV_TIMN G,MXABCDHIJ	Carr Drv	This is the carriage-drive timing belt between the carriage-drive motor and the carriage-drive shaft.	page 262
0901389	FRM,MTR_CNTRL_BRD,L	Elec	This is the motor control board (a.k.a. motor driver board) in the electronics assembly. Common to 500-700, FB910, FB950.	page 368
0901400	FRM,BLWR,BLT_VAC,L	Maint	This is the belt vacuum blower assembly used to suck down the media to the belt. This includes one blower. Common to 500-700, FB950, FB910.	page 309
0901402	FRM,ALGN_PIN_ASSY,L	Med Drv	Alignment pins or N-up pins. These pins used to set the position of multiple sheets. Multiple instances are used on the printer; this FRM is for qty. 1. Common to 500-700, FB950, FB910.	
0901405	FRM,PRNTER_LVLING_PAD ,L	Encl	This is the leveling pad for FB500, FB700, FB950 and FB910 (CS9840).	
0901406	FRM,MEDIA_THKNSS_SN SR,L	Med Drv	This is the media thickness sensor assembly for FB950, FB910, FB500, FB700. It was calibrated in the factory.	page 327
0901407	FRM,MEDIADRV_ENCDR,L	Med Drv	This is the encoder that attaches to end of the media-drive motor on the service end of the printer. Common to 500-700, FB950, FB910. This is not the hi-resolution encoder located on the user end of the printer (the type & location varies by the printer model).	page 288
0901425	FRM,RLD_E_STRP&FM,ABC DHIJ	Carr Drv	This is the mylar encoder strip (and foam tape) that is installed in the full length of the rail. It is long enough for a 98"/2.5m printer and can be trimmed down for smaller printers. This FRM requires you to reuse the existing aluminum bar from the old strip.	page 264
0901469	FRM,ON_OFF_SW,L	Elec	This is the On/Off switch on the electronics assembly. Common to 500-700, FB950, FB910.	
0901507	'FRM,SPLY,UV_POWER,DU AL_CH,N	Elec	This is the UV Power Supply for FB500. Also used in some models of the H-Series or CS5400 printer. Check control panel System Information; if panel shows "NDP", order this FRM. The FRM is a single unit that powers both channels. See CQ115-67004 for the FB700 UVPS.	page 379
0901512	FRM,PWR_DIST_BRD,N	Elec	This is the power distribution board for FB500, FB700, and H-Series. This routes inbound AC to the various printer power supplies.	page 378
0901513	FRM,FAN,EBOX,COOL-ING,N	Elec	This fan assembly cools the electronics box in the printer. The electronics box has three of these (fans) in it. Two are exhaust and one is intake.	page 392
0901533	FRM,MTR,SRV_STN,N	Maint	This is the service station wiper motor (which moves the wiper head in the Y axis). Common to 500-700, FB950, H-Series.	page 399
0901561	FRM,S&T_MOTOR&SWITC HES,L	Med Drv	This is the takeup motor and switch assembly for the roll-to-roll accessory. Common to 500-700, FB910, FB950.	page 348
0901572	KIT,TOOL,BELT_TENSION,L	Med Drv	This is the custom HP tool/fixture used to measure and set tension on the media belt. A dial indicator (not included, see CQ114-67176) is required to use this tool. Applicable to 500-700, FB950, FB910. This tool and a dial indicator are mandatory tools for all service that involves changing the belt tension.	page 288

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
0901586	FRM,AC-RELAY,N	Elec	This is the AC Relay that is located in the main electronics box. There are multiple instances in the printer; this FRM is for qty. 1	page 382
0901594	FRM,LAMP,GLASS,N	Carr	This is the quartz lamp glass that inserts below the left or right lamp housing. Common to 500-700, FB950, H-Series.	page 255
0901596	FRM,FAN,UV_LAMP,N	Carr	This is the cooling fan which is used in the lamp assembly. Each lamp has quantity 2. This part number replaces 0500164.	page 256
0901599	FRM,ASSY,FAN,N	Encl	This is the fan which is used on the top enclosure and end enclosures for FB500, FB700, also H-Series. There are multiple instances on each printer; this FRM is for qty. 1	
0970811	FRM,MTR,CARRDRV,SFEM XABCDHIJ ROHS	Carr Drv	Carriage-drive motor only.	page 261
CH104-67002	FRM,N,PUMP,PRESSURE	OHS	This pressure pump is for the ink delivery system (IDS) vacuum/ pressure system. It is located on the OHS assembly.	
CH154-00009	BRKT,RAIL,ANACONDA,IONIZER	Med Drv	This bracket attaches the ionizer bar to the back of the rail. It is used on the FB500 and the FB950. Multiple instances are used on the respective printer platforms; this FRM is for qty. 1	
CH154-50005	ASSY,CBL,ANACONDA,SHOP_VAC_EXT, 15FT	Elec	This is the AC power cable from the electronics assembly to the service station ShopVac. Commonly used in the 500-700, and the FB950.	
CH154-60027	ASSY,PIGTAIL,OHS,ANACONDA,1.75IN_DIA_FLT	OHS	This is the replacement "pigtail" tubing/filter/connector assembly found on the 3-Liter CMYK-LtC-LtM ink cartridges (ink boxes). Commonly used in the 500-700 and the FB950.	
CH154-67005	FRM,ENCDR_STRIP_ACTUATOR,Q	Med Drv	Lifting encoder strip assembly, including bracket, used in all lifting assemblies and service station on the FB950, and all lifting assemblies but the service station FB500 and FB700. For the equivalent service station part in FB500/700, see CQ114-67083.	page 294
CH154-67006	FRM,READER,ENCDR,ACTUATOR,Q	Med Drv	This is the encoder reader board assembly used at all of the lifting positions on the FB950 and FB500 and FB700 printer. This includes the board only, no metal bracket included.	page 294
CH154-67008	FRM,MEDIA_MTR/ REDCR,Q	Med Drv	This is the media drive motor/reducer assembly for FB950 and FB500 and FB700. It is not the same as the one used on the FB910.	page 283
CH154-67009	FRM,CBL,UV_LAMP,5.3M, Q	Carr	This is the UV lamp power cable in the track from electronics assembly to one lamp. Two cables are used per printer; this FRM is for qty. 1. Commonly used in the 500-700, and FB950.	page 425
CH154-67012	FRM,ENCLOSURE_WINDOW,Q	Encl	This is the replacement UV-blocking windows used only on the center output-side door. includes push nuts. Commonly used in the 500-700 and the FB950. See CQ114-67090 for input-side windows.	
CH154-67014	FRM,BOTTLE,UV_WASTE,Q	OHS	This is the 1-gallon bottle with warning label for collection of UV liquid wastes.	page 212
CH154-67015	FRM,BOTTLE,FLUSH,Q	Misc	This is the squeeze bottle with label for UV flush.	
CH154-67023	FRM,TUBE,VACUUM,LONG,Q	Track	Long tube for ink-system vacuum that runs through the track assy. Common to 500-700, FB950.	page 420

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CH154-67024	FRM,TUBE,SOL_PRS,LONG,Q	Track	Long tube for ink system air pressure that runs through the track assy. Common to 500-700, FB950.	page 420
CH154-67037	FRM,foot switch/CBL,NO HOOD,GRNDED,Q	Med Drv	This is the replacement foot switch only, no orange safety hood included, for FB700, FB950, FB910 and H-Series. This accessory is not supported on the FB500.	page 302
CH231A	HP,DJ_H35000/DJ_H45000,UV,REPLACEMENT,BU	Carr	This is the replacement UV bulb for the H-Series, the FB950, and the FB500.	page 253
CH971-62824	RULER,ADHESIVE_BACKED,ENGLISH_METRIC,NAR	Med Drv	This is the ruler located with the N-up alignment pins. The part is 98"/2.5m long and can be cut down for the 64"/1.6m size	
CQ114-00067	ENCL,PRINTER,KAA,USER	Encl	This is the user-end endcap. This is the sheet metal enclosure only, nothing else. Common to 500-700.	page 217
CQ114-00068	ENCL,PRINTER,KAA,SERVICE	Encl	This is the service-end endcap. This is the sheet metal enclosure only, nothing else. Common to 500-700.	page 217
CQ114-00072	ENCL,PRINTER,KAA,BLT_CVR,OUTPUT,SERVICE	Encl	This is the belt cover enclosure on the service end, output side of the printer. Common to 500-700.	page 218
CQ114-00073	ENCL,PRINTER,KAA,BLT_CVR,OUTPUT,USER	Encl	This is the belt cover enclosure on the user end, output side of the printer. Common to 500-700.	page 218
CQ114-00074	ENCL,PRINTER,KAA,BLT_CVR,INPUT,SERVICE	Encl	This is the belt cover enclosure on the service end, input side of the printer. Common to 500-700.	page 218
CQ114-00075	ENCL,PRINTER,KAA,BLT_CVR,INPUT,USER	Encl	This is the belt cover enclosure on the service end, output side of the printer. Common to 500-700.	page 218
CQ114-00076	ENCL,PRINTER,KAA,CVR_MNT,USER	Encl	This is the mounting bracket for outer cover on the input user side. Common to 500-700.	
CQ114-00077	ENCL,PRINTER,KAA,CVR_MNT,SERVICE	Encl	This is the mounting bracket for outer cover on the input service side. Common to 500-700.	
CQ114-60115	KIT,COMPONENTS,U	Misc	This is the component kit included with a new printer. This item exists for special situations the kit is missing, such as when a machine was used at a tradeshow. Common to 500-700.	
CQ114-67002	FRM,CARRIAGE_HOLDDOWN_KIT,U	Carr	Carriage hold-down kit for shipping FB500 and FB700 printers.	page 238
CQ114-67003	FRM,FASTENERS_KIT,U	Misc	Collection of various fasteners used in multiple locations on the printer, too long to list here. Common to 500-700. See also CQ114-67186 for fasteners for the tables and roll-to-roll accessory.	
CQ114-67004	FRM,FB500,ALIGNMNT_BAR	Med Drv	This is the media alignment bar for the FB500 only.	
CQ114-67005	FRM,CARR_INK_RESERVOIR,U	OHS	This is an assembly of the ink reservoir (1pc), formed tubing (4pcs), printhead attachment plates (2pcs), and associated fasteners/fittings. Six are used per printer; this FRM is for qty 1. Common to 500-700.	page 235
CQ114-67006	FRM,CARR_VALVE_CBL,U	Carr	Cable from headboard to the valve/manifold assembly. Common to 500-700.	page 238
CQ114-67007	FRM,CARR_COOLING_FAN,U	Carr	This is the cooling fan for the back of the carriage. Two are used per printer, this FRM is for 1 fan. Common to 500-700.	page 233

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67008	FRM,CARR_CAMERA/CASE/CABLES,U	Carr	This is the carriage camera (image sensor) assembly and cables, with metal housing. See CQ114-67013 for the camera/cables only. Common to 500-700.	page 233
CQ114-67009	FRM,CARR_HOME_SNSR/BRKT/CBL,U	Carr	This is the carriage home sensor, mounting bracket, and cable. It does not include the flag attached to the rail, see 0507774. Common to 500-700.	page 249
CQ114-67010	FRM,CARR_MANIFOLD_ASSY,U	Carr	This is the air valve/manifold assembly that mounts on the rear of the carriage above the trolley. Common to 500-700.	page 238
CQ114-67011	FRM,3_THERM_ASSY,U	Carr	This is an assembly of the three thermistors pre-installed into the top half of the ink reservoir. It includes a new O-ring for the reservoir. Six assemblies are used per printer; this FRM is for qty. 1. Common to 500-700.	page 235
CQ114-67012	FRM,HEADBOARD,U	Carr	This is the headboard assembly for FB500-FB700. It includes the protective bracket and all related hardware.	page 231
CQ114-67013	FRM,CAMERA/FLEX_CBLS,U	Carr	This is the camera (image sensor) assembly and cables only. Common to 500-700.	page 233
CQ114-67014	FRM,TROLLEY,U	Carr	This is the complete trolley assembly (upper and lower plates). Common to 500-700.	
CQ114-67015	FRM,UPPER_TROLLEY,U	Carr	Upper trolley plate with wheels. Common to 500-700.	page 246
CQ114-67016	FRM,CARR,OVERFILL_FLTER_ASSY,U	Carr	This is the overfill filter and tubing assembly. Six are used on the printer, this FRM is qty 1. Common to 500-700.	
CQ114-67017	FRM,CARR,SRVC,LAMP_MODULE,U	Carr	This is the service-side lamp housing for FB500. It does not include a bulb.	page 252
CQ114-67018	FRM,CARR,USER,LAMP_MODULE,U	Carr	This is the user-side lamp housing for FB500. It does not include a bulb.	page 251
CQ114-67019	FRM,PRINTHEAD_ONLY,U	Carr	This is the printhead for FB500/FB700. It includes replacement O-rings and fasteners. Twelve are used per printer; this FRM is for qty. 1	page 224
CQ114-67020	FRM,CARR,PH,Y_AXIS_ALIGNMT_BAR_ASSY,U	Carr	This is the bar with adjustment screws to control the Y-axis alignment of the printheads on the carriage. Common to 500-700.	
CQ114-67021	FRM,CARRIAGE_COVER,U	Carr	This is the carriage cover for FB500/FB700.	page 224
CQ114-67022	FRM,FB500,CARR_BELT/CLIP,ASSY	Carr	This is the main carriage belt (blue belt) for FB500. It includes the metal clips that attach to the belt and secure the belt to the carriage.	page 260
CQ114-67023	FRM,MEDIA_OUT_DETECT_SNSR,QU	Med Drv	This is the optical media-out detection sensor found on the input side of the printer. Two are used on the printer, one at center and one at the user end; this FRM is for qty. 1. Commonly used in the 500-700, and the FB950.	page 328
CQ114-67024	FRM,FB500,MULTI_CBL_LOOM,SERVICE_SIDE	Elec	This is the cabling loom (conduit and cables) for cables that pass between the electronics assembly to components on the service end of the FB500 printer. Only the loom bundle is available, the individual cables are not orderable.	
CQ114-67025	FRM,FB500,MULTI_CBL_LOOM,USER_SIDE	Elec	This is the cabling loom (conduit and cables) for cables that pass between the electronics assembly to components on the user end of the FB500 printer, excluding devices in the user-end removable enclosure. Only the loom bundle is available, the individual cables are not orderable.	

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67026	FRM,MULTI_CBL_LOOM,USER_ENCL,U	Elec	This is the cabling loom (conduit and cables) for cables that pass between the electronics assembly and components in the user-end removable enclosure and to the OHS board. The cables related to the control panel are available individually (see CQ114-67051, CQ114-67052, CQ114-67053), but the OHS data cable is not. Common to 500-700.	
CQ114-67027	FRM,RAIL_UPDOWN,LINEAR_BEARING,QU	Med Drv	This is the linear bearings for rail up/down motion. Two are used on the printer; this FRM is for qty. 1. Common to 500-700.	
CQ114-67028	FRM,EBOX_AIR_FILTER,QU	Elec	This is the filter media for the cooling fans on the electronics assembly. This is not considered a user-replaceable consumable item. Two are used on the printer; this FRM is for qty. 1. Common to 500-700.	page 367
CQ114-67030	FRM,IO_BOARD,U	Elec	I/O board assembly for the FB500 and FB700. Includes the metal bracket.	page 383
CQ114-67031	FRM,FB500,UV_PWR_OUTPUT_CBL	Elec	This is the cable from the FB500 UVPS to the external connector on the electronics assembly for the track UV power cable. The external connector is integrated with this cable. Two are used per printer; this FRM is for qty 1.	page 370
CQ114-67032	FRM,24/38VDC_PWR_SPLY,U	Elec	24/38VDC dual-channel power supply in the electronics assembly. Common to 500-700.	page 393
CQ114-67033	FRM,AC_DIST,SHOP_VAC,VAC_PS,U	Elec	This is the cable in the electronics assembly from the AC distribution board to 24 VDC vacuum power supply and to the service station ShopVac. This cable label is CQ114-50003. Common to 500-700.	page 378
CQ114-67034	FRM,AC_DIST,AC_RELAY,UV_PS,U	Elec	This cable provides the power from the AC distribution board to the UVPS. One wire goes to the UVPS, the other wire goes to the AC Relay. Cable label is CQ114-50005. Unique to FB500.	page 378
CQ114-67035	FRM,AC_DIST,ATX_PS,U	Elec	This is the cable that goes from the AC Distribution board to the ATX power supply. Cable label is CQ114-50022 AC_DIST,ATX_PS. Common to 500-700.	page 378
CQ114-67036	FRM,INTRNL_MTR_DRVR_CBL,U	Elec	This is the ribbon cable from the I/O board to the Motor Driver Board. Cable label is CQ114-50025. Common to 500-700.	page 368
CQ114-67037	FRM,VAC_RESERVIOR,U	OHS	This is the ink-delivery-system (IDS) vacuum accumulator module. Resembles a blue filter housing. Common to 500-700.	
CQ114-67038	FRM,MINISCUS_VACUUM_MODULE,U	OHS	This is the ink-delivery-system (IDS) vacuum assembly (silver box), with external white air filter. Common to 500-700.	
CQ114-67039	FRM,INTERNAL,INK_SHAKER_CBL,U	OHS	This is the cable from the OHS board to the external 4-pin connector in the ink rack area for the white ink homogenizer.	
CQ114-67040	FRM,OHS_BOX,U	OHS	This is the OHS sheet metal enclosure, informally referred to a the "bathtub" because of its general shape. Does not include any related parts. Common to 500-700.	page 219
CQ114-67041	FRM,INTERNAL,INK_FILTER,U	OHS	This is the disc filter found in the OHS between the check valve and the long tube in the track. 6 are used per printer; this FRM is for qty.1. Common to 500-700.	page 401
CQ114-67043	FRM,OHS_BOARD,U	OHS	This is the OHS circuit board. It communicates with the ink profilers and the I/O board and powers the ink pumps. Common to 500-700.	page 402

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67044	FRM,IGUS_CHAIN_BRKT,U	Carr	Trolley attachment bracket–This is the bracket that mounts to the top of the trolley plate for attaching the umbilical track. Common to 500-700.	page 244
CQ114-67045	FRM,TRACK_CLAMP_PARTS_KIT,U	Track	This is the clamp parts used at rail/track attachment and at track/carriage attachment. Two are used per printer; this FRM is for qty. 1. Common to 500-700.	page 417
CQ114-67046	FRM,IGUS_HDBD_PWR_CBL,U	Track	This is the power cable in the track from the electronics assembly to the headboard. Common to 500-700.	page 417
CQ114-67048	FRM,FB500,IGUS,TRACK_LINKS_ONLY	Track	This is the track chain only (no cables, tubes, etc.) for the FB500.	
CQ114-67049	FRM,FB500,INK_TUBE_ASSY	Track	This is a replacement ink tube assembly for any color. This FRM is size-specific to FB500. This is the long ink tube with 109.75" (278.75cm) of 4mm O.D. tubing and two attached shorter lengths of 3/16" O.D. tubing.	
CQ114-67050	FRM,FB500,CMPLT_IGUS_ASSY	Track	This is the complete track assembly, with all cables, tubing, etc., for FB500.	
CQ114-67051	FRM,LCD_TOUCH_PANEL_CBL,QU	Elec	This is the serial data cable between the LCD control panel and the I/O board. This is the touch-sensitive data transmission cable.	page 383
CQ114-67052	FRM,LCD_VGA_CBL,QU	Elec	This is the 'VGA cable between the LCD control panel and the motherboard. This is for video display.	
CQ114-67053	FRM,LCD_PWR_CBL,U	Elec	This is the power cable between the LCD control panel and the I/O board.	page 383
CQ114-67054	FRM,LCD,U	Elec	This is the touch-sensitive LCD control panel. Common to 500-700.	
CQ114-67055	FRM,DRV_RLR_BRNG/BLK/RING,U	Med Drv	This is the media-drive roller bearing block and retaining ring. Qty 2 are used per printer; this FRM is for qty 1. Common to 500-700.	
CQ114-67056	FRM,IDLE_RLR_BRNG/BLK/RING,U	Med Drv	This is the idler roller bearing, block, and retaining ring. Qty 2 are used per printer; this FRM is for qty 1. Common to 500-700.	
CQ114-67059	FRM,FB500,MEDIA_DRV_RLLR	Med Drv	This is the media drive roller for FB500.	
CQ114-67060	FRM,FB500,MEDIA_IDLER_RLLR	Med Drv	This is the media idler roller for FB500.	
CQ114-67061	FRM,FB500,FAN_TRAY_CBL	Med Drv	This is the cable assembly used in the FB500 belt vacuum table. One is used per tray with 3 trays per printer; this FRM is for qty. 1	
CQ114-67062	FRM,FB500,VAC_TRAY/BLOWERS	Med Drv	This is the vacuum tray with blowers and cabling used in the FB500 belt vacuum table. There are three trays per printer; this FRM is for qty.1	
CQ114-67063	FRM,FB500,MEDIA_BELT	Med Drv	This is the media-drive belt for FB500. Includes various other parts required for performing the replacement.	
CQ114-67064	FRM,HI_RES_MEDIA_ENCODER,U	Med Drv	This is the read-head and cable for the high-resolution media drive encoder, located on the user-end of the media belt/vacuum table assembly. The cable is integrated to the read-head and inserts into CQ114-67170 Encoder interface connector. See also CQ114-67066 for the encoder ring on the roller. Common to 500-700.	page 270
CQ114-67065	FRM,MEDIA_MTR_CPLER_PARTS,U	Med Drv	This is the coupler between the media drive motor/reducer and the media drive roller. The FRM includes 8 new screws and 2 new interlock keys. Common to FB500-700.	page 280

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67066	FRM,MEDIA,RING_ENCODER,U	Med Drv	This is the hi-resolution media drive encoder ring, located on the user end of the drive roller. The FRM includes a hi-accuracy dial indicator required for replacement of the part.	
CQ114-67068	FRM,RAIL_UP/DOWN_MTR,UQ	Med Drv	This is the lifting motor/actuator for the rail. Qty 2 are used per printer; this FRM is for qty 1. Common to 500-700. For the alignment bar and input/output roller lifting, use CQ114-67094. For the service station lift motor, use CQ114-67082.	page 298
CQ114-67070	FRM,PWR_SUPLY,IONIZER,UL,U	Elec	This is the power supply for the anti-static ionizer bar, mounted to the rail. Common to 500-700.	page 372
CQ114-67071	FRM,FB500,IONIZER_BAR	Elec	This is the anti-static ionizer bar for FB500.	
CQ114-67072	FRM,FB500,ST_STEEL,RAIL_STRIPS	Carr Drv	This is the stainless-steel strips used in the FB500 rail. The carriage wheels run along the strips. This FRM is for a set of three.	page 266
CQ114-67073	FRM,SRVC_STN,FLOAT_SW_ASSY,QU	Med Drv	This is the float switch assembly used in the service station. Includes bracket. Commonly used in the 500-700 and FB950.	
CQ114-67074	FRM,SRVC_STN,U	Maint	This is the complete service station assembly. Common to 500-700.	page 393
CQ114-67075	FRM,SRVC_STN,FRAME_MNT,U	Maint	This is the service station frame mount assembly. This is the part that stays in place on the printer chassis when the tray/basin is opened. Common to 500-700.	
CQ114-67076	FRM,SRVC_STN,TRAY,U	Maint	This is the service station tray/basin assembly. This is the part that opens out from the printer when the clasp is released. Common to 500-700.	
CQ114-67077	FRM,SRVC_STN,DOC_BLADE,U	Maint	This is the doctor blade for cleaning the service station wiper. Common to 500-700.	page 164
CQ114-67078	FRM,SRVC_STN,HEIGHT_SNSR,U	Maint	This is the service station height sensor (part of the wiper assembly). Common to 500-700.	
CQ114-67079	FRM,SRVC_STN,BELT,U	Maint	This is the service station wiper drive belt. Common to 500-700.	page 393
CQ114-67082	FRM,SRVC_STN,UP/DOWN_MTR,U	Med Drv	This is the lifting motor/actuator for the service station. Common to 500-700.	page 398
CQ114-67083	FRM,SRVC_STN_ENCDR_STRP/FLAG,U	Maint	This is the lifting encoder strip & min/max flag assembly used in the service station. Common to 500-700.	page 398
CQ114-67085	FRM,SRVC_STN,DRAIN_HOSE,U	Maint	This is the replacement drain hose only for service station. It runs from the elbow fitting on the service station basin to the spigot on the printer enclosure. Common to 500-700.	page 394
CQ114-67086	FRM,SRVC_STN,LATCH,U	Maint	This is the complete latch mechanism for securing the service station basin/tray to the frame mount. Common to 500-700.	
CQ114-67087	FRM,SRVC_STN,ENCDR_EXT_CBL,U	Maint	This is the cable for service station lifting encoder. Common to 500-700.	page 393
CQ114-67088	FRM,SRVC_STN,ENCLOSURE,SHOPVAC,U	Maint	This is the metal enclosure that surrounds the service station Shop-Vac. Includes both the foam insulation within the box and all related fasteners. Common to 500-700.	
CQ114-67089	FRM,SRVC_STN,SHOPVAC,U	Maint	This is the ShopVac for the service station. Common to 500-700.	

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67090	FRM,INPUT_ENCLOSURE_WINDOW,U	Encl	This is the replacement UV-blocking input side windows. It includes push nuts for attachment to enclosure. Multiple instances are used per printer; this FRM is for qty 1. Common to 500-700. See CH154-67012 for the output-side windows.	
CQ114-67092	FRM,FB500,CNTR_DOOR,UV_BLOCK,SKIRT	Encl	This is the replacement light-blocking skirt for FB500 main cover.	
CQ114-67093	FRM,LED_LIGHT,U	Encl	This is the LED lamp assembly found in the service station area.	
CQ114-67094	FRM,ASSY,HEIGHT ADJUST,QU	Med Drv	This is a single assembly for adjusting the height of the input and output rollers and the alignment bar. This assembly is used in six locations on the printer. Common to 500-700.	page 291
CQ114-67095	FRM,FB500,MEDIA_HOLD_DWN_RLLER	Med Drv	This is the media hold-down roller for FB500. Two are used per printer; this FRM is for qty 1.	page 296
CQ114-67096	FRM,INK_SHAKER_ASSY,U	OHS	This is the white-ink homogenizer assembly that mounts in the ink rack. Common to 500-700.	
CQ114-67098	FRM,EBOX,AC_IN_CBL,U	Elec	This is the main AC input cable assy. It includes the filtered AC inlet and cable/connector to the AC Distribution board. The cable label is CQ114-50021. Common to 500-700.	page 378
CQ114-67099	FRM,FB500,INTERNAL_CBL,U	Elec	This cable is from the back of the I/O board (J28) to many internal components, including the ebox fans, on/off switch, UVPS cable connect sense. and foot switch. The cable label is CQ114-50024. Unique to 500.	page 383
CQ114-67101	FRM,INK_PUMP_EXTN_CBL,U	Elec	This cable harness goes from the OHS board to the ink pumps. All six pump cables are in this single P/N. Common to 500-700.	
CQ114-67105	FRM,FB500,AC_DIST,IONIZER,CBL,U	Elec	This is the cable in the electronics assembly from the AC distribution board to RELAYS on the I/O board. This is power cable to the Ionizer. Cable label is CQ114-50001. Common to 500-700.	page 378
CQ114-67106	FRM,INTEGRTD,INK_PUMP_ASSY,U	OHS	This is the replacement ink pump, including tubing, quick disconnect to box, check valve, and filter, and Torx fasteners for installation. Six are used per printer; this FRM is for qty 1. Common to 500-700.	
CQ114-67107	FRM,LCD,BEZEL,U	Encl	This is the bezel that surrounds the LCD along with the HP insignia. Common to 500-700.	
CQ114-67108	FRM,SET,RUBBER_SCREWS,PLTN_VAC,U	Med Drv	This set of 2 rubber screws are used to fasten the blower to the blower plate in the media belt vacuum trays. Multiple instances are used per printer; this FRM is for 1 blower. Common to 500-700.	page 309
CQ114-67109	FRM,ASSY,CARR_DRV,U	Carr Drv	This is the carriage-drive assembly. Includes bracket, motor, drive shaft, timing belt, and all related fasteners. Common to 500-700.	page 263
CQ114-67110	FRM,ASSY,CARR_DRV_SHFT,U	Carr Drv	This is the carriage-drive shaft. Shaft is knurled to prevent pulley from slipping on the shaft. Common to 500-700.	page 262
CQ114-67111	FRM,CARR_IDLR,U	Carr Drv	This is the idler assembly located on service-end of the rail. Common to 500-700.	page 259
CQ114-67113	FRM,JACK_TRAILER_WHEEL,U	Misc	This is the wheel assembly used for moving the printer, including 4 screws. Four are used per printer; this FRM is for qty. 1	page 482
CQ114-67114	FRM, FRAME_CBL_CVR, SER_OUT CORNER,U	Encl	This box-like enclosure is located in the interior output side-service end corner. Under-side frame cable cover for service output corner. Common to 500-700.	

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67127	FRM,CAR_SPARE_TUBES,U	Carr	This is the two short tubes used with the headboard pressure sensor and the air manifold. Common to 500-700.	page 230
CQ114-67128	FRM,IGUS_DATA_CABLE,U	Track	This is the LVDS data cable that runs through the track from the electronics assembly to the headboard. This cable is 143" (363cd) long. Despite appearances this cable is not wired in the same way as an UTP Ethernet cable. Common to 500-700.	page 417
CQ114-67129	FRM,FB500_ACCY_TABLE_STAND,W/WHEELS,U	Table	This is the table support structure and wheels for either of the FB500 accessory tables. Essentially this is the undercarriage of the table, minus the table top. This FRM is for qty 1	
CQ114-67130	FRM,CORNER_BRKT_TABLES,U	Table	This is a triangular bracket located at the top of the table stand. Two are used per table, both standard and accessory; this FRM is for qty. 1	
CQ114-67131	FRM,TABLE_CASTER_ASSY,U	Table	This is the table caster assembly. It includes wheel with threaded shaft, mounting bracket, black hand knob, wingnut, and related fasteners. None of the components are available separately. Used on all sizes/versions of the media support tables for 500-700.	
CQ114-67132	FRM,TABLE_VERTICAL_COVER,U	Table	This is the vertical leg cover used on all tables. The same cover is used on left and right sides. Used on all sizes/versions of the media support tables for 500-700.	
CQ114-67133	FRM,FB500,TABLE_TRANSITION,U	Table	This is the metal transition piece attached to the standard FB500 input and output tables to bridge from the table to the printer belt. One is used per table; this FRM is for qty. 1	
CQ114-67134	FRM,18IN,ROLLER_TABLE_CVR,U	Table	This is the sheet metal cover used for the FB500 standard input table only (64"x18").	
CQ114-67135	FRM,18IN,ROLLER,TABLE,U	Table	This is the 18" long roller bar that is used on the standard input table for both FB500 and FB700. Multiple instances are used per table; this FRM is for qty 1	
CQ114-67136	FRM,TABLE_LATCH,KIT,U	Table	This is the kit of the parts needed to replace any single latch and/or receiver piece for connecting tables together or for connecting a table to the printer. Four or more may be found per printer (depending on accessory table use); this FRM is for qty. 1. Common to 500-700.	
CQ114-67137	FRM,FB500_SLAM_LATCH,KIT,U	Table	This is a kit of parts for the slam latch for the FB500 media support tables. Includes fasteners, brackets and offset plates as well as the two latches and connecting cable. One is used per table; this FRM is for qty. 1	
CQ114-67138	FRM,FB500_TABLE_STAND,INPUT/OUTPUT,U	Table	This is the table support structure and wheels for either of the FB500 standard tables. Essentially this is the undercarriage of the table, minus to table top. This FRM is for qty. 1	
CQ114-67139	FRM,32",ROLLER_TABLE_CVR,U	Table	This is the 64" W x 32" L sheet metal cover for the FB500 standard output table (qty. 1) and the FB500 accessory table (qty. 2 per table).	
CQ114-67140	FRM,32IN_ROLLER,TABLE,U	Table	This is the 32" long roller bar that is used on the standard output tables and on the accessory tables, for both FB500 and FB700. Multiple instances are used per table; this FRM is for qty 1. See also CQ114-67135 for the roller bar for the standard input table.	
CQ114-67141	FRM,FB500,INPUT_TABLE,U	Table	Complete standard input table assembly for FB500.	

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67142	FRM,FB500,OUTPUT_TABLE,U	Table	Complete standard output table assembly for FB500.	
CQ114-67143	FRM,FB500,OUTPUT&ACCESSORY,TABLE_TOP,U	Table	This is the table top assembly for the FB500 output table (qty. 1) and the FB500 accessory tables (qty. 2 per table). See also CQ114-67138 for standard table undercarriage and CQ114-67129 for accessory table undercarriage.	
CQ114-67144	FRM,TABLE,GAS_SHOCK,KIT,U	Table	This is the gas shock and associated brackets/fasteners found on the FB500 accessory tables only. None of the other table types employ this part.	
CQ114-67145	FRM,FB500,ACCESSORY_TABLE,U	Table	This is the complete accessory table for FB500. The input and output accessory tables are identical. This FRM is one entire table.	
CQ114-67146	FRM,ATX_12V,POWER_SUPPLY,U	Elec	This is the ATX power supply used in the electronics assembly. Common to 500-700.	page 390
CQ114-67147	FRM,S&T,AC_PWR_DIST_CBL,U	Elec	This is the cable in the electronics assembly from the AC distribution board to the output for the roll-to-roll accessory. The external outlet for the RTR connection is integrated to the cable. Cable label is CQ114-50049. Common to 500-700.	page 378
CQ114-67148	FRM,USER,FOAM_ROLLER_BRKT,U	R2R	This is the user-side foam-roller bracket to position the roll-to-roll accessory foam rollers on the belt surface. Common to 500-700.	page 336
CQ114-67149	FRM,SERVICE,FOAM_ROLLER_BRKT,U	R2R	This is the service-side foam-roller bracket to position the roll-to-roll accessory foam rollers on the belt surface. Common to 500-700.	page 336
CQ114-67150	FRM,FB500-R2R,FOAM_ROLLER,U	R2R	This is a foam roller assembly for the FB500 roll-to-roll accessory. Two are used per printer; this FRM is for qty. 1	page 115
CQ114-67151	FRM,FB500-R2R,USER_SUPPLY_ASSY,U	R2R	This is the user-side supply bracket assembly for the roll-to-roll accessory, for supporting the media supply spool and holding the foam rollers when they are not in use. This FRM is the entire assembly with all parts and fasteners. Common to 500-700.	page 336
CQ114-67152	FRM,FB500-R2R,SERVICE_SUPPLY_ASSY,U	R2R	This is the service-side supply bracket assembly for the roll-to-roll accessory, for supporting the media supply spool and holding the foam rollers when they are not in use. This FRM is the entire assembly with all parts and fasteners. Common to 500-700.	page 336
CQ114-67153	FRM,FB500-R2R,USER_TAKEUP_ASSY,U	R2R	This is the user-side takeup bracket assembly. Includes the parts related to the dancer bar assembly. Does not include the takeup motor/switch assembly, the motor timing belt, or the belt cover. Common to 500-700.	page 336
CQ114-67154	FRM,FB500-R2R,SERVICE_TAKEUP_ASSY,U	R2R	This is the service-side takeup bracket assembly. Includes the parts related to the dancer bar assembly. Common to 500-700.	page 336
CQ114-67155	FRM,FB500-R2R,TAKEUP_DANCER_ASSY,U	R2R	This is the dancer roller bar FB500 roll-to-roll accessory. The dancer bar is the movable bar when the takeup system is operational.	page 336
CQ114-67156	FRM,FB500-R2R,TAKEUP_IDLER_ASSY,U	R2R	This is the fixed roller bar for the FB500 roll-to-roll accessory. The fixed roller remains stationary when the takeup system is operational.	page 336
CQ114-67157	FRM,FB500-R2R,MEDIA_SPOOL_ASSY,U	R2R	This is the media spool for the FB500 roll-to-roll accessory. This is the spool only, no media collets. The spool is the same for either supply or takeup. This FRM is for (a single spool) qty 1.	page 336

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67158	FRM,FB500-R2R,MEDIA_COLLET_ASSY,U	R2R	This is a single media collet used on the media spools in the roll-to-roll accessory. The collet is for 3" cardboard cores only. Two collets are used per spool; this FRM is for qty 1. Common to 500-700.	page 336
CQ114-67159	FRM,FB500-R2R,SPOOL_HOLDER_ASSY,U	R2R	This is the spool-holding "puck" with roller bearings found on the roll-to-roll accessory. It holds the media spool in place between the user-end and service-end bracket assemblies. Four are used in total on the accessory; this FRM is for qty. 1	page 336
CQ114-67160	FRM,FB500-R2R,SUPPLY_TENSIONER_ASSY,U	R2R	This is the supply tensioner ("clutch") used in the service-end supply bracket of the roll-to-roll accessory. The supply tensioner prevents the media supply roll from unspooling. Common to 500-700.	page 336
CQ114-67161	FRM,R2R,ALIGNMENT_TOOL,U	R2R	This is the alignment tool used with the roll-to-roll accessory to position the brackets/rollers accurately. Common to 500-700.	page 336
CQ114-67162	FRM,CAR_ENCODR/BRKT,U	Carr	This is the main carriage-drive encoder sensor that mounts on the input-side of the carriage (with integrated cable), Includes mounting bracket and associated hardware. Common to 500-700.	page 240
CQ114-67163	FRM,EXHAUST_FAN_LIGHT_BLOCKER,U	Encl	This is the light-blocking shield for each of the enclosure fans except for the service endcap location. Located inside the respective enclosure. Multiple instances are used per printer; this FRM is for qty. 1. Common to 500-700. See CQ114-67185 for the special shield used only in the service endcap.	
CQ114-67164	FRM,EXHAUST_FAN_CABLE,CENTER_DOOR,U	Elec	This cable runs inside the main output-side door and provides power to the three enclosure fans in the cover. It connects to a cable that comes from J7 of the I/O board. Common to 500-700.	page 383
CQ114-67167	FRM,SERV_STN,WIPER,U	Maint	This is the service station wiper blade. Ordinarily this part is replaced by the customer during scheduled cleaning & maintenance via the User Cleaning Kit CQ121A (consumable item). It is included here for unscheduled service replacement. Common to 500-700.	page 164
CQ114-67168	FRM,SERV_STN,DRAIN_FITTING_KIT,U	Maint	This is the kit of the elbow on the service station basin, the spigot on the printer frame, and associated hardware. Does not include the hose between the basin and the spigot, see CQ114-67085. Common to 500-700.	page 394
CQ114-67169	FRM,USER_SIDE_LOUVER,U	Encl	This is the light-trapping louvre assembly found in the light-blocking tray on the user end of the printer. Common to 500-700.	
CQ114-67170	FRM,RENISHAW_CONNECTOR/INTERFACE,U	Med Drv	The is the interface connector for the hi-resolution read-head. The connector has illuminated LEDs when operating. The read-head/cable inserts into this connector. This connector itself plugs into CQ114-67179. Common to 500-700.	page 276
CQ114-67171	FRM,R2R,TAKEUP_BELT_CVR,U	R2R	This is the sheet metal cap that covers the belt & gears/pulleys in the roll-to-roll accessory takeup motor area. Common to 500-700.	page 334
CQ114-67172	FRM,R2R,MOTOR_BELT,U	R2R	This is the drive belt located between the takeup motor and the takeup-spool shaft on the roll-to-roll accessory. Common to 500-700.	page 336
CQ114-67173	FRM,R2R,DANCER_BAR,LOCK,BRKT,U	R2R	This is the small bracket that locks the dancer bar on the roll-to-roll accessory into its high position. Common to 500-700.	page 336
CQ114-67174	SERV_TOOL,MEDIA_MTR_TORQUE_WRENCH,U	Tool	This torque wrench with long 5mm hex key bit is used to remove/install the media drive motor-roller coupler (CQ114-67065). This tool is mandatory for performing that service.	page 284

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67175	SERV_TOOL,Y-OFFSET_ADJUST,HEX_WRENCH,U	Tool	This is a long hex key (Allen wrench) suitable for accessing the printhead adjustment plate fastener(s). This tool makes the procedure easier than most similar standard tools.	page 450
CQ114-67176	SERV_TOOL,SABRE_ANGL,DIAL_INDCTR,W/MNT,U	Tool	This is a standard dial indicator suitable for performing the carriage sabre angle measurement and belt tension measurement. See related tool 0901572. This indicator is not for use when servicing the high-resolution media drive encoder (CQ114-67066).	page 467
CQ114-67178	FRM,HDD,INITIALIZED,U	Elec	This FRM contains a hard disk that has been specifically initialized for FB500 and FB700. It contains the release SW version that was current at the time of shipment, and so may require updating when installed on a printer.	page 390
CQ114-67179	FRM,CBL,EBOX_TO_RENISHAW_INTERFACE,U	Med Drv	This cable goes from the electronics assembly to the high-resolution encoder interface connector (CQ114-67170). Common to 500-700.	page 276
CQ114-67180	FRM,BRUSH,IONIZER_POINT,U	Tool	This is the brush used to clean the points on the anti-static ionizer bar. One is included with each printer in the component kit. This FRM would be ordered at the customer site, if the original were lost.	page 489
CQ114-67181	SERV_TOOL,RENISHAW_RING,CLEANER,U	Tool	This is the chemswab for cleaning the encoder ring. This FRM contains qty 1	page 215
CQ114-67182	KIT,SERVICE,UPTIME,FB500	Misc	This is the kit of FRMs for maintaining uptime at hard-to-service sites needing lead time for parts for FB500. Purchase is bundled with printer at the time of the original sale.	
CQ114-67183	FRM,WHITE_INK_PROFILER,U	OHS	This is the replacement profiler for the 2-Liter white ink cartridge.	
CQ114-67185	FRM,SER_END,EXHAUST_FAN_LIGHT_BLOCKER,U	Encl	This is the light-blocking shield used with the pair of fans in the service endcap. This shield is unique to this location. Common to 500-700. See CQ114-67163 for the single-fan shield used everywhere else.	
CQ114-67186	FRM,ACCESSORY_FASTENERS,U	Misc	This is a collection of various fasteners used in multiple locations on the tables and the roll-to-roll accessory, too long to list here. Common to 500-700. See also CQ114-67003 for fasteners for the printer itself.	
CQ114-67187	FRM,ASSY,MOTHERBOARD,U	Elec	This is the motherboard for the electronics assembly. Includes board, processor, and RAM. Common to 500-700.	page 385
CQ114-67188	FRM,SHOP_VAC_FILTER,REPLACEMENT,U	Maint	This is the replacement filter media and mesh used inside the ShopVac. Includes related fasteners. Common to FB500-700	
CQ114-67190	FRM,MAIN_COVER,GAS_SPRING,U	Encl	These gas springs are used to hold open the main cover. Two are used per printer; this FRM is for qty. 1	page 220
CQ114-67191	FRM,WHITE_INK_BOX,SPLIT_TUBE_ASSY,U	OHS	This is the replacement Y-tube assembly found on the 2-Liter white ink cartridge (ink box). This is the complete assembly from the box to the two connectors into the printer, with all tubing, fittings, and filters. Common to 500-700.	
CQ114-67192	FRM,SRVC_ACCESS_DOOR,U	Encl	This is the service access door assembly found in the service-end enclosure. Includes the door, window, latch, hinge, the door switch, and related fasteners. Common to 500-700.	
CQ114-67193	FRM,DOOR_SWITCH,U	Encl	This is the switch used on the main cover and service door, the service station latch-closed detection, and the service station wiper home switch. Common to 500-700.	page 471

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67194	FRM,PRINTCARE_WEBCAM&CABLE,U	Misc	This is the web cam and extension cable used for CallMe@hp. Common to 500-700.	
CQ114-67195	FRM,RAIL_TO_FRAME,GRND_CBL,U	Encl	This is a 28" (71 cm) braided cable that connects from the rail to the media vacuum table main frame. Includes fasteners. Common to 500-700.	
CQ114-67196	FRM,END_CAP,GRND_CBL,U	Encl	This is a 126" (320 cm) braided cable that connects from the service-side endcap to the chassis. Common to FB500-700. There is no corresponding cable for the user side.	
CQ114-67197	FRM,FB500,RAW,CENTER_OUTPUT_DOOR	Encl	Center output-side main door for the FB500. This is the sheet metal enclosure only, nothing else.	
CQ114-67198	FRM,FB500,RAW,CENTER_INPUT_COVER	Encl	Center input-side cover for FB500. This is the sheet metal enclosure only, nothing else.	
CQ114-67199	FRM,FB500/700,ASSY,MOTHERBOARD	Elec	Motherboard assembly including board, processor, and RAM. Common to 500-700. This P/N replaces CQ114-67187.	
CQ114-67201	FRM,LAMP,BENT_SPACER_BRKT,U	Carr	Spacer/bracket that bridges the gap between the carriage proper and the lamp housings. Two are used per printer, this FRM is qty. 1. Common to 500-700.	
CQ114-67202	FRM,CAMERA,CASE/CABLES,U	Carr	Camera assembly and cables, with metal housing. Common to 500-700. See CQ114-67202 for the flex cables only. Replaces CQ114-67008.	
CQ114-67203	FRM,CAMERA_FLEX_CABLES_ASSY,U	Carr	Replacement pair of the labeled, 18" (46 cm) flex cables connecting the camera assembly to the headboard. See CQ114-67202 for the complete camera assembly. Replaces CQ114-67013.	
CQ114-67204	FRM,SRVC_STN,SHFT_CVRS,U	Carr	Pair of metal covers that deflect ink from the service station wiper rails.	
CQ114-67205	FRM,USER_BELT_HOLDDOWN,U	Encl	Belt edge guard for the user end. This guard is located inside the main cover, in-line with the printing path of the carriage, to keep the end of the belt from ever interfering with carriage travel. Common to 500-700. Replaces CQ114-67057	
CQ114-67206	FRM,SERVICE_BELT_HOLDDOWN,U	Encl	Belt edge guard for the service end. This guard is located inside the main cover, in-line with the printing path of the carriage, to keep the end of the belt from ever interfering with carriage travel. Common to 500-700. Replaces CQ114-67058.	
CQ114-67207	FRM,CAR_IDLER,FOAM_BUMPER,U	Encl	Adhesive-backed foam bumper for the carriage drive idler. Two thicknesses are used on the FB500-FB700; all other printers using this piece use only 1 thickness. This FRM is for Qty/thickness 1.	
CQ114-67208	FRM,TUBE_MENDERS_KIT,U	OHS	Collection of plastic barbs that are used to join the ends of tubes together. Qty 4 each are included for 2 sizes of ink tubes, air vacuum tube, air pressure tube. See the Service Manual for more information.	
CQ114-67209	KIT,FB500,REPACKAGING	Misc	Repackaging kit for FB500 printer. Includes the carriage restraint (CQ114-67002) and instructions.	
CQ114-67210	FRM,R2R,ALIGNMENT_TOOL,IMPRVD,U	Tool	Alignment tool for RTR accessory installation. This FRM replaces CQ114-67161. An instance of the tool is included with each RTR accessory product kit.	

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ114-67211	FRM,2_PART_LCD_PWR_CBL,U	Elec	Long power cable from the electronics assembly to the control panel along with an additional short extension. The extension eases disconnecting the cable from the LCD if the endcap needs to be completely detached from the printer. Replaces CQ114-67053.	
CQ114-67212	FRM,IGUS_DATA-RAIL_GRND_ CABLES,U	Track	This is the FB500-FB700 LVDS data cable in the track assembly bundled with CQ114-67195 and CQ114-67196 grounding cables. This is to ensure that a printer having LVDS problems also does have the grounding cables. The P/N replaces CQ114-67128.	
CQ114-67213	FRM,FB500,FULL_IGUS,ALT	Track	Complete track (Igus) assembly for FB500 only, with all tubes, cables, and related hardware. This FRM is for repairing a printer that already has the "ALT" Igus, not for a printer with the "ORG" Igus.	
CQ114-67214	FRM,FB500,IGUS,4_INK_TUBE	Track	Bundle of four ink tubes (CMYK) for replacement in the "ALT" Igus assembly only. For FB500 only.	
CQ114-67215	FRM,FB500,IGUS,2_INK-2_AIR	Track	Bundle of two ink tubes (lm-lc/white) for replacement in the "ALT" Igus assembly only. For FB500 only.	
CQ114-67216	FRM,PH_RESERVOIR,2_O-RING_SETS,U	Carr	Pair of the small O-rings used between the printhead and the ink barbs on the bottom of the FB500-FB700 carriage.	
CQ115-67001	FRM,FB700,ALIGNMNT_BAR	Med Drv	This is the media alignment bar for the FB700.	page 294
CQ115-67003	FRM,FB700,CAR_BELT/CLIP,ASSY	Carr Drv	This is the main carriage-drive belt (blue belt) for FB700. Includes the metal clips that attach to the belt and secure the belt to the carriage.	page 260
CQ115-67004	FRM,FB700,SPLY,UV_POWER,SNGL_CH	Elec	This is the UV power supply for FB700. Two are used per printer; this FRM is for qty. 1	
CQ115-67006	FRM,FB700.IGUS,TRACK_LINKS_ONLY	Track	This is the track chain only (no cables, tubes, etc.) for the FB700.	page 417
CQ115-67007	FRM,FB700,CMPLT_IGUS_ASSY	Track	This is the complete track assembly, with all cables, tubing, etc., for FB700.	page 417
CQ115-67008	FRM,FB700,MEDIA_DRV_RLLR	Med Drv	This is the media drive roller for FB700.	
CQ115-67009	FRM,FB700_MEDIA_IDLER_RLLR	Med Drv	This is the media idler roller for FB700.	
CQ115-67010	FRM,FB700,FAN_TRAY_CBL	Med Drv	This is the cable assembly used in the FB700 belt vacuum table. One is used per tray with 3 trays per printer; this FRM is for qty. 1	
CQ115-67011	FRM,FB700,VAC_TRAY/BLOWERS	Med Drv	This is the vacuum tray with blowers and cabling used in the FB700 belt vacuum table. There are three trays per printer; this FRM is for qty.1	page 304
CQ115-67012	FRM,FB700,IONIZER_BAR	Elec	This is the anti-static ionizer bar for FB700.	
CQ115-67014	FRM,FB700,ST_STEEL,RAIL_STRIPS	Carr Drv	This is the stainless-steel strips used in the FB700 rail. The carriage wheels run along the strips. This FRM is for a set of three.	page 266
CQ115-67015	FRM,FB700,CNTR_DOOR,UV_BLOCK,SKIRT	Encl	This is the replacement light-blocking skirt for FB700 main cover.	
CQ115-67016	FRM,FB700,MEDIA_HOLD_DWN_RLLER	Med Drv	This is the media hold-down roller for FB700. Two are used per printer; this FRM is for qty 1.	page 296

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ115-67017	FRM,FB700,MULTI_CBL_LOOM,SERVICE_SIDE	Elec	This is the cabling loom (conduit and cables) for cables that pass between the electronics assembly to components on the service end of the FB700 printer. Only the loom bundle is available, the individual cables are not orderable.	
CQ115-67018	FRM,FB700,MULTI_CBL_LOOM,USER_SIDE	Elec	This is the cabling loom (conduit and cables) for cables that pass between the electronics assembly to components on the user end of the FB700 printer, excluding devices in the user-end removable enclosure. Only the loom bundle is available, the individual cables are not orderable.	
CQ115-67020	FRM,FB700,MEDIA_BELT	Med Drv	This is the media-drive belt for FB700. Includes various other parts required for performing the replacement.	
CQ115-67027	FRM,FB700-R2R,MEDIA_SPOOL_ASSY	R2R	This is the media spool for the FB700 roll-to-roll accessory. This is the spool only, no media collets. The spool is the same for either supply or takeup. This FRM is for a single spool.	page 336
CQ115-67028	FRM,FB700-R2R,SPOOL_SUPPORT	R2R	This is the media-spool stiffener or "sleeve" that is installed over the primary FB700 spool to add rigidity. The stiffener itself is 72" long. Two are used with the FB700 roll-to-roll accessory; this FRM is for qty. 1	page 336
CQ115-67029	FRM,FB700-R2R,FOAM_ROLLER	R2R	This is a foam roller assembly for the FB700 roll-to-roll accessory. Two are used per printer; this FRM is for qty. 1	page 336
CQ115-67030	FRM,FB700-R2R,TAKEUP_DANCER_ASSY	R2R	This is the dancer roller bar FB700 roll-to-roll accessory. The dancer bar is the movable bar when the takeup system is operational.	page 336
CQ115-67031	FRM,FB700-R2R,TAKEUP_IDLER_ASSY	R2R	This is the fixed roller bar for the FB700 roll-to-roll accessory. The fixed roller remains stationary when the takeup system is operational.	page 336
CQ115-67032	FRM,FB700,ACCSSORY_TABLE	Table	This is the complete accessory table for FB700. The input and output accessory tables are identical. This FRM is one entire table.	
CQ115-67033	FRM,FB700,CENTER,INPUT_TABLE,TOP_COVER	Table	This is the sheet metal cover used for the FB700 standard input table only.	
CQ115-67034	FRM,FB700,CENTER,OUTPUT_TABLE,TOP_COVER	Table	This is the sheet metal cover used for the FB700 standard output table only.	
CQ115-67035	FRM,FB700,SLAM_LATCH&PARTS	Table	This is a kit of parts for the slam latch for the FB700 media support tables. It includes fasteners, brackets and offset plates as well as the two latches and connecting cable. One is used per table; this FRM is for qty. 1	
CQ115-67036	FRM,FB700,INPUT,TABLE_TOP	Table	This is the table top assembly for the FB700 input table.	
CQ115-67037	FRM,FB700,OUTPUT,TABLE_TOP	Table	This is the table top assembly for the FB700 output table and the FB700 accessory tables.	
CQ115-67038	FRM,FB700,OUTPUT_TABLE,COMPLETE	Table	This is the complete standard output table assembly for FB700.	
CQ115-67039	FRM,FB700,INPUT_TABLE,COMPLETE	Table	This is the complete standard input table assembly for FB700.	

Table 1: FRM (Field Replaceable Module) List

Part #	Part Name	Type	Description	Page
CQ115-67040	FRM,FB700,AC_DISTRB,UV_PS,CBL	Elec	This cable provides the power from the AC distribution board to the UVPS. One wire goes to the UVPS, the other wire goes to the AC Relay. Cable label is CQ115-50011. Unique to FB700. See CQ114-67034 for similar cable in FB500.	
CQ115-67041	FRM,FB700,RELAY,UV_PS,CBL	Elec	This cable goes between the AC Relay and the two UV Power Supplies in the FB700 electronics assembly. Cable label is CQ115-50012	
CQ115-67042	FRM,FB700,EBOX,UV_PWR_OUTPUT,CBL	Elec	Cable and external connector for the track UV power cables. Internal connection to both the UVPS to cable harness CQ115-50014 from the I/O board. Two instances of this cable are used per printer; this FRM is for qty. 1. Cable label is CQ115-50013	
CQ115-67043	FRM,FB700,EBOX_INTERNAL,CBL	Elec	Cable from the back of the I/O board (J28) to many internal components, including the ebox fans, on/off switch, UVPS cable connect sense. and foot switch. Cable label is CQ115-50014. Unique to 700. See CQ114-67099 for similar cable in FB700.	
CQ115-67044	FRM,FB700,EBOX_INTERNAL,CBL	Elec	Cable from the back of the I/O board (J28) to many internal components, including the ebox fans, on/off switch, UVPS cable connect sense. and foot switch. Cable label is CQ115-50014. Unique to 700. See CQ114-67099 for similar cable in FB700.	
CQ115-67045	FRM,FB700,RAW,CENTER_INPUT_COVER	Encl	Center input-side cover for FB700. This is the sheet metal enclosure only, nothing else.	
CQ115-67047	FRM,CARR,LEFT/SRVC,LAMP_MODULE,QU	Carr	Service-side lamp housing for FB700 and FB950 only. Replaces CJ852A for the FB950. Does not include bulb. See CQ114-67017 for the corresponding FB500 part.	
CQ115-67048	FRM,CARR,RIGHT/USER,LAMP_MODULE,QU	Carr	User-side lamp housing for FB700 and FB950 only. Replaces CJ853A for the FB950. Does not include bulb. See CQ114-67018 for the corresponding FB500 part.	
CQ115-67049	KIT,FB700,REPACKAGING	Misc	Repackaging kit for FB700 printer. Includes the carriage restraint (CQ114-67002) and instructions.	
CQ115-67051	FRM,FOAM_TAPE,IGUS_TRAY	Track	This is a 69-inch (175 cm) length of the foam tape found on top of the rail that cushions the track assembly (Igus). This is the necessary length for any 98" (2.5 m) printer, but may be cut down to shorter lengths for use on other machines.	
CQ115-67052	FRM,FB700,CAR_BELT/CLIP,ASSY,SIZED	Carr Drv	Main carriage belt (blue belt) for FB700. Includes the metal clips that attach to the belt and secure the belt to the carriage. This part replaces CQ115-67003.	
CQ115-67053	FRM,FB700,FULL_IGUS,ALT	Track	Complete track (Igus) assembly for FB700 only, with all tubes, cables, and related hardware. This FRM is for repairing a printer that already has the "ALT" Igus, not for a printer with the "ORG" Igus.	
CQ115-67054	FRM,FB700,IGUS,4_INK_TUBE	Track	Bundle of four ink tubes (CMYK) for replacement in the "ALT" Igus assembly only. For FB700 only.	
CQ115-67055	FRM,FB700,IGUS,2_INK-2_AIR_TUBE	Track	Bundle of two ink tubes (lm-lc/white) for replacement in the "ALT" Igus assembly only. For FB700 only.	

Exploded Views

Note You cannot order all part numbers that are listed. For a list of part number that can be ordered, see “Parts List for Field Replaceable Modules” on page 14.

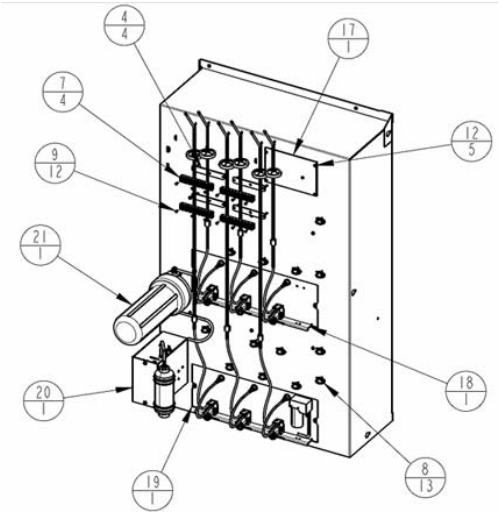
Exploded views: Off-head supply assemblies

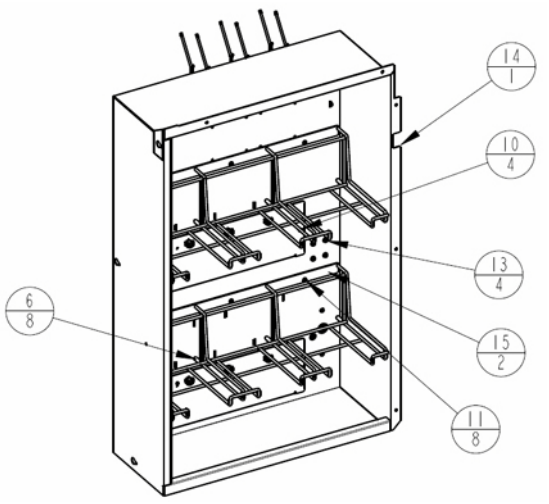
OHS part numbers

In the illustration, the top number in the circle is the part number and the bottom number is the quantity used for the assembly. **You cannot order all part numbers listed**.

Fig. 2. OHS part numbers

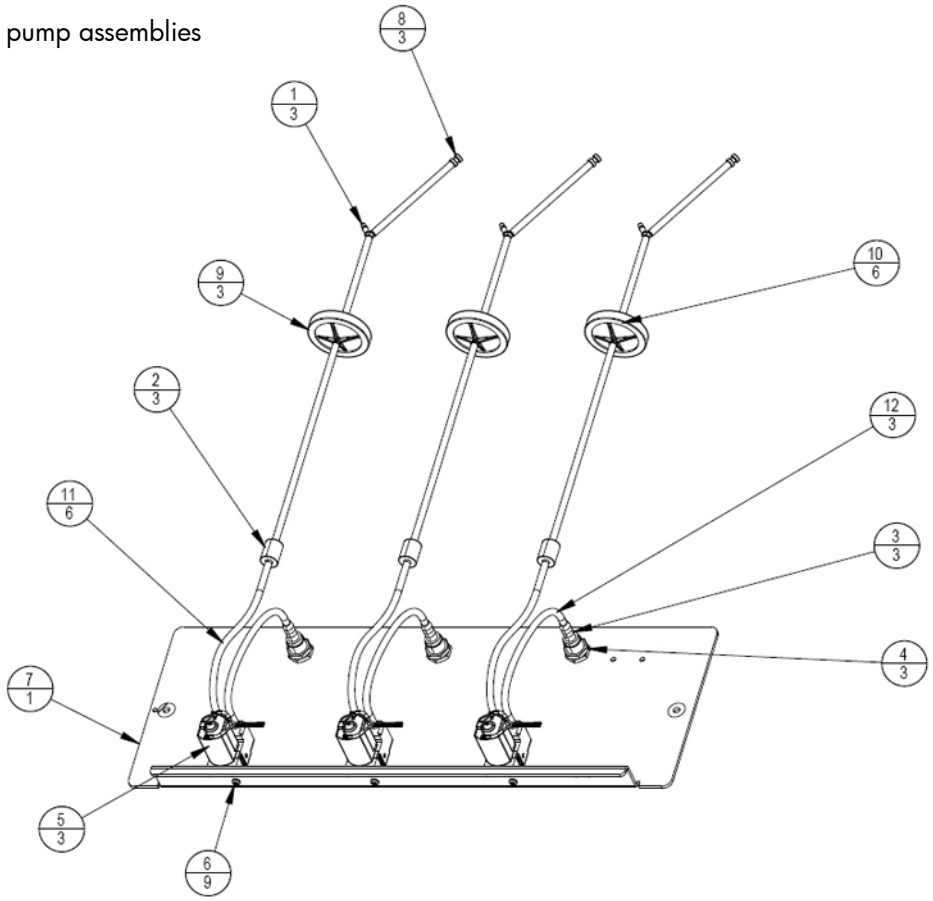
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	0500163	ASSY,CBL,PIRANHA,INK_PUMP_EXT
2	1	0507343	LBL,CS546X,INK_TUBE_THRU_HOLES,6_COLORS
3	1	0507345	LBL,CS546X,DOCKING_STATION,6_COLORS
4	4	0507384	PLT,OHS,PIRANHA, TUBE_COMB_SUPPORT
5	1	0601425	ADH,LOCTITE,INSTANT_BOND, PRISM_401
6	8	0602500	CAP,RUBBER1/4"_ID,EPDM
7	4	0602989	MNT,0.1875"_OD_TUBE,POLYPROPOLENE
8	13	0600756-102	TIE_WRAP,LOCKING,NYLON, 0.14"_WD,BLCK,5.75"_LG
9	12	0601308-208	SCREW,PFH,M3,0.5_PITCH,8MM_LG,W/PATCH
10	4	0601310-008	SCREW,PPH,SEMS,M4,0.7_PITCH, ST,8MM_LG
11	8	0601310-110	SCREW,PPH,SEMS, M4,0.7_PITCH, ST,10MM_LG,BLCK
12	5	0601311-008	SCREW,PPH,SEMS,M3,0.5_PITCH ST,8MM_LG
13	4	0601412-116	SCREW,PPH,SEMS,M5,0.8_PITCH, ST,16MM_LG, BLCK
14	1	CQ114-00058	ENCL,OHS,KAA,BASE
15	2	CQ114-00085	RACK,OHS, KAA,INK_BOX
16	1	CQ114-50027	ASSY,CBL,KAA,OHS,SHAKER
17	1	CQ114-60033	PCB,PIRANHA,OHS,LF
18	1	CQ114-60047	ASSY,OHS,KAA,INK_ PUMP_W/O_VAC,6_COLOR
19	1	CQ114-60048	ASSY,OHS,KAA,INK_ PUMP,6_COLOR
20	1	CQ114-60049	ASSY,VACUUM, KAA,HIGH_REL
21	1	CQ114-60057	ASSY,RESERVOIR, KAA,PRESS_VAC





Ink pumps

Fig. 3. Ink pump assemblies



Ink pump parts list can be found in Fig. 12., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

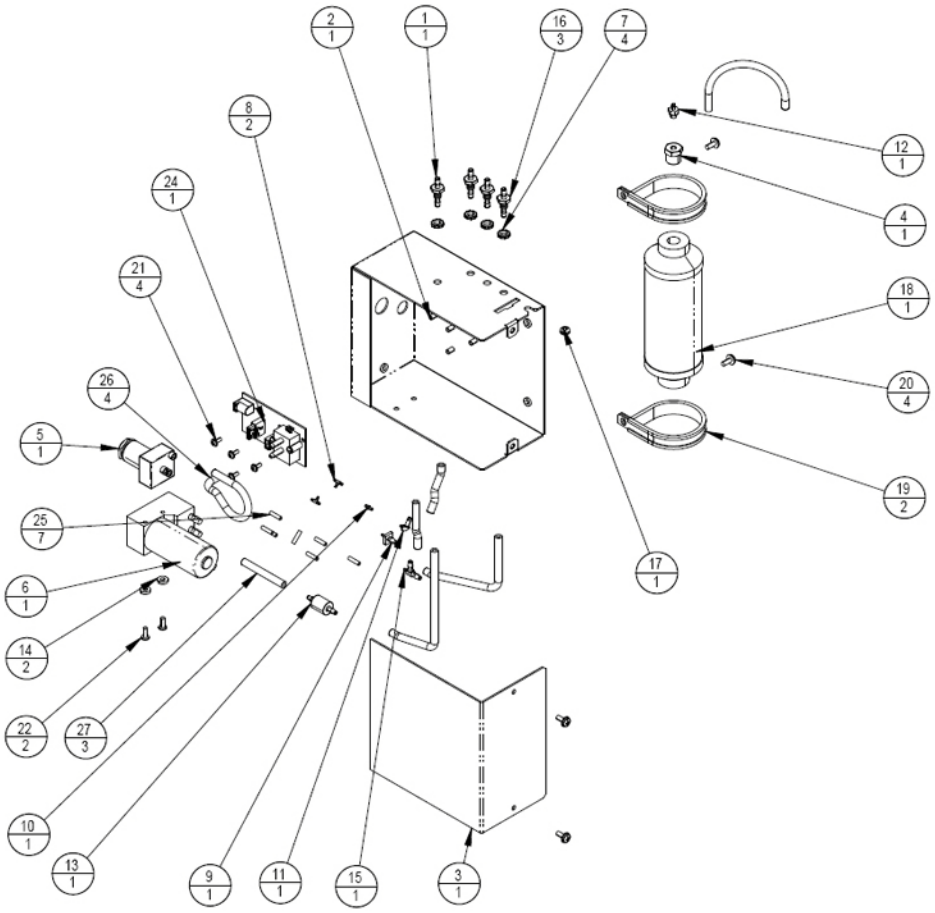
Fig. 4. Ink pump parts list

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	0100-2803	FITTING,WYE,1/8"_SEMI_RIGID,NYLON,BLACK
2	3	CH971-62698	VALVE,CHECK,0.75_PSI_MIN,1/8"_BARB,NYLON
3	3	CH971-63030	CPLG,HOSE_BARB,BODY,1/8"_ID,POLYPRO
4	3	CH971-63044	NUT,NICKEL_BRASS,1/2-24
5	3	CH971-63113	PUMP,DIAPHRAGM,12VDC,MICRO,0.1LPM
6	9	CH971-63115	SCREW,PPH,THREAD_FORMING, 4-20_THREAD,ST,0.25"_LG
7	1	CQ114-00124	CVR,OHS,KAA, PUMP_CVR
8	3	CQ114-20070	FITTING,OHS,KAA, BARBED_PLUG
9	3	CQ114-40010	FILTER,OHS KAA,INK
10	6	CQ114-60086	ASSY,TUBING,FLUSH_ PIGTAIL,KAA,3_IN
11	6	CQ114-60132	ASSY,TUBING,FLUSH_ PIGTAIL,KAA,7_IN
12	3	CQ114-60133	ASSY,TUBING, INK_PUMP,KAA,5_IN

Vacuum pump assembly exploded view

Vacuum pump assembly

Fig. 5. Vacuum pump assembly



Vacuum pump parts list can be found in Fig. 12., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

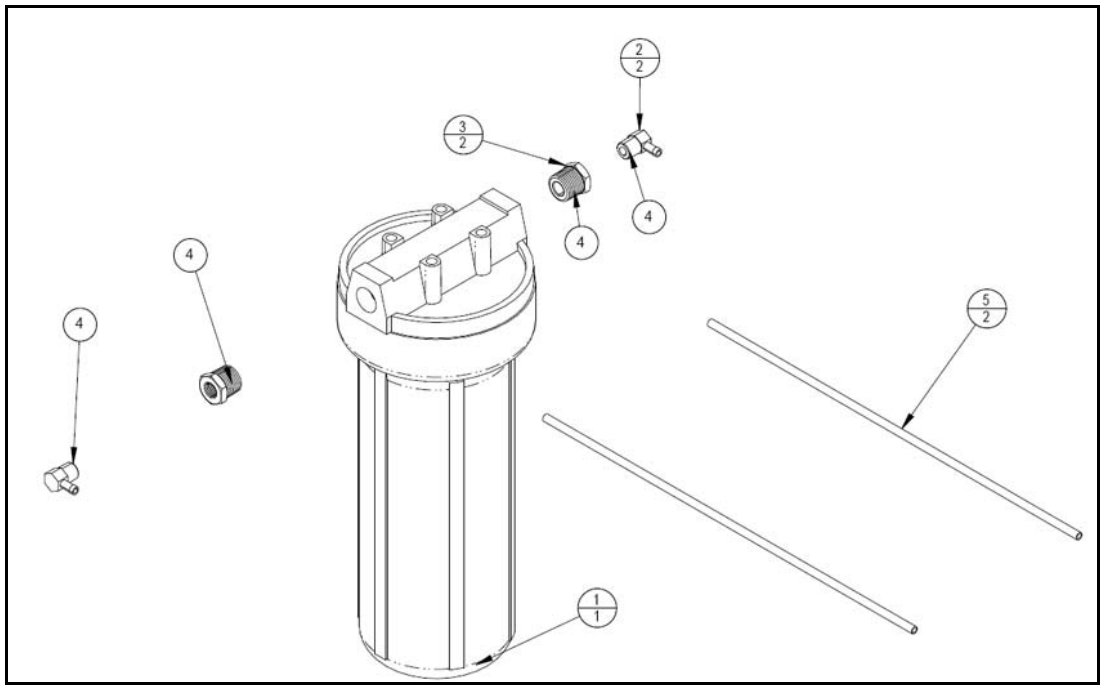
Fig. 6. Vacuum pump parts list

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	0100-2802	FITTING,PANEL_MOUNT,REDUCTION, 3/32"_TO_1/8"_BARB,POLYPROP
2	1	CH971-57199	ENCL,PRESS_VAC,PIRANHA
3	1	CH971-57200	CVR,PRESS_VAC,PIRANHA
4	1	CH971-61330	ADAPTOR,PIPE,1/4X10-32_REDUCN, BRASS,NPT
5	1	CH971-62216	REGULATOR,VACUUM,0_10"_H2O
6	1	CH971-62229	PUMP,DIAPHRAGM,24VDC,15_PSI,ROHS
7	4	CH971-62250	NUT,LOCK,1/4-28,POLYPROP
8	2	CH971-62375	FITTING,TEE,1/16"_BARB,SOFT_TUBE,POLYPROP
9	1	CH971-62376	FITTING,REDUCER,1/8"_BARB,1/16"_BARB, SOFT_TUBE,POLYPROP
10	1	CH971-62377	FITTING,ORIFICE,0.007"_DIA,1/16"_BARB,BRASS
11	1	CH971-62389	FITTING,ELBOW,REDUCER,1/8"_BARB,1/16"BARB,TUBE,POLYPROP
12	1	CH971-62433	FITTING,10-32_UNF,1/8"_BARB,O-RING_SEAL, ENP_BRASS
13	1	CH971-62698	VALVE,CHECK,0.75_PSI_MIN,1/8"_BARB,NYLON
14	2	CH971-62894	WSHR,RUBBER,0.170"_ID,0.375"_OD,0.093"_THK
15	1	CH971-62895	FITTING,TEE_REDUCER,1/8"_BARB,1/16"_BARB,SOFT_TUBE
16	3	CH971-62896	CONN,PANEL_MOUNT,1/8"_BARB,1/4-28_UNF,SOFT_TUBE
17	1	CH971-63005	GROMMET,BUNA_N,1/8"_ID
18	1	CH971-63124	FILTER,AIR,5_MICRON,1/4_NPT_FEMALE
19	2	CH971-63128	STRAP,2"_DIA,SST,EPDM_WRAP
20	4	CH980-00081	SCREW,PPH,SEMS,M4,0.7_PITCH, ST,10MM_LG,BLCK
21	4	CH980-00089	SCREW,PPH,SEMS,M3,0.5_PITCH, ST,8MM_LG,BLCK
22	2	CH980-00214	SCREW,PPH,#6,SELF_TAP, 0.375"_LG,ROHS_COMP
23	1	CQ114-50013	ASSY,CBL, KAA,PRESS/VAC
24	1	CQ114-60028	ASSY,LVL1,KAA, PRESS/VAC,+24V,LF
25	7	CQ114-60180	ASSY,TUBING,KAA, KAA,VAC,0.5_IN
26	4	CQ114-60181	ASSY,TUBING, KAA,VAC,5.5_IN
27	3	CQ114-60182	ASSY,TUBING, KAA,VAC,2_IN

Vacuum reservoir, Exploded view

Vacuum reservoir

Fig. 7. Vacuum reservoir



Vacuum reservoir parts list can be found in Fig. 12., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

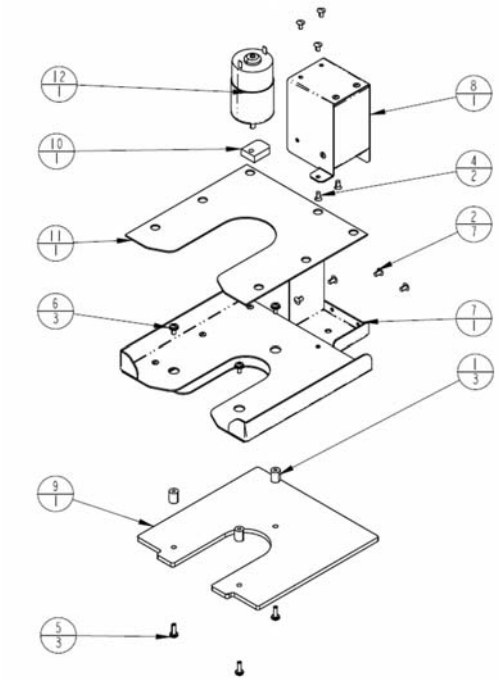
Fig. 8. Vacuum reservoir parts list

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	CH971-62221	RESERVOIR,VACUUM,3/8IN_NPT
2	2	CH971-62364	FITTING,ADAPTER,1/8IN_NPT_MALE,1/8IN_BAR
3	2	CH971-62365	FITTING,BUSHING,3/8IN_NPT_MALE, 1/8IN_N
4	1	CH980-00045	TAPE,TEFLON,MIL_GRADE,0.25IN_WD
5	2	CQ114-60087	ASSY,TUBING,VAC_ RESERVOIR,KAA,300MM

Ink homogenizer, Exploded view

Ink homogenizer

Fig. 9. Ink homogenizer



Ink homogenizer parts list can be found in Fig. 12., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

Fig. 10. Ink homogenizer parts list

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	3	1520-0700	MOUNT,SANDWICH,FEMALE_FEMALE,NEOPRENE,0.5"_HT,0.375"_DIA
2	7	CH971-62949	RIVET,BLIND,0.156_DIA,0.162_HOLE
3	1	CH980-00013	ADH,LOCTITE,RETAINING,PERM
4	2	CH980-00042	SCREW,PFH,M4,ST,0.7MM_PITCH, 8MM_LG,BLCK
5	3	CH980-00076	SCREW,PPH,SEMS, M4,0.7_PITCH, ST,12MM_LG
6	3	CH980-00080	SCREW,PPH,SEMS,M4,0.7_PITCH, ST,8MM_LG,B
7	1	CQ114-00086	TRAY,SHAKER, KAA,INK_BOX
8	1	CQ114-00087	CVR,SHAKER, KAA,MOTOR
9	1	CQ114-20054	PLT,SHAKER, KAA,BASE
10	1	CQ114-20055	BAR,SHAKER, KAA,ECCENTRIC
11	1	CQ114-40029	PAD,SHAKER, KAA,INK_BOX
12	1	CQ114-60036	ASSY,MTR,KAA,SHAKER

Exploded views: Carriage assemblies

Trolley assembly (upper and lower) exploded view

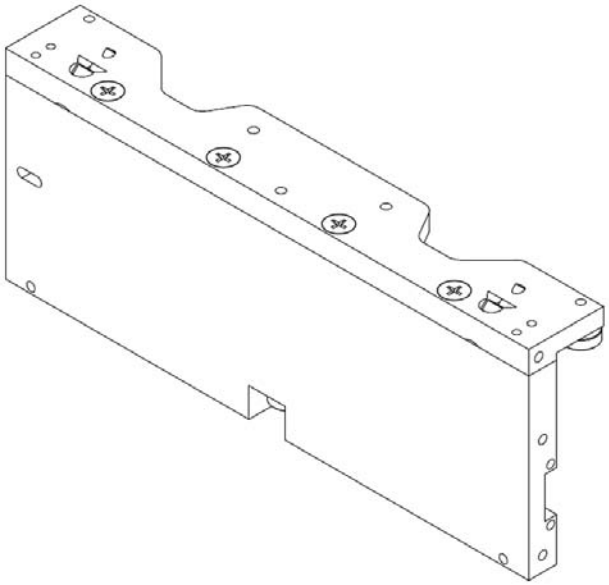
Trolley assembly (upper and lower). The trolley parts list can be found in Fig. 12., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

Fig. 11. Trolley

The orderable part number for the complete trolley assembly is as follows:

CQ114-67014

The above part number includes both the upper and lower trolley assemblies.



Part numbers used in the trolley assembly

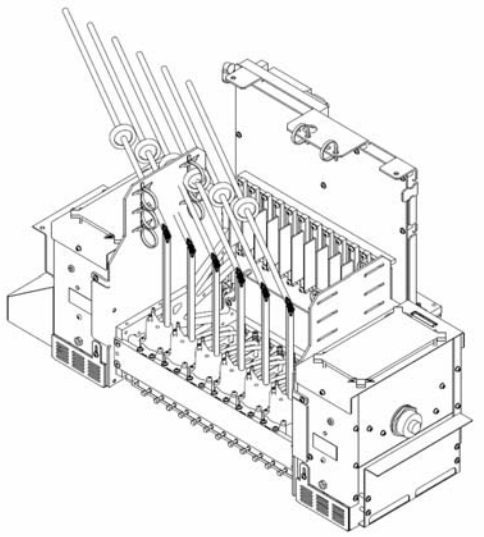
Fig. 12. Trolley parts list

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	4	CH980-00221	SCREW,PFH,M6,1.0_PITCH,ST, 20MM_LG,W/LOCKING_PATCH,ROHS_COMP
2	1	CQ114-20033	PLT,TROLLEY, KAA,LOWER
3	1	CQ114-60123	ASSY,TOP_TROLLEY, KAA
4	1	CQ114-60157	ASSY,TROLLEY, KAA,CARRIAGE_WHEEL

Carriage assembly, exploded views

Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

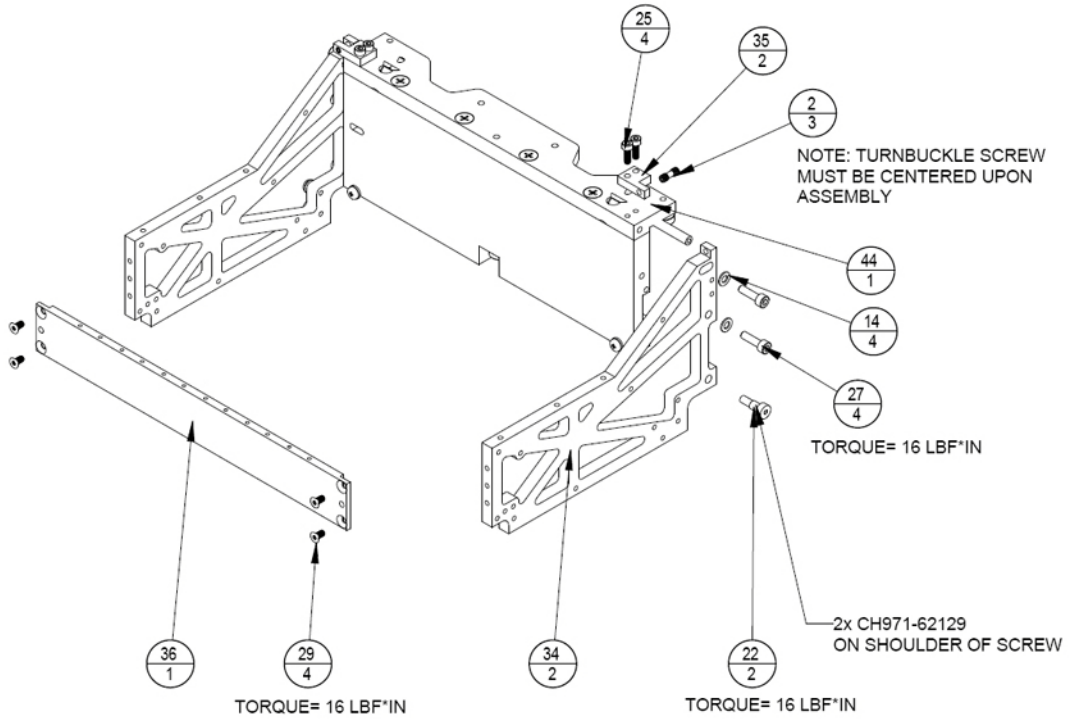
Fig. 13. Carriage assembly



Carriage assembly brackets, exploded view

Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly). For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

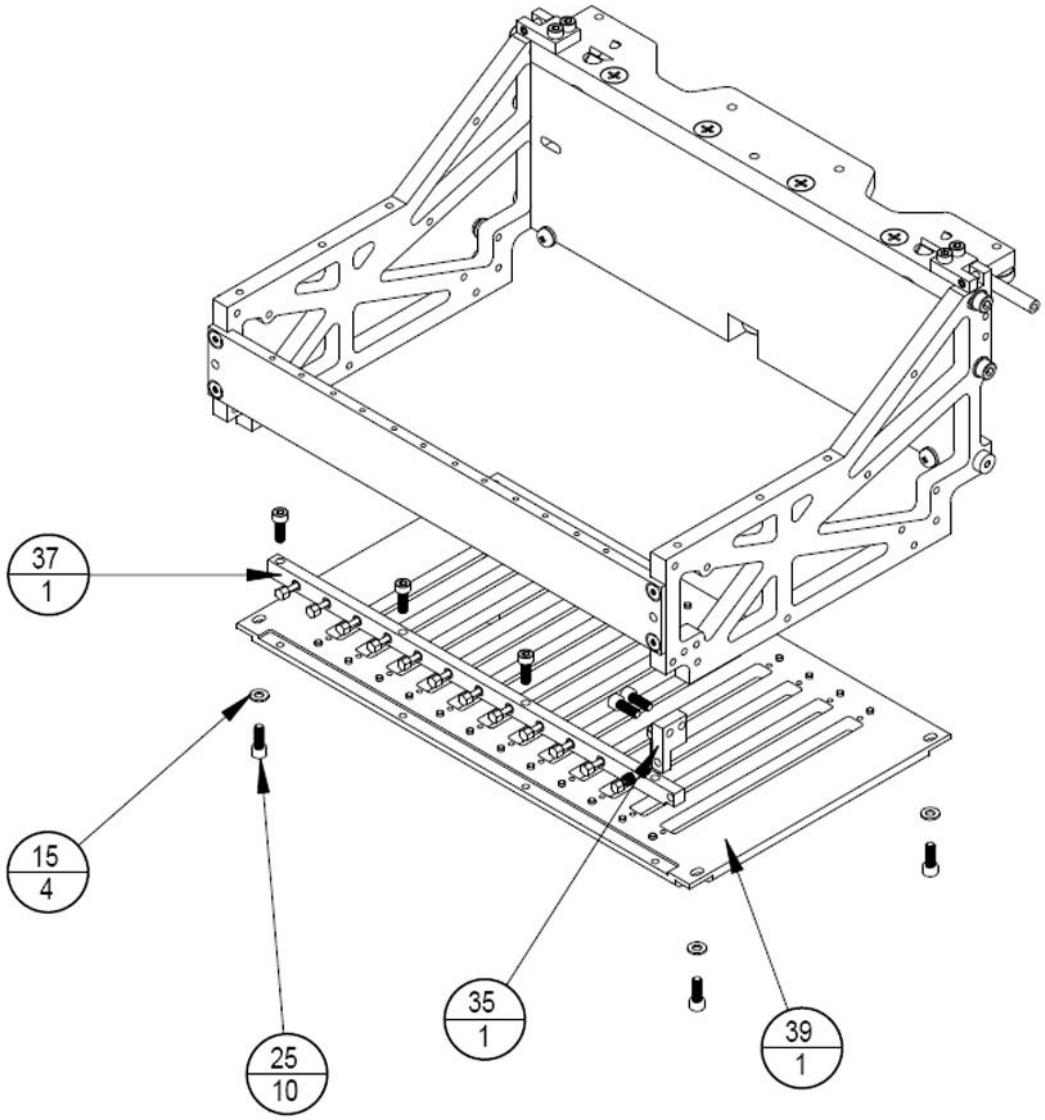
Fig. 14. Carriage brackets



Carriage pen plate, exploded view

Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly). For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

Fig. 15. Carriage Pen plate



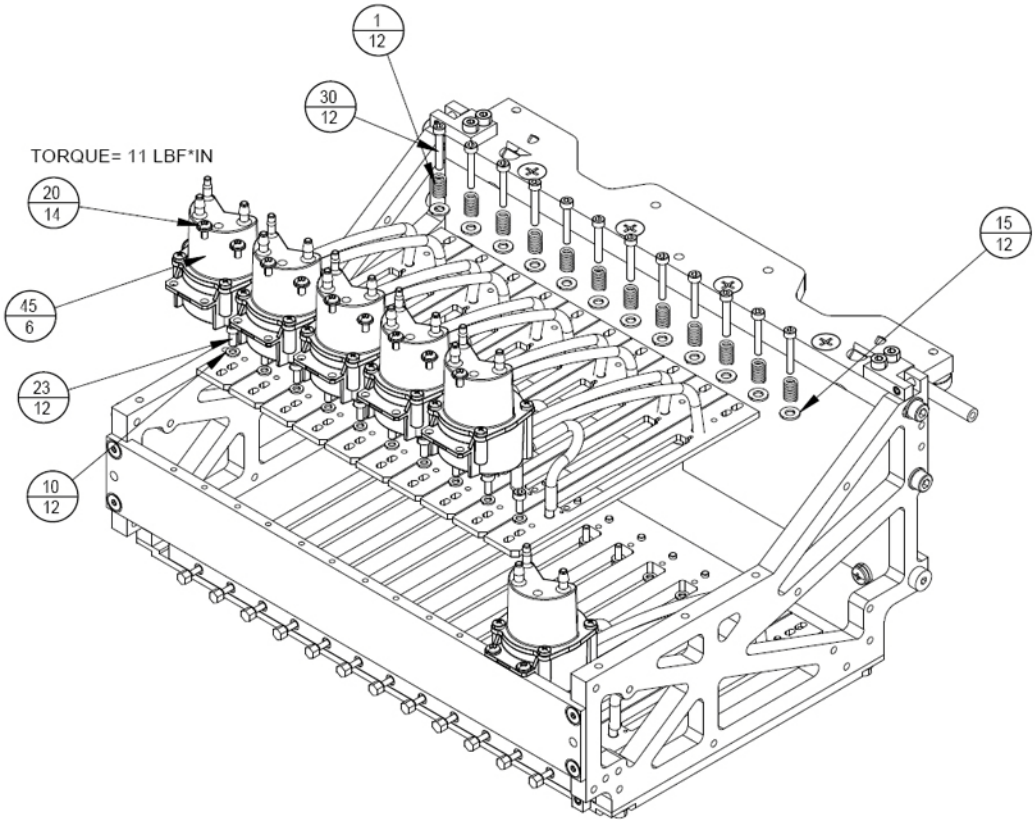
Carriage reservoirs, exploded views

Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

The orderable part number for the ink reservoir is as follows: CQ114-67005.

For a complete list of orderable part numbers and their descriptions, see the section “Parts List for Field Replaceable Modules” on page 14.

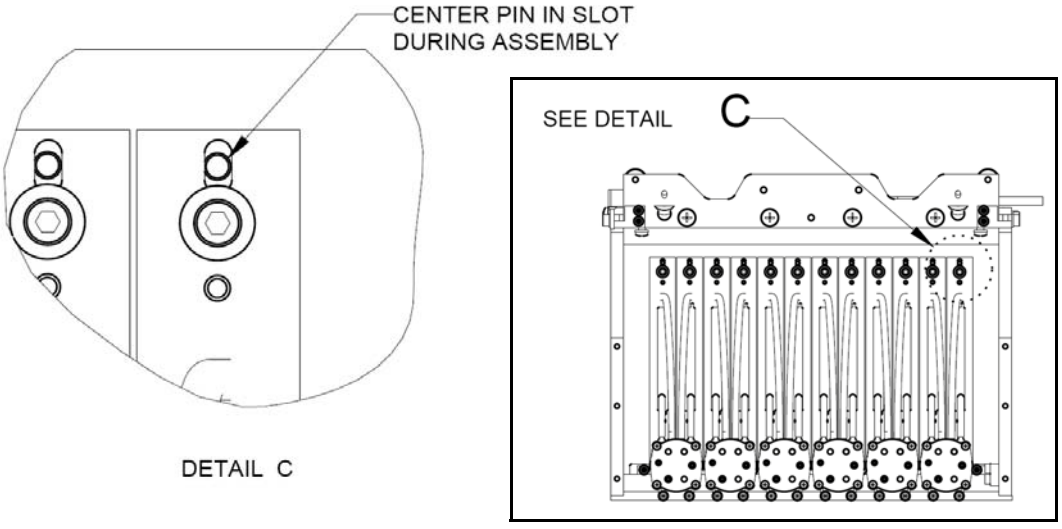
Fig. 16. Ink reservoirs



Printhead interface plate’s alignment pin, exploded view

Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

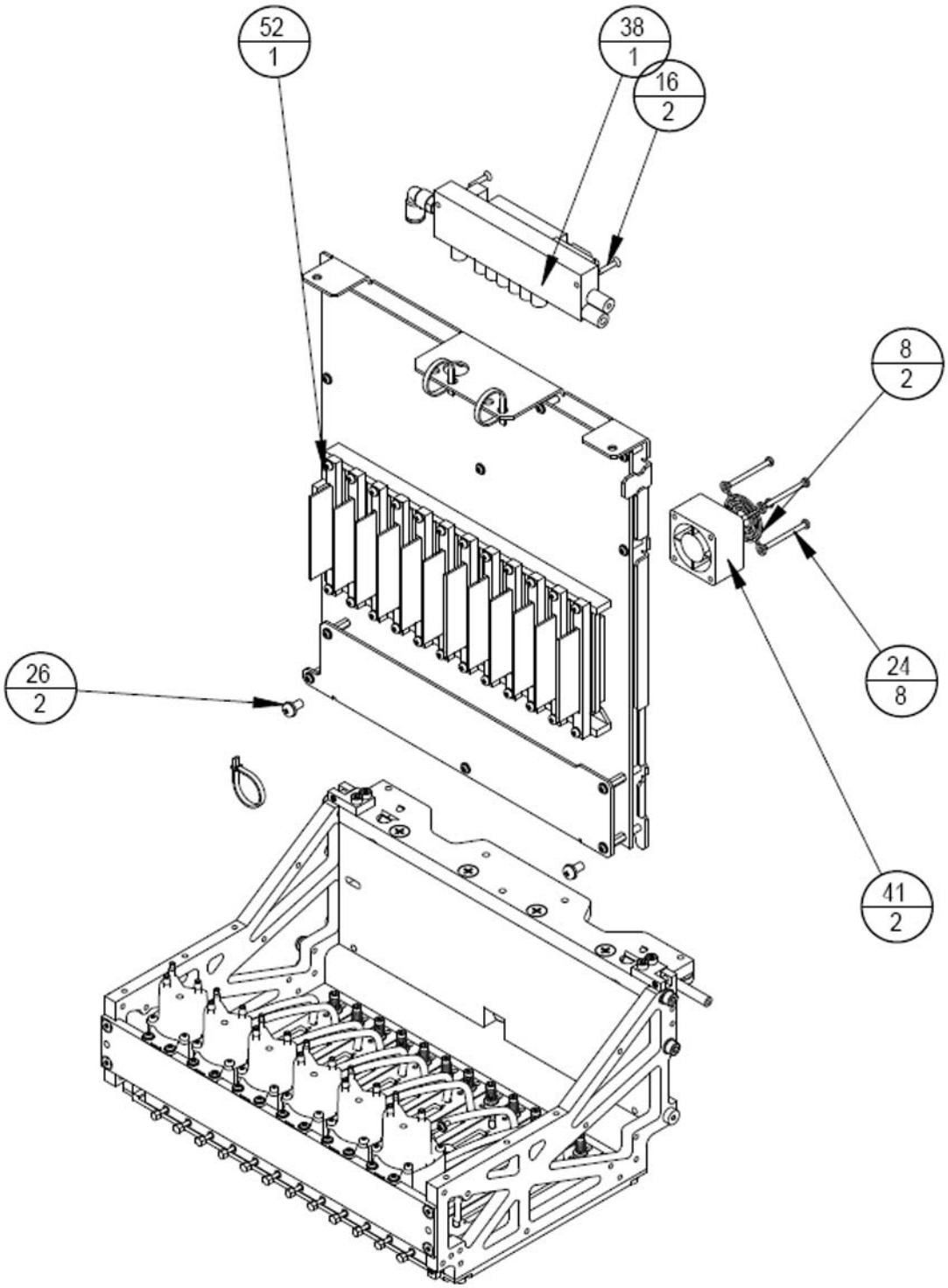
Fig. 17. Printhead interface plate’s alignment pin



Carriage back plate, exploded view

Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

Fig. 18. Carriage back plate exploded view



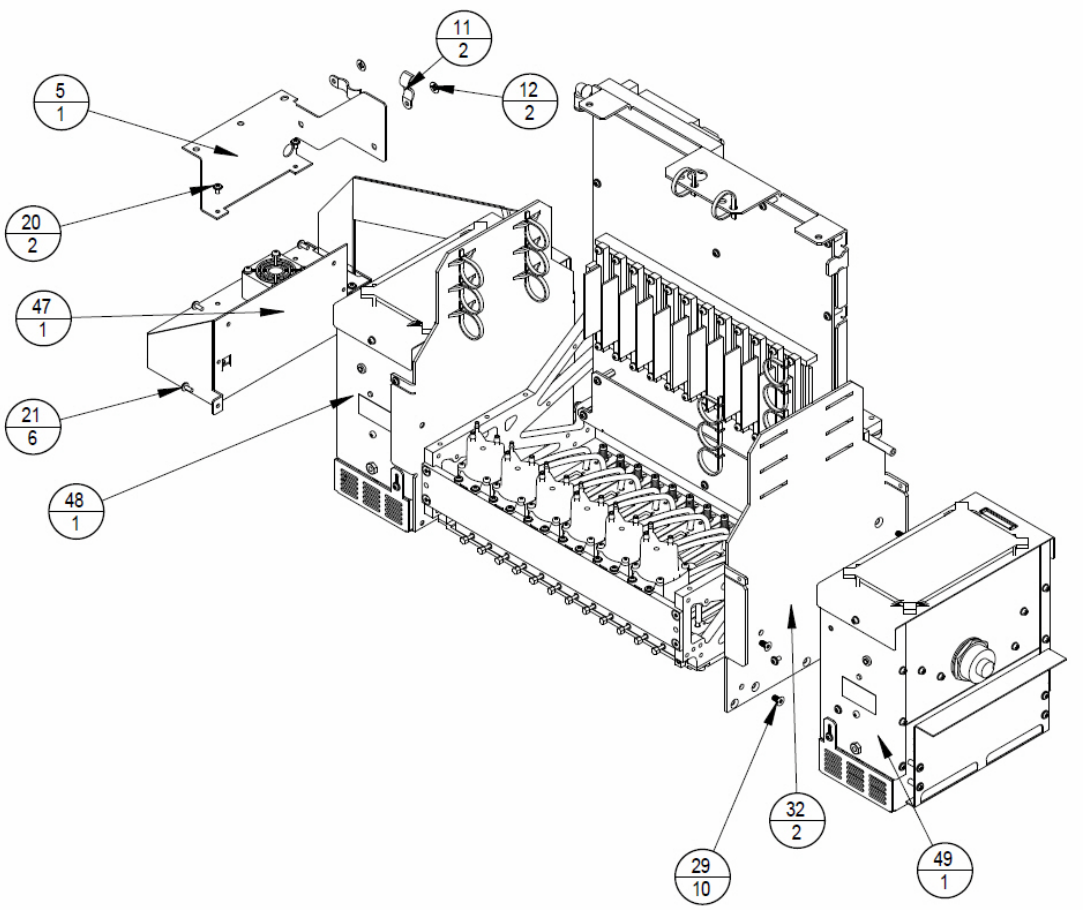
#38 – Air manifold orderable part number is as follows: CQ114-67010

#41 - Cooling fan assembly orderable part number is as follows: CQ114-67007

Carriage side attachments, exploded views

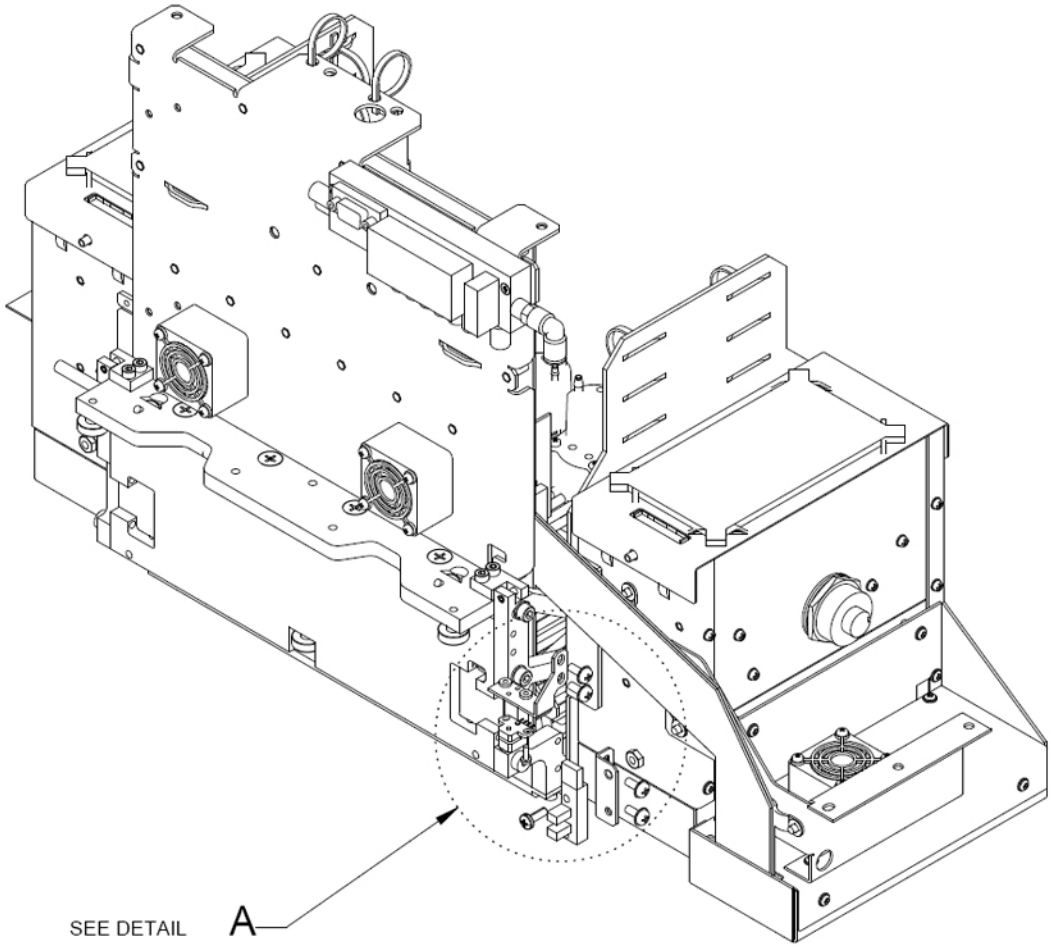
Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

Fig. 19. Carriage side attachments



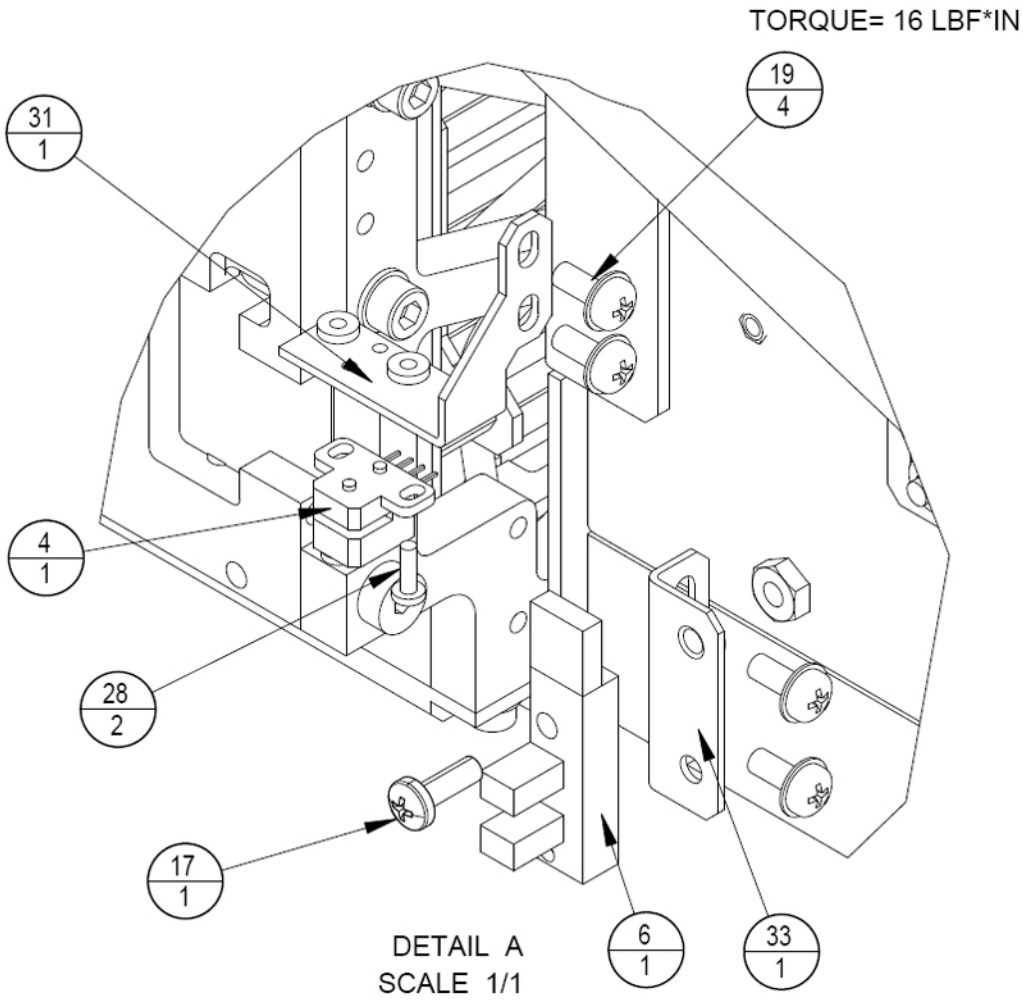
Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

Fig. 20. Encoder reader



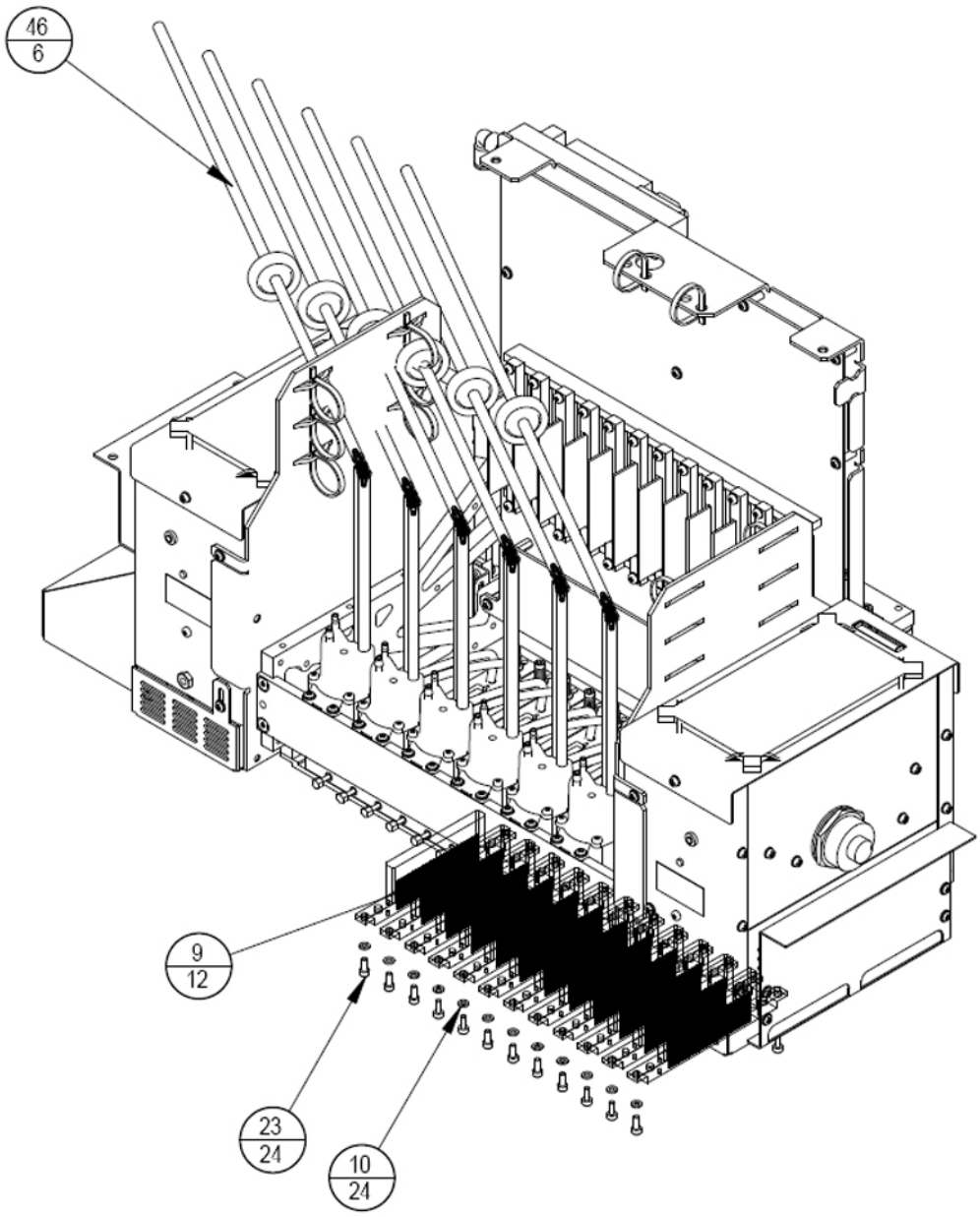
Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

Fig. 21. Encoder reader



Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

Fig. 22. Printheads



Carriage assembly parts list can be found in Fig. 24. on page 46 (Not all parts can be ordered and some parts can only be ordered as part of an assembly).

Fig. 23. Printhead interface plates

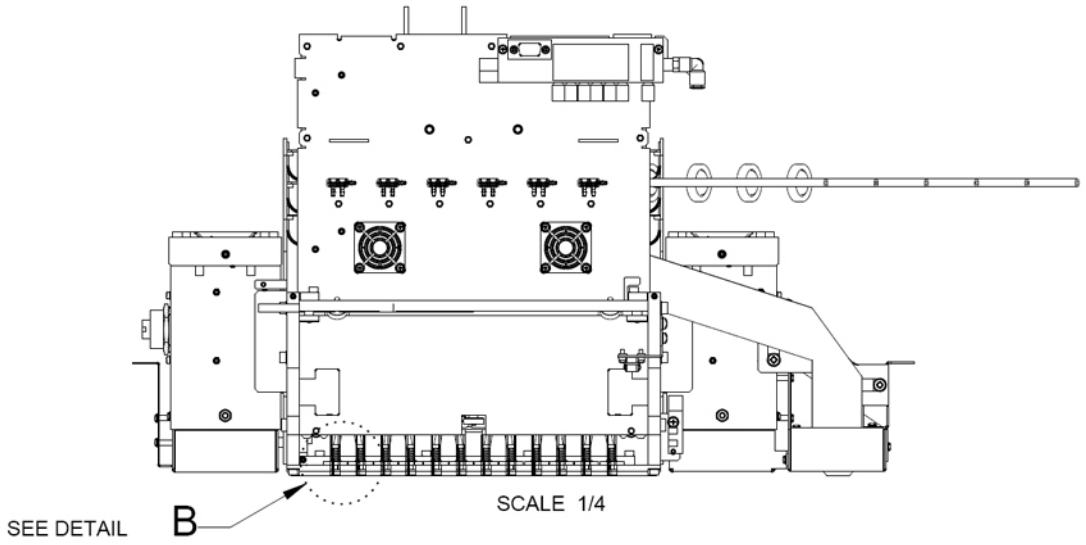


Fig. 24. Carriage parts list

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	12	1460-2813	SPR,COMP,0.24"_OD,0.045"_WD,125_LB/IN
2	3	3030-1243	SCREW,SET,10-32,TURNBUCKLE,CLAMP
3	2	CH971-50218	ASSY,CBL,BLK_MAMBA,HEADBD,UV_HSNG
4	1	CH971-56848	ASSY,FLEX,ENCDR_READER,LF
5	1	CH971-57187	BRKT,LAMP,PIRANHA, IONIZER_HOLDER_LEFT
6	1	CH971-60085	SNSR,GAP,5MM, 16MA,ROHS
7	1	CH971-62129	GREASE,LITHIUM, HEAVY_DUTY
8	2	CH971-62578	GUARD,FINGER, FAN,1.53"_SQ
9	12	CH971-62887	PRINTHEAD,PIEZO,192_JET, W/ADPTR_BRD,HTR,ROHS
10	36	CH971-62947	WSHR,FLAT,SST, 0.128"_ID,0.238"_OD
11	2	CH971-63075	CLIP,TENSION,0.375"_WD, 1.313"_LG,ACETAL,BLACK
12	2	CH971-63078	NUT,PUSH,M4,THREADED
13	14	CH980-00019	TIE_WRAP,LOCKING,NYLON,0.14IN_WD,BLCK,5
14	4	CH980-00060	WSHR,FLAT,ST,METRIC,M5,5MM_DIA_SCREW
15	16	CH980-00062	M4 WASHER,12MM_OD,1.4MM_THK
16	2	CH980-00068	SCREW,PFH,M3,0.5_PITCH,ST, 16MM_LG
17	1	CH980-00076	SCREW,PPH,SEMS, M4,0.7_PITCH, ST,12MM_LG
18	8	CH980-00077	SCREW,PPH,SEMS,M4,0.7_PITCH, ST,16MM_LG
19	4	CH980-00081	SCREW,PPH,SEMS,M4,0.7_PITCH, ST,10MM_LG,BLCK
20	16	CH980-00085	SCREW,PPH,SEMS, M3,0.5_PITCH,ST,6MM_LG
21	6	CH980-00089	SCREW,PPH,SEMS,M3,0.5_PITCH, ST,8MM_LG,BLCK
22	2	CH980-00091	SCREW,SHC,SHLDR,M5, 0.8_PITCH,SST,8MM_LG,W/PATCH
23	36	CH980-00094	SCREW,SHC,M3,0.5_PITCH, ,ST,8MM,W/PATCH
24	8	CH980-00096	SCREW,PPH,M3, 0.5_PITCH,35MM_LG
25	14	CH980-00103	SCREW,SHC,M4,0.7_PITCH,12MM_LG,BLACK,W/P
26	2	CH980-00105	SCREW,PPH,SEMS,M5,0.8_PITCH,ST,10MM_LG
27	4	CH980-00127	SCREW,SHC,0.8_PITCH, M5,18MM_LG,W/PATCH
28	2	CH980-00136	SCREW,PPH,M2.5, 0.45MM_PITCH,8MM_LG
29	14	CH980-00212	SCREW,SHC,FLAT,M4,0.7 _PITCH,ST,8MM_LG,W
30	12	CH980-00949	SCREW,SHC,M3,0.5_PITCH, SST,20MM_LG
31	1	CQ114-00040	BRKT,CARRIAGE, KAA,ENCODER
32	2	CQ114-00041	BRKT,CARRIAGE, KAA,LAMP_MNT
33	1	CQ114-00048	BRKT,CARRIAGE, KAA,HOME_SENSOR
34	2	CQ114-20032	PLT,CARRIAGE, KAA,SIDE
35	3	CQ114-20038	BLK,CARRIAGE,KAA, TILT_ADJ
36	1	CQ114-20040	BAR,CARRIAGE,KAA, FRONT_STIFFENER
37	1	CQ114-20056	PLT,CARRIAGE, KAA,FLAT_PEN_ADJ
38	1	CQ114-20075	MANIFOLD,CARRIAGE,KAA,VALVED
39	1	CQ114-20096	PLT,CARRIAGE,KAA, PIN,WITHOUT_KEYING
40	1	CQ114-50008	ASSY,CBL,KAA,CARRIAGE_HOME_SNSR
41	2	CQ114-50012	ASSY,FAN,KAA,COOLING,4PIN
42	6	CQ114-50019	ASSY,CBL,KAA,RSRVR_THMST_ASSY
43	1	CQ114-50045	ASSY,CBL,KAA,HEADBD,VALVES
44	1	CQ114-60012	ASSY,TROLLEY, KAA
45	6	CQ114-60031	ASSY,RESERVOIR, KAA,INK
46	6	CQ114-60040	ASSY,OVERFILL_ FLTR_BLKR,KAA
47	1	CQ114-60044	ASSY,CAMERA_ CASE,KAA
48	1	CQ114-60045	ASSY,LAMP, KAA,LEFT
49	1	CQ114-60051	ASSY,LAMP, KAA,RIGHT

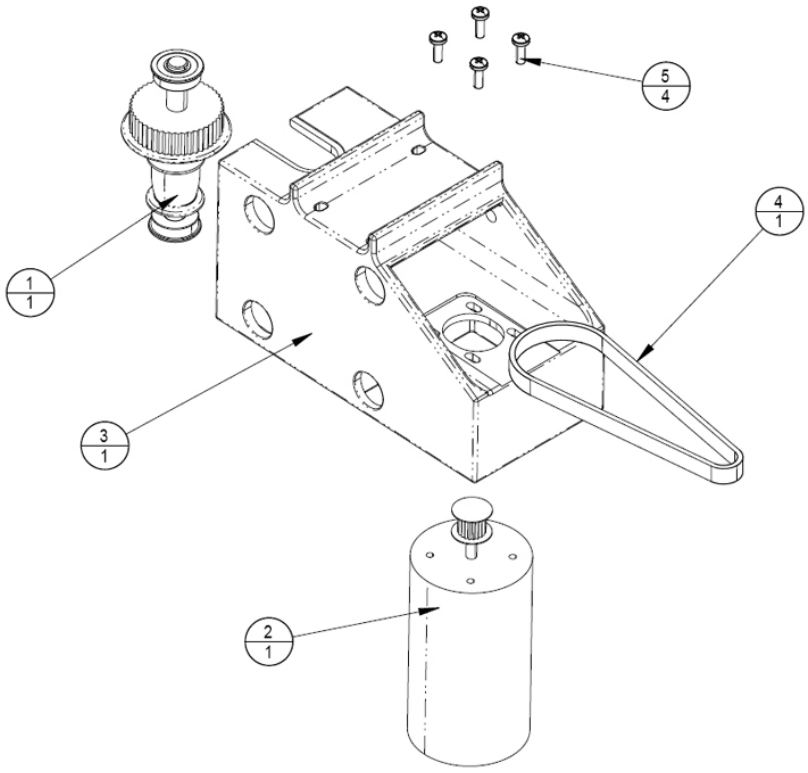
Fig. 25. Carriage tubing

50	1	CQ114-60095	ASSY,TUBING, CARRIAGE,KAA,2.5_IN
51	1	CQ114-60096	ASSY,TUBING, CARRIAGE,KAA,6.7_IN
52	1	CQ114-60140	ASSY,HEADBOARD, KAA,DFM_IMPROVEMENT

Exploded views: Carriage-drive assemblies

Carriage-drive assembly

Fig. 26. Carriage-drive assembly



Carriage-drive parts list can be found in Fig. 27., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section "Parts List for Field Replaceable Modules" on page 14.

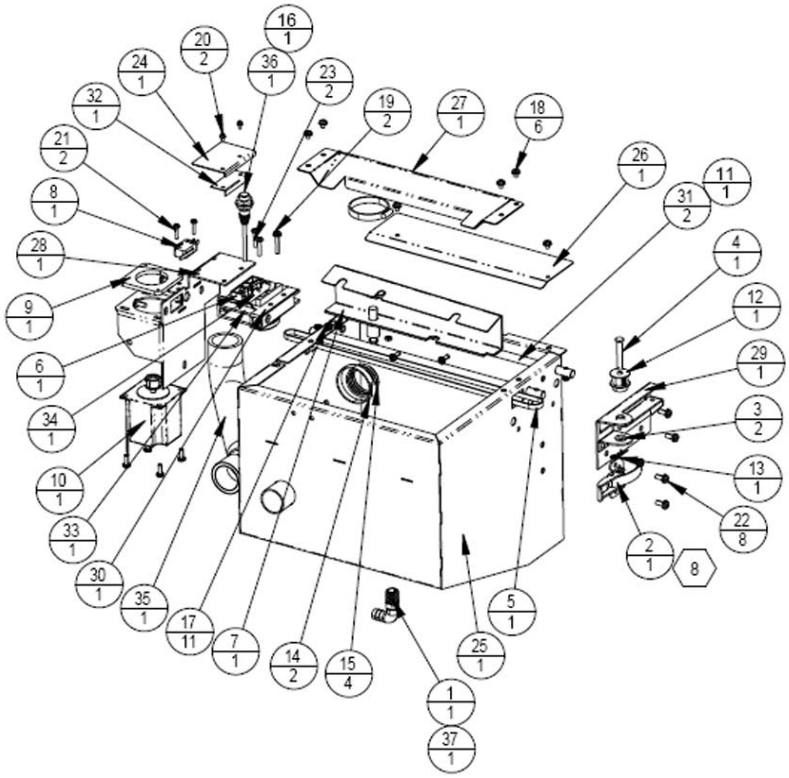
Fig. 27. Carriage-drive part number

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	CH109-60002	ASSY,CARR_DRV, ANACONDA,DRV_SHFT
2	1	CH971-54440	ASSY,MTR,XENA/ATHENA, CARRIAGE_DRV,LF
3	1	CH971-57219	BRACKET,RAIL,PIRANHA, CARR_DRIVE_CAST_MACH
4	1	CH980-00015	BELT,TIMING,3MM_P,HTD, 104_GROOVE,312_PITCH_LENGTH
5	4	CH980-00076	SCREW,PPH,SEMS, M4,0.7_PITCH, ST,12MM_LG

Exploded views: Service station assemblies

Service station assembly

Fig. 28. Service station



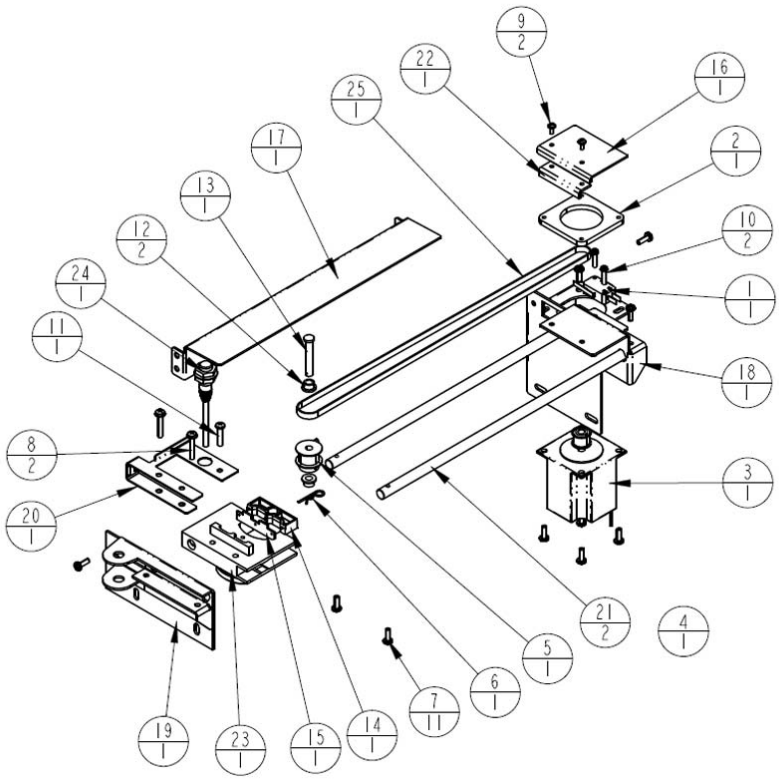
Service station parts list can be found in Fig. 29., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section "Parts List for Field Replaceable Modules" on page 14.

Fig. 29. Service station part number

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	0100-2805	FITTING,ELBOW,12MM BARB 0.25 IN THREAD
2	1	1390-1445	LATCH,DRAW,2.66_LG,0.732_WD
3	2	1410-1042	BEARING-SLV .252-IN-ID .377-IN-OD
4	1	1480-1172	PIN,CLEVIS,0.25"_DIA,1.5"_LG
5	1	1500-1310	BELT,TIMING.3MM_P,HTD, HTD,245_GROOVE
6	1	CH104-40002	PLT,SERVICE_STATION,PIRANHA,WIPER,HRD_TL
7	1	CH154-60013	ASSY,INK_FLOAT,ANACONDA
8	1	CH971-50184	ASSY,SW,PNL,SNSR_ARM,SPDT,10A,NC,4_PIN,11",ROHS
9	1	CH971-53514	PLT,MTR_MNT,XENA,NUT
10	1	CH971-53679	ASSY,MTR,XENA,PAPER_DRV,ROHS
11	1	CH971-62129	GREASE,LITHIUM, HEAVY_DUTY
12	1	CH971-62940	PUL,TIMING,DBL_FLNGD_ W/INSERT,3MM_PITCH,20_GRVE
13	1	CH971-62942	PIN,COTTER,0.059_WIRE_ DIA,1.125" LN,0.25_SHFT
14	2	CH971-63099	CLAMP,HOSE,1.75"_DIA
15	4	CH971-63101	O-RING,BUNA-N,1.25IN_ID,1.4375IN_OD,0.09
16	1	CH980-00011	ADH,LOCTITE, THREADLOCKER, PENETRATING
17	11	CH980-00076	SCREW,PPH,SEMS, M4,0.7_PITCH, ST,12MM_LG
18	6	CH980-00079	SCREW,PPH,SEMS,M4, 0.7_PITCH, ST,6MM_LG,BLCK
19	2	CH980-00084	SCREW,PPH,SEMS, M4,0.7_PITCH,ST,25MM_LG,BLCK
20	2	CH980-00088	SCREW,PPH,SEMS,M3, 0.5_PITCH, 6MM_LG,BLCK
21	2	CH980-00090	SCREW,PPH,SEMS,M3,0.5_PITCH, ST,16MM_LG,BLCK
22	8	CH980-00106	SCREW,PPH,SEMS, M5,0.8_PITCH,ST,12MM_LG
23	2	CH980-00160	SCREW,PPH,THRD_FORMING, PLASTIC,M4,ST,20MM_LG,BLCK
24	1	CQ114-00027	BRKT,SRVC STN, KAA,BLADE,MNT
25	1	CQ114-00028	TRAY,SRVC STN, KAA,DIVIDER
26	1	CQ114-00032	CVR,SRVC STN,KAA, FRAME,MNT
27	1	CQ114-00035	GUARD,SRVC_STN, KAA,BELT
28	1	CQ114-00045	BRKT,SERVICE_STATION, KAA,DRIVE_MOTOR
29	1	CQ114-00046	BRKT,SERVICE_STATION, KAA,IDLER_PULLEY
30	1	CQ114-00047	PLT,SERVICE_STATION, KAA,BELT_MNT
31	2	CQ114-20025	SHFT,SRVC STN, KAA,SLIDER
32	1	CQ114-20026	BLADE,SRVC STN, KAA,WIPER,CLEAN
33	1	CQ114-20098	SLIDER,SERVICE_STATION, KAA,ALT
34	1	CQ114-40043	WIPER,SRVC_STN, KAA,VAC
35	1	CQ114-40044	TUBE,SRVC_STN, KAA,VAC,SLIDER
36	1	CQ114-60028	ASSY,SW,KAA, SERVICE_STATION,GAP
37	1	CQ114-60171	ASSY,TEFLON_TAPE, SRVC_STN,KAA,3.0_IN

Service station wiper assembly

Fig. 30. Service station wiper assembly



Service station parts list can be found in Fig. 31., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

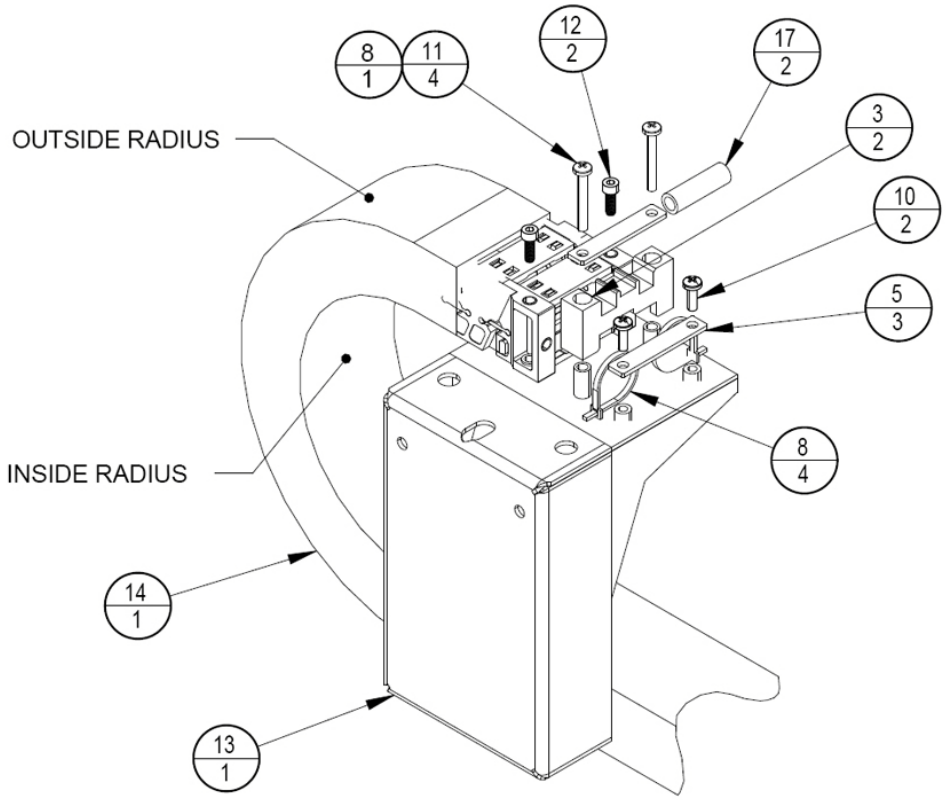
Fig. 31. Service station wiper assembly

ITEM NO.	QTY.	PART NO.	REV	DESCRIPTION
1	1	0500184	1	ASSY,SW,PNL,SNSR_ARM,SPDT,10A,NC,4_PIN,11",ROHS
2	1	0503514		PLT,MTR_MNT,XENA,NUT
3	1	0583679		ASSY,MTR,XENA,PAPER_DRV,ROHS
4	1	0602129		GREASE,LITHIUM, HEAVY_DUTY
5	1	0602940		PUL,TIMING,DBL_FLANGED_ W/INSERT,3MM_PITCH,20_GROOVE
6	1	0602942		PIN,COTTER,0.059_WIRE_ DIA,1.125" LN,0.25_SHFT
7	11	0601310-012		SCREW,PPH,SEMS, M4,0.7_PITCH, ST,12MM_LG
8	2	0601310-125		SCREW,PPH,SEMS, M4,0.7_PITCH,ST,25MM_LG,BLCK
9	2	0601311-108		SCREW,PPH,SEMS,M3,0.5_PITCH, ST,8MM_LG,BLCK
10	2	0601311-116		SCREW,PPH,SEMS,M3,0.5_PITCH, ST,16MM_LG,BLCK
11	1	0602065-120		SCREW,PPH,THREAD_FORMING, THRU_PLASTIC,M4,ST,20MM_LG,BLCK
12	2	2938T1	1	BUSHING
13	1	92390A163	1	PIN,CLEVIS,0.25"_DIA,1.5"_LG
14	1	CH104-40002		PLT,SERVICE_STATION,PIRANHA,WIPER,HRD_TL
15	1	CH154-40006		WIPER,SERVICE_STATION, ANACONDA,VAC
16	1	CQ114-00027	1	BRKT,SRVC STN, KAA,BLADE,MNT
17	1	CQ114-00035	1	GUARD,SRVC STN, KAA,BELT
18	1	CQ114-00045	1	BRKT,SERVICE_STATION, KAA,DRIVE_MOTOR
19	1	CQ114-00046	1	BRKT,SERVICE_STATION, ,KAA,IDLER_PULLEY
20	1	CQ114-00047	1	PLT,SERVICE_STATION, KAA,BELT_MNT
21	2	CQ114-20025	1	SHFT,SRVC STN, KAA,SLIDER
22	1	CQ114-20026	1	BLADE,SRVC STN, KAA,WIPER,CLEAN
23	1	CQ114-20030		SLIDER,SRVC STN,KAA
24	1	CQ114-50028		ASSY,SW,KAA, SERVICE_STATION,GAP
25	1	Z-AB-SST-BELT	1	BELT,TIMING

Track attachment at carriage

Cable clamp

Fig. 32. Track cable clamp at carriage



Track parts list can be found in Fig. 33., however, not all part numbers may be ordered. For a complete list of orderable part numbers, see the section “Parts List for Field Replaceable Modules” on page 14.

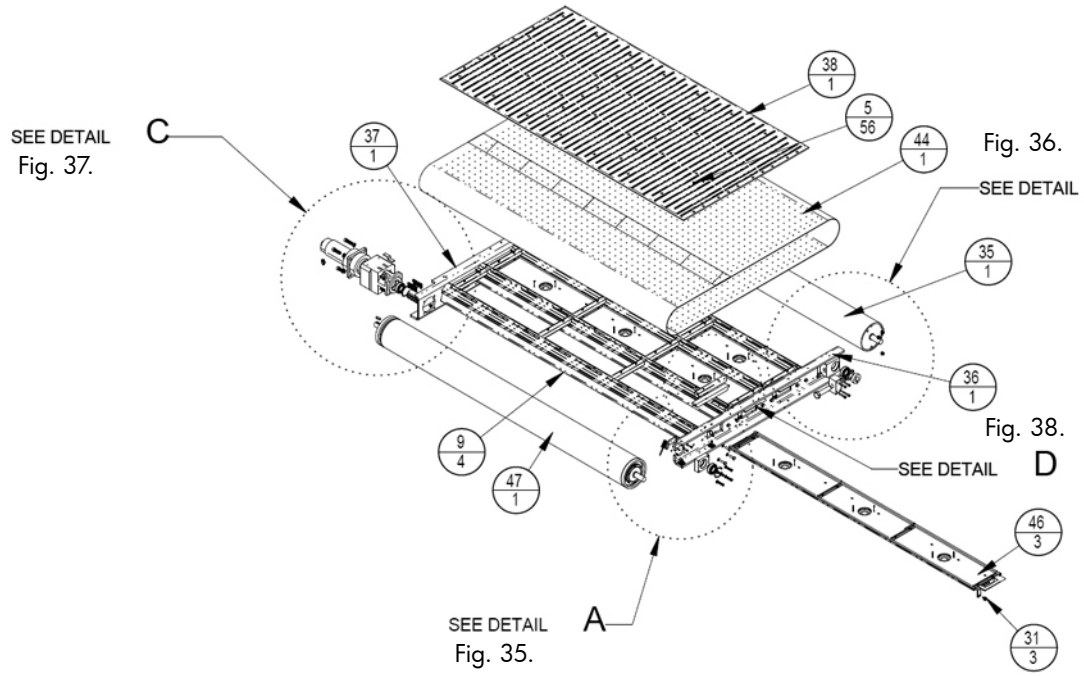
Fig. 33. Track cable clamp at carriage

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	0890-2354	SLEEVE,POLYETHYLENE, BLACK,3/8"_NOM_DIA
2	34	9220-8021	SEPARATOR,IGUS,VERTICAL, SLOTTED,NON_LOCK
3	2	CH154-20006	MNT,IGUS,ANACONDA, CBL_CLP
4	1	CH971-50320	ASSY,CBL,ANACONDA, IGUS_ROUND_CBL_PWR
5	3	CH971-55829	PLT,PLATEN,SHARK, TUBE_CLAMP
6	1	CH971-57668	RETAINER,PLATEN,ANACONDA, TUBE,IGUS_CHAIN_BRKT
7	2	CH971-63043	CBL,UV_LAMP,5.3_METERS
8	4	CH980-00008	TIE_WRAP,LOCKING,NYLON,0.10"_ WD,BLCK,5.75"_LG
9	1	CH980-00009	ADH,LOCTITE,THREADLOCKER, SMALL_SCREW
10	2	CH980-00076	SCREW,PPH,SEMS, M4,0.7_PITCH, ST,12MM_LG
11	4	CH980-00078	SCREW,PPH,SEMS, M4,0.7_PITCH, ST,30MM_LG
12	4	CH980-00103	SCREW,SHC,M4,0.7_PITCH,12MM_LG,BLACK,W/P
13	1	CQ114-00039	BRKT,CARRIAGE, KAA,IGUS
14	1	CQ114-40020	CHAIN,IGUS,KAA, CABLE TRACK
15	1	CQ114-60118	ASSY,TUBING,IGUS, PRESSURE,KAA64
16	1	CQ114-60119	ASSY,TUBING,IGUS, VACUUM,KAA64
17	2	CQ114-60121	ASSY,TUBING,IGUS, CLAMP_PAD,KAA64
18	6	CQ114-60176	ASSY,TUBING,IGUS, INK,KAA64,ALT
19	1	CQ115-50015	ASSY,CBL,KAA,HD_DATA_CAT5, SHIELDED,ROHS

Media-drive assemblies exploded views

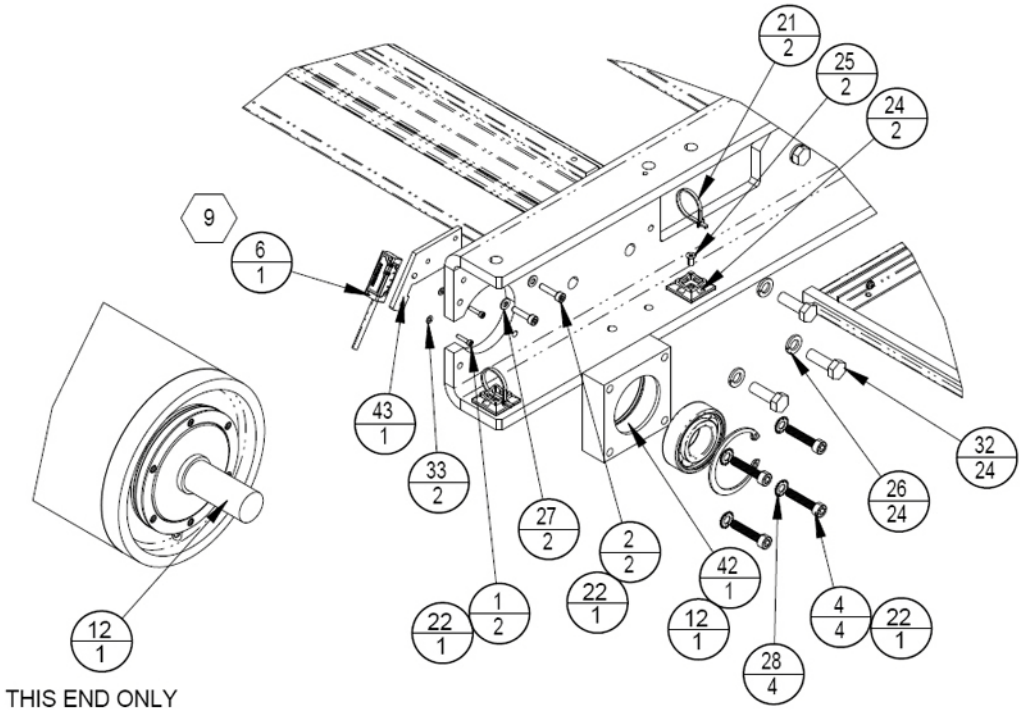
Media-drive belt assemblies (see part numbers in Fig. 39. on page 57)

Fig. 34. Media-drive assemblies



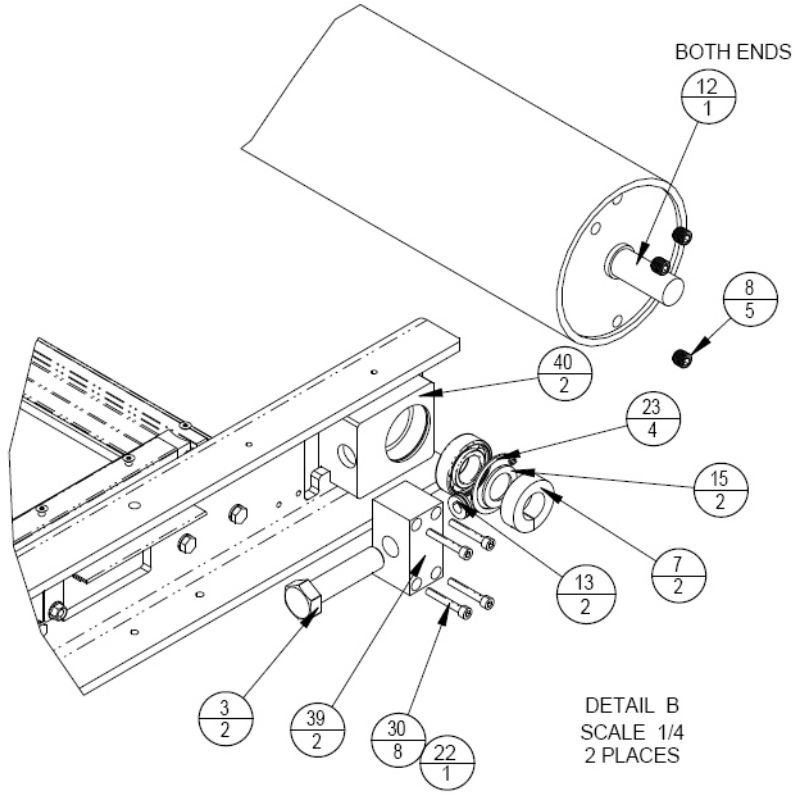
Drive roller user-end of output-side (see part numbers in Fig. 39. on page 57)

Fig. 35. User-end of drive roller



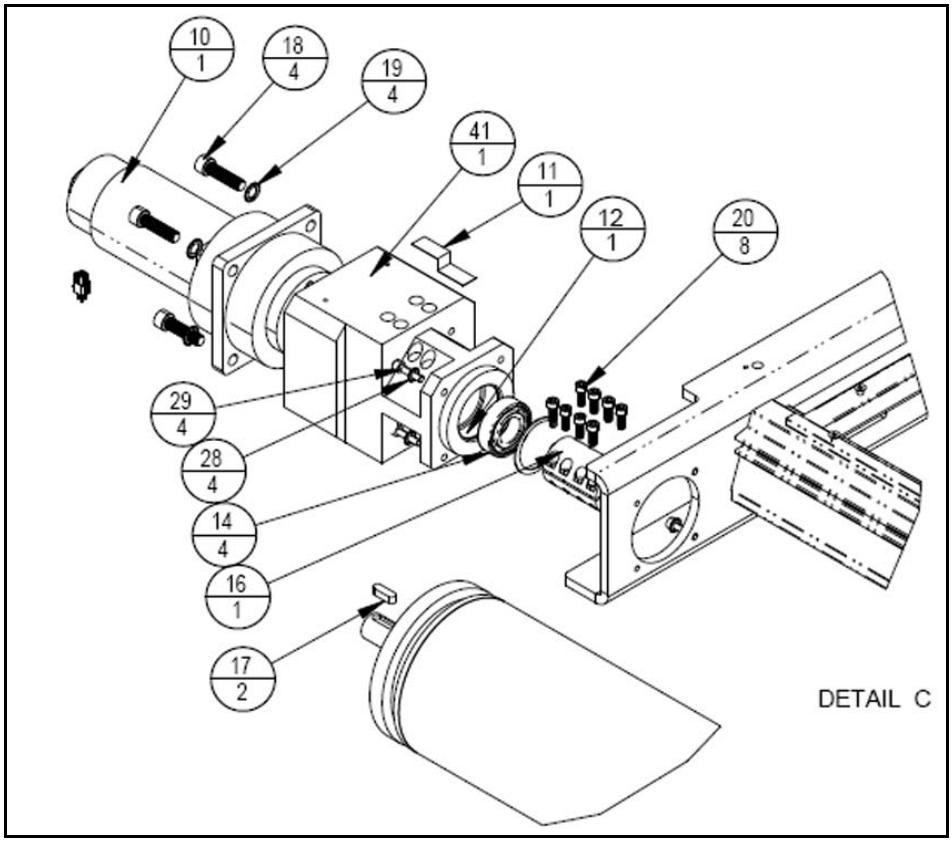
Idler roller user-end of input-side (see part numbers in Fig. 39. on page 57)

Fig. 36. User-end of idler roller



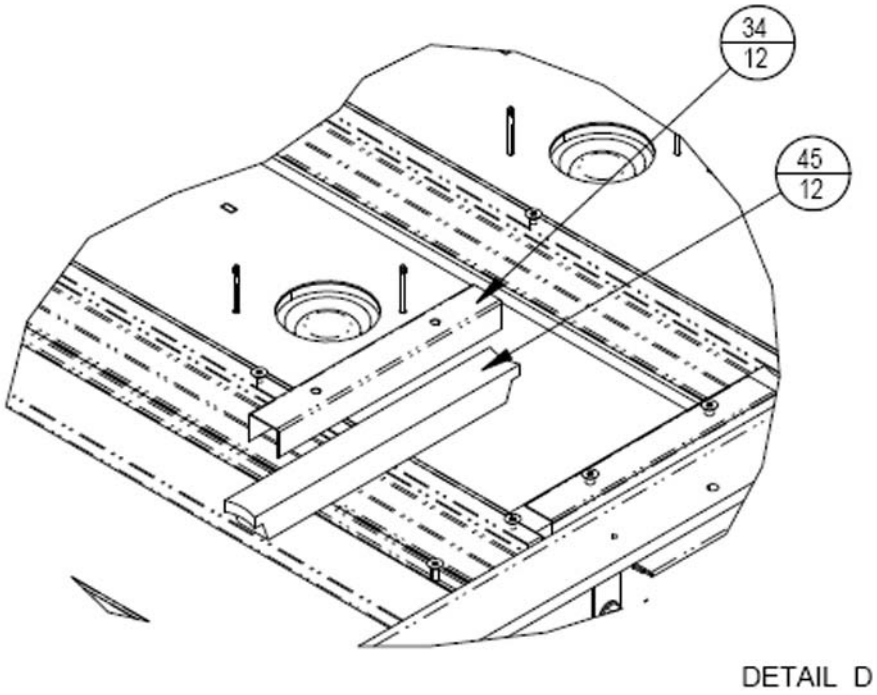
Media-drive motor (see part numbers in Fig. 39. on page 57)

Fig. 37. Service-end of drive roller



Fan array mount (see part numbers in Fig. 39. on page 57)

Fig. 38. User-end fan array mount



Media-drive assemblies part numbers

Note You cannot order all part numbers that are listed. For a list of part number that can be ordered, see "Parts List for Field Replaceable Modules" on page 14.

Fig. 39. Media-drive assemblies part numbers

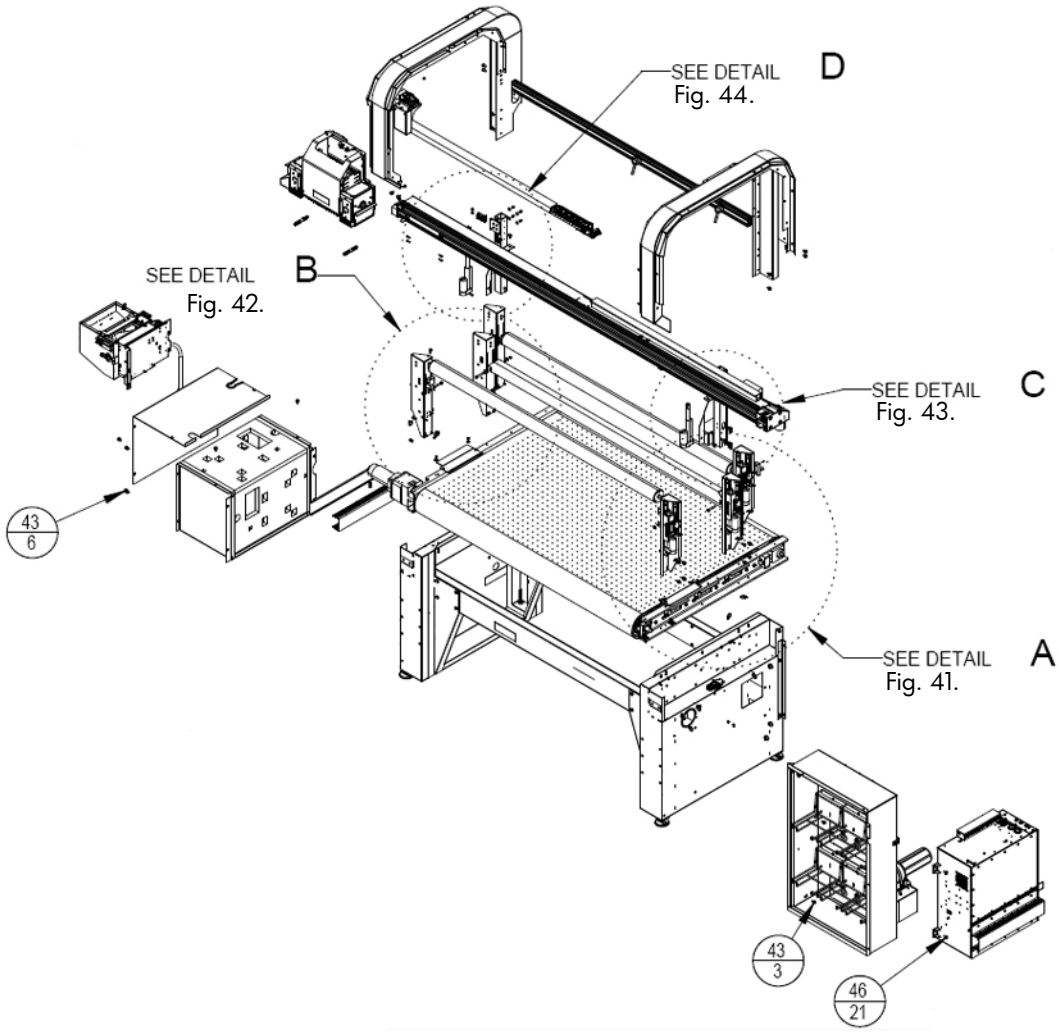
ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	0515-0478	SCREW-SKT-HD-CAP M2.5 X 0.45 12 MM-LG
2	2	0515-1274	SCREW,SHC,M4,0.7_PITCH,18MM_LG
3	2	0515-5368	BOLT,HEX, M20,80MM LG
4	4	0515-5520	SCREW,SHCS,M6x1.0_30MM,LG
5	56	0515-5527	SCREW,HFH,M5,0.8MM_PITCH,12MM_LG
6	1	0960-2778	SNSR,RENISHAW, READ_HEAD,1M_CABLE
7	2	1500-1274	COLLAR,CLAMP,25MM_ID,1.875"_OD
8	5	3030-1244	SCREW,SET,1/2-13_UNC, ,0.5"_LG,SST
9	4	CH153-20008	EXTRN,VAC_BOX,BARRACUDA, SPPT_BEAM,MACH
10	1	CH154-60006	ASSY,MTR,ANACONDA, MEDIA BELT,W/GEARHEAD
11	1	CH971-57425	LBL,HAMMERHD, CPLNG_INST,MTR_MNT
12	1	CH971-62129	GREASE,LITHIUM, HEAVY_DUTY
13	2	CH971-62728	BRG,THRUST,10MM_ID,21MM_OD,SST
14	4	CH971-62733	BRG,RADIAL,25MM_SHAFT,52MM_OD
15	2	CH971-62826	SPACER, 1"_ID,1.5"_OD,0.125"_THK
16	1	CH971-62840	COUPLING,TWO_PIECE, 25MM_SHAFT,8MM_KEYWAY,SST
17	2	CH971-62841	KEY,8MM_x_7MM, 25MM_LG,UNDERSIZED
18	4	CH971-62873	SCREW,SHC,SST,M10,1.5_PITCH,40MM_LG
19	4	CH971-62874	WSHR,LOCK,EXT_TOOTH,ST,METRIC, M10,SST
20	8	CH971-63015	SCREW,SHC,1.0_PITCH,M6,ST, 16MM_LG,BLCK OXIDE
21	2	CH980-00008	TIE_WRAP,LOCKING,NYLON,0.10"_ WD,BLCK,5.75"_LG
22	1	CH980-00009	ADH,LOCTITE,THREADLOCKER, SMALL_SCREW
23	4	CH980-00035	RING,RETAINING,INT,2.0"_DIA
24	2	CH980-00038	HOLDER,TIE_WRAP,ADH,WHITE
25	2	CH980-00042	SCREW,PFH,M4,ST,0.7MM_PITCH, 8MM_LG,BLCK
26	24	CH980-00056	WSHR,SPLIT,ST,METRIC,M8
27	2	CH980-00059	WSHR,FLAT,ST,METRIC, M4,4MM_DIA_SCREW
28	8	CH980-00101	WSHR,LOCK,EXT_TOOTH,ST,METRIC, M6
29	4	CH980-00130	SCREW,SHC,1.0_PITCH, SST,M6,25MM_LG
30	8	CH980-00134	SCREW,SHC,1.0_PITCH, M6,ST,40MM_LG,BLCK
31	3	CH980-00173	SCREW,HEX,M6,SERRATED_FLANGE,12MM_LG
32	24	CH980-00185	SCREW,HEX,M8,1.25_PITCH,25_MM_LG
33	2	CH980-00890	WSHR,FLAT,ST,METRIC,M2.5,2.5MM_DIA_SCREW
34	12	CQ114-00004	BRKT,MEDIA_BELT,KAA, FOAM_MNT,DIVIDER
35	1	CQ114-20001	ROLLER,MEDIA_BELT KAA,IDLER
36	1	CQ114-20003	BRKT,MEDIA_BELT, KAA,MNT PLT,USER
37	1	CQ114-20004	BRKT,MEDIA_BELT, KAA,MNT PLT,SRVC
38	1	CQ114-20005	PLT,VAC_BOX, KAA,PLATEN
39	2	CQ114-20006	BLK,MEDIA_BELT,KAA, ROLLER,ADJ_MNT
40	2	CQ114-20007	BRKT,MEDIA_BELT,KAA, ROLLER,ADJ_BRG,MNT
41	1	CQ114-20047	BRKT,MEDIA_BELT,KAA, MULTI_MTR_MNT
42	1	CQ114-20050	BLK,MEDIA_BELT, KAA,BEARING,MNT
43	1	CQ114-20065	SPACER,MEDIA_BELT, KAA,RENISHAW_SENSOR
44	1	CQ114-40001	BELT,MEDIA_BELT, KAA,VACUUM
45	12	CQ114-40002	FOAM,MEDIA_BELT,KAA, FAN_TRAY_DIVIDER
46	3	CQ114-60006	ASSY,MEDIA_BELT, KAA,VAC_FAN
47	1	CQ114-60117	ASSY,MEDIA_BELT, KAA_64,DRIVE_ROLLER

Exploded views: Media-drive actuator assemblies

Media-drive actuator assemblies exploded views

List of exploded views for actuator assemblies

Fig. 40. Actuator assemblies

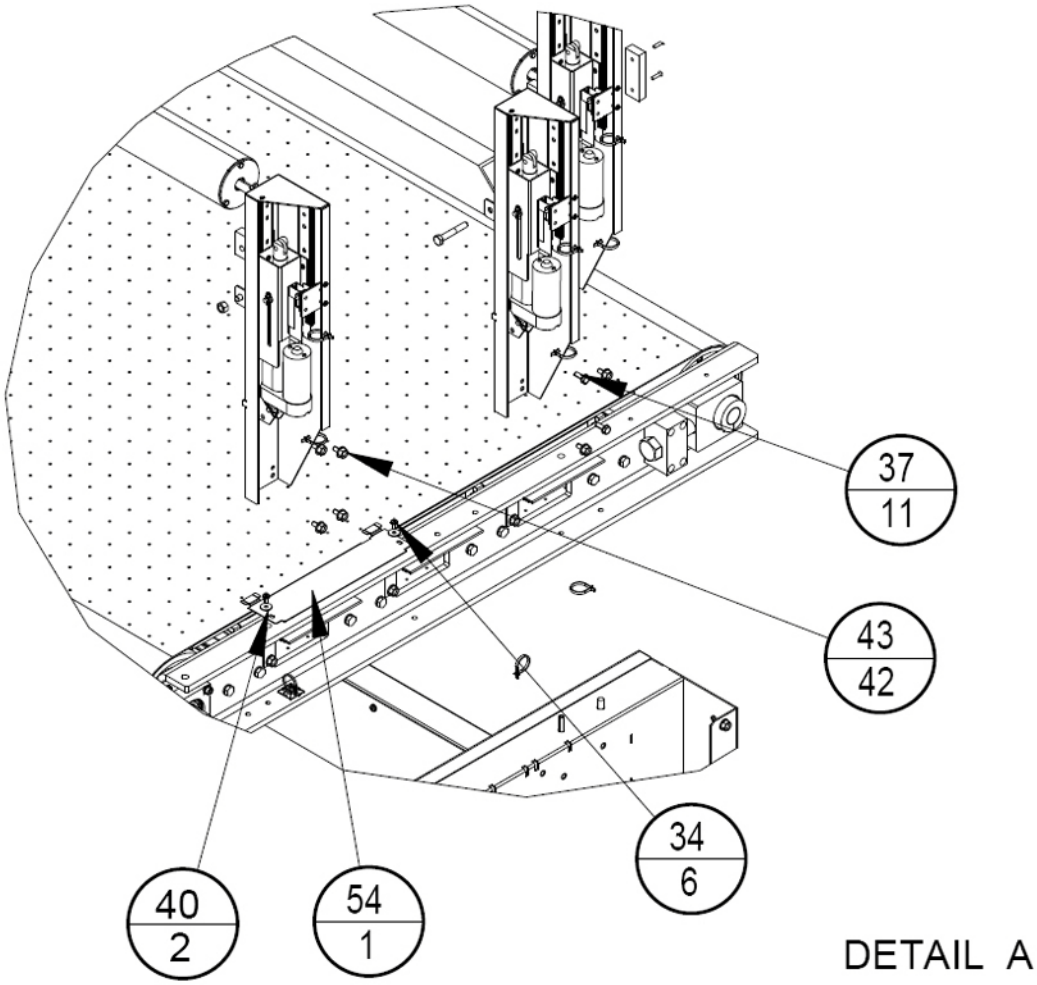


Part numbers for actuator assemblies are in Fig. 45. on page 63.

Note You cannot order all part numbers that are listed. Technical services defines the list of orderable field replaceable parts. Some parts can only be ordered as an assembly.

