Cezanne Print System

Part No. 9104549

User's Guide V1.0

Cezanne Print System User's Guide

Published by:

Buskro Ltd.
1738 Orangebrook Court, Unit #1
Pickering, ON, L1W 3G8
Canada
Tel.: (905) 839-6018
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First Edition, 2007

Printed in Canada

Manual History

Version	Date	Description	ECO No.
1.0	01-Oct-07	Manual Released.	N/A

Atlas Print System

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General Information

Chapter 1

1.1 Description

The Atlas inkjet system is a series of print technologies that includes the Monet, Renoir, and Cezanne inks to provide high-resolution images at high speeds on a wide variety of materials. Although all three inks provide outstanding image quality, they have varying strengths. As a result, it is important to choose the ink that best suits the situation.

Although the ink delivery systems and printheads are almost identical between the three inks, they are not interchangeable. As a result, it is important not to mix inks or unapproved fluids in the same ink delivery system or printhead otherwise ***serious*** damage can occur.

> **Note:** Never mix inks or other fluids otherwise serious and permanent damage can occur to the system. This applies to both Buskro and non-Buskro fluids. For example, a mixture of Monet and Cezanne ink will cause permanent damage to a printhead.

1.1.1 Cezanne Ink

The Cezanne ink is a fast-drying solvent-based ink formulation that is recommended for applications where dry time and adhesion are the critical parameters. However, in order to obtain faster-dry times, the ink is more volatile. As a result, some operating stability is sacrificed. In general, where reliability and stability are paramount, the traditional Monet ink (a non-volatile solvent-based ink with moderate drying characteristics) should be used. Some important facts about Cezanne:

- **Recommended ink temperature is 25-30^{o}C.** It is recommended to keep the system in an environment that does not exceed this temperature otherwise it may result in more frequent wiping or purging due to lines in the print.

- **Due to the fast drying properties of the ink, the printhead itself can dry out quickly.** This is an area where the Monet ink is superior. During periods of inactivity (between prints), the printhead can dry out resulting in a fuzzy leading edge or even missing jets. This can normally be recovered by printing, but it may also require a maintenance wipe or purge (Section 5.1). In order to assist with this problem, Compose has the ability to automatically print a full test pattern to assist in recovering jets during set periods of inactivity (Section 6.1.3).

- **Use in a well-ventilated area.**

- **Monet ink can be printed at higher speeds.** While Cezanne print quality can be maintained at high speeds, Monet has greater stability at high speeds. As a result, it is capable of maintaining quality print at higher speeds than Cezanne.

- **Cezanne ink is darker than Monet.** Based on tests on standard materials, Cezanne was found to be consistently darker than Monet (the magnitude of difference varies with substrate and DPI). In some cases, Cezanne was more than 50% darker at 660 DPI.

- **Cezanne ink dries faster than Monet.** Based on tests on standard materials with and without the use of a heater, Cezanne consistently matched or exceeded Monet in terms of reduced dry times. While dry times were equal on porous materials (nearly instantaneous), a significant improvement was seen on glossier materials.

1.2 System Drawings

1.2.1 Inkwell Dimensions (BK700)

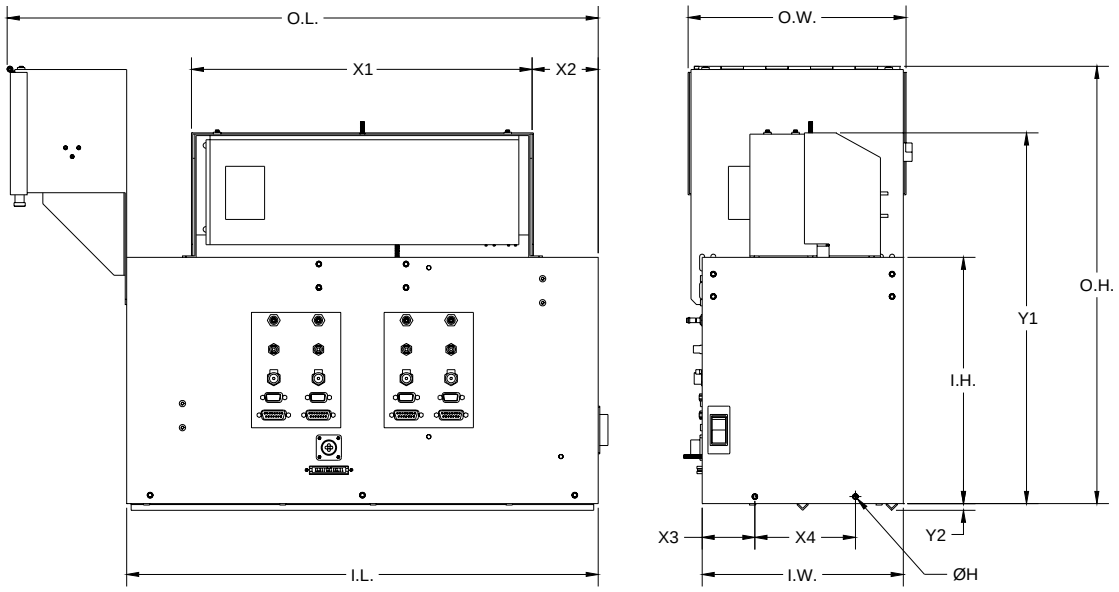


Table 1-1: *Inkwell Dimensions (BK700)*

Symbol	Description	Dimensions	
O.L.	Overall Length	26.45”	672 mm
O.W.	Overall Width	9.75”	248 mm
O.H.	Overall Height	19.51”	496 mm
I.L.	Inkwell Length	21.10”	536 mm
I.W.	Inkwell Width	9.00”	229 mm
I.H.	Inkwell Height	11.00”	279 mm
X1	Power Supply Assembly Width	15.24”	387 mm
X2	Power Supply Assembly Location	2.96”	75 mm
X3	Mounting Hole Location (Both Sides of Inkwell)	2.36”	60 mm
X4	Mounting Hole Spacing (Both Sides of Inkwell)	4.50”	114 mm
Y1	Height from bottom of inkwell to top of power supply cover	16.56”	421 mm
Y2	Rib height	0.30”	8 mm
H	Mounting Holes (2 on each side of Inkwell)	10-32 UNF (4X)	

1.2.2 Inkwell Dimensions (BK1700, BK1710, and BK1720)

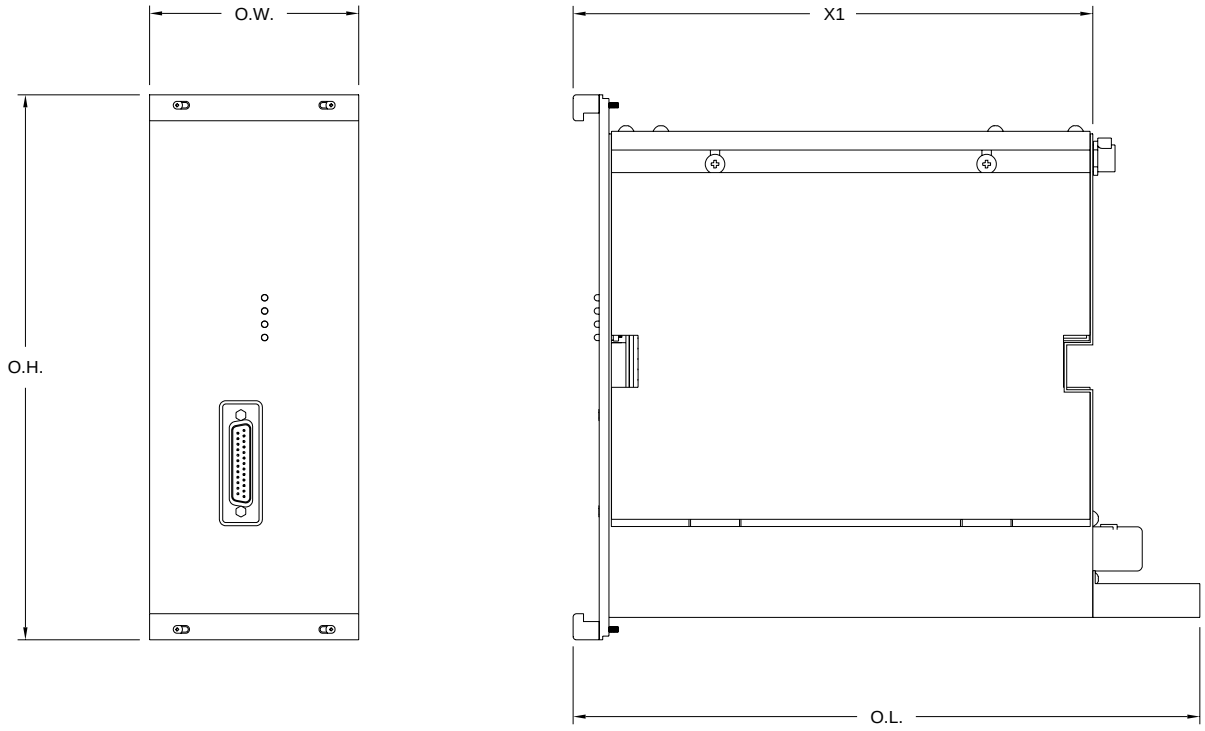


Table 1-2: *Inkwell Dimensions (BK1700, BK1710, and BK1720)*

Symbol	Description	Dimensions	
O.L.	Overall Length	12.05”	306 mm
O.W.	Overall Width	4.02”	102 mm
O.H.	Overall Height	10.48”	266 mm
X1	Inkwell Length	9.99”	254 mm

1.2.3 Printhead Dimensions (Cezanne 1250)

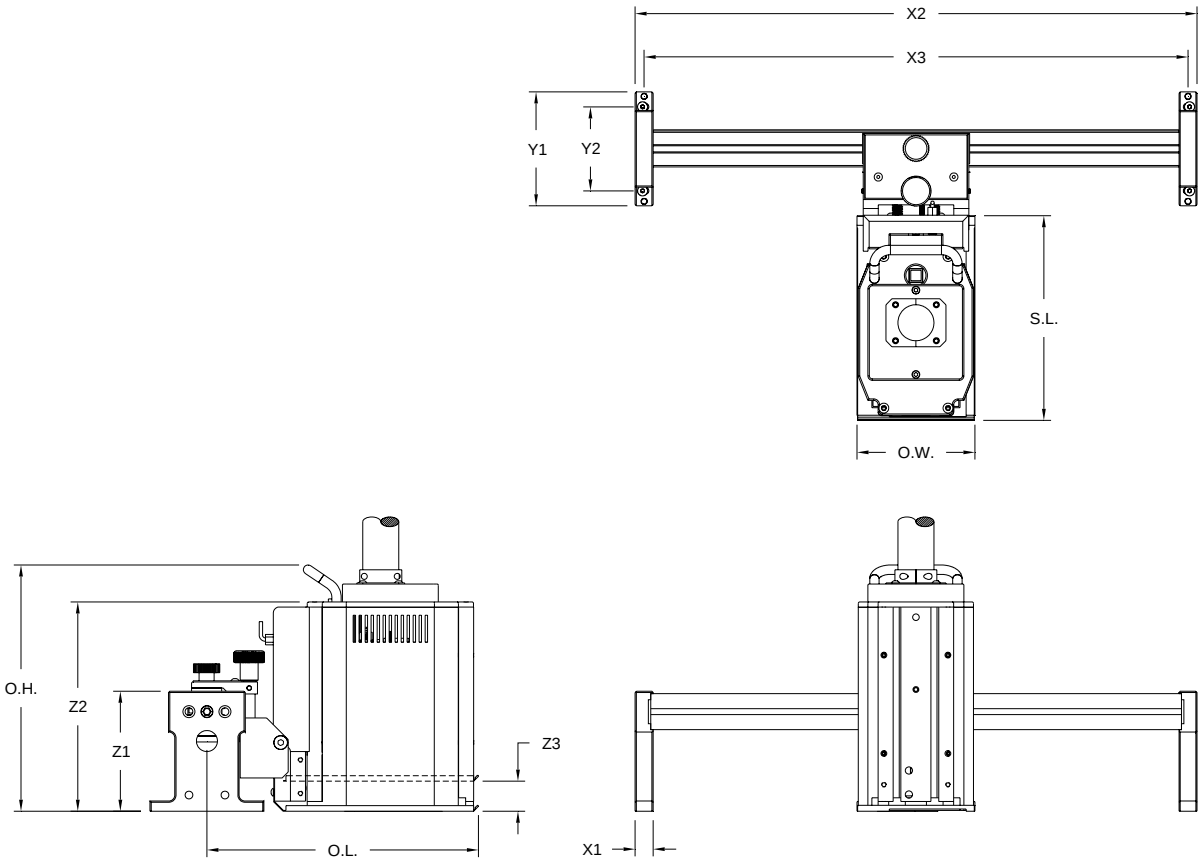


Table 1-3: *Cezanne 1250 Printhead Dimensions on Standard BK79B-22 Bridge*

Symbol	Description	Dimensions	
O.L.	Overall Length from center of rail	11.32”	288 mm
O.H.	Overall Height	10.26”	261 mm
O.W.	Overall Width (Shield Width)	4.92”	125 mm
Z1	Bridge rail mount height	5.00”	127 mm
Z2	Height to top surface	8.80”	224 mm
Z3	Height adjustment	1.25”	32 mm
S.L.	Overall Shield Length	8.53”	217 mm
X1	Bridge rail mount thickness	0.75”	19 mm
X2	Overall width of bridge	23.43”	595 mm
X3	Bridge rail mount mounting screw spacing	22.68”	576 mm
Y1	Bridge rail mount length	4.75”	121 mm
Y2	Bridge rail mount mounting screw spacing	3.50”	89 mm

1.2.4 Printhead Components (Cezanne 1250)

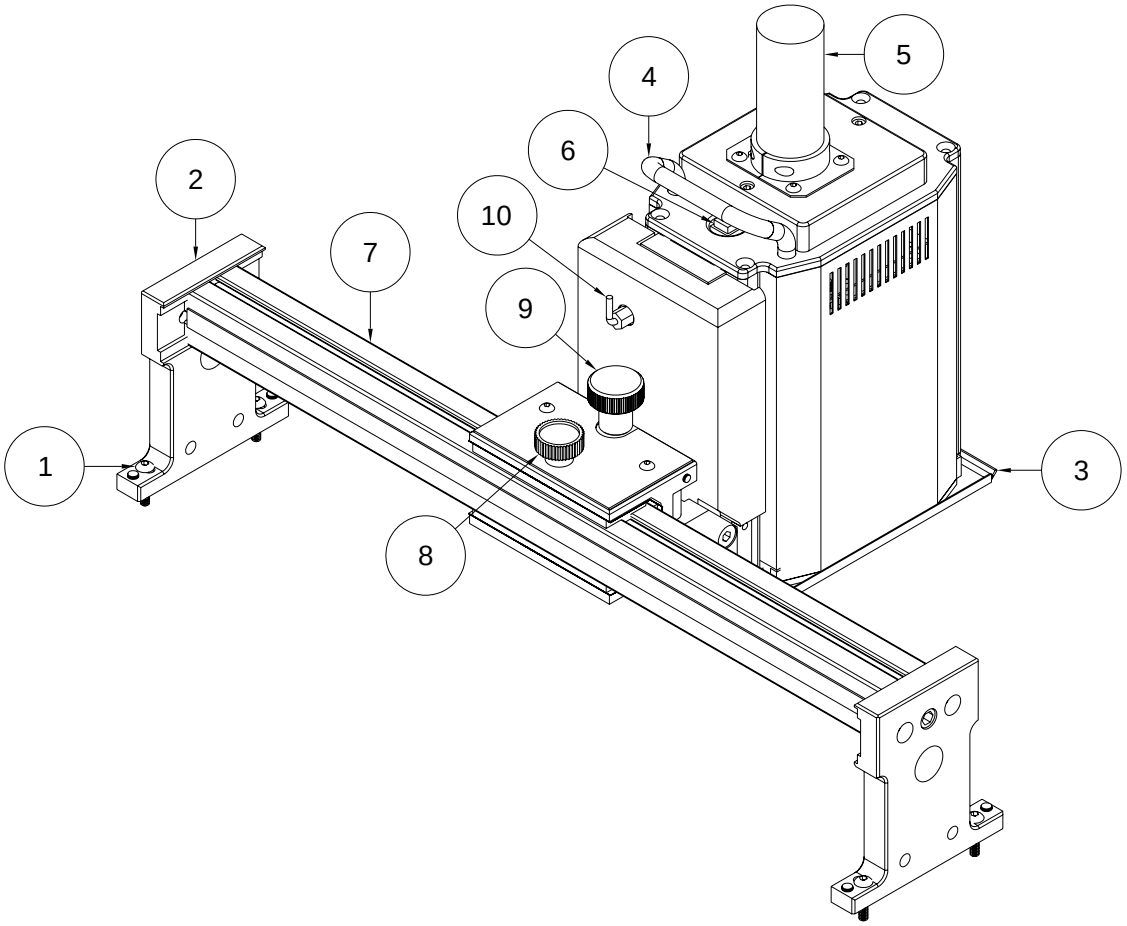


Table 1-4: *BK79 Series Printhead Components (Cezanne 1250)*

Item	Description
1	Mounting screw (four ¼-20 UNC)
2	Bridge rail mount (two per bridge)
3	Printhead shield
4	Printhead handle
5	Printhead umbilical (connect to inkwell)
6	Priming button
7	Bridge rail (standard 22” but other lengths are available)
8	Lateral adjustment release knob
9	Height adjustment knob
10	Release knob for maintenance

1.2.5 Printhead Specifications (Cezanne 1250)

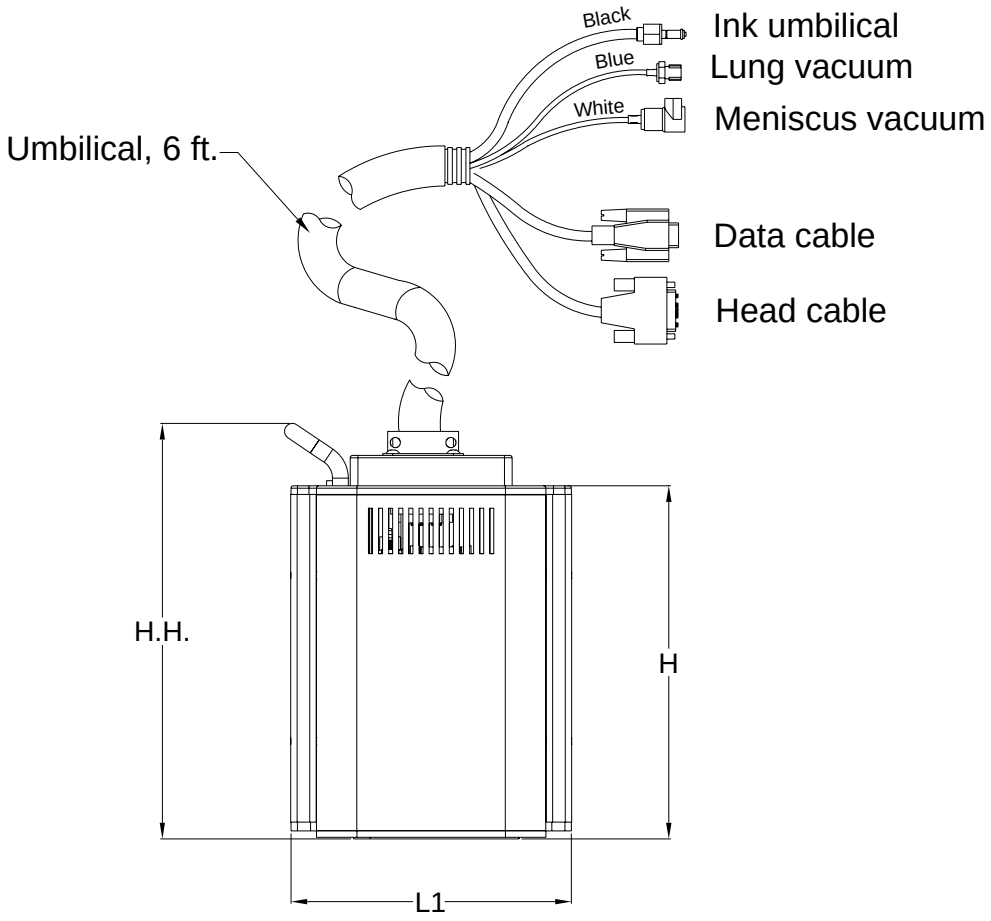


Table 1-5: *Printhead Specifications (Cezanne 1250)*

General		
Vertical Resolution	256 DPI	
Horizontal Resolution	110, 220, 330, 440, 660 DPI	
Vertical Print Swath	1”	25.4 mm
Horizontal Print Swath	39”	990.6 mm
Physical		
Printhead Length (L1)	6.93”	176 mm
Printhead Height to Handle (H.H.)	10.27”	261 mm
Printhead Height (H)	8.73”	222 mm
Printhead Weight	9 lbs	4 kg

1.2.6 Printhead Dimensions (Cezanne 2250 and 3250)

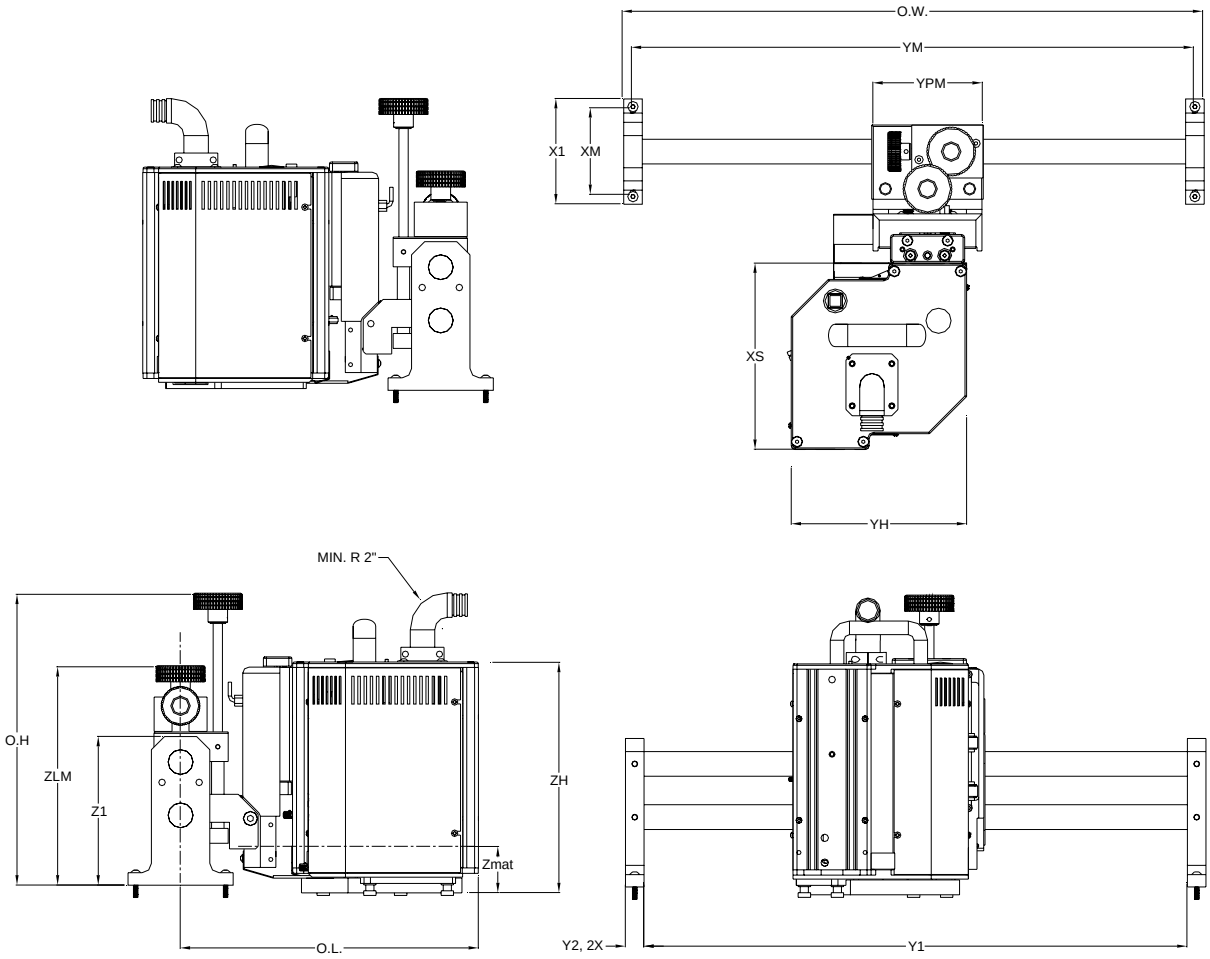


Table 1-6: *Cezanne 2250/3250 Printhead Dimensions on BK80B-22" Bridge*

Symbol	Description	Dimensions	
O.L.	Atlas 2250/3250 print head overall length from center of rail	12.89"	327 mm
O.W.	Overall width of bridge	23.45"	596 mm
O.H.	Overall height to height adjustment knob	11.74"	298 mm
X1	Bridge rail mount length	4.25"	108 mm
XM	Bridge rail mount mounting screw spacing	3.50"	89 mm
XS	Atlas print head overall shield length	7.53"	191 mm
Y1	Bridge exposed length	21.95"	556 mm
Y2	Bridge rail mount thickness	0.75"	19 mm
YH	Atlas print head shield width	7.08"	179 mm
YPM	Print head mount width	4.50"	114 mm
Z1	Bridge rail mount height	6.00"	152 mm
ZLM	Height of locking mechanism	8.82"	224 mm
Zmat	Height adjustment	1.50"	38 mm
ZH	Atlas print head height	8.94"	227 mm

1.2.7 Print head Components (Cezanne 2250 and 3250)

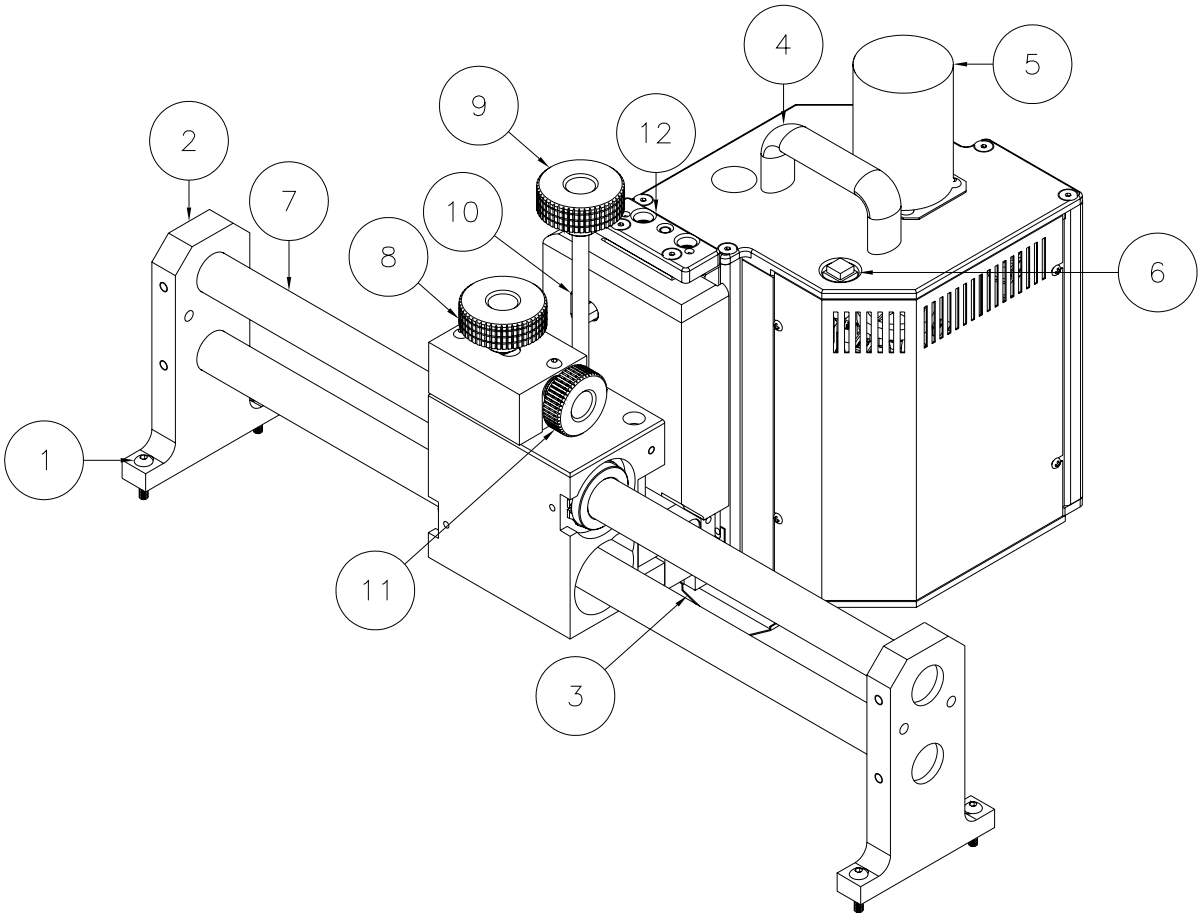


Table 1-7: *Cezanne 2250/3250 Printhead Components*

Item	Description
1	Mounting screw (four ¼-20 UNC)
2	Bridge rail mount (two per bridge)
3	Printhead shield
4	Printhead handle
5	Printhead umbilical
6	Priming button
7	Bridge rail (2 per Bridge)
8	Lateral adjustment release knob
9	Height adjustment knob
10	Release knob for maintenance
11	Lateral Fine Adjustment Knob
12	Angular Adjustment

1.2.8 Cezanne 2250/3250 Printhead Specifications

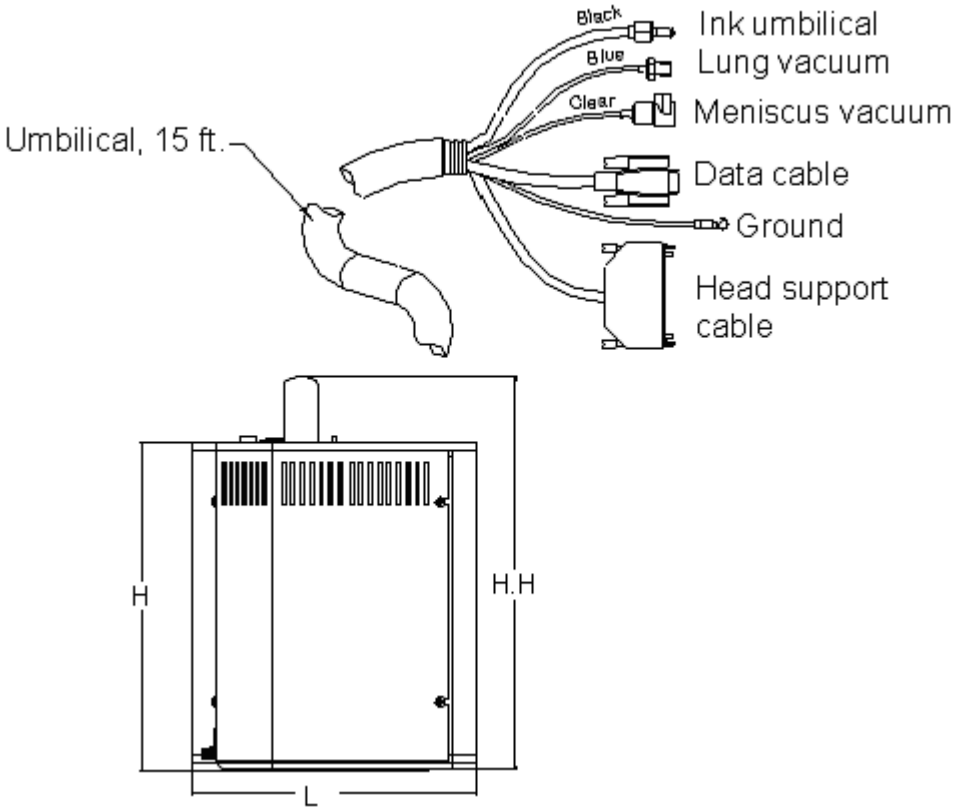


Table 1-8: *Cezanne 2250/3250 Printhead Specifications*

General		
Vertical Resolution	256 DPI	
Horizontal Resolution	110, 220, 330, 440, 660 DPI	
Vertical Print Swath	2” or 3”	51 mm or 76 mm
Horizontal Print Swath	39”	990.6 mm
Physical		
Length (L)	7.53”	191 mm
Overall Height to Handle (H.H.)	10.43	265 mm
Enclosure Height (H)	8.73”	222 mm
Weight	18 lbs	8.1 kg

Note: The 2250 and 3250 are only available on the BK1710 and BK1720 controllers. Contact Buskro for more details.