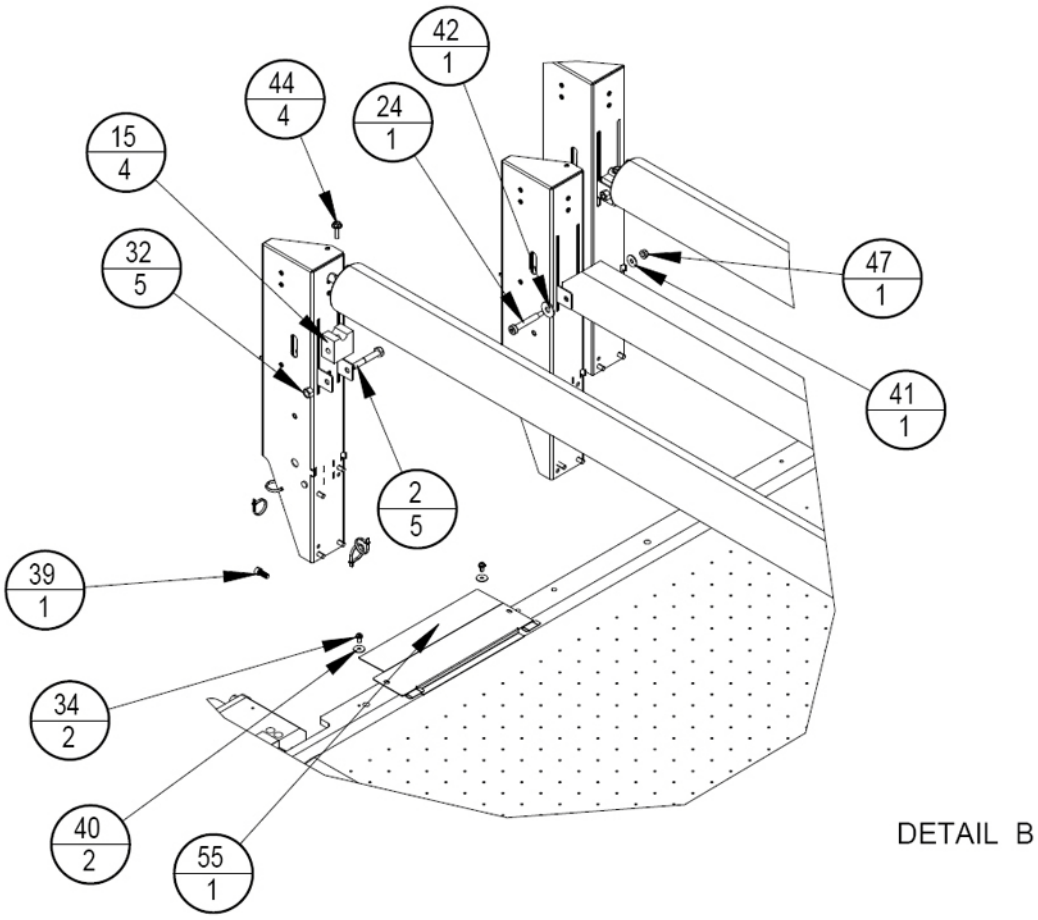
Actuator assemblies for input roller, alignment bar and output roller

Fig. 41. Actuator assemblies on user-end



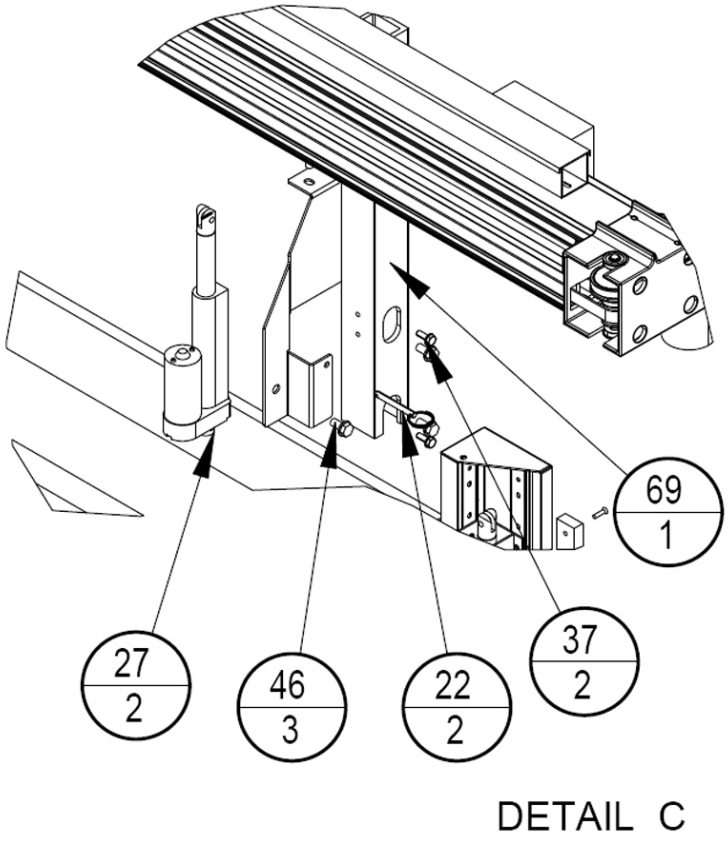
Actuator assemblies for input roller, alignment bar and output roller on the service-end

Fig. 42. Actuator assemblies on service-end



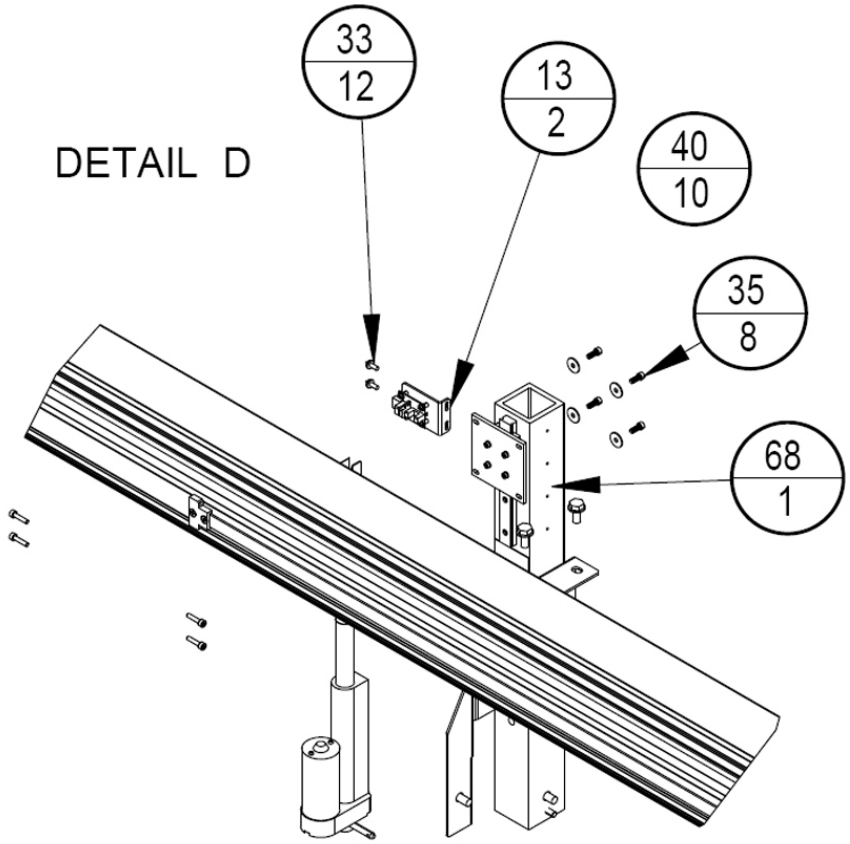
Rail actuator assembly

Fig. 43. Actuator assembly for rail



Rail actuator assembly

Fig. 44. Actuator assembly for rail



Actuator assembly part numbers (Not all part numbers can be ordered)

Fig. 45. Actuator assemblies part numbers

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	4	0515-1274	SCREW,SHC,M4,0.7_PITCH,18MM_LG
2	5	0515-2709	BOLT,HEX,M8,1.25_PITCH, 50MM_LG
3	4	0535-1134	NUT,T-SLOT,M4,WITH_BALL,ST
4	1	0960-2652	VAC,WET/DRY,WW,8_LTR,240V,50/60HZ
5	1	0960-2708	CONN,RENISHAW, TONIC_INTERFACE,15_PIN,20X
6	1	CH153-20063	BAR,ALIGNMENT_BAR, BARRACUDA
7	2	CH153-60035	ASSY,PINCH_ROLLER BARRACUDA,ROLLER
8	1	CH154-00015	BRKT,ENCODER,ANACONDA,SHIELD
9	1	CH154-50005	ASSY,CBL,ANACONDA,SHOP_VAC_EXT,15FT
10	2	CH971-50247	ASSY,SNSR,PHOTOELECTRIC, RETRO,RCVR/EMTR
11	1	CH971-50313	ASSY,CBL,ANACONDA,US_RAIL_MTR
12	1	CH971-52774	BMPR,CARRIAGE_DRIVE,RATTLER
13	2	CH971-57192	ASSY,RAIL_ENCODER,PIRANHA
14	6	CH971-57489	ASSY,HEIGHT_ADJ,ANACONDA
15	4	CH971-57515	BLK,MEDIA_GUIDE,ANACONDA,MNT
16	1	CH971-57529	BLK,PINCH_ROLLER, ANACONDA,ALIGNMENT
17	1	CH971-57556	BRKT,OHS,ANACONDA,SUPPORT_STRAP
18	2	CH971-60072	LAMP,UV_CURE,400W,135V, ,3.2A,R7S,UV-A,MERCURY
19	2	CH971-62205	BUMPER,ADHESIVE_BACKED,DOME_TOP,7/16IN_D
20	2	CH971-62685	BRKT, HEIGHT_ADJ, ALIGN_SENSOR
21	1	CH971-62818	STRAP,EQUIP_BOX,COMPONENT,TIE_DOWN
22	2	CH971-63079	PIN,QUICK_RELEASE, 0.25"_DIA,2.1"_LG,ST
23	11	CH971-63091	MNT,PUSH,CABLE_TIE,2-WAY,EXTRNL,0.18IN_T
24	1	CH971-63095	SCREW,SHC,SHLDR,M6_THREAD, M8_SHLDR,45MM_LG
25	2	CH971-63099	CLAMP,HOSE,1.75"_DIA
26	8	CH971-63101	O-RING,BUNA-N,1.25IN_ID,1.4375IN_OD,0.09
27	2	CH971-63136	ACTUATOR,75MM_STROKE,24_VOLT
28	1	CH980-00009	ADH,LOCTITE,THREADLOCKER, SMALL_SCREW
29	33	CH980-00019	TIE_WRAP,LOCKING,NYLON,0.14IN_WD,BLCK,5
30	2	CH980-00041	SCREW,PFH,M4,ST,0.7MM_PITCH,16MM_LG,W/PA
31	2	CH980-00042	SCREW,PFH,M4,ST,0.7MM_PITCH, 8MM_LG,BLCK
32	5	CH980-00065	NUT,HEX,METRIC,SELF_LOCK,M8, NYLON_INSE
33	12	CH980-00075	SCREW,PPH,SEMS, M4,0.7_PITCH, ST,10MM_LG
34	8	CH980-00081	SCREW,PPH,SEMS,M4,0.7_PITCH, ST,10MM_LG,BLCK
35	8	CH980-00103	SCREW,SHC,M4,0.7_PITCH,12MM_LG,BLACK,W/P
36	5	CH980-00108	SCREW,PPH,SEMS,M5,0.8_PITCH,ST,10MM_LG,BLCK
37	13	CH980-00116	SCREW,HEX,M6, SELF_THREAD, 16MM_LG
38	4	CH980-00120	NUT,HEX,METRIC,KEPS,M4
39	1	CH980-00135	SCREW,SHC,1.0_PITCH,M6,ST,16MM_LG,BLCK
40	12	CH980-00155	WSHR,FENDER,ST, METRIC,M4
41	1	CH980-00156	WSHR,FENDER,SST,METRIC,M6
42	1	CH980-00159	WSHR,FENDER,ST,METRIC,M8,BLCK, 8MM_DIA
43	51	CH980-00173	SCREW,HEX,M6,SERRATED_FLANGE,12MM_LG
44	4	CH980-00174	SCREW,HEX,M6,SERRATED_FLANGE,20MM_LNG,BL
45	4	CH980-00188	PIN,SPR,STL,1/4IN_DIA,1.0IN_LG
46	24	CH980-00206	SCREW,HEX,M8,SERRATED_FLANGE, 16MM_LNG,BLK
47	1	CH980-00219	NUT,HEX,METRIC,KEPS, M6,BLCK,ROHS_COMP
48	4	CH980-00876	WSHR,SPLIT,ST,METRIC,M4
49	1	CQ114-00065	BRKT,PRINTER,KAA, SERVICE,VERTICAL
50	1	CQ114-00066	BRKT,PRINTER,KAA, USER,VERTICAL
51	1	CQ114-00076	BRKT,PRINTER,KAA, CVR_MNT,USER
52	1	CQ114-00077	BRKT,PRINTER,KAA, CVR_MNT,SERVICE
53	1	CQ114-00094	BRKT,RENISHAW_ENCODER_ CONN,KAA,CHASSIS
54	1	CQ114-00135	BRKT,MEDIA_BELT,KAA HOLD_DOWN,USER_ALT
55	1	CQ114-00136	BRKT,MEDIA_BELT,KAA HOLD_DOWN,SRVC_ALT
56	4	CQ114-00137	BRKT,RAIL, KAA,IONIZER
57	1	CQ114-20045	RAIL,CHASSIS,KAA, LOCATOR_PIN
58	1	CQ114-50006	ASSY,CBL,KAA,PRESS/VAC,ADAPTER
59	1	CQ114-50009	IONIZER,RAIL, KAA, 64_INCH
60	1	CQ114-50011	ASSY,CBL,KAA,RENISHAW _ENCODER,ADAPTER

Actuator assembly part numbers, continued (Not all part numbers can be ordered)

Fig. 46. Actuator assemblies part numbers, continued

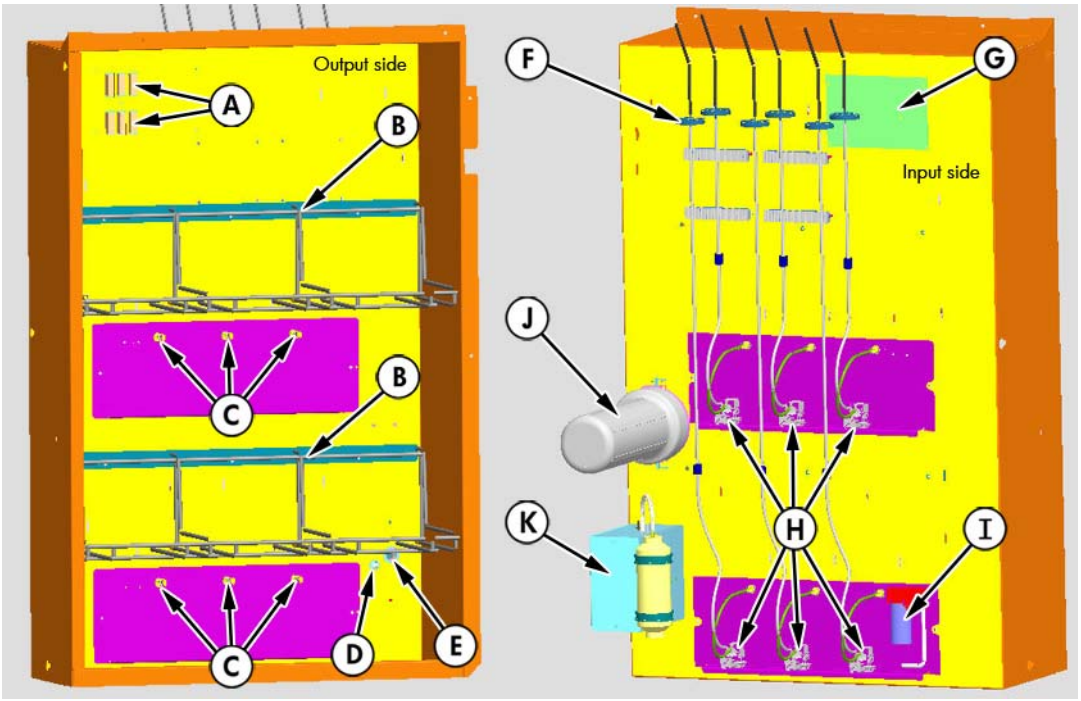
61	1	CQ114-50040	ASSY,LOOM,KAA,SERVICE_SIDE
62	1	CQ114-50041	ASSY,LOOM,KAA,USER_SIDE
63	1	CQ114-50042	ASSY,LOOM,KAA,USER_SIDE_CABINET
64	1	CQ114-60002	ASSY,MEDIA_BELT, KAA
65	1	CQ114-60005	ASSY,FRAME,KAA
66	1	CQ114-60007	ASSY,RAIL,KAA
67	1	CQ114-60013	ASSY,CARRIAGE,KAA
68	1	CQ114-60016	ASSY,RAIL_MTG, KAA,SERVICE
69	1	CQ114-60017	ASSY,RAIL_MTG, KAA,USER
70	1	CQ114-60018	ASSY,IGUS, KAA
71	1	CQ114-60022	ASSY,SRVC STN,KAA
72	1	CQ114-60035	ASSY,ELECTRONICS, KAA
73	1	CQ114-60046	ASSY,OHS,KAA
74	1	CQ114-60079	ASSY,PRINTER, ANACONDA,VAC_BOX
75	1	CQ114-60085	ASSY,BELT,CHASSIS, KAA,219.5IN
76	1	CQ114-60088	ASSY,MOLDED_IDLER, KAA
77	1	CQ114-60090	ASSY,RAIL,KAA, CARR_DRV
78	1	CQ114-60149	ASSY,EBOX, CONDUIT_TOP_3X2,20.00IN
79	1	CQ114-60150	ASSY,EBOX,CONDUIT_ CHANNEL_3X2,20.00IN
80	1	CQ114-60156	ASSY,PRINTER,KAA, CARRIAGE,COVER
81	1	CQ114-60189	ASSY,CHASSIS, KAA,SHRINK_TUBE,1IN
82	1	CQ114-60190	ASSY,CHASSIS, KAA,MESH,VAC,7IN

Off-Head Supply Assemblies

About the OHS (off-head supply)

The OHS (off-head supply) refers the printer's components used to supply and maintain ink for the printheads. It includes the following items:

Fig. 47. OHS Area

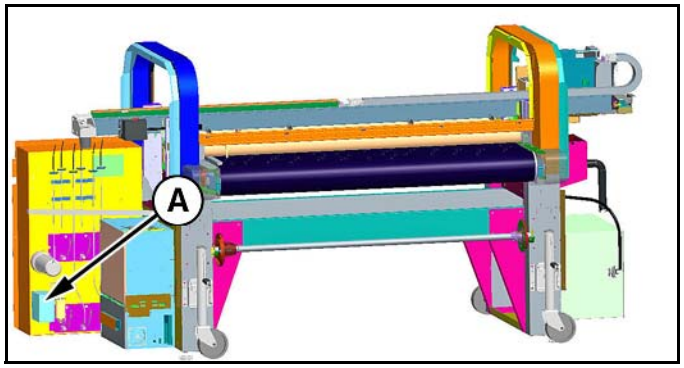


A = Ink profilers
B = Ink box rack
C = Ink tube connection ports
D = Power port for auxiliary vacuum power supply
E = Vacuum regulator adjustment screw
F = Permanent ink filters (one for each ink pump)
G = OHS controller
H = Ink pumps
I = Pressure pump
J = Vacuum accumulator
K = Vacuum assembly

About the vacuum assembly

The vacuum assembly (A in Fig. 48.) is located on the user-end of the printer in the cabinet behind the ink boxes.

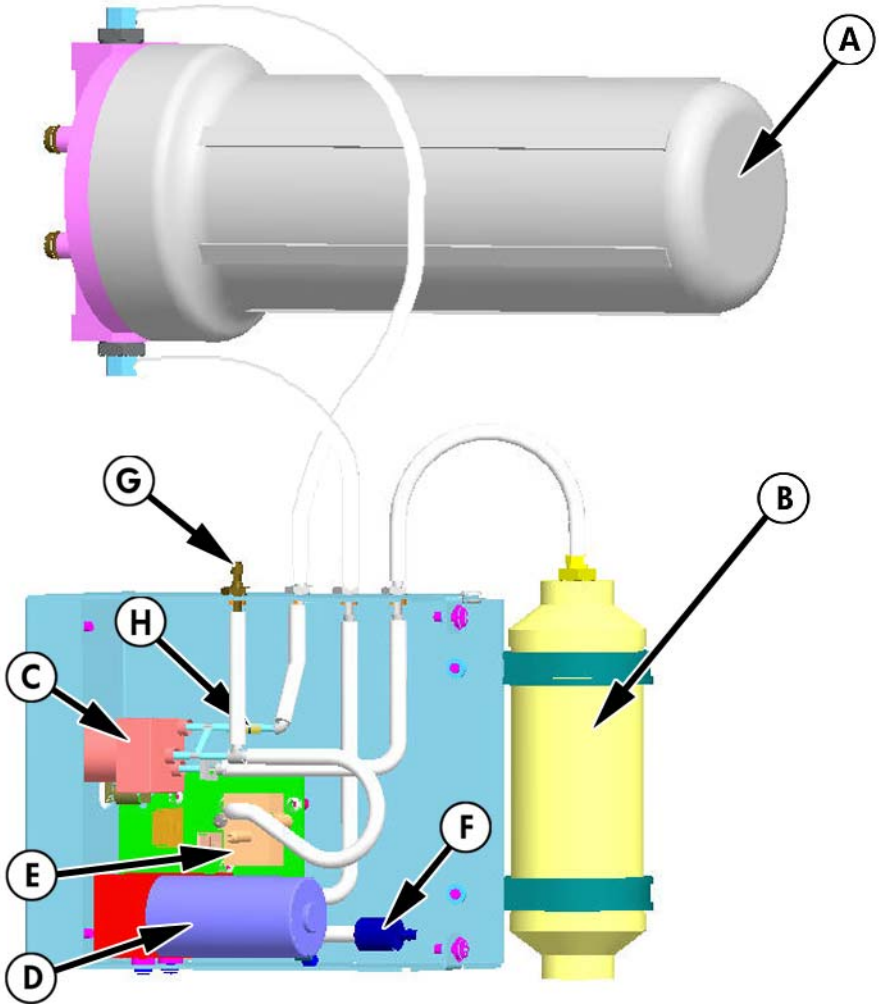
Fig. 48. Location of vacuum assembly



A small amount of vacuum is applied to the printheads to keep the ink from leaking out. It is called “meniscus” vacuum because it causes the upper surface of the liquid to curve up, like fluid being drawn up a straw. This keeps the ink from leaking from the printheads. The vacuum level target for the ink system is between 5 and 5.5 inches of water. A combination of the vacuum pump (D in Fig. 49.) and an air restrictor (H in Fig. 49.) keep the vacuum level constant.

Vacuum assembly diagram

Fig. 49. Vacuum Assembly



A = Vacuum accumulator

B = Air filter for input air

C = Adjustable vacuum regulator

D = Vacuum pump

E = Vacuum sensor

F = Check valve

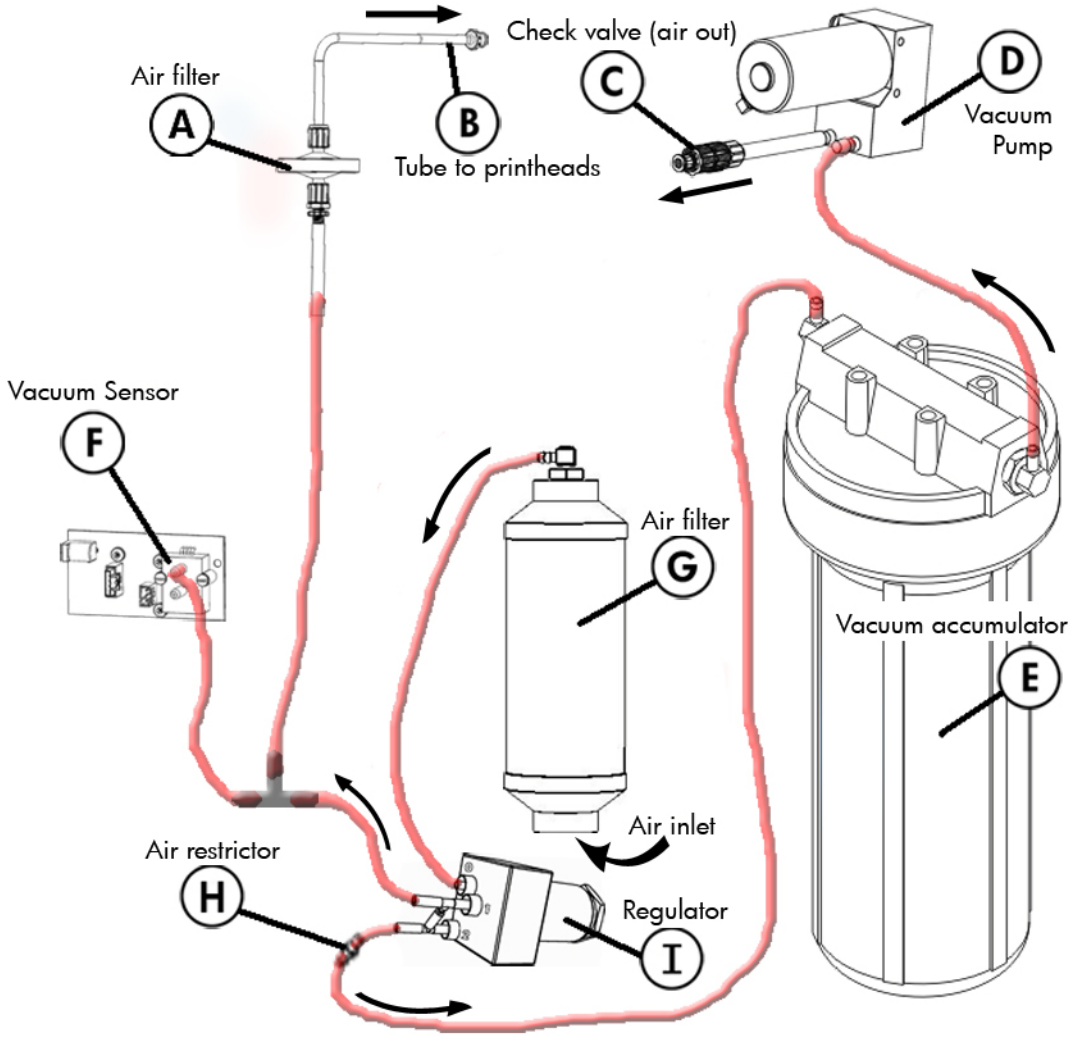
G = Vacuum port that leads to printheads

H = Air restrictor

Vacuum assembly air flow diagram

Air enters the vacuum assembly through the large-white air filter (G in Fig. 50.) and passes through the regulator. The adjustment knob on the regulator regulates how much outside air can pass into the accumulator (E in Fig. 50.). The vacuum pump pumps the air out of the accumulator to create vacuum. Air that is pumped out of the accumulator exits the assembly through the one-way check valve (C in Fig. 50.). The vacuum sensor (F in Fig. 50.) senses the level of vacuum, and triggers the vacuum pump (D in Fig. 50.) to pump out air from the accumulator as needed to maintain vacuum levels.

Fig. 50. Vacuum air diagram



About the vacuum pump

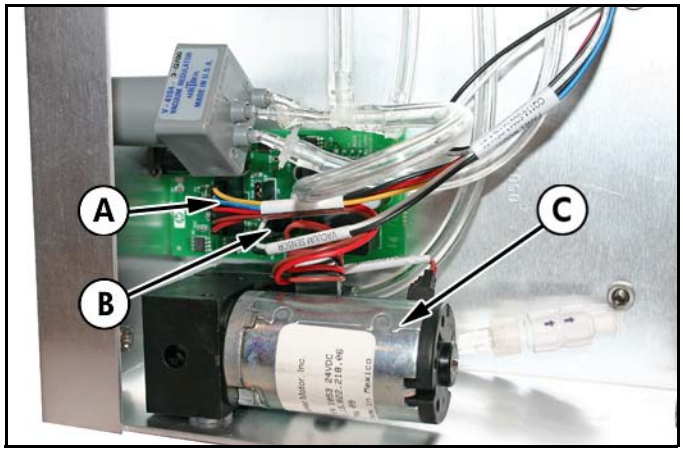
The vacuum pump (C in Fig. 51.), located inside the vacuum assembly, produces a much higher level of vacuum than the ink system needs (about six to seven times more). The vacuum pump pulls air from the vacuum accumulator (E in Fig. 50. - the large blue reservoir) to create the vacuum. Air that is pulled from the reservoir is expelled through the vacuum check valve (C in Fig. 50.) that is attached to the vacuum pump.

Fig. 51. Vacuum pump

A = Vacuum pump motor power

B = Vacuum sensor

C = Vacuum pump motor



About the vacuum regulator

The vacuum regulator (I in Fig. 50.) regulates how much outside air is allowed into the accumulator (E in Fig. 50.). Outside air enters first through a large air filter (G in Fig. 50.) before entering the regulator on its port zero (it has three ports: zero, one and two). Inside the regulator is a flexible diaphragm that responds to the atmosphere on each side of it.

If the vacuum level drops below 5 inches of water, the diaphragm distorts into a curved surface to allow outside air to enter on port zero. The vacuum-level adjustment screw on the outside of the regulator is a long screw that touches the flexible diaphragm. When the vacuum-level adjustment screw is turned, it makes the diaphragm easier or harder to distort. When the screw is turned clockwise (to increase vacuum), it increases pressure on the flexible diaphragm, making it more difficult for the vacuum to distort the diaphragm to let in outside air.

Changes to the vacuum regulator setting only change the vacuum high point (the point at which outside air is allowed into the system to reduce vacuum). Therefore, turning the screw to increase vacuum will not result in a change in vacuum reading until the vacuum level drops and the vacuum pump turns on to build vacuum to its high point.

About the vacuum air-inlet filter

A large air filter (G in Fig. 50.) that is slightly smaller than a soda can (such as a can of Coke or Pepsi) is located on the side of the vacuum assembly. Air is filtered through this before it enters the vacuum regulator on port zero of the regulator. This air filter is a permanent that should not need to be changed for the life of the printer unless the printing environment is unusually contaminated with air debris.

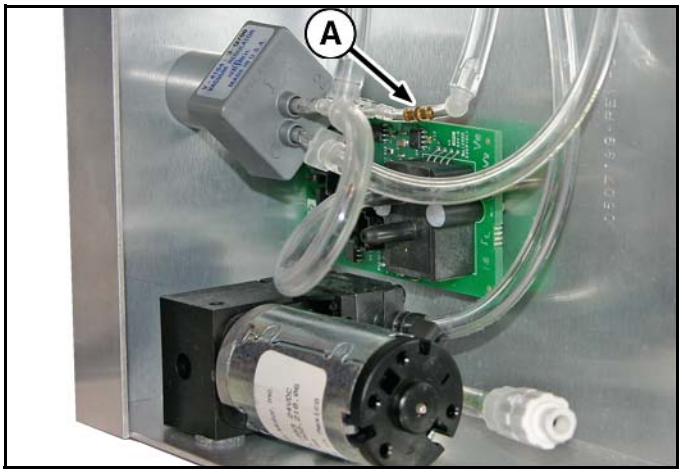
About the vacuum accumulator

The blue vacuum accumulator (E in Fig. 50.) has a tube that connects between it and the vacuum pump (D in Fig. 50.) and another tube that connects between it and the regulator (I in Fig. 50.). A much higher level of vacuum is built up in the accumulator than is needed by the ink system. The vacuum level may be between 35 and 30 inches of water in the reservoir and the printer only needs 5 to 5.5 inches.

About the vacuum restrictor

The restrictor (A in Fig. 52.) is inserted in the tubing between the regulator and the blue accumulator (E in Fig. 50.). It reduces the effect of the vacuum in the accumulator by restricting the possible air flow.

Fig. 52. Restrictor



About the vacuum sensor

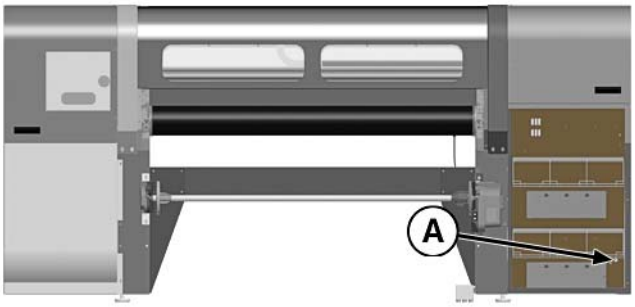
The vacuum sensor (F in Fig. 50.) connects to the regulator from a tube that also branches from the restrictor. This senses the level of vacuum in the system.

About the vacuum assembly power supply

Vacuum must be constantly applied to the printheads or ink will leak from the jet orifices. The vacuum pump receives power from the printer through a cable that plugs into the control board that is shared with the vacuum sensor (F in Fig. 50.). The vacuum pump has an additional auxiliary power supply that can be plugged into a wall outlet or power backup system in case of power loss. The power cord plugs into the printer on the user-end of the output side below the ink boxes (A in Fig. 53.).

Fig. 53. Auxiliary power connection for vacuum assembly

A = Location of the auxiliary power cord



There are two ways to add auxiliary power to the vacuum assembly: Use an extension cord that is plugged into a standard wall outlet, or plug the power cord into a UPS (Uninterrupted Power Supply).

Using a UPS (similar to one that would be used with a personal computer) is recommended. This will safeguard the printer from losing vacuum if the printer loses power. If the printer loses vacuum, the printheads will leak ink into the drip tray.

The power-adapter (A in Fig. 54.) comes with a variety of attachments for local power outlets.

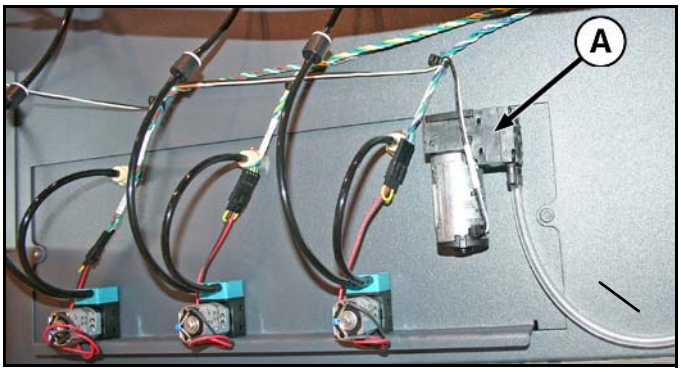
Fig. 54. Auxiliary power connections



About the pressure pump

The pressure pump is located near the lower ink pumps. Viewing it is partially blocked by the electronics box. The purpose of the pressure pump (A in Fig. 55.) is to create enough air pressure to purge the ink out of the printheads during maintenance cleaning of the printheads or when changing to or from a white-ink configuration. Ink is pushed out of the printheads and into the service station. Air pressure is supplied from the ink pump through the air manifold. The manifold connects to the six printhead reservoirs using six tubes. When pressure is needed, a valve switches in the manifold so that specified printhead reservoirs receive pressure instead of vacuum.

Fig. 55. Pressure pump

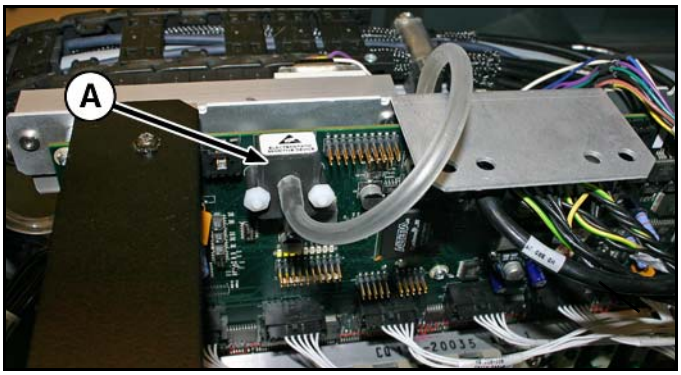


Due to legacy wiring (wiring that remains to support a previous configuration), the power cable for the pressure pump routes to the vacuum assembly, loops inside the vacuum assembly housing and back out before going the to I/O controller in the main electronics box. However, the wiring does not connect to the control board inside the vacuum assembly. This routing may change.

About the pressure sensor

The pressure sensor (A in Fig. 56.) is mounted on the top of the carriage headboard. The main purpose of the pressure sensor is for diagnostics (checking for pressure leaks).

Fig. 56. Pressure sensor location

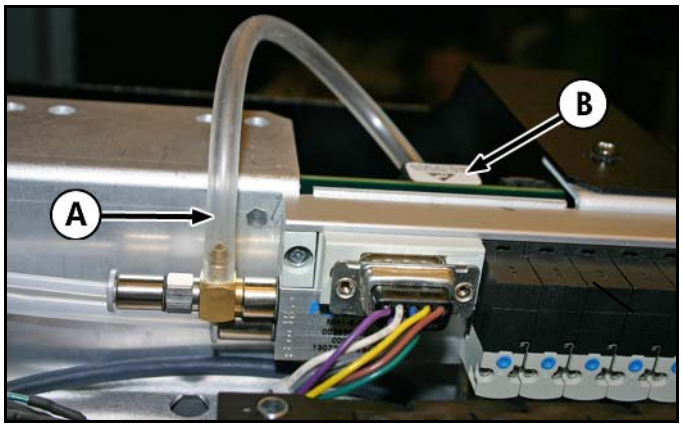


A pressure tube (A in Fig. 57.) branches from the air manifold (on the input-side of the carriage) and connects to the pressure sensor (B in Fig. 57.) on the headboard. The pressure sensor can detect leaks for each ink reservoir by pressurizing the reservoir and monitoring the rate of pressure decay.

Fig. 57. Pressure sensor

A = pressure tube

B = Pressure sensor

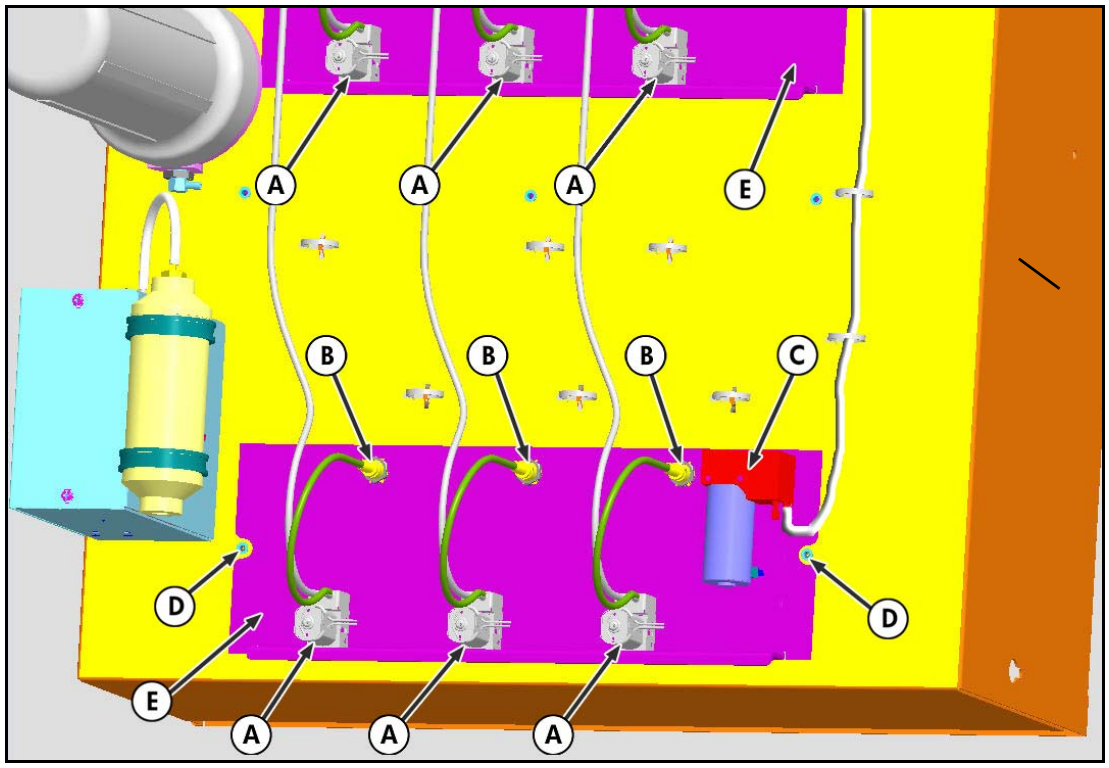


About the ink pumps

The ink pumps (A in Fig. 58.) are located inside the OHS housing behind the ink boxes. They are mounted to removable plates (E in Fig. 58.) that are accessible by removing two screws (D in Fig. 58.) The pumps turn on when the ink levels in the printhead dip below a certain level. The ink pumps are diaphragm pumps with a dual membrane having two o-ring barriers separating two chambers. On the inlet side, a piston pulls ink into the pump from the ink tube (B in Fig. 58.) that connects between the ink box and the pump. The chamber seals and the second chamber opens, allowing the piston to pump the ink toward the printheads. The outlet chamber closes and the process repeats until the printhead has received adequate ink to cover its ink thermistor (when the thermistor is not covered with ink, it causes the pump to activate).

The ink pumps are capable of pumping ink much faster than is desired to fill the printheads. Therefore, the pumping is slowed (time sliced) to keep the printhead from filling so quickly that the vacuum level in the printheads is interrupted (which could cause a ink to leak).

Fig. 58. Ink pumps



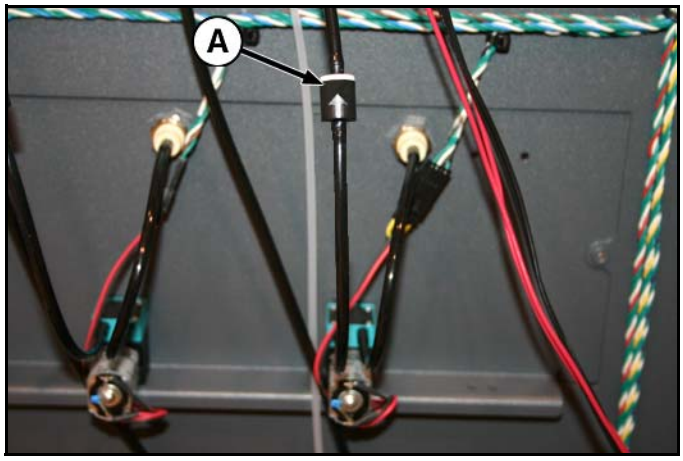
About the ink-pump check valve

The ink-pump check valve (A in Fig. 59.) is installed between the pump and the permanent ink filter (located above the ink pump). The check valve makes sure that the ink can only flow one direction- toward the printheads. There is an arrow on the check valve that indicates the direction of flow.

Because the printheads are located above the ink boxes, the ink could siphon back toward the ink pumps during periods of non-printing. The check valve keeps this from happening.

Fig. 59. Check values

A = Check valve that only allows ink to flow in one direction (away from the pumps)

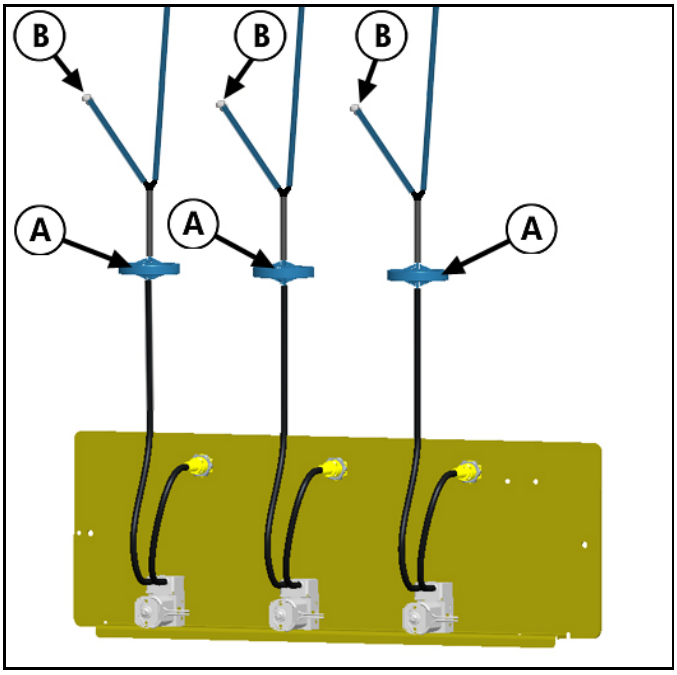


About the permanent ink filters

The permanent ink filters (A in Fig. 60.) that are located above each ink pump make sure that no contaminants from the ink or ink pump enter the ink tubes, which would clog the printhead jets. These filters are expected to last the life of the printer (unless a contaminant clogs the filter). The permanent ink filters have an "inlet" side and an "outlet" side, and the must be installed in the proper orientation. The word "inlet" is printed on the side of the filter that should face toward the ink pump.

Above each permanent ink filter is a Y-split in the tube, and a short section of tubing with a stainless steel tube cap (B in Fig. 60.). This small section of tubing is used during assembly of the ink system. You should never remove the stainless steel tube cap, as it is pressed on with a special tool and is not meant to be removed. You will never need to use this tube during a service procedure.

Fig. 60. Y-split in ink tube



About the ink

The printer uses six ink colors in a CMYK (Cyan, Magenta, Yellow and Black) configuration with additions of light magenta and light cyan to expand the color gamut. There are 12 printheads, two printheads per color. The ink uses high-intensity ultraviolet light curing to cure its position on the media. When white ink is installed, the printer does not use light-cyan ink because white ink is installed in the light-cyan position.

About the tubes

The ink is delivered to the carriage ink reservoirs by ink tubes from the ink boxes. The tubes travel up to the flexible track assembly and down to the carriage ink reservoirs.

Vacuum is created within a vacuum reservoir and a tube connects the vacuum reservoir to the air manifold (also traveling through the track assembly). From the air manifold (located above the carriage trolley), six vacuum tubes connect to the carriage ink reservoirs to maintain the meniscus vacuum levels within the ink system.

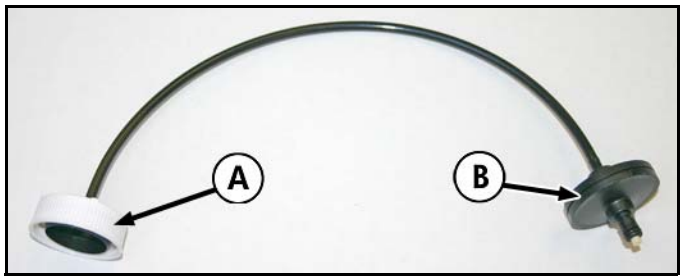
A tube runs from pressure pump through the track assembly and up to the air manifold located above the carriage trolley.

About the ink boxes

The ink boxes for black, magenta, cyan, yellow, light cyan and light magenta are filled with 3000 ml of ink. The optional white ink is filled with 2000 ml of ink (amounts are subject to change). The ink is in a plastic jug inside of a cardboard box. The plastic jug has a tube inserted through the screw-on cap. This tube assembly is called the "pigtail." The pigtail consists of a tube that connects through a screw-on cap (A in Fig. 61.) to a stopper on the ink jug end and a large ink filter (B in Fig. 61.) on the end that connects to the ink-pump tube port. The pigtail for the white ink has a split in the tube so that the ink tube can connect to two ink-pump tube ports (for white ink use, the light cyan and light magenta inks are removed and replaced with one box of white ink).

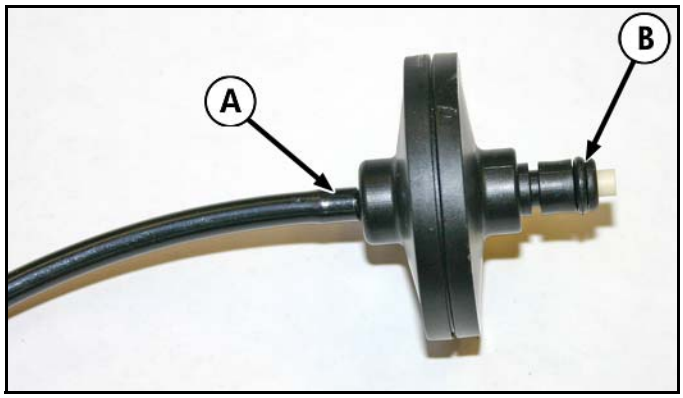
Fig. 61. Ink box pigtail

Note: Appearances may vary



The pigtail design changed slightly in 2010. Previously, the pigtail connected to its ink filter using twist-on Luer fittings. To remove the possibilities for leaks from loose fittings, Luer fittings have been replaced with push-on barb fittings (A in Fig. 62.). There are now no Luer fittings used for any ink tube connection in the printer.

Fig. 62. End of pigtail



Ink boxes are attached to the OHS (off-head supply) system by connecting the ink box pigtail nozzle (B in Fig. 62.) to the ink pump connection port (A in Fig. 63.). There is an ink port interface behind each ink box, into which the ink box pigtail plugs.

The level of ink in the box is stored on the ink profiler and can be viewed on the printer's menu. Ink levels are estimated by calculating the amount of ink jetted from the printheads during printing and the amount expelled during an ink purge over the service station. The estimation is based on average expected drop size and average expected ink purges. The ink system will allow a slight percentage above the expected 100% ink level in the ink box to be pulled from the ink box to account for the possibility of over estimating ink use. However, the estimation is close enough that the ink system will never allow the printheads to under fill and de-prime (run dry).

Fig. 63. Ink box install

A = Ink port where ink boxes are plugged in



About the profilers

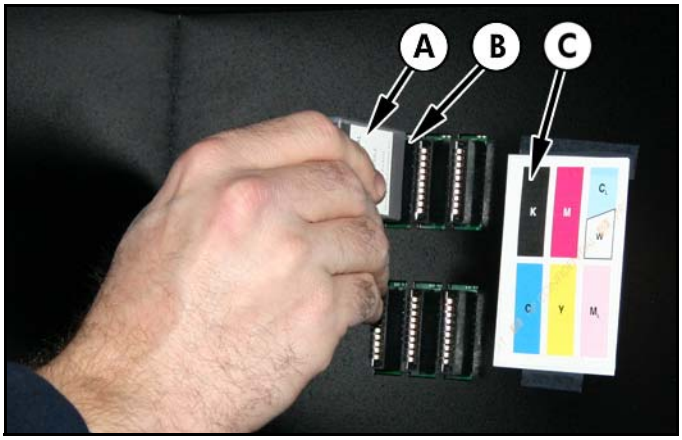
Each new box of ink has an included device called a "profiler" (A in Fig. 64.). The profiler plugs into the printer near where the ink boxes are installed. When the printer is operating, there will be 6 profilers installed (or 5 when white ink is in use). The profilers pass information about the newly installed ink to the printer, including information on the type and color of ink. This is to prevent the wrong type of ink being installed into the printer. The profilers also store estimated ink level data. This allows ink boxes to be removed after partial use and later replaced (for example, when changing to white ink). Ink level tracking is important so that the printheads do not de-prime (run dry of ink).

Fig. 64. Profilers

A = Ink profiler

B = Profiler slot

C = Diagram showing which profiler plugs into which slot



About the white ink option

When installing the white ink option, a profiler is inserted into one of the ink profiler slots to act as a dongle for the white-ink option installation. After the installation of the option, the profiler (dongle) is removed from the printer. The profiler cannot be used on another printer to enable the white-ink option. It is for one-use only. Boxes of white ink ship with an ink profiler that serves the same purpose as the other ink profilers. The white ink profiler is not a white-ink installation dongle.

About the ink homogenizer (shaker)

The ink homogenizer is used to shake the white ink box. White ink is an optional addition to the printer. The homogenizer is placed beneath the white ink box and shakes the ink at preset intervals. Shaking is needed because the white ink pigments settle over time. The homogenizer plugs into the OHS controller (Fig. 65.) through a hole in the ink cabinet.

Fig. 65. Ink homogenizer

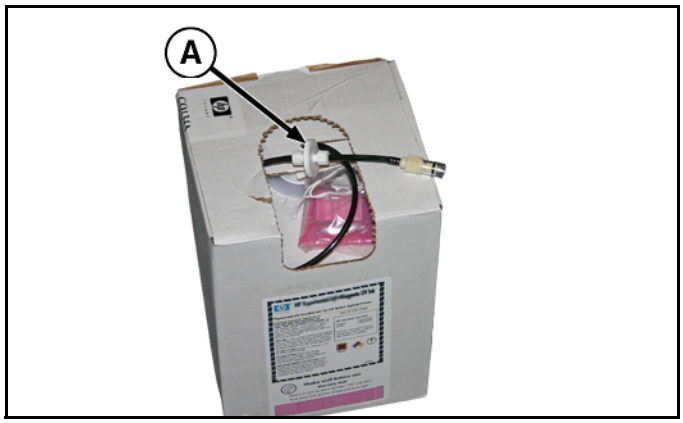


About the ink-box filters

There is a filter (A in Fig. 66.) attached to each ink box (supplied with each new box of ink). The ink passes through the filter before traveling to the printhead. This ensures that no debris will enter and clog the printheads from the ink boxes.

Fig. 66. Ink-box filters

A = ink filter

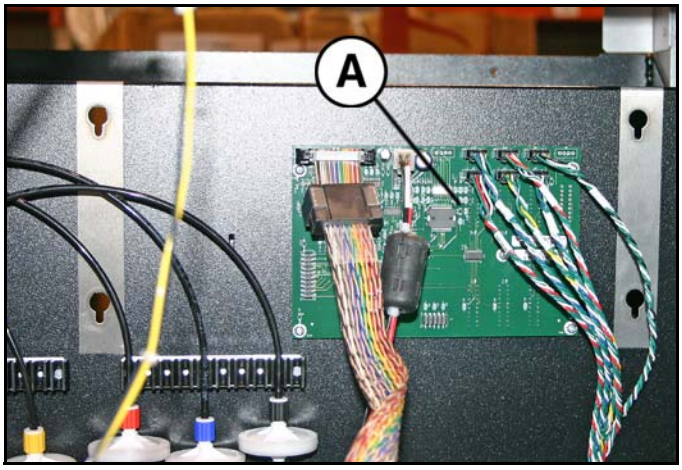


About the OHS controller

The OHS controller is located above the ink pumps in the user-end enclosure. The ink profilers plug into it. It reports profiler information to the ink system. Data is exchanged with the OHS controller through the larger ribbon cable. Power is supplied to the controller board by the 4-pin power cable.

Fig. 67. Ink-box filters

A = OHS controller



The OHS controller in this printer is similar but not identical to previous generations of printers. There are two extra connectors (one of the connectors provides power for the ink shaker).

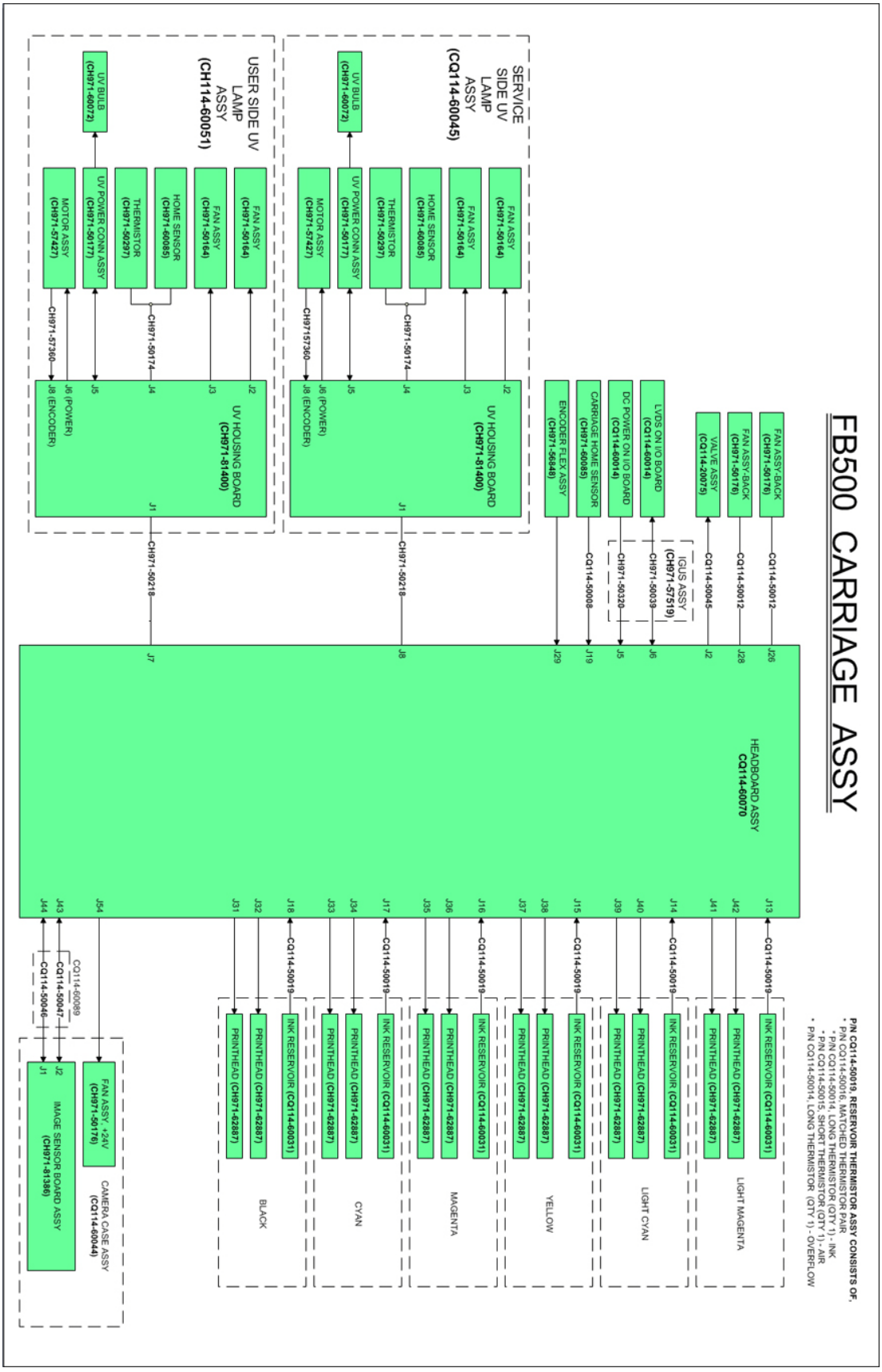
Carriage

The carriage assembly rests on the rail using four wheels at the top (two on each side) of the carriage and one wheel in the middle near the bottom. The carriage contains 12 printheads that jet ink onto the media and two UV lamps that quickly cure the ink with high-intensity ultraviolet light. The carriage can print bi-directional or mono-directional. The height of the carriage above the media is adjustable.

Wiring diagram for FB500 Carriage Assembly

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Fig. 68. Wiring diagram for FB500 carriage assembly



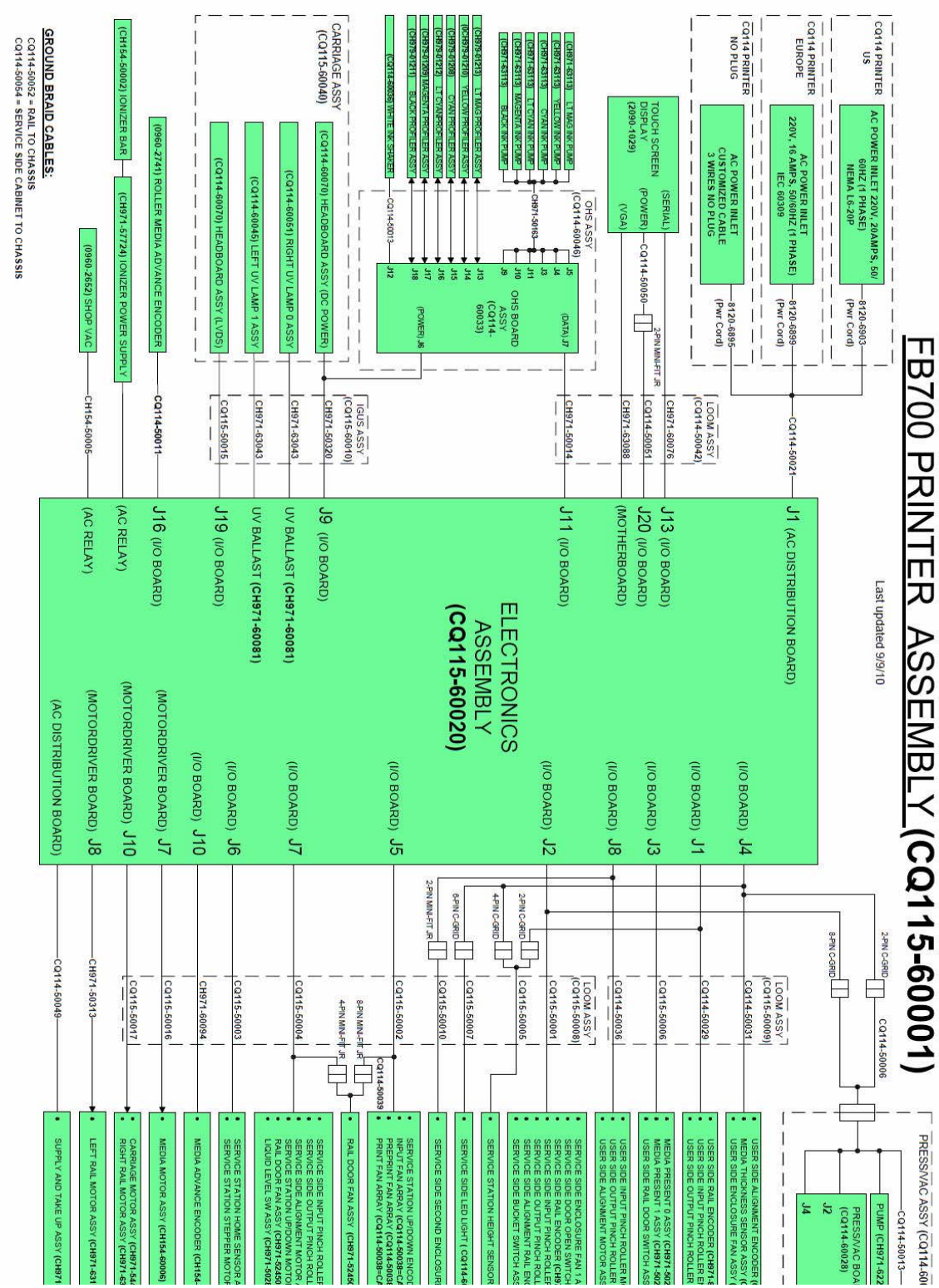


Fig. 69. Wiring diagram for FB700 carriage assembly

About the carriage head height

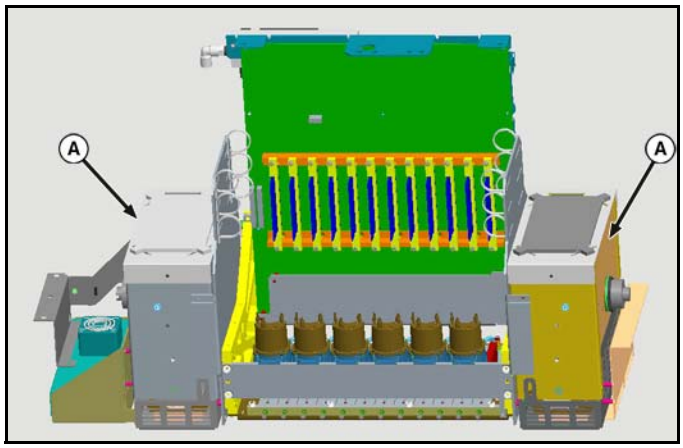
The carriage operates at a default head height set to 2.2 mm (0.085-in) above the media. (The space below the carriage will measure 1.778 mm (0.070 in) due to the printhead protection frame around the outside of the carriage.) The head height can be adjusted up or down at the control panel (Printer Settings > Head Height Off Media). Automatic head-height adjustment and patent-pending shuttered UV lamp system allow the printer to accept rigid sheet-fed media up to 6.35 cm (2.5 in) thick.

About the lamps

There are two UV lamps (A in Fig. 70.)- one mounted on each side of the carriage. These high-intensity lamps discharge ultraviolet light waves at an optimized wavelength for curing the ink. Each lamp has a built-in shuttering system that consists of an actuator (B in Fig. 71.) that moves the bulb reflector (C in Fig. 71.) so that light either shines out of the bottom of the lamp or not. The moving of the reflector acts to shutter the bulb. The bulb is shuttered any time that the carriage is no longer over the print zone. The print zone is defined by the camera when it measures media width during the "load media" routine.

Fig. 70. Lamps

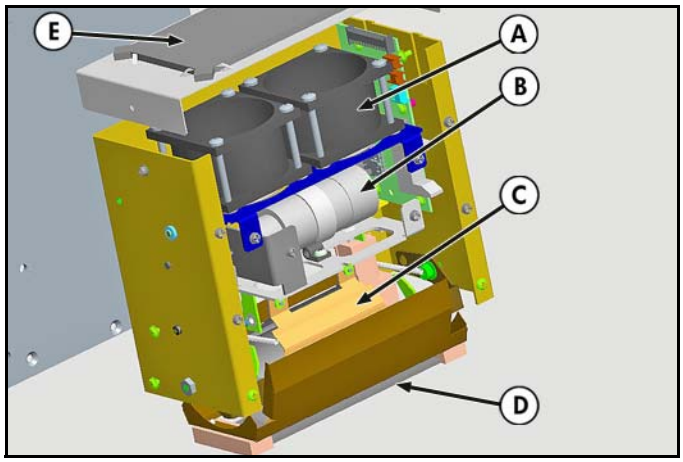
A = UV lamp assemblies



The lamps have fans (A in Fig. 71.) mounted above the UV bulbs. The fans are needed periodically to cool down the bulbs and to keep the shutter actuator (B in Fig. 71.) cool. The fans speed is highest during the lamp cool-down phase after printing completes. There is a thermistor inside each lamp to report temperature to the carriage headboard, which controls fan speed.

Fig. 71. Lamp exploded

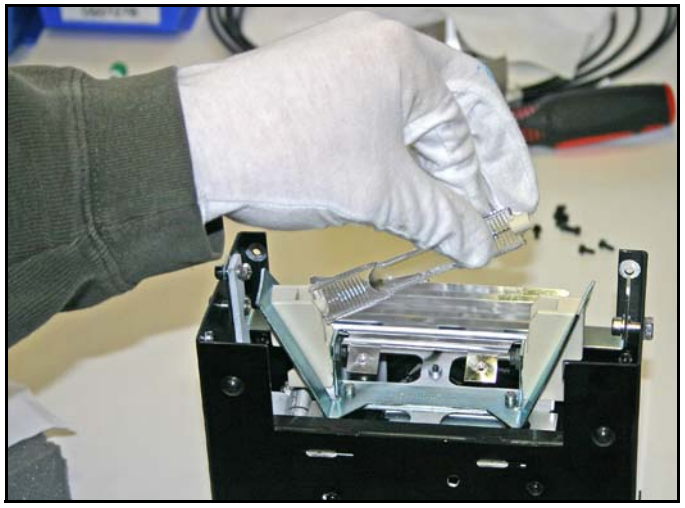
A = Cooling fans
B = Lamp bulb
C = Reflector
D = Lamp glass
E = Air filter



About the lamp bulbs

UV bulbs have a life expectancy of 500 hours and can be extended approximately 500 more hours by changing the default intensity setting from the printer's menu. When the ink begins not to cure as well (ink may rub off) due to an aging bulb, the UV energy intensity can be increased.

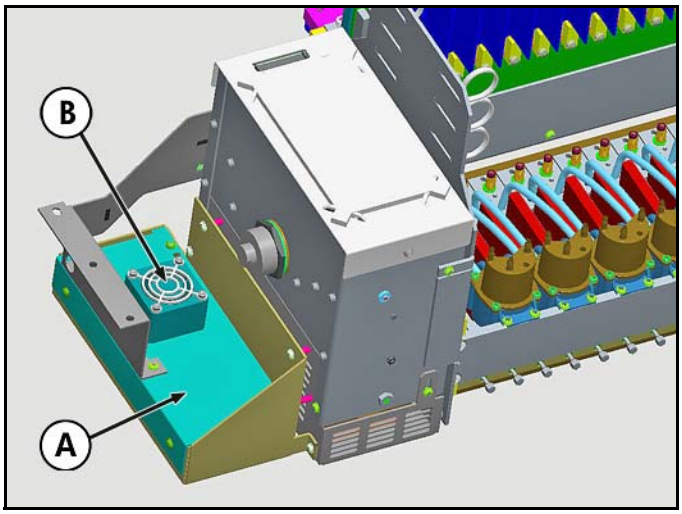
Fig. 72. Lamp bulb



About the camera

The carriage camera is mounted on the service-side of the carriage (A in Fig. 73.). It has a cooling fan (B in Fig. 73.) mounted on top of the camera enclosure to keep it cool.

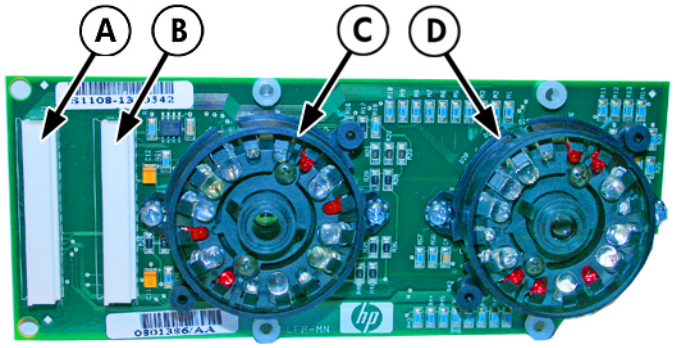
Fig. 73. Camera location



The camera (image sensor) is used to find the edges of the media and for various calibration procedures. The camera looks for white media to contrast the white media with the dark color of the belt. The camera cannot detect transparent media or black media.

Fig. 74. Camera board

A = J1, plugs into J44 on headboard
B = J2, plugs into J43 on headboard
C = photo diode (not current in use)
D = Camera (image sensor)

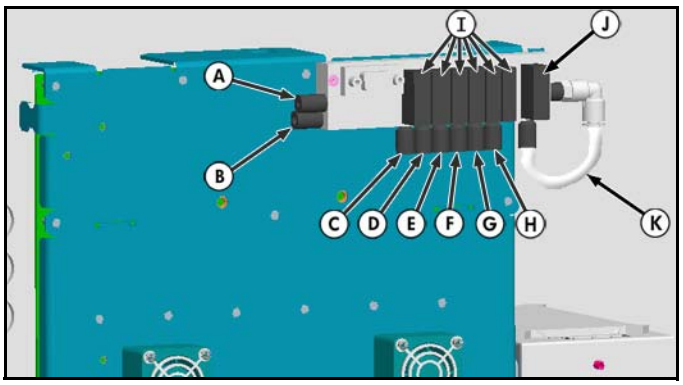


The camera board has a camera (D in Fig. 74.) and a photo diode (C in Fig. 74.). Currently, the photo diode is not used by the printer. The flex cable slots (Zif -- zero insertion force -- sockets) are labeled J1 (A in Fig. 74.) and J2 (B in Fig. 74.).

About the air manifold

The air manifold is located on the back of the carriage (the input-side). The purpose of the air manifold is to switch from vacuum to pressure for the printheads. On the inlet side of the air manifold, it has two tubes: one from the vacuum assembly and a one from the pressure pump. On the outlet side of the manifold, there are six tube connectors. Each connector has a tube that splits and connects to each pair of printheads (there are six pairs of printheads- one pair for each color).

Fig. 75. Air manifold



A = Pressure line port

B = Vacuum line port

C = Air port for black

D = Air port for cyan

E = Air port for magenta

F = Air port for yellow

G = Air port for light cyan

H = Air port for light magenta

I = Valves that allow pressure or vacuum to printhead reservoirs

J = Valve that switches from pressure to vacuum

K = Pressure tube

When the carriage moves over the service station for an ink-purge-and-clean, the manifold switches from vacuum to pressure. Just before the switch, the ink system instructs the pressure pump to build additional pressure. The manifold switches to pressure and a quantity of ink from all printheads is expelled into the service station.

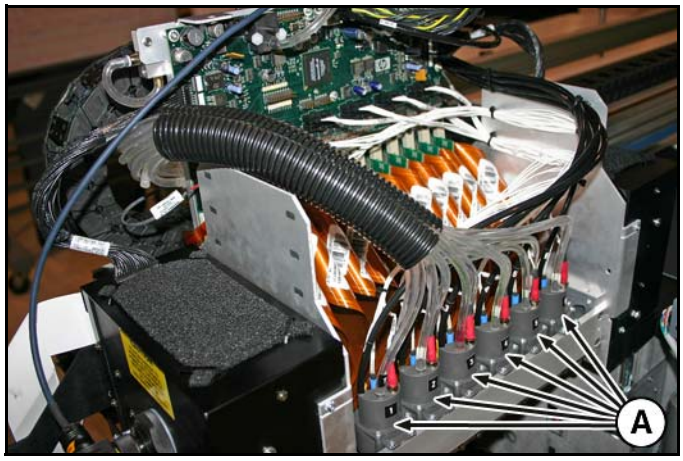
About the carriage ink filters

There are filters between the manifold and the printhead that prohibit ink from flowing up from the printhead into the air manifold. If ink reaches the air manifold, the manifold must be replaced. These filters are also air filters that will trap any debris that may enter the printheads. The filters keep air-borne debris from circulating through the air system.

About the printhead reservoirs

The six printhead reservoirs (A in Fig. 76.) are located in the carriage assembly mounted above the 12 printheads. Ink tubes from the ink boxes supply the six printhead reservoirs with ink.

Fig. 76. Reservoirs



The reservoirs are not mounted on the printheads but are connected to the printheads by short tubes (G in Fig. 77.).

There are six items connected to the ink reservoirs: three thermistors (B, E and F in Fig. 77.), one ink tube (D in Fig. 77.), and two vacuum tubes (A and D in Fig. 77.).

Fig. 77. Reservoir ports

A = Vacuum port

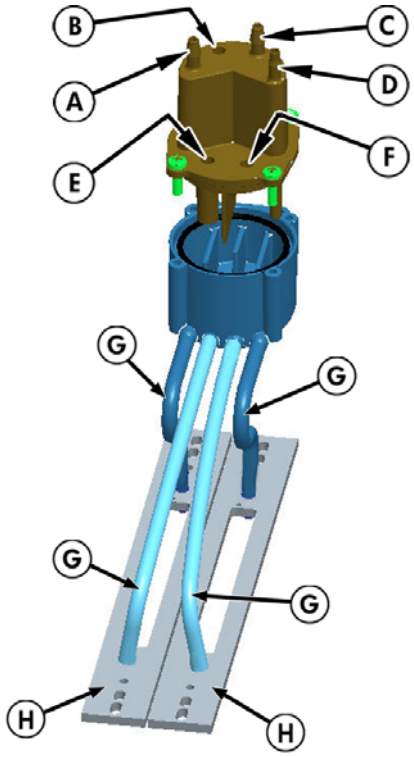
B = Overfill thermistor (red)

C = Vacuum port

D = Ink port

E = Air thermistor (blue)

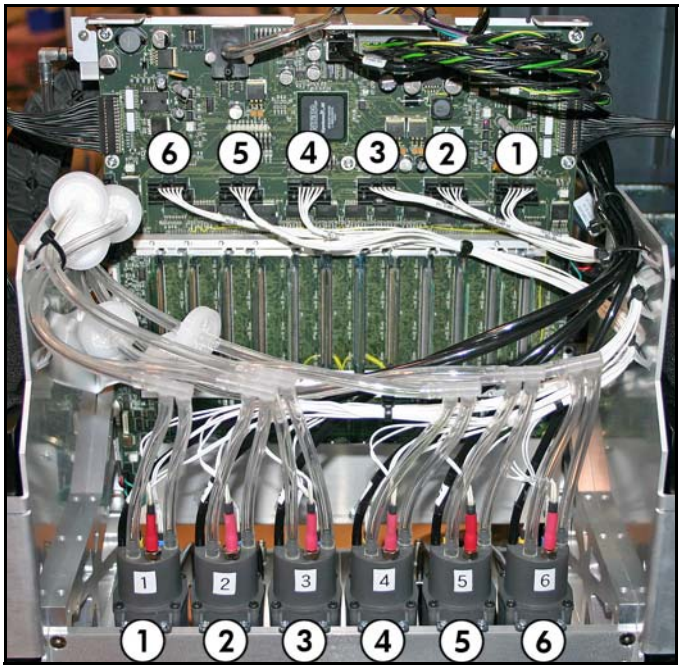
F = Ink thermistor (yellow)



About the thermistors

There are three thermistors installed in the printhead reservoirs. These three thermistors are bundled together in the same wiring harness using a single connection that plugs into the carriage headboard. All thermistor wiring harness are the same length; therefore, the thermistor for printhead one plugs into the headboard thermistor location that is furthest from reservoir one.

Fig. 78. Thermistor locations



The three thermistors are color coded with a band of colored plastic near the reservoir entry location. The yellow ink-temperature thermistor and the blue air-temperature thermistor are calibrated (matched) to report the same temperature when suspended in air at a location near each other. The thermistors have a bulb on the tip of each thermistor that is sensitive to temperature. The thermistors are temperature-sensitive resistors. Current is passed through all three thermistors to heat them. As the temperature goes up, the resistance goes down. It is the amount of resistance that is measured.

- The blue thermistor (reference thermistor) is always suspended in air.
- The yellow thermistor (ink thermistor) is suspended in the ink inside the reservoir.
- The red thermistor (overfill thermistor) is suspended in air, but it is at a higher elevation than the blue reference thermistor that is also in air.

When ink is used by the printhead and the reservoir level drops, the ink thermistor is exposed to air. Because all of the thermistors are being heated slightly, the lack of ink causes the temperature to rise on the ink thermistor. As the ink thermistor heats up, its resistance drops. This signals the ink system to turn on the ink pump. Ink will continue to pump into the reservoir until the ink thermistor is covered with ink, which cools the thermistor down and increases the resistance in the thermistor reading. If the ink system pumps for longer than normal (5 to 25 seconds, depending on what the printer is doing), the ink system will detect that something has gone wrong and ink is not reaching the ink reservoirs as expected (for example, if an ink pump malfunctions).

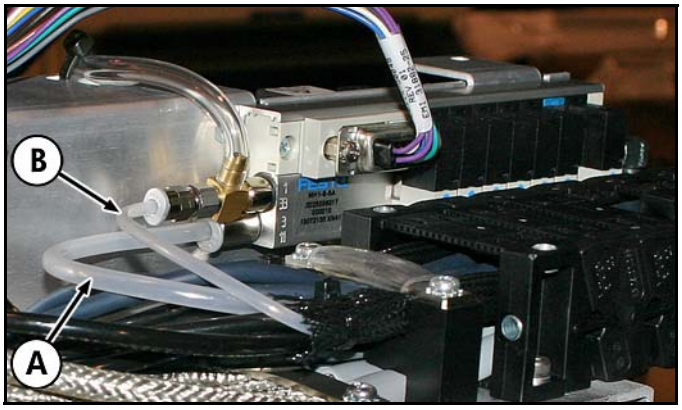
If ink reaches the overfill thermistor, the ink system immediately turns off the ink pumps.

About the vacuum tubes

There is one single vacuum tube that connects between the vacuum pump assembly (located inside the user-end enclosure) and the air manifold (located behind the carriage headboard mounting plate). There are six vacuum tube ports on the air manifold that service the six ink reservoirs. Each vacuum tube coming from the air manifold splits using a short dual-tube assembly. The two tubes that split from the single port are both connected to the same printhead reservoir.

Fig. 79. Vacuum tube location

A = Pressure tube
B = Vacuum tube

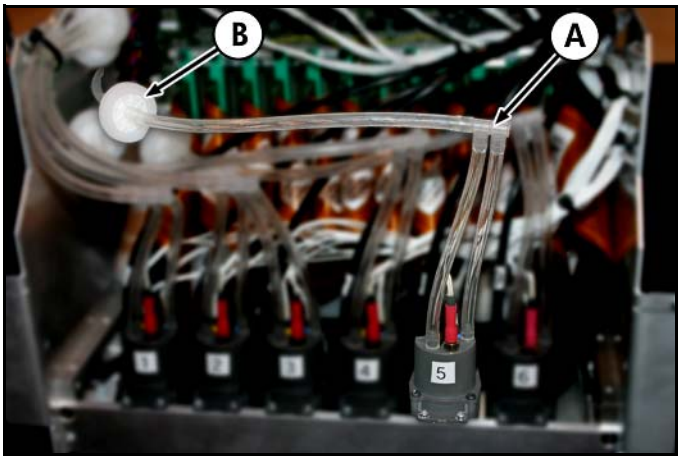


About the vacuum tubes, split

The vacuum tube splits (A in Fig. 80.) and connects to two locations on the same reservoir. This is to protect against ink overfills. If the reservoir is overfilled for any reason, ink will be sucked up into a vacuum tube. The second vacuum tube can suck the ink back down, keeping it from progressing up the tube. If this fails, and ink is sucked up both tubes, the ink will run into the filter (B in Fig. 80.) located between the dual tubes and the air manifold. This filter should keep ink from proceeding into the air manifold. If ink ever enters the air manifold, the manifold must be replaced.

Fig. 80. Split vacuum tube

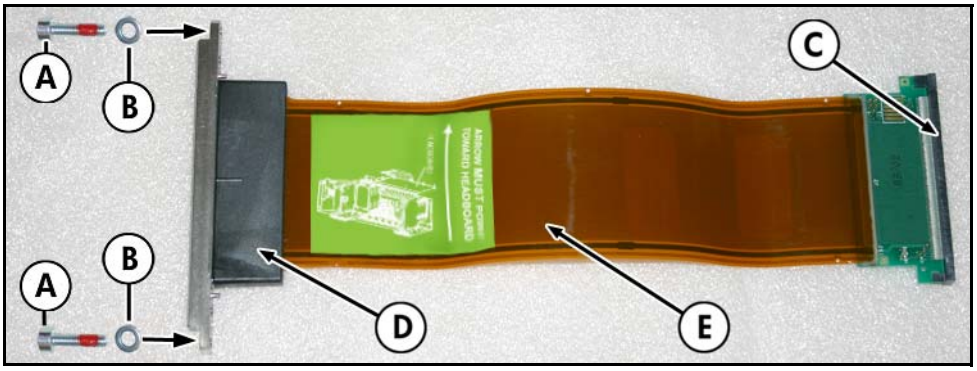
A = Split vacuum tube
B = Ink-blocking filter



About the printheads

There are 12 printheads in the carriage assembly (two printheads for each color of ink). The printheads use cyan, magenta, yellow, black, light cyan and light magenta. The printer can also use white ink. In this case, the two light cyan and two light magenta printheads are flushed of ink and replaced with white ink. The printheads have a built-in heater that receives power through the flex cable.

Fig. 81. Printhead



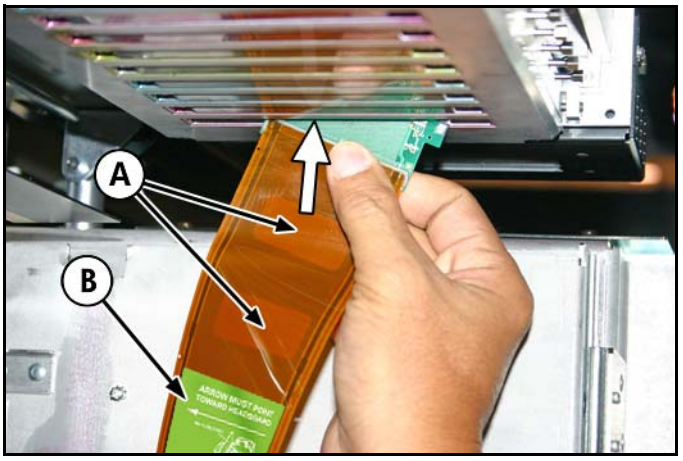
A = Hex screws
B = Washer
C = Flex cable head that plugs into headboard
D = Printhead
E = Flex cable

The printheads install from the bottom of the carriage pen plate (Fig. 82.), where they mate with the ink-delivery system of the carriage reservoirs. Two hex screws and washers (A and B in Fig. 81.) secure the printhead to the pen plate.

Fig. 82. Printhead installation

A = Voltage labels that face toward the user-end of printer

B = Printhead orientation label (arrow points toward input-side of printer when printhead flex cable is inserted through the slot)

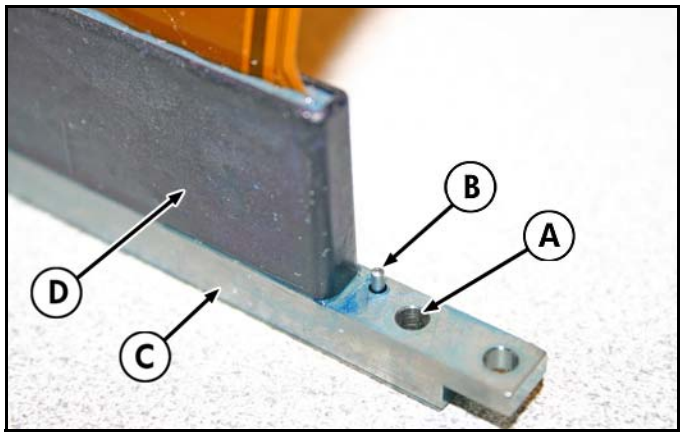


The flex cable (E in Fig. 81.) connects to the top of the printhead. The connection interface (D in Fig. 81.) is only used for making the electrical connection. No ink is stored in this area. Ink enters the printhead (C in Fig. 83.) through two small ink-interface holes (A in Fig. 83.).

There is an ink interface hole next to each alignment pin (B in Fig. 83.). The other end of the flex cable plugs into the carriage headboard.

Fig. 83. Printhead

A = Ink tube interface
B = Alignment pin
C = Printhead face (ink jets out of the bottom of this)
D = Printhead body



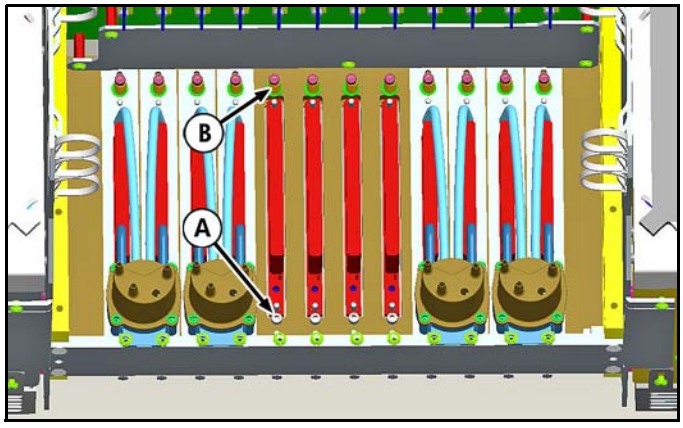
About the printhead interface plate

The printheads install by being inserted beneath the carriage through the printhead interface plate. There are 12 interface plates (H in Fig. 77.) installed onto the pen plate, one for each printhead. Two hex screws and two washers, installed from the bottom of the carriage, secure the printhead to the interface plate. The interface plate is secured to the pen plate using two screws (using a 2.5 mm hex wrench). These screws (A and B in Fig. 84.) are installed from the top of the carriage. The input-side screw (B in Fig. 84.) has a spring and a washer that captures the plate. This screw remains slightly loose for thermal expansion and contraction. The screw with the spring should never be turned unless the interface plate needs replacement or removed for cleaning. The hex screw on the output-side of the interface plate (A in Fig. 84.) should be loosened a half turn to perform y-axis calibration. The interface plate has two ink ports that interface with the printhead when the printhead is installed (G in Fig. 77.).

Fig. 84. Printhead interface plate screws

A = Y-axis adjustment screw

B = Permanent screw - **do not turn this screw**

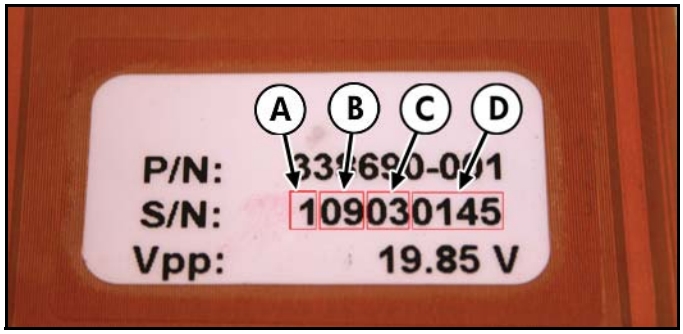


About printhead serial numbers

The printhead serial number can contain nine alphanumeric characters. If the serial number is only numbers, the first number (A in Fig. 85.) is the division code, the second two numbers (B in Fig. 85.) represent the year, numbers four and five (C in Fig. 85.) represent the month and the last four numbers (D in Fig. 85.) represent where in the manufacturing sequence the printhead was made. In other words, in Fig. 85., the last four numbers are "0145." This means it was the 145th printhead created in that lot of printheads.

Fig. 85. Printhead serial numbers explained

A = Division code
B = Year
C = Month
D = Manufacturing lot number



If the printhead serial number ends in a letter, the first number of the serial number will be truncated. Therefore, if the serial number ends in a letter, the first two numbers of the serial number will represent the year it was manufactured.

About printhead y-axis and x-axis positioning

To change the y-axis position of the printhead (the printhead's position moving from the input to the output side and vice versa), the interface plate must be moved. The x-axis of the interface plate cannot be moved (movement in the direction from user-end to service-end and vice versa), so the printhead cannot be moved from side to side, nor can the printhead's angle be mechanically changed.

About printhead saber angle

The meaning of the term "saber angle" has evolved with this printer. The saber angle of the printhead currently refers to the angle degree of deviation from being perpendicular to the carriage's printing axis. In other words, the position of the printhead's interface plate should be exactly perpendicular to the direction of carriage motion. The angular degree to which it is not perpendicular is the saber angle.

Ideally, the printhead's interface plate will be exactly 90 degrees (perpendicular) to the printing axis; however, due to stuck-up tolerances for the interface plate, such as pin hole size and pin angle (the pins that align the interface plates), the printhead's interface plate's angle may not be exactly perpendicular to the printing axis. The saber angle can be calibrated (corrected) by printing a saber angle pattern and examining the pattern.

About carriage (gross) saber angle

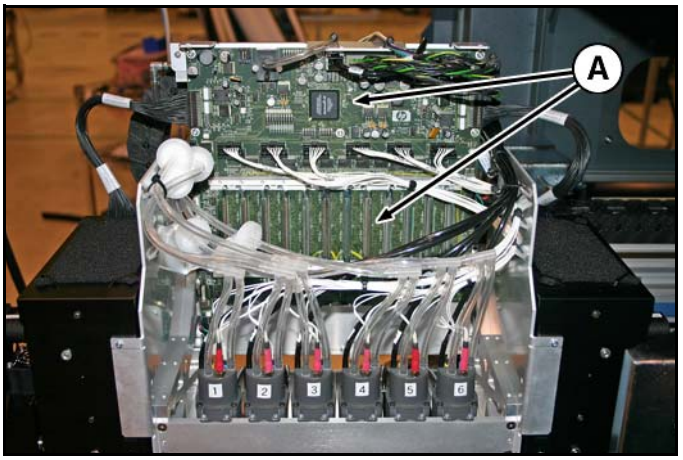
Carriage saber angle (or gross saber angle) is similar to printhead saber angle, except it refers to the angle of the whole carriage assembly (or the angle that the carriage deviates from the axis of the printing). The gross saber angle is detected using a dial indicator that is attached to a stationary location on the printer. The tip of the dial indicator is zeroed on one end of the carriage, and the carriage is moved so that the tip of the dial indicator slides along the front of the carriage until it reaches the opposite end of the carriage. The dial indicator difference between the starting point and the ending point equals the amount of gross saber angle. The dial should be within .002" (.0508 mm). If not, the gross saber angle of the carriage must be adjusted mechanically as shown in the section "Changing the Carriage Saber Angle" on page 468.

About the carriage headboard

The carriage headboard (A in Fig. 86.) is located inside the carriage and serves as the main electrical and data interface between the carriage and the IO board (located in the main

electronics box). The headboard is secured to the rear plate of the carriage (the input-side of the carriage) using five screws.

Fig. 86. Carriage head-board



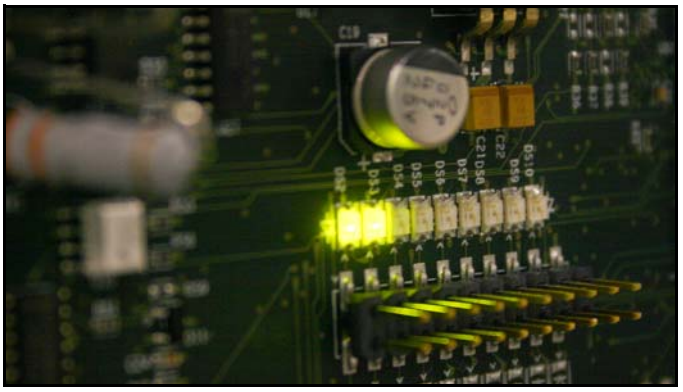
The carriage headboard performs the following tasks:

- Unpacks data that comes from the IO board through the LVDS cable (the black cable that looks like an Ethernet cable but is not) and sends processed instructions to the printheads through the connected printhead flex cables.
- Controls cooling fan speed for the UV lamps that are mounted on the sides of the carriage.
- Tracks carriage position (via encoder reader mounted on back of headboard) and calculates carriage speed.
- Receives information from home sensor that is mounted on the service-end of the carriage.
- Tracks vacuum levels at the printhead reservoirs using the vacuum sensor attached to the headboard.
- Discovers media width and calibrations data via the attached camera.
- Responds to ink level changes via the attached thermistors and tells the ink pumps when to pump and when to stop pumping.

About the carriage headboard lights

The carriage headboard lights have very little troubleshooting value. The lights blink during start up to indicate that the FPGA (Field-Programmable Gate Array) has been properly programmed. Currently, they convey no further information.

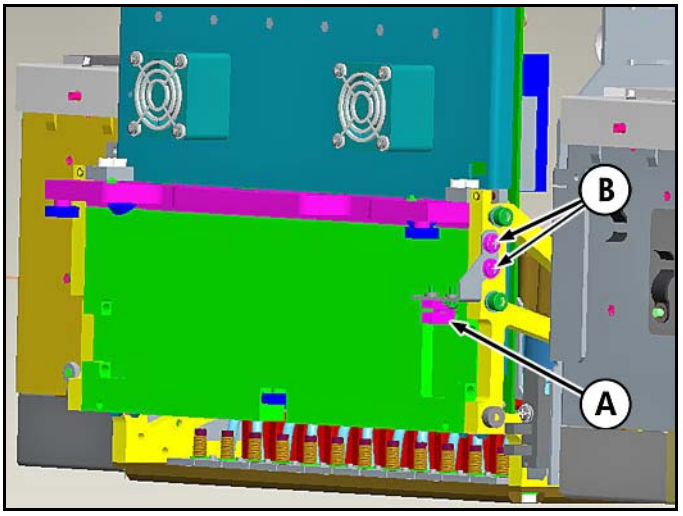
Fig. 87. Carriage head-board lights



About the encoder reader

The carriage encoder reader (A in Fig. 88.) is mounted to the back (input-side) of the carriage plate using a bracket (B in Fig. 88.) that attaches to the service-end side plate. The rail encoder strip, which runs the length of the rail, inserts between the encoder reader's sensors. The encoder reader uses an optical sensor to detect marks on the encoder strip.

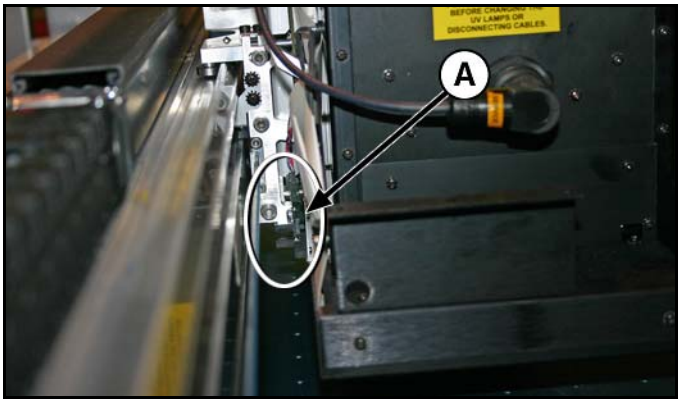
Fig. 88. Encoder reader



About the carriage home sensor

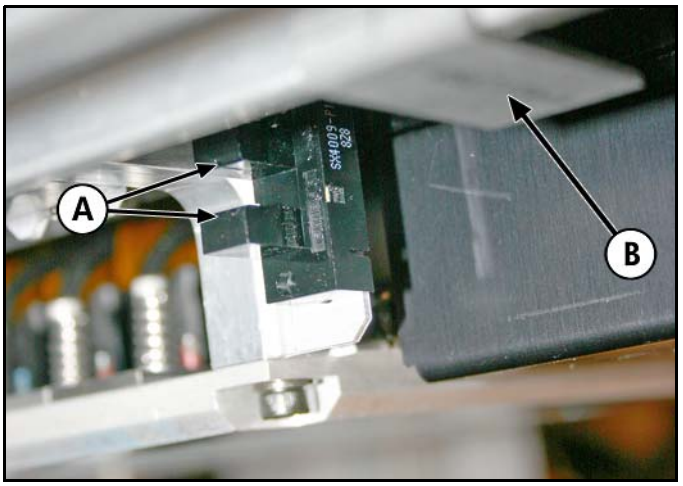
The home sensor is attached to the lower corner of the carriage on the service end.

Fig. 89. Home sensor



The home sensor is an optical-gap sensor (A in Fig. 90.) that is activated when the home-position bracket (B in Fig. 90.) passes between the optical sensors. This informs the headboard that the carriage has reached its home position.

Fig. 90. Home sensor gap

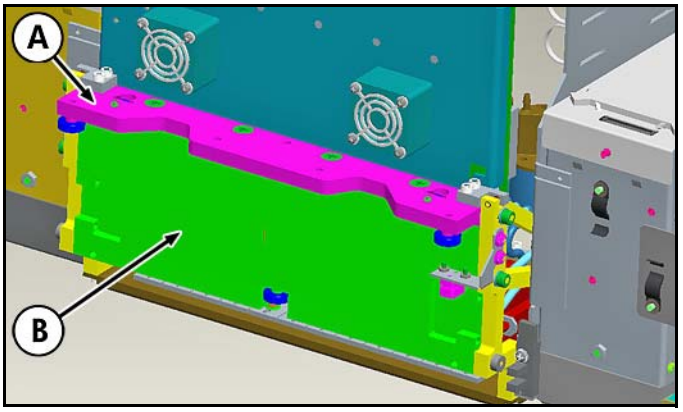


The home sensor is a second-level safety feature that is used if the carriage loses its position information. This can happen if power is lost, the printer experiences a “head motion failure” or the carriage has a head strike against something on the belt (like warped media) that dislodges the carriage from the rail and the carriage encoder strip (“head motion failure”). When the carriage is returned to the encoder strip, the printer will not know where on the encoder strip the carriage is located. Therefore, it will move toward the home position slowly until the home sensor finds the home flag.

About the carriage trolley assembly

The trolley assembly contains the five wheels that connect with the rail during carriage motion. It has two main sections: the upper trolley assembly (A in Fig. 91.) and the lower trolley assembly (B in Fig. 91.).

Fig. 91. Trolley



About the upper carriage trolley assembly

The upper trolley assembly (A in Fig. 91.) is attached to the lower trolley assembly using four large phillips-head screws. It has four wheels (two at each end) that grip the input and output-side of the rail at the top of the rail.

About the lower carriage trolley assembly

The lower trolley assembly (B in Fig. 91.) is attached to the carriage side plates using six shoulder bolts. It has one wheel that rolls on the output-side face of the rail.

Service station

About the service station

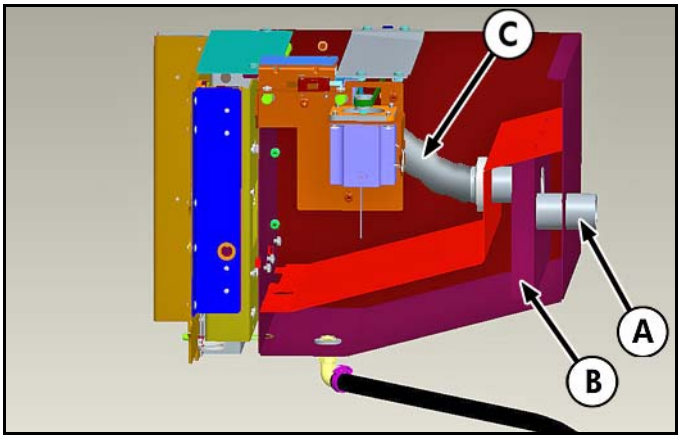
The service station is located at the service-end of the rail. It contains a wiper assembly that moves in the y-axis only (back and forth from input-side to the output-side). The service station receives the ink debris from the printheads during a purge. A Shop-Vac is connected to the service station to suction the debris from the printheads and carriage pen plate.

Fig. 92. Side section view of service station

A = ShopVac connection for service station

B = Partition of the separation chamber

C = Hose that provides suction near the wiper to suction ink from the printheads



As liquid enters the separation chamber, it first contacts the partition (B in Fig. 92.). The chamber dynamics are such that nearly all of the liquid is separated and drains from the separation chamber into the service station basin. Very little liquid will enter the Shop-Vac, and, if operating correctly, the Shop-Vac should never need to be emptied of liquid ink. Waste ink will accumulate in the service station basin until the service station float valve (A in Fig. 94.) is lifted high enough to cause a warning to be issued that the service station should be drained. Ink must be manually drained into the waste ink jug by opening the ink jug spigot valve (B in Fig. 101.).

The ink jug spigot valve must remain closed to prevent disturbing the air dynamics within the liquid-separation chamber. If the valve is left open, the additional air flow could cause more ink than desired to be atomized and sucked into the Shop-Vac.

About ink purges

Purges keep the printhead jets free-flowing and clear of debris. During a purge, a pair of printheads (for one color) expels ink over the service station basin. Next, the Shop-Vac turns on, and the wipers move out to wipe the pair of printheads. The Shop-Vac turns off while the wipers move back to the input side of the service station, and then the Shop-Vac turns on again while the wipers perform a second wipe.

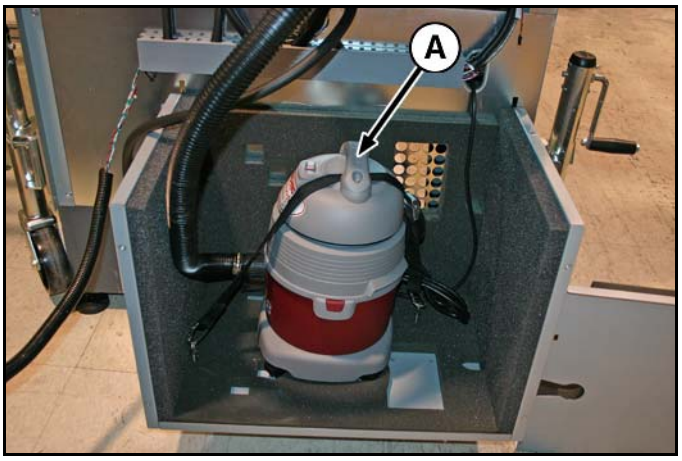
The printer can perform two types of printhead-jet-cleaning purges: standard and performance. The performance purge uses slightly more ink and more air pressure to expel the ink. The performance purge is usually only used when a jet is not firing and the user wants to try a more aggressive cleaning purge. The standard purge may or may not drip (depending on vacuum level) into the service station basin prior to being wiped. The performance purge always drips.

About the Shop-Vac

The Shop-Vac (A in Fig. 93.) resides in the enclosure below the service station. Its purpose is to suction debris from the bottoms of the printheads and pen plate. The Shop-Vac hose enters the side of the service station (A in Fig. 92.) and connects to a liquid-separation chamber. Within the

chamber is a divider (B in Fig. 92.) that partitions the chamber in half lengthwise. On the opposite side is the collection hose (C in Fig. 92.) that attaches to the wiper carriage.

Fig. 93. Shop-Vac



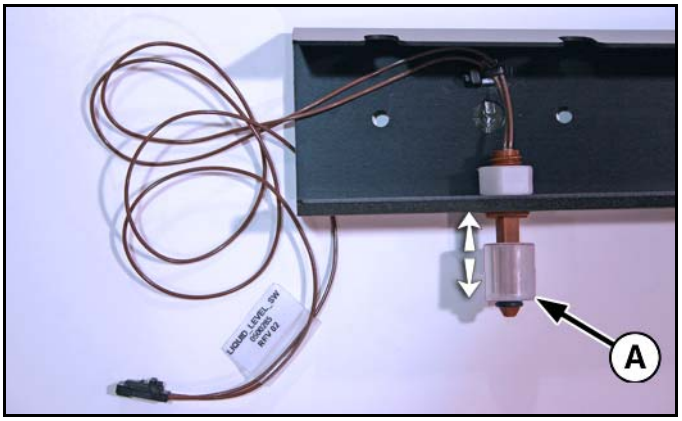
Caution The Shop-Vac is integral to the design of the cleaning procedure. Disconnecting it from power will have an adverse affect on servicing the printheads and will shorten the life of the printheads.

About the float Sensor

There is a float sensor in the basin of the service station that triggers a warning message on the printer's menu screen. The message informs the user that the service station needs to be drained into the waste ink jug.

Fig. 94. Float

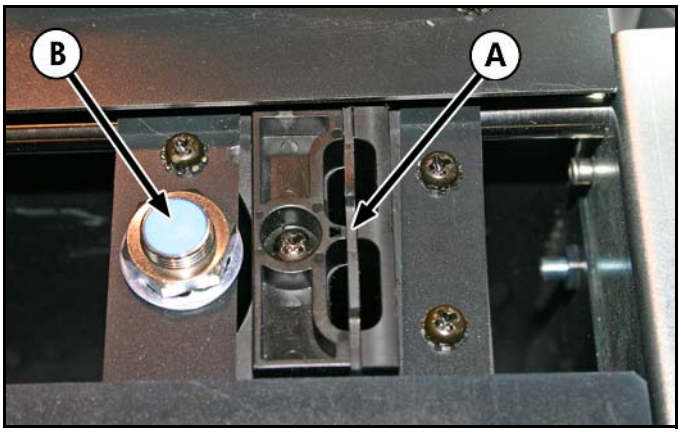
A = Float



About the service station wipers

The wipers (A in Fig. 95.) are located in the service station. They are a consumable item that must be replaced quarterly or more often (depending on use). The wiper carriage contains one wiper blade that is slotted to wipe two printheads simultaneously. The position of the wiper blade must be calibrated using the printer's service menu. The calibrations include the distance between the printheads and the wiper, the X and the Y position of the wiper and the wiper tilt. To adjust wiper tilt, you must loosen the screws that mount the wiper carriage and wiper carriage rail assembly to the service station.

Fig. 95. Wipers



A = Wipers

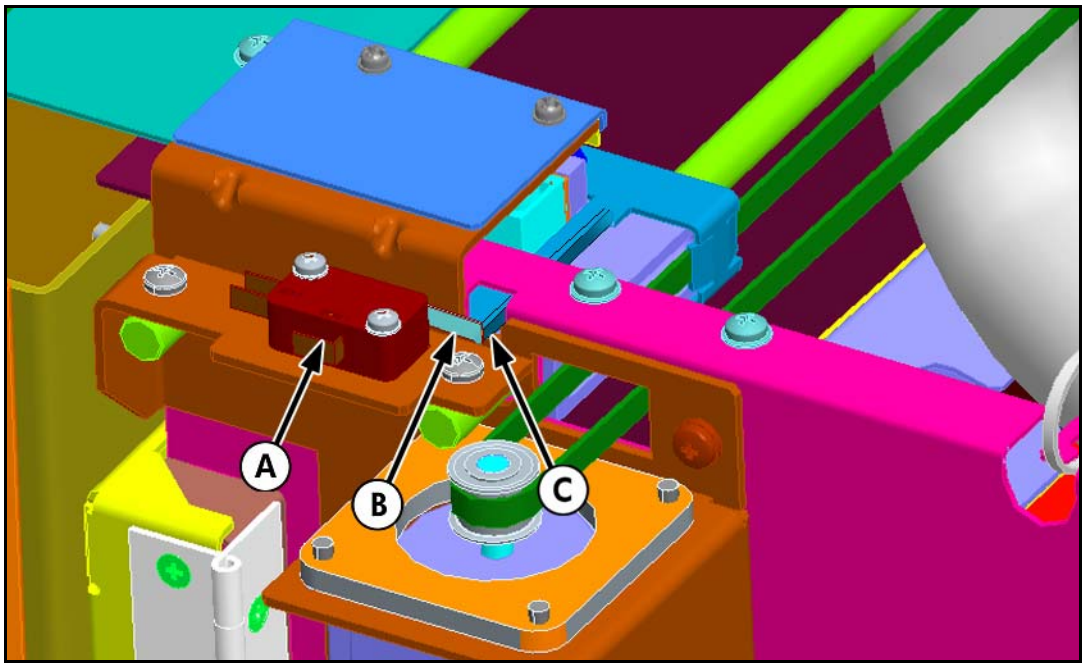
B = Gap sensor

A Shop-Vac hose (C in Fig. 92.) is connected to the wiper carriage that suctions the waste ink through two holes (one oval-shaped hole beside each wiper). Only the ink that is wiped is suctioned away. Ink that is expelled during a purge will be deposited in the service station basin.

About the wiper-carriage home sensor

The wiper-carriage home sensor (A in Fig. 96.) is activated when the carriage moves all the way to the input-side of the service station and wiper-carriage bracket (C in Fig. 96.) presses the switch on the sensor (B in Fig. 96.). This informs the printer of the carriage position.

Fig. 96. Wiper-carriage home sensor



A = Wiper-carriage home sensor
B = Senor arm
C = Tab on wiper carriage that activates sensor arm

About the gap sensor

The gap sensor (B in Fig. 95.) senses the distance between the printhead pen plate and the wipers. The wiper height is adjusted based on feedback from this switch. This does not replace the need to calibrate wiper height initially or when carriage rail height is recalibrated.

About the service station access sensor

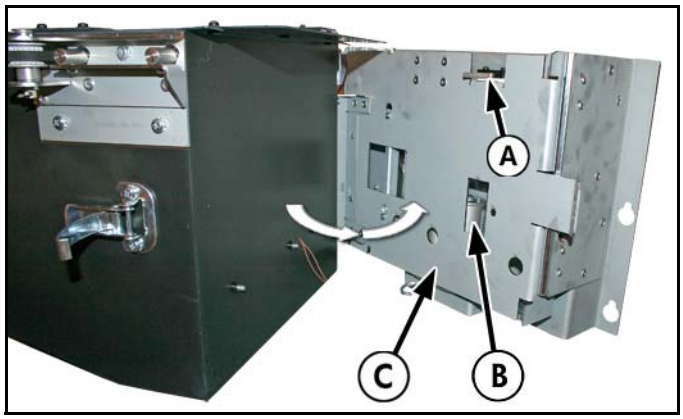
The service station access sensor (A in Fig. 97.) is located behind the service station. It is attached to the service station mounting assembly, which contains the service station actuator up-down motor. The service station is hinged on one side to allow it to swing out from beneath the carriage (allowing for easier access to the printheads). The sensor is activated then the service station is closed and opened.

Fig. 97. Service station access sensor

A = Open/Closed sensor

B = Actuator motor

C = Service station mounting assembly



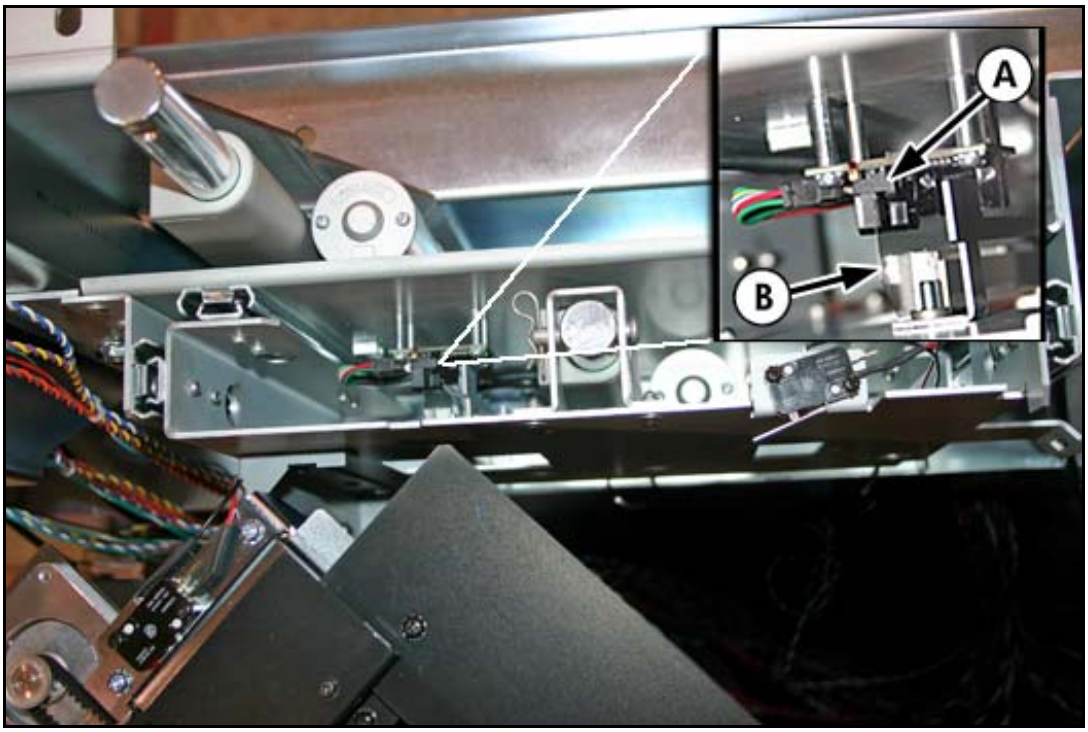
About the service station actuator (up-down motor)

The service station actuator (B in Fig. 97.) is located inside the service station mounting assembly (C in Fig. 97.). The motor turns an internal screw that moves the motor shaft up or down. The shaft is attached to the sliding bracket of the service station mounting assembly, which allows the service station to move up or down.

About the service station encoder

The service station encoder (B in Fig. 98.) and encoder reader (A in Fig. 98.) are located inside the service station mounting assembly (C in Fig. 97.). The encoder is thin plastic with marks printed on it. The encoder reader counts the marks as the service station moves up or down to determine the position.

Fig. 98. Service station encoder



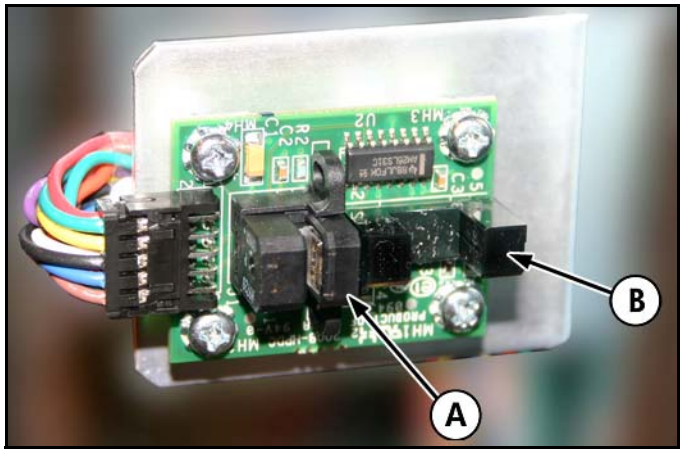
About the service station encoder reader

The encoder reader (A in Fig. 99.) for the service station's actuator motor is the same assembly used for the other up-down actuator motors (for the input roller, alignment bar, rail and output roller). The circuit board that holds the encoder reader also has a home sensor (B in Fig. 99.), which is an optical-gap sensor that is activated when the home-position flag passes between the optical sensors. This informs the printer that the service station has reached its home position.

Fig. 99. Service station encoder reader and home sensor

A = Encoder reader

V = Home sensor (senses home sensor flag)



About the service station home sensor flag

The home sensor flag (D in Fig. 99.) passes through the service station's optical home sensor (C in Fig. 99.) and informs the printer that the service station is at its home position. The actuator motor slowly moves the service station up until the flag passes through the home sensor.

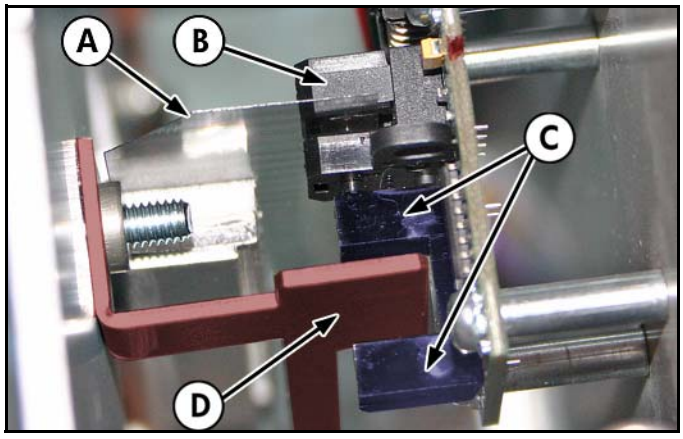
Fig. 100. Service station home sensor flag

A = Encoder strip

B = Encoder reader

C = Home sensor

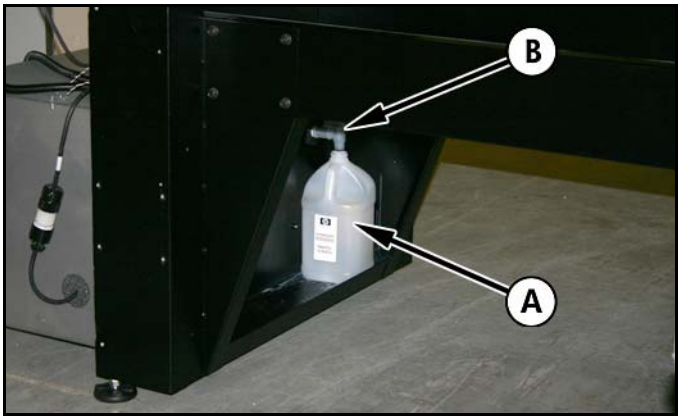
D = Home sensor flag



About the waste-ink jug

The waste ink jug (A in Fig. 101.) receives liquid from the service station. It has an on/off valve (B in Fig. 101.) that must be opened manually to receive the liquid. The draining of the service station should be done by the user quarterly (or more often, depending on use).

Fig. 101. Waste ink jug

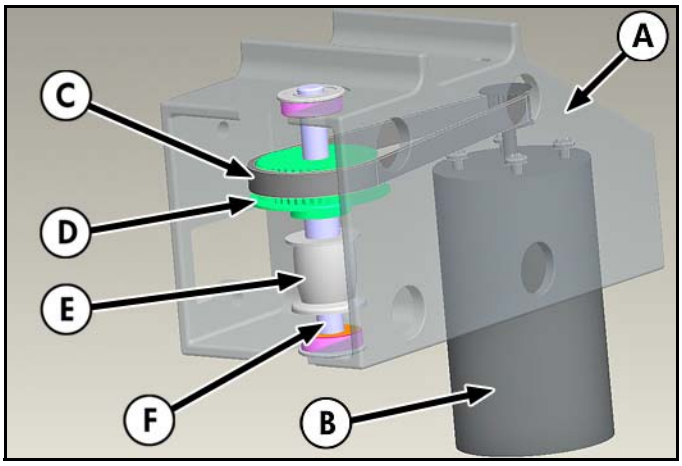


Carriage-drive

About the carriage-drive assembly

The carriage-drive assembly is bolted on the user-end of the rail. It moves the carriage back and forth along the rail by moving the long belt that is attached to each side of the carriage. It consists of a metal housing (A in Fig. 102.), a motor (B in Fig. 102.), a timing belt (C in Fig. 102.) and a shaft (F in Fig. 102.).

Fig. 102. Carriage-drive assembly



A = Carriage-drive assembly

B = Carriage-drive motor

C = Carriage-drive timing belt

D = Carriage-drive toothed pulley

E = Carriage-drive smooth pulley

F = Carriage-drive shaft

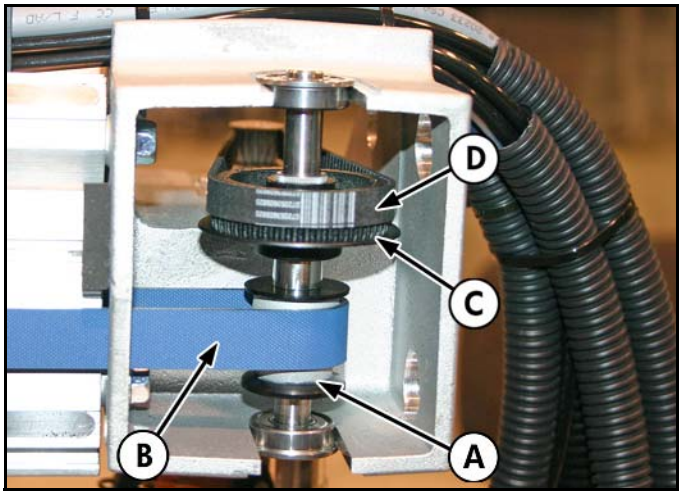
About the carriage-drive smooth pulley

The smooth pulley (E in Fig. 102.) contacts the main carriage-drive belt. The belt is tensioned enough that the pulley can move the belt when the pulley shaft is turned. The pulley is located at the end of the rail on the user-end of the printer.

About the carriage-drive shaft

The carriage-drive shaft is located in the carriage-drive assembly. The shaft has two pulleys: a toothed pulley (C in Fig. 103.) for the timing belt (D in Fig. 103.) and a smooth, friction pulley (A in Fig. 103.) for the main carriage belt. It is connected to the carriage-drive motor by the small timing belt. The friction pulley moves the main carriage belt when the carriage-drive shaft is turned by the motor.

Fig. 103. Carriage-drive shaft



A = Friction pulley

B = Carriage-drive belt

C = Toothed pulley

D = Carriage-drive timing belt

About the carriage-drive timing belt

The carriage-drive timing belt (D in Fig. 103.) is located in the carriage-drive assembly. This toothed, small belt goes around the carriage-drive motor's pulley and around the carriage-drive pulley shaft gear (C in Fig. 103.).

About the carriage-drive motor

The carriage-drive motor mounts in the carriage-drive assembly housing on the user-end of the rail using four screws (A in Fig. 104.). The motor is a 24v DC servo motor. It interfaces with the motor driver board in the main electronics box on cable J10.

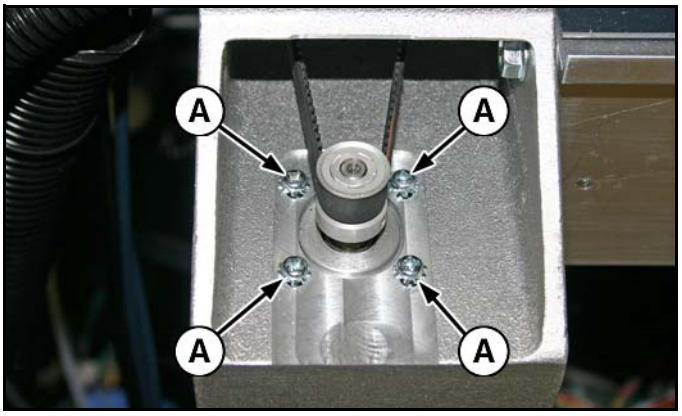


Fig. 104. Carriage-drive motor mount screws

A = Motor-mount screws

About the Carriage Idler

The carriage idler is located on the service-end of the rail. It contains a smooth friction pulley that contacts the belt. It consists of friction pulley mounted on a spring-tensioned fork. The spring is to keep the belt at proper tension regardless of temperature-related expansion or contraction.

To remove the belt from the carriage, belt tension is first released by unbolting the idler from the end of the rail and moving the idler off of the rail.

About the carriage-drive belt

The belt is attached to each side of the carriage by T-shaped belt clamp that screws into the sides of the carriage trolley using two screws (A in Fig. 105.). To remove the belt, the carriage must be tilted away from the rail to access the screws that secure the tab into the input-side of the trolley.

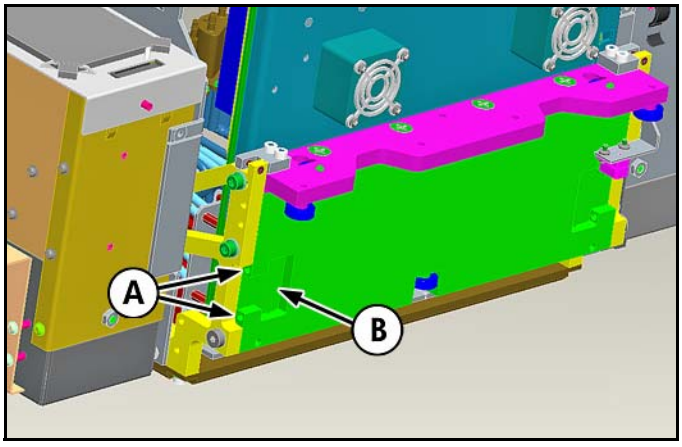


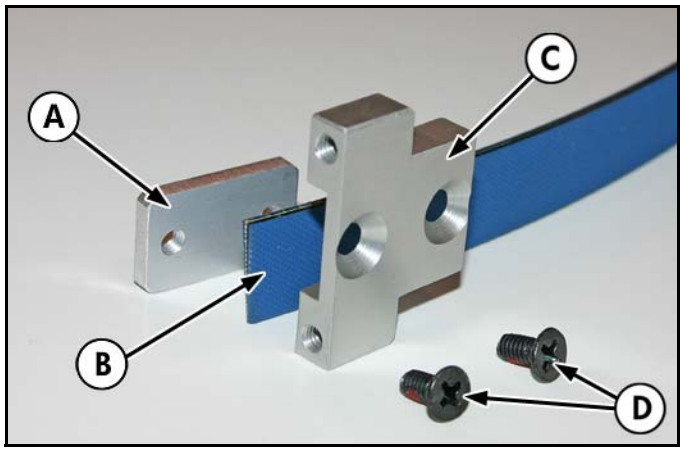
Fig. 105. Belt clamp installation location

A - Screw holes where bracket attaches to side of carriage

B = Slot for belt bracket

The main carriage belt (B in Fig. 106.) is sandwiched between the bracket (C in Fig. 106.) and a screw-on clamp (A in Fig. 106.) using two screws (D in Fig. 106.).

Fig. 106. Belt clamp



Belt has holes predrilled for screws

The end of the carriage belt is pre-drilled with holes for the two screws (D in Fig. 106.) that secure the belt clamp.

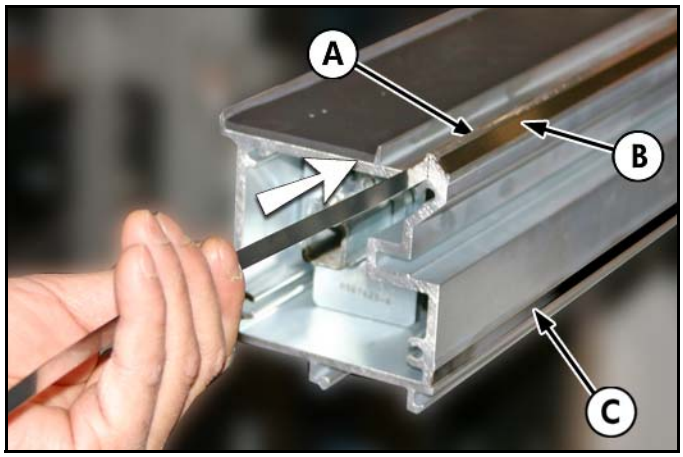
About the carriage-drive belt length and tension

If cut properly, the carriage-drive belt length should be exactly 557.213 cm (219.375-in) for the HP Scitex FB500 / FB700 printer. This is the main contributor to belt tension for this printer. Due to this, belt tension is not adjustable. Belt tension for previous generations of printers was adjusted by inserting the belt more or less into the belt clamps on each side of the carriage. Belt position at the sides of the carriage is static for this printer and is set at the factory.

About the rail strips

There are three replaceable rail strips installed in the rail that make contact with the carriage wheels. They provide a smooth surface for the wheels. The top rails strips (A and B in Fig. 107.) provide a smooth surface for the four top, carriage trolley wheels (a pair of wheels on each end of the trolley). The lower rail strip (C in Fig. 107.) provides a smooth surface for the lower carriage trolley wheel.

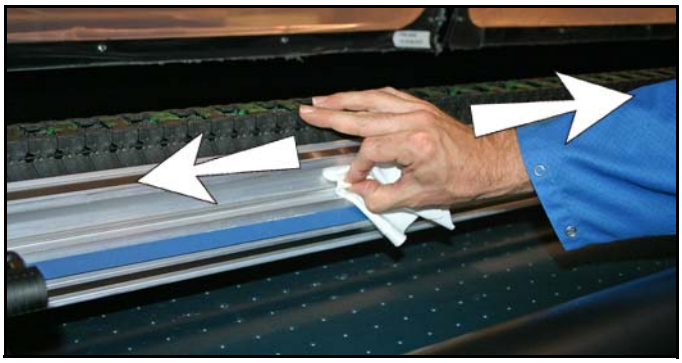
Fig. 107. Rail strips



About the carriage encoder strip

The rail encoder strip is installed into the rail and is nearly as long as the rail. The encoder strip is a translucent length of plastic with incremental marks on it. The marks are detected by the encoder reader that is located on the back of the carriage (connected the headboard). The marks are printed on the under-side of the encoder strip. This is because dust and debris can deposit more easily on the top of the strip. When cleaning the strip, do not scrub the side of the strip that faces down, as the marks can be scrubbed off of the strip. It should be cleaned with 70% isopropyl alcohol (common rubbing alcohol - 70% isopropyl alcohol diluted with 30% water).

Fig. 108. Cleaning the encoder strip



The encoder strip is printed with 150 pulse marks per inch. The software translates these marks into 600 pulses per inch, which corresponds to 600 dpi ink jetting. The printer counts pulse marks to determine precise, high-resolution position data.

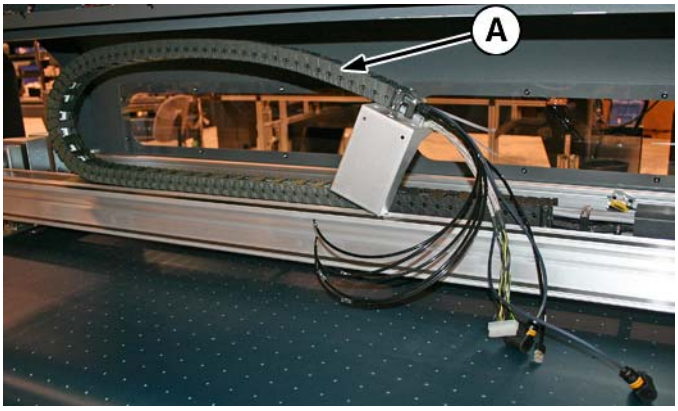
Note A dirty encoder strip is one of the leading causes of error codes appearing on the printer's menu and of production interruptions. The rail encoder strip should be cleaned every two weeks (minimum) and more often depending on use and environment.

Track assemblies

About the track assembly

The track assembly (A in Fig. 109.) is connected to the carriage and delivers tubes and cables to the carriage.

Fig. 109. Track assembly



The following tubes and cables are in the track assembly:

- Six ink tubes
- LVDS communication cable (usually black in color)
- Two lamp power cables
- Vacuum tube
- Pressure tube
- Strand of four power cables (usually green)

About the ink tubes

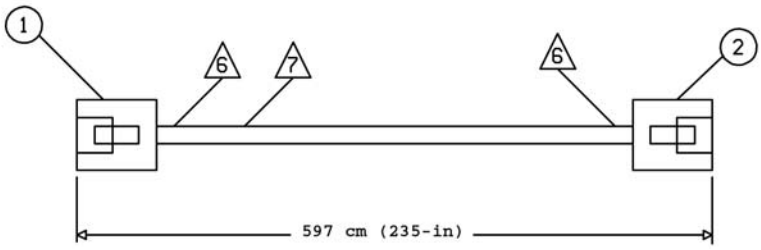
The ink tubes are opaque to keep ambient UV light from curing the ink inside the tubes.

About the LVDS cable

The LVDS (Low voltage differential signaling) cable is located in the track assembly. It exits from the track assembly through the H-block at position D in Fig. 111. It is a black cable that looks like a standard Ethernet cable, but it is not. It only has 4 wires (two twisted pairs), whereas a standard Ethernet cable has 8 wires. It connects to the I/O controller at location J19 (see Fig. 150.).

Fig. 110. LVDS cable pinout

TERMINAL	CABLE		TERMINAL
ITEM NO.	GAUGE	COLOR	ITEM NO.
1/PIN1	24	BLACK	2/PIN 1
1/PIN3	24	RED	2/PIN 3
1/PIN6	24	GREEN	2/PIN 6
1/PIN8	24	YELLOW	2/PIN 8



The LVDS cable both sends and receives information between the headboard and the IO board. This physical layer consists of the cable and two chips on the carriage headboard and two chips on the IO board. On each, one chip receives and the other sends. It sends information such as when to open and close shutters, when to fire the ink jets.

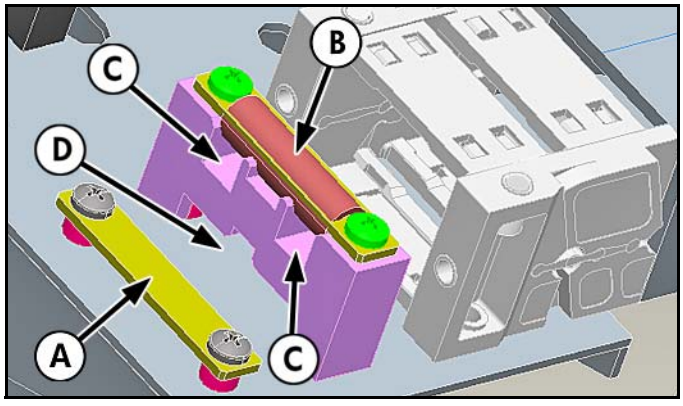
About the headboard power cables

Beneath the plastic insulation of the power cables is wire braided cable wrapping for grounding. This is clamped to the electronics box and to the carriage trolley-attachment bracket on the input-side of the carriage headboard.

About the H-block clamp

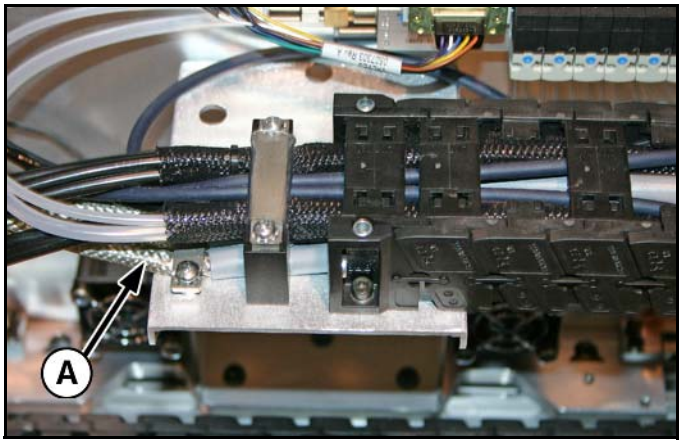
The H-block clamp secures and organizes the cables and tubes that exit from the track assembly at the carriage. The tubes and lamp power cables pass over the top (C in Fig. 111.) of the H-block and are clamped with a soft rubber bar (B in Fig. 111.) that is secured by SEM screws on each side.

Fig. 111. Track H-block



The headboard power cables (A in Fig. 112.), which are wrapped in a braided metal shielding at the cable ends, exit through the lower portion (D in Fig. 111.) of the H block and are secured with a metal bar (A in Fig. 111.) for grounding purposes.

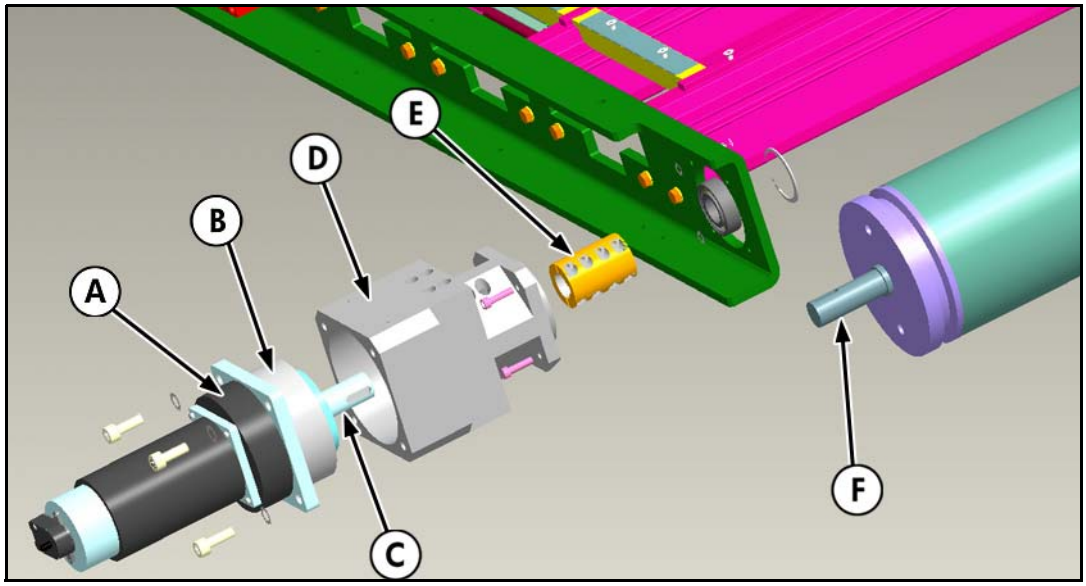
Fig. 112. Track H-block photo



About the media-drive motor

The media-drive motor (A in Fig. 113.) has a connected gear reduction (B in Fig. 113.) and a stub shaft (C in Fig. 113.) that connects to a coupling (E in Fig. 113.) in the media-drive housing (D in Fig. 113.) and is shared with the media-drive roller's stub shaft (F in Fig. 113.). The motor can turn the roller in either direction.

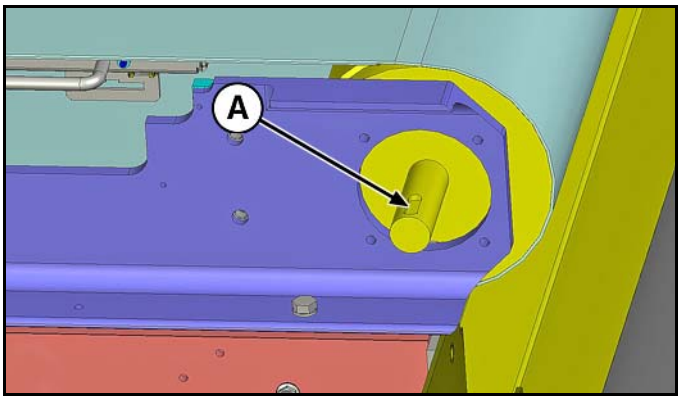
Fig. 113. Media-drive assembly



About the media-drive motor coupling

The coupling (E in Fig. 113.) clamps around the stub shafts of both the media-drive roller and the motor, and is locked in place by a two removable keys that reside in slots (A in Fig. 114.) in both the stub shaft for the motor and the stub shaft for the drive roller. There are four hex screws that connect the coupling to the roller's stub shaft and four screws that connect the coupling to the motor's stub shaft.

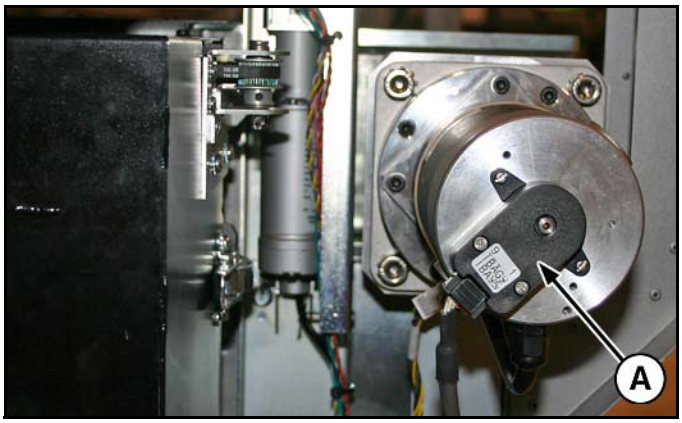
Fig. 114. Key slot in media-drive roller



About the media-drive motor encoder

The motor encoder is attached to the end of the motor. It reports speed and direction (forward or reverse), but it is not responsible for the high-resolution position reporting. That is done by a different encoder that is located on the user-end of the media-drive roller.

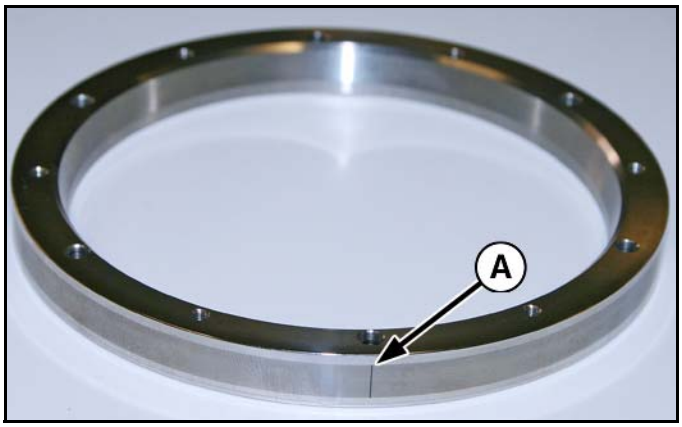
Fig. 115. Media-drive motor encoder



About the high-resolution encoder ring

The encoder ring (D in Fig. 117.) has marks printed on it that are counted by the encoder reader readhead. There is a prominent mark on the hub called the “reference mark” (A in Fig. 116.). The reference mark is used to calibrate the optional starting position.

Fig. 116. High-resolution encoder hub

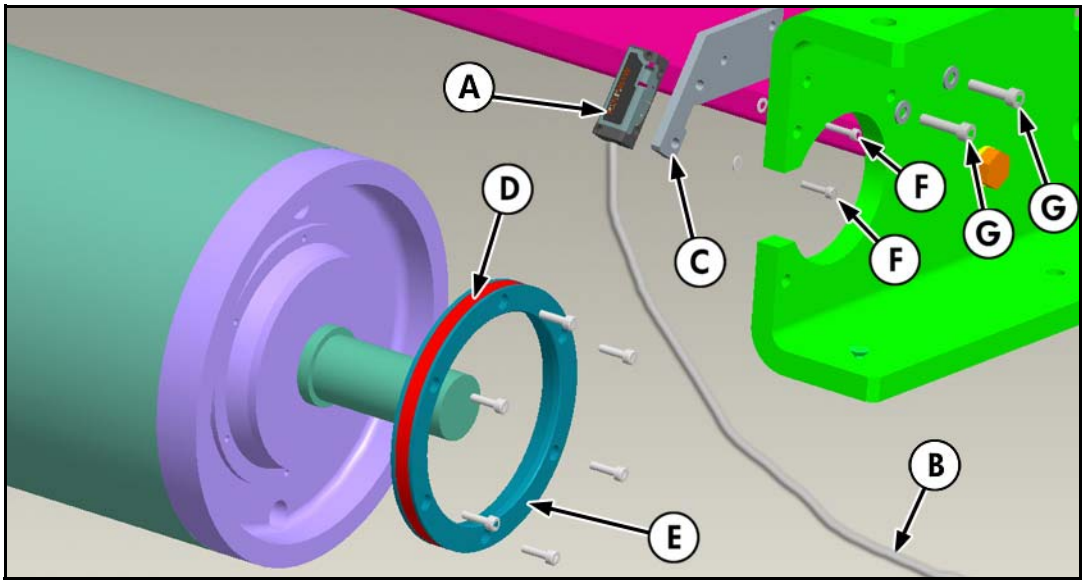


About the high-resolution belt encoder reader

The high-resolution encoder reader (A in Fig. 117., also called the “readhead”) is mounted to the side of the fan-box side plate with a bracket (C in Fig. 117.) on the user-end of the printer (output-side). The encoder reader senses high-resolution marks (D in Fig. 117.) on the encoder ring (E in Fig. 117.), which is screwed onto the user-end of the media-drive roller. The cable (B

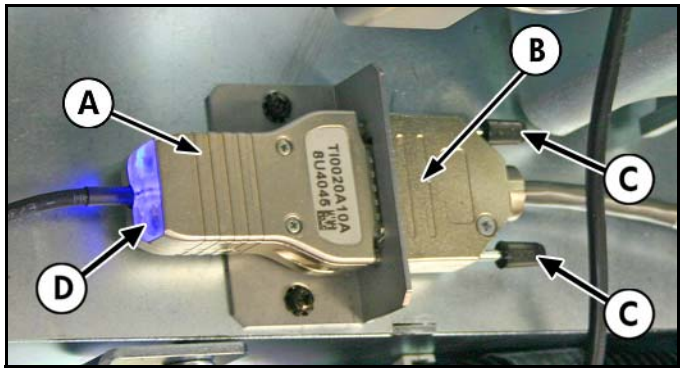
in Fig. 117.) for the encoder reader routes to the electronics box and plugs into the input-side of the electronics box.

Fig. 117. High-resolution media-drive belt encoder



The high-resolution encoder consists of five components: the encoder ring (D in Fig. 117.), the encoder reader or "readhead" (A in Fig. 117.) the interface (A in Fig. 118.) and the cable that connects between the interface and the electronics box (B in Fig. 118.).

Fig. 118. High-resolution encoder interface



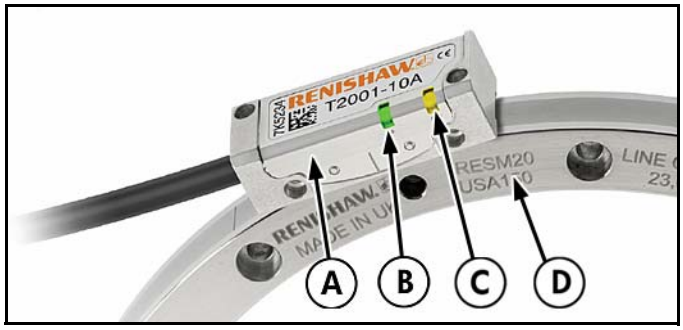
For information on the high-resolution encoder's interface lights (D Fig. 118.), see Fig. 320. on page 277.

The encoder reader has two lights on it (B and C in Fig. 119.). These can be seen if the output-side belt enclosure on the user-end is removed (see Fig. 221. on page 218). The calibration LED (C in Fig. 119.) is always yellow if lit. If the calibration LED is on constant, it means the AGC (Automatic Gain Control) is active. The high-resolution encoder operates with the AGC turned on. However, the AGC must be turned off during calibration (focusing) of the readhead. The AGC amplifies the signal so that imperfect focus or smudges on the encoder rings can be compensated for by the readhead. It is turned off during initial calibration or focusing of the readhead so that you can fine tune the focus.

In other modes, it may flash a single blink (while calibrating focus) or a double blink (calibrating the reference mark). The setup LED (B in Fig. 119.) can have six different states of either green, orange, red or any of these colors flashing.

Fig. 119. High-resolution encoder reader lights

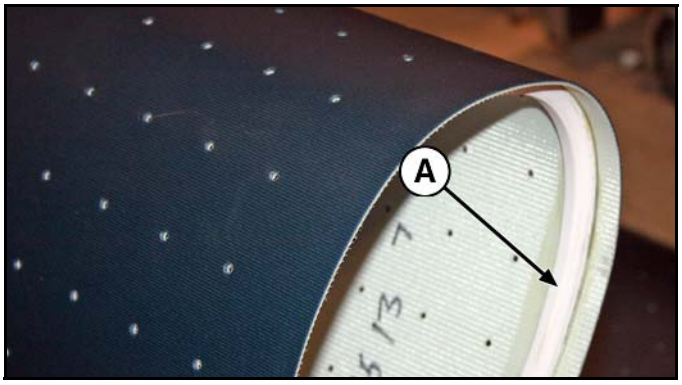
A = Encoder reader or readhead
B = Setup LED
C = Calibration LED
D = Encoder wheel



About the media-drive belt

The media-drive belt is a cylinder of material that is sewn together and vulcanized for durability. On the service-end side of the belt is a v-belt (A in Fig. 120.) that rides in a groove of the idler roller and the media-drive roller. The media-drive belt must operate at a specific tension on the media-drive roller (output-side) and the idler roller (input-side). Tension must be independently adjusted between the service-end and user-end to make sure that the belt tracks correctly. Due to small differences in the belt circumference from the service-end to the user-end sides, the tension on each end of the belt may be slightly different to achieve perfect tracking.

Fig. 120. V-belt

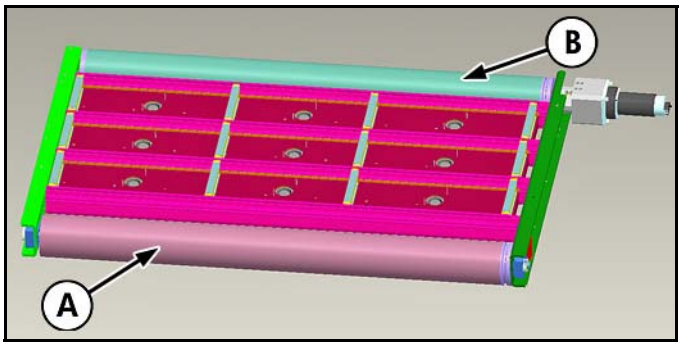


Inside the belt are two rollers (one with a motor attached (the media-drive roller) and one idler roller). These rollers are mounted in two side plates that span the length of the belt from the input-side to the output-side. Between the rollers are three trays of fans that span the width of the belt.

About the media-drive roller

The media-drive roller (A in Fig. 121.) is located inside the media belt on the output-side of the printer. The roller is mounted between the side plates of the belt and is captured on the service end by the media-drive motor (A in Fig. 113.) and on the user end by a bearing block. The drive roller's position is fixed. All alignment and tension adjustments are done by manipulating the idler roller on the input-side of the belt.

Fig. 121. Rollers

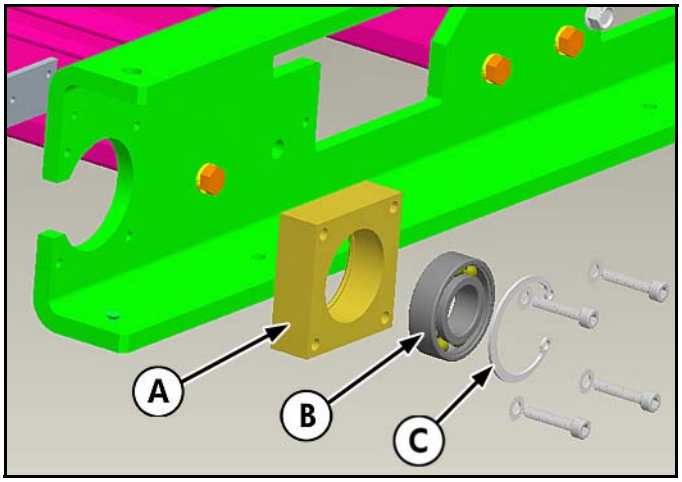


The drive motor is connected to the roller's stub shaft using coupling (E in Fig. 113.). On the user-end, the roller's stub shaft passes through the side plate and into a bearing (B in Fig. 122.). The

bearing is held in place in the bearing block (A in Fig. 122.) by a c-ring (C in Fig. 122.). The bearing block is connected to the side of the side plate with four hex screws and washers.

Fig. 122. Bearing block

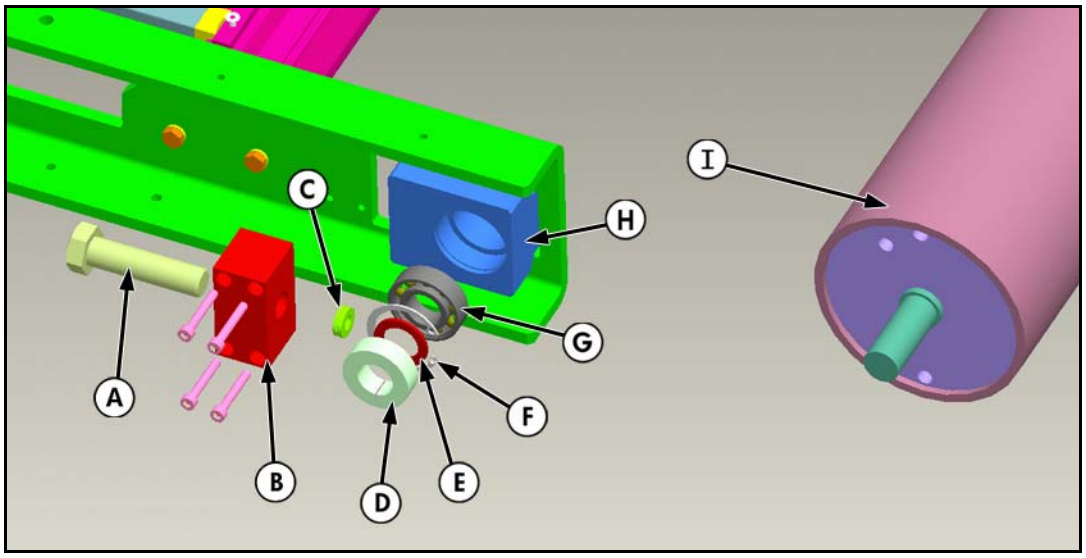
Bearing block for media-drive roller viewed from output-side of the user-end



About the idler roller

The idler roller (I in Fig. 123.) is located on the input-side of the printer. There are stub shafts on each end of the roller that insert through the side plates on each side of the belt. Adjustment bearing blocks secure the stub shafts on both sides of the roller. The idler roller adjusts tension and belt alignment. The roller can be adjusted from user to service-end (left to right when facing it) to manipulate belt tracking. Belt tension is adjusted by turning the adjustment bolt on each adjustment block on the sides. Belt tension affects both belt tracking and media advance accuracy.

Fig. 123. Idler roller and adjustment blocks



About the adjustment bearing block assembly

The adjustment bearing block assembly changes the belt tension by increasing or decreasing the distance of the idler roller from the drive roller on both the user-end and the service-end of the idler roller. The adjustment screw (A in Fig. 123.) is turned to move the idler roller closer or further away from the drive roller. The adjustment screw turns against the thrust bearing (C in Fig. 123.), which is a sandwich of two washers and a bearing. The thrust bearing pushes the adjustment bearing block to change belt tension.

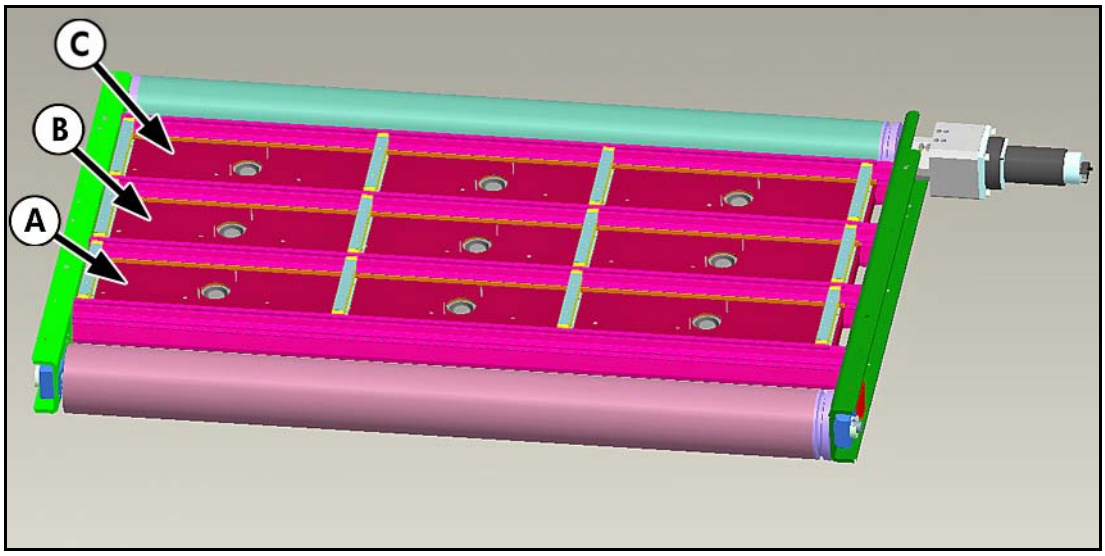
The stub shaft of the idler roller passes through a bearing (G in Fig. 123.), which is held in place by a c-ring (F in Fig. 123.). A spacer (E in Fig. 123.) separates the bearing and the coupling clamp (D in Fig. 123.).

About the vacuum trays

There are three trays (A, B and C in Fig. 124.) of fans (fan arrays) inside the belt housing. Each tray has three fans. These three trays slide into a housing called “the fan box.” Each fan tray creates a zone.

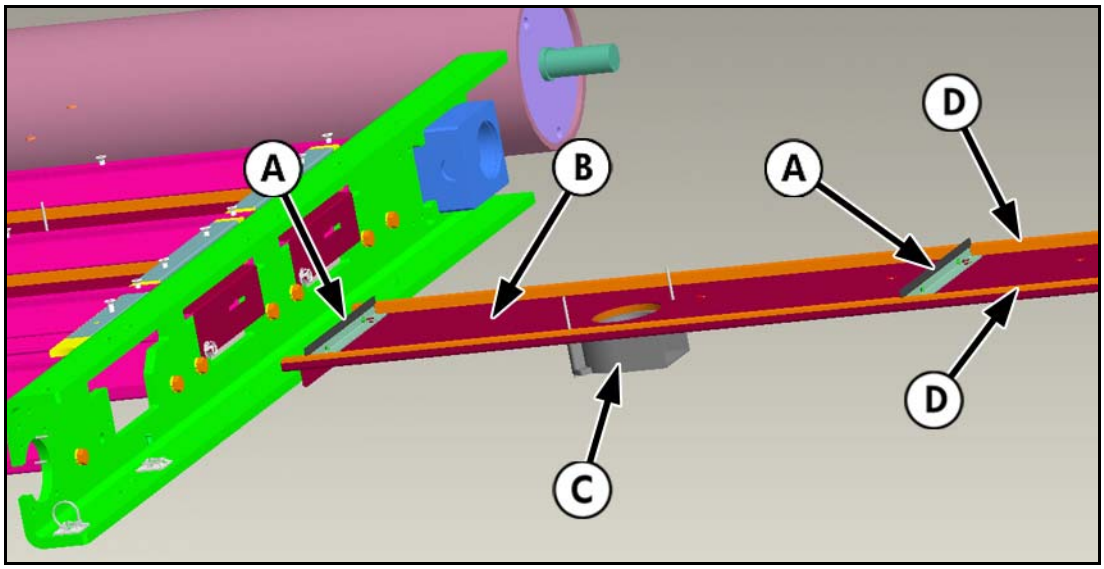
- Input zone - The first fan tray on the input-side (A in Fig. 124.) is called the “input zone.”
- Pre-print zone - The middle tray (B in Fig. 124.) forms the “pre-print zone.”
- Print zone - The output-side tray (C in Fig. 124.), which resides directly below the rail and carriage, is called the “print zone.”

Fig. 124. Vacuum trays



Each tray (B in Fig. 125.) is sealed with air-trapping gaskets (D in Fig. 125.) against an area of the fan box so that the combined three trays (nine fans) create the vacuum needed to hold media to the belt. Each fan (C in Fig. 125.) creates a vacuum area, defined by air dams (A in Fig. 125.) on each side of the fan. The air dams inhibit airflow interaction from fan to fan.

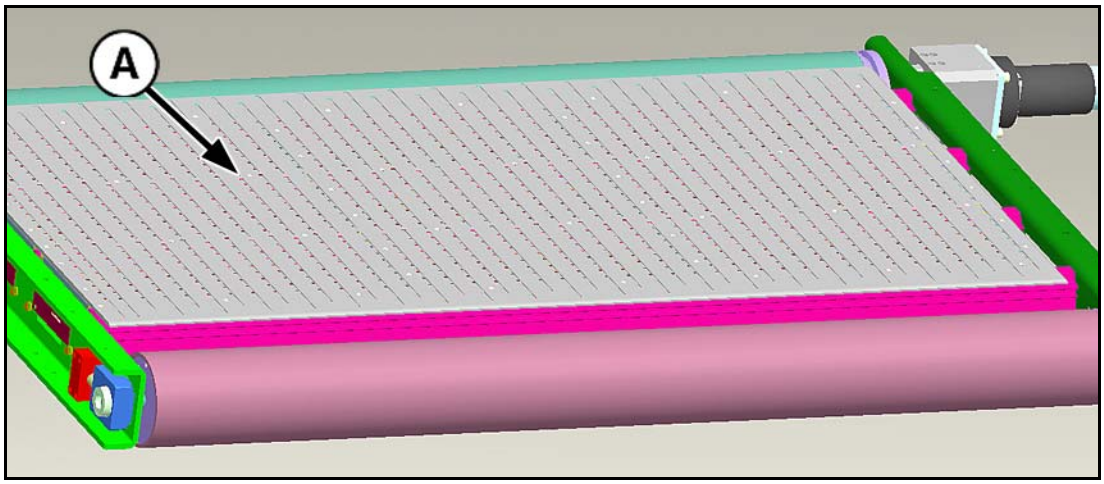
Fig. 125. Fan sections



About the airflow plate

An airflow plate resides between the media-drive belt and the fans. The plate covers all three zones (the input, pre-print and print zone). The belt has holes that align with the holes in the airflow plate to provide adequate vacuum against the media.

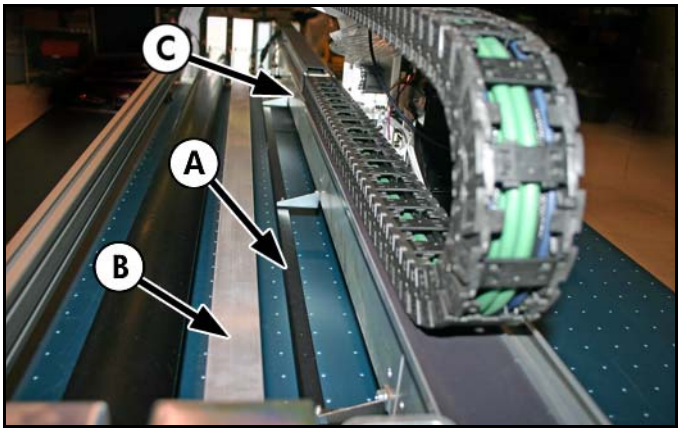
Fig. 126. Airflow plate



About the ionizer

The ionizer (A in Fig. 127.) is a narrow bar (1.27 cm or 0.5-in) that runs the width of the belt. It is located between the media alignment bar (B in Fig. 127.) and the rail (C in Fig. 127.) on the input side of the printer. The ionizer reduces static by producing both negative and positive ions, which are attracted by the unbalanced atoms of the media (atoms that have a deficiency of positive or negative electrons). The ionizer power supply is mounted to the user-end of the rail, and it supplies high-voltage to closely-spaced sharp points located on the bottom of the ionizer (close to the media). The power supply alternates current pulses between the sharp points that produce both positive and negative ions.

Fig. 127. Ionizer



About the N-up pins

The N-up pins are located above the media-drive belt on the input side of the printer. Multi-sheet N-UP allows you to print a multiple-copy job on multiple sheets across the belt, and multiple rows of sheets, until the job is complete.

To print multi-sheet N-UP, load multiple sheets on the printer, then send a print job from the RIP with a quantity greater than or equal to the number of sheets you loaded. The printer will prompt you to load more sheets until the number of copies you specified has been printed. You can also print Stored Jobs as multi-sheet N-UP.

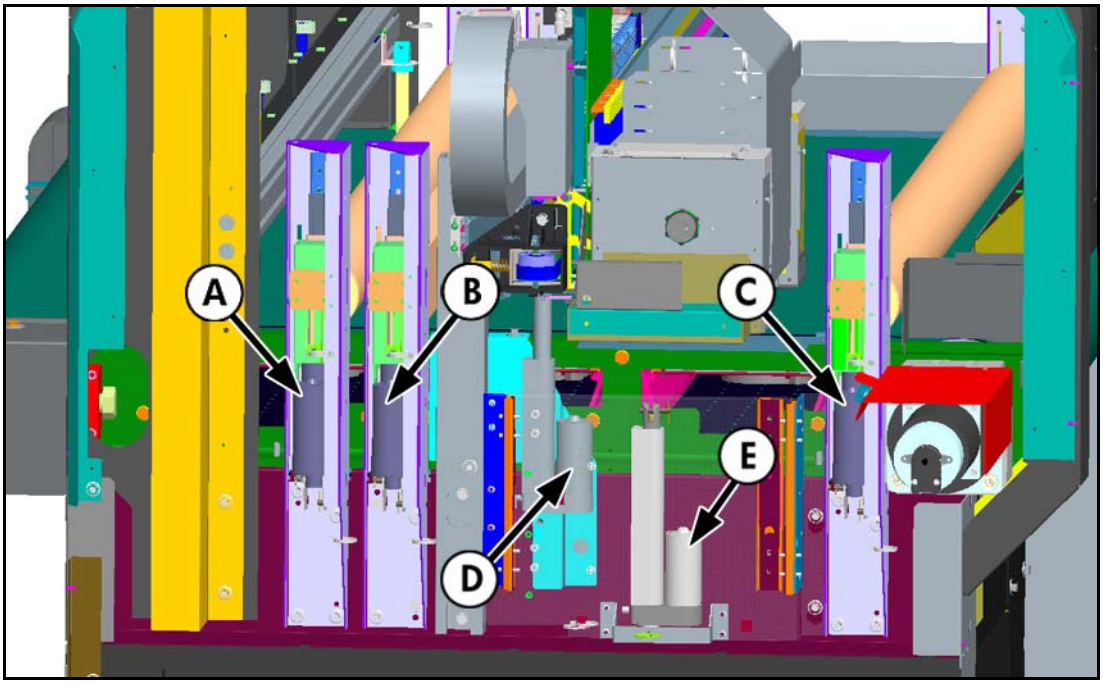
This type of printing works best with an image that has wide margins on all four edges, but edge-to-edge printing is also possible with the appropriate printer settings, and by carefully matching the dimensions of the image to the dimensions of the media sheets.

About the actuator motors

Actuator motors move the rail, the alignment bar, the input and output hold-down rollers and the service station up and down. For the rail, alignment bar and the hold-down rollers, the actuator motors are located in three sets of towers mounted on the sides of the media belt. The motors use an encoder strip and a encoder reader to track up/down position.

There are six identical actuator assemblies and three additional actuator motors in the printer (see Fig. 128. for the service-end view).

Fig. 128. Actuator assemblies and individual actuator motors



A = Input roller actuator assemblies

B = Alignment bar actuator assemblies

C = Output roller actuator assemblies

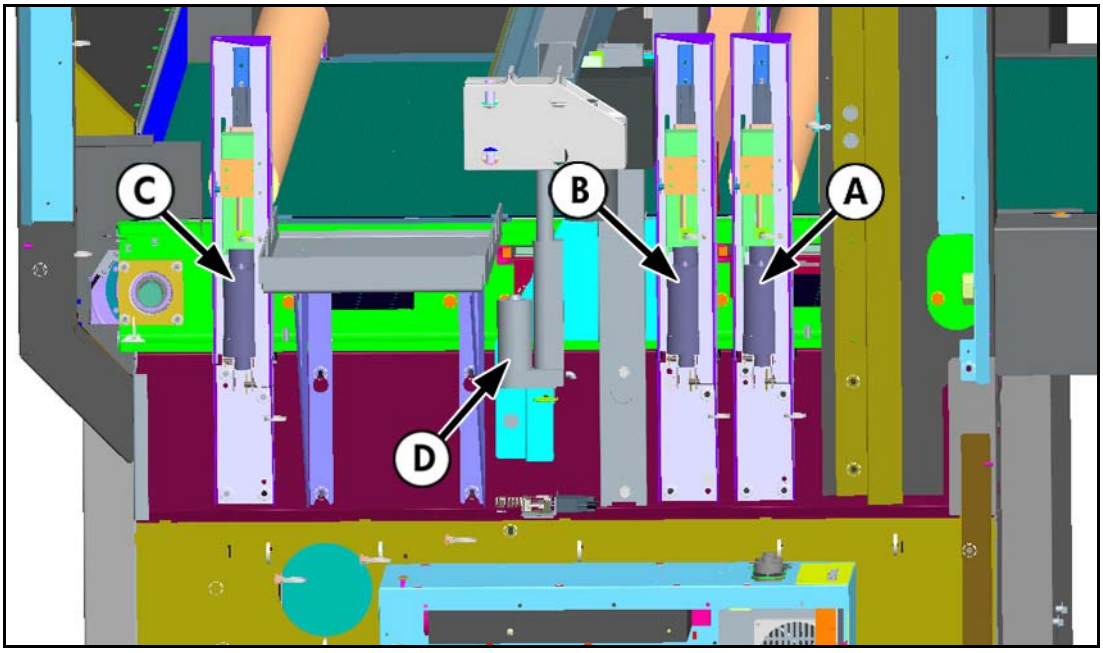
D = Rail actuator motors

E = Service station actuator motor

Note: In the service-end view, the service station is removed for clarity.

User-end view

Fig. 129. Actuator assemblies and individual actuator motors



A = Input roller actuator assemblies

C = Output roller actuator assemblies

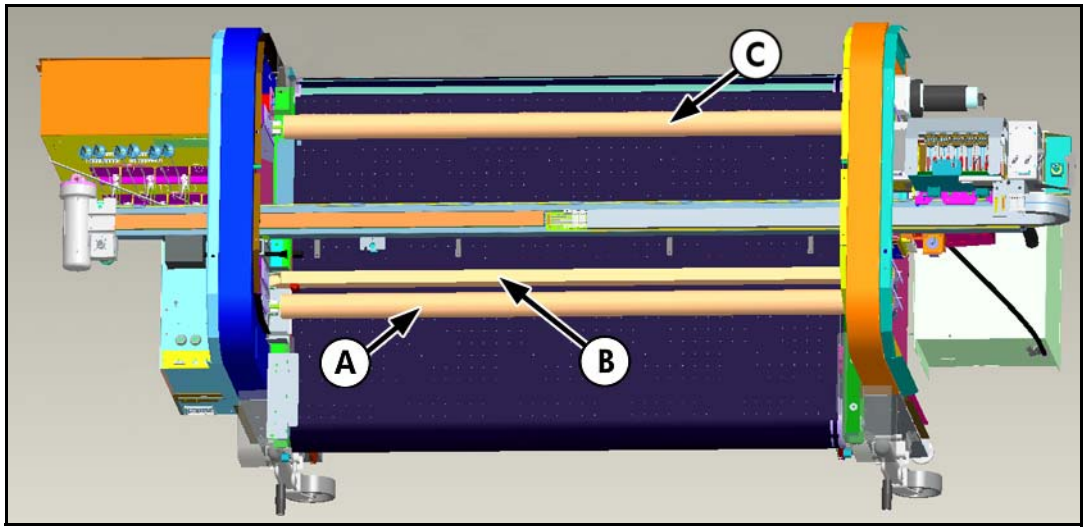
B = Alignment bar actuator assemblies

D = Rail actuator motors

About the media alignment bar

The alignment bar (B in Fig. 130.) ensures that the media enters the printer straight. Media is pressed against the bar during the media loading process. It is then captured by the input roller, which hold the media's position.

Fig. 130. Alignment bar and media rollers



About the input roller

The input roller holds the media in place and flattens warped media before it travels beneath the carriage. During the load process, the input roller will lift to allow the insertion of media and then descend to press and hold the media down. If the printer has the roll-to-roll option installed,

the printer will also have two removable foam rollers above the input-side of the belt. These are used to load flexible media onto the roll-to-roll system and should not be confused with the input roller.

About the output roller

The output roller keeps the media flat as it comes off of the belt. Otherwise, the media would curl and contact the carriage, cause a headstrike, which can force debris into the jet nozzles of the printheads and permanently damaging the printheads.

About the media thickness sensor

The media thickness sensor is located beneath the rail on the user-end of the printer. It detects the thickness of the media. This informs the printer how high above the media to raise the rail.

Fig. 131. Media thickness sensor



About the media detection sensor

The media detection sensor (A in Fig. 132.) is located on the input side of the printer. It shines a laser beam at a 45-degree angle onto the belt. When reflective media breaks the beam, the sensor reports finding media to the printer.

Fig. 132. Media detection sensor



Note If the printer has the optional roll-to-roll feature installed, there will be an additional media-detection sensor installed near the middle of the input-side enclosure above the belt.

Roll-to-roll

About the roll-to-roll assembly

Lift and press foam rollers

The media is unspooled from the supply spool, and it travels over a foam roller called the “lift roller” (D in Fig. 134.) and under a second roller called the “press roller” (C in Fig. 134.).

Caution Hold the lift and press foam rollers horizontally with both hands. Do not hold the foam rollers at an angle. The weight of the rollers will cause the adhesive that bonds the foam to the rollers to sheer, separating the foam from the roller.

Fig. 133. Proper way to hold foam rollers

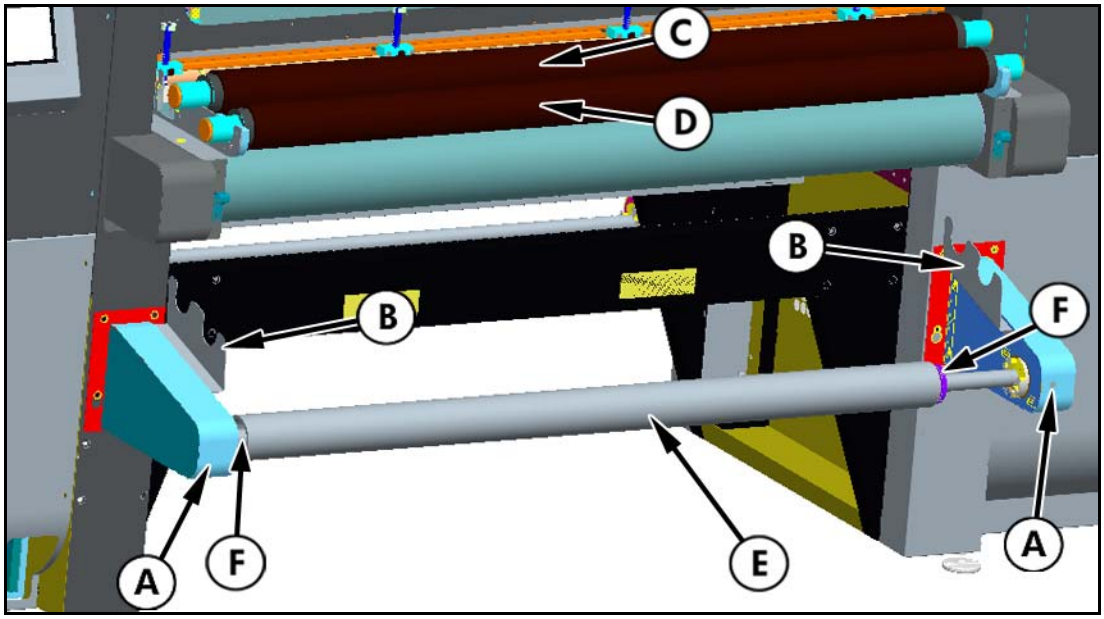


About the supply assemblies

The supply assemblies are bolted to the input-side of the printer. The supply spool is held in place by spool collets (F in Fig. 134.) on each end of the spool. The supply collets are not motorized. The media is pulled from the supply spool by the media-drive belt, which grips the media by vac-

uum. The motorized takeup spool is located on the output-side of the printer. When the media comes off of the belt, the motorized takeup winds the media around the takeup spool.

Fig. 134. Supply spool



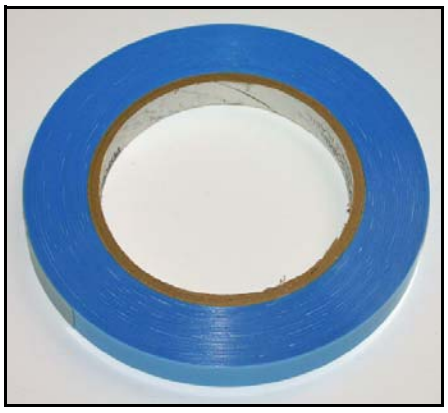
Mid-spool support for heavy media rolls

Some rolls of media may be so heavy that they cause the supply and takeup spools to sag. If the supply spool sags, wrinkles develop in the media as it moves onto the media-drive belt. During printing, these wrinkles can contact the bottom of the carriage (called a “head strike”). A head strike will damage the print and possibly the carriage or printheads. The mid-spool support is installed to keep heavy rolls, like long rolls of vinyl, from sagging.

Because there is no standard radius for media cores, the media roll may not fit snugly onto the mid-spool support. You may need to add tape (supplied) as a spacer to keep the media from rattling on the mid-spool support. If the media roll fits over the mid-spool support snugly, then adding a spacer (tape) is not needed.

If the roll is loose on the mid-spool support, tape (Fig. 135.) should be added to increase the diameter of the mid-spool support. Add (or remove) as many layers of tape as needed to create a snug fit between the mid-spool support and the media roll.

Fig. 135. Tape used to create spacers on mid-roll support

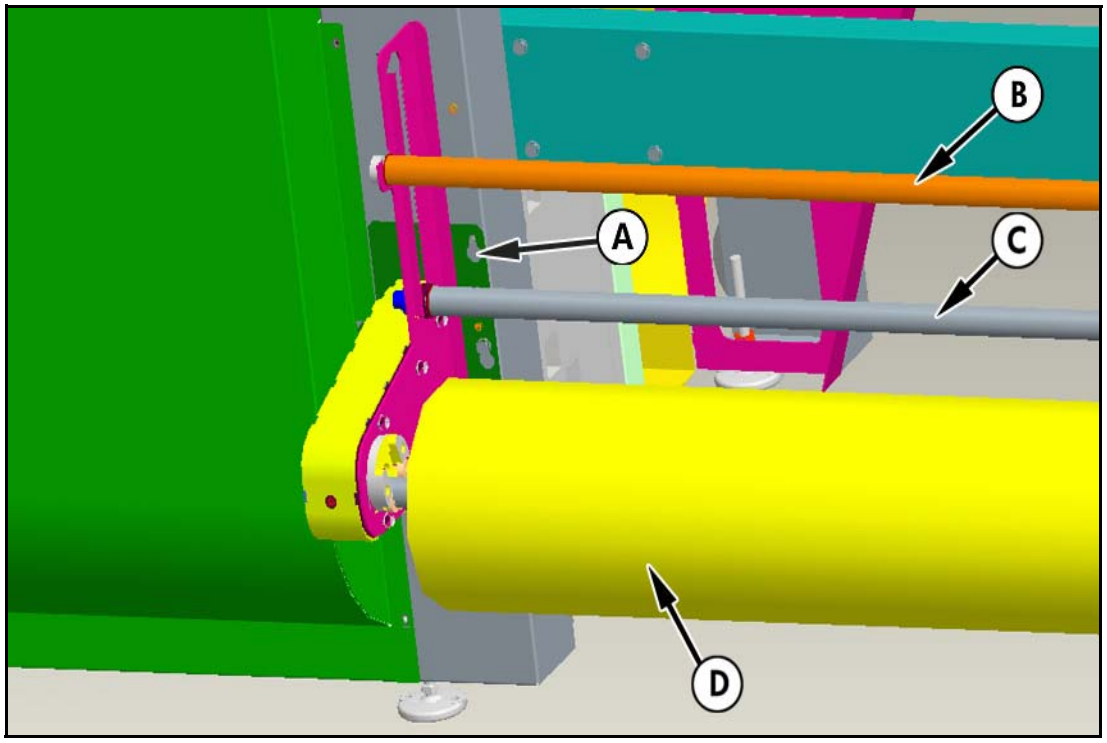


Note: This tape (included in roll-to-roll kit) should not be used to tape the media to the takeup core. It is for creating spacers, as needed, for the mid-spool support.

About the takeup assemblies

The motorized takeup (Fig. 136.) is an optional attachment that is installed if the roll-to-roll option is installed. It is bolted to the output-side of the printer (A in Fig. 136.). There is no communication between the printer and the takeup. Roll media coming from the belt passes behind the moveable dancer bar (C in Fig. 136.) and over the stationary bar (B in Fig. 136.), after which it is taped to an empty cardboard core at a location on the spool closest to the printer (When viewed from the user-end, the takeup turns clockwise--when viewed from the user-end of the printer).

Fig. 136. Takeup assembly

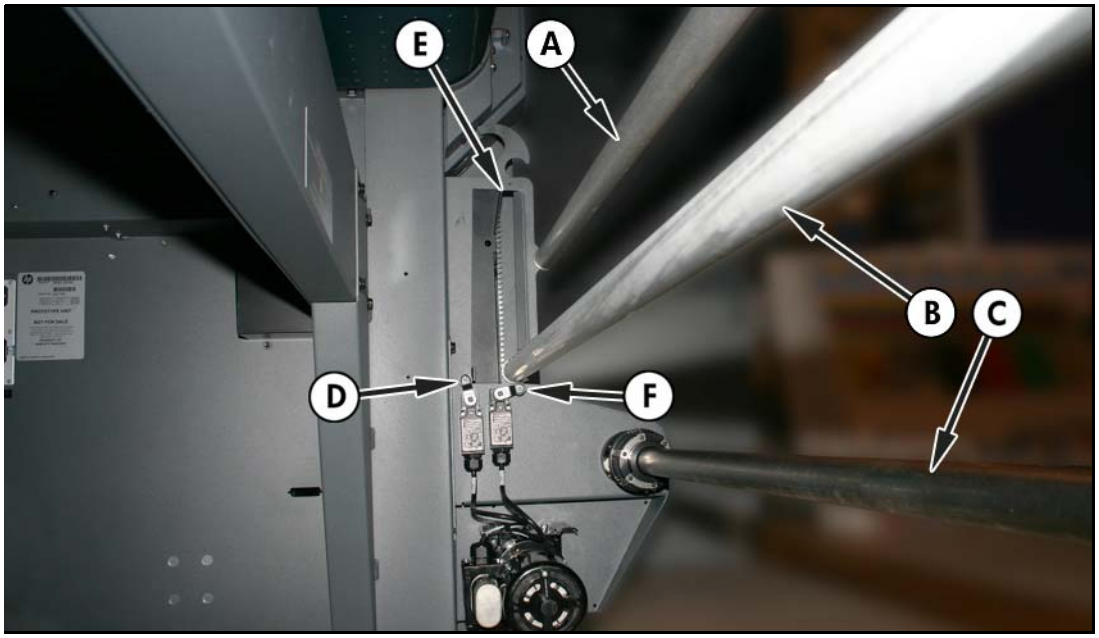


About the limit switches

The takeup assembly uses two limit switches: one (D in Fig. 137.) to activate the turning of the takeup spool (C in Fig. 137.) and the other (F in Fig. 137.) to stop the takeup spool from turning. As media feeds off of the media-drive belt, the weight of the dancer bar (B in Fig. 137.) pulls the loop of media down until the dancer bar contacts the activation limit switch (F in Fig. 137.). This turns on the takeup spool motor, causing the loop of media to be wound onto the takeup spool (C in Fig. 137.). When the media roll on the supply spool is completely used up, and the end of the roll of media wraps onto the takeup spool, the dancer bar will lower (because there is no media holding it up), and the motor will turn off when the dancer bar activates the switch.

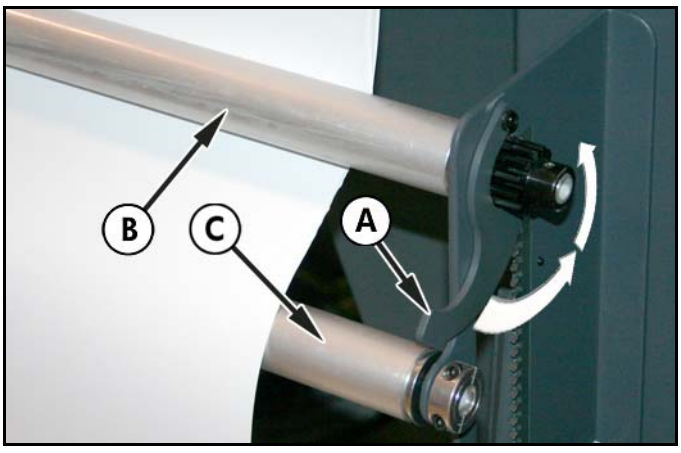
As the loop of media shortens (between the fixed bar and the dancer bar), the dancer bar is forced upward until the limit switch (D in Fig. 137.) deactivates, turning off the takeup motor. This process repeats as long as media feeds off of the belt.

Fig. 137. Limit switches



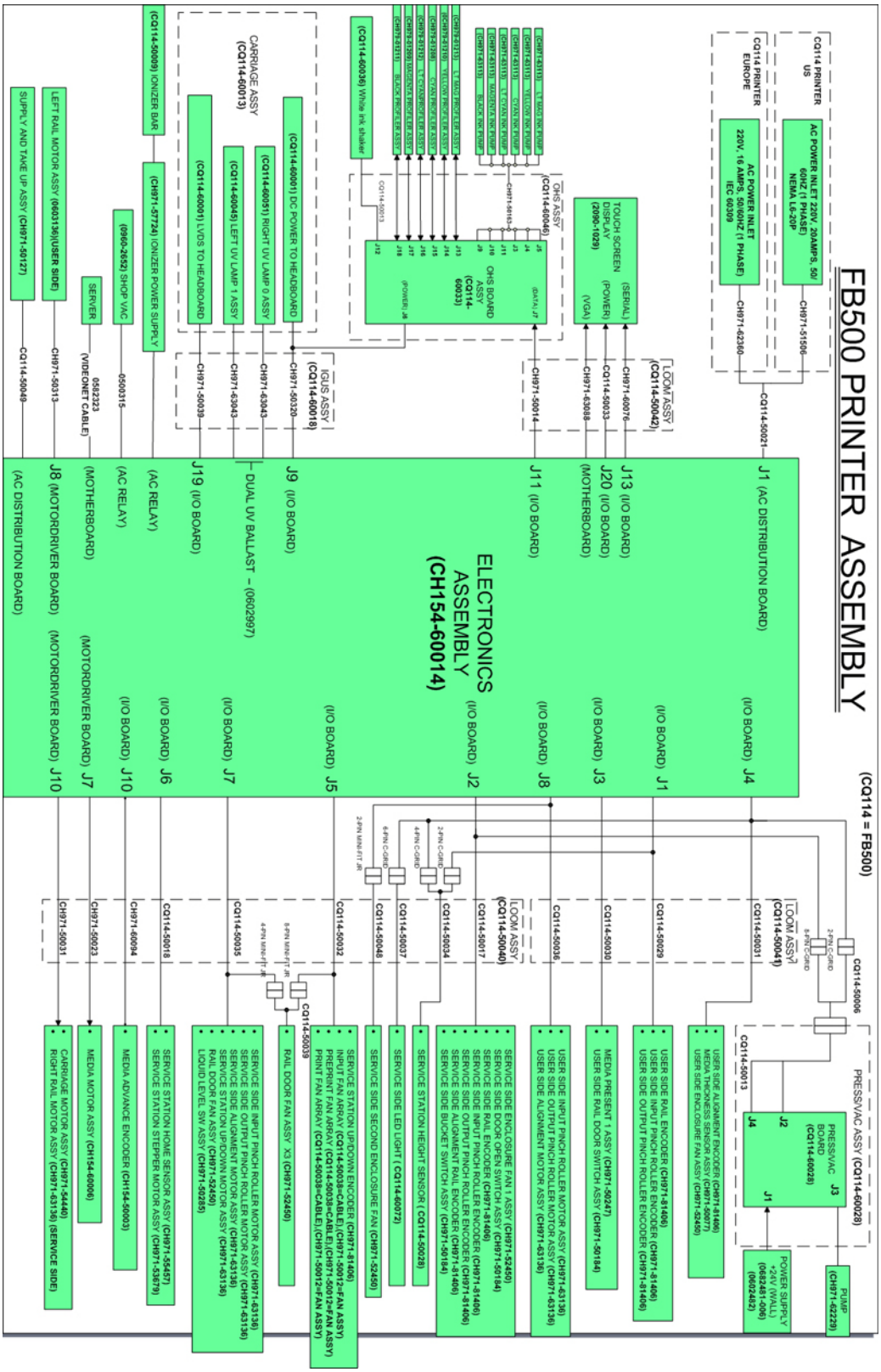
When loading the takeup, the moveable dancer bar can be locked in the top position using the position latch (A in Fig. 138.) to keep the dancer bar (B in Fig. 138.) from activating the takeup motor.

Fig. 138. Position latch



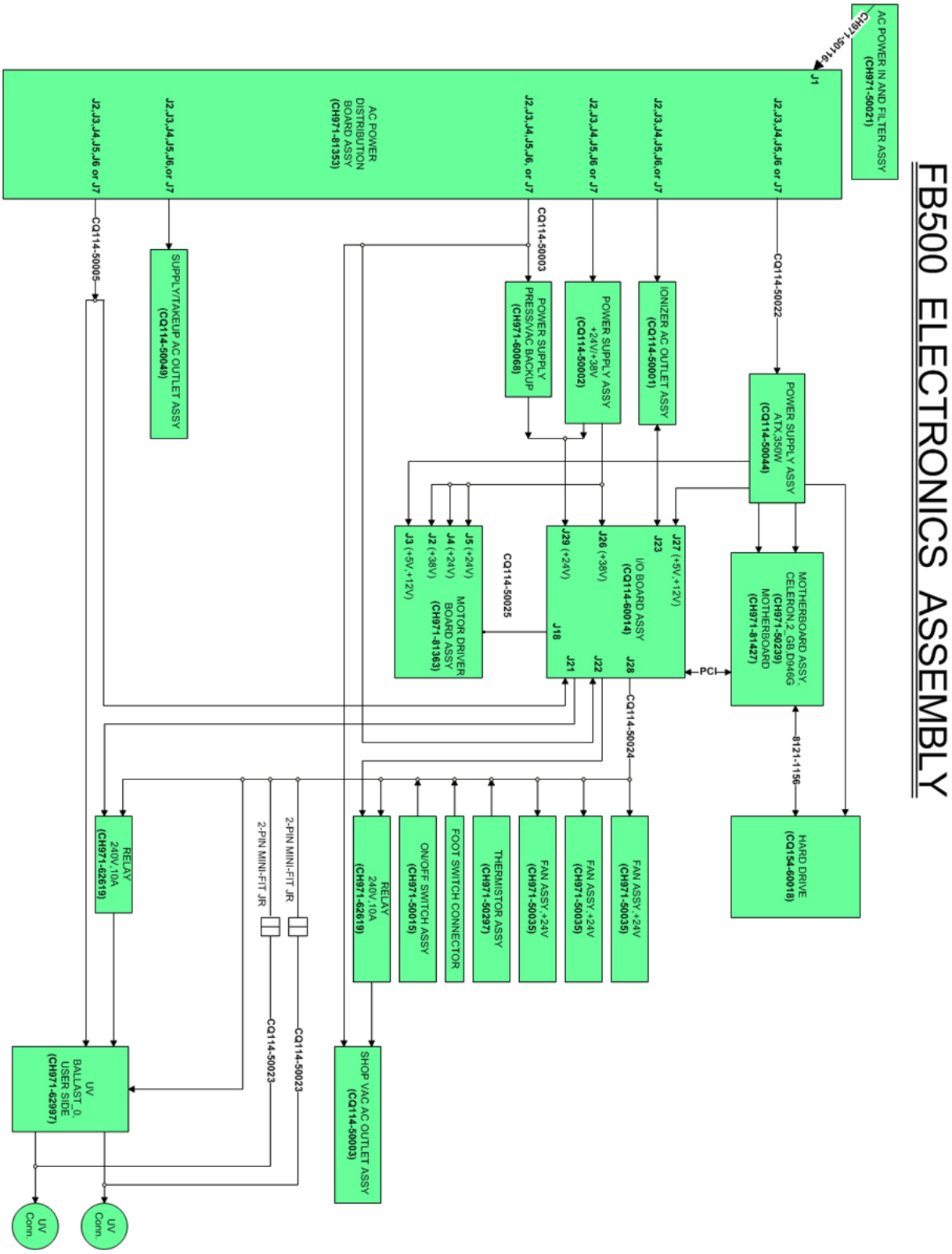
Wiring diagram for the FB500 printer

Fig. 139. Wiring diagram for FB500 printer



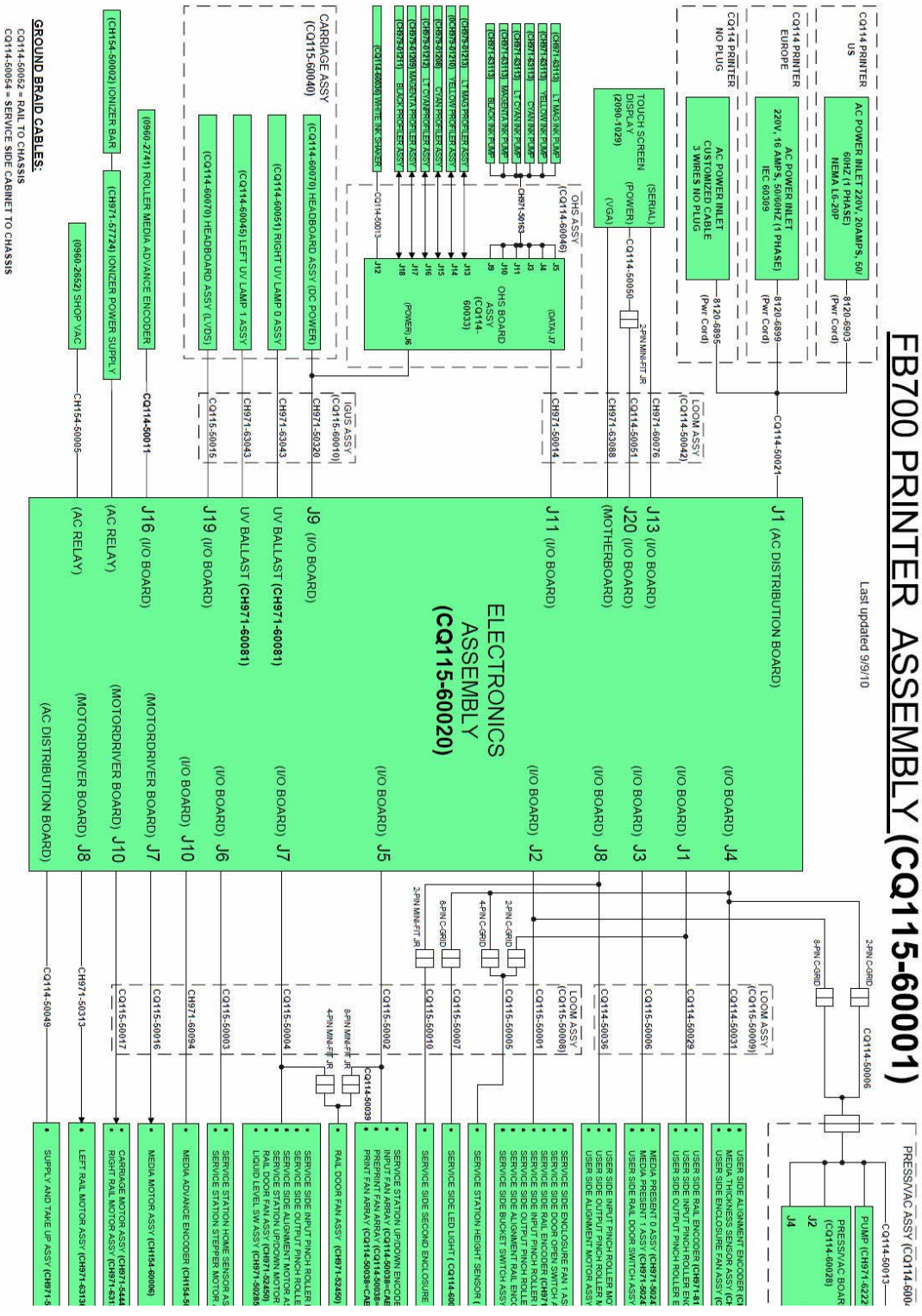
Wiring diagram for FB500 main electronics

Fig. 140. Wiring diagram for electronics box



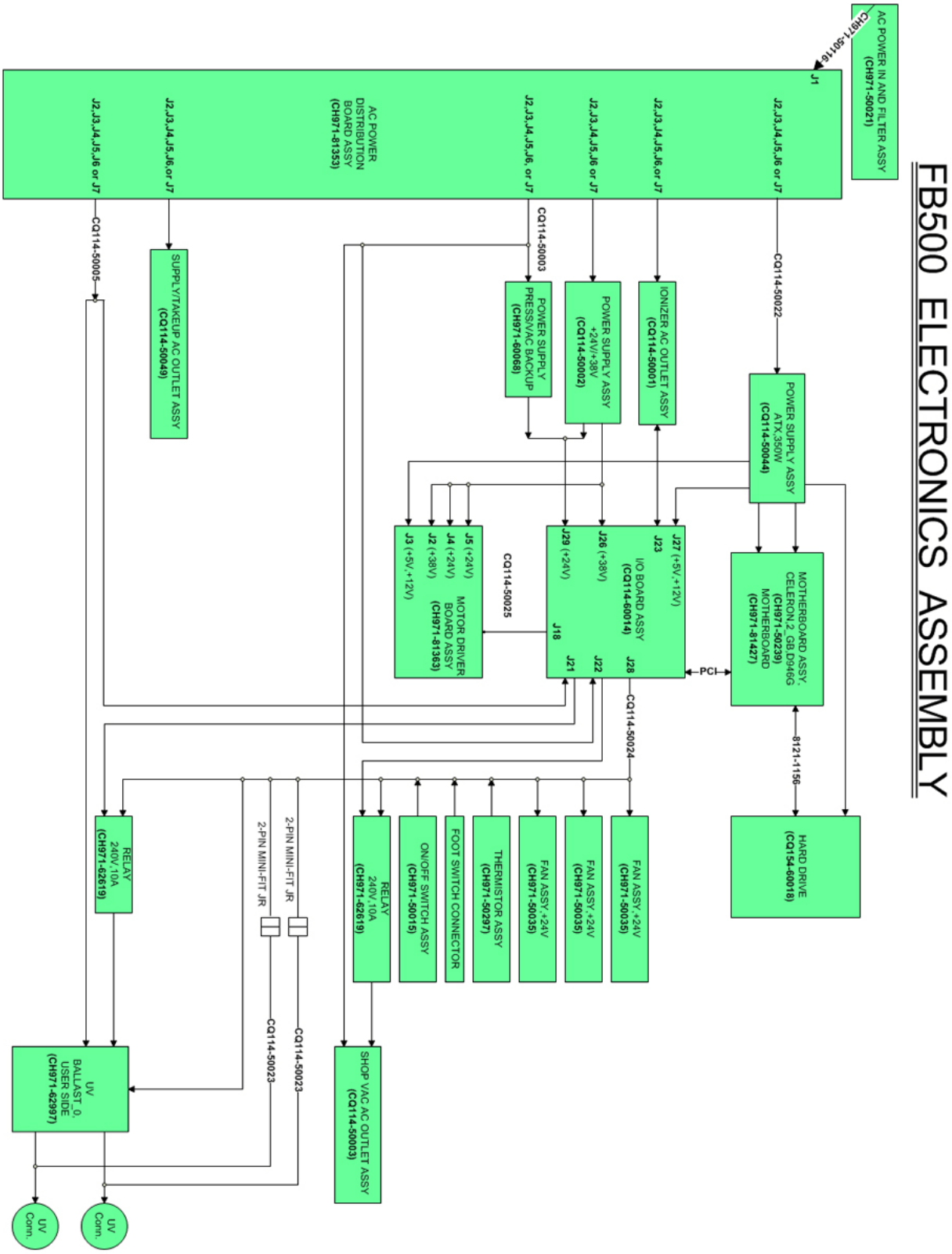
Wiring diagram for the FB700 printer

Fig. 141. Wiring diagram for FB700 printer



Wiring diagram for FB700 main electronics

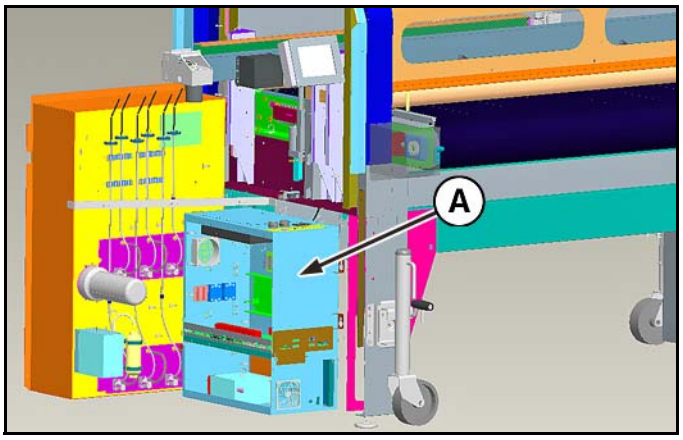
Fig. 142. Wiring diagram for FB700 electronics box



About the main electronics box

The main electronics box (A in Fig. 143.) is located in the user-end enclosure. It contains the motherboard for processing commands, a hard disk, a small 24-volt power supply, a power distribution board, a 38-volt / 24-volt power supply, an AC filter, two AC relays, an ATX 12-volt power supply, the UV power supply and a large I/O board.

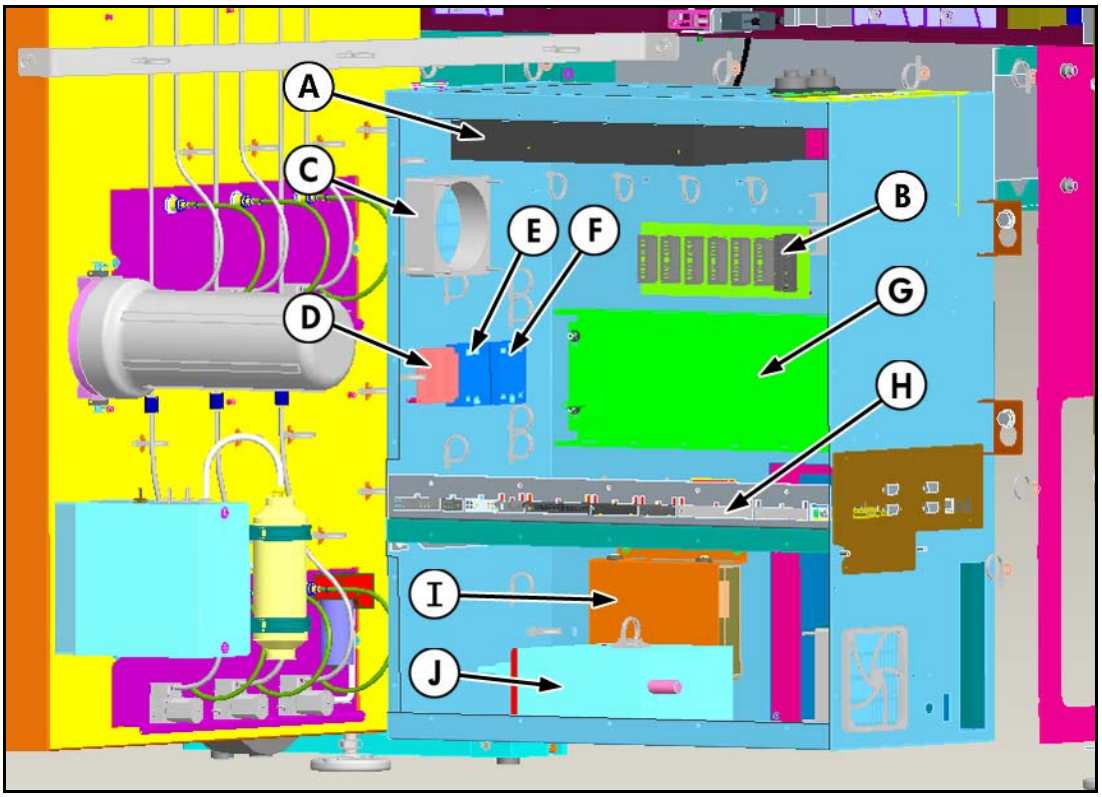
Fig. 143. Electronics box location



Electronics box components identified

Partial view (see second view for more components).

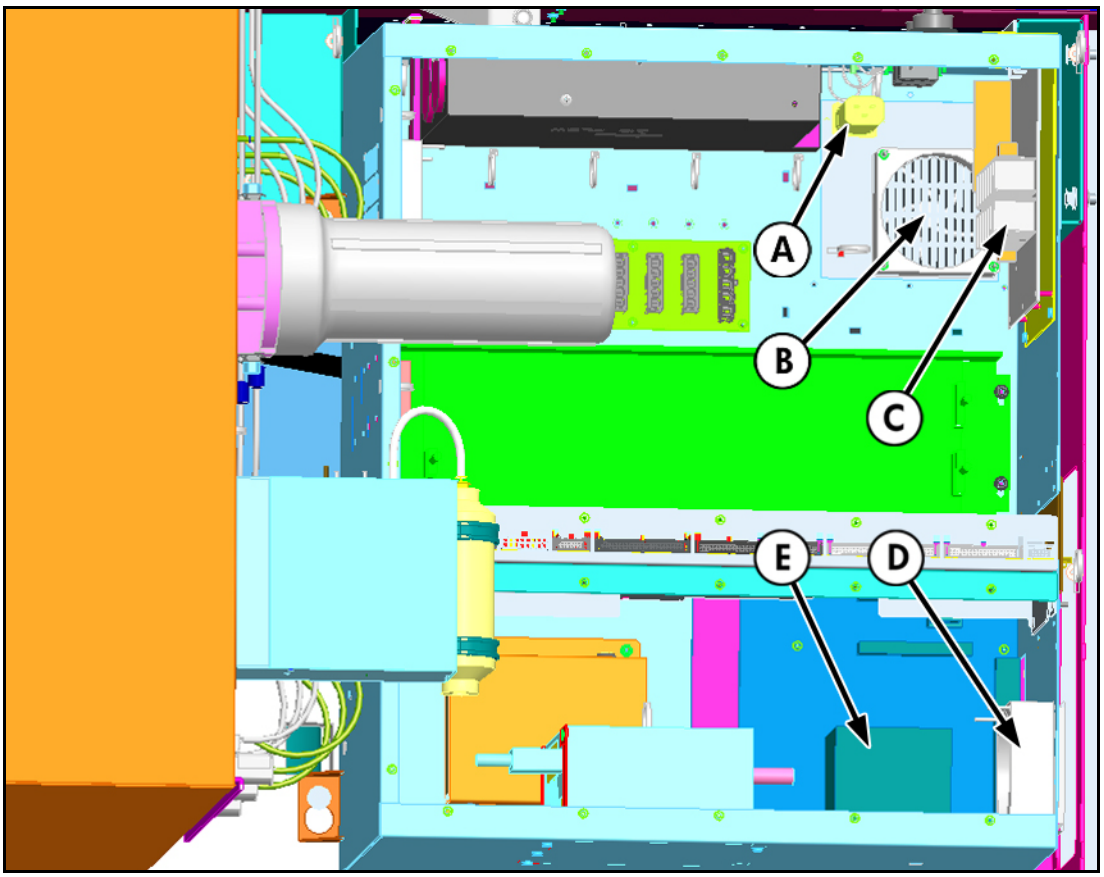
Fig. 144. Electronics box components for FB500



A = 38v/24v power supply
B = AC distribution board
C = Fan to vent hot air
D = TBD
E = AC relay for ShopVac
F = AC relay UV power
G = UV power supply
H = I/O controller
I = Hard drive
J = ATX 12v power supply

Second view of electronics box

Fig. 145. Electronics box components, second view

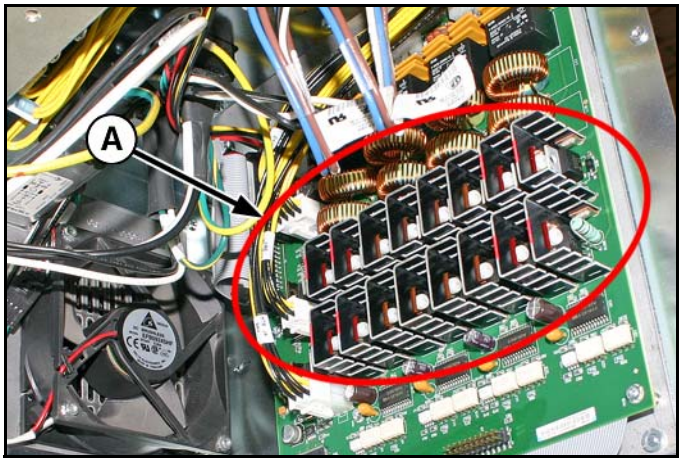


A = AC filter
B = Input air fan
C = Motor control board
D = Input air fan
E = Motherboard

About the motor control board

The motor control board (C in Fig. 145.) is used for motors that draw a higher amount of initial amperage to start. These include the media advance motor, the carriage motor, and the rail actuator motors. Motors that require initial high amperage to start generate heat in the electronics box. The motor control board has 16 FETs (Field Effect Transistors - see A in Fig. 146.) to dissipate this heat.

Fig. 146. FETs on the motor control board



About the 38v/24v power supply

The 38v/24v power supply (A in Fig. 144.) is secured to the top of the electronics box. It receives power from the AC distribution board and converts it to DC voltage. It provides power to the printheads and most of the printers motors and actuators (up/down motors for the rail, alignment bar, input roller and output roller).

The 38v power is used for the printheads and for the media advance motor.

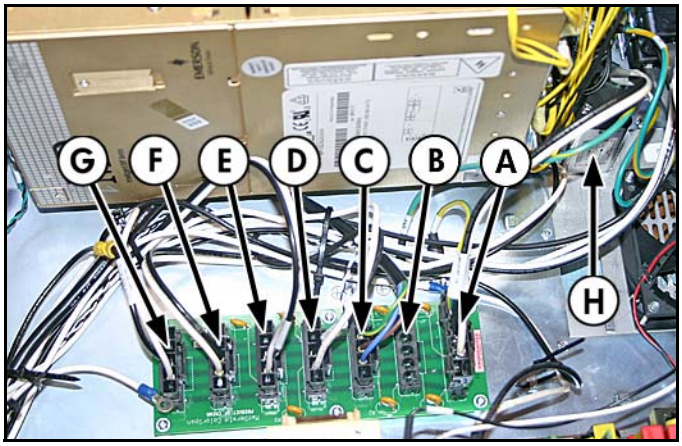
The 24v supplies power to all of the enclosure fans (expect the carriage fans, which are regulated to 12v), all of the actuator motors (up/down motors) for the rail, alignment bar, service station and the input and output rollers. The carriage headboard receives both 38v and 24v. The carriage camera and the lamp shutters use 24v. The 24v is regulated down to 12v at the headboard for the thermistors and carriage fans.

Power for the motors is controlled with H-bridge circuitry, which allows the polarity to reverse to change the direction the motors turn. Power is passed through the I/O controller (H in Fig. 144.) to control direction (forward/backward or up/down) and the on/off state of motors.

About the AC power distribution board

The AC distribution board has one input socket (A in Fig. 147.) and six output sockets. The external power cord plugs into the AC filter outlet (H in Fig. 147.), which connects to the input voltage socket (A in Fig. 147.) of the AC distribution board. It acts like a power strip for various components including the optional takeup motor (B in Fig. 147.), the ATX power supply (C in Fig. 147.), the 38v/24v power supply (D in Fig. 147.), the ionizer (E in Fig. 147.), the Shop-Vac (F in Fig. 147.)and the UV power supply (G in Fig. 147.).

Fig. 147. AC power distribution board



About the AC filter

The printer's power cord plugs into the AC filter (A in Fig. 145.), which connects to the first socket on the AC distribution board (A in Fig. 147.). The AC filter controls conducted emissions to ensure that the printer does not conduct electrical noise back into the power grid.

About the AC relay

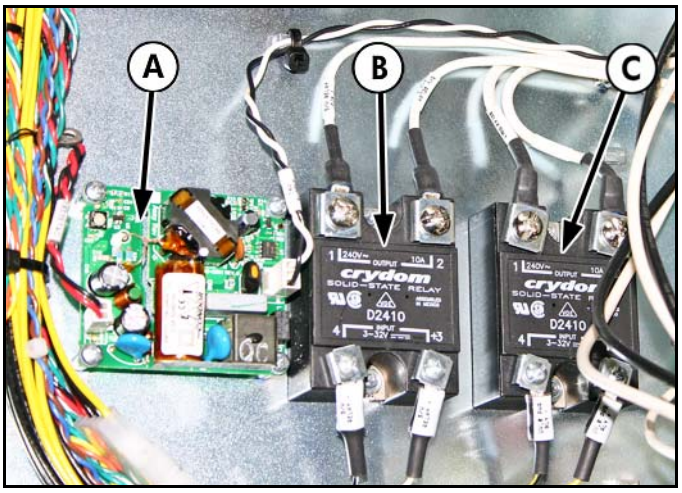
There are two AC relays in the electronics box. The AC relay (B in Fig. 148.) closest to the small 24v power supply (A in Fig. 148.) switches power on or off to the Shop-Vac. The second AC relay (C in Fig. 148.) switches power on or off to the UV power supply.

Fig. 148. AC relays

A = 24v backup power supply

B = AC relay for ShopVac

C = AC relay for UV power supply



About the ATX power supply

The ATX power supply (J in Fig. 144.) provides power to the motherboard, the hard drive and to the circuitry for the motor control board. The power from the ATX supply does not directly drive any motors, but it supplies power to the logic on the control board. The ATX power supply also connects to the I/O controller and can deliver 3.3v and 5v through regulators on the I/O controller.

About the hard disk

The hard disk (I in Fig. 144.) holds the operating system for the printer and the user interface for the printer's menu. Print jobs are first spooled to the hard disk before being processed.

About the motherboard

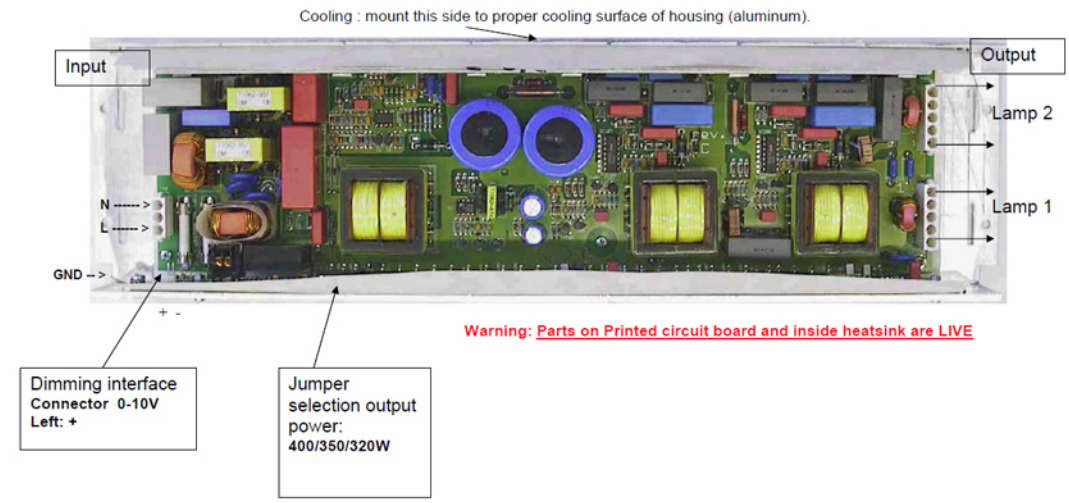
The motherboard (E in Fig. 145.) processes data and commands. It also loads the operating system from the hard drive. The motherboard is powered by the ATX power supply, and provides power to the I/O board through its PCI bus slot.

About the UV power supply

The UV power supply (G in Fig. 144.) is a single power supply with dual channel output (two 400 watt channels, one for each lamp). Power is delivered to the UV power supply from the AC distribution board. The hot wire connects directly to the UV power supply. The neutral wire con-

nects to the AC relay (C in Fig. 148.). From the AC relay, the neutral wire branches to the I/O controller to provide voltage sensing and then connects to the UV power supply.

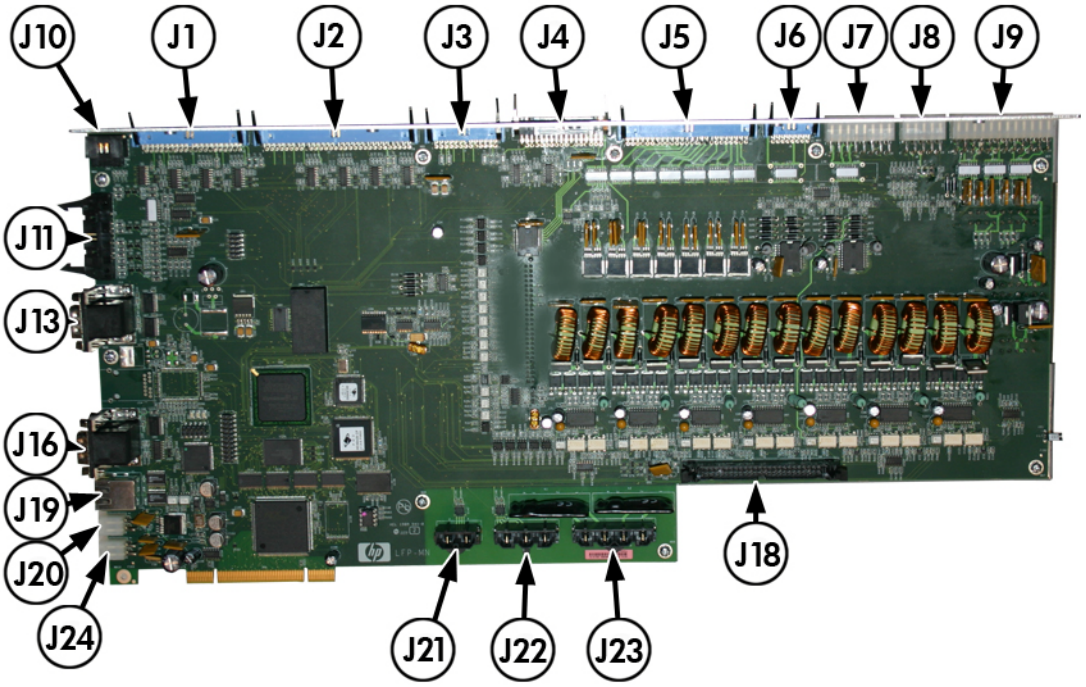
Fig. 149. UV power supply



About the I/O board

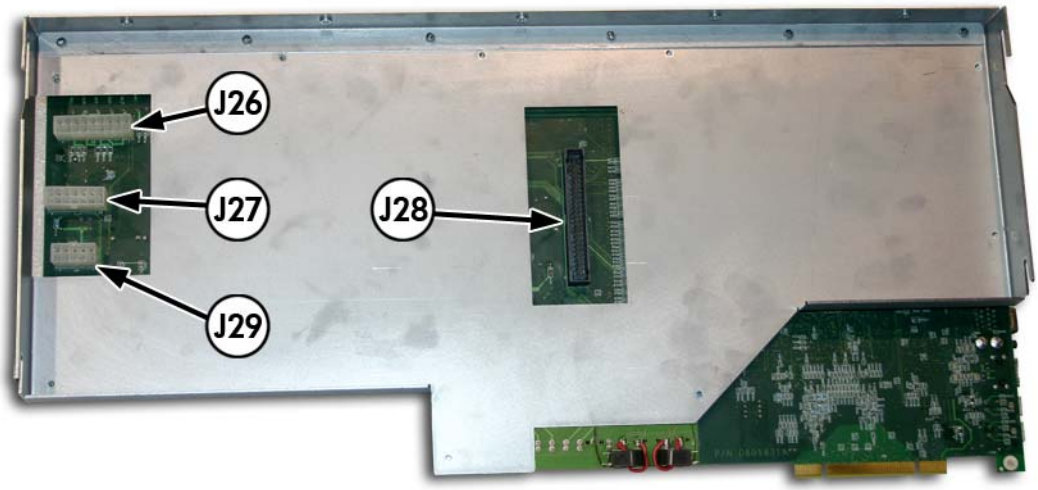
The I/O board (H in Fig. 144.) plugs into the motherboard's PCI slot. It is the main interface between the printer's commands and the various motors, sensors, fans, printheads, etc. See "Wiring diagram for the FB500 printer" on page 119 and "Wiring diagram for FB500 main electronics" on page 120.

Fig. 150. Top of I/O board



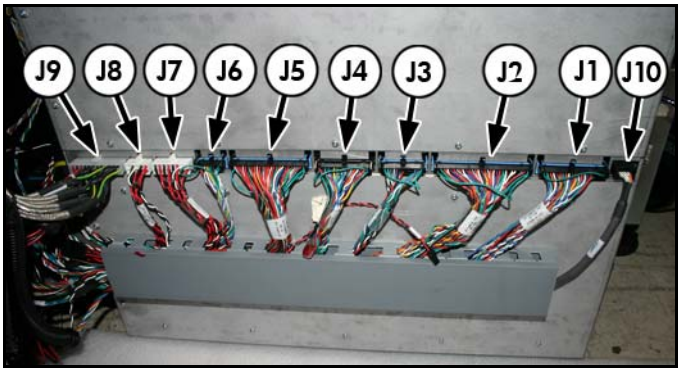
I/O Board view from the bottom

Fig. 151. Bottom of I/O board



I/O board external cables

Fig. 152. I/O board external cabled



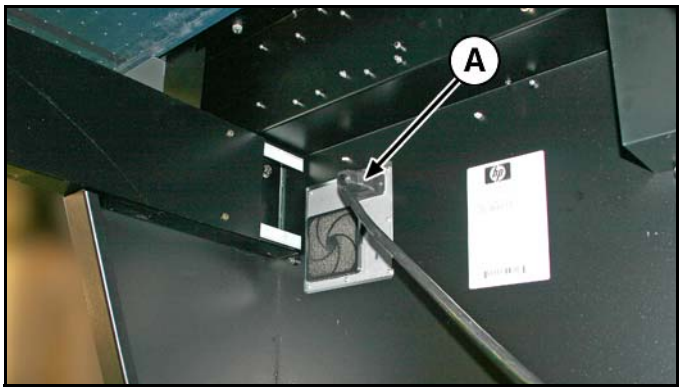
For more information, see “Cable Pinouts” on page 131.

About the main power cable

Do not power on the printer until the printheads are fully installed.

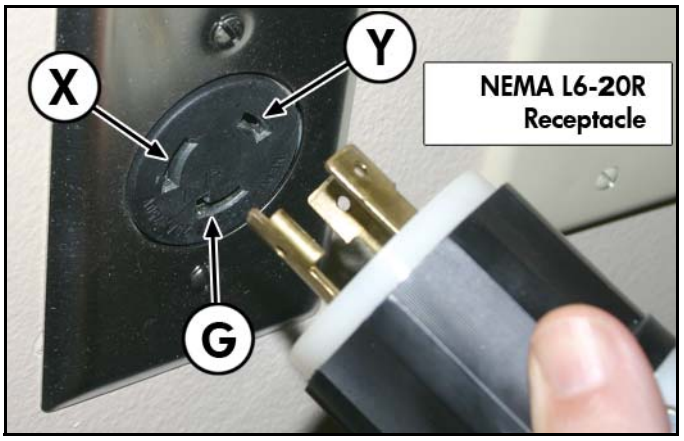
The power cable (A in Fig. 153.) plugs into the printer at the power cable location under the printer in the center area near the user-end.

Fig. 153. Power cable connection



The supplied power cable plugs into a NEMA L6-20R wall receptacle.

Fig. 154. NEMA L6-20R receptacle



Uninterrupted power supply

The AC input provided to the printer must be clean and constant at the specified voltage and frequency. If your facility is subject to electric power brownouts, blackouts, or surges, Hewlett-Packard recommends the use of a backup power system, or UPS (uninterruptedly power supply) (UPS), to ensure that the AC input power to the printer is continuously within specifications. The UPS must be a single-phase UPS capable of sourcing a minimum of 3000 VA, at a voltage in the range of 200-240 VAC, 50/60 Hz, and a maximum current rating of 12 Amps per phase. The UPS must have the proper receptacle as specified in this document. Connect the UPS to the facility wall outlet, and connect the printer power cord to the UPS

Pinout for J1

Fig. 155. I/O cable pinouts for J1

Pin#	40 PIN		J1, User Side Motor Encoders, cable PN CQ114-50029
1	ConnectDrive	CONNECTDRIVE	
2		J_CONNECTDRIVE0	
3		J_CONNECTDRIVE0	
4		J_FOOTREADY_N	
5		GND	
6	POWERSWITCH	POWERSWITCH	Printer power switch, no connect sense
7	GND	GND	Switch return
8	ConnectDrive	CONNECTDRIVE	
9	User side Rail Encoder +5V	5vFUSED1	
10	User side Rail Encoder Phase B Pos	J_USRAIL_PHASEBPOS	
11	User side Rail Encoder Phase B Neg	J_USRAIL_PHASEBNEG	
12	User side Rail Encoder Return	GND	
13	User side Rail Encoder Phase A Pos	J_USRAIL_PHASEAPOS	
14	User side Rail Encoder Phase A Neg	J_USRAIL_PHASEANEG	
15	User side Rail Encoder Limit Pos	J_USRAIL_LIMITPOS	
16	User side Rail Encoder Limit Neg	J_USRAIL_LIMITNEG	
17	User side Rail Encoder Connect	J_USRAIL_CONN	
18	ConnectDrive	CONNECTDRIVE	
19	US Input PinchRLR Encoder +5V	5v	
20	US Input PinchRLR Encoder Phase B Pos	J_USPINCHIN_PHASEBPOS	
21	US Input PinchRLR Encoder Phase B Neg	J_USPINCHIN_PHASEBNEG	
22	US Input PinchRLR Encoder Return	GND	
23	US Input PinchRLR Encoder Phase A Pos	J_USPINCHIN_PHASEAPOS	
24	US Input PinchRLR Encoder Phase A Neg	J_USPINCHIN_PHASEANEG	
25	US Input PinchRLR Encoder Limit Pos	J_USPINCHIN_LIMITPOS	
26	US Input PinchRLR Encoder Limit Neg	J_USPINCHIN_LIMITNEG	
27	US Input PinchRLR Encoder Connect	J_USPINCHIN_CONN	
28	ConnectDrive	CONNECTDRIVE	
29	US Output PinchRLR Encoder +5V	5v	
30	US Output PinchRLR Encoder Phase B	J_USPINCHOUT_PHASEBPOS	
31	US Output PinchRLR Encoder Phase B Neg	J_USPINCHOUT_PHASEBNEG	
32	US Output PinchRLR Encoder Return	GND	
33	US Output PinchRLR Encoder Phase A Pos	J_USPINCHOUT_PHASEAPOS	
34	US Output PinchRLR Encoder Phase A Neg	J_USPINCHOUT_PHASEANEG	
35	US Output PinchRLR Encoder Limit Pos	J_USPINCHOUT_LIMITPOS	
36	US Output PinchRLR Encoder Limit Neg	J_USPINCHOUT_LIMITNEG	
37	US Output PinchRLR Encoder Connect	J_USPINCHOUT_CONN	
38	24v	SPARE_PWR1	SS Height snsr pwr
39	FLCableConn		Cable Sense
40	GND	GND	

Pinout for J2

Fig. 156. I/O cable pinouts for J2

	60 PIN	250095-014	J2 ,Service Side Motor Encoders, cable PN CQ114-50017
1	ConnectDrive	CONNECTDRIVE	
2	ConnectDrive	CONNECTDRIVE	Connect Drive
3	Enclosure fan power(PWM-able)	ENCFAN1	power (US side encl fan)
4	Enclosure fan power return	GND	Return
5	Enclosure fan connect sense	ENCFAN1_CONN	Connect sense input
6	ConnectDrive	CONNECTDRIVE	
7	/EMERG3	/EMERG3	Available
8	GND	GND	Available
9	Emerg3Conn	Emerg3Conn	PRESS/VAC
10	ConnectDrive	CONNECTDRIVE	
11	/EMERG4	/EMERG4	Emergency kill switch 4, Bucket Open switch
12	GND	GND	Bucket Open switch Return
13	Emerg4Conn	Emerg4Conn	PRESS/VAC
14	ConnectDrive	CONNECTDRIVE	
15	/EMERG5	/EMERG5	Service Side Door Open Switch
16	GND	GND	
17	Emerg5Conn	Emerg5Conn	
18	ConnectDrive	CONNECTDRIVE	
19	SSS Rail Encoder +5V	5v	
20	SSS Rail Encoder Phase B Pos	J_SSSRAIL_PHASEBPOS	
21	SSS Rail Encoder Phase B Neg	J_SSSRAIL_PHASEBNEG	
22	SSS Rail Encoder Return	GND	
23	SSS Rail Encoder Phase A Pos	J_SSSRAIL_PHASEAPOS	
24	SSS Rail Encoder Phase A Neg	J_SSSRAIL_PHASEANEG	
25	SSS Rail Encoder Limit Pos	J_SSSRAIL_LIMITPOS	
26	SSS Rail Encoder Limit Neg	J_SSSRAIL_LIMITNEG	
27	SSS Rail Encoder Connect	J_SSSRAIL_CONN	
28	ConnectDrive	CONNECTDRIVE	
29	SSS Input PinchRLR Encoder +5V	5v	
30	SSS Input PinchRLR Encoder Phase B Pos	J_SSSPINCHIN_PHASEBPOS	
31	SSS Input PinchRLR Encoder Phase B Neg	J_SSSPINCHIN_PHASEBNEG	
32	SSS Input PinchRLR Encoder Return	GND	
33	SSS Input PinchRLR Encoder Phase A Pos	J_SSSPINCHIN_PHASEAPOS	
34	SSS Input PinchRLR Encoder Phase A Neg	J_SSSPINCHIN_PHASEANEG	
35	SSS Input PinchRLR Encoder Limit Pos	J_SSSPINCHIN_LIMITPOS	
36	SSS Input PinchRLR Encoder Limit Neg	J_SSSPINCHIN_LIMITNEG	
37	SSS Input PinchRLR Encoder Connect	J_SSSPINCHIN_CONN	
38	ConnectDrive	CONNECTDRIVE	
39	SSS Output PinchRLR Encoder +5V	5v	
40	SSS Output PinchRLR Encoder Phase B Pos	J_SSSPINCHOUT_PHASEBPOS	
41	SSS Output PinchRLR Encoder Phase B Neg	J_SSSPINCHOUT_PHASEBNEG	
42	SSS Output PinchRLR Encoder Return	GND	
43	SSS Output PinchRLR Encoder Phase A Pos	J_SSSPINCHOUT_PHASEAPOS	
44	SSS Output PinchRLR Encoder Phase A Neg	J_SSSPINCHOUT_PHASEANEG	
45	SSS Output PinchRLR Encoder Limit Pos	J_SSSPINCHOUT_LIMITPOS	
46	SSS Output PinchRLR Encoder Limit Neg	J_SSSPINCHOUT_LIMITNEG	
47	SSS Output PinchRLR Encoder	J_SSSPINCHOUT_CONN	
48	ConnectDrive	CONNECTDRIVE	
49	SSS Alignment bar Encoder +5V	5v	
50	SSS Alignment bar Encoder Phase B Pos	J_SSSALIGN_PHASEBPOS	
51	SSS Alignment bar Encoder Phase B Neg	J_SSSALIGN_PHASEBNEG	
52	SSS Alignment bar Encoder Return	GND	
53	SSS Alignment bar Encoder Phase A Pos	J_SSSALIGN_PHASEAPOS	
54	SSS Alignment bar Encoder Phase A Neg	J_SSSALIGN_PHASEANEG	
55	SSS Alignment bar Encoder Limit Pos	J_SSSALIGN_LIMITPOS	
56	SSS Alignment bar Encoder Limit Neg	J_SSSALIGN_LIMITNEG	
57	SSS Alignment bar Encoder Connect	J_SSSALIGN_CONN	
58		/EMERG6	
59		GND	
60	SSS1CableConn		

Pinout for J3

Fig. 157. I/O cable pinouts for J3

Pin #	26 PIN	0250095-007	J3 ,Media Presence/Emergency Kills, cable P/N CQ114-50030
1	ConnectDrive	CONNECTDRIVE	Cable sense
2	ConnectDrive	CONNECTDRIVE	
3	+24VMOTOR	+24VMTR	Banner1, 3-wire, 0602239 powered switch, connect sense Middle media sensor
4	/BANN1	/BANN1	Roll Presence
5	GND	GND	
6	Bann1Conn	Bann1Conn	connect sense for BAN1
7	ConnectDrive	CONNECTDRIVE	
8	+24VMOTOR	+24VMTR	Banner0, 3-wire, 0602239
9	/BANN0	/BANN0	
10	GND	GND	
11	Bann0Conn	Bann0Conn	connect sense for BAN0
12	ConnectDrive	CONNECTDRIVE	Available
13	/EMERG0	/EMERG0	Available
14	GND	GND	Available
15	Emerg0Conn	Emerg0Conn	Available
16	ConnectDrive	CONNECTDRIVE	
17	/EMERG1	/EMERG1	Emergency kill switch 1, User side rail door
18	GND	GND	
19	Emerg1Conn	Emerg1Conn	
20	ConnectDrive	CONNECTDRIVE	
21	/EMERG2	/EMERG2	Available
22	GND	GND	Available
23	Emerg2Conn	Emerg2Conn	Available
24	24V	SPARE_PWR0	Available
25	FRCableConn	FRCableConn	
26	GND	GND	Available

Pinout for J4

Fig. 158. I/O cable pinouts for J4

Pin #	34 PIN	0250095-009	J4 ,Mixed Cable, cable PN CQ114-50031
1	CableConnect drive	CONNECTDRIVE	
2	ConnectDrive	CONNECTDRIVE	Media Alignment encoder
3	US Alignment bar Encoder +5V	5v	Media Alignment encoder
4	US Alignment bar Encoder Phase B	J_USALIGN_PHASEBPOS	Media Alignment encoder
5	US Alignment bar Encoder Phase B	J_USALIGN_PHASEBNEG	Media Alignment encoder
6	US Alignment bar Encoder Return	GND	Media Alignment encoder
7	US Alignment bar Encoder Phase A Pos	J_USALIGN_PHASEAPOS	Media Alignment encoder
8	US Alignment bar Encoder Phase A	J_USALIGN_PHASEANEG	Media Alignment encoder
9	US Alignment bar Encoder Limit Pos	J_USALIGN_LIMITPOS	Media Alignment encoder
10	US Alignment bar Encoder Limit Neg	J_USALIGN_LIMITNEG	Media Alignment encoder
11	US Alignment bar Encoder Connect	J_USALIGN_CONN	Media Alignment encoder
12	ConnectDrive	CONNECTDRIVE	Head height sensor, connect sensed
13	HH Sensor Input	J_MEDIATHICK	Head height sensor, connect sensed
14	HH Sensor Connect	J_MEDIATHICK_CONN	Head height sensor, connect sensed
15	+24V	+24VMTR	Head height sensor, connect sensed
16	GND	GND	Head height sensor, connect sensed
17	ConnectDrive	CONNECTDRIVE	
18	Ext_tempSnsr	J_TEMP	Service station height sensor
19	GND	GND	Return
20	Ext_tempSnsrConn	EXT_TEMPSNSR_CONN	Connect sense input
21	Sensor power	J_PRESS_SNSR_PWR	5v
22	Vacuum Pressure	J_VACPRESS_IN	sensor
23	Vacuum Pressure return	GND	Return
24	Vacuum Pressure power	J_VACPRESS_PWR	24v
25	Vacuum Pressure power return	GND	Return
26	Pressure Valve	J_PRESS_VALVE	Motor driver(BTS 621)
27	Pressure Valve return	GND	Return
28	Pressure pump control	J_PRESS_PUMP_CTRL	motor driver(BTS 621)
29	ConnectDrive	CONNECTDRIVE	Connect Drive
30	Enclosure fan power(PWM-able)	ENCFAN0	power
31	Enclosure fan power return	GND	Return shared with cabinet fan and SS LED
32	Enclosure fan connect sense	ENCFAN0_CONN	Connect sense input
33	Spare 12V switched	J_SPARE12VSW	LED_LIGHT_MODULE
34	US3CableConn	US3CableConn	cable connect sense input

Pinout for J5

Fig. 159. I/O cable pinouts for J5

Pin #	50 PIN	0250095-013	J5 ,Fans, cable PN CQ114-50032
1	ConnectDrive		
2	ConnectDrive	CONNECTDRIVE	Connect Drive Rail_Door_Fans_1&2
3	Enclosure fan power(PWM-able)	ENCFAN2	Rail_Door_Fan2 power
4	Enclosure fan power return	GND	Rail_Door_Fan2 Return
5	Enclosure fan connect sense	ENCFAN2_CONN	Connect sense input Rail_Door_fans_1&2
6	ConnectDrive	CONNECTDRIVE	Connect Drive Rail_Door_Fans_3&4
7	Enclosure fan power(PWM-able)	ENCFAN3	Rail_Door_Fan4 power
8	Enclosure fan power return	GND	Rail_Door_Fan4 Return
9	Enclosure fan connect sense	ENCFAN3_CONN	Connect sense input Rail_Door_Fans3&4
10	ConnectDrive	CONNECTDRIVE	
11	SSS Up/down mtr Encoder +5V	5v	
12	SSS Up/down mtr Encoder Phase B Pos	J_SSS_UP_DOWN_PHASEBPOS	
13	SSS Up/down mtr Encoder Phase B Neg	J_SSS_UP_DOWN_PHASEBNEG	
14	SSS Up/down mtr Encoder Return	GND	
15	SSS Up/down mtr Encoder Phase A Pos	J_SSS_UP_DOWN_PHASEAPOS	
16	SSS Up/down mtr Encoder Phase A Neg	J_SSS_UP_DOWN_PHASEANEG	
17	SSS Up/down mtr Encoder Limit Pos	J_SSS_UP_DOWN_LIMITPOS	
18	SSS Up/down mtr Encoder Limit Neg	J_SSS_UP_DOWN_LIMITNEG	
19	SSS Up/down mtr Encoder Connect	J_SSS_UP_DOWN_CONN	
20	ConnectDrive	CONNECTDRIVE	Connect Drive (Input row)
21	Power	VacFan0	
22	GND	GND	
23	Power	VacFan1	
24	GND	GND	
25	Power	VacFan2	
26	GND	GND	
27	Power	VacFan3	
28	GND	GND	
29	Fan0bankConn	Fan0bankConn	Connect sense input
30	ConnectDrive	CONNECTDRIVE	Connect Drive(Pre-print row)
31	Power	VacFan4	
32	GND	GND	
33	Power	VacFan5	
34	GND	GND	
35	Power	VacFan6	
36	GND	GND	
37	Power	VacFan7	
38	GND	GND	
39	Fan1bankConn	Fan1bankConn	Connect sense input
40	ConnectDrive	CONNECTDRIVE	Connect Drive (print row)
41	Power	VacFan8	
42	GND	GND	
43	Power	VacFan9	
44	GND	GND	
45	Power	VacFan10	
46	GND	GND	
47	Power	VacFan11	
48	GND	GND	
49	Fan2bankConn	Fan2bankConn	Connect sense input
50	SSS2CableConn	SSS2CableConn	Cable connect sense

Pinout for J6

Fig. 160. I/O cable pinouts for J6

Pin #	16 PIN	0250095-004	J6 ,Service Station Step Motor, cable PN CQ114-50018
1	Cable Connect Drive	CONNECTDRIVE	
2	SS Home 0 Connect Drive	CONNECTDRIVE	
3	SS Home 0 Power	J_SSHOME0_PWR	
4	SS Home 0	J_SSHOME0_N	Cherry lever switch.
5	SS Home 0 Return	GND	
6	SS Home 0 Connect	J_SSHOME0_CONN	
7	Connect Drive	CONNECTDRIVE	Stepper Motor
8	SSSTEP A pos	J_SSSTEP+A	
9	SSSTEP A neg	J_SSSTEP-A	
10	SSSTEP B pos	J_SSSTEP+B	
11	SSSTEP B neg	J_SSSTEP-B	
12	SSConnect	SSConnect	
13	24V	J_SSHOME1_PWR	Available
14	GND	GND	Available
15			
16	SSS3CableConn	SSS3CableConn	Connect sense input

Pinout for J7

Fig. 161. I/O cable pinouts for J7

Pin #	16 PIN		J7 ,Service Station side motors, cable PN CQ114-50035
1	Spare motor pos	J_L298SPAREMTR+A	Rail_Door_Fan1 Power
2	Spare motor neg	J_L298SPAREMTR-A	Rail_Door_Fan1 Return
3	Spare motor pos	J_L298SPAREMTR+B	Rail_Door_Fan3 Power
4	Spare motor neg	J_L298SPAREMTR-B	Rail_Door_Fan3 Return
5	Spare Index ground	GND	
6	5v	SPARE_PWR2	
7	Service Station up/down pos	J_SSTNUPDWNMTR+	
8	Service Station up/down neg	J_SSTNUPDWNMTR-	
9	Dancer bar switch(Not Used)	/DANCER0	Kaa Model Switch
10	Dancer bar switch(Not Used)	/DANCER1	Float Switch
11	Input pinch roller mtr pos	J_SSSPINCHIN_RLR+	
12	Input pinch roller mtr neg	J_SSSPINCHIN_RLR-	
13	Output pinch roller mtr pos	J_SSSPINCHOUT_RLR+	
14	Output pinch roller mtr neg	J_SSSPINCHOUT_RLR-	
15	Alignment bar mtr pos	J_SSSALIGN_MTR+	
16	Alignment bar mtr neg	J_SSSALIGN_MTR-	

Pinout for J8

Fig. 162. I/O cable pinouts for J8

Pin #	10 PIN		J8 ,User side motors, cable PN CQ114-50036
1	Input pinch roller mtr pos	J_USPINCHIN_RLR+	
2	Input pinch roller mtr neg	J_USPINCHIN_RLR-	
3	Output pinch roller mtr pos	J_USPINCHOUT_RLR+	
4	Output pinch roller mtr neg	J_USPINCHOUT_RLR-	
5	Spare emergency switch	/EMERG7	
6	Alignment bar mtr pos	J_USALIGN_MTR+	
7	Alignment bar mtr neg	J_USALIGN_MTR-	
8	SPARE_PWR3	24VFUSED	Second Service station enclosure fan.
9	GND	GND	
10	GND	GND	

Pinout for J9

Fig. 163. I/O cable pinouts for J9

Pin #	24 PIN		J9 HDBRD and OHS PWR
1	+24V_HEADBOARD_D	+24V_HEADBOARD_D	
2	MGND	MGND	
3	+38V_HEADBOARD_A	+38V_HEADBOARD_A	
4	MGND	MGND	
5	+38V_HEADBOARD_B	+38V_HEADBOARD_B	
6	MGND	MGND	
7	+38V_HEADBOARD_C	+38V_HEADBOARD_C	
8	MGND	MGND	
9	+5V_HEADBOARD	+5V_HEADBOARD	from PCI bus connector
10	GND	GND	from PCI bus connector
11	+5V_HEADBOARD	+5V_HEADBOARD	from PCI bus connector
12	GND	GND	from PCI bus connector
13	MGND	MGND	
14	+24V_HEADBOARD_D	+24V_HEADBOARD_D	
15	MGND	MGND	
16	+38V_HEADBOARD_A	+38V_HEADBOARD_A	
17	MGND	MGND	
18	+38V_HEADBOARD_B	+38V_HEADBOARD_B	
19	GND	GND	from PCI bus connector
20	+5V_HEADBOARD	+5V_HEADBOARD	from PCI bus connector
21	GND	GND	from PCI bus connector
22	+5V_HEADBOARD	+5V_HEADBOARD	from PCI bus connector
23	GND	GND	from PCI bus connector
24	+12V	+12V	from PCI bus connector

Pinout for J10

Fig. 164. I/O cable pinouts for J10

Pin #	10 PIN		J10 Media Advance Encoder connector
1	NC		
2	Power		
3	GROUND		
4	NC		
5	A - Channel		
6	A + Channel		
7	B - Channel		
8	B + Channel		
9	I - Channel		
10	I + Channel		

Pinout for J11

Fig. 165. I/O cable pinouts for J11

Pin #	20 Pin Ribbon		J11 OHS Connector
1	Profiler Clock out	J_DD0+	
2	Profiler Clock out	J_DD0-	
3	Profiler Data out	J_DD1+	
4	Profiler Data out	J_DD1-	
5	5v Fused	+5VFUSED1	
6	GND	GND	
7	Profiler Shift clock out	J_DD2+	
8	Profiler Shift clock out	J_DD2-	
9	Profiler Shift load out	J_DD3+	
10	Profiler Shift load out	J_DD3-	
11	5v Fused	+5VFUSED1	
12	GND	GND	
13		J_SHDTAA+	
14		J_SHDTAA -	
15		J_SHDTAINA+_N	
16		J_SHDTAINA -_N	
17	Connect drive	CONNECTDRIVE	
18	Conn Sense	J_DOCKING_CONN	
19	Profiler write	J_IOW+_N	
20		J_IOW-_N	

Pinout for J13

Fig. 166. I/O cable pinouts for J13

Pin #	18 PIN		J13, DSUB, serial
1	DCD0		
2	SIN0		
3	SOUT0		
4	DTR0		
5	GND		
6	DSR0		
7	RTS0		
8	CTS0		
9	RI0		
10	DCD1		
11	SIN1		
12	SOUT1		
13	DTR1		
14	GND		
15	DSR1		
16	RTS1		
17	CTS1		
18	RI1		

Pinout for J14

Fig. 167. I/O cable pinouts for J14

Pin #	12 PIN		J14, Gig ether
1	Center	GND	
2	MDIC-	MDI_C-	
3	MDIC+	MDI_C+	
4	MDIB+	MDI_B+	
5	MDIB-	MDI_B-	
6	Center	GND	
7	Center	GND	
8	MDID+	MDI_D+	
9	MDID-	MDI_D-	
10	MDIA+	MDI_A+	
11	MDIA-	MDI_A-	
12	Center	GND	

Pinout for J16

Fig. 168. I/O cable pinouts for J16

Pin #	18 PIN		J16, DSUB, Gurley encoder/serial
1	DCD		
2	SIN		
3	SOUT		
4	DTR		
5	GND		
6	DSR		
7	RTS		
8	CTS		
9	RI		
10	Case Gnd		
11	Index+		
12	PhaseB+		
13	PhaseA+		
14	+5v		
15	Index-		
16	PhaseB-		
17	PhaseA-		
18	GND		

Pinout for J21

Fig. 169. I/O cable pinouts for J21

Pin #	4 PIN(INTERNAL)		J21 ,Mini fit snr
1	BALLAST0 LINE IN	BALLAST0_LINEIN	
2	BALLAST0 LINE OUT	BALLAST0_LINEOUT	
3	BALLAST0 LINE IN	BALLAST0_LINEIN	
4	BALLAST0 LINE OUT	BALLAST0_LINEOUT	

Pinout for J22

Fig. 170. I/O cable pinouts for J22

Pin #	6 PIN(INTERNAL)		J22 ,Mini fit snr
1	BALLAST1 LINE IN	BALLAST1_LINEIN	
2	BALLAST1 LINE OUT	BALLAST1_LINEOUT	
3			
4	BALLAST1 LINE IN	BALLAST1_LINEIN	
5	BALLAST1 LINE OUT	BALLAST1_LINEOUT	

Pinout for J23

Fig. 171. I/O cable pinouts for J23

Pin #	4 PIN		J23 Ionizer Power(Mini fit snr)
1	AC into relay	ION_LINE_IN	
2			
3			
4	AC out of relay	ION_LINE_OUT	

Pinout for J24

Fig. 172. I/O cable pinouts for J24

Pin #	4 PIN		J24 TouchScreen Power (Unswitched)
1	GND	GND	
2	GND	GND	
3	5v	+5v	
4	12v	+12v	

Pinout for J26

Fig. 173. I/O cable pinouts for J26

Pin #	18 PIN		J26 Astec PWR Supply (38V)
1	Power Control 2	J_SPARE_PWR_SPLY_INHIBIT_N2	
2	+38V	PENPOWER_A	
3	GND	M	
4	+38V	PENPOWER_A	
5	GND	M	
6	+38V	PENPOWER_C	
7	GND	M	
8	+5V	+5V_AUX	
9	GND	M	
10	Power Control 1	J_SPARE_PWR_SPLY_INHIBIT_N1	
11	GND	M	
12	+38V	PENPOWER_B	
13	GND	M	
14	+38V	PENPOWER_B	
15	GND	M	
16	+5V	+5V_AUX	
17	GND	M	
18	+24V	+24V_VACPRESS_PWR	

Pinout for J27

Fig. 174. I/O cable pinouts for J27

Pin #	14 PIN		J27 ATX PWR Supply
1	+12VMOTOR	+12VMTR	
2	+12VMOTOR	+12VMTR	
3	+12VMOTOR	+12VMTR	
4	5VSB	J_5VSB	
5	+5VMOTOR	+5VMTR	
6	+5VMOTOR	+5VMTR	
7	+5VMOTOR	+5VMTR	
8	MGND	M	
9	MGND	M	
10	MGND	M	
11	/PS_ON	J_PS_ON_N	
12	MGND	M	
13	MGND	M	
14	MGND	M	

Pinout for J28

Fig. 175. I/O cable pinouts for J28

Pin #	50 PIN(INTERNAL)		J28 ,Internal switches /sensors/conn sense, Uv ctrl, cable = 0500354
1	INTERNAL CABLE CONNECT DRIVE	CONNECTDRIVE	
2	SHOP VAC PWR RELAY CTRL +	VAC_RLY_CTRL	
3	SHOP VAC PWR RELAY CTRL -	GND	
4	UV BALLAST0 POWER RELAY CTRL +	BALL0_RLY_CTRL	
5	UV BALLAST0 POWER RELAY CTRL -	GND	
6	UV BALLAST1 POWER RELAY CTRL +	BALL1_RLY_CTRL	
7	UV BALLAST1 POWER RELAY CTRL -	GND	
8	COOLING FAN0 CONNECT DRIVE	CONNECTDRIVE	
9	COOLING FAN0 POWER	EBOXFAN0	
10	COOLING FAN0 POWER RETURN	GND	
11	COOLING FAN0 CONNECT	CLFAN0CONN	
12	COOLING FAN1 CONNECT DRIVE	CONNECTDRIVE	
13	COOLING FAN1 POWER	EBOXFAN1	
14	COOLING FAN1 POWER RETURN	GND	
15	COOLING FAN1 CONNECT	CLFAN1CONN	
16	COOLING FAN2 CONNECT DRIVE	CONNECTDRIVE	
17	COOLING FAN2 POWER	EBOXFAN2	
18	COOLING FAN2 POWER RETURN	GND	
19	COOLING FAN2 CONNECT	CLFAN2CONN	
20	UV DIM DAC0 CONNECT DRIVE	CONNECTDRIVE	
21	UV DIM DAC0 OUTPUT	UV_L0_DIM	
22	UV DIM DAC0 RETURN	GND	
23	UV DIM DAC0 CONNECT	UVDIM0CONN	
24	UV DIM DAC1 CONNECT DRIVE	CONNECTDRIVE	
25	UV DIM DAC1 OUTPUT	UV_L1_DIM	
26	UV DIM DAC1 RETURN	GND	
27	UV DIM DAC1 CONNECT	UVDIM1CONN	
28	UV LAMP0 CONNECT SENSE DRIVE	CONNECTDRIVE	
29	UV LAMP0 CONNECT SENSE RETURN	UVLAMP0CONN	
30	UV LAMP1 CONNECT SENSE DRIVE	CONNECTDRIVE	
31	UV LAMP1 CONNECT SENSE RETURN	UVLAMP1CONN	
32	CONNECT DRIVE	CONNECTDRIVE	
33	INT_TEMP SENSOR	J_TEMP_INT	
34	GND	GND	
35	INT_TEMP SENSOR CONNECT	INT_SNSRCONN	
36	POWERSWITCH	POWERSWITCH	
37	GND	GND	
38	ConnectDrive	CONNECTDRIVE	Ready footswitch, passive switch, connect sense
39	/FOOTREADY	/FOOTREADY	
40	GND	GND	
41	FootReadyConn	FootReadyConn	
42			
43			
44			
45			
46			
47			
48			
49			
50	INTERNAL CABLE CONNECT RETURN	INTCABLECONN	

Pinout for J29

Fig. 176. I/O cable pinouts for J29

Pin #	10 PIN		J29 Astec PWR Supply (24V)
1	MGND	M	
2	MGND	M	
3	+24VMOTOR	+24VMTR	
4	+24VMOTOR	+24VMTR	
5	POWER CTRL 2	J_PWR_SPLY_INHIBIT_N2	
6	MGND	M	
7	MGND	M	
8	+24VMOTOR	+24VMTR	
9	+24VMOTOR	+24VMTR	
10	POWER CTRL 1	J_PWR_SPLY_INHIBIT_N1	

Troubleshooting carriage-drive assemblies

Carriage motion failures

A carriage motion failure error indicates that the printer has detected that the carriage is not moving at the expected rate of speed. The most common reason for this error is an obstruction, such as buckled media that is slowing or prohibiting the carriage from moving. However, in some cases ESD (electro-static discharge) events can be severe enough to confuse the printers, so that the electrical pulses are interrupted as encoder tick marks, generating a carriage motion failure or an LVDS error. The current software has improved the ability to distinguish ESD events from mechanical events.

The encoder reader (see "About the encoder reader" on page 89), which is mounted on the input-side of the carriage, reads the encoder strip that is installed in the rail. The encoder strip has marks printed on the strip. Depending on the speed of the carriage, the printer expects to see a specific number of the marks per second to verify the carriage is moving at the anticipated speed. If the encoder reader sees more or fewer per second than expected, the carriage motion failure error will appear.

Troubleshooting carriage motion failures

To troubleshoot a carriage motion failure, use the following list to find the source of the error.

1. Is there anything obstructing carriage motion?
   - Check for media that is buckled, warped or touching the carriage as it travels. Remove the obstruction.
   - Is the media-drive belt vacuum in the print zone (C in Fig. 124. on page 110) able to suck down the media flat so that the media does not curl and contact the carriage? Address any issues with the belt vacuum fan array in the print zone, such as fans not working or fan cables disconnected.
2. Is the encoder strip and encoder strip reader operating properly?
   - Visually inspect the encoder strip for damage. Move the carriage as needed to view the encoder strip from end to end. The encoder strip can be severely bent or torn from improper placement inside the encoder reader. Replace the encoder strip if it is damaged.
   - The encoder strip can be damaged by over scrubbing or cleaning of the underside of the strip where the marks are printed. To inspect the marks, place white paper under the strip and shine a light through the encoder strip to inspect the marks. Replace the encoder strip if the strip's marks have been scrubbed off at any location.
   - Make sure the encoder strip is properly inserted in the encoder reader (see "About the encoder reader" on page 89).
   - Make sure the encoder reader bracket is not bent, causing the reader to mount at an angle. Replace the bracket as needed.
   - Clean the encoder strip using 30% IPA (common rubbing alcohol). Do not over scrub the underside of the strip. There is no danger in over cleaning the top of the strip, but take care not to scratch the surface.
3. Does the printer pass the carriage motion slow and fast speed tests?

- Run the carriage motion slow speed test located in the printer's menu as follows:

  SERVICE > TOOLS > SERVICE PRINTER > USER DIAGNOSTICS > CARRIAGE MOTION TESTS

  This will test the integrity of the encoder strip's tick marks and will report whether or not the carriage-drive motor passes cable and power testing.

4. Is the carriage-drive belt working properly?

- If the carriage-drive belt was recently removed from either side of the carriage, the belt may have been twisted prior to re-attaching it. This twist in the belt may not be visible, as it may be twisted into the rail. If the belt is twisted, extra noise may be heard when the carriage nears either end of the rail. To inspect this, the idler must be removed from the service-end of the rail to release the belt tension, and the carriage-drive belt must be disconnected from one side of the carriage.

- What about belt tension? Unlike previous generations of printers, the belt tension cannot be adjusted on this printer. If the belt is cut to the correct length, and it is securely attached to the sides of the carriage, the tension should be correct See "About the carriage-drive belt length and tension" on page 99 for more detail.

- Is the printer operating at an ambient temperature that is within specification? The carriage-drive belt does not stretch or shrink if the printer is operating in the specified environmental ranges, which are as follows:

  Temperature: 20–30° C (68–85° F)

  Relative Humidity: 20–80%, non-condensing (40–60% recommended to avoid

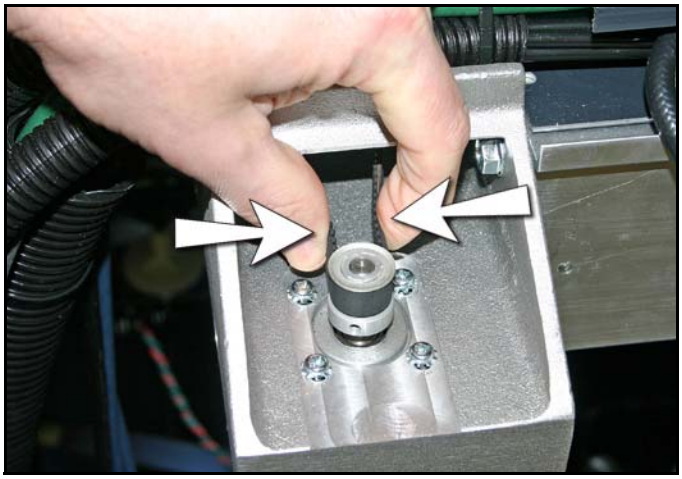
  static electricity on synthetic media that occurs below 40%, and buckling on paper-based media over 60%.)

  Maximum operating altitude: 3000 m (10,000 ft)

5. Is the carriage-drive assembly working properly?

- Check the carriage-drive timing belt tension for the carriage-drive timing belt. The tension is correct if, when you press the sides of the belt, the centers of the belt do not touch (see Fig. 177.). If the belt centers touch, loosen the four screws that mount the carriage-drive motor, and pull the motor away from the carriage-drive shaft. Tighten the carriage-drive motor mount screws to secure the timing belt tension.

Fig. 177. Check carriage-drive timing belt tension





Caution To avoid injury to your fingers by being caught in the moving carriage-drive belt, power off the printer or open a door, such as the service station door or output-side door, to disable the carriage motor.

- Make sure the carriage-drive motor mount screws (A in Fig. 104.) are tightened securely.

6. Is anything causing the track assembly to delay carriage motion?

- Make sure a carriage cable or tube is not being snagged on anything in the printer.

7. Are the carriage wheels noisy (need cleaning or lubrication)?

- Clean the carriage wheels and the three rail strips according to the service documentation.
- Oil the carriage wheels and rails strips according the service instructions.

Troubleshooting the carriage-drive smooth pulley

- For an illustration, see “About the carriage-drive smooth pulley” on page 97.
- Insufficient carriage-drive belt tension can cause the pulley to slip and the carriage will report a carriage motion failure. However, with this printer, the only way to have insufficient carriage-drive belt tension is for the belt to be cut to the wrong length. See “About the carriage-drive belt length and tension” on page 99.
- Too much belt tension will make the idler impossible very difficult to install and cause premature wear on the bearings of the idler and carriage-drive shaft and the belt itself. However, with this printer, the only way to have too much carriage-drive belt tension is for the belt to be cut to the wrong length. See “About the carriage-drive belt length and tension” on page 99.
- High belt tension will also cause output anomalies. Vertical banding.

Troubleshooting the carriage-drive shaft

- For an illustration, see “About the carriage-drive shaft” on page 97.
- Insufficient carriage-drive belt tension can cause the friction pulley to slip and the carriage will report a carriage motion failure. However, with this printer, the only way to have insufficient carriage-drive belt tension would be for the belt to be cut at the wrong length. See “About the carriage-drive belt length and tension” on page 99.
- Too much belt tension will make the idler (friction pulley on the service-end of the rail) impossible to install. If you can install the idler, you do not have too much tension. However, with this printer, the only way to have too much carriage-drive belt tension would be for the belt to be cut to the wrong length. See “About the carriage-drive belt length and tension” on page 99.

Troubleshooting the carriage-drive timing belt

- For an illustration, see “About the carriage-drive timing belt” on page 97.
- If carriage-drive timing belt tension is too loose, gear slippage will occur, resulting in carriage motion failures. The belt is properly tensioned by pulling the motor pulley away from the carriage-drive shaft pulley until the belt is taut, and then tightening the motor mount screws.
- If the carriage-drive timing belt tension is too tight, it will cause premature wear on the carriage-drive shaft bearings, carriage-drive motor and the main carriage-drive belt.

Troubleshooting the carriage-drive motor

- For an illustration, see “About the carriage-drive motor” on page 98.
- The carriage-drive motor uses brushes, and the motor brushes can wear out. However, the brushes and the motor will likely last the life of the printer.

Troubleshooting the carriage-drive belt

- When installing the belt, the belt can be twisted inside the rail. This may cause head motion failure errors and/or vertical banding. It will also prematurely wear out the belt.

- If the belt tension is too high, the surface of the belt where it touches the smooth pulley will become smooth. This can cause carriage motion failures. However, with this printer it should be impossible to adjust the belt tension. If the belt tension is too high, the belt was not cut to the proper length. Replace the belt. See "About the carriage-drive belt length and tension" on page 99.

Troubleshooting the rail strips

- For more information, see "About the rail strips" on page 99.

- If the strips are dented, gouged or have debris on them, the obstacles can interfere with smooth motion of the carriage wheels, which can result in output anomalies. The three rail strips must be cleaned and lubricated (using the supported lubrication cloth according the User Cleaning Kit instructions) by the printer's operator every two weeks or more often, depending on use and environment.

Troubleshooting the carriage encoder strip

- For more information, see "About the carriage encoder strip" on page 100.

- The encoder strip gets dirty and should be cleaned by the printer's operator every two weeks or more often, depending on use and environment.

- If the carriage it tilted away from the rail, care should be taken to make sure that the encoder strip is re-inserted into the encoder reader on the back of the carriage. Manually moving the carriage when the encoder strip is not properly inserted in the encoder reader can damage the encoder strip.

- If the encoder reader bracket gets bent, the reader will tilt and rub against the encoder strip. Over time, this will damage the strip and result in carriage motion errors.

Troubleshooting Carriage Assemblies

Troubleshooting carriage head height

- For more information, see “About the carriage head height” on page 79.
- Due to a dirty environment, the media thickness sensor can stick at its pivot point, resulting in wrong head height.
- Improper calibration of the media thickness sensor can lead to bad readings by sensor and subsequent erroneous rail height moves.

Troubleshooting the lamps

- For more information, see “About the lamps” on page 79.
- If the lamps are not allowed to cool down properly (for example, if power is disrupted), the liquid metal inside the bulbs forms into droplets versus spreading out evenly. This will make the bulbs more difficult to start up and could result in complete failure of bulb operation.
- The fans are covered with a replaceable air filter that resides on top of the lamps. If these become clogged the bulbs and shuttering system can overheat and fail. The filters must be changed quarterly or more, depending on use and environment.
- Shutter movement errors can be caused by uncalibrated or poorly calibrated shutters.
- Shutter movement errors can be caused by broken or loose linkage between the actuator and the shutter.
- Shutter movement errors can be caused by a defective actuator or actuator encoder.
- Shutter movement errors can be caused by lamp PCB failures.
- The error, “Current not sensed,” can be caused by lamp PCB failures.

Troubleshooting the camera

- For more information, see“About the camera” on page 80.
- The camera needs to be focused when the camera is removed or loses its position. This calibration is done from the hidden service menu that requires a password to enter.
- The white flex cables connecting the camera to the headboard must be connected to the correct cable socket during installation. Inserting a cable into a wrong socket will damage the headboard, forcing a replacement of the headboard and camera.
- If the camera image is dark or cannot be focused, the camera and camera LED lights may need to be cleaned.
- If there is partial camera LED light failure, the camera will not be able to detect all colors of ink.

Troubleshooting the air manifold

- For more information, see “About the air manifold” on page 81.
- There are valves in the manifold. These valves can stick open or closed. This will usually result in improper vacuum levels in the ink reservoir on the carriage.
- Poor connection at cable connector can result in a leak.

- If ink or head flush contacts the manifold, it must be replaced.

Troubleshooting the carriage ink filters

- For more information, see “About the carriage ink filters” on page 81.
- If ink or head flush contacts the filter, it must be replaced.
- If a filter becomes wet, air cannot pass through the filter, and the printhead will leak due to a lack of vacuum.
- Moisture in the vacuum system can contaminate the filters over time.

Troubleshooting printhead reservoirs

- For more information, see “About the printhead reservoirs” on page 82
- The reservoirs can overfill if bubbles develop in the reservoir. Bubbles can develop if air enters the ink lines, which can cause the ink to foam within the reservoir. If the bubbles contact both vacuum ports of the reservoir, ink will be pulled up the vacuum tube. Air can get into the air reservoirs if the printhead de-primes (runs dry of ink), if there is a crack in a fitting, or a missing o-ring in the air manifold.

Troubleshooting thermistors

- Cross wiring of the thermistors (connecting to the wrong locations on the headboard) will give bad data to the printer concerning ink levels in the reservoirs, possibly creating an ink over-fill.
- Thermistor failure will cause the ink pump never to pump.
- If a in-ink thermistor wire connection fails, testing the open circuit will read near 226, and a short circuit will read near 2. An open ink thermistor will cause the pump not to pump. A shorted thermistor will cause the ink pump to pump all the time. If the in-air thermistor wire fails, the will have the opposite effect.
- If a thermistor is bent, and the thermistor touches the side of the reservoir, it will produce faulty readings.

Troubleshooting the vacuum tube

- Cracks in tube fitments can cause vacuum leaks.

Troubleshooting split vacuum tubes

- Cracks in tube fitments can cause vacuum leaks.

Troubleshooting printheads

- Printheads are fragile and can be damaged by contact with hard surfaces. Handle with care during installation.
- Headstirkes against media will damage the printhead nozzles and lead to unrecoverable jets.
- Insufficient cleaning or cleaning improperly (pushing debris into the jet nozzles) will lead to loss of jets or misdirected jets.
- If the printhead EEPROM cannot be read, the jets may first but the drop size may not be ideal.
- A head strike can delaminate the orifice plate.

- If the printhead's internal heater fails, intermittent jetting may result, as the ink will be too viscous to jet properly.

- EEPROM and printhead heater errors may be caused by poorly seated flex cables at the headboard.

Troubleshooting the printhead interface plate

- If the printhead screws (installed from the bottom of the carriage) are not tightened according to the torque specification of 12 in-lb, the ink may leak from the interface plate's ink ports.

- If the printhead screws are over tightened, the printhead may crack or place such a mechanical stress on it that it cannot jet ink properly.

- If the output-side hex screw that secures the interface plate to the pen plate is not tightened after y-axis calibration, the interface plate will move and change the calibrated y-axis setting.

Troubleshooting the carriage headboard

- LVDS errors at startup are most likely caused by the LVDS cable. However, hardware issues with the headboard or I/O board can also cause this error.

- If printheads cannot heat, the flex cables may need to be re-seated or the headboard may have a hardware failure.

- UV lamp shutter motion failure can be caused by a headboard failure.

- There are large capacitors on the headboard that can be damaged if mishandled or speared with a screwdriver. A metal plate covers capacitors at the bottom of the of the headboard to protect them. The screws that hold this plate onto the headboard do not need to be removed to remove the headboard. Removing the plate may result in damage to the capacitors.

- If you plug the camera flex cables into the wrong socket on the headboard, it will destroy the headboard and the camera when the printer is powered on.

- The lights blink during start up to indicate that the FPGA (Field-Programmable Gate Array) has been properly programmed.

  When facing the carriage headboard, there are a row of nine LEDs (number zero to eight in software). If there are two rows, only the top row is programmed. LED eight is leftmost (service-end) when facing the carriage headboard. The LEDs are programmed as follows:

Fig. 178. Headboard LEDs

8 = print strobe active
7 = buffer status (good)
6 = transport status (good)
5 = link status (good)
4 =38 volts status (good)
3 = 24 volts status (good)
2 = 12.0 volts status (good)
1 = 5.0 volts status (good)
0 = 2.5 volts status (good)

Note Due to fluxuations in the 5 volt source from the ATX power supply, the 1 LED may fluctuate on and off. This causes no problems for the printer.

Troubleshooting the carriage encoder reader

- The optical sensors of the encoder reader get dirty and must be cleaned with a lint-free cloth and IPA (isopropyl alcohol).

- If the encoder reader is mounted at an angle (versus parallel to the encoder strip), the reader will not sense see the pulse marks on the encoder strip.

- If the encoder reader is not aligned properly, it can rub on the encoder strip and damage the strip.

Troubleshooting the home sensor

- The optical sensor can get dirty and cause the sensor to malfunction. It must be cleaned with care, making sure that the cleaning utensil, such as a cotton swab, moves the debris out of the optical slit and not across them, which may push debris into the optical slits. Because the home sensor is a second-level safety feature, it can be disabled if it malfunctions- to allow the printer to operate while a replacement is scheduled.

- If the carriage has a crash (for example, into warped media), the home sensor can be damaged.

- During carriage removal, especially at the service-end of the rail, the home sensor can get damage if the carriage contacts hard surfaces.

Troubleshooting the upper trolley

- If debris sticks to a trolley wheel, it will slightly lift the carriage every time the debris contacts the rail. This will cause more y-axis offset at the moment of contact, which will result in a repeating pattern. If the wheel on the service-end of the carriage is dirty, the repeating artifact will be seen mostly in the black.

- If the wheels are not properly lubricated, the wheels may be noisy.

- Too much lubrication on the rail can cause pockets of lubrication to bubble on the rail, creating bumps for the wheels to travel over. This can cause output anomalies. Use the supported pre-lubricated towel to lubricate the rail.

- Misalignment of the upper trolley to the lower trolley can impart an unwanted angle to the carriage relative to the rail.

Troubleshooting the lower trolley

- Debris can collect on the wheels, resulting in output anomalies. Trolley wheels should be cleaned monthly or more, depending on use and environment.

- If the rail is not lubricated at the required frequency, the wheel bearings will experience additional stress and could fail prematurely.

- Lack of lubrication will cause the wheel bearings to make a squeaking noise during carriage movement. This will reduce the life of the bearings.

Troubleshooting the vacuum assembly

- If the printheads are de-primed (run dry of ink), unfiltered air can be sucked into the ink system through the printhead jets. If filters are not in place between the printheads and the air manifold, contaminates can circulate through the air system and clog the vacuum line restrictor (H in Fig. 50.).

- Incorrect vacuum causes drop size variations. Drop size variations effect print quality and ink counting accuracy.

- If vacuum is not supplied to the printheads, ink will leak out. The leaked inked is not deducted from the ink profiler, resulting in inaccurate ink counts.

- Nearly all of the components that are not tubing are incompatible with UV ink and printhead flush. If these liquids enter the system, the hardware parts will be contaminated and in most cases will require parts replacement.

- The vacuum pump set point (controlled through the regulator) must be set according to the documented procedure, or the set point will be incorrect and the vacuum will not be properly maintained

- Any opening in the system will cause the vacuum to leak, and it will not be maintained properly. The current design has reduced many possible leak possibilities through the use of barbed fittings (versus screw-on Luer fittings), but low-vacuum status or vacuum pump running more frequently than expected are still signs of a possibly compromised vacuum system. Use the Vacuum Pressure troubleshooter found in the User Diagnostics menu of the printer to help isolate the location of the leak.

Troubleshooting the vacuum pump

- The vacuum pump motor can completely fail, requiring replacement.

- The controller board that supplies power to the motor can fail, causing the motor to not work.

- A complete loss of power will to allow the pumps to operate, causing a loss of vacuum to the printheads. A backup power supply is recommended for the vacuum assembly.

Troubleshooting the vacuum regulator

- If a catastrophic ink overfill occurs and ink is sucked through the vacuum system, the regulator can be destroyed by ink.

- If the air filter on regulator port zero is disconnected, the regulator can be contaminated with airborne debris.

- If the regulator's vacuum setting is changed dramatically during a leak in the vacuum system, problems can occur when the leak is fixed. The badly adjusted regulator can cause the system to continue to function poorly. This may lead to a false conclusion that the vacuum assembly requires replacement. To fix this problem, slowly turn the regulator counter-clockwise until the vacuum reaches a level that can be measured by the vacuum sensor and displayed on the control panel. You may need counter a considerable amount.

Troubleshooting the vacuum accumulator

- If the black o-ring between the top and accumulator body is not sealing properly, a leak can occur.

- If the main screw-on vessel is not completely tight, a vacuum leak can occur.

- Overtightening the blue accumulator body or other stressful mishandling can crack the plastic, which would require replacement.

Troubleshooting the vacuum restrictor

- The restrictor can become clogged if debris enters the vacuum system. The restrictor must be replaced. Attempts to force something through the restrictor to clean it will likely change its properties and render it unusable.
- If the printer's menu reports that the vacuum level did not recover on time, the restrictor may be clogged.
- A clogged restrictor is often indicated by a message on the printer's display, such as "Vacuum not recovering." Commonly, this message occurs after printhead servicing (purge).

Troubleshooting the vacuum sensor

- If ink is sucked into the vacuum system and contacts the sensor, the sensor must be replaced.
- "Unknown sensor failure" message. This message may also occur with the printheads are empty.
- If the cable sensor's cable is not firmly connected to the control board (B in Fig. 51.), the sensor will not work.

Troubleshooting vacuum power supply

- Board failure (A in Fig. 51.) causing power not to be passed to the pump.
- Power supply connector can break.
- Source power can be lost. A backup power supply is recommended for the vacuum assembly.

Troubleshooting the pressure pump

- If voltage is getting to the pump, but the pump still does not work, the pump has failed. If the purge is not working, make sure the pump is coming on.
- If the cable connection at the I/O controller fails or the I/O board malfunctions, the pump may not work.

Troubleshooting the ink pumps

- When an ink pump fails, it fails completely. It delivers no ink at all. There is no such failure as a "weak" pump.
- If voltage is getting to the pump, but the pump still does not work, the pump has failed.
- Manufacturing defects can cause the pump seals to fail. During such a failure, the pump motor will run, but no ink will be pushed through the lines.
- The pump cables are identical and can be cross-wired, resulting in the wrong pump running at the wrong time.
- The pump cables can become disconnected or severed.
- If the pump runs but is not able to draw ink from the box, the filter above the ink pump may be plugged.
- Obstruction in the ink line can keep the pump from running.

Troubleshooting the ink-line check valve

- If the check valve is installed upside down, the ink will not flow beyond the check valve.

Troubleshooting profilers

- Profilers can be installed in the wrong color slot. The printer will not print with missing or improperly installed ink profilers.
- Profiler can fail its validation test (not work at all) and need to be replaced
- Profiler can track ink levels incorrectly if missing jets are not mapped out or ink purges repeatedly purge more than expected.
- Profilers can be programmed incorrectly.

Troubleshooting the ink shaker

- If the shaker is not working, make sure the cable is connected to the OHS board.

Troubleshooting ink-box filters

- Ordinarily, the ink-box filter has sufficient capacity to filter the quantity of ink in the ink box. In the event of a manufacturing variance, the filter could clog, which would reduce or stop the flow of ink to the pump. This would ultimately result in a message of "Unable to fill the printheads with ink" on the control panel.

Troubleshooting the OHS controller

- A badly seated or defective ribbon cable from the OHS board to the I/O board can result in error messages [Code E-IO-200 (010000C8) or Code E-PB-1 (01300001)] on the control panel that the printer cannot communicate with the OHS board.
- A problem with one or more ink profilers can lead to a false diagnosis of a bad OHS board. Removing all profilers and systematically installing them individually, or slowly and sequentially (one after another), can lead to correct identification of a bad profiler rather than a bad OHS board.

Troubleshooting maintenance system

Troubleshooting the service station

- If the service station will not go up or down, try replacing the actuator motor for the service station.
- If the service station does not move up and down in a full range of motion, the encoder strip for the service station may be dirty or mispositioned.
- Cured ink can clog the drain. The drain hole should be checked and cleared of debris with all service calls.

Troubleshooting the printhead wipers

- If the wiper to printhead height is incorrect, the wipers will not properly wipe the printheads. The result will be missing jets. Similarly, if the wiper is out of position or tilted, the printheads will not be properly wiped.
- Wiper must be cleaned periodically as indicated in the User Cleaning Kit instructions. Usage-based reminders on the printer's menu screen will prompt the operator when it is time to clean the wipers.
- The wipers will wear down with use and must be changed periodically as indicated in the User Cleaning Kit instructions.
- Wiper sliders/rails must be greased to allow easy motion of the wiper carriage.
- If the rails for the wiper carriage are dirty, wiper carriage motion can be restricted.
- Wiper error may occur if the wiper motor is failing.
- A damaged or worn wiper belt can cause wiper movement errors.

Troubleshooting the service station encoder and encoder reader

- If the encoder strip dislocates from its holder, the service station will not move up or down. If it is only partially dislocated, the service station may move some but will not have a full range of motion.
- If the encoder strip is dirty, the encoder reader may not be able to read the marks on the strip. The encoder strip can be removed and cleaned.

• Leaving the valve for the waste ink open during printhead servicing by the Shop-Vac will adversely affect the air flow dynamics in the liquid-separation chamber of the service station, resulting in more liquid being sucked into the Shop-Vac than intended.

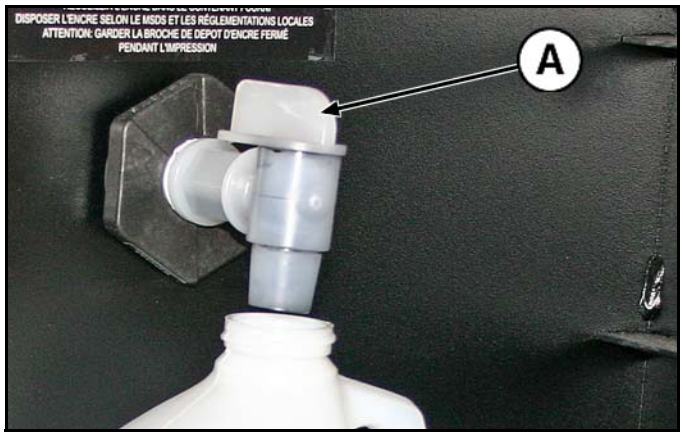
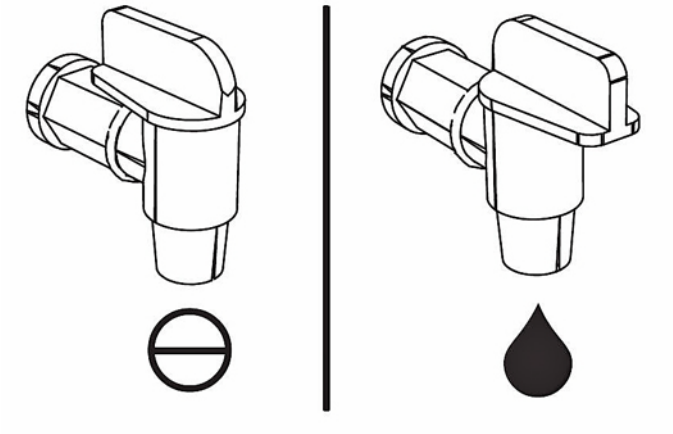


Fig. 179. Spigot in off position

Note: For correct vacuum performance in the service station, be sure to turn the spigot to the off position unless draining ink from the service station.



Troubleshooting the track assembly

- If the cables and tubes are not installed correctly or are improperly tensioned in the track, friction will occur between the track ribs and the components. This causes deterioration of cables (holes worn through the shielding) and the track. It can also cause the track to tilt to one side. It is critical to follow assembly instructions carefully.

Troubleshooting the LVDS cable and LVDS error

- For more information, see "About the LVDS cable" on page 102.

- LVDS errors include the following: E-IO-210 (010000D2), E-IO-211 (010000D3), E-IO-212 (010000D4), E-LV-3 (01100003), E-LV-4 (01100004), E-LV-5 (01100005), E-LV-6 (01100006), E-HB-1 (01200001), E-HB-1 (01200001), E-HB-2 (01200002), E-HB-3 (01200003), E-HB-4 (01200004), E-HB-5 (01200005)

- An LVDS error occurs any time something interrupts communication that travels between the headboard and the I.O. board through the LVDS cable. For example, if the cable is partially seated in its connector or the cable is damaged or the printer receives a strong static discharge, LVDS errors will result.

- A common issue that causes severe damage to the printer is for the LVDS cable to be plugged into or unplugged from either the IO board or the carriage headboard while the printer is powered on. This will destroy the LVDS chip(s) on either or both the carriage headboard or IO board, resulting in the need to replace these components.

- If the LVDS cable is not clamped well by the H-block, the cable will be able to move within the track. This friction against other cables and parts of the track will wear a hole in the cable and damage the wires. If this happens, the printer will generate an LVDS error.

- If the LVDS cable is stressed at the carriage headboard connector, the cable and the headboard connector will not make adequate contact, resulting in a LVDS error (also called a "loss lock error). You should tie wrap the cable so that there is slack in the cable prior to plugging into the headboard. The LVDS cable should plug straight into the headboard (perpendicular to the headboard). There should not be a bend in the cable near where the cable plugs into the headboard.

- If the LVDS cable is not routed properly in the track assembly or has too much slack (curved sections of cable versus a fairly taut cable), the cable will experience premature wear (due to rubbing against the sides of the track enclosure) and will cause the printer to generate LVDS errors.

- If the encoder reader reports more or less pulses from the encoder strip than are expected, it can generate an LVDS error. For example, if static discharges from media and interferes with the encoder reader's detection of the encoder strip tick marks, an LVDS error will result. Also, if the under side of the encoder strip is dirty (obscuring the tick marks) or if the encoder reader lens is dirty, it can also cause an LVDS error. Clean the strip using 30% IPA. If the problem continues, remove the carriage and clean the encoder reader lens using the technique specified in the cleaning guide.

- If the enclosures are not secured to the printer with all of their fasteners, the printer may not be properly grounded, resulting in LVDS errors. Install and tighten all fasteners for the end enclosures.

Detecting a damaged LVDS chip

There are two LVDS chips on the carriage headboard and two LVDS chips on the IO board. One chip sends information through the LVDS cable and the other chip receives data through the LVDS cable. These chips can burn out. For example, if you unplug the LVDS cable while the printer is powered on; or if you plug the LVDS cable into the LVDS connector (on either the IO board or carriage headboard) while the printer is powered on, the LVDS chips can be destroyed. If the chips burn out, they will heat up to about 149C (300F) and the text on the chip will turn brown. If you see brown text on the LVD chip or if you sense that the LVDS chip is very hot, the chip has failed and the board should be replaced. The LVDS chips normally operate just above ambient temperature. If they are very hot, they are damaged. However, an LVDS chip can burn out so severely that it loses contact with the board, and, in which case, would no longer over heat.

Below is a photo of a portion of the IO board by the LVDS cable connector housing (A in Fig. 180.) near the two LVDS chips (B & C in Fig. 180.). When the chips are oriented so that the text is upright, the LVDS chip that receives data is on top (B in Fig. 180.) and the LVDS chip that sends data is on bottom (C in Fig. 180.). In Fig. 180., the LVDS receive chip has brown text, indicating that it has been burned out and the board should be replaced.

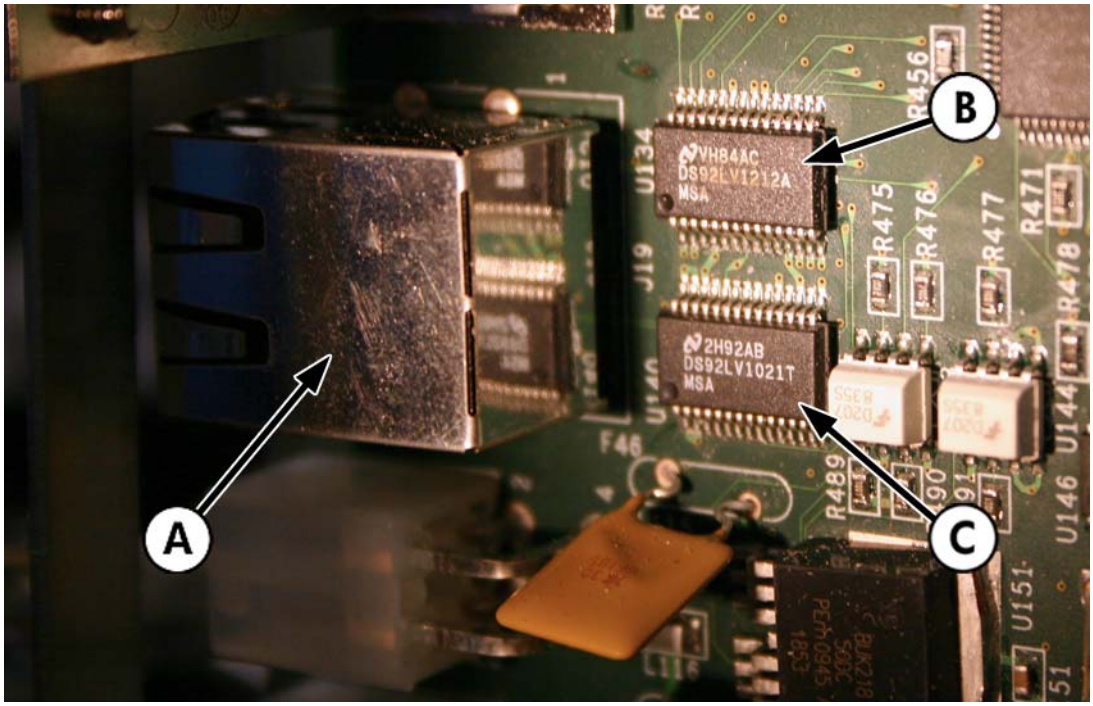


Caution You should never touch anything inside the electronics box while the power cable is plugged into the printer. Severe injury or death may result from electrocution.



Caution When handling electronics, wear a static-control strap to protect the electronics from being damaged by static shock.

Fig. 180. IO Board LVDS chips

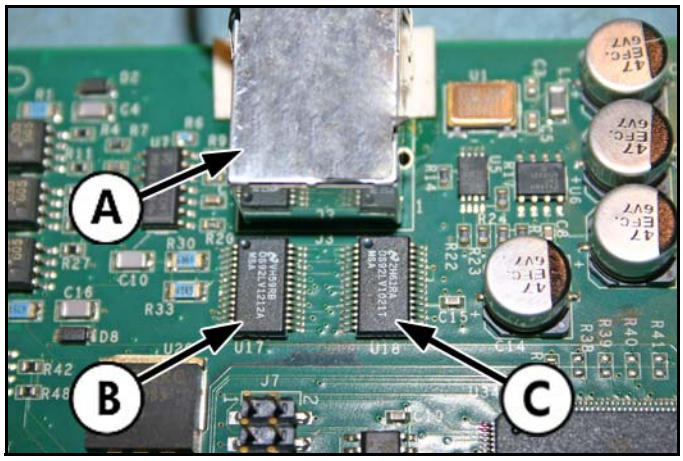




Caution If the LVDS chip(s) on either the IO board or the carriage headboard burn out, it is likely that the board on the other end will also be damaged. In other words, if the LVDS chips on the IO board burn out, it is likely that the LVDS chips on the headboard will be damaged and vice versa. Therefore, if you install a new carriage headboard into a printer with damaged IO board LVDS chips, it is likely that the headboard will be destroyed (the LVDS chips will burn out) when the printer is powered on.

Below is a photo of the location of the LVDS chips (B and C in Fig. 181.) on the carriage hardboard, located just below the LVDS cable connector (A in Fig. 181.).

Fig. 181. Headboard LVDS chips



Troubleshooting error: Failed to Program FPGA

• The FPGA (Field-Programmable Gate Array) is an integrated circuit that is initially programmed in the factory. It can be updated by a software update (called a software BIN) configured by the printer's firmware. When the printer starts up, the printer compares the currently installed firmware (on the printer's hard disk) against the headboard software (that is stored in the FPGA on the headboard). If the headboard software on the hard disk is newer than the software on the headboard, the FPGA is updated. The communication travels from the hard disk to the IO board through the LVDS send chip and then through the LVDS cable. It arrives at the headboard through the LVDS cable and into the receiving LVDS chip and then on to the FPGA circuit.

If anything prevents the printer from checking the headboard software version in the FPGA or updating the FPGA, several errors may result, including the following:

- E-HB-4 (01200004)
- Headboard FPGA programming failure
- Headboard LVDS error
- E-HB-3 (01200003), Could not reset Head board FPGA
- E-HB-5 (01200005), Failed to initialize LVDS link to Head board

  •The error, 01200005, is often due to a burned out LVDS chip (A in Fig. 182.) on the headboard. This will require replacement of the headboard and LVDS cable. It is likely that the burned out chip on the headboard may have caused the LVDS chip on the IO board to burn out as well, requiring replacement of the IO board. The source of this prob-

lem is usually caused by someone plugging the LVDS cable into the headboard while the printer is powered on.

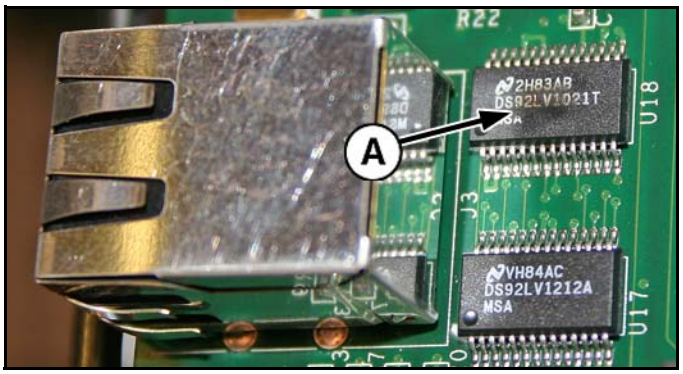


Fig. 182. Headboard LVDS chip burned out

Troubleshooting the media-drive motor coupling

- Specific tools and procedures are prescribed for removing and installing the coupler. These tools and instructions must be used and observed or the interface between the motor and drive roller will be poor and belt motion problems may occur.

Troubleshooting the media-drive motor encoder

- If there is a printer error message concerning the media drive, read the message carefully to understand which encoder is referenced, the on-motor encoder (A in Fig. 115.) or the on-shaft high-resolution encoder (A in Fig. 117.). Failure to recognize the correct encoder will result in improper diagnostics.

Troubleshooting the high-resolution media-drive encoder

The high-resolution encoder's interface has a diagnostic LED near where the cable connects to the interface (the connector that plugs into the IO board in the electronics box). The LED reports the amount of signal being received from the encoder head. Note the following chart.

Table 2: High-resolution encoder interface Diagnostic LED

Signal	Indication	Status
Incremental	Purple	Normal setup; signal level 110% to 135%
	Blue	Optimal setup; signal level 90% to 110%
	Green	Normal setup: signal level 70% to 90%
	Orange	Acceptable setup; signal level 50% to 70%
	Red	Poor setup; signal may be too low for reliable operation; signal level < 50%
	Purple / blank - flashing	Over signal; system in error
	Blue / blank - flashing	Over speed; system in error
	Red / blank - flashing	Poor setup; signal level < 20%; system in error
Reference mark	Blank flash	Reference mark detected (speed < 100 mm/s only)

As the media-drive roller turns, the amount of signal is constantly indicated by a the color of the LED. Because the drive roller is not perfectly round, the focus of the encoder readhead changes at different places on the encoder ring. For example, the LED may be blue and periodically change to green as the media-drive roller turns.

The interface LED responds every time it passes over the reference mark, which is a wider tick mark on the encoder ring. If the reference mark has been calibrated (so that the system knows where it is), the LED will turn off when the readhead passes over the reference mark. If the reference mark has not been calibrated, the LED will flash red every time it passes over the reference mark.

- The high-resolution encoder can get dirty and cause media-drive errors. Clean the encoder according the cleaning procedure.

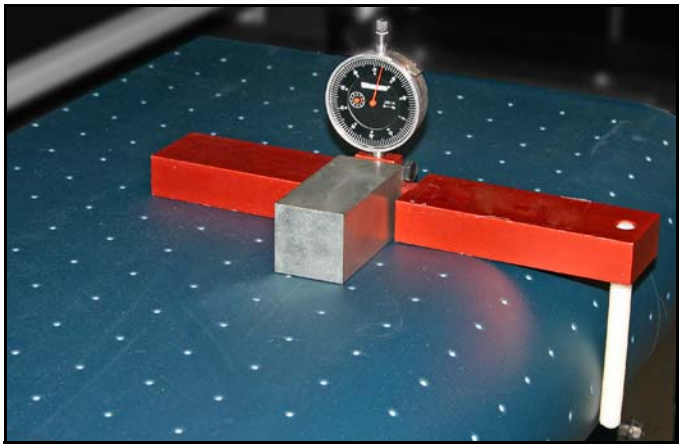
Troubleshooting the media-drive belt

- If the media belt tension is too tight, there can be some deflection of the media-drive and the idler roller in the center of the rollers. On flexible roll material only (not rigid), this can cause the outside edges to travel slightly fast than the middle. This results in different offsets in the middle of the print versus the outsides. This results in horizontal banding on flexible materials. The banding can be identified because it does not track completely across the media. It might only appear on the sides or the middle or a mix of both, but never all the way across the media.

- If the belt tension is too loose, there will be horizontal banding, but it will be all the way across the media.

- Proper belt tension and position is critical to best printing performance. Tensioning and alignment procedures must be followed carefully to ensure correct technique. It is also critical that a dial indicator (Fig. 183.) be used to detect proper deflection of the belt.

Fig. 183. Dial indicator tool



Troubleshooting the ionizer

- Debris can collect on the sharp points of the ionizer. The debris can interfere with the ionization process. The ionizer points should be cleaned with the printer's supplied brush quarterly or more often depending on use. The printer's operator can perform this scheduled maintenance task.

- If you hear static-like noise coming from the ionizer, it probably needs to have its points cleaned.

- If you often smell ozone when the ionizer is in use, the points should be cleaned.

Troubleshooting the media alignment bar

- The alignment bar will bend if it encounters a blow from a heavy substrate such as plywood. This may require replacement of the alignment bar.

Troubleshooting the rail actuator motor

- Rail motor errors can result from the rail actuator encoder strips falling out of their fittings within the rail actuator assemblies.

Troubleshooting the media thickness sensor

- Debris can collect on the media thickness sensor's roller (A in Fig. 131.) and create inaccurate readings for media thickness. The roller must be cleaned by the user quarterly or more often, depending on use and environment.

Troubleshooting the media detection sensor

- The media detection sensor cannot detect non-reflective material, such a black media, or transparent media, such as clear film. The size and width of the media must be input manually into the printer's on-screen media loading menu.

- If the sensor is installed at the wrong angle, it will not work. For example, if the beam shines directly down onto the media versus at a 45-degree angle, the sensor will not detect media.

Troubleshooting the supply spool

-

Troubleshooting the motor control board

- If the input air flow near the motor control board is blocked, the motor control board will overheat. Usually this results in damage to the transistors. This can be observed by looking at the FETs (see “About the motor control board” on page 124).

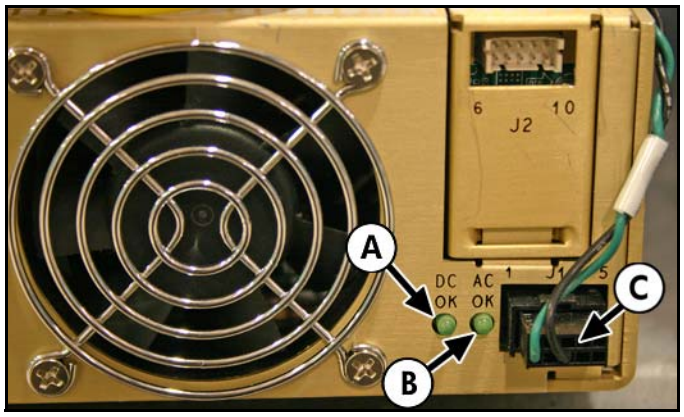
Troubleshooting the I/O board

- If you replace the I/O board, the calibration parameters for the LCD will be lost. However, the LCD will automatically go into calibration mode if needed. If you want to force the LCD to recalibrate, touch the screen during startup when you first see the message “Display Test.”

Troubleshooting the 38/24v power supply

There are two LED lights on the 38/24v power supply that indicate the status of AC and DC voltage. The DC LED (A in Fig. 184.) is labeled “DC OK,” and the AC LED (B in Fig. 184.) is labeled “AC OK.” When the printer is powered on and operating correctly, both lights should be illuminated constantly. When electronic box is plugged in to external power but not switched on, the AC light should illuminate constant and the DC light should blink until the power switch is turned on.

Fig. 184. 38/24v power supply



- The inhibitor cable (C in Fig. 184., also known as the “remote” connector or J1) provides the communication between the IO board and the 38/24v power supply. If the inhibit connector is disconnected from the 38/24v power supply, the power will always be on (even if the power switch on the printer is turned off). There have been documented cases in which the inhibitor cable is disconnected, loose or damaged and power was expected supplied to the power cables for the carriage heardboard. When the power cables were plugged into the headboard, it damaged the headboard.

- If the printer is powered on at the power switch, and one of these lights is blinking, there is a problem. One of the outputs (24 or 38v) could be shorted so that the power supply’s fold-back current limit circuit is engaged.

- If either light is blinking, check the inhibitor cable (C in Fig. 184.) for damage. If the cable has bare wire that is touching the metal of the electronics box, this could cause the lights to blink. Disconnect the cable to see if the blinking stops.

- The lights could blink due to poor or faulty grounding (rare).

- If the IO board remote circuit is damaged, the lights could blink.

The following sections are found in the printer's menu.

TOOLS > USER CLEANING AND MAINTENANCE

The user interface on the printer contains both hidden password protected areas and areas that are always visible. To access the password protected menus, see the section "Accessing the password protected service menu" on page 449.

Menu: Maintenance reminders

The maintenance reminders module lists scheduled maintenances for your printer.

TOOLS > USER CLEANING AND MAINTENANCE > MAINTENANCE REMINDERS

Menu: Replace UV lamp bulb or bulbs

The user cleaning section of the user manual provides additional detailed instructions and information on this task. For instructions on replacing the UV lamb bulb, see the section

TOOLS > USER CLEANING AND MAINTENANCE > REPLACE UV LAMP BULB OR BULBS

Menu: Clean rail encoder strip

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN RAIL ENCODER STRIP

Menu: Clean ionizer needles

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN IONIZER NEEDLES

Menu: Clean and lube rail strips

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN AND LUBE RAIL STRIPS

Menu: Clean print head orifice plates

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN PRINT HEAD ORIFICE PLATES

Menu: Clean/lube service station rails

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN / LUBE SERVICE STATION RAILS

Menu: Clean service station wiper

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN SERVICE STATION WIPER

Menu: Clean carriage wheels

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN CARRIAGE WHEELS

Menu: Vacuum bottom of carriage

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > VACUUM BOTTOW OF CARRIAGE

Menu: Clean carriage home sensor

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN CARRIAGE HOME SENSOR

Menu: Replace UV lamp filters

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > REPLACE UV LAMP FILTERS

Menu: Clean electronics box filters

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN ELECTRONICS BOX FILTERS

Menu: Replace service station wiper

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > REPLACE SERVICE STATION WIPER

Menu: Drain waste from service station

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > DRAIN WASTE FROM SERVICE STATION

Menu: Clean media thickness sensor roller

The user cleaning section of the user manual provides additional detailed instructions and information on this task.

TOOLS > USER CLEANING AND MAINTENANCE > CLEAN MEDIA THICKNESS SENSOR ROLLER

TOOLS > USER DIAGNOSTICS

Menu: Carriage motion

Runs the carriage motion troubleshooter which walks the user through a series of tests to help diagnose a problem with the carriage motion system.

TOOLS > USER DIAGNOSTIC > CARRIAGE MOTION

Menu: Rail motion

A troubleshooter for diagnosing problems with rail motion and the head height system.

TOOLS > USER DIAGNOSTIC > RAIL MOTION

Menu: Calibration

Runs the calibration troubleshooter which walks the user through a series of tests to help diagnose a problem with print quality.

TOOLS > USER DIAGNOSTIC > CALIBRATION

Menu: Verify H2H Y Alignment

Prints a pattern to make sure the head-to-head Y calibration matches the current head alignment.

TOOLS > USER DIAGNOSTIC > VERIFY H2H Y ALIGNMENT

Menu: Print quality

A trouble shooter for resolving some common image quality issues.

TOOLS > USER DIAGNOSTIC > PRINT QUALITY

Menu: Service station

Runs the service station troubleshooter which walks the user through a series of tests to help diagnose a problem with the service station.

TOOLS > USER DIAGNOSTIC > SERVICE STATION

Vacuum pressure

Runs the vacuum pressure troubleshooter which walks the user through a series of tests to help diagnose a problem with the head vacuum pressure.

TOOLS > USER DIAGNOSTIC > VACUUM PRESSURE

Menu: Hard drive

This test runs the hard drive's file system check routine, followed by a test which writes out specific files to the hard drive and verifies that they are read back in correctly. Note that running this test will delete any jobs that are stored on the hard drive.

TOOLS > USER DIAGNOSTIC > HARD DRIVE

Menu: LVDS

Runs through the LVDS error checklist to check for problems that could cause LVDS communication errors between the printer's Head board and I/O board.

TOOLS > USER DIAGNOSTIC > LVDS

Menu: Print diagnostic plot

Print a special diagnostic plot that is stored on the printer's hard drive.

TOOLS > USER DIAGNOSTICS > PRINT DIAGNOSTIC PLOT

Menu: Print jet statistics

Displays a table which states how many jets are out on each head, how many were replaced, how they were disqualified, and how many are out in X and Y directions.

TOOLS > USER DIAGNOSTIC > PRINT JET STATISTICS

Menu: Warnings and actions list

Displays a list of all the possible actions and warnings. This list is also available in the user manual.

TOOLS > USER DIAGNOSTIC > WARNINGS AND ACTIONS LIST

Menu: Error history

Displays a list of errors that have occurred since the printer was turned on.

TOOLS > USER DIAGNOSTIC > ERROR HISTORY

Menu: Log error history

Logs the errors that have occurred since the printer was turned on.

TOOLS > USER DIAGNOSTIC > LOG ERROR HISTORY

Menu: Log system info

Logs system info to the server's log. See the server manual for collecting this log.

TOOLS > USER DIAGNOSTIC > LOG SYSTEM INFO

TOOLS > SERVICE PRINTER > DEVICE TESTS

Menu: Device test wizard

Runs the device tests one after another.

TOOLS > SERVICE PRINTER > DEVICE TEST > DEVICE TEST WIZARD

Purpose, function or description:
It runs all the device tests in sequence, and requires some operator invention. It is not an automated test.

Action when selected:
Runs Carriage Home Sensor Test; Vacuum Fan Test; Profiler Test; Cabinet Fans Test; Rail Height Motor Test; Roller, Alignment Bar, Sensor and Switch Test; Carriage Cooling Fan Test; Service Station Tests; UV Lamp Test; and the Image Sensor LED Test.

Evaluating the outcome:
See remarks for the individual test entries that follow.

Menu: Vacuum fan test

Runs the vacuum fans to test for correct operation.

TOOLS > SERVICE PRINTER > DEVICE TEST > VACUUM FAN TEST

Purpose, function or description:
It runs the vacuum table fans to test for correct operation. There are four chambers in each of the three zones, but some of the chambers have more than one fan.

Action when selected:
Operator can select each chamber (1-4) in the three zones and toggle it on and off.

The fans will either spin up immediately or they will not. The fans that do not operate as expected may be contributing to output problems or head rubs / head strikes against the media.

Evaluating the outcome:
The fans will either spin up immediately or they will not. The fans that do not operate as expected may be contributing to output problems or head rubs / head strikes against the media.

Menu: Media thickness sensor test

It runs a test to determine if the media thickness sensor is working properly.

TOOLS > SERVICE PRINTER > DEVICE TEST > MEDIA THICKNESS SENSOR TEST

Purpose, function or description:
Tests if the media thickness sensor is working properly.

Action when selected:
Raises the rail to maximum height so that the thickness sensor is at its lowest possible point. The printer will show the value generated in this state, then prompts you to raise the thickness sensor to its maximum. A 2.54 cm (1-in) to 3.2 cm (1.25-in) block placed between the sensor arm and the belt will raise the sensor to its maximum. The printer will show the value generated in this state and tell you if the values are within the normal range.

Evaluating the outcome:
If the sensor values are not reasonable, recalibration is required. Sensor replacement may be required. Observe for stickiness/inhibition of motion of the mechanical sensor arm.

Menu: Rail-height motor test

Runs a test to determine if the rail height motors and encoders are working properly.

TOOLS > SERVICE PRINTER > DEVICE TEST > RAIL HEIGHT MOTOR TEST

Purpose, function or description:
It determines if the rail height motor encoders are working properly.

Action when selected:
It allows the operator to move both rail motors together going both up and down. A display shows the current encoder positions and the media thickness sensor reading.

Evaluating the outcome:
The motors should be able to move their entire range with reasonable encoder values shown.

Menu: Roller, alignment bar, sensor and switch test

Runs a test that allows the user to test the operation of the media rollers, media alignment bar, media present sensor, and foot switch (Foot switch is only available on FB700). To lower and raise the media rollers and media alignment bar press the corresponding button. The icon for the media sensor is red when the sensor is not detecting media; the icons for the FB700 foot switch is red when it is not being pressed and green when it is being pressed.

TOOLS > SERVICE PRINTER > DEVICE TEST > ROLLER, ALIGNMENT BAR, SENSOR AND SWITCH TEST

Purpose, function or description:
It tests the operation of the input and output rollers, media alignment bar, media present sensors (both rigid and roll-fed), and foot switch.

Action when selected:
It allows the operator, to move the rollers and alignment bar up and down, to break the beam of the media's present sensors in order to verify that they detect media, and to test if the foot switch presses are sensed.

Evaluating the outcome:
The rollers and alignment bar should move freely. The media's present sensor should detect media; if they do not adjust their angle. The foot switch presses should be detected at the right times.

Menu: Carriage home sensor test

Tests the operation of the carriage home sensor.

TOOLS > SERVICE PRINTER > DEVICE TEST > CARRIAGE HOME SENSOR TEST

Purpose, function or description:
Tests the operation of the carriage home sensor.

Action when selected:
Prompts operator to manually move the carriage to the Service end of the rail. An indicator on the control panel shows if the hone sensor is reading the flag or not.

Evaluating the outcome:
The sensor should find the flag. If not, clean the sensor as indicated in the User Cleaning Kit instructions. The sensor may be disconnected and the printer will continue to function.

Menu: Profiler test

Identifies and verifies profilers in each position. The printer will report the profiler number, color, and ink percentage remaining. Particularly useful when the printer is connected to a third-party RIP that cannot display profiler status.

TOOLS > SERVICE PRINTER > DEVICE TEST > PROFILER TEST

Purpose, function or description:
Commands the printer to identify and verify profilers in each position. The printer will report the profiler color and percentage remaining. Particularly useful when the printer is not connected to a RIP that can show profiler status.

Action when selected:
Shows a display of the profilers. No operator interaction through the control panel, but if profilers are physically removed or inserted the screen will update as new status is detected.

Evaluating the outcome:
If experiencing profiler-related problems, use this test to insert profilers one at a time and/or sequentially to identify any problems with specific profilers or OHS board positions.

Menu: Service station tests

Runs a test that allows the user to move the service station up / down, move the wipers forward / backward, and turn on / off the service station vacuum. The test also shows the status of the waste ink float, the status of the height sensor and the position of the service station.

TOOLS > SERVICE PRINTER > DEVICE TEST > SERVICE STATION TESTS

Purpose, function or description:
Tests the operation of the service station motors and sensors and the ShopVac.

Action when selected:
Operator can move the service station height and wiper motors in their respective directions, turn the ShopVac on and off, and view the up/down status of the waste ink float.

Evaluating the outcome:
Motors should move freely through out their ranges. ShopVac should turn on and stay on until turned off; an immediate shutdown indicates the ShopVac vessel is full of liquid.

Menu: Cabinet fans test

Runs the cabinet fans to test for correct operation.

TOOLS > SERVICE PRINTER > DEVICE TEST > CABINET FANS TEST

Purpose, function or description:
Tests the operation of the enclosure fans.

Action when selected:
Operator can toggle the cabinet fans on and off. All fans turn on/off together, there is no independent control of each fan.

Evaluating the outcome:
All fans should operate.

Menu: Carriage cooling fan test

Runs the carriage cooling fans to test for correct operation.

TOOLS > SERVICE PRINTER > DEVICE TEST > CARRIAGE COOLING FAN TEST

Purpose, function or description:
Tests the operation of the fans on the carriage.

Action when selected:
The carriage moves out onto the belt. There are separate toggles for the 'output side' fans (fans on the carriage cover) and the 'input side' fans (fans on the back of the carriage for the headboard.

Evaluating the outcome:

All fans should operate in the test. When printing, it is normal for the input side fans to be off except in the fastest print modes.

Menu: Ionizer relay test

Allows the user to turn on / off the ionizer relay to verify correct operation.

TOOLS > SERVICE PRINTER > DEVICE TEST > IONIZER RELAY TEST

Purpose, function or description:
Tests operation of the ionizer bar by energizing it through the relay in the electronics assembly.

Action when selected:
Operator can toggle the ionizer on and off.

Evaluating the outcome:

Menu: UV lamp test

Run the UV lamps, shutters, and blowers for correct operation. Note: The lamps need to be turned off in order to test the shutters and blowers.

TOOLS > SERVICE PRINTER > DEVICE TEST > UV LAMP TEST

Purpose, function or description:
Tests the lamps, shutters, and cooling fans for correct operation. The lamps must be off in order to test the shutters.

Action when selected:
Moves the carriage out to the belt. Raises the output roller to allow visibility to lamps. Operator can turn the lamps on and off; move the shutter to the left and right fully closed positions and the fully open position, and toggle the cooling fans on and off for each lamp.

Evaluating the outcome:
All functions should operate when commanded.

Menu: Media motion velocity test

Run media belt to test resulting velocity.

TOOLS > SERVICE PRINTER > DEVICE TEST > MEDIA MOTION VELOCITY TEST

Purpose, function or description:
For a given PWM (pulse width modulation), compares the velocity of the belt, measured by the on-shaft encoder, against the velocity of the media drive motor, measured by the on-motor encoder.

Action when selected:
Prompts the operator to calibrate the encoder, which should be done. The operator selects the desired PWM in 10% increments. The belt begins to run and the measured velocities are displayed. Can be run both forward and backward.

Evaluating the outcome:
A typical machine at 50% PWM will have a velocity of 6.9 cm (2.7-in)/sec, plus or minus.51 cm (0.2-in)/sec. If velocity at 50% is slower than this range, it may indicate that there is unexpected drag or a problem with media drive system, such as a shifted roller or a poor interface at the media motor and drive shaft coupling.

Menu: Test media drive control system

Tests media drive control system for ability to properly control the belt.

TOOLS > SERVICE PRINTER > DEVICE TEST > TEST MEDIA DRIVE CONTROL SYSTEM

Purpose, function or description:
Runs the media belt and returns information concerning the feedback loop for media motion control.

Action when selected:
There is no operator interaction, the belt moves and then the display shows a bar graph that is a Histogram of Move Errors and an Average and a Standard Deviation.

Evaluating the outcome:
The Histogram should have a single tall bar and few surrounding bars (or no other). If the tall bar is not at zero (0), it indicates that the media feed calibration is not accurate and should be performed. An Average value of 0.500 or higher also indicates that the media feed calibration should be performed.

The Standard Deviation indicates if the system is operating consistently, even if the feed calibration is incorrect. A Standard Deviation of 0.300 or less is acceptable; higher values indicate the system is not consistent. This may be due to drag or other inefficiency in the media drive system.

TOOLS > SERVICE PRINTER > DEVICE TESTS > IMAGE SENSOR TESTS

Menu: Visually examine LEDs

Turns on LEDs individually and allows visual inspection.

TOOLS > SERVICE PRINTER > DEVICE TESTS > IMAGE SENSOR TESTS > VISUALLY EXAMINE LEDS

Purpose, function or description:
This allows the operator to visually examine if each LED is firing correctly.

Action when selected:
The carriage moves out over the belt. The operator selects which LEDs (red, green, blue) to turn on, and then may examine the carriage to visually confirm that the selected LED is working.

Evaluating the outcome:
All LEDs should illuminate when commanded. If not, replace camera board.

Menu: Whitepoint

Test camera whitepoint and display results.

TOOLS > SERVICE PRINTER > DEVICE TESTS > IMAGE SENSOR TESTS > WHITEPOINT

Purpose, function or description:
Tests the camera whitepoint sensing.

Action when selected:
Requires media to be loaded. Media should have a good white point. Carriage moves over media and scans. The control panel shows the Integration Time and Gain for each LED.

Evaluating the outcome:

Menu: Take picture of white paper

Take picture of white image and display results.

TOOLS > SERVICE PRINTER > DEVICE TESTS > IMAGE SENSOR TESTS > TAKE PICTURE OF WHITE PAPER

Purpose, function or description:
Tests the camera's interpretation of the whiteness of the specific loaded media.

Action when selected:
It requires media to be loaded. The carriage moves over media and scans. The operator is prompted if the scanned image should be printed.

Evaluating the outcome:

Menu: Take raw picture of dots

The printer prints a small set of lines which are scanned by the digital image sensor. Then the printer prints an enlargement of the image as the sensor captured it, with no image enhancement.

TOOLS > SERVICE PRINTER > DEVICE TESTS > IMAGE SENSOR TESTS > TAKE RAW PICTURE OF DOTS

Purpose, function or description:
Allows the operator to evaluate the basic picture-taking functionality of the image sensor.

Action when selected:
A small square composed of dots of all colors is printed. The image sensor then scans the print, and then prints a 400x enlargement of the image is was able to see. The lamps must turn off for the scanning and complete the cool-down before the second image can be printed.

Evaluating the outcome:
All colors should be discernible in the print. The background may be off-white. If the lens is occluded this will make the image hazy. If there are marks or debris on the lens, repeated tests will show them in the same places each time. If the image is black or has large areas of black, the image sensor is not functioning normally.

Menu: Take enhanced picture of dots

The printer prints a small set of lines which are scanned by the digital image sensor. Then the printer prints an enlargement of the image as the sensor captured it, after image enhancement.

TOOLS > SERVICE PRINTER > DEVICE TESTS > IMAGE SENSOR TESTS > TAKE ENHANCED PICTURE OF DOTS

Purpose, function or description:
Allows the operator to evaluate the functionality of the image-enhancement software for the image sensor.

Action when selected:
A small square composed of dots of all colors is printed. The image sensor then scans the print, and then prints a 400x enlargement of the image is was able to see. The lamps must turn off for the scanning and complete the cool-down before the second image can be printed.

Evaluating the outcome:
Compared to the Raw Picture, this image should be much brighter. The background should be white. Dots should be clearly defined for all colors. Anything else indicates that the processing of the camera image is not working as expected.

Menu: Open loop actuator test

This test runs the pinch rollers, alignment bar, and rail in open loop mode, which is useful in trying to diagnose encoder, limit switch, or other actuator problems.

TOOLS > SERVICE PRINTER > DEVICE TESTS > OPEN LOOP ACTUATOR TEST

Purpose, function or description:

Action when selected:

Evaluating the outcome:

Menu: Open loop service station test

This test runs the service station height motor in open loop mode, which is useful in trying to diagnose encoder, limit switch, or other problems.

TOOLS > SERVICE PRINTER > DEVICE TESTS > OPEN LOOP SERVICE STATION TEST

Menu: Pod test

Tests the functionality of the control panel display.

TOOLS > SERVICE PRINTER > DEVICE TESTS > POD TEST

Purpose, function or description:
Disguised entry point for enabling hidden menus.

Action when selected:
Minimal interface shows “Keystroke Detected”. Operator can select up/down arrows. Service technicians enter a specific sequence to enable the hidden menus.

Evaluating the outcome:
If any other keystrokes are entered, when proceed is pressed the test will show “Pod Test Completed, <##> keystrokes detected”.

Menu: Hard drive file system check

This will run the hard drive’s file system check routine to detect any errors in the file system. Run this if job storage has been disabled because of disk errors. The check may take up to 10 minutes to complete.

TOOLS > SERVICE PRINTER > DEVICE TESTS > HARD DRIVE FILE SYSTEM CHECK

Purpose, function or description:
Runs a file system check on the hard drive.

Action when selected:
Operator selects if file system errors should be fixed even if fixing them will cause data loss. The test may take 10 minutes to complete.

Evaluating the outcome:
If successful the test will show “File System Check Passed”.

TOOLS > SERVICE PRINTER > PRINT TESTS

Menu: Print prime bars

Prints a pattern for checking jet health.

TOOLS > SERVICE PRINTER > PRINT TESTS > PRINT PRIME BARS

Menu: Print test

This test is useful for diagnosing a malfunctioning print head. The user selects which print heads they want to print with, the width and height of the pattern, and the coverage of the pattern. If multiple print heads and / or colors are selected their printed area can be combined or printed together.

TOOLS > SERVICE PRINTER > PRINT TESTS > PRINT TEST

Purpose, function or description:
Prints one or more printheads to test basic printhead operation.

Action when selected:
Operator selects desired resolution, print width, print length, colors, heads of each color to use, whether to print heads/colors separately or together, and coverage per color.

Evaluating the outcome:
Selected printheads should fire consistently. The quality of the actual print pattern is not necessarily indicative of quality to be expected in normal print jobs. This pattern may be useful in determining if there is a repeating pattern in the output.

Menu: Belt & rail parallel test

Prints a pattern similar to the manual bidi calibration pattern across the width of the media to verify that the head height is calibrated to the same height at both ends of the belt. If the rail is not parallel to the belt, the bidi will be off at the service edge of the media. It is recommended that the bidi be calibrated before running this test, and that this pattern be printed on as wide of media as possible.

TOOLS > SERVICE PRINTER > PRINT TESTS > BELT & RAIL PARALLEL TEST

Purpose, function or description:
Verifies that the head height is calibrated to the same height at both ends of the belt. The standard bidirectional calibration should be completed and verified as good before beginning this test.

Action when selected:
Prints a pattern similar to the manual bidi registration pattern across the width of the media.

Evaluating the outcome:
If the rail is not the same height at both sides, the bidirectional registration will be off at the service edge of the media.

Menu: Media feed accuracy test, one

Prints lines that are intended to be fixed distance apart, and sets media feed system for accurate advances.

TOOLS > SERVICE PRINTER > PRINT TESTS > MEDIA FEED ACCURACY TEST, ONE

Menu: Media feed accuracy test, all

Prints lines that are intended to be fixed distance apart, and sets media feed system for accurate advances.

TOOLS > SERVICE PRINTER > PRINT TESTS > MEDIA FEED ACCURACY TEST, ALL

Menu: Horizontal dot accuracy

Prints horizontal dot accuracy test print.

TOOLS > SERVICE PRINTER > PRINT TESTS > HORIZONAL DOT ACCURACY

Menu: Vertical dot accuracy

Prints vertical dot accuracy test print.

TOOLS > SERVICE PRINTER > PRINT TESTS > VERTICAL DOT ACCURACY

Menu: Print test page

Prints a test page.

TOOLS > SERVICE PRINTER > PRINT TESTS > PRINT TEST PAGE

Menu: Print faux 662

Prints a “662” test page.

TOOLS > SERVICE PRINTER > PRINT TESTS > PRINT FAUX 662

Menu: Comb banding ramps

Prints comb banding ramps.

TOOLS > SERVICE PRINTER > PRINT TESTS > COMB BANDING RAMPS

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS

Menu: Air valves

This procedure allows the user to test the air valves.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > AIR VALVES

Purpose, function or description:
Tests the air valves on the carriage manifold for operation.

Action when selected:
The operator can select the air valve for each color channel and toggle it from Off (vacuum) to On (pressure).

Evaluating the outcome:
Valves should audibly click when the open.

Menu: Prime ink pumps

This procedure primes the ink pumps.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > PRIME INK PUMPS

Purpose, function or description:

Runs a pump for a period of time. Useful for testing if ink is being delivered to the printheads. The printheads must be sensed as empty, or the printer will prompt to empty the heads for the selected color(s).