System Support Box (BK700)

Chapter 2

2.1 Introduction

The system support box is essentially the inkwell containing the ink delivery system and all related electronics. The architecture of the system can be seen in Figure 2-1 while the components can be seen in Figure 2-2.

Figure 2-1: *System Support Box Architecture*

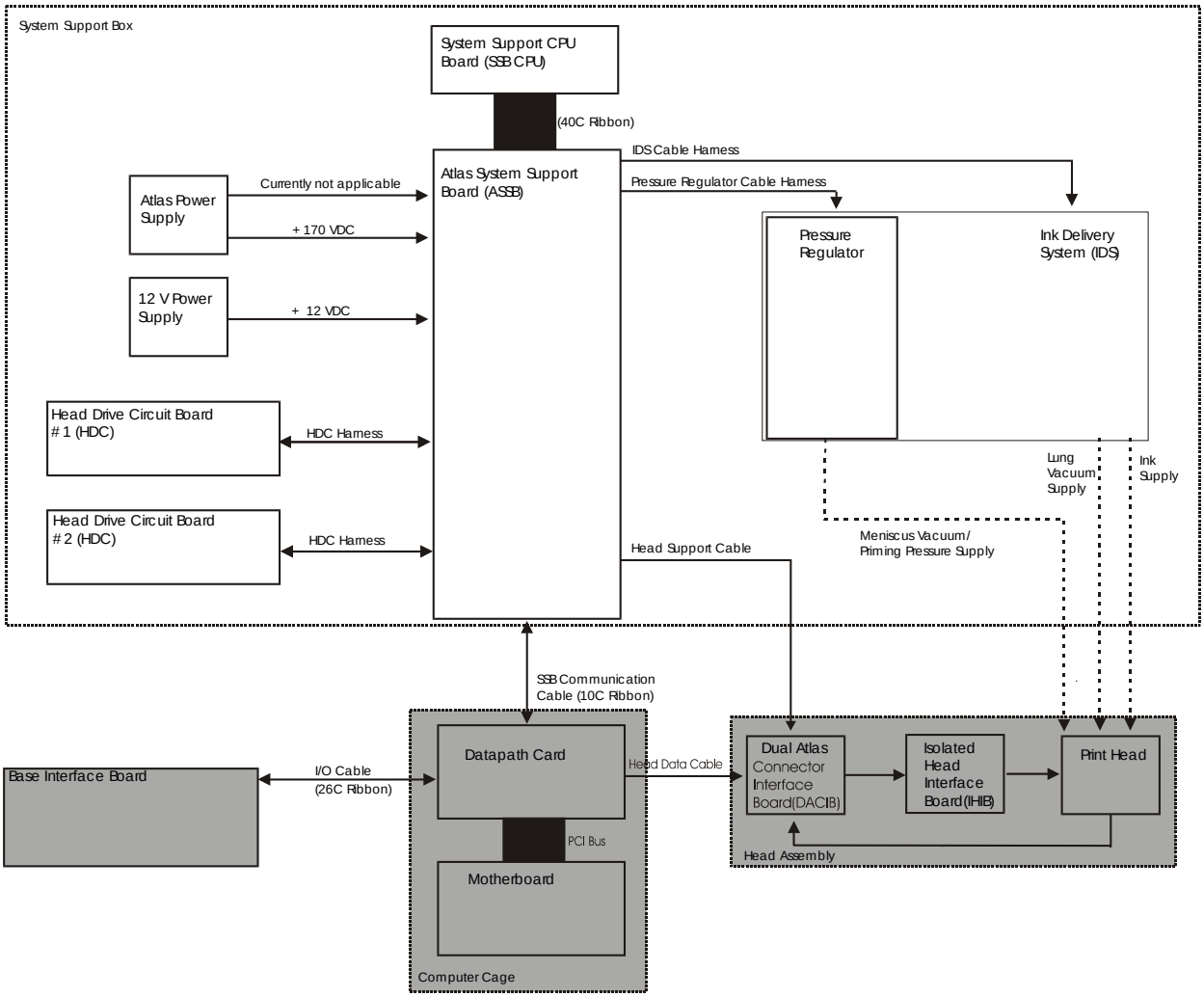
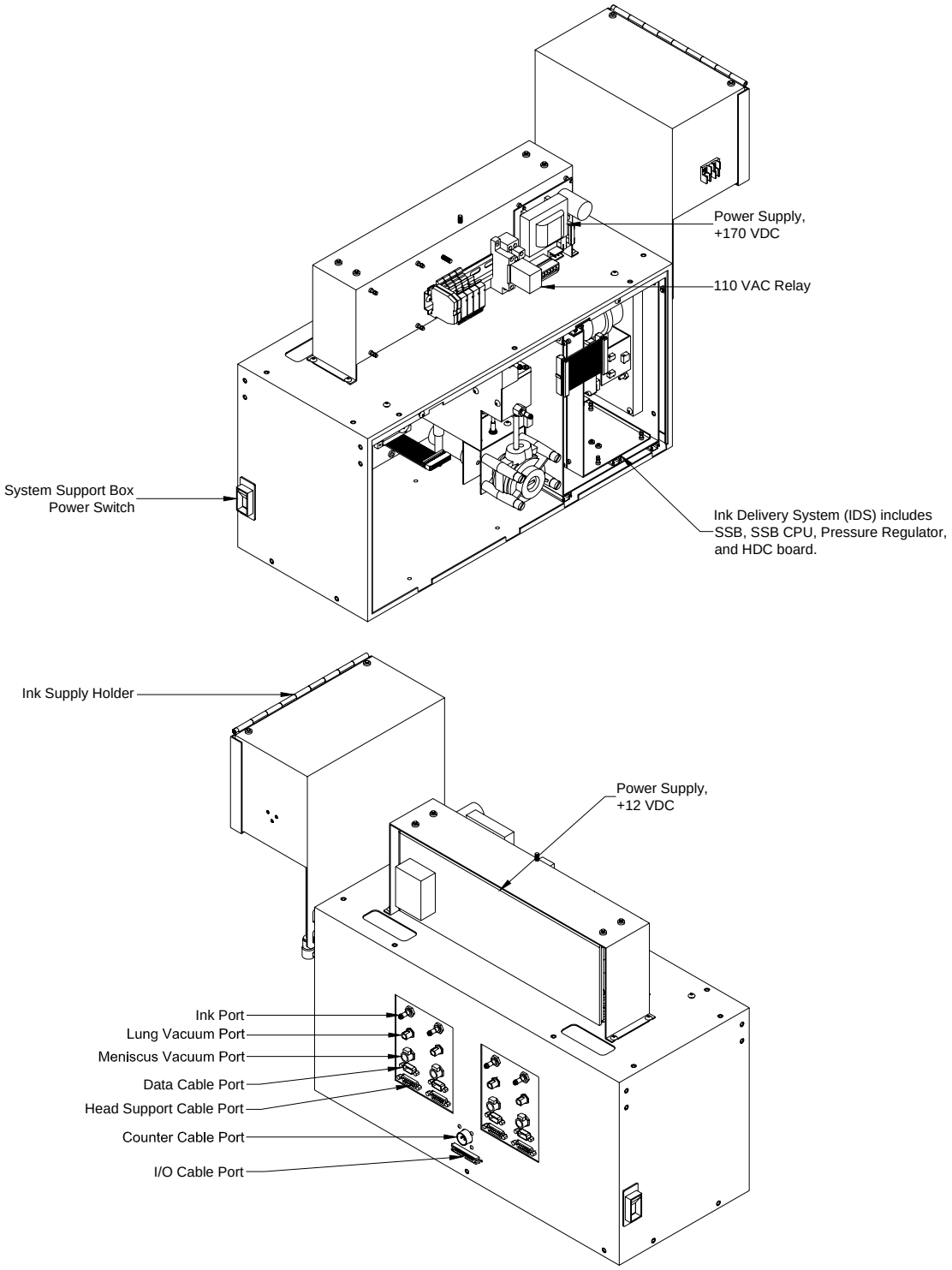


Figure 2-2: *System Support Box Components*



2.2 Atlas System Support Board (ASSB)

The Atlas System Support Board (Figure 2-3) interconnects all the components required to drive the print system. It also monitors and controls the ink level in the printhead and sets the fire-pulse amplitude delivered by the HDC to the printhead. The main connections on the ASSB are summarized in Table 2-1.

Figure 2-3: *Atlas System Support Board*

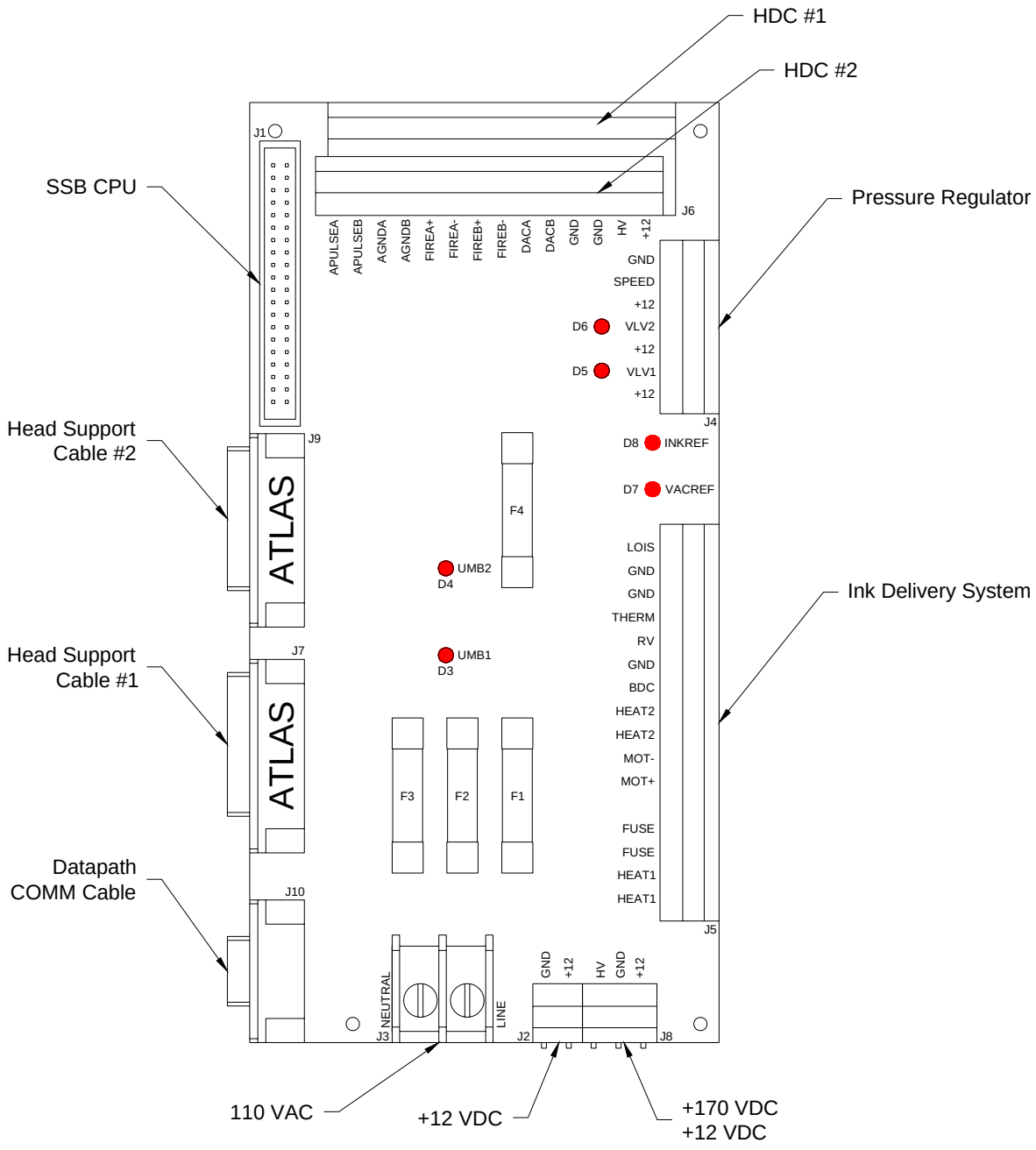


Table 2-1: *Atlas System Support Board Connections*

Component	Description
J1	Connection for System Support Board CPU (SSB CPU)
J2	Connection for Atlas Power Supply (12 VDC)
J3	Connection for incoming power (120 VAC)
J4	Connection for the pressure regulator
J5	Connection for the Ink Delivery System (IDS)
J6	Connection for the Head Drive Circuit Board (HDC)
J7	Connection for the Head Support Cable #1
J8	Connection for the Atlas Power Supply (+170 VDC, +12 VDC)
J9	Connection for the Head Support Cable #2
J10	Connection for the Datapath Card Cable
F1	Fuse, +12 VDC (2 A)
F2	Fuse, 120 VAC Line (3 A)
F3	Fuse, 120 VAC Neutral (3 A)
F4	Fuse, +12 VDC (1 A)
D3	UMB #1 LED indicates printbar #1 solenoid valve is open (printbar filling with ink)
D4	UMB #2 LED indicates printbar #2 solenoid valve is open (printbar filling with ink)
D5	Priming Valve #1 LED indicates priming valve #1 is active
D6	Priming Valve #2 LED indicates priming valve #2 is active
D7	Vacuum Refresh LED (On Elite only)
D8	Ink Pump LED indicates that ink is being pumped from the IDS

2.3 System Support Board CPU II (SSB CPU II)

The System Support Board CPU II (Figure 2-4) provides the intelligence for the ASSB. The SSB CPU II performs the following functions:

1. Communicates with the Datapath card via the ASSB to display error icons and printhead temperature and voltage readings.
2. Controls opening and closing of the Ink Supply Line Valve in the printhead.
3. Commands the Pressure Regulator to prime a printhead when the priming button is pressed.
4. Controls the sequence for refilling the printhead with ink.
5. Controls low-on-ink sensing using the float switch installed in the subcontainer.

Figure 2-4: *System Support CPU II Board*

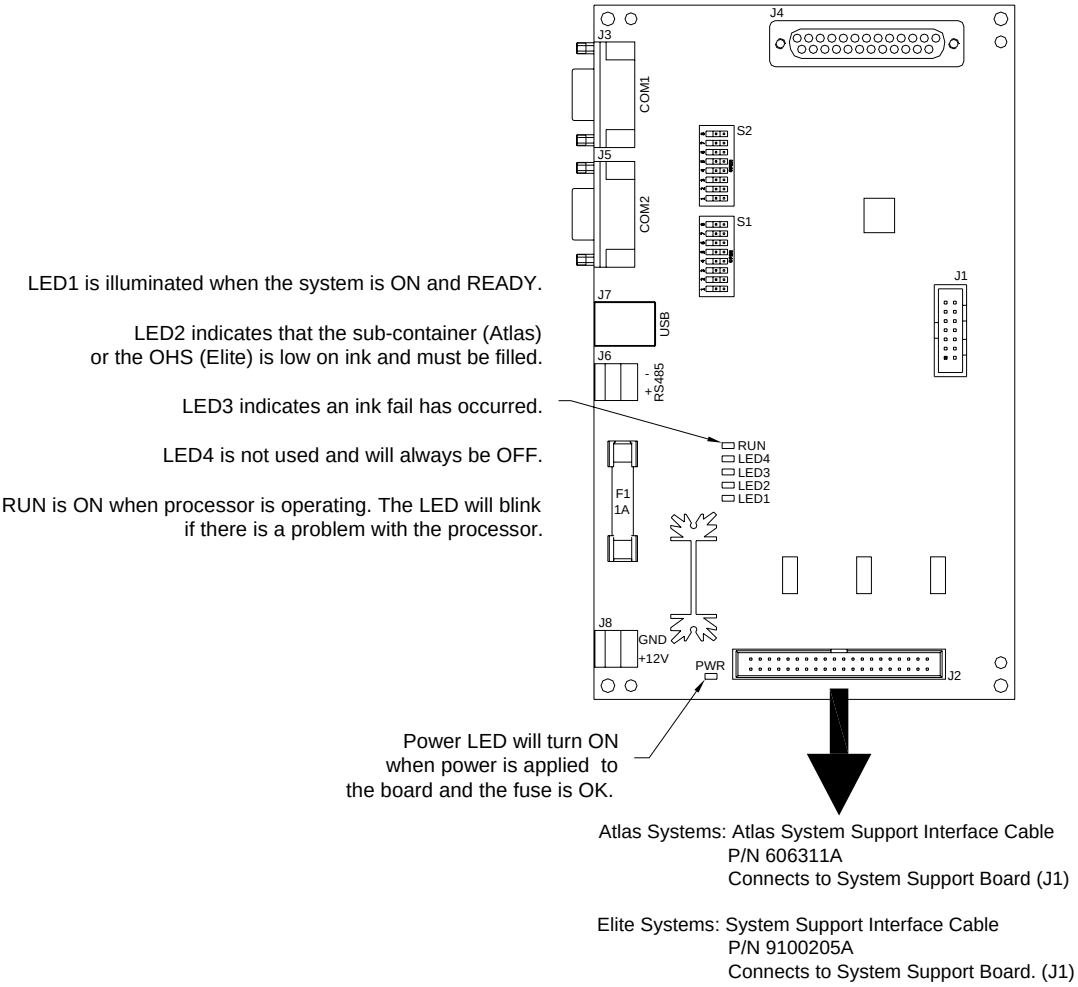


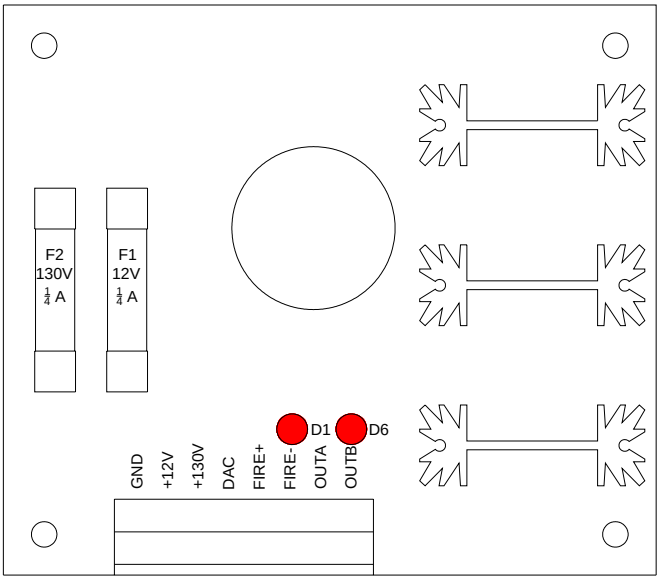
Table 2-2: *System Support CPU II Board - S1 DIP Switch Settings (S2 all off, Open = Off)*

DIP	Setting	Function
1 and 2	1:2 = OFF:OFF 1:2 = ON:OFF 1:2 = OFF:ON 1:2 = ON:ON	For Print Bars 1 and 2 For Print Bars 3 and 4 For Print Bars 5 and 6 For Print Bars 7 and 8
3	ON OFF	Atlas Printheads Elite Printheads
4 and 5	4:5 = OFF:OFF 4:5 = ON:OFF 4:5 = OFF:ON 4:5 = ON:ON	IAP 100% Jetting Voltage (for Elite) IAP 25% Jetting Voltage IAP 33% Jetting Voltage IAP 50% Jetting Voltage
6	ON OFF	10% Printhead Heater Power (For low temperature inks like Cezanne) 100% Printhead Heater Power
7	ON OFF	Re-program the Altera CPLD Normal Mode
8	ON OFF	Enter Firmware Update Mode Normal Mode

2.4 Head Drive Circuit Board (HDC)

The Head Drive Circuit Board (Figure 2-5) generates the high and low voltage signal required to fire the printhead and also regulates the printhead voltage. When the low voltage signal is received by the HDC board, LED D1 turns on. When the high voltage signal is outputted by the HDC board in order to fire the printhead, LED D6 turns on.

Figure 2-5: *Head Drive Circuit Board*



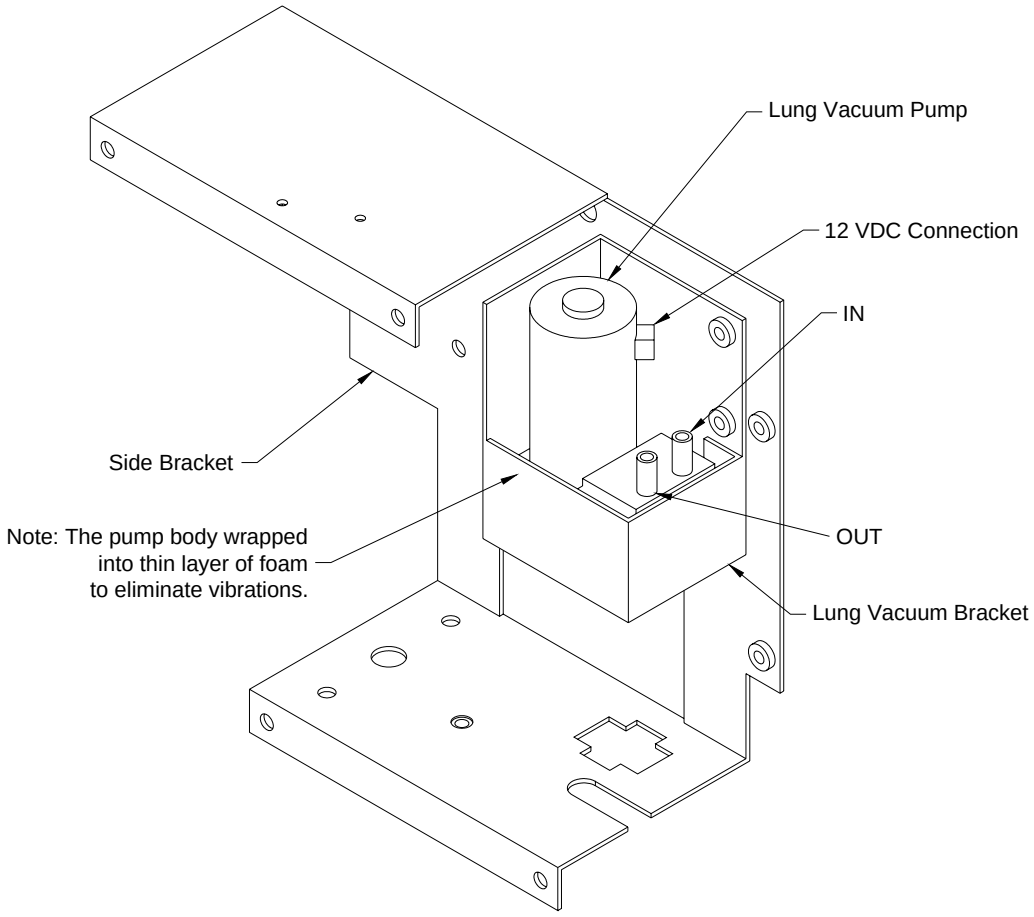
2.5 Lung Vacuum

The purpose of the lung vacuum is to remove gas from the ink which can form bubbles that cause jetouts. The lung vacuum should measure in the range of 14 to 24 inches of mercury (in Hg). Early models utilized a –16 in Hg pump while newer models will be equipped with –23.5 in Hg pumps to increase the efficiency of gas removal. If the vacuum drops below 14 in Hg, there may be a loss in jets during printing. If a large volume of ink is purged out at a given time, wait at least two minutes before printing in order to provide time for the Lung Vacuum to remove trapped gasses in the ink.

2.5.1 Lung Vacuum Function

The lung vacuum is generated by the 12 VDC pump shown in Figure 2-6. To generate the lung vacuum, the IDS must be powered ON by switching the main switch on the side of the system support box. Each time the system support box is powered ON, the lung vacuum pump will ***instantaneously*** generate lung vacuum.

Figure 2-6: *Lung Vacuum Pump in the IDS*

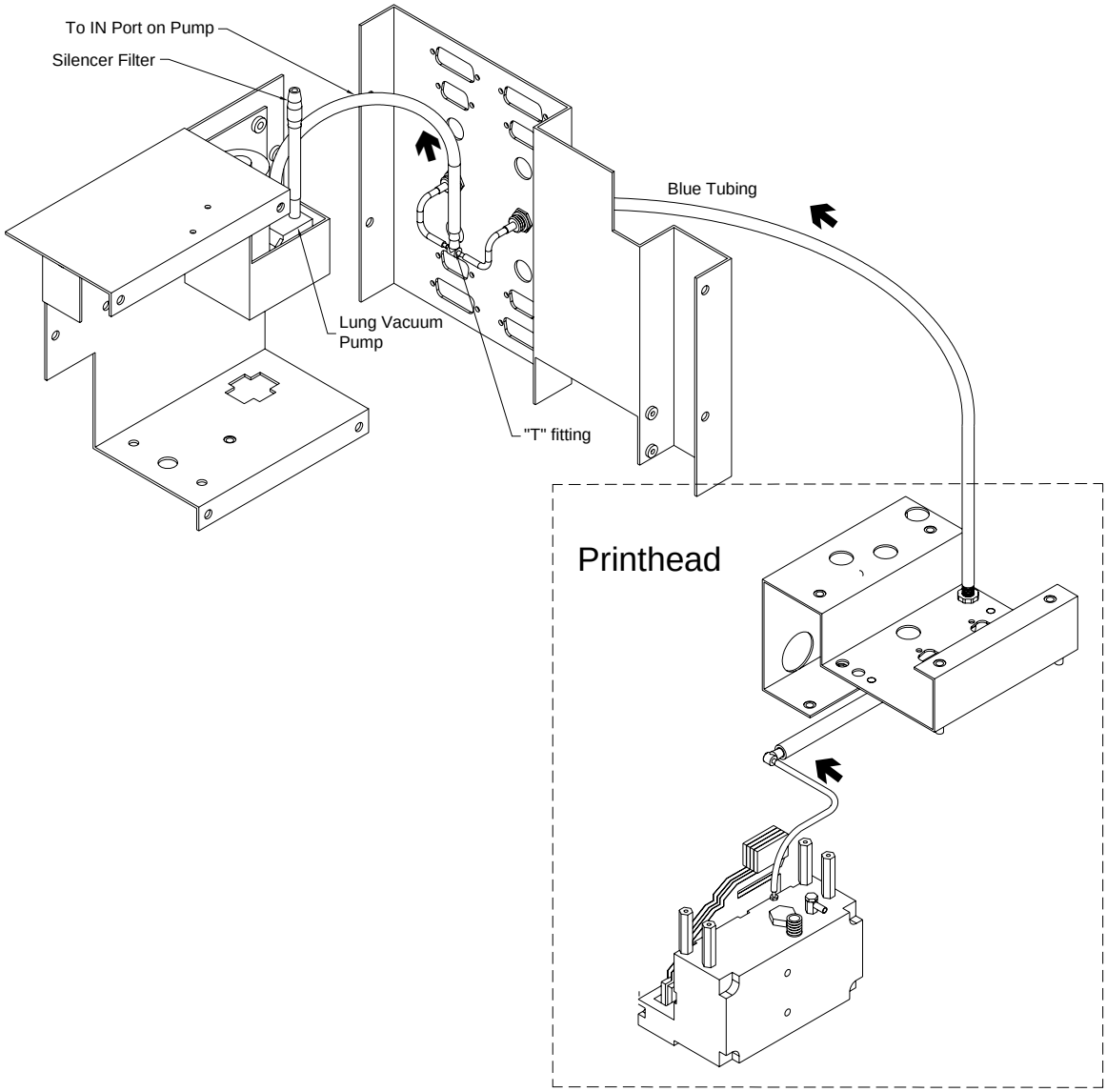


Note: The lung vacuum pump must be on whenever the IDS is on. It will make a slight "buzzing" sound under normal conditions.

2.5.2 Physical Connection

The lung vacuum pump is connected to the printhead through a series of hoses and fittings. The vacuum supply route can be seen in Figure 2-7.