Action when selected:
The operator can select each pump to turn on for 10 seconds.

Evaluating the outcome:
The thermistors eventually should detect in the printheads. If the ink line is disconnected from the printheads, ink should exit from the tube when the pump runs.

Menu: Ink pumps

This procedure allows the user to test the ink pumps.

Warning: Be careful running this test if there is ink in the reservoirs. You may over fill the heads.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > INK PUMPS

Menu: Ink / air thermistors

This test displays the readings of the ink and air thermistors. The readings must be very close to each other when there is no ink in the reservoir.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > INK / AIR THERMISTORS

Purpose, function or description:
Displays the current values measured by the ink/air thermistors.

Action when selected:
Displays the current values measured by the ink/air thermistors.

Evaluating the outcome:
If the heads are filled with ink, the ink thermistors should have significantly higher values than the air thermistors. If the heads are filled with air, the ink and air thermistors should be similar, typically with a difference of no more than 8. Higher numbers indicate cooler temperatures.

Menu: Pressure pump

This procedure allows the user to test the pressure pump.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > PRESSURE PUMP

Purpose, function or description:
Tests the operation of the pressure pump.

Action when selected:

Evaluating the outcome:
The pump should operate when commanded.

Menu: Vacuum pump

This procedure allows the user to test the vacuum pump to verify that the printhead vacuum pressure is near the nominal value (vacuum level between 5 and 5.5 inches of water).

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > VACUUM PUMP

Purpose, function or description:
Tests the operation of the vacuum pump.

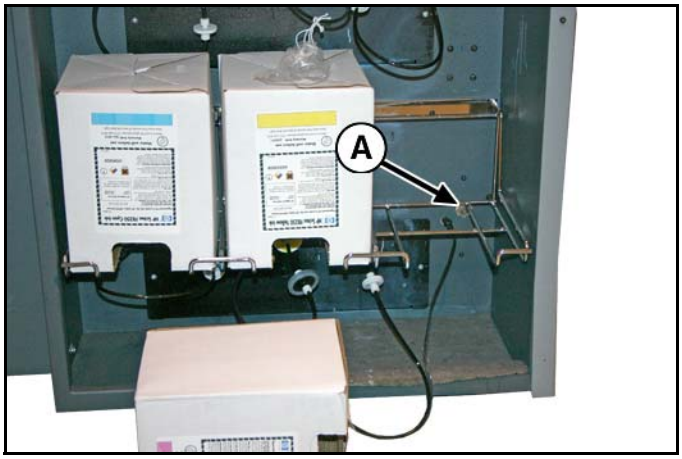
Action when selected:

Evaluating the outcome:
The pump should operate when commanded.

For information regarding the vacuum system, see the section “About the vacuum assembly” on page 65.

To change the vacuum level, turn the adjustment knob (A in Fig. 185.) on the regulator.

Fig. 185. Vacuum regulator knob location



Menu: Turn ON / OFF white ink shaker

This utility allows to turn on or off the white ink shaker when the printer is upgraded for the white ink use.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > TURN ON / OFF WHITE INK SHAKER

Menu: Initial ink fill

Performs the initial ink fill routine.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > INITIAL INK FILL

Menu: Prep for shipping

Prepares printheads for shipping the printer or an extended shutdown by emptying ink from the heads and cleaning them with flush.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > PREP FOR SHIPPING

Purpose, function or description:
Prepares printer for shipping or extended shutdown by emptying ink form the heads and prompting for cleaning with flush.

Menu: Disable on-head system

This allows the user to prevent the ink system from starting automatically when the printer starts.

TOOLS > SERVICE PRINTER > INK SYSTEM TESTS > DISABLE ON-HEAD SYSTEM

Purpose, function or description:
Selecting this option puts the printer in a non-printing state that can be reset only by rebooting the printer.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS

Menu: Calibration wizard

Steps through all the necessary calibrations in sequence and ensure that calibrations are performed in order.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > CALIBRATION WIZARD

Purpose, function or description:
Steps through all the necessary calibrations in sequence and ensures that calibrations are performed in order.

Action when selected:
Shows the list of calibration items and allows the operator to move through them and select each one. In the wizard view, each item will be listed a "Calibrated," "Pending," "Skipped," or "Must Be Calibrated." If the status is "Must be Calibrated," it does not indicate that this calibration is required, but rather indicates that the item is presumed to have been calibrated prior to selecting the active item.

Evaluating the outcome:
See the entries for the individual calibration items below.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS

Menu: LCD touchscreen calibration

Adjusts the position of the LCD touchscreen in relation to the LCD display.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > LCD TOUCHSCREEN CALIBRATION

Purpose, function or description:
Calibrates the touch screen sensitivity to detect presses in the correct locations.

Action when selected:
Two cross hairs are displayed for the user to press. This is the same routine available during initialization of the printer.

Evaluating the outcome:
If the cross hairs are shown again, the calibration did not succeed and must be attempted again.

Menu: Head height calibration

Calibrates head height off of the belt, to ensure accurate head clearance.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > HEAD HEIGHT CALIBRATION

Purpose, function or description:
Calibrates the head height off of the belt. There are two methods available, the Feeler Gauge Method and the Dial Indicator Gauge method. The Dial Indicator Gauge method is used only at the factory; the Feeler Gauge method is the only supported method used in the field.

Action when selected:
User is first prompted to select if verifying the existing calibration or performing a new calibration. If Verify is selected, the operator uses the gauge to confirm that the head height is at the right value but not make any changes.

If calibrate is selected, the user is able to move the rail motors together or independently at fast and slow speeds until the measured head height is the same on both ends.

Evaluating the outcome:
The locations to take measurements with the feeler gauge are significant. The rail will droop somewhat in the center and be at its highest at the outside ends. Therefore the two locations to take feeler gauge readings are at the midway point between the user end and center of the belt and at the midway point between the service end and the center of the belt. This produces an average height that is slightly lower than nominal at the center and slightly higher than nominal at the ends.

Menu: Media thickness sensor calibration

Calibrates media thickness sensor, to ensure accurate head clearance.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > MEDIA THICKNESS SENSOR CALIBRATION

Purpose, function or description:
Tests if the media thickness sensor is working properly.

Action when selected:
Raises the rail to maximum height so that the thickness sensor is at its lowest possible point. The printer will show the value generated in this state, then prompts you to raise the thickness sensor to its maximum. A 1" to 1.25" block placed between the sensor arm and the belt will raise the sensor to its maximum. The printer will show the value generated in this state and tell you if the values are within the normal range.

Evaluating the outcome:
If the sensor values are not reasonable, recalibration is required. Sensor replacement may be required. Observe for stickiness/inhibition of motion of the mechanical sensor arm.

Menu: Service station calibration

Adjusts the positions of the service station for proper head servicing.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > SERVICE STATION CALIBRATION

Purpose, function or description:
Calibrates the height and wiper positioning for the service station.

Action when selected:
The on-screen prompts are too detailed to recount here. The stages of the calibration are:

1. Wiper Height. Sets the wiper blade height with respect to the carriage bottom pin plate. It may require adjustment as the wiper blade wears, or when the wiper is replaced.

2. Front/Back tilt of the entire service station. Sets the levelness of the entire service station relative to the carriage. Once done correctly, can usually be skipped in the future.

3. Left/Right tilt of the entire service station. Sets the levelness of the entire service station relative to the carriage. Once done correctly, can usually be skipped in the future.

4. Wiper X position. Sets the wiping position from left to right under the carriage.

5. Wiper Y position. Sets the wiping position from front to back under the carriage.

Evaluating the outcome:
When complete, perform a Purge and then a Prime Bar to evaluate the efficacy of the automated service. You may also visually inspect the printhead orifices to see if they appear to be wiped uniformly from front to back and across all 12 positions.

Menu: Input roller home calibration

Calibrates height of the input roller off of the belt.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > INPUT ROLLER HOME CALIBRATION

Purpose, function or description:
Calibrates the home location for the input roller.

Action when selected:
The roller raises to its maximum position, then lowers slowly until it no longer sees encoder pulses down. This is ordinarily because the roller has reached the belt and cannot go any lower. The roller then raises back up while counting encoder pulses to determined the available range of motion.

The range must exceed the required value. A severe buildup of ink on the belt or any other foreign object that halts the downward motion prematurely can lead to unexpected operation of the roller.

Menu: Output roller home calibration

Calibrates height of the output roller off of the belt.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > OUTPUT ROLLER HOME CALIBRATION

Purpose, function or description:
Calibrates the home location for the output roller.

Action when selected:
The roller raises to its maximum position, then lowers slowly until it no longer sees encoder pulses down. This is ordinarily because the roller has reached the belt and cannot go any lower. The roller then raises back up while counting encoder pulses to determinate the available range of motion.

Evaluating the outcome:
The range must exceed the required value. A severe buildup of ink on the belt or any other foreign object that halts the downward motion prematurely can lead to unexpected operation of the roller.

Menu: Alignment bar home calibration

Calibrates heights of the alignment bar off of the belt.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > ALIGNMENT BAR HOME CALIBRATION

Purpose, function or description:
Calibrates the home location for the alignment bar.

Action when selected:
The bar raises to its maximum position, then lowers slowly until it no longer sees encoder pulses down. This is ordinarily because the bar has reached the belt and cannot go any lower. The bar then raises back up while counting encoder pulses to determined the available range of motion.

Evaluating the outcome:
The range must exceed the required value. A severe buildup of ink on the belt or any other foreign object that halts the downward motion prematurely can lead to unexpected operation of the alignment bar.

Menu: UV lamps shutter calibration

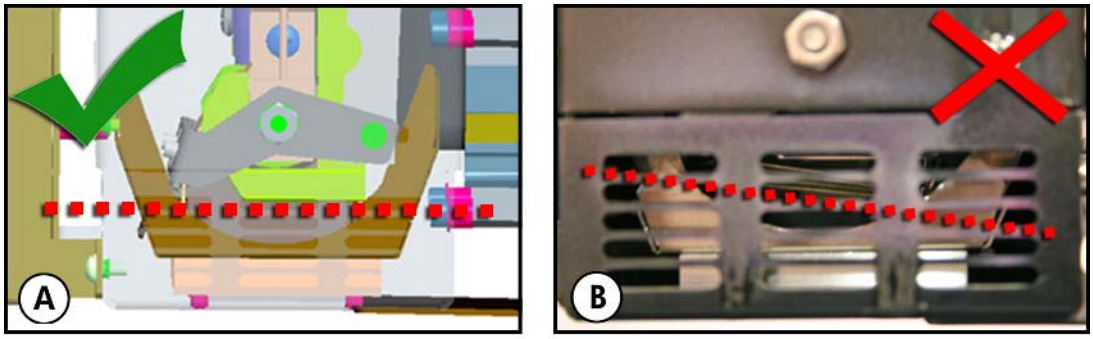
This calibrates the UV lamp shutter position to make sure the shutter and lamp reflectors are parallel with the media-drive belt. This calibration is in the password protected service menu. See the installation guide for the password. Select the following option from the printer's service menu:

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > UV LAMPS SHUTTER CALIBRATION

- When asked whether or not to reset the current calibration, select "No."
- When asked whether or not to lower the output roller, select "yes." However, it may be easier to remove the output roller. To remove the output roller, use a 10 mm socket to remove the bolts at the ends of the roller.

- Look through the slots in the lamp housing to observe the lamp reflector/shutter. Use the arrows on the printer's menu to move the shutter until it is parallel with the media-drive belt.

Fig. 186. Lamp shutter calibration



Purpose, function or description:
Calibrates the position of the shutters in the UV lamps by establishing the position of the shutter that is fully open.

Action when selected:
Moves the carriage out to the belt. The operator uses buttons on the control panel to move the shutters until they are pointed "straight down," that is, fully open.

Evaluating the outcome:
The shutters should be fully open and not partially deflecting to either side.

Menu: Image sensor height & position

Calibrates the height of the images sensor by continuously displaying the image sensor's output on the LCD; adjust the height of the image sensor until the image is in focus. Also calibrates the image sensor position with respect to printheads, to ensure accurate edge-to-edge printing.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > IMAGE SENSOR HEIGHT & POSITION

Purpose, function or description:
Locates the image sensor relative to printhead #1.

Action when selected:
Prints a black square on the media. By measuring the number of encoder pulses from the edge of the media to the edge of the block, the printer learns where the image sensor is relative to the printheads.

Evaluating the outcome:
If image placement left-to-right or margins seem incorrect, run this calibration.

Menu: Printhead Y calibration

Aligns printheads in the Y direction, not routinely needed since printheads are aligned at the factory.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > PRINTHEAD Y CALIBRATION

Purpose, function or description:
Uses the image sensor to guide the operator through positioning the printheads in the Y axis (front to back) so that the desired arrangement is achieved.

Action when selected:
The on-screen prompts are too detailed to recount here. The stages of the calibration are:

1. Select if calibrating the In-Line or the Staggered offset arrangement.

2. Print a set of Y alignment patterns.

3. Visually inspect that the gross alignment of the heads is acceptable. Make adjustments as required.

4. Use the software routine to locate the drop placements shown on the display.

5. Make adjustments as advised by the software.

6. Repeat steps 4 and 5, reprinting a new set of patterns each time, until no adjustments are required.

7. Select "finish calibration".

Evaluating the outcome:
Two measurements per head are required; more will increase the accuracy of the average.

If an adjustment of 1/8 turn or less would be needed, the software will indicate "no adjustment needed", but a tech with a steady hand can still make the adjustment. If the next scan of the next set of patterns shows 1/8 turn in the opposite direction from the previous scan, it may not be worth the effort to continue to try to center that head.

Menu: Media feed calibration

Eliminates banding between print swaths by calibrating media advance.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > MEDIA FEED CALIBRATION

Purpose, function or description:
Calibrates the media feed rate.

Action when selected:
The same five calibration methods as found in the regular "Calibrate Printer | Manual Calibrations | Media Feed Calibration" are available. The difference is that in the service menu these calibrations will move the entirety of the required adjustment on the first try. In the regular calibration menu, the software assumes there is inherent inaccuracy of measurement by the operator and moves only a portion of the required adjustment, necessitating at least one more calibration.

Evaluating the outcome:
The methods that employ the image sensor are the most desirable options.

Menu: Manual bidi calibration

A manual version of the autobidi calibration, necessary when printing on media that is transparent or other media that the printer's image sensor can't see.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > MANUAL BIDI CALIBRATION

Purpose, function or description:
Calibrates the bidirectional registration. Exactly the same procedure as the user calibration of the same name.

Action when selected:
Prints a pattern for the operator to evaluate and enter the desired values on the control panel.

Evaluating the outcome:
A reprint of the pattern following calibration should present reasonable results.

Menu: Auto head X calibration

Performs an automatic head-to-head calibration using the printer's image sensor to ensure that the printheads are aligned relative to each other.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > AUTO HEAD X CALIBRATION

Menu: Pin & alignment bar position

Calibrates the positioning pin and alignment bar positions.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > PIN & ALIGNMENT BAR POSITION

Menu: Media sensor position calibration

Prints a pattern that allows for calibrating the position of the media sensor.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > MEDIA SENSOR POSITION CALIBRATION

Purpose, function or description:
Locates the position of the media-out sensor.

Action when selected:

Evaluating the outcome:
If the printer prematurely sense out-of-media (such as by clipping the trailing edge of the print), run this calibration.

Menu: Media alignment bar alignment

Prints two sets of lines that are parallel when the alignment bar is properly aligned.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > MEDIA ALIGNMENT BAR ALIGNMENT

Purpose, function or description:
Set alignment bar to be parallel to belt motion.

Action when selected:
Print patterns on sheet, measure for parallel, adjust alignment bar.

Evaluating the outcome:
Results in prints being printed parallel to the front edge of the media when loaded against the alignment bar.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS

Menu: Invalidate calibration

This item allows a calibration to be invalidated. This should only be done when a component is going to be (or has been) replaced and replacing that component will cause the calibration to be no longer valid.

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INVALIDATE CALIBRATION

TOOLS > SERVICE PRINTER > RESET HOME POSITIONS

Menu: Reset carriage home position

Recalibrates the home position of the printhead carriage. If the printhead carriage will not return to the service station between prints, select this option. Cycling the power off and on will also run the home head function.

TOOLS > SERVICE PRINTER > RESET HOME POSITION > RESET CARRIAGE HOME POSITION

Purpose, function or description:
Re-finds the carriage home position.

Action when selected:
If the home sensor is operation, home will be established when the flag breaks the sensor plane. If the home sensor is not working, home will be established when the carriage encounters enough resistance to motion, typically by the bumper on the idler on the service end of the rail.

Evaluating the outcome:
The carriage should move all the way to the service end stop.

Menu: Reset rail home position

Recalibrates the vertical home position of the carriage for accurate head clearances.

TOOLS > SERVICE PRINTER > RESET HOME POSITION > RESET RAIL HOME POSITION

Purpose, function or description:
Drives the rail motors to their home positions.

Action when selected:

Evaluating the outcome:
The rail should move to its maximum height.

Menu: Home service station

Returns the service station wipers and service station tray to the home positions. This ensures that the service station is out of the way of the carriage movement.

TOOLS > SERVICE PRINTER > RESET HOME POSITION > HOME SERVICE STATION

Purpose, function or description:
Drives the service station height motor and wiper motor to their respective home positions.

Action when selected:

Evaluating the outcome:
The service station should lower to its home position and the wiper head should return to its garage at the input side of the service station.

Menu: Home UV shutters

Returns the UV lamp shutters to the home positions.

TOOLS > SERVICE PRINTER > RESET HOME POSITION > HOME UV SHUTTERS

Purpose, function or description:
It drives the shutter motor in each lamp to its home position.

Action when selected:

Evaluating the outcome:
The shutters should close.

Menu: Home input roller

Returns the Input Roller to the home position.

TOOLS > SERVICE PRINTER > RESET HOME POSITION > HOME INPUT ROLLER

Purpose, function or description:
It drives the input roller to its home position.

Action when selected:

Evaluating the outcome:
The input roller should move to its maximum height.

Menu: Home output roller

Returns the output roller to the home position.

TOOLS > SERVICE PRINTER > RESET HOME POSITION > HOME OUTPUT ROLLER

Purpose, function or description:
It drives the output roller to its home position.

Action when selected:

Evaluating the outcome:
The output roller should move to its maximum height.

Menu: Home alignment bar

Returns the alignment bar to the home position.

TOOLS > SERVICE PRINTER > RESET HOME POSITION > HOME ALIGNMENT BAR

Purpose, function or description:
Drives the alignment bar to its home position

Action when selected:

Evaluating the outcome:
The alignment bar should move to its maximum height.

Menu: Measure media width

Measures the width of the media using the image sensor on the printhead carriage.

TOOLS > SERVICE PRINTER > MEASURE MEDIA WIDTH

Purpose, function or description:
Measures the media width using the image sensor.

Action when selected:
The carriage comes out and measures the media

Evaluating the outcome:
Reported width should be within expectations.

Menu: Replace printhead

Prepares a printhead for replacement by emptying ink from the head and cleaning it with flush. Prior to this operation user may choose to print out the 'head return form' providing configuration information about the selected head(s).

TOOLS > SERVICE PRINTER > REPLACED PRINTHEAD

Purpose, function or description:
Prepares a printhead for replacement by emptying ink from the head and cleaning it with flush.

Action when selected:
Operator selects the applicable color. The printer operates the pressure pump to push all the ink out of the selected color printheads.

Evaluating the outcome:

Menu: Fill replaced printhead

Cleans and loads ink into a new printhead. The printhead should be empty before starting this procedure.

TOOLS > SERVICE PRINTER > FILL REPLACED PRINTHEAD

Purpose, function or description:
Loads ink into a new printhead.

Action when selected:
Operator selects the appropriate printheads. If the correct firing voltage for the new printhead cannot be automatically sensed from the printhead EEPROM, the printer will prompt the operator to enter the value found on the label on the printhead flex cable. The printer then prompts the operator to fill the new printhead with flush, to create a buffer between any vendor test fluid and HP ink. The printer then pushes the flush from the printhead using air pressure. When this is complete, the printhead is filled with ink. The user will next be prompted to perform the Y calibration.

Evaluating the outcome:

Menu: Set head vacuum

Procedure for setting head vacuum.

TOOLS > SERVICE PRINTER > SET HEAD VACUUM

Purpose, function or description:
Runs a procedure to set the regulator on the ink delivery system vacuum.

Action when selected:
The operator is prompted in sequence to set the regulator, then to wait for the vacuum to stabilize at the new value. The process of adjust/wait repeats until the user exits. At the end of the operation a purge of Black is required.

Evaluating the outcome:
At the end of the procedure, the vacuum level should stay within the green zone shown on the control panel display.

Menu: Reset image sensor

Resets the image sensor electronics.

TOOLS > SERVICE PRINTER > RESET IMAGE SENSOR

Purpose, function or description:
If the system reports a numeric error code 040xxxxx, any further attempts to perform the same action that raised the error or to perform other image sensor operations will probably raise the error again. This option resets the image sensor circuitry only, eliminating the need to reboot the entire printer.

Action when selected:
The operator is prompted to re-initialize the image sensor electronics.

Evaluating the outcome:

Menu: Prep for shipping

Prepares printheads for shipping the printer or an extended shutdown by emptying ink from the heads and cleaning them with flush.

TOOLS > SERVICE PRINTER > PREP FOR SHIPPING

Purpose, function or description:
Prepares printer for shipping or extended shutdown by emptying ink form the heads and prompting for cleaning with flush.

Menu: Install shipping restraint

This menu item will walk the user through the procedure to install the shipping restraint. This should be one of the last procedures done before packing the printer.

TOOLS > SERVICE PRINTER > INSTALL SHIPPING RESTRAINT

Purpose, function or description:
Walks the operator through installing the carriage shipping restraint and sets a software flag for the next power up that the restraint is in place.

Menu: Set clock

Set the printers clock time.

TOOLS > SERVICE PRINTER > SET CLOCK

Purpose, function or description:
The internal clock is normally set during build and test. In the event that a process variation results in a printer having the clock not be set, this menu option allows the operator to obtain a code allowing them to set the clock in the field.

Action when selected:
The current time and date is displayed along with the printer software version and a unique reset number. The reset number and software version information are provided to an HP representative who can provide a 'handshake' reset key, which is entered on the next screen. When a valid reset key is provided, the printer allows the operator to set the clock.

Evaluating the outcome:
If an invalid key is provided, the procedure cannot be completed. The reset number generated by the printer changes each time, so the printer must remain on this screen until the complementary reset key from HP is obtained.

Menu: Raise rail, bar, and rollers

Use this to raise the Rail, Alignment Bar, and the Rollers to their maximum positions. This is useful for leveling the media tables with the printer.

TOOLS > SERVICE PRINTER > RAISE RAIL, BAR, AND ROLLERS

Purpose, function or description:
Raises these four assemblies to their maximum height.

Action when selected:

Evaluating the outcome:

Menu: Restore hard drive to defaults

Use this to restore the hard drive to the factory defaults. Note that this will delete any stored jobs.

TOOLS > SERVICE PRINTER > RESTORE HARD DRIVE TO DEFAULTS

Purpose, function or description:
Restores factory defaults on hard drive. Erases any stored jobs. Typically used when the printer presents with any error message concerning the hard drive (codes starting with 060xxxxx).

Menu: Support roll fed: yes

Configures printer software to support roll fed media.

TOOLS > SERVICE PRINTER > SUPPORT ROLLFED: YES

Menu: Roll fed media control: method a

Configures media motion control for roll fed media.

TOOLS > SERVICE PRINTER > ROLLFED MEDIA CONTROL: METHOD A

Menu: Configure warming attns

Enables/Disables actions and warnings indicating that head warming has exceeded its temperature threshold.

TOOLS > SERVICE PRINTER > CONFIGURE WARMING ATTNS

Menu: Carriage control

Configures the carriage control software for one of the control methods.

TOOLS > SERVICE PRINTER > CARRIAGE CONTROL

Purpose, function or description:
Changes the acceleration control of the carriage. If carriage motion failures are occur i ng for no discernible reason after due diligence and troubleshooting, an alternate method can be selected.

Action when selected:
The operator can select from Method A, Method B, or Method C.

Evaluating the outcome:
The default is A. Select B or C only if A results in carriage motion failures after troubleshooting all other possible causes. Selecting B or C also may affect image quality in the Y axis, as the relationship between the carriage turnaround time and the media belt settling time is affected.

Menu: Show autoH2H Y calibration

Displays the results of the last auto head to head Y calibration performed.

TOOLS > SERVICE PRINTER > SHOW AUTO H2H Y CALIBRATION

Menu: UV current sense method

Configures the current sense method used by the UV cure system.

TOOLS > SERVICE PRINTER > UV CURRENT SENSE METHOD

Menu: Auto printhead service

Configures the automatic servicing settings.

TOOLS > SERVICE PRINTER > AUTO PRINTHEAD SERVICE

Error codes, warnings and actions

See the list of errors, warnings and actions in the online file for a full description with trouble-shooting steps. below are a list of prefixes and the explanation of the prefixes. This will help you to understand the source of the message.

Menu: ERRORS

E-GN-*General(NOTE:ERROR_GENERAL==0)

E-HR-*HardwareRegister

E-MT-*Motor,NoID

E-HS-*HeadHeightMotor,Service-End

E-HU-*HeadHeightMotor,User-End

E-US-*UVShutterMotor,Service-End

E-UU-*UVShutterMotor,User-End

E-SH-*ServiceStationHeightMotor

E-SW-*ServiceStationWiperMotor

E-RS-*InputRollerMotor,Service-End

E-RU-*InputRollerMotor,User-End

E-OS-*OutputRollerMotor,Service-End

E-OU-*OutputRollerMotor,User-End

E-BS-*AlignmentBarMotor,Service-End

E-BU-*AlignmentBarMotor,User-End

E-IO-*I/OBoard

E-LV-*LVDS

E-HB-*HeadBoard

E-PB-*ProfilerBoard

E-VN-*VideonetBoard

E-FL-*Flash (not currently used)

E-UV-*UVSystem

E-MD-*MotorDriverBoard

E-PA-*LCDPanel

E-HM-*Head(Carriage)Motion

E-MM-*MediaMotion

E-UC-*UVCovers (not currently used)

E-MI-*MediaIndex (not currently used)

E-MS-*MediaSwitch (not currently used)

E-MR-*MediaRoller (not currently used

E-SS-*ServiceStation

E-VF-*VacuumFans

E-OH-*On-HeadSystem

E-FH-*Off-HeadSystem

E-VS-*VacuumSystem

E-HH-*HeadHeight

E-AC-*Actuator

E-CM-*Camera

E-PD-*Photodiode

E-CN-*Cancel

E-RG-*Registration

E-GU-*Gutter

E-HD-*HardDrive

E-JS-*JobStatistics

E-CD-*Head(Carriage)DriveMotor

E-MA-*MediaAdvanceMotor

Menu: ACTIONS

A-MS-*MediaSystem

A-HM-*Head(Carriage)Motion (not currently used)

A-MV-*MediaDrive

A-IS-*InkSystem

A-WP-*WhitePoint

A-SS-*ServiceStation

A-PC-*PrintheadCalibration

A-SM-*SoftwareModule

A-PR-*Printing

A-UC-*UVCovers (not currently used)

A-HH-*HeadHeight

A-DR-*Doors

A-UV-*UVSystem

A-HW-*HeadWarmer

A-AC-*Actuator

Menu: WARNINGS

W-MS-*MediaSystem

W-HM-*Head(Carriage)Motion

W-MM-*MediaMotion

W-IS-*InkSystem

W-WP-*WhitePoint (not currently used)

W-PC-*PrintheadCalibration

W-VN-*Videonet

W-SC-*SystemCalibration(not currently used)

W-RP-*RequirePurge (not currently used)

W-SS-*ServiceStation

W-SV-*Server (not currently used)

W-LS-*LightSensor

W-HT-*Heater (not currently used)

W-VS-*VacuumSystem

W-SE-*Service-End Assembly (not currently used)

W-SM-*SoftwareModule

W-UV-*UVSystem

W-HW-*HeadWarmer

W-ES-*EdgeSensor

W-PW-*Power (not currently used)

W-HC-*HeadConfiguration

W-EB-*EBox

W-HD-*HardDrive

W-MR-*MaintenanceReminder

Schedule of tasks normally completed by printer's operator

Table 3: Cleaning and Maintenance Tasks

Task	Time Frequency	Page Number	Items Needed
Clean and lubricate carriage-wheel strips on rail (three strip locations)	Every two weeks	page 206	Oiled cloth kit, six lint-free cleaning cloths
Clean rail encoder strip	Every two weeks	page 208	Oiled cloth kit, six lint-free cleaning cloths
Manually clean printheads	Every two weeks	page 199	Three lint-free cleaning cloths
Clean and lubricate service station wiper rails	Monthly	page 203	Six grease packs, three pairs of gloves
Clean service station wiper (should be cleaned when carriage bottom is cleaned)	Monthly	page 206	Three lint-free cleaning cloths
Clean carriage wheels (five wheels)	Monthly	page 208	Six, long stick swabs
Clean bottom of carriage (automatic routine performed at service station)	Monthly	page 210	N/A
Clean home sensor	Monthly	page 213	Long stick swabs
Replace UV lamp filters (kit)	Quarterly	page 199	Two filters
Clean electronics box fan filters (two filters)	Quarterly	page 202	N/A
Replace service station wiper	Quarterly	page 205	One wiper
Clean ionizer tips	Quarterly	page 211	N/A
Service station spigot empty / close	Quarterly	page 212	N/A
Clean media thickness sensor roller	Quarterly	page 213	One lint-free cleaning cloth
Vacuum the dust from the fans on the output-side door	Quarterly		



Note The maintenance schedules are approximate. Maintenance times will be sooner if printer use is more frequent than average or the environment is more dusty than average.

Schedule of cleaning and maintenance performed by service provider

Table 4: Service provider cleaning and maintenance tasks

Task	Time Frequency	Page Number	Items Needed
Check and adjust printhead Y-axis calibrations	As needed	page 450	A long, 2.5 mm hex wrench, part #: CQ114-67175
Check and adjust rail height (carriage head height)	As needed	page 470	Head-height gauge
Check and adjust carriage front-to-back tilt	As needed	page 463	Head-height gauge
Check and adjust carriage gross saber angle	As needed	page 467	Dial indicator, part #: CQ114-67177
Check and adjust printhead saber angle	As needed	page 460	Examine printed pattern
Check and adjust image sensor focus	As needed	page 465	No tools required
Check and adjust image sensor position	As needed	Not documented	Investigate
Check and adjust service station calibration	As needed	page 475	Flashlight and #2 phillips screwdriver
Check and adjust carriage-drive belt tension	As needed	Not currently possible	If belt is too long, it must be cut to length. If it is too short, order a new belt.
Check and adjust carriage-drive motor's belt tension (timing belt)	As needed	page 262	A #2 phillips screwdriver
Check and adjust media-drive belt tension	As needed	Not documented yet	Belt-tensioning, dial indicator tool, large adjustable wrench, such as a Crescent wrench
Check and adjust parallelism of idler roller and media-drive roller	As needed	Not documented yet	Flat, metal measuring tape (or one that will not stretch and is not curved) that is greater in length than the circumference of the belt
Clean the carriage encoder reader	Annually		Alcohol swabs, part #: 9301-6411
Clean the lift encoder strips and readers	Annually		Lint-free clothes and IPA
Clean dust from electronics box	Annually		Vacuum cleaner with tube attachment, compressed air

Table 4: Service provider cleaning and maintenance tasks

Task	Time Frequency	Page Number	Items Needed
Check and adjust roll-to-roll alignment	As needed	Currently in different document	Measuring tape, level, English/Imperial hex wrenches (such as Allen keys) 9/64-in, 3/16-in, 1/4-in, metric hex wrenches (such as Allen keys) 3 mm, 4 mm, 5 mm, 7 mm (L-shaped),
Check and adjust wiper motor belt tension	As needed		A #2 phillips screwdriver
Clean high-resolution encoder hub	Annually	page 214	A #2 phillips screwdriver, Alcohol swabs, part #: 9301-6411
Check and adjust high-resolution read head position	Annually	page 274	A #2 phillips screwdriver
Calibrate the alignment bar	As needed	page 295	No tools required
Print output-quality check print	Annually	Not yet documented	
Check and adjust vacuum level	Annually	Not yet documented	Flat-blade screwdriver
Check and clean service station drain hole (make sure it is not clogged with debris)	Annually	Not yet documented	Long swabs

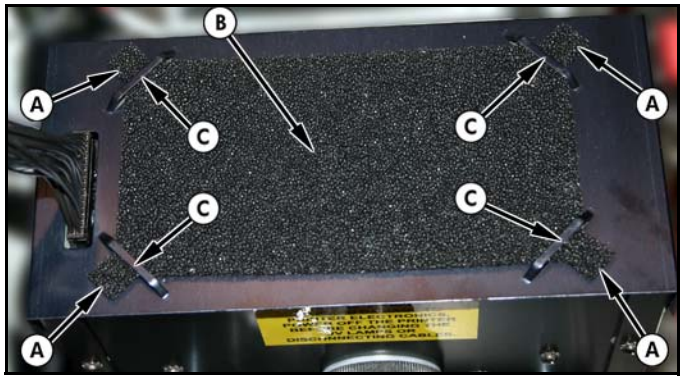
Replacing UV lamp filters

Lamp filters keep ink dust and other debris from entering the air-cooled lamp area. If the filters become clogged, the lamps may over heat, reducing the life of the bulbs. Over heating causes printing to stop, which can ruin a print job.

Required Tools: No tools required

1. Remove the original air filters for both carriage lamps (B in Fig. 188.).

Fig. 188. Carriage lamp air filters



2. Install the new air filters by insert the corner tabs (A in Fig. 188.) under the corner slots (C in Fig. 188.) on top of the lamps.

Cleaning the printheads

Required Tools:

- Lint-free clothes
- Head flush solution

1. Move the output-side table away from the printer.
2. From the printers menu, select the following:

   INK > MAINTENANCE > MANUALLY CLEAN PRINTHEADS

   This will cause the rail to raise to its highest positions and move the carriage out over the service station.
3. Open the service door to access the carriage over the service station.



Caution Wear protective gloves, such as latex, to protect your hands from being stained with ink.



Caution Wear safety glasses to protect your eyes from ink and head flush that may splash into your eyes.

4. Fully saturate a lint-free cloth with head flush solution.

Fig. 189. Saturate cloth with head flush



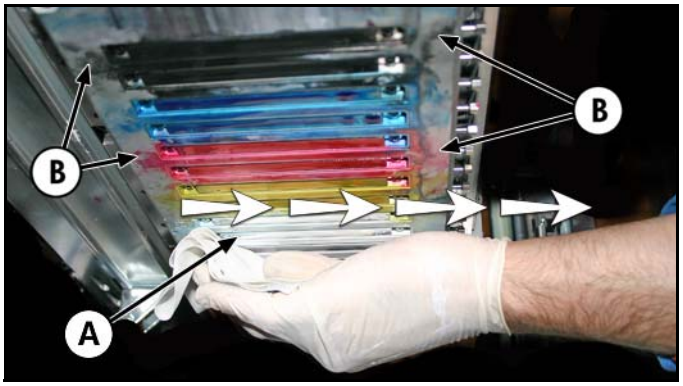
5. For each printhead, use a single finger on a clean area of the saturated lint-free cloth to wipe the printhead orifice (A in Fig. 191.) from the input-side to the output-side of the carriage.

Fig. 190. Wiping printheads



Note To avoid pushing debris into the printhead orifice, make sure each wipe is done with a clean area of the cloth. The cloth should be fully saturated with head flush.

Fig. 191. Wiping printheads



6. Using a lint-free cloth saturated with head flush, clean the bottom of the pen plate (B in Fig. 191.) around the printheads.

7. From the printers menu, select the following:

   PURGE

8. When the purge completes, selecting the following from the printer's menu.

   PRIME BARS

   Examine the prime bars for missing jets. If a printhead has missing jet, repeat steps 5 to 8.

Clean the electronics box fan filters

Electronics box fan filters keep dust and other debris from entering the air-cooled area of the electronics box. If the filters become clogged, the electronics may over heat, causing performance errors. There are two air intake fans to clean. One is located near the power switch on the user-end of the printer (input side). The other is located in the middle area under the printer chassis where the power cord attaches on the user-end.

Required Tools

- Vacuum cleaner with tube attachment

1. Vacuum the dust and debris from the front of the fan on the input-side of the electronics box (located behind the user-end enclosure in the area indicated by C in Fig. 192.).

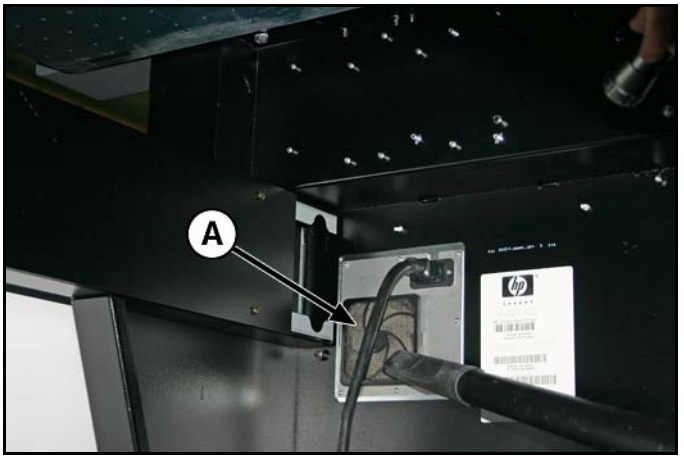
If the chassis wheels are still connected to the printer, rotate the wheel out of the way as shown in Fig. 192.

Fig. 192. Cleaning the electronics box fan filter on the input-side



2. Vacuum the filter (A in Fig. 193.) located under the printer's chassis near the power cord attachment point, and remove dust from the surrounding area.

Fig. 193. Cleaning dust from the electronics box fan under the chassis



Clean and grease the service station wiper slide rails

Cleaning and lubricating the wiper carriage rails keeps the wiper motion moving smoothly for best cleaning performance.

Required tools

- Protective gloves, such as latex
- Safety glasses
- Lint-free clothes
- Head flush
- Grease (supplied)
- Cotton swabs



Caution Wear protective gloves, such as latex, to protect your hands from being stained with ink.



Caution Wear safety glasses to protect your eyes from ink and head flush.

1. Open the service door on the output-side of the printer.
2. Move the carriage away from the service station.
3. Reach through the service door opening to move the wiper carriage to one end of the service station wiper rails.
4. Using a cloth moistened with head flush, wipe ink and debris from the top of the service station, including the area cover the wiper rails.

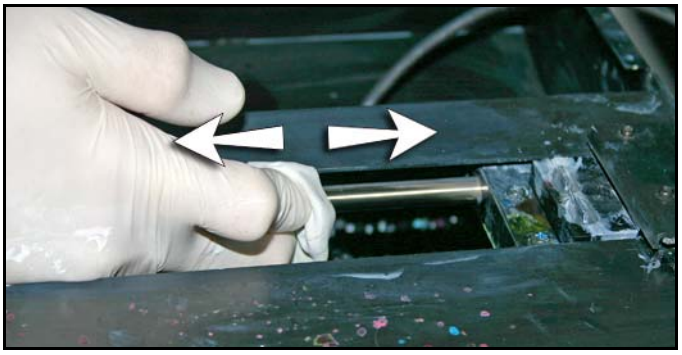
Fig. 194. Cleaning the top of the service station



5. Using a lint-free cloth, clean both of the wiper rails (A and B in Fig. 195.) on both sides of the wiper carriage (C in Fig. 195.).

   Clean the exposed rails on all sides, moving the wiper carriage to clean the full length of the rails.

Fig. 195. Cleaning the wiper rails



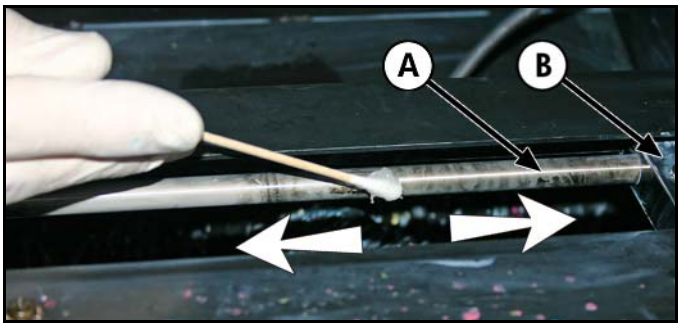
6. Apply a dab of grease (supplied) onto a cotton swab.

Fig. 196. Grease for rails



7. Apply the grease to both rails (A in Fig. 196. shows one of two rails), making sure to grease the entire surface of the rail (top, bottom and sides).

Fig. 197. Lubricate rails



8. Move the wiper carriage (B in Fig. 197.) out to lubricate the rail surfaces on the other side of the wiper carriage.

9. Move the wiper carriage back and forth on the rails to spread the lubrication evenly.

Replace the service station wipers

The wiper blades deteriorate with use. Replacing the wiper blades periodically restores the wiping to optimal performance and wiper height.

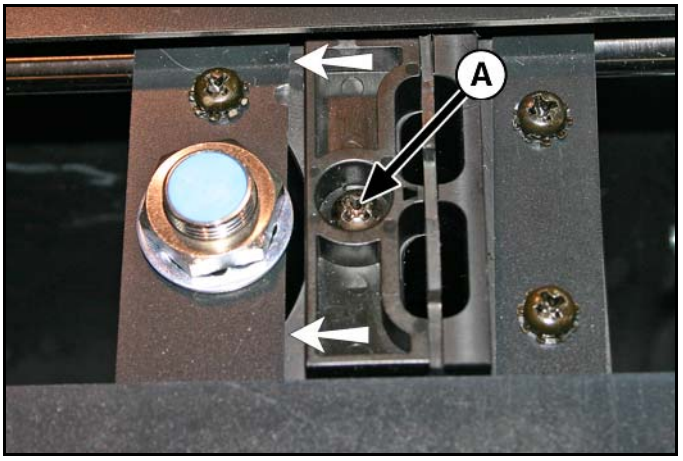
Required Tools

- #2 phillips screwdriver

Note Replace the wipers according to the schedule Table 3, "Cleaning and Maintenance Tasks," on page 196. The wiper replacement schedule is calculated to be frequent enough to avoid the need for wiper-height calibrations between replacements. If the wipers are not making adequate contact with the printheads, contact your service provider to calibrate the wiper height.

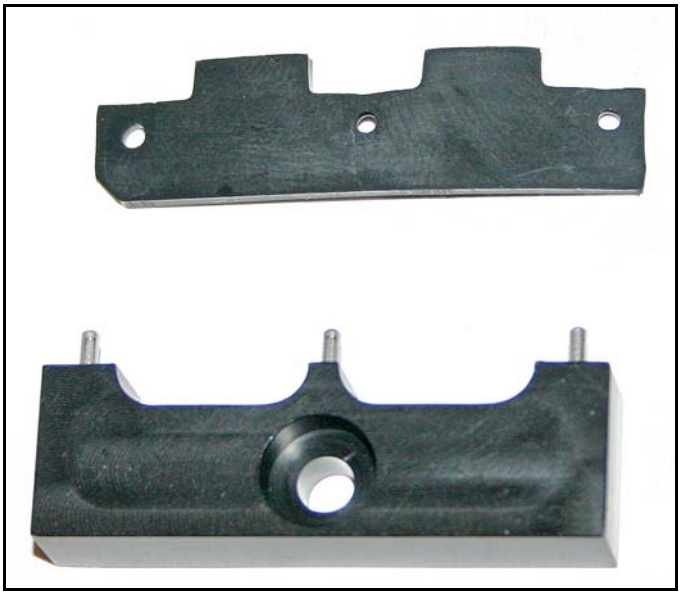
1. Open the service door to access the service station.
2. Remove the screw (A in Fig. 198.) that secures the wiper clamp to the wiper assembly.

Fig. 198. Wiper clamp screw



3. Separate the two wiper clamp halves and remove the original wiper blade.
4. Install the replacement wiper blade in the orientation shown below.

Fig. 199. Wiper blade orientation



5. Secure the wiper blade clamp to the wiper assembly using the original screw.

Clean service station wiper

Clumps of ink can accumulate around the wiper blades. If not cleaned off, the wipers can press the clumps of ink into the printhead orifices, which can clog the printhead jets.

Required tools

- Protective gloves, such as latex
- Safety glasses
- Lint-free clothes
- Head flush



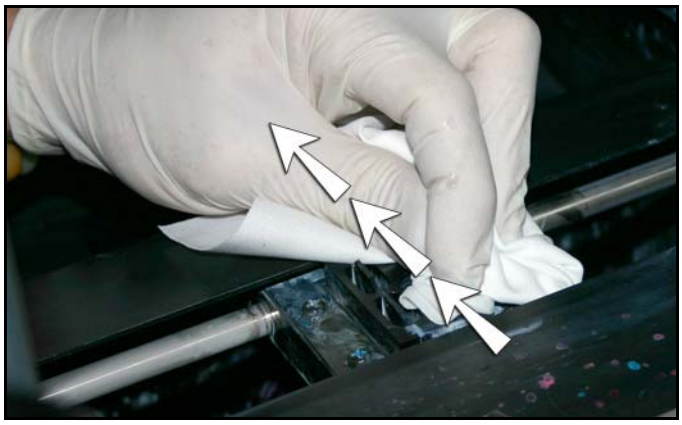
Caution Wear protective gloves, such as latex, to protect your hands from being stained with ink.



Caution Wear safety glasses to protect your eyes from ink and head flush.

1. Wear cloves, such as latex, to protect your hands from ink.
2. Using a lint-free cloth saturated with head flush (do not use IPA) wipe both sides of the rubber wiper.

Fig. 200. Cleaning wipers



3. Clean the wiper rail covers with a lint-free cloth saturated with head flush.

Clean and oil rail carriage-wheel strips

Ink dust and debris can accumulate on the carriage-wheel strips. These particles become obstacles and friction for the carriage wheels, which can appear as repeating output anomalies on the printed media.

Required tools

- Isopropyl alcohol (IPA)
- Oiled rags (supplied)

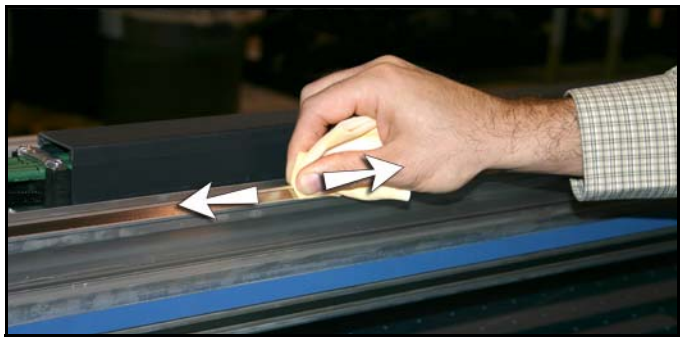
1. Clean the three carriage-wheel strips well with Isopropyl alcohol.

   Using a lint-free cloth moistened with Isopropyl alcohol, clean the top carriage-wheel strip (Fig. 201.), the back side of the top carriage-wheel strip (Fig. 202.) and the lower wheel strip (Fig. 203.).

2. Lubricate the top carriage-wheel strip from end to end on the rail (moving the carriage to clean the full length of the rail).

   The included oiled rags can be reused until there is no clear surface remaining on the rag (rags should be replaced quarterly). Clean these surfaces weekly or more frequently, depending on the amount of debris in the environment.

Fig. 201. Top carriage-wheel strip



Caution Do not add additional oil to the lubrication cloths. The cloths are created to distribute a very thin film of oil. If too much oil is deposited, oil pockets can cause friction with the carriage wheels, which will produce output anomalies.

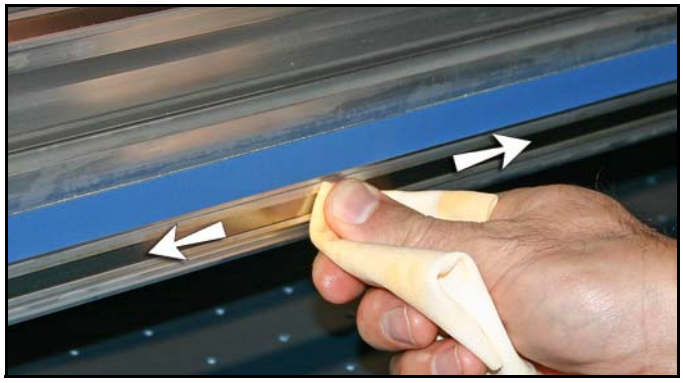
3. Lubricate behind the top area of the rail where the carriage wheels contact.

Fig. 202. Back of top carriage-wheel strip



4. Lubricate the lower carriage-wheel strip from end to end on the rail (moving the carriage to clean the full length of the rail).

Fig. 203. Lower carriage-wheel strip



Note Even if the oiled cloth appears clean, it should be discarded quarterly so that the oil does not become sticky.

Clean the rail encoder strip

Ink dust and debris can accumulate on the encoder strip and block accurate reading of the encoder marks by the carriage encoder reader.

Required tools

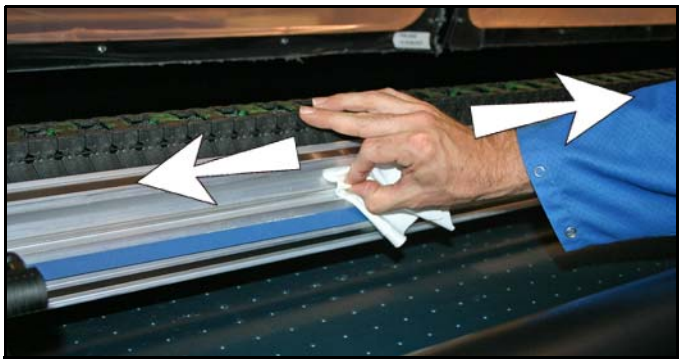
- Lint-free clothes
- Isopropyl alcohol (IPA)

1. Using a lint-free cloth moistened with IPA (Isopropyl alcohol), wipe the top and bottom of the encoder strip, cleaning the entire length of strip.

Use common rubbing alcohol, which is 70% isopropyl alcohol and 30% water.

After cleaning most of the encoder strip, move the carriage to clean the section of encoder strip that is behind the carriage. Be sure to clean the encoder from end to end.

Fig. 204. Cleaning the encoder strip



Clean carriage wheels

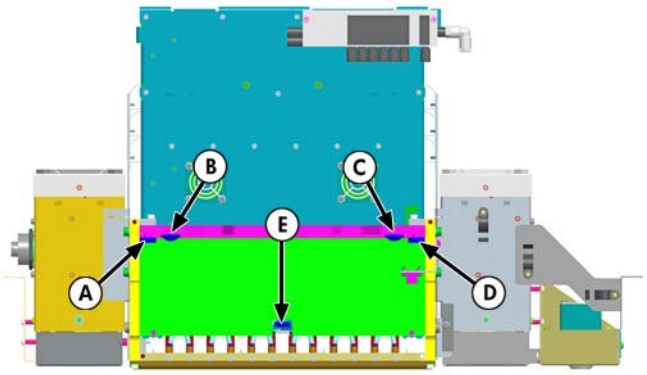
Required tools

- Isopropyl alcohol (IPA)
- Cotton swab

Ink dust and debris can accumulate on the carriage wheels. These particles become obstacles and friction for the carriage wheels, which can appear as repeating output anomalies on the printed media.

There are five carriage wheels to clean.

Fig. 205. Carriage wheels

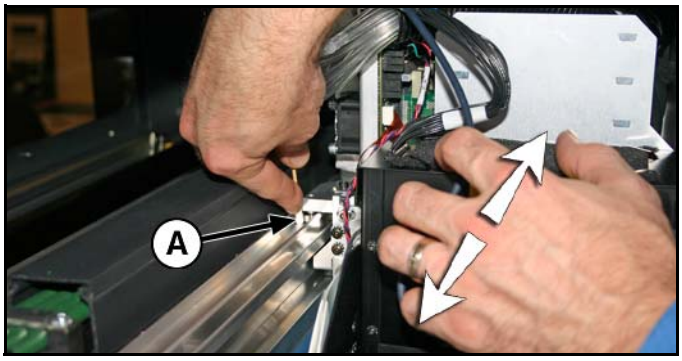


1. Raise the rail by selecting the following from the printer's menu: TOOLS > SERVICE PRINTER > RESET HOME POSITIONS > RESET RAIL HOME POSITION.

   The rail and the output roller will raise to the maximum height. You can move the carriage to any position on the rail that is convenient for cleaning.

2. Clean the top service-end wheel by placing an IPA (Isopropyl alcohol) moistened cotton swab against the side of the wheel (A in Fig. 206.) and moving the carriage back and forth (move about 10 cm or 4-in).

Fig. 206. Top, service-end carriage wheel



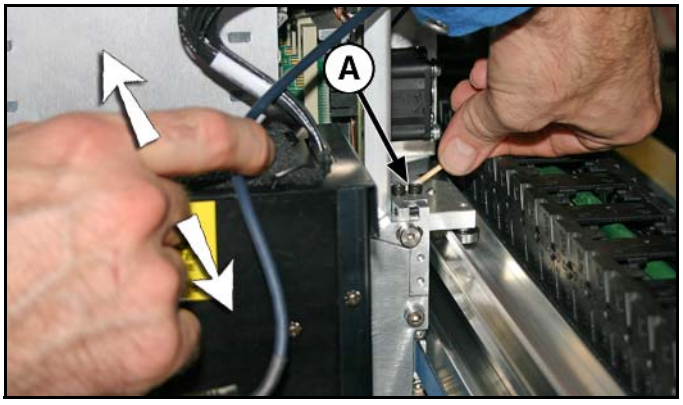
3. Clean the top user-end carriage wheel with an IPA moistened cotton swab.

Fig. 207. Top, user-end carriage wheel



4. Clean the top slanted wheels (B & C in Fig. 205.) by inserting an IPA moistened cotton swab into the opening above the wheels (A in Fig. 208.) and moving the carriage back and forth.

Fig. 208. Top slanted carriage wheels



5. Clean the lower carriage wheel by placing an IPA moistened cotton swap next the wheel and moving the carriage back and forth.

   Manually move the carriage to the location over the service station. Access the lower wheel through the service door.

Fig. 209. Lower carriage wheels



Clean bottom of carriage

Clumps of ink and debris can accumulate around the printheads. This routine cleans as much of this surface area as possible. This reduces the possibility of ink debris being moved from the edge of the printhead orifice area onto the printhead, which can clog jets.

1. From the printer's menu, select INK > MAINTENANCE > CLEAN BOTTOM OF CARRIAGE.
2. When the procedure completes, clean the wipers as shown in the section "Clean service station wiper" on page 206.

Clean ionizer tips with brush

Ink dust and debris can collect on the ionizer pens which degrades its ability to eliminate static. Cleaning the ionizer pens keeps the ionizer bar in optimal performance.

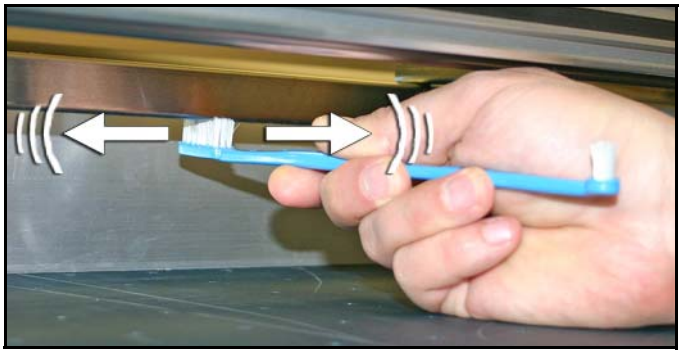
Required tools

- Brush (supplied)

1. Using the included brush (A in Fig. 210.) - supplied with the printer), clean the ionizer needles (A in Fig. 211.) located beneath the ionizer bar (B in Fig. 210.).

The ionizer bar is located between the input roller and the alignment bar on the input-side of the printer.

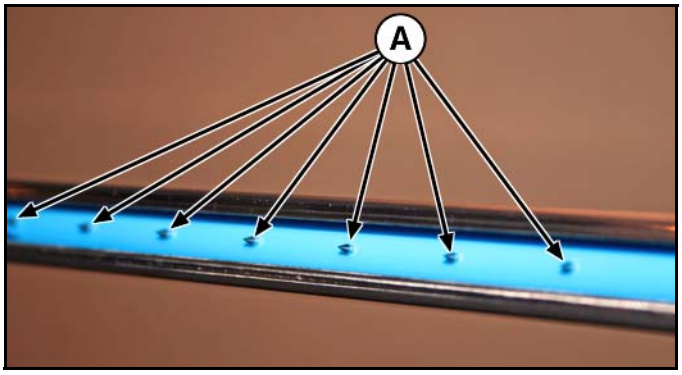
Fig. 210. Cleaning the ionizer needles



The needles (A in Fig. 211.) run the length of the ionizer bar.

Fig. 211. Ionizer needles

View: Beneath the ionizer bar



Service station empty / close

Waste ink accumulates in the service station until drained.

Required tools

- Waste ink jug (supplied)

1. Place the waste ink jug (included with the printer) beneath the waste ink spigot.
2. Turn the spigot to the **ON** position (A in Fig. 212.).

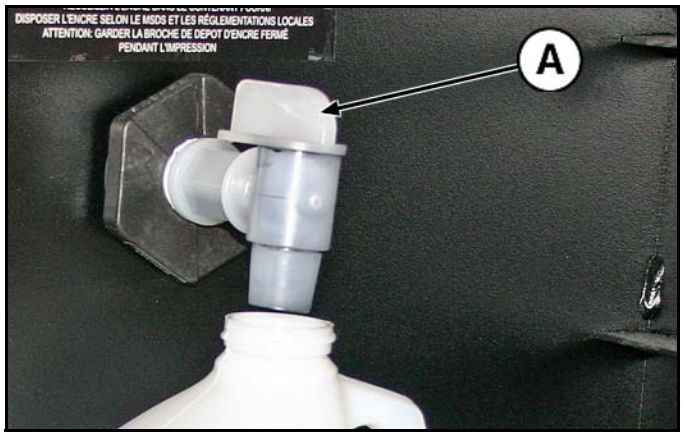
Fig. 212. Spigot in on position



Waste-ink jug's open and closed positions

3. After the waste ink has drained, turn the spigot to the **OFF** position (A in Fig. 213.).

Fig. 213. Spigot in off position



Note: For correct vacuum performance in the service station, be sure to turn the spigot to the off position after draining ink from the service station.

Caution The drain spigot must remain closed during printing and service station use. An open spigot affects the vacuum level in the service station and will degrade service station performance if left open.

Clean media thickness sensor roller

Debris on the media thickness sensor can result in inaccurate measurements. Clean the roller to keep the sensor operating correctly.

Required tools

- Lint-free clothes
- Isopropyl alcohol (IPA)

1. Using a lint-free cloth that is saturated with IPA (isopropyl alcohol), clean the media thickness sensor roller by manually turning the roller with your finger while applying the cloth to the roller surface.

Fig. 214. Cleaning media thickness sensor



Clean the carriage home sensor

The home sensor is located on the service-end of the carriage between the lamp assembly and the carriage side plate (on the input-side of the carriage). Ink dust and debris can accumulate in the thin slits of the optical sensor and cause errors.

Required tools

- Long cotton swab
- Isopropyl alcohol (IPA)

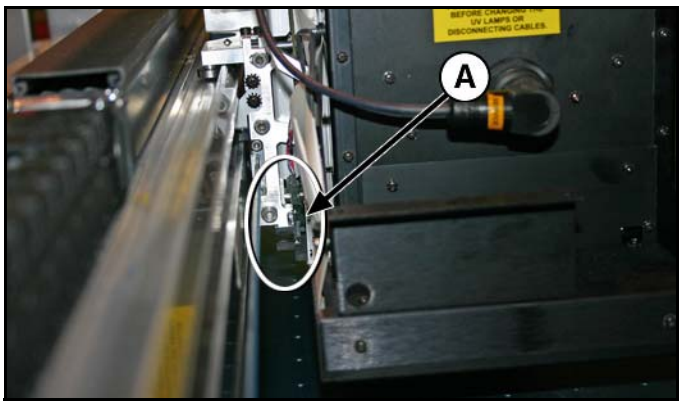
1. Open the output-side door.

   Opening the output-side door will disable the carriage servo, allowing the carriage to be moved manually.

2. Move the carriage to the center of the rail to access the home sensor more easily.

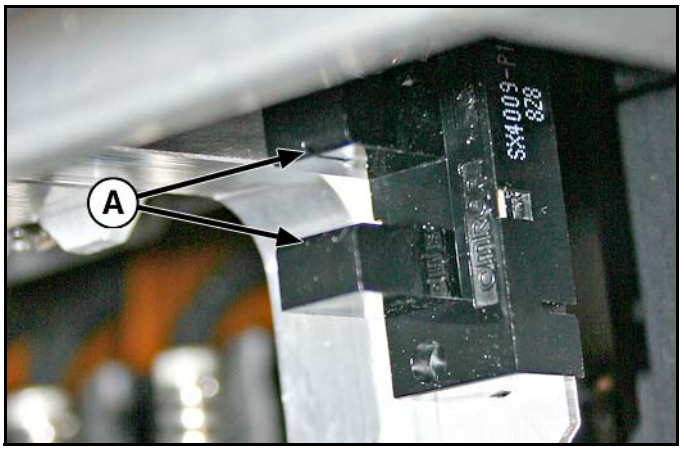
3. Locate the home sensor (A in Fig. 215.).

Fig. 215. Home sensor location



4. Locate the upper and lower slits (A in Fig. 216.) of the optical sensor.

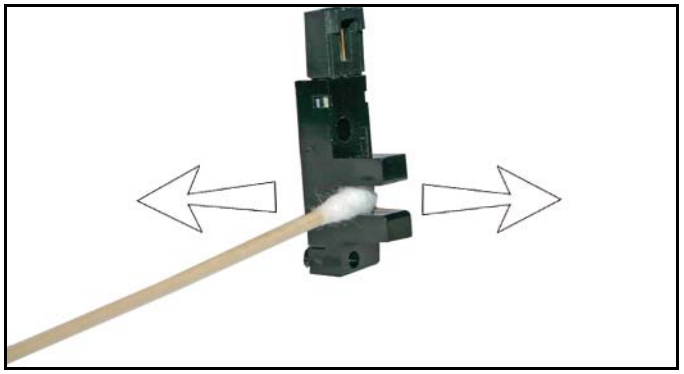
Fig. 216. Close up of home sensor showing optical slits



5. Using a long cotton swap that is saturated in isopropyl alcohol, clean the top and bottom slit by inserting the swap into the opening from the input-side of the sensor (versus inserting from the user-end of the sensor).

Caution Insert from the input-side to keep from pushing debris into the slits. Insert the swap moving from the input-side toward the output-side direction. Do not wipe across the slits, as this will force debris down into the openings.

Fig. 217. Cleaning the home sensor



Cleaning the high-resolution encoder hub

Required tools

- #2 phillips screwdriver
- Additional person to press the media advance button on the printer's menu

Special Tool This procedure requires a alcohol swab tool, part #: 9301-6411.

The ability of high-resolution encoder readhead to see the encoder marks on the encoder hub is referred to as "signal strength." Debris on the encoder hub reduces signal strength and degrades media-advance accuracy. A measurement of signal strength is displayed using different light colors on the high-resolution cable interface, which is bolted to the top of the electronics box (Fig. 117. on page 106).

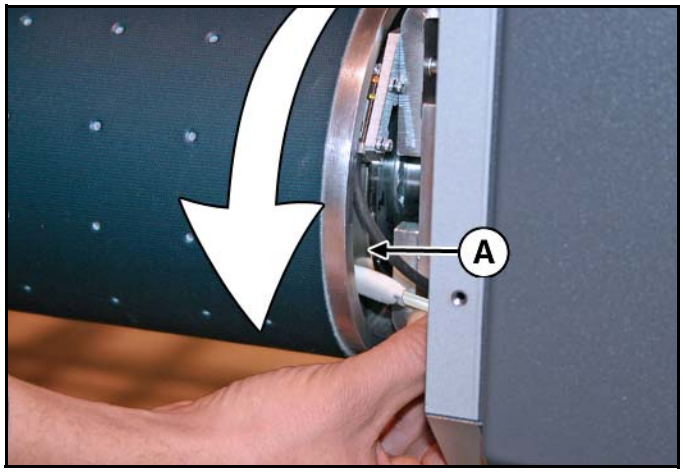
If the readhead is properly aligned and the encoder hub is clean, the cable interface lights will illuminate purple or blue (see Table 6 on page 278 for a chart of the potential colors and their

meanings). The light color will change in real time to respond to the signal strength. In other words, if the encoder hub is clean in one area, the lights may be purple or blue. If the encoder hub is dirty in one area, the cable interface lights should change to green, orange or red, depending on how dirty the encoder hub is. Clean the encoder hub until the cable interface lights are purple and blue for most of the encoder hub's rotation.

1. Remove the user-end belt cover on the output-side of the printer as shown in the section "Removing the output-side, user-end belt enclosure" on page 218.
2. Remove the user-end enclosure as shown in the section "Remove the user-end and service-end enclosures" on page 217.
3. Using the specified alcohol swab, press the alcohol moistened swab against the encoder hub (A in Fig. 218.).

   To activate the alcohol swab, you must squeeze the end of the alcohol-filled tube hard enough to rupture the seal inside the swab end. Squeeze the tube to dispense alcohol into the swab as needed to clean the encoder hub.

Fig. 218. Cleaning the high-resolution encoder hub



4. Have someone press the media advance button on the printer's menu to turn the drive roller (and encoder hub) while the alcohol-moistened swab is pressed against the hub to clean it.

   Squeeze additional alcohol from the swab's tube as needed.
5. Visually inspect the hub to make sure all debris that covers the encoder marks is cleaned from the encoder hub.
6. Look at the encoder cable interface lights (Fig. 117. on page 106) to make sure the lights are purple or blue for most of the encoder wheels rotation.

Note If you cannot get the cable interface lights to be mostly purple and blue, make sure AGC (Automatic Gain Control) is turned on (see "Turning AGC on for the high-resolution encoder interface" on page 279). Otherwise, you may need to align the readhead. See the section "Aligning the high-resolution encoder" on page 275.

7. Install the belt enclosure using the enclosure screws.
8. Install the user-end enclosure using the enclosure screws.

Managing Power Off Scenarios

1. Turn off the lamps at the printer's control panel screen by selecting Printing (A in Fig. 219.) and then Turn off Lamps (B in Fig. 219.), and wait for the lamps to finish their cool down sequence.

   PRINTING > TURN OFF LAMPS

Caution Failure to allow the lamps to cool down properly will damage the lamps. If you disconnect the power cable from the back of the printer or disconnect the power cable from the lamp assembly before the cool down sequence has finished, you will damage the lamps. Do not disconnect the power cable until the printer's control panel screen no longer reads "Cooling".

Fig. 219. Power off lamps

Select "Turn Off Lamps"



2. When the printer's control panel screen no longer reads "Cooling" (it will change to "Off"), turn off the power to the printer.

3. Make sure that the auxiliary power supply (see Fig. 53. on page 69) for the vacuum assembly is providing power to the vacuum assembly.

   If the auxiliary power supply is not available, restore power to the printer as soon as it is safe. Failure to follow these instructions will result in ink seeping from the printheads during the repair due to lack of vacuum.

   If auxiliary power to the vacuum assembly is not available, and you must power down the printer for an extended time, you must plan for ink that will eventually seep from the printheads. Only ink that is currently in the printheads will leak. Placing the carriage assembly over the service station should be adequate to handle the seepage.

Caution Allow the printer to complete its shutdown procedure before disconnecting the power cord.

If you need to power down the printer to access areas of the printer where high voltage exists, keep in mind that turning off the power switch does not completely remove power from the printer. To be safe, unplug the main power cable to the printer (see before proceeding with service. Once the main power cable had been unplugged, allow 5 minutes to pass to allow any current to drain from the capacitors.

Remove the user-end and service-end enclosures

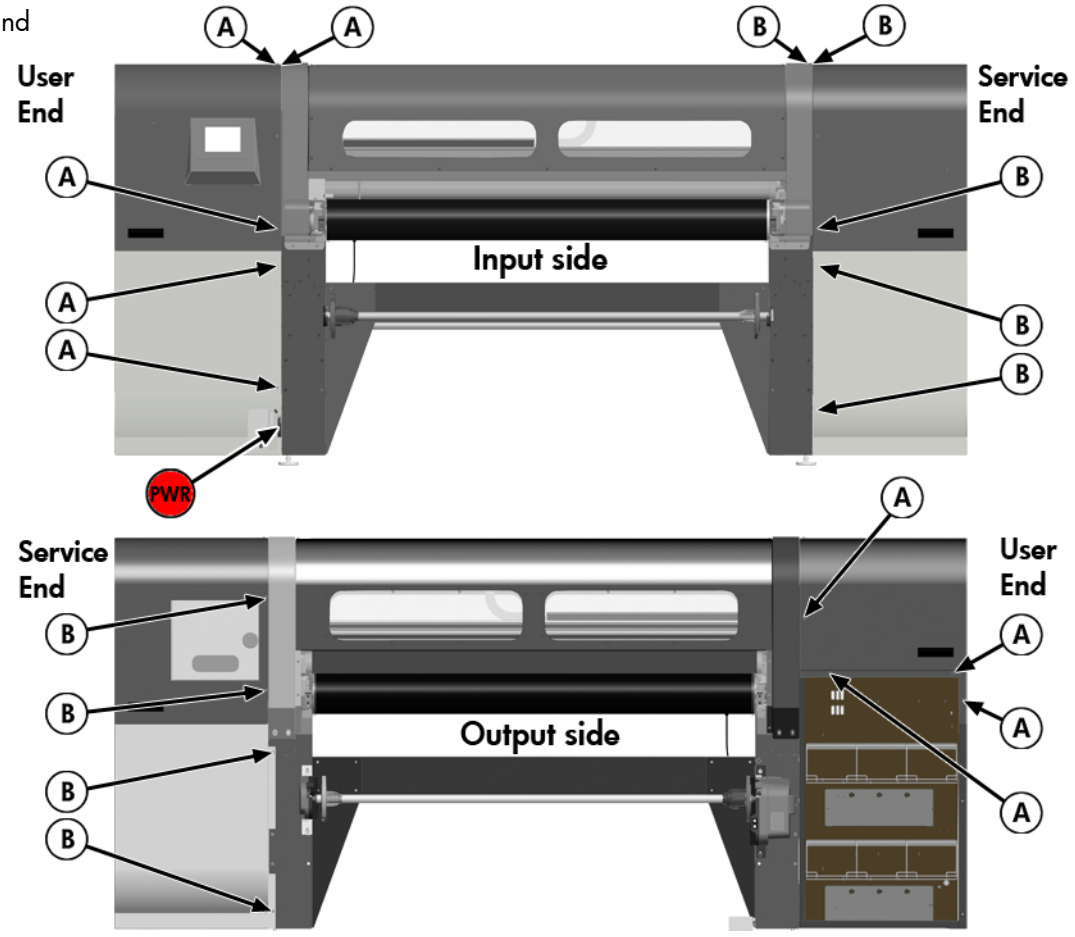
Some of the procedures require the removal of enclosures. Refer to this section for instructions on removing and installing the enclosures. Be sure to reinstall the enclosure using all of its fasteners (with the fasteners securely tightened). The fasteners provide the grounding contact between the enclosures and the printer, which helps to mitigate problems with static electricity.

Required tools

- #2 phillips screwdriver

1. Remove the screws (A and B in Fig. 220.) that secure the user and service-end enclosures to the printer, and remove the enclosures.

Fig. 220. Enclosure fasteners and printer orientation



Installing the user and service-end enclosure

1. Unless replacement screws were included with the service call, install the original screws to secure the enclosure to the printer.

   To ensure proper grounding, make sure all screws are installed and that all screws are snug.

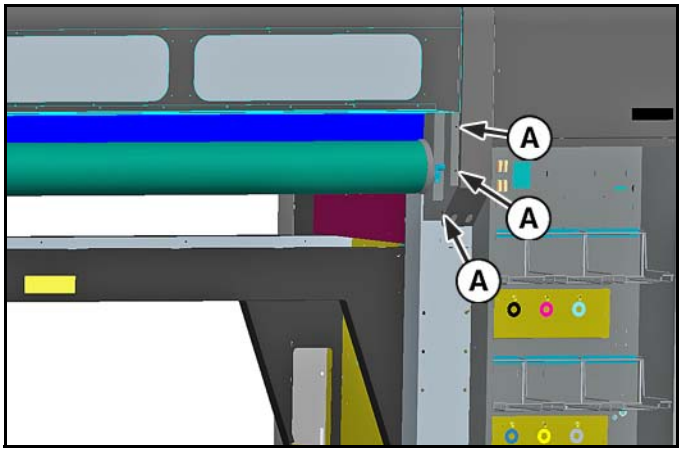
Removing the output-side, user-end belt enclosure

Required tools

- #2 phillips screwdriver

1. Remove the three screws (A in Fig. 221.) that secure the closure, and remove the enclosure from the printer.

Fig. 221. Output-side, user-end belt enclosure



[End of procedure]

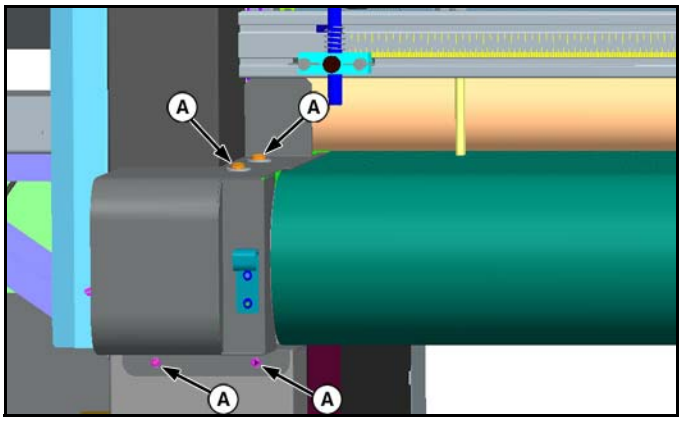
Removing the input-side, user-end belt enclosure

Required tools

- #2 phillips screwdriver

1. Remove the four screws (A in Fig. 222.) that secure the closure, and remove the enclosure from the printer.

Fig. 222. Input-side, user-end belt enclosure



[End of procedure]

Removing the light-blocking tray

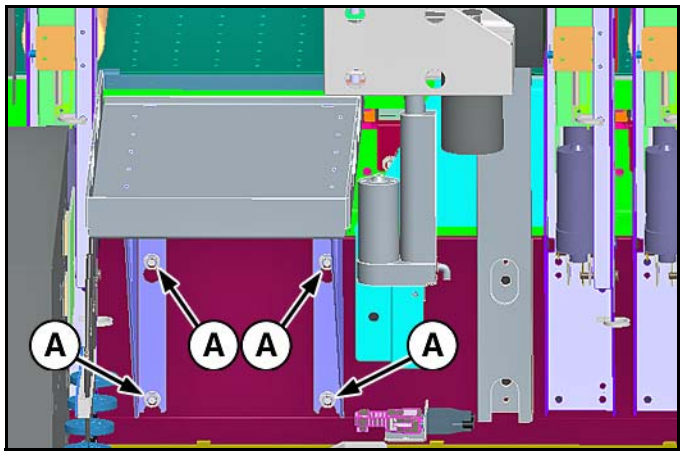
The light-blocking tray is located above the electronics box inside the user-end of the printer.

Required tools

- 10 mm socket
- 20 cm (8-in) extension

1. Using a 10 mm socket and a 20 cm (8-in) extension, loosen the four screws (A in Fig. 223.) that secure the light-blocking tray to the printer.

Fig. 223. Light-blocking tray



2. Lift the tray so that the bracket can be removed from the bolt heads.

[End of procedure]

Installing the light-blocking tray

1. Place the tray onto the bolt head and press it down to its installation position.
2. Using a 10 mm socket and a 20 cm (8-in) extension, tighten the four screws (A in Fig. 223.) that secure the light-blocking tray to the printer.

[End of procedure]

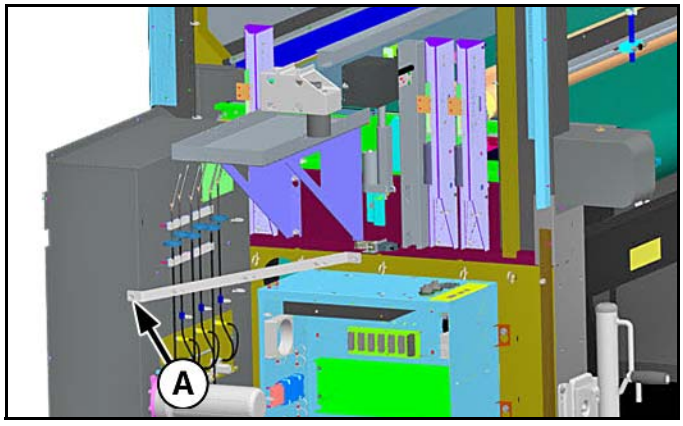
Disconnecting the OHS Cabinet

Required tools

- 10 mm socket

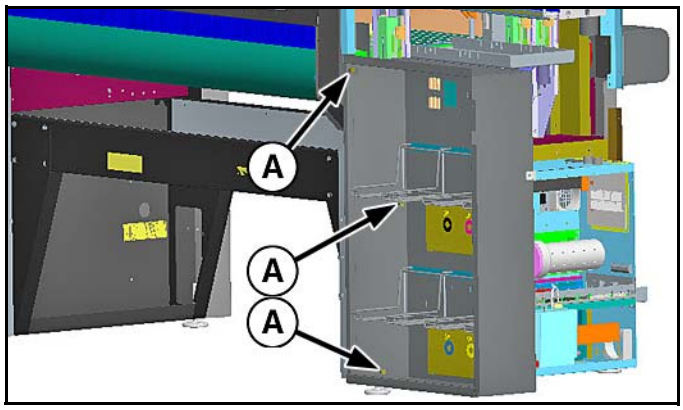
1. Using a 10 mm socket, remove the bolt (A in Fig. 224.) that secures the OHS enclosure bracket to the printer.

Fig. 224. OHS enclosure bracket



2. Using a 10 mm socket, loosen the three bolts (A in Fig. 225.) that secure the OHS assembly to the printer.

Fig. 225. OHS enclosure bolts



[End of procedure]

Removing the output-side top door

Required tools

- Flat-blade screwdriver
- #2 phillips screwdriver
- 10 mm socket wrench

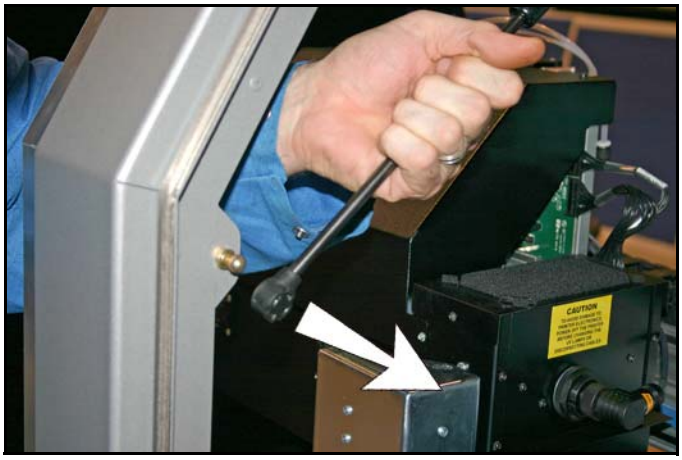
1. Remove the service-end and user-end enclosure as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.
2. Using a flat-blade screwdriver, pry off the ball-compression cap from the end of both the user-end and service-end gas dampers.

Fig. 226. Gas damper caps



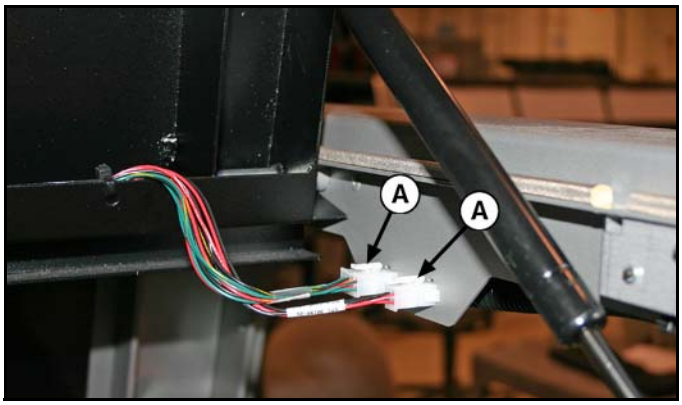
3. Disconnect the user-end and service end dampers.

Fig. 227. Gas damper removal



4. Disconnect both fan power cables (A in Fig. 228.).

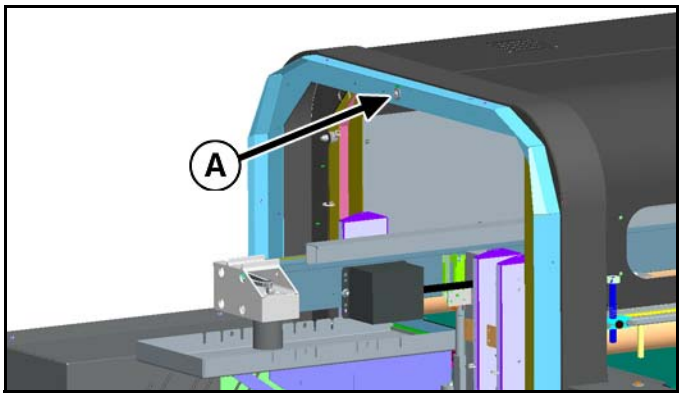
Fig. 228. Fan power connections



5. Using a 10 mm socket wrench, remove the two bolts and washers (A from Fig. 229. shows one of two sets) that secure the door to the printer (one on each side of the printer).

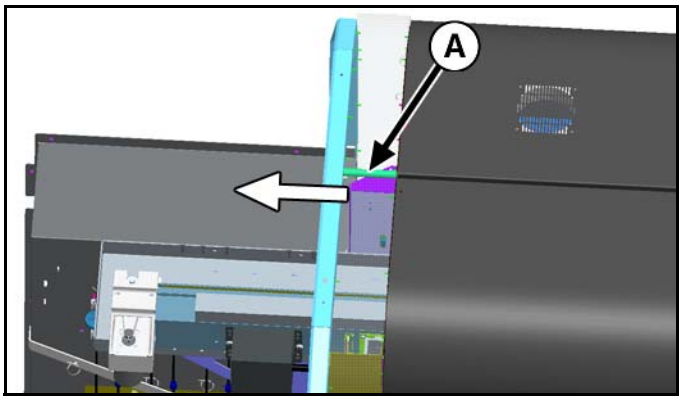
The washers secure the pins on which the doors pivot. Once the washers are removes, the pins can be removed and the door lifted away from the printer.

Fig. 229. One of two bolts that secure the output-side door



6. Remove the pins (A in Fig. 230.) for the user-end and the service-end of the output-side door.

Fig. 230. Door pins



Note: For clarity, the vertical enclosure is shown transparent. It is not necessary to remove this enclosure.

7. With the help of an additional person, lift the cover off of the printer.

[End of procedure]

Installing the output-side top door

1. If the fans are removed from the output-side door, install the fans as shown in the section "Installing a fan in the output-door" on page 223.
2. Position the door so that the user-end and service-end pin holes align with the holes in the enclosure.
3. Insert the pivot pins (A in Fig. 230.) for both the user-end and service-end of the door.
4. Using a 10 mm socket, install the washers and bolts (a pair on each end) that secure the pivot pins.
5. Plug in the fan power cables at their connections on the printer's enclosure.

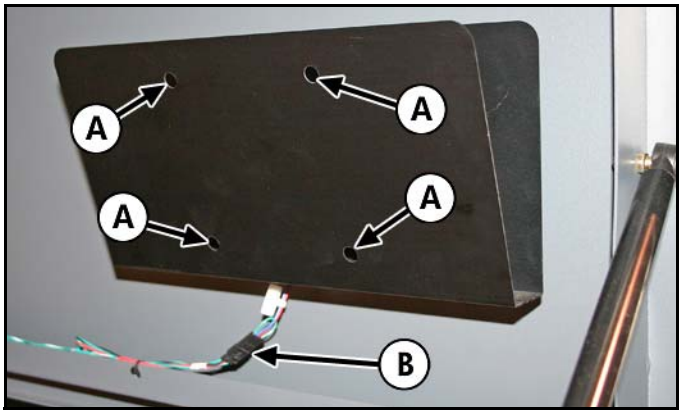
Removing a fan from the output-side door

Required tools

- #2 phillips screwdriver

1. Open the output-side door.
2. Disconnect the fan's power cable from the quick disconnect location (B in Fig. 231.).

Fig. 231. Door fan

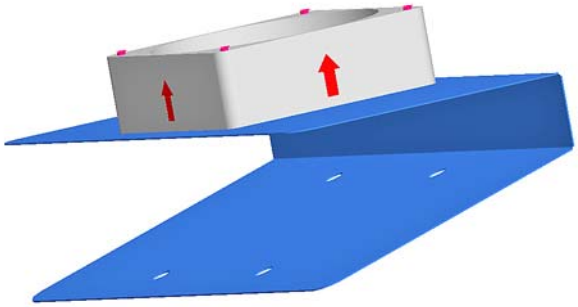


3. Insert a #2 phillips screwdriver through the screw access holes (A in Fig. 231.), and remove the four screws that secure the fan to the door.

Installing a fan in the output-door

1. If the fan is dirty, vacuum dust from the fan and wipe it clean with a damp cloth.
2. Make sure the fan is oriented with the arrows pointed in the direction that exits the printer's enclosure.

Fig. 232. Door fan



3. Secure the fan to the output-side door using four phillips head screws.
4. Connect the fan's power cable to the quick connect location.

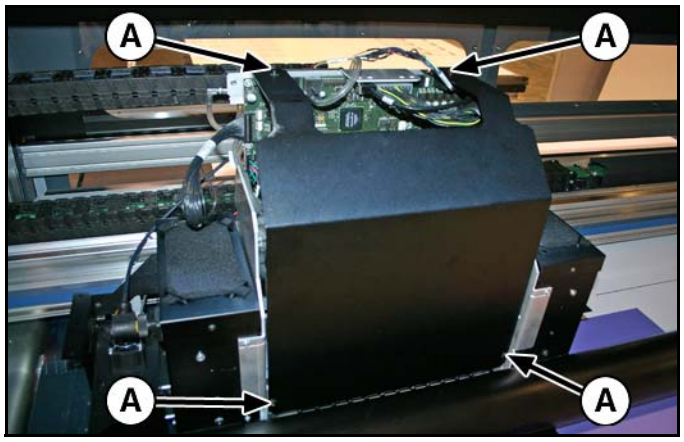
Carriage assembly cover

Required tools

- #2 phillips screwdriver

1. To remove or install the carriage cover, use a #2 phillips screwdriver to remove the four screws (A in Fig. 233.) that secure the cover to the assembly.

Fig. 233. Four carriage cover screws



Removing printheads

Before a printhead can be removed from the printer, it must be purged of ink using air pressure. This is an automatic process that is selected from the printer's menu.

Required tools

- #2 phillips screwdriver
- 2.5 mm hex key

1. From the printer's menu, select the following:

   SYSTEM > TOOLS > SERVICE PRINTER > REPLACE PRINTHEAD

   Proceed through the menu choices to purge the printhead of ink. On some menu screens, you may need to press the down arrow to see all choices.

   After the purge is complete, you will be prompted to allow the rail to raise to its highest point.

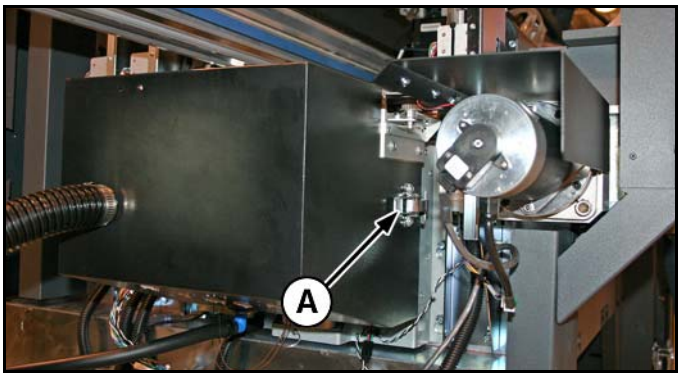
2. Remove the service-end enclosure as shown in the section "Remove the user-end and service-end enclosures" on page 217.

3. Once the printhead is purged of ink and the rail is raised, power off the printer following the procedures in the section "Managing Power Off Scenarios" on page 216.

Releasing the service station latch

4. Release the service station latch, and rotate the service station out of the way.

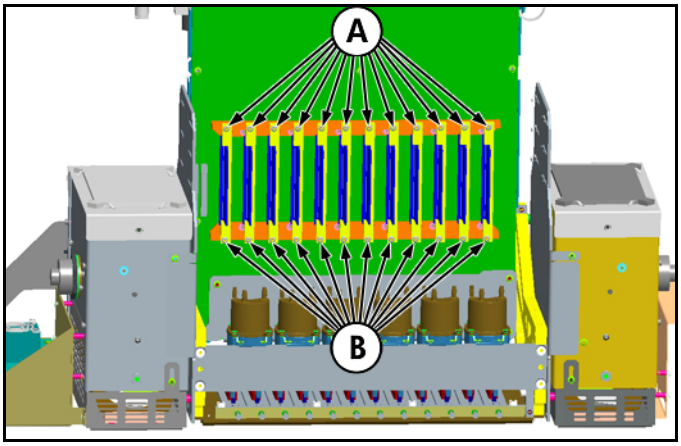
Fig. 234. Service station latch



5. Using a #2 phillips screwdriver, remove the top (A in Fig. 235.) and bottom screw (B in Fig. 235.) that secures the flex cable lock bracket to the headboard and disconnect the cable from the headboard.

Only remove the flex cable lock bracket for the printhead being replaced.

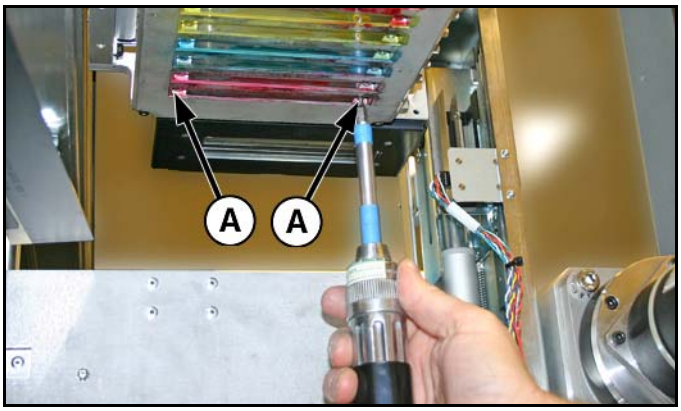
Fig. 235. Flex cable screws





6. Using a 2.5 mm hex key, remove the two screws (from the bottom of the carriage) that secure the printhead to the printhead interface plate.

Fig. 236. Printhead screws



7. Remove the printhead through the slot in the bottom of the carriage.

Installing Printheads

Replacement printheads include two o-rings (see A in Fig. 237.), two printhead screws and washers and fresh screws for the service-end end enclosure (in case the enclosure screws become stripped or have a scratched screw head).

1. Move the carriage to the service-end of the rail positioned over the service station area.

Do not allow the printing face of the printhead to contact any hard surfaces.

2. If you are replacing a printhead, remove the original two o-rings (A in Fig. 237.) from each interface tube.

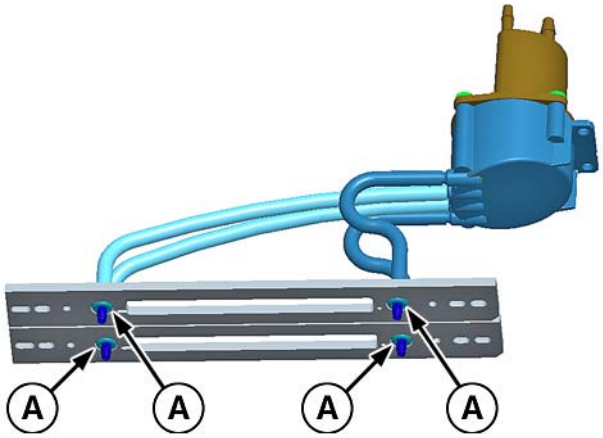
3. If the existing o-rings are damaged or worn, replace the existing o-rings with the included o-rings.

The existing o-rings may be difficult to see. Be sure that you remove both o-rings before installing the new o-rings. Failure to remove the original o-rings before installing the replacement o-rings will cause ink to leak from the fittings, and it may place stress on the printhead that will damage the jetting surface, causing printing anomalies.

Fig. 237. Printhead o-rings

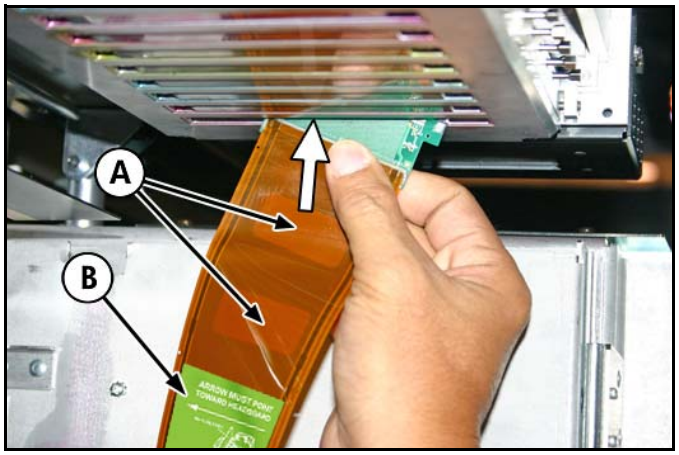
Note: Remove the original two o-rings (A) before installing the replacement o-rings.

Be careful not to install o-rings over existing o-rings.



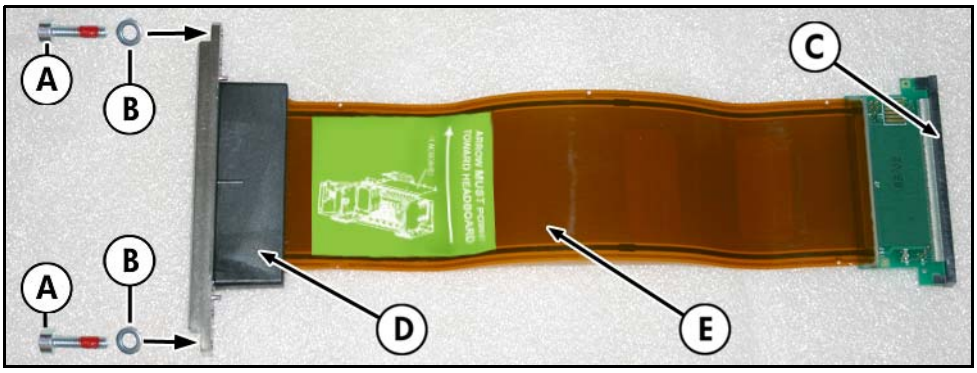
4. Insert a printhead connector through slot 12 in the pen plate with the printhead flex cable turned so that the cable voltage labels (A in Fig. 238.) are facing toward the user-end of the printer and the arrow of the orientation label (B in Fig. 238.) is pointing toward the input-side of the printer.

Fig. 238. Installing printhead



5. Locate two screws (A in Fig. 239.) and two washers (B in Fig. 239.) to secure the printhead to the pen plate.

Fig. 239. Printhead screws and washers

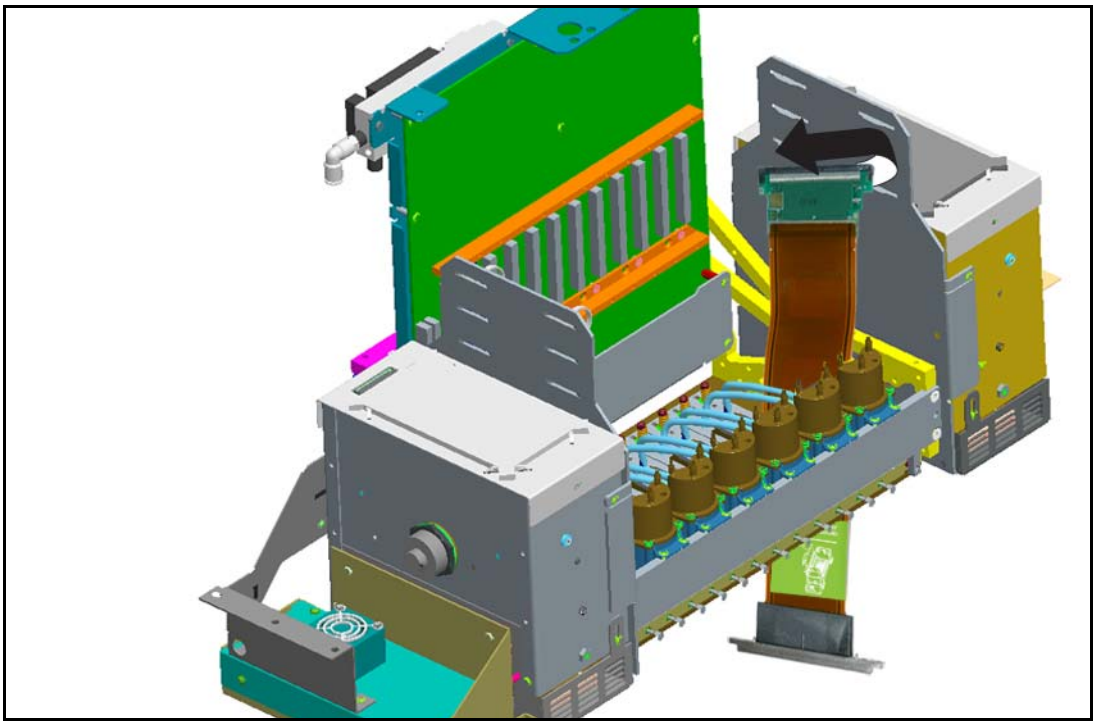


Do not allow the printing face of the printhead to contact any hard surfaces.

Make sure the printhead is completely flat in the pen plate before tightening the screws.

Make sure the printhead is inserted in the proper orientation. If the printhead is installed in the wrong orientation, the alignment pins will be destroyed upon tightening the printhead to the interface plate.

Fig. 240. Printhead orientation



6. From beneath the carriage, use a 2.5 mm hex key or torque screwdriver to insert a screw (A in Fig. 239.) and washer (B in Fig. 239.) at each end of the printhead (see Fig. 241.).

7. Using a torque screwdriver, tighten the two printhead socket-head cap screws at **12 in-lb**.

Fig. 241. Setting printhead screw torque



Install the flex cables

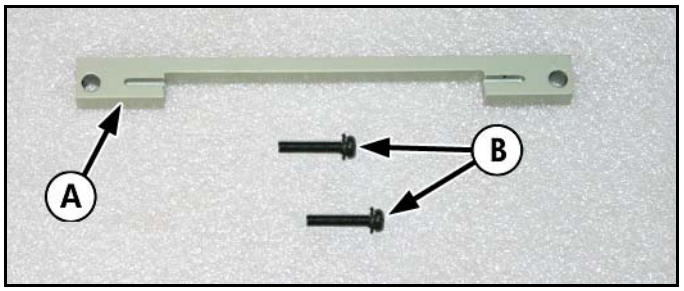
8. Plug the flex cable into the headboard in the position above the pen plate slot.

Fig. 242. Plug in flex cable



9. Use the original two SEMS screws (B in Fig. 243.) to secure the flex cable the headboard using the flex cable lock bracket (A in Fig. 243.).

Fig. 243. Flex cable lock bracket





Because of clearance and line of sight, fasteners should be put on as each cable is installed.

10. Repeat the process (steps 4 through 8) to install all 12 flex cables according to the configuration shown in Fig. 248.

Fig. 244. Flex cable fastener



11. Verify that all cables are connected well to the headboard according to the configuration shown in Fig. 248.

12. Power on the printer.

13. From the printer's menu, select the following:

SYSTEM > TOOLS > SERVICE PRINTER > FILL REPLACED PRINTHEAD

Post printhead-replacement calibrations

14. Once the printhead has filled with ink, verify the printhead y-axis calibration as shown in the section "Printhead y-axis calibration" on page 450.

When a printhead is replaced, the y-axis calibration should not change as long as the y-axis adjustment screw has not been turned. However, its y-axis calibration should be checked.

15. Calibrate the printhead saber angles as shown in the section "Calibrate the printhead saber angle" on page 460.

Removing the carriage headboard

Required tools

- Long #2 phillips screwdriver

1. If a firmware update was included in the headboard replacement kit, install the firmware following the directions in the section "Installing Firmware" on page 446.

2. Power off the printer following the procedures in the section "Managing Power Off Scenarios" on page 216.

3. Remove the service-end enclosure as shown in the section "Remove the user-end and service-end enclosures" on page 217.

4. Manually move the carriage so that it is positioned above the service station.

Wear a static-control strap to protect the electronics from being damaged by static shock.

5. Remove the carriage cover as shown in the section "Carriage assembly cover" on page 224.

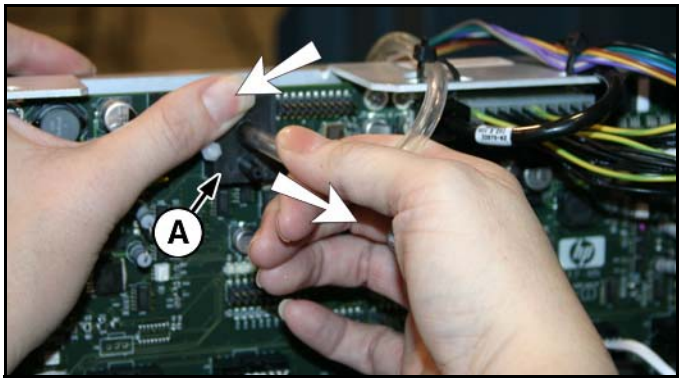
6. Remove all of the screws (A and B in Fig. 235.) and washers that secure the flex cable lock brackets.

Disconnecting the carriage pressure sensor tube

7. Pull the pressure tube off of the pressure sensor barb.

To remove the tube, press against the pressure sensor (as shown in Fig. 245.) to relieve strain on the sensor that will occur when you pull the tube off of the pressure sensor's barb.

Fig. 245. Removing the carriage pressure sensor tube



8. Unplug all cables from the headboard.

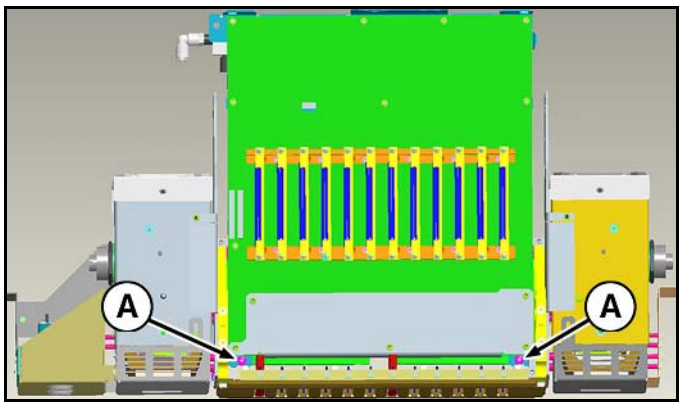
To remove the cables from the white Zif sockets (J, K and L in Fig. 248.), pull the top of the Zif socket toward you and remove the cable.

Removing the headboard (with mounting plate)

9. Using a long #2 screwdriver, remove the two output-side screws (A in Fig. 246.) that secure the headboard mounting plate to the carriage assembly.

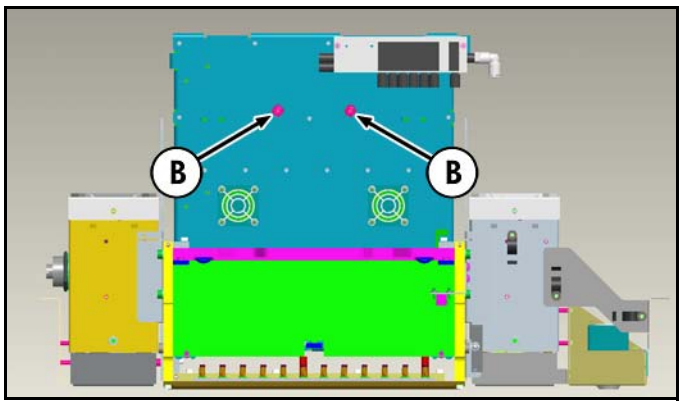
Do not remove the headboard from the mounting plate. Remove the mounting plate from the carriage with the headboard attached to the headboard mounting plate.

Fig. 246. Output side headboard screws



10. Remove the two input-side screws (B in Fig. 247.) that secure the headboard mounting plate to the carriage assembly, and remove the headboard and its mounting plate.

Fig. 247. Input side headboard screws



Installing the carriage headboard (with mounting plate)

1. Make sure the printer is powered off following the procedures in the section "Managing Power Off Scenarios" on page 216.

2. Secure the headboard to the carriage using the original two output-side screws (A in Fig. 246.) and two input-side screws (B in Fig. 247.).

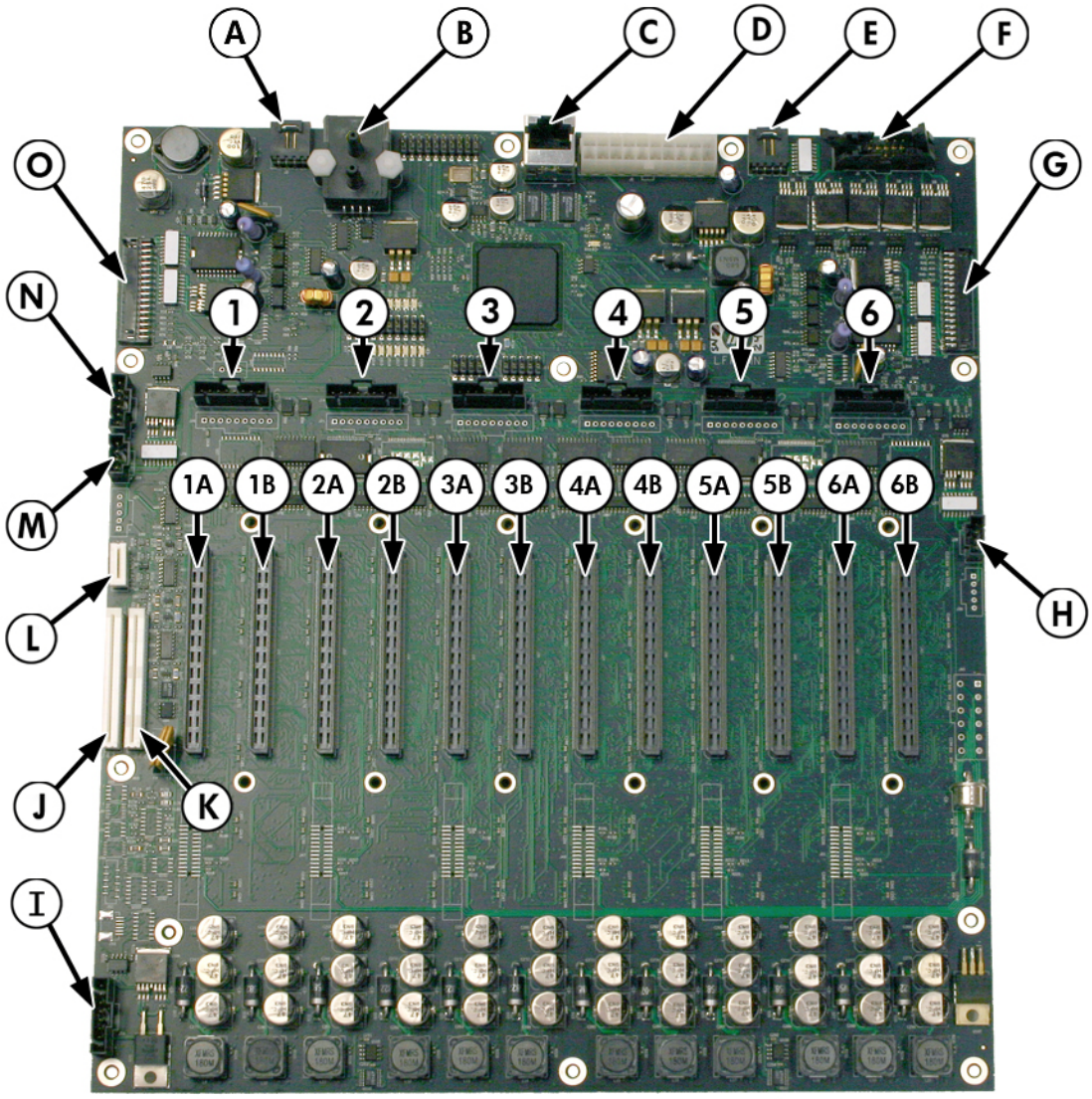
Wear a static-control strap to protect the electronics from being damaged by static shock.

Headboard cable connection chart

3. Plug in the cables to the headboard using the guide below.

To install the cables into the white Zif sockets (J, K and L in Fig. 248.), pull the top of the Zif socket toward you, insert the cable and press the top toward the headboard to capture the cable.

Fig. 248. Headboard cable locations



A = Unused connection
B = Pressure tube (top nozzle)
C = LVDS cable
D = Headboard power cable
E = Unused connection
F = Air manifold valve switch power
G = User-end lamp power
H = User-end headboard fan
I = Carriage camera fan
J = J43 camera cable slot
K = J44 camera cable slot
L = Encoder reader cable slot
M = Service-end headboard fan
N = Home sensor cable
O = Service-end lamp power

1 = Thermistors for black
2 = Thermistors cyan
3 = Thermistors for magenta
4 = Thermistors for yellow
5 = Thermistors for light cyan or white
6 = Thermistors for light magenta or white

1A and 1B = Black printheads
2A and 2B = Cyan printheads
3A and 3B = Magenta printheads
4A and 4B = Yellow printheads
5A and 5B = Light cyan or white printheads
6A and 6B = Light magenta or white printheads

4. Install the printhead flex cables as shown in the section “Install the flex cables” on page 229.

Removing the carriage camera board

Required tools

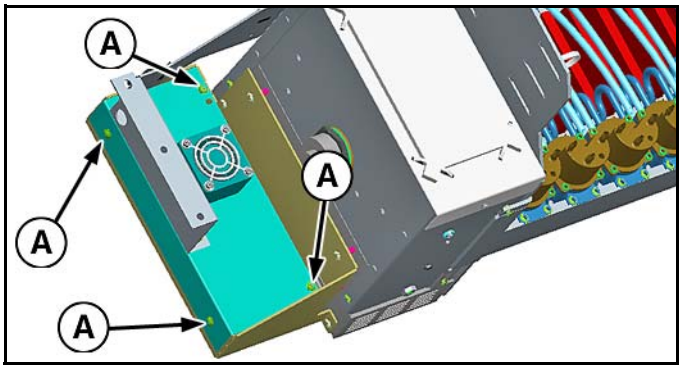
- #2 phillips screwdriver
- A static-control strap

1. Power off the printer following the procedures in the section “Managing Power Off Scenarios” on page 216.
2. Optionally, remove the service-end enclosure as shown in the section “Remove the user-end and service-end enclosures” on page 217.
3. Manually move the carriage so that it is positioned above the service station.

Wear a static-control strap to protect the electronics from being damaged by static shock.

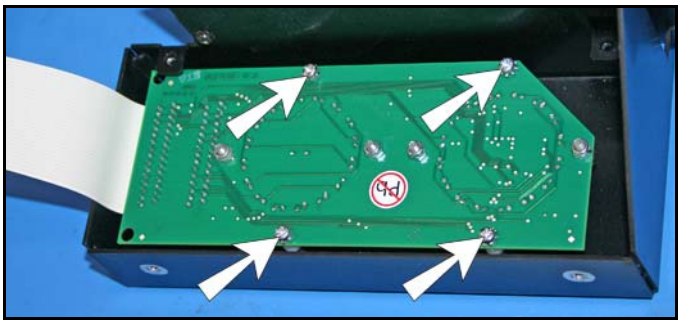
4. Remove the carriage cover as shown in the section “Carriage assembly cover” on page 224.
5. Remove the four screws (A in Fig. 249.) that secure the camera enclosure cover to the carriage.

Fig. 249. Screws that secure the camera enclosure



6. Remove the four screws that secure the camera board into its housing.

Fig. 250. Screws that secure the camera



7. Remove the flex cables from the two camera board Zif sockets (A and B in Fig. 74. on page 81).

   To release the cables, pull the tops of the Zif sockets away from the board.

Installing the carriage camera board

1. Make sure the printer is powered off, following the procedures in the section “Managing Power Off Scenarios” on page 216.
2. With the Zif sockets pulled out, insert each cable into the appropriate socket as shown in Fig. 252.

   Notice that the cables install into the camera board with the silver edge up (as shown in Fig. 251.). The cable inserted into camera board connection J1 (B in Fig. 251.) connects to connection J44 (Fig. 252.) on the headboard. The cable inserted into connection J2 (A in Fig. 251.), installs into connection J43 (Fig. 252.) on the headboard. Notice that the camera cables install into the headboard with the blue side toward the user-end of the printer.

Fig. 251. Cable orientation

A = J2
B = J1

J1 to J44 on headboard
J2 to J43 on headboard

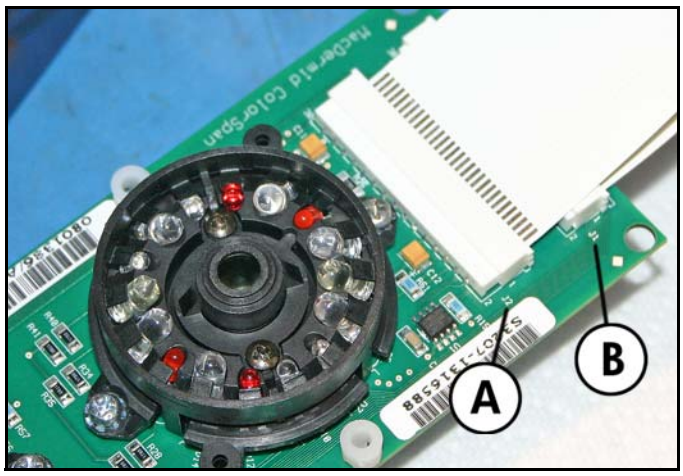
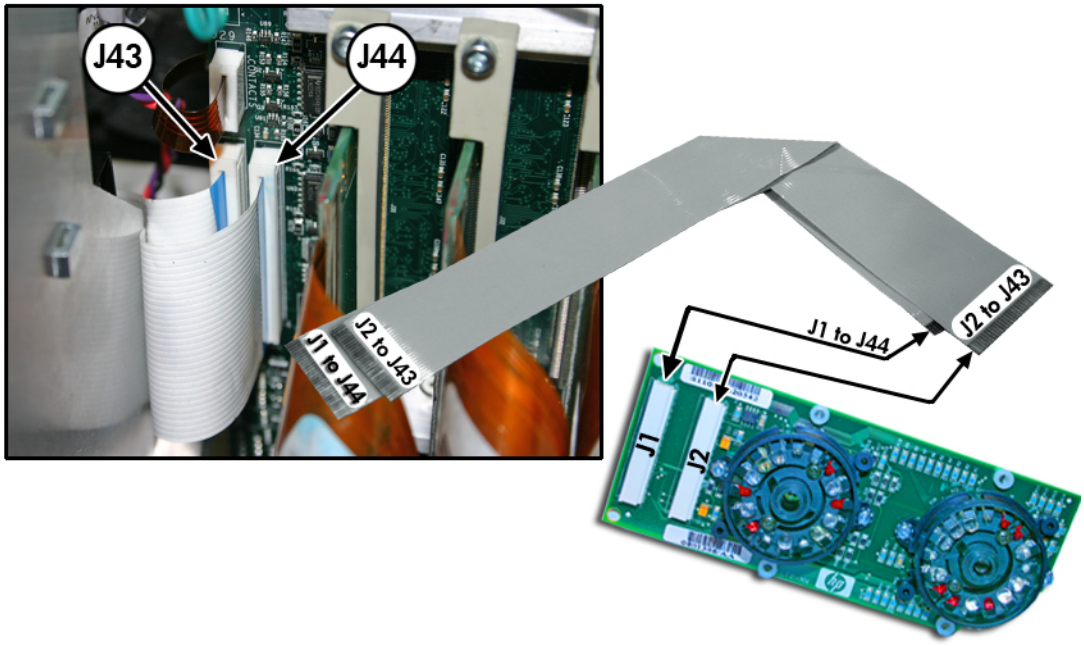


Fig. 252. Camera cables to carriage headboard





Plugging the flex cable into the wrong Zif socket, either on the headboard on the camera board, will result in multiple hardware failures, including the destruction of the headboard and camera board.

3. Using the original four screws, install the camera board in the same orientation as shown in Fig. 250.

4. Install the camera enclosure cover using the original four screws (A in Fig. 249.).

Removing a thermistor set

The thermistor FRM is re-installed into a reservoir cover. To replace the thermistors, you must clamp the vacuum tubes, cut the ink tube and replace the reservoir cover and reservoir cover o-ring.

Required tools

- #2 phillips screwdriver
- A static-control strap
- Clamp

Power off printer and unplug power cords

1. Power off the printer following the procedures in the section "Managing Power Off Scenarios" on page 216.
2. Unplug the printer's power cord to ensure that the vacuum pump will not activate.
3. Unplug the backup power supply's power cord to ensure that the vacuum pump will not activate.
4. Optionally, remove the service-end enclosure as shown in the section "Remove the user-end and service-end enclosures" on page 217.
5. Move the carriage so that it is positioned above the service station to capture ink that will leak from the printheads during this procedure.
6. Remove the carriage cover as shown in the section "Carriage assembly cover" on page 224.

Removing the printhead reservoir

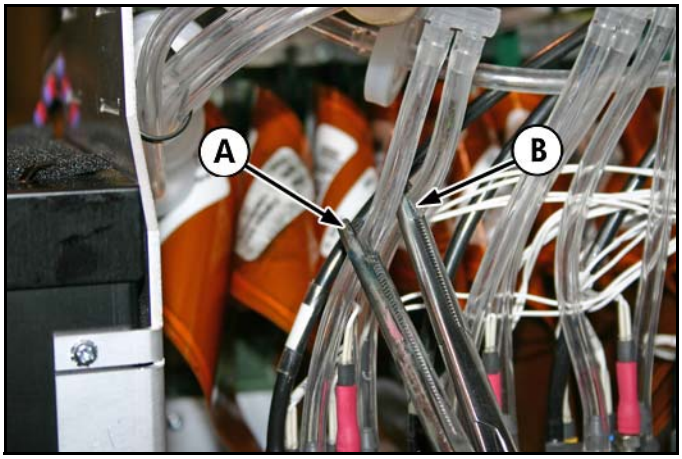
Wear a static-control strap to protect the electronics from being damaged by static shock.

When you remove the top of the ink reservoir, all reservoirs and printheads will loose vacuum if the vacuum tubes for that lid are not clamped closed (a loss of vacuum will cause ink to drip from the printheads). The two vacuum tubes connected to the affected reservoir must be clamped prior removing the reservoir tops. This will slow the loss of vacuum for all printheads.

Clamp vacuum tubes to service printhead components

7. Clamp closed both vacuum tubes (A and B in Fig. 253.) for the reservoir being serviced.

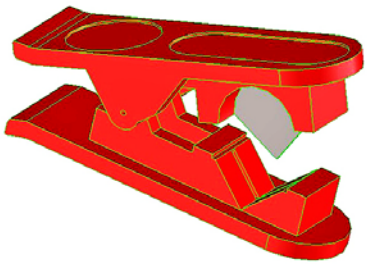
Fig. 253. Vacuum tubes clamped closed



8. At approximately 5 cm (2-in) above the printhead reservoir, cut the ink tube that connects to the reservoir cover that is being removed.

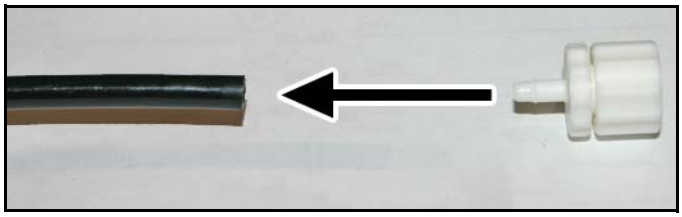
Use the supplied ink tube cutter to ensure that the tube is cut straight versus elliptical, as results from using wire cutters. Do not use wire cutters to cut the ink tubes.

Fig. 254. Ink tube cutter



9. Insert a tube plug into the end of the ink tube that is connected to the track assembly to keep ink from leaking.

Fig. 255. Tube plug

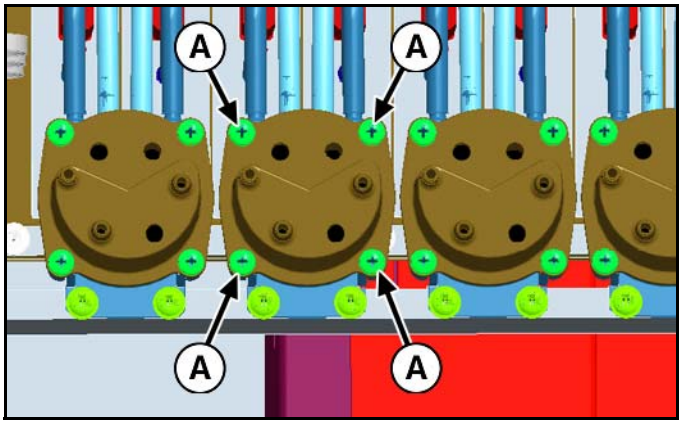


10. Cut the vacuum tubes from the original reservoir cover at approximately 5 cm (2-in) above the printhead reservoir.

11. For the thermistors being replaced, disconnect the thermistor cable connection from the head-board (see Fig. 78. on page 83 for connection locations).

12. Using a #2 phillips screwdriver, remove the four screws (A in Fig. 256.) that secure the top of the ink reservoir to the printhead and remove the reservoir top (which contains all of the original thermistors).

Fig. 256. Screws that secure reservoir top



Note: For clarity, the reservoirs are shown without thermistors or ink tubes installed; however, it is not necessary to remove theses from the reservoir tops for this procedure

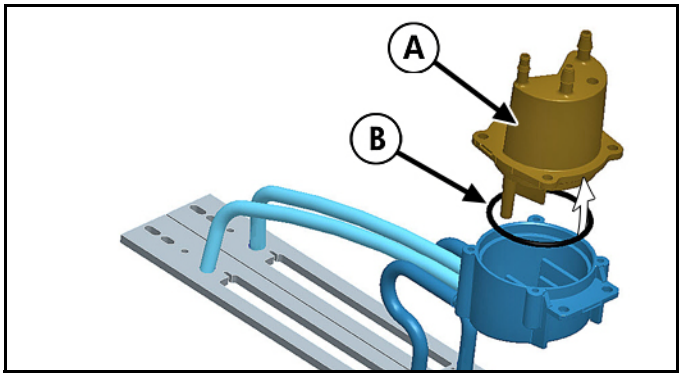
Be careful not to let dust or debris fall into the ink reservoir. This will plug the ink jet nozzles and could render the printhead unusable.

13. Remove the reservoir o-ring (B in Fig. 257.).

Installing a thermistor set

1. Install the included o-ring (B in Fig. 257.) to the base of the reservoir lid.

Fig. 257. Reservoir lid o-ring



2. Use a torque screwdriver ("Torque screwdriver and bit set" on page 486), secure the reservoir cover to the printhead reservoir using the original four screws at 0.67791 nm (6 lb-in).

The printhead reservoir is plastic. The screws are metal. Take care not to over tighten the screws and not to cross thread the screws. Install the screws slowly, making sure you are using the original thread path.

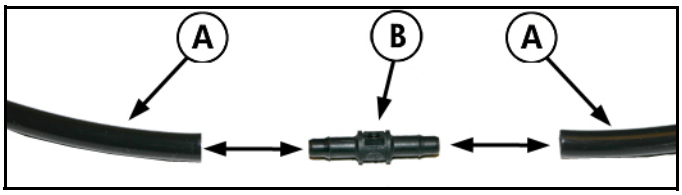
3. Plug the thermistor cable into the headboard connector (see Fig. 78. on page 83 for connection locations).

4. Connect the ink tube from the track to the ink tube of the new reservoir cover using a tube joiner.

Fig. 258. Tube joiner

A = Ink tubes

B = Tube joiner for same sized tubes



5. Connect the vacuum tubes using tube joiners.
6. Remove the vacuum tube clamps.
7. Power on the printer.
8. Connect the power cord for the backup power supply for the vacuum pump.

[End of procedure]

Removing the carriage air manifold

Required tools

- Small screwdriver
- #1 phillips screwdriver

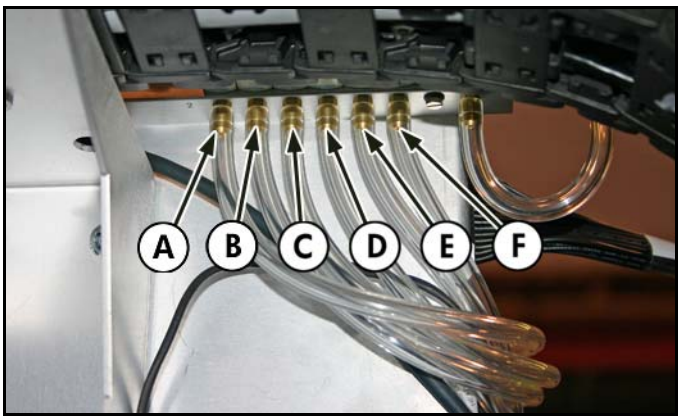
1. Remove the service-end enclosure as illustrated in the section “Remove the user-end and service-end enclosures” on page 217.
2. Power off the printer following the cautions described in the section “Managing Power Off Scenarios” on page 216.
3. For all six ink reservoirs, clamp the vacuum tubes above the ink reservoirs as shown in Fig. 253. on page 236.

When the vacuum tubes are removed from the manifold, vacuum will not be available to the printheads and ink will eventually leak from the printheads. Be sure the carriage is over the service station. Reconnect the vacuum tubes to the reservoir as soon as possible.

4. Remove the six vacuum (A - F in Fig. 259.) tubes from the air ports on the bottom of the air manifold.

To remove the tubes, use a small screwdriver to pry the tubes off of the barbs, being careful not to stretch or gouge the air tubes.

Fig. 259. Air manifold vacuum tubes



A = Air port for black

B = Air port for cyan

C = Air port for magenta

D = Air port for yellow

E = Air port for light cyan

F = Air port for light magenta

Removing the pressure and vacuum tube

5. Remove the pressure (A in Fig. 260.) and vacuum (B in Fig. 260.) source tubes from the manifold.

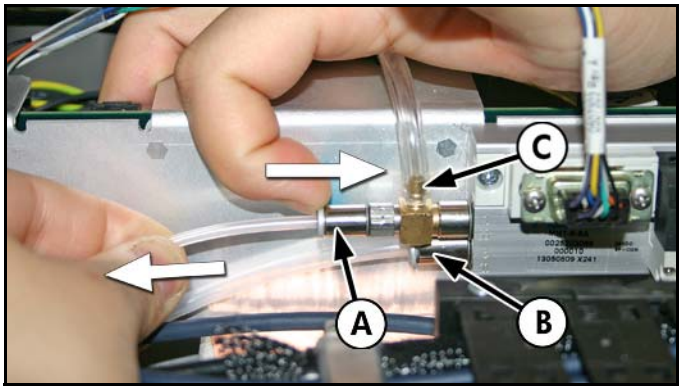
To remove the tubes, depress the compression ring at the top of the connection and pull the tube out of the fitting.

Fig. 260. Removing the pressure and vacuum tubes

A = Pressure tube

B = Vacuum tube

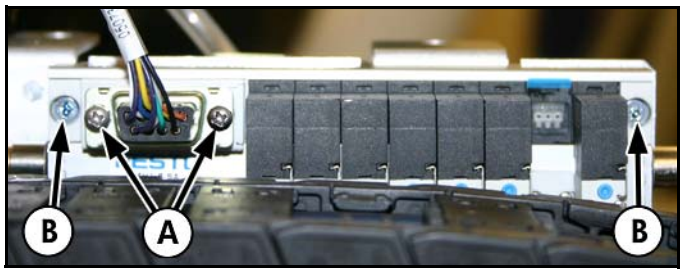
C = Pressure sensor tube (do not disconnect this tube) for this procedure



6. Remove the pressure tube (C in Fig. 260.) from the fitting on the manifold by pulling it off the fitting.

7. Using a #1 phillips screwdriver, remove the two screws (A in Fig. 261.) that secure the data cable to the manifold.

Fig. 261. Removing the screws for the manifold



8. Using a #1 phillips screwdriver, remove the two screws (B in Fig. 261.) that secure the manifold to the carriage, and remove the manifold.

Installing the carriage air manifold

1. Connect the air manifold to the carriage using the original screws.
2. Insert the pressure tube (C in Fig. 260.) into the fitting on the manifold by pushing it onto the fitting.
3. Install the pressure (A in Fig. 260.) and vacuum (B in Fig. 260.) source tubes into the manifold.

   To install the tubes, depress the compression ring at the top of the connection and push the tube into of the fitting as far as it will go.
4. Install the six vacuum (A - F in Fig. 259.) tubes onto the air ports on the bottom of the air manifold.

   To install the tubes, push the tubes onto the barbs as far as they will go.
5. Release the tube clamps to restore vacuum to the ink reservoirs.
6. Using a #1 phillips screwdriver, install the two screws (A in Fig. 261.) that secure the data cable to the manifold.

   [End of procedure]

Removing the carriage encoder reader

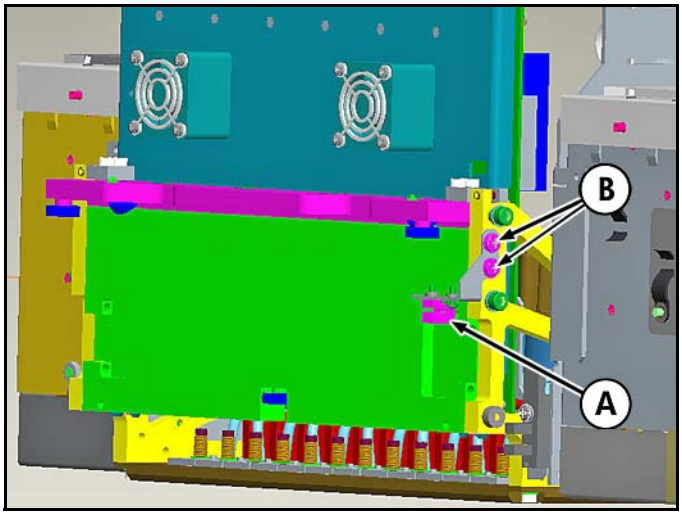
Required tools

- #2 phillips screwdriver

1. Remove the service-end enclosure as illustrated in the section “Remove the user-end and service-end enclosures” on page 217.
2. Power off the printer following the cautions described in the section “Managing Power Off Scenarios” on page 216.
3. Remove the carriage cover as shown in the section “Carriage assembly cover” on page 224.

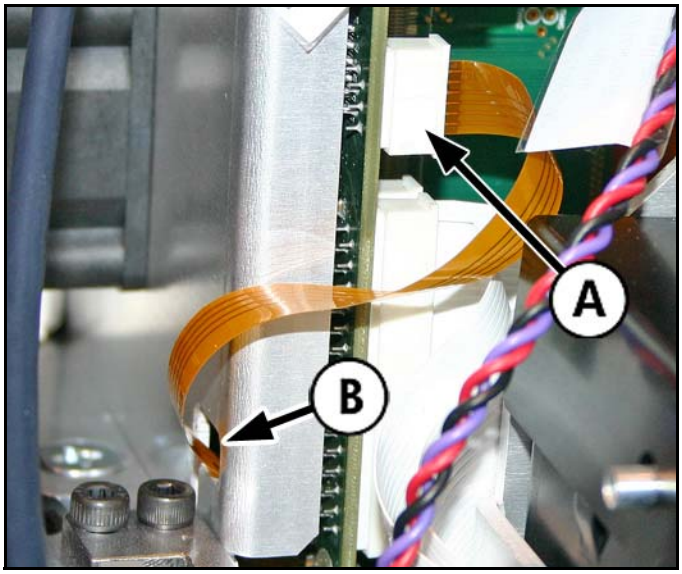
4. Using a #2 phillips screwdriver, remove the two screws (B in Fig. 262.) that secure the encoder reader (A in Fig. 262.) to the service-end of the carriage.

Fig. 262. Encoder reader screws



5. Unplug the encoder reader cable (A in Fig. 263.) from the carriage headboard.

Fig. 263. Encoder reader cable



6. Using a long #2 screwdriver, remove the two output-side screws (A in Fig. 246.) that secure the headboard mounting plate to the carriage assembly.

Do not remove the headboard from the mounting plate. Disconnect the headboard mounting plate from the carriage with the headboard attached to the headboard mounting plate. This will provide the needed clearance to remove the encoder reader cable.

7. Remove the two input-side screws (B in Fig. 247.) that secure the headboard mounting plate to the carriage assembly, and pull the headboard mounting plate away from the trolley.

8. Thread the encoder reader cable through the hole (B in Fig. 263.) in the headboard mounting plate, and remove the encoder reader from the carriage.

Installing the carriage encoder reader

1. Thread the encoder reader cable through the hole in the headboard mounting plate.
2. Connect the encoder reader cable to the headboard.
3. Secure the headboard mounting plate to the carriage using the original four screws.
4. Secure the encoder reader to the service-end of the carriage using the original two screws.

[End of procedure]

Removing the carriage from the rail

Before the carriage can be removed from the printer, the printheads must be purged of ink using air pressure. This is an automatic process that is selected from the printer's menu.

Required tools

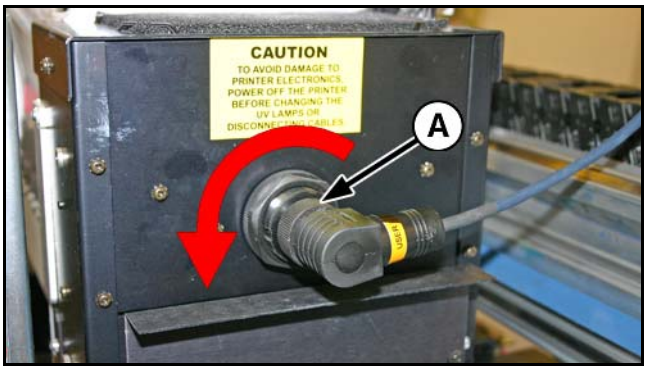
- Wire cutter
- #2 phillips screwdriver
- Paper towels

1. From the printer's menu, select the following:
   INK > MAINTENANCE > PRINTHEAD PROCEDURES > EMPTY HEADS
   Proceed through the menu choices to purge the printheads of ink. On some menu screens, you may need to press the down arrow to see all choices.
2. Remove the service-end enclosure as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.
3. Power off the printer following the cautions described in the section "Managing Power Off Scenarios" on page 216.
4. Remove the carriage cover as shown in the section "Carriage assembly cover" on page 224.
5. Release the belt tension as shown in the section "Releasing the carriage-drive belt tension" on page 259.
6. Remove the carriage-drive belt from the sides of the carriage as shown in the section "Removing the carriage-drive belt" on page 260.
7. Disconnect the LVDS cable from the headboard (see Fig. 248. on page 232 for location).
8. Disconnect the headboard power cables from the headboard (see Fig. 248. on page 232 for location).

Disconnecting the lamp power cables

9. Disconnect the lamp power cables from the sides of both lamp assemblies.

Fig. 264. Removing the lamp power cable



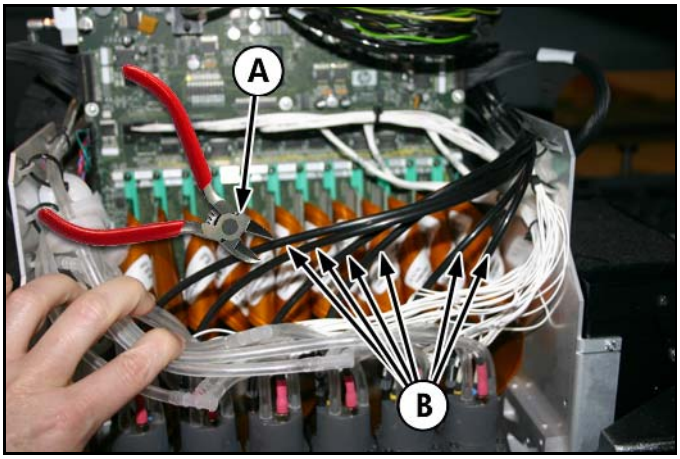
10. Disconnect the pressure and vacuum tubes from the air manifold as shown in the section "Removing the pressure and vacuum tube" on page 239.

Disconnecting the ink tube from the ink reservoir

11. Have paper towels nearby in case ink leaks from the ink tubes that are about to be cut in the next step.

12. Cut each of the ink tubes (B in Fig. 265.) about 13 cm (about 5-in) above the reservoir, making sure to cut perpendicular to the tube (not at an angle).

Fig. 265. Cutting ink tubes

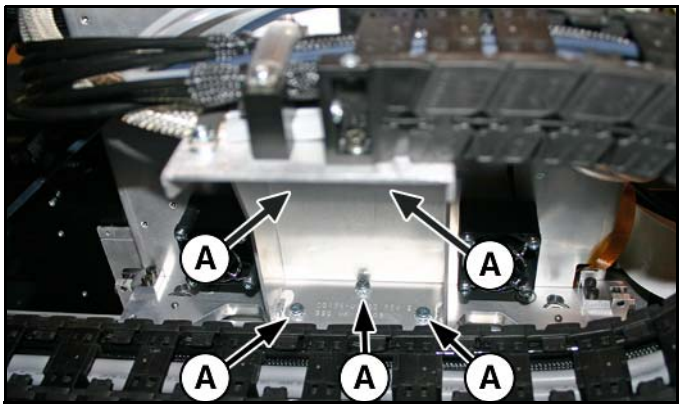


13. Wrap a paper towel around the ends of each ink tube, securing the towels with rubber bands.

Remove the trolley attachment bracket

14. Using a #2 philips screwdriver, remove the five screws (A in Fig. 266.) that secure the trolley attachment bracket to the input-side of the carriage.

Fig. 266. Trolley attachment bracket



15. Prepare a place to place the carriage when it is removed.

Use a soft section of foam or some other soft surface that will not scratch or dent the print-heads.

16. Slide the carriage off of the service-end of the rail and remove the carriage from the printer.

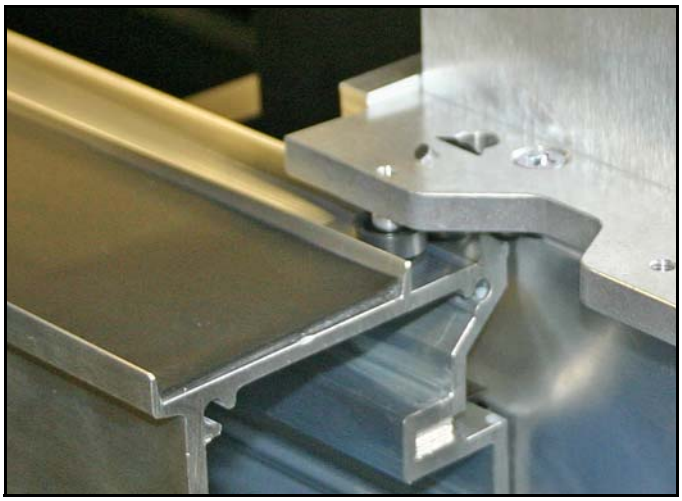
17. Place the carriage on top of the a soft piece of foam (or other soft surface) to protect the printheads.

[End of procedure]

Installing the carriage on the rail

1. Place the top carriage trolley wheels onto the end of the rail above the service station as shown below.

Fig. 267. Placing trolley bearing onto rail



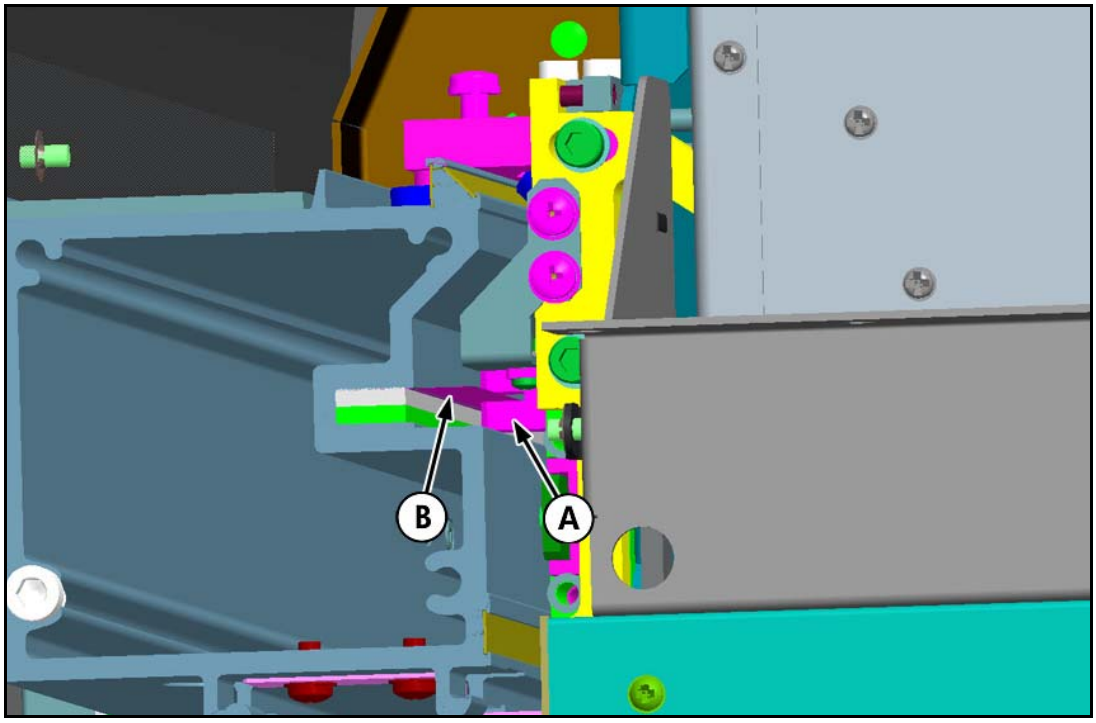
2. While holding the carriage at the end of the rail, insert the encoder strip into the encoder reader as the carriage is pushed onto the end of the rail.

3. Observe the encoder strip (B in Fig. 268.) and encoder reader (A in Fig. 268.) to make sure that the encoder strip is level in the encoder reader.

The encoder strip should be perpendicular to the rail and inserted into the reader as shown below. If the encoder strip is forced upward or downward by the encoder reader, the

encoder reader must be adjusted up or down until the encoder strip is completely perpendicular with the rail.

Fig. 268. Inserting the encoder strip into the reader



4. Secure the track attachment bracket to the top of the carriage trolley using the original three screws.

   See Fig. 266. for the screw locations.

5. Push the vacuum tube and the pressure tube into manifold.

   See Fig. 260. on page 239 for an illustration of the vacuum and pressure tube in the manifold.

6. Reconnect the power and data cable to the top of the carriage headboard.

   See Fig. 248. on page 232 for the cable locations.

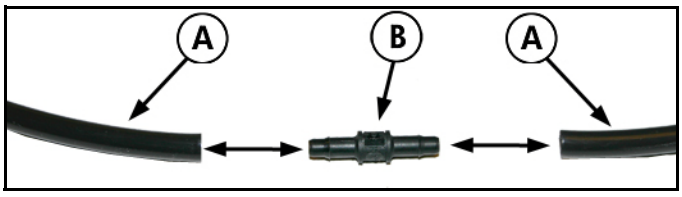
7. Reconnect the UV power cables for the service and user-end lamp assemblies.

   See Fig. 264. on page 243 for locations of the UV power cables.

Reconnecting tubes using tube joiner (tube mender)

8. Push a straight-through, ink-tube joiner (B in Fig. 269.) into the ends of each ink tube above the ink reservoirs.

Fig. 269. Ink tube joiners



9. Reconnect the ink source lines to each reservoir tube (pushing the source tubes onto the tube joiners), making sure to connect the correct ink line to the correct ink color.

10. Power on the printer.

11. Fill all of the printheads with ink.

    To fill all printheads, select INK > MAINTENANCE > PRINTHEAD PROCEDURES > LOAD INK IN ALL HEADS. Press PROCEED to fill the printheads.

12. Reconnect the carriage-drive belt to both sides of the carriage, making sure that the belt is not twisted inside the rail.

    See “Installing the carriage-drive belt” on page 260.

13. Install the carriage cover using the original screws.

14. Install the end enclosures using the original screws.

[End of procedure]

Removing the upper trolley plate

Required tools

- Dial indicator, part # CQ114-67177
- #2 phillips screwdriver
- 3 mm hex wrench
- 3/32-in hex wrench
- 4 mm hex wrench

1. Remove the service-end enclosure as illustrated in the section “Remove the user-end and service-end enclosures” on page 217.
2. Power off the printer following the cautions described in the section “Managing Power Off Scenarios” on page 216.

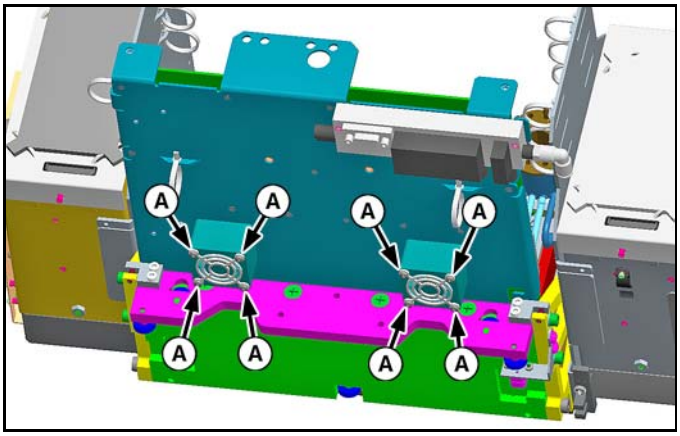
When changing the upper or lower trolley attachment, the carriage tilt may change. On installation, verify that the upper trolley is centered on lower trolley. Be sure to check the carriage saber angle as shown in the section *“Verifying the gross saber angle” on page 467*.

This procedure requires a special tool (dial indicator, part # CQ114-67177). You must have the approved dial indicator that is needed to verify and set carriage saber angle.

3. Remove the carriage cover as shown in the section “Carriage assembly cover” on page 224.
4. Remove the trolley attachment bracket as shown in the section “Remove the trolley attachment bracket” on page 244.

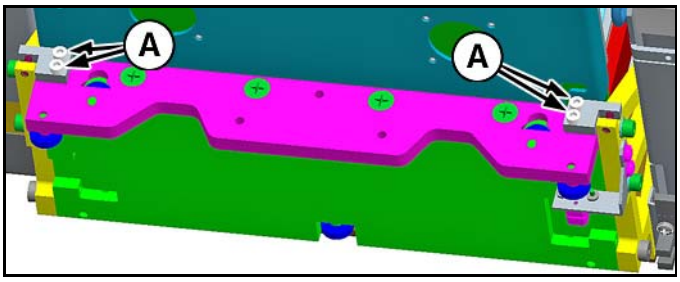
5. Remove the eight screws (A in Fig. 270.) that secure the two headboard-cooling fans to the input-side of the carriage, and remove the fans.

Fig. 270. headboard fans



6. Using a 3 mm hex wrench, remove the four screws (A in Fig. 271.) that secure the two turnbuckle brackets to the user-end and service-end of the upper trolley plate (do not remove or turn the turnbuckle screws).

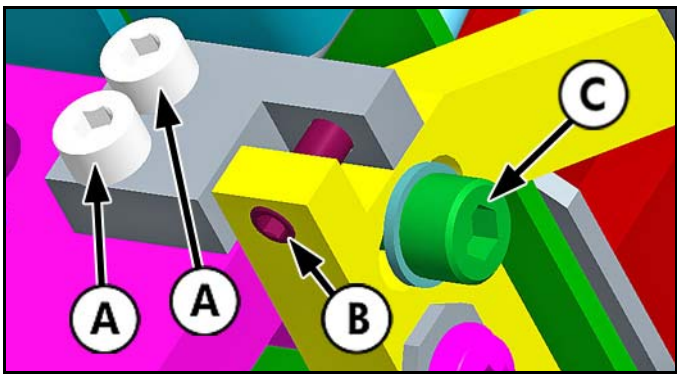
Fig. 271. Turnbuckle brackets



Wrench sizes in Fig. 272.

- A = 3 mm hex wrench for turnbuckle bracket screws
- B = 3/32-in hex wrench for turnbuckle screw
- C = 4 mm hex wrench for carriage side-plate, top set screw

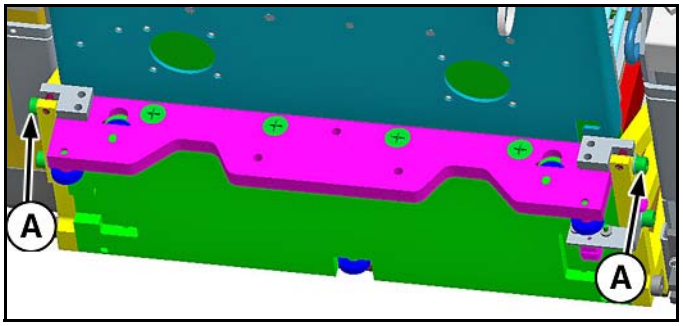
Fig. 272. Wrench sizes



7. Using a 4 mm hex wrench, remove the top two set screws (A in Fig. 273.) on the user and service-end of the carriage.

Fig. 273. Location of carriage side plate screws

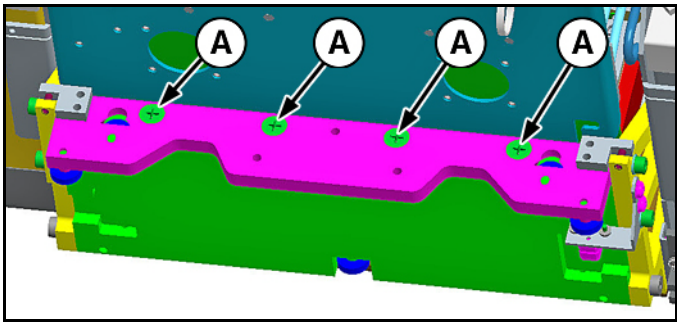
A = Screws to remove



8. Using a #2 philips screwdriver, remove the four screws (A in Fig. 274.) that secure the upper trolley plate to the lower trolley plate, and remove the upper trolley plate from the carriage.

Fig. 274. Upper trolley screws

A = Screws to remove



9. Remove the upper trolley plate from the carriage.

[End of procedure]

Installing the upper trolley plate

1. Slide the trolley plate between the turn buckle brackets and the lower trolley.
2. Secure the trolley plate to the lower trolley using the original four screws (A in Fig. 274.).
3. Install the two, top side plate screws
4. Using a 3 mm hex wrench, install the four screws (A in Fig. 271.) that secure the turnbuckle brackets to the upper trolley plate.
5. Install the trolley attachment bracket using the original screws (see Fig. 266. on page 244).
6. Install the eight screws (A in Fig. 270.) that secure the two headboard-cooling fans to the input-side of the carriage, and install the fans.
7. Check the carriage tilt as shown in the section “Checking carriage front-to-back tilt” on page 462.
8. Verify the carriage saber angle as shown in the section *“Verifying the gross saber angle” on page 467.*
9. Install the carriage cover as shown in the section “Carriage assembly cover” on page 224.

[End of procedure]

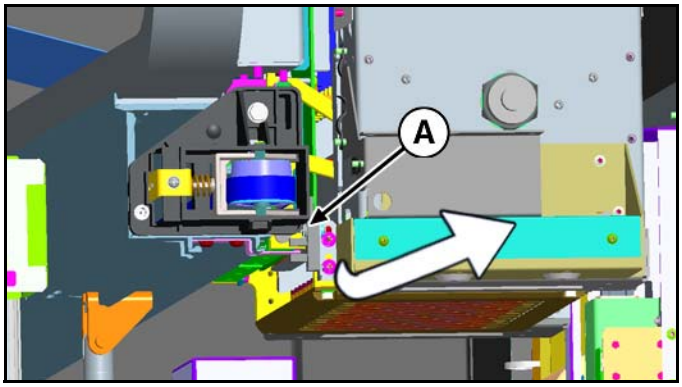
Removing the home sensor

Required tool:

- L-shaped #2 phillips screwdriver (see Fig. 686. on page 487)
- # 2 phillips screwdriver.

1. Remove the service-end enclosure as illustrated in the section “Remove the user-end and service-end enclosures” on page 217.
2. Tilt the carriage away from the rail to access the home sensor screw (A in Fig. 275.).

Fig. 275. Home sensor screw



3. Using an L-shaped, #2 phillips screwdriver (see Fig. 686. on page 487), remove the screw that secures the home sensor to the carriage.
4. Disconnect the cable from the top of the home sensor.

Installing the home sensor

1. Plug the home sensor cable into the top of the home sensor.
2. Tilt the carriage away from the rail to access the home sensor screw (A in Fig. 275.).
3. Install the screw that secures the home sensor to the carriage.
4. Manually move the carriage so that the home sensor flag passes between the home sensor to make it is installed correctly.

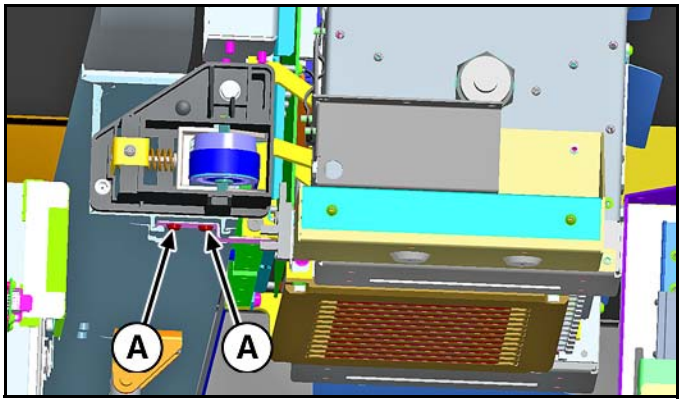
Removing the home sensor flag

Required tool:

- # 2 phillips screwdriver.

1. Remove the service-end enclosure as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.
2. Using a #2 phillips screwdriver, remove the two screws (A in Fig. 276.) that secure the home sensor flag to the under side of the rail.

Fig. 276. Home sensor flag screws



Installing the home sensor flag

1. Using a #2 phillips screwdriver, install the two screws (A in Fig. 276.) that secure the home sensor flag to the under side of the rail.

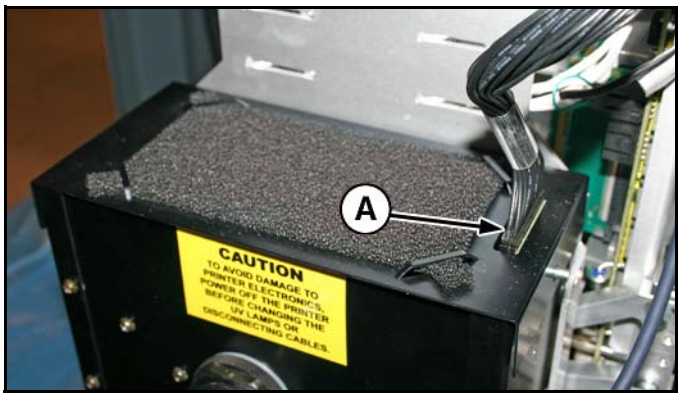
Remove the user-end lamp cover

Required tools

- #2 phillips screwdriver

1. Remove the service-end enclosure as illustrated in the section “Remove the user-end and service-end enclosures” on page 217.
2. Power off the printer following the cautions described in the section “Managing Power Off Scenarios” on page 216.
3. Disconnect the auxiliary cable (A in Fig. 277.) from the top of the user-end lamp.

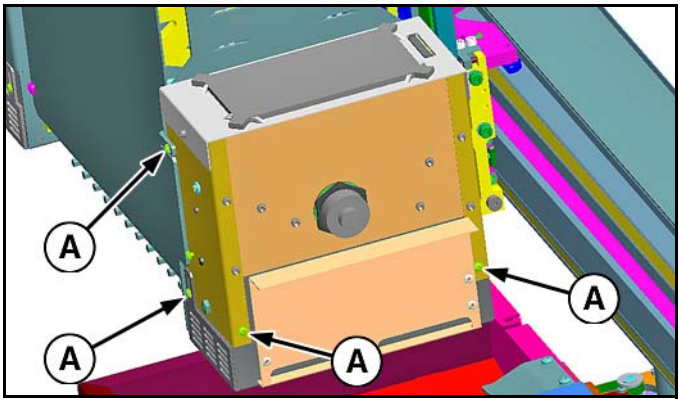
Fig. 277. Lamp auxiliary cable



4. Remove the lamp power cable from the side of the lamp housing.

   To remove the cable, turn the coupling counterclockwise (see Fig. 264. on page 243).
5. Remove the four silver screws (A in Fig. 278.) that secure the lamp housing to the lower lamp assembly.

Fig. 278. Lamp housing screws



6. Remove the lamp housing from the printer.

Installing the user-end lamp cover

1. Secure the lamp housing to the lamp assembly using the original silver screws (see Fig. 278. for locations).
2. Connect the auxiliary cable to the top of the lamp.
3. Connect the lamp power cable to the side of the lamp.
4. Install the carriage cover as shown in the section “Carriage assembly cover” on page 224.

Remove the service-end lamp cover

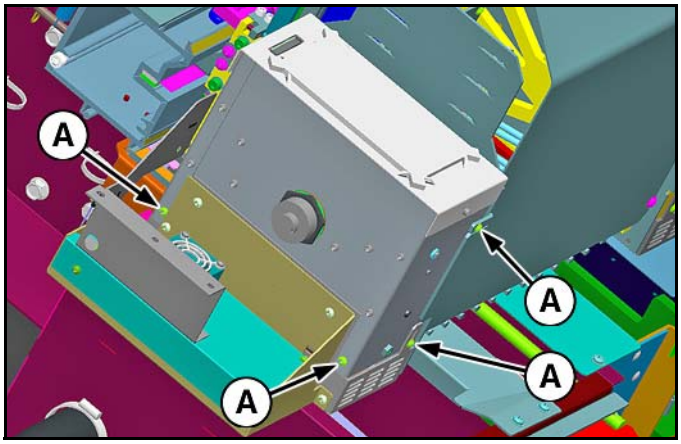
Required tools

- #2 phillips screwdriver

1. Remove the service-end enclosure as illustrated in the section “Remove the user-end and service-end enclosures” on page 217.
2. Power off the printer following the cautions described in the section “Managing Power Off Scenarios” on page 216.
3. Disconnect the auxiliary cable (for example of auxiliary cable, see A in Fig. 277.) from the top of the service-end lamp.
4. Disconnect the lamp power cable from the side of the lamp housing.

   To remove the cable, turn the coupling counterclockwise (see Fig. 264. on page 243).
5. Remove the four silver screws (A in Fig. 279.) that secure the lamp housing to the lower lamp assembly.

Fig. 279. Service-end lamp housing screws



6. Remove the lamp housing from the printer.

Install the service-end lamp cover

1. Secure the lamp housing to the lamp assembly using the original three silver screws (see Fig. 279. for locations).

   If you have difficulty fitting the lamp housing into the carriage, see the information following See “Installing the user-end lamp cover” on page 144.
2. Connect the auxiliary cable to the top of the lamp.
3. Connect the lamp power cable to the side of the lamp.
4. Install the carriage cover as shown in the section “Carriage assembly cover” on page 224.

Removing the UV Lamp Bulb

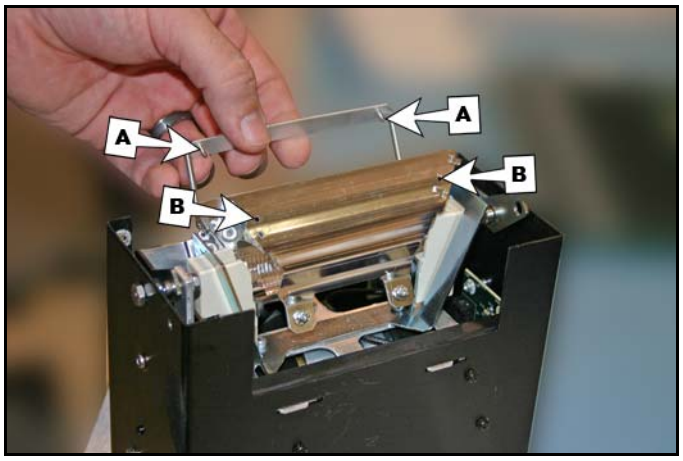
Required tools

- Cotton gloves
- #2 phillips screwdriver

1. Remove the lamp housing as shown in "Remove the user-end lamp cover" on page 251 or "Remove the service-end lamp cover" on page 252.
2. Wear cotton gloves to protect the reflector and replacement bulb from fingerprints.
3. Pull the spring-loaded clamp from the side of the lamp reflector as shown below.

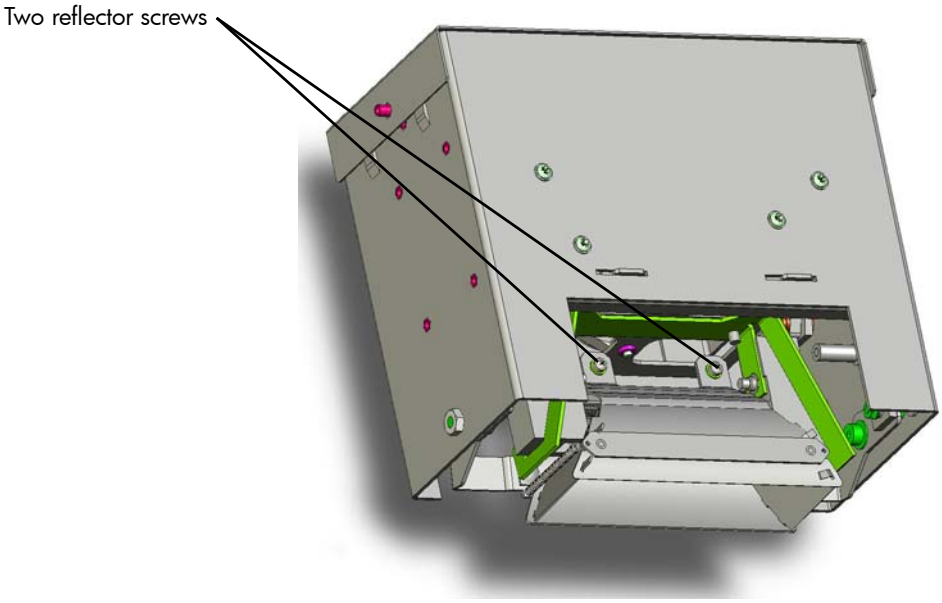
A = Dowel of spring-loaded clamp

B = Hole in side of lamp reflector



4. Loosen the two screws that hold the two reflectors together until the outside reflector can be removed.

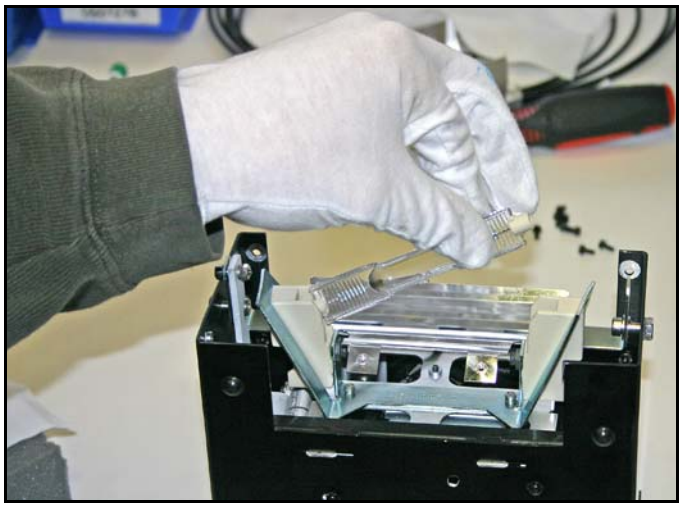
   The reflector screws are captive screws and are not meant to be fully removed. If you do fully remove the screws, take care that the screws do not drop into the lamp housing.



Do not bend any of the tabs on the reflectors.

5. Push the lamp bulb to one side slightly (against the spring), and lift it from the lamp housing.

Fig. 280. Removing a lamp bulb

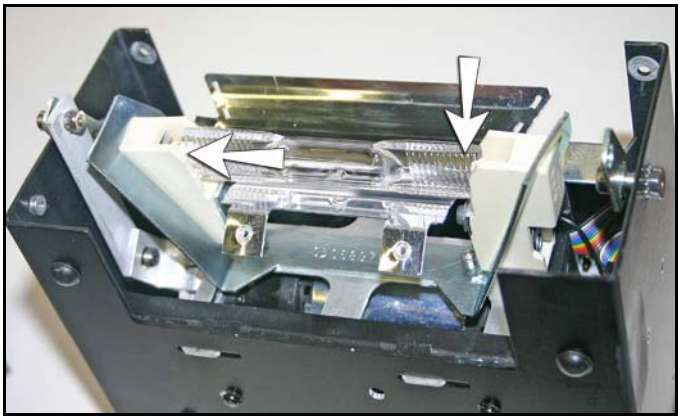


Installing the UV Lamp Bulb

1. Insert the replacement bulb into the lamp housing, pressing it to the left, and then down into place.

Fig. 281. Installing a lamp bulb

The arrows indicate pushing the bulb to the left and then down into place



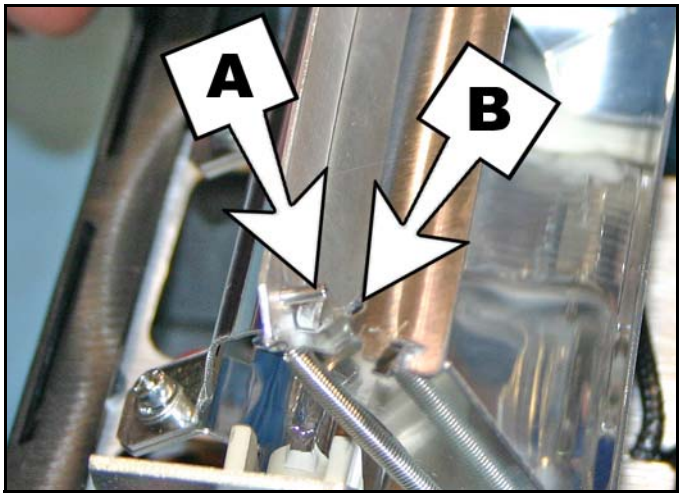
2. Tighten the two screws that hold the reflectors together (see step 4 on page 253 for location of screws).

3. Install the spring-loaded clamp's dowels into the reflector.

Fig. 282. Installing lamp reflector springs

A = One of two dowels in spring-loaded clamp

B = Hole in side of reflector



4. Install the lamp into the carriage as shown in the section “Installing the user-end lamp cover” on page 252.

Removing the Lamp Glass

Required tools

- #2 phillips screwdriver

1. Remove the lamp housing as shown in the section “Remove the user-end lamp cover” on page 251 or “Remove the service-end lamp cover” on page 252.
2. Using a phillips screwdriver, remove the four screws that secure the lower reflector as shown below.

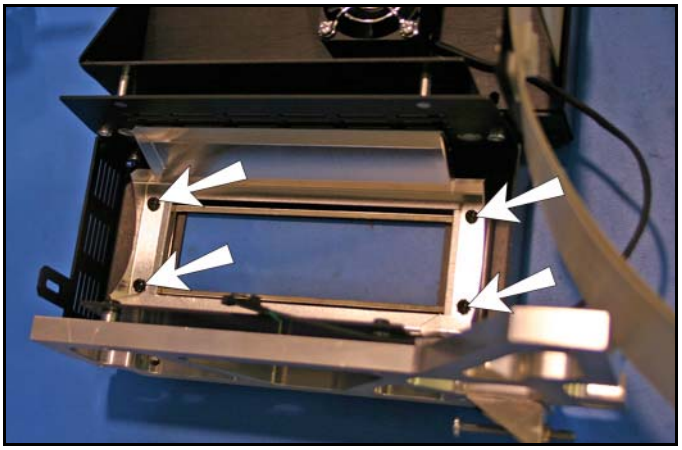


Fig. 283. Screws that secure the lamp reflector

The arrows indicate the four screws to remove

Note: For clarity, the lamp assembly is shown removed from the carriage.

3. Remove the lower reflector.
4. Remove the four screws that secure the spring clamps as shown below.

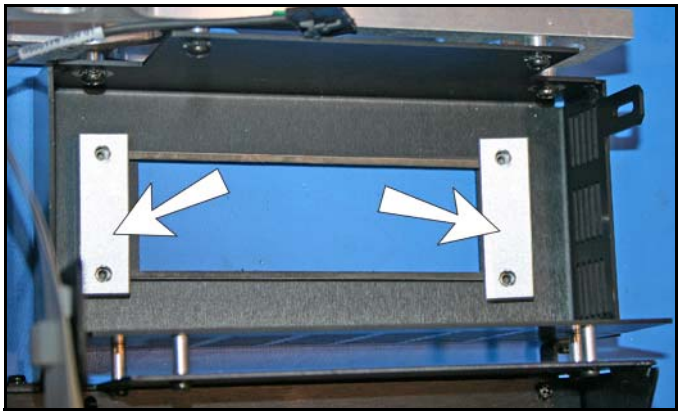
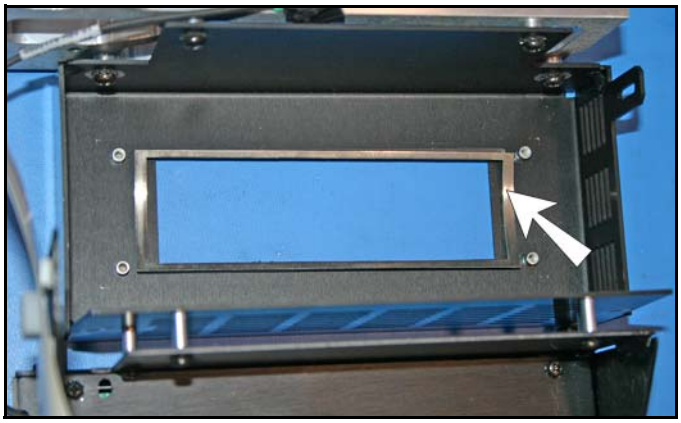


Fig. 284. Screws that secure the glass-retention spring

The arrows indicate the spring clamps

5. Remove the spring.

Fig. 285. Glass retention spring



The arrow indicates the spring

6. Remove the glass.

Installing the lamp glass

1. Center the glass over the lamp opening.
2. Center the spring on top of the glass.

   The edges of the spring should curve up away from the glass as shown in step 5 on page 256.
3. Place the spring clamps on each end of the spring, sliding them over the ends of the spring.

   Make sure that the glass remains centered over the opening in the lamp housing. Make certain that the spring and spring clamp are centered over the glass.
4. Install the lower reflector using the original four screws.
5. Install the lamp housings as shown in the section “Installing the user-end lamp cover” on page 252 or “Install the service-end lamp cover” on page 252.

Removing the lamp fan assembly

Required tools

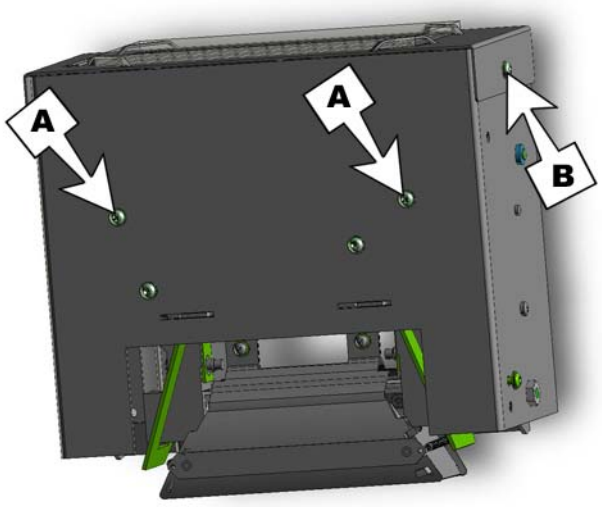
- #2 phillips screwdriver

1. Remove the lamp housing as shown in the section “Remove the user-end lamp cover” on page 251 or “Remove the service-end lamp cover” on page 252.
2. Using a phillips screwdriver, remove four screws (two on each side) that secure the fan assembly into the lamp housing.

Fig. 286. Lamp-fan housing screws

A = Two of the four screws to remove. The other two screws are on the opposite side in the similar location.

B = The screw to remove the top cover



3. Remove screw (B) that secures the top cover (which contains the air filter) of the lamp housing, and remove the top cover.

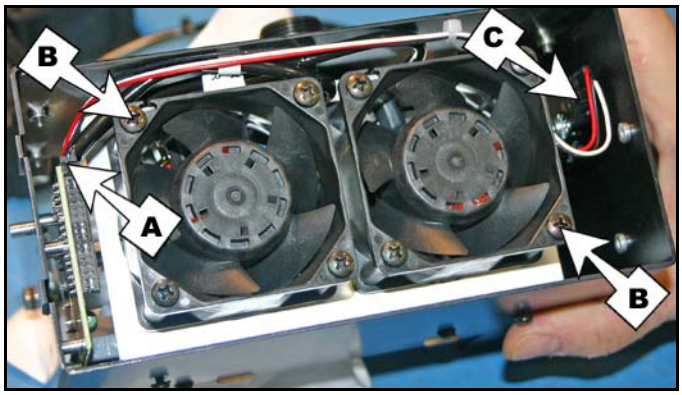
4. Disconnect the home sensor (C).

Fig. 287. Lamp fans

A = Power connections

B = Screw that secures fan to fan assembly

C = Home sensor connection



5. Pull out the fan assembly from the lamp housing.

6. Disconnect the fan power cable (A) from the lamp housing.

Installing the lamp fan

1. Connect the fan's power cable to the power connection (A).
2. Insert the fan assembly into the lamp housing.
3. Connect the home sensor cable (C).
4. Install the lamp housings as shown in the section "Installing the user-end lamp cover" on page 252 or "Install the service-end lamp cover" on page 252.
5. Install the top cover enclosure for the lamp housing.

Removing a single lamp fan

Required tools

- #2 phillips screwdriver
- Needle-nosed pliers

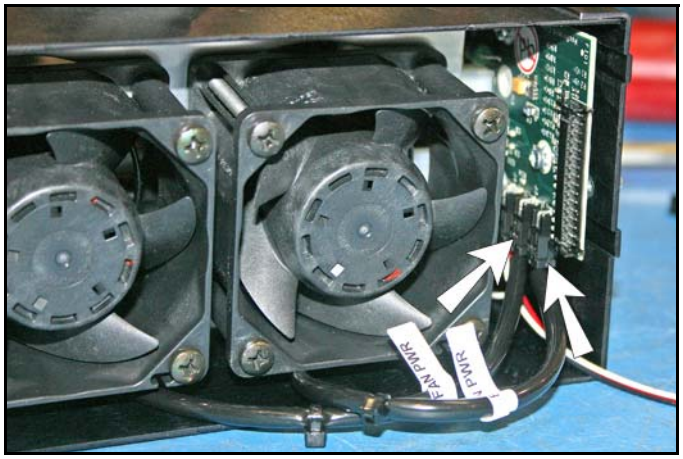
1. Remove the lamp housing as shown in the section "Remove the user-end lamp cover" on page 251 or "Remove the service-end lamp cover" on page 252.
2. Remove screw that secures the top cover (as shown in step 2 on page 256) of the lamp housing, and remove the top cover.
3. Remove the four screws that secure the fan to the fan assembly.

4. Disconnect the fan's power cable from the lamp housing.

   You may need to use needle-nosed pliers to remove the power connection.

Fig. 288. Lamp fan power cables

The arrows indicate the power connection locations



Installing a single lamp fan

1. Align the finger guard in the fan assembly with the screw holes in the finger guard and fan assembly housing.
2. Insert the fan with the fan's label toward the finger guard.

   You should not be able to see the label once the fan is installed.

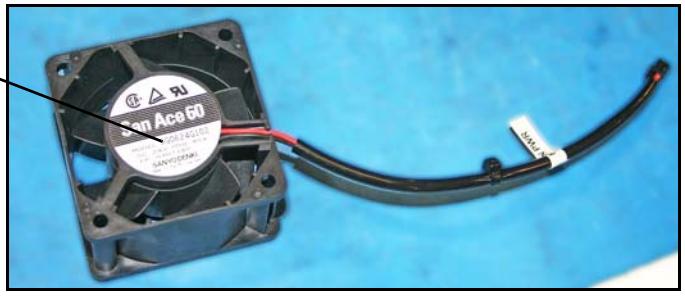


Fig. 289. Lamp fan label

3. Secure the fan to the fan assembly using the original four screws.
4. Connect the fan's power cable to power connection.

   You may need to use needle-nosed pliers to install the power connection.
5. Install the lamp housings as shown in the section "Installing the user-end lamp cover" on page 252 or "Install the service-end lamp cover" on page 252.
6. Install the top cover enclosure for the lamp housing.

Releasing the carriage-drive belt tension

Required tools

- 10 mm socket wrench with 3" extension
- 5 mm hex wrench

1. Remove the service-end enclosure as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.
2. Manually move the carriage so that it is positioned above the service station.
3. Remove the carriage cover as shown in the section "Carriage assembly cover" on page 224.

Removing the carriage-drive idler

4. Using a 10 mm socket wrench with a 3" extension, remove the bolt (A in Fig. 290.) that secures the idler (B) to the end of the rail.

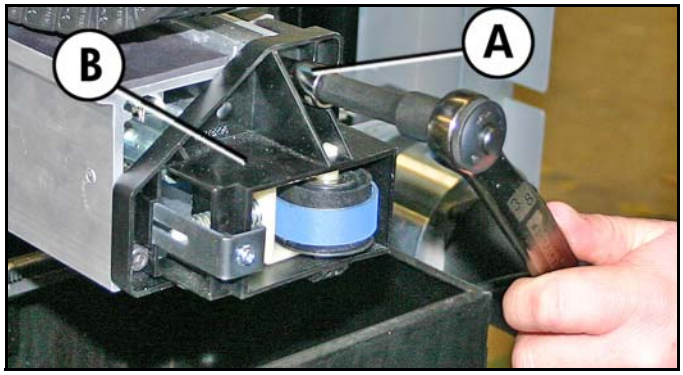


Fig. 290. Removing idler bolt

5. Using a 5 mm hex wrench, remove the hex screw (A in Fig. 291.) that secures the idler (B in Fig. 291.) to the end of the rail.

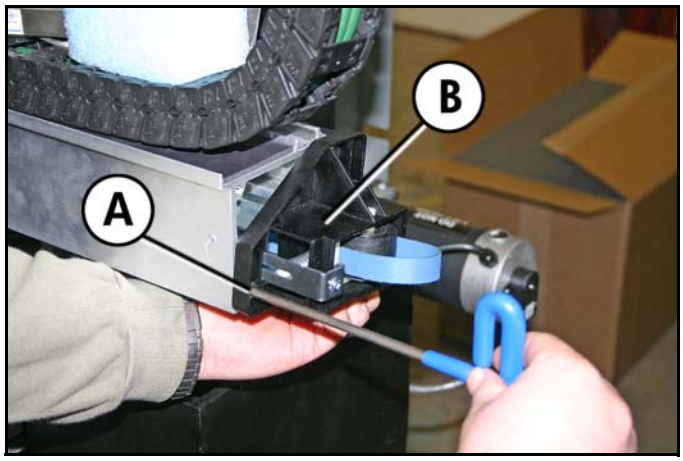


Fig. 291. Removing the hex screw from the idler

6. From the service-end of the rail, pull the idler toward you while pushing idler toward the output-side of the rail to release belt tension.

[End of procedure]

Installing the carriage-drive idler

Installing the idler will restore the carriage-drive belt tension. Because the belt is cut to the correct length, no adjustments are needed to set the belt tension. See "About the carriage-drive belt length and tension" on page 99 for more information.

1. With the carriage-drive belt attached to both sides of the carriage, pull the idler around to the end of the rail and align the bolt and screw holes.
2. Using a 10 mm socket wrench with a 3" extension, install the bolt (A in Fig. 290.) that secures the idler to the end of the rail.
3. Using a 5 mm hex wrench, install the hex screw (A in Fig. 291.) that secures the idler (B in Fig. 291.) to the end of the rail.

[End of procedure]

Removing the carriage-drive belt

Required tools

- 3 mm hex wrench
- #2 phillips screwdriver

1. Remove the user-end and service-end enclosure as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.
2. Release the carriage-drive belt tension as described in the section "Releasing the carriage-drive belt tension" on page 259.
3. Using a 3 mm hex wrench, remove the two screws (see A in Fig. 105. on page 98 for screw locations) that secure the belt clamp to the service-end of the carriage, and remove the belt clamp from the carriage.
4. Using a 3 mm hex wrench, remove the two screws (see A in Fig. 105. on page 98 for screw locations) that secure the belt clamp to the user-end of the carriage, and remove the belt clamp from the carriage.
5. Using a #2 phillips screwdriver, remove the screws (D in Fig. 106. on page 99) that secure the belt to the belt clamps, and remove the belt from the clamps.

[End of procedure]

Installing the carriage-drive belt

1. Thread the belt through rail (making sure it does not twist).

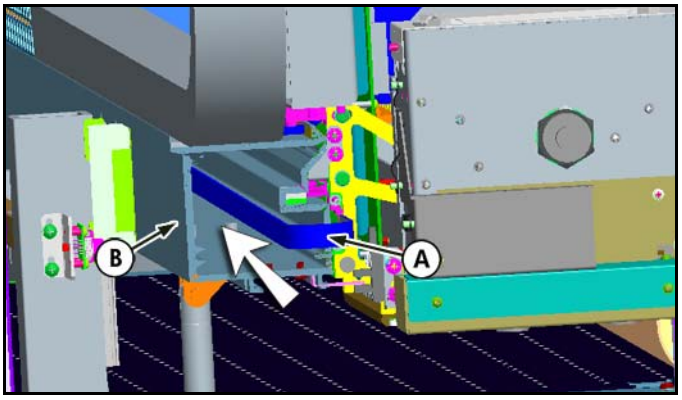


Fig. 292. Threading belt through idler

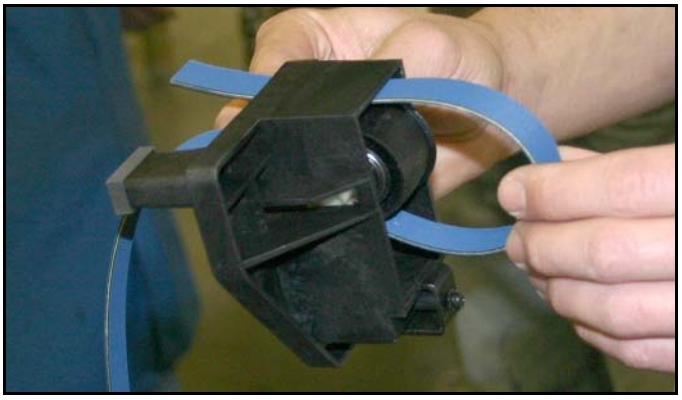
A = Carriage-drive belt

B = Rail

Make sure the belt is not twisted in the rail. A twisted belt will cause banding on the printed output.

1. Thread the belt through the idler as shown below.

Fig. 293. Threading belt through idler



2. Insert the belt around the carriage-drive shaft pulley (E in Fig. 102. on page 98).
3. If the replacement carriage-drive belt does not have belt clamps, attach a belt clamp to each end of the belt using the original four screws (two for each clamp).

   Make sure that the belt clamps are installed in the same orientation (Fig. 106. on page 99).
4. Check that the belt is not twisted inside the rail.
5. Using a 3 mm hex wrench, install the belt clamps into each side of the carriage using the original four screws (two on each clamp).
6. Rotate the idler around the end of the rail (to its installation location) to tension the belt.
7. Using a 12 mm socket wrench, install the bolt that secures the idler to the end of the rail.
8. Ensure that the rail encoder strip is inserted into the encoder reader on the input-side of the carriage.

   [End of procedure]

Remove the carriage-drive motor

Required tools

- #2 phillips screwdriver

1. Remove the user-end enclosures as shown in the section “Remove the user-end and service-end enclosures” on page 217.
2. Disconnect the motor’s power cable from its quick disconnect location.

   [End of procedure]

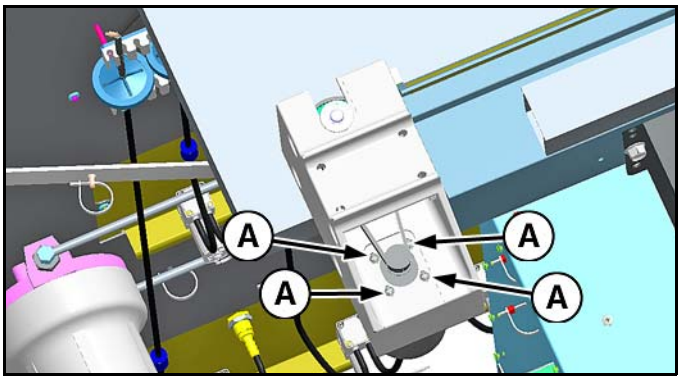
Remove the carriage-drive timing belt

1. Remove the four screws (A in Fig. 294.) that secure the motor to the carriage-drive assembly housing.

> The main carriage-drive belt is under tension. Do not attempt to move the carriage-drive shaft without releasing the belt tension (see "Releasing the carriage-drive belt tension" on page 259) or the belt could pop out of the carriage-drive assembly with enough force to cause injury.

As the screws are loosened, the carriage-drive timing belt, which connects to the carriage-drive shaft, will loosen and remove from the motor pulley.

Fig. 294. Carriage-drive motor screws



2. Remove the motor from the printer.

[End of procedure]

Install the carriage-drive motor

1. Place the carriage-drive timing belt (C in Fig. 102. on page 97) around the carriage-drive shaft (Fig. 102. on page 97).
2. Insert the carriage-drive motor pulley into the carriage-drive assembly bracket (Fig. 294.).
3. Loop the carriage-drive timing belt around the motor pulley.
4. Using the original four screws (A in Fig. 294.), secure the motor to the carriage-drive assembly bracket, but do not fully tighten the screws.
5. Pull the motor away from the carriage-drive shaft to tension the carriage-drive timing belt.
6. Tighten the four screws that secure the motor the carriage-drive assembly bracket.

[End of procedure]

Remove the carriage-drive shaft

Required tools

- #2 phillips screwdriver

1. Release the carriage-drive belt (main carriage belt) tension as shown in the section "Releasing the carriage-drive belt tension" on page 259.
2. Loosen the four carriage-drive motor mount screws (A in Fig. 294.).
3. Slip the carriage-drive timing belt (C in Fig. 102. on page 97) off of the motor pulley.
4. Remove the carriage-drive shaft from the printer.

[End of procedure]

Remove the carriage-drive assembly housing

Required tools

- 10 mm socket wrench with an extension

1. Release the carriage-drive belt (main carriage belt) tension as shown in the section "Releasing the carriage-drive belt tension" on page 259.
2. Remove the carriage-drive motor as shown in the section "Remove the carriage-drive motor" on page 261.
3. Remove the carriage-drive shaft as shown in the section "Remove the carriage-drive shaft" on page 262.
4. Using a 10 mm socket wrench with an extension, remove the four bolts that secure the carriage-drive assembly housing to the end of the rail, and remove the housing from the printer.

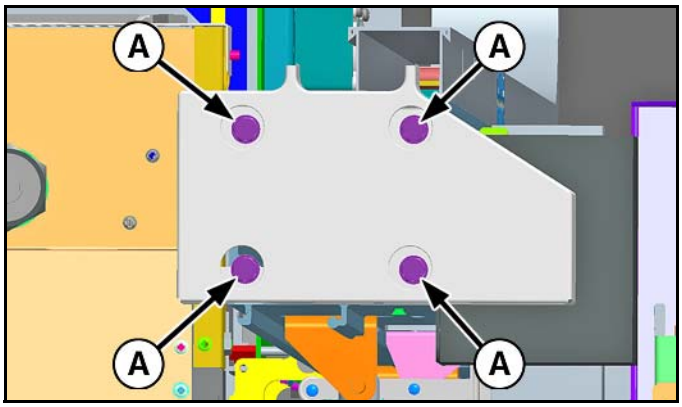


Fig. 295. Carriage-drive assembly housing

[End of procedure]

Remove the rail encoder strip

1. Remove the service-end and user-end enclosure as shown in the section "Remove the user-end and service-end enclosures" on page 217.
2. Move the carriage to the user-end of the rail.
3. Near the service-end of the rail, grip the encoder strip between your thumb and index finger, and pull the encoder strip out of the encoder strip trough about 2.5 cm (about 1 in).

Fig. 296. Removing encoder strip



4. Working your way toward the carriage, pull the encoder strip out of its trough.

   By the time you reach the carriage, you will be able to pull the encoder strip out of the printer with little resistance. Be careful not to scratch or bend the encoder strip.

Installing the rail encoder strip

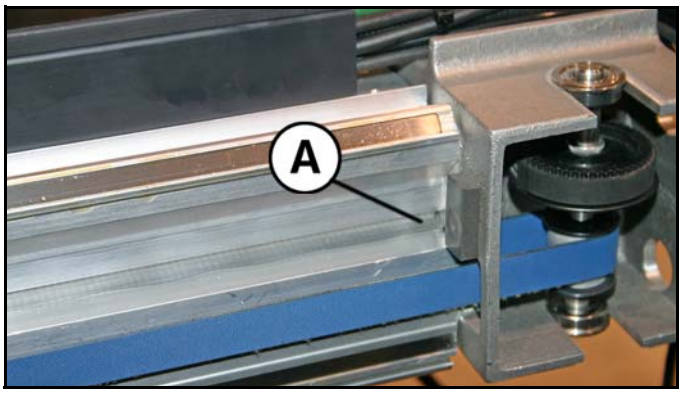
1. While guiding the encoder strip into the rail trough with the flat edge, such as a flat-blade screwdriver, slide the encoder strip into its trough behind the carriage.

Fig. 297. Guiding encoder strip behind carriage



2. Slide the encoder strip into its trough until it reaches the side of the carriage-drive assembly.

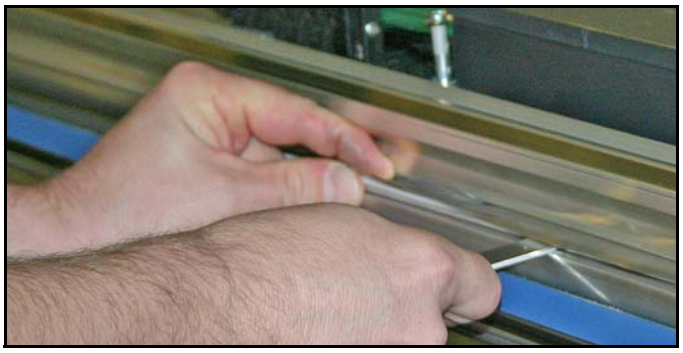
Fig. 298. Encoder strip at edge of carriage-drive assembly



3. Work down the encoder strip, inserting it into the trough in the rail.

   With one hand, smooth any wrinkles that develop on the top encoder strip, while pressing the metal bar of the encoder strip into its trough with a flat edge tool such as a flat-blade screwdriver.

Fig. 299. Installing encoder strip



4. Use a flat-bade screwdriver to make sure the encoder strip is fully seated into the rail trough.
5. Make sure the encoder strip is inserted through the encoder reader (see Fig. 268. on page 245) on the carriage.

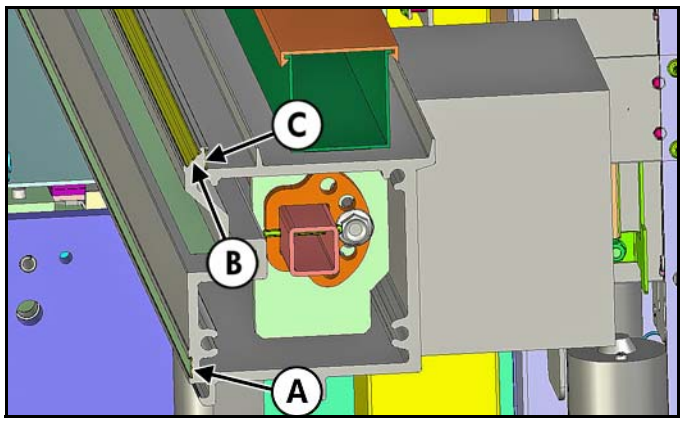
Removing rail wheel strips

Required tools

- No required tools

There are three rail bearing strips in the rail assembly. The lower bearing strip (A in Fig. 300.), the upper bearing strip (B in Fig. 300.) and the input-side bearing strip (C in Fig. 300.).

Fig. 300. Three rail bearing strips



1. Remove the idler assembly as shown in the section “Releasing the carriage-drive belt tension” on page 259.
2. Remove the carriage-drive assembly housing as shown in the section “Remove the carriage-drive assembly housing” on page 263.
3. Lift the carriage off of the rail and place it into the printhead protection tray (A in Fig. 301.) or onto a foam pad to protect the printheads.

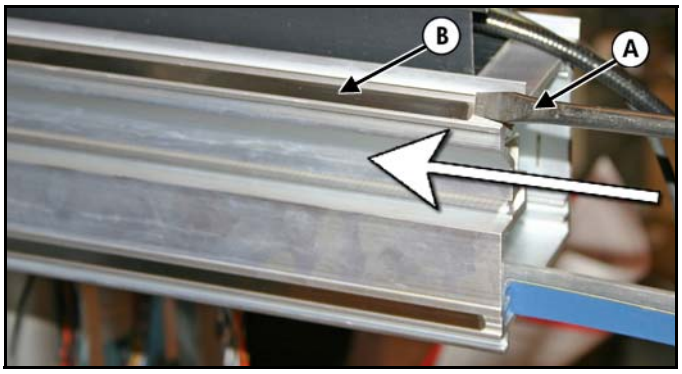
Fig. 301. Printhead protection tray



4. From the user-end of the rail, use a flat-blade screwdriver (A in Fig. 302.) to push the rail bearing strip (B in Fig. 302.) toward the service end of the printer until enough of the strip extends from the end of the rail to grasp firmly (use pliers if needed).

Take caution not to scratch the rail channel with the screwdriver. Scratches can cause the bearing strip to bulge at the scratch location, causing printing anomalies.

Fig. 302. Pushing out rail strip



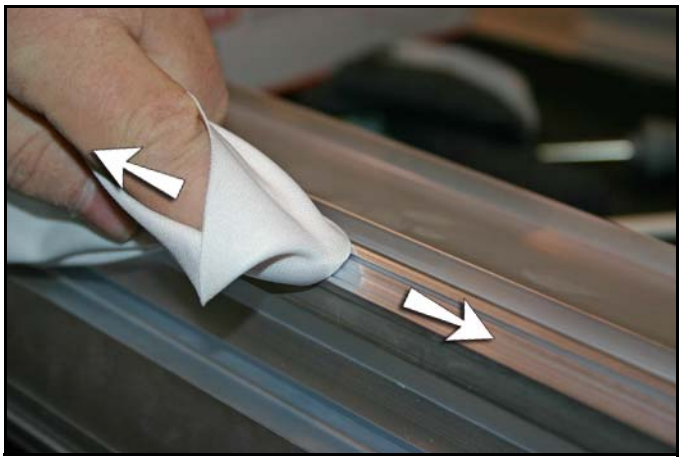
5. From the service-end of the printer, pull the rail strip out of the rail.

Installing a rail wheel strip

1. Clean and lubricate the replacement rail strip as shown in the section "Clean and oil rail carriage-wheel strips" on page 206.

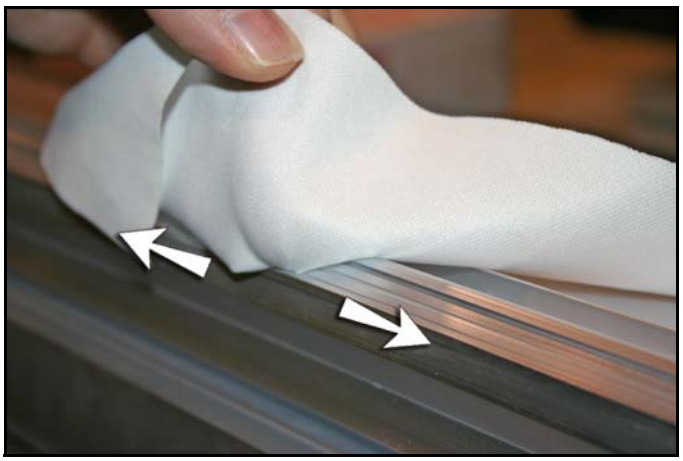
2. Wipe the rail channel with a lint-free cloth and isopropyl alcohol.

Fig. 303. Clean channel with a lint-free cloth and IPA



3. Using a lint-free cloth moistened with isopropyl alcohol, use your fingernail or tool similar in durometer and size (a non-metal tool) to clean the inside edges of the strip's channel.

Fig. 304. Clean channel edges with a lint-free cloth and IPA



4. Lubricate the receiving strip channel with the supplied oiled cloth.

The lubrication should be applied as a thin film and should not pool or run.

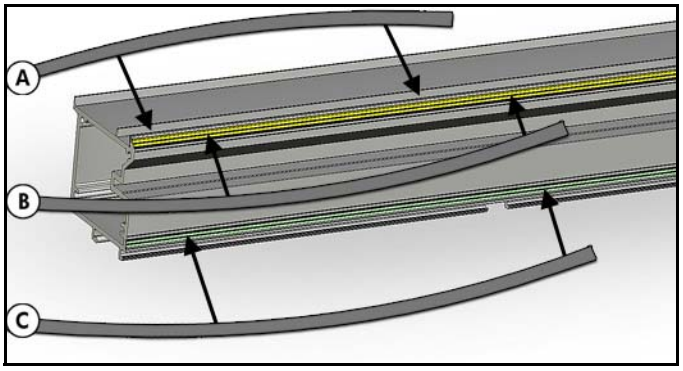
Fig. 305. Lubricate channel with supplied oiled cloth



5. Insert the rail bearing strip from the service-end of the rail.

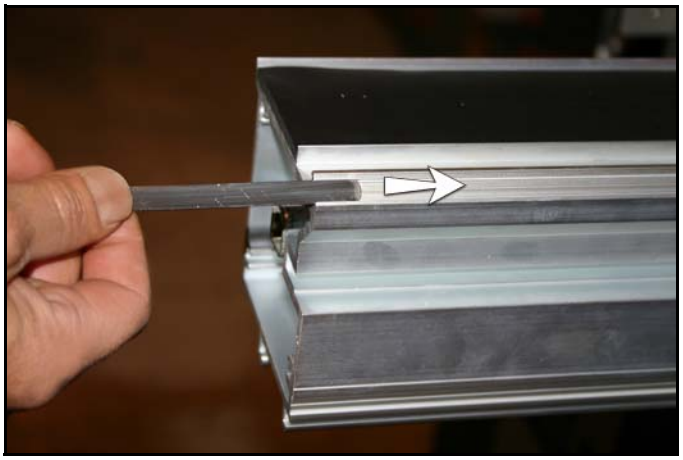
There will be a slight curve to the strip, as if it was once wound onto a large spool. The concave side of the strip should face toward the rail.

Fig. 306. Strip orientation for installation locations



The input-side strip used for the trolley bearing (A in Fig. 306.) installs with the concave side of the strip facing toward the output side of the printer. The upper (B in Fig. 306.) and lower rail bearing strip (C in Fig. 306.) install with the concave side is toward the rail or toward the input side of the printer.

Fig. 307. Insert rail bearing strip to channel



Push the strip into the channel until it is flush with the service end of the rail.

Push slowly. Push near the end of the rail to keep the strip from bending. If the strip is bent or crimped during installation, the strip must be replaced. A crimp in the strip will cause banding on the printed output.

6. Install the carriage-drive motor housing assembly using the original four bolts.
7. Install the carriage-drive motor as shown in the section “Install the carriage-drive motor” on page 262.
8. Install the idler assembly as shown in the section “Removing the carriage-drive idler” on page 259.
9. Clean and lubricate the bearing strips as shown in the section “Clean and oil rail carriage-wheel strips” on page 206.

Removing the high-resolution encoder

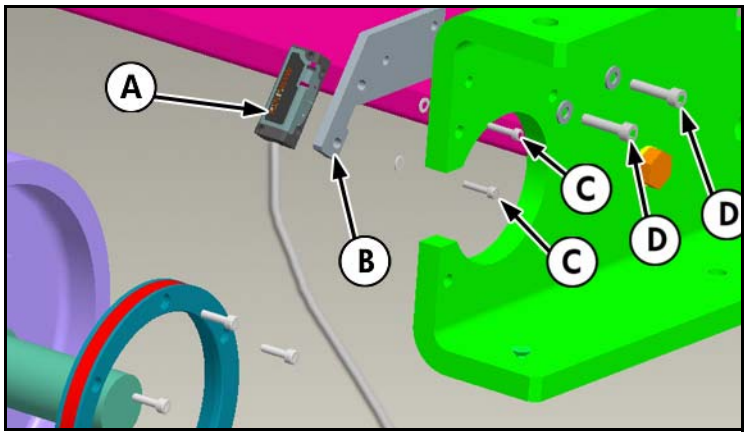
Required tools

- 2.5 mm hex wrench
- 2 mm hex wrench
- #2 phillips screwdriver
- Small flat-blade screw driver
- Wire cutter

1. Remove the user-end enclosure as shown in the section “Remove the user-end and service-end enclosures” on page 217.
2. Remove the OHS enclosure cabinet as shown in the section “Disconnecting the OHS Cabinet” on page 219.

   Lift the OHS enclosure off of the printer and move it aside to create room to access the high-resolution encoder assembly.
3. Remove the output-side, user-end belt enclosure as shown in Fig. 221. on page 218.
4. Using a 2.5 mm hex wrench, remove the two screws and washers (C in Fig. 308. that secure the encoder readhead to the to bracket.

Fig. 308. High-resolution media-drive belt encoder

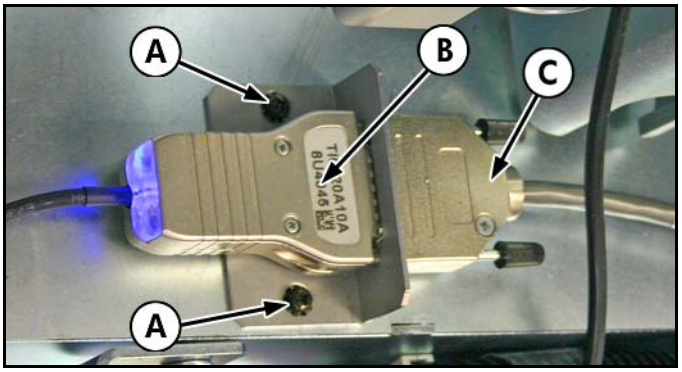


5. Remove the readhead from the bracket.

The high-resolution encoder cable disconnects from the interface (B in Fig. 309.), and is replaced separately from the interface. To open the interface, the interface must be disconnected from the electronics box cable (C in Fig. 309.), and the interface must be

turned over to access the access cover where the cable is disconnected. It may be easier to reach the screw location if the light-blocking tray above the interface is removed.

Fig. 309. High-resolution media-drive belt encoder interface



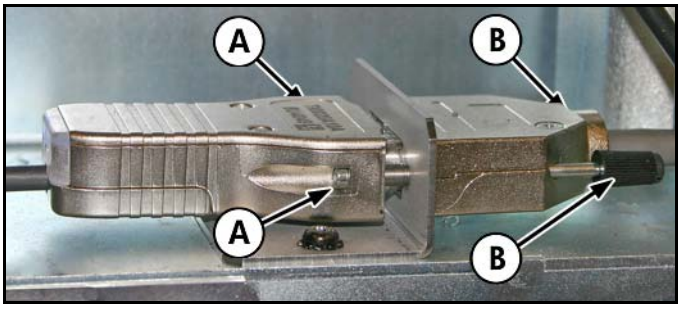
6. Remove the light-blocking tray as shown in the section “Removing the light-blocking tray” on page 218.

To remove the interface, the small screws on the interface (A in Fig. 310.) and the thumb screws (B in Fig. 310.) on the electronics box cable must be unscrewed. It may be easier to remove the small screws if the bracket screws are removed (A in Fig. 309.).

7. If necessary, to access the interface side screws (A in Fig. 310.), remove the two screws (A in Fig. 309.) hat secure the bracket to the top of the electronics box.

8. Unscrew the thumb screws (B in Fig. 310.) on the electronics box cable that connects to the interface.

Fig. 310. Screws for high-resolution interface

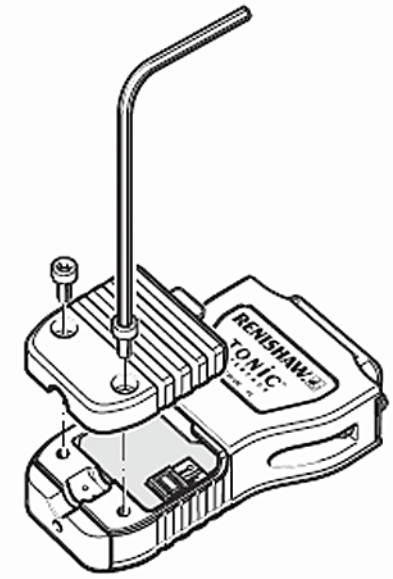


9. Using a small flat-blade screw driver, loosen the two screws (A in Fig. 310., one on each side of the interface) until the interface can be unplugged from the electronics box cable.

10. Turn the interface over to access the cover plate screws.

11. Using a 2 mm hex wrench, remove the cover plate from the interface (located on top of the electronics box).

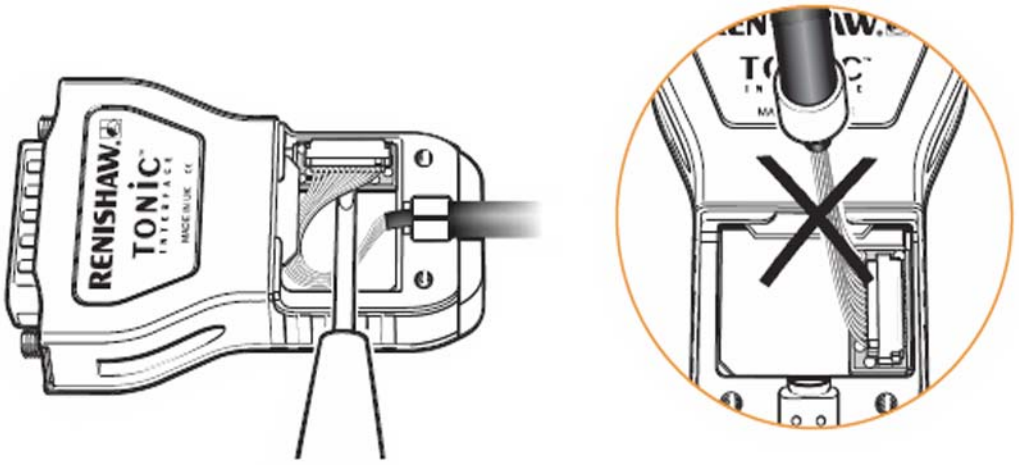
Fig. 311. Removing the interface cover plate



12. Using a small screwdriver, gently lever the cable connector out of the socket inside the interface.

Do not pull the cable out of the socket by tugging on the cable. This may damage the connections.

Fig. 312. Removing the encoder cable from the interface



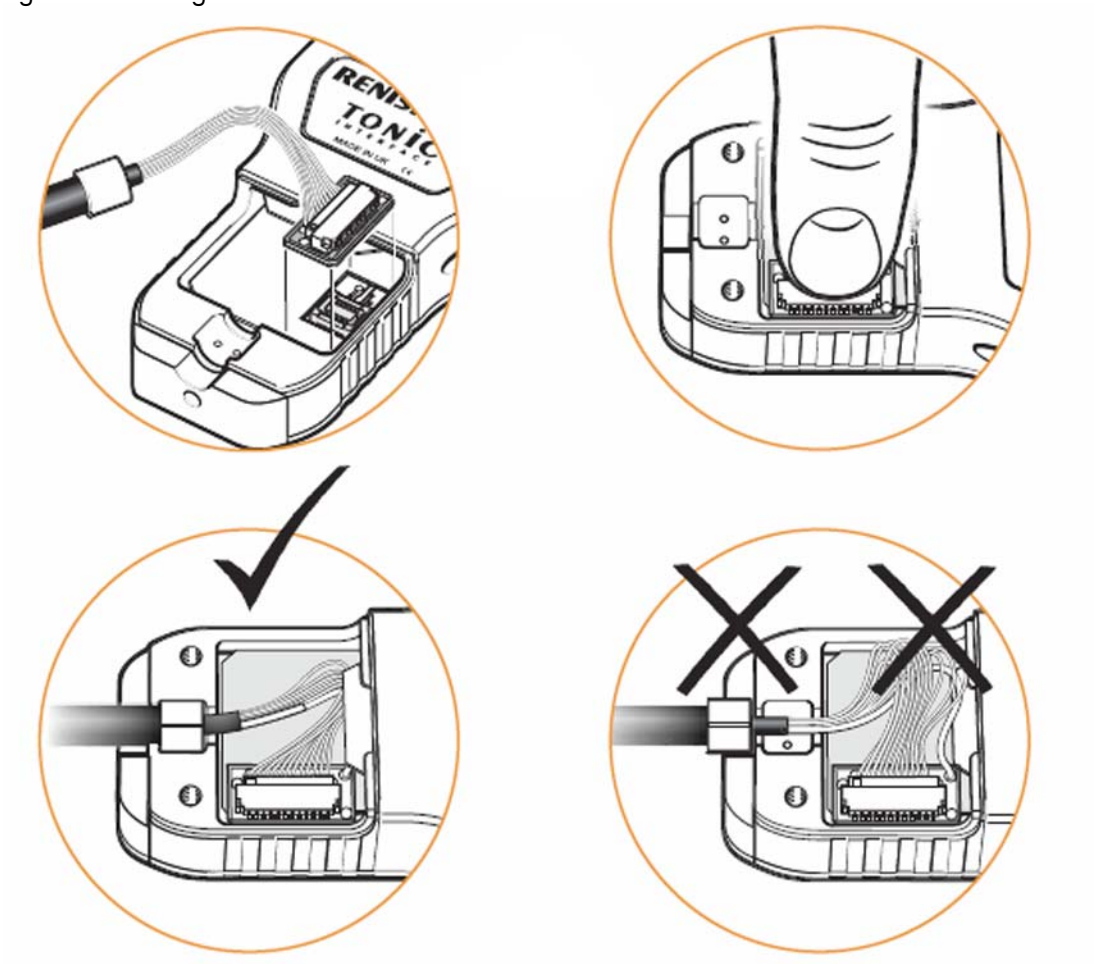
13. If the cable is tie wrapped to the printer frame, cut the tie wraps (see C in Fig. 314.).

14. Remove the encoder readhead (and its cable) from the printer.

Installing the high-resolution encoder

1. plug the encoder reader cable into the interface as shown in Fig. 313., taking care arrange the cables so that they cannot be pinched in the cover plate.

Fig. 313. Installing the encoder cable from the interface



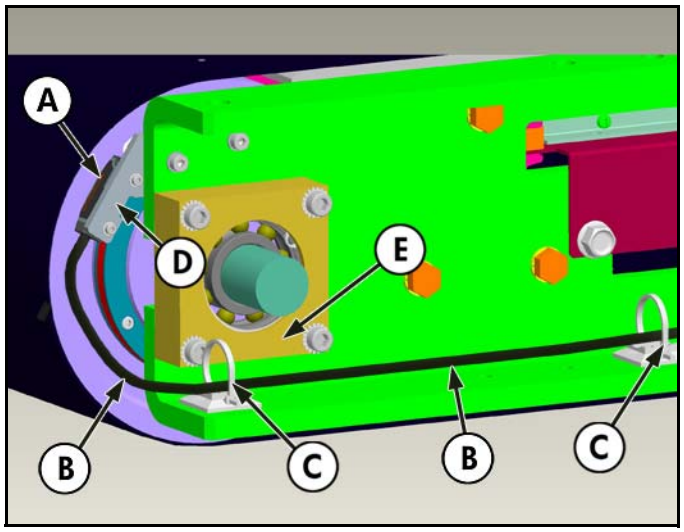
2. Using a 2 mm hex wrench, install the cover plate using the original screws.
3. Plug the interface into the electronics box cable interface (Fig. 310.).
4. Screw in the thumb screws from the electronics box cable (B in Fig. 310.).
5. Using a small flat-blade screwdriver, secure the interface to the bracket using the two side screws (A in Fig. 310.).
6. If you removed the bracket from the top of the electronics box, secure the bracket in place using the original two screws.
7. Apply Loctite 222 to the two screws that will secure the encoder readhead to the bracket near the drive roller.
8. Slide the encoder readhead (A in Fig. 314.) into the user-end of the drive roller so that it is inside the lip of the concaved end of the roller.

   The cable should be oriented down toward the floor as shown in Fig. 308. and Fig. 314.
9. Using a 2.5 mm hex wrench, loosely connect the encoder readhead to the mounting bracket (D in Fig. 314.) using the original screws (with Loctite 222) and washers (C in Fig. 308.).

10. Route the cable through two tie wraps (C in Fig. 314.).

The cable should be routed under the bearing block (E in Fig. 314.), but it should not apply stress to the encoder readhead.

Fig. 314. High-resolution encoder's cable routing



11. Locate the spacing tool.

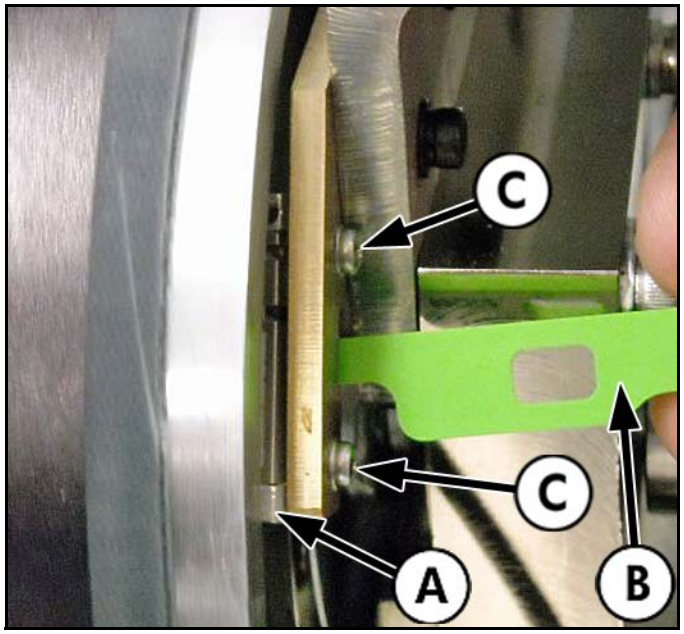
Fig. 315. High-resolution encoder's spacing tool



Set the high-resolution encoder's readhead spacing

12. Insert the supplied spacing tool (B in Fig. 316.) between the readhead (A in Fig. 316.) and the encoder ring and bias the readhead against the spacer.

Fig. 316. Set the spacing between the high-resolution encoder's readhead and encoder ring



13. Using a 2.5 mm hex wrench, tighten the readhead mounting screws enough to keep the readhead in place.

After the printer is powered on, the screws may be loosened to fine tune the alignment of the readhead.

Aligning the high-resolution encoder

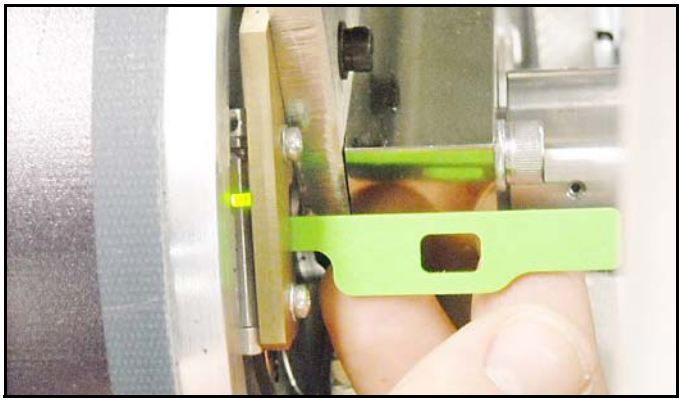
1. Power on the printer.

2. Check the printer's menu for media-drive media-drive error messages.

If the readhead is too far away from or too close to the encoder ring, it will not be in focus enough to pass the printer's initialization test. The setup LED should be green if it is in focus enough to pass the initialization test.

If the LED is not green, repeat the spacing procedure (with the printer powered on) as described in "Set the high-resolution encoder's readhead spacing" on page 274 until the LED is green. Once it is green, press RETRY on the printer's menu to continue the printer's initialization.

Fig. 317. Setup LED green when readhead correctly spaced



Determine if AGC is on or off

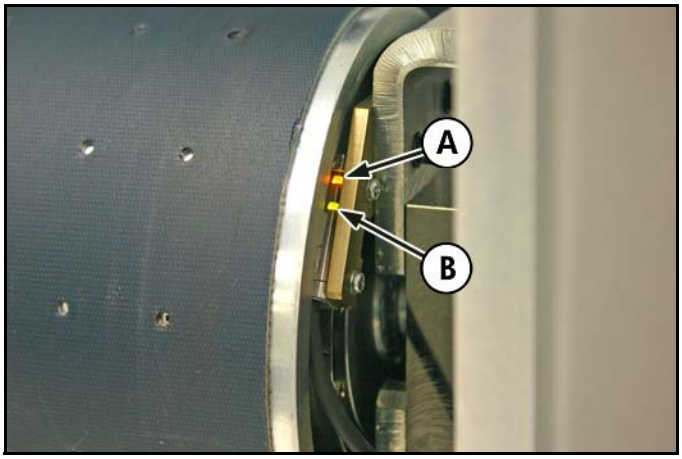
3. Determine if AGC (Automatic Gain Control) is on or off (it needs to be off for alignment and turned back on for normal operation).

The high-resolution encoder normally operates with AGC turned on to amplify the signal. However, during alignment of the readhead to the encoder ring, AGC must be turned off in order to tune the alignment. If you are replacing the readhead and have not replaced the interface, the AGC is probably on. If the calibration LED (A in Fig. 318.) is illuminated, AGC is active and must be turned off.

Fig. 318. High-resolution encoder's Led

A = Calibration LED

B = Setup LED



The illumination of the Setup LED (B in Fig. 318.) may be so bright that its light can be seen through the non-illuminated LED of the calibration LED (A in Fig. 318.). This may lead to the false impression that the Calibration LED is illuminated.

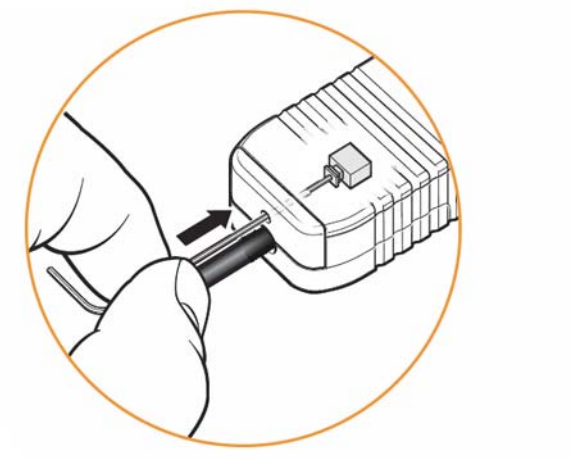
Turning off AGC (Automatic Gain Control)

4. Turn off AGC.

To turn AGC on or off, insert a tool, such as a small hex wrench, into the hole on the end of the interface, push in the calibration button and hold in for a minimum of 3 seconds.

The calibration LED (A in Fig. 318.) will go off when AGC has turn off, or it will illuminate when it is turned on.

Fig. 319. AGC button



Note: You must hold the button a minimum of 3 seconds (whether turning AGC on or off)

Align readhead with AGC turned off

5. Advance the drive roller while monitoring the color of the Setup LED (B in Fig. 318.) and the Diagnostic LED (A in Fig. 320.) on the interface.

To advance the media roller, select MEDIA > FORWARD on the printer's menu.

The goal is for the Setup LED on the readhead to be green and the Diagnostic LED on the interface to be green, blue or purple (see Table 6, "High-resolution encoder interface Diagnostic LED," on page 278) as much as possible while the drive roller rotates a full rotation.

Fig. 320. Interface Diagnostic LED

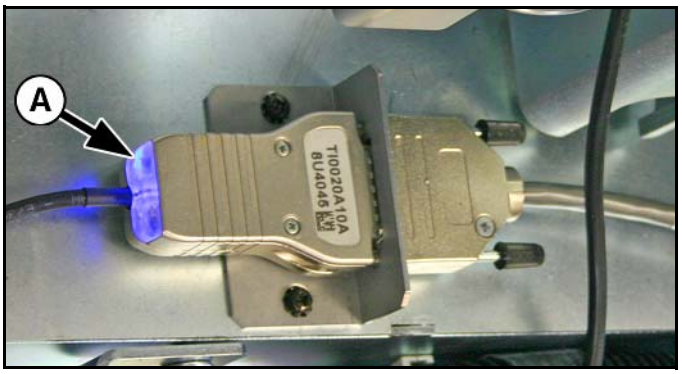


Table 5: High-resolution encoder reader Led

LED	When	Indication	Status
Setup LED	Incremental	Green	Normal set-up: signal level 70% to 135%
	Incremental	Orange	Acceptable set-up; signal level 50% to 70%
	Incremental	Red	Poor set-up; signal may be too low for reliable operation; signal level <50%
	Reference mark	Blank (flash)*	Calibrated. * The incremental signal level needs to be > 70% to be able to calibrate the reference mark
	Reference mark	Orange (flash)	Acceptable phasing
	Reference mark	Red (flash)	Not calibrated
Calibration LED	Operating	On	Automatic Gain Control – On
	Operating	Off	Automatic Gain Control – Off
	Calibration	Single flashing	Calibrating incremental signals
	Calibration	Double flashing	Calibrating reference mark
	Reset	Flashing at power-up (<2s)	Restoring factory defaults

Table 6: High-resolution encoder interface Diagnostic LED

Signal	Indication	Status
Incremental	Purple	Normal setup; signal level 110% to 135%
	Blue	Optimal setup; signal level 90% to 110%
	Green	Normal setup: signal level 70% to 90%
	Orange	Acceptable setup; signal level 50% to 70%
	Red	Poor setup; signal may be too low for reliable operation; signal level < 50%
	Purple / blank - flashing	Over signal; system in error
	Red / blank - flashing	Poor setup; signal level < 20%; system in error (will potential lose encoder counts)

6. If necessary, loosen the screws that secure the readhead to the bracket and reposition it until the lights on the Diagnostic LED are green, purple or blue for most of the rotation of the drive roller.

If the Diagnostic LED turns red while the drive roller is turning, stop the roller and adjust the position of the readhead until the light is green, purple or blue. Continue this process until the Diagnostic LED is green, purple or blue for most of the drive roller's rotation. Once you turn the AGC back on, it should be green for the entire rotation of the drive roller.

The Diagnostic LED on the interface will turn off momentarily if the readhead see the reference mark. This is normal.

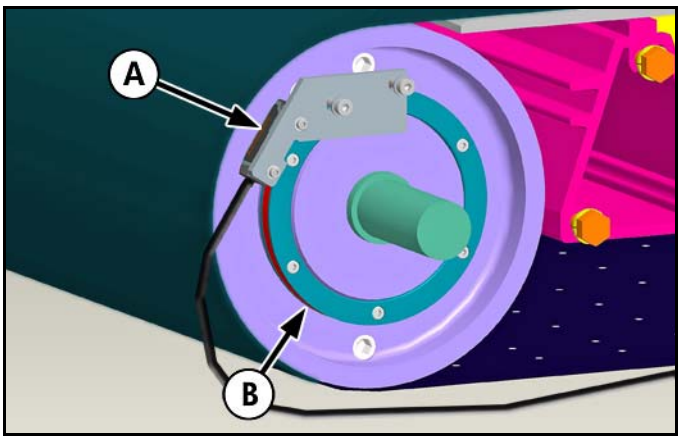
7. Once the readhead is aligned, tighten the screws that secure the readhead to the bracket.

8. Perform incremental signal calibration

High-resolution encoder incremental signal calibration

1. Advance the drive roller from the printers menu until you can view the reference mark at the 7:00 o'clock position (B in Fig. 321.).

Fig. 321. Move media roller so reference mark is not under readhead





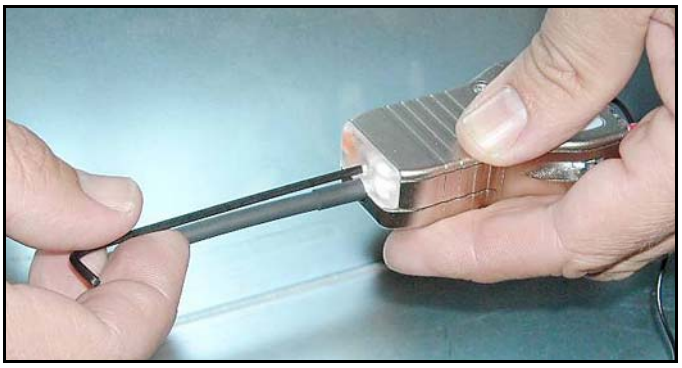
Tip The reference mark is always near the "R" in the word "Renishaw" that is printed on the side of the encoder ring.

Activate high-resolution encoder calibration mode

2. Gently press the calibration button inside the interface, and hold it in for 1 second.

When activated, the Calibration LED (A in Fig. 318.) on the readhead will begin to single flash with a yellow light.

Fig. 322. Activating the incremental calibration mode



3. Press the FORWARD button on the printer's menu and hold it until the Calibration LED on the readhead begins to double flash yellow (about 3 seconds or less).

Be sure to press FORWARD (versus BACKWARD). The readhead should not see the reference mark during the incremental calibration. If it does, the calibration must be stopped and repeated.

To exist the incremental calibration mode, press the calibration button again as performed in Fig. 322.

4. If the Calibration LED is double flashing yellow, set the reference mark as shown in the next section.

Set the reference mark for the high-resolution encoder

1. With the Calibration LED double flashing yellow from the incremental calibration, advance the drive roller until the reference mark passes under the readhead, and then move the drive roller the opposite direction until it passes under the readhead a second time and the Calibration LED stops flashing.

Once the Calibration LED on the readhead stops flashing, the reference mark is set and the incremental calibration data is saved.

2. Install the belt enclosure, end enclosure and OSH cabinet using the original screws.

Turning AGC on for the high-resolution encoder interface

3. Turn AGC on.

To turn AGC on, insert a tool, such as a small hex wrench, into the hole on the end of the interface (see Fig. 319.), push in the calibration button and hold in for a minimum of 3 seconds.

The calibration LED (A in Fig. 318.) will go off when AGC has turn off, or it will illuminate when it is turned on.

4. Verify that the calibration LED is illuminated (see A in Fig. 318.), indicating that AGC is active.

AGC should be active for normal operation of the printer.

[End of procedure]

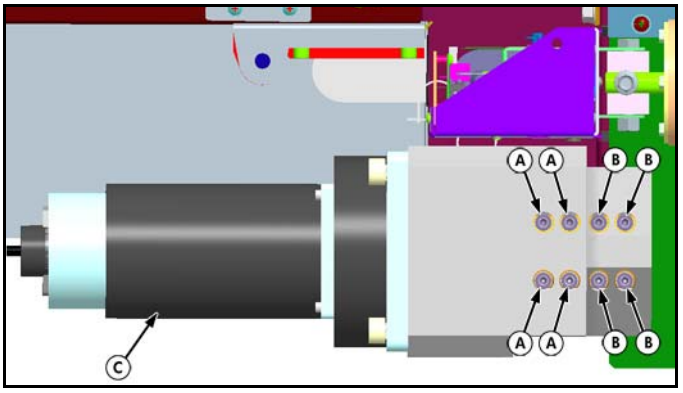
Removing the media-drive motor

Required tools

- Flashlight
- Caliper
- A large adjustable wrench, like a Crescent wrench
- Low-adhesive tape, such as painters tape

1. Disconnect the service-end and user-end enclosures as shown in "Remove the user-end and service-end enclosures" on page 217.
2. From the printer's control panel, have someone press the media advance button until the socket-head-cap screws (A and B in Fig. 323.) can be seen through the coupling access holes.

Fig. 323. Aligning screw and screw access holes



Use a flashlight to see into the access holes while someone advances the drive belt

3. Power off the printer following the cautionary steps outlined in the section See "Managing Power Off Scenarios" on page 216.

The power cord provides primary grounding to the printer. Leave the power cable plugged into the printer unless accessing electronics or high-voltage areas.

4. Loosen the belt tension as described in the section "Loosening the media-drive belt tension" on page 280.

Failure to loosen the belt tension will damage the motor coupling during removal and installation of the coupling. It will also make it impossible to align the coupling properly during installation.

Loosening the media-drive belt tension

5. Remove the corner belt enclosures on the input-side of the printer for the user-end and service-end of the belt as shown in the section "Removing the input-side, user-end belt enclosure" on page 218.

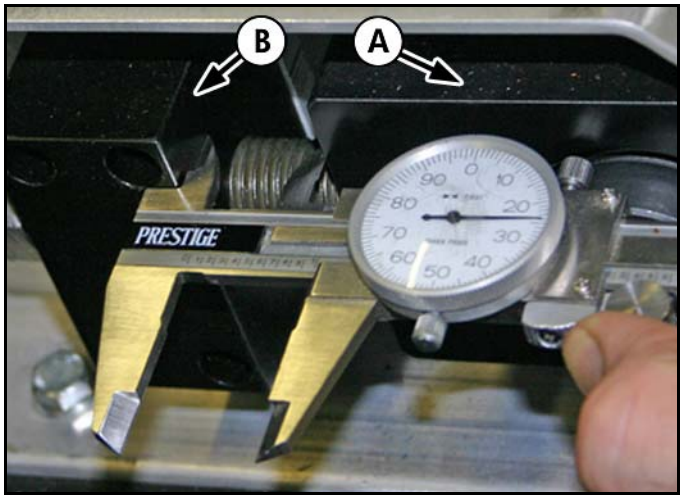
6. Using a caliper, measure and record the distance between the idler bearing block (A in Fig. 324.) and the idler adjustment block (B in Fig. 324.) on both the user-end and the service-end of the media belt.

   The bearing and adjuster blocks are located on the input-side of the printer.

Fig. 324. Measuring distance for belt tension

A = Idler bearing block

B = idler adjustment block



7. Record the distance between both Idler bearing blocks and adjustment blocks here.

User End:

Measurement: _____ Date: _____

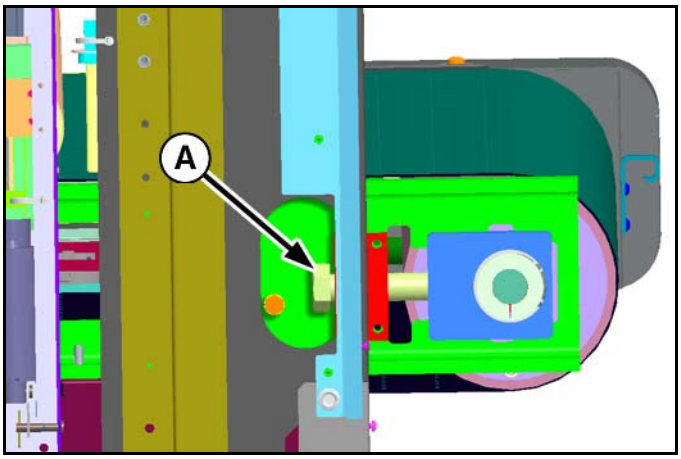
Service End:

Measurement: _____ Date: _____

8. Use a large adjustable wrench, like a Crescent wrench, to loosen the bolt on the user-end and service-end idler adjustment blocks until the adjustment block moves about 1 cm (about 0.5 in) on each side.

Fig. 325. Loosening each adjustment block about1.3 cm (0.5 in)

A = Bolt used to adjust roller position



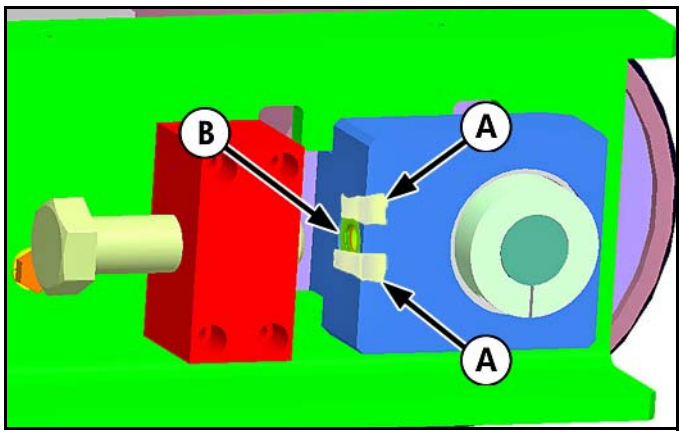
9. Using a piece of low-adhesive tape (A in Fig. 326.), such as painters tape, tape the thrust bearings (B in Fig. 326.) in place on both the user and service-end of the input-side, media-idler roller.

This will prevent the thrust bearings from falling out of the idler adjustment blocks during service.



Tip Fold a tab of tape over on the end of the tape to make it easier to remove during re-assembly.

Fig. 326. Idler block and thrust bearing



10. If the thrust bearing assembly falls out of the idler block, reassemble it as shown in Fig. 327. with the thrust bearing sandwiched between two washers.

Tape the thrust bearing assembly into the idler block as shown in Fig. 326.

Fig. 327. Thrust bearing



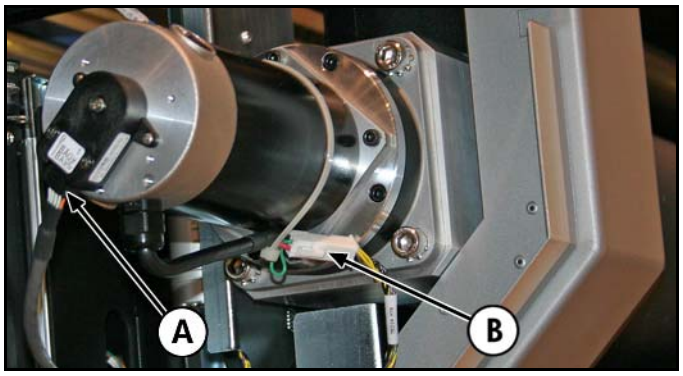
Removing the media-drive motor

Required tools

- Specified torque wrench
- 5mm hex key
- 8 mm hex key

1. Disconnect the media-drive motor's encoder cable from the motor encoder (A in Fig. 328.).

Fig. 328. Media-drive motor cables



2. Disconnect the media-drive motor's power cable (B in Fig. 328.).

3. Make sure the belt tension has been released as shown in the section "Loosening the media-drive belt tension" on page 280.

4. Using the specified torque wrench with 5mm hex key, loosen the eight motor coupling screws (A and B in Fig. 323. on page 280) two turns.

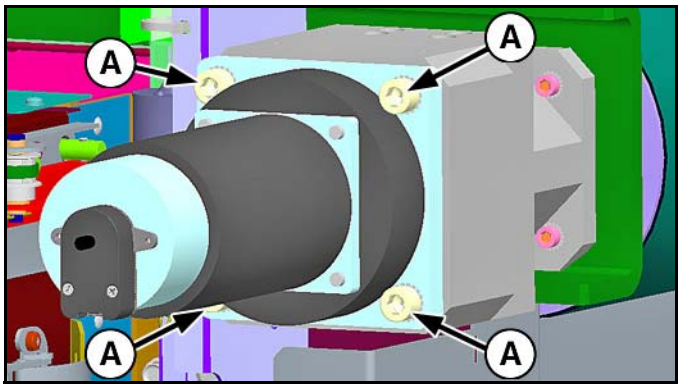
For torque wrench, see www.mcmaster.com. The torque wrench is part #: 5274A11 (torque wrench 3/8"SQ) and the hex key is part #: 8367A72 (3/8 square drive, 5mm, 15 cm (6 in) long).

A torque wrench is specified here because the torque wrench's hex key is hardened for more extreme torque. Because of this, you are less likely to round off the socket-head-cap screws while loosening the screws.

Do not turn the screws more than three full turns or the screws may fall free from the coupling.

5. Using an 8 mm hex key (A in Fig. 329.), remove the four media-drive motor mounting screws.

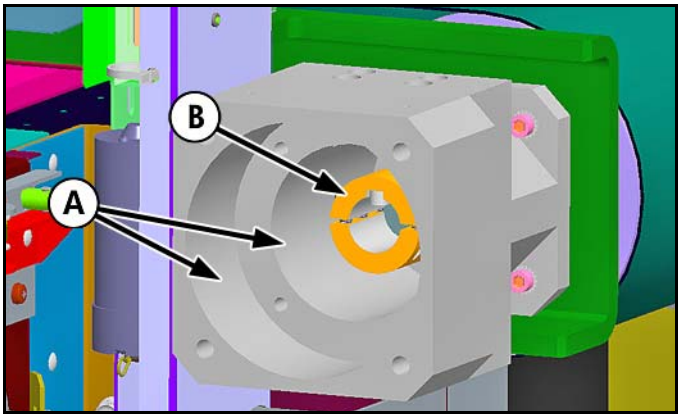
Fig. 329. Media-drive motor's mount screw



Be careful not to scratch or dent the precision-ground motor housing (A in Fig. 330.), or fit irregularities could occur.

6. Remove the coupling (B in Fig. 330.) from the output roller's shaft, being careful not to scratch the motor housing (A in Fig. 330.).

Fig. 330. Media-drive motor housing and coupling



Installing the media-drive motor

1. If replacement screws are provided, remove the original hex screws from the coupling (see Fig. 331.).

Do not reuse the original screws if replacement screws are included.

This procedure requires a special tool and hex wrench bit (an adjustable torque wrench for tightening media drive coupling screws to specification, part # CQ114-67177 and hex wrench bit, part # 8710-2356). You must have the approved torque wrench with a hardened, new hex wrench bit. A rounded off hex wrench bit will damage the coupling screws.

2. Install the supplied replacement hex screws into the original coupling.

3. Using a 5 mm hex key, turn all eight screws on the coupling until they are all screwed in as far as they can go.

This step is performed prior to installation to place all screws at the same height.

4. Turn each screw counterclockwise three full turns until all eight screws are at an equal height as shown in Fig. 331.

It is extremely important that each end of the coupling is tightened equally before the final turn to tighten each screw. Failure to follow the screw-tightening instructions will result in slippage and runout.

Fig. 331. Incorrect and correct installation of coupling screws prior to installation of coupling



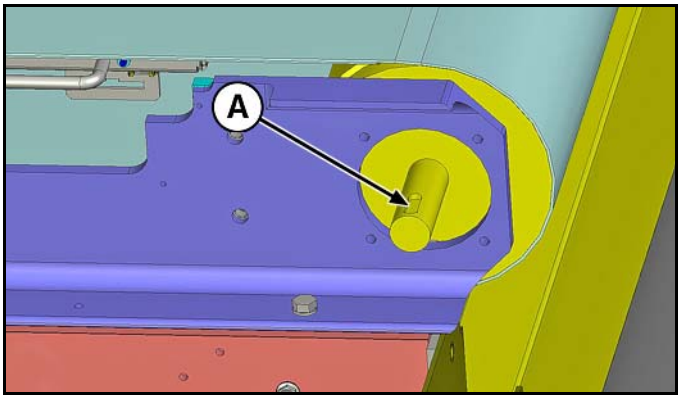
The above is an example of **bad** coupling screw height alignment prior to installation



The above is an example of **good** coupling screw height alignment prior to installation

5. Make sure a stub-shaft key is in the media-drive roller's stub shaft (Fig. 114.).

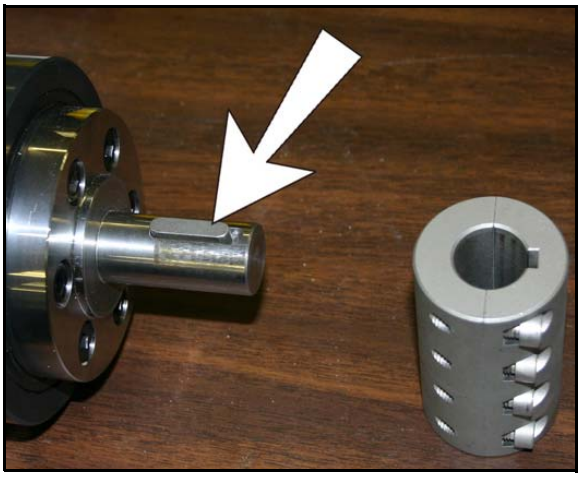
Fig. 332. Key slot in media-drive roller



6. Make sure the **supplied** replacement stub-shaft key is in the media-drive motor's stub shaft.

Do not install damaged keys. If the key is damaged, obtain a replacement.

Fig. 333. Stub-shaft key



The arrow indicates the media-drive motor's stub-shaft key. There is an identical key in the output roller's shaft

Do not install damaged keys. If the key is damaged, obtain a replacement.

7. Insert the coupling through the motor housing and around the output roller's shaft and key, pushing it in until the coupling screws align with the screw holes in the coupling housing (see Fig. 330. on page 284).

Tip Insert a torque wrench bit through a coupling screw hole to guide the couple into place.

8. Insert the media-drive motor's stub shaft and key into the coupling.

Do not tighten the coupling until the media-drive motor is attached to the motor housing.

9. Using an 8 mm hex key, secure the motor into the motor housing using the 4 original screws.

See Fig. 329. for screw locations. Tighten all four screws snugly using a criss-crossing pattern, in which each screw is tightened slightly until all are tightened.

10. Without tightening the screws, turn the coupling screws using a 5 mm hex key until slight resistance is encountered (a torque wrench will be used to tighten the screws).

Make sure you turn each screw an equal amount. The screws should remain at the same height during each tightening procedure.

This procedure requires a special tool (an digital torque wrench for tightening media drive coupling screws to specification, part # CQ114-67177, and hex wrench bit, part # 8710-2535). You must have the approved torque wrench with a hardened, new hex wrench attachment. A rounded off hex wrench tool will damage the coupling screws.

See Fig. 329. for screw locations. Tighten the screws by turning each screw one half turn at a time. Tightening the screws is a four-step process, with an increasing amount of torque used for each step. The first step uses almost no torque and the final torque to tighten all screws is 170 (lb-in) See Fig. 334.

If one end of the coupling is tightened significantly more than the other, shaft slippage will occur during printer operation. Start with the screws at the same height and follow the pattern shown below to tighten the screws.

Torque conversion

A torque wrench must be used during installation of the motor coupling. The following chart converts metric and US torque specifications.

Fig. 334. Torque conversion chart

170 Pound Inch [lb-in]= 14 Pound Foot [lb-ft] = 19 Newton Meter [N-m]

150 Pound Inch [lb-in] = 12.5 Pound Foot [lb-ft] = 17 Newton Meter [N-m]

100 Pound Inch [lb-in] = 8.3 Pound Foot [lb-ft] = 11.5 Newton Meter [N-m]

50 Pound Inch [lb-in] = 4.2 Pound Foot [lb-ft] = 5.7 Newton Meter [N-m]

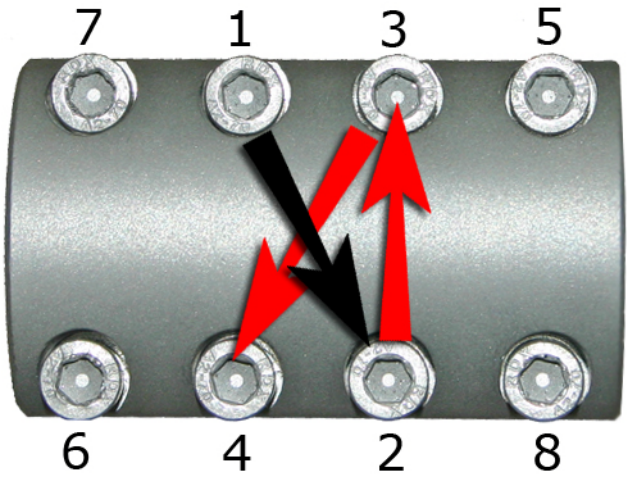
Do not use a ball-end hex key or the screw could round off.

Begin at the screw position indicated by "1" in Fig. 335., and turn that screw one half turn and move to the screw at position "2", and turn it a half turn. Continue in this pattern until you have turned all screws until they stop. Do not torque them down during the first sequence of tightening. The goal is to have all screws at the same height before significant torque is applied.

Fig. 335. screw tightening pattern

Tighten the coupling screws in the pattern indicated

Torque Specification: 170 (lb-in)



11. After turning all screws lightly until they stop at the same height, use a torque wrench to tighten the screws following the pattern specified in Fig. 335., using an initial torque of 50 (lb-in or 5.7 Nm).

12. Repeat the tightening pattern to tighten the screws at 100 (lb-in). See Fig. 335.

13. Complete the screw tightening by tightening the screws to 170 (lb-in). See Fig. 335.

14. Reconnect the encoder cable.

15. Reconnect the motor's power cable.

Tensioning the media-drive belt

16. Tension the belt by turning the service-end and user-end idler adjustment block bolts clockwise (using the adjustable wrench) until the distance between the idler blocks and the adjustment blocks matches the original amount recorded in step 6 on page 281 (see Fig. 324.).

Alternate the tightening of the service-end and user-end idler adjustment bolts. Take turns tightening each slightly until both are restored to their original positions.

17. Install the service-end and user-end media belt enclosures using the original screws.

Removing the media-drive motor's encoder

Required tools

- #1 screwdriver
- 1.5 mm hex wrench
- Slotted screwdriver
- Encoder reader

1. Disconnect the service-end cabinet as shown in the section "Remove the user-end and service-end enclosures" on page 217.

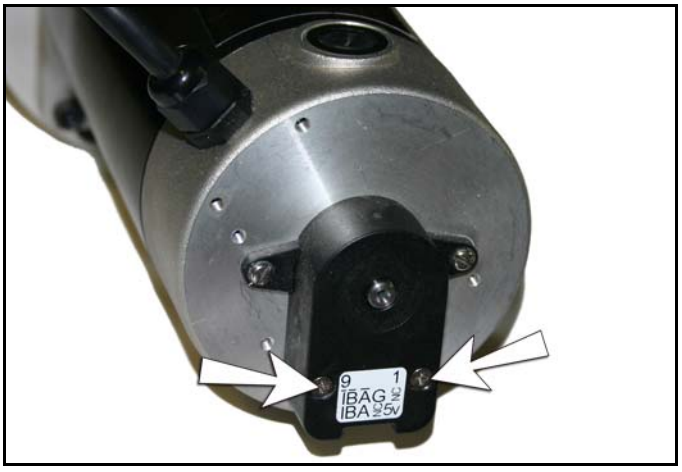
2. Disconnect the power cable from the media-drive motor's encoder as shown in the section "Removing the media-drive motor" on page 283.

3. Disconnect the encoder cable from the encoder assembly as shown in the section "Removing the media-drive motor" on page 283.

4. Using a #1 screwdriver, remove the two screws that secure the cover to the encoder reader assembly.

Fig. 336. Screws for motor encoder

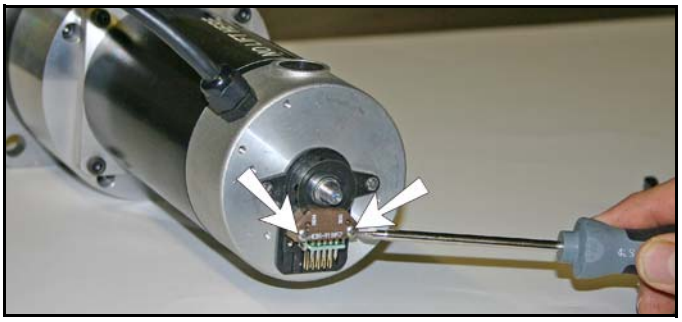
The arrows indicate the two screws to remove



5. Remove the two screws that secure the encoder reader to the assembly.

Fig. 337. Encoder screws

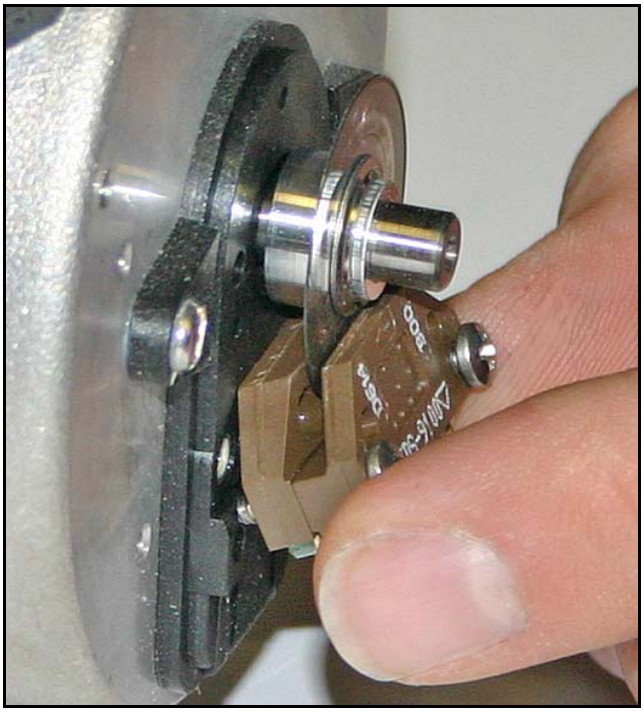
The arrows indicate the two screws to remove



6. Carefully tilt the encoder reader during removal to avoid touching the encoder wheel, and remove the encoder reader from the assembly.

Be careful not to contact the encoder wheel while removing the encoder reader.

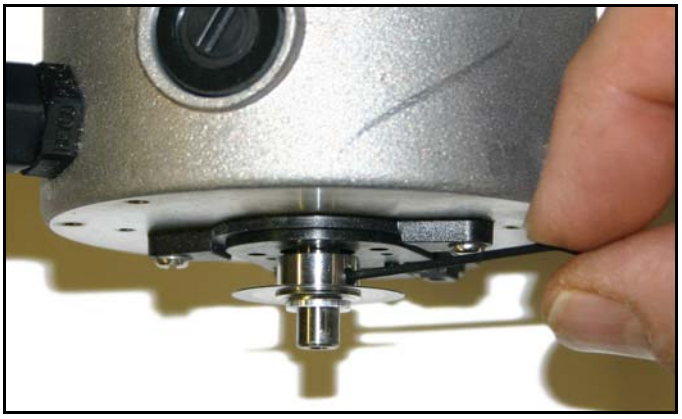
Fig. 338. Tilting the encoder wheel



Tilting the encoder reader so as not to contact the encoder wheel during removal (or installation)

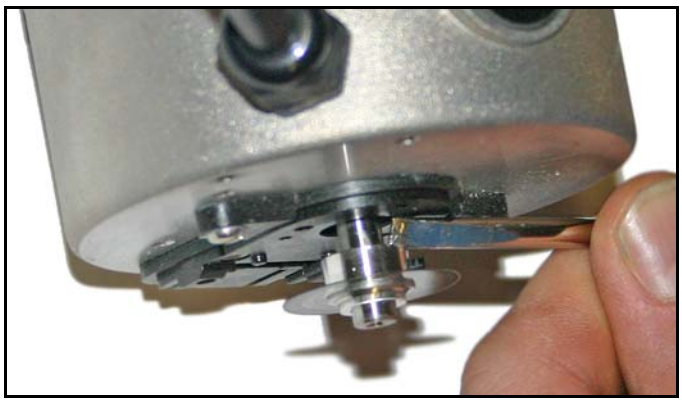
7. Depending on the version, use either a 1/16-in or a 1.5 mm hex wrench to loosen the screw that secures the encoder wheel to the shaft.

Fig. 339. Loosening encoder wheel shaft



8. Using a slotted screwdriver, pry the encoder wheel away from the motor as shown below to remove the encoder wheel from the assembly.

Fig. 340. Prying off encoder wheel



9. Remove the two screws that secure the back mounting plate to the motor.

Fig. 341. Back plate screws

The arrows indicate the screws to remove

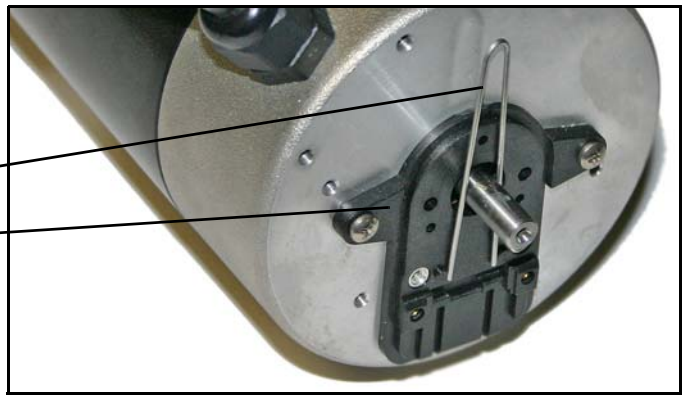


Installing the media-drive motor's encoder

1. Install the encoder assembly back plate to the motor using the two original screws (Fig. 341.).

2. Install the spacer against the back plate as shown below.

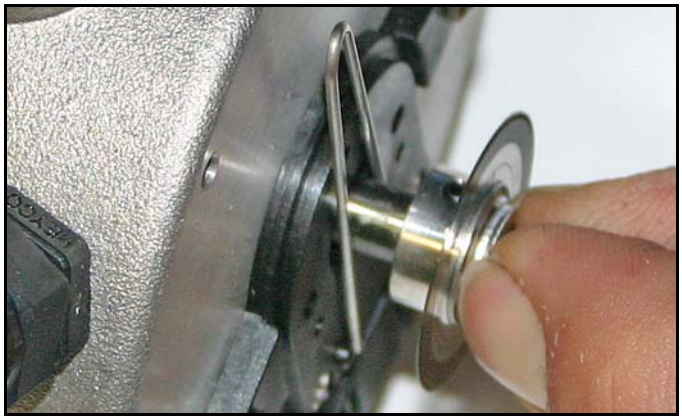
Fig. 342. Encoder wheel spacer



3. Push the encoder wheel onto the shaft until it is snug against the spacer.

   Take care not to touch the encoder during installation. Grip the encoder wheel by the hub as shown below.

Fig. 343. Pushing the encoder wheel toward the spacer



4. Tighten the screw that secures the encoder wheel to the shaft using the supplied hex wrench.
5. Remove the spacer.
6. Install the encoder reader using the two supplied screws.

   To install the encoder reader, tilt the encoder reader to place the encoder wheel into the encoder reader's slot, and then align the screw holes. Review Fig. 338. for the proper technique.
7. Install the encoder assembly cover using the two supplied screws (see step 4 on page 288 for location).
8. Connect the power cable from the media-drive motor's encoder as shown in the section "Removing the media-drive motor" on page 283.
9. Connect the encoder cable from the encoder assembly as shown in the section "Removing the media-drive motor" on page 283.
10. Connect the service end cabinet as shown in "Remove the user-end and service-end enclosures" on page 217.

Remove an input roller actuator assembly

The process is the same for both the user-end and service-end actuator assemblies (see Fig. 128. on page 112).

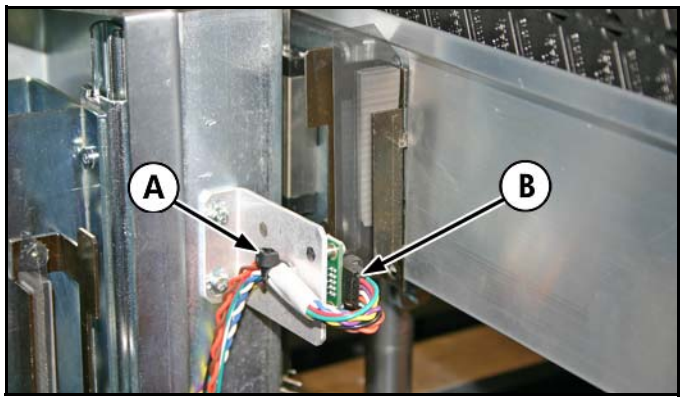
Required tools

- 10 mm socket

1. Remove the enclosure for the end being serviced as shown in the section "Remove the user-end and service-end enclosures" on page 217.

2. Cut the cable tie (A in Fig. 344.) and disconnect the actuator assembly's encoder reader cable (B in Fig. 344.).

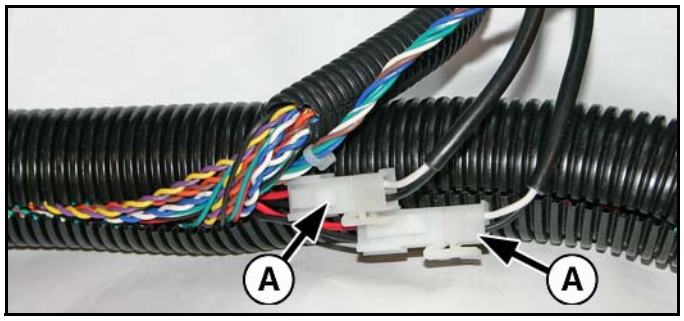
Fig. 344. Encoder reader cable for actuator



3. Disconnect the actuator motor cable.

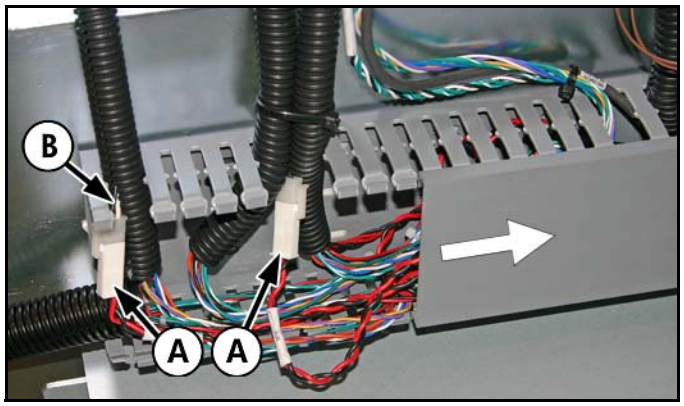
On the service-end, the power cable for the actuator is located inside the cable loom (A in Fig. 345.). On the service-end, the power cable for the actuator is located in the cable routing tray (see Fig. 346.). Follow the black cable from the motor down to the cable loom or cable routing tray to locate the quick-disconnect location.

Fig. 345. Opening cable loom for power cables



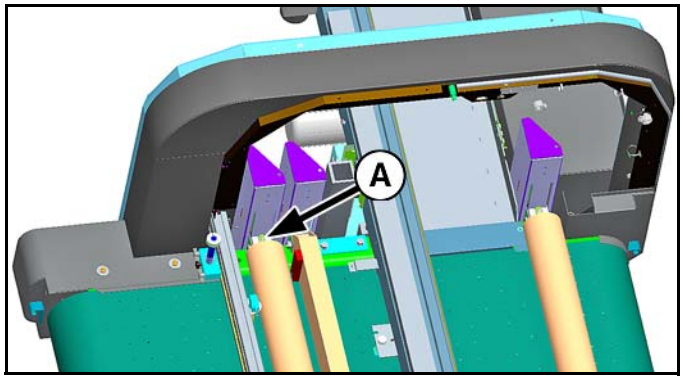
To open the cable routing tray, slide the cover toward the output side of the printer to locate the quick disconnect locations. To identify the cable, there will be a black and a white wire (B in Fig. 346.) coming from the actuator motor's cable to the connector (A in Fig. 346.).

Fig. 346. Connections in cable routing tray cover



4. Using a 10 mm socket, remove the bolt (A in Fig. 347.) that connects the input roller to the actuator assembly on end being serviced.

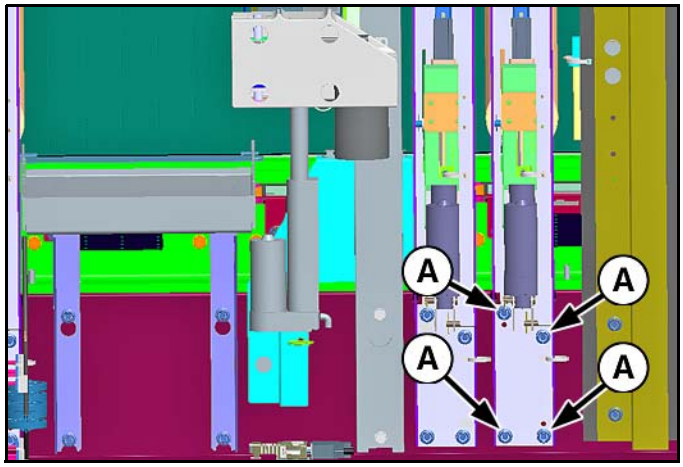
Fig. 347. Bolt that secures input roller



5. Using a 10 mm socket, remove the four screws (A in Fig. 348.) that secure the input roller actuator assembly to the printer.

Fig. 348. Four bolts that secure the input-roller actuator assembly

Note: This illustration is of the user-end of the printer. See Fig. 128. on page 112 for the location of the input actuator assembly on the service-end of the printer



6. Remove the actuator assembly from the printer.

Install an input actuator assembly

1. Mount the input actuator assembly to the printer using the original four screws. See Fig. 348. for screw locations.
2. Attach the roller to the actuator assembly using the original bolt (see Fig. 347.).
3. Reconnect the encoder reader cable and power cable (see Fig. 344. for locations).
4. Install the end enclosure as shown in the section "Remove the user-end and service-end enclosures" on page 217.
5. Calibrate the input actuator assembly as shown in the section "Calibrate the input roller assembly" on page 293.

Calibrate the input roller assembly

1. Access the password-protected area of the printer's menu as shown in the section "Access the password-protected pod test area of the printer's service menu to see the service calibration options." on page 449.

2. From the menu, select SYSTEM > TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > INPUT HOME ROLLER CALIBRATION.

   The calibration procedure is completely automated. Once the roller stops moving, the calibration is complete.

Remove an alignment bar actuator assembly

The process is the same for both the user-end and service-end alignment bar actuator assemblies (see Fig. 128. on page 112).

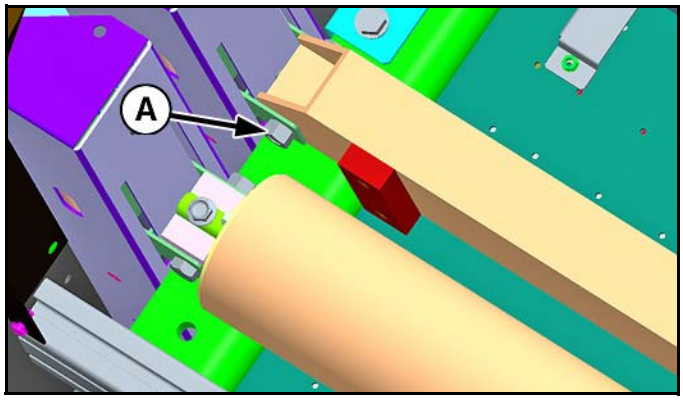
Required tools

- Wire cutter
- 13 mm open-end wrench
- 10 mm socket

1. Remove the enclosure for the end being serviced as shown in the section “Remove the user-end and service-end enclosures” on page 217.
2. Cut the tie wraps that attach to the actuator assembly.

   Note the locations for the cut tie wraps and replace the tie wraps with the new assembly.
3. Disconnect the actuator assembly’s encoder reader cable (see Fig. 344.).
4. Disconnect the actuator motor cable (see Fig. 346.).
5. Using a 13 mm open-end wrench, remove the nut (A in Fig. 349.) that secures the alignment bar to the actuator assembly on the end being serviced.

Fig. 349. Bolt that secures the alignment bar



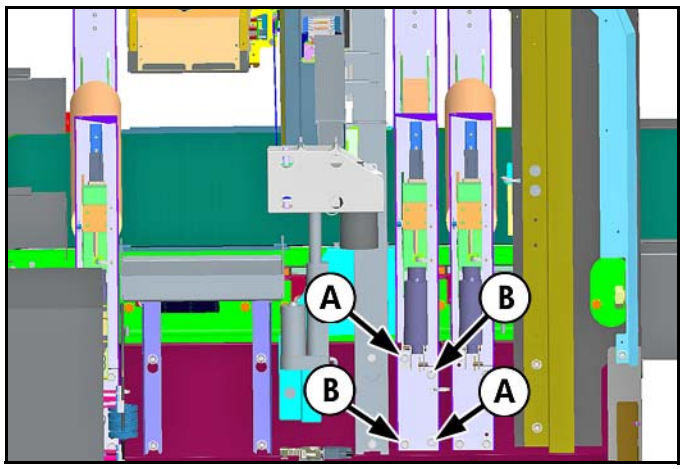
6. Remove the bolt that connects the alignment bar to the actuator assembly.

7. Using a 10 mm socket, remove the four bolts (A and B in Fig. 350.) that secure the alignment bar to the printer.

Fig. 350. Bolts that secure the alignment bar actuator

A = M6 pinning bolts

B = Regular M6 bolts



8. Remove the actuator assembly from the printer.

Install an alignment bar actuator assembly

1. Mount the alignment bar actuator assembly to the printer using the pinning bolts (A in Fig. 350.).

   The pinning bolts set the alignment bar position. Do not install the regular M6 bolts (B in Fig. 350.) until the pinning bolts (A in Fig. 350.) are tightened. Make sure to install the pinning bolts (A in Fig. 350.) in their original hole locations as shown in Fig. 350.

2. Install the two remaining bolts (B from Fig. 350.) that secure the alignment bar actuator assembly to the printer.

3. Attach the alignment bar to the actuator assembly using the original bolt and nut (see Fig. 349.).

4. Reconnect the encoder and power cable (see Fig. 344. and Fig. 345. for locations).

5. Install new tie wraps in the original locations.

6. Install the end enclosure as shown in the section “Remove the user-end and service-end enclosures” on page 217.

7. Calibrate the input actuator assembly as shown in the section “Calibrate the alignment bar” on page 295.

Calibrate the alignment bar

1. Access the password-protected area of the printer’s menu as shown in the section “Access the password-protected pod test area of the printer’s service menu to see the service calibration options.” on page 449.
2. From the menu, select SYSTEM > TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > ALIGNMENT BAR HOME ROLLER CALIBRATION.

   The calibration procedure is completely automated. Once the alignment bar stops moving, the calibration is complete.

Replace an output-roller actuator assembly

Required tools

- Wire cutter
- 10 mm socket

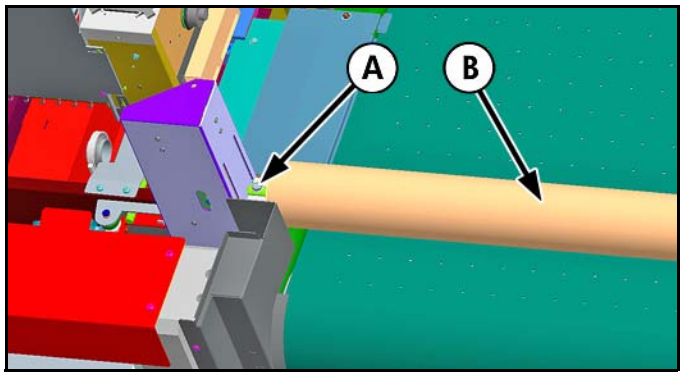
1. If replacing the user-end output-roller actuator assembly, disconnect the OHS cabinet from the printer (to allow access to the lower bolts for the actuator tower) as shown in the section "Disconnecting the OHS Cabinet" on page 219.
2. Cut the tie wraps that attach to the actuator assembly.

   Note the locations for the cut tie wraps and replace the tie wraps with the new assembly.
3. Disconnect the actuator assembly's encoder reader cable (see Fig. 344.).
4. Disconnect the actuator motor cable (see Fig. 346.).

Remove the output roller

5. Using a 10 mm socket, remove the bolt (A in Fig. 351.) that secures the output roller (B in Fig. 351.) to the actuator that is being replaced.

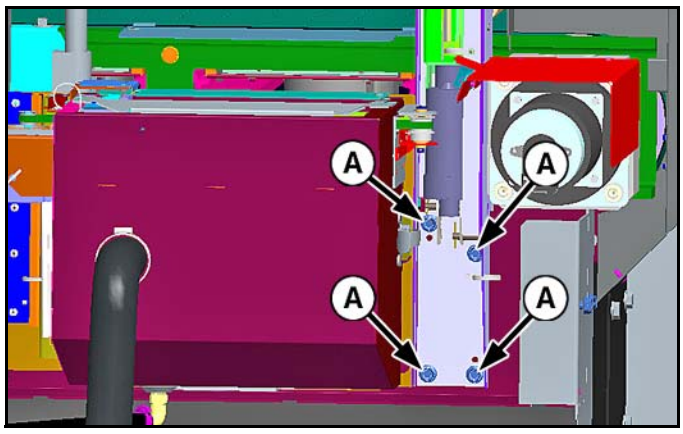
Fig. 351. Bolts that secure the output roller to its actuators



6. Using a 10 mm socket, remove the four screws (A in Fig. 352.) that secure the actuator assembly to the printer.

   If you are replacing the user-end output-roller actuator assembly, locate the four bolts through after disconnecting the OHS cabinet as shown in the section "Disconnecting the OHS Cabinet" on page 219.

Fig. 352. Four bolts that secure actuator assembly



7. Remove the actuator assembly from the printer.

Install an output-roller actuator assembly

1. Secure the actuator assembly to the printer using the original four bolts (Fig. 352.).
2. Connect the output roller to the actuator assembly using the original bolt (Fig. 351.).
3. Connect the encoder reader cable and the motor power cable to the actuator assembly (Fig. 344.).
4. If installing the user-end actuator assembly, reconnect the OHS cabinet using the original bolts.
5. Calibrate the output roller as shown in the section "Calibrate the output-roller" on page 297.

Calibrate the output-roller

1. Access the password-protected area of the printer's menu as shown in the section "Access the password-protected pod test area of the printer's service menu to see the service calibration options." on page 449.
2. From the printer's menu, select SYSTEM > TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > OUTPUT ROLLER HOME ROLLER CALIBRATION.

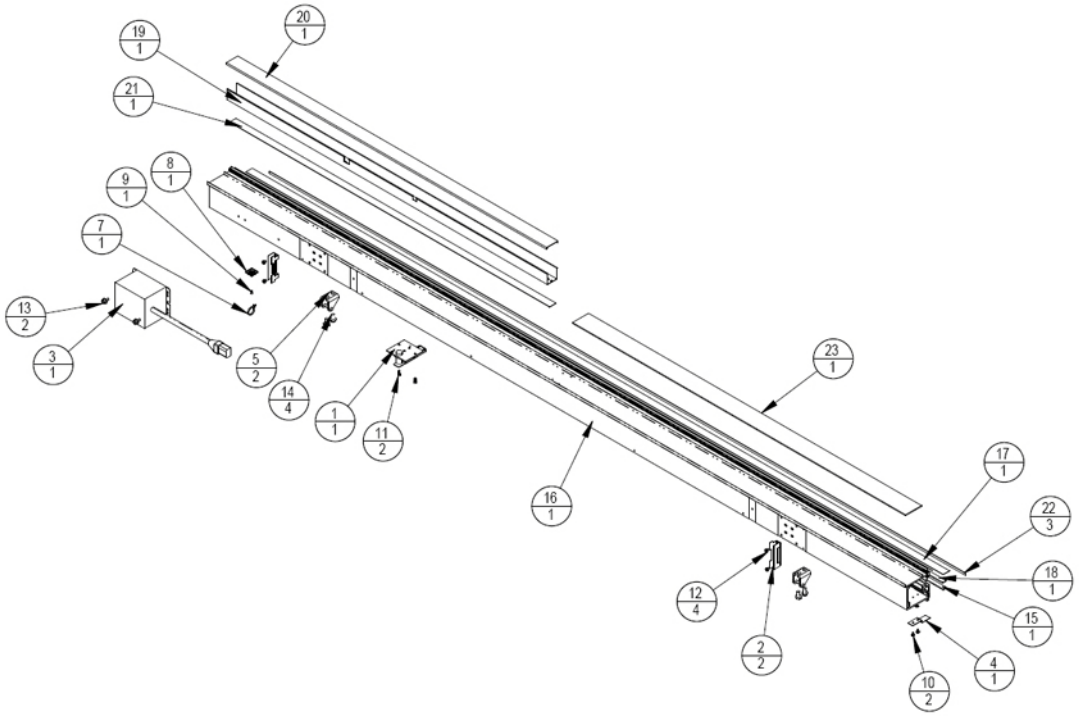
   The calibration procedure is completely automated. Once the output roller stops moving, the calibration is complete.

This procedure requires two people to lift the rail. A third person may be needed to snap the printhead protection tray onto the bottom of the carriage while the rail is lifted. Failure to protect the printheads while the rail is removed will damage the printheads.

Rail exploded views

Rail assemblies (see Fig. 354. for part numbers)

Fig. 353. Rail assemblies



Rail assembly part numbers (Not all part numbers can be ordered and some parts can only be ordered as part of an assembly)

Fig. 354. Rail part numbers

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	CH971-56342	ASSY, MEDIA_DETECTION, HAMMERHEAD
2	2	CH971-57506	ASSY,RAIL_ENCODER_ _STRIP,ANACONDA
3	1	CH971-57724	PWR_SPLY,STAND, PIRANHA,IONIZER_ALT
4	1	CH971-57774	FLAG,RAIL,ANACONDA,SENSOR_HOME
5	2	CH971-62925	BRKT,CLEVIS,ACTUATOR,MOUNTING,ROHS_COMP
6	1	CH971-63073	LUBRICANT,GEAR_OIL, AGMA_7_EP
7	1	CH980-00019	TIE_WRAP,LOCKING,NYLON,0.14IN_WD,BLCK,5
8	1	CH980-00038	HOLDER,TIE_WRAP,ADH,WHITE
9	1	CH980-00042	SCREW,PFH,M4,ST,0.7MM_PITCH, 8MM_LG,BLCK
10	2	CH980-00080	SCREW,PPH,SEMS,M4,0.7_PITCH, ST,8MM_LG,B
11	2	CH980-00103	SCREW,SHC,M4,0.7_PITCH,12MM_LG,BLACK,W/P
12	4	CH980-00107	SCREW,PPH,SEMS,M5,0.8_PITCH,ST,8MM_LG, BLCK
13	2	CH980-00173	SCREW,HEX,M6,SERRATED_FLANGE,12MM_LG
14	4	CH980-00206	SCREW,HEX,M8,SERRATED_FLANGE, 16MM_LNG,BLK
15	1	CQ114-00062	STIFFENER,ENCDR,KAA, CARRIAGE_MOTION
16	1	CQ114-20044	EXTRN,RAIL KAA,MACHINED
17	1	CQ114-40019	STRIP,ENCDR, KAA,64"_PTR
18	1	CQ114-40025	PAD,RAIL,KAA, ENCDR_FOAM
19	1	CQ114-60080	ASSY,CONDUIT_CHANNEL, RAIL,KAA,50.00IN
20	1	CQ114-60081	ASSY,CONDUIT_TOP, RAIL,KAA,50.00IN
21	1	CQ114-60082	ASSY,TAPE_DBL_SIDE, RAIL,KAA,50.00IN
22	3	CQ114-60084	ASSY,STRIP,RAIL, KAA_64,108.83IN
23	1	CQ114-60137	ASSY,TAPE_FOAM, RAIL,KAA_64,52.00IN

Remove a rail actuator

Required tools

- 10 mm socket
- 3 mm L-shaped hex wrench
- Soft foam pads (supplied)

1. Remove the user-end and service-end enclosures as shown in the section “Remove the user-end and service-end enclosures” on page 217.
2. Locate the foam pads that ship with the replacement rail actuator.

Each end of the rail must remain at approximately the same height. If one end is lifted or lowered significantly lower or higher (more than 2 cm), damage to the rail-motion bearings can occur. To prevent this damage, the rail must be disconnected from both actuators and placed on top of the supplied foam pads. Lifting the rail requires two people.

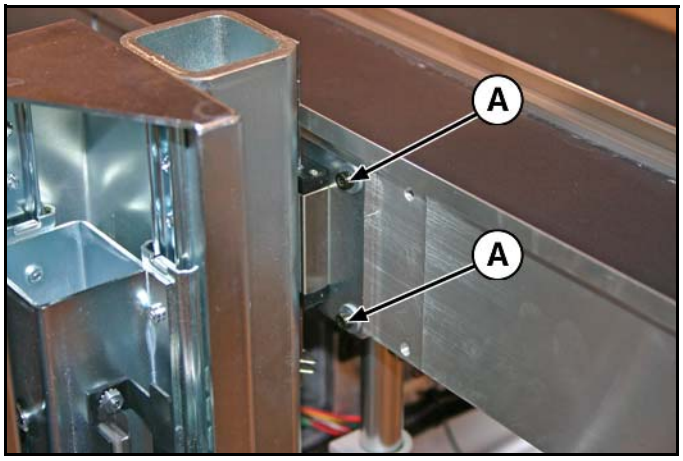
3. Using a 10 mm socket, remove the two bolts (one at each end of the output roller) that connect the output roller to the service-end and user-end actuator assemblies (see Fig. 351.).
4. Remove the output roller from the printer.
5. Remove the service station as shown in the section “Removing the service station” on page 393.

6. Place the included foam blocks on the output side of the rail near each end of the rail (making sure the rail stays at the same height at all times).

7. Using a 3 mm L-shaped hex wrench, loosen the four screws (A in Fig. 355. shows two of the four) that secure the bearing bracket to the rail for the opposite end being removed.

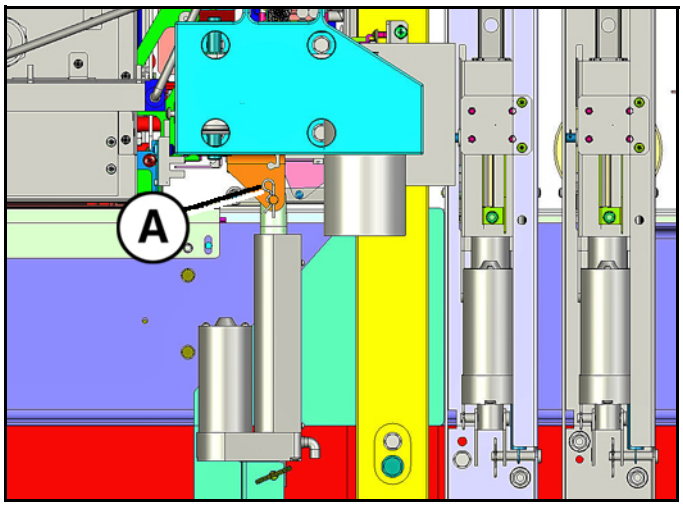
   Loosen the screws (four or five complete turns to ensure that there is no binding of the bearings during movement of the opposite end of the rail.

Fig. 355. Bearing bracket screws



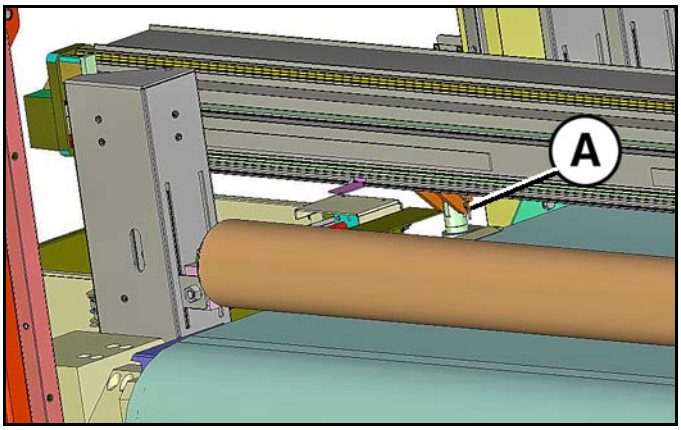
8. Remove the cotter pin (A in Fig. 356.) from the top of the actuator on the user-end of the printer.

Fig. 356. User-end rail actuator cotter pin



9. Remove the cotter pin (A) from the top of the actuator on the service-end of the printer.

Fig. 357. Service-end rail actuator cotter pin



10. Snap the printhead-protection tray (A in Fig. 358.) onto the bottom of the carriage.

If necessary, have two people lift the rail slightly while a third person places the tray (or foam pad) onto the bottom of the carriage. The arrow on the tray should point toward the input side of the printer.

Failure to protect the printheads with the printhead protection tray (or soft padding) will result in damage to the printheads when the printheads contact any hard surface. Lift the carriage off of the rail and place it into the printhead protection tray (A in Fig. 358.) or onto a soft foam pad.

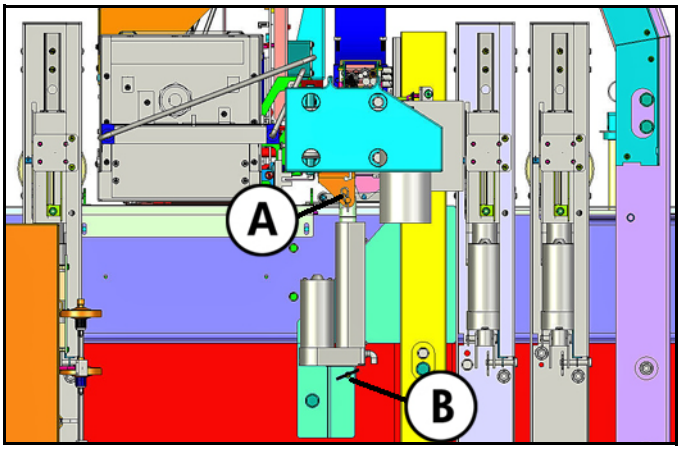
Fig. 358. Printhead protection tray



11. With the help of another person, left the rail off of the actuators, and place the rail on top of the foam pads (pads are included with the replacement actuator).

12. Remove the lower pin (B) that secures the actuator to the printer.

Fig. 359. User-end rail actuator pins



13. Remove the actuator from the printer.

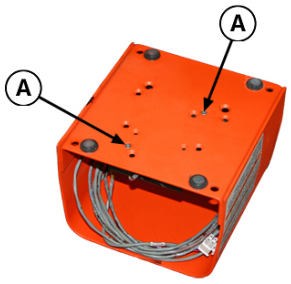
Install a rail actuator assembly

1. Secure the actuator to the printer using the original lower pin (see B in Fig. 359.).
2. With the help of another person, secure the rail to the actuators using the top cotter pins (see A in Fig. 357. and Fig. 359.).
3. Using a 3 mm L-shaped hex wrench, tighten the four screws (A in Fig. 355. shows two of the four) that secure the rail bearing brackets to the user and service-end of the rail.
4. Remove the printhead protection tray from the carriage.
5. Install the service station as shown in the section “Installing the service station” on page 394.
6. Using a 10 mm socket, secure the output roller to its actuator assemblies using the original bolts (Fig. 351.).
7. Calibrate the head height as shown in the section “Head height calibration” on page 470.

Removing the optional foot switch

1. If replacing an existing foot switch, remove the two screws (A in Fig. 360.) that secure the foot switch to the foot switch housing, and remove the foot switch from the housing.

Fig. 360. Foot switch screws





It is critical that the grounding wire (B in Fig. 362.) of the foot switch is securely fastened to the electronics box of the printer. A poor ground connection will transfer static shock from the printer user to the IO board through the foot switch, which will damage the IO board. If this static damage occurs, the symptoms include a foot switch that seems to always be activated.

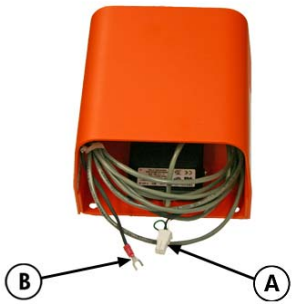
Installing the replacement foot switch

1. If replacing the original foot switch, install the replacement foot switch into the foot switch housing using the original two screws (A in Fig. 360.).
2. Locate the 4-pin connector (A in Fig. 361.) and the foot switch ground wire (B in Fig. 361.).

Fig. 361. Foot switch

A = Foot switch 4-pin connection

B= Foot switch ground wire

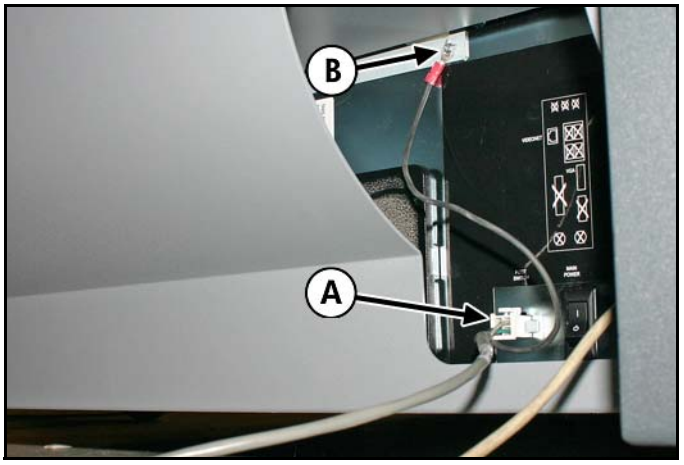


3. Using a phillips screwdriver, loosen the ground screw (B in Fig. 362.) on the electronics box.

Fig. 362. Foot switch connections

A = Foot switch 4-pin connection

B= Foot switch ground wire

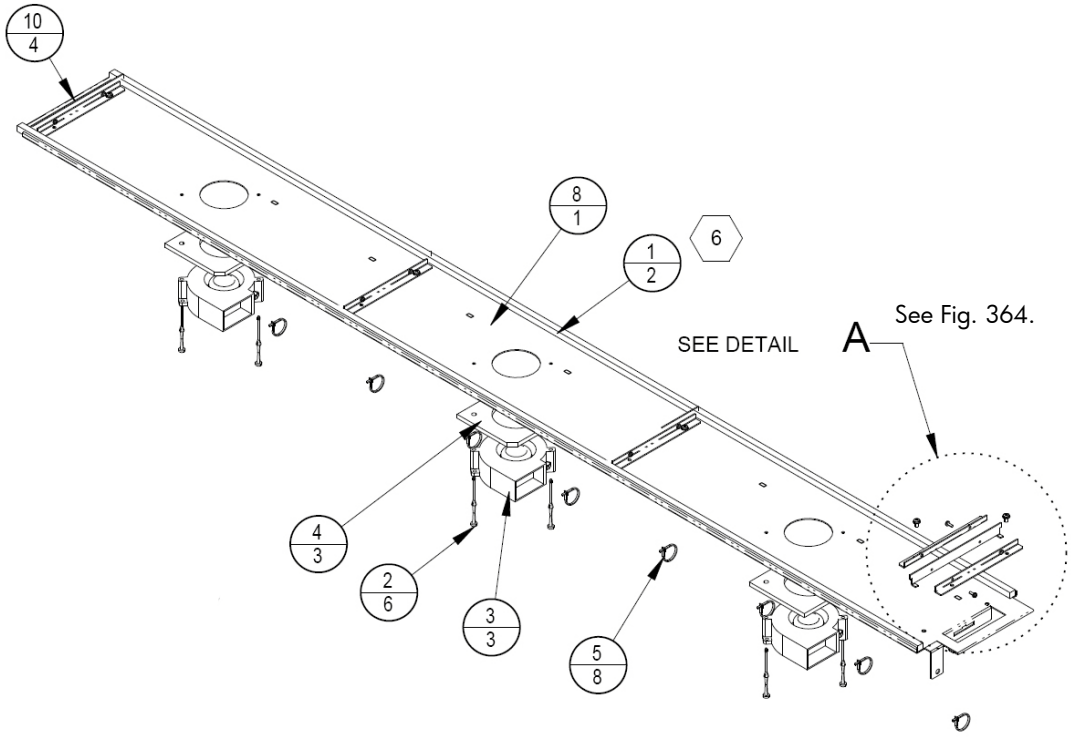


4. Slide the ground wire under the grounding screw and tighten the screw.
5. Plug the 4-pin connection into the electronics box port (A in Fig. 362.).

Fan array exploded views

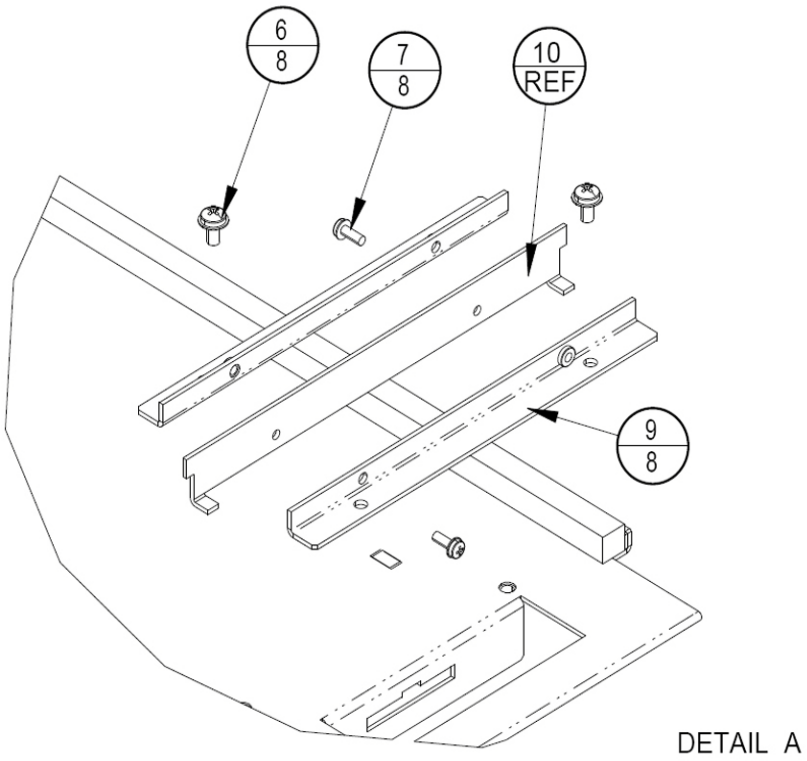
The fan array (see Fig. 365. on page 304 for part numbers)

Fig. 363. Fan array assembly



The fan array end bracket

Fig. 364. Fan array bracket



Fan array part numbers (Not all part numbers can be ordered and some part numbers can only be ordered as part of an assembly)

Fig. 365. Fan array part numbers

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	2	8160-1876	EMI GASKET 0.375-IN X 0.375-IN ROHS
2	6	CH154-40001	SCREW,MEDIA_BELT,ANACONDA,RUBBER,MOLDED
3	3	CH971-50012	ASSY,BLWR,HAMMERHD,PLATEN
4	3	CH971-56348	PAD,VAC_BOX,HAMMERHEAD,FAN_MNT
5	8	CH980-00008	TIE_WRAP,LOCKING,NYLON,0.10"_ WD,BLCK,5.75"_LG
6	8	CH980-00080	SCREW,PPH,SEMS,M4,0.7_PITCH, ST,8MM_LG,B
7	8	CH980-00086	SCREW,PPH,SEMS,M3,0.5_PITCH ST,8MM_LG
8	1	CQ114-00003	TRAY,VAC_BOX, KAA,FAN_MNT
9	8	CQ114-00005	BRKT,MEDIA_BELT,KAA, PAD_MNT,FAN_TRAY
10	4	CQ114-40003	PAD,MEDIA_BELT,KAA, FAN_TRAY_DIVIDER
11	1	CQ114-50038	ASSY,CBL,KAA,FAN_ARRAY

Removing the output-side vacuum fan array

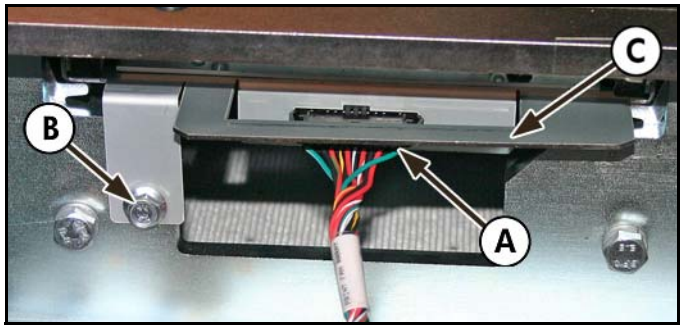
Required tools

- 10 mm socket wrench

1. Remove the user-end enclosure as shown in the section “Remove the user-end and service-end enclosures” on page 217.
2. Remove the light-blocking trays shown in the section “Removing the light-blocking tray” on page 218.

3. Unplug the power cable (A in Fig. 366.) from the end of the fan array.

Fig. 366. Fan array



4. Using a 10 mm socket wrench, remove the bolt (B in Fig. 366.) that secures the fan array into the printer.

5. Using the fan array handle (C in Fig. 366.), pull the fan array out of the vacuum fan box.

Installing the output-side vacuum fan array

1. Slide the vacuum array into the vacuum fan box as far as it will go.
2. Plug in the original power cable (A in Fig. 366.) to the end of the fan array.
3. Install the original bolt that secures the tray into the printer.
4. Install the light-blocking trays shown in the section “Installing the light-blocking tray” on page 219.

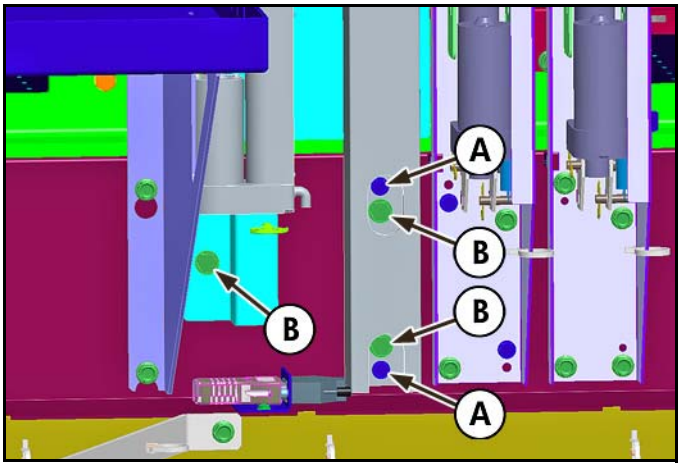
Removing the middle vacuum fan array

Required tools

- 10 mm socket wrench and extension
- 13 mm socket with extension

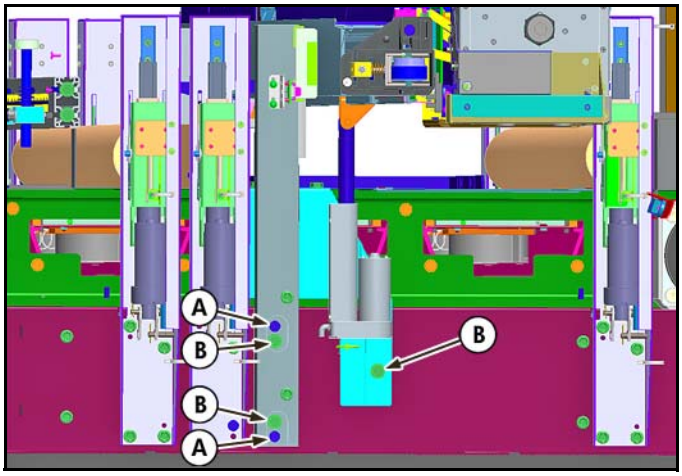
1. Remove the user-end and service-end enclosures as shown in the section “Remove the user-end and service-end enclosures” on page 217.
2. Remove the service station as shown in the section “Removing the service station” on page 393.
3. Remove the rail actuators as shown in the section “Remove a rail actuator” on page 298.
4. Using a 10 mm socket and extension, remove the pin bolts (A in Fig. 367.) from the user-end rail tower.

Fig. 367. User-end bolts



5. Using a 10 mm socket and extension, remove the pin bolts (A in Fig. 368.) from the service-end rail tower.

Fig. 368. Service-end bolts



6. Using a 13 mm socket with extension, remove the remaining bolts securing the rail towers to the user-end (B in Fig. 367.) and service-end (B in Fig. 368.) of the printer.

7. Remove the user-end alignment bar actuator tower as shown in the section “Remove an alignment bar actuator assembly” on page 294.

8. While supporting the rail with foam pads, move the rail towers toward the output roller until enough clearance is gained to remove the middle fan array.

9. On the user end, disconnect the power cable from the fan box housing (see example A in Fig. 366.).

10. Using a 10 mm socket wrench, remove the bolt (B in Fig. 366.) that secures the fan array into the printer.

11. Grip the middle fan array’s handle (see example C in Fig. 366.), and pull the fan array out of the printer.

Installing the middle vacuum fan array

1. Slide the vacuum array into the vacuum box as far as it will go.
2. Plug in the original power cable (similar to A in Fig. 366.) to the end of the fan array.
3. Using a 10 mm socket wrench, install the bolt (B in Fig. 366.) that secures the fan array into the printer.
4. Using a 13 mm socket with extension, install the bolts securing the rail towers to the user-end (B in Fig. 367.) and service-end (B in Fig. 368.) of the printer, but do not fully tighten the bolts.
5. Using a 10 mm socket and extension, install the pin bolts (A in Fig. 367. and Fig. 368.) that pin the location of the user-end and service-end rail tower.
6. Tighten bolts B from Fig. 367. and Fig. 368.
7. Install the rail actuators as shown in the section “Install a rail actuator assembly” on page 301.
8. Install the user-end alignment bar actuator tower as shown in the section “Install an alignment bar actuator assembly” on page 295.

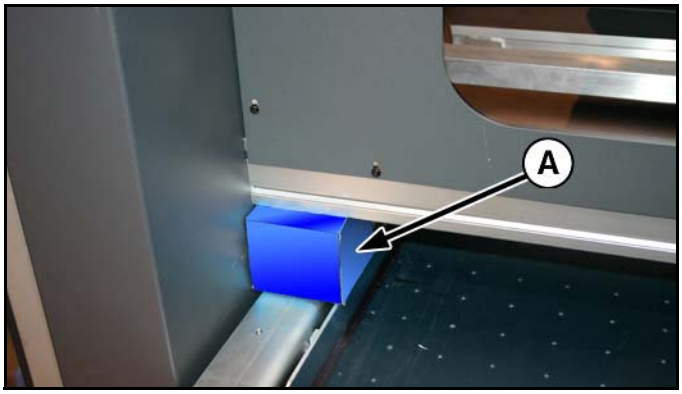
Removing the input-side fan array

Required tools

- Block
- #2 screwdriver
- 13 mm socket wrench
- 10 mm socket wrench

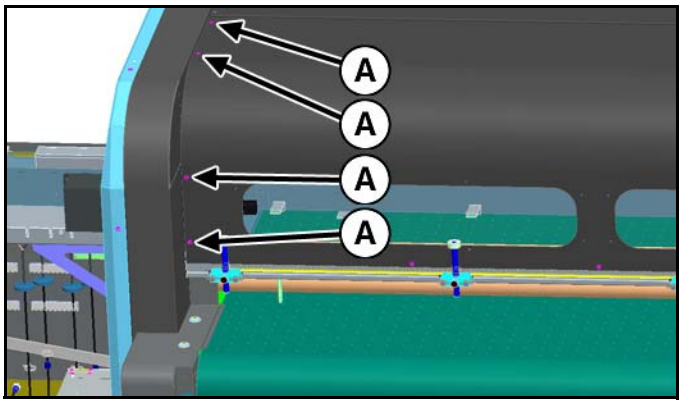
1. Remove the user-end and service-end enclosures as shown in the section "Remove the user-end and service-end enclosures" on page 217.
2. Remove the output-side top door as shown in the section "Removing the output-side top door" on page 220.
3. Insert a block (A in Fig. 369.) under the top enclosure's cross member to support it on the user-end of the input-side of the printer.

Fig. 369. Block under cross member



4. Remove the four user-end screws that secure the input-side enclosure to the printer.

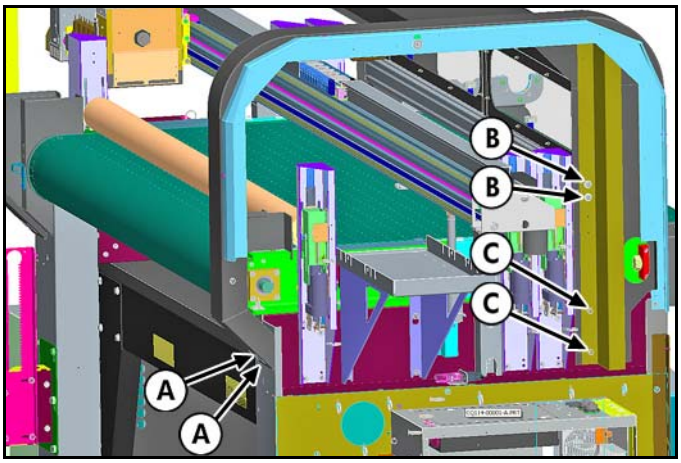
Fig. 370. Screws that secure user-end of input-side enclosure



5. Remove the input-side, user-end corner belt enclosure as shown in the section "Removing the input-side, user-end belt enclosure" on page 218.

6. Using a 13 mm socket wrench, remove the two bolts (B in Fig. 371.) that secure the upper section of the user-end upright vertical.

Fig. 371. User-end vertical



7. Using a 10 mm socket wrench, remove the two bolts (C in Fig. 371.) that secure the lower section of the user-end upright vertical.
8. Using a 10 mm socket wrench, remove the two bolts (A in Fig. 371.) that secure the lower section of the output-side upright vertical.
9. Remove the user-end input-roller actuator assembly as shown in the section "Remove an input roller actuator assembly" on page 291.
10. Remove the alignment bar towers and actuators as shown in the section "Remove an alignment bar actuator assembly" on page 294.
11. Unplug the power cable (A in Fig. 366.) from the end of the fan array.
12. Using a 10 mm socket wrench, remove the bolt (B in Fig. 366.) that secures the fan array into the printer.
13. Using the fan array handle (C in Fig. 366.), pull the fan array out of the vacuum fan box.

Installing the input-side fan array

1. Slide the fan array into the input-side fan slot of the fan box.
2. Plug in the power cable (A in Fig. 366.) to the fan array.
3. Install the alignment bar actuator tower as shown in the section "Install an alignment bar actuator assembly" on page 295.
4. Install the input-roller actuator and tower as shown in the section "Install an input actuator assembly" on page 293.
5. Install the vertical bracket using the original bolts (see Fig. 371.).
6. Reconnect the n-up bar to the vertical bracket using its original bolts (see Fig. 371.).
7. Install the belt corner enclosures using the original screws (see "Removing the input-side, user-end belt enclosure" on page 218).

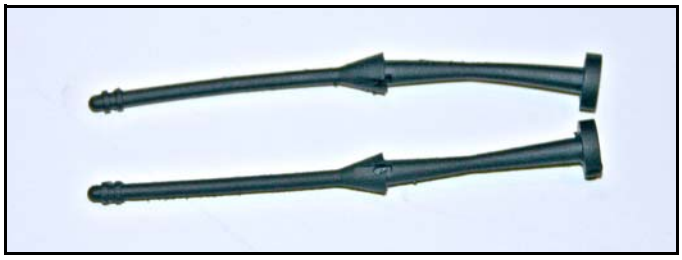
Replacing a fan-array fan

Required tools

- Rubber fastener

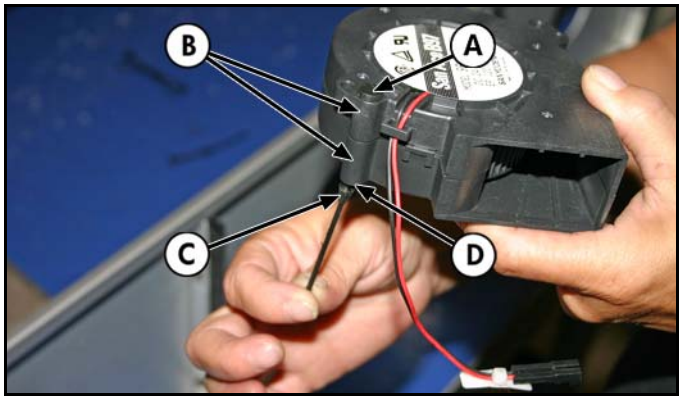
1. Remove the affected fan array following the steps outlined in the section "Media-drive fan arrays" on page 303.
2. Disconnect the original fan's power cable at its quick-disconnect location.
3. Remove the fasteners that secure the fan to the fan array, and remove the fan from the array.
4. Locate two rubber fasteners (Fig. 372.).

Fig. 372. Rubber fasteners



5. Insert the rubber fasteners (A in Fig. 373.) into the fan-screw guides (B in Fig. 373.), pulling them through until the stopper (C in Fig. 373.) clears the bottom edge of the screw guide (D in Fig. 373.).

Fig. 373. Rubber fastener install



6. Orient the fan as shown in Fig. 374.
7. Insert the rubber fasteners through the screw holes in the tray as shown in Fig. 374.

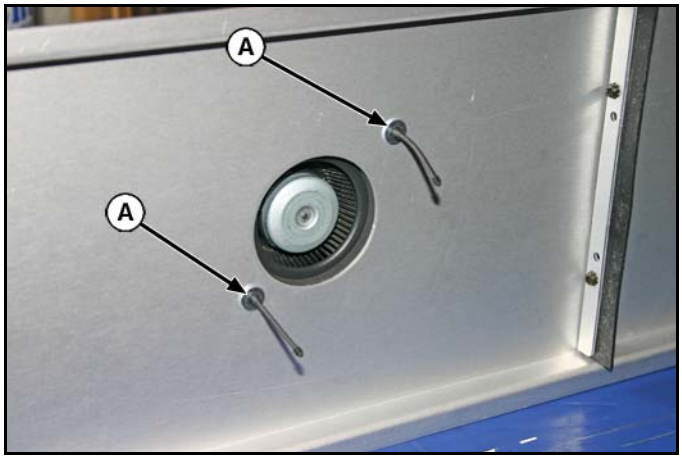
Fig. 374. Fan installation



8. Pull the rubber fasteners from the opposite side until the rubber stopper is pulled through the screw hole.

9. Insert a washer (A in Fig. 375.) on each on each rubber fastener, pulling the rubber fastener until the washes are between the rubber stoppers and the fan tray.\

Fig. 375. Fan washer installation



10. Trim the rubber fasteners to a length of 0.5 cm (about 1/4-in) beyond the rubber stopper.

Fig. 376. Trimming rubber fasteners



Media-drive belt, Removal

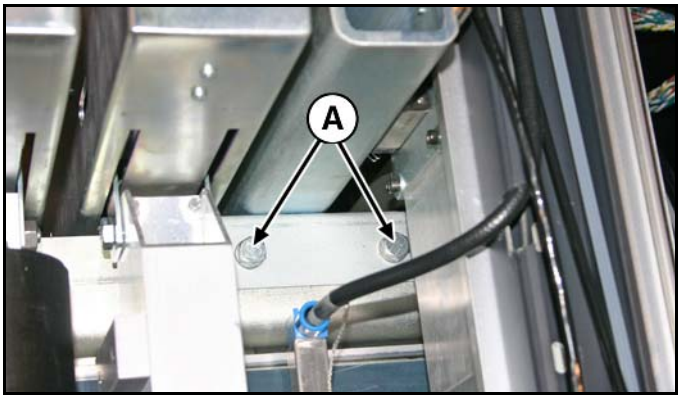
Required tools: Belt replacement kit (tables, wood blocks and rickshaw bars), belt tensison detection tool, dial indicator, #2 phillips screwdriver, small flat-blade screw driver, 10 mm, 13 mm socket with extension, flashlight, caliper (to measure distance from bearing block to adjustment block), a large adjustable wrench (like a Crescent wrench), long-nosed vice grips, low-adhesive tape (such as painters tape), 2 mm, 2.5 mm, 5 mm hex wrench, wire cutter, hammer, permanent marker

1. Using the assembly documentation included with the support tables, assemble all of the support tables suppled with the media-drive belt replacement kit.
2. Remove the service-end and user-end enclosures as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.
3. Power off the printer following the cautions described in the section "Managing Power Off Scenarios" on page 216.
4. Remove the top output-side door as shown in the section "Removing the output-side top door" on page 220.
5. Remove the output-side and input-side belt-corner enclosures as shown on page 218.
6. Remove the enclosure verticle supports on the service-end and user-end of the printer as shown on page 307.
7. Disconnect the three fan arrays as shown on page 305.
8. Remove the media-drive motor as shown in the section "Removing the media-drive motor" on page 280.

Be sure to record the belt tension setting by measuring the distance between the bearing blocks and adjustment blocks (using a caliper).

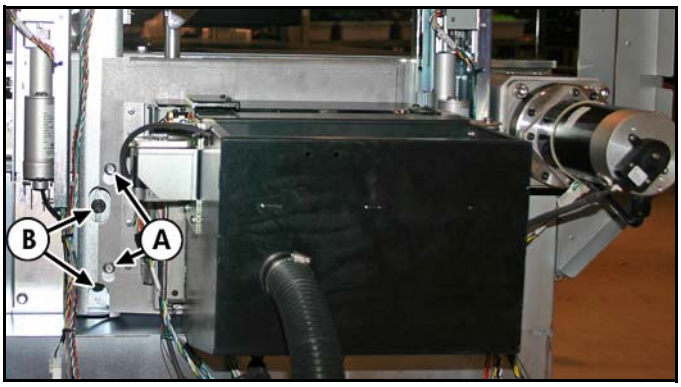
9. Disconnect the high-resolution encoder cable from the encoder interface as shown on page 271.
10. Using a 13 mm socket with extension and an open-end 13 mm wrench, loosen the four bolts (about 6 complete turns) that secure the rail tower support bracket (two bolts on each side of the belt).

Fig. 377. Rail tower support bracket



11. Using a 10 mm socket with extension, remove the four pinning bolts (A in Fig. 378.) in the rail actuator towers (two bolts for each tower).

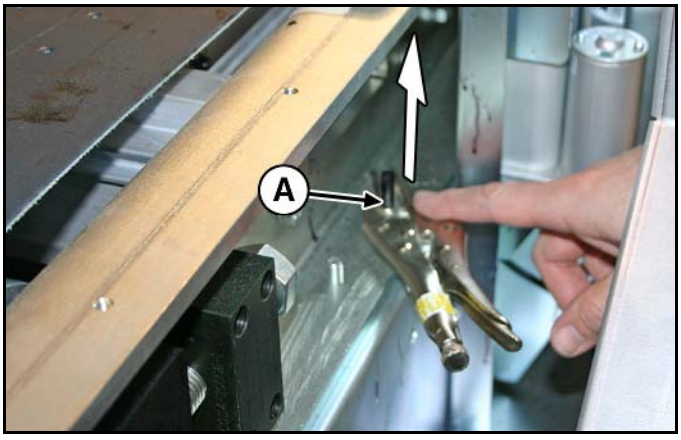
Fig. 378. Rail tower bolts



12. Using a 13 mm socket with extension, loosen the four remaining rail-tower bolts (B in Fig. 378.) that secure the rail tower to the printer (two bolts on each side).

13. Fasten a long-nosed vice grip or side-cutter plier onto one of the four roll pins that pin the location of the fan box to the printer and pry the pin up and out of the printer.

Fig. 379. Prying up one of four roll pins



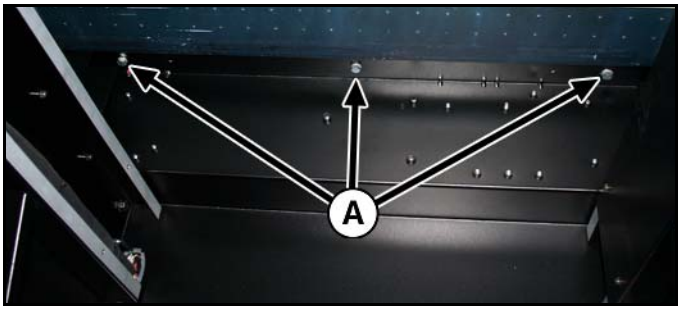
14. Remove the remaining three roll pins (there are two on each side of the belt).

15. Using a 13 mm socket with extension, remove the six bolts (three on the user-end and three on the service-end) that secure the media-drive belt's fan box to the frame of the printer.

The bolt heads are accessed from under the printer.

Fig. 380. Media-drive fan-box bolts (showing 3 of 6 bolts)

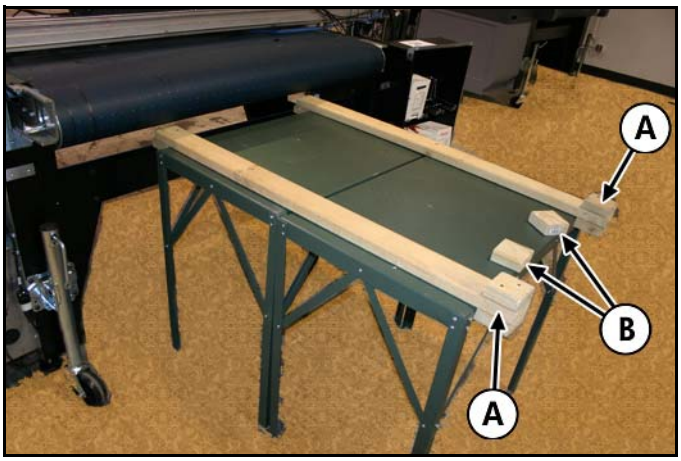
View: From under the printer



16. Place the two tables on the output-side of the printer.

17. Place the wooden assemblies (A in Fig. 381.) on the table so that the ends of the boards capture the table.

Fig. 381. Wooden supports



The wooden blocks (B in Fig. 381.) will be be secured to the ends of the boards after the fan box has been placed onto the table on top of the boards. The wooden blocks are to keep the rollers (media-drive roller and idler roller) from falling off of the tables.

18. Position one person in front of the table (facing the output-side of the printer) to hold the table in place as the fan box is pushed onto the table.

19. Using three people, push the media-drive fan box from the input-side of the printer until it slides on top of the wooden supports on top of the tables.

Fig. 382. Push fan box onto supports

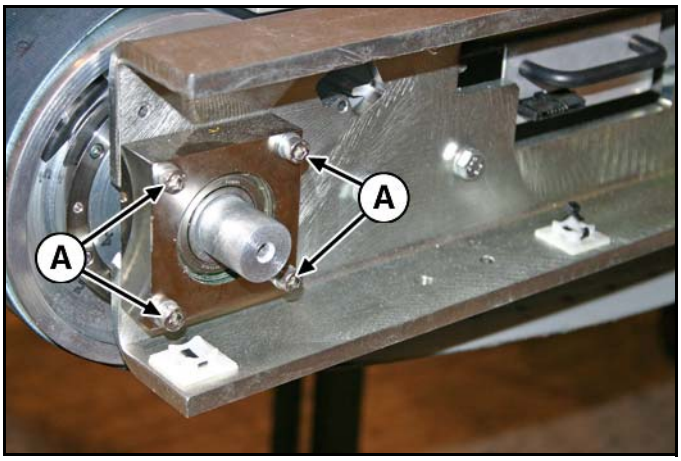


20. Using a 5 mm hex wrench, remove the four screws (A in Fig. 383.) that secure the media-drive bearing block.



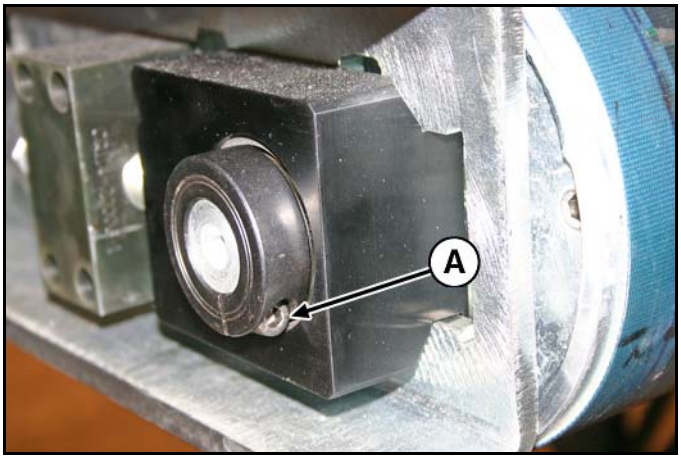
Do not allow the side panel of the fan box to fall and contact the stub shafts of the rollers. When the bearing blocks are removed, the side panel of the fan box will shift and may contact the stub shafts of the idler roller or the media-drive roller. Damage to the stub shaft can cause output anomolies such as banding.

Fig. 383. Media-drive bearing block



21. Using a 5 mm hex wrench, loosen the set screw (A in Fig. 384.) on the idler bearing-block collars (one on each end of the idler roll, and remove the collars.

Fig. 384. Idler bearing block collars



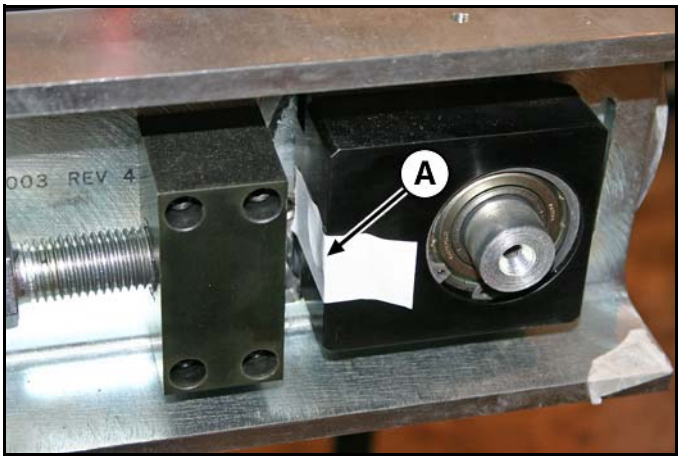
22. Remove the stub-shaft washers from each idler stub shaft (one on each end).

Fig. 385. Idler stub shaft washer



23. If the thrust bear washers are not taped into the idler bearing blocks, place a piece of tape (A in Fig. 386.) over the thrust bearing hole to make sure they do not fall out.