Figure 2-7: *Lung Vacuum Supply Route (BK791 Shown)*



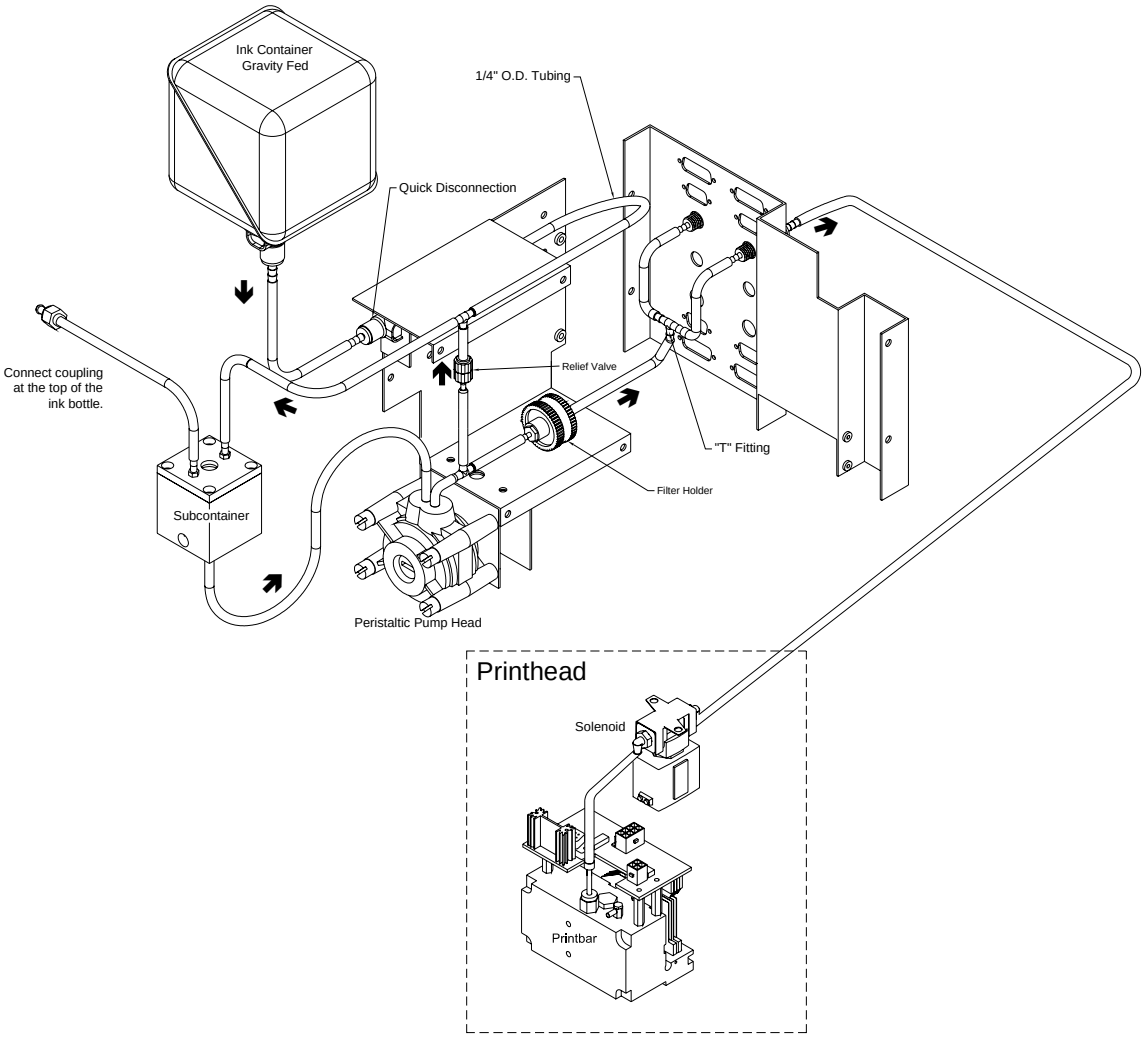
2.6 Ink Supply Line

The ink supply line controls the flow of ink from the ink container (located in the ink bottle holder) to the printhead. The sequence of the ink flow from the container is summarized below and can be seen in Figure 2-8:

1. Ink starts in the ink container and is gravity fed into the subcontainer.
2. The subcontainer float switch determines the amount of ink in the subcontainer.
3. The peristaltic pump head pumps ink through the filter. If pressure reaches 20 psi, ink is released back into the subcontainer through the relief valve.
4. The hydrophilic filter filtrates ink before exiting the system support box.
5. Ink travels from the system support box to the printhead.
6. The printhead solenoid valves open and close to supply ink to each printbar individually.

Note: The vent tubing must be connected to a coupling at the top of the ink bottle holder box. The vent tube eliminates vacuum developing in the subcontainer that could cause an ink level misreading.

Figure 2-8: *Ink Supply Route*



Note: The relief valve is an essential part of the assembly. It is required to avoid a pressure build-up in the ink lines. The relief valve must be installed with the arrow pointing in the direction shown above.

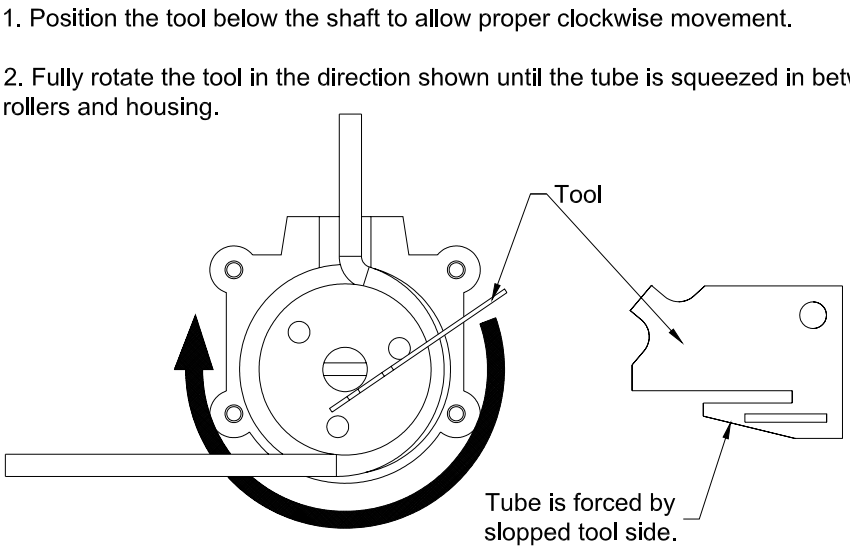
2.6.1 Maintaining the Ink Line

In order to ensure optimum performance of the IDS, it is important to replace the relief valve, filter, and the tubing line running through the peristaltic pump once every six months. In order to do this, refer to the following instructions:

1. Turn off the system support box.
2. Using a flat-head screwdriver, turn the peristaltic pump clockwise in order to remove ink from the ink line between the pump and the relief valve.
3. Connect the syringe to the coupling on the subcontainer and remove the ink.
4. Replace the relief valve. The arrow on the relief valve must match the direction of ink flow indicated in Figure 2-8.
5. Replace the filter in the filter holder. Note that the filter used depends on the type of ink.
6. Replace the tubing in the peristaltic pump using the tool provided (Figure 2-9).
7. Ensure all lines are connected properly and are tie-wrapped on all fittings to prevent ink leakage.

Note: It may be necessary to replace the tubing in the peristaltic pump more frequently than specified above. This should be determined by regularly inspecting the tubing for signs of wear.

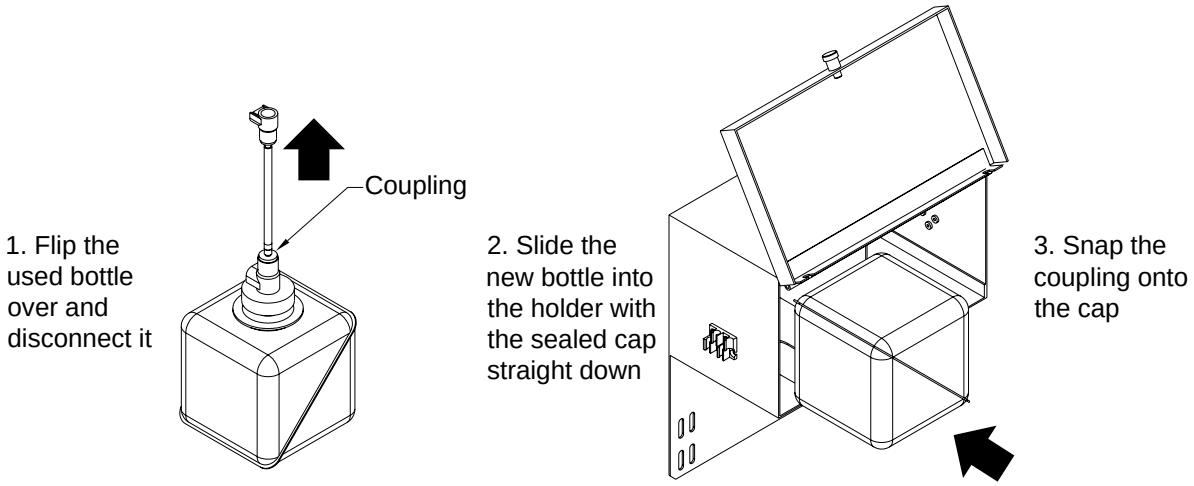
Figure 2-9: *Installing Tubing in the Peristaltic Pump*



2.6.2 Replacing and Maintaining the Ink Bottle

When replacing an ink bottle, follow the instructions shown in Figure 2-10.

Figure 2-10: *Ink Bottle Replacement*



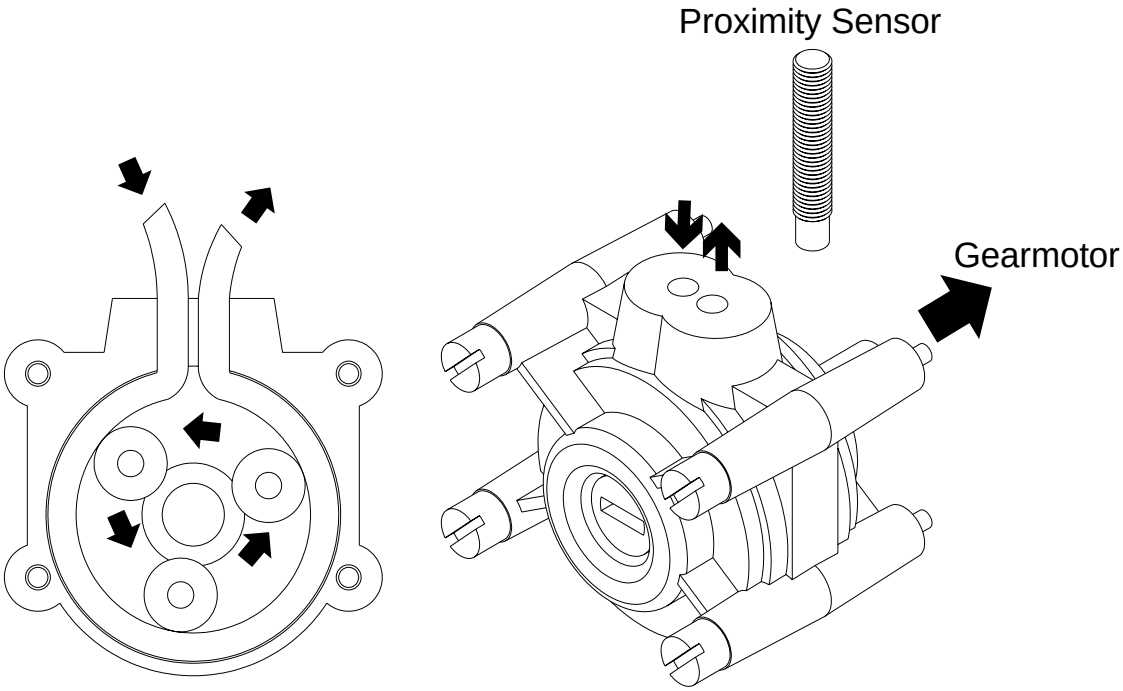
Note: Ink should ***NOT*** be recycled by placing used ink back into the bottle. Not only can this damage the head, but may also contaminate the filter and result in the ink line bursting due to back pressure.

Never use unapproved fluids with the system (including other inks) as this could cause permanent damage to the system. For example, mixing Monet and Cezanne inks will cause permanent damage to the system. Buskro is not responsible for any damage caused by improper use.

2.6.3 Peristaltic Pump Head

The peristaltic pump head is responsible for pumping ink from the subcontainer to the printhead. The number of strokes is controlled electronically by the proximity sensor installed above the pump head and the gearmotor installed over the metal coupling. The peristaltic pump head displaces a certain amount of ink per stroke. The arrows show the direction of the ink pumping (Figure 2-11). The 12 VDC gearmotor drives the pump in a counter-clockwise direction.

Figure 2-11: *Peristaltic Pump Head*

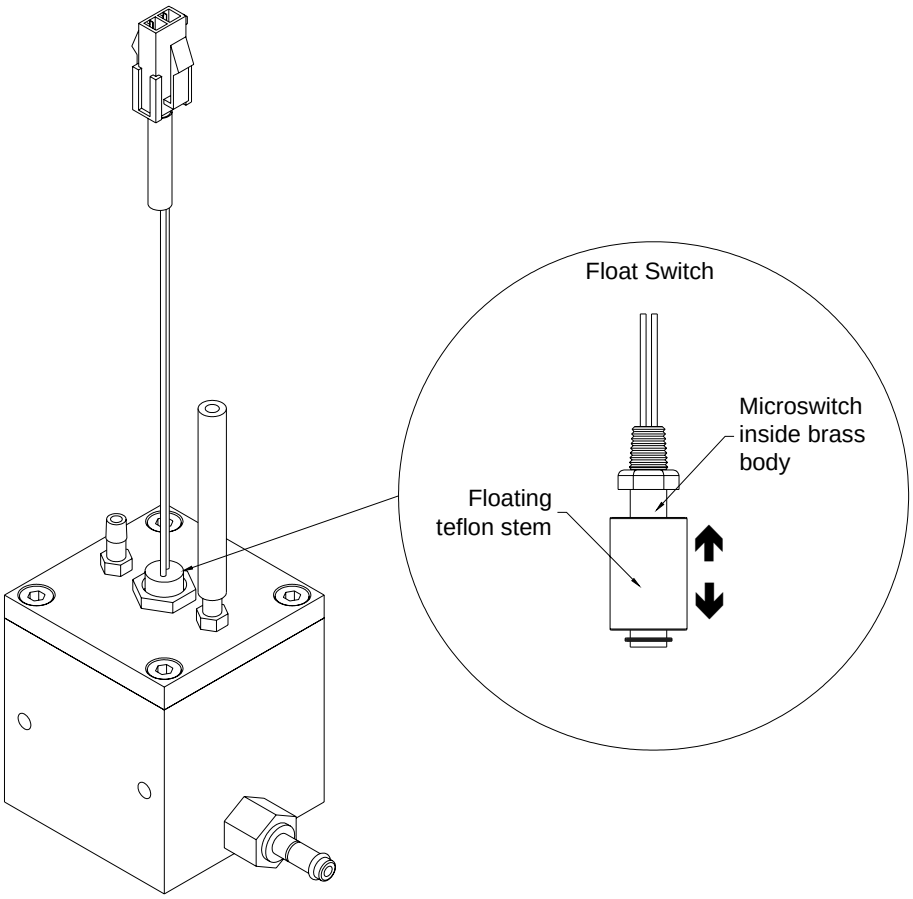


Note: Tubing must be installed properly as shown to prevent ink from pumping backwards.

2.6.4 Float Switch

The float switch (Figure 2-12) is responsible for sensing the ink level within the subcontainer.

Figure 2-12: *Subcontainer with Float Switch*



Note: If an ink low icon appears in Compose, the float switch has indicated that the ink level is low in the subcontainer.

2.7 Pressure Regulator, Meniscus Vacuum

The meniscus vacuum is responsible for maintaining a continuous negative pressure (-3.3 inches of water for 1250 printheads) required to prevent ink "weeping" (leaking out of the head) and for creating a positive purge pressure (50 inches of water) to prime the printheads. The pressure regulator generates the positive and negative pressures. The meniscus vacuum line can be seen in Figure 2-13. In order to prevent ink from being drawn into the pressure regulator, a hydrophobic filter is installed for each printbar to stop ink from passing through. This filter is also used to filter air used when purging the printhead. If ink enters the filter, it must be replaced.

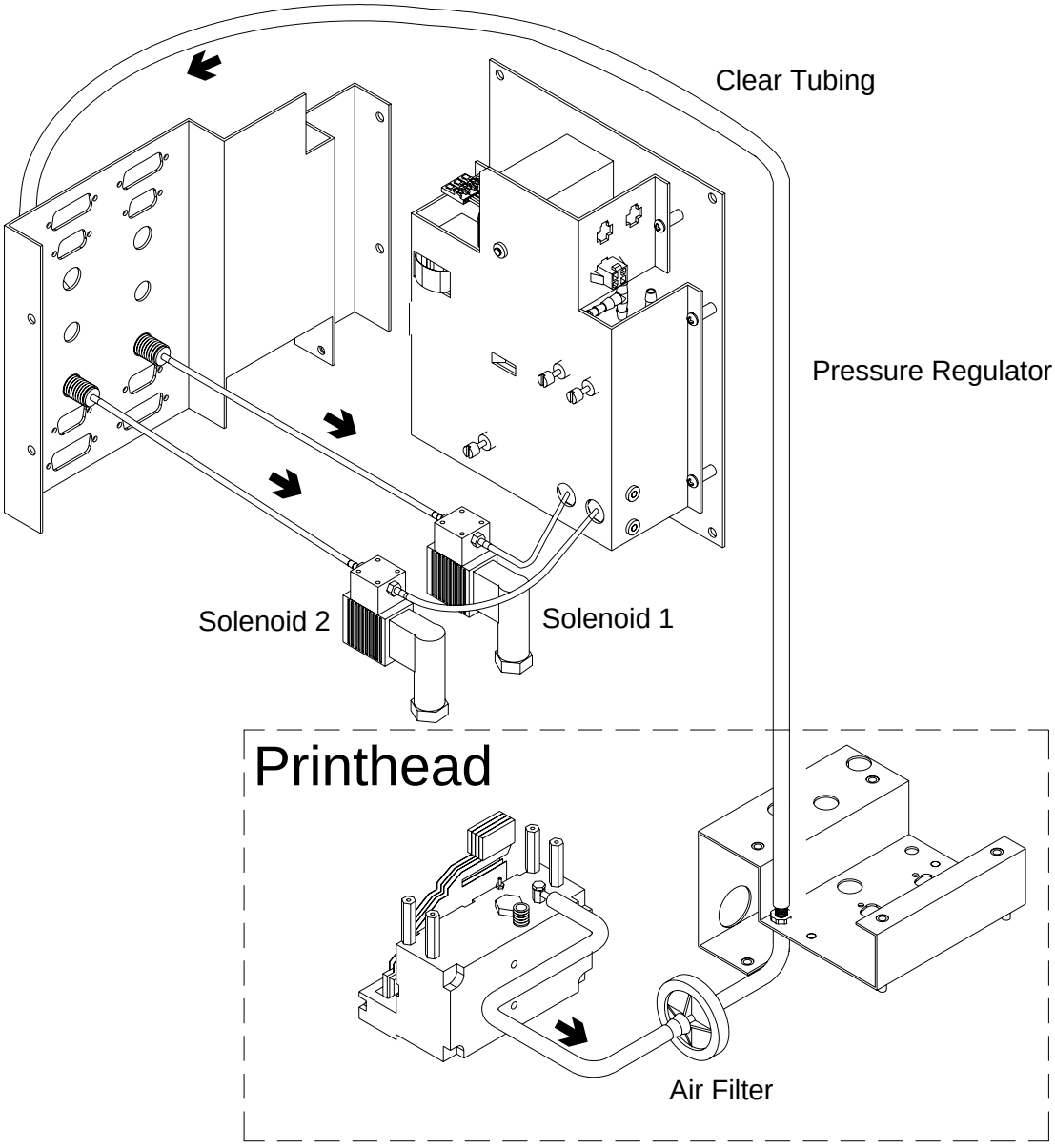
The two solenoid valves (Solenoid 1 and Solenoid 2 in Figure 2-13) are used to maintain the meniscus vacuum when the system support box is powered off. This prevents ink from leaking out of the printhead. The solenoids are closed through a 12 VDC relay in the terminal block assembly (**Section 2.10**).

Note: If the meniscus pressure is too high, it can prevent proper firing of the jet. Air can also be ingested into the ink causing jetouts. If the meniscus pressure is too low, ink can leak out of the head and pool on the orifice plate, material or the transport base. It can also cause misfires or jetouts.

If the purge pressure is too low, it may be ineffective in recovering jets. If the purge pressure is too high, it will use more ink. It will also take longer to remove gas from the ink which could result in jetouts.

If ink leaks from the printhead while the system support box is powered off, there is likely a leak in the meniscus line or the solenoid is not closing properly.

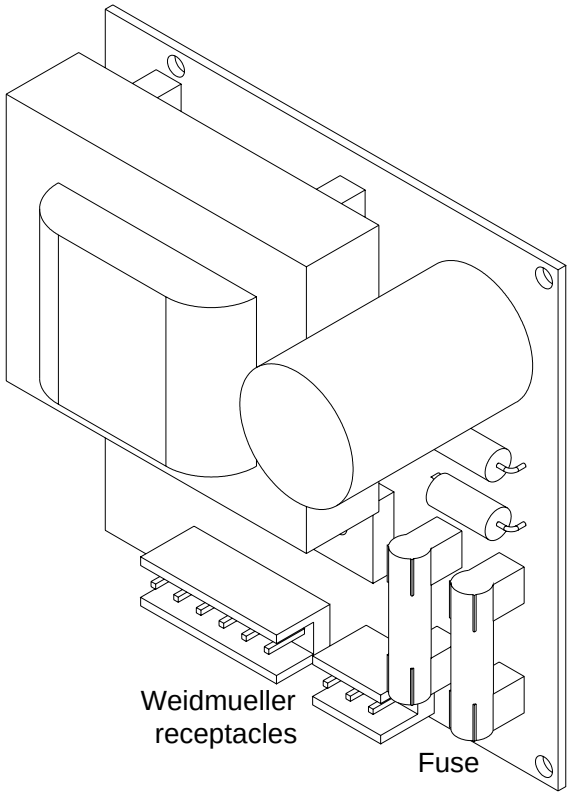
Figure 2-13: *Meniscus Vacuum Supply Route*



2.8 Atlas Power Supply, 170 VDC

The Atlas power supply (P/N 9101158) mounted on the front of power supply housing and above the Atlas inkwell container, is responsible for providing the +170 VDC required to fire the piezo crystals in the printhead. Weidmueller connectors are used to interface the board to the ASSB.

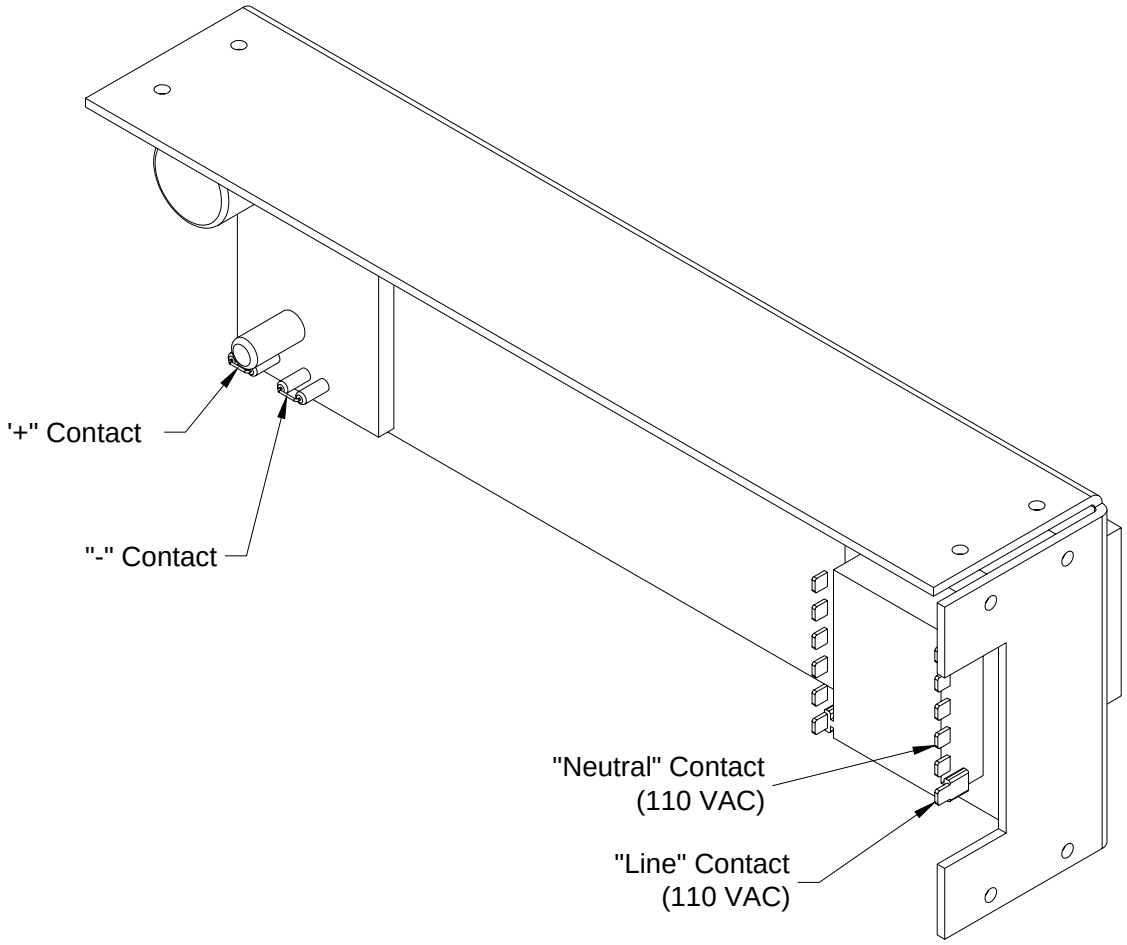
Figure 2-14: *Atlas Power Supply, +170 VDC*



2.9 Power Supply, 12 VDC

The 12 VDC Power Supply (P/N 9101209) is located inside the power supply housing above the inkwell container and is responsible for providing +12 VDC to the Atlas System. This supplies 12 VDC for the ASSB, the gearmotor, the pressure regulator pump and the solenoid valves installed in the main box and printhead assemblies.

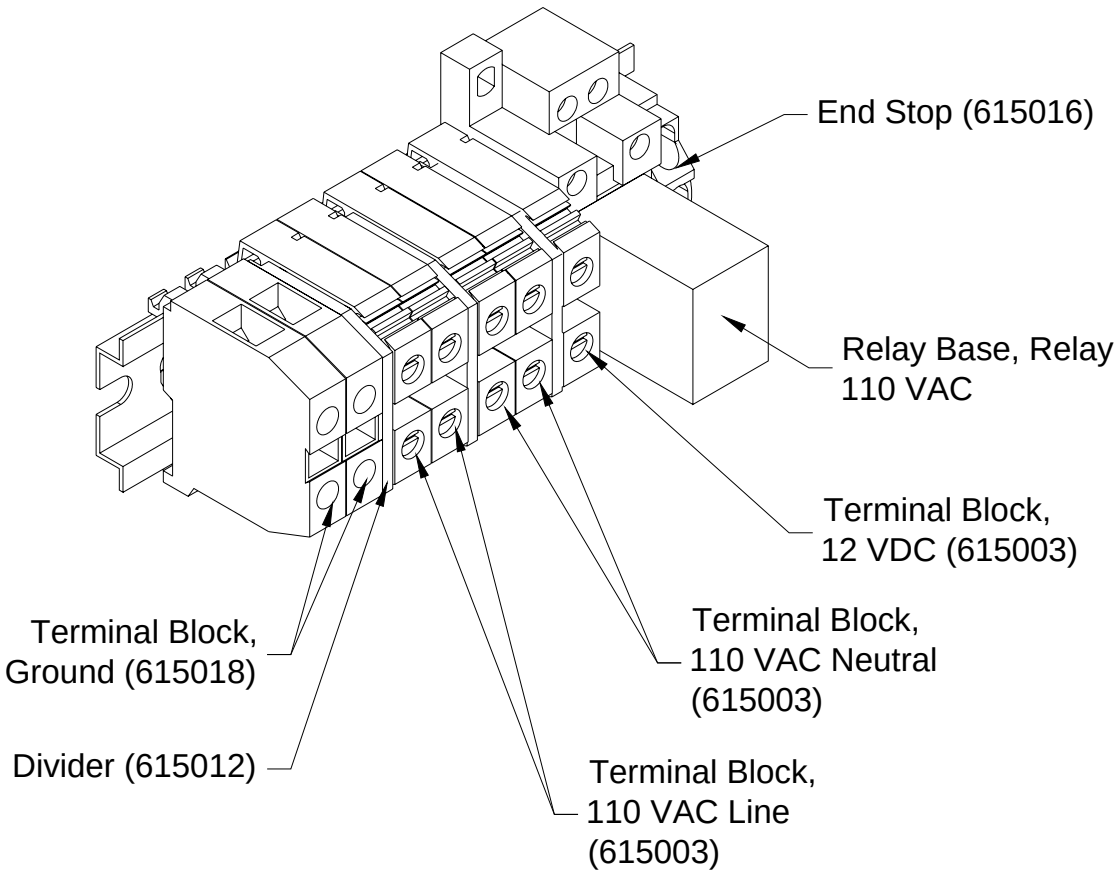
Figure 2-15: *12 VDC Power Supply*



2.10 Terminal Block Assembly

The terminal blocks located at the front wall of the power supply housing distribute the necessary power to various components. The 110 VAC relay is installed to instantaneously disconnect the solenoid valves in the meniscus vacuum line and provide permanent negative pressure.

Figure 2-16: *Terminal Block Assembly*



BK1710 / 1720 Controllers

Chapter 3

3.1 Introduction

The BK1710 / BK1720 controllers (Figure 3-1) are more advanced than their predecessor, the BK700. In addition to supporting the 1250 printhead (1" print swath), it is also capable of supporting 2250 and 3250 printheads for greater print swath (2" and 3" respectively). It is also capable of driving up to eight printheads (compared to four with the BK700) for greater total print swath. It is modular in design to simplify upgrades, and it has a number of displays to assist in troubleshooting and understanding its current status.

Figure 3-1: *BK1720 Controller*

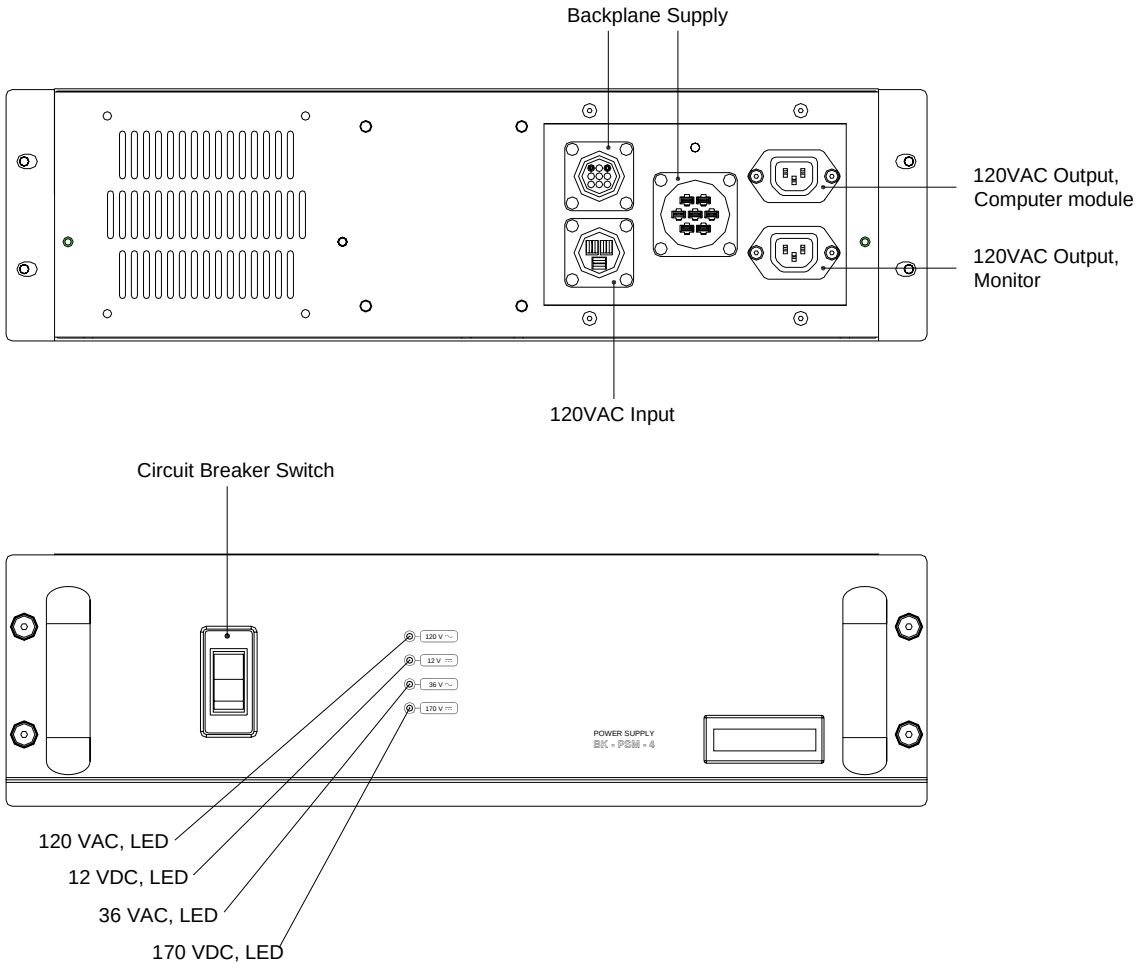
3.2 Ink Delivery Module

The Cezanne ink delivery module (BK-IDM-4C shown in Section 1.2.2) is a rack-mounted module designed to control the ink supply to up to four printheads. Up to two ink delivery modules can be added to a BK1720 controller.

3.3 Power Supply Module

The Power Supply Module (Figure 3-2) is a rack mounted module that provides the necessary power requirements for a given technology. Apollo uses the BK-PSM-4H while Atlas and Aurora (Monet, Cezanne, and Renoir inks) use the BK-PSM-4A.

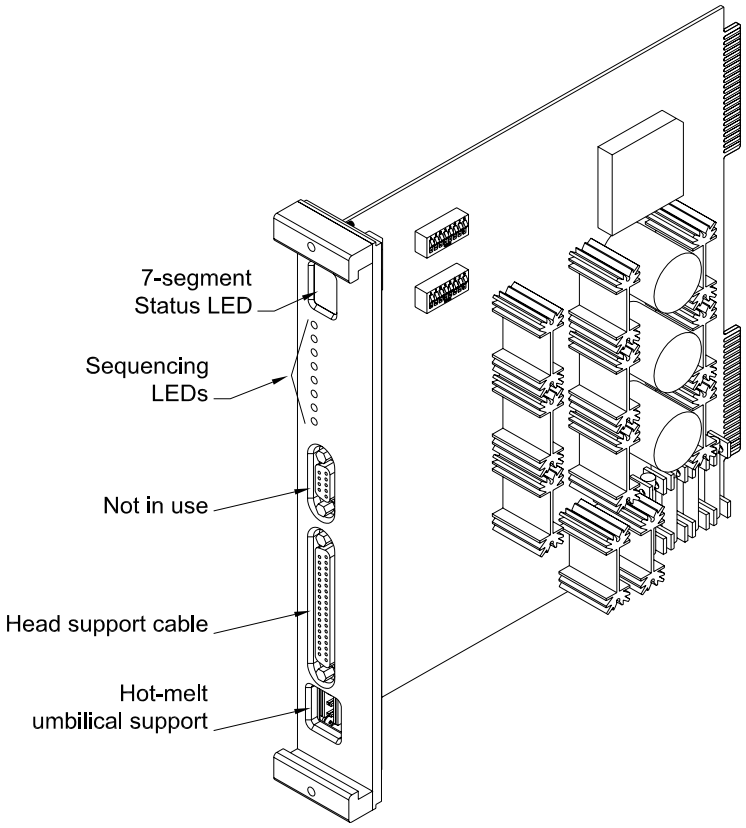
Figure 3-2: *Atlas & Aurora Power Supply Module*



3.4 Head Control Card (HCC)

In order to properly control each printhead, all Atlas and Aurora printheads require a separate Head Control Card (Figure 3-3).

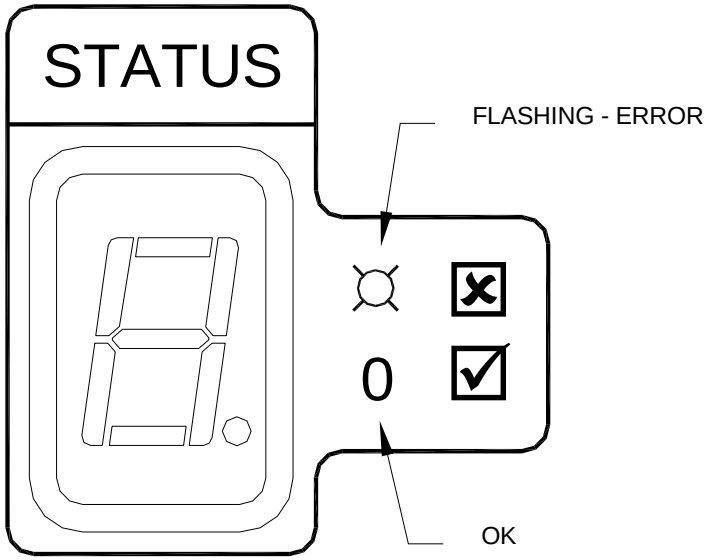
Figure 3-3: *Head Support Card (HCC)*



3.4.1 HCC Status and Error Codes, Indication LEDs

In order to reduce downtime while troubleshooting and to monitor the system status at any time, status codes and LEDs are displayed on the front of the controller. The status codes are explained in Figure 3-4 while the LED indicators are explained in Figure 3-5.

Figure 3-4: *Status Display (HCC and RCC)*

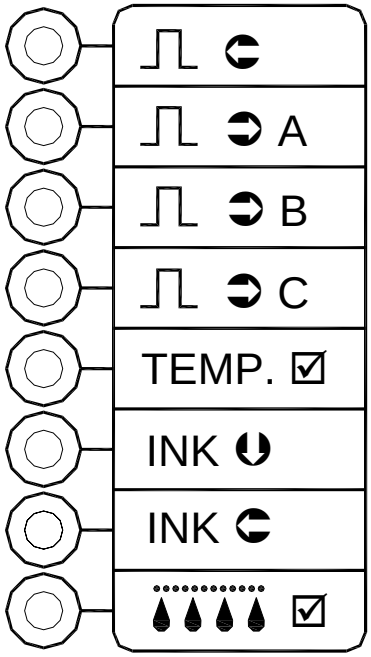


STATUS/ERROR CODES AND THEIR MEANINGS:

0 - READY
1 - INK LOW
2 - TEMPERATURE LOW
3 - INK EMPTY – RCC ONLY
4 - THERMISTOR SHORT
5 - THERMISTOR OPEN
6 - HEATER FAILURE
7 - LOIS SHORT
8 - LOIS OPEN
9 - PUMP/REFILL FAILURE

The order of priority is 9 – 0.

Figure 3-5: *LED Indicators (HCC)*



LED INDICATORS AND THEIR MEANINGS (from top):

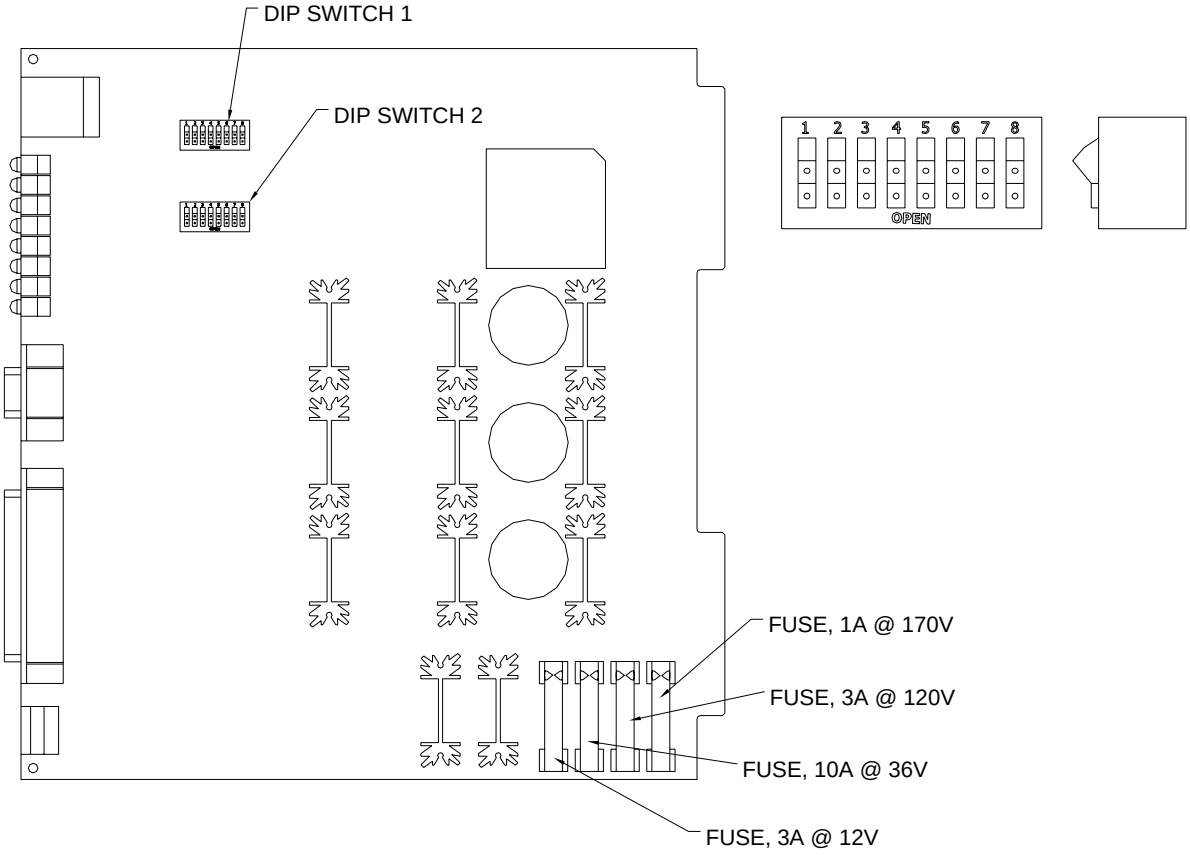
LED 1 ON - FIRE PULSE IN
LED 2 ON - FIRE PULSE OUT A
LED 3 ON - FIRE PULSE OUT B
LED 4 ON - FIRE PULSE OUT C
LED 5 ON - AT TEMPERATURE
LED 6 ON - HEAD INK LOW
LED 7 ON - REFILL IN PROGRESS
LED 8 ON - PURGE ALLOWED

The “FIRE PULSE OUT A, B, and C” are related to the corresponding jetting assembly firing (for example, the 3250 printhead uses all three jetting assemblies while the 2250 will only use A and B).

3.4.2 HCC DIP Switch Settings

The HCC DIP switch settings will determine the printhead address, the head reservoir address, the necessary IAP voltage, and the printhead type. There are two DIP-switch blocks on each HCC:

Figure 3-6: *HCC Dip Switches*



HCC DIP-SWITCH 1 SETTINGS:

POSITION 1 - HEAD ADDRESS BIT 0
POSITION 2 - HEAD ADDRESS BIT 1
POSITION 3 - HEAD ADDRESS BIT 2
POSITION 4 - HEAD ADDRESS BIT 3
POSITION 5 - RESERVOIR ADDRESS FOR HEAD BIT 0
POSITION 6 - RESERVOIR ADDRESS FOR HEAD BIT 1
POSITION 7 - IAP VOLTAGE BIT 0
POSITION 8 - IAP VOLTAGE BIT 1

Table 3-1: *HCC Head Address Settings (Switch 1 – DIP 1-4), 0 = Open (OFF) 1 = ON*

DIP 1	DIP 2	DIP 3	DIP 4	Description
0	0	0	0	Head 1
1	0	0	0	Head 2
0	1	0	0	Head 3
1	1	0	0	Head 4
0	0	1	0	Head 5
1	0	1	0	Head 6
0	1	1	0	Head 7
1	1	1	0	Head 8
0	0	0	1	Head 9
1	0	0	1	Head 10
0	1	0	1	Head 11
1	1	0	1	Head 12
0	0	1	1	Head 13
1	0	1	1	Head 14
0	1	1	1	Head 15
1	1	1	1	Head 16

Table 3-2: *HCC Reservoir Address Settings (Switch 1 - DIP 5-6), 0 = Open (OFF) 1 = ON*

DIP 5	DIP 6	Description
0	0	Ink Reservoir #1 (RCC #1)
1	0	Ink Reservoir #2 (RCC #2)
0	1	Ink Reservoir #3 (RCC #3)
1	1	Ink Reservoir #4 (RCC #4)

Table 3-3: *HCC IAP Settings (Switch 1 - DIP 7-8), 0 = Open (OFF) 1 = ON*

DIP 7	DIP 8	Description
0	0	IAP 0% Jetting Voltage
1	0	IAP 25% Jetting Voltage
0	1	IAP 33% Jetting Voltage
1	1	IAP 50% Jetting Voltage

HCC DIP-SWITCH 2 SETTINGS:

POSITION 1 - HEAD TYPE BIT 0
POSITION 2 - HEAD TYPE BIT 1
POSITION 3 - HEAD TYPE BIT 2
POSITION 4 - HEAD TYPE BIT 3
POSITION 5 - HEAD TYPE BIT 4
POSITION 6 - RESERVED
POSITION 7 - RESERVED
POSITION 8 - HEATER POWER OPTION

Table 3-4: *HCC Head Type Settings (Switch 2 – DIP 1-5), 0 = Open (OFF) 1 = ON*

DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	Function
0	0	0	0	0	Atlas Head Type (1250)
1	0	0	0	0	Atlas-DV Head Type
0	1	0	0	0	Aurora Head Type (UV 1250)
1	1	0	0	0	Sapphire1 Head Type
0	0	1	0	0	Sapphire2 Head Type (2200 or 2250)
1	0	1	0	0	Sapphire3 Head Type (2300 or 3250)

Table 3-5: *HCC Heater Power Settings (Switch 2 - DIP 8), 0 = Open (OFF) 1 = ON*

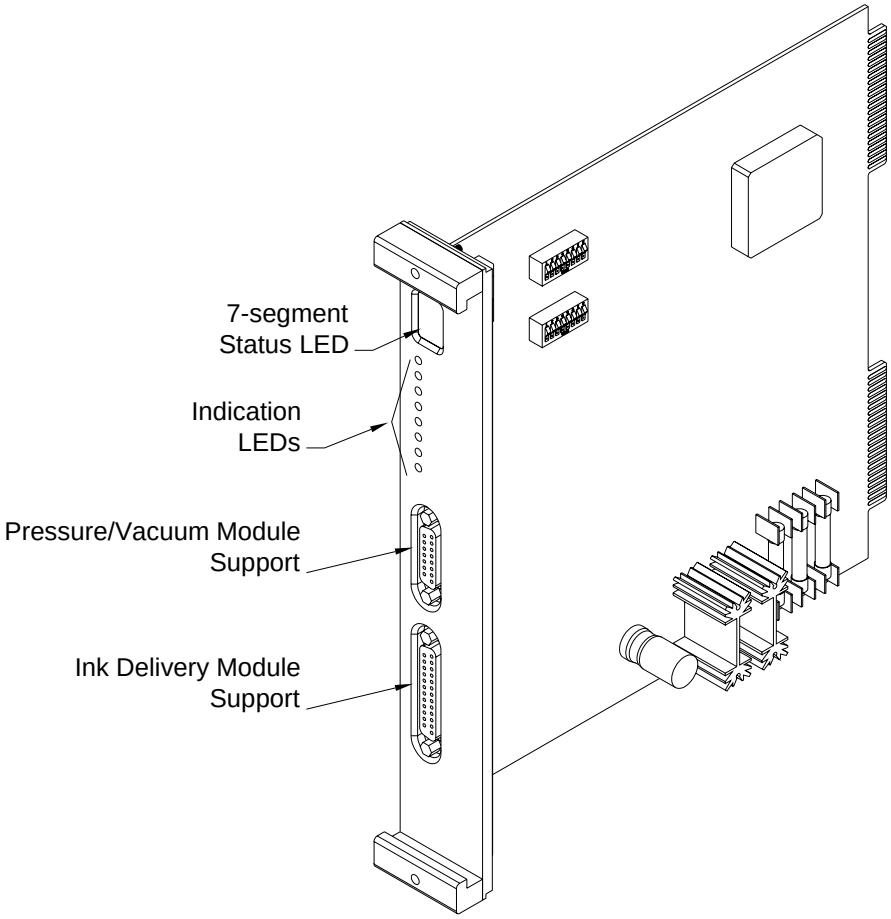
DIP 8	Description
0	Full Heater Power
1	10% Heater Power (Use for Cezanne)

Note: In order for the HCC Heater Power Settings to work, the HCC Eprom (P/N 9105155) must be V1.3 or higher.

3.5 Reservoir Control Card (RCC)

The Reservoir Control Card is used to support one Pressure/Vacuum Module and Ink Delivery Module.

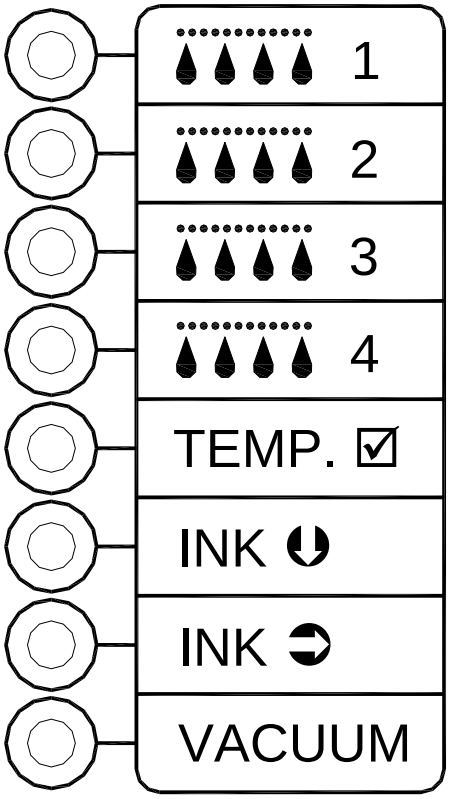
Figure 3-7: *Reservoir Control Card (RCC)*



3.5.1 RCC Status and Error Codes, Indication LEDs

The status codes for the RCC are the same as the HCC. For information on the Status Codes, reference Figure 3-4.

Figure 3-8: *RCC LED Indicators*



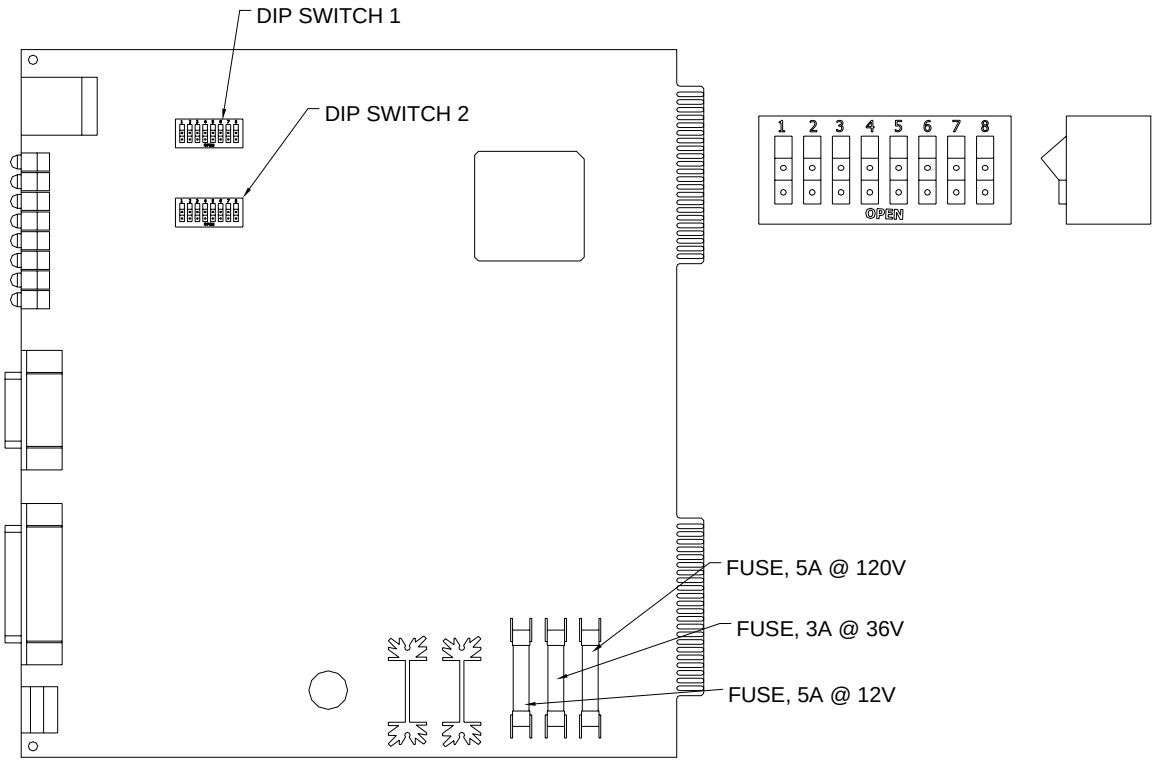
LED INDICATORS AND THEIR MEANINGS (from top):

LED 1 ON - PURGE 1 (CHANNEL #1)
LED 2 ON - PURGE 2 (CHANNEL #2)
LED 3 ON - PURGE 3 (CHANNEL #3)
LED 4 ON - PURGE 4 (CHANNEL #4)
LED 5 ON - AT TEMPERATURE (IF APPLICABLE)
LED 6 ON - RESERVOIR INK LOW (INK DELIVERY SYSTEM)
LED 7 ON - PUMP INK
LED 8 ON - PUMP VACUUM (IF APPLICABLE)

3.5.2 RCC DIP Switch Settings

The RCC DIP switch settings will determine the pressure regulator address (Pressure Vacuum Module), the pressure regulator type, the pressure regulator purge type, the ink delivery module address, and the type of ink delivery module. There are two DIP switch blocks on the RCC.

Figure 3-9: *RCC Dip Switches*



RCC DIP-SWITCH 1 SETTINGS:

POSITION 1 - PRESSURE REGULATOR ADDRESS BIT 0
POSITION 2 - PRESSURE REGULATOR ADDRESS BIT 1
POSITION 3 - PRESSURE REGULATOR TYPE BIT 0
POSITION 4 - PRESSURE REGULATOR TYPE BIT 1
POSITION 5 - PRESSURE REGULATOR TYPE BIT 2
POSITION 6 - PRESSURE REGULATOR PURGE TYPE BIT 0
POSITION 7 - PRESSURE REGULATOR PURGE TYPE BIT 1
POSITION 8 - RESERVED

Table 3-6: *RCC Pressure Regulator Address (Switch 1 - DIP 1-2), 0 = Open (OFF) 1 = ON*

DIP 1	DIP 2	Description
0	0	Pressure Regulator #1 (RCC #1)
1	0	Pressure Regulator #2 (RCC #2)
0	1	Pressure Regulator #3 (RCC #3)
1	1	Pressure Regulator #4 (RCC #4)

Table 3-7: *RCC Pressure Regulator Type (Switch 1 - DIP 3-5), 0 = Open (OFF) 1 = ON*

DIP 3	DIP 4	DIP 5	Description
0	0	0	Original 2-Channel Pressure Regulator (P/N 9100138)
1	0	0	4-Channel P.R., 1 Technology (Head 1-4)
0	1	0	4-Channel P.R., 2 Technologies (Head 1-3, Head 5)
1	1	0	4-Channel P.R., 2 Technologies (Head 1-2, Head 5-6)

Note: 1250 and 2250 / 3250 printheads are considered two different technologies even if the same ink is used.

Table 3-8: *RCC Purge Settings (Switch 1 - DIP 6-7), 0 = Open (OFF) 1 = ON*

DIP 6	DIP 7	Description
0	0	Constant Purge Type
1	0	Three x 1 second Pulses
0	1	Reserved
1	1	Reserved

RCC DIP SWITCH 2 SETTINGS:

POSITION 1 - RESERVOIR ADDRESS BIT 0
POSITION 2 - RESERVOIR ADDRESS BIT 1
POSITION 3 - RESERVOIR TYPE BIT 0 (Note 3)
POSITION 4 - RESERVOIR TYPE BIT 1 (Note 3)
POSITION 5 - RESERVOIR TYPE BIT 2 (Note 3)
POSITION 6 - RESERVOIR TYPE BIT 3 (Note 3)
POSITION 7 - RESERVED
POSITION 8 - RESERVED

Table 3-9: *RCC Reservoir Address Settings (Switch 2 - DIP 1-2), 0 = Open (OFF) 1 = ON*

DIP 1	DIP 2	Description
0	0	Ink Reservoir #1 (RCC #1)
1	0	Ink Reservoir #2 (RCC #2)
0	1	Ink Reservoir #3 (RCC #3)
1	1	Ink Reservoir #4 (RCC #4)

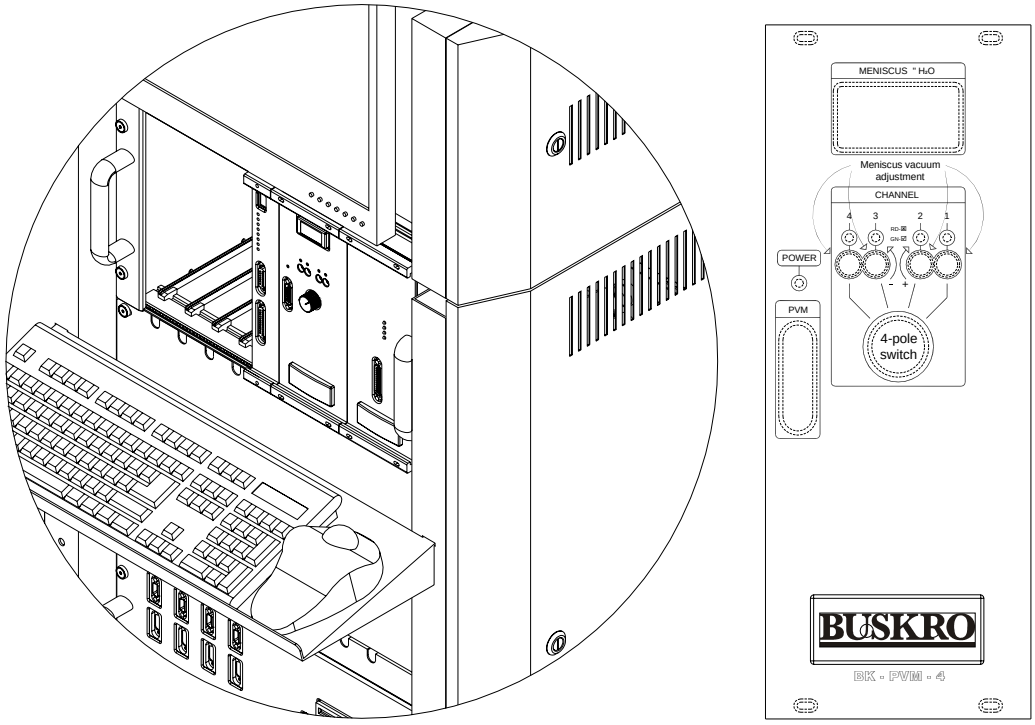
Table 3-10: *RCC Reservoir Type Settings (Switch 2 – DIP 3-6), 0 = Open (OFF) 1 = ON*

DIP 3	DIP 4	DIP 5	DIP 6	Description
0	0	0	0	Atlas / Aurora Reservoir

3.6 Pressure Vacuum Module

The Pressure Vacuum Module (BK-PVM-4A) is a rack-mounted module that controls the meniscus, lung, and purge pressures for Atlas and Aurora technologies. It can support up to four printheads per module. It shares the same physical dimensions as the Ink Delivery Module and can be mounted in the rack of the controller as shown in Figure 3-10.

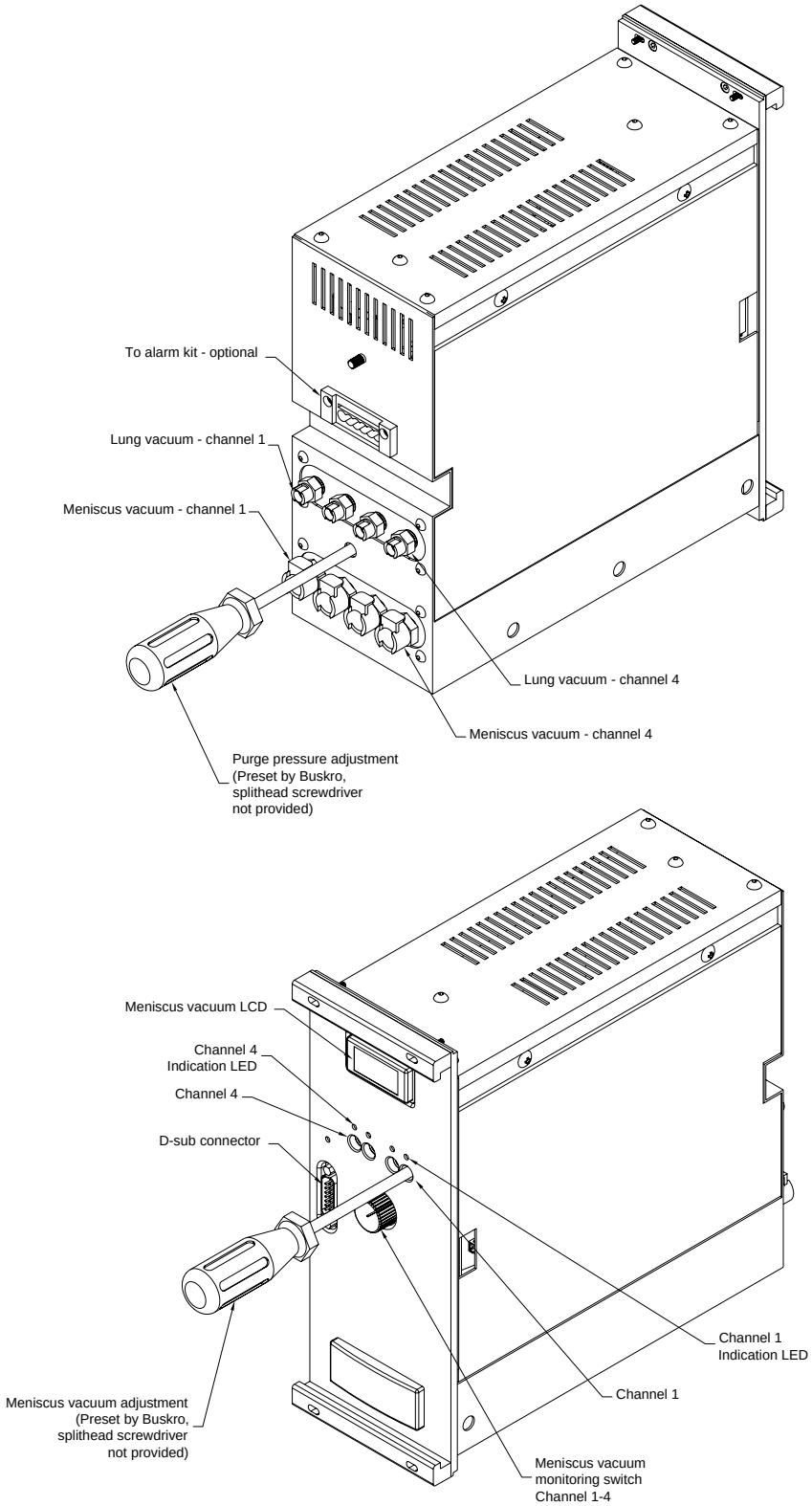
Figure 3-10: *Pressure/Vacuum Module Integration*



3.7 Pressure/Vacuum Adjustment

The meniscus vacuum and the purge pressure of the unit are adjustable as shown in Figure 3-11. While the meniscus vacuum range can vary depending on print technology, the purge pressure is around 50 inches of water (in Wg). 1250 printheads require 3.3 in Wg meniscus while 2200, 2250, 2300, and 3250 printheads require 4.7 in Wg. All meniscus settings should be within a tolerance of +/- 0.3 in Wg, and the reading on the LCD will reflect the given range.