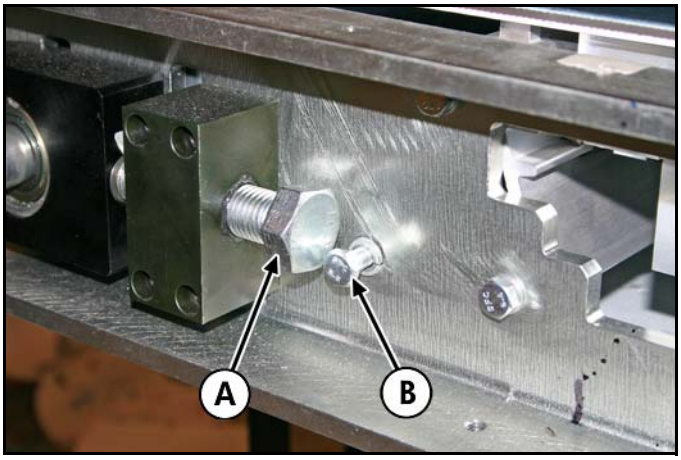
Fig. 386. Thrust bearings taped into place



24. Turn the belt-tension screw (A in Fig. 387.) counterclockwise until the end of the screw is flush with the bearing block.

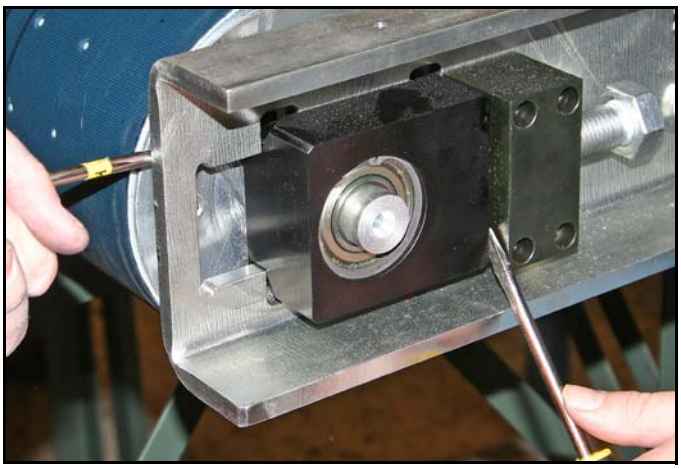
If one of the side-plate bolts (B in Fig. 387.) blocks the path of the belt tension screw, remove the side--plate bolt.

Fig. 387. Belt tension screw



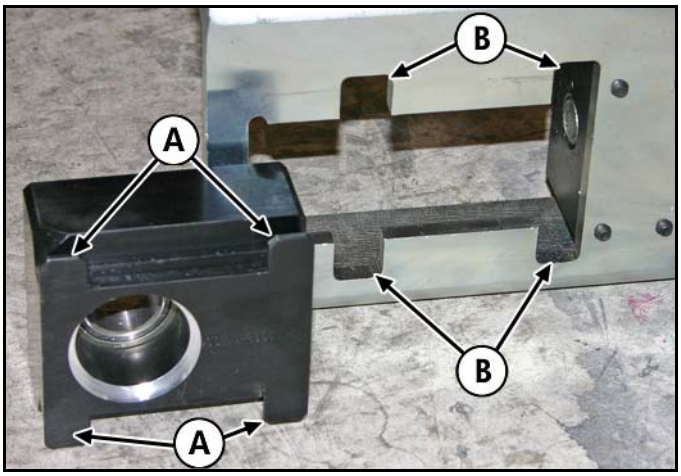
25. Use a large flat-blade screwdriver to pry the idler bearing blocks so that the tabs of the bearing blocks align with the open slots in the side panel.

Fig. 388. Align tabs of bearing block with slots in side panel



Note the following illustration that shows the tabs (A in Fig. 389.) of the bearing block and the slots (B in Fig. 389.) of the side panel. This photo is for illustration only. The side panel will be removed in subsequent steps.

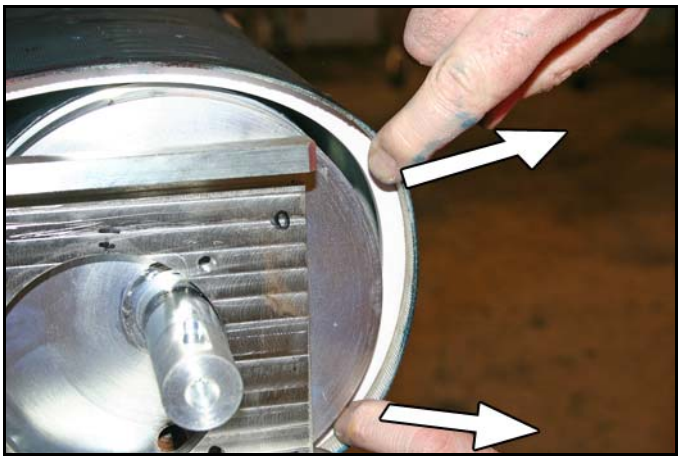
Fig. 389. Bearing block tabs



26. Use a flat-blade screwdriver to pry the bearing block off of the idler stub shafts (one on each side).

27. Pull the v-belt out of the groove in the rollers, sliding the belt slightly toward the opposite end.

Fig. 390. Removing the v-belt from the groove



28. Using two people, pull the each roller out of the fan box and place them on the floor gently.

Pull the rollers out on the user-end. Grip the stub shafts to lower the roller to the floor. An additional person may be needed to grab the service-end stub shaft when the roller is pulled from from the fan box.

Tip Mark the rollers with a permanent marker to ensure that the drive roller and the idler roller are not mixed up.

Fig. 391. Removing the drive roller



29. Move the fan box so that the service-end of the fan box (the opposite end from the end that will receive the rickshaw bars) is even with the table edge.

Moving the fan box to the edge is necessary so that the fan box can be tilted upward on the opposite end.

30. Using a 13 mm socket, remove the 12 bolts (A in Fig. 392.) that secure user-end side panel, and remove the side panel from the fan box.

To keep the side panel from suddenly dropping onto the stub shafts, have two people hold the side panel as the last bolt is removed.

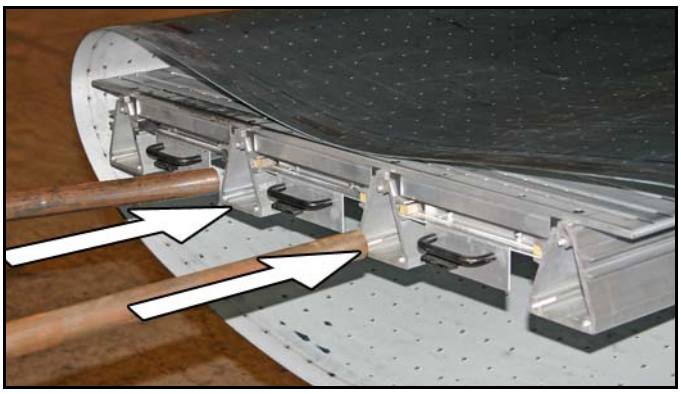
Do not allow the side panel to drop onto the stub shafts of the idler roller or media-drive roller. Damage to the stub shaft will result in outout anomolies such as banding.

Fig. 392. Fan box side-panel bolts



31. Insert the ends of the rickshaw bars through the triangluar openings of the fan box, pushing in the poles as far as the will go.

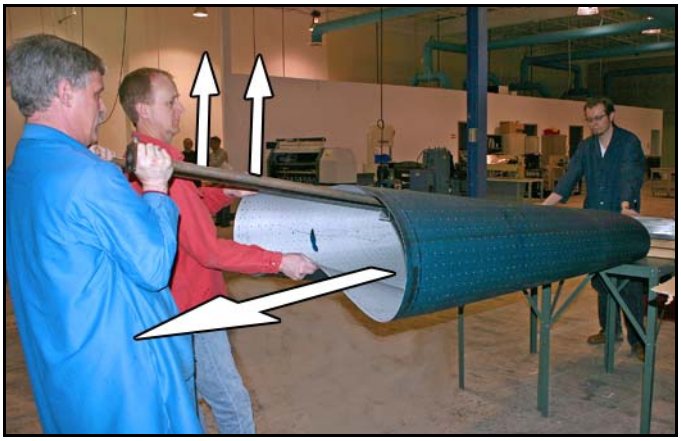
Fig. 393. Inserting rickshaw bars



32. Have someone hold the service-end of the fan box to make sure that it does not slide off of the table when it is tilted upward on the user-end.

33. Using the rickshaw bars, lift the user-end of the fan box so that the weight of the fan box is not resting on the belt.

Fig. 394. Removing the belt



34. With the help of an additional person, maneuever the belt off of the fan box.

Installing the media-drive belt

1. Have someone hold the service-end of the fan box so that the fan box does not slide off the table when it is tilted upward during belt installation.
2. With the rickshaw bars inserted into the fan box triangular slots, slide the media-drive belt onto the rickshaw bars, making sure that the v-belt edge of the belt is inserted first.

   The v-belt inserts into a groove on the service-end of the rollers.
3. Using two people, slide the media-drive roller and the idler roller into the fan box and belt assembly.

   Insert the end of the roller that has the v-groove first, so that it aligns with the v-belt in the media-drive belt.
4. Insert the v-belt ino the groove in the rollers see Fig. 390.
5. Attached the side panel using a 13 mm socket and the original 12 screws.

6. Align the tabs in the idler bearing blocks with the slots in the side panel near the idler roller, and push the bearing blocks onto the stub shafts so that the bearing blocks lock into place on the side panel.

7. Install the washers onto each of the idler roller stub shafts.

8. Using a 5 mm hex wrench, install the locking collars onto each idler roller stub shaft.

9. Using a 5 mm hex wrench and the original four screws, secure the bearing block to the user-end of the drive-roller.

10. If you removed a bolt from the service-side of the fan box to make room for the tension screw, install the bolt.

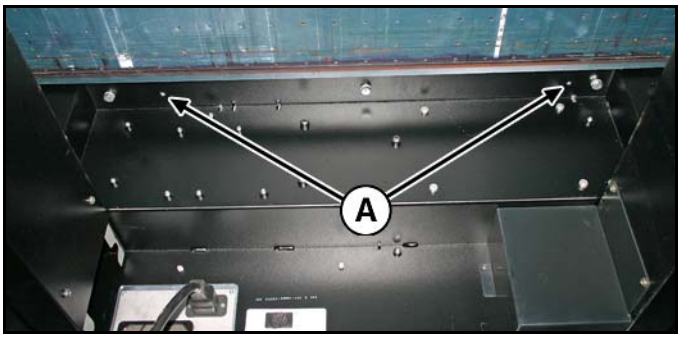
11. Push the fan box back onto the printer until the bolt holes of the fan box align with the holes in the printer's frame.

12. From beneath the printer, use a 13 mm socket to install the six bolts that secure the fan box, but do not tighten the bolts (leave them very loose).

13. From beneath the printer, use a hammer to tap the four roll pins up into the fan box (two roll pins per side).

    Tap the pins until they are flush (flush under the printer).

Fig. 395. Roll pin installation locations



14. Tighten the six bolts that secure the fan box to the printer.

15. Using a 10 mm socket and a 10 mm wrench, tighten the four bolts (two on each bracket) that secure the rail-support bracket (A in Fig. 377.)

16. Using a 10 mm socket with extension, tighten the four silver bolts (two on each tower) that pin the rail tower position Fig. 378.

17. Using a 13 mm socket with extension, tighten the four bolts that secure the rail towers Fig. 378.

18. Connect the high-resolution encoder cable as shown in "Installing the high-resolution encoder" on page 273.

19. Install the media-drive motor as shown in the section "Installing the media-drive motor" on page 284.

20. Center the media rollers as shown in the section "Center the media rollers" on page 320.

21. Verify belt tension as shown in the section "Checking media-drive belt tension" on page 321.

22. Verify the rollers are parallel as shown in the section. "Make sure media rollers are parallel" on page 324.

23. Lap the belt as shown in the section “Lap the belt” on page 326.

Center the media rollers

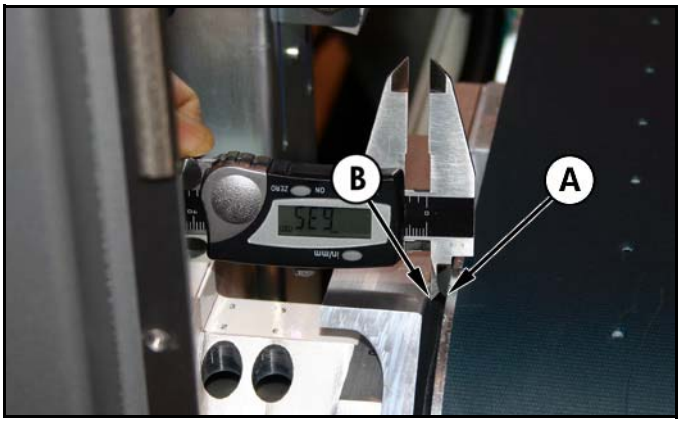
To center the rollers, begin by centering the driver roller (output side) using the procedure described in the next section. Once it is centered, measure the distance between the top edge of the roller and the top edge of the side plate. Then, use a large screwdriver to pry idler roller (input side) left or right to match the same distance from the side plate.

Center the driver roller

1. Measure the distance between the drive roller (A in Fig. 396.) and the side plate (B in Fig. 396.) on both the user and service-end of the roller.

Place the caliper prongs at the same depth on both the user and service-end when measuring the distance between the side plates and roller edges. The distance will be different when the caliper prongs are inserted as deep as possible versus placing the prongs at the top edge of the side plate and top of the roller.

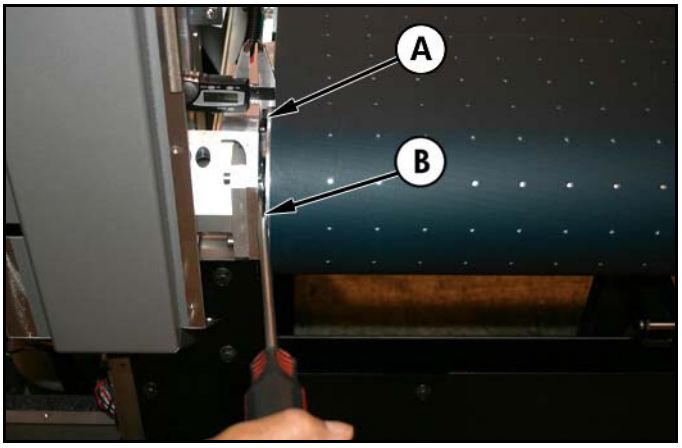
Fig. 396. Measure distance from drive roller to side plate



Note: Appearance my vary

2. Using a large screwdriver (B in Fig. 397. -or similar pry bar), nudge the drive roller left or right until the distances between the drive roller and the side plate are equal on both the user and service-end.

Fig. 397. Nudging drive roller while taking a measurement



Note: Appearance my vary

Begin idler roller centering

1. Using calipers, measure the distance between the edge of the idler roller (input side) and the edge of the side plate on both the user-end and the service-end.

Fig. 398. Measuring gap between media roller and side plate

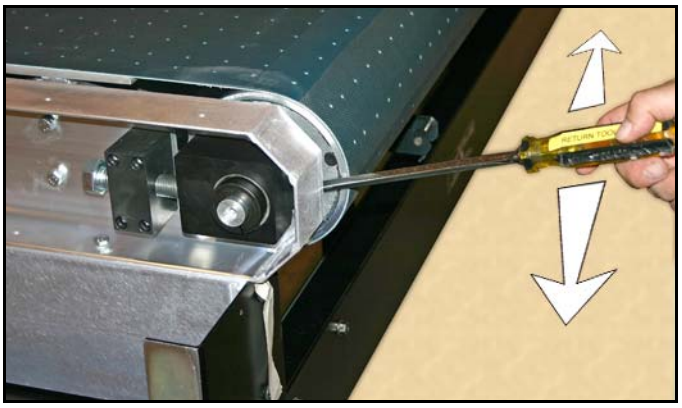


Note: Appearance my vary

2. Using a large screwdriver, pry the idler roller (on input side) to the left or right until the distance from the side plate closely matches the distance from the drive roller to the side plate.

Move the idler roller until it is at least within 0.3 cm (1/8-in) of the distance that the drive roller is from the side plate.

Fig. 399. Centering media roller



Note: In this photo, the retaining collar and adjustment block are installed. However, these will be installed in later steps. The collar should not be tightened during this procedure.

Note: Appearance my vary

3.

Checking media-drive belt tension

The idler tension adjustment blocks will be adjusted until the belt tension on the user-end and the service-end of the belt equal .022" as shown in Fig. 402.

Next, the belt and rollers will be checked to make sure the rollers are exactly parallel to each other. If they are not, the belt will "walk" to one side as it rotates around the fan box. To check if the rollers are parallel, the belt is measured with a flat measuring tape on each end. The measurements must be exact. The belt-tensioning bolts must be adjusted to bring the rollers into parallel, and the tension rechecked to make sure it is still within the specification range.

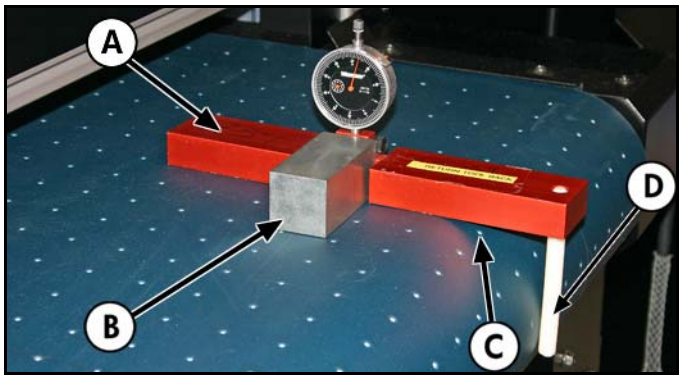
After fine tuning the tension and adjusting the media roller's parallelism to each other, one end of the belt must be within .022" and .025" and the other within .022" and .035".

1. Begin by restoring the previous belt tension setting by moving the adjustment bolt (E in Fig. 326. on page 282) until the distance between the bearing blocks and the adjust bolt block is the same as the original measurements recorded in Fig. 324. on page 281.

   This step helps to get the belt into an approximate position for belt tension, making it easier to adjust the belt to .022" on both side. If previous distance is unknown, adjust the tension as shown below until both sides are at .022."

2. Place the belt-tensioning tool on the user-end of the input-side of the belt between the 8th and 9th hole (C in Fig. 400.), about the same width as the tool from end to end.

Fig. 400. Belt tension tool on user end



3. Position the tool on the belt as shown in Fig. 400. with the white bar (D in Fig. 400.) against the end of the belt on the input-side.

Make sure the belt seam is not visible. If you can see the belt seam and the tensioning tool at the same time, the seam is too close to the tool.

Do not take readings with the belt seam touching a media roller. This adds a small amount of tension to the belt.

4. Set the gauge on the belt-tension tool so the dial is at zero.

   Tap the belt a few times to make sure the dial returns to zero.

5. Place the weight block (B in Fig. 400.) in the slot of the belt-tensioning tool.

   One end of the weight block should face toward the center of the belt and the other toward the belt-tension tool.

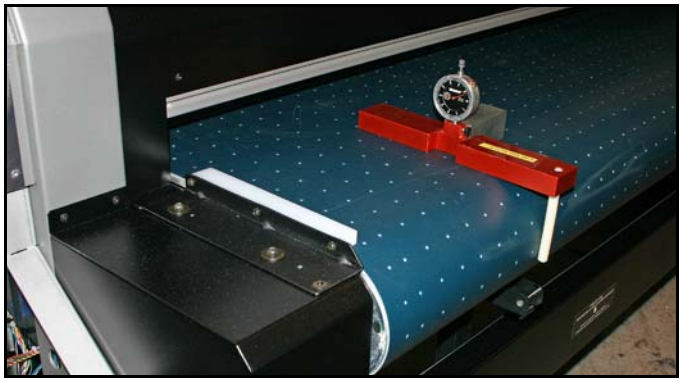
6. Record the change in belt tension.

7. Move the belt-tensioning tool to the service-end of the printer, placing it between the 8th and 9th hole, and repeat the process (steps 2 through 6) to record a reading on the service end.

Regardless of end position (user-end or service-end), the weight block should face toward the middle of the belt as shown in Fig. 401.

Fig. 401. Belt tension tool on service end

Note: Appearance my vary



Belt tension specification

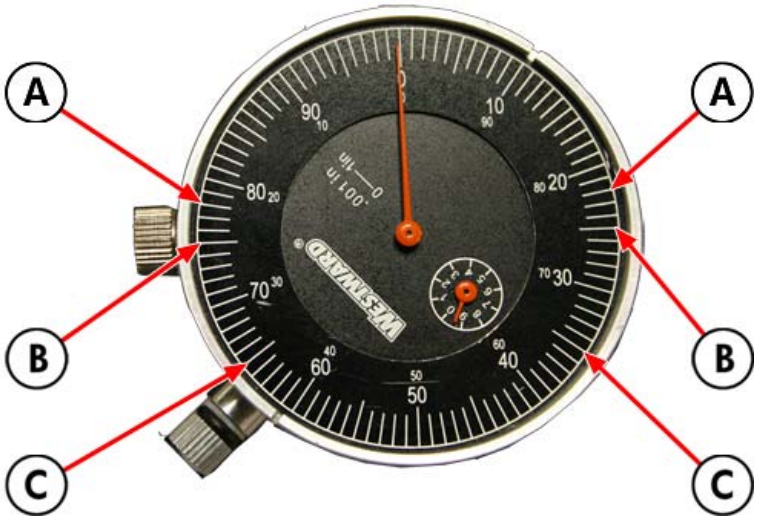
One end of the belt must be within .022" and .025" and the other within .022" and .035". It does not matter which end of the belt is between .022" and .025" and which end is between .022" and .035".

Fig. 402. Belt tension specifications

A = 0.22"

B = 0.25"

C = 0.35"



8. Adjust belt-tension bolt (E in Fig. 326. on page 282) until the specification is accomplished.

A lower number equates to a higher belt tension. The belt tension should never be tighter than 0.22". In other words, a belt tension of 0.21" or lower is too tight. Start by adjusting both sides to be 0.22" so that one side can be loosened slightly if needed to make the rollers parallel and still be within specification.

Make sure media rollers are parallel

1. Using a flat metal measuring tape (or one that will not stretch and is not curved), measure the circumference of the belt (on both the user-end and service-end of the printer) between the third and fourth hole in from the edge.

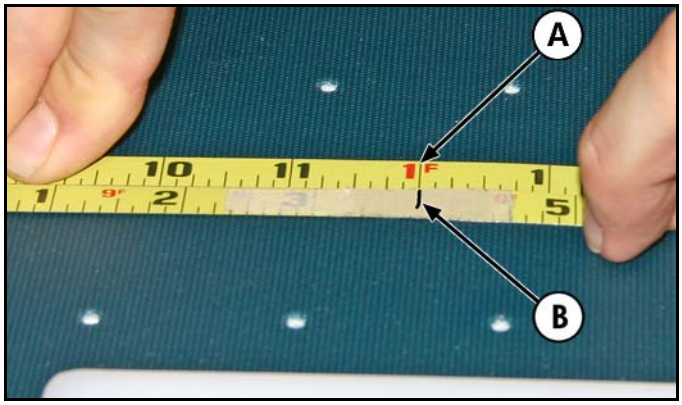
Fig. 403. Measuring belt circumference



Note: Appearance my vary

Place a piece of tape on the belt and mark the tape at where the tape measure crosses an easily identifiable location such as the 10 cm point or 1 foot location. The goal is to get both sides to be exactly the same. The measurement amount is less important than getting both distances to be the same.

Fig. 404. Mark the tape location



2. If necessary, adjust the tension-adjustment bolt (E in Fig. 326.) to make the user-end and service-end equal in circumference (making the input and output rollers parallel).

Since both sides are at least 0.22," one side must be loosened.

When the tension is changed on either end, the circumference and tension will change slightly on the opposite end. To get both sides parallel and within specification (Fig. 402.), you will need to measure repeatedly, adjust and take belt tension readings until the belt tension is within specification and the media rollers are parallel.

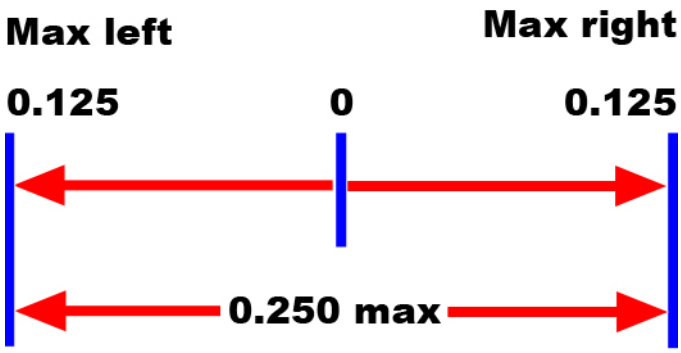
No variance is acceptable between the circumference measurement for the user and service-end of the belt. Both measurements must be exactly the same or the belt will not track correctly on the media roller.

Check belt tracking

The belt is put in motion using the motion velocity test (located in the printer's service menu). The velocity test moves the belt either forward or reverse, depending on whether a positive or negative velocity number is selected. If the belt is properly tensioned, and if the drive roller and idler roller are parallel, the belt and roller will track no more than about 0.3 cm (0.125-in) in either direction (see Fig. 405.). The distance the roller move will be detected using a dial indicator.

For example, a common observation will be to see the belt track 0.90-in when the belt is moving forward (belt velocity numbers are positive) and, when the belt velocity is reversed (negative belt velocity numbers), the belt will track the opposite direction back to the zero point and continue another 0.120-in in the opposite direction. If the belt tracks significantly further, recheck belt tension and make sure the rollers are parallel.

Fig. 405. Maximum belt travel



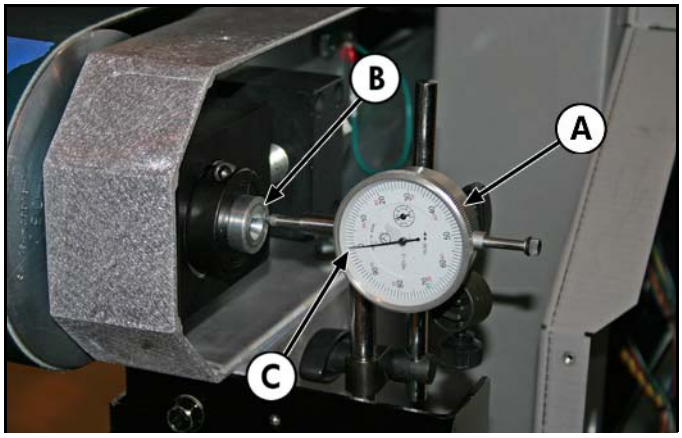
Measure roller tracking with a dial indicator

1. Place the dial indicator (A in Fig. 406.) on the service-end of the idler roller with the dial tip touching the edge of the idler roller stub shaft (B in Fig. 406.).

Fig. 406. Dial indicator on idler stub shaft

Note: In this figure, the locking collar is shown installed. However, it should not be tightened onto the stub shaft yet.

Appearance may vary



2. Set the dial to zero (C in Fig. 406.).

Move the belt using the velocity test

1. Access the password protected area of the service menu as shown in the section "Access the password-protected pod test area of the printer's service menu to see the service calibration options." on page 449.
2. From the printer's menu, select TOOLS > SERVICE PRINTER > DEVICE TESTS > MISCELLANEOUS TESTS > MEDIA MOTION VELOCITY TEST.

   Press PROCEED to test belt velocity (to move the belt). The software will ask if you want to calibrate the motor encoder. Select "NO." Set the PWM at + 50% by pressing the UP arrow key.

   Watch the belt track for five complete revolutions or until the belt and roller stop moving toward the user-end or service-end. If it is properly tensioned and the rollers are parallel, the roller should not move much more than 0.3 cm (0.125-in). If it does, recheck the belt tension (see "Checking media-drive belt tension" on page 321) and make sure the rollers are parallel (see "Make sure media rollers are parallel" on page 324).
3. Stop the velocity test from the printer's menu.
4. Record the distance the belt and roller moved toward the user-end or service-end of the printer.

5. Reset the dial indicator to zero.

6. Start the velocity test from the menu by - 50 (negative 50) for the velocity amount.

   By selecting a velocity of -50, the belt direction will reverse and the belt tracking should also reverse.

   Watch the belt track for five complete revolutions or until the belt and idler roller stop moving toward the user-end or service-end. If it is properly tensioned and the rollers are parallel, the roller should not move much more than about 0.6 cm (0.250-in). If it does, recheck the belt tension (see "Checking media-drive belt tension" on page 321) and make sure the rollers are parallel (see "Make sure media rollers are parallel" on page 324).

7. Stop the velocity test once the belt has stopped moving (the opposite direction from the first velocity test).

8. Record the distance.

9. Divide the distance from step 8 in half and record the quotient.

   For example, if the total travel distance was 0.220, the quotient would be 0.110.

10. Reset the dial indicator to zero.

11. Start the velocity test using +50 for the velocity.

12. Stop the velocity test when the dial indicator shows that the roller has moved the amount determined in step 9 (half of the distance traveled in the full range of motion for the roller moving left and right).

13. Using a 5 mm hex wrench, install the locking collars on the idler roller's stub shafts (both the user and service-end stub shafts).

Lap the belt

1. Run the velocity test at 50% PWM for 30 minutes.

   As the belt moves, watch to see if the v-belt of the main media-drive belt begins to ride up in the v-groove of the idler and drive roller (v-groove is located on service-end of rollers). If it does, the belt is still drifting to one side. Repeat the adjustments found in the section "Center the driver roller" on page 320.

2. After 30 minutes, stop the velocity test.

3. Inspect the sides of the belt to make sure that the belt is not running the fan box side plates.

4. Run the velocity test at 50% PWM for 30 minutes more.

Remove the media thickness sensor

1. Raise the rail to its highest position by pressing the up arrow in the device test menu.

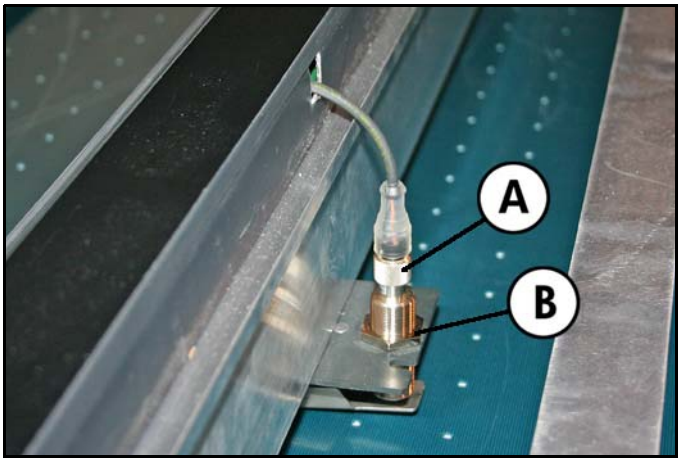
   To raise the rail, press up arrow in the menu located in TOOLS > DEVICE TESTS > RAIL HEIGHT MOTOR TEST.

2. Unscrew the cable from its disconnect location (see A in Fig. 407.).

   The media thickness sensor is located near the user-end of the printer on the input-side of the rail.

3. Using pliers or an adjustable wrench, remove the nut (B) that secures the media thickness sensor to the rail bracket.

Fig. 407. Media thickness sensor



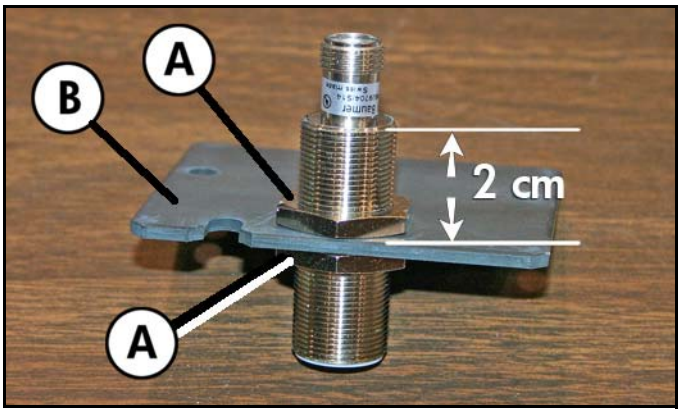
4. Remove the media thickness sensor from the printer.

Install the media thickness sensor

1. Assemble the media thickness sensor as shown as shown in Fig. 408. with a lock nut (A) above and below the mounting plate (B).
2. Tighten the locknuts (A) with the top thread of the media thickness sensor exactly 2 cm above the mounting plate (B) as shown in Fig. 408.

Fig. 408. Media thickness sensor mounting

Note: For clarity, the mounting plate is shown disconnected from the rail. It is not necessary to remove the plate from the rail for this procedure



3. Install the screw-on cable to the top of the media thickness sensor.
4. Calibrate the media thickness sensor as shown in the section “Maintenance calibrations” on page 475.

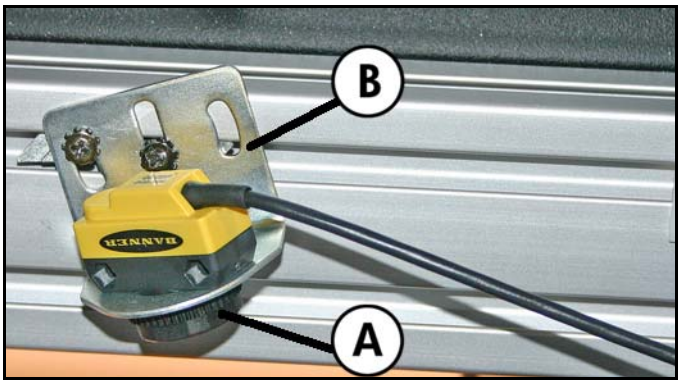
Calibrate the Media Thickness Sensor

1. Access the password-protect area of the printer's menu as shown in the section "Access the password-protected pod test area of the printer's service menu to see the service calibration options." on page 449.
2. From the menu, select TOOLS > > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > MEDIA THICKNESS SENSOR CALIBRATION
3. Allow the calibration to run.

Remove the media detection sensor

1. Unscrew the plastic ring (A) that secures the sensor to the sensor bracket (B).

Fig. 409. Media detection sensor



2. Disconnect the sensor at its quick disconnect location.

   To locate the quick disconnect location, follow the sensor's cable a short distance from the sensor to the connection.
3. Remove the media detection sensor from the printer.

Install the media detection sensor

1. Secure the media detection sensor to the sensor bracket (see Fig. 409.).
2. If the bracket was removed from the printer, install the bracket at an angle as shown in Fig. 409. and in Fig. 410.

   The sensor should tilt about 15 degrees as shown in Fig. 410.

Fig. 410. Media detection sensor tilt



Wrong!



Correct!

3. Connect the sensor's cable at its quick connect location.

Fasteners for roll-to-roll assemblies

- Bolts for lower racks used to hold the lift foam roller and press foam roller.

Fig. 411. Bolts for foam roller lower racks

Used in step 2 and step 3 on page 332



- Bolts used to install the two supply arms and the two takeup arms.

Fig. 412. Bolts for supply and takeup arms

Used in step 1 and step 4 on page 332 and in step 7 and step 8 on page 333



- Screws and washers used to secure the upper racks for the lift and press foam rollers.

Fig. 413. Screws used for top racks

Used in step 5 and step 6 on page 333



- Screws used to assemble the alignment tool

Fig. 414. Alignment tool screws

Used in step 1 on page 334 and step 1 on page 335



- Screws and bracket used with dancer bar racks

Fig. 415. Dancer bar bracket and screws

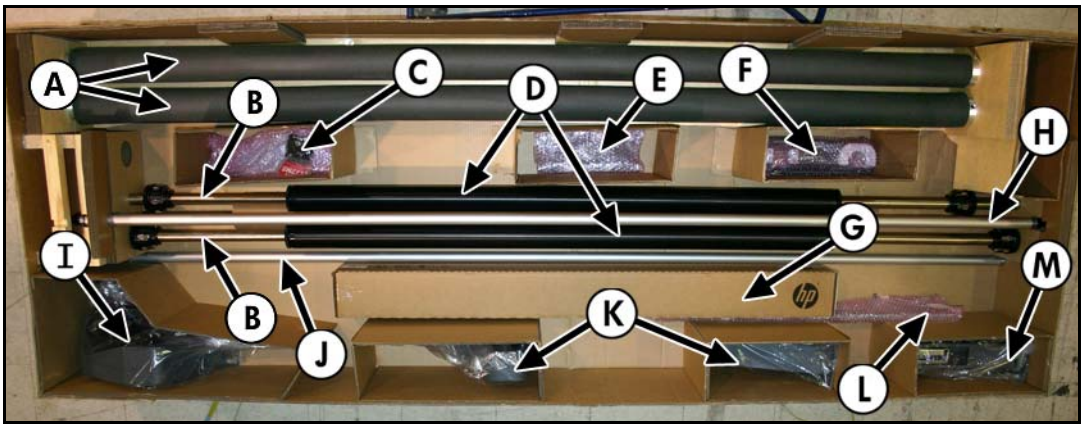
Used in step 22 on page 353



Optional roll-to-roll box contents

If you are installing the optional roll-to-roll kit, the contents will be similar to the box below. The location of items in the box may vary.

Fig. 416. Box contents



A = Lift and press foam rollers

B = Takeup or supply spools

C = Fasteners

D = Mid-spool supports used only with very heavy rolls of media (remove otherwise)

E = Lower racks for lift and press foam rollers

F = Upper racks for lift and press foam rollers

G = Sample roll of media

H = Movable dancer bar

I = Motorized takeup arm

J = Stationary bar in the dancer bar assembly

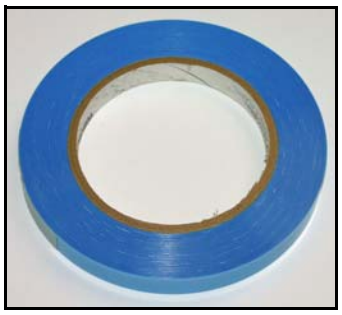
K = Supply spool attachments arms

L = Alignment tool

M = Takeup attachment arm

The mid-spool supports (D in Fig. 416.) are the black, removable tubes that are pre-installed on each of the spools (takeup and supply spools). The mid-spool supports should be removed unless you are using heavy media. If you will be using the mid-spool supports to support very heavy rolls of media (such as long rolls of vinyl), see the section "Mid-spool support for heavy media rolls" on page 366.

Fig. 417. Tape used to create spacers on mid-spool support



Note: This tape should not be used to tape the media to the takeup core. It is for creating spacers, as needed, for the mid-spool support. See "Mid-spool support for heavy media rolls" on page 366.

Installation of optional roll-to-roll kit

Required tools

- Medium-sized adjustable wrench, such as a Crescent wrench
- # 2 phillips screwdriver (including one with a short shaft that is less than 10 cm (4-in) long)
- Metric sockets 10 mm, 12 mm, 13 mm
- Socket wrench extension that is at least 20 cm (8-in) long.
- Metric hex wrenches (such as Allen keys) 3 mm, 4 mm, 5 mm (supplied), 7 mm (L-shaped)
- English/Imperial hex wrenches (supplied with this kit) 9/64-in, 3/16-in, 1/4-in
- Level
- Measuring tape or ruler
- Alignment tool (supplied)

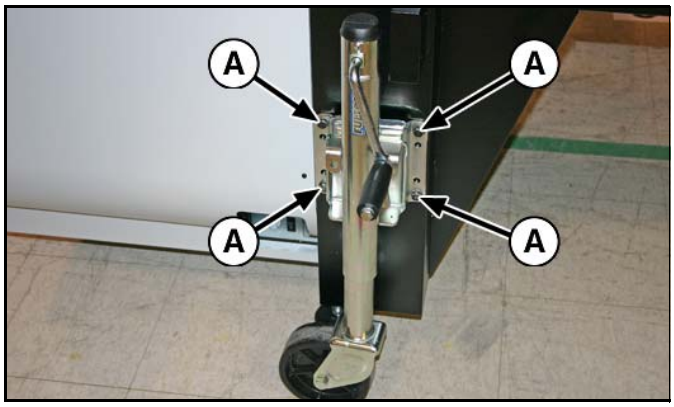
Configure printer for roll-to-roll

1. Using the printer's menu, configure the printer for roll-to-roll media by selecting the following:
   SYSTEM > TOOLS > SERVICE PRINTER > PROCEED > SUPPORT ROLLFED > CUT SHEET AND ROLLFED

Level the printer

1. (Optionally) If the four wheels are removed from the printer, install them (see Fig. 418. for bolt locations).
   If the printer height needs to change during leveling, the wheel cranks can be used to lift the printer.
2. Level the printer as shown in the section "Leveling the printer" on page 480.
3. (If applicable) Using a 12 mm socket with an 8-in extension, remove the 16 bolts (four at each wheel assembly - A in Fig. 418.) that secure the wheel assemblies to the printer.

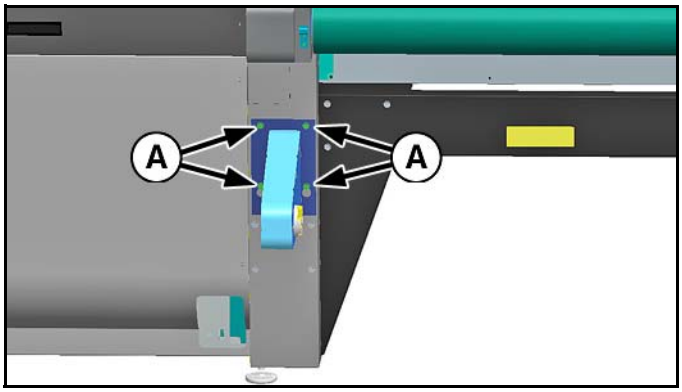
Fig. 418. Removing the wheel assemblies



Install the roll-to-roll supply arms

1. Using a 12 mm socket, install the four bolts (A in Fig. 419.) that secure the user-end supply arm to the printer.

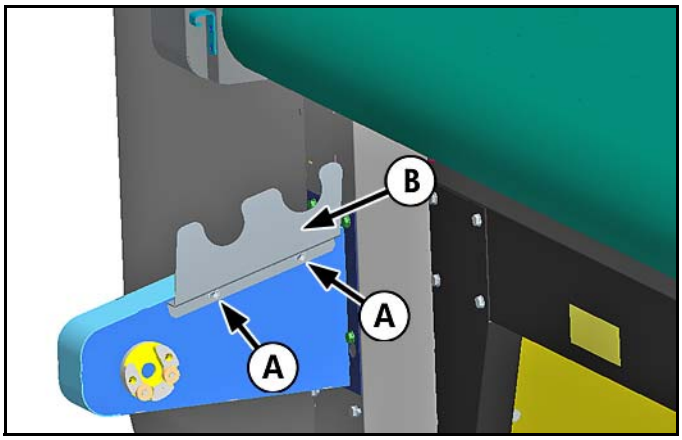
Fig. 419. User-end supply arm



2. Using a 10 mm socket, install the two silver bolts (A in Fig. 420.) that secure the foam-roller rack (B in Fig. 420.) onto the user-end supply arm.

Fig. 420. Roam roller rack for user-end supply arm

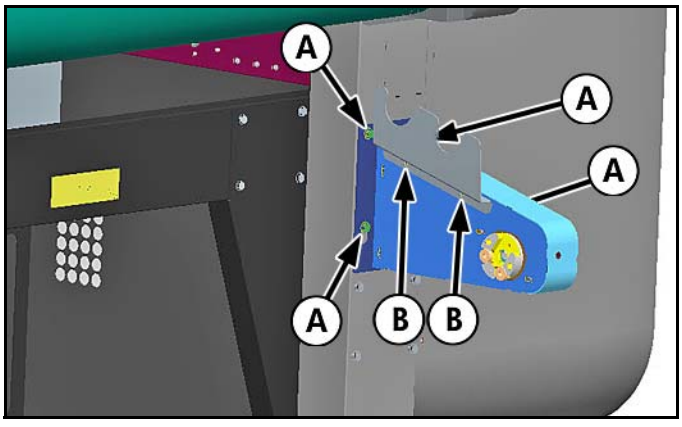
See photo of bolts in Fig. 411. on page 329.



3. Using a 10 mm socket, install the two silver bolts (B in Fig. 421.) that secure the foam-roller rack to the service-end supply arm.

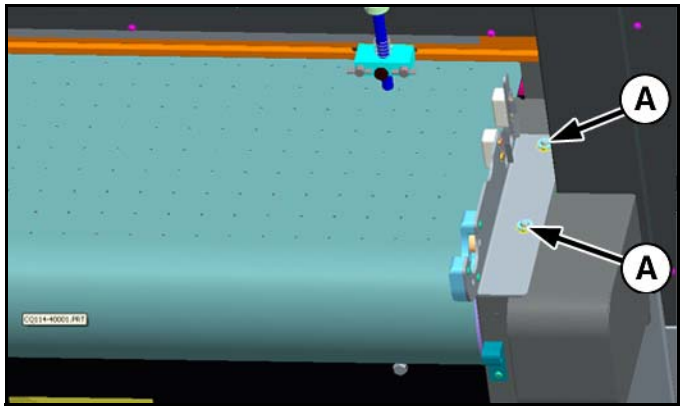
4. Using a 12 mm socket, install the four bolts (A in Fig. 421.) that secure the service-end supply arm to the printer.

Fig. 421. Service-end supply arm



5. Using a 4 mm hex wrench, install the two screws and two washers (A in Fig. 422.) that secure the service-end foam-roller racks on top of the input-side belt corner enclosure.

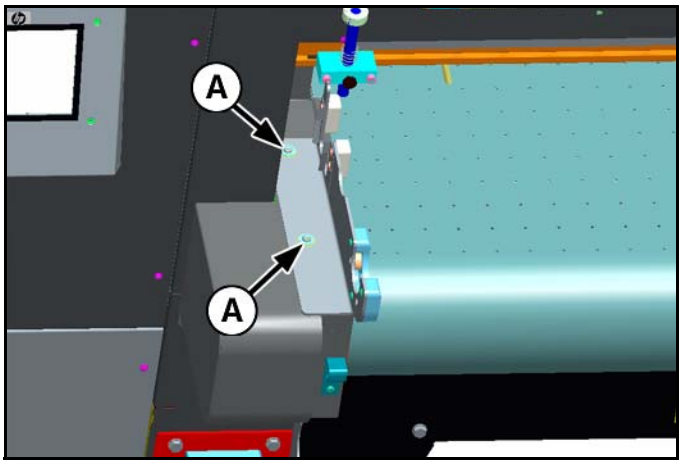
Fig. 422. Service-end foam-roller racks



Do not tighten the screws for the rack mounts (A in Fig. 422. and Fig. 423.). You will align the position of the rack mounts in a later step.

6. Using a 4 mm hex wrench, install the two screws and two washers (A in Fig. 423.) that secure the user-end foam-roller racks on top of the input-side belt corner enclosure.

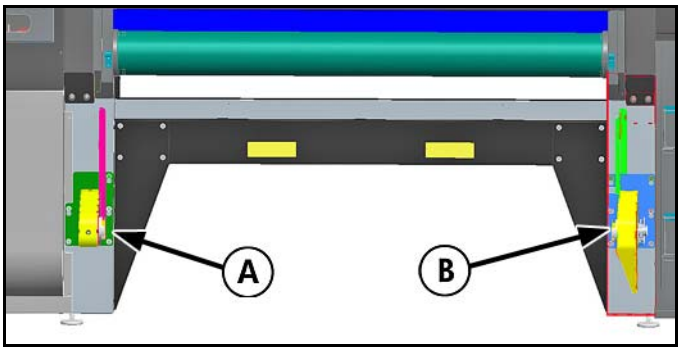
Fig. 423. User-end foam-roller racks



7. Using a 12 mm socket, install the five bolts that secure the service-end takeup arm (A in Fig. 424.) to the printer.

8. Using a 12 mm socket, install the five bolts that secure the user-end takeup arm (B in Fig. 424. - with motor) to the printer.

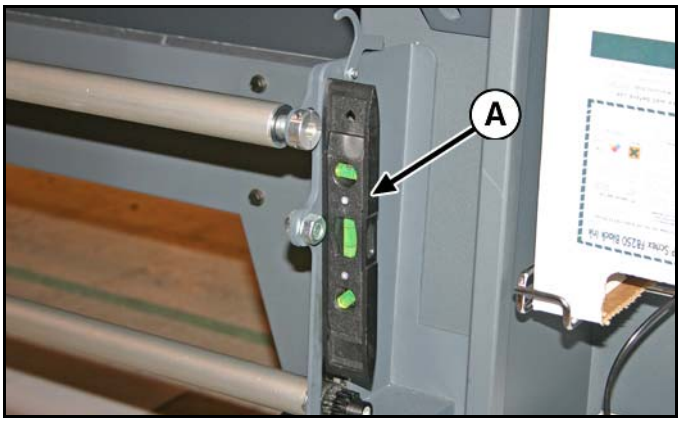
Fig. 424. Service and user-end takeup arms



9. Make sure the bracket holding the motor is level.

The weight of the motor can pull the support arm to the side as it is being tightened onto the printer. Use a level (A in Fig. 425.) to verify that the bracket assembly is tightened on level.

Fig. 425. Make sure motorized takeup bracket assembly is level



10. Assemble the alignment tool to align the supply spools as shown in the section "Assemble tool for supply and/or takeup spools" on page 334.

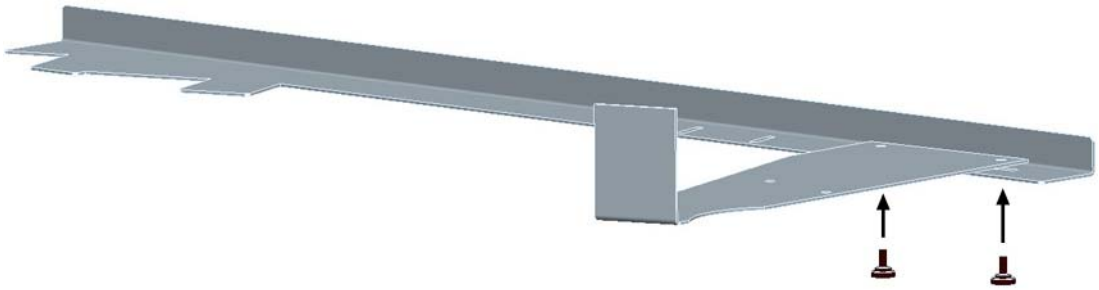
Roll-to-roll alignment tool configurations

The following examples show different ways the alignment tool can be configured. Refer to this section when you need to reconfigure the tool to accomplish the alignment procedure.

Assemble tool for supply and/or takeup spools

1. Using the thumb screws, assemble the alignment tool as shown in Fig. 426.

Fig. 426. Alignment tool for supply or takeup spool



Roll-to-roll alignment tool configurations for supply and/or takeup

Fig. 427. Configurations for supply and/or takeup spool

A = Position for takeup spool

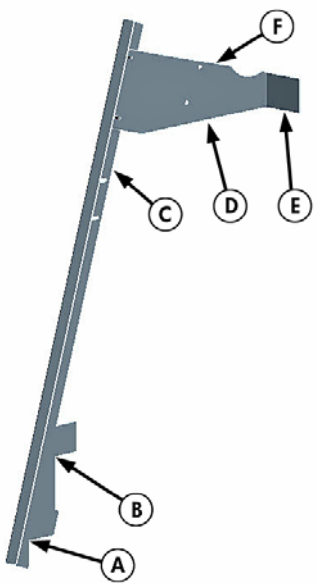
B = Position for supply spool

C = Curve of media-drive belt

D = Flat against media-drive belt and parallel with media-drive belt's vacuum holes

E= Flat and perpendicular to media-drive belt's vacuum holes

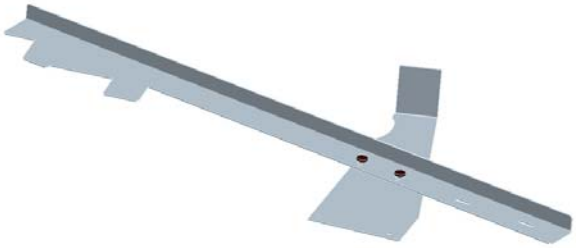
F = Where to press down on tool to ensure it is flat against the belt



Roll-to-roll alignment tool configuration for foam rollers

1. Using the thumb screws, assemble the alignment tool as shown in Fig. 428.

Fig. 428. Alignment tool for foam rollers



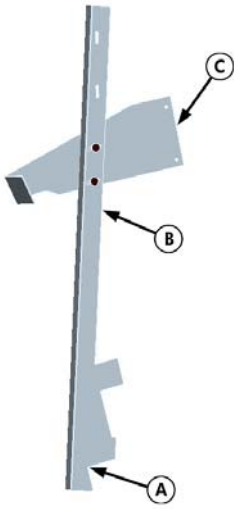
Roll-to-roll alignment tool configurations for foam roller tool configuration

Fig. 429. Configurations for foam rollers

A = Position for takeup spool

B = Curve of media-drive belt

C= Pressed against edge of foam roller



Align the roll-to-roll supply spool

The initial goal of the supply spool alignment is to determine the exact distance of the supply spool from the belt and the exact height of the supply spool on the user-end of the printer. The supply arm on the user end is fixed. The supply arm on the service end is adjustable. You will adjust the service-end supply arm to match the user-end supply arm. During the tool setup, you will make sure the tool is touching at four key points, and then you will tighten the tool's thumb screws.

1. Insert a supply spool (A in Fig. 430.) into the supply spool collets.

   If media is loaded on the supply spool, remove it from the spool before loading the spool.

2. Verify that the printer is level by placing a level onto the middle of the media belt.

   If the printer is not level, level the printer using the procedure shown in the section "Level the printer" on page 331.

3. Configure the alignment tool into the supply and takeup configuration as shown in the section "Roll-to-roll alignment tool configurations for supply and/or takeup" on page 335.

4. With the tool's thumb screws slightly loosened, place the tool onto the user-end of the supply spool as shown below.

Fig. 430. Supply spool alignment



5. Align the top edge of the tool near the 7.5 cm (3-in) mark on the printer's media ruler (A in Fig. 431.).

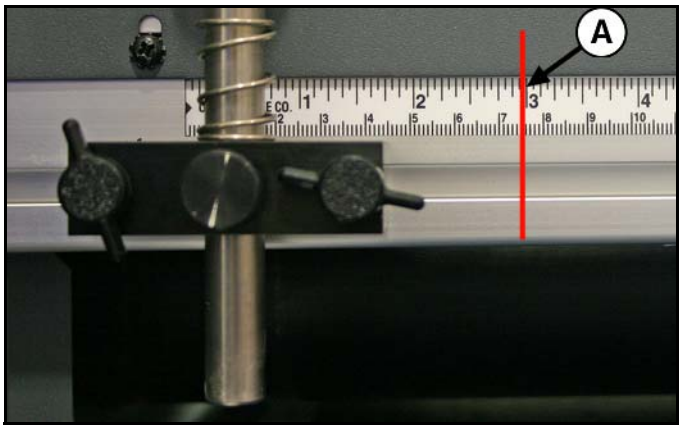


Fig. 431. Aligning tool at 7.5 cm (3-in) on the media ruler

6. Use your knee to press the tool against the supply spool, making sure that both edges (A and B in Fig. 432.) are touching the supply spool.

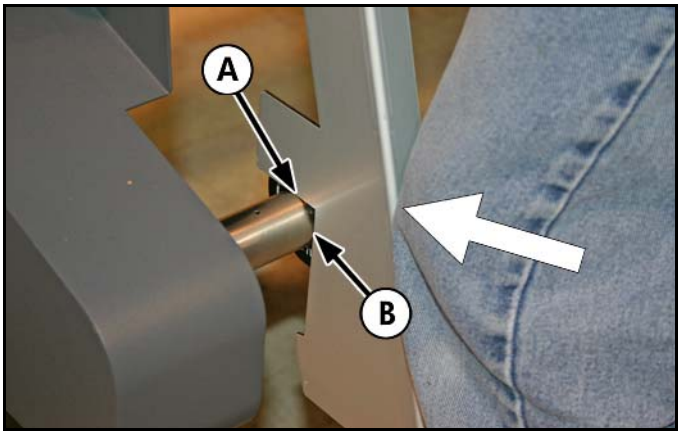


Fig. 432. Supply spool alignment at spool

7. Align the edge of the tool's arm (B and C in Fig. 433.) with a column of vacuum holes at the edge of the belt as shown in Fig. 433.

8. Press down on the top of the tool at position E in Fig. 433. to make sure the bottom edge of the tool at position E in Fig. 433. is flat against the belt.

   There may be a slight gap at position C in Fig. 433. due to flex in the belt.

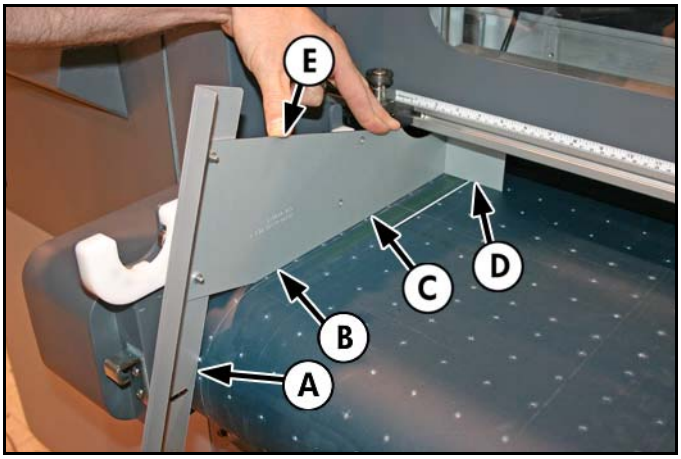


Fig. 433. Supply spool alignment at belt

9. With the edges of the tool touching at the supply spool (A and B in Fig. 432.) and the belt (A, B and D in Fig. 433.), tighten the two thumb screws on the tool.

Align the service-end supply spool position

10. Using a 10 mm socket wrench, loosen the two bolts (A in Fig. 434.) that secure the horizontal adjustment turnbuckle position in the adjustable supply arm.

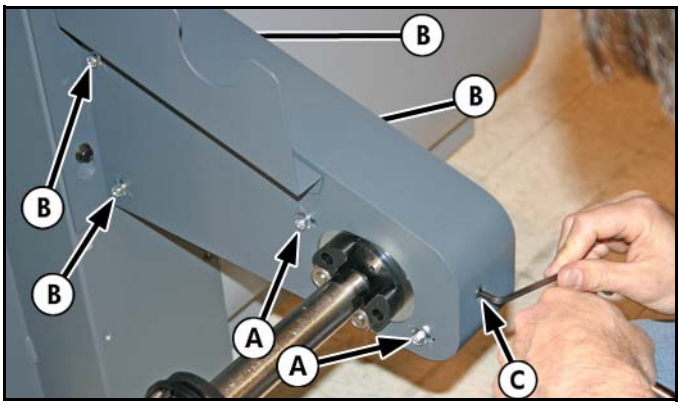


Fig. 434. Supply arm horizontal adjustment on service end

11. Using a 10 mm socket wrench, loosen the four bolts (B in Fig. 434. and Fig. 436.) that secure the vertical adjustment turnbuckle position in the adjustable supply arm.

Failure to loosen all bolts for the adjustment turnbuckles before turning the turnbuckle screws will result in damage to the supply arm housing.

12. Using the supplied 3/16-in hex wrench, turn the horizontal-adjustment turnbuckle (C in Fig. 434.) clockwise until the bolts (A in Fig. 435.) are as far as possible to the left (when facing the bolts) in the slot (B in Fig. 435.).

Turning the turnbuckle screw clockwise will move the spool collet (C in Fig. 435.) as close to the printer as possible. This will allow you to turn the turnbuckle screw counterclockwise until the spool touches the alignment tool in the following steps. The bolts (A in Fig. 435.) should be all the way to the left (when facing the bolts) edge of the slot (B in Fig. 435.). This will be the starting position for the calibration of the horizontal position.

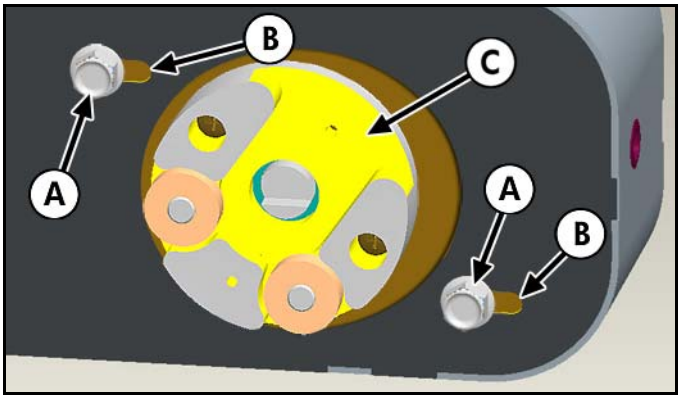


Fig. 435. Bolt starting position for horizontal adjustment

13. Using the supplied 3/16-in hex wrench, turn the vertical-adjustment turnbuckle (A in Fig. 436.) counterclockwise until the bolts are at the top of their slots (B in Fig. 437.), lowering the supply arm to its lowest position.

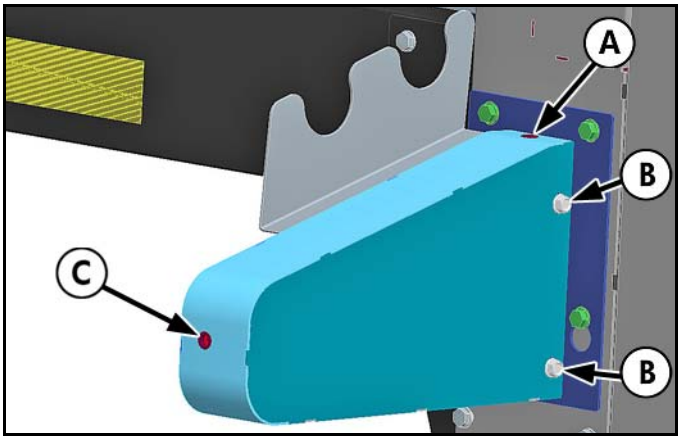


Fig. 436. Supply arm vertical adjustment on service end

When properly positioned, the bolts on both sides (A in Fig. 437. shows two of the four bolts) will be at the top of their slots (B in Fig. 437.).

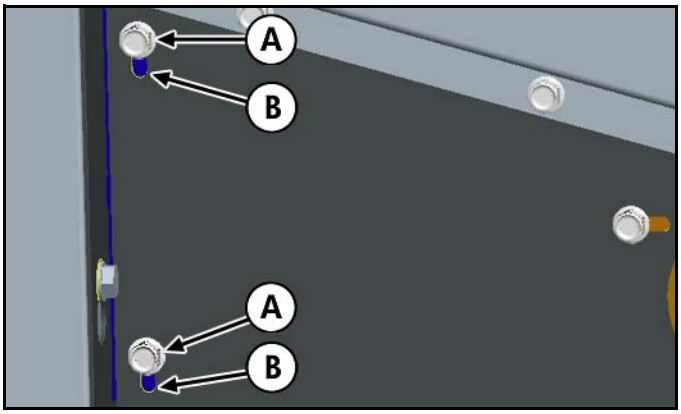


Fig. 437. Bolt starting position for vertical adjustment

14. Place the alignment tool on the belt so that the top edge is 10 cm (4-in) from the end of the media measurement ruler (D in Fig. 438.), aligning the bottom edge of the tool (B in Fig. 438.) with the column of vacuum holes in the belt.

Make sure the edge of the tool is flat against the belt with no gap showing at positions A, B and C in Fig. 438.

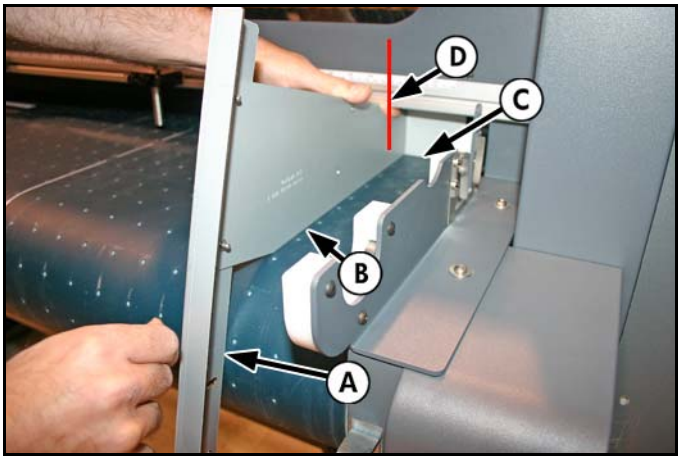


Fig. 438. Supply arm vertical adjustment on service end

15. Using the supplied 3/16-in hex wrench, turn the horizontal-adjustment turnbuckle counterclockwise (as shown in Fig. 439.) until the spool just touches the alignment tool (A in Fig. 440.).

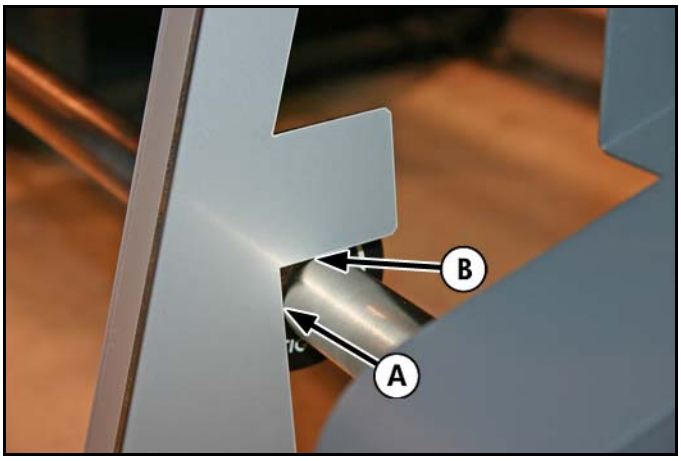
Fig. 439. Supply arm horizontal adjustment on service end



Be careful not to push the tool with the supply spool. As the spool touches the tool, reverse the hex wrench in the turnbuckle to back the spool away from the tool slightly, and then turn the hex wrench counterclockwise again to move the spool toward the tool until it touches.

16. Using the supplied 3/16-in hex wrench, turn the vertical-adjustment turnbuckle (A in Fig. 436.) clockwise until the spool just touches the alignment tool (B in Fig. 440.).

Fig. 440. Supply arm vertical adjustment on service end



Be careful not to lift the tool with the supply spool. As the spool touches the tool, reverse the hex wrench in the turnbuckle to back the spool away from the tool slightly, and then turn the hex wrench counterclockwise again to move the spool toward the tool until it touches.

17. Recheck the user-end of the spool to make sure the tool is flat and touching as shown in step 8 and step 9 on page 337.

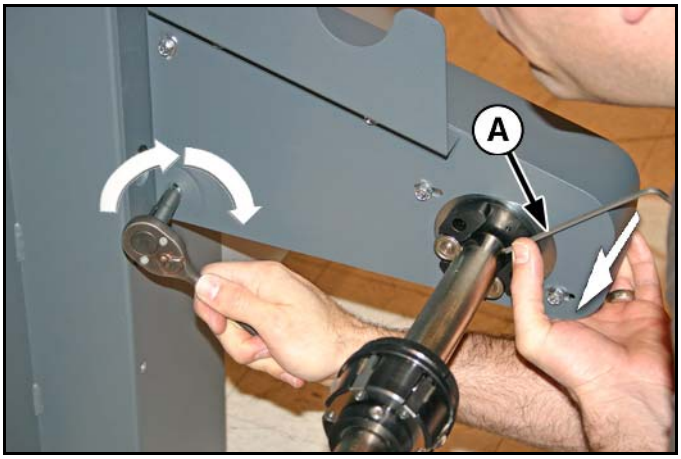
18. If needed, reset the tool's position and repeat the calibration of the service-end of the spool.

19. Recheck that the service-end of the spool is correctly positioned as shown in Fig. 440.

Tighten the supply arm turnbuckle bolts

20. Insert a 4 mm hex wrench (as a spacer) between the service-end of the spool and the collet (A in Fig. 441.).

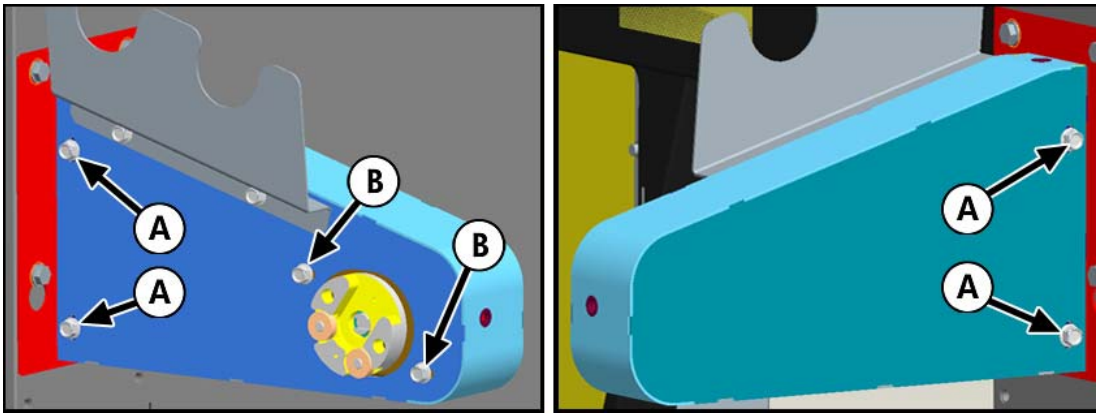
Fig. 441. Spacer between end of spool and collet on service-end



21. While biasing the service-end supply arm toward the user-end of the printer (as shown in Fig. 441.), use a 10 mm socket to tighten the four bolts (A in Fig. 442.) that secure the vertical-adjustment turnbuckle.

22. Use a 10 mm socket to tighten the two bolts (B in Fig. 442.) that secure the horizontal-adjustment turnbuckle.

Fig. 442. Vertical and horizontal turnbuckle bolts



23. Make sure that the supply spool can be removed from the supply collets and that there is not too much space at the end of the spool.

If there is too much space at the end of the spool, the takeup motor can pull the supply spool out of the collets when the supply roll is not heavy enough to hold the spool down at the end of a media roll. If the spool cannot be removed (too little space) or it can be removed without compressing the end spring tab (too much space), insert the 4 mm hex wrench (as a spacer) at the service-end of the spool and loosen and retighten the turnbuckle bolts in the adjustable supply arm (as shown in Fig. 441.).

Hold the foam rollers horizontally with both hands. Do not hold the foam rollers at an angle. The weight of the rollers will cause the adhesive that bonds the foam to the rollers to shear, separating the foam from the roller.

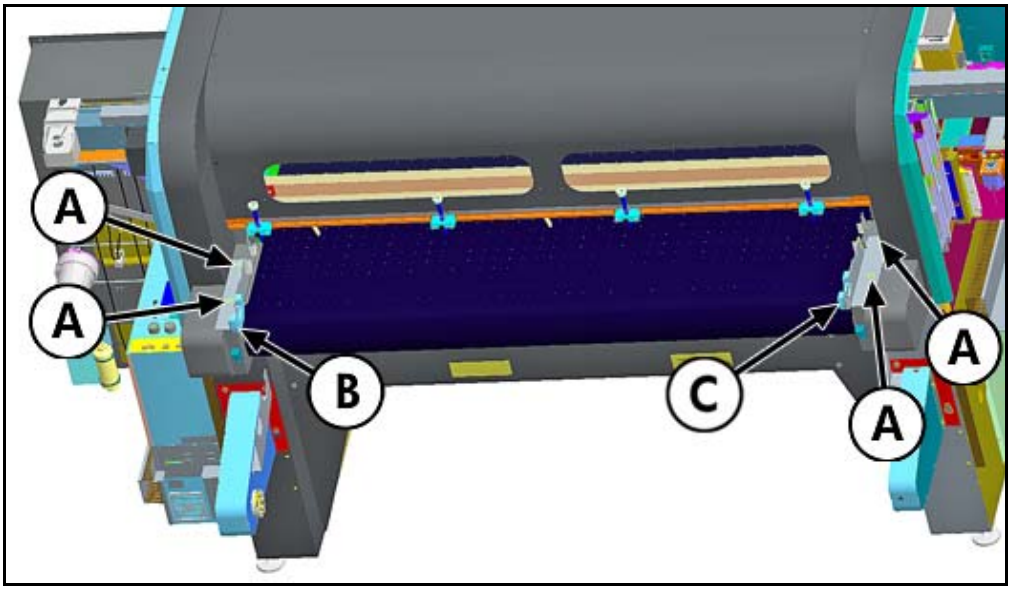
Fig. 443. Proper way to hold foam rollers



Align the foam roller racks

1. Make sure that the upper foam roller racks (B and C in Fig. 444.) on each side of the media-drive belt are installed with their fasteners (A in Fig. 444.) **loosened**.

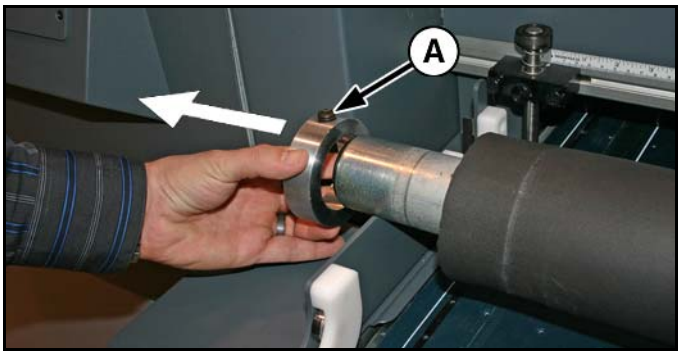
Fig. 444. Upper foam roller rack fasteners



2. Assemble the alignment tool into the "foam roller configuration" as shown in the section "Roll-to-roll alignment tool configuration for foam rollers" on page 335.

3. Using the supplied 1/4-in hex wrench, loosen the screw (A in Fig. 445.) that secures the collars on the ends of the foam rollers and remove the two collars.

Fig. 445. Removing foam roller collars

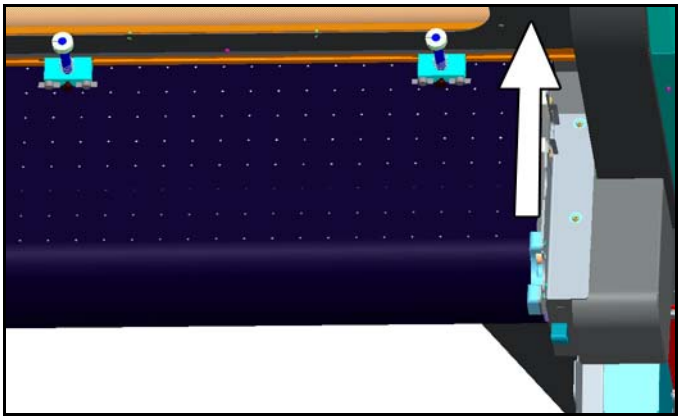


4. Place the foam roller in the inside foam roller rack (closest to the middle of the printer).

5. Using a 4 mm hex wrench, loosen the two screws that secure the foam roller rack on the service-end of the belt (see Fig. 422. for screw locations).

6. Push the service-end foam roller rack (C in Fig. 444.) as far toward the output-side of the printer as it will go (do not tighten the screws yet).

Fig. 446. Bias service-end upper rack toward output side



7. Make sure the thumb screws of the alignment tool are slightly loose.

8. Place the alignment tool on the **user-end** of the supply spool (A in Fig. 447.) and press the body of the alignment tool against the belt (B in Fig. 447.) while touching the leading edge of the alignment tool (C in Fig. 447.) on the metal shaft of the foam roller.

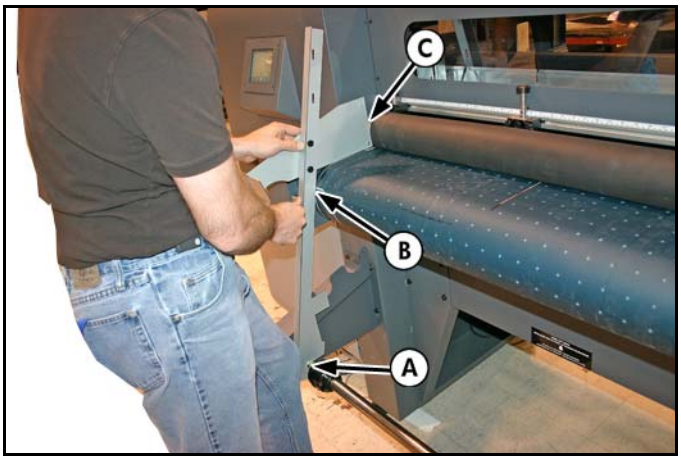


Fig. 447. Setting alignment tool for foam rollers

9. With all three points of the alignment tool touching (A, B and C in Fig. 447.), tighten the thumb screws on the alignment tool.

10. Place the alignment tool on the **service-end** of the supply spool so that the leading edge the alignment tool (C in Fig. 447.) is positioned toward the exposed metal of the roller's collar shaft.

11. Pull the foam roller rack (B in Fig. 448.) toward the alignment tool (A in Fig. 448.) until it touches the edge, making sure the body of the alignment tool is touching the belt and the lower notch of the tool is on the supply spool.

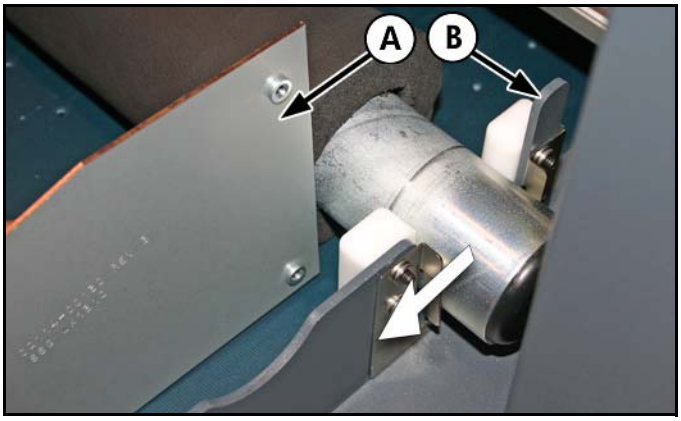


Fig. 448. Setting the position of the service-end foam roller rack

12. Using a 4 mm hex wrench, tighten the screw closest to the input-side edge (A in Fig. 449.) that secures the service-end foam roller rack to the printer.



Fig. 449. Securing the position of the service-end foam roller rack

For now, leave the second screw (B in Fig. 450.) loose.

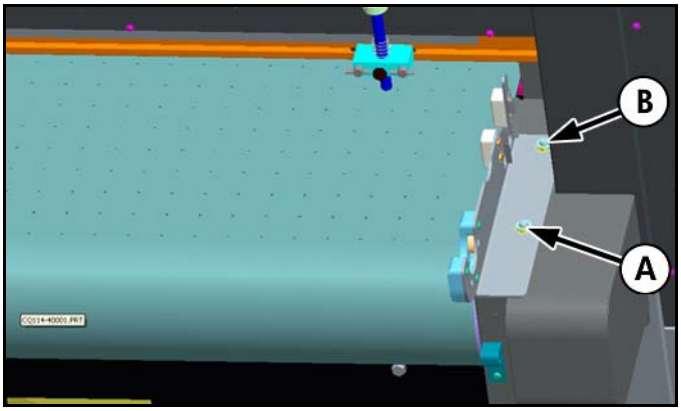


Fig. 450. Tighten one screw and leave the other loose

13. Recheck the tool against the user-end foam roller rack, adjusting the tool if needed and repeating the calibration until both sides match.

Center the foam rollers between the foam roller collars

14. Using the supplied 1/4-in hex wrench, install the two collars onto the foam roller.

Position the collars flush against the foam.

15. Move the foam roller into the rack (A in Fig. 451.) closest to the edge of the belt.

Install the same foam roller previously used.

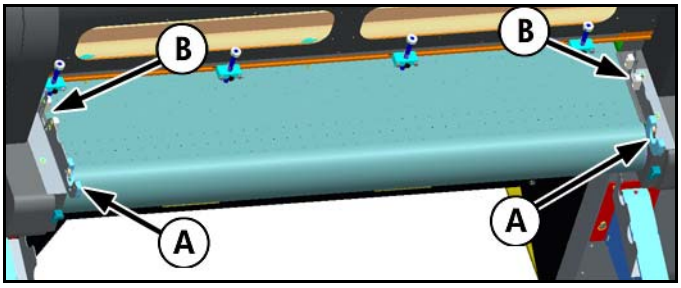


Fig. 451. Foam roller racks

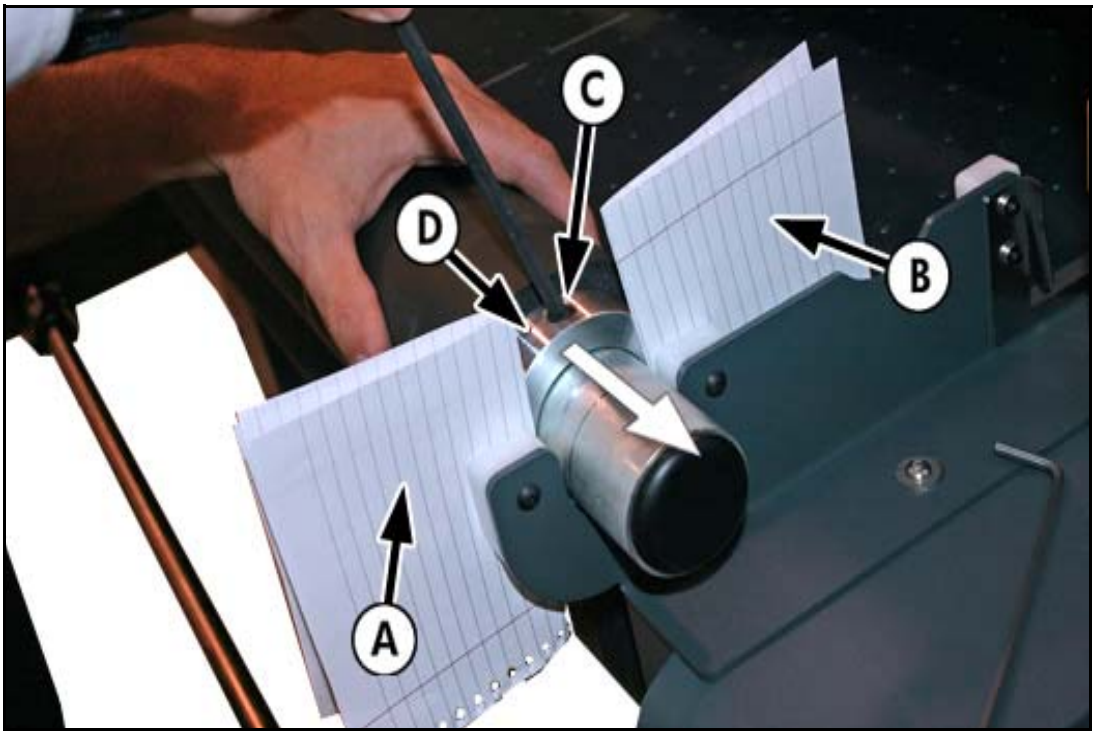
16. Take two sheets of copy paper or notebook paper (A in Fig. 452.), and fold the two pieces of paper in half so that you have a thickness of four pieces of paper.

These pieces of paper will be used to set the distance between the foam roller collars and the inside edge of the foam roller rack.

17. Take another two pieces of paper (B in Fig. 452.) and also fold these two in half.

18. Insert the folded pieces of paper on each side of the foam roller's shaft between the collar (D in Fig. 452.) and the edge of the foam roller rack as shown below.

Fig. 452. Setting the distance between the collar and the foam roller rack



19. Using the supplied1/4-in hex wrench, loosen the collar and move the collar against the paper so that the paper is sandwiched between the collar and the rack.

20. Tighten the collar.

21. Remove the paper.

22. Rotate the foam roller within the rack and look for binding between the edge of the collar and the rack.

If the foam roller's collar binds against the side of the rack when the roller rotates, insert the paper again and slightly increase the space between the collar and the side of the rack. Tighten the collar and repeat the rotation test.

23. Using the same foam roller as used in the previous step, move the foam roller to the inside rack position (B in Fig. 451.).

24. Insert the pair of folded papers on each side of the foam roller's shaft at the service-end of the roller.

25. Move the service-end foam roller rack toward the foam roller's collar to sandwich the paper between the collar and the rack.

Pivot the service-end rack on the screw that was tightened in step 13 on page 339 to set the proper position of the service-end foam roller rack. Once the paper is sandwiched between the collar and the rack, you will tighten the inside screw (B in Fig. 450.) on the foam roller rack.

26. Once the spacing is set between the collar and the rack, tighten the inside screw (B in Fig. 450.) on the foam roller rack.

Once the screw is tightened, the foam roller racks should be parallel with each other.

27. Check for binding between the foam roller's collar and the side of the foam roller rack and adjust using the spacers as needed.

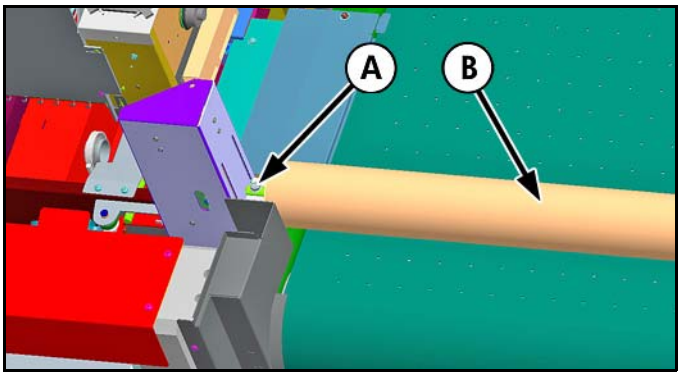
28. Install the second roller and turn it to check for binding, adjusting its collars as needed (but do not adjust the foam roller rack to accommodate the second roller).

29. Flip the foam rollers, and try both foam rollers in each of the two rack positions to make sure both rollers can turn freely in either rack position.

Remove the output roller

1. Using a 10 mm socket, remove the two bolts (A in Fig. 351. shows one of two bolts) that secure the output roller (B in Fig. 351.) to each end actuator motor (one is located on the service-end and the other is located on the user-end of the belt).

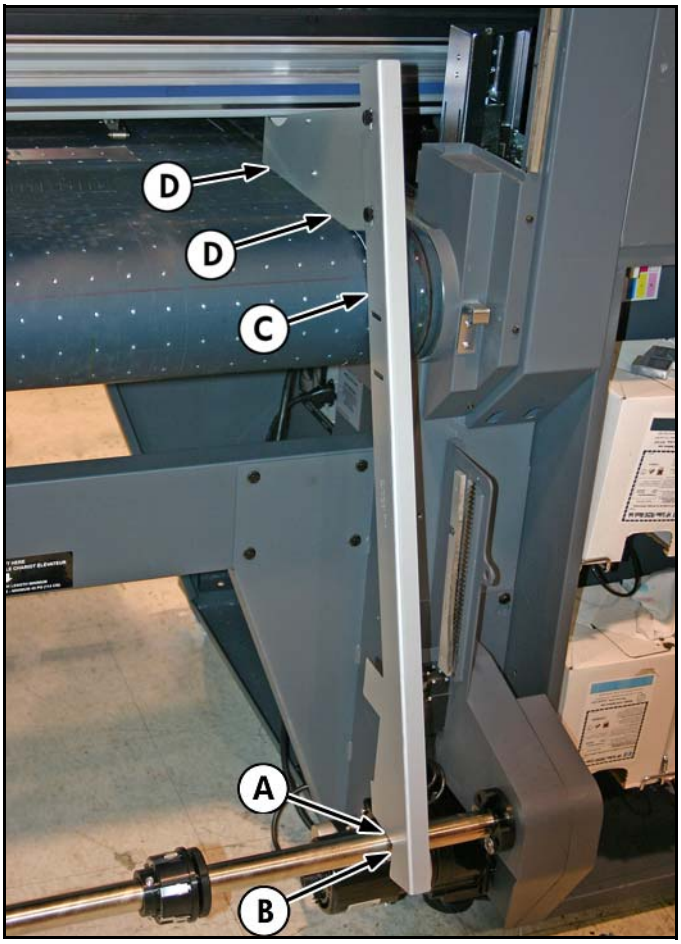
Fig. 453. Bolts that secure the output roller to its actuators



Set the takeup roller position

1. Configure the alignment tool into the supply and takeup configuration as shown in the section "Roll-to-roll alignment tool configurations for supply and/or takeup" on page 335.
2. With the tool's thumb screws slightly loosened, place the tool onto the user-end of the takeup spool, making sure the edges of the tool (A and B in Fig. 454.) are both touching the takeup spool and that the tool is touching the belt at positions C and D in Fig. 454.

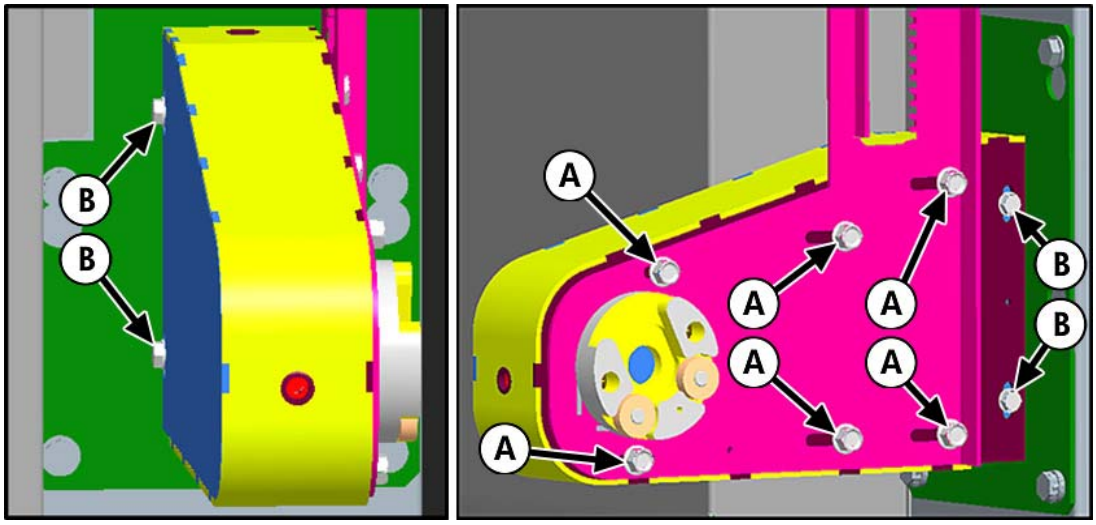
Fig. 454. Alignment tool at user-end of takeup spool



3. Tighten the thumb screws to set the tool's position.

4. Using a 10 mm socket wrench, loosen the six bolts (A in Fig. 455.) that secure the horizontal adjustment turnbuckle for the service-end takeup arm.

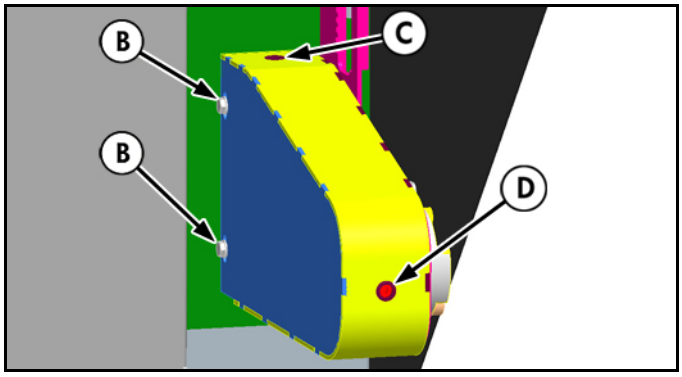
Fig. 455. Takeup arm turnbuckle screw bolts



5. Using a 10 mm socket wrench, loosen the four bolts (B in Fig. 455. and Fig. 456.) on the sides of the takeup arm (two on each side of the takeup arm located at the service-end of the printer) that secure the vertical adjustment turnbuckle screw (C in Fig. 456.).

   Due to the location of the outside bolts (B in Fig. 456.), use an adjustable wrench, like a Crescent wrench, to loosen the bolts on the user-end side of the takeup arm that secure the vertical adjustment turnbuckle screw (this is referring to the same takeup arm shown in Fig. 455.).

Fig. 456. Takeup arm turnbuckle screw bolts



Failure to loosen all bolts for the adjustment turnbuckles before turning the turnbuckle screw (C in Fig. 456.) will result in damage to the takeup arm housing.

6. Using the supplied 3/16-in hex wrench, turn the horizontal-adjustment turnbuckle (D in Fig. 456.) clockwise until the bolts (A in Fig. 455.) are at the end of their slots (similar to Fig. 435. on page 338).

   Turning the turnbuckle screw clockwise will move the spool position as close to the printer as possible. This will allow you to turn the turnbuckle screw counterclockwise until the spool touches the alignment tool in the following steps.

7. Using the supplied 3/16-in hex wrench, turn the vertical-adjustment turnbuckle (C in Fig. 456.) counterclockwise until the turnbuckle screw can no longer be turned counterclockwise, lowering the takeup arm to its lowest position (similar to Fig. 437. on page 339).

8. Place the alignment tool on the belt near the first column of vacuum holes that are closest to the service-end of the belt.

9. Make sure the tool is flat on the belt as shown in Fig. 454. on page 348.

10. Using the supplied 3/16-in hex wrench, turn the horizontal-adjustment turnbuckle (D in Fig. 456.) counterclockwise until the spool just touches the alignment tool.

As the spool touches the tool, reverse the hex wrench in the turnbuckle to back the spool away from the tool slightly, and then turn the hex wrench counterclockwise again to move the spool toward the tool until it touches.

11. Using the supplied 3/16-in hex wrench, turn the vertical-adjustment turnbuckle (C in Fig. 456.) clockwise until the spool just touches the alignment tool.

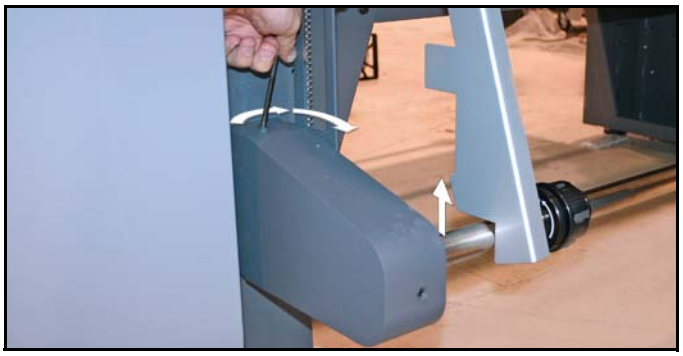


Fig. 457. Adjusting the vertical position of the takeup spool

12. Recheck the user-end of the spool to make sure the tool is flat and touching the belt.

13. If needed, reset the tool's position and repeat the calibration of the service-end of the spool.

14. Recheck that the service-end of the spool is correctly positioned.

Tighten the takeup arm's turnbuckle bolts

15. Insert a 4 mm hex wrench (as a spacer) between the user-end of the spool and the collet (A in Fig. 458.).

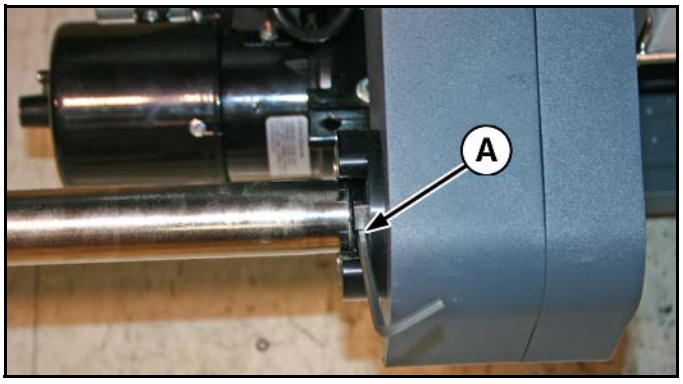


Fig. 458. Spacer between end of spool and collet on user-end

16. While biasing the service-end takeup arm toward the user-end of the printer, tighten the two bolts (using a 10 mm socket) that secure the vertical-adjustment turnbuckle (A in Fig. 459.) on the user-end side of the takeup arm.

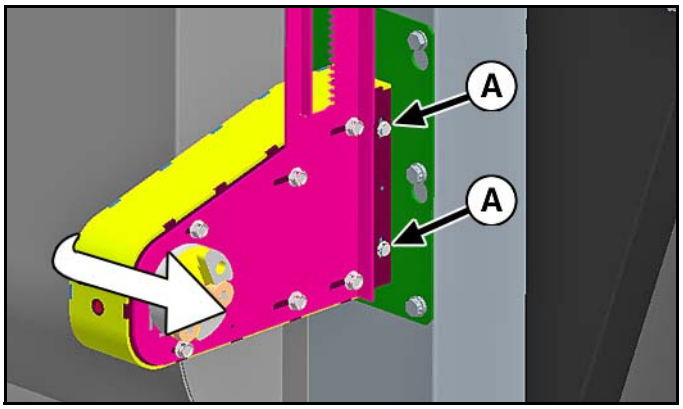


Fig. 459. Turnbuckle bolts on user-end side of service-end takeup arm

17. While biasing the service-end takeup arm toward the user-end of the printer, tighten the two bolts (using an adjustable wrench) that secure the vertical-adjustment turnbuckle (B in Fig. 456.) on the service-end side of the takeup arm.

18. While biasing the service-end takeup arm toward the user-end of the printer (as shown in Fig. 441.), tighten the six bolts (using a 10 mm socket) that secure the horizontal-adjustment turnbuckle (A in Fig. 455.).

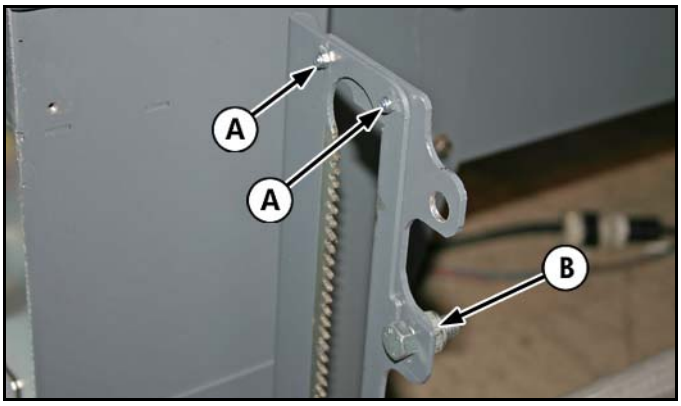
19. Make sure that the takeup spool can be removed from the collets and that there is not too much space at the end of the spool (adjust as needed).

Install the roll-to-roll moveable dancer bar

There are two configurations of the service-end bracket that is above the dancer bar gears: version one (Fig. 460.) and version two (Fig. 461.). If you have version one, the brackets must be removed on both the user-end and the service of the assembly before the dancer bar is installed. Failure to remove the brackets will cause the dancer bar gears to be inserted in the wrong initial gear tooth on the rack. If you have version two (Fig. 461.), only the service-end bracket must be removed prior to installing the dancer bar.

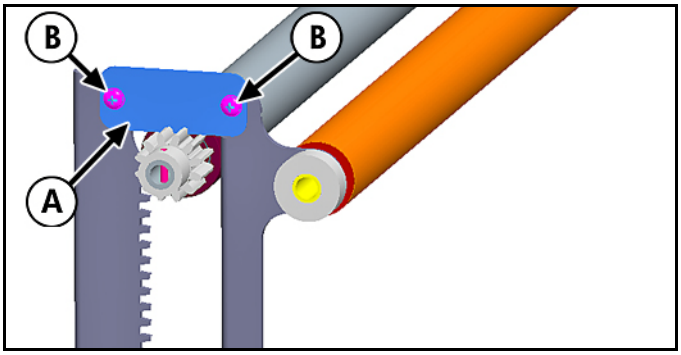
Version one of bracket above dancer bar gears

Fig. 460. Dancer bar bracket version one



Version two of bracket above dancer bar gears

Fig. 461. Dancer bar bracket version two



20. If you have bracket version one (Fig. 460.), use an adjustable wrench to remove the nut (A in Fig. 462.) from the user-end dancer bar gear assembly.



Do not attempt to remove the screw from the nut (A in Fig. 462.) using a screwdriver, or the screw may break. Remove the nut first.

21. If you have bracket version one (Fig. 460.), remove the bolt (B in Fig. 462.) from the user-end bracket using an adjustable wrench.

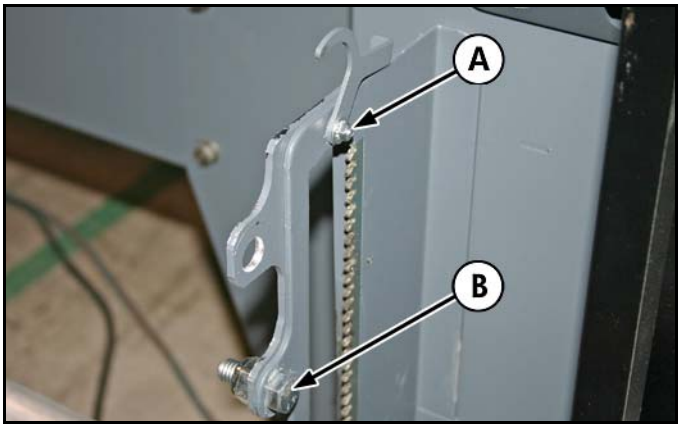


Fig. 462. Removing the user-end bracket from the early-style dancer bar gear rack

22. If you have bracket version two (Fig. 461.), use a #2 phillips screwdriver to remove the bracket (A in Fig. 461.) from the service-end assembly.

23. Insert the dancer bar into the top hole of the dancer bar gear rack on the service-end of the printer, pushing it through until there is room to insert the opposite end into the user-end hole of the gear rack.

24. On the user-end of the printer, lift the dancer bar to the top of the gear rack.

Lift the bar as high as it will go. This will align the dancer bar's gear with the correct teeth in the gear rack.



Fig. 463. Lifting the dancer bar on the user end

25. Before lowering the dancer bar, observe that the other end of the dancer bar is at the top of the gear rack on the service-end as shown in Fig. 464.

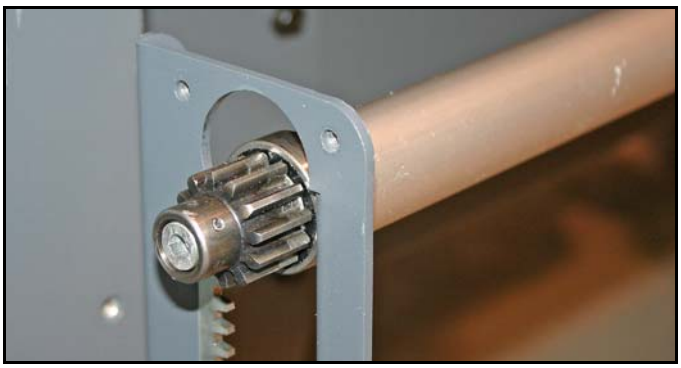


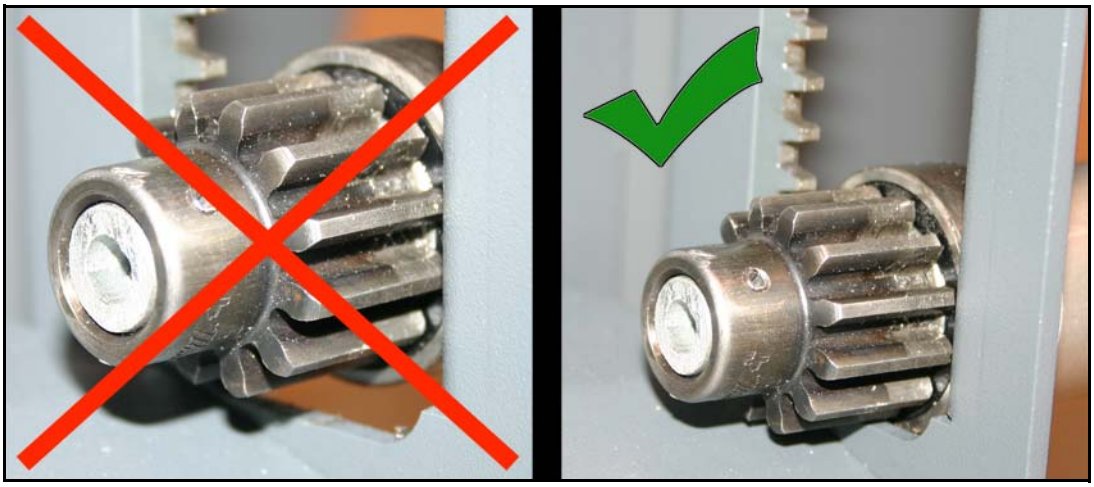
Fig. 464. Dancer bar lifted to top of gear rack in preparation for lowering the dancer bar

26. Lower the dancer bar to the bottom of the gear rack.

27. Make sure the dancer bar gears go all the way to the bottom of the gear rack.

If the gears do not go all the way to the bottom, repeat steps 24 and 25.

Fig. 465. Dancer bar gear at the bottom of the gear rack



28. If removed, install the brackets to the tops of the gear racks (see Fig. 462. and Fig. 461. on page 352).

Install the fixed bar into the dancer rack

29. Using a 9/64-in hex wrench, remove the collars from the ends of the fixed bar.

Fig. 466. Removing the collars from the ends of the fixed bars



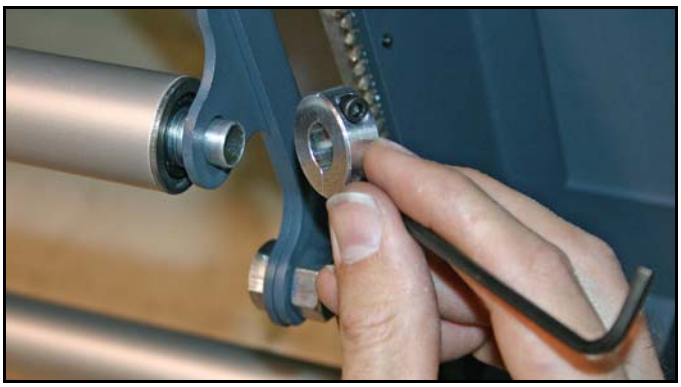
30. Insert the fixed bar into the hole at the top of the gear rack.

The fixed bar does not have a left or right orientation. Both ends are the same.

31. Using the supplied 9/64-in hex wrench, install the collars onto the ends of the fixed bar so that the collars are flush with the end of the bar.

The inner shaft that receives the clamp slides back and forth. If needed, have a helper push the inner shaft through the hole from the opposite end of the fixed bar.

Fig. 467. Fixed bar installation



Takeup motor power

32. Plug in the power cable from the takeup motor to the power outlet under the printer.

Fig. 468. Plugging in the takeup motor power



Verify movement of dancer bar

You should be able to insert a 3 mm hex wrench under the user-end dancer bar gear, lift the dancer bar to the top and lower the dancer bar to rest on the 3 mm hex wrench, and the takeup motor should turn off. However, if you insert a 4 mm hex wrench beneath the user-end dancer bar gear, lift the dancer bar to the top and lower the dancer bar to rest on the 4 mm hex wrench, the takeup motor should remain on. If this is not true, the position of the limit switch that is labeled "NC" (B in Fig. 472.) must be adjusted until it is true.

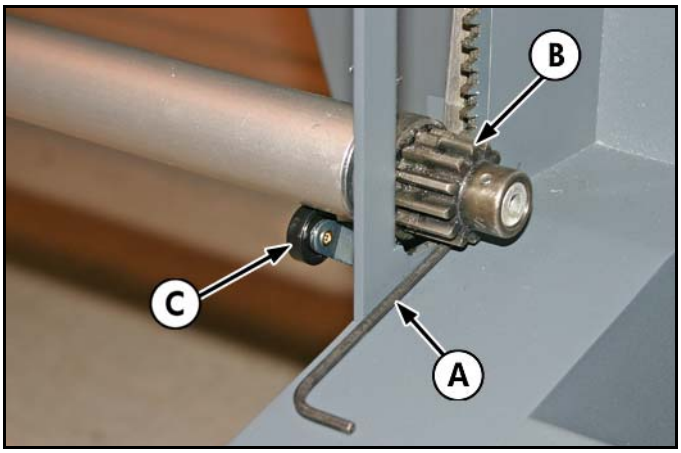
For a more information on the limit switches, see also Fig. 137. on page 118.

Verify takeup motor turn-off trigger point

1. Insert a 3 mm hex wrench beneath the user-end dancer bar gear.
2. Lift the dancer bar to the top of the gear rack, and lower the dancer bar to rest on the 3 mm hex wrench.

   If the takeup motor does not turn off, adjust the position of the NC limit switch (B in Fig. 472.) as shown in the section "Adjusting takeup switch positions" on page 358.

Fig. 469. Testing switch positions



3. Insert a 4 mm hex wrench beneath the user-end dancer bar gear.
4. Lift the dancer bar to the top of the gear rack, and lower the dancer bar to rest on the 4 mm hex wrench.

   If the takeup motor turns off, adjust the position of the NC limit switch (B in Fig. 472.) as shown in the section "Adjusting takeup switch positions" on page 358 until it does not.
5. If adjustments were made to the limit switch positions, repeat steps 1 through step 4 on page 356 to verify the trigger point.

Verify takeup motor's turn-on trigger point

6. Lift the dancer bar to the top of the gear rack, and insert something that is 3.8 cm tall (1.5-in) under the user-end dancer bar gear.

Often, the bend of a 7 mm hex wrench is this height.

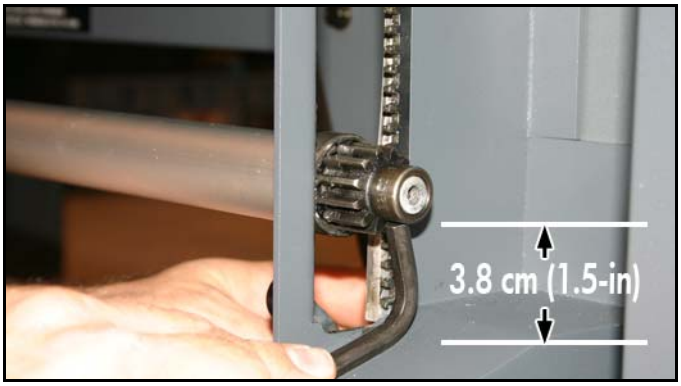


Fig. 470. Testing switch trigger point

7. Lower the dancer bar until the user-end dancer bar gear contacts the obstruction.

If the motor does not come on within +/- 0.63 cm (1/4-in) of the obstruction, adjust the position of the NC limit switch (B in Fig. 472.) as shown in the section "Adjusting takeup switch positions" on page 358 until it does not.

8. If adjustments were made to the limit switch positions, repeat steps 6 and step 7 on page 357 to verify the trigger point.

Adjusting takeup switch positions

The switch position can be adjusted by either moving the wheel position (A in Fig. 471. - a larger position move) or by loosening the two screws (B in Fig. 471.) that secure the switch to the printer to fine tune its position.

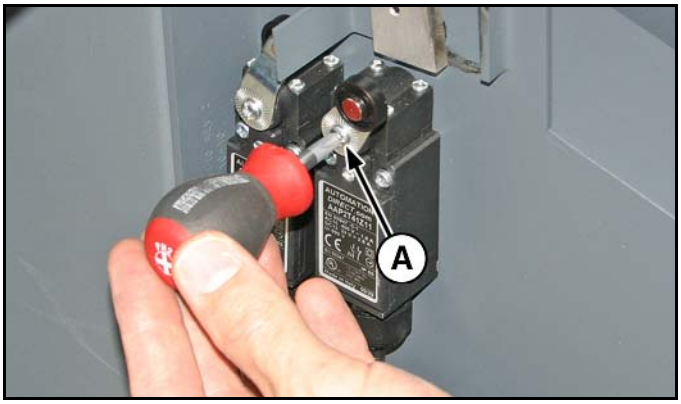
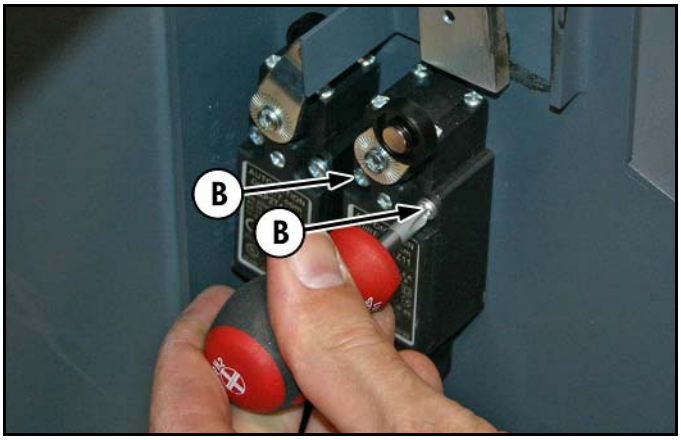


Fig. 471. Moving switch positions

A = Gross position moves

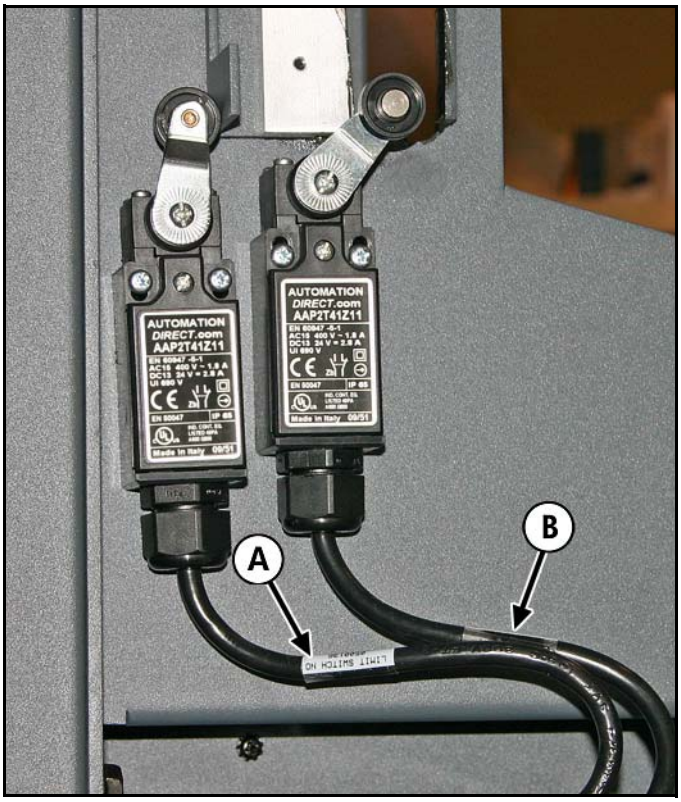
B = Fine tune moves



Note: Verify that the limit switches are assembled with their wheel brackets oriented as shown in Fig. 471. and Fig. 472. If not, remove the screw that secures the wheel bracket (A in Fig. 471.) and correct the bracket orientation.

9. The limit switches are labeled “NO” (Normally Open - A in Fig. 472.) and “NC” (Normally Closed - B in Fig. 472.).

Fig. 472. Limit switch labels



A = NO (Normally Open)

B = NC (Normally Closed)

Note: Verify that the limit switches are assembled with their wheel brackets oriented as shown in Fig. 471. and Fig. 472. If not, remove the screw that secures the wheel bracket (A in Fig. 471.) and correct the bracket orientation.

Install the output roller

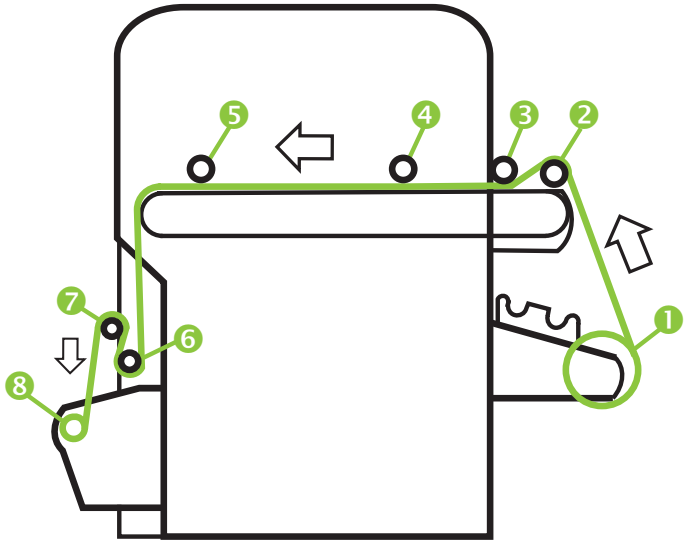
1. Using a 10 mm socket, install the two nuts that secure the output roller (Fig. 351.) to the printer.

Loading roll-to-roll media

Media loading overview

The leading edge of the media should roll off of the supply spool from the outside (1 in Fig. 473.) of the roll, travel over the lift roller (2 in Fig. 473.), under the press roller (3 in Fig. 473.), under the input roller and output roller (4 and 5 in Fig. 473.), under the dancer bar (6 in Fig. 473.), over the fixed bar (7 in Fig. 473.), and finally wrap under the takeup spool (8 in Fig. 473.).

Fig. 473. Loading media



It is critical that the media always wraps **under** the takeup spool (8 in Fig. 473.).

In some cases, the supply spool can unwrap from the inside, but the preferred method for the supply spool is for the media to unwrap from the outside (1 in Fig. 473.).

If loading clear media, the carriage cannot see the media edge to detect where to start printing. Follow the printer's media-loading wizard for invisible media to measure from the user edge of the media-drive belt to the edge of the media, and input this distance during the media load process when prompted.

When loading a very narrow web of media, you may need to reverse the supply spool prior to loading the media, so that the tab at the end of the spool is not engaged in the collet. This will reduce the friction when the supply spool turns. A narrow web of media will contact fewer vacuum holes on the media-drive belt, which may cause the media to slip during media advance if there is too much friction on the supply spool.

Prepare the printer

1. Remove the lift and press foam rollers from their lower rack position (so they will not be trapped behind the media when the media is inserted through the printer).
2. If using the media that is supplied with the roll-to-roll kit, remove the black spool stiffeners from the spool.

   The spool stiffeners are only needed for heavier rolls that can cause the spools to bend.
3. Install the lift foam roller onto the top rack as illustrated in (D in Fig. 134.) on page 116.
4. Install the roll of media onto the supply spool approximately in the center of the spool.

Center the media on the supply spool

1. Bias the supply arm (Fig. 474.) toward the spool of media.

   Pull the supply arm toward the roll of media, release the supply arm and then proceed to the next step (measuring the distance from end of the roll to the side of the supply arm).
2. Use a ruler to measure the distance from the ends of the roll to the sides of the supply arms (on both the user-end and service-end of the printer).

   If the media is wider at the outside edge than at the core, measure from the widest point.

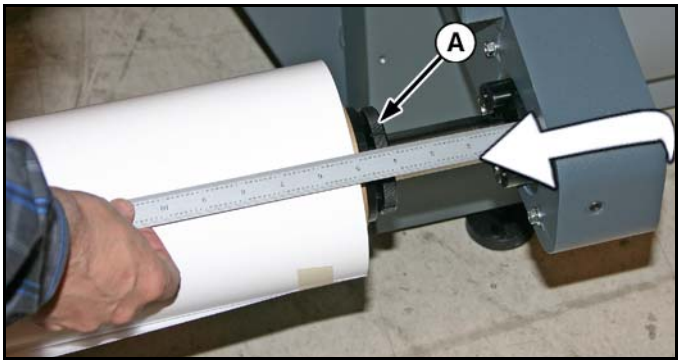


Fig. 474. Measuring the distance from the ends of the roll

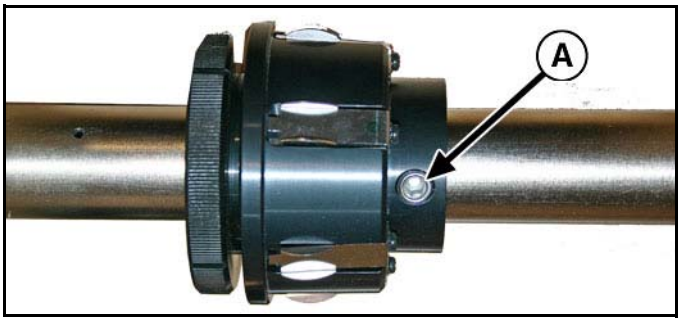
Before tightening the collet rings (A in Fig. 474.), the supply roll must be centered on the supply spool by +/- 0.3 cm (1/8-in).

3. Loosen the collet rings (A in Fig. 474.) to adjust the media roll's position on the supply spool until the roll is exactly centered on the spool.
4. Loosen the service-end collet, and pull the media off of the user-end collet to access the collet set screw on the supply spool.

Both the user-end collet and the service-end collet have set screws. Make sure you tighten the **user-end** set screw. If you tighten the service-end set screw, media tracking issues may develop.

5. Using a 5 mm hex wrench, tighten the user-end set screw (A in Fig. 475.) that secures the collet in position on the spool.

Fig. 475. Tighten collet onto supply spool



6. Push the media back onto the collet and tighten the collet rings (A in Fig. 474.) on the supply spool.

Initiate LOAD MEDIA from printer's menu

7. Verify the roll-to-roll option is set to YES.

From the printer's menu, select SYSTEM > TOOLS > SERVICE PRINTER > SUPPORT ROLL FED MEDIA. If the menu option is set to YES, you can return to the top-level menu.

8. If using the supplied media that came with the roll-to-roll kit, select the media type as UV PHOTOBASE.

From the printer's menu, select the following:

MEDIA > CONFIGURE > UV PHOTOBASE (ROLL) > PROCEED

9. When prompted, select NEW LOAD.

10. When prompted to enter the media's thickness, select whether you will enter the thickness in inches or centimeters.

If you are using the supplied UV photobase media that came with the roll-to-roll kit, enter 0.02 cm (0.008-in) thickness for the media.



Do not skip the step to enter the media thickness. The media thickness is not automatically measured (as it is with non-roll-fed media).

11. Load the media over the lift roller (D in Fig. 134. on page 116) and through the printer toward the takeup spool.

12. In order to remove slack, pull the media manually when its edge is above the takeup spool.

Fig. 476. Removing slack from media

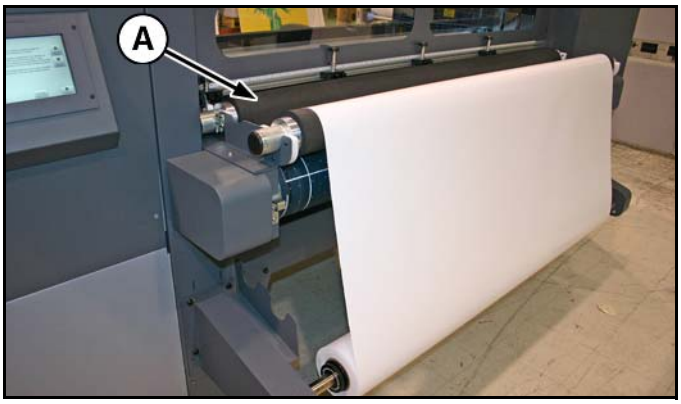


13. From the printer's menu, select TURN ON FANS.

Smooth out the media on the belt to remove wrinkles.

14. Drop the press roller (A in Fig. 477.) into its rack position to hold down the media.

Fig. 477. Installing press roller

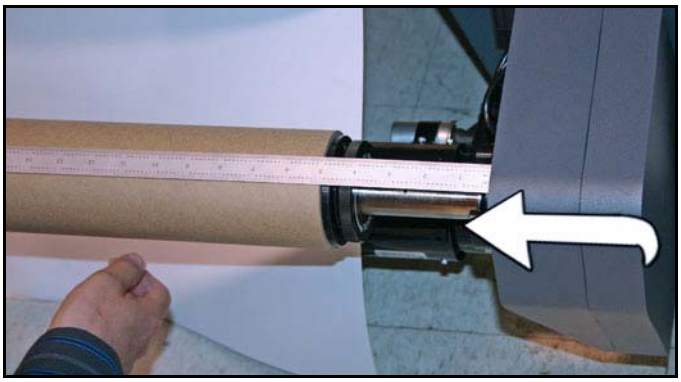


15. Bias the takeup-motor arm toward the service-end of the printer (see Fig. 478.) by pulling it toward the service-end before you take the measurement in the following step 16.

16. Center the takeup cardboard core onto the takeup spool by measuring the distance from each edge of the cardboard core to the edge of each takeup arm.

The cardboard core must be centered on the takeup spool by +/- 0.3 cm (1/8-in).

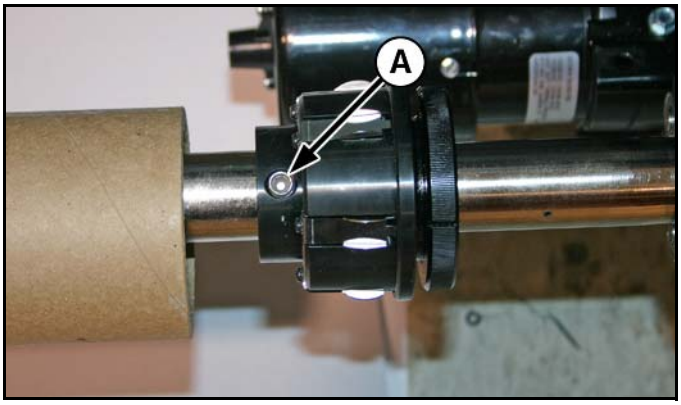
Fig. 478. Centering cardboard core on takeup spool



Both the user-end collet and the service-end collet have set screws. Make sure you tighten the **user-end** set screw. If you tighten the service-end set screw, media tracking issues may develop.

17. Pull the cardboard tube off of the user-end collet and, using a 5 mm hex wrench, tighten the screw (A in Fig. 479.) that secures the collet in position on the takeup spool.

Fig. 479. Tighten collet onto takeup spool

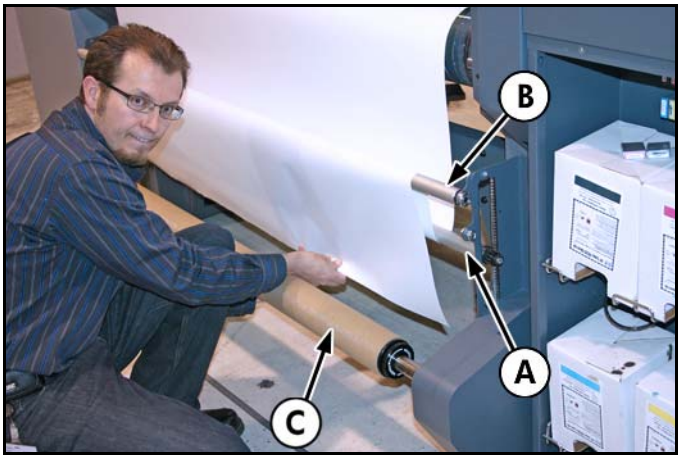


18. Push the cardboard tube back onto the user-end collet.

19. Push the service-end collet into the cardboard tube and tighten the collet by turning the outer ring on the end of the collet.

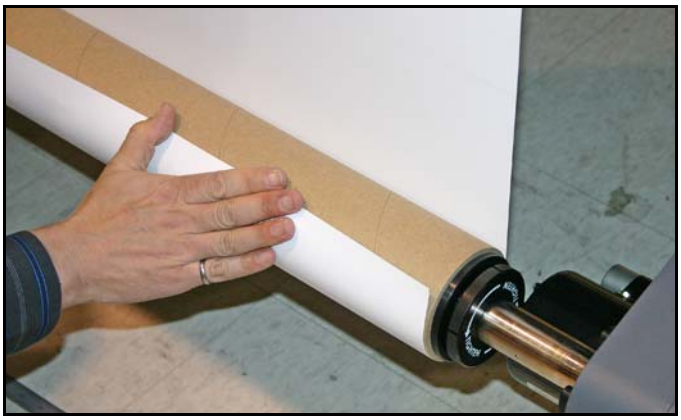
20. Route the media under the dancer bar (A in Fig. 480.) and over the fixed bar (B in Fig. 480.).

Fig. 480. Routing the media through the dancer bar



21. Wind the media under the cardboard core and tape the media to the core with the edge of the media at the edge of the cardboard core.

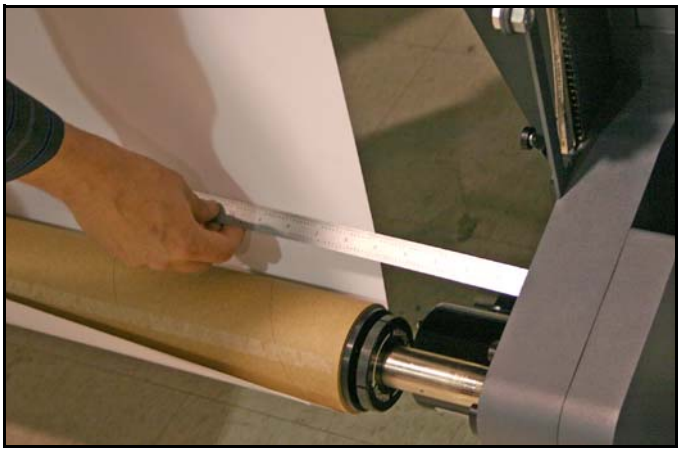
Fig. 481. Tape media to core



It is important that the media be centered. If the media is the same width as the spool, then center the media and the spool. If the media is not as wide as the spool, it is the media that must be centered (not the spool).

22. Measure the distances on each side of the loaded media to make sure that it is centered on the core after taping it to the core.

Fig. 482. Verifying the media is centered



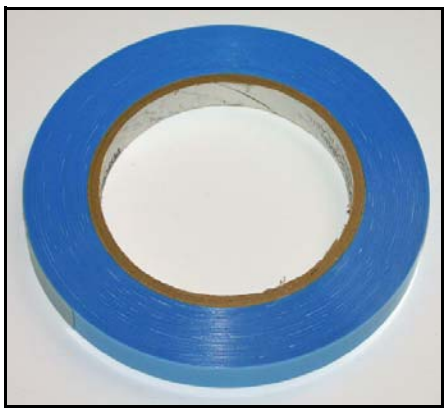
Mid-spool support for heavy media rolls

Some rolls of media may be so heavy that they cause the supply and takeup spools to sag. If the supply spool sags, wrinkles develop in the media as it moves onto the media-drive belt. During printing, these wrinkles can contact the bottom of the carriage (called a "head strike"). A head strike will damage the print and possibly the carriage or printheads. The mid-spool support (D in Fig. 416. on page 330) is installed to keep heavy rolls, like long rolls of vinyl, from sagging.

Because there is no standard radius for media cores, the media roll may not fit snugly onto the mid-spool support. You may need to add tape (supplied) as a spacer to keep the media from rattling on the mid-spool support. If the media roll fits over the mid-spool support snugly, then adding a spacer (tape) is not needed.

If the roll is loose on the mid-spool support, tape (Fig. 135.) should be added to increase the diameter of the mid-spool support. Add (or remove) as many layers of tape as needed to create a snug fit between the mid-spool support and the media roll.

Fig. 483. Tape used to create spacers on mid-roll support



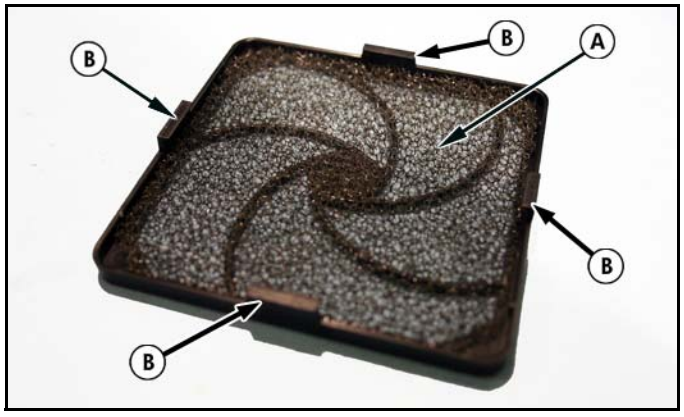
Note: This tape should not be used to tape the media to the takeup core. It is for creating spacers, as needed, for the mid-spool support.

Removing the fan's air filter

There are two fan air filters for the main electronics box. One is accessed under the printer between the printer's frame legs near the power cord, and the other is located on the input-side of the printer near the printer's power switch.

1. Remove the fan filter cover by squeezing the sides of the filter cover until the cover's tabs (B in Fig. 484.) release.

Fig. 484. Fan filter cover



Installing the fan filter cover

1. Insert the new fan filter into the fan filter cover.
2. Snap the fan filter cover back onto its original location, making sure that all four tabs lock into the finger guard cover.

Fig. 485. Fan filter installation



Removing the electronics box covers

Required tools:

- #2 phillips screwdriver

1. Remove the user-end enclosure as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.
2. Power off the printer following the cautions described in the section "Managing Power Off Scenarios" on page 216, and remove the main power-in cable from the printer.
3. Remove all of the cables that are connected to the user-end side of the electronics box.
4. Remove the screws (A and B in Fig. 220.) that secure the user and service-end enclosures to the printer, and remove the enclosures.
5. Remove the electronics box covers.

Installing the electronics box covers

1. Install the top and bottom cover to the electronics box using the original silver screws.

   For grounding and electrical radiation emission reasons, it is important to install all of the cover screws.
2. Reconnect all of the cables to the user-end side of the electronics box, making sure that all of the cables are seated and snapped into place.

Removing the motor control board

Required tools:

- #2 phillips screwdriver

1. Remove the top cover to the electronics box as shown in the section "Removing the electronics box covers" on page 368.
2. Power off the printer following the cautions described in the section "Managing Power Off Scenarios" on page 216, and remove the main power-in cable from the printer.
3. Disconnect the external cables (A in Fig. 486.) attached to the motor control board.

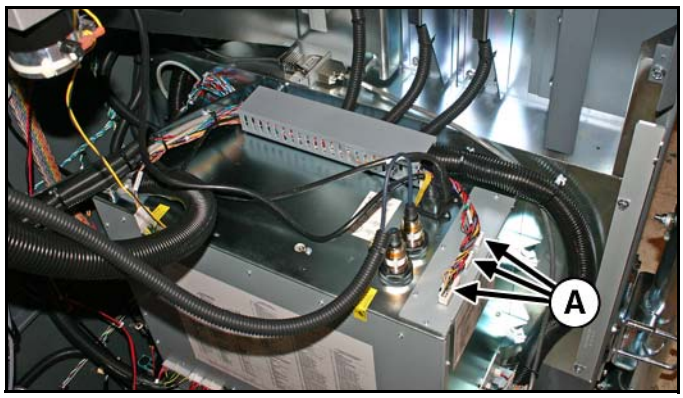
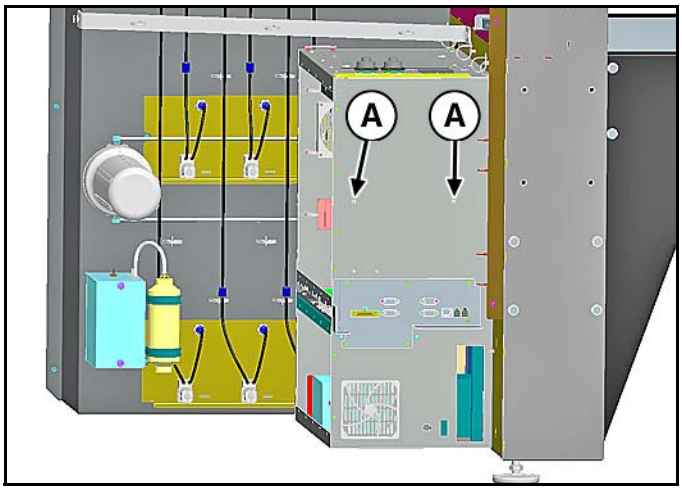


Fig. 486. Motor control board external cables

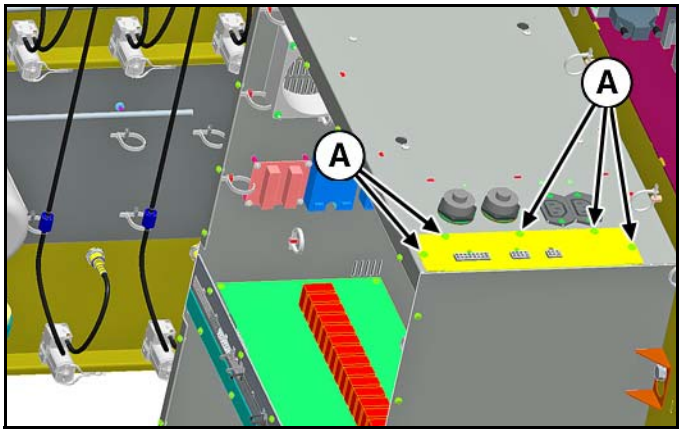
4. Using a #2 phillips screwdriver, remove the two screws (A in Fig. 487.) located on the input-side of the electronics box that secure the motor control board to the enclosure.

Fig. 487. Motor control board screws



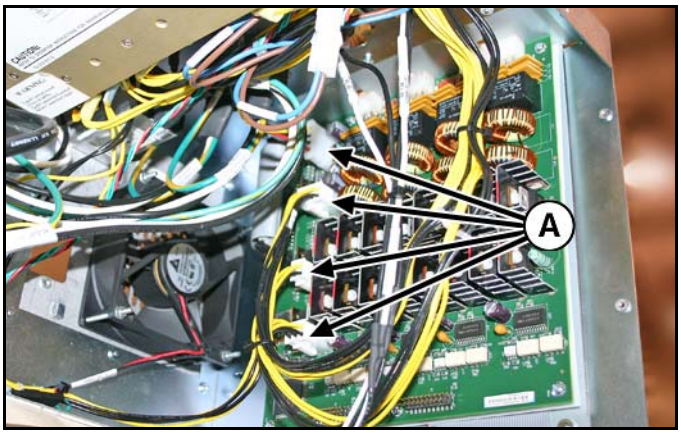
5. Using a #2 phillips screwdriver, remove the five screws (A in Fig. 488.) located on the top of the electronics box.

Fig. 488. Motor control board screws



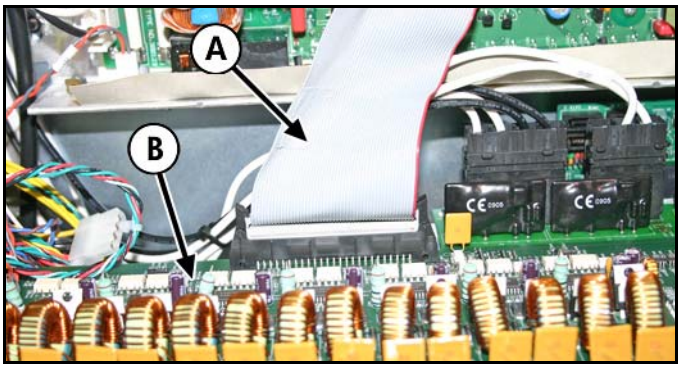
6. Disconnect the four cables (A in Fig. 489.) from the motor control board.

Fig. 489. Motor control board cables



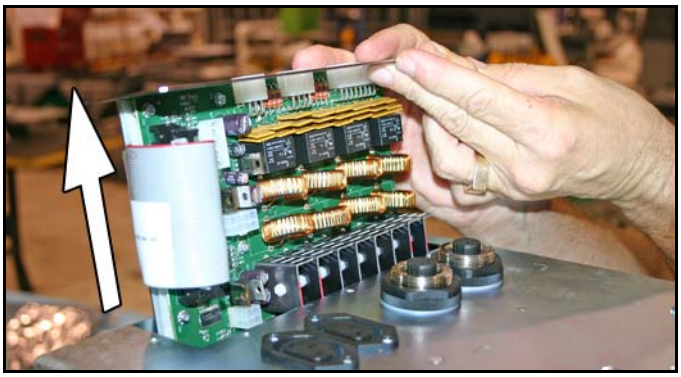
7. Disconnect the motor control board ribbon cable (A in Fig. 490.) from the IO board (B in Fig. 490.).

Fig. 490. Motor control board ribbon cable



8. Release the cable clamp that secures the ribbon cable to the electronics box inside enclosure.
9. Remove the motor control board by lifting it out from the top of the electronics box.

Fig. 491. Removing the motor control board



Installing the motor control board

1. Insert the motor control board through the top opening of the electronics box.
2. Install the five screws (A in Fig. 488.) that secure the motor control board assembly to the top of the electronics box.
3. Using a #2 phillips screwdriver, install the two screws (A in Fig. 487.) located on the input-side of the electronics box that secure the motor control board to the enclosure.
4. Connect the four cables (A in Fig. 489.) to the motor control board.
5. Connect the motor control board ribbon cable (A in Fig. 490.) to the IO board (B in Fig. 490.).
6. Secure the ribbon cable to the electronics box inside enclosure using the enclosure clamp.
7. Install the electronics box covers as shown in the section “Installing the electronics box covers” on page 368.
8. Connect the external cables (A in Fig. 486.) that attach to the motor control board.

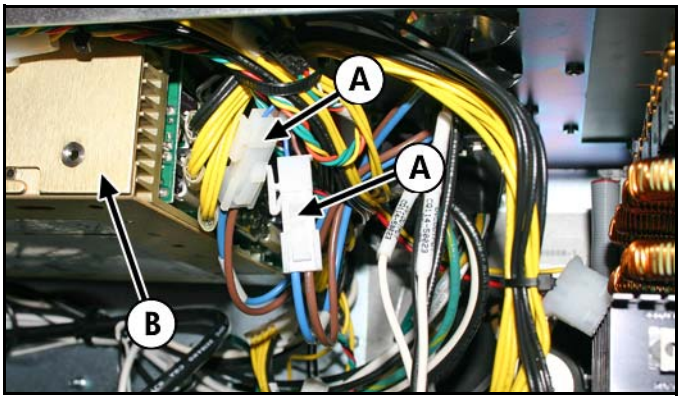
Removing the FB 500 ebox UV power output cables

Required tools: #2 phillips screwdriver

The UV power output cables connect between the UV power supply and the external UV power cable connection on the electronics box. The cable is labeled “CQ114-50023.”

1. Power off the printer following the cautions described in the section “Managing Power Off Scenarios” on page 216, and remove the main power-in cable from the printer.
2. Remove the covers to the electronics box as shown in the section “Removing the electronics box covers” on page 368.
3. Disconnect the two brown-and-blue UV sense cables (A in Fig. 492.) located near the 24v/ 38v power supply (B in Fig. 492.) at the top of the electronics box.

Fig. 492. UV sense cables



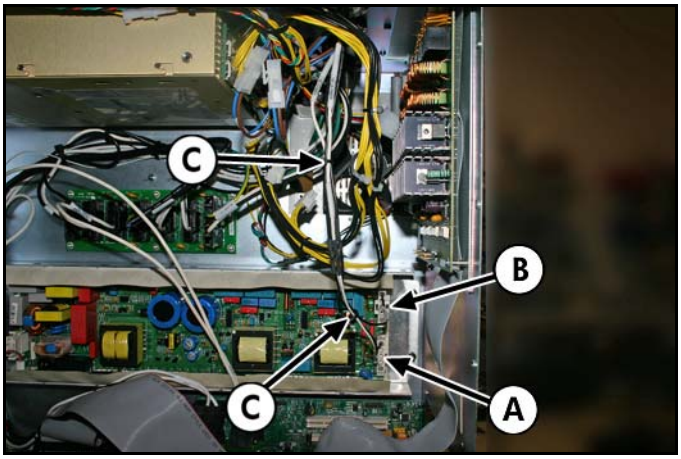
4. Disconnect the output power cables from the UV power supply for the user-end (A in Fig. 493.) and service-end (B in Fig. 493.) UV power connectors.

Fig. 493. UV output power cables

A = User-end power cable connection

B = Service-end power cable connection

C = Cable tie locations



5. Cut the two cable ties (C in Fig. 493.) the secure the cables.

6. Unscrew the black nuts that secure the cables to the tops of the electronics box.

Fig. 494. Unscrew nuts

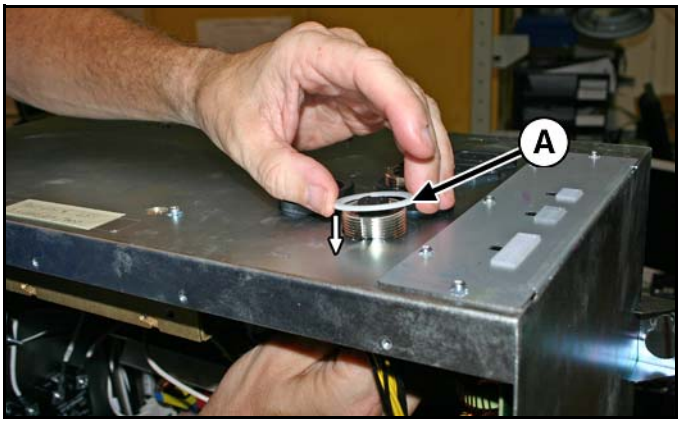


7. Remove the cables from the electronics box.

Installing the FB 500 ebox UV power output cables

1. Thread the cables through the UV power cable opening on the top of the electronics box.
2. Place the plastic washer around the threads of the connector.

Fig. 495. Plastic washer



3. Screw on the black plastic nut (Fig. 494.) that secures the UV power cable connector to the top of the electronics box.
4. Connect the output power cables to the UV power supply for the user-end (A in Fig. 493.) and service-end (B in Fig. 493.) UV power cables.
5. Connect the two brown-and-blue UV sense cables (A in Fig. 492.) located near the 24v/38v power supply (B in Fig. 492.) at the top of the electronics box.
6. Install two cable ties (C in Fig. 493.) to tidy up the cables.
7. Install the electronics box covers as shown in the section "Installing the electronics box covers" on page 368.

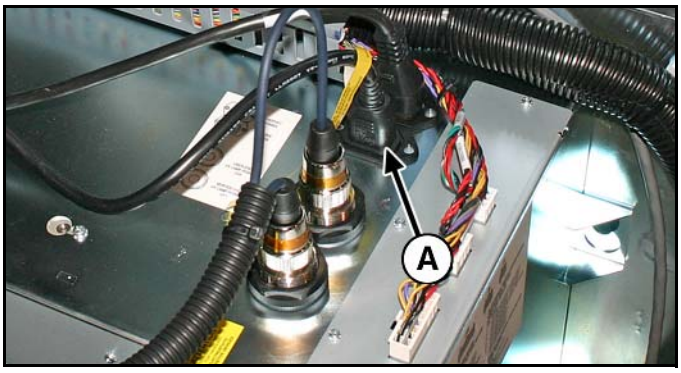
Removing the ebox ionizer power-out cable

This cable is labeled "CQ114-50001." It connects between the AC power outlet on the electronics box (where the ionizer plugs into the electronics box) and the AC distribution board.

Required tools: 7 mm socket, #1, #2 phillips screwdrivers and something to cut cable ties.

1. Power off the printer following the cautions described in the section "Managing Power Off Scenarios" on page 216, and remove the main power-in cable from the printer.
2. Remove the covers to the electronics box as shown in the section "Removing the electronics box covers" on page 368.
3. Unplug the ionizer's power cable from the top of the electronics box.

Fig. 496. Ionizer power cable



4. Using a 7 mm socket, disconnect the ground wire (A in Fig. 497.) for the ionizer power-out cable.

Fig. 497. Power-out ground cable

A = Ionizer cable ground

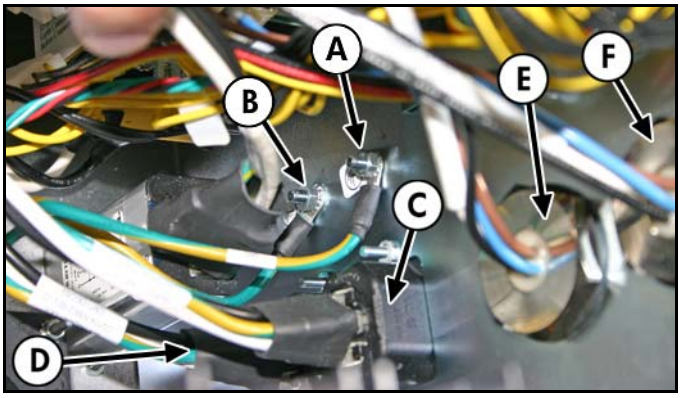
B = ShopVac cable ground

C = Ionizer AC outlet

D = ShopVac power outlet

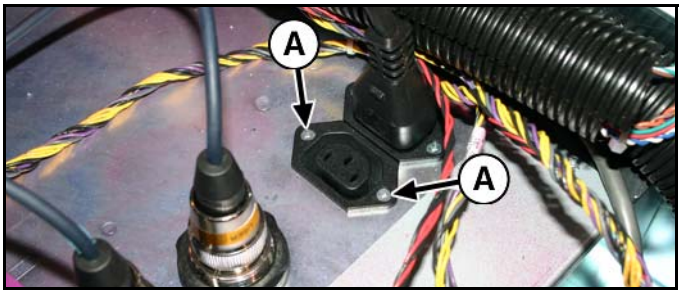
E = User-end UV power cable

F = Service-end UV power cable



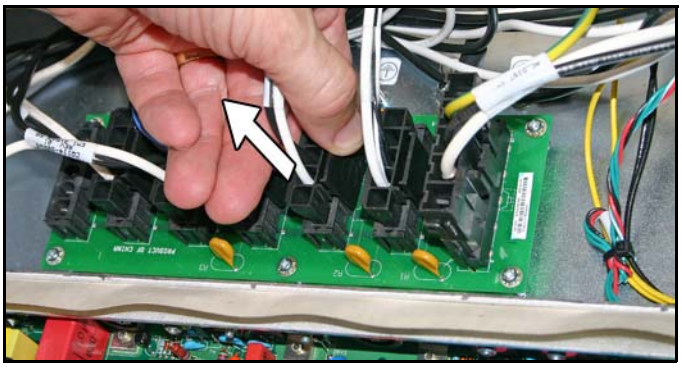
5. Using a #1 phillips screwdriver, remove the two screws (A in Fig. 498.) that secure the ionizer's outlet plate to the electronics box.

Fig. 498. Outlet plate screws



6. Unplug the ionizer cable from position J3 on the AC distribution board.

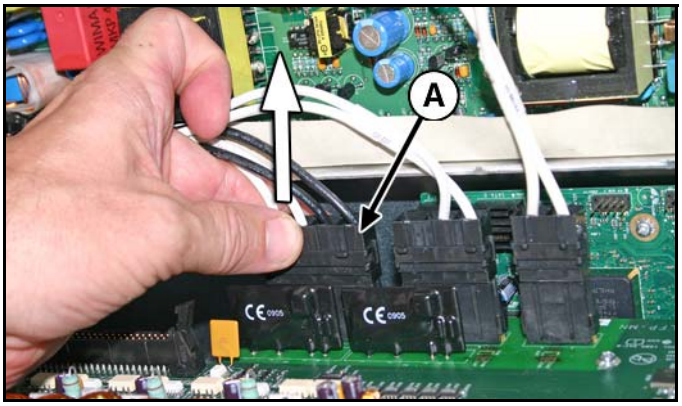
Fig. 499. Ionizer cable position on AC distribution



7. Unplug the ionizer cable from the IO board at position J23 (see also Fig. 150. on page 128 for J23 location on IO board).

Fig. 500. Ionizer cable position on IO board

A = Ionizer cable at position J23 on IO board



8. Cut any cable ties that secure the ionizer power-out cable.

9. Remove the ionizer power-out cable through the top of the electronics box.

Installing the ebox ionizer power-out cable

1. Insert the ionizer power-out cable through the outlet hole on top of the electronics box.
2. Using a #1 phillips screwdriver, install the two screws (A in Fig. 498.) that secure the ionizer's outlet plate to the electronics box
3. Plug the ionizer cable into position J3 on the AC distribution board (see Fig. 499.).
4. Plug the ionizer cable into the IO board at position J23 (see also Fig. 150. on page 128 for J23 location on IO board).
5. Using a 7 mm socket, connect the ground wire (A in Fig. 497.) for the ionizer power-out cable to the electronics box enclosure.
6. Plug in the external power cable for the ionizer to the ionizer power outlet.
7. Install the electronics box covers as shown in the section "Installing the electronics box covers" on page 368.

Removing the ebox ShopVac power-out cable

This cable is labeled "CQ114-50003." It connects between the ShopVac's external AC power outlet on the electronics box (where the ShopVac plugs into the electronics box) and the AC distribution board.

Required tools: 7 mm socket, #1, #2 phillips screwdrivers and something to cut cable ties.

1. Power off the printer following the cautions described in the section "Managing Power Off Scenarios" on page 216, and remove the main power-in cable from the printer.
2. Remove the covers to the electronics box as shown in the section "Removing the electronics box covers" on page 368.
3. Unplug the ShopVac's power cable (A in Fig. 501.) from the top of the electronics box.

Fig. 501. ShopVac power cable



4. Using a 7 mm socket, disconnect the ground wire (B in Fig. 497.) for the ShopVac power-out cable.

Fig. 502. Power-out ground cable

A = Ionizer cable ground

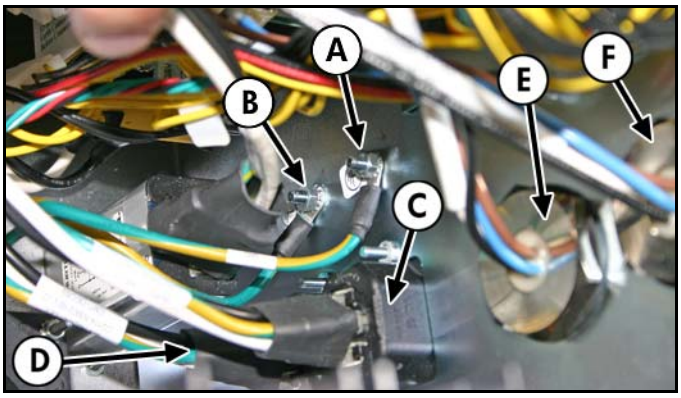
B = ShopVac cable ground

C = Ionizer AC outlet

D = ShopVac power outlet

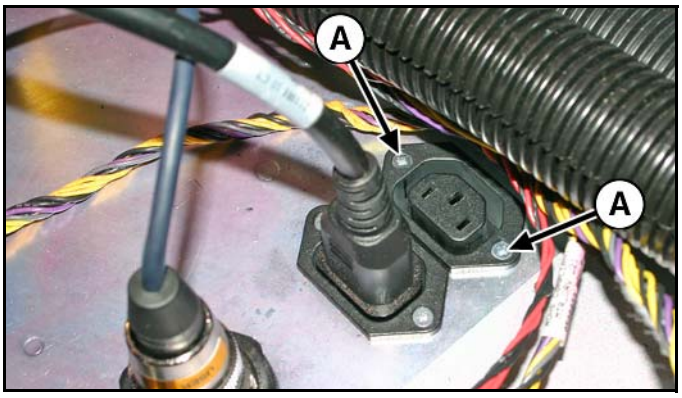
E = User-end UV power cable

F = Service-end UV power cable



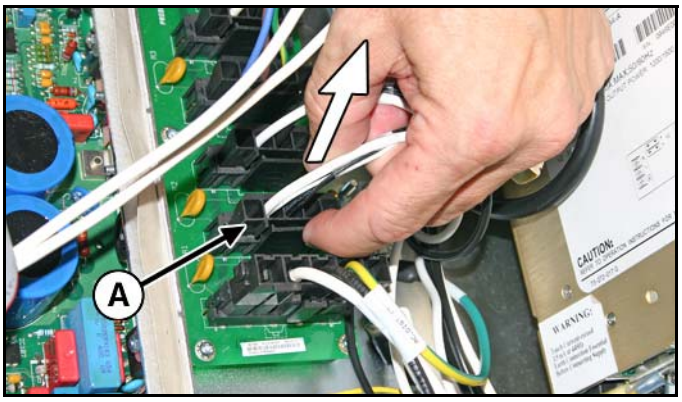
5. Using a #1 phillips screwdriver, remove the two screws (A in Fig. 498.) that secure the ionizer's outlet plate to the electronics box.

Fig. 503. Outlet plate screws



6. Unplug the ShopVac cable from position J2 on the AC distribution board.

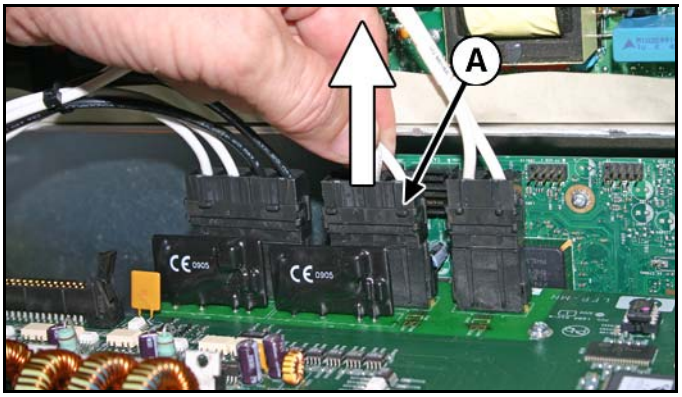
Fig. 504. ShopVac cable position J2 on AC distribution



7. Unplug the ShopVac cable from the IO board at position J22 (see also Fig. 150. on page 128 for J22 location on IO board).

Fig. 505. Ionizer cable position on IO board

A = ShopVac cable at position J22 on IO board



8. Cut any cable ties that secure the ShopVac power-out cable.
9. Remove the ShopVac power-out cable through the top of the electronics box.

Installing the ebox ShopVac power-out cable

1. Insert the ShopVac power-out cable through the outlet hole on top of the electronics box.
2. Using a #1 phillips screwdriver, install the two screws (A in Fig. 503.) that secure the ShopVac's outlet plate to the electronics box
3. Plug the ShopVac cable into position J2 on the AC distribution board (see Fig. 504.).
4. Plug the ShopVac cable into the IO board at position J22 (see also Fig. 150. on page 128 for J23 location on IO board).
5. Using a 7 mm socket, connect the ground wire (B in Fig. 497.) for the ShopVac power-out cable to the electronics box enclosure.
6. Plug in the external power cable for the ShopVac to the ShopVac power outlet.
7. Install the electronics box covers as shown in the section "Installing the electronics box covers" on page 368.

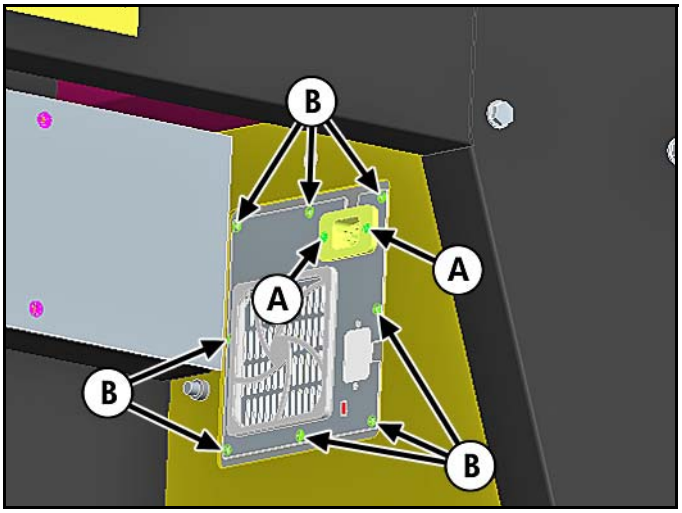
Removing the ebox main input-power cable

This cable is labeled "CQ114-500021." It connects between the printer's external AC power outlet on the electronics box (where the printer's power cable plugs into the electronics box) and the AC distribution board.

Required tools: 4 mm socket, #1, #2 phillips screwdrivers and something to cut cable ties.

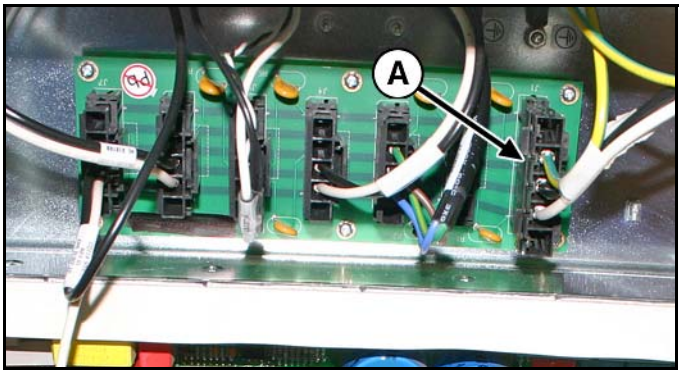
1. Power off the printer following the cautions described in the section "Managing Power Off Scenarios" on page 216, and remove the main power-in cable from the printer.
2. Remove the covers to the electronics box as shown in the section "Removing the electronics box covers" on page 368.
3. Using a #1 phillips screwdriver, remove the two screws (A in Fig. 506.) that secure the outlet cover to the electronics box cover plate.

Fig. 506. External screws for AC output cable



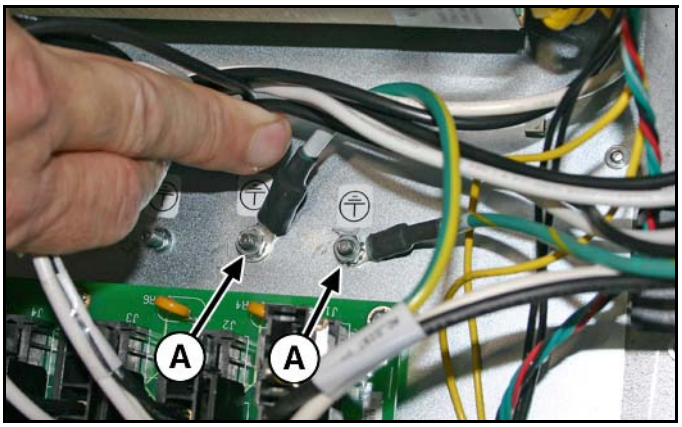
4. Using a #1 phillips screwdriver, remove the eight screws (B in Fig. 506.) that secure the electronics box cover plate.
5. Unplug the AC output cable (A in Fig. 507.) from J1 of the AC distribution board.

Fig. 507. AC output cable position J1 on AC distribution



6. Using a 4 mm socket, remove the two nuts (A in Fig. 508.) that secure the two ground wires (located just above the AC distribution board).

Fig. 508. Ground wires



7. Remove the input power cable through the opening in the outlet plate (located under the printer).

Installing the ebox main input-power cable

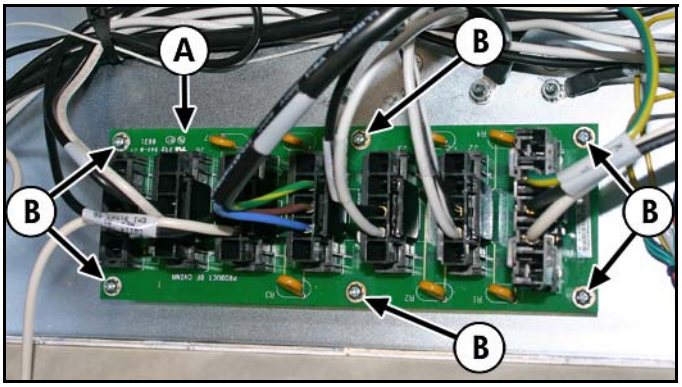
1. Insert the input-power cable into the electronics box through the opening at the outlet on the side of the electronics box under the printer.
2. Using a #1 phillips screwdriver, install the eight screws (B in Fig. 506.) that secure the electronics box cover plate.
3. Using a #1 phillips screwdriver, install the two screws (A in Fig. 506.) that secure the outlet cover to the electronics box cover plate.
4. Using a 4 mm socket, install the two nuts (A in Fig. 508.) that secure the two ground wires (located just above the AC distribution board).
5. Plug in the AC output cable (A in Fig. 507.) into J1 of the AC distribution board.
6. Install the electronics box covers as shown in the section “Installing the electronics box covers” on page 368.

Removing the AC distribution board

Required tools: #2 phillips screwdriver

1. Power off the printer following the cautions described in the section “Managing Power Off Scenarios” on page 216, and remove the main power-in cable from the printer.
2. Remove the covers to the electronics box as shown in the section “Removing the electronics box covers” on page 368.
3. Remove all of the cables connected to the AC distribution board (A in Fig. 509.).

Fig. 509. AC distribution board



4. Using a phillips screwdriver, remove the six screws (B in Fig. 509.) that secure the AC distribution board to the electronics box.

Installing the AC distribution board

1. Using a phillips screwdriver, install the six screws (B in Fig. 509.) that secure the AC distribution board to the electronics box.
2. Plug in the cables to the AC distribution board according to the illustration in Fig. 510.

Fig. 510. AC distribution board cables

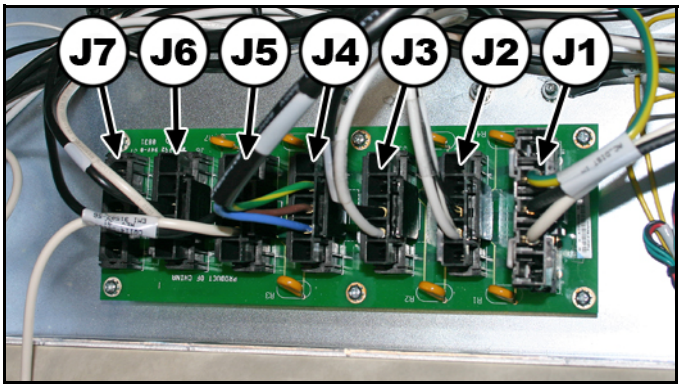


Table 7: AC Distribution board

J#	Usage	Cable label
J7	Optional roll-to-roll	CQ114-50021
J6	Input power to 24/38v power supply	CQ114-50002
J5	Input power for the UV power supply	CQ114-50005
J4	ATX power supply	CQ114-50022
J3	Ionizer	CQ114-50001
J2	ShopVac	CQ114-50003
J1	Main power AC in	CQ114-50021

3. Install the electronics box covers as shown in the section “Installing the electronics box covers” on page 368.

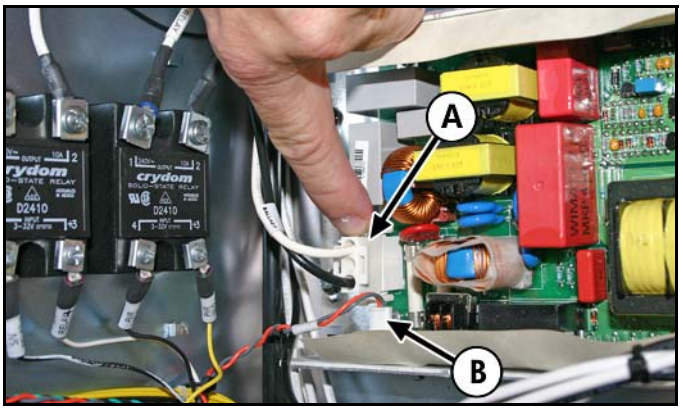
Removing the FB500 UV power supply

Required tools: #2 phillips screwdriver, 5 mm socket

1. Power off the printer following the cautions described in the section “Managing Power Off Scenarios” on page 216, and remove the main power-in cable from the printer.
2. Remove the covers to the electronics box as shown in the section “Removing the electronics box covers” on page 368.

3. Disconnect the power-in cable (A in Fig. 511.) from the output-side of the power supply.

Fig. 511. UV power supply power-in cable



4. Disconnect the dimmer control cable (B in Fig. 511.) from the UV power supply.

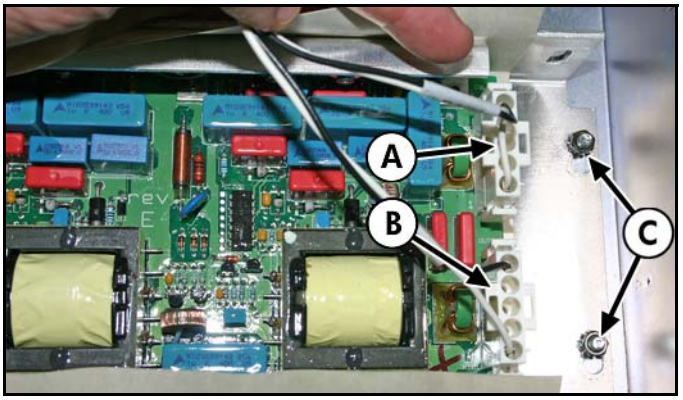
5. Disconnect the two power-out cables (A and B in Fig. 512.) from the input-side of the UV power supply.

Fig. 512. UV power supply power-out cables

A = UV power-out for service-end lamp

B = UV power-out for user-end lamp

C = M5 nuts that secure UV power supply to the electronics box



6. Using a 5 mm socket, remove the four M5 nuts, two at each end (C in Fig. 512.), that secure the UV power supply to the electronics box.

Installing the FB500 UV power supply

1. Using a 5 mm socket, install the four M5 nuts, two at each end (C in Fig. 512.), that secure the UV power supply to the electronics box.
2. Connect the service-end (A in Fig. 512.) and user-end (B in Fig. 512.) power-out cables to the input-side of the UV power supply.
3. Connect the dimmer control cable (B in Fig. 511.) to the UV power supply.
4. Connect the power-in cable (A in Fig. 511.) to the output-side of the power supply.
5. Install the electronics box covers as shown in the section "Installing the electronics box covers" on page 368.

Removing the FB700 UV power supply

Required tools: #2 phillips screwdriver, 5 mm socket

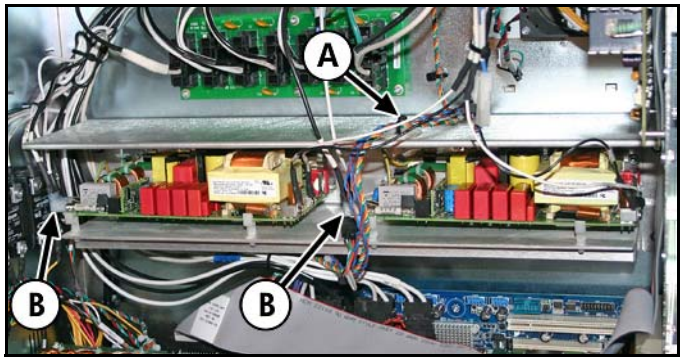
1. Power off the printer following the cautions described in the section "Managing Power Off Scenarios" on page 216, and remove the main power-in cable from the printer.
2. Remove the top cover in the split cover on the electronics box as shown in the section "Removing the electronics box covers" on page 368.

3. Cut the cable cable tie (A in Fig. 513.) that is secured to the top of the power supply.

Fig. 513. Power supply connectors

A = Cable tie to cut

B = Power-in spade connectors

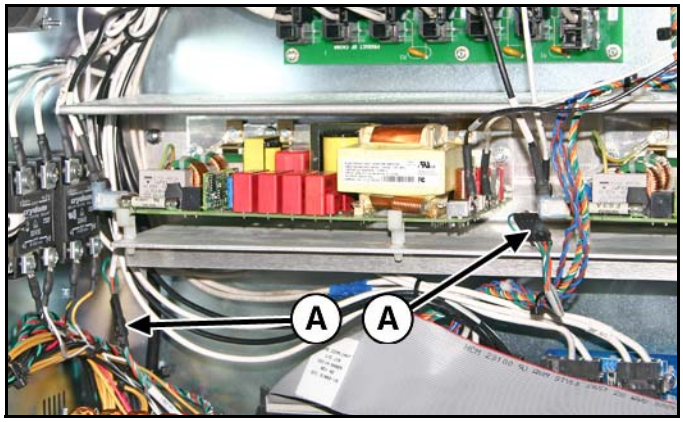


4. Disconnect the 220v power-in spade connectors (B in Fig. 513.) on each end of the power supply.

5. Disconnect the two dimmer cables (A in Fig. 514.) at their quick disconnect locations.

Fig. 514. Power supply connectors

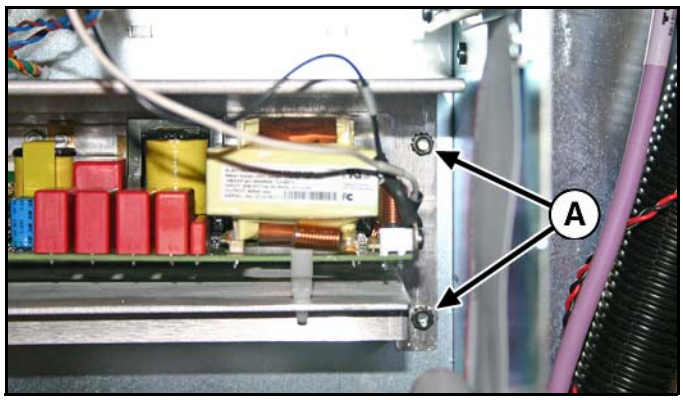
A = Dimmer cables



6. Using a 5 mm socket wrench, remove the four nuts (A in Fig. 515.) that secure the power supply to the electronics (two nuts at each end of the power supply).

Fig. 515. Power supply connectors

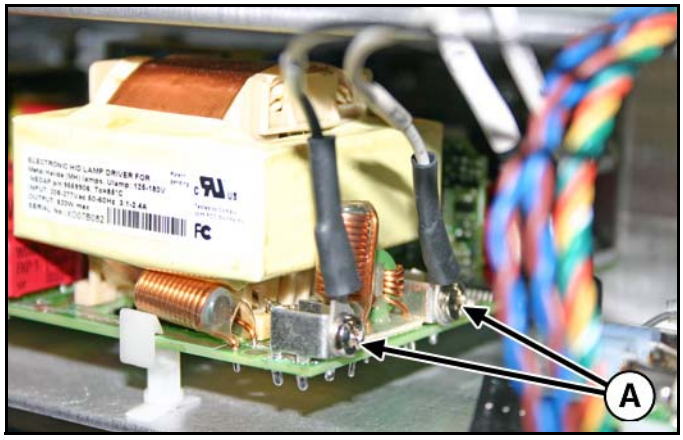
A =Two of four nuts to remove



7. Using a #2 phillips screwdriver, disconnect the four power-out cables (A in Fig. 516.) from the UV power supply modules (two cables at the end of each module).

Fig. 516. Power supply connectors

A = Power out cables



8. Remove the power supply from the electronics box.

Installing the FB700 UV power supply

1. Connect the four power-out cables (A in Fig. 516.) to the two modules of the UV power supply (two at each end of both modules).
2. Using a 5 mm socket, install the four M5 nuts, two at each end (A in Fig. 515.), that secure the UV power supply to the electronics box.
3. Connect the two dimmer control cables (A in Fig. 514.) to the UV power supply.
4. Connect the power-in cables (B in Fig. 513.) to the output-side of the power supply.
5. Install the electronics box covers as shown in the section “Installing the electronics box covers” on page 368.

Removing an AC relay

Required tools: #2 phillips screwdriver, 4 mm socket

1. Remove the covers to the electronics box as shown in the section “Removing the electronics box covers” on page 368.

2. Remove the four screws that secure the four wires to the AC relay.

   For the ShopVac AC relay, remove screws B, C, D, and E in Fig. 517. For the UV power supply AC relay, remove screws G, H, I and J in Fig. 517.

Fig. 517. AC relays

A = AC relay for ShopVac

F = AC relay for UV power supply

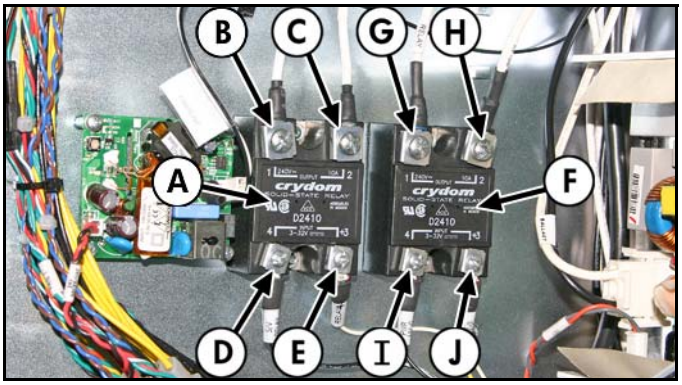


Table 7: AC Relay Wiring

AC Relay - ShopVac	AC Relay - UV Power Supply
B is labeled: SV Relay Pin 1	**G** is labeled: Relay Pin 1
C is labeled: SV Relay Pin 2	**H** is labeled: Relay Pin 2
D is labeled: SV Relay –	**I** is labeled: PWR UV Rly –
E is labeled: SV Relay +	**J** is labeled: PWR UV Rly +

3. Using a 4 mm socket, remove the two nuts that secure the AC relay to the electronics box.

Installing an AC relay

1. Using a 4 mm socket, install the two nuts that secure the AC relay to the electronics box.
2. Install the four screws that secure the four wires to the AC relay.

   Use the wire label table in Fig. 517. to connect the correct wire to the AC relay lug. For the ShopVac AC relay, install screws B, C, D, and E in Fig. 517. For the UV power supply AC relay, install screws G, H, I and J in Fig. 517.
3. Install the electronics box covers as shown in the section “Installing the electronics box covers” on page 368.

Removing the IO controller board

Required tools: #2 phillips screwdriver

1. Remove the covers to the electronics box as shown in the section “Removing the electronics box covers” on page 368.

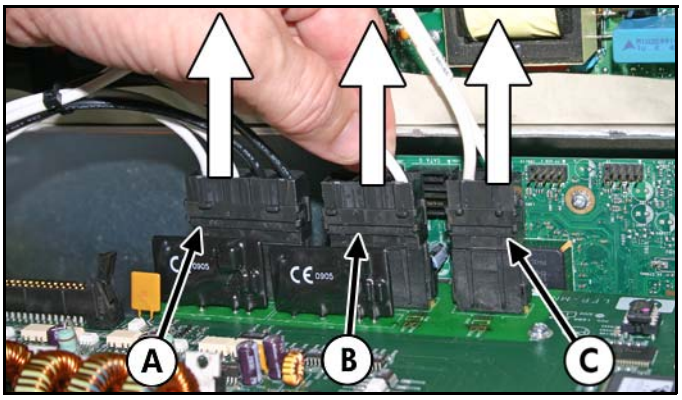
2. Disconnect the UV power supply wire harness (A in Fig. 518.), the ShopVac wire harness (B in Fig. 518.) and the ionizer wire harness (C in Fig. 518.) from the side of the IO board.

Fig. 518. Wire harnesses

A = J21 - for the UV power supply

B = J22 - for the ShopVac

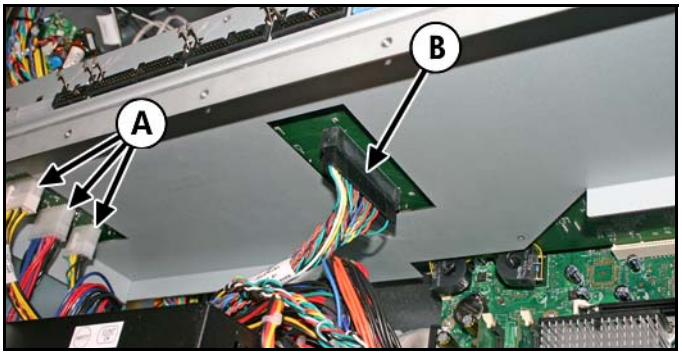
C = J23 - for the ionizer



3. Disconnect the motor-driver board's ribbon cable from the IO board at J18 (cable is labeled CQ114-50025) as shown in Fig. 490. on page 370.

4. Disconnect the set of 3 power cables (A in Fig. 519.) from the IO board at J26, J27 and J29.

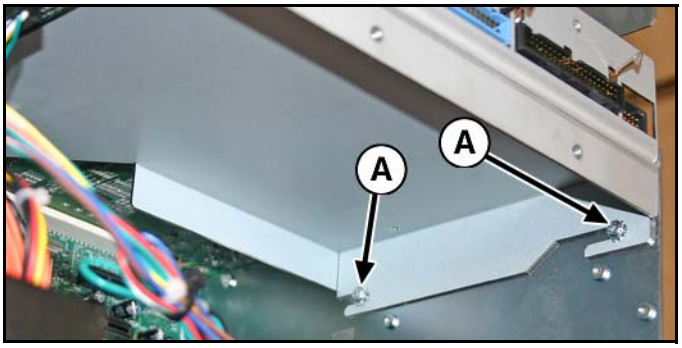
Fig. 519. IO board cables



5. Disconnect the wire harness (B in Fig. 519.) from the IO board's J28 location.

6. Loosen the four screws (two on each end of the IO board - A in Fig. 520. shows two of four screws).

Fig. 520. IO board screws

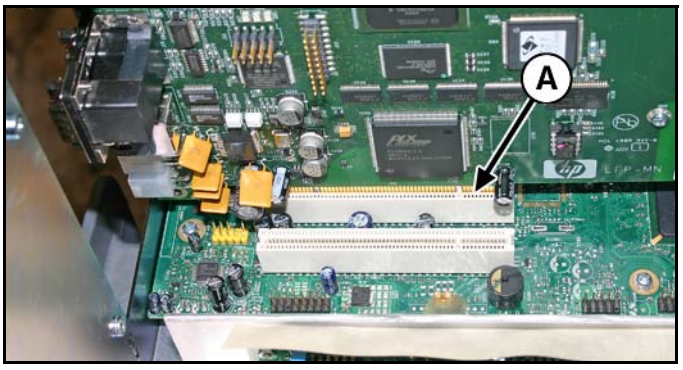


7. Remove the IO board from the motherboard slot, and remove IO board from the electronics box.

Installing the IO controller board

1. Slide the IO board into the second motherboard bus slot (A in Fig. 521.), while aligning the screw slots on both ends of the IO board with the four loosened screws (A in Fig. 520. shows two of four screws).

Fig. 521. Bus slot



2. Tighten the four screws (two on each end of the IO board - A in Fig. 520. shows two of four screws).
3. Connect the wire harness (B in Fig. 519.) to the IO board's J28 location.
4. Connect the 3 power cables (A in Fig. 519.) to the IO board at J26, J27 and J29.
5. Connect the motor-driver board's ribbon cable to the IO board at J18 (cable is labeled CQ114-50025) as shown in Fig. 490. on page 370.
6. Connect the UV power supply wire harness (A in Fig. 518.), the ShopVac wire harness (B in Fig. 518.) and the ionizer wire harness (C in Fig. 518.) to the side of the IO board.
7. Install the electronics box covers as shown in the section "Installing the electronics box covers" on page 368.

Removing the ebox motherboard

Required tools: #2 phillips screwdriver

Wear a static-control strap to protect the electronics from being damaged by static shock.

1. Remove the covers to the electronics box as shown in the section "Removing the electronics box covers" on page 368.
2. Remove the IO controller board as shown in the section "Removing the IO controller board" on page 383.

Regarding the included on/off controller and cable: As of this writing, the most current motherboard configuration uses the blue-colored Advansus motherboard, which requires a separate on/off controller (mounted separately inside the electronics box enclosure). If your printer uses the original configuration, you will find a green-colored Intel motherboard that has no separate on/off controller, and you will need to install the supplied on/off controller.

If your printer has the green-colored motherboard (original configuration), it may have a small 24v power supply mounted where the new on/off controller needs to mount. In this case, you will remove the small 24v power supply and mount the power-on controller in its place.

The small 24v power supply provides power to the vacuum pump even if the printer is powered off (but still has facility power to the printer). If this power supply is removed, the customer must have the external auxiliary power supply in use when the printer is powered off, or the printheads will lose vacuum and leak ink.

The small 24v power supply is no longer installed in the current shipping configuration, and it may not be present.

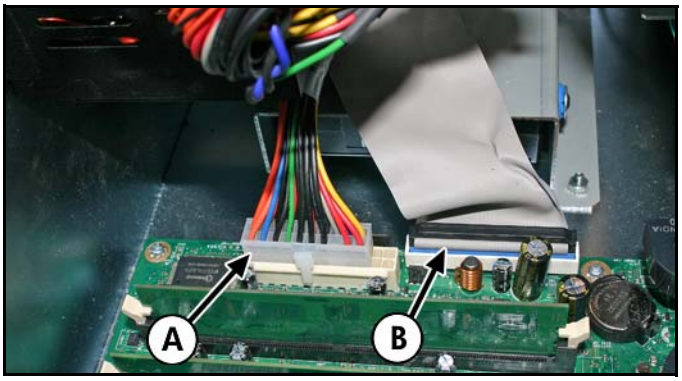
In this document, the Advansus motherboard is referred to as "blue colored." The color of the motherboard is subject to change. The reference number for the Advansus motherboard will appear as LM55560-Q45 on a label on the motherboard I/O ports.

Fig. 522. Advansus Motherboard label



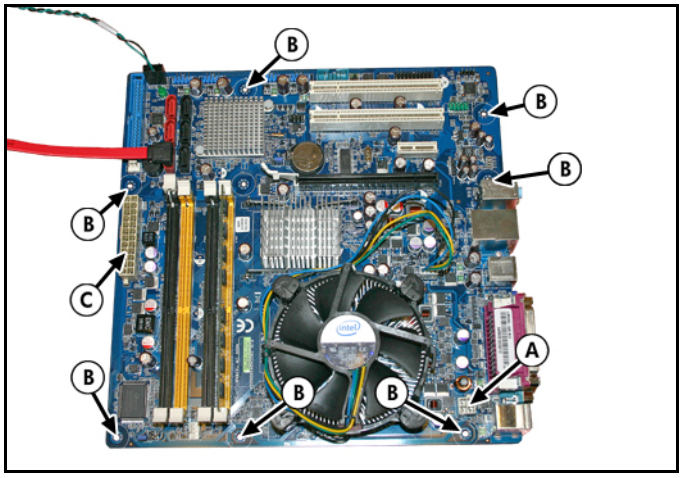
3. If removing the green-colored Intel motherboard, disconnect the IDE cable, disconnect the IDE cable (B in Fig. 523.) and main motherboard power cable (A in Fig. 523.) from the motherboard.

Fig. 523. Motherboard cables



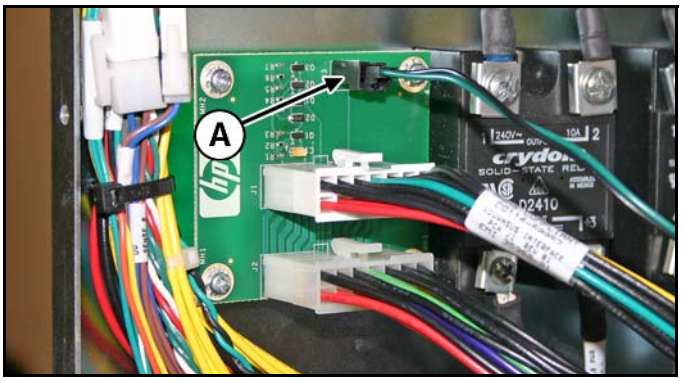
4. If removing the blue-colored Advansus motherboard, disconnect the motherboard's main power-in cable (C in Fig. 524.).

Fig. 524. Motherboard cables



5. If you are removing the blue-colored Advansus motherboard, disconnect the cable (A in Fig. 525.) from the on/off controller mounted to the side of the electronics box.

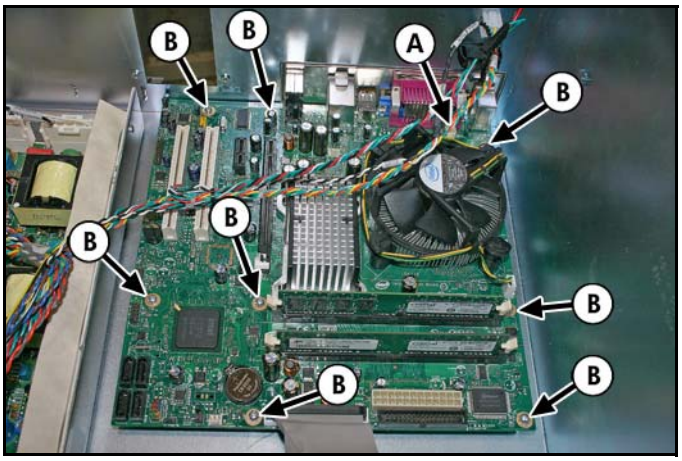
Fig. 525. On/off controller for Advansus motherboard



6. Disconnect the 12v power cable (A in Fig. 526.) from the motherboard.

7. Using a #2 phillips screwdriver, remove the 8 silver screws (B in Fig. 526.) that secure the motherboard to the enclosure.

Fig. 526. Motherboard



Installing the ebox motherboard

1. Slide the motherboard under the tabs of the external IO port interface plate on the input-side of the enclosure.
2. Using a #2 phillips screwdriver, install the 8 silver screws (B in Fig. 526.) that secure the motherboard to the enclosure.
3. Connect the 12v power cable (A in Fig. 526.) to the motherboard.
4. If installing the Intel motherboard, connect the IDE cable (B in Fig. 523.) and the main motherboard power cable (A in Fig. 523.) to the motherboard.
5. If installing the Advansus motherboard, connect the SATA cable from the hard disk to the motherboard connection labeled SATA1.
6. In installing the Avdansus motherboard, connect the cable (A in Fig. 525.) from the motherboard to the on/off controller.
7. Install the IO controller board as shown in the section “Installing the IO controller board” on page 385.
8. Install the electronics box covers as shown in the section “Installing the electronics box covers” on page 368.

9. Verify the motherboard BIOS configuration as shown in the section "Motherboard BIOS configuration" on page 388.

Motherboard BIOS configuration

The BIOS options for the Advansus motherboard use the default settings except for the options below. The BIOS should arrive properly configured. However, the settings should be checked, as improper setting will cause errors. Also, if the motherboard battery is removed, you will need to configure the BIOS with these settings:

Table 7: Motherboard BIOS modified settings

BIOS Section	Default BIOS Option	Change default to this
Standard CMOS Features > Halt On	All Errors	No Errors
Advanced BIOS Features > CPU Features > PPM Mode	Native Mode	SMM
Advanced BIOS Features > CPU Features > C1E Function	Auto	Disabled
Advanced BIOS Features > CPU Features > Execute Disable Bit	Enabled	Disabled
Advanced BIOS Features > CPU Features > Core Multi-Processing	Enabled	Disabled
Advanced BIOS Features > CPU Features > Second Boot Device	CDROM	Disabled
Advanced BIOS Features > CPU Features > Second Boot Device	CDROM	Disabled
Advanced BIOS Features > CPU Features > Third Boot Device	LS120	Disabled
Advanced BIOS Features > CPU Features > Boot Other Device	Enabled	Disabled
Advanced BIOS Features > CPU Features > APIC Mode	Enabled	Disabled
Advanced BIOS Features > CPU Features > ASF Support	Enabled	Disabled
Advanced BIOS Features > CPU Features > DMI Event Log	Enabled	Disabled
Advanced Chipset Configuration > System BIOS Cacheable	Enabled	Disabled
Advanced Chipset Configuration > PCI Express Port 1	Auto	Disabled
Advanced Chipset Configuration > PCI Express Port 2	Auto	Disabled
Advanced Chipset Configuration > PCI Express Port 3	Auto	Disabled
Advanced Chipset Configuration > PCI Express Port 4	Auto	Disabled
Advanced Chipset Configuration > PCI Express Port 5	Auto	Disabled
Advanced Chipset Configuration > PCI Express Port 6	Auto	Disabled
Advanced Chipset Configuration > On-Chip Frame Buffer Size	128MB	32MB

Table 7: Motherboard BIOS modified settings

BIOS Section	Default BIOS Option	Change default to this
Advanced Chipset Configuration > Total GFX Memory	256MB	128MB
Integrated Peripherals > OnChip IDE Device > OnChip Secondary PCI IDE	Enabled	Disabled
Integrated Peripherals > OnChip IDE Device > Onboard Device > Audio Amplifier	Enabled	Disabled
Integrated Peripherals > OnChip IDE Device > Onboard Device > Azalia Controller	Auto	Disabled
Integrated Peripherals > OnChip IDE Device > Super IO Device > Onboard FDC Controller	Enabled	Disabled
Integrated Peripherals > OnChip IDE Device > Super IO Device > Onboard Serial Port 2	2F8/IRQ3	Disabled
Integrated Peripherals > OnChip IDE Device > Super IO Device > Onboard Parallel Port	378/IRQ7	Disabled
Integrated Peripherals > OnChip IDE Device > Super IO Device > PWRON After PWR-Fail	Off	On
Integrated Peripherals > OnChip IDE Device > USB Device Setting > USB 1.0 Controller	Enabled	Disabled
Integrated Peripherals > OnChip IDE Device > USB Device Setting > USB 2.0 Controller	Enabled	Disabled
Integrated Peripherals > OnChip IDE Device > USB Device Setting > USB Operation Mode	Fast	Disabled
Integrated Peripherals > OnChip IDE Device > USB Device Setting > USB Keyboard Function	Enabled	Disabled
Integrated Peripherals > OnChip IDE Device > USB Device Setting > USB Mouse Function	Enabled	Disabled
Integrated Peripherals > OnChip IDE Device > USB Device Setting > USB Storage Function	Enabled	Disabled
Power Management Configuration > Modem Use IRQ	3	NA
PnP/PCI Configurations > Init Display First	PCI Slot	Onboard
PnP/PCI Configurations > Resources Controlled By	Auto (ESCD)	Manual
PnP/PCI Configurations > Resources Controlled By > IRQ-7 assigned to	PCI Device	Reserved
PnP/PCI Configurations > Resources Controlled By > IRQ-9 assigned to	PCI Device	Reserved
Frequency/Voltage Control > Auto Detect PCI Clk	Enabled	Disabled

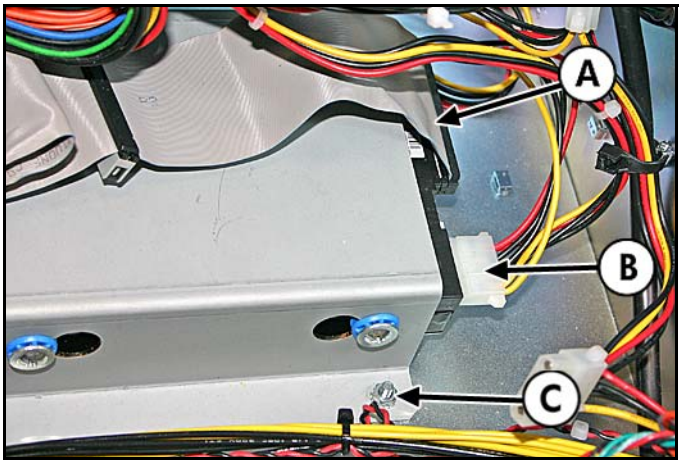
Removing the ebox hard disk

Required tools: #2 phillips screwdriver and a 4 mm socket

Regarding the included SATA hard disk and cable: The FRM kit includes a SATA hard disk. You should install the SATA hard disk for the following reasons: (A) The original hard disk is defective, or (B) You are installing an Advansus motherboard and there is an IDE hard disk installed. The Advansus motherboard does not support IDE hard drives in this configuration. The Intel motherboard supports both IDE and SATA. The supplied hard drive is imaged at the factory with required data on the hard disks and cannot be replaced with off-the-shelf hard drives. If you replace the hard disk, images the customer has saved onto the hard disk will be lost.

1. Remove the covers to the electronics box as shown in the section "Removing the electronics box covers" on page 368.
2. Remove the IO controller board as shown in the section "Removing the IO controller board" on page 383.
3. If the printer uses an IDE hard disk, disconnect the IDE cable (A in Fig. 527.) and 12v power cable (B in Fig. 527.) from the hard disk.

Fig. 527. Hard disk



4. If the printer uses a SATA hard disk, disconnect the SATA cable from the hard disk.
5. Using a 4 mm socket, remove the four nuts (C in Fig. 527. shows one of four nuts) that secure the hard disk enclosure to the electronics box.

Installing the ebox hard disk

1. Secure the hard disk and its enclosure to the electronics box using the original four nuts (C in Fig. 527. shows one of four nuts).
2. Connect the IDE cable (A in Fig. 527.) and 12v power cable (B in Fig. 527.) to the hard disk.
3. Install the IO controller board as shown in the section "Installing the IO controller board" on page 385.
4. Install the electronics box covers as shown in the section "Installing the electronics box covers" on page 368.

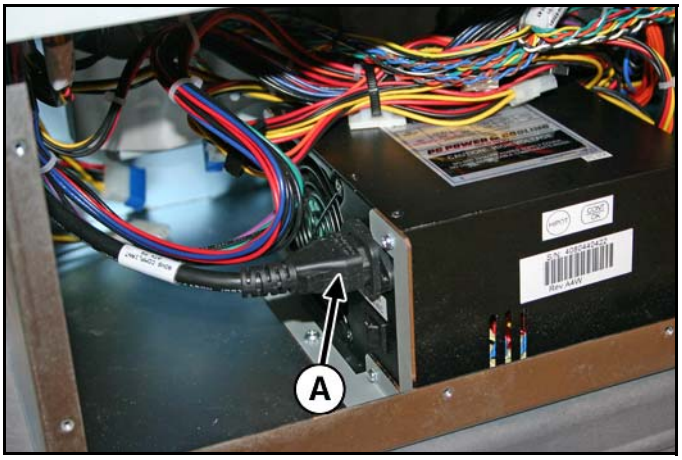
Removing the ATX power supply

Required tools: #2 phillips screwdriver

1. Remove the covers to the electronics box as shown in the section "Removing the electronics box covers" on page 368.
2. Remove the IO controller board as shown in the section "Removing the IO controller board" on page 383.

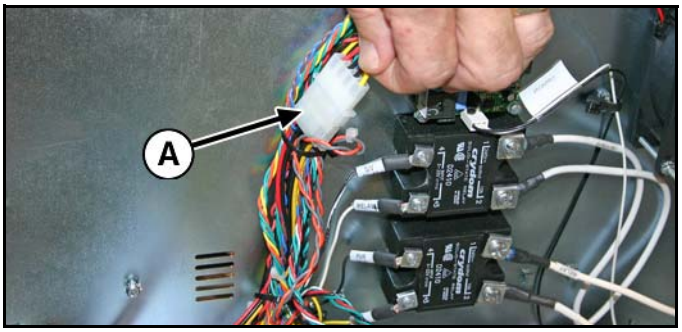
3. Disconnect the 12v power cable (A in Fig. 526.) and the main motherboard power cable (A in Fig. 523.) from the motherboard.
4. Disconnect the 12v power cable (B in Fig. 527.) from the hard disk.
5. Disconnect the AC input power cable (A in Fig. 528.) from the ATX power supply.

Fig. 528. ATX power supply



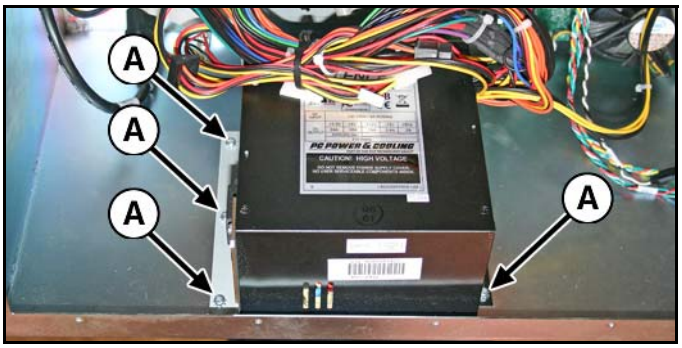
6. Disconnect the 12v molex connector (A in Fig. 529.) that is located near the AC-relays.

Fig. 529. Molex connector



7. Remove the four screws (A in Fig. 530.) that secure the ATX power supply to the enclosure.

Fig. 530. ATX power supply



Installing the ATX power supply

1. Install the four screws (A in Fig. 530.) that secure the ATX power supply to the enclosure.
2. Connect the 12v molex connector (A in Fig. 529.) that connects near the AC-relays.
3. Connect the AC input power cable (A in Fig. 528.) to the ATX power supply.
4. Connect the 12v power cable (B in Fig. 527.) to the hard disk.

5. Connect the 12v, 4-pin power cable (A in Fig. 526.) and the main motherboard power cable (A in Fig. 523.) to the motherboard.

6. Install the IO controller board as shown in the section "Installing the IO controller board" on page 385.

7. Install the electronics box covers as shown in the section "Installing the electronics box covers" on page 368.

Removing an electronics box fan

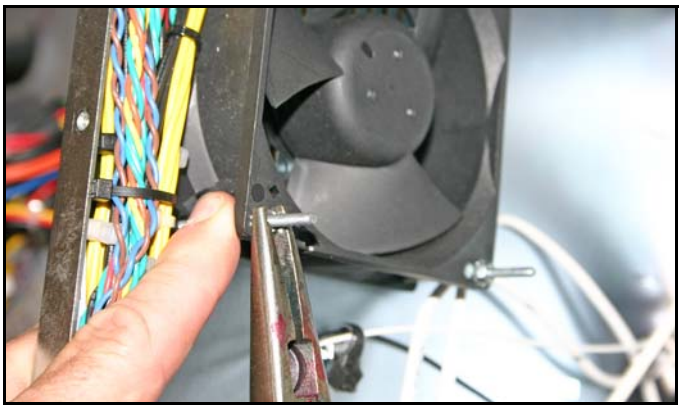
Required tools: #2 phillips screwdriver and pliers or small adjustable wrench.

There are two inlet fans and one exhaust fan for the electronics box. One of the inlet fans can be seen by looking under the printer near the main AC power-in. The other inlet fan can be seen on the input-side of the electronics box. The exhaust fan is located on the output-side of the electronics box, and it blows toward the ink pumps that are mounted on the OHS assembly.

1. Remove the covers to the electronics box as shown in the section "Removing the electronics box covers" on page 368.
2. Disconnect the fan's power cable at its quick-disconnect location.
3. Using pliers or a small adjustable wrench, remove the four nuts that secure the fan to the enclosure.

   Hold the screw with your finger (Fig. 531.) while turning the nut.

Fig. 531. Fan



Installing an electronics box inlet fan

The fans must be installed so that the label on the middle of the fan faces in the direction of the desired airflow. For example, inlet fan should be installed with the fan label facing toward the inside of the electronics box. The exhaust fan's label should face toward the exterior of the printer.

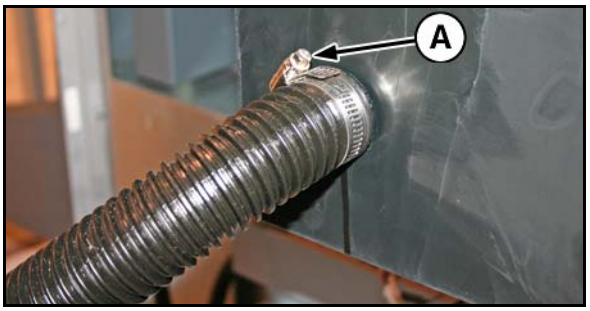
1. Install the fan using the original nuts.
2. Connect the fan's power cable.
3. Install the electronics box covers as shown in the section "Installing the electronics box covers" on page 368.

Removing the service station

Required tools: #2 phillips screwdriver, 10 mm socket with an extension

1. Drain the service station by opening the service station drain valve (see "Service station empty / close" on page 212).
2. If the service station is being completely removed from the printer (versus being disconnected for a service task), disconnect the Shop-Vac hose from the service using a screwdriver to loosen the hose clamp (A in Fig. 532.).

Fig. 532. Service station hose clamp



3. If the service station is being completely removed from the printer (versus being disconnected for a service task), disconnect the service station drain hose as shown in the section "Disconnecting the service station drain hose" on page 394.

Service station cables

4. Disconnect the cables (at their quick-disconnect location) for the service station motor (A in Fig. 533.), home sensor (B in Fig. 533.), actuator (C in Fig. 533.), float sensor (D in Fig. 533.) and the service station encoder reader (E in Fig. 533.).

Fig. 533. Cable connections near the service station

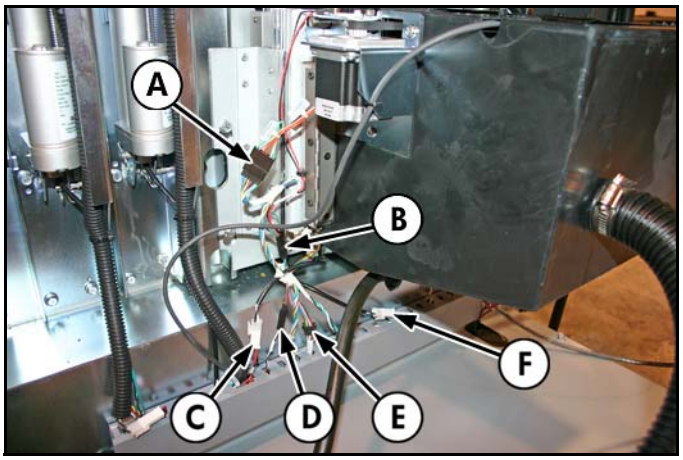
A = Service station motor

B = Service station home sensor

C = Service station actuator (up/down motor)

D = Service station float sensor

E = Service station encoder reader

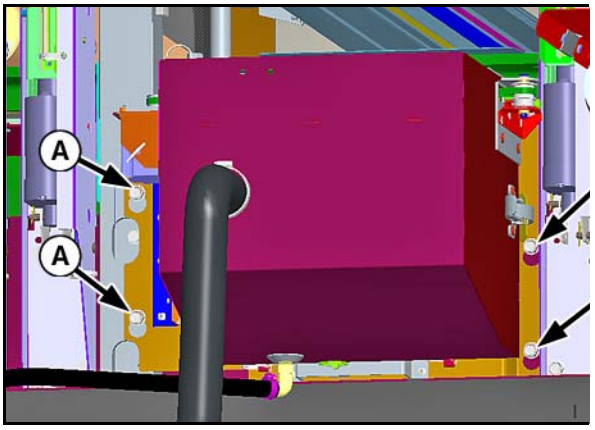


5. Close the service station (into the latched position).

Service station bolts

6. If the service station is being completely removed from the printer (versus being disconnected for a service task), use a 10 mm socket with an extension to loosen the four bolts (A in Fig. 534.) that secure the service station to the printer, and remove the service station from the printer.

Fig. 534. Service station bolts



Installing the service station

1. Place the service station onto the original four bolts (A in Fig. 534.), and tighten the bolts using a 10 mm socket.
2. If necessary, reconnect the service station drain hose as shown in the section "Install the service station drain hose" on page 395.
3. Reconnect the service station cables shown in "Service station cables" on page 393.
4. Calibrate the service station wiper height as shown in the "Calibrating Wiper Height" on page 475.
5. Calibrate the service station y-axis alignment as shown in the section "Calibrating wiper y-axis alignment" on page 475.
6. Calibrate the service station wiper left-to-right tilt as shown in the section "Calibrating wiper left/right tilt" on page 476.
7. Check the output-side wiper tilt as shown in the section "Check output-side wiper tilt" on page 476.
8. Check input-side wiper tilt as shown in the section "Check input-side wiper tilt" on page 478.
9. Check the wiper x-axis alignment as shown in the section "Calibrating wiper x-axis alignment" on page 478.

Disconnecting the service station drain hose

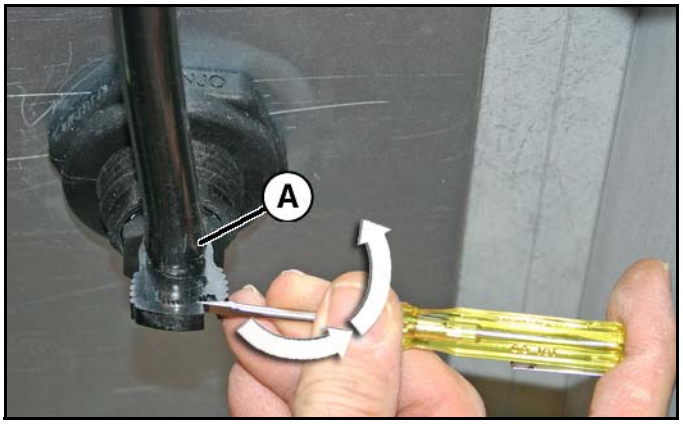
Required tools

- Paper towels
- Drop cloth
- Small screwdriver

1. Drain the service station by opening the service station drain valve (see "Service station empty / close" on page 212).
2. Locate paper towels to catch any liquid that may leak during this procedure.
3. Place a drop cloth beneath the work area to protect the floor or printer area from liquid that may leak during this procedure.

4. Using a small screwdriver, pry off both hose clamps from the ends of the drain tube as shown in Fig. 535.

Fig. 535. Prying off hose clamp



5. With a paper towel ready to catch ink that may leak from the tube, pull the tube off of the brass fitting on the service station.
6. Pull the tube off of the plastic fitting that connects to the bulkhead (A in Fig. 535.).

Install the service station drain hose

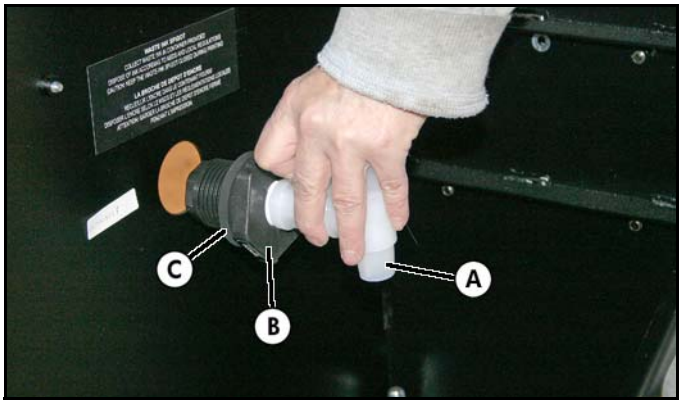
1. Push the drain hose onto the end of the brass fitting beneath the service station.
2. Slide two hose clamps onto the drain hose.
3. Push the drain hose onto the fitting at the drain bulkhead (A in Fig. 535.).
4. Use pliers to tighten the hose clamps over the ends of the drain hose.

   The clamps will break if over tightened.

Installing complete drain hose kit

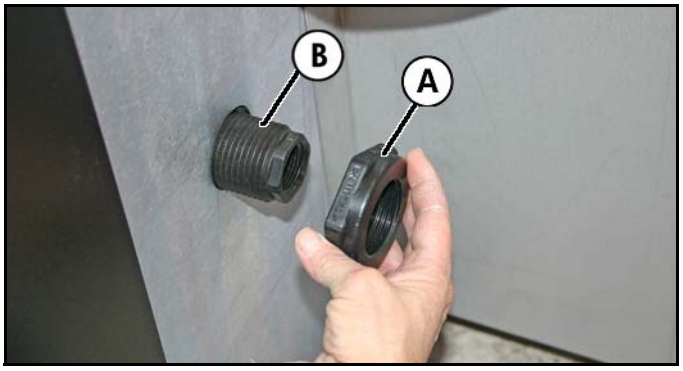
1. Insert the spigot (A in Fig. 536.), bulkhead (B in Fig. 536.) and rubber washer (C in Fig. 536.) through the drain hose opening at the service end of the printer.

Fig. 536. Insert bulkhead with spigot and washer



2. Screw on (counter clockwise) the retaining nut (A in Fig. 537.) to the bulkhead threads (B in Fig. 537.).

Fig. 537. Bulkhead retaining nut



3. Apply nylon thread sealing tape to the threads of the plastic elbow.

Fig. 538. Tape elbow



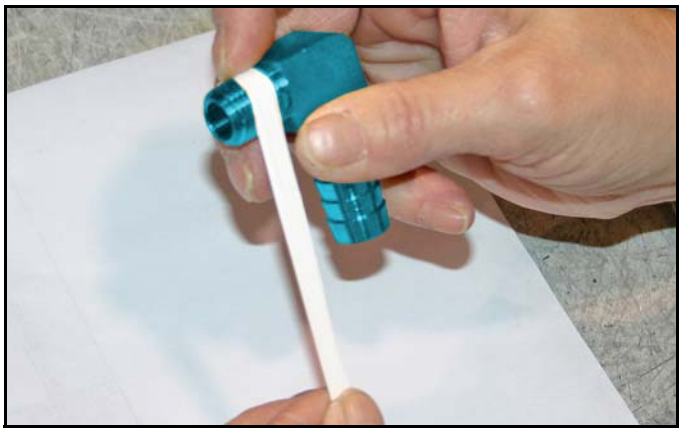
4. Using a tool such as vice grips, tighten the elbow until it is snug and in the 12 o'clock orientation as shown in

Fig. 539. Elbow installed in bulkhead



5. Wrap the threads of the fitting in nylon thread tape.

Fig. 540. Wrap brass fitting with nylon tape



Note: Appearance of fitting may vary.

6. Using a 5/8-in wrench, screw the fitting into the base of the service station until snug.

Fig. 541. Installing fitting



Note: Appearance of fitting may vary.

7. Connect the drain hose as shown in the section “Install the service station drain hose” on page 395.

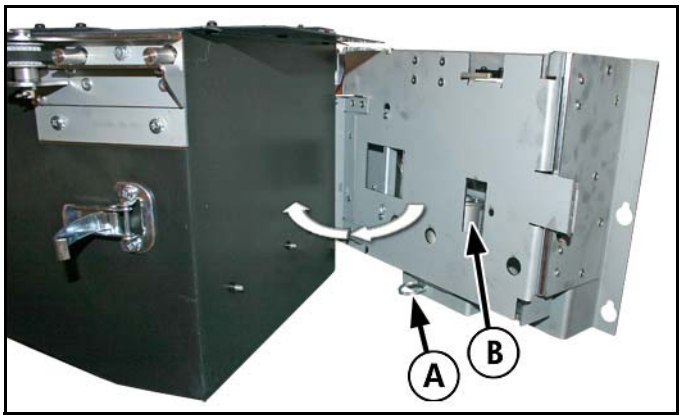
Remove the service station actuator

Required tools

- No tools required

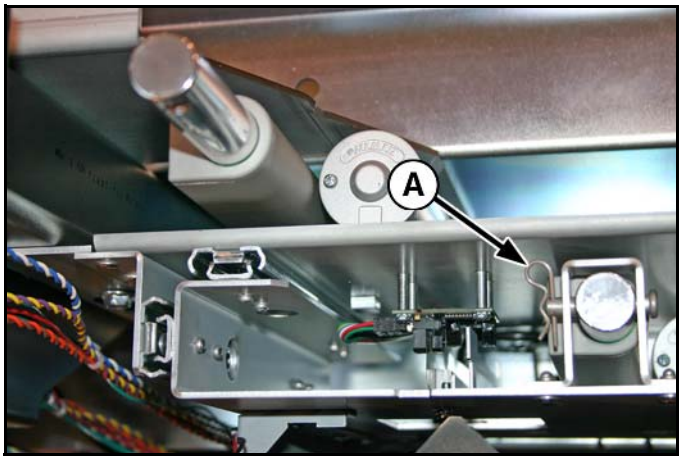
1. Release the service station latch as shown in the section “Releasing the service station latch” on page 225.
2. Pull out the lower pin (A in Fig. 542.) that secures the lower actuator (B in Fig. 542.) connection to the service station.

Fig. 542. Lower service station pin



3. Remove the cotter pin (A in Fig. 543.) from the top connection of the service station actuator.

Fig. 543. Service station actuator cotter pin



4. Disconnect the service station cables as shown in the section “Service station cables” on page 393.
5. Loosen the four bolts that secure the service station to the printer as shown in the section “Service station bolts” on page 394.
6. Remove the actuator from the service station.

Install the service station actuator

1. Using the original cotter pin, secure the actuator arm to the top service station connection (see Fig. 543.).
2. Secure the actuator to the lower service station connection using the original ringed-pin (see Fig. 542.).

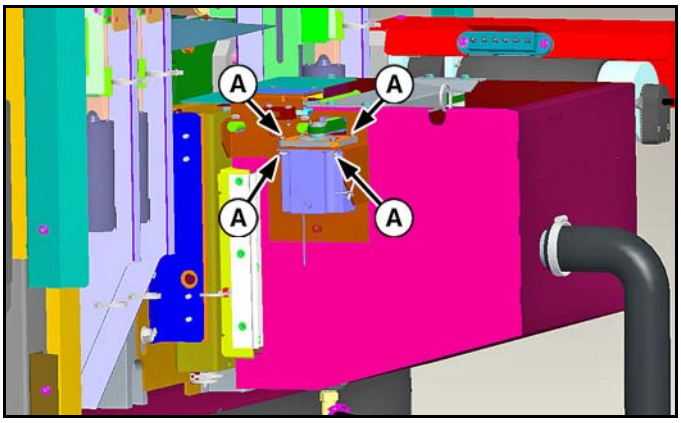
Remove the service station wiper motor

Required tools

- #2 phillips screwdriver

1. Remove the service-end enclosure as shown in the section "Remove the user-end and service-end enclosures" on page 217.
2. Disconnect the motor's power cable at its quick disconnect location.
3. Using a phillips screwdriver, remove the four screws that secure the motor to the service station.

Fig. 544. Service station motor mount screws viewed from **beneath** the service station



Install the service station wiper motor

1. With the motor in the motor mount, place the belt around the motor pulley.
2. Secure the motor to the motor mount using the original four screws.
3. With the screws loosened, pull the motor away from the service station until the belt is taut.
4. Tighten the four screws that secure the motor.

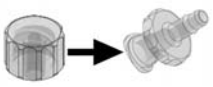
OHS assemblies

The OHS (off-head supply) assemblies maintain ink to the printheads.

Tube joiners and plugs

- 4 mm OD (outer diameter) ink tube = smaller ink tube (used inside track to middle of panduit only)
- 3/16-in OD ink tube = larger ink tube (used near ink pumps and above ink reservoirs but not inside track)

Table 8: Tube joiners and plugs

ID	Part #:	Description	Where Used	Image
A	0100-2836	Tube joiner that joins 4 mm OD ink tube to 3/16-in OD ink tube	Ink tube, joins smaller to larger	
B	0100-2849	Tube joiner that joins 4 mm OD ink tube to 4 mm OD ink tube.	Ink tube, smaller to smaller	
C	0100-2809	Tube joiner that joins 3/16-in OD vacuum tube (same joiner as 3/16-in OD ink tube)	Vacuum tube	
D	0100-2848	Tube joiner for 1/8-in OD pressure tube	Pressure tube	
E	0100-2809	Tube joiner for 3/16-in OD ink tube to 3/16-in OD ink tube (same as vacuum-tube joiner)	Ink tube, joins larger to larger	
F	CH971-62664 (cap) and CH980-00181 (fitting)	Tube plug for 4 mm OD ink tube. The plug is two pieces. The twist-on cap plugs the barbed fitting	Ink tube, plugs smaller tube	
G	CH971-62664 (cap) and CH971-62969 (fitting)	Tube plug for 3/16-in OD ink tube. The plug is two pieces. The twist-on cap plugs the barbed fitting	Ink tube, plugs larger tube	

Removing a permanent ink filter

Required tools: Tube cutting tool (that provides a straight cut versus an elliptical cut)

1. Remove the user-end enclosure as illustrated in the section “Remove the user-end and service-end enclosures” on page 217.
2. Power off the printer (to make sure the ink pumps do not pump) following the cautions described in the section “Managing Power Off Scenarios” on page 216.

Cutting the ink tube for removal

3. Cut the ink tube above (A in Fig. 545.) and below (B in Fig. 545.) the ink filter.

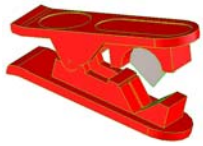
   Use the specified tube-cutting tool as shown in the section “Tube cutter” on page 487.

   If the tube has previous been cut at position A in Fig. 545., cut the tube at position C in Fig. 545.

If ink tube has been cut previously in this location (A in Fig. 545.), there may not be enough room to install a new tube mender to re-attach the new ink tube. In this case, cut the ink tube above the Y-fitting (C in Fig. 545.). The Y-fitting is only used during assembly of the printer’s ink system. If needed, the Y-fitting can be removed.

Do not shorten the tube so much that the tube mender is installed near the tie wrap of the cable loom. If the tube mender is too close to the tie wrap, it may create a stress point where the ink tubes bend to exit the cable loom.

Have a paper towel ready to catch ink that will leak.



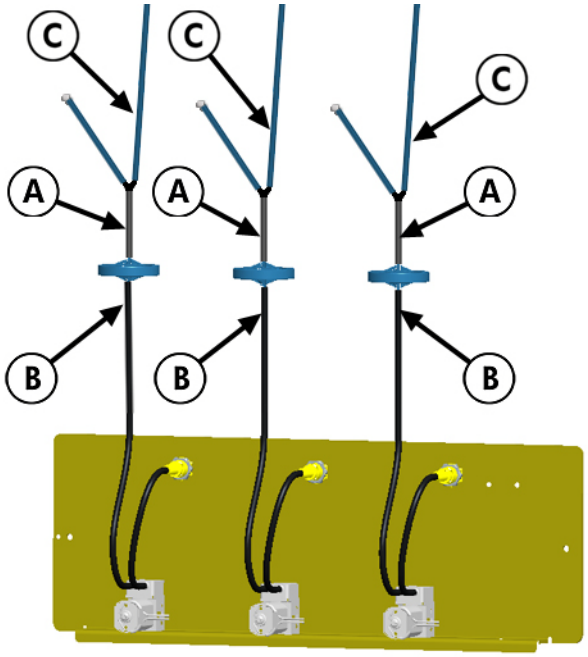
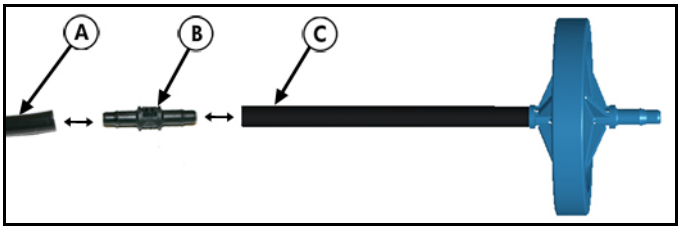


Fig. 545. Cutting ink tubes around ink filter

Installing the permanent ink filter

1. Insert a tube joiner (B in Fig. 546.) between the end of the tube (A in Fig. 546.) coming from the ink pump and the tube (C in Fig. 546.) that is attached to the replacement ink filter.

Fig. 546. Joining ink tubes



Note: See table of tube joiners in the section "Tube joiners and plugs" on page 400

Removing the OHS controller board

1. Remove the user-end enclosure as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.



Wear a static-control strap to protect the electronics from being damaged by static shock.

2. Remove the ink drip/light-blocking tray as shown in the section "Removing the light-blocking tray" on page 218.
3. Disconnect all cables from the OHS controller.
4. Unplug the ink profilers from the OHS controller.
5. Using a #2 phillips screwdriver, remove the five silver screws that secure the OHS controller to the printer.

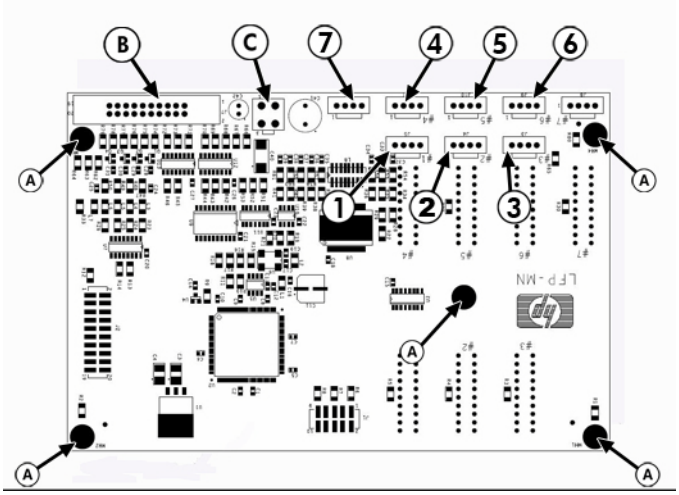
Installing the OHS controller board

1. Secure the OHS controller to the printer using the original five silver screws (A in Fig. 547.).
2. Connect the ink pump cables to the OHS controller, matching the numbers on the ink pump cables with the diagram in Fig. 547.

Fig. 547. OHS controller

A = Screw holes
B = Data cable
C = Power cable

1 = J5
2 = J4
3 = J3
4 = J11
5 = J10
6 = J9
7 = J12 (homogenizer)

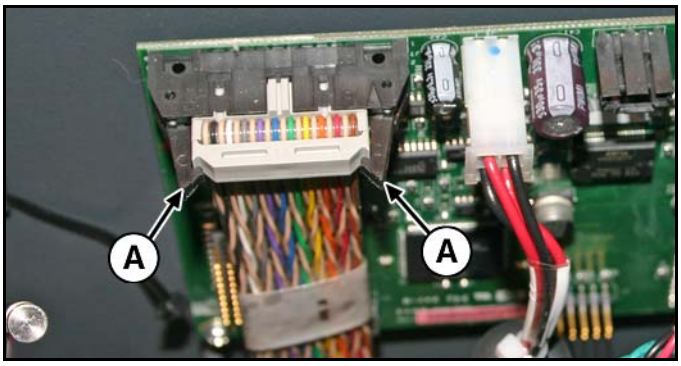


3. Connect the power cable to the OHS controller at position C in Fig. 547.

4. Connect the data cable to the OHS controller at position B in Fig. 547.

   Make sure the locking tabs (A in Fig. 548.) are securely snapped around the data cable.

Fig. 548. Data cable tabs and shaker cable



5. If the optional homogenizer (ink shaker) is installed, connect the homogenizer power cable to position 7 in Fig. 547.

Adjusting vacuum level

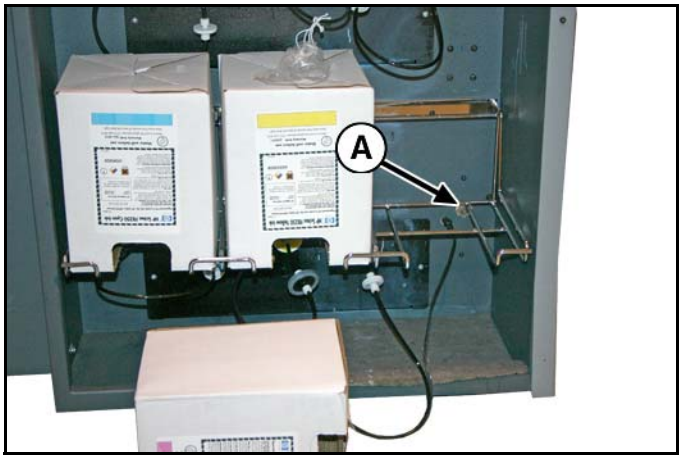
The vacuum assembly (for the meniscus vacuum used by the printheads) should be set correctly from the factory. However, if the vacuum level control has been changed during transport, it will either run be set too low, causing the pumps to run continuously. Or, it will be set too high, causing the vacuum level to rise to the point that a warning will appear of the printer's menu (informing you that the vacuum level is too high).

Required tools: Small flat-blade screwdriver

1. Using a small flat-blade screwdriver, turn the vacuum-level adjustment knob (A in Fig. 549.) as far counterclockwise as it will turn.

   This will cause the vacuum pump to activate.

Fig. 549. Vacuum regulator knob location



2. As the vacuum pump is running, slowly turn the vacuum-level adjustment knob (A in Fig. 549.) until the vacuum pump turns off.

3. From the printer's menu, select SYSTEM > SYSTEM INFORMATION to view the vacuum level.

   - Vacuum pump activates = 9.3 millimeters of mercury (5-inches of water)
   - Target peak vacuum level = 11 millimeters of mercury (6-inches of water)

4. From the printer's menu screen, watch the vacuum level change.

5. If the vacuum level climbs above the target peak level, turn the vacuum-level adjustment knob (A in Fig. 549.) counterclockwise an 1/8 of a turn.

As you observe the vacuum level, it will fall to 9.3 millimeters of mercury (5-inches of water), and the vacuum pump will activate. As the pump activates, the vacuum will begin to climb. The vacuum level should not climb above 11 millimeters of mercury (6-inches of water). If it climbs above the target peak level, turn the vacuum-level adjustment knob counterclockwise an 1/8 of a turn and watch the vacuum level cycle from the pump activation point to its highest level a few more times (making sure the highest level is below or equal to the target peak level).

Replacing the complete track assembly

Before you remove move the original track assembly, follow the steps to prepare the replacement track, so that it is ready to be installed before any tubes are cut.

Required Tools:

- Apron to protect clothing from ink
- Drop cloth to protect floor from ink
- Gloves to protect hands from ink
- Paper towels
- Rubber bands to secure paper towels around ends of tubes temporarily
- Safety glasses to protect eyes from ink
- Long #2 phillips screwdriver
- Tube cutting tool (supplied)
- Something to cut cable ties, such as wire cutters (do not use to cut ink tubes)
- Head flush (to clean the service station)
- Tube joiners (supplied)

Overview

The following is a summary of the procedures covered in this instruction.

- Print a prime bar (verify jetting performance prior to beginning service)
- Flush ink from printheads, as they will be without vacuum for an extended period
- Remove enclosures (user and service-end end caps and carriage cover)
- Install included labels on tubes that remain in the printer and connect to new track
- Disconnect track cables and tubes from carriage (cut ink tubes at each side of tube joiner)
- Disconnect trolley attachment bracket from input-side of carriage
- Cut ink tubes at the user-end of printer (cutting at each side of tube joiner inside panduit on top of rail) - To reduce error, tubes are cut and joined to new track before cutting the next tube
- Disconnect cables at user-end of printer
- Disconnect mid-rail track-attachment bracket from top of rail
- Connect new track to carriage
- Connect new carriage tubes and cables
- Install grounding straps if needed

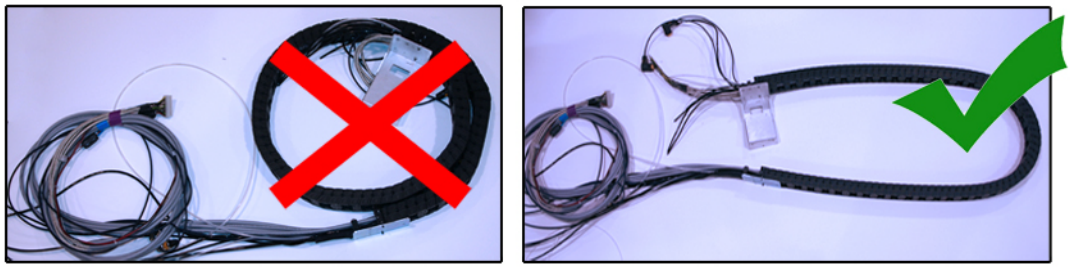
- Power on printer
- Fill printhead with ink
- Empty and clean service station
- Print a prime bar (verify jetting performance after track replacement)



Do not coil the track during storage or installation, as this stretches the cables and changes their position. This will cause the track to be improperly tensioned. Improper tension will cause the cables to prematurely fail due to cables rubbing against each other and against the track surfaces. The track should never bend in more than one location.

DO NOT COIL THE TRACK!

Fig. 550. Storing the track assembly



Things to do first for track replacement

Print a prime bar pattern

1. From the printer's menu, select INK > CHECK JET HEALTH and print a prime bar pattern.

   This pattern will provide a baseline for jetting performance, allowing you to know if anything you do to the printer has changed the baseline quality.

Access the password protected service menu

1. Access the password protected service menu.

To access the password protected menus, see the section "Accessing the password protected service menu" on page 449.

Empty the carriage of ink

1. From the printer's menu, select INK > MAINTENANCE > PRINTHEAD PROCEDURES > EMPTY ALL HEADS (FILL WITH AIR).

   Because the vacuum will be off for an extended period, it is impossible to keep the printheads from draining of ink (even if the vacuum tubes are clamped).

   When the printer's menu displays the message to clean the service station, the empty-printhead procedure in complete.

2. While the printheads empty of ink, continue to the next section to apply the labels.

Remove both endcap enclosures

1. Remove the service-end and user-end enclosures as illustrated in the section "Remove the user-end and service-end enclosures" on page 217.

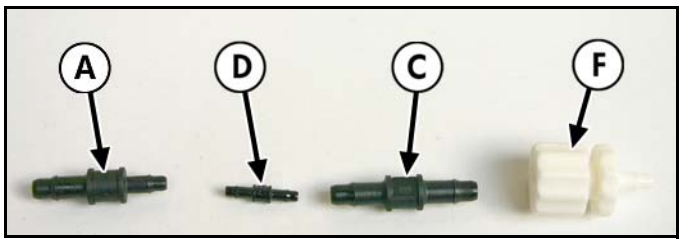
Included fasteners, plugs and joiners

Included tube joiners and plugs for track replacement

The following tube joiners and plugs are included with replacement track assemblies.

Fig. 551. Tube joiners and plugs

A = Ink tube joiner large to small
D = Pressure tube joiner
C = Vacuum tube joiner
F = smaller tube plug for track



Note: The vacuum tube joiner fits into the larger-diameter ink tubes. Be careful not to use the wrong tube joiner.

Included fasteners for track replacement

The following fasteners are included with the track replacement kit.

Fig. 552. Grounding strap fasteners

Grounding strap fasteners used in "Install the user-end grounding strap" on page 432.



Fig. 553. Enclosure screws

Enclosure fasteners used in "Remove the user-end and service-end enclosures" on page 217.

Do not reuse original



Fig. 554. Mid-rail track bracket attachment screws

Mid-rail track bracket screws used in step 3 on page 419.

Do not reuse original screws



Fig. 555. Track/trolley attachment bracket screws

Track/trolley attachment bracket screws used in step 17 on page 428.

Do not reuse original screws



There are extra tube joiners in the replacement kit in case one is misplaced. Your installation kit may not contain all of the fittings in this reference list.

Included with the track replacement kit are two ground cables that may or may not be installed. See the section "Check for grounding strap" on page 431.

Prepare the replacement track

The replacement track will arrive assembled for factory installation. There will be ink tube sections on each end of the new track that need to be cut off, as these tube sections are already installed in the printer. On each end of the ink tubes, you will find a tube joiner that joins the smaller tube that is inside the track with the larger ink tubes that connect to the permanent ink filter (above the ink pumps) and to the ink reservoirs (above the printheads).

The new track should have labels already installed above at the tube joiner, but if it does not, you will need to install a ink-tube identifying label.

Cut off unneeded ends of ink tubes on new track

1. Cut the user-end ink tube sections just before the installed tube joiner (C in Fig. 556.).
Cut at the marks in the photo (B in Fig. 556.).

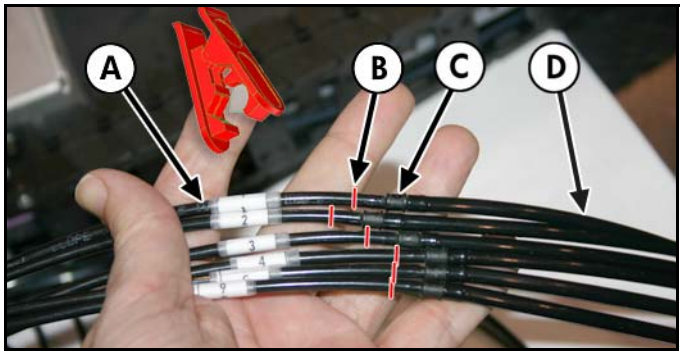
Fig. 556. Cutting around tube joiner

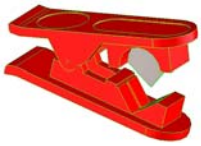
A = Tubes that are attached to the tubes inside the track housing

B = Where to cut

C = Tube joiner

D = Tubes at the end of track that would attach to the permanent ink filters during printer assembly





Required tool: Tube cutter
Use the supplied cutting tool, versus wire cutters, to ensure that the tubes are cut straight. Wire cutters result in an elliptical tube end that will not seal as well

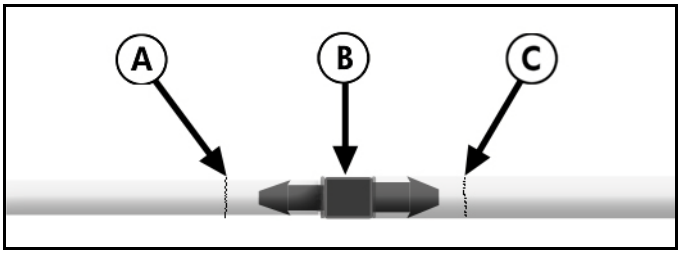
Take care not to cut into the tube joiner, as this will leave parts of the tube joiner in the ink tube. Debris in the ink tube could damage the printheads.

Fig. 557. Cutting around tube

A = Location to cut tube so that tube joiner is not cut

B = Original tube joiner

C = Tube that is removed from new track during installation setup



Cut off unneeded ends of ink tubes at carriage-end of new track

2. Cut off the ends of the ink tubes before the tube joiner at the carriage end of the new track.

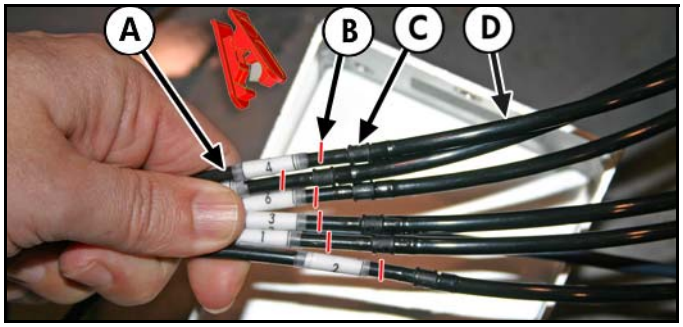
Fig. 558. Cutting around tube

A = Tubes that are attached to the tubes inside the track housing

B = Where to cut

C = Tube joiner

D = Tubes at the end of track that would attach to the carriage ink filters

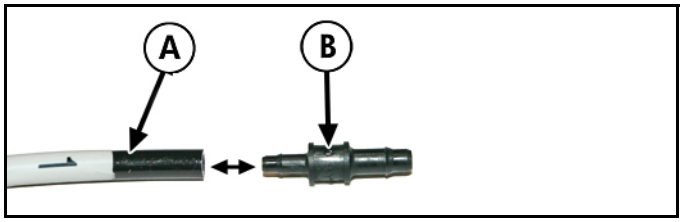


Install tube joiners into both ends of new ink tubes

Install tube joiners into the user-end of all six ink tubes

3. Insert a tube joiner (B in Fig. 559., see also "Tube joiners and plugs" on page 400) into the end of the new ink- tube (B in Fig. 556.) at the user-end of the new track.

Fig. 559. Smaller-to-larger tube joiner



4. Repeat step 3 until all of the ink tubes at the user-end of the track have a tube joiner installed.

Install tube joiners into all of the new track's ink tubes at the carriage-end

5. Insert a tube joiner (B in Fig. 559.) into the ends of all of the new ink- tubes (B in Fig. 558.) at the carriage-end of the new track.

Label tubes connected to original track that will remain in printer

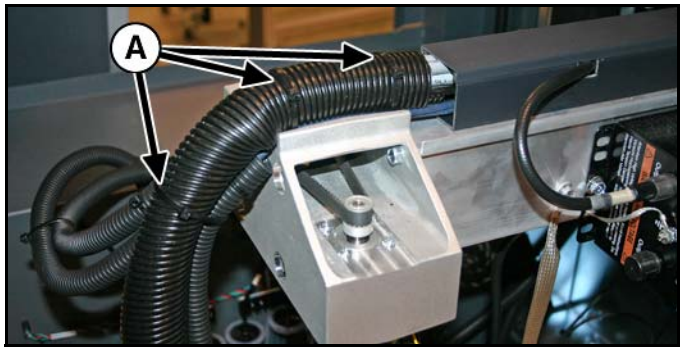
You will label the tubes that will reconnect to the new track after the original track is removed. Tube labels are supplied with the replacement track kit. Labels should be installed at all locations where the tubes will be cut. A label will be installed on all tubes that will reconnect to the new track.

1. Cut the cable ties that secure the cable looms that contain the tubes and cables of the original track assembly (located above ink filters in the user-end enclosure area-- see Fig. 581.).

   Cut any cable tie that restricts the removal of the cables or tubes of the original track assembly. Note the cable and tube groupings, as the cables and tubes should be restored to this configuration after installing the new assemblies.

Fig. 560. Cable loom tie wraps

A = Cable ties to cut



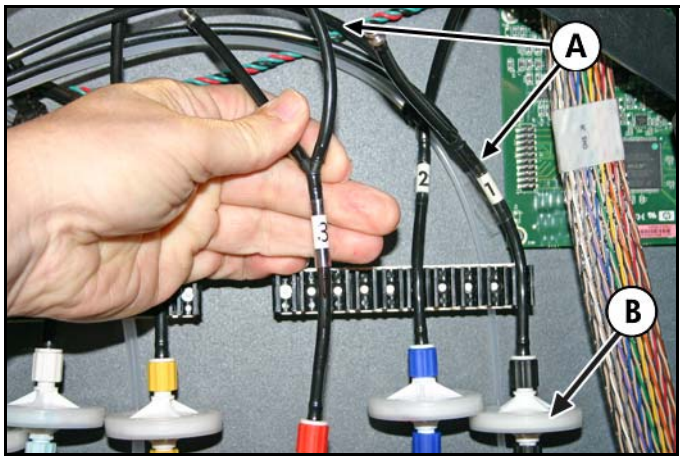
2. Pull all of the ink tubes out of their cable looms.

3. Near the permanent ink filters (above the ink pumps), locate ink tube number 1 (A in Fig. 561.) for black, and follow it up to the tube joiner inside the panduit above the rail.

Fig. 561. Ink tubes above ink pumps

A = Ink tube #1 for black ink

B= Permanent ink filter



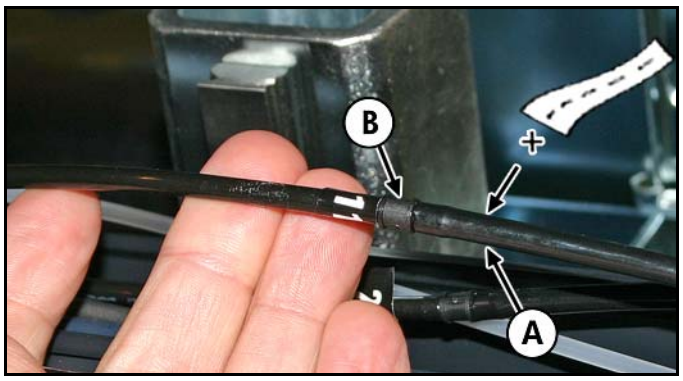
Label tubes that connect to permanent ink filters

4. Located inside the panduit above the rail, install a number "1" label at position A in Fig. 562. near the tube joiner (B in Fig. 562.) on the side of the tube that connects to the permanent ink filter.

Fig. 562. Where to install label

A = Location to install new label on ink pump tube

B = Tube joiner in panduit



5. Repeat steps 3 and 4 for all six ink tubes until all of the tubes that connect to the permanent ink filters are labeled near the tube joiners inside the panduit.

Power off the printer and remove power cords

Power off the printer

1. When the printheads complete their purge of ink, turn off the printer using the power switch.

Fig. 563. Power switch





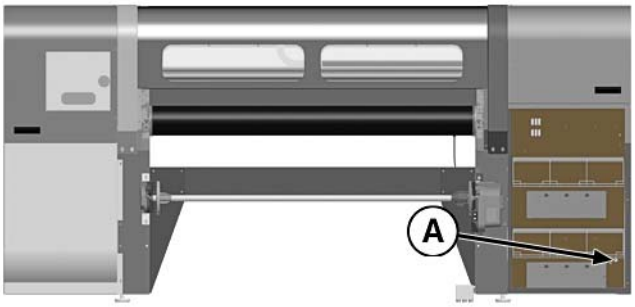
Do not unplug the main power cable from the printer before the lamps complete their cool down. Failure to allow the lamps to cool down properly will damage the lamps. If you disconnect the power cable from the back of the printer or disconnect the power cable from the lamp assembly before the cool down sequence has finished, you will damage the lamps. Do not disconnect the power cable until the printer's control panel screen no longer reads "Cooling".

2. Make sure the carriage is over the service station so that ink from the printheads will drip into the service station when the vacuum is disconnected.

3. Make sure that the vacuum pump's backup power supply is POWERED OFF by unplugging the power cable (A in Fig. 53.) for the power supply.

Fig. 564. Auxiliary power connection for vacuum assembly

A = Location of the auxiliary power cord



Because the vacuum tube will be cut during this procedure, it is important that the vacuum pump does not turn on. Unplug the auxiliary power supply near the lower ink boxes.

Allow the printer to complete its shutdown procedure before disconnecting the power cord.

Disconnect the backup power supply that powers the vacuum pump (backup power in the event of loss of main power). The vacuum pump should not run during this procedure.

Unplug the main power cable

4. Once the lamps have cooled down, unplug the main power cable to the printer.

Fig. 565. Printer's main power cable

A = Location of the auxiliary power cord



You must unplug the power cable to remove power to the vacuum pump.

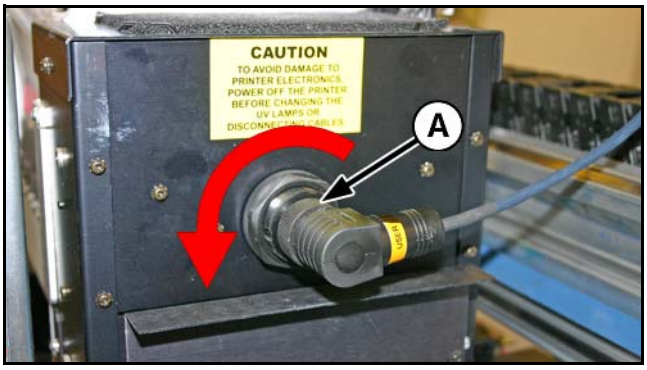
Disconnecting all track cables and tubes from carriage

Disconnect cables from the carriage

5. Remove both lamp power cables from the sides of the lamp housings.

Fig. 566. Removing the lamp power cable

A = Where to turn to loosen



Remove the carriage cover

6. Remove the carriage cover as shown in the section “Carriage assembly cover” on page 224.

Disconnect cables from the headboard

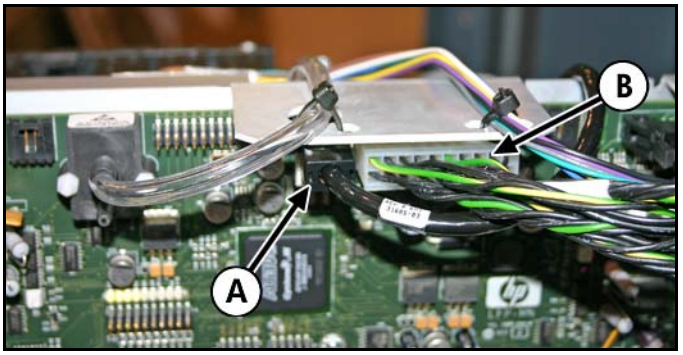
7. Disconnect the LVDS data cable (A in Fig. 567.) and power cable (B in Fig. 567.) that connect between the carriage headboard and track assembly.

Fig. 567. Data and power cable

Note: Appearance of data cable may vary

A = LVDS data cable

B = Headboard power cable



Disconnect tubes from the carriage

Required tools:

- Tube cutting tool (supplied), cutting tool for cable ties, apron, gloves, drop cloth, paper towels

8. Wear an apron to protect your clothing from ink splatter.

9. Place a drop cloth on the floor to catch ink that may drip during the procedure.

10. Have paper towels ready in case of ink leakage.



Wear protective gloves, such as latex, to protect your hands from being stained with ink.



Wear protective eye wear to protect your eyes from ink splatter.

11. Cut the tie wraps (B in Fig. 570.) that secure the ink tubes to the inside edge of the carriage assembly.

Note the groupings of thermistor wires and ink tubes (see Fig. 570.), as the wires and tubes should be restored in the same configuration after joining the tubes with the new track assembly.

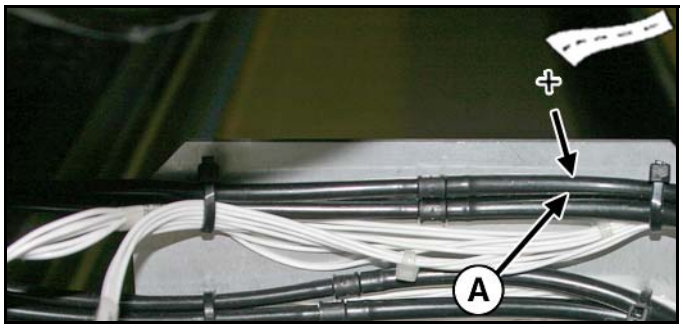
12. Using a supplied label, label the tubes (A in Fig. 568.) on the side of the tube joiner that connects to the ink reservoir.

The ink line numbering is as follows: 1 = black, 2= Cyan, 3 = Magenta, 4 Yellow, 5 = Light Cyan or White and 6 = Light Magenta or White.

Fig. 568. Label the tubes

A = Where to place the number label

Note: In the photo, the tie wraps are not cut. However, the tie wraps should be cut prior to installing the labels



13. Repeat step 12 until all 6 reservoir ink tubes have been labeled according to their color.



Do not reuse a tube end that has had a tube joiner inserted. If you make a mistake and use the wrong tube joiner, do not pull out the tube joiner and insert the correct tube joiner. The tube end will be stretched and could potentially leak. Instead, cut the end of the tube using the supplied cutting tool to create a fresh tube end to insert the correct fitting. If this results in the tube being too short, see the section “Resolution for too-short tubes” on page 430.

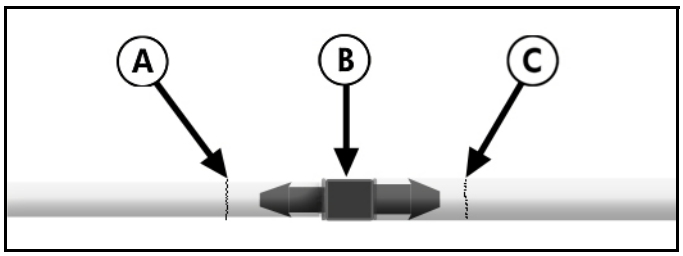
14. Cut the ink tubes just before and just after the tube joiner (A and C in Fig. 569.), taking care not to cut into the tube joiner, as this will leave parts of the tube joiner in the ink tube.

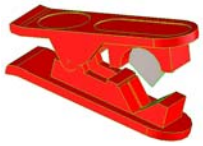
Fig. 569. Cutting around tube joiner

A = Tube that is attached to the original track

B = Original tube joiner

C = Tube that is attached to the ink reservoir





Required tool: Tube cutter



When you cut the tubes on either side of the tube joiner (A and C in Fig. 569.), make certain that you are not cutting into the tube joiner. This could leave some of the tube joiner in the ink tube, which could clog the filter.

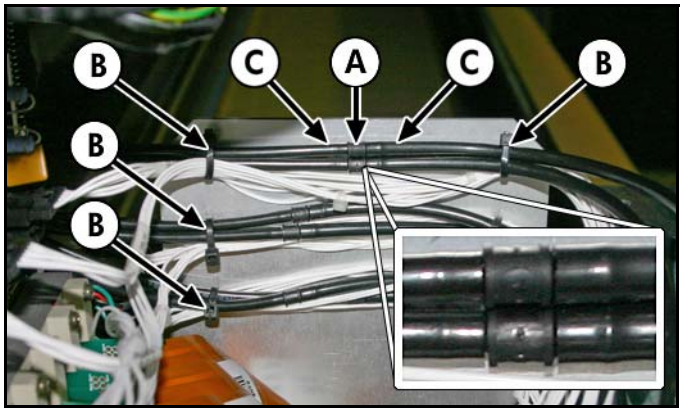
The tube joiner is needed to join the smaller-outer-diameter ink tube of the track to the larger-outer-diameter ink tube that connects to the ink reservoir. The tube joiners in the carriage are located between two cable ties (B in Fig. 570.).

Fig. 570. Tube joiners

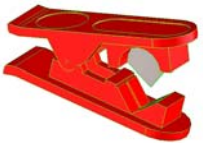
A = Tube joiner (to be removed)

B = Cable ties to cut

C = Where to cut ink tubes (on each side of the joiner, taking care not to cut into the joiner)



Required tool: Tube cutter





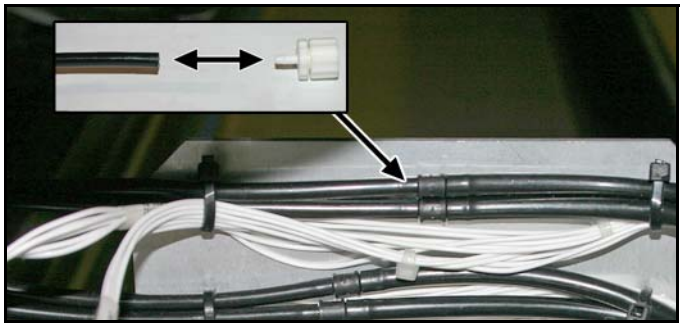
Do not clamp the ink source tube. This will damage the tube. Use a paper towel or tube plug to stop ink flow.



When you cut the ink tubes, hold both sections of the tube of each side of the tube cutter to prevent the tube from springing away from the cutter when the tube is cut. If the tube springs away from the cutter upon being cut, drops of ink will spatter from the tube.

15. Use the specified tube plug to stop the ink flow from the ink tube that is in the original track (see "Tube joiners and plugs" on page 400) or wrap a paper towel around the tube end, and secure it with a rubber band.

Fig. 571. Tube plug



Note: Plug track ink tubes as soon as you cut them

Removing the air tubes from the air manifold

16. Remove the vacuum (B in Fig. 260.) and pressure (A in Fig. 260.) tubes from the air manifold.

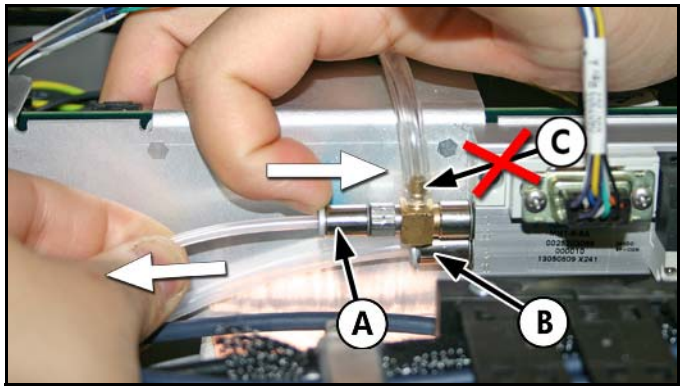
To remove the tubes, depress the compression ring at the top of the connection and pull the tube out of the fitting.

Fig. 572. Removing the pressure and vacuum tubes

A = Pressure tube

B = Vacuum tube

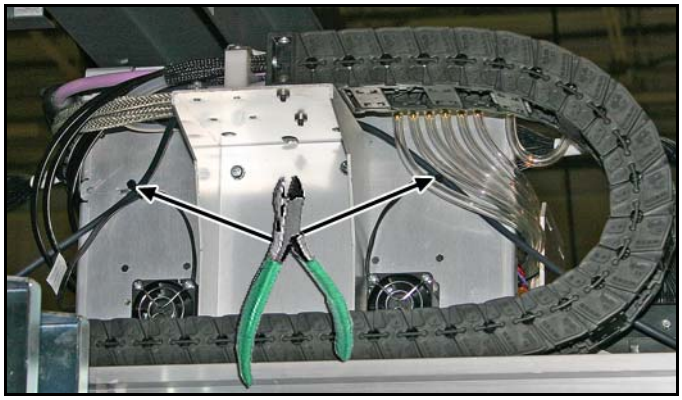
C = Pressure sensor tube (**do not disconnect this tube**)



Remove the track from the carriage

17. Cut the cable ties (Fig. 573.) that secure the lamp cables to the input-side of the carriage.

Fig. 573. Lamp power cable tie wraps

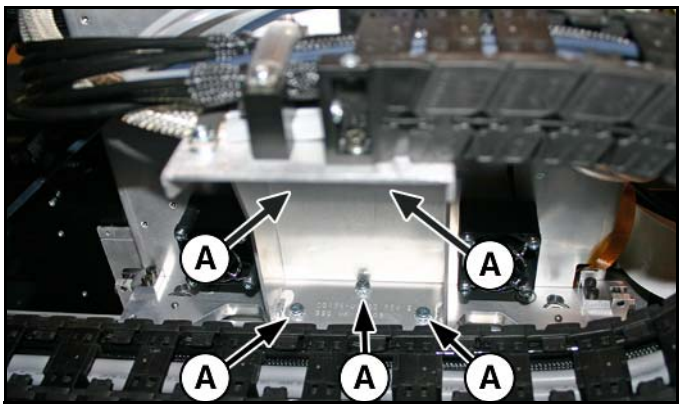


Note: Cut cable ties only

Remove the trolley attachment bracket

18. Using a #2 phillips screwdriver, remove the five screws (A in Fig. 266.) that secure the trolley attachment bracket to the input-side of the carriage.

Fig. 574. Trolley attachment bracket

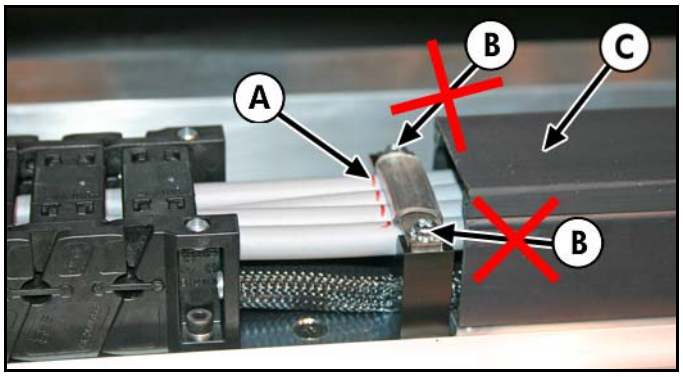


A = Screws to remove

Removing the track from the rail-attachment bracket

19. Remove the panduit cover (C in Fig. 575.) by pulling it off of the panduit track.

Fig. 575. Cable clamps near panduit



Note: Appearance of cables may vary

A = Cable position mark
B = Cable clamp screws (**Do not remove**)
C = Panduit cover

Caution: Do not remove the screws (B) that secure the cable clamp, as this will allow the cable positions to change

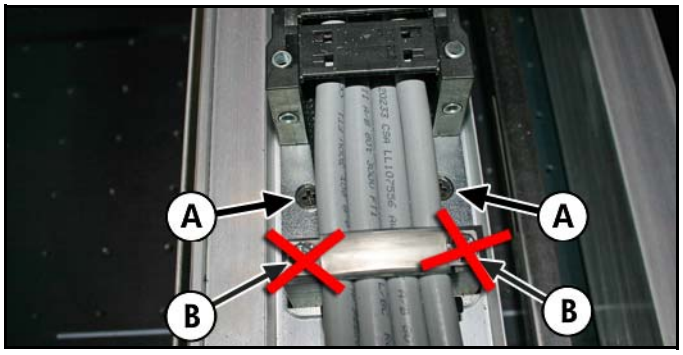
Do not remove the cable clamp screws (B in Fig. 575.), as this will allow the cable positions to change and cause the loss of proper cable tension.

20. Remove the two screws (A in Fig. 576.) that secure the clamp bracket to the rail.

Fig. 576. Cable clamp bracket screws

Note: Appearance of cables may vary

A = Screws to remove



21. Place the track flat on top of the media-drive belt.

Clean area under track

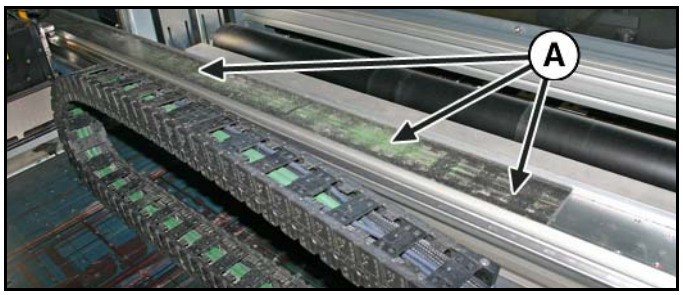
1. Clean the area above the rail where the track installs.

Clean all dust and debris from the track installation area. Dust created by the track can be used to troubleshoot or identify problems with track cable wear.

Fig. 577. Cable clamp bracket screws

Note: Appearance of cables may vary

A = Area to clean



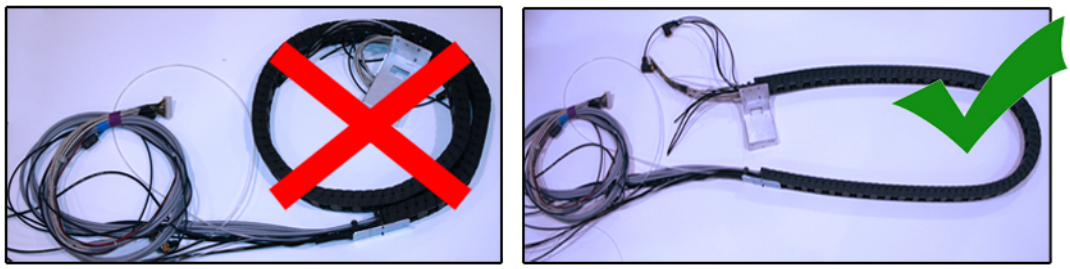
Installing the new track assembly onto the rail

1. Place the new track assembly on top of the rail, placing the cables and tubes into the panduit (see B in Fig. 575. for location of panduit).

Do not coil the track during storage or installation, as this stretches the cables and changes their position. This will cause the track to be improperly tensioned. Improper tension will cause the cables to prematurely fail due to cables rubbing against each other and against the track surfaces. The track should never bend in more than one location.

DO NOT COIL THE TRACK!

Fig. 578. Storing the track assembly

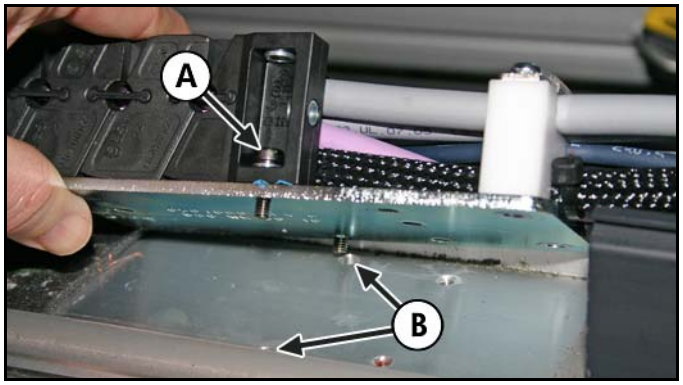


Attaching the track bracket to the rail

2. Align the track bracket screws (A in Fig. 579.) with the holes (B in Fig. 579.) in the rail.

Fig. 579. Track bracket screws

A = Screws that secure track to track bracket



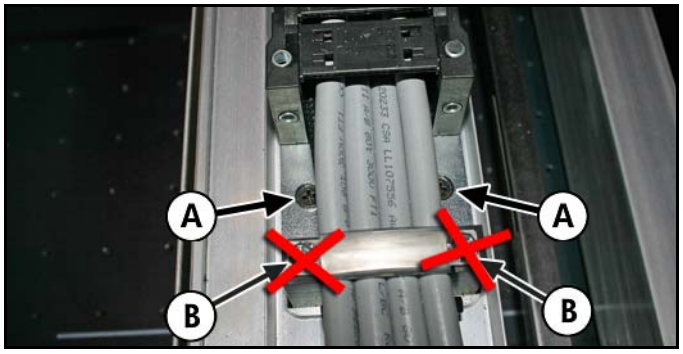
3. Using two phillips screws, connect the track to the rail using the bracket that is installed on the track.

Fig. 580. Cable clamp bracket screws

Note: Do not loosen the clamp screws (B).

A = Screws to install the mid-rail track bracket to the rail

B = Cable clamp screws (**Do not loosen these screws**)





Do not loosen the cable clamp screws (see A in Fig. 575. for location of clamp), as this will change the cable position, resulting in improper cable tension.

4. Plug in the DC power cable to the OHS controller (see Fig. 589. for location).

5. Screw in both UV power cables (A in Fig. 592.) to the top of the electronics box.

Disconnecting and connecting the user-end of the track assembly

Required tools:

- Ink-tube cutting tool (supplied)
- Tube joiners and plugs (see “Tube joiners and plugs” on page 400)
- #2 phillips screwdriver



Before cutting any tubes, make sure that the tubes from the ink pumps are labeled with the supplied labels (labels should be applied near the tube joiners inside the panduit). To ensure that you connect the tubes to the correct tube connections, as you cut a tube, immediately connect the cut tube to the new track assembly.

6. Place a drop cloth beneath the area where you will cut the tubes (about the rail in the panduit area) to catch any ink that may drip.

7. If the supplied tube-identification labels are not yet installed, install the labels at a location approximately 15 cm (6-in) from the ink tube joiner (inside the panduit tray) install the supplied labels onto the ink tubes that connect to the ink pumps.

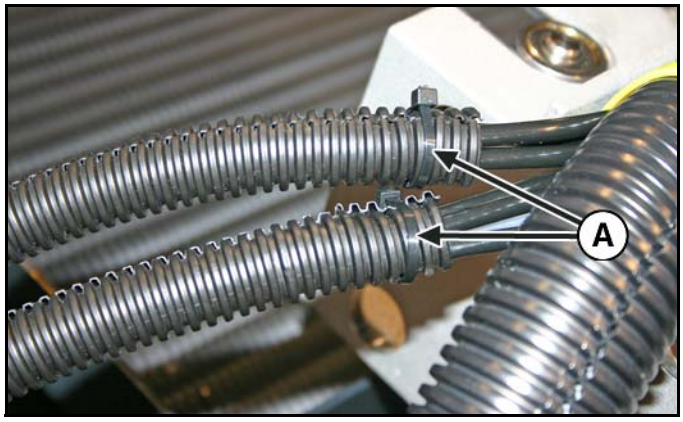
   The ink line numbering is as follows: 1 = black, 2= Cyan, 3 = Magenta, 4 Yellow, 5 = Light Cyan or White and 6 = Light Magenta or White.

8. Cut any cable tie that restricts the removal of the cables or tubes of the original track assembly.

   Note the cable and tube groupings, as the cables and tubes should be restored to this configuration after installing the new assemblies.

Fig. 581. Cable loom tie wraps

A = Cable ties to cut



Cutting and connecting air tubes

Cutting the vacuum tube

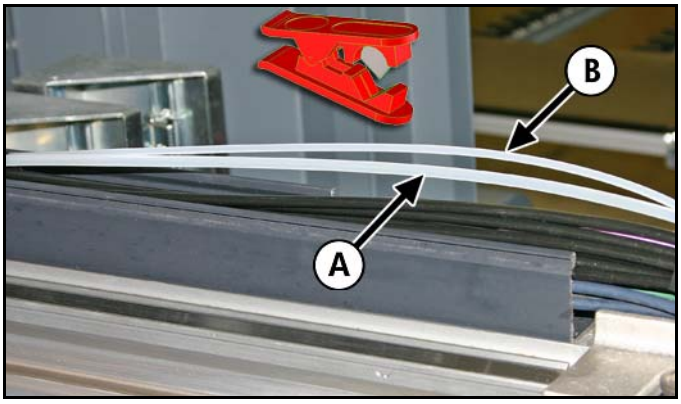
9. Cut the vacuum tube (A in Fig. 582., located inside the panduit on the rail) at about 30 cm (12-in) from the user-end of the panduit.

   The vacuum tube has a slightly larger outer diameter than the pressure tube.

Fig. 582. Where to cut the track air tubes

A = Vacuum tube, where to cut

B = Pressure tube, where to cut



10. Insert a tube joiner (see "Tube joiners and plugs" on page 400) into the cut end of the vacuum tube (the other end of the tube connects to the vacuum assembly).

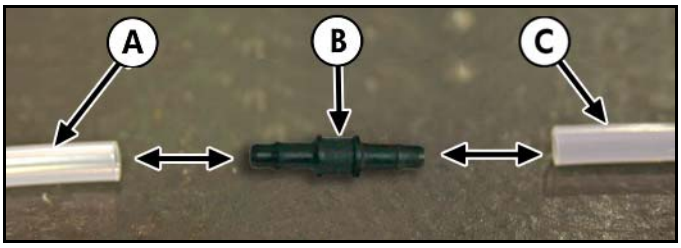
11. Connect the new vacuum tube (A in Fig. 583.) from the new track to the tube coming from the vacuum assembly (A in Fig. 583.) using a supplied tube mender (see "Tube joiners and plugs" on page 400).

Fig. 583. Joining the vacuum tube

A = Vacuum tube from new track

B = Vacuum tube joiner

C = Vacuum tube from vacuum assembly



The tube joiner for the vacuum tube is located in a separate plastic bag from the ink tube joiners.

Cutting the pressure tube

12. Cut the pressure tube (B in Fig. 582., located inside the panduit on the rail) at about 25 cm (10-in) from the user-end of the panduit.

13. Insert a tube joiner (see "Tube joiners and plugs" on page 400) into the cut end of the pressure tube (the other end of the tube connects to the pressure pump), and connect the new pressure tube (A in Fig. 584.) to the tube coming from the pressure pump (C in Fig. 584.).

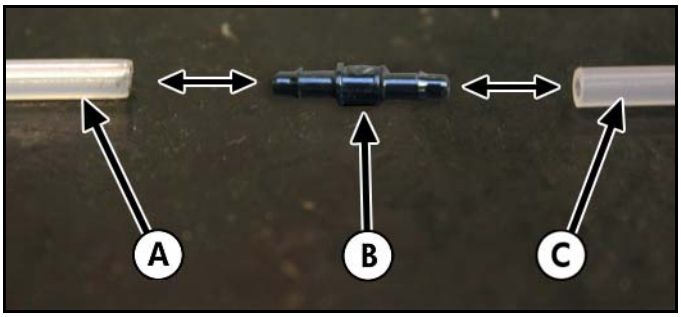
The pressure tube should be joined inside the panduit area above the rail. It is especially important that the tubes are not joined at a bend or curve location.

Fig. 584. Joining the pressure tube

A = Pressure tube from new track

B = Pressure tube joiner

C = Pressure tube from pressure pump



Cutting and connecting user-end ink tubes one at a time

14. Locate ink tube number 1 inside the panduit.

15. Inspect the ink tube to make sure the section of the ink tube that comes from the ink pump is properly labeled (has a tube-identifying number) near the tube joiner (located above the rail in the panduit area).

16. Make sure you are wearing gloves, eye protection, clothing protection and are using a drop cloth.

When you cut the ink tubes, hold both sections of the tube of each side of the tube cutter to prevent the tube from springing away from the cutter when it is cut. If the tube springs away from the cutter upon being cut, drops of ink will spatter from the tube.

Cut the original ink tube and then immediately join the tube with the corresponding ink tube from the new track. This will keep ink from leaking from the ink-pump tube and it will reduce the chance of connecting the tubes incorrectly.

17. Cut the original track's ink tube on each side of the original tube joiner (B in Fig. 585.).

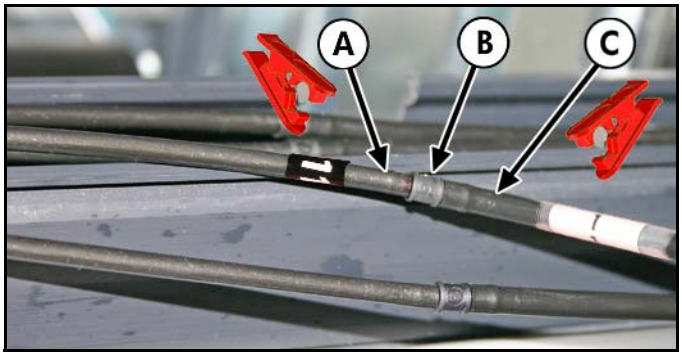
Cut the original track's ink tube (A in Fig. 585.) and the tube from the permanent ink filters and ink pump (C in Fig. 585.), making sure not to cut into the tube joiner.

Fig. 585. Cutting the ink tube

A = Ink tube for tube 1 (black ink) from original track

B = Original tube joiner

C = Ink tube #1 from permanent ink filter and ink pump



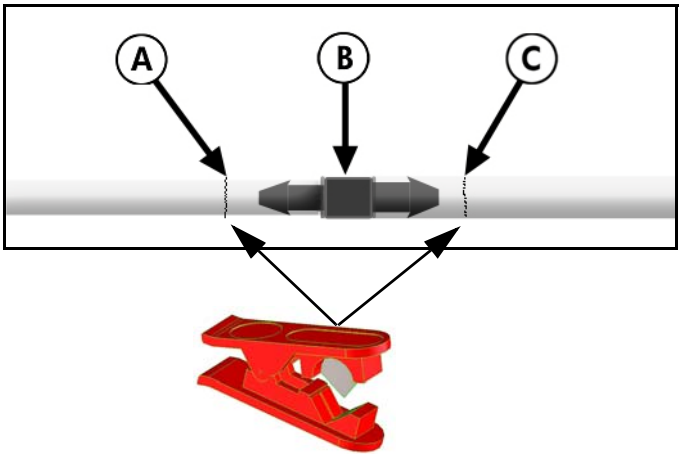
When you cut the tubes on either side of the tube joiner (A and C in Fig. 569.), make certain that you are not cutting into the tube joiner. This could leave some of the tube joiner in the ink tube, which could clog the filter.

Fig. 586. Cutting around tube joiner

A = Tube from original track

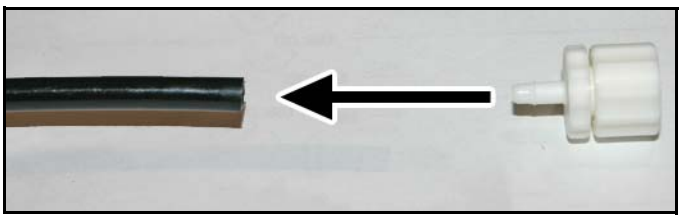
B = Tube joiner

C = Tube that connects to permanent ink filter and ink pump



18. Insert a tube plug (see "Tube joiners and plugs" on page 400) into the track ink tube immediately after cutting the tube at position A in Fig. 585.

Fig. 587. Plug original track tubes



Connect the new track to the ink-pump tubes

19. Connect the smaller tube for black (tube 1) of the new track with the larger tube for black that comes from the permanent ink filter above the ink pumps.

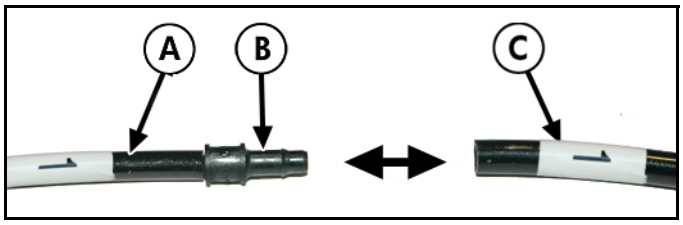


Fig. 588. Connecting track ink tubes with ink pump tubes

A = Smaller tube from new track

B = Tube joiner

C = Larger tube to permanent ink filter and ink pump

20. Repeat steps 14 through step 19 on page 423 for each of the ink tubes until all of the tubes from the ink pumps are joined with tubes from the new track assembly.

Disconnecting user-end cables

Disconnect the remaining track cables

21. Disconnect the OHS DC power cable (C in Fig. 589.) from the OHS controller.

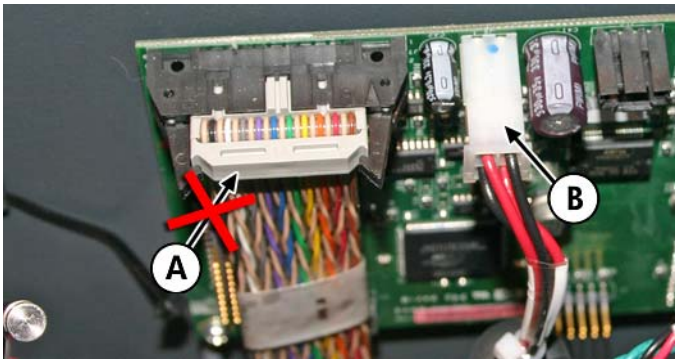


Fig. 589. DC cable for OHS controller

A = Data cable - **Do not disconnect**

B = DC power cable - **Disconnect this cable**

22. Disconnect the headboard power cables (A in Fig. 590.) from the electronics box.

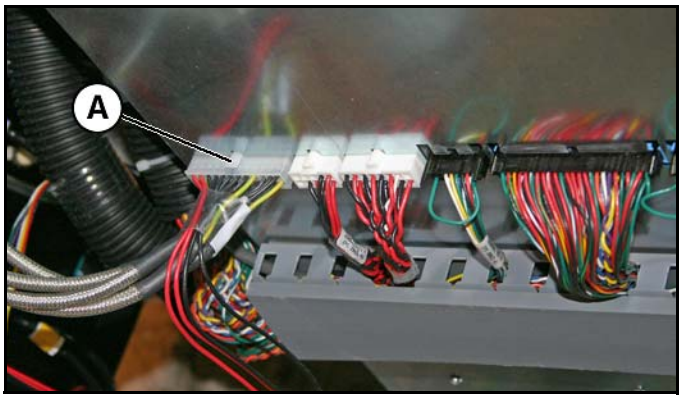


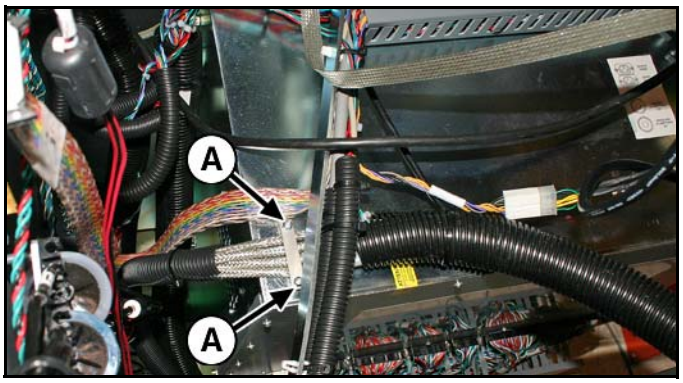
Fig. 590. Lamp communication cable

A = Headboard power cable to disconnect

23. Remove the two screws (A in Fig. 591.) that clamp the ground cables to the top of the electronics box inside the user-end enclosure.

Fig. 591. Cable clamp

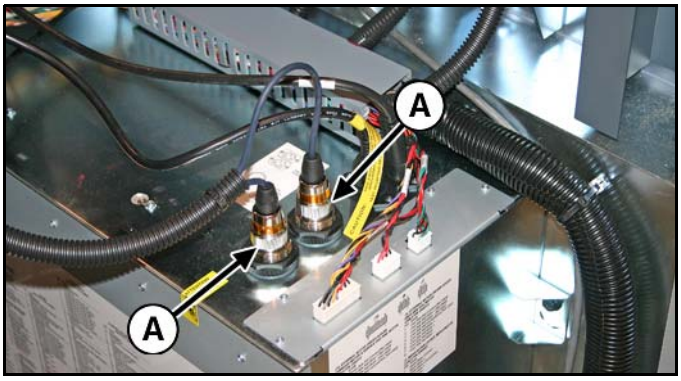
A = Screws to remove to release grounding cable clamp



24. Unscrew both UV power cables (A in Fig. 592.) from the top of the electronics box.

Fig. 592. UV Cables

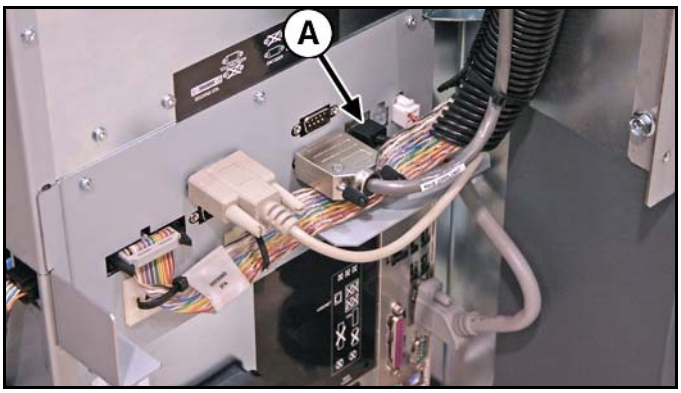
A = UV power cables to disconnect by unscrewing top nut



25. Disconnect the LVDS data cable (A in Fig. 593.) from the electronics box.

Fig. 593. Data cable

A = LVDS data cable to disconnect



26. Cut any additional cable ties that restrict the LVDS data cable from being removed from the cable loom.

27. Remove the original track assembly from the printer.

Cable looms

Loom for LVDS and headboard power cables

1. Locate the large cable loom that resides near the carriage drive assembly (see Fig. 581. on page 420).

   The small cable for the media-thickness sensor should also be in this cable loom. It should still be in the cable loom unless it was taken out during removal of the original track.

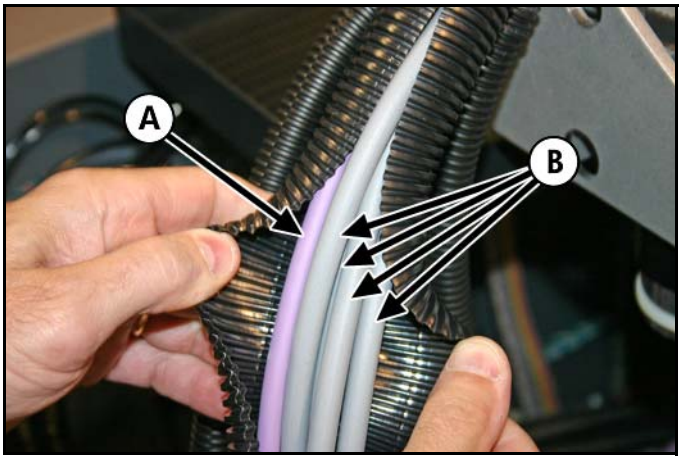
2. Place the LVDS data cable (A in Fig. 594.) and the headboard power cables (B in Fig. 594.) from the track into this cable loom.

Fig. 594. Large cable loom

Note: Appearance of cables may vary

A = LVDS data cable

B = Headboard power cables



3. Locate the three smaller cable looms that are below the large cable loom that contains the LVDS and power cables.

Ink and air tube cable looms

4. Insert the vacuum tube and ink tubes 4, 5 and 6 into one of the smaller cable looms (see Fig. 595.).

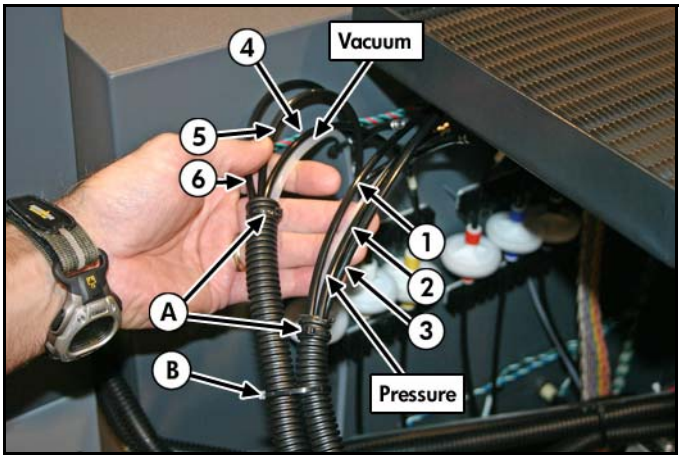
5. Insert the pressure tube and ink tubes 1, 2 and 3 into another of the smaller cable looms (see Fig. 595.).

Fig. 595. Ink and air cable looms

1 = Black
2 = Cyan
3 = Magenta

4 = Yellow
5 = Light cyan or white
6 = Light magenta or white

A = Tie wraps at ends of looms
B = Tie wrap around both looms

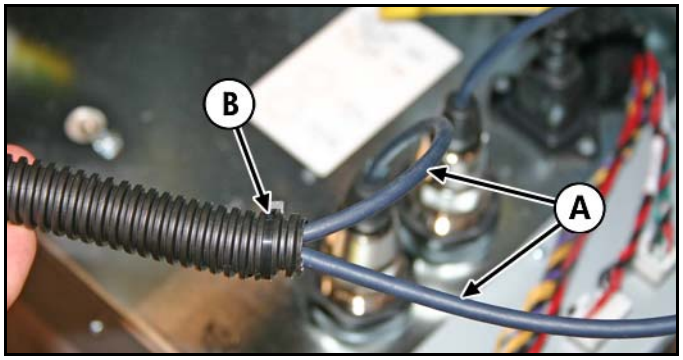


6. Insert the lamp power cables (A in Fig. 596.) into the remaining smaller cable loom and tie wrap each end (B in Fig. 596.).

Fig. 596. Lamp power cables

A = Lamp power cables

B = Tie wrap that secures cables at each end of cable loom



7. Make sure that both ends (A in Fig. 595.) of each of the three smaller cable looms are secured with cable ties.

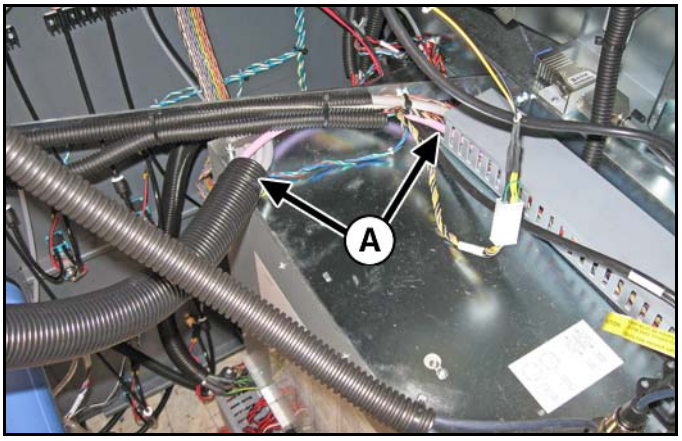
8. Place a cable tie at two locations around both ink and air cable looms (B in Fig. 595.) so that they are connected together near the ink pumps.

9. Route the LVDS data cable (A in Fig. 597.) through the cable loom toward the electronics box.

Do not insert the LVDS data cable into the cable loom that runs in front of the electronics box. Due to the angled connector on the end of the cable, the LVDS data cable should be tie wrapped to the side of this cable loom.

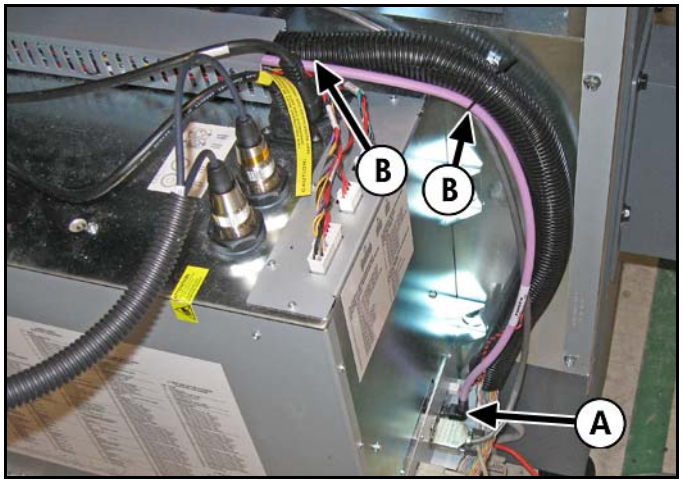
Fig. 597. LVDS data cable

A = Correct routing of LVDS data cable



10. Use cable ties to tie wrap the LVDS cable (B in Fig. 598.) to the outside of the cable loom.

Fig. 598. LVDS data cable tie wrapped to loom



Do not coil the LVDS cable on itself, as this can contribute to emission problems.

11. Insert the LVDS data cable (A in Fig. 598.) into the electronics box connection location.

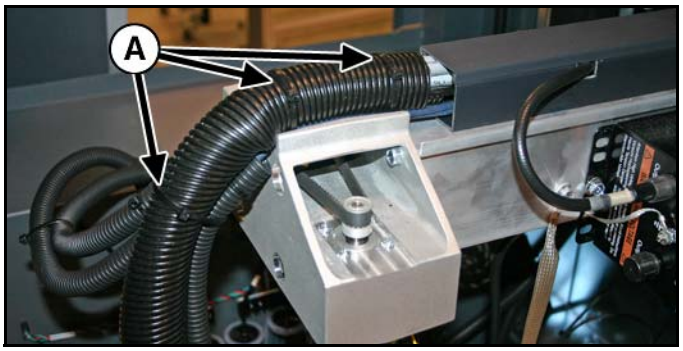
Do not insert the LVDS cable into the cable loom that is on the input-side of the electronics box (due to the connector on its end - see Fig. 598.).

12. Install the panduit cover.

13. Use three cable ties to secure the large cable loom and three smaller cable looms above the carriage-drive motor.

Fig. 599. Cable loom tie wraps

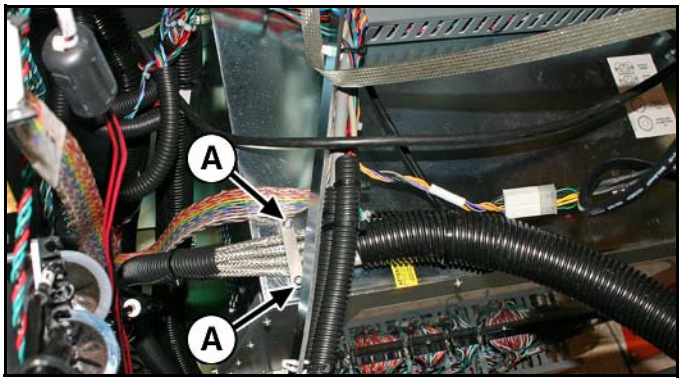
A = Cable tie locations on looms



14. Install the clamp and two screws (A in Fig. 600.) that clamp the grounding cables to the top of the electronics box.

Fig. 600. Cable clamp

A = Screws that secure grounding cable clamp



15. Connect the OHS power cable to the OHS controller as shown in Fig. 589.

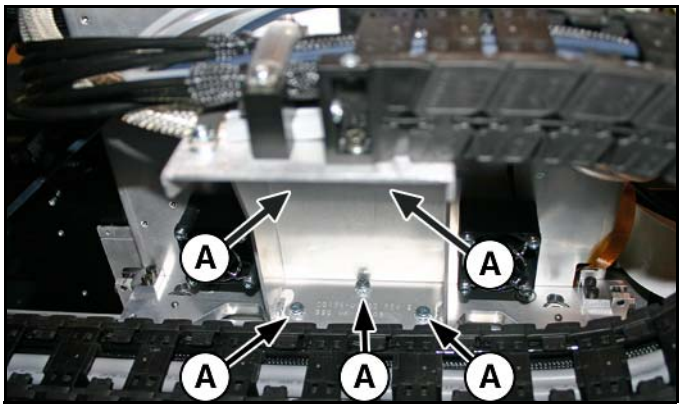
16. Connect the headboard power cables to the electronics box (see A in Fig. 590. for location).

Connecting the track assembly to the carriage

17. Install the five screws that secure the trolley attachment bracket to the input-side of the carriage as shown in the section "Remove the trolley attachment bracket" on page 417.

Fig. 601. Trolley attachment bracket

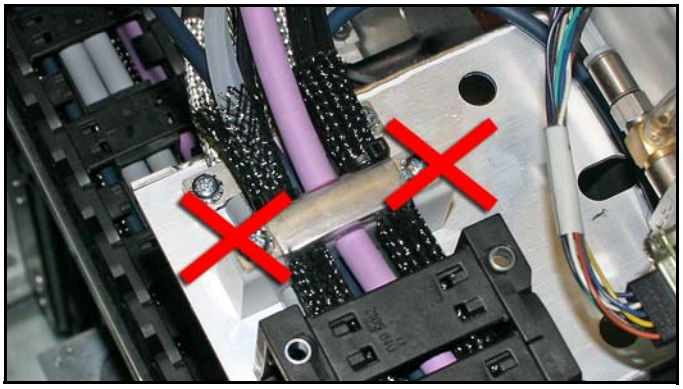
A = Screws to install



Do not loosen the H-block cable clamp screws. Loosening the screws will change the cable position, resulting in a lose of correct cable tension.

Fig. 602. H-black screws

Note: Do not loosen the H-block cable clamp screws

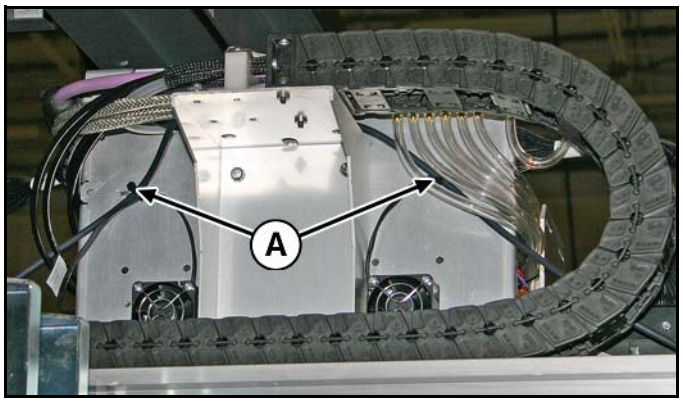


18. Install the pressure tube (A in Fig. 260.) and vacuum tube (B in Fig. 260.) by depressing the tube collars and pushing in the tubes into the manifold.

19. Install two cable ties (Fig. 603.) that secure the lamp cables to the input-side of the carriage.

Fig. 603. Lamp power cable tie wraps

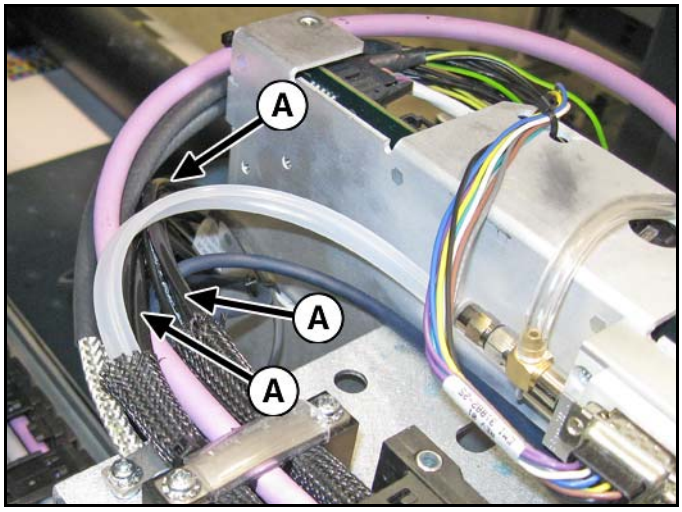
A = Cable ties to install



20. Make sure that the ink tubes (A in Fig. 604.) route from the end of the track to the inside of the headboard power cables and the LVDS data cable.

Fig. 604. Carriage tube routing

A = Correct ink tube routing



Connect track ink tubes to carriage ink tubes

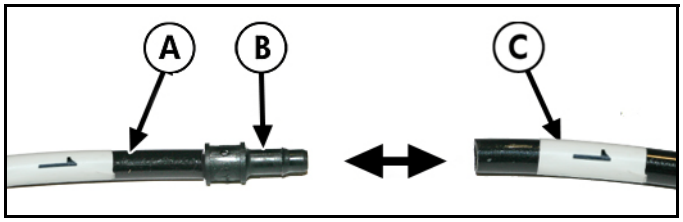
21. Reconnect the ink tubes using the corresponding track ink tube and printhead reservoir ink tube.

Fig. 605. Connecting carriage ink tubes to track ink tubes

A = Smaller tube from new track

B = Tube joiner

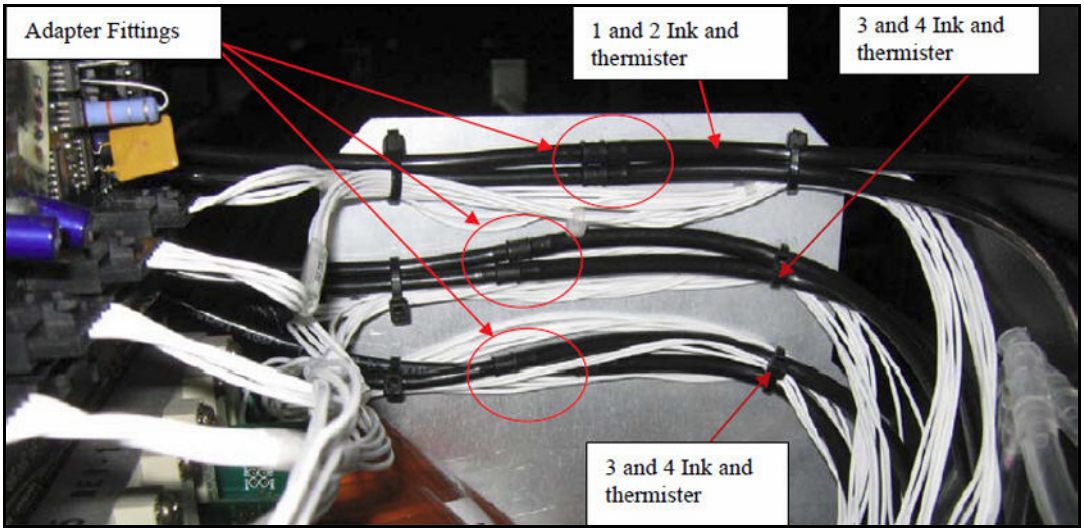
C = Larger tube to ink reservoirs



22. Install cable ties as shown in Fig. 606.

Make sure that the tube menders are positioned between the cable ties and the correct thermistor wires are grouped with the correct ink tubes as shown in Fig. 606.

Fig. 606. Carriage tube routing



Resolution for too-short tubes

If the track ink tube has been cut too short to connect to the tube joiner, you must extend the track ink tube by adding a tube extension. The length is correct if the tube joiner is located between the two cable ties.

Do not loosen the track tube clamps. This will cause the tubes and cables to change positions and lose correct tension. Incorrect tension will cause damage to the cables and result in banding on the printed output.

Extending the track tubes if too short

To extend the track ink tube length, cut a section of ink tube out of the original track, and, using a tube joiner (see "Tube joiners and plugs" on page 400), add the needed length to the ink tube near the carriage.

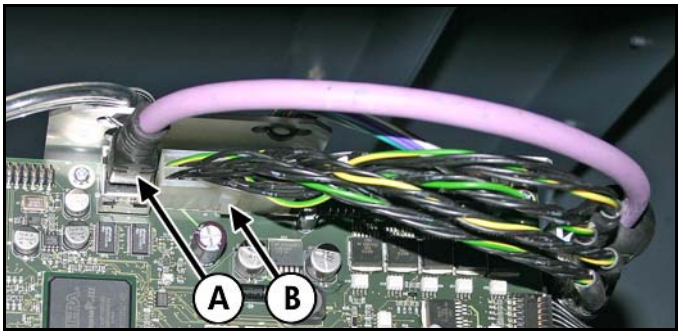
Connecting the headboard cables

23. Connect the LVDS data cable (A in Fig. 607.) and headboard power cable (B in Fig. 607.) that connect between the headboard and track assembly.

Fig. 607. Data and power cable

A = LVDS data cable

B = Headboard power cable



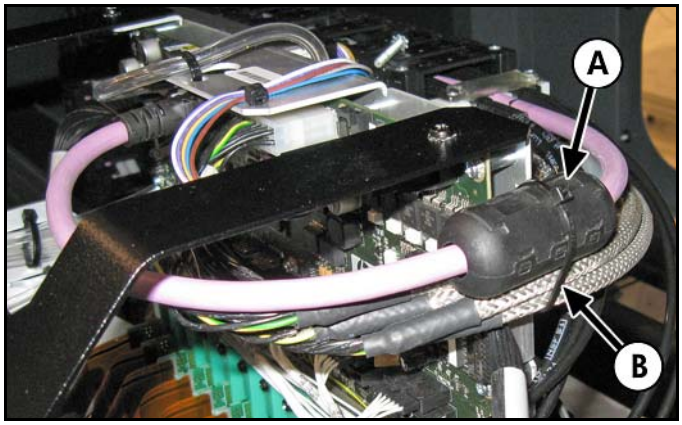
24. Make sure that the LVDS data cable ferrite (A in Fig. 608.) is tie wrapped in the position shown at the headboard power cables (B in Fig. 608.) and that the LVDS data cable loops slightly as it plugs into the carriage (as shown in Fig. 608.).

Fig. 608. LVDS data cable

Note: Tie wrap position of LVDS ferrite (A in Fig. 608.) is critical for proper strain relief

A = Ferrite on LVDS cable

B = Tie wrap holding ferrite to headboard power cables



25. Install both lamp power cables from the side of the lamp housings.

To install the cables, turn the coupling (A in Fig. 609.) clockwise until snug.

Fig. 609. Installing the lamp power cable

A = Lamp power cable coupling



26. Install the carriage cover as shown in the section "Remove the carriage cover" on page 413.

27. Install the panduit cover (B in Fig. 575.).

Check for grounding strap

Included with the track replacement kit are two ground cables that may or may not need to be installed. Check to see if the user-end (B in Fig. 612.) and service-end (B in Fig. 617.) grounding straps are installed. If they are installed, skip this section regarding ground strap installation and proceed to "Powering up the printer" on page 434.

Fig. 610. Grounding strap fasteners

Grounding strap fasteners used in "Install the user-end grounding strap" on page 432.



Install the user-end grounding strap

The user-end grounding strap is the shorter of the two straps. It installs between the rail (near the ionizer power supply) and the actuator-motor tower for the input roller.

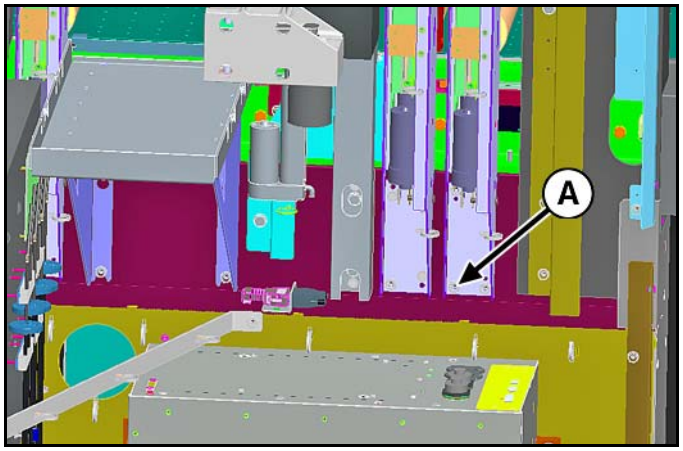
Required tools: 10 mm socket, 20 cm (8-in) extension.

1. Using a 10 mm socket remove one of the bolts (A in Fig. 611.) that secure the input roller's actuator-motor tower to the printer.

   The bolt is located above the electronics box inside the user-end of the printer.

Fig. 611. Bolt for actuator tower

A = Location to remove a bolt



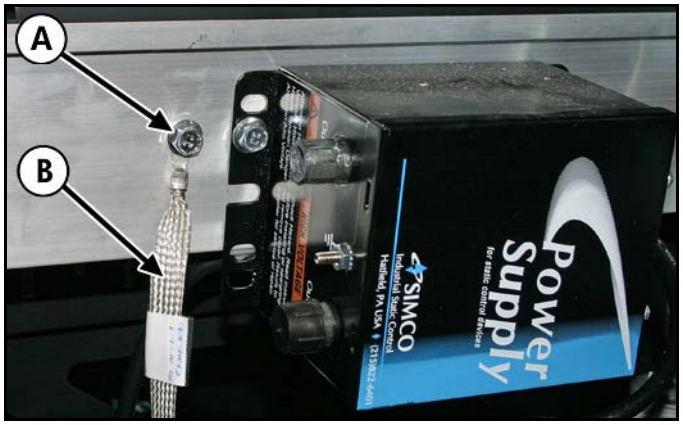
2. Insert the bolt through the eye of the grounding strap and reinstall the bolt into the actuator tower with the grounding strap sandwiched between the bolt and the actuator tower.

3. Using a 10 mm socket and supplied silver bolt (A in Fig. 612.), secure the grounding strap (B in Fig. 612.) to the rail in the existing hold next to the ionizer power supply.

Fig. 612. Bolt for user-end of rail

A = Bolt that secures grounding cable to rail

B = Grounding cable



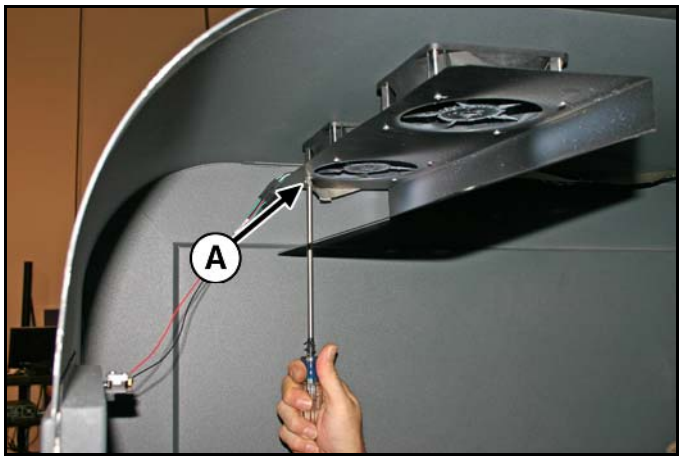
Installing the service-end grounding strap

Required tools: Long, #2 phillips screwdriver, 10 mm socket

1. Locate the end of the grounding strap marked as “Cabinet Cover” (it has a smaller eye for the fan screw).
2. Remove the corner screw (A in Fig. 613.) from the end-enclosure fan.

Fig. 613. Fan screw

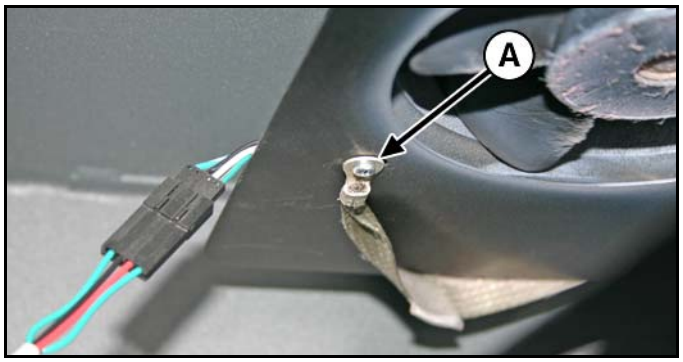
A = Screw to remove



3. Insert the fan screw through the eye of the cabinet-cover end of the grounding strap, and reinstall the screw through the fan.

Fig. 614. Fan screw

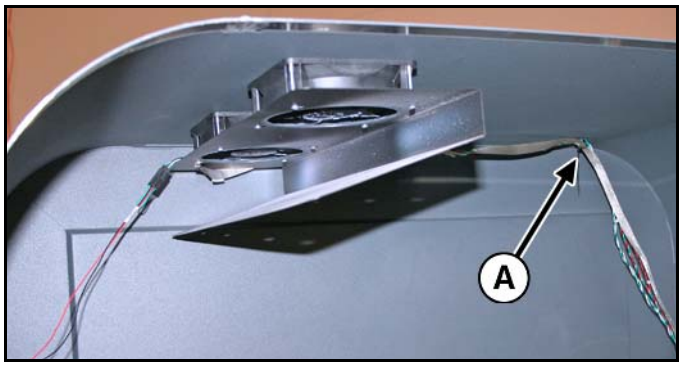
A = Grounding strap installed with fan screw



4. Using a supplied tie wrap, secure the grounding strap to the inside-corner (A in Fig. 615.) of the enclosure cabinet.

Fig. 615. Cable tie strap

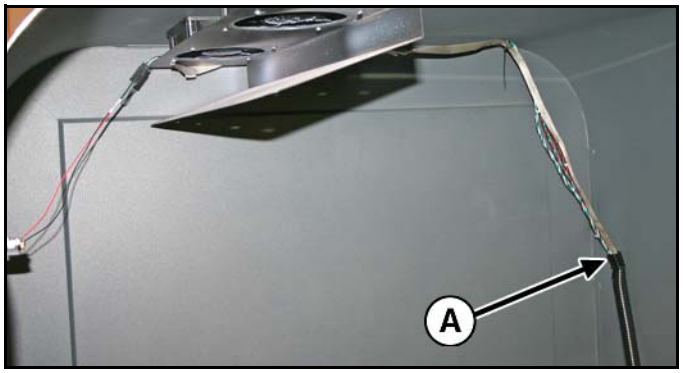
A = Tie wrap securing grounding strap



5. Insert the grounding strap into the enclosure cable loom (A in Fig. 616.) that travel to the electronics box.

Fig. 616. Cable loom

A = Tie wrap securing grounding strap

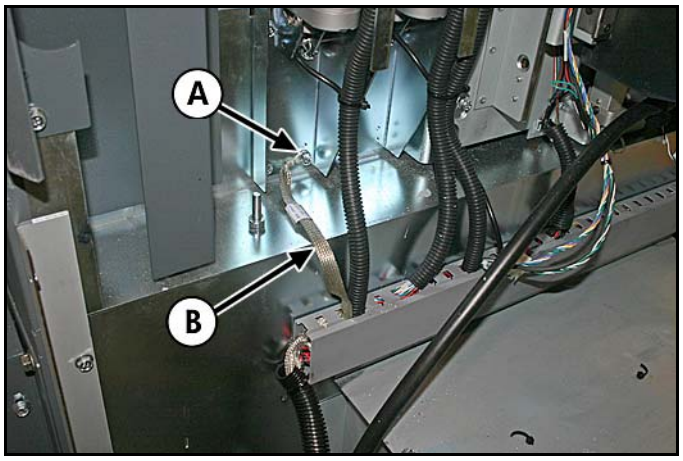


6. Connect the end of the grounding strap to the printer beneath the output roller's actuator-motor tower (A in Fig. 617.).

Fig. 617. Service-end connection to printer

A = Bolt securing grounding strap

B = Grounding strap



7. Push any excess grounding strap into the cable loom.

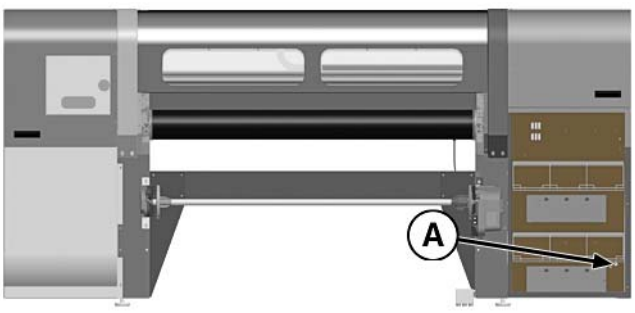
Powering up the printer

Connect the power cables

1. Connect the backup power supply to the vacuum assembly located in the lower area near the ink boxes.

Fig. 618. Auxiliary power connection for vacuum assembly

A = Location of the auxiliary power cord



2. Connect the main power cable to the printer.

3. Turn on the printer using the on/off switch located on the input-side of the printer on the user end (near the floor).

Fill the printheads with ink

1. Access the password-protected pod test area of the printer's service menu as shown in the section "Accessing the password protected service menu" on page 449.
2. From the printer's menu, select INK > MAINTENANCE > PRINTHEAD PROCEDURES > FILL ALL HEADS WITH INK.

Finishing up track replacement

Drain and clean the service station

3. Open the ink-drain valve (A in Fig. 179.) located under the printer to drain the service station as shown in the section.

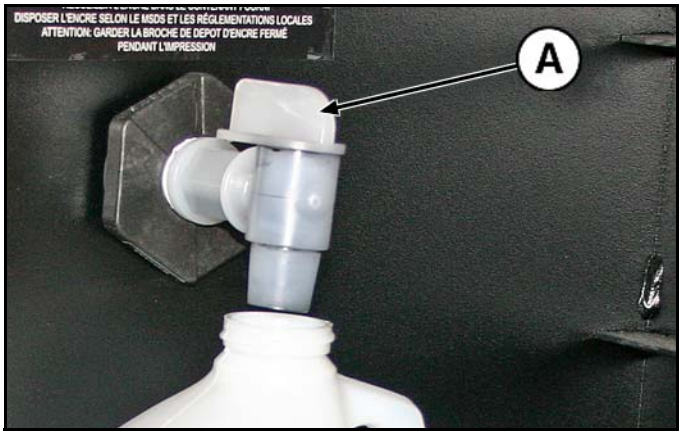
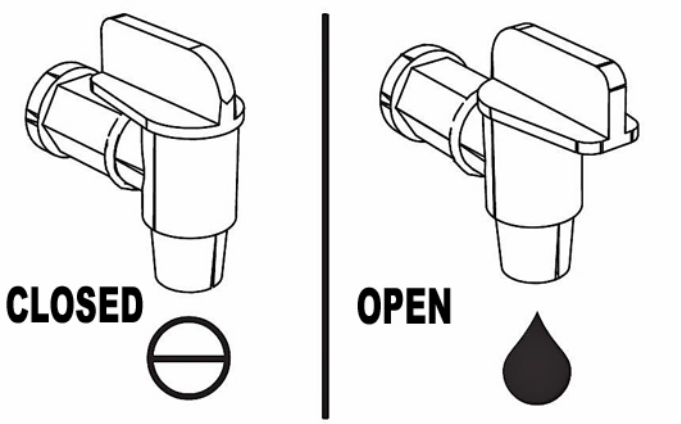


Fig. 619. Spigot in off position

Note: For correct vacuum performance in the service station, be sure to turn the spigot to the off position during normal usage. Only open the spigot to drain the service station, and then close it immediately



4. Check the service station drain hole for any debris that may block the drain and remove the blockage as needed.
5. Clean and lubricate the service station rails as described in the maintenance area of the service manual.

Print a prime bar pattern

1. From the printer's menu, select INK > CHECK JET HEALTH and print a prime bar pattern.

   Compare the printhead jetting health with the original prime bar printed prior to beginning the track replacement.

Replacing an ink tube bundle

To replace an ink tube, the original ink tube is cut near the ink reservoir and the ink filter (located above the ink pump in the user-end enclosure. The new tube will be taped to the original tube and pulled through the track assembly.

Required Tools:

- Apron to protect clothing from ink
- Drop cloth to protect floor from ink
- Gloves to protect hands from ink
- Paper towels
- Safety glasses to protect eyes from ink
- #2 phillips screwdriver
- Tube cutting tool (supplied)
- Something to cut cable ties, such as wire cutters (do not use to cut ink tubes)
- Head flush (to clean the service station)
- Tube joiners (supplied)
- Permanent marker

Ink tube replacement overview

The following is a summary of the procedures covered in this instruction.

- Print a prime bar (verify jetting performance prior to beginning service)
- Empty heads of ink (optional, but all printheads will drain during procedure)
- Power off and unplug power cables for printer and vacuum backup power
- Remove enclosures (user and service-end end caps and carriage cover)
- Prepare new ink tube bundle for installation (cut unneeded sections of tubing from each end)
- Install included labels on tubes that remain in the printer and connect to new track
- Disconnect track ink tubes from carriage (cut ink tubes at each side of tube joiner)
- Cut ink tubes at the OHS-end (user-end) of printer (cutting at each side of tube joiner inside panduit on top of rail) - To reduce error, tubes are cut and joined to new track before cutting the next tube
- Connect new tube bundle to original tube bundle near the carriage
- Pull tube bundle through track
- Cut off original tube bundle and tube joiners used to connect the two bundles
- Power on printer
- Fill printheads with ink

- Empty and clean service station
- Print a prime bar (verify jetting performance after track replacement)

Ink tube bundle replacement, first things

1. Remove the carriage cover as shown in the section “Carriage assembly cover” on page 224.

Wear protective gloves, such as latex, to protect your hands from ink.



2. Wear an apron to keep ink from splashing onto your clothing.

Wear safety eye wear to protect your eyes from ink.



3. Place drop cloth on the floor to keep ink from dripping on the floor.

   Be ready with paper towels to capture any leaking ink. Secure paper towels to the ends of the tubes with rubber bands.

Print a prime bar pattern

1. From the printer’s menu, select INK > CHECK JET HEALTH and print a prime bar pattern.

   This pattern will provide a baseline for jetting performance, allowing you to know if anything you do to the printer has changed the baseline quality.

Access the password protected service menu

1. Access the password protected service menu.

To access the password protected menus, see the section “Accessing the password protected service menu” on page 449.

Empty the carriage of ink

1. From the printer’s menu, select INK > MAINTENANCE > PRINTHEAD PROCEDURES > EMPTY ALL HEADS (FILL WITH AIR).

   Because the vacuum will be off for an extended period, it is impossible to keep the printheads from draining of ink (even if the vacuum tubes are clamped).

   When the printer’s menu displays the message to clean the service station, the empty-printhead procedure in complete.

2. While the printheads empty of ink, continue to the next section (below) to apply the labels.

Remove both endcap enclosures

3. Remove the service-end and user-end enclosures as illustrated in the section “Remove the user-end and service-end enclosures” on page 217.

Prepare the new tube bundle for replacement

The new tube arrives with sections of larger-diameter tubes attached at both ends. These larger diameter tubes are connected to the tube bundle with tube joiners at the factory. The purpose of the larger-diameter tubes at each end of the tube bundle is to connect to the permanent ink filters near the ink pumps at the user-end of the printer and to connect to the printhead reservoirs at the carriage-end of the track. However, the original larger-diameter tubes are not being removed from the printer. Only the smaller-diameter tubes that are bundled within the track are being replaced. Therefore, the larger-diameter sections of tubes must be cut off of both ends of the replacement tube bundle prior to installation of the tube bundle.

Tape the braided cover to the tubes

1. Locate the OHS-end (off-head supply) end of the new tube bundle.

   The OHS-end of the tube bundle has the longer sections of tubes (approximately 132 cm or 52-in) coming from the end of the braided bundle sleeve.

2. At the OHS-end of the new tube bundle, cut the cable tie that secures the braided sleeve to the tubes (the cable tie must be removed because it will not fit through the track when the bundle is pulled through).

3. Use duct tape to tape the end (OHS-end) of the braided sleeve to the tubes to prevent the braided sleeve from moving during the procedure.

Fig. 620. Taping the tube bundle sleeve to the tubes



Cut off end sections of ink tubes in new tube bundle

1. Cut off the unneeded sections of both ends of the ink tubes as shown in the section "Cut off unneeded ends of ink tubes on new track" on page 408.

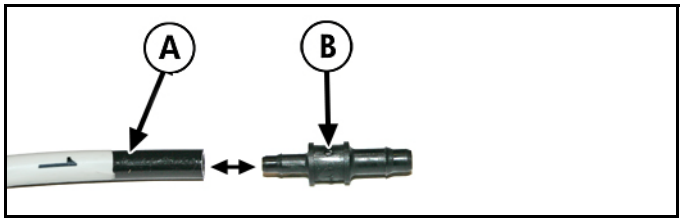
   Be sure to use the supplied tube cutter (versus something like wire cutters), so the ends of the tubes will be cut straight and not elliptical.

   For the air tubes, you will cut the pressure and vacuum tubes to length once the new tube bundle is pulled through the track assembly. The air tubes will be cut and joined inside the panduit area near the tube joiners for the ink tubes.

Install tube joiners into the OHS-end of all six tubes

1. For ink tubes, insert a tube joiner (B in Fig. 621., see also "Tube joiners and plugs" on page 400) into the ends of all of the ink- tubes at the OHS-end and carriage-end of the new track.