Figure 3-11: *Meniscus Vacuum and Purge Pressure Adjustment*



3.7.1 Meniscus vacuum monitoring switch

This monitoring switch allows users to switch between the four channels which display the meniscus vacuum value. See Figure 3-10.

3.7.2 Status/Warning light

If the meniscus vacuum range is within limits, the LED located above the adjustment opening will be a solid green. Once the meniscus vacuum for the particular channel exceeds the limits, the LED will flash red independent from the position of the monitoring switch. If this switch is set to a channel that exceeds required range, the LED will flash green and orange indicating incorrect meniscus vacuum level.

3.7.3 Lung vacuum

The lung vacuum level is not adjustable. Early models utilized a –16 in Hg pump while newer models will be equipped with –23.5 in Hg pumps to increase the efficiency of gas removal.

3.7.4 Needle Valve Filter

Over time, excessive paper dust can cause the sintered filter in the adjustment needle valve to clog which can increase the meniscus vacuum. While it is possible for the system to run normally without the filter, it is highly recommended to ensure that the proper filter is installed to avoid damage to the adjustment needle valve.

Atlas Printhead

Chapter 4

4.1 Features

4.1.1 Universal front/back Mounting

The printhead is constructed with identical aluminum extrusions on either end permitting universal front or back mounting depending on the arrangement of the bridge.

4.1.2 Rugged Umbilical

All printhead “life support” requirements emanating from the controller are ported through a single ruggedly encased umbilical providing excellent protection. These essential elements include vacuum, ink, and data lines.

4.1.3 Individual Height Control

In order to accommodate various product thicknesses, the height of each printhead can be adjusted individually.

4.1.4 Leveling Control for Print Optimization

A simple spring-loaded head leveling arrangement is provided to permit convenient and rapid head leveling for the purpose of optimizing the print quality. In addition, this construction provides head compliance in the event of a double-feed situation.

4.1.5 Portable

Since the printhead is capable of sliding relative to the mounting assembly, the printhead can be easily attached or removed from the mount for unparalleled portability.

4.1.6 Convenient Maintenance System

The printhead mount is equipped with a convenient release knob that automatically raises the printhead for rapid access to the printhead face in the event wiping and purging is required.

4.2 Components

4.2.1 The Printbar / Jetting Assembly

The jetting assembly is a monochrome 256-jet head that uses Drop-On-Demand (DOD) technology that applies voltage to the Piezo-electric crystals in the head to jet ink. In the case of 1250 printhead (1"), only one printbar is used while in the 2250 (2") and 3250 (3") printheads, two or three jetting assemblies respectively are used. An illustration of the 1250 printbar can be seen in Figure 4-1 while the 2250 and 3250 manifold assembly can be seen in Figure 4-2.

Figure 4-1: *The Printbar (1250)*

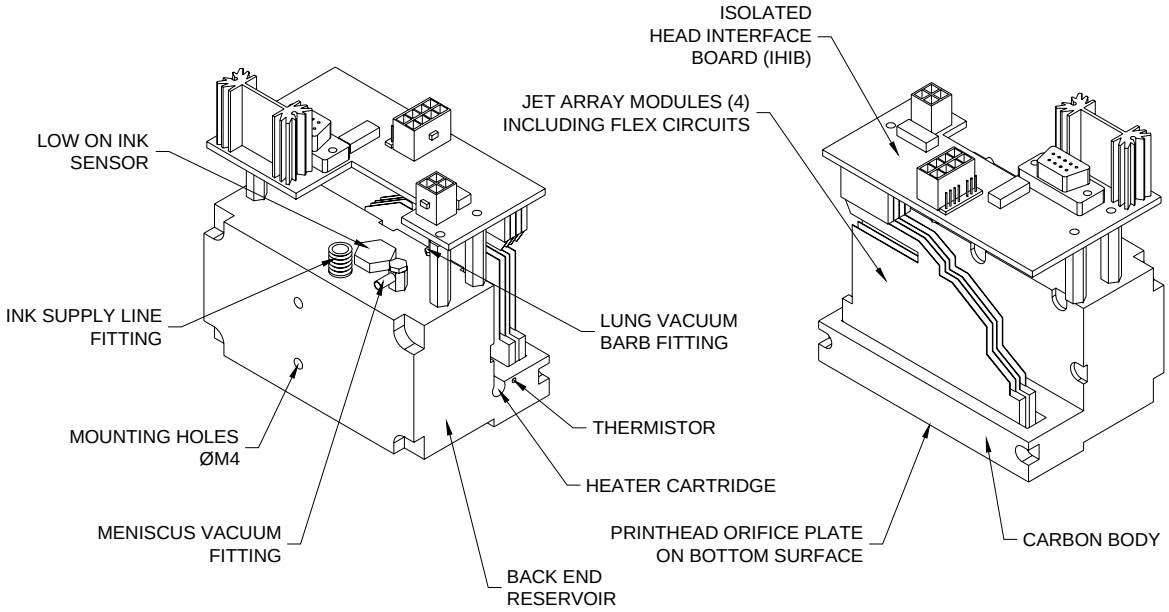
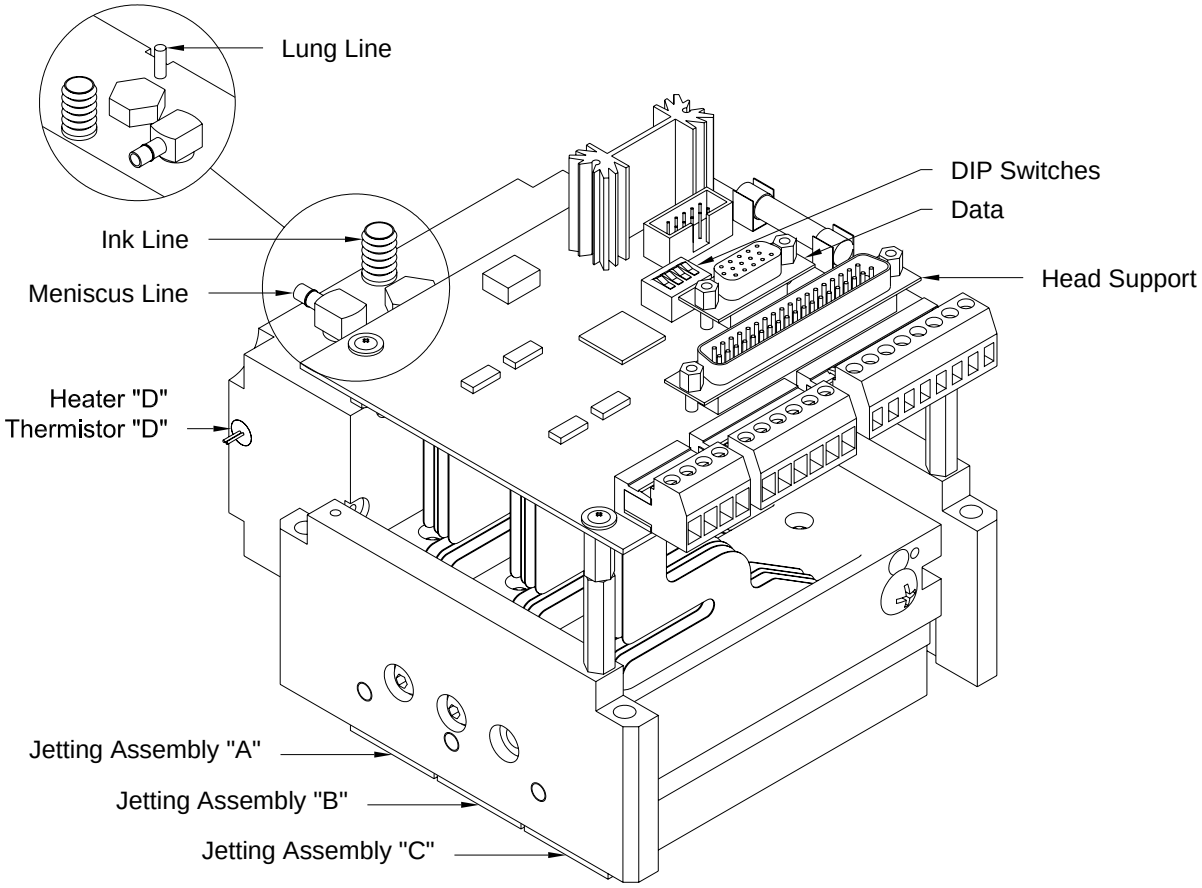


Figure 4-2: *Manifold Assembly (2250 and 3250)*



The ink reservoir in the printbar normally holds 40 mL of ink and also contains a Low On Ink Sensor (LOIS), a heater cartridge and thermistor to maintain the required temperature, and a lung vacuum feature to remove air from the ink.

4.2.2 THIB II Board

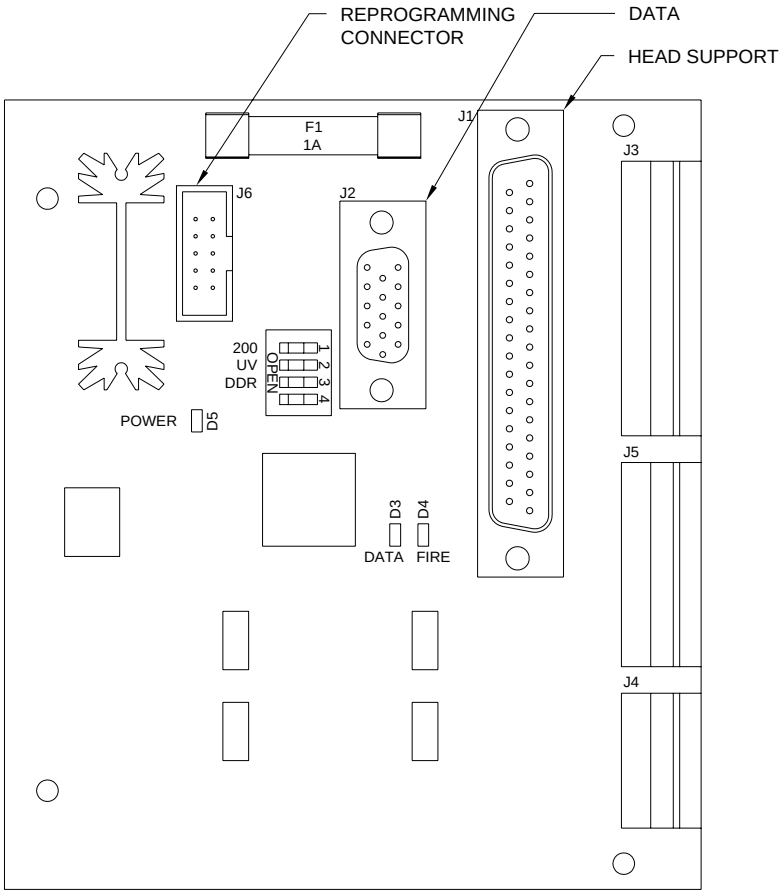


Table 4-1: THIB II Board - DIP Switch Settings

DIP	Setting	Function
1	ON OFF (OPEN)	2300 or 3250 Printhead 2200 or 2250 Printhead
2	ON OFF (OPEN)	Solvent Ink (Monet, Cezanne) Aurora UV Ink (Renoir)
3	OFF	For Future Use
4	OFF	For Future Use

Table 4-2: THIB II Board – LED Functions

LED	Setting	Function
D3	Green	Data being transferred
D4	Red	High voltage fire pulse applied
D5	Green	Power (12V from Head Cable)

4.2.3 Lung Vacuum Line

The lung vacuum is designed to de-aerate the ink to prevent loss of jets due to air bubbles. If a large volume of ink is consumed (i.e. purging), wait a couple of minutes to allow the lung to remove the air bubbles. Otherwise, jets may be lost within a few minutes of printing.

4.2.4 Meniscus Vacuum Line

The meniscus vacuum should measure approximately 3.3 inches of water (in Wg) for 1250 printheads and 4.7 in Wg for 2250 and 3250 printheads. If the meniscus vacuum is too low, ink may leak from the printhead. Conversely, if the meniscus vacuum is too high, air may be drawn into the nozzles. Both cases can result in a loss of jets during printing. If either of these conditions are observed, the meniscus vacuum can be measured using a low-pressure gauge (P/N 9100338A). If an incorrect meniscus vacuum is measured at the head, another reading should be taken directly from the pressure regulator to ensure that the problem is not in the meniscus vacuum line itself.

Note: If the hydrophobic filter in the printhead on the meniscus line fills with ink, it must be replaced.

4.2.5 Priming Button

The priming button(s), located on the top of the printhead assembly, is available to remove air from the printhead. To prime the printhead, the button must be pressed and held for approximately 4 seconds. A number of conditions must be met in order for priming to occur. These conditions are outlined below.

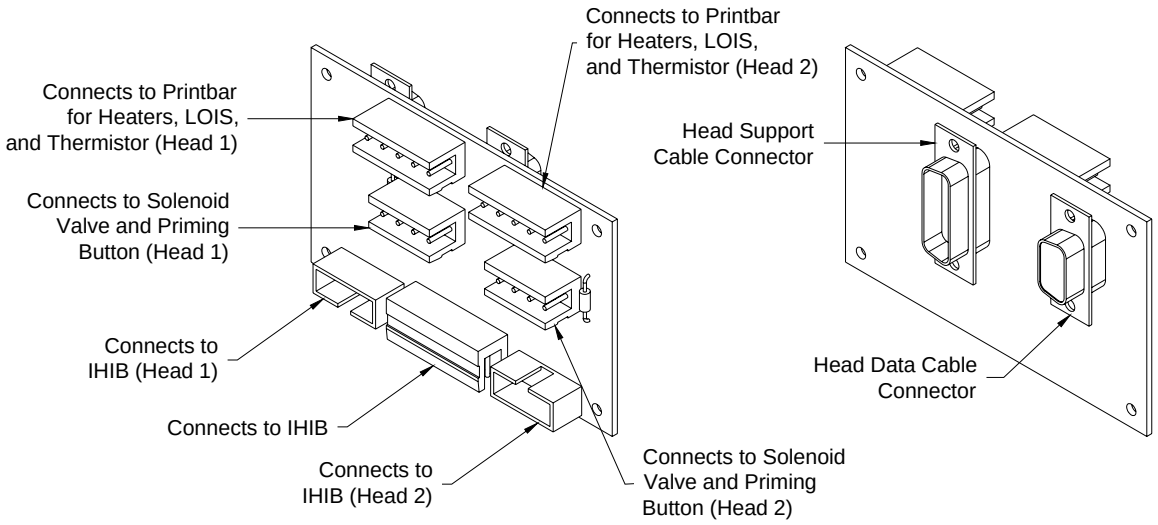
1. The Atlas System Support Box power must be ON.
2. The printhead must be at its operating temperature (**Section 6.1.2**).
3. The ink refill process must be inactive.
4. There must be sufficient ink in the subcontainer of the Ink Delivery System.
5. A period of 10 seconds must elapse between the start of one prime to the start of another.

If any of the above conditions are not met, priming may not occur.

4.2.6 Dual Atlas Connector Interface Board (DACIB)

In the 1250 printheads, the DACIB (Figure 4-3) is used to interface the printhead with the system support box and the datapath card through the head support cable and head data cable respectively.

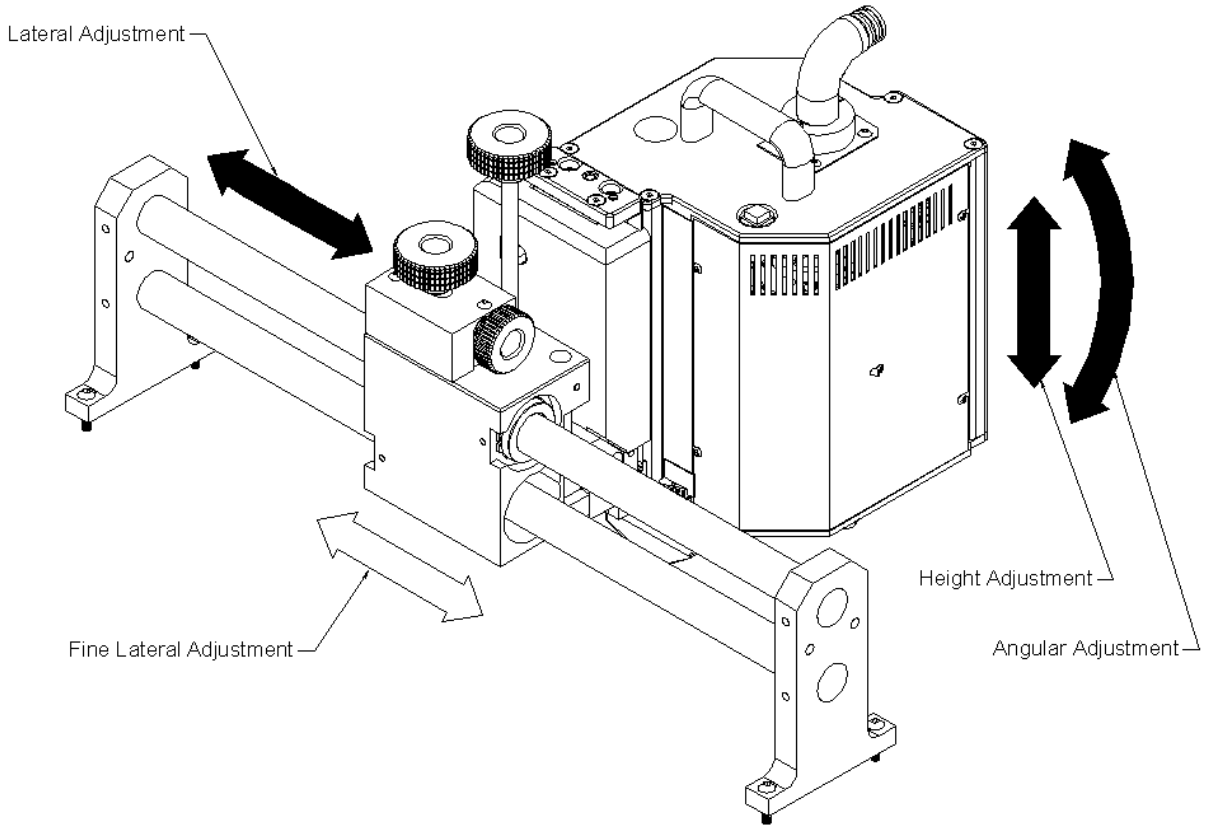
Figure 4-3: *Dual Atlas Connector Interface Board (DACIB)*



4.3 Printhead Adjustments

In order to provide flexibility, each printhead is designed to allow individual lateral, vertical, and angular adjustments. This is achieved by adjusting the associated knobs and screw (Section 1.2.4, 1.2.7, and Figure 4-4).

Figure 4-4: *Printhead Adjustments*



4.3.1 Lateral Adjustment

Lateral adjustment is achieved by turning the release knob counter-clockwise and sliding the printhead along the rail. Once in position, the release knob should be turned clockwise to lock the printhead in place. This adjustment provides proper placement of print on the piece.

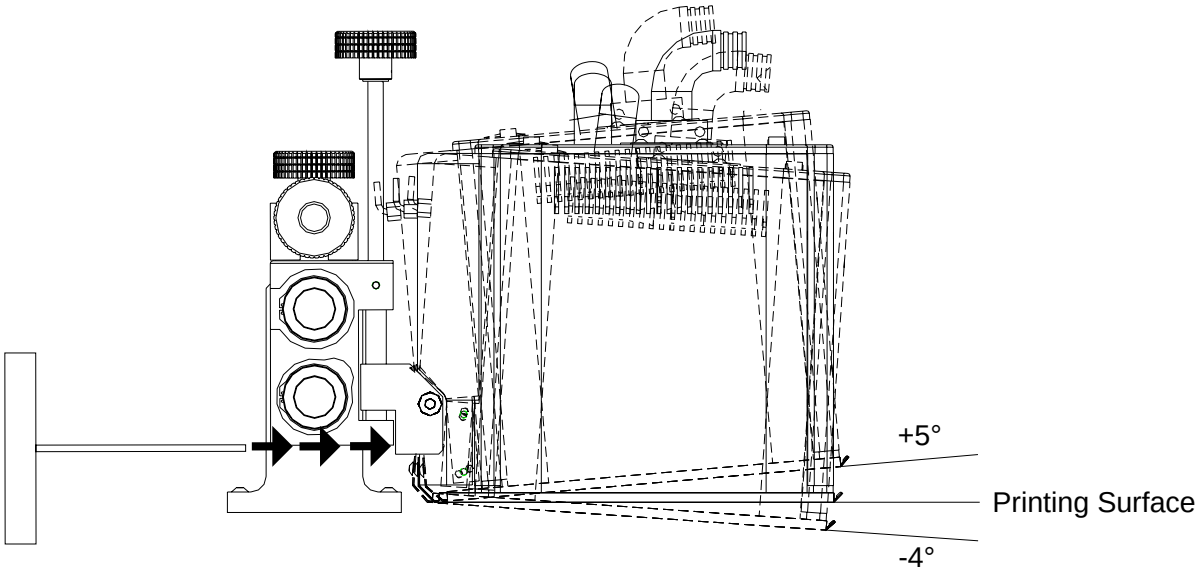
4.3.2 Height Adjustment

Height adjustment is achieved by turning the height adjustment knob. Clockwise rotation raises the printhead while counter-clockwise lowers it. In general, the printhead should be as close to the material (without interfering with transport) as possible in order to obtain optimum print quality.

4.3.3 Angular Adjustment (Printhead Leveling)

Angular adjustment is achieved by turning the angular adjustment screw with a 3/16 hex key tool. This provides a 9-degree adjustment range as shown in Figure 4-5. In order to obtain optimum print quality, the lower surface (shield) must be parallel with the tabletop.

Figure 4-5: *Printhead Angular Adjustment*

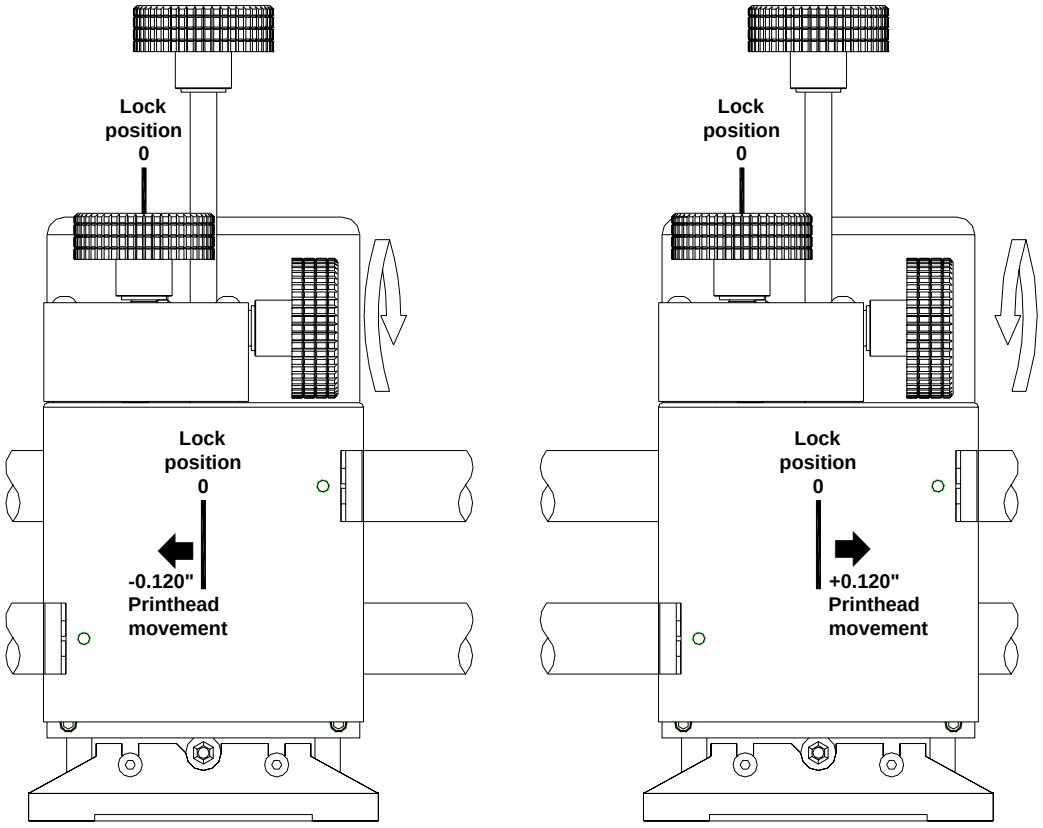


Note: Height and angular printhead adjustments are important to achieve optimum print quality.

4.3.4 Fine Lateral Adjustment (BK80 Bridge)

When using a BK80 bridge, fine lateral adjustment is available. The Fine lateral adjustment is crucial when printing images or text labels wider than 2.55” with more than one print head. In order to avoid gaps between prints, it is required to use the “Fine lateral adjustment” feature to align the prints rapidly and efficiently. The Fine lateral adjustment is obtained by turning the horizontally placed knob until full alignment occurs, shown in Figure 4-6.

Figure 4-6: *Print head Fine Lateral Adjustment*

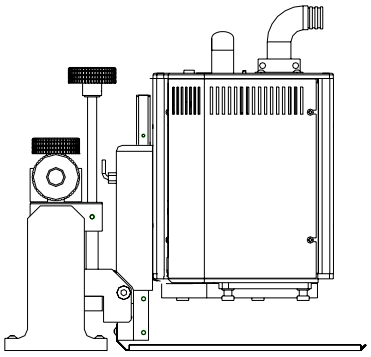


4.3.5 Raising the Printhead

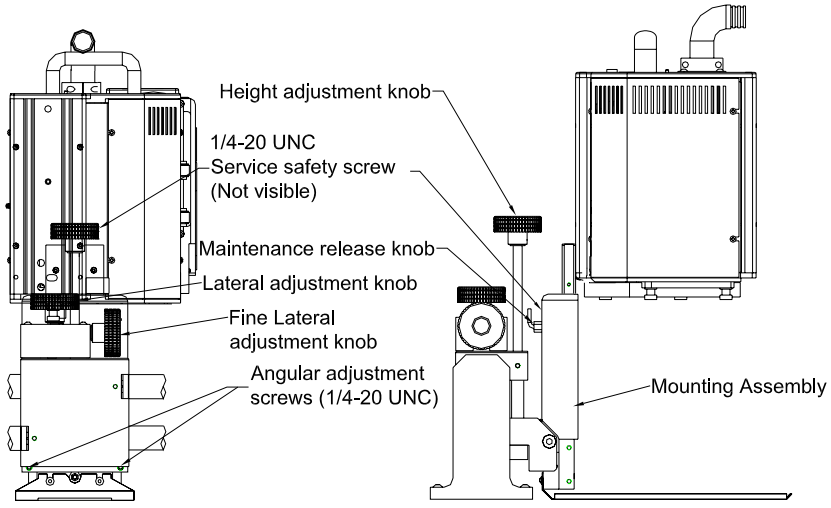
In order to simplify maintenance and service, the printhead housing can slide vertically relative to the mounting assembly. In order to clean or wipe the printhead, the maintenance release knob shown in Figure 4-7 can be pulled to automatically raise the head to the required level. When cleaning is completed, the printhead can be pushed down until it snaps in place.

In cases where the printhead needs to be serviced, the printhead must either be removed from the mounting assembly or raised high enough to access the screws securing the main covers. In order to do this, the service safety screw must be loosened.

Figure 4-7: *Raising the Printhead*



Maintenance elevation



Service elevation

Printhead Maintenance

Chapter 5

5.1 General Maintenance

5.1.1 Wet Wiping

Wet wiping is recommended when the printhead has not been used for an extended period of time or if voids in the print (loss of jets) are seen or are occurring frequently during production runs. This process assists in removing dust, debris, and dried ink from the orifice plate (bottom of the printhead where the jets are fired from). To wipe the printhead:

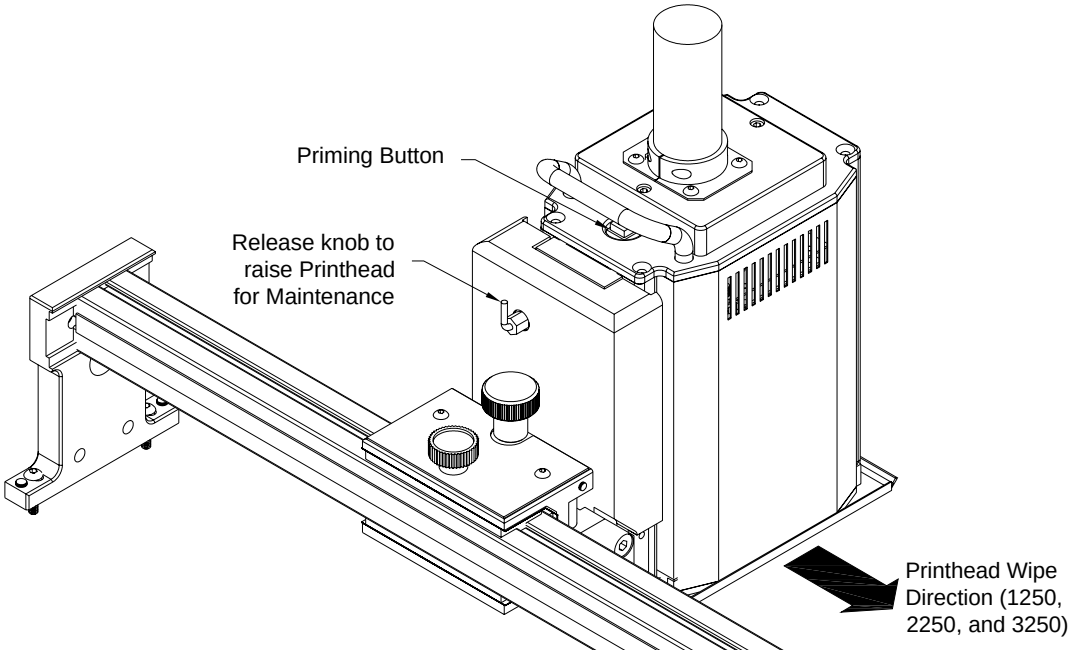
1. Pull the maintenance release knob to raise the printhead.
2. Apply Maintenance Spray (P/N BKSPR-CEZ125) to the approved fibreless ***white*** wipe (P/N 9104195). The wipe should be new (clean and free of dust and particles) and wet (saturated with maintenance spray or flush).
3. Using the specified wipes, lightly press against the bottom of the printhead and move the wipe in the direction shown in Figure 5-1. Repeat until the orifice plate is clean.

Note: Only the Buskro approved white fibreless wipe (P/N 9104195) should be used otherwise the printhead can be damaged or fibres from the wipe may cause blockages and voids in the print. Do NOT apply unapproved materials to the orifice plate.

Do not use unapproved chemicals to assist in cleaning the printhead. Only use the Cezanne Maintenance Spray (P/N BKSPR-CEZ125) or Flush (P/N BKFSH-CEZ1000).

In order to keep the wipes clean, it is recommended that they be stored in a sealed bag. This is to minimize contamination from the environment (such as dust and debris) which can be transferred to the printhead.

Figure 5-1: *Priming and Wiping (1250 Printhead shown)*



5.1.2 Purging / Priming

In cases where a wet wipe is not sufficient, purging (also known as priming) is recommended. This applies pressure to eject ink through the orifice plate. Note that a wet wipe should be conducted afterwards. To prime and clean the printhead:

1. Pull the maintenance release knob to raise the printhead.
2. Place the ink tray underneath the printhead. Alternatively, hold an approved fibreless wipe underneath the printhead (recommend wearing gloves).
3. Press the priming button on the top of the printhead. Hold for approximately four seconds to allow ink to drip out of the printhead and then release.
4. Using the specified wipes, lightly press against the bottom of the printhead and move the wipe in the direction shown in Figure 5-1.
5. If one purge is not sufficient, repeat the process. Wait approximately ten seconds between each purge.

Note: If jets are lost shortly after purging during a production run (i.e. after a few minutes), there may be air bubbles in the ink. Repeat the purge process and wait at least two minutes before printing. This will provide time for the lung vacuum to remove air bubbles from the ink.

5.1.3 Shut-down Procedure

During periods where the printhead is not being used for extended periods of time (i.e. overnight), it is recommended to cap the printheads to minimize dry-out and contamination from outside sources (i.e. paper dust). To shut-down the printhead, reference the following steps:

1. Pull the maintenance release knob to raise the printhead.
2. Apply Maintenance Spray (P/N BKSPR-CEZ125) to the approved fibreless ***white*** wipe (P/N 9104195). The wipe should be new (clean and free of dust and particles) and wet (saturated with maintenance spray or flush).
3. Place the wet wipe on the printhead cap and attach the printhead cap to the bottom of the printhead. The wet wipe should contact the orifice plate. If it does not, add another wipe underneath the wet wipe.
4. Place the ink tray underneath the printhead.
5. Shut off the controller.

5.1.4 Start-up Procedure

To start-up the printhead, reference the following steps:

1. Turn the controller ON and start Compose. Wait until the **"Normal Status"** icon appears.
2. Remove the printhead cap and use a wet wipe to clean excess fluid from the orifice plate. Wipe in the direction shown in Figure 5-1.
3. In many cases, Cezanne printheads can be recovered by simply printing a few test patterns at a 330 DPI or higher. If this does not work, follow the wet wipe or purging procedure described in Sections 5.1.1 and 5.1.2.

Note: The system can also be capped and left on. This may speed up the process of starting up the system.

Compose Settings

Chapter 6

6.1 Compose Software

In general, Buskro print technology is designed to work with a Buskro controller equipped with Compose IQ software. Compose IQ is a Windows® based application that controls all operational aspects of a Buskro inkjet system.

6.1.1 Printhead Drivers

In order to integrate the print technology with Compose, the proper printhead driver (Table 6-1) must be specified in the Setup menu (Figure 6-1).

Figure 6-1: *Compose Setup Window*

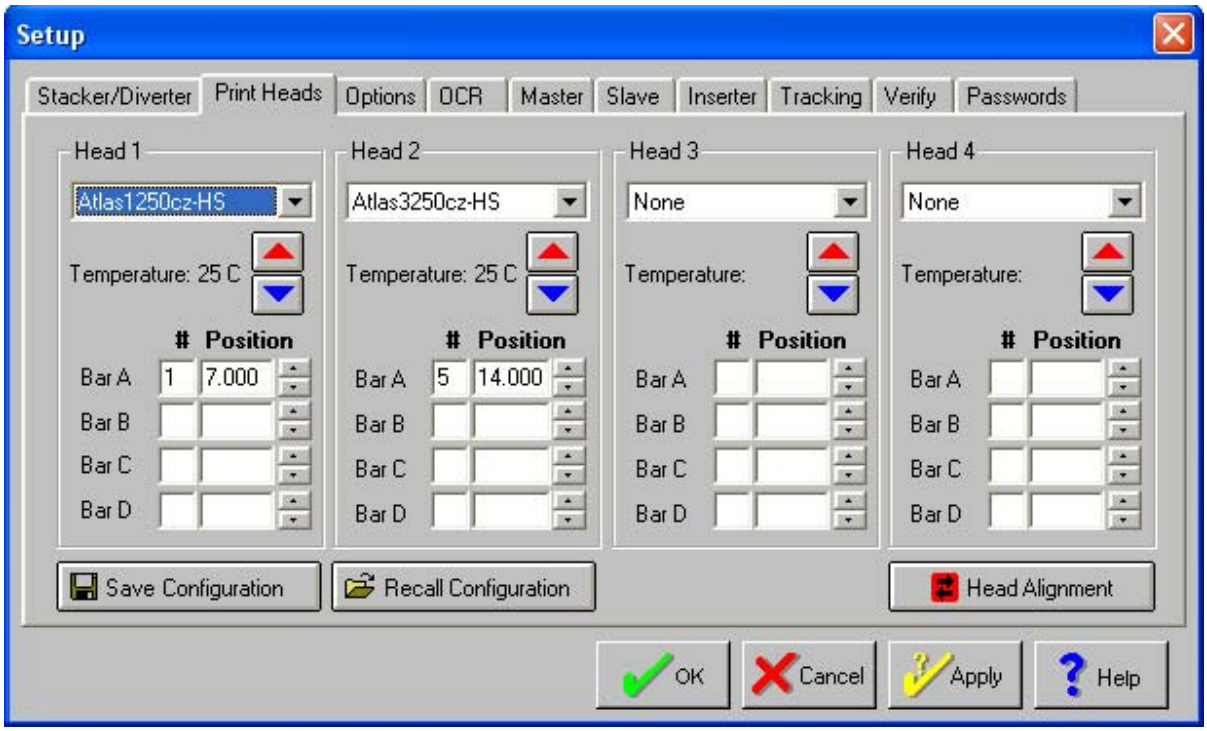


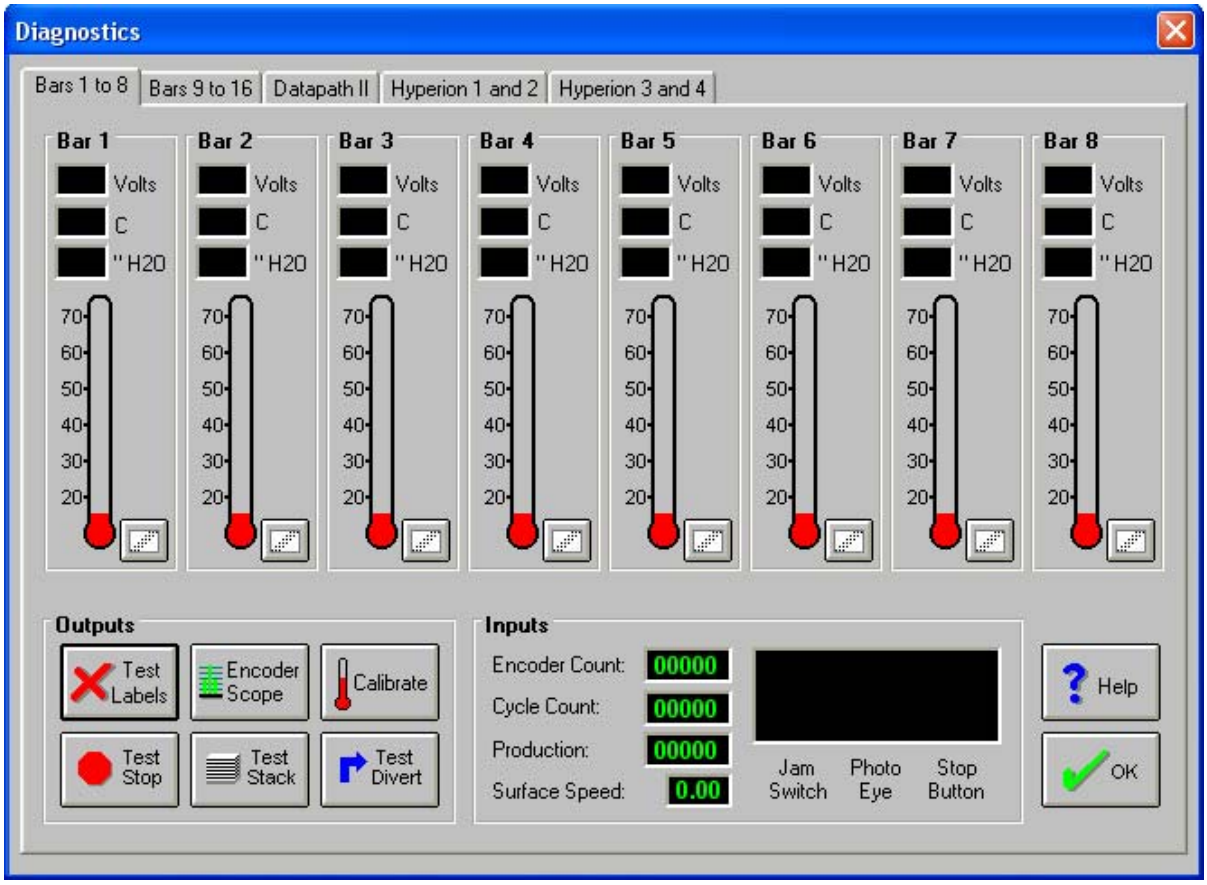
Table 6-1: *Standard Cezanne Printhead Drivers*

Print Type	Inches of Print	Driver Name	Description
Atlas 1250 (Cezanne)	1	Atlas1250cz-HS	High Speed Driver (Default)
		Atlas1250cz	Regular Driver
Atlas 2250 (Cezanne)	2	Atlas2250cz-HS	High Speed Driver (Default)
		Atlas2250cz	Regular Driver
Atlas 3250 (Cezanne)	3	Atlas3250cz-HS	High Speed Driver (Default)
		Atlas3250cz	Regular Driver

6.1.2 Diagnostics Screen

The Compose diagnostic screen displays the voltage and temperature readings for each printbar (Figure 6-2). The voltage value can be different for each jetting assembly. As a result, it is preset before shipment with the factory settings. The normal voltage range is 80-100 volts. The temperature reading depends on the ink technology used. In the case of Cezanne, it should be within 25-30°C.

Figure 6-2: *Compose Diagnostics Window*



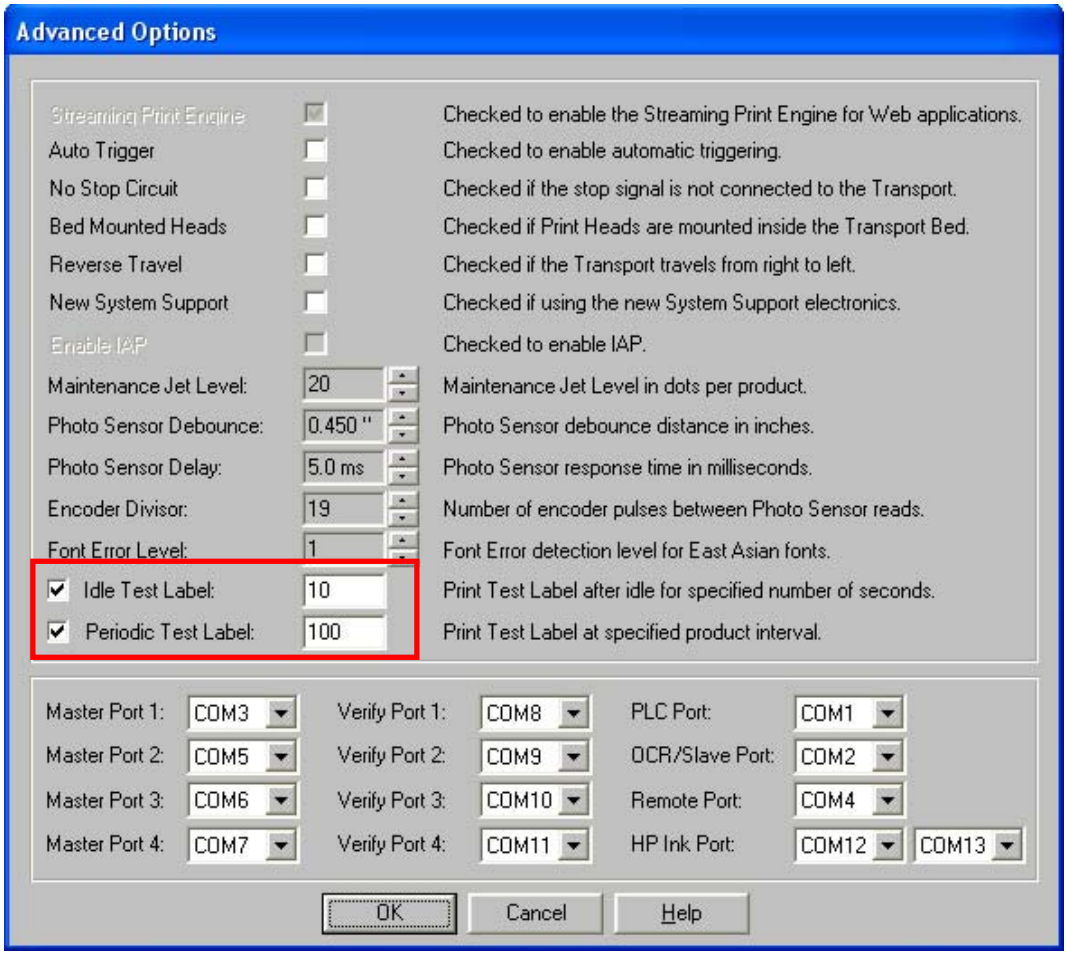
Note: Only trained technicians should make adjustments to the Voltage as it can affect print performance. In the case of Cezanne ink, it is not recommended to exceed the rated voltage otherwise more frequent jetouts will occur during printing.

6.1.3 Automatic Test Labels

While one of the main advantages of using the Cezanne ink is fast dry times, this also causes faster dry-out in the head. This can cause feathered leading edges in the print or voids in the print even after brief moments of no use. For the most part, the print can be recovered by printing test labels (without the need to wipe or purge the printhead). As a result, Compose is capable of automatically printing test labels in certain conditions. These features are found under the **Options** tab in the **Setup** window (Figure 6-3). They are:

1. **Idle Test Label** – Print a Test Label on the next piece after a specified number of seconds has passed.
2. **Periodic Test Label** – Print a Test Label every nth piece. Useful if print is variable and certain lines are not always printed.

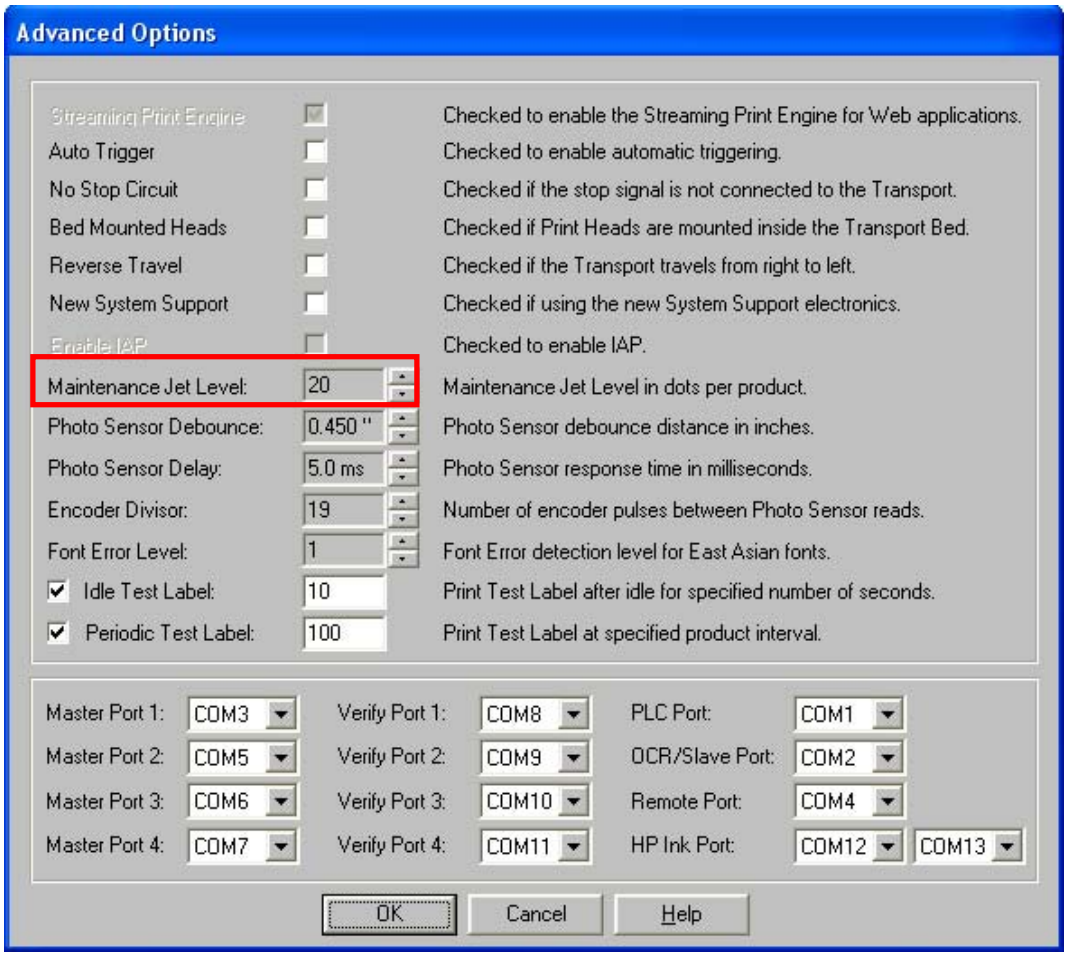
Figure 6-3: *Advanced Options - Automatic Test Labels*



6.1.4 Maintenance Jets

The maintenance jet feature in Compose is used to fire unused jets during printing in a manner not visible to the naked eye. In a given print job, it is highly unlikely that 100% of the jets are always in use. As a result, maintenance jets are fired to exercise unused jets during printing. This feature can be found in the **Advanced Options** dialog box shown in Figure 6-4. The recommended value is 20, but this can be optimized by visually inspecting the print. Although a higher value is recommended to help exercise the jets, this will also increase the possibility of seeing the maintenance jets on the piece. The higher the value, the more likely the maintenance jets will become visible on the piece.

Figure 6-4: *Advanced Options Dialog Box*



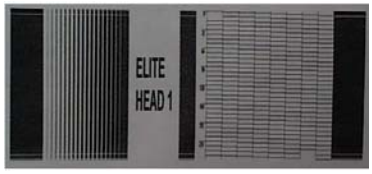
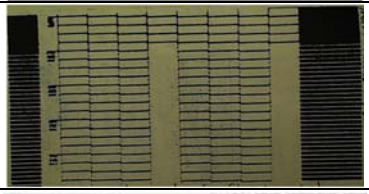
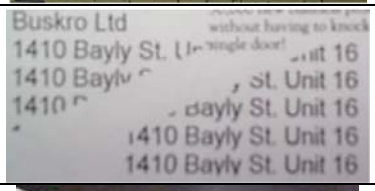
Troubleshooting

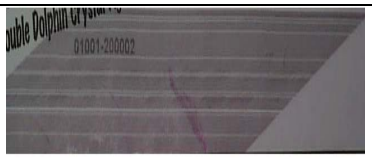
Chapter 7

7.1 Troubleshooting Guide

The purpose of this chapter is to provide a basic troubleshooting guide for basic print problems. Some possible problems are described in Table 7-1.

Table 7-1: *Troubleshooting Guide*

Problem	Example	Action
Lines in Print		• Follow procedures in Section 5.1 • Check for material contact. Make sure head is level and does not contact the material • After purging, wait 2 minutes to allow ink to deaerate before printing • Check temperature (< 30°C). Confirm SSB CPU II (BK700) or HCC (BK1710 / BK1720) is set for 10% heater power • Measure Lung Vacuum (> 14 in Hg) • Measure Meniscus Pressure (3.3 in Wg for 1250, 4.7 in Wg for 2250 or 3250) • Measure Purge Pressure (50 in Wg) • Confirm that the check valve on the lung line in the head is connected with airflow away from the printhead • Lower jetting voltage 10V (technician only)
Head Prints every other Channel		• Check Data Cable to Printhead • Defective HDC Board
Head missing ¼ of print		• Check flex connectors at the head • Defective driver chips on head that must be factory repaired
Split Image		• Verify v1.3 PCI Controller Chip or higher on the Data Path Card • Belt speed is below minimum speed of 0.15 m/s. Increase speed.
Ink is Dripping from Print Head		• Measure Meniscus Pressure at head (3.3 in Wg for 1250, 4.7 in Wg for 2250 or 3250). • Check meniscus hose and hydrophobic filter for ink blockage • Check solenoid valve that allows permanent meniscus vacuum

Problem	Example	Action
No ink in the Ink Supply Line		• Check that the UMB LED is lit on the SSB (BK700 only) • Measure ink low reading on head (LOIS/GND • Check solenoid valve installed in the printhead • Check PVC membrane disc in the filter holder mounted behind peristaltic pump head. Replacement is necessary if ink is recycled from the ink tray • No ink in the subcontainer
Peristaltic Pump constantly pumping ink		• Low ink level in the head (temporary) • SSB malfunction • LOIS malfunction
Pump Fail Icon		• Loss of power in 12 VDC wiring related to float switch installed inside the subcontainer.
Low on ink icon		• Check ink bottle • Subcontainer low on ink (temporary)
Print is streaking		• Check 3 Pin connector on printhead • Change 10 Pin ribbon cable on printhead
Printhead Temperature too High		• Ensure ambient temperature is < 30C. • For BK700 check temperature calibration. • For BK700 check if SSB CPU II board is used and if DIP 6 is ON (Table 2-2). • For BK1700 / BK1710 / BK1720 check that HCC Eprom is 1.3 or higher and that DIP 8 on Switch 2 is ON (Table 3-5).

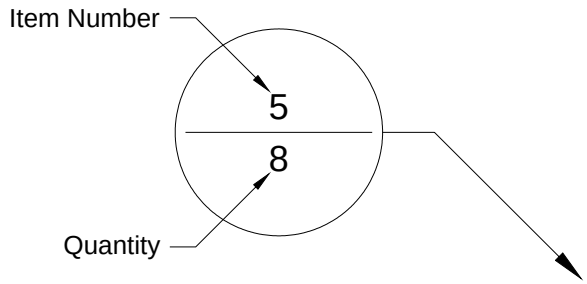
BK700 Assembly Drawings

Appendix **A**

List of Tables

List of Figures

Balloon Annotation and Parts Listing



Item	Part Number	Quantity	Description	Reference
1				
2				

The following is a description of how to interpret the information in this section:

Item:

This column indicates the item number used for each unique part in an assembly drawing. It is matched with the top number in the balloon pointing at the associated part.

Part Number:

This column represents the Buskro part number.

Quantity:

This represents the total number of a given part in an assembly. It is matched with the bottom number in the balloon pointing at the associated part.

Description:

This column contains a brief description of the part.

Reference:

This column indicates the page location for sub-assemblies.

Table A-1: *Unit BK700, Atlas, Cezanne (BKT700CU)*

Item	Part Number	Quantity	Description	Reference
1	404510	19	Screw, BHCS, 10-32 UNF x 1/4"	
2	404550	4	Screw, BHCS, 10-32 UNF x 3/4"	
3	404570	4	Screw, BHCS, 10-32 UNF x 1"	
4	446000	1	Slide Latch - A3	
5	803305	1	Trackball Mouse	
6	9100169	1	Controller Rear Door	
7	9100704A	1	Offline Controller Cabinet Assembly	
8	9100717A	1	Field Connection Cable	
9	9100721A	1	Connector Plate Assembly	
10	9100734	1	Offline Controller Comtrol Plate	
11	9100738A	1	Controller Console Assembly	
12	9100743	2	Offline Controller Inkwell Mount	
13	9100747	1	Offline Controller Front Cover	
14	9100978A	1	Inkwell, Single IDS, Cezanne	Page A-7
15	9101644	1	Sponge Rubber, 1/4 x 3/8"	

Figure A-1: *Unit BK700, Atlas, Cezanne (BKT700CU)*

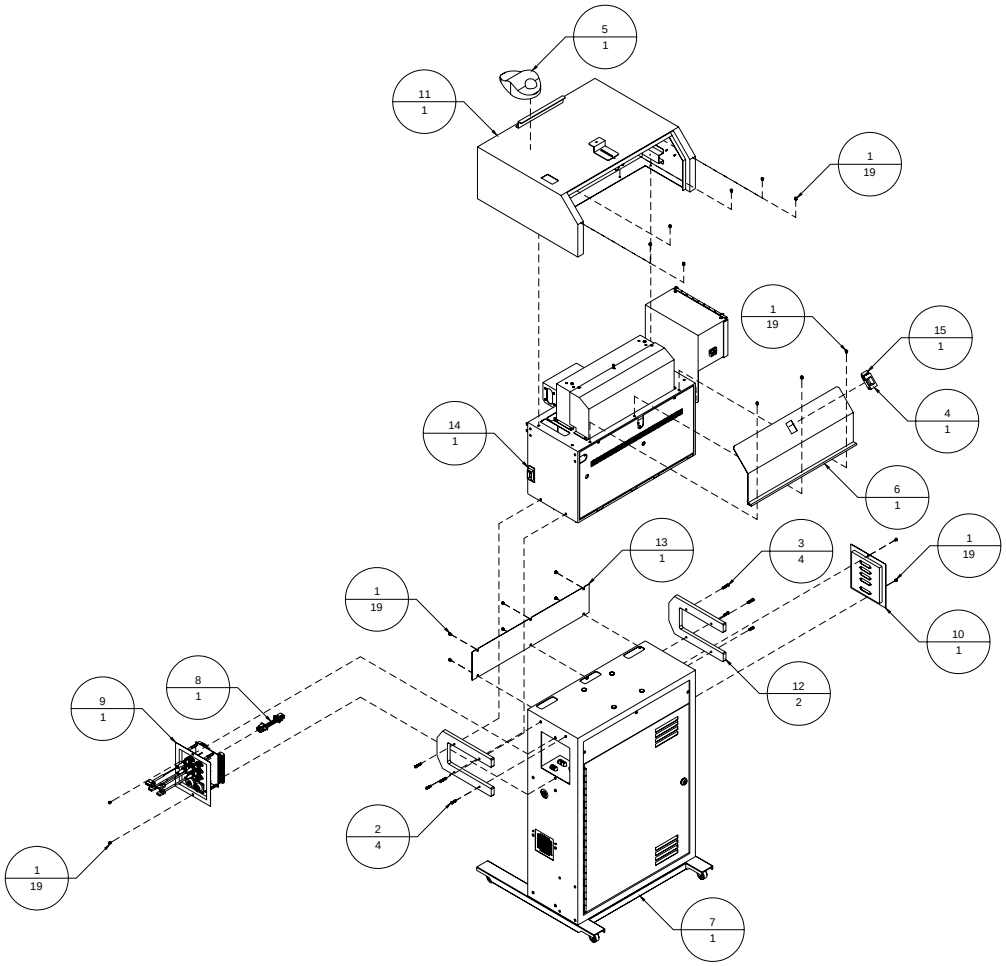


Table A-2: *Pressure Regulator 2-Channel (BK-PVM-700)*

Item	Part Number	Quantity	Description	Reference
1	402310	5	Screw, PHMS, 6-32 UNC x ¼”	
2	403310	3	Screw, PHMS, 8-32 UNC x ¼”	
3	439005	3	Lockwasher, No.8	
4	439006	5	Lockwasher, No.6	
5	440006	2	Washer, #8, 1/2" O.D. x 0.05" Thick	
6	9100148A	2	3-way solenoid valve assembly	Page A-3
7	9100472	29”	Tubing, Silicone, ¼ OD x 1/8 ID	
8	9100921	1	Pressure Pump	
9	9100971	1	Gripper Clip	
10	9101290	4	Fitting, Tee, 1/8" I.D.	
11	9102618A	1	Cable, Triple 12VDC	
12	9102715	2	Gripper Clip, 3/8" - 5/8"	
13	9102960A	2	Flow Control, Meniscus Vacuum	Page A-20
14	9103020A	1	Flow Control Assembly, Purge Pressure	Page A-21
15	9103198	2	Screw, SHCS, 8-32 UNC x 1-3/4"	
16	9103473A	2	Meniscus Pump Assembly, Heavy duty	Page A-22
17	9103634	1	Bracket, Mounting, Components	
18	9103635	1	Plate, Mounting	

Figure A-2: *Pressure Regulator 2-Channel (BK-PVM-700)*

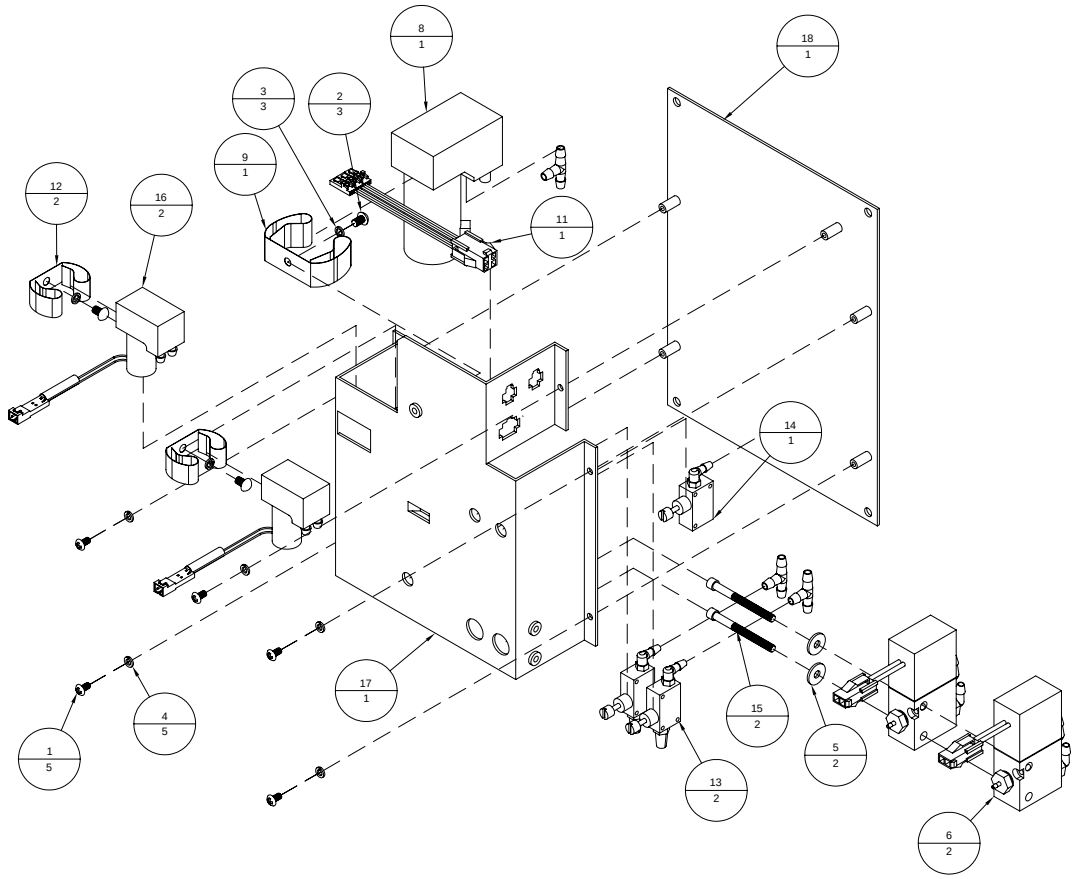


Table A-3: *3-Way Solenoid Valve Assembly (9100148A)*

Item	Part Number	Quantity	Description	Reference
1	9100206	1	Receptacle, 2	
2	9100207	2	Contact, Male, 18	
3	9102085	2	Connector "L", 1/8	
4	9102144	1	Connector, 1/8	
5	9102714	1	Solenoid Valve, Built	