Fig. 621. Smaller-to-larger tube joiner



Label tubes that will be cut but will remain in printer

Tubes in the tube bundle to be replaced that will be cut must be labeled on the side of the tube that will remain in the printer. This will ensure that the new tubes are connected to the correct location. Tube labels are supplied with the replacement tube bundle kit. Labels should be installed at all locations where the tubes will be cut (installed on the tube ends that remain in the printer).

2. Remove the panduit cover (located above the rail).

3. Cut the cable ties that secure the cable looms at the user-end of the printer as shown in Fig. 560. on page 410.

4. For the tube bundle being replaced, pull all of the ink tubes and (and air tubes, if applicable) out of their cable looms at the user-end of the printer.

5. Near the permanent ink filters (above the ink pumps), locate ink tubes that will be replaced with the ink tube bundle (A in Fig. 561. on page 410), and follow them up to the tube joiner inside the panduit above the rail.

Label tubes that connect to permanent ink filters

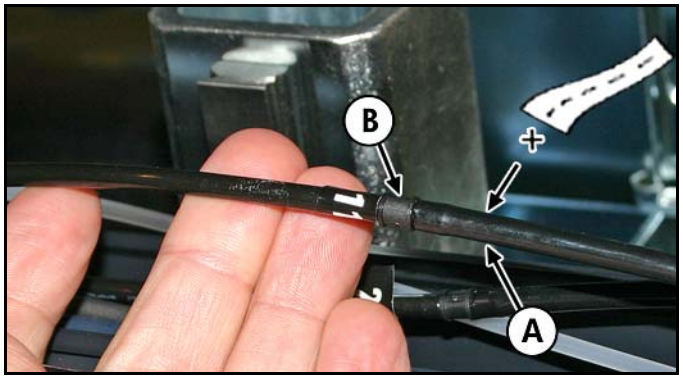
1. In the panduit above the rail, locate the tube joiners for the tubes to be replaced.
2. On the ink tubes being replaced, install number labels (at position A in Fig. 622.) that match the tube numbers near the permanent ink filters (A in Fig. 561. on page 410).

   The labels should be installed on the side of the tube that connects to the permanent ink filter. The label should be positioned near the tube joiner (B in Fig. 622.).

Fig. 622. Where to install label

A = Location to install new label on ink pump tube

B = Tube joiner in panduit



3. Repeat steps for all ink tubes being replaced until all of the tubes that connect to the permanent ink filters are labeled near the tube joiners inside the panduit.

Power off printer and remove power cables

1. Power off the printer and remove the power cords for the printer and the backup power for t he vacuum as shown in the section “Power off the printer and remove power cords” on page 411.

Disconnect tubes from the carriage

Required tools:

- Tube cutting tool (supplied), cutting tool for cable ties, apron, gloves, drop cloth, paper towels

2. Make sure the carriage is over the service station to capture ink that will drain from printheads during the procedure.
3. Wear an apron to protect your clothing from ink splatter.
4. Place a drop cloth on the floor to catch ink that may drip during the procedure.
5. Have paper towels ready in case of ink leakage.



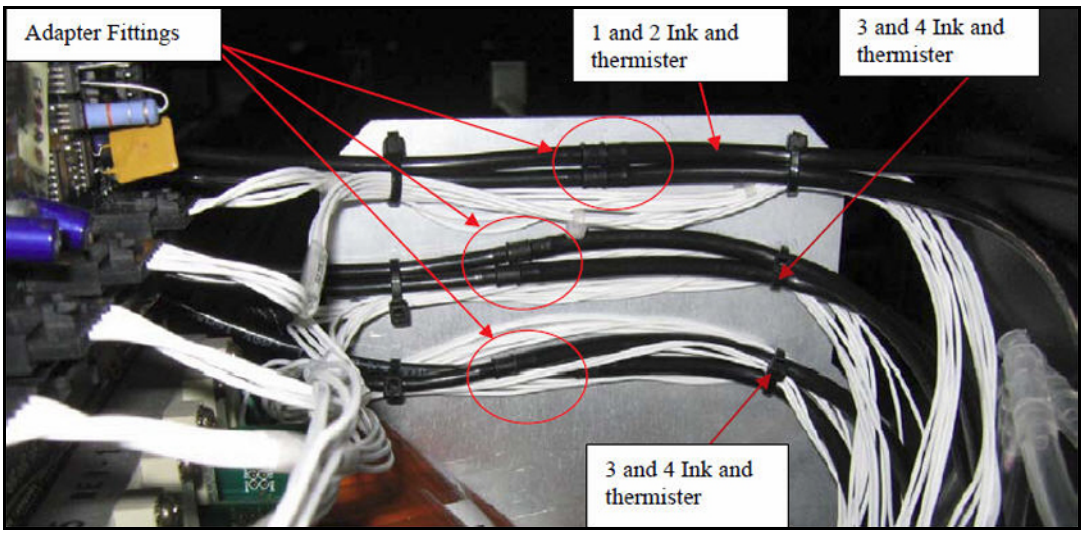
Wear protective gloves, such as latex, to protect your hands from being stained with ink.



Wear protective eye wear to protect your eyes from ink splatter.

6. Cut the tie wraps (Fig. 623.) that secure the ink tubes for the tube bundles being replaced.

Fig. 623. Carriage tube routing



Note the groupings of thermistor wires and ink tubes, as the wires and tubes should be restored in the same configuration after joining the tubes with the new track assembly.

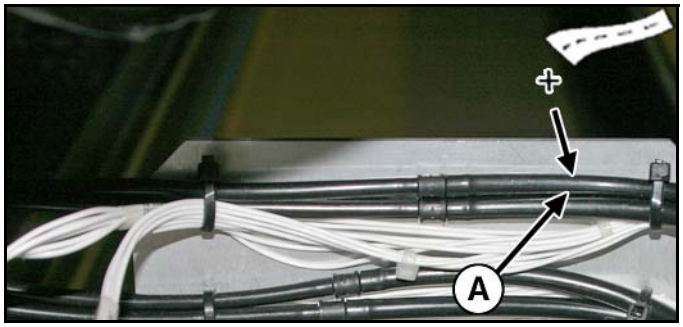
7. Using a supplied label, label the tubes (A in Fig. 624.) on the side of the tube joiner that connects to the ink reservoir (the tube that remains in the printer).

The ink line numbering is as follows: 1 = black, 2= Cyan, 3 = Magenta, 4 Yellow, 5 = Light Cyan or White and 6 = Light Magenta or White.

Fig. 624. Label the tubes

A = Where to place the number label

Note: In the photo, the tie wraps are not cut. However, the tie wraps should be cut prior to installing the labels



8. Repeat step until all tubes for the replacement ink tubes bundle have been labeled according to their color.



Do not reuse a tube end that has had a tube joiner inserted. If you make a mistake and use the wrong tube joiner, do not pull out the tube joiner and insert the correct tube joiner. The tube end will be stretched and could potentially leak. Instead, cut the end of the tube using the supplied cutting tool to create a fresh tube end to insert the correct fitting. If this results in the tube being too short, see the section "Resolution for too-short tubes" on page 430.

Cutting ink tubes at carriage for tube bundle replacement

9. Cut the ink tubes just before and just after the original tube joiner (A and C in Fig. 569. on page 415).

When you cut the tubes on either side of the tube joiner (A and C in Fig. 569.), make certain that you are not cutting into the tube joiner. This could leave some of the tube joiner in the ink tube, which could clog the filter.

The tube joiner is needed to join the smaller-outer-diameter ink tube of the track to the larger-outer-diameter ink tube that connects to the ink reservoir. The tube joiners in the carriage are located between two cable ties (B in Fig. 570. on page 415).

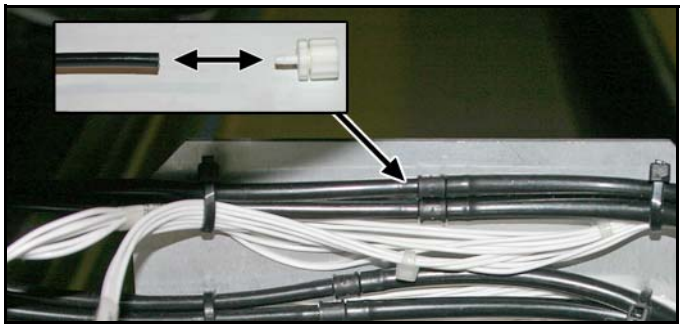
Do not clamp the ink source tube. This will damage the tube. Use a paper towel or tube plug to stop ink flow.

When you cut the ink tubes, hold both sections of the tube of each side of the tube cutter to prevent the tube from springing away from the cutter when the tube is cut. If the tube springs away from the cutter upon being cut, drops of ink will spatter from the tube.

Plug tube that is being removed

10. Use the specified tube plug to stop the ink flow from the ink tube that is in the original track (see "Tube joiners and plugs" on page 400) or wrap a paper towel around the tube end, and secure it with a rubber band.

Fig. 625. Tube plug



Note: Plug track ink tubes as soon as you cut them

11. If replacing a tube bundle containing air tubes, disconnect the pressure and vacuum tubes from the air manifold as shown in the section "Removing the air tubes from the air manifold" on page 416.

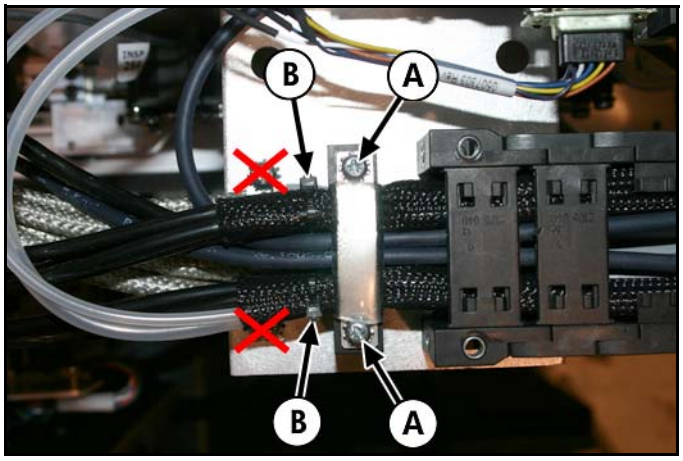
Connect the new tube bundle to the original tube bundle

The old tube bundle will be attached to the new tube bundle using tube joiners for two reasons. First, it keeps ink from leaking into the track from the cut tubes. Second, it creates the lowest profile possible for pulling the tubes through the track. Do not reuse the tube joiners used to. Once the tube bundle is pulled though the track, you will cut off the original tubes and the tube joiners used to connect the two bundles. You will install new tube joiners.

Release the H-block tube clamp at carriage end

1. Using a phillips screwdriver, remove one screw (A in Fig. 626.) and loosen the second screw (A in Fig. 626.) that secures the carriage H-block tube clamp.

Fig. 626. H-block



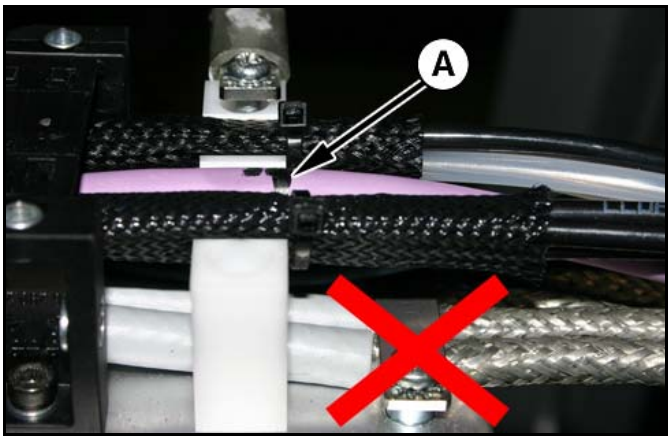
Note: Do not loosen the screws marked with an "X"

A = Screws that secure the H-block cable clamp

B = Cable ties that secure the braided sleeve to the tube bundles

2. To ensure that the cables are returned to their correct tension, mark the LVDS cable position and the UV power cable positions at the carriage cable clamp.

Fig. 627. Marking the cables at the carriage clamp



Note: Do not remove the screws that secure the headboard power cables (indicated by the "X")

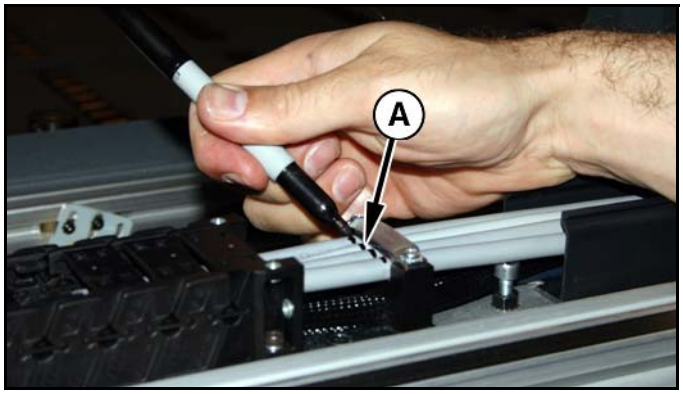
A = Mark the cable positions at the clamp

3. Cut the cable tie (B in Fig. 626.) from the braided sleeve at the carriage-end of the original tube bundle that is being replaced.

Release the mid-rail cable clamp

1. If the headboard power cables' position is not marked, use a permanent marker to mark the positions (A in Fig. 628.) at the mid-rail cable clamp.

Fig. 628. Marking the cable position prior to releasing cable clamp



A = Where cables should be marked

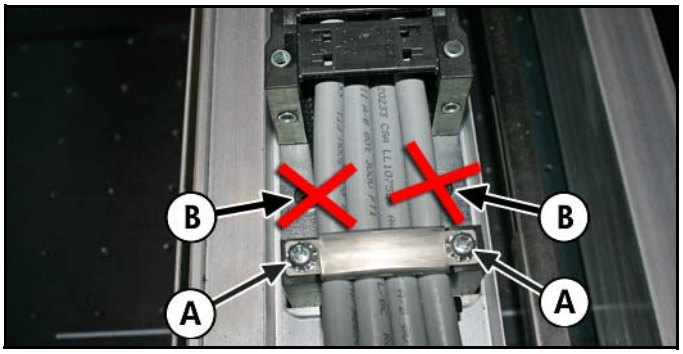
2. Remove the two screws that secure the mid-rail cable clamp.

Fig. 629. Cable clamps near panduit

Note: Appearance of cables may vary

A = Screws to remove

B = Bracket screws (**Do not remove**)

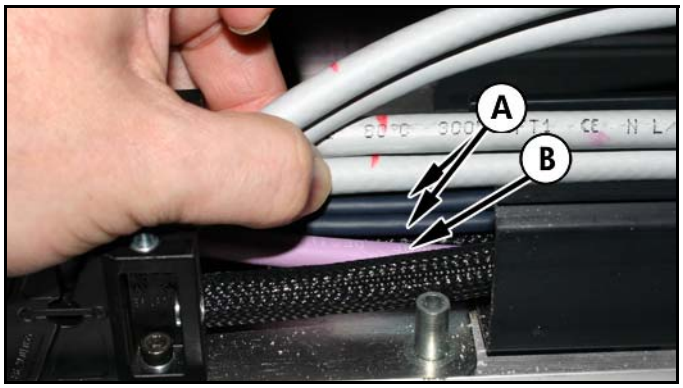


3. Use the marker to mark the UV power cables' (A in Fig. 630.) position and the LVDS cable's position (B in Fig. 630.).

Fig. 630. Marking the cable position prior to releasing cable clamp

A = UV power cables positions

B = LVDS cable position



Connect the new and original tube bundles together

4. Connect the OHS-end of the new tube bundle (this end has the braided sleeve taped to the tubes) to the carriage-end of the original tube bundle using tube joiners (see "Tube joiners and plugs" on page 400).

If you are replacing a tube bundle containing air tubes, be careful not to insert a vacuum tube joiner into an ink tube (see "Tube joiners and plugs" on page 400). The vacuum tube joiners should be packaged in a separate bag. If you accidentally use the wrong joiner, cut the tube to remove the joiner. Do not re-use the tube end that has had a tube joiner inserted, as this distorts the tube's end and degrades its ability to seal around the tube joiner.

If replacing the tube bundle containing air tubes, position the new tube bundle so that it is between the UV power cables as it is pulled through the track assembly.

5. From the OHS-end of the track, pull the tube bundle through the track until the tube joiners of the new tube bundle align with the tube joiners of the other tube bundle that is located in the panduit above the rail.

6. Make sure the tubes are labeled so that the correct tubes from the ink

7. Using the tube cutting tool, cut off the original tube bundle and the tube joiners used to connect the original and new tube bundle.

8. If replacing a tube bundle containing air tubes, trim the air tubes (using the tube cutting tool) so that they are joined within the panduit near the ink tube joiners.

9. Use the supplied tube joiners (see "Tube joiners and plugs" on page 400) to join the ink tubes (and air tubes if applicable).

10. Align the cables at the mid-rail cable clamp with the marks that were made in step 3 on page 443.

11. Align the cables at the carriage-end cable clamp with the cable marks made in step 2 on page 443.

12. Install and tighten the mid-rail cable clamp.

13. Verify that the cables are still aligned with the marks.

14. Install and tighten the carriage-end cable clamp.

15. Verify that the cables are still aligned with the marks.

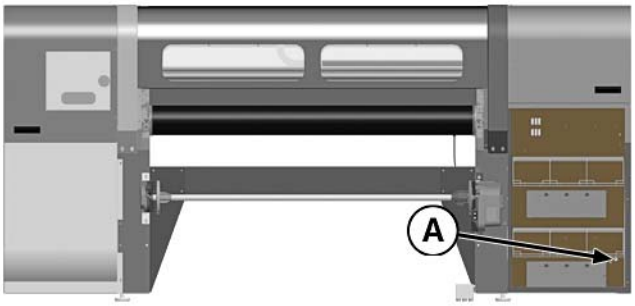
16. Install the panduit cover.

Connect the power cables

1. Connect the backup power supply to the vacuum assembly located in the lower area near the ink boxes.

Fig. 631. Auxiliary power connection for vacuum assembly

A = Location of the auxiliary power cord



2. Connect the main power cable to the printer.

3. Turn on the printer using the on/off switch located on the input-side of the printer on the user end (near the floor).

Fill the printheads with ink

1. Access the password-protected pod test area of the printer's service menu as shown in the section "Accessing the password protected service menu" on page 449.
2. From the printer's menu, select INK > MAINTENANCE > PRINTHEAD PROCEDURES > FILL ALL HEADS WITH INK.

Drain and clean the service station

1. Open the ink-drain valve (A in Fig. 179.) located under the printer to drain the service station as shown in the section.
2. Check the service station drain hole for any debris that may block the drain and remove the blockage as needed.

3. Clean and lubricate the service station rails as described in the maintenance area of the service manual.

Print a prime bar pattern

1. From the printer's menu, select INK > CHECK JET HEALTH and print a prime bar pattern.

   Compare the printhead jetting health with the original prime bar printed prior to beginning the track replacement.

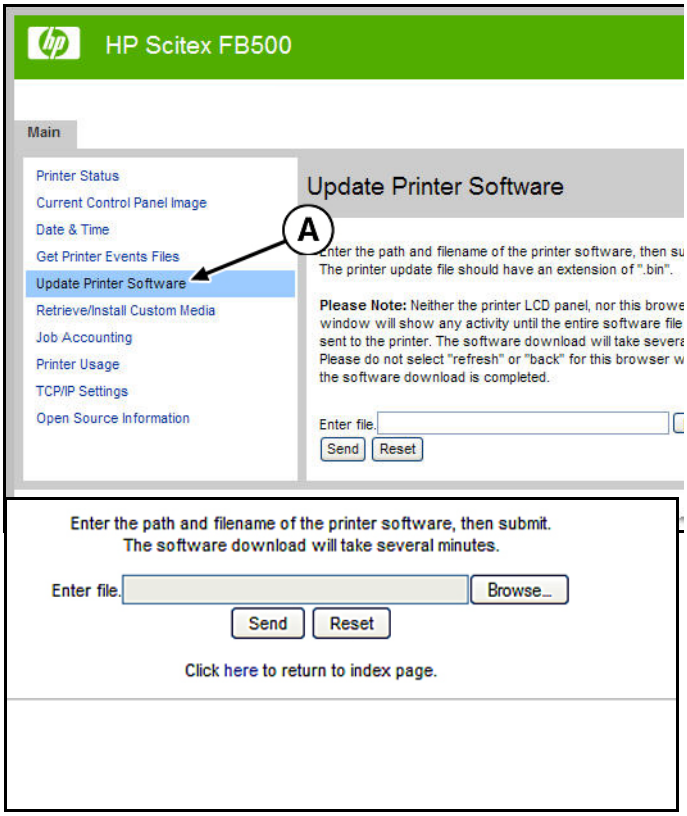
[End of procedure]

Installing Firmware

1. From a web browser, enter the IP address of the printer into the URL window.

   To get the IP address of the printer, press the SYSTEM icon on the printer's menu. The IP address will be at the bottom of the screen.

2. From the web browser, select "Click here to update printer software."



3. Browse for the firmware file to upload using the BROWSE button.
4. Press the SEND button to upload the file to the printer.
5. Cycle the printer's power following the shutdown procedures outlined in the section "Managing Power Off Scenarios" on page 216.

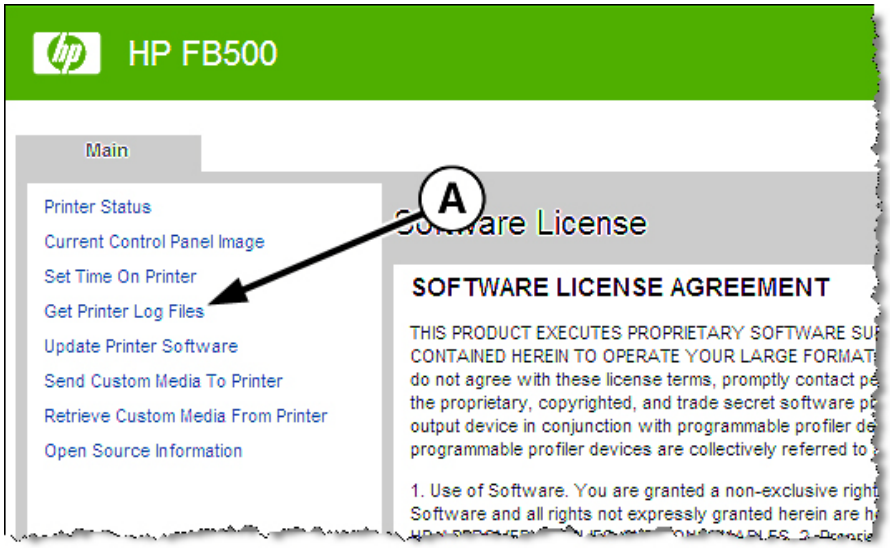
   [End of Procedure]

Access printer logs

1. From a web browser, enter the IP address of the printer into the URL window.

   To get the IP address of the printer, press the SYSTEM icon on the printer's menu. The IP address will be at the bottom of the screen.

2. Select “Get Printer Log Files.”



3. Click the file name that contains the date of the log file you want to download.

4. Save the data to a file on your local computer.

FTPing to the printer

If you have FTP access to the printer (not blocked by firewall), you can FTP to the printer’s hard disk to access logs, PrintCare log files. To FTP to the printer’s hard disk, use the following information (case sensitive):

- Host name: (Use the printer’s IP address)

  To get the IP address of the printer, press the SYSTEM icon on the printer’s menu. The IP address will be at the bottom of the screen.

To access logs, use the following log in:

- User name: logs
- Password: support

To access PrintCare logs, use the following log in:

- User name: printcare
- Password: support

To access the temp folder, use the following log in:

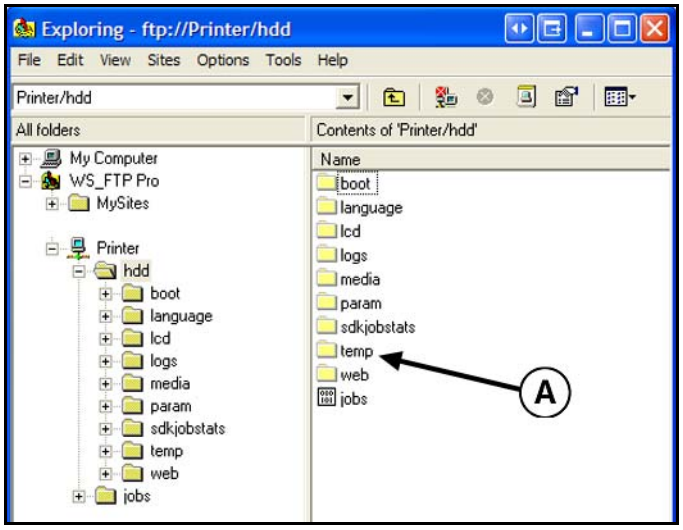
- User name: temp
- Password: support

Make sure that the FTP software is configured with the transfer mode set to Binary versus ASCII.

Manually FTPing the software BIN to the printer's hard disk

1. FTP to the printer using the steps shown in the section "FTPing to the printer" on page 447.
2. FTP the image into the "hdd/temp" folder in the following location:
   - hdd/temp

Fig. 632. FTP to hard disk



Accessing the password protected service menu

1. Access the password-protected pod test area of the printer's service menu to see the service calibration options.

   From the printer's menu, select SYSTEM> TOOLS > SERVICE PRINTER > DEVICE TESTS > POD TEST.

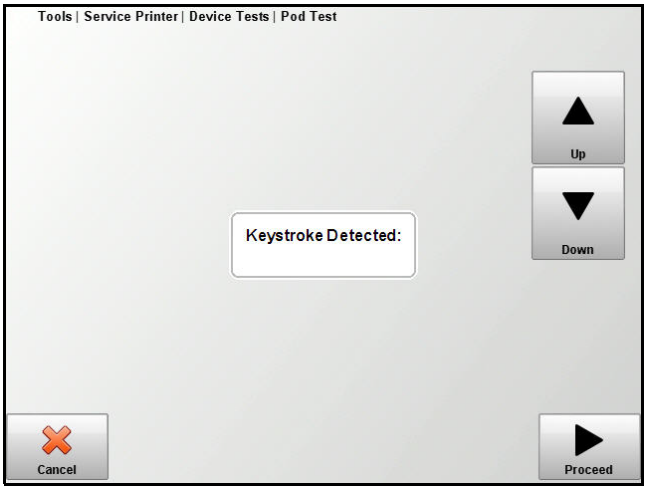


Fig. 633. Printer's password-protected menu

The password is a series of arrow key presses (either the up arrow or the down arrow). Enter the following sequence of keystrokes and then press PROCEED. If correctly entered, the printer screen will inform you that the keystrokes were accepted.

- Up Up, Up, Up
- Up, Down, Up, Down
- Up, Up, Down, Down
- Up, Up, Up, Down
- PROCEED

Carriage and printhead calibrations

Printhead y-axis calibration

When a printhead is replaced, the y-axis calibration should not change as long as the y-axis adjustment screw has not been turned. However, its position should be checked.

1. Make sure the carriage front-to-back tilt is set properly.

   See the section See "Checking carriage front-to-back tilt" on page 120.

2. Remove the service station as shown in the section "Removing the service station" on page 393



This procedure requires a special tool (a long, 2.5 mm hex wrench, part # CQ114-67175).

3. Remove the carriage cover as shown in "Carriage assembly cover" on page 224.

4. Print the prime bars from the printer's menu to make sure the jets are printing well.

5. Load foam board media to print the y-offset patterns.



Foam board media (or similar paper-based medias - like Foam-X and Foam-cor) have been tested to perform best for this calibration. Other medias may not provide readable prints (especially medias with a plasticized surface). Samples of foam board media were included with the printer at initial installation of the printer.

1. From the printer's menu, select TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > PRINTHEAD Y CALIBRATION.

Fig. 634. Menu screen: Calibrate for Staggered



2. Proceed through the menu prompts until the rail is raised and the lamps are turned off.

3. Install the carriage cover using the original screws.

4. Print the H2H Y PATTERNS (from the printer's menu).

Foam board media (or similar paper-based medias - like Foam-X and Foam-cor) have been tested to perform best for this calibration. Other medias may not provide readable prints (especially medias with a plasticized surface). Samples of foam board media were included with the printer at initial installation of the printer.

Examine the H2H Y Pattern

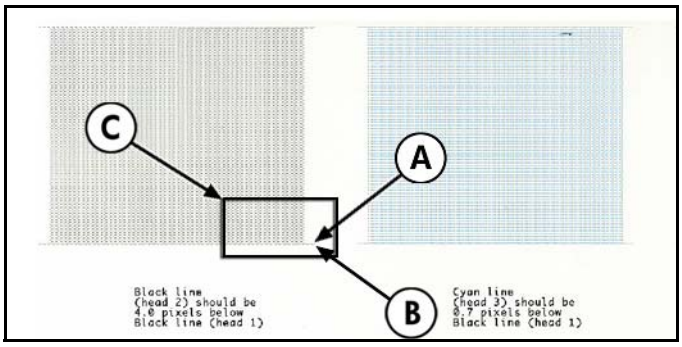
Examine each pattern for the following two things:

- Verify that jet 1 of the target printhead is not printing more than 8 pixels from jet 1 of the black reference printhead (further explained below)
- Determine if any printhead (2 through 12) needs to be coarsely tuned in its y-axis calibration before running the on-screen calibration

Eleven color blocks will print beginning with printhead #2 (second black printhead) and continuing through printhead #12 (light magenta). Each color block compares its y-axis printing to that of printhead #1 (black).

Fig. 635. Example of verification pattern for two of twelve printheads

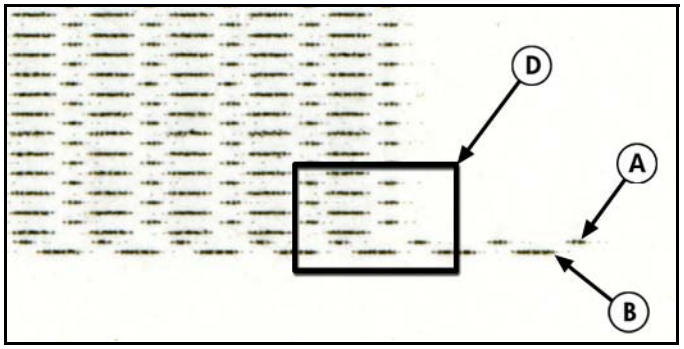
Note: See enlargement of area (C) in Fig. 636.



In Fig. 636., the short line (A) is jet 1 on the black head 1 (referred to as the “reference head”). The longer line (B) is jet 1 on the printhead that is being compared to the reference head.

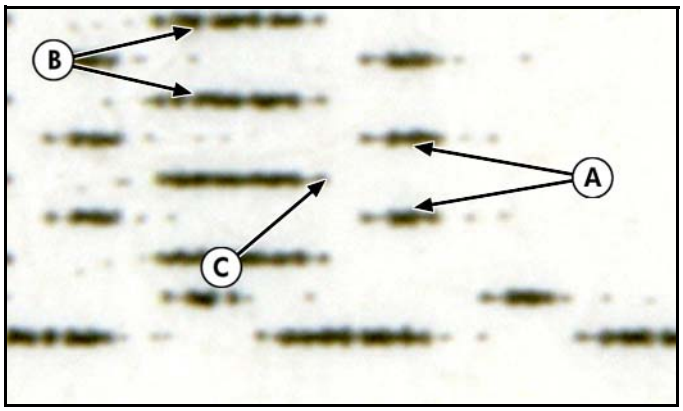
Fig. 636. Close up of (C) from Fig. 635.

Note: See enlargement of area (D) in Fig. 637.



In Fig. 637., the distance between two adjacent lines of ink printed from the reference printhead (A in Fig. 637.) is 8 pixels. Similarly, the distance between two lines of ink printed from the comparing printhead (B in Fig. 637.) is 8 pixels. In this example, the printhead being compared to the reference printhead is printing a line of ink (C in Fig. 637.) 4 pixels below the reference printhead's line of ink (A in Fig. 637.).

Fig. 637. Close up of (D) from Fig. 636.



5. For each color block, verify that jet 1 for the target printhead (B in Fig. 636.) does not print more than 8 pixels from jet 1 of the reference printhead (A in Fig. 636.).

In Fig. 636., the target printhead has printed one jet (one longer line of ink - B in Fig. 636.) below jet 1 (the shorter line of ink) from the reference black printhead (A in Fig. 636.). If there are two rows of longer lines below the reference jet 1 (A in Fig. 636.), the target printhead is printing "a full jet" too low. If there is no longer line below the black reference jet 1, the target printhead is printing at least "a full jet" too high. Follow the menu screen's instruction to adjust the target printhead's y-axis position.

Follow the steps in "Adjusting the printhead y-axis position" on page 454. to turn the y-axis for the target printhead two full rotations counterclockwise to lower the target printhead's y-axis position by one full jet. Similarly, turn it two full rotation clockwise to raise it one full jet.

6. If you made adjustments to the printheads, follow the menu prompts to print the patterns again.

For correct results, make sure the patterns are printed on foam board type media.

Make sure all printheads are re-tightened before printing the patterns.

7. Fine tune the y-axis position of printheads 2 through 12 by making sure their positions match the settings that print below each color block.

For example, printhead 3 (the first cyan printhead) should be 0.7 pixels below the reference jet of ink. In other words, the longer cyan line (B in Fig. 638.) should be just below the shorter black line of ink (A in Fig. 638.). Use a loupe to examine the patterns.

There are 8 pixels vertically between each black line. Fig. 638., below, shows the cyan line (C in Fig. 638.) positioned approximately 0.7 pixels below the black line.

To adjust the cyan line up, turn the y-axis screw clockwise. Turn it counterclockwise to move the cyan line down. See “Adjusting the printhead y-axis position” on page 454.

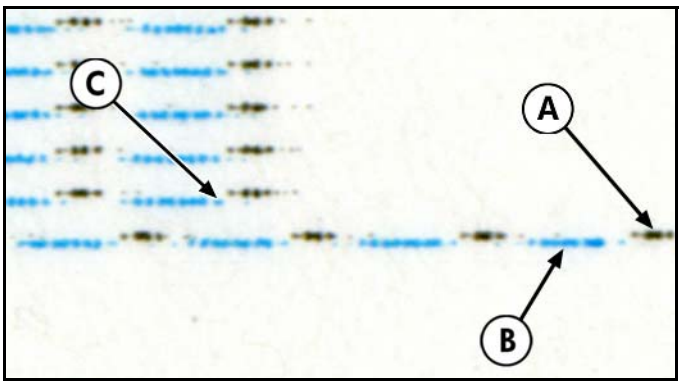


Fig. 638. Verify jet placement not too high or low

8. Follow the menu’s prompts to reprint the patterns for further adjustments until the patterns match the text descriptions below the color blocks as closely as possible.

If the adjustment numbers create a pattern of ascending or descending from one side to the next, it is likely that the saber angle needs to be adjusted. Check the carriage saber angle and then return to this y-axis calibration. To check the saber angle, see the section “Verifying the gross saber angle” on page 467.

Adjusting the printhead y-axis position

The printhead y-axis position is changed by moving the printhead's interface plate forward or backward in the y-axis (input-side to output-side and vice versa). The interface plate is secured with two screws from the top (not to be confused with the two screws that secure he printhead to the interface plate from the bottom), but only the top output-side screw (A in Fig. 641.) is loosened for this procedure. Never turn the top input-side screw (B in Fig. 641.). The interface plate does not have a spring that presses against it. Therefore, if you turn the adjustment screw counterclockwise, the interface plate will need to be pressed from the input side to move it toward the output side.

Required tools

- Permanent marker
- A long 2.5mm hex wrench
- 5 mm wrench

1. Using your thumb and index finger, turn the y-axis adjustment screw (A in Fig. 639.) clockwise to make sure the tip (B in Fig. 639.) of the adjustment screw is touching the interface plate (C in Fig. 639.).

Do not use a wrench for this step, as a wrench could move the interface plate. The goal of this step is to make sure the tip of the screw is touching to edge of the interface plate for the printhead being adjusted. This should be checked before making any adjustments.

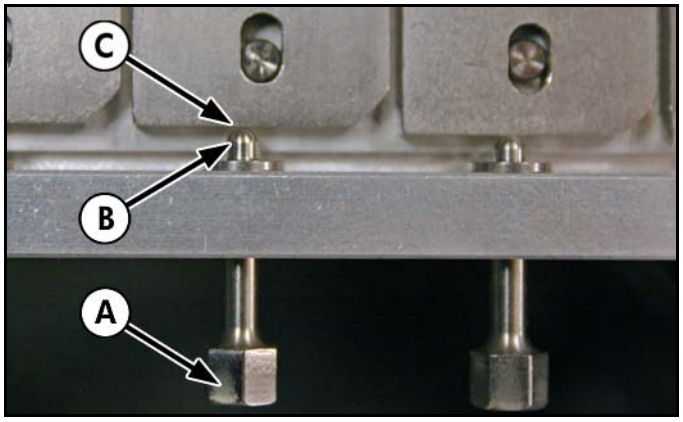


Fig. 639. Y-axis adjustment screws touching the interface plate

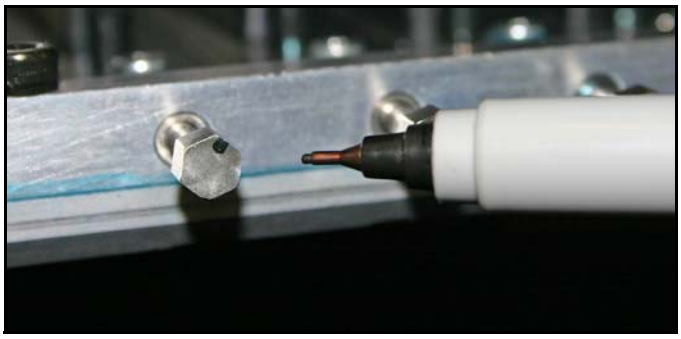
Note: For clarity, this view is shown without the ink reservoirs. You will need to peer around the reservoirs to see the tips of the adjustment screws.



It is critical that you make sure the adjustment screw (A in Fig. 639.) is touching the interface plate for all printheads prior to loosening the top output-side screw (B in Fig. 641.) that secures the interface plate to the pen plate. If the screw is not touching the interface plate prior to changing the adjustment screw position, it will produce inaccurate results and the calibration will have to be repeated.

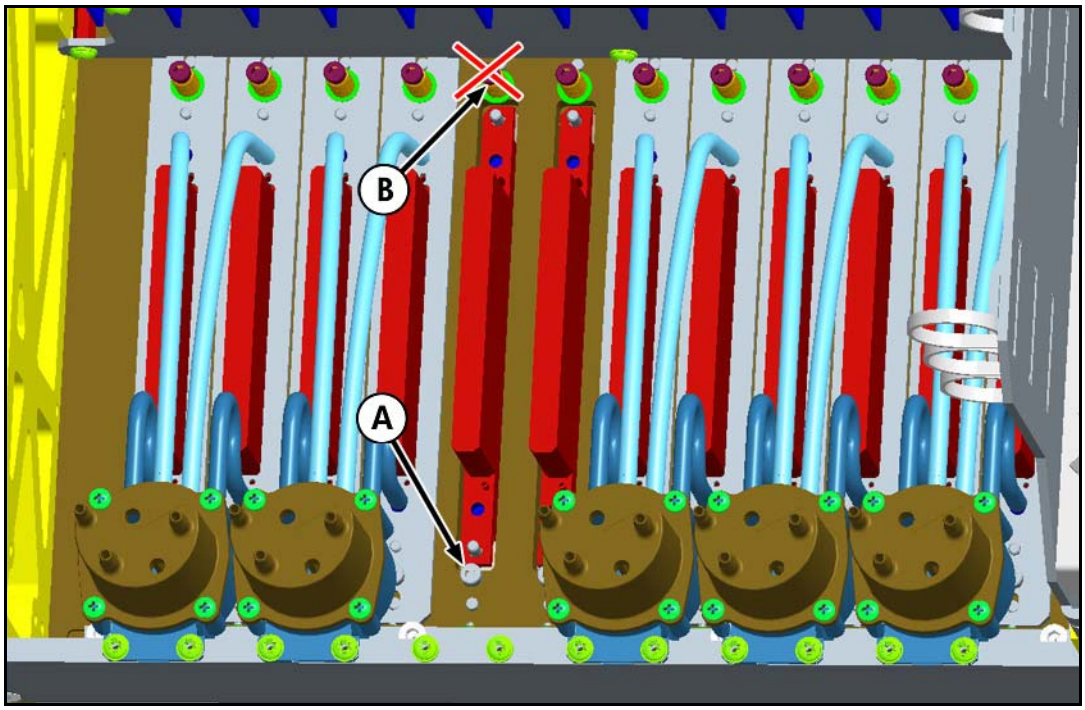
Tip With a permanent marker, put a mark on the screw head. This will make it more clear how far the screw has turned.

Fig. 640. Marking y-axis adjustment screw



2. Using a long 2.5mm hex wrench (part # CQ114-67175), turn the output-side screw (A in Fig. 641.) one full turn.

Fig. 641. Screws that secure the printhead interface plate



To access the output-side interface screw, use a long 2.5 mm hex wrench with a ball socket end.

Do not loosen more that one interface plate at a time.

3. Using a 5 mm wrench, turn the y-axis adjustment screw (A in Fig. 642.) that touches the output-side edge of the interface plate.

   To adjust the ink line upward, turn the y-axis screw clockwise. Turn it counterclockwise to move the line down.

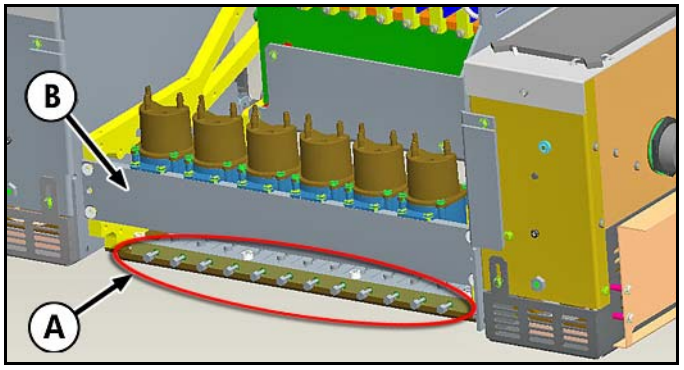


Fig. 642. Y-axis adjustment screws

If you turn the y-axis adjustment screw counterclockwise, tap on the interface plate from input-side (A in Fig. 643.) of the carriage to move the interface plate toward the output-side of the printer.

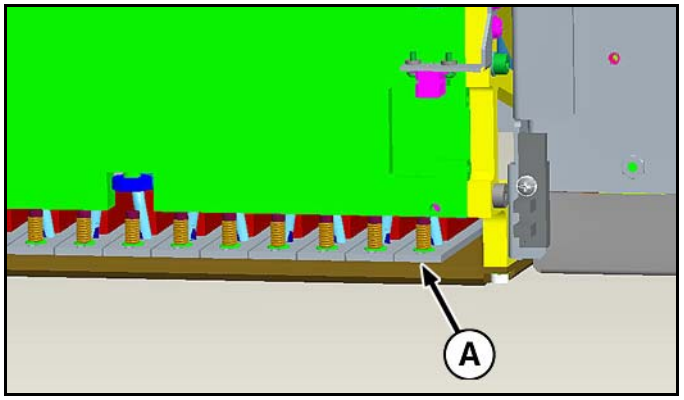
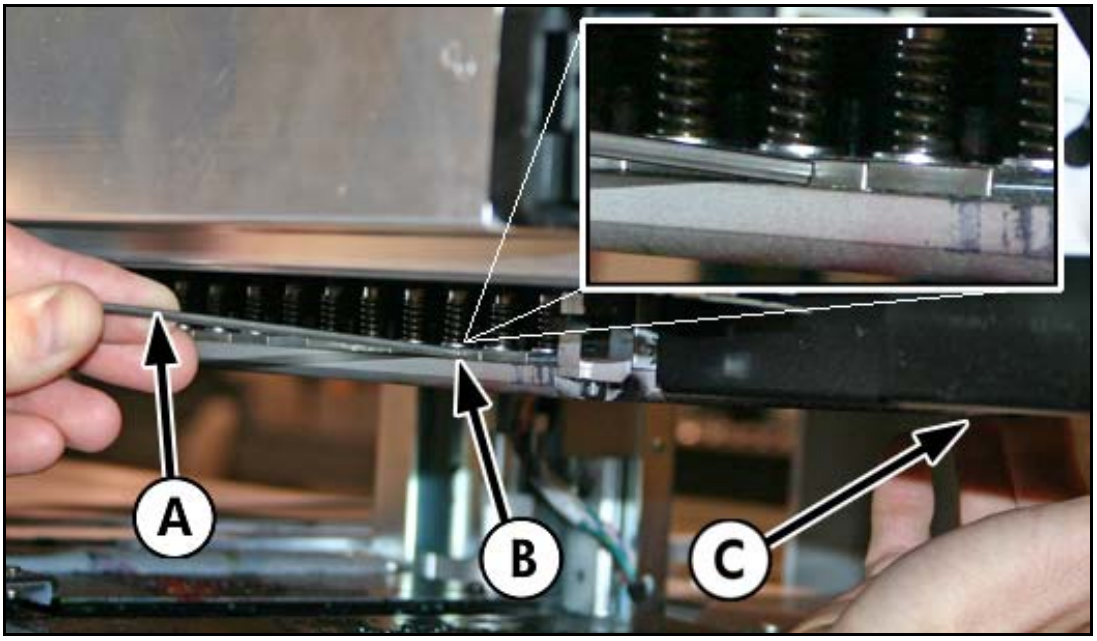


Fig. 643. Input-side of printhead interface plate

Tip While gripping the output-side of the carriage (C in Fig. 644.) for leverage, use the hex wrench (A in Fig. 644.) to push the interface plate (B in Fig. 644.) toward the tip of the adjustment screw.

Fig. 644. Pushing interface plate with hex wrench



4. Tighten the output-side screw (A in Fig. 641.) that secures the printhead interface plate's position.

Measure H2H Y Offsets

To measure the H2H Y Offsets, the carriage camera will photograph the patterns printed earlier, place the images onto the printer's screen, and allow you to fine tune the y-offset calibration by moving digital lines on screen to the center of the printed lines in the digital photo.

1. Select MEASURE H2H Y OFFSETS from the menu.

   The printer will photograph the first pattern and display it on the printer's menu. All patterns, 2 through 12, will be photographed by the camera and calibrated on screen.

2. Follow the printer's menu prompts to select the printhead that was just replaced.

3. Follow the menu's prompts to use the arrow keys to position two movable lines to the vertical center of two short lines (from the reference printhead, A & B in Fig. 20.) and one longer line (C in Fig. 20.) from the target printhead being measured.

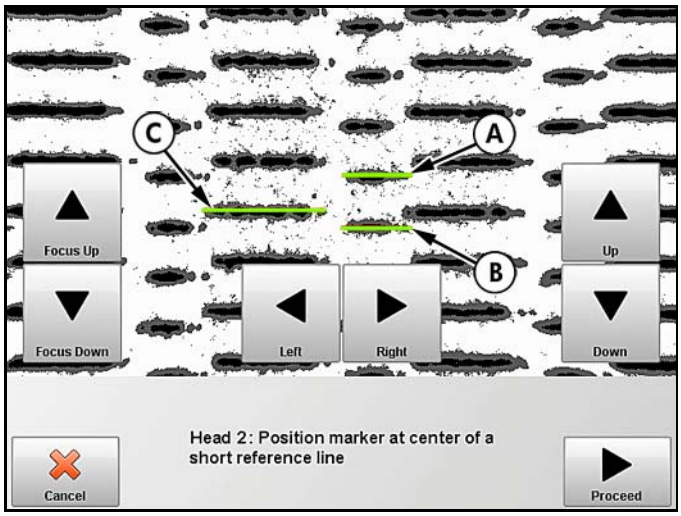
   The lines will be red while being moved with the arrows. Once you select PROCEED, the line will turn green and place the next line on screen. Once three lines have been positioned according to the screen instructions, the menu will prompt you to take a second reading for best average or to progress to the next printhead pattern until all patterns have been calibrated.

Fig. 645. Screen calibration of H2H offsets

A = line printed from single jet of reference printhead

B = line printed from single jet of reference printhead

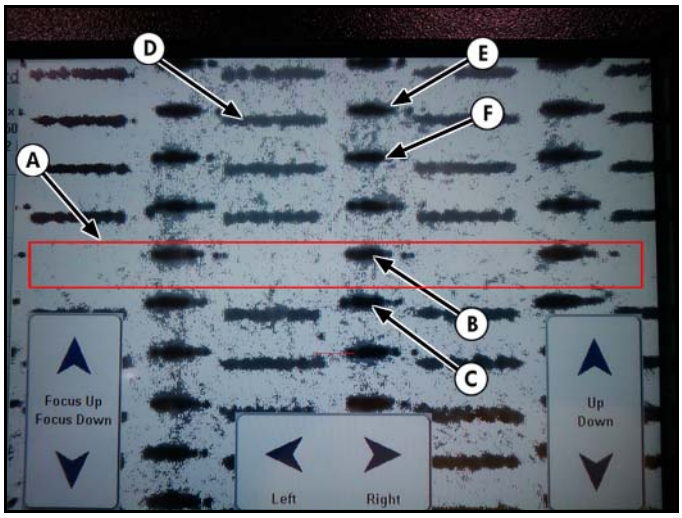
C = longer line printed from target printhead being measured



In Fig. 645., notice that the target jet (C in Fig. 645.) is vertically between the two lines of reference jets (A & B in Fig. 645.) If a reference jet is missing (as in the area marked A in Fig. 645.), do not measure from any reference line that would be above and below the missing

target line (as B and C would be in Fig. 646.). Instead, chose lines similar to (E) and (F) in Fig. 646. for the reference lines and (D) in Fig. 646. for the longer target line to measure.

Fig. 646. Missing jet in target printhead being measured

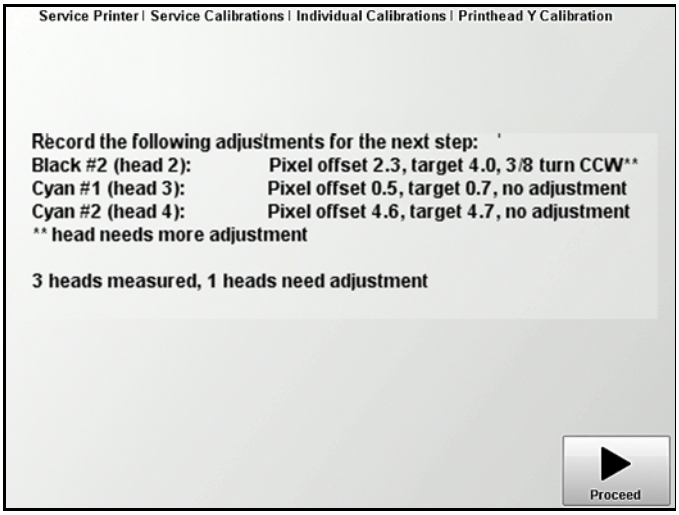


4. Take at least two measurements for the pattern.

   When you press proceed, you will be prompted to take an additional reading.

5. After the pattern has been measured, examine the summary chart that displays on the printer's menu.

Fig. 647. Summary of changes



If a the y-axis screw for a printhead needs to be turned, a double asterisk will appear on the right-hand side of the summery (A in Fig. 647.). If there is no asterisk, no further adjustment is required.

The summary chart will indicate which printhead(s) need additional adjustment. Follow the on-screen instructions to turn the y-axis screws the amount specified in the summary.

Use the chart below to record the recommended amount to turn each y-axis screw.

Table 9: Staggered Configuration

Color	Printhead	Target	Adjustment # 1	Adjustment # 2
Black #1	1	0		
Black #2	2	4.0		
Cyan #1	3	0.7		
Cyan #2	4	4.7		
Magenta #1	5	3.3		
Magenta #2	6	7.3		
Yellow #1	7	2.0		
Yellow #2	8	6.0		
Lt. Cyan #1	9	1.3		
Lt. Cyan #2	10	5.3		
Lt. Magenta #1	11	2.7		
Lt. Magenta #2	12	6.7		

6. Repeat the screen measurements and make further changes to the y-axis screw positions until the measurement summary reports that no additional changes are needed (less than 1/8th turn).

Run the auto BIDI calibration

1. From the menu, select CALIBRATE > AUTO CALIBRATIONS > AUTO BIDI.

Calibrate the printhead saber angle

This calibration corrects variances in printhead angle for each printhead. The printheads should be installed so that the printhead interface plates are exactly perpendicular to the direction of the printing axis. If, for example, any of the pins that align the printhead interface plates are slightly bent, the printhead may not be exactly perpendicular. This calibration prints a serious of patterns for each printhead and asks you to select the pattern with the least amount of serration (saw- toothed edge). Select the straightest, least jagged line for each printhead.

1. Access the password-protected area of the printer's menu as shown in the section "Accessing the password protected service menu" on page 449.
2. From the menu, select SYSTEM > TOOLS > SERVICE PRINTER > SERVICE CALIBRATION > INDIVIDUAL CALIBRATIONS > HEAD SABER ANGLE CALIBRATION

   As the calibration initiates, you will be asked whether or not to "Clear saber angle calibration data first?" Select "YES" unless you are calibrating fewer than all printheads.

3. Choose the straightest line that has the least jagged sides in the column for the right-to-left pattern for head 1 (the first black printhead).

Below each “Head” number, you will see either “R2L” or “L2R” (A in Fig. 648.). These abbreviations stand for “Right-to-Left” and “Left-to-Right.” The calibration routine will first ask about all 12 patterns that printed R2L, and then it will ask about the 12 patterns that printed L2R.

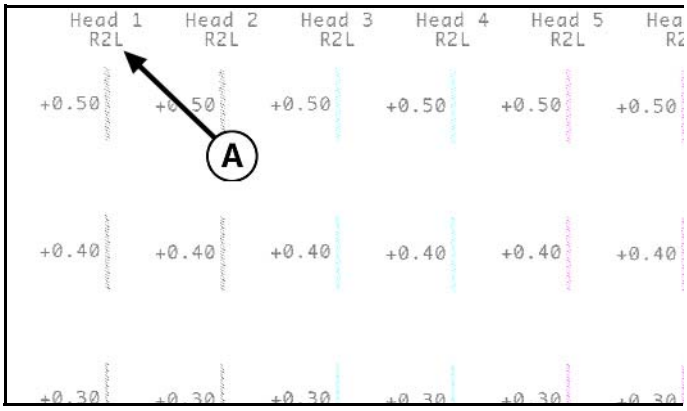


Fig. 648. Saber angle pattern printed Right-to-Left

4. Using the up or down arrow, change the value on the printer’s menu to reflect the number next to the selection you make in step 3.

5. Select PROCEED to enter the best value for each printhead.

After proceeding through the 12 patterns that printed R2L, the calibration routine will prompt you to repeat the process to enter the best values for the patterns printed L2R (beginning again with Head 1).

6. Press PROCEED when you see the message “Saber Angle Calibration successful.”

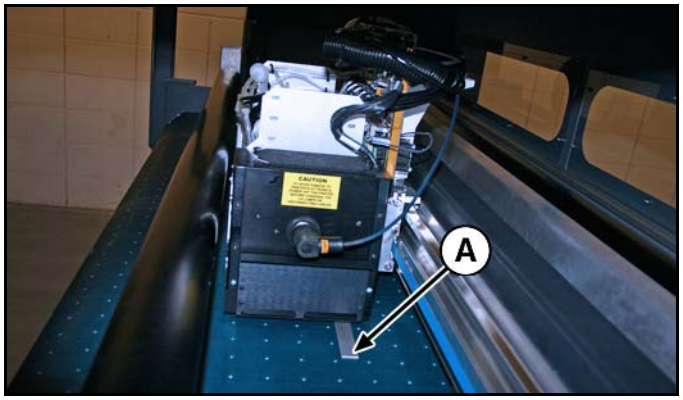
Checking carriage front-to-back tilt

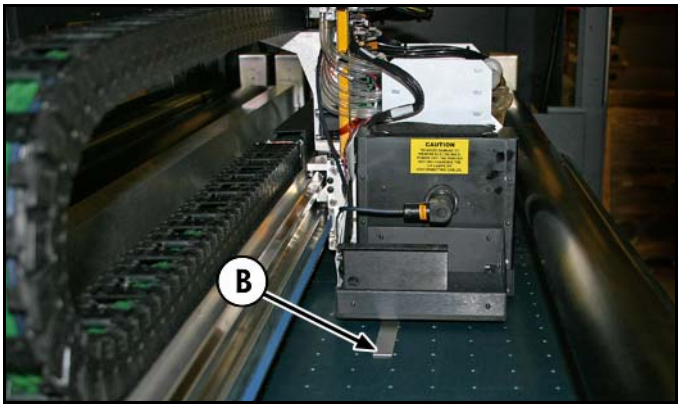
1. Check to see if the head height at the front of the carriage (output side) is the same as the head height at the back of the carriage (input side) on both ends of the carriage.

Using the head-height gauge as shown in Fig. 658. and Fig. 661., check to see if the head height is the same between the front edge of the carriage and the rear on both sides (A and B in Fig. 649.).

If the front of the carriage is not the same height as the rear, the carriage tilt should be adjusted. This adjustment is important in achieving banding-free output. A difference of even the thickness of a piece of paper (0.004") can cause output anomalies.

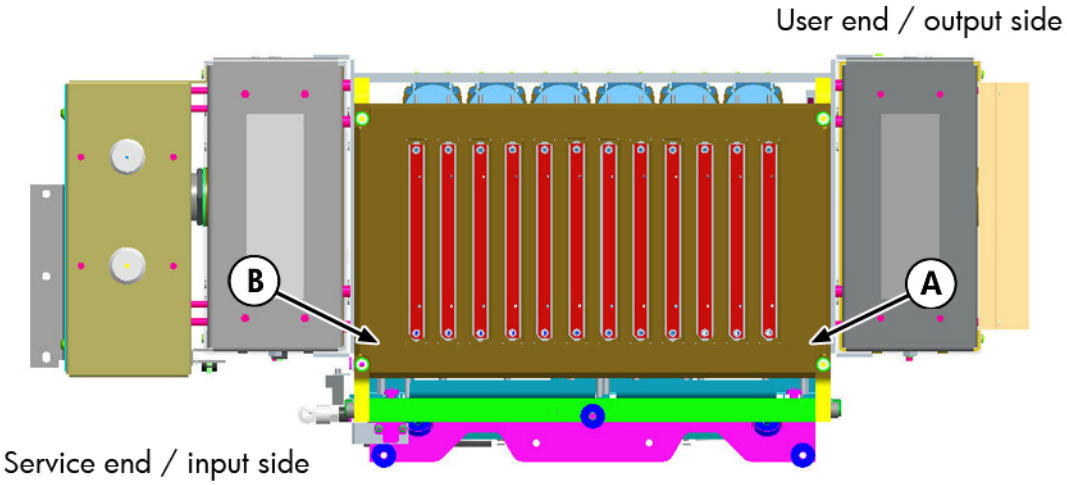
Fig. 649. Checking head height at rear (input side) of carriage





A = Rear of carriage (input side) on the user-end of the carriage

B = Rear of carriage (input side) on the service-end of the carriage



Calibrating front-to-back tilt will require saber angle calibration (if the pen plate is loosened). Do not calibrate front-to-back tilt if you do not have a dial indicator tool to set the saber angle.

Required tools

- 3 mm hex wrench
- 4 mm hex wrench
- 3/32-in hex wrench
- Head-height gauge

1. From the printer's menu, select the following:

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > HEAD HEIGHT CALIBRATION > VERIFY

This will move the carriage to the correct location for carriage tilt adjustment.

2. Loosen the screws on both sides of the carriage (see illustration below for locations).

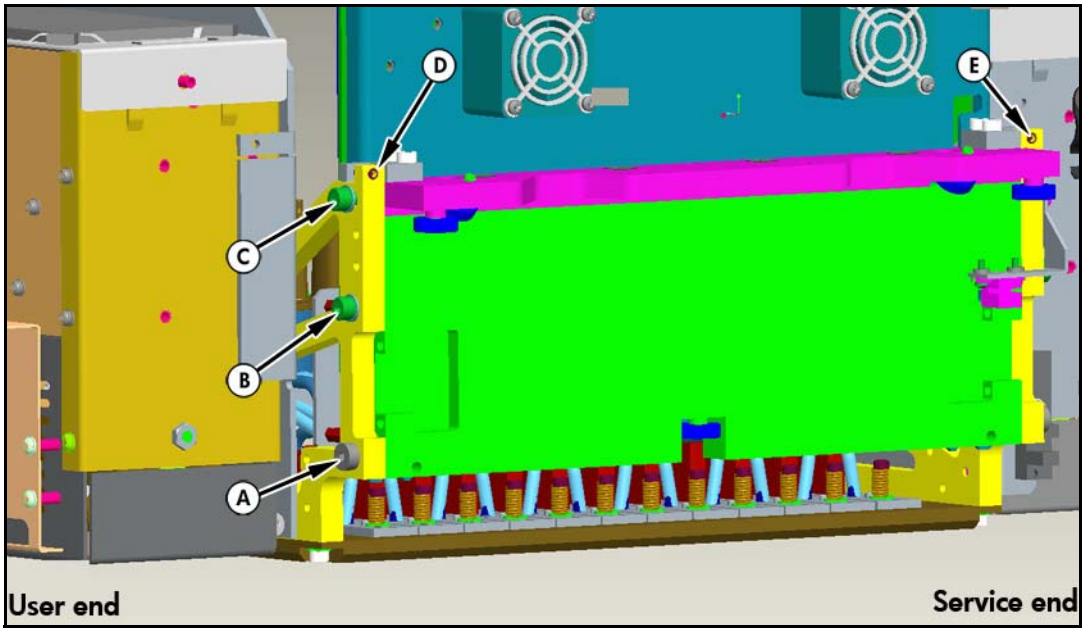
The lower screw (A in Fig. 650.) is the pivot screw. Do not over loosen the pivot screw. Once the pivot screw is loose, finger tighten it so that it is just loose enough to allow pivot.

Loosen the pivot screw (A in Fig. 650.) a half turn on both sides of the carriage. Loosen the middle screw (B in Fig. 650.) and upper set screws (C in Fig. 650.) a full turn on both sides of the carriage.

- A = Pivot screw. Use 3 mm hex wrench
- B = Middle set screw. Use 4 mm hex wrench
- C = Upper set screw. Use 4 mm hex wrench
- D = User-end tilt-adjustment screw (use 3/32-in hex wrench)

- E = Service-end tilt-adjustment screw (use 3/32-in hex wrench)

Fig. 650. Carriage side-plate screws



3. Finger tighten the top pivot screws (A in Fig. 650. - one on each side of the carriage) to make sure it is not too loose. Do not remove the screws.

4. With the six screws loosened, use a 3/32-in hex wrench to turn the service-end tilt-adjustment screw (E in Fig. 650.) clockwise to raise the front of the carriage or counterclockwise to lower it.

   The tilt-adjustment screws can be turned from the input or output side of the carriage.

Front-to-back calibration of the service-end of the carriage

5. Place the head-height gauge under the front of the service-end carriage (see Fig. 661.).

6. Adjust the height until the front of the service-end is the same height as the rear of the service-end of the carriage.

   When properly calibrated, you should be able to insert the gauge and feel the slight friction of resistance as the gauge is removed.

7. Tighten the service-end set screws (B and C in Fig. 650.) and the pivot screw (A in Fig. 650.) shown in Fig. 650.

8. Using the head-height gauge, verify that the front-to-back tilt did not change after tightening the service-end screws on the side of the carriage.

   Recalibrate the service-end of the carriage if needed (before proceeding to calibrating the user-end of the carriage).

Front-to-back calibration of the user-end of the carriage

9. Place the head-height gauge under the input-side and then the output-side of the user-end of the carriage.

10. If there is more than 0.005 (five thousandths) difference between the input-side and output-side of the user-end of the carriage, fix the carriage twist (twist in the pen plate) as shown in the section “Fixing Carriage Twist” on page 466.

    For comparison, the height of an average piece of 20lb copy paper is 0.004".

11. Adjust the height until the front of the user-end is the same height as the rear of the user-end of the carriage.

12. Tighten the user-end set screws (B and C in Fig. 650.) and the pivot screw (A in Fig. 650.) shown in Fig. 650.

13. Re-check front-to-back tilt.

14. Tighten all six (three on each side) side screws (A, B, and C in Fig. 650.).

15. Check the carriage head height as shown in the section "Head height calibration" on page 470.

16. Check the saber angle calibration as shown in the section "Verifying the gross saber angle" on page 467.

17. Calibrate the media-thickness sensor.

Calibrate the media-thickness sensor

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > MEDIA THICKNESS SENSOR CALIBRATION

18. Calibrate the camera focus.

Calibrate the camera focus

TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > IMAGE SENSOR HEIGHT & POSITION

Calibrate the service station wipers as shown in the section "Maintenance calibrations" on page 475.

Fixing Carriage Twist

After calibrating the front-to-back height at all four carriage corners, if any one of the corners is a different height from the other three corners, the carriage pen plate is twisted and must be leveled.



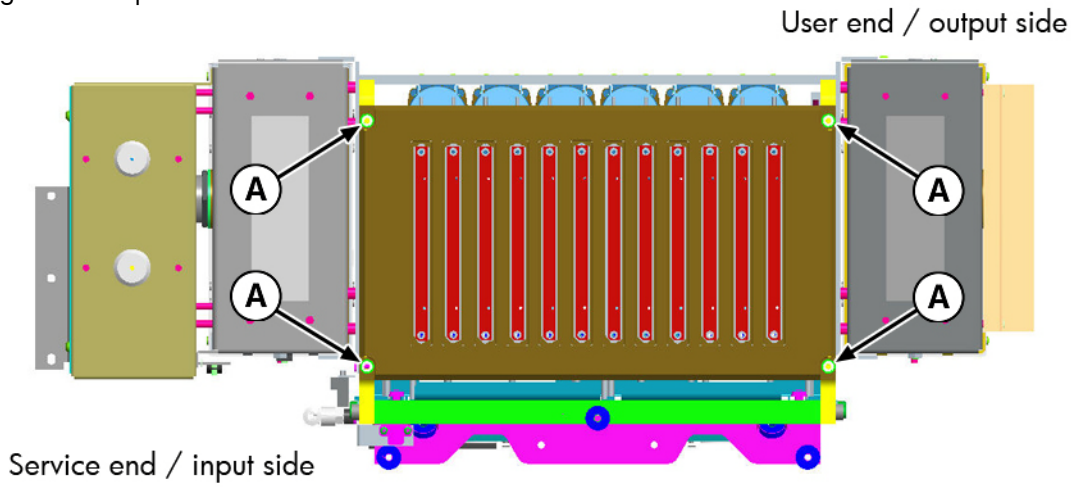
Leveling the pen plate will affect the carriage saber angle. Do not level the pen plate if you do not have a dial indicator tool (part # CQ114-67177) to set the saber angle.

Required tools

- Dial indicator tool
- 2.5 hex wrench

1. Calibrate carriage front-to-back tilt as shown in the section "If you have trouble with missing jets after changing the service station, re-check the service station calibration. Poorly calibrated wiper position results in missing jets." on page 476.
2. If the carriage pen plate has twist, proceed to the following steps to loosen the pen plate screws.

Fig. 651. Pen plate screws



3. Move the carriage to the service station area.
4. Release the service station latch (Fig. 234.) and rotate the service station out of the way.
5. Use a 2.5 hex wrench to loosen the four pen plate screws (A in Fig. 651.).
6. With the four screws loosened one half turn, calibrate the front-to-back tilt as shown in the section "Calibrating Carriage Front-To-Back Tilt" on page 463.
7. Tighten the four pen-plate screws according the torque specifications **30-35 lb.in (3.4-3.9 Nm)**.

   If you are calibrating the saber angle, you can leave all of the screws loosened except for the output-side, service-end corner screw.
8. Calibrate the carriage saber angle as shown in the section "Verifying the gross saber angle" on page 467.

Verifying the gross saber angle

Required tools

- Dial indicator tool

1. Check the front-to-back tilt as described in the section “Checking carriage front-to-back tilt” on page 462.

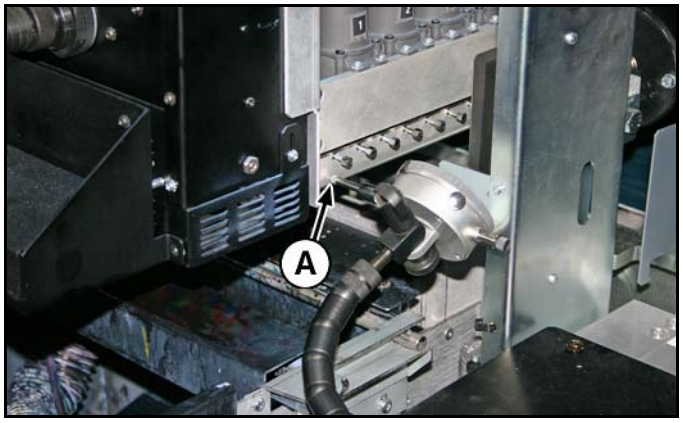


This procedure requires a special tool (dial indicator, part # CQ114-67177). You must have the approved dial indicator that is needed to verify and set carriage saber angle.

2. Mount the dial indicator tool to the printer’s frame with the measurement tip placed between the gap at the end of the y-axis bar and just below the y-axis adjustment screws (A in Fig. 652.) on the service-end of the carriage.

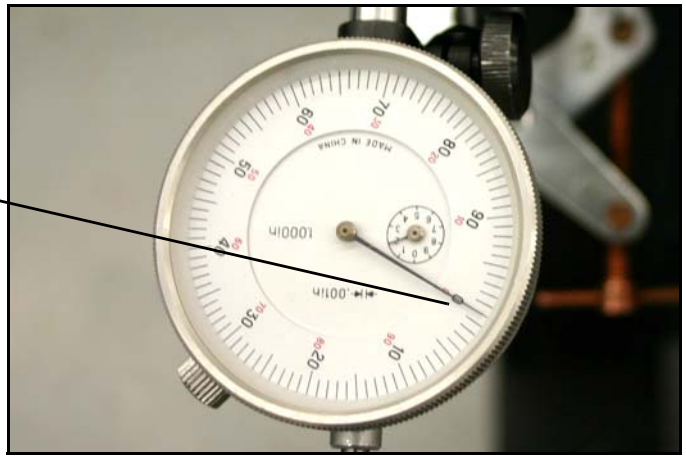
The dial’s probe should be parallel with the pen plate (not angled up or down).

Fig. 652. Mount for saber angle dial indicator



3. Turn the face of the dial indicator until the arrow is pointing at zero.

Fig. 653. Zero setting for dial indicator



4. Move the carriage so that the tip is at the user-end of the carriage (between the gap at the user-end of the y-axis bar) and note the dial location.

   If the dial moves more than .002" (.0508 mm) in either direction, the carriage angle must be changed.

Fig. 654. Dial indicator specification

The arrow points to .002" from zero



Changing the Carriage Saber Angle

Required tools

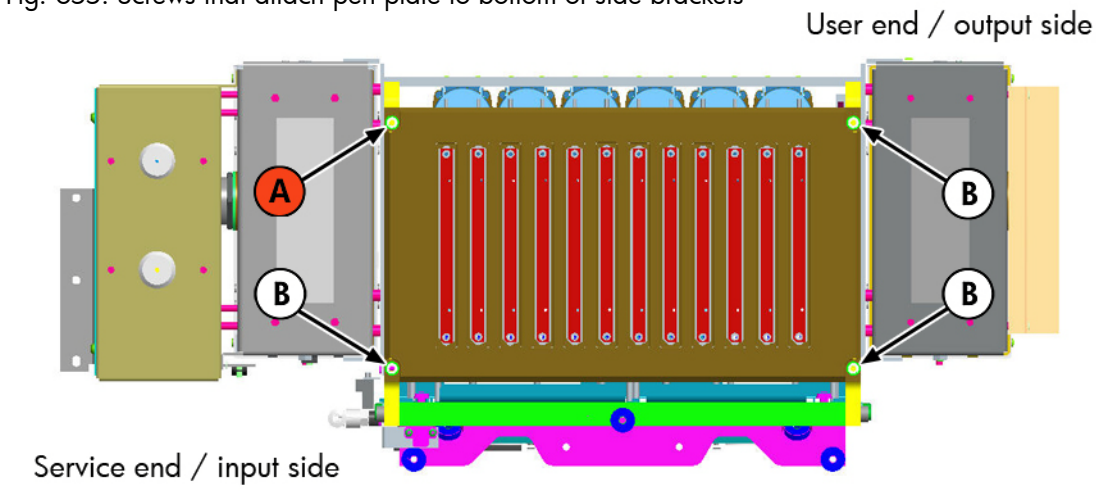
- 2.5 hex wrench
- 3/32-in hex wrench
- Dial indicator tool

1. Place the tip of the dial indicator at the service-end of the carriage, and turn the dial face until the arrow is at zero.
2. Move the carriage so that the dial indicator tip is at the user-end of the carriage, and note the difference.

3. Using a 2.5 hex wrench, loosen three of the screws (B in Fig. 655.) that attach the pen plate to the two side brackets.

   Loosen the three screws (B in Fig. 655.) a quarter turn.

Fig. 655. Screws that attach pen plate to bottom of side brackets



A = Pivot screw - should remain fairly tight during procedure (but loose enough to allow pivot)

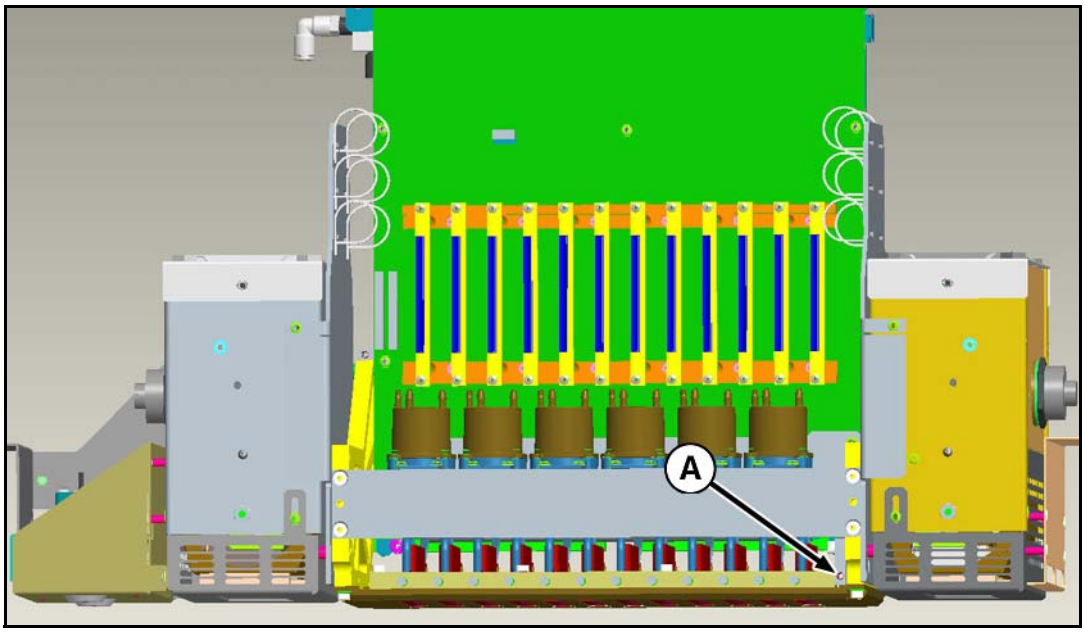


Turn the pen plate screws the least amount needed to pivot the pen plate. Turn the pen plate screws in eighth turn increments. If you loosen them too much, the plates will separate, and calibration will be much more difficult.

4. Using a 3/32-in hex wrench, turn the saber angle screw (A in Fig. 656.) clockwise until the dial indicator shows that the right-side saber angle is within .002" (.0508 mm).

   If the right side needs to move back (versus forward), turn the saber angle screw counterclockwise, and then manually push the user-end of the pen plate back with your thumb.

Fig. 656. Saber angle screw



   If the pen plate is already pivoted all the way back (preventing you from pushing it further), loosen the pen plate pivot screw (see illustration in Fig. 655.). Pull the pen plate toward you. Similarly, if the pen plate is already too far forward (preventing you from pivoting the pen plate toward you), loosen the pivot screw and push the pen plate away from you.

5. Repeat the above steps, taking fresh dial indicator readings from the service-end and user-end, making sure that there is no more than .002" (.0508 mm) difference between each end of the carriage.

6. It is not uncommon to need to repeat these steps three or four times, as one side changes slightly when the other side is adjusted.

7. Tighten the pen plate screws to torque specification: **30-35 lb.in (3.4-3.9 Nm)**.

Warning Do not forget to tighten the pen plate corner screws or you will have to repeat the calibration.

8. Recheck the saber angle calibration.

Head height calibration

Head height calibration requires the following subsequent calibrations: Media thickness sensor, service station wiper calibration, camera focus and auto BIDI calibration.

Required tools

- Head height gauge

1. Remove any media that may be loaded across the platen.

2. Temporarily disable the output door-open switch (A in Fig. 657.).

   Locate the door-open quick-disconnect location within the cable loom located at the user-end corner of the output-side door.

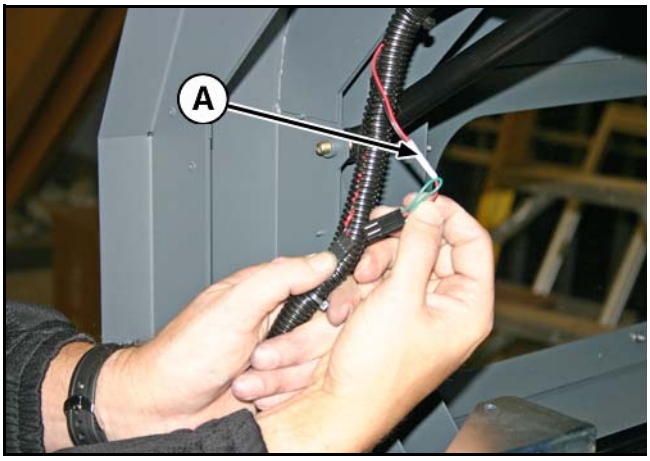


Fig. 657. Output-side door-open switch

3. Disconnect the switch at its quick-disconnect location to temporarily disable the output-side, door-open-detection switch.

   The cable is labeled “CUR DOOR OPEN SW.”

4. From the printer’s menu, select the following:

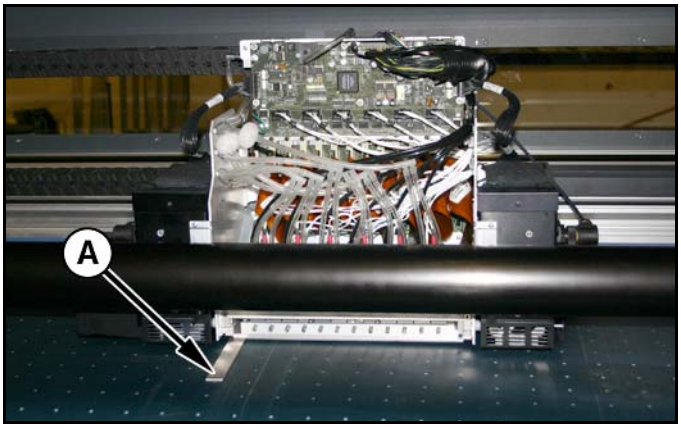
   SYSTEM> TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > HEAD HEIGHT CALIBRATION > VERIFY

   The printer’s menu will prompt you to make sure the media is unloaded, and then it resets the rail height. Next, the carriage will move out to the middle of the platen.

5. Manually move the carriage to the middle of the platen.

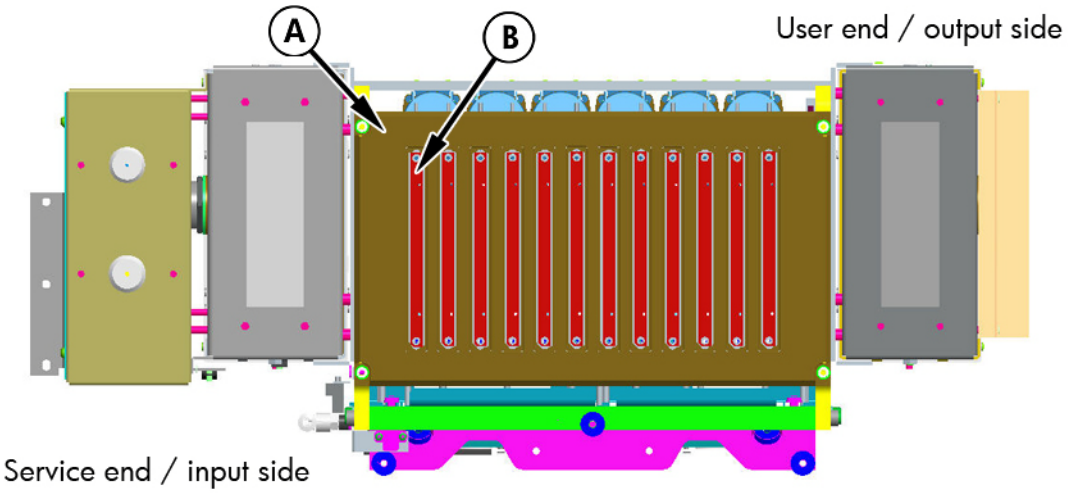
6. Insert the head-height gauge (A in Fig. 658.) beneath the service-end side edge of the carriage as shown below.

Fig. 658. Head-height calibration of service-end of carriage



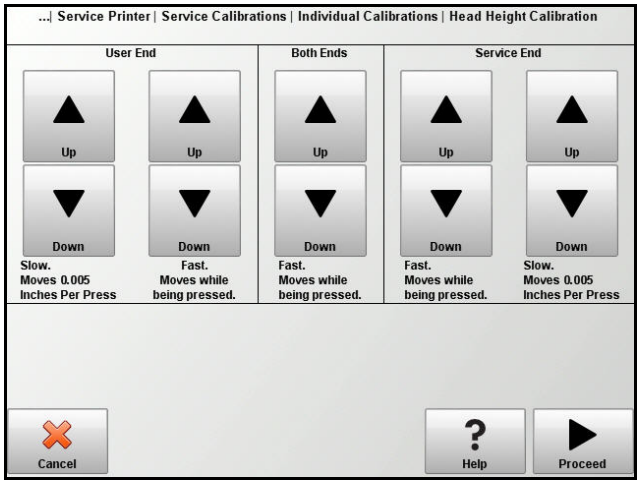
Make sure the gauge (A in Fig. 658.) is under the pen plate (A in Fig. 659.) not the lamps or a printhead (B Fig. 659.).

Fig. 659. Carriage pen plate



7. Press the middle button (indicated by the text "Both Ends") on the printer's menu to bring the carriage close to the gauge.

Fig. 660. Carriage head height calibration menu



8. Lower the rail until the gauge is trapped between the carriage and the platen.

9. Press the arrow up button that corresponds to the side of the carriage with the gauge until the gauge can move in and out with slight friction between the carriage and platen.

10. Insert the gauge under the other end (user-end) of the carriage to see if one side of the carriage is lower than the other.

If one side is lower, calibrate the higher side down to match the lower side.

Fig. 661. Head-height calibration of user-end of carriage



11. Manually move the carriage to the user-end of the printer and recheck the calibration on both sides of the carriage.

If one side of the carriage pen plate (A in Fig. 659.) is lower, calibrate the higher side down to match the lower side.

12. Manually move the carriage to the service-end of the printer, and recheck the calibration on both sides of the carriage.

If the measurement is lower on one end of the printer, calibrate the higher side down to match the measure on the lower side of the printer.

13. Recheck the calibration for both sides three times.

The head height will change slightly for the service-end after the user-end has been adjusted. Recheck the calibrations for both sides and adjust as necessary. Rechecking calibration three times on each side is usually sufficient.

14. Press PROCEED to save the calibration.

15. Follow the menu prompts to calibrate the media-thickness sensor and the camera focus.

If you need to access the media-thickness sensor calibration after leaving the menu area, select the following:

SYSTEM > TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > INDIVIDUAL CALIBRATIONS > MEDIA THICKNESS SENSOR CALIBRATION

If you need access the camera focus calibrations after leaving the menu, select the following:

SYSTEM > TOOLS > SERVICE PRINTER > SERVICE CALIBRATIONS > IMAGE SENSOR HEIGHT CALIBRATION

Reconnect the door-open switch

16. Reconnect the open-door sensor switch (see Fig. 657. for location).

Calibrating the service station wipers

Calibrating the service station wipers includes setting the distance between the wiper tips and the printhead surface and setting the x-axis tilt of the wiper assembly (at both the input-side and the output-side.

1. Access the password-protect area of the printer's menu as shown in the section "Accessing the password protected service menu" on page 449.
2. Access the service station calibration screen under TOOLS > SERVICE PRINTER > SERVICE CALIRBATION > INDIVIDUAL CALIBRATIONS > SERVICE STATION CALIBRATION.
3. Press PROCEED to position the rail and carriage for the calibration procedure.
4. Perform the list of calibrations listed in the SERVICE STATION CALIBRATION menu in the order they are listed.

   The following sections provide additional information on these calibrations.

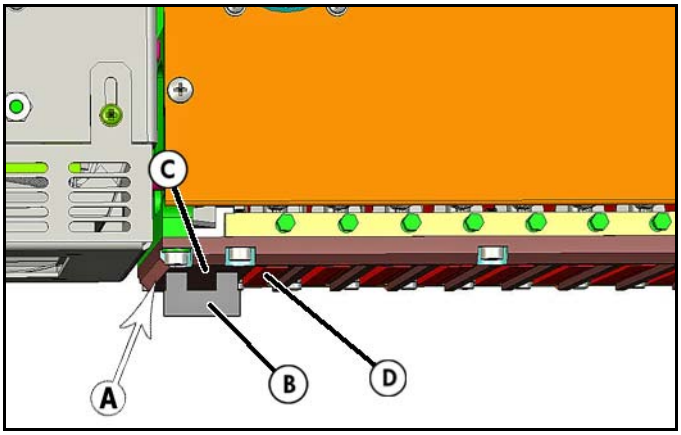
Calibrating Wiper Height

1. Select WIPER HEIGHT from the menu.
2. Use the arrow keys to raise or lower the service station until the wiper(s) (B in Fig. 662.) are just touching the pen plate (C in Fig. 662.).

Note Do not use a flashlight to view the wipers for this step, unless you are backlighting the wipers. Front lighting can distort the wiper silhouette, prohibiting a proper view of the gap between the wipers and pen plate.

The correct distance is achieved when pressing the down arrow once produces a gap between all wipers and the pen plate, and pressing the up arrow once causes at least one wiper to touch the pen plate.

Fig. 662. Wiper position



A = Edge of the pen plate bevel

B = Simulated wiper

C = Printhead

D = Pen plate

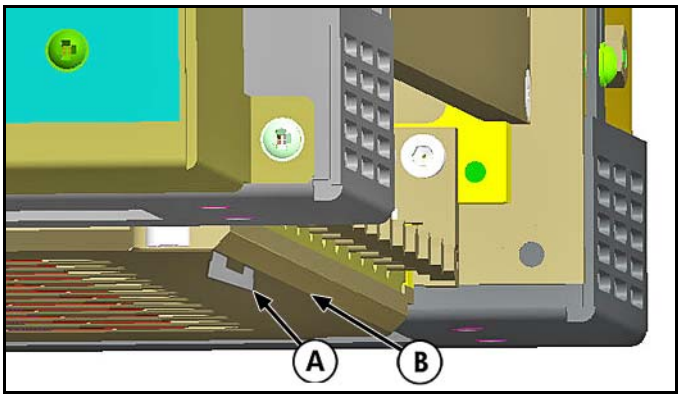
3. Press PROCEED to continue.

Calibrating wiper y-axis alignment

1. Select WIPER Y POSITION.
2. Press PROCEED to move the align the wipers near the user-end corner on the output side of the carriage.

3. Using the BACK / FORWARD arrows, move the wipers (A in Fig. 663.) until the wipers are at the edge of the beveled chamfer (B in Fig. 663.) near the output side of the carriage pen plate.

Fig. 663. Wiper blade y-positions



4. Press PROCEED when aligned with the edge of the chamfer (B in Fig. 663.).

Note If you have trouble with missing jets after changing the service station, re-check the service station calibration. Poorly calibrated wiper position results in missing jets.

Calibrating wiper left/right tilt

If the two side-by-side wipers are not at the same height from the carriage, the wiper assembly may be tilted by the two shafts that carry the wiper carriage. During this calibration, the wipers are observed at both the input and output sides of the carriage. The screws that hold the wiper assembly shafts in place are loosened to remove any twist in the wiper assembly.

Required tools

- #2 phillips screwdriver

1. Select TILT ADJUSTMENT from the printer's service menu (see step 2 on page 475).

Warning Wear protective gloves, such as latex, to protect your hands from ink.

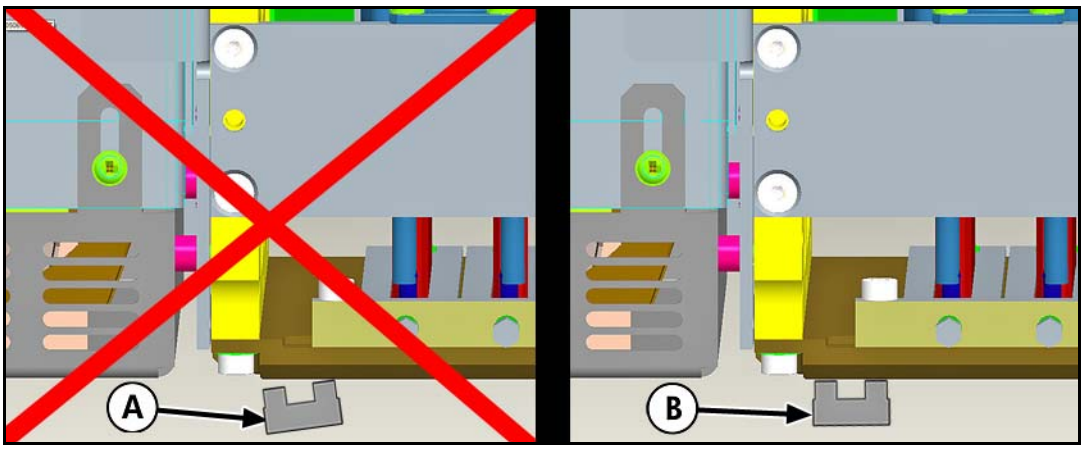
Check output-side wiper tilt

2. Press PROCEED to position the wipers at the output side of the carriage.
3. Using a flashlight, observe the wipers position relative to the bottom of the carriage to make sure that the wipers are parallel with the bottom of the carriage pen plate.

   The wipers should be parallel with the carriage pen plate. In the example below, the wipers are tilted in example (A) and parallel in example (B). If the wipers are tilted, the screws that

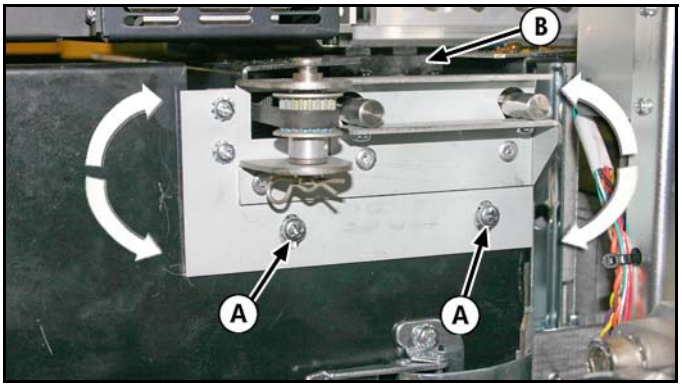
secure the output-side wiper rails must be loosened in order to rotate the rails slightly to make the wipers parallel with the pen plate.

Fig. 664. Checking for wiper tilt



4. If the wipers are tilted, loosen the screws (A in Fig. 665.) that secure the output-side wiper rail assembly and rotate the wiper rails until the wipers (B in Fig. 665.) are parallel with the carriage pen plate.

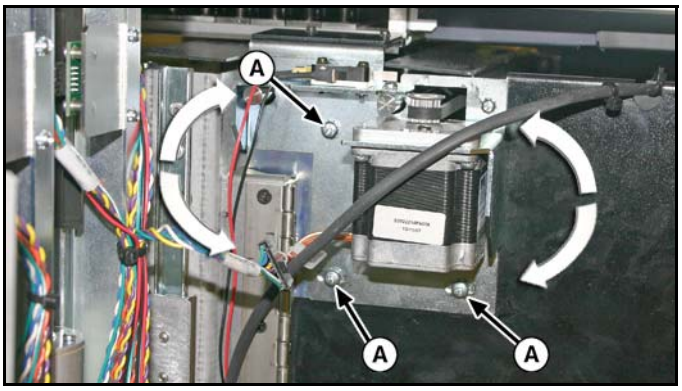
Fig. 665. Screws that secure wiper assembly on output side



Check input-side wiper tilt

5. Press PROCEED to check the input side of the carriage for wiper tilt.
6. If the wipers are tilted relative to the pen plate, loosen the three screws (A in Fig. 666.) that secure the wiper rail assembly on the input side of the service station as shown in Fig. 666.

Fig. 666. Screws that secure wiper assembly on input side



7. Tilt the wiper assembly left or right until the wipers are parallel with the pen plate on the input side of the carriage.
8. Retighten the screws (A in Fig. 666.).

Check the wiper height on the input side of the carriage

The printer's menu can only adjust the wiper height on the output side of the carriage. If the wiper height is incorrect on the output side, the wiper height must be manually changed.

1. If the wiper height is too high or too low on the input side of the carriage, loosen the screws that secure the wiper rails on the input side (A in Fig. 666.) and move the wipers up or down until the wiper blades are just touching the pen plate.

   See "Calibrating Wiper Height" on page 475 for wiper height illustration.
2. Press PROCEED to recheck the wiper to carriage alignment.

   If the wipers are not parallel with the pen plate, loosen the wiper assembly screws and repeat the alignment process.

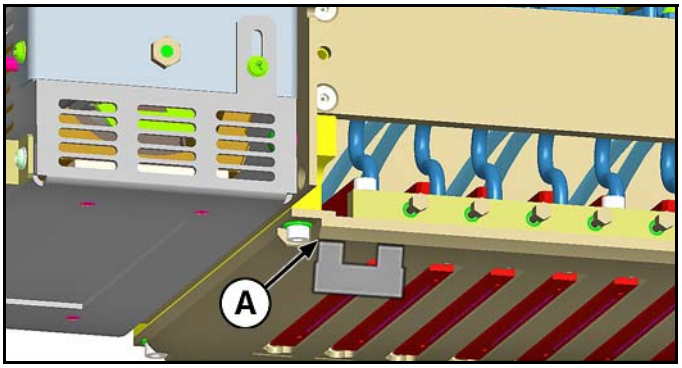
Calibrating wiper x-axis alignment

The x-axis calibration makes sure the wiper aligns with the printheads jetting area. The wiper is aligned to the bevel on the outside edge of the pen plate.

1. Select WIPER X POSITION (see step 2 on page 475).
2. Press PROCEED to align the wipers near the service-end corner on the output side of the carriage.

3. Press the LEFT and RIGHT keys to move the carriage toward the user-end or service end until the edge of the service-end wiper is aligned with the edge of the bevel on the edge of the pen plate (A in Fig. 662.).

Fig. 667. Wiper at edge of pen plate on service end



4. Press PROCEED when aligned with the edge.

5.

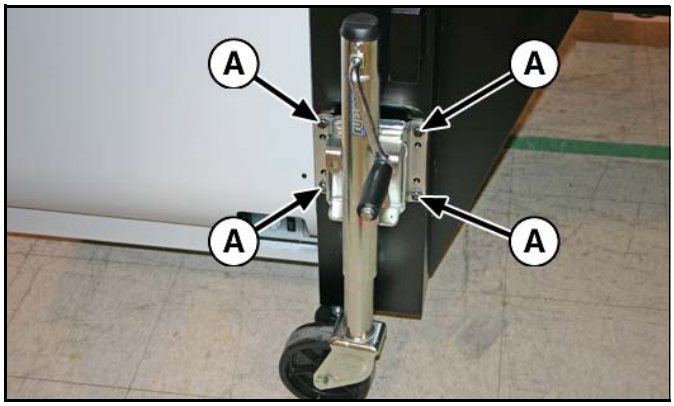


Caution Failure to reconnect the switch before printing could result in injury to the printer operator.

Install the printer's wheels

1. If the four wheels are removed from the printer, install them (see Fig. 668. for bolt locations).

Fig. 668. Bolt locations for wheel assemblies



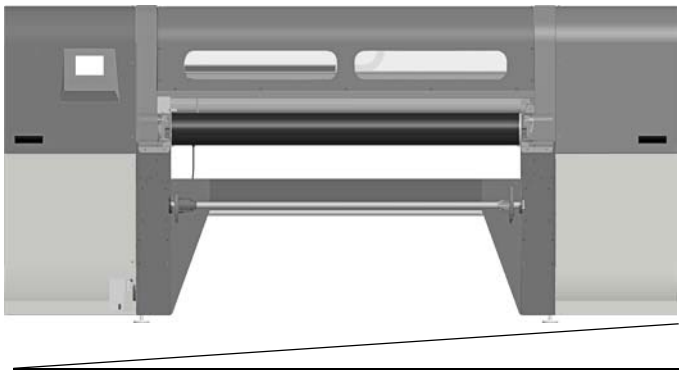
Check height difference between user and service-end of printer

2. Make sure the floor height difference over the width of the printer (end cabinet to end cabinet) is not greater than 5.6 cm or about 2.2 in.

If the difference in floor height is greater than 5.6 cm or about 2.2 in over the width of the printer, the end cabinets will not align properly with the printer.

Fig. 669. Maximum height difference from user to service-end

Maximum floor height difference allowable over the width of the printer is 5.6 cm or about 2.2 in

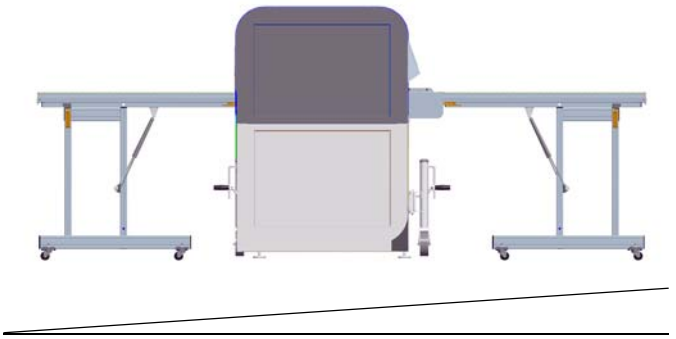


Check height difference between input and output-side of printer

3. Make sure the floor height difference over the length of the printer (input table to output table) is not greater than 5.1 cm or 2.0 in.

Fig. 670. Maximum height difference from input-side to output-side

Maximum floor height difference allowable over the length of the printer is 5.1 cm or 2.0 in

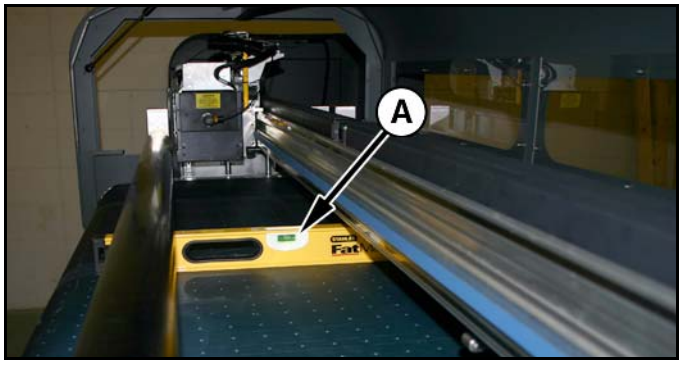


5.1 cm (2-in) max

4. Use a level (A in Fig. 671.) to check that the printer is level from front-to-back on both the service end and user end.

On the service end, place the level (A in Fig. 671.) on a rigid area of the belt perpendicular to the rail to measure front-to-back.

Fig. 671. Front-to-back leveling



Adjusting leveling pads

5. If needed, use an adjustable wrench (like a Crescent wrench) or open-end wrench to turn the height-adjustment stud nut (B in Fig. 672.) counterclockwise, which will lift the printer away from the pad.

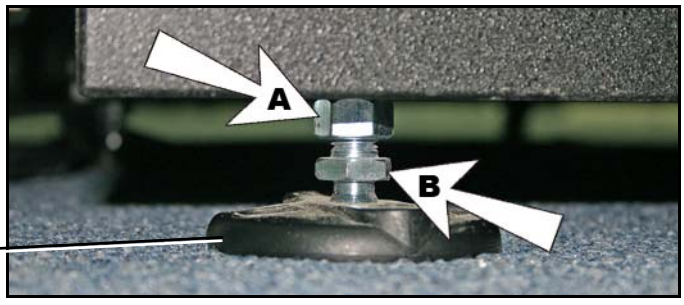
For stability and optimal printing performance, the printer should be as close to the floor as possible. Only raise the printer where needed to level the printer.

Fig. 672. Adjusting leveling pads

A = Locking nut - use 19mm wrench or adjustable wrench

B = Height-Adjustment stud - use 20mm wrench or adjustable wrench

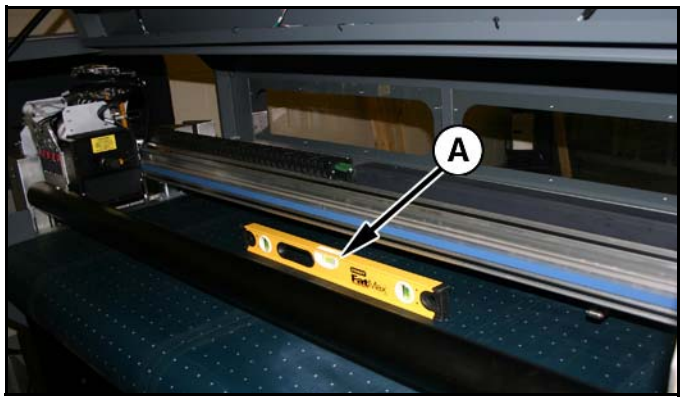
Leveling pad with lock nut tightened



6. Once the printer is level, snug the locking nut (A in Fig. 672.) against the printer's frame.

7. Check that the printer is level from left-to-right (service-to-user end) by placing the level (A in Fig. 673.) in the middle of the belt parallel with the rail.

Fig. 673. Right-to-left leveling (service-to-user-end leveling)



8. Secure the leveling pads' positions by turning all four of the locking nuts clockwise (see Fig. 672.) until they are snug against the printer.

9. Re-verify that the front-to-back is level.

Note Each adjustment that is made to make the printer level has the potential to change the levelness of the other axis. Re-verify each axis (left-to-right or front-to-back) after making a change.

Remove printer wheels

Required tools: 13 mm socket with an 8-in extension

1. Using the 13 mm socket with an 8-in extension, remove the 16 bolts (four at each wheel assembly - A in Fig. 668. on page 480) that secure the wheel assemblies to the printer.

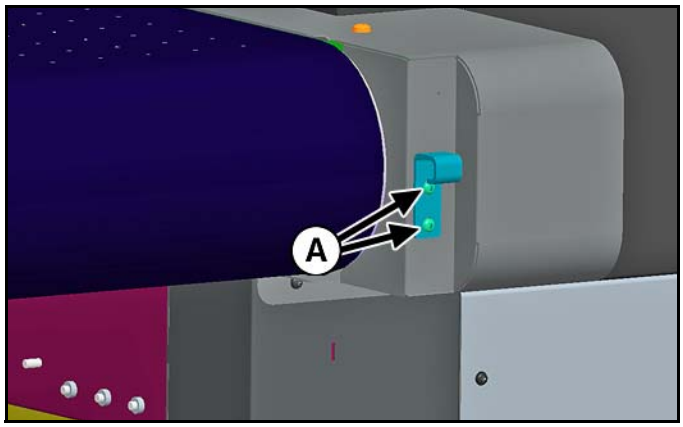
Attaching and Leveling the tables

1. Using a 3 mm hex wrench, loosen the two screws (A in Fig. 674.) that secure the printer's latch hooks on the user and service end of the printer.

Fig. 674. Table latch-hook screws

Note: For adjustment purposes, the latch hook moves in the y-axis when the screws are loosened

Use a 3 mm hex wrench

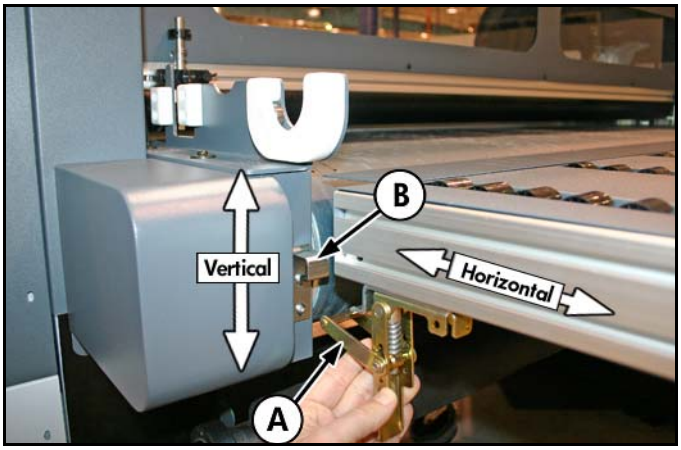


2. Attach the table latches (A in Fig. 675.) to the printer's latch hook (B in Fig. 675.) on the input and output sides of the printer.

Fig. 675. Table attachment bracket

A = Latch hook

B = Table latch



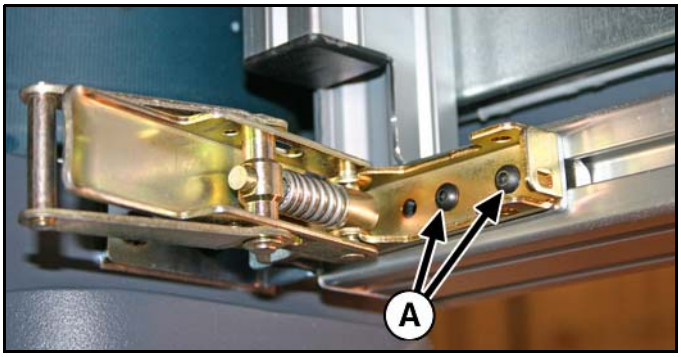
If the latches (A in Fig. 675.) are mispositioned in the horizontal axis (Fig. 675.) and cannot reach the latch hook (B in Fig. 675.) of the printer, use a 3 mm hex wrench to loosen the latch-position screws (A in Fig. 676.). Do not over loosen the screws. Only loosen them slightly.

Fig. 676. Latch-position screws

View of latch from beneath the table

A = Latch-position screws

Use a 2.5 mm hex wrench

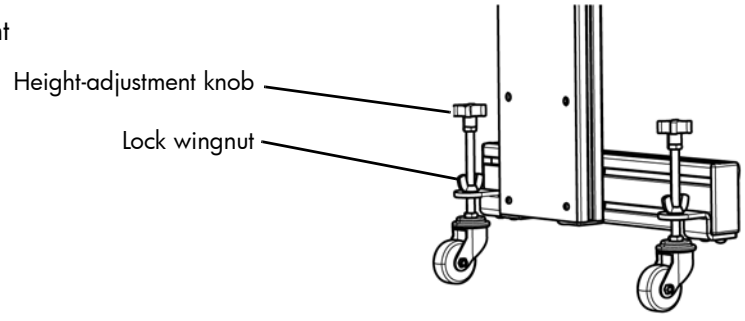


3. Make sure all latches are securely fastened.

Caution The tables must be completely latched to complete the ground between the tables and printer. This is extremely important due to medias prone to static discharge. If extension tables are used, make sure they are fully latched as well.

4. Set the table height so that the table's rollers are the same height as the printer's belt.

Fig. 677. Table wheel-height adjustment



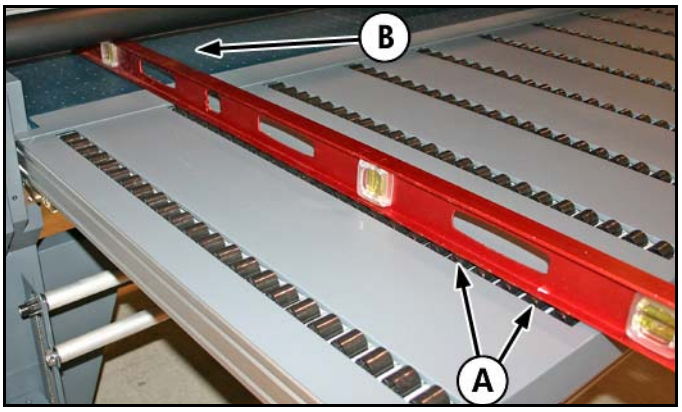
Caution The bubble levels (spirit levels) that are inserted on the sides of the tables are less accurate than using longer levels. Do not depend on the small pre-installed bub-

ble levels to level the tables. You must use a level, such as a carpenter's level for accurate results.

5. Level the table from front to back.

Place the level on the table's rollers (A in Fig. 678.) and on the belt (B in Fig. 675.)as shown below. If one set of rollers is higher than the other sets of rollers, place the level on that set of rollers.

Fig. 678. Leveling the tables from front to back



The table is level and at the same height (at the rollers) as the belt

6. Level the table from left to right.

Fig. 679. Leveling the tables from Left to right



7. Recheck that the printer is level and at the same height (at the rollers) as the belt.

8. Disconnect the tables from the printer.

9. Press down on the rear of the table to lift the leading edge of the table, simulating its height when connected to the printer, and slide the table's latch toward the printer's latch hook (see Fig. 680.).

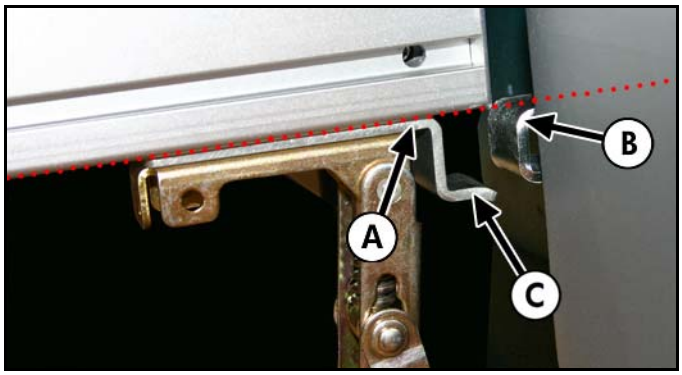
10. Align the height (vertical-axis - Fig. 675.) of the latch-hook (B in Fig. 680.) with the latch opening (C in Fig. 680.), so that the bottom of the table (A in Fig. 680.) slides over the latch hook when the table is pushed toward the latch hook.

Fig. 680. Aligning the latch hook with the latch

A = Bottom edge of table

B = Top edge of latch hook

C = Opening in latch



11. Use a 3 mm hex wrench to tighten the latch-hook screws with the latch hook in the correct position.

Set table-to-belt distance

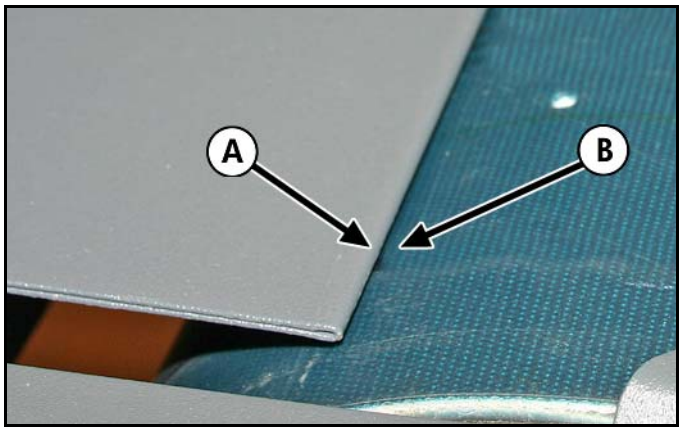
Overview: The lip of the table should be an equal distance from the media-drive belt on both the use-end and service-end of the table. The separation between the table's lip and the belt should be equal to approximately the thickness of a heavy vinyl, roll-to-roll media (about 0.38 mm or 0.015-in). To change the distance between the table lip and the belt, slightly loosen the two latch-position screws (A in Fig. 676.) and slide the latch in the horizontal-axis direction (see Fig. 675.).

Fig. 681. Distance between table lip and media-drive belt

A = Table lip

B = Media-drive belt

Note: You should be able to slip a piece of media that is about 0.38 mm (0.015-in) thick between the table lip and belt



12. If the distance between the table's lip and the belt needs to be adjusted, use a 2.5 mm hex wrench to loosen the two latch-position screws (A in Fig. 676.) beneath the latch.

13. Adjust the latch position until the correct distance between the table lip and media-drive belt is achieved, and then tighten the latch-position screws (A in Fig. 676.).

Special Tools

Carriage and printhead special tools

Long hex wrench to set y-axis

This this long, 2.5 mm hex wrench is used to reach the screw that must be loosened when changing the y-axis calibration of each printhead.

Part number: CQ114-67175

Fig. 682. Hex wrench 2.5 mm for printhead y-axis calibration



Torque screwdriver and bit set

This tool is used to set the screw torque during printhead installation into the carriage pen plate.

Part number: CQ114-67177

Fig. 683. Torque screwdriver and bit set



Gross saber angle dial indicator

This tool is used during printer initial setup and to check the carriage gross saber angle. It has a magnetic base for attaching it to the frame of the printer near the carriage.

Part number: CQ114-67176

Fig. 684. Dial indicator used to check carriage gross saber angle



Vacuum tube clamps

While this less common tool cannot be ordered as a service tool, it is listed here to show its appearance. It is used to clamp the vacuum tubes above the printheads when the printhead reservoir must be opened or a tube is cut, which causes a loss of vacuum to all printheads unless clamps are used to clamp both vacuum tubes above the affected printhead.

Fig. 685. Hemostat clamp used to clamp vacuum tubes above printheads



L-shaped ratchet screwdriver

While this less common tool cannot be ordered as a service tool, it is listed here to show its appearance. It is used to access screws in areas where there is little clearance.

Fig. 686. L-Shaped ratchet screwdriver

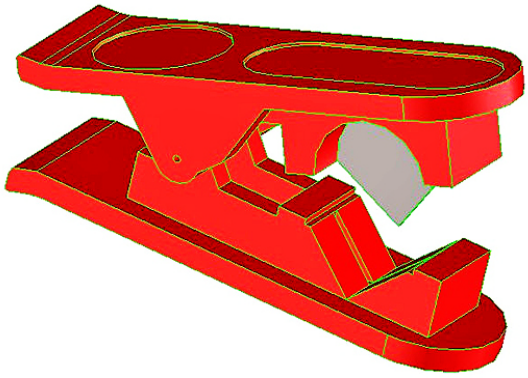


Tube cutter

The tube cutter provides a straight cut to the tubes versus an elliptical-end cut that results from using a tool such as wire cutter. The straight cut provided with this tool creates a better interaction with the tube joiners. It is best practice to use this tool.

Fig. 687. Tube cutting tool

Part number: Q6702-60697



Media-drive special tools

The photos of tools are not to size.

Torque wrench for media-drive motor coupling

This torque wrench and specified hardened wrench bit are used to tighten the screws on the media-drive motor coupling. Be sure that the bit is not rounded off before using or you could damage the coupling screws.

Part number: CQ114-67174

Fig. 688. Torque wrench and hardened bit



High-resolution readhead alignment tool

This tool is used to align the high-resolution readhead.

Part number: CQ114-67189

Fig. 689. High-resolution readhead alignment tool



Dial indicator for high-resolution encoder hub

This tool is used to set the position of the high-resolution encoder hub during replacement.

Part number: This tool cannot be ordered separately from the high-resolution hub. This tool is sent with the high-resolution hub replacement kit.

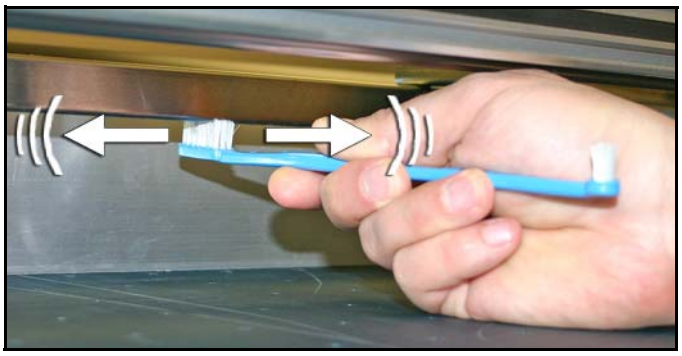
Fig. 690. Dial indicator for high-resolution hub



Ionizer point cleaning brush

This tool is used to clean the points of the ionizer.

Fig. 691. Cleaning the ionizer needles

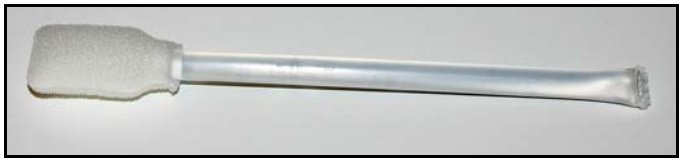


Alcohol swabs

This tool is used to clean the high-resolution encoder hub. To use the swab, squeeze the end of the tube toward the foam pad to rupture the seal. This will release alcohol into the pad. Squeeze the tube to saturate the foam pad as needed.

Part number: CQ114-67181

Fig. 692. Alcohol swab

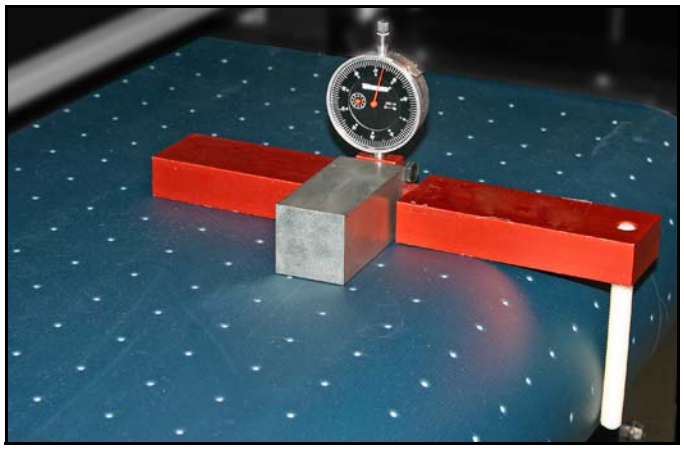


Dial indicator belt tensioning tool

This tool is used to check and set the media-drive belt tension.

Part number: 0901572

Fig. 693. Dial indicator for belt tensioning

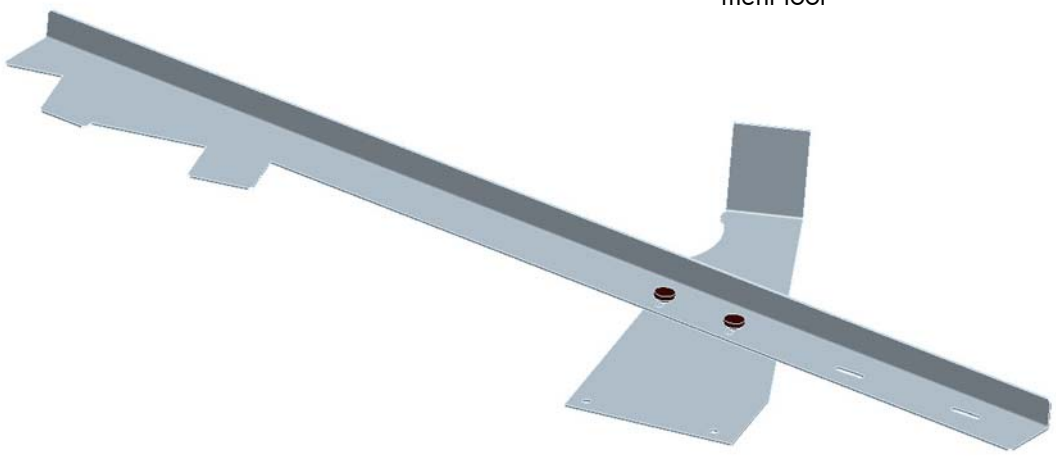


Roll-to-roll alignment tool

This tool is used to set the alignment of the supply and takeup spool position and the foam roller rack positions.

Part number: CQ114-67161

Fig. 694. Roll-to-roll alignment tool



C-ring pliers

While this less common tool cannot be ordered as a service tool, it is listed here to show its appearance and use. It is used to remove the C-ring from the bearing block on the media-drive rollers.

Fig. 695. C-ring pliers



Calipers

While this less common tool cannot be ordered as a service tool, it is listed here to show its appearance. It is used to measure the distances between the media-drive and idler rollers in order to center the media drive belt. It can also be used to measure the position of media-drive tensioning block, which allows you to release belt tension and restore it without needed to perform the full belt tensioning procedure

Fig. 696. Calipers



Flexible tape measure

While this less common tool cannot be ordered as a service tool, it is listed here to show its appearance. It is used to measure the media-drive belt to make sure both sides of the belt (the user-end and service-end) are the same distance apart at the ends. In other words, that the idler roller and the media-drive roller are parallel.



Fig. 697. Flexible measuring tape

Index

Numerics

01200005, Error code 157
0901572, Described 489
24v backup power supply, Location 123
38/24v power supply, Troubleshooting 162
38v/24v power supply, About 125
38v/24v power supply, Location 123

A

AC Distribution board, Installing 379
AC distribution board, Location 123
AC distribution board, Removing 378
AC filter, About 125
AC filter, Location 124
AC power distribution board, About 125
AC relay for ShopVac, Location 123
AC relay UV power, Location 123
AC relay, About 126
AC relay, Installing 383
AC relay, Removing 382
Access printer logs 446
Action message prefixes explained 194
Activation limit switch (for optional roll-to-roll), About 118
Actuator assemblies for service-end, Exploded views 60
Actuator assemblies for user-end, Exploded views 59
Actuator assemblies, Exploded views 58
Actuator assemblies, Identified 112
Actuator assemblies, Part numbers 63
Actuator motor cable, Disconnecting 292
Actuator motor power cable, Locating in loom and routing tray 292
Actuator motors, About 112
Actuator, Rail, Installing 301
Actuator, Rail, Removing 298
Adjustable vacuum regulator 66
Adjustment bearing block, About 109
AGC - turning off 276
AGC (Automatic Gain Control), High-resolution encoder 106
AGC, Turning on for the high-resolution encoder interface 279
Air filter for input air 66
Air manifold, About 81
Air manifold, Installing 240
Air manifold, Removing 238
Air manifold, Troubleshooting 146
Air restrictor 66
Air tubes, Cutting for replacement 420
Air valves, Service menu location 176
Airflow plate, About 111
Alignment bar actuator assembly, Installing 295
Alignment bar actuator assembly, Removing 294
Alignment bar and media rollers, About 113
Alignment bar home calibration, Service menu location 182
Alignment bar, Calibrating 295
Alignment tool configurations 334
Altitude specifications 143
Altitude, Maximum 143
ATX 12v power supply, Location 123
ATX power supply, About 126
ATX power supply, Installing 391
ATX power supply, Removing 390
Auto BIDI Calibration 460
Auto head X calibration, Service menu location 185

Auto printhead service, Service menu location 192
Automatic Gain Control, Turning on or off 276

B

Bearings, Cleaning 208
Belt & rail parallel test, Service menu location 175
Belt encoder lights 277
Belt fan array mount, Exploded view 56
Belt housing airflow plate, About 111
Belt housing, About 110
Belt tension tool 489
Belt tension, About 109
Belt tension, Carriage-drive, Releasing 259
Belt tension, Carriage-drive, Restoring 259
Belt tension, Media drive, Loosening 280
Belt, Carriage-drive, Installing 260
Belt, Carriage-drive, Removing from carriage 260
Belt-tension adjustment block, Exploded view 55
BIDI Calibration, Auto 460
BIOS settings, Motherboard BIOS settings 388
Black tubes installed on takeup and supply spools, About 330
Black tubes installed on takeup and supply spools, Using 116, 366
Box contents 330
Bulb, Installing 254
Bulb, Removing 253

C

Cabinet fans test, Service menu location 169
Cable J1 pinout 131
Cable J10 pinout 137
Cable J11 pinout 137
Cable J13 pinout 138
Cable J14 pinout 138
Cable J16 pinout 138
Cable J2 pinout 132
Cable J21 pinout 138
Cable J22 pinout 139
Cable J23 pinout 139
Cable J24 pinout 139
Cable J26 pinout 139
Cable J27 pinout 140
Cable J28 pinout 140
Cable J29 pinout 141
Cable J3 pinout 133
Cable J4 pinout 134
Cable J6 pinout 136
Cable J7 pinout 136
Cable J8 pinout 136
Cable J9 pinout 137
Cable loom, LVDS, headboard and media detection cables 425
Cable looms, Ink and air tubes 425
Calibration wizard, Service menu location 179
Calibration, Service menu location 165
Calibrations 475
Calibrations needed after replacing printheads 230
Caliper tool, Described 490
Camera focus, Calibration 465
Camera, About 80
Camera, Installing the carriage camera 234
Camera, Removing 233
Camera, Troubleshooting 146
Carriage air manifold, About 81
Carriage air manifold, Installing 240
Carriage air manifold, Removing 238

Carriage assembly brackets, Exploded view 37
Carriage assembly cover 224
Carriage assembly, Exploded views 37
Carriage back plate, Exploded view 40
Carriage bearings, Cleaning 208
Carriage belt length 99
Carriage belt, About 98
Carriage bottom, Cleaning 210
Carriage cables, Disconnecting 413
Carriage camera, About 80
Carriage camera, Removing 233
Carriage control, Service menu location 191
Carriage cooling fan test, Service menu location 169
Carriage cover, Removing and installing 224
Carriage drive motor, Part number 16
Carriage encoder reader cable, Unplugging 241
Carriage encoder reader, About 89
Carriage encoder reader, Installing 242
Carriage encoder reader, Removing 240
Carriage encoder reader, Troubleshooting 148
Carriage encoder strip, About 100
Carriage encoder strip, Troubleshooting 145
Carriage front-to-back tilt, Checking 462
Carriage gross saber angle, About 87
Carriage grounding 102
Carriage head height, About 79
Carriage head height, Calibration 470
Carriage head height, Troubleshooting 146
Carriage headboard lights, About 88
Carriage headboard, About 87
Carriage headboard, Mounting screws 231
Carriage headboard, Removing 230
Carriage headboard, Troubleshooting 148
Carriage home sensor flag, Removing and installing 250
Carriage home sensor test, Service menu location 168
Carriage home sensor, About 89
Carriage home sensor, Removing 249
Carriage idler, About 98
Carriage ink filters, About 81
Carriage ink filters, Troubleshooting 147
Carriage motion failure, Troubleshooting 142
Carriage motion failures, About 142
Carriage motion failures, Troubleshooting 142
Carriage motion slow and fast speed tests 142
Carriage motion, Service menu location 165
Carriage pen plate, Exploded view 38
Carriage reservoirs, Exploded views 39
Carriage saber angle, Changing 468
Carriage saber angle, Verifying 467
Carriage side brackets, Exploded views 37
Carriage stabilizing bar, Exploded view 37
Carriage thermistors, About 83
Carriage thermistors, Installing 237
Carriage thermistors, Removing 235
Carriage trolley, About 90
Carriage trolley, Lower, About 90
Carriage turnbuckle screws, Exploded views 37
Carriage Twist, Fixing 466
Carriage upper trolley, Removing 246
Carriage vacuum tubes, About 84
Carriage wheels noisy, Troubleshooting 144
Carriage wheels, Cleaning 208
Carriage, Installing on the rail 244
Carriage, Removing from the rail 242

Carriage-drive assembly housing, Removing 263
Carriage-drive assembly, About 97
Carriage-drive assembly, Exploded view 48
Carriage-drive belt clamps 98
Carriage-drive belt length 99
Carriage-drive belt length and tension, About 99
Carriage-drive belt tension, Releasing 259
Carriage-drive belt tension, Restoring 259
Carriage-drive belt, About 98
Carriage-drive belt, Installing 260
Carriage-drive belt, Removing 260
Carriage-drive belt, Troubleshooting 143, 145
Carriage-drive belt, Troubleshooting belt tension 143
Carriage-drive idler, Installing 259
Carriage-drive idler, Removing 259
Carriage-drive motor brushes, Troubleshooting 144
Carriage-drive motor, About 98
Carriage-drive motor, Identified 97
Carriage-drive motor, Installing 262
Carriage-drive motor, Mount screws 143
Carriage-drive motor, Removing 261
Carriage-drive motor, Troubleshooting 144
Carriage-drive shaft bearings, Troubleshooting 144
Carriage-drive shaft, About 97
Carriage-drive shaft, Identified 97
Carriage-drive shaft, Removing 262
Carriage-drive shaft, Troubleshooting 144
Carriage-drive smooth pulley, About 97
Carriage-drive smooth pulley, Troubleshooting 144
Carriage-drive timing belt tension, Troubleshooting 144
Carriage-drive timing belt, About 97
Carriage-drive timing belt, Identified 97
Carriage-drive timing belt, Removing 262
Carriage-drive timing belt, Tension 143
Carriage-drive timing belt, Troubleshooting 144
Carriage-wheel strips, Cleaning 206
Check height difference between input and output-side of printer, About 481
Check valve 66
Check valves, About 72
Checking media-drive belt tension 321
Clean and lube rail strips, Service menu location 163
Clean carriage home sensor, Service menu location 164
Clean carriage wheels, Service menu location 164
Clean electronics box filters, Service menu location 164
Clean ionizer needles, Service menu location 163
Clean media thickness sensor roller, Service menu location 164
Clean print head orifice plates, Service menu location 163
Clean rail encoder strip, Service menu location 163
Clean service station wiper, Service menu location 163
Clean the encoder strip 142
Clean/lube service station rails, Service menu location 163
Cleaning tasks, Schedule 196
Cleaning the carriage bottom 210
Clear film, using 160
Clear media, About loading 360
CMYK 73
Comb banding ramps, Service menu location 176
Configure warming attns, Service menu location 191
Connecting the track assembly to the carriage 428
Could not reset head board FPGA 157
Coupling, Media-drive, Removing 284
CQ114-00067, Parts list 17
CQ114-00068, Parts list 17
CQ114-60115, Parts list 17

CQ114-67129, Parts list 23
CQ114-67134, Parts list 23
CQ114-67138, Parts list 23
CQ114-67143, Parts list 24
CQ114-67150, Parts list 24
CQ114-67161, Described 490
CQ114-67169, Parts list 25
CQ114-67174, Described 488
CQ114-67174, Parts list 25
CQ114-67175, Described 486
CQ114-67175, Parts list 26
CQ114-67176, Described 486
CQ114-67176, Parts list 26
CQ114-67177, Described 486
CQ114-67181, Described 489
CQ114-67181, Parts list 26
CQ114-67186, Parts list 26
CQ114-67188, Parts list 26
CQ114-67189, Described 488
CQ114-67190, Parts list 26
CQ114-67191, Parts list 26
CQ114-67193, Parts list 26
CQ114-67xxx, Parts list 27
CQ115-67027, Parts list 29
CQ115-67028, Parts list 29
CQ115-67029, Parts list 29
CQ115-67030, Parts list 29
CQ115-67031, Parts list 29
CQ115-67032, Parts list 29
CQ115-67033, Parts list 29
CQ115-67034, Parts list 29
CQ115-67035, Parts list 29
CQ115-67036, Parts list 29
CQ115-67037, Parts list 29
CQ115-67038, Parts list 29
CQ115-67039, Parts list 29
C-ring pliers, Described 490

D

Dancer bar, About 118
Data cable, Disconnecting from carriage 242
Device test wizard, Service menu location 167
Dial indicator for high-resolution encoder hub, Described 488
Dial indicator tool 467
Dial indicator used to set media-drive belt tension 489
Dial indicator, tool used for carriage gross saber angle 486
Direction media should unwrap from supply spool 360
Disable on-head system, Service menu location 178
Door-open switch, Reconnect 474
Drain waste from service station, Service menu location 164

E

E-HB-3 (01200003) 157
E-IO-200 (010000C8) 152
Electronics box components identified 123
Electronics box cover, Installing 368
Electronics box cover, Removing 368
Electronics box fan filter, Cleaning 202
Enclosure door, Output-side, Removing 220
Enclosure, Light blocking tray, Installing 219
Enclosure, Light-blocking tray, Removing 218
Enclosure, OHS cabineting, Removing 219
Enclosures, End, Removing and installing 217
Enclosures, Removing and installing 217

Enclosures, User and service-end cabinets, Removing and installing 217
Encoder reader cable, Unplugging 241
Encoder reader, About 89
Encoder reader, Carriage - Installing 242
Encoder reader, Carriage - Removing 240
Encoder strip, Cleaning 208
Encoder strip, Rail, Installing 264
Encoder strip, Rail, Removing 264
Encoder strip, Troubleshooting 142
Environmental range 143
E-PB-1 (01300001) 152
Error code 157
01200003 157
01200005 157
Error codes, Warnings and actions 193
Error history, Service menu location 166
Error prefixes explained 193

F

Failed to initialize LVDS link to head board 157
Failed to program FPGA, Troubleshooting 157
Fan (in output-side door), Removal 222
Fan array, Exploded views 303
Fan array, Output side, Removing 304
Fan arrays, About 110
Fan arrays, Removing 303
Fan filter, Cleaning 202
Fan filter, Installing 367
Fan filter, Removing 367
Fan, ebox inlet, Location 124
Fan, ebox, exhaust, Location 123
Fan, ebox, inlet, Installing 392
Fan, ebox, inlet, Removing 392
Fan-array fan, Replacing 309
Fan-array mount, Exploded view 56
Fans in input print zone, About 110
Fans, Lamps, Installing 257
Fans, Lamps, Removing 256
Ferrite for LVDS cable, Proper location at carriage 430
Field Replaceable Module (FRM) list 14
Fill replaced printhead, Service menu location 189
Filling all printheads with ink 435, 444
Filter, Ink box, About 75
Firmware, Installing 446
Fittings to mend tubes 400
Flex cables, Installing 229
Flexible tape measure, About 491
Float sensor, About 92
Footswtich, Installing 302
Footswtich, Replacing 302
FPGA (Field-Programmable Gate Array) 148
FPGA, Troubleshooting 157
Friction pulley, Troubleshooting 144
FRM instructions (removing and installing parts) 224
FRM List 14
Front-To-Back Tilt, Carriage, Calibrating 463
FTP to printer's hard disk 447
FTPing to the printer 447

G

Gap switch, Service station, About 94
Gas spring, Door, Removing 220
Gear reduction, Media drive, About 104
Glass, Lamp, Installing 256

Glass, Lamp, Removing 255
Gross saber angle, Changing 468
Gross saber angle, Description of dial indicator tool 486
Gross saber angle, Verifying 467
Grounding straps 431

H

H2H Y Offsets, Measuring 458
H2H Y Pattern 451
Hard disk, ebox, Installing 390
Hard disk, ebox, Removing 390
Hard drive file system check, Service menu location 174
Hard drive, ebox, Location 123
Hard drive, Service menu location 165
H-block clamp, About 102
Head height calibration 470
Head height calibration, Service menu location 180
Head height, About 79
Headboard cable connection chart 232
Headboard cables, Connecting 430
Headboard cables, Disconnecting 413
Headboard FPGA programming failure 157
Headboard lights, About 88
Headboard power cables 102
Headboard power cables, About 103
Headboard pressure sensor, About 70
Headboard, About 87
Headboard, Carriage, Removing 230
Headboard, Installing 231
Headboard, Mounting screws 231
Height, Maximum difference 480
Hemostat tool, Described 487
High-resolution belt encoder reader, About 105
High-resolution encoder 276
High-resolution encoder calibration mode, Activating 279
High-resolution encoder hub, Cleaning 214
High-resolution encoder hub, Dial indicator described 488
High-resolution encoder hub, Tool used for cleaning described 489
High-resolution encoder interface lights, Diagnostic 277
High-resolution encoder interface, About 106
High-resolution encoder reader lights, About 107
High-resolution encoder ring, About 105
High-resolution encoder spacing tool 274
High-resolution encoder, Aligning 275
High-resolution encoder, Cable routing 274
High-resolution encoder, Cleaning the hub 214
High-resolution encoder, Diagnostic LED 159
High-resolution encoder, Encoder reader lights 277
High-resolution encoder, Incremental signal calibration 278
High-resolution encoder, Installation 273
High-resolution encoder, LED flashes red 159
High-resolution encoder, Removing 270
High-resolution encoder, Removing the interface cover plate 272
High-resolution encoder's readhead LEDs 277
High-resolution enocder, Automatic Gain Control LED 275
High-resolution interface, AGC, turning on 279
High-resolution media-drive encoder, Troubleshooting 159
High-resolution readhead, alignment tool described 488
Home alignment bar, Service menu location 188
Home input roller, Service menu location 188
Home output roller, Service menu location 188
Home sensor flag, removing and installing 250
Home sensor, About 89
Home sensor, Removing 249

Home sensor, Troubleshooting 149
Home service station, Service menu location 187
Home UV shutters, Service menu location 187
Horizontal dot accuracy, Service menu location 176
Humidity specifications 143

I

I/O Board, About 128
I/O board, connections listed 128
I/O board, Troubleshooting 162
I/O controller board, Installing 385
I/O controller board, Removing 383
I/O controller, Location 123
Idler roller user-end of input-side, Exploded view 55
Idler roller, About 109
Idler, Removing 259
Image sensor height & position, Service menu location 183
Inaccurate ink counts, Troubleshooting 150
Initial ink fill, Service menu location 178
Ink / air thermistors, Service menu location 177
Ink box filter, About 75
Ink boxes, About 73
Ink count, Troubleshooting 150
Ink drop size variations, Troubleshooting 150
Ink filters, About 81
Ink filters, Permanent (above ink pumps), About 72
Ink homoginizer, Exploded view 35
Ink profilers, About 74
Ink pump check valve, About 72
Ink pumps, About 71
Ink pumps, Exploded view 32
Ink pumps, Service menu location 177
Ink pumps, Troubleshooting 151
Ink purges, About 91
Ink shaker, About 75
Ink shaker, Exploded view 35
Ink shaker, Troubleshooting 152
Ink tube bundle, Replacing 437
Ink tube, Removal at permanent ink filter 401
Ink tube, Replacing 436
Ink tube, Y-split above ink filters near ink pumps, About 72
Ink tubes, About 73, 101
Ink tubes, Cutting at carriage for tube bundle replacement 440
Ink tubes, disconnecting from printhead reservoirs 414
Ink tubes, Disconnecting from reservoirs 243
Ink tubes, Label before cutting 411
Ink tubes, Resolving ink tubes that are too short at carriage 430
Ink, About 73
Ink, Draining from all printheads 406, 437
Ink-box filters, Troubleshooting 152
Ink-line check valve, Troubleshooting 151
Ink-tube joiner, Installing 245
Input actuator assembly, Installing 293
Input print zone, About 110
Input roller actuator assembly, Removing 291
Input roller assembly, Calibrating 293
Input roller home calibration, Service menu location 181
Input roller, About 113
Input side, Location 12
Input-side fan array, Install 308
Input-side fan array, Remove 307
Install shipping restraint, Service menu location 190
Interface plate, Calibrating the saber angle 460
Invalidate calibration, Service menu location 186

Ionizer internal power-out cable, Installing 374
Ionizer internal power-out cable, Removing 372
Ionizer power supply, About 111
Ionizer relay test, Service menu location 170
Ionizer, About 111
Ionizer, Clean tips with brush 211
Ionizer, Troubleshooting 160
IP address, How to find the printer's IP address 446

J

J1 pinout 131
J10 pinout 137
J11 pinout 137
J13 pinout 138
J14 pinout 138
J16 pinout 138
J2 pinout 132
J21 pinout 138
J22 pinout 139
J23 pinout 139
J24 pinout 139
J26 pinout 139
J27 pinout 140
J28 pinout 140
J29 pinout 141
J3 pinout 133
J4 pinout 134
J6 pinout 136
J7 pinout 136
J8 pinout 136
J9 pinout 137

K

K, Black ink 73

L

Lamp bulb, Installing 254
Lamp bulb, Removing 253
Lamp bulbs, About 80
Lamp cover, Service-end, Installing 252
Lamp cover, Service-end, Removing 252
Lamp cover, User-end, Installing 252
Lamp cover, User-end, Removing 251, 252
Lamp fan assembly, Installing 257
Lamp fan assembly, Removing 256
Lamp fan, Installing a single fan 258
Lamp fan, Removing a single fan 257
Lamp glass, Installing 256
Lamp glass, Removing 255
Lamp power cables, Removing and installing 243
Lamps, About 79
Lamps, Troubleshooting 146
LCD touchscreen calibration, Service menu location 180
Level the printer 331
Leveling pads, Adjusting 481
Leveling the printer 480
light 219
Light-blocking tray, Removing 218, 219
Limit switches for takeup, About 118
Loading clear media, About 360
Loading media 360
Loading narrow media, Tip 360
Loctite 222 273
Log error history, Service menu location 166

Log files, Accessing 446
Log system info, Service menu location 166
Loss lock error 155
L-shaped ratchet screwdriver, About 487
Lubriating the rail strips, Troubleshooting 149
LVDS cable, About 102
LVDS cable, Disconnecting from carriage 242
LVDS cable, Troubleshooting 155
LVDS chip, Detecting a damaged one 156
LVDS chips 156
LVDS chips, IO board 156
LVDS error, Troubleshooting 155
LVDS, Service menu location 165

M

Maintenance reminders, Service menu location 163
Maintenance schedule 196
Manifold, Installing 240
Manifold, Removing 238
Manual bidi calibration, Service menu location 184
Manually FTPing the software BIN to the printer's hard disk 448
Maximum height difference 480
Measure media width, Service menu location 189
Media alignment bar alignment, Service menu location 185
Media alignment bar, About 113
Media alignment bar, Troubleshooting 160
Media belt tension, Troubleshooting 160
Media detection sensor, About 114
Media detection sensor, Install 328
Media detection sensor, Remove 328
Media detection sensor, Troubleshooting 160
Media drive encoder lights 277
Media feed accuracy test, all, Service menu location 176
Media feed accuracy test, one, Service menu location 175
Media feed calibration, Service menu location 184
Media motion velocity test, Service menu location 170
Media roll, Direction it should unwrap on supply 360
Media rollers, centering 320
Media sensor position calibration, Service menu location 185
Media thickness sensor calibration, Service menu location 180
Media thickness sensor roller, Cleaning 213
Media thickness sensor test, Service menu location 167
Media thickness sensor, About 114
Media Thickness Sensor, Calibrate 328
Media thickness sensor, Install 327
Media thickness sensor, Remove 327
Media thickness sensor, Troubleshooting 160
Media-drive belt assemblies, Exploded view 54
Media-drive belt tension specification 323
Media-drive belt tension, Tool used to set tension, Described 489
Media-drive belt, About 108
Media-drive belt, Installation 315
Media-drive belt, Installing 318
Media-drive belt, lapping 326
Media-drive belt, Loosening belt tension 280
Media-drive belt, Removing 311
Media-drive belt, Tensioning 288
Media-drive belt, Troubleshooting 160
Media-drive coupling tool, torque wrench described 488
Media-drive coupling, Removing 284
Media-drive motor coupling, About 104
Media-drive motor coupling, Installing 285
Media-drive motor coupling, Troubleshooting 159
Media-drive motor encoder, About 105

Media-drive motor encoder, Troubleshooting 159
Media-drive motor stub shaft, About 104
Media-drive motor, About 104
Media-drive motor, Exploded view 55
Media-drive motor, Installing 284
Media-drive motor, Removing 280
Media-drive motor, Stub-shaft key 286
Media-drive motor, Torque conversion chart for coupling 287
Media-drive motor's encoder, Installing 290
Media-drive motor's encoder, Removing 288
Media-drive part numbers 57
Media-drive roller, About 108
Media-drive rollers, measuring tracking 325
Media-drive rollers, verify parallelism 324
Media-drive, Belt, moving belt with velocity 325
Media-drive, tracking 324
Media-thickness sensor, Calibrate 465
Meniscus vacuum, Setting pressure level 403
Middle vacuum fan array, Install 306
Middle vacuum fan array, Remove 305
Mid-spool supports, About 330
Mid-spool supports, Using 116, 366
Motherboard, About 126
Motherboard, ebox, Installing 387
Motherboard, ebox, Location 124
Motherboard, ebox, Removing 385
Motor control board, About 124
Motor control board, Installing 370
Motor control board, Location 124
Motor control board, Removing 368
Motor control board, Troubleshooting 162

N

Narrow media, Tip on loading 360
NEMA L6-20R receptacle 129
Non-reflective material, Troubleshooting 160
N-up pins, About 111

O

OHS (off-head supply) 71, 90
OHS (off-head supply) controller, About 76
OHS (off-head supply), About 65
OHS assemblies, Troubleshooting 150
OHS Cabinet, Removing and installing 219
OHS controller 76
OHS controller board, Removing and installing 402
OHS controller, Troubleshooting 152
Open loop actuator test, Service menu location 174
Open loop service station test, Service menu location 174
Operating environment 143
Orientation 12
Output roller home calibration, Service menu location 182
Output roller, About 114
Output roller, Removing 296
Output side, Location 12
Output-roller actuator assembly, Installing 297
Output-roller actuator assembly, Removing 296
Output-roller, Calibrating 297
Output-side door, Removing 220
Output-side vacuum fan array, Install 305
Output-side vacuum fan array, Removing 304

P

Password protected service menu 406, 437, 449

Pen-plate screws, Torque specification 466
Permanent ink filter, Installing 402
Permanent ink filter, Removing 401
Pin & alignment bar position, Service menu location 185
Pinch roller, Output, Removing 296
Pinout for J1 131
Pinout for J10 137
Pinout for J11 137
Pinout for J13 138
Pinout for J14 138
Pinout for J16 138
Pinout for J2 132
Pinout for J21 138
Pinout for J22 139
Pinout for J23 139
Pinout for J24 139
Pinout for J26 139
Pinout for J27 140
Pinout for J28 140
Pinout for J29 141
Pinout for J3 133
Pinout for J4 134
Pinout for J6 136
Pinout for J7 136
Pinout for J8 136
Pinout for J9 137
Pivot screws, Carriage side plates, Wrench sizes 463
Pod test, Service menu location 174
Post printhead-replacement calibrations 230
Power cable, About 129
Power cable, Disconnecting main 412
Power distribution board, Installing 379
Power distribution board, Removing 378
Power Off Scenarios, Managing 216
Power supply lights for 38/24v, About 162
Power supply, 38/24v, Troubleshooting 162
Power supply, 38v/24v, About 125
Power, Turn off printer power 411
Powering off the printer 216
Powering up the printer 434, 444
Power-out, internal cable, Installing 378
Power-out, internal cable, Removing 376
Prep for shipping, Service menu location 178, 190
Pre-print zone, About 110
Pressure pump 70
Pressure pump, Service menu location 177
Pressure pump, Troubleshooting 151
Pressure pumps, About 70
Pressure sensor 70
Pressure sensor, About 70
Pressure sensor, Carriage - removing the tube 230
Pressure tube, Cutting for replacement 420
Pressure tube, Removing from air manifold 239
Prime bar, Printing 435, 445
Prime ink pumps, Service menu location 176
Print diagnostic plot, Service menu location 165
Print faux 662, Service menu location 176
Print jet statistics, Service menu location 166
Print prime bars, Service menu location 175
Print quality, Service menu location 165
Print test page, Service menu location 176
Print test, Service menu location 175
Print zone, Troubleshooting 142
Print zones, About 110

Printer Logs 446
Printhead installation, Torque screwdriver 486
Printhead interface plate, About 86
Printhead interface plate, Troubleshooting 148
Printhead interface plate's alignment pin, Exploded view 39
Printhead interface plates, Exploded view 39
Printhead purge 91
Printhead reservoirs, About 82
Printhead reservoirs, Troubleshooting 147
printhead saber angle, Calibrating 460
Printhead thermistors, About 83
Printhead wipers, Troubleshooting 153
Printhead Y calibration, Service menu location 183
Printhead y-axis calibration 450
Printhead y-axis, special tool 486
Printheads de-primed, Troubleshooting 150
Printheads filling with ink 435, 444
Printheads, About 85
Printheads, emptying all printheads of ink 406, 437
Printheads, Flex cables, Installing 229
Printheads, Installing 226
Printheads, Manually cleaning 199
Printheads, Purge ink from 224
Printheads, Removal 224
Printheads, Screw torque
12 in-lb 228
Printheads, Troubleshooting 147
Profiler test, Service menu location 168
Profilers, About 74
Profilers, Troubleshooting 152
Purge 91

Q

Quick-disconnect 292

R

Racks, Lower, Installing 332
Racks, Upper, Installing 333
Rail actuator assembly, Exploded view 61, 62
Rail actuator errors 160
Rail actuator motor, Troubleshooting 160
Rail actuator, Installing 301
Rail actuator, Removing 298
Rail bearing strips, Installing 267
Rail bearing strips, Removing 266
Rail encoder strip, Cleaning 208
Rail encoder strip, Installing 264
Rail encoder strip, Removing 264
Rail exploded views 297
Rail height calibration (same as head height) 470
Rail height motor test, Service menu location 168
Rail lubrication, Troubleshooting 149
Rail motion, Service menu location 165
Rail motor errors 160
Rail motor erros 160
Rail part numbers 298
Rail strips, About 99
Rail strips, Cleaning and lubricating 206
Rail strips, Troubleshooting 145
Rail wheel strips, Installing 267
Rail wheel strips, Removing 266
Raise rail, bar, and rollers, Service menu location 191
Readhead, High-resolution, About 105
Receptacle 129

Relative humidity 143
Remove the user-end and service-end enclosures 217
Removing the upper trolley plate 246
Replace printhead, Service menu location 189
Replace service station wiper, Service menu location 164
Replace UV lamp bulb or bulbs, Service menu location 163
Replace UV lamp filters, Service menu location 164
Reservoirs, About 82
Reset carriage home position, Service menu location 187
Reset image sensor, Service menu location 190
Reset rail home position, Service menu location 187
Restore hard drive to defaults, Service menu location 191
Roller, alignment bar, sensor and switch test, Service menu location 168
Rollfed media control (method A), Service menu location 191
Roll-to-roll alignment tool configuration, Foam rollers 335
Roll-to-roll kit, Installation 331
Roll-to-roll kit, Required tools 331
Roll-to-roll spool alignment tool 490
Roll-to-roll, About 114
Roll-to-roll, Configure printer's menu for 331

S

Saber angle, Changing 468
Saber angle, Gross, About 87
Saber angle, printhead (not gross), Calibrating 460
Saber angle, Printhead, About 87
Saber angle, Verifying 467
Schedule of maintenance tasks 196
Service end, Location 12
Service menu, Password 406, 437, 449
Service station access sensor, About 94
Service station actuator, About 94
Service station actuator, Installing 398
Service station actuator, Removing 398
Service station bolts, Removing 394
Service station cables 393
Service station cables, Connections identified 393
Service station calibration, Service menu location 181
Service station drain hose, Disconnecting 394
Service station drain hose, Install 395
Service station drain spigot, Open/ close position 212
Service station drain spigot, Replacing 395
Service station encoder and encoder reader, Troubleshooting 153
Service station encoder reader, About 95
Service station encoder, About 94
Service station home sensor flag, About 95
Service station hose clamp (for Shop-Vac hose), Removing and installing 393
Service station latch, Releasing 225
Service station tests, Service menu location 169
Service station wiper motor, Installing 399
Service station wiper motor, Removing 399
Service station wiper slide rails, Clean and lubricate 203
Service station wiper, Cleaning 206
Service station wipers, Calibrating 475
Service station wipers, Replacing 205
Service station, About 91
Service station, Draining 212, 435, 444
Service station, Empty / close 212
Service station, Exploded view 49
Service station, Installing 394
Service station, Removing 393
Service station, Troubleshooting 153
Service-end of the carriage, Front-to-back calibration 464
Service-end rail encoder not sensed 160

Set clock, Service menu location 190
Set head vacuum, Service menu location 189
Set screws, Carriage side plates, Wrench sizes 463
Setup LED 277
Sevice station, Service menu location 165
ShopVac internal power-out cable, Installing 376
ShopVac internal power-out cable, Removing 374
Shop-Vac, About 91
Show autoH2H Y calibration, Service menu location 192
Single lamp fan, Installing 258
Single lamp fan, Removing 257
Software BIN, Described 157
Software update 446
Spacer tool for high-resolution readhead alignment 488
Special Tools 486
Specified environmental range 143
Spigot, Open and closed positions 212
Split vacuum tubes, Troubleshooting 147
Static-control strap 156
Supply arms, installing 332
Supply spool (optional), About 115
Supply spool, Aligning 336
Supply spool, Alignment tool described 490
Supply spool, Troubleshooting 161
Support rollfed
yes, Service menu location 191

T

Tables, Leveling 482
Take enhanced picture of dots, Service menu location 173
Take picture of white paper, Service menu location 172
Take raw picture of dots, Service menu location 173
Takeup assembly, About 117
Takeup spool motor, About 118
Takeup spool, Alignment tool described 490
Takeup spool, Taping media to takeup spool, About 360
Temperature 143
Temperature specifications 143
Test media drive control system, Service menu location 171
Thermistors, About 83
Thermistors, Cable connection locations on headboard 83
Thermistors, Installing 237
Thermistors, Removing 235
Thermistors, Troubleshooting 147
Theta-z, About 87
Thrust bearings, Illustration of assembly 283
Thrust bearings, Taping into idler adjustment block during service 282
Tool needed for printhead installation, Torque screwdriver 486
Tool to adjust printhead y-axis 486
Tool used to align high-resolution readhead 488
Tool used to align roll-to-roll, Described 490
Tool used to clean high-resolution encoder hub, Described 489
Tool used to set media-drive belt tension 489
Tool used with high-resolution encoder hub installation 488
Tool used with media-drive coupling 488
Tools, Calipers for measuring distances at media-drive and idler rollers, Described 490
Tools, c-ring pliers for media-drive bearing blocks, Described 490
Tools, vacuum tube clamps 487
Torque specifications, Pen plate screws 466
Torque wrench description, For media-drive coupling 488
Track assemblies, Field Replaceable Modules 405
Track assembly, About 101
Track assembly, Installing 418
Track assembly, Replacing 405

Track assembly, Troubleshooting 155
Track attachment at carraige, Exploded view 52
Track grounding, About 103
Track replacement, Included fasteners 407
Track replacement, Included tube joiners and plugs 407
Track replacement, Preparing new track 408
Track tubes and cables, Disconnecting from carriage 413
Track, Attaching to rail 419
Track, Cleaning under track above rail 418
Track, Connecting track bracket to carriage 428
Track, Disconnecting bracket from carriage 417
Track, Disconnecting trolley-attachment bracket from carriage 417
Track, Removing from the rail-attachment bracket 417
Trolley assembly, Exploded view 36
Trolley attachment bracket, Disconnect from carriage 417
Trolley attachment bracket, Removing and installing 244, 417
Trolley wheels, Troubleshooting 149
Trolley, Lower, Troubleshooting 149
Trolley, Upper, Removing 246
Trolley, Upper, Troubleshooting 149
Trolley-attachment bracket, removing from carriage 417
Tube joiner, Installing in larger-diameter ink tube 409
Tube joiners, A list 400
Tube mender 245
Tubes 75
Turn ON / OFF white ink shaker, Service menu location 178
Turnbuckle screw, Wrench size 463

U

Unable to fill the printheads with ink, Troubleshooting 152
Uninterrupted power pupply, About 130
Updating firmware 446
Upper trolley, Removing 246
Upper trolley, Troubleshooting 149
User end, location 12
User-end of the carriage, Front-to-back calibration 464
User-End of the track assembly, Disconnecting 419
User-end rail encoder not sensed 160
UV current sense method, Service menu location 192
UV lamp bulb, Installing 254
UV lamp bulb, Removing 253
UV lamp fans, Installing 257
UV lamp fans, Removing 256
UV lamp filters, Replacing 199
UV lamp glass, Installing 256
UV lamp glass, Removing 255
UV lamp shutter motion failure, Troubleshooting 148
UV lamp test, Service menu location 170
UV lamps shutter calibration, Service menu location 182
UV lamps, Installing a single fan 258
UV lamps, Removing a single fan 257
UV Power Supply for FB500, Part number 15
UV power supply for FB500, Removing 379
UV power supply for FB700, Removing 380
UV power supply, About 126
UV power supply, FB500, Installing 380
UV power supply, FB700, Installing 382
UV power supply, Location 123
UV power suuply for FB500, Installing 372
UV power suuply for FB500, Removing 370

V

Vacuum accumulator 66, 68
Vacuum accumulator, About 68

Vacuum accumulator, Troubleshooting 150
Vacuum air-inlet filter 68
Vacuum air-inlet filter, About 68
Vacuum assembly 65
Vacuum assembly air flow diagram 67
Vacuum assembly diagram 66
Vacuum assembly, About 65
Vacuum assembly, Troubleshooting 150
Vacuum bottom of carriage, Service menu location 164
Vacuum fan test, Service menu location 167
Vacuum level, Adjustment screw locations 178
Vacuum level, Setting level 403
Vacuum power supply, About 69
Vacuum power supply, Troubleshooting 151
Vacuum pressure, Service menu location 165
Vacuum pump 66, 68
Vacuum pump motor 68
Vacuum pump motor power 68
Vacuum pump, About 68
Vacuum pump, Exploded view 33
Vacuum pump, Service menu location 177
Vacuum pump, Troubleshooting 150
Vacuum regulator 68
Vacuum regulator, About 68
Vacuum regulator, Troubleshooting 150
Vacuum reservoir, Exploded view 34
Vacuum restrictor, About 69
Vacuum restrictor, Troubleshooting 151
Vacuum sensor 66, 68
Vacuum sensor, About 69
Vacuum sensor, Troubleshooting 151
Vacuum trays, About 110
Vacuum tube clamp, Described 487
Vacuum tube, Cutting for replacement 420
Vacuum tube, Removing from air manifold 239
Vacuum tubes, About 84
Vacuum tubes, Clamping to service printheads 236
Vacuum tubes, Troubleshooting 147
Verify H2H Y Alignment, Service menu location 165
Vertical dot accuracy, Service menu location 176
Visually examine LEDs, Service menu location 172

W

Wall receptacle 129
Warning message prefixes explained 195
Warnings and actions list, Service menu location 166
Waste ink jug, Open and closed positions 212
Waste ink jug, Troubleshooting 154
Waste-ink jug, About 96
Wheels, Installing 480
Wheels, Removing 482
Whitepoint, Service menu location 172
Wiper Height, Calibrating 475
Wiper height, Checking 478
Wiper left/right tilt, Callibrating 476
Wiper tilt, output-side, Checking 476
Wiper x-axis alignment 478
Wiper y-axis alignment, Calibrating 475
Wiper-carriage home sensor, About 93
Wipers, Troubleshooting 153
Wiring diagram for FB500 carriage assembly 77, 78
Wiring diagram for FB700 main electronics 122
Wiring diagram for main electronics 120
Wiring diagram for the FB500 electrical box 119, 121

Y

Y-axis bar, Exploded view 38
Y-axis calibration, adjusting 454

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