Figure A-3: *3-Way Solenoid Valve Assembly (9100148A)*

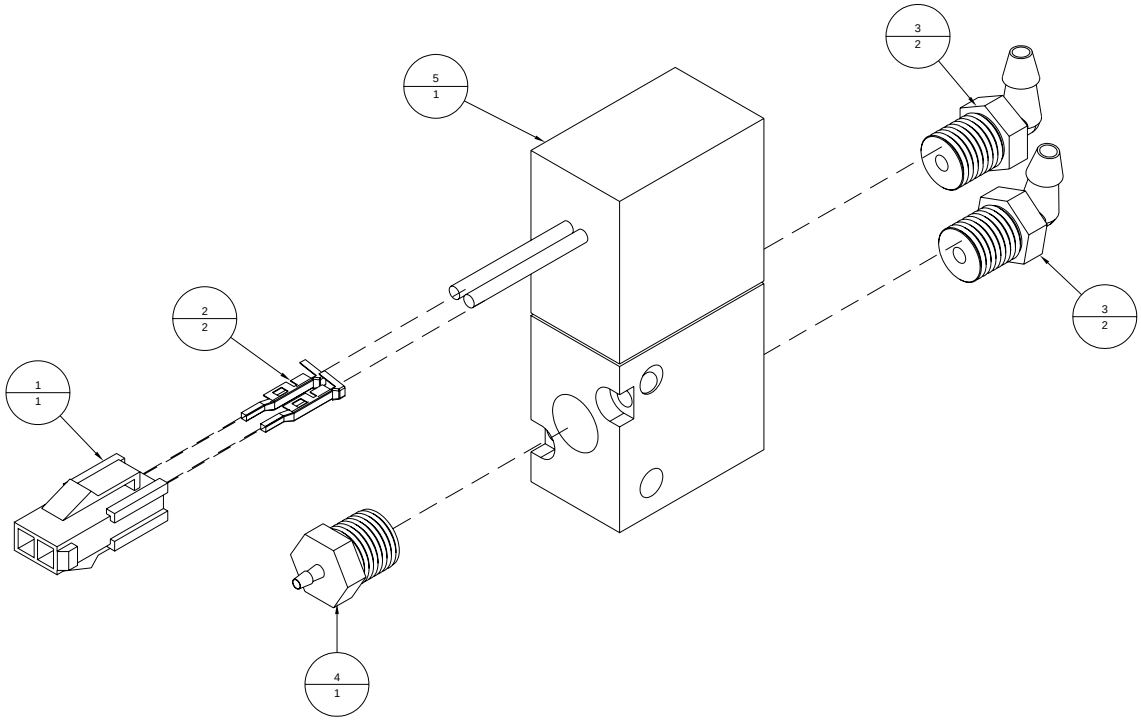
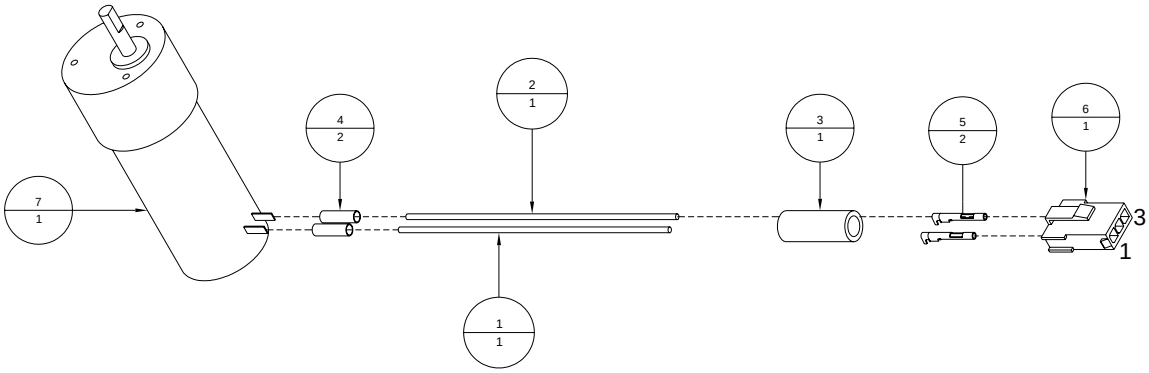


Table A-4: *Gearmotor Assembly (9100936A)*

Item	Part Number	Quantity	Description	Reference
1	606023	1 x 4”	Wire, #18, Green, Hookup	
2	606025	1 x 4"	Wire, #18, Orange, Hookup	
3	609001	1 x 2”	Shrink Wrap, 1/4" I.D.	
4	609004	2 x 1”	Shrink Wrap, 1/8" I.D.	
5	614002	2	Female Contact, Socket	
6	614003	1	Cap Receptacle	
7	9100936	1	Motor, Gear, R 187:1, 12 VDC	

Figure A-4: *Gearmotor Assembly (9100936A)*



Contact #	Function on gearmotor	Color	Length"	Wire #
1	-	GN	4	18
2	n/a	n/a	n/a	n/a
3	+	OG	4	18

Table A-5: *Filter Holder Assembly (9100964A)*

Item	Part Number	Quantity	Description	Reference
1	9100149	2	Connector, 1/8" NPT, 1/8" ID	
2	9102116	1 x 12”	Tubing, Pharmed, 1/8" x 1/4"	
3	9102675A	1	Filter Body Assembly	

Figure A-5: *Filter Holder Assembly (9100964A)*

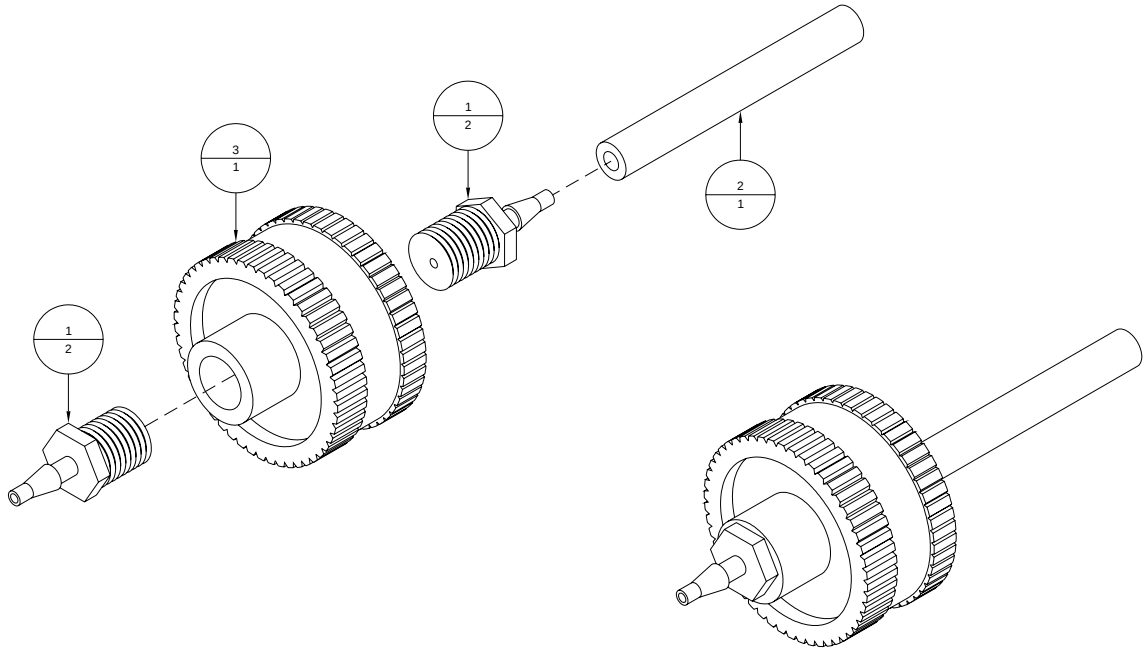


Table A-6: *Electrical Boards Bracket Assembly (9100969A)*

Item	Part Number	Quantity	Description	Reference
1	401310	5	Screw, PHMS, 4-40 UNC x 1/4"	
2	402510	2	Screw, BHCS, 6-32 UNC x 1/4"	
3	440530	5	Washer, #6, Nylon	
4	606030A	1	Cable, High Voltage Power Supply	
5	606311A	1	System Support Interface Cable (Atlas)	
6	615076A	2	Cable, HDC	
7	9100969	1	System Support Board, Atlas	
8	9100994	2	Board, Head Drive Circuit (HDC)	
9	9101230	1	Electrical Boards Bracket	
10	9101285	1	Catch Stopper (Part of IDS BOM)	
11	9104380	1	Board, System Support CPU (SSB II)	

Figure A-6: *Electrical Boards Bracket Assembly (9100969A)*

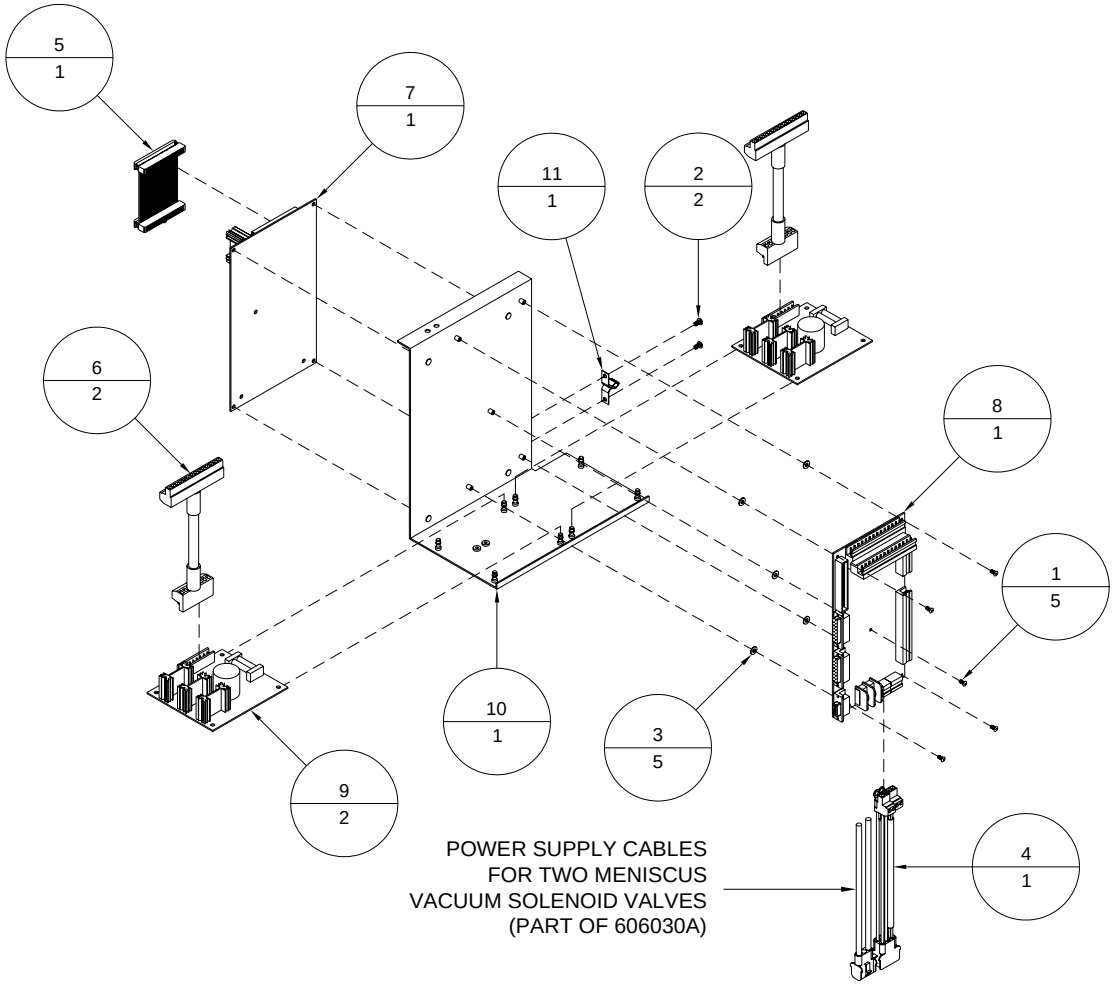


Table A-7: *Inkwell, Single IDS, Cezanne (9100978A)*

Item	Part Number	Quantity	Description	Reference
1	401510	4	Screw, BHCS, 4-40 UNC x 1/4"	
2	402510	10	Screw, BHCS, 6-32 UNC x 1/4"	
3	404510	16	Screw, BHCS, 10-32 UNF x 1/4"	
4	420008	1	Nut, 10-32 UNF	
5	603300	1	Switch, Breaker, 5A, 1 Pole	
6	606330A	1	Main Power Supply Cable	
7	614114A	1	Cable, Panel Mount Counter	
8	615131	1	Cable Clamp, 3/8", Metal	
9	803020	2	Electrical Warning Label	
10	9100717	1	Plug, 6-Pin, Mate-n-lok	
11	9100748A	1	Cable, I/O Panel Mount	
12	9100979	1	UV/Solvent Inkwell Container	
13	9101165	2	Drawer Slide	
14	9101209A	1	Power Supply Housing Assembly	Page A-11
15	9101217	1	Rear Door	
16	9101220	1	Housing Cover	
17	9101228A	1	Ink Delivery Module, Atlas	Page A-12
18	9101788	1	Bracket, Umbilical Mount	
19	9101796	1	Eye Protection Label	
20	9102151A	1	Syringe Assembly	
21	9102156A	1	Ink Bottle Holder Assembly	
22	9103909A	1	Bottle Coupling Assembly	Page A-23
23	BKINK-CEZBK1000	1	Ink, Cezanne, Black, 1L	

Figure A-7: *Inkwell, Single IDS, Cezanne (9100978A)*

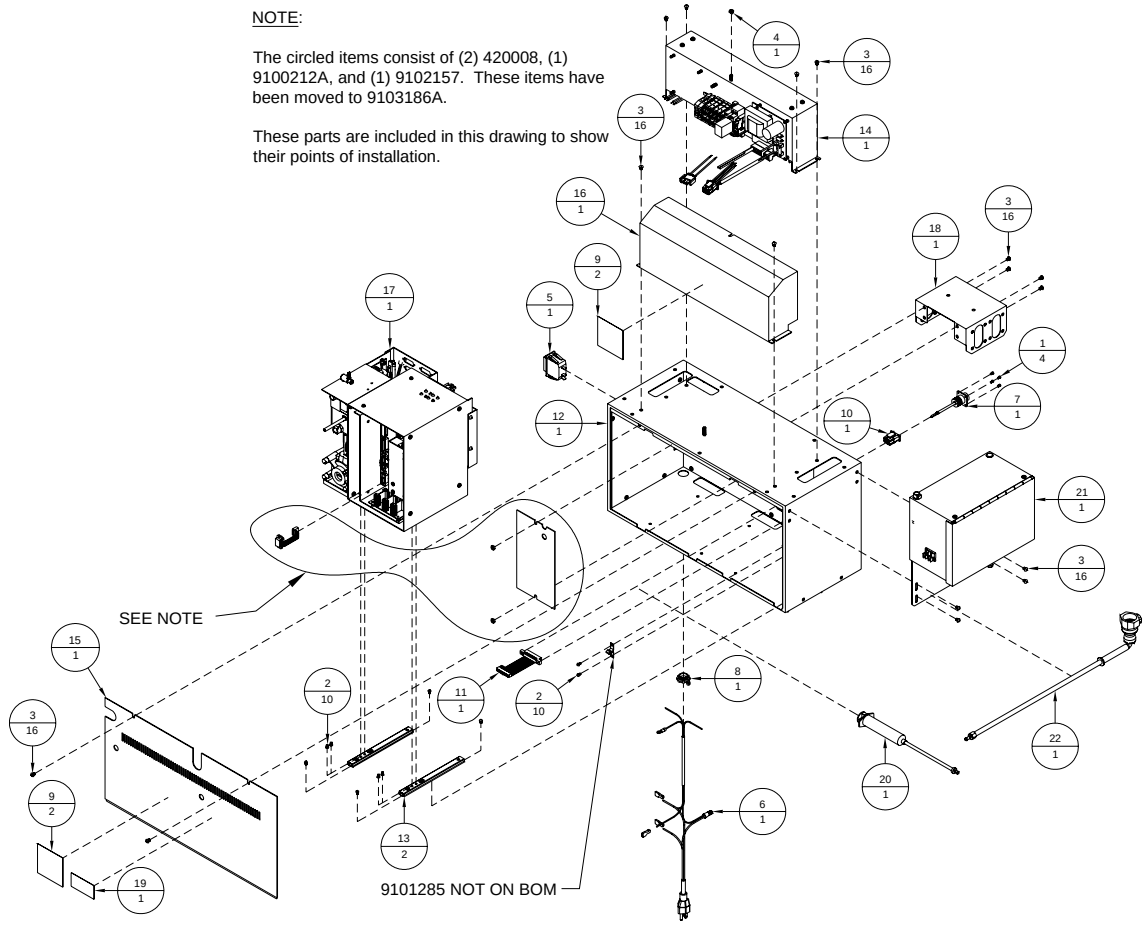


Table A-8: *"U" Holder Assembly (9101164A)*

Item	Part Number	Quantity	Description	Reference
1	401310	3	Screw, PHMS, 4-40 UNC x 1/4"	
2	404550	1	Screw, BHCS, 10-32 UNF x 3/4"	
3	9100876	1	Coupling, 0.5" dia.	
4	9100931	1	Peristaltic Pump Head	
5	9100936A	1	Gearmotor Assembly	Page A-4
6	9101164	1	"U" Holder	
7	9102116	1	Tubing, Pharmed, 1/8" x 1/4", 16"	

Figure A-8: *"U" Holder Assembly (9101164A)*

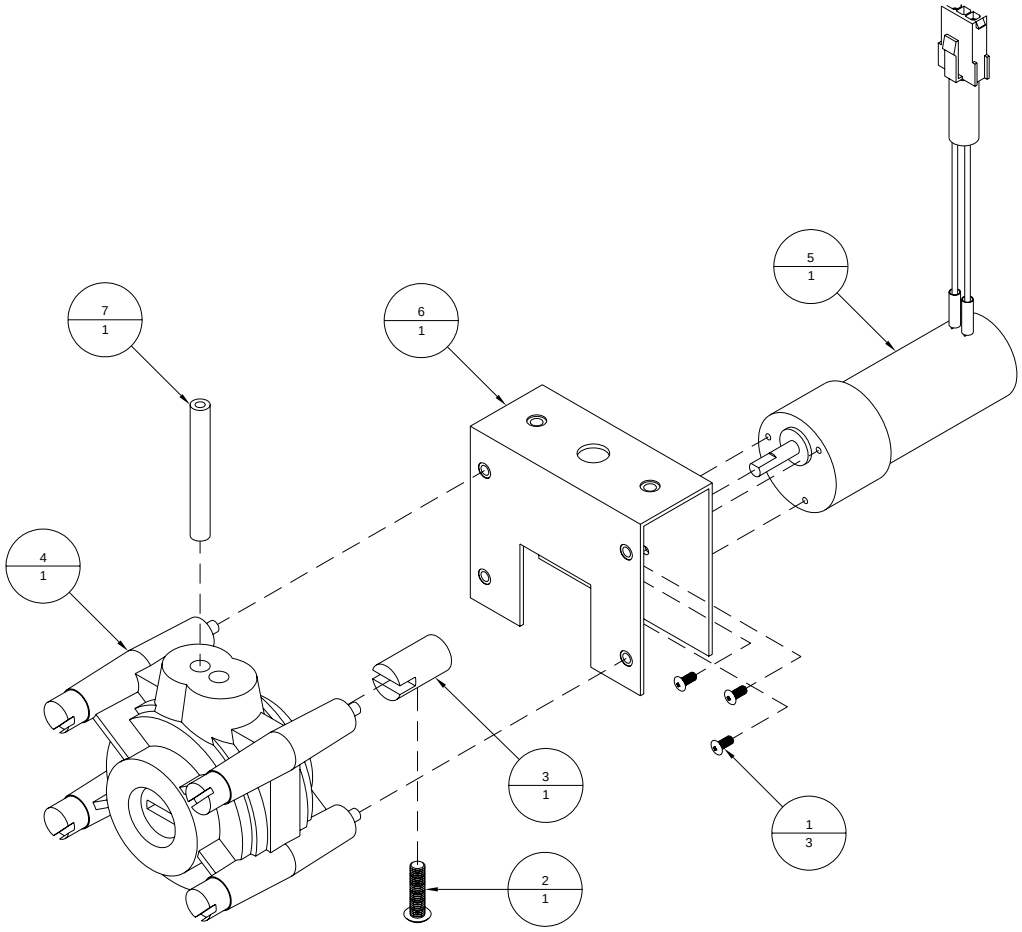


Table A-9: *Solenoid Valve Assembly, Air (9101208A)*

Item	Part Number	Quantity	Description	Reference
1	606531	1 x 25”	Cable, #22-2, Shielded	
2	9100170	1 x 5”	Tubing, Viton, 1/16” I.D.	
3	9100170	1 x 10”	Tubing, Viton, 1/16” I.D.	
4	9101208	1	Solenoid Valve, Air, 12 VDC, N.C.	
5	9101583	2	Fitting, Nylon, 10-32 UNF, 1/16” I.D.	

Figure A-9: *Solenoid Valve Assembly, Air (9101208A)*

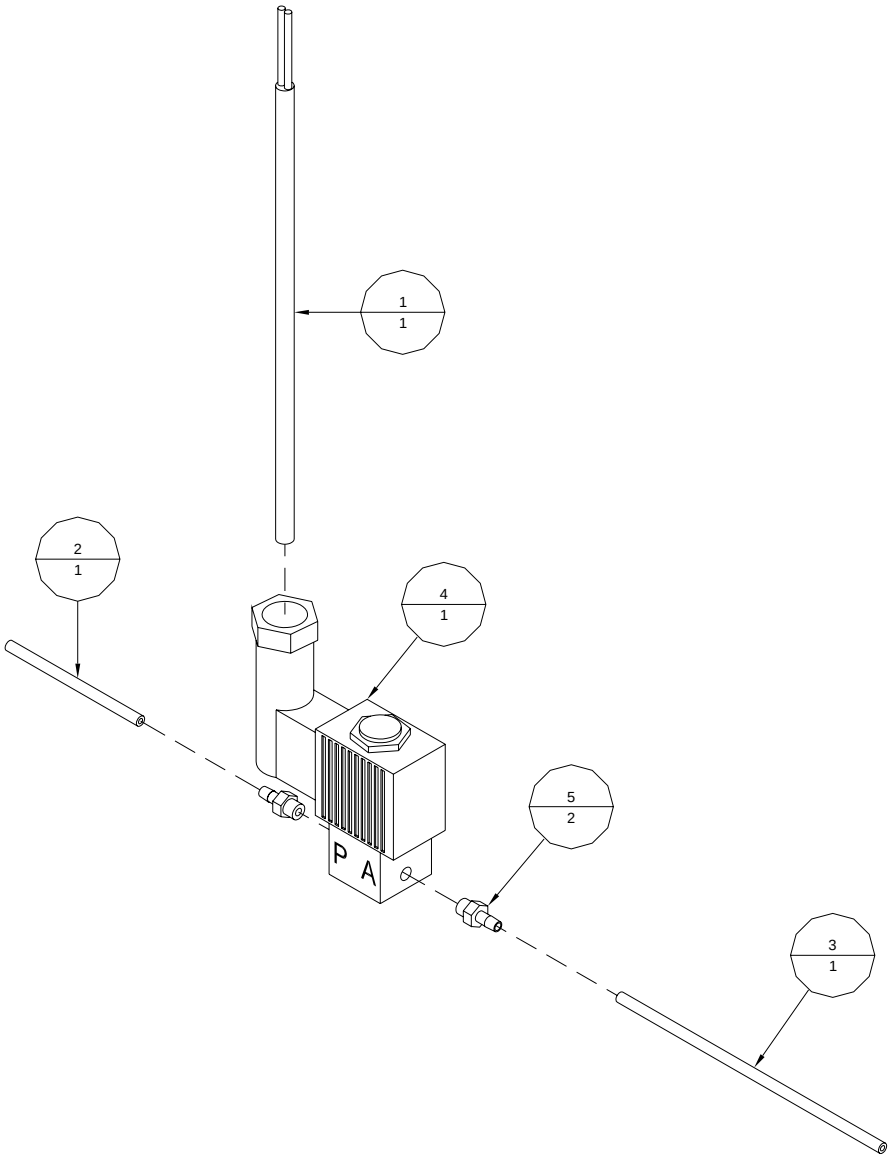


Table A-10: *Power Supply Housing Assembly (9101209A)*

Item	Part Number	Quantity	Description	Reference
1	404510	2	Screw, BHCS, 10-32 UNF x 1/4”	
2	404520	4	Screw, BHCS, 10-32 UNF x 3/8”	
3	606000	1 x 12”	Wire, #16, Black, Hookup	
4	606002	2 x 12”	Wire, #16, Blue, Hookup	
5	606009	1 x 12”	Wire, #16, White, Hookup	
6	606021	2 x 12”	Wire, #16, Brown, Hookup	
7	609001	2 x 1”	Shrink Wrap, 1/4” I.D.	
8	609111A	1	Cable, Power Supply, 110VAC, 170/12VDC	
9	610100	1	Relay, 120 VAC	
10	615003	5	Terminal Block, M10/10, Grey, 10mm 7.5 A	
11	615004	1	Relay Base	
12	615012	3	End Section, FEM6, Grey, 2.5mm	
13	615016	1	End Stop, BAM, 9.1mm	
14	615018	2	Ground Block, M10/10.P, Green & Yellow	
15	615021	1 x 5.5”	“T” Rail	
16	615064A	1	Supply Cable, 120 VAC	
17	9101158	1	Power Supply, Atlas, 170 V	
18	9101209	1	Power Supply, 12 VDC, 10.2 A	
19	9101219	1	Power Supply Housing	

Figure A-10: *Power Supply Housing Assembly (9101209A)*

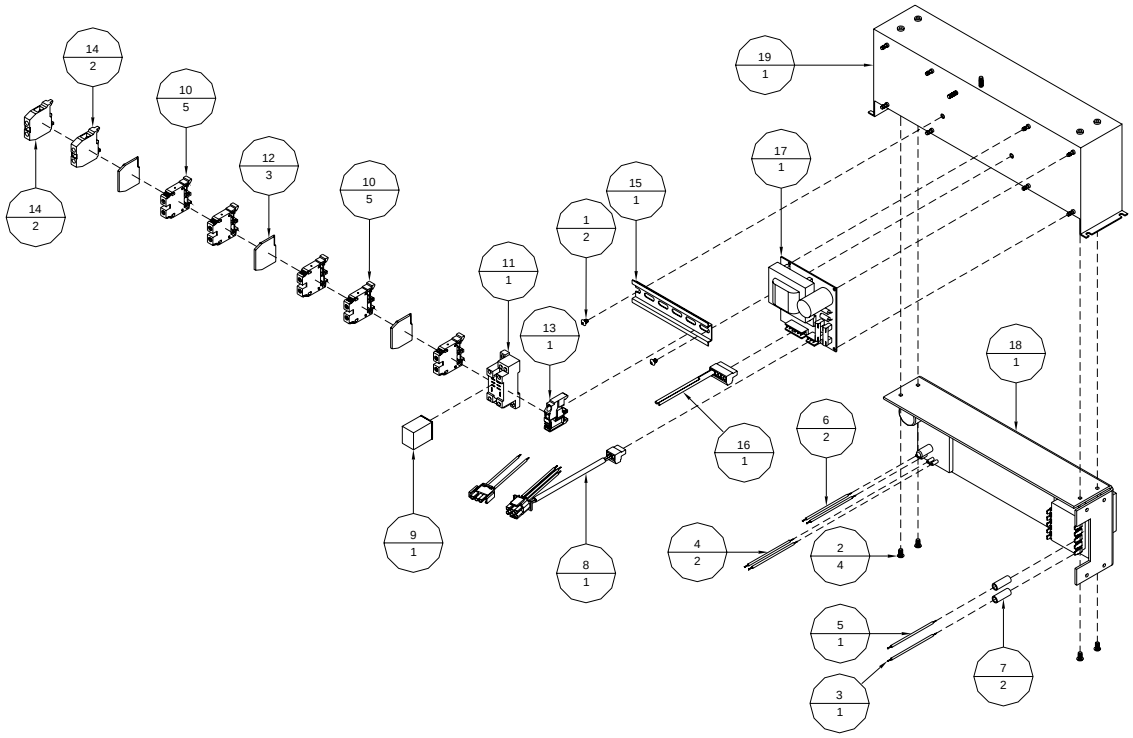


Table A-11: *Ink Delivery Module, Atlas (9101228A)*

Item	Part Number	Quantity	Description	Reference
1	402510	10	Screw, BHCS, 6-32 UNC x 1/4”	
2	404510	14	Screw, BHCS, 10-32 UNF x 1/4”	
3	413506	8	Screw, BHCS, M3 x 6mm	
4	615140	15	Lashing Tie (Not Shown – See Notes)	
5	9100206A	1	Cable, Pressure Regulator	
6	9100969A	1	Electrical Board Bracket Assembly	Page A-6
7	9101165	2	Drawer Slide	
8	9101208A	2	Solenoid Valve Air Assembly	Page A-10
9	9101228	1	Main Container	
10	9101229A	1	Side Bracket Assembly	Page A-13
11	9101231A	1	Terminal Bracket	Page A-14
12	9101285	1	Roller Catch	
13	9101584	1	Tray, Ink Spill	
14	BK-PVM-700	1	Pressure Regulator, 2 Channel	Page A-2

Figure A-11: *Ink Delivery Module, Atlas (9101228A)*

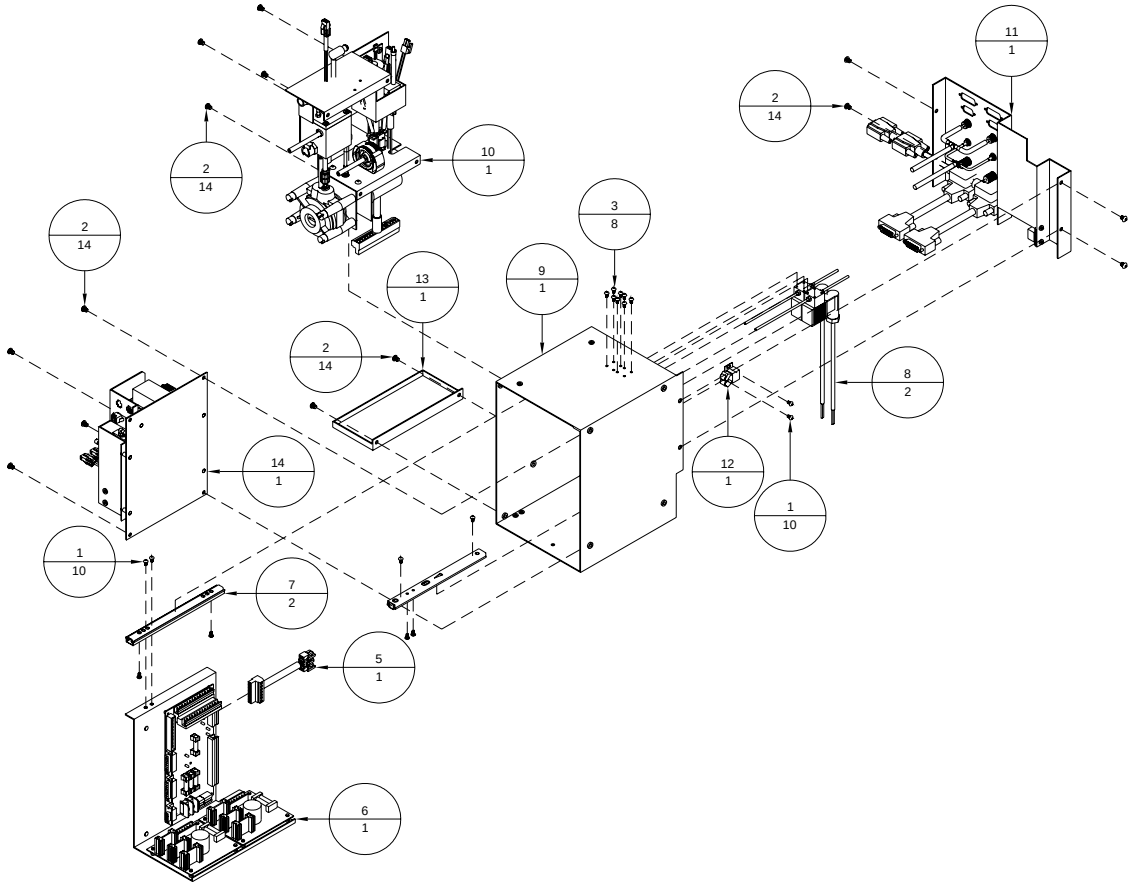


Table A-12: *Side Bracket Assembly (9101229A)*

Item	Part Number	Quantity	Description	Reference
1	404510	7	Screw, BHCS, 10-32 UNF x 1/4"	
2	630004A	1	Cycle Proximity Switch Assembly	
3	640301A	1	Cable, IDS Drive	
4	9100472	1	Tubing, Silicone, 1/4" O.D., 2.5"	
5	9100921	1	Lung Vacuum Pump	
6	9100921A	1	Adapter Cable Assembly	
7	9100964A	1	Filter Holder Assembly	Page A-5
8	9100971	1	Gripper Clip	
9	9101049	1	Lung Vacuum Pump Bracket	
10	9101164A	1	"U" Holder Assembly	Page A-9
11	9101170	1	Fitting, Straight Reducer, 1/8 To 1/16 ID	
12	9101229	1	Side Bracket	
13	9101692	1	Coupling, 1/8" I.D. Tubing, Panel mount	
14	9101693A	1	Subcontainer Assembly	Page A-16
15	9101700A	1	Relief Valve Assembly, 20 PSI	Page A-18
16	9102116	1 x 2.5”	Tubing, Pharmed, 1/4"x 1/8"	
17	9102116	1 x 24”	Tubing, PharMed, 1/4" x 1/8"	
18	9102148	1	Coupling Insert, Elbow, 1/8" I.D.	

Figure A-12: *Side Bracket Assembly (9101229A)*

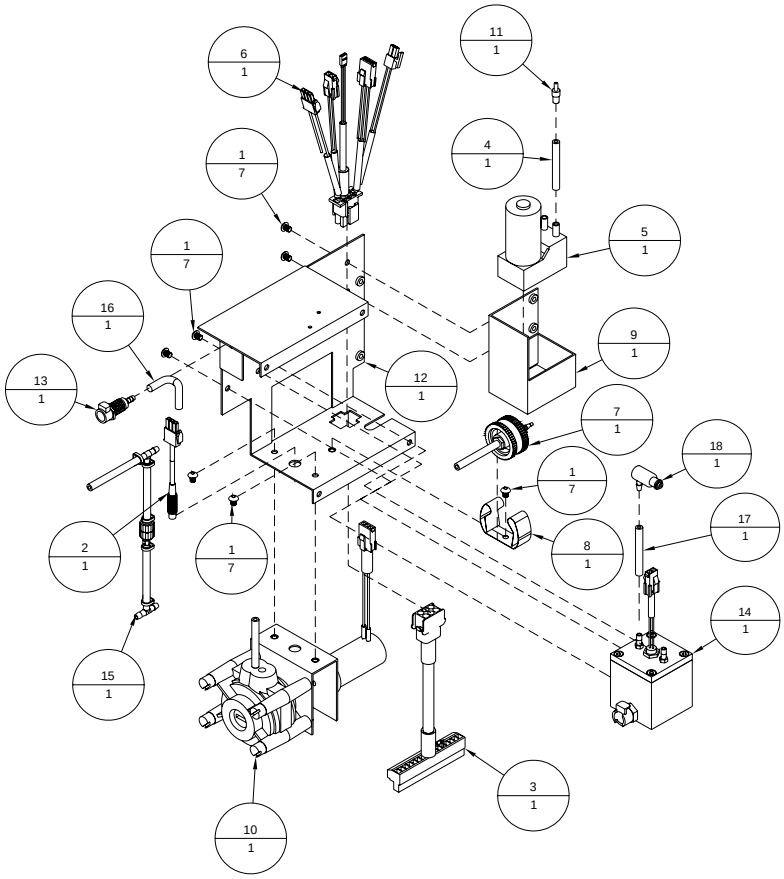


Table A-13: *Terminal Bracket Assembly (9101231A)*

Item	Part Number	Quantity	Description	Reference
1	402510	2	Screw, BHCS, 6-32 UNC x 1/4"	
2	615140	6	Lashing Ties (Not Shown - See Note)	
3	615322	4	Female Screwlock, 4-40 UNC	
4	9100170	2	Tubing, Viton, 1/16" ID, 2"	
5	9100960	1	Tubing, Norprene, 1/8" x 1/4" , Black, 8"	
6	9100962	2	Coupling, Hose Barb, Panel mount, 1/16" I.D.	
7	9100963	1	"T" Connector, 1/8"x 1/16"x1/16"	
8	9100981	2	Coupling Body-Panel Mount,Submin,1/8" OD	
9	9101162A	2	Cable, Head Support Interface, Atlas	
10	9101231	1	Terminal Bracket	
11	9101285	1	Roller Catch	
12	9101290	1	Fitting, Tee, 1/8" I.D.	
13	9101692	2	Coupling, 1/8" I.D. Tubing, Panel Mount	
14	9102116	2	Tubing, Pharmed, 1/4"x 1/8", 4"	
15	9102116	1 x 8”	Tubing, Pharmed, 1/4"x 1/8"	
16	9102805A	2	Cable, Printhead Data, 6', Right	

Figure A-13: *Terminal Bracket Assembly (9101231A)*

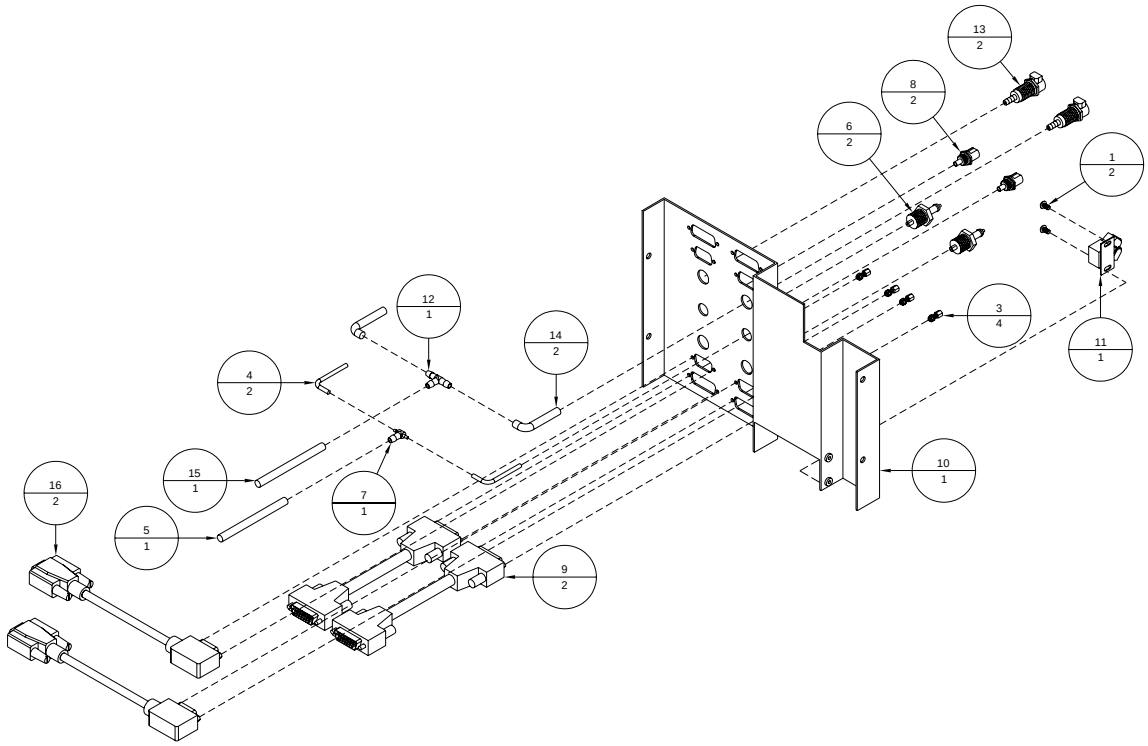


Table A-14: *Ink Delivery Module, Reverse, Atlas (9101232A)*

Item	Part Number	Quantity	Description	Reference
1	402510	10	Screw, BHCS, 6-32 UNC x 1/4"	
2	404510	14	Screw, BHCS, 10-32 UNF x ¼"	
3	413506	8	Screw, BHCS, M3 x 6 mm	
4	9100206A	1	Cable, Pressure Regulator	
5	9100969A	1	Electrical Board Bracket Assembly	Page A-6
6	9101165	2	Drawer Slide	
7	9101208A	2	Solenoid Valve Assembly, Air	Page A-10
8	9101228	1	Main Container	
9	9101229A	1	Side Bracket Assembly	Page A-13
10	9101234A	1	Terminal Bracket Assembly, Reverse, Monet	Page A-16
11	9101285	1	Roller Catch – Roller	
12	9101584	1	Tray, Ink Spill	
13	BK-PVM-700	1	Pressure Regulator, 2-Channel	

Figure A-14: *Ink Delivery Module, Reverse, Atlas (9101232A)*

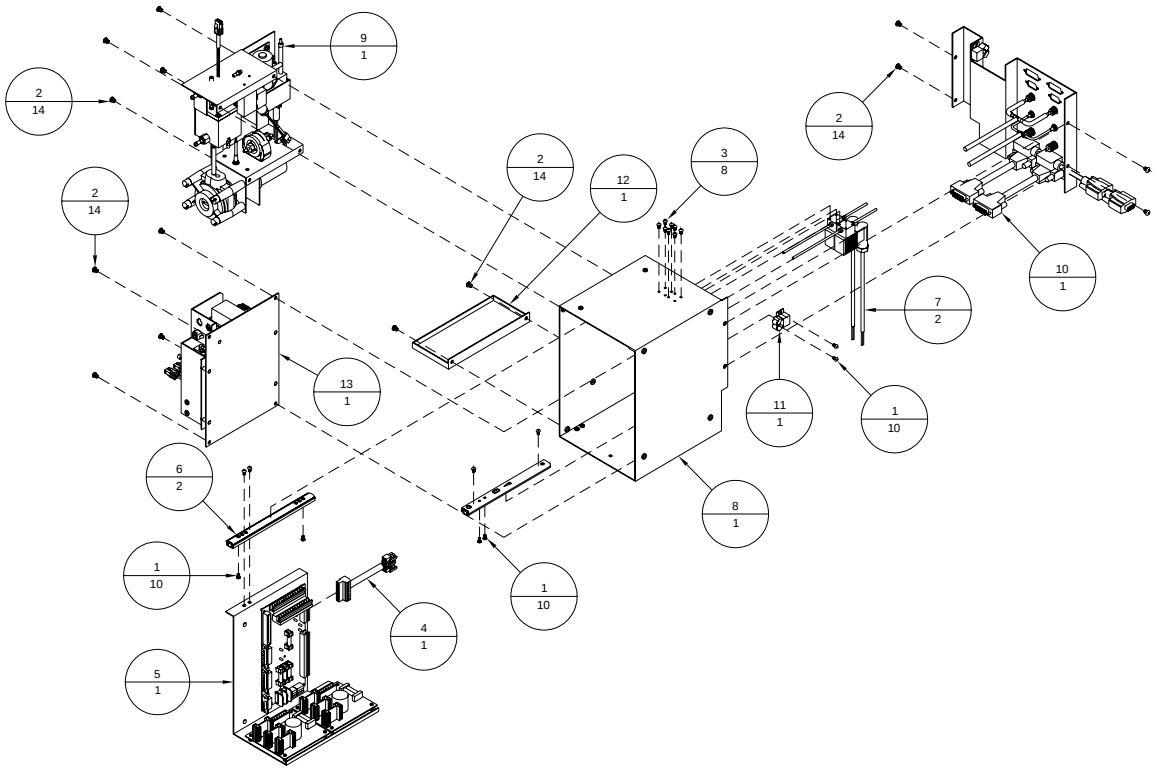


Table A-15: *Terminal Bracket Assembly, Reverse (9101234A)*

Item	Part Number	Quantity	Description	Reference
1	402510	2	Screw, BHCS, 6-32 UNC x 1/4"	
2	615140	6	Lashing Tie	
3	615322	4	Female Screwlock, 4-40 UNC	
4	9100170	2 x 2”	Tubing, Viton, 1/16” ID	
5	9100960	10”	Tubing, Norprene, 1/8” x ¼”, Black	
6	9100962	2	Coupling, Hose Barb, Panel Mount, 1/16 ID	
7	9100963	1	"T" Connector, 1/8"x 1/16"x1/16"	
8	9100981	2	Coupling Body-Panel Mount, 1/8” O.D.	
9	9101162A	2	Head Support Interface Cable, Atlas	
10	9101231	1	Terminal Bracket	
11	9101285	1	Roller Catch – Roller	
12	9101290	1	Fitting, Tee, 1/8" I.D.	
13	9101692	2	Coupling, 1/8” I.D. Tubing, Panel Mount	
14	9102116	2 x 4”	Tubing, PharMed, ¼” x 1/8”	
15	9102116	10”	Tubing, PharMed, ¼” x 1/8”	
16	9102705A	2	Cable, Printhead Data, 6’, Left	

Figure A-15: *Terminal Bracket Assembly, Reverse (9101234A)*

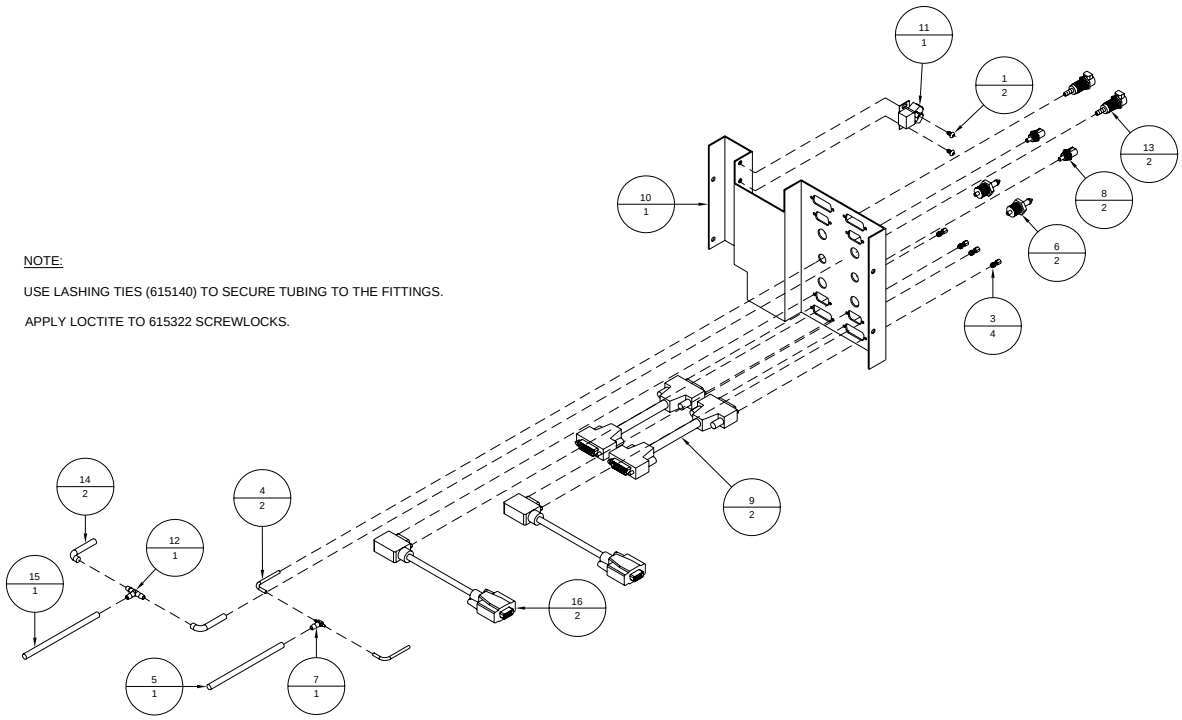
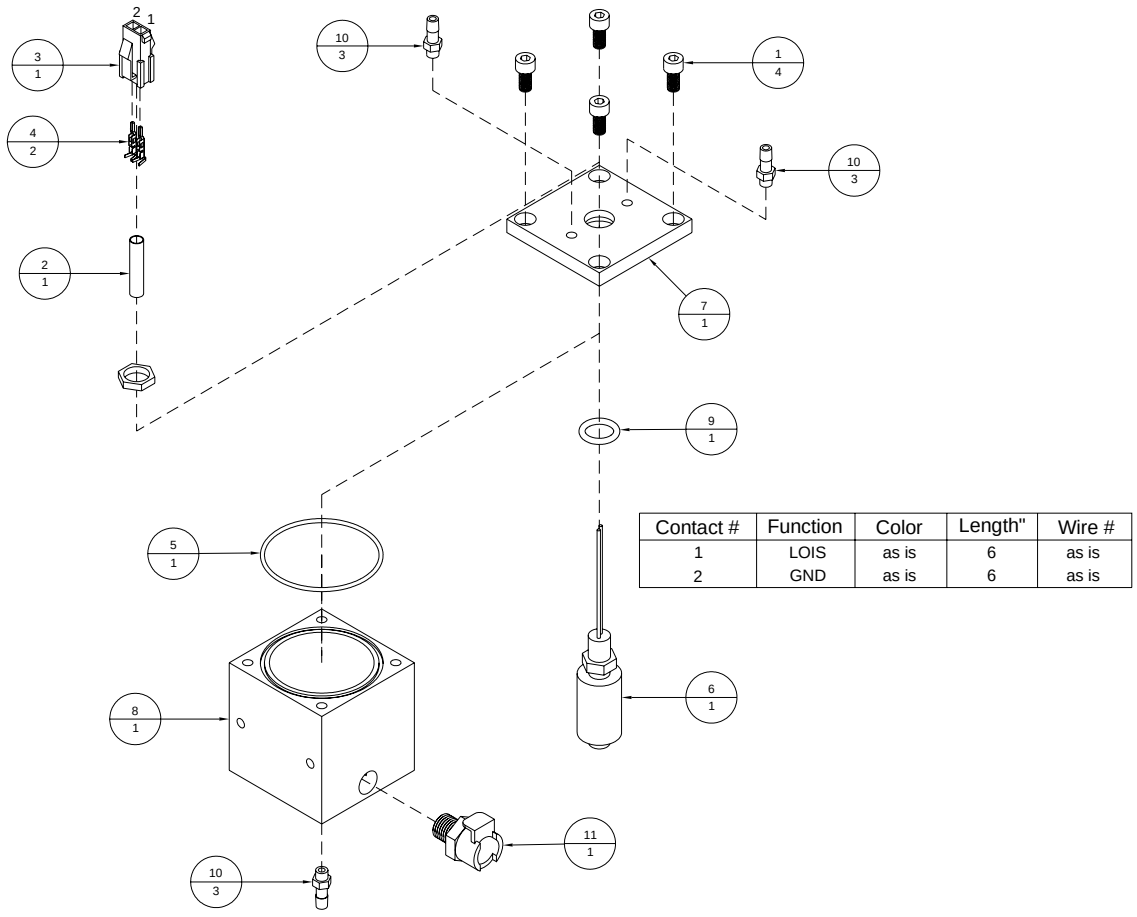


Table A-16: *Subcontainer Assembly (9101693A)*

Item	Part Number	Quantity	Description	Reference
1	404220	4	Screw, SHCS, 10-32 UNF x 3/8"	
2	609000	1	Shrink Wrap, 3/16" I.D., 5"	
3	9100206	1	Receptacle, 2-Pin, Mini-Fit Jr	
4	9100207	2	Contact, Male, 18-22 AWG	
5	9100877	1	O-Ring, 1/16" Dia.	
6	9100966	1	Float Switch, micro-miniature	
7	9100973	1	Ink Subcontainer Lid	
8	9101166	1	Drainable Subcontainer	
9	9101297	1	O-Ring, 7/16 x 5/8 x 3/32, EPDM peroxide cured	
10	9101582	3	Fitting, Nylon, 10-32 UNF, 1/8" I.D.	
11	9102150	1	Coupling Body, 1/8" NPT	

Figure A-16: *Subcontainer Assembly (9101693A)*

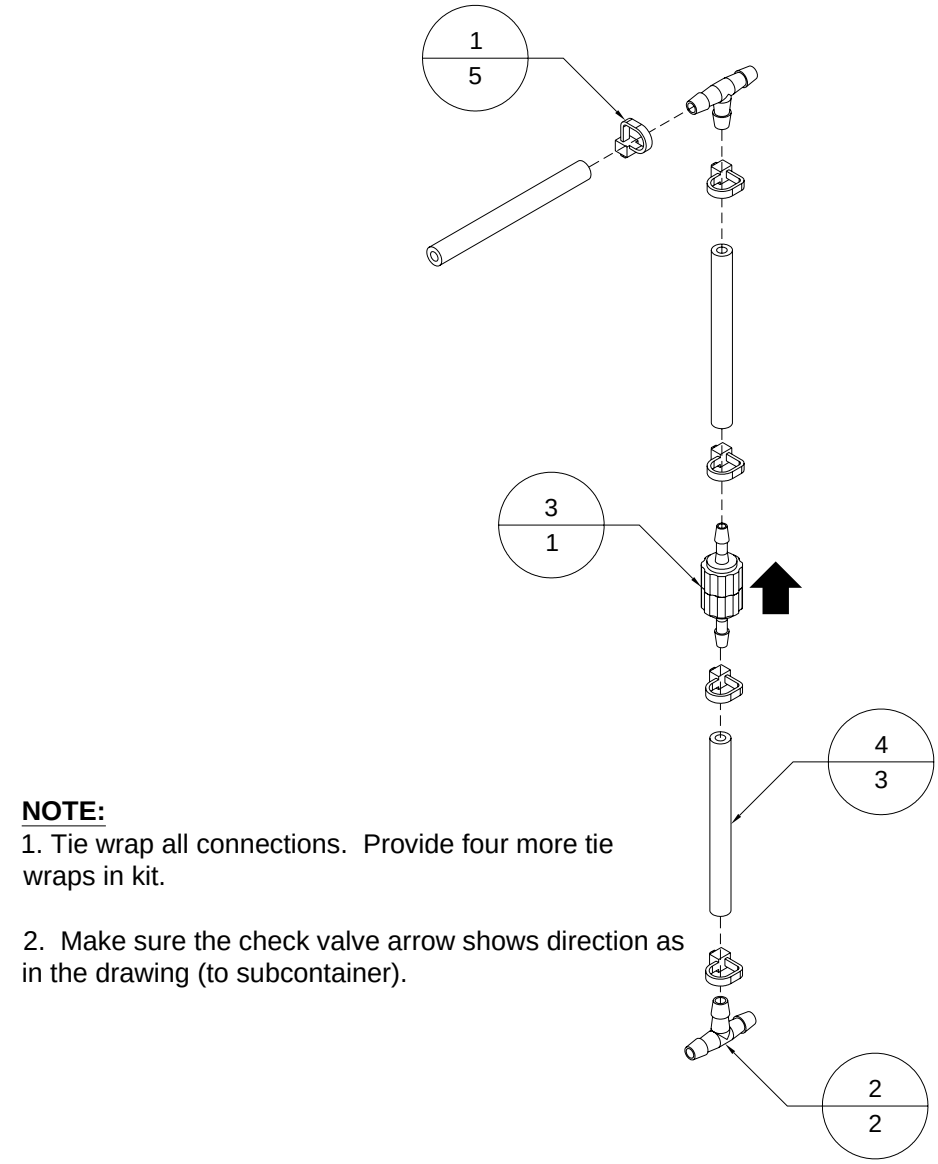


Contact #	Function	Color	Length"	Wire #
1	LOIS	as is	6	as is
2	GND	as is	6	as is

Table A-17: *Relief Valve Assembly (9101700A)*

Item	Part Number	Quantity	Description	Reference
1	615140	5	Lashing Tie	
2	9101290	2	Fitting, Tee, 1/8" I.D.	
3	9101700	1	Check Valve, 20 PSI	
4	9102116	3 x 2.5”	Tubing, PharMed, ¼” x 1/8”	

Figure A-17: *Relief Valve Assembly (9101700A)*



NOTE:

1. Tie wrap all connections. Provide four more tie wraps in kit.

2. Make sure the check valve arrow shows direction as in the drawing (to subcontainer).

Table A-18: *Ink Bladder Holder Assembly (9102156A)*

Item	Part Number	Quantity	Description	Reference
1	401010	3	Screw, FHCS, 4-40 UNC x ¼"	
2	404510	2	Screw, BHCS, 10-32 UNF x ¼"	
3	9101287	1	Multitube Holder	
4	9101305	1	Hole Plug, ½" Dia	
5	9101733	1	Cubitainer, 1L	
6	9102116	1 x 1.5"	Tubing, Pharmed, ¼" x 1/8"	
7	9102116	1 x 8"	Tubing, Pharmed, ¼" x 1/8"	
8	9102156	1	Ink Botle Holder	
9	9102237	1	Holder Door	
10	9102625	1	Coupling, Panel Mount, ¼" OD	
11	9104580	1	Check Valve, 1/8" ID	

Figure A-18: *Ink Bladder Holder Assembly (9102156A)*

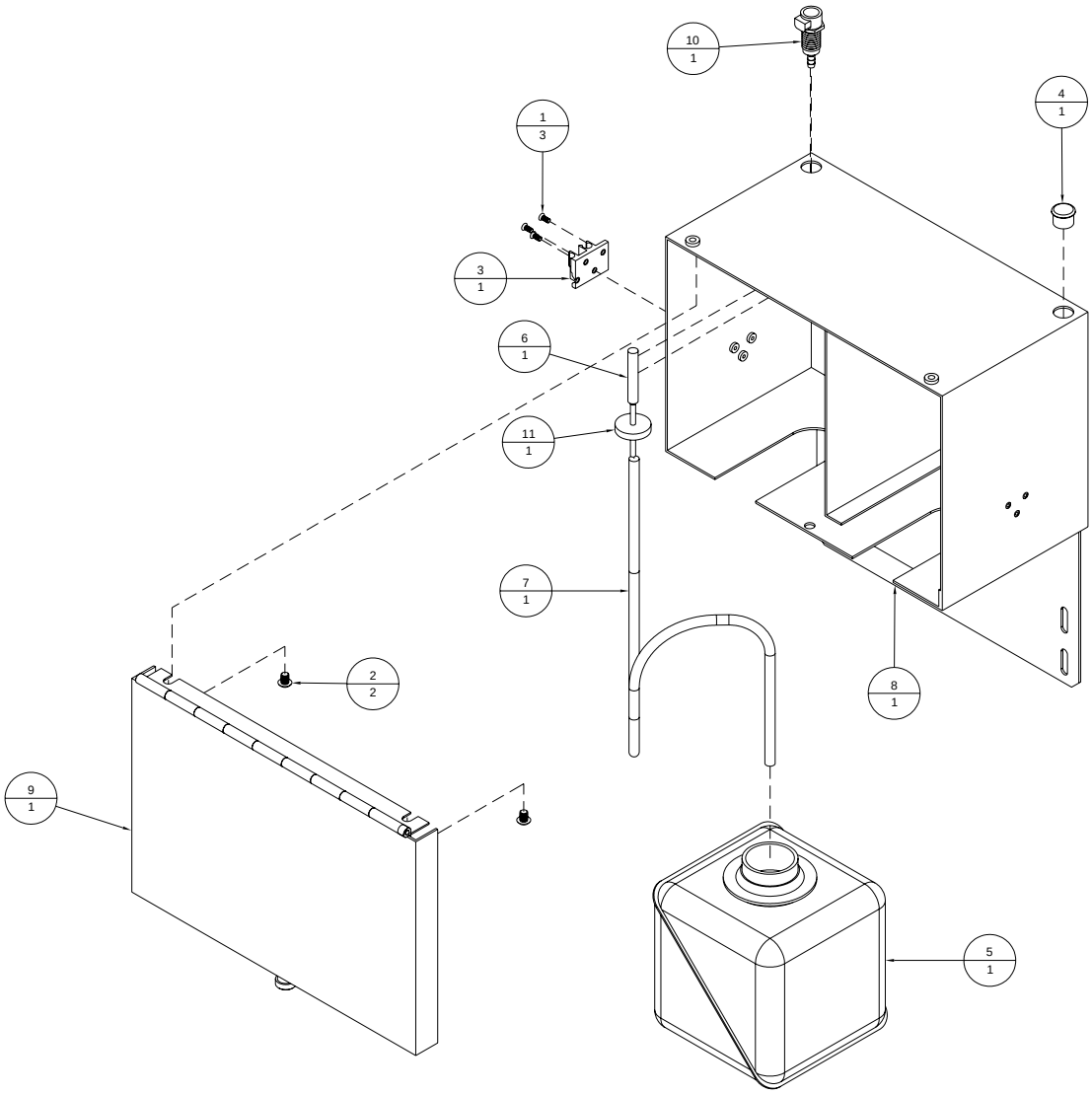


Table A-19: *Flow Control Meniscus Vacuum (9102960A)*

Item	Part Number	Quantity	Description	Reference
1	9102575	1	Filter, Bronze/Steel	
2	9102960	1	Valve, Flow Control, 10-32 UNF	
3	9103020	1	Fitting, 10-32 UNF, Elbow, 1/8" I.D.	

Figure A-19: *Flow Control Meniscus Vacuum (9102960A)*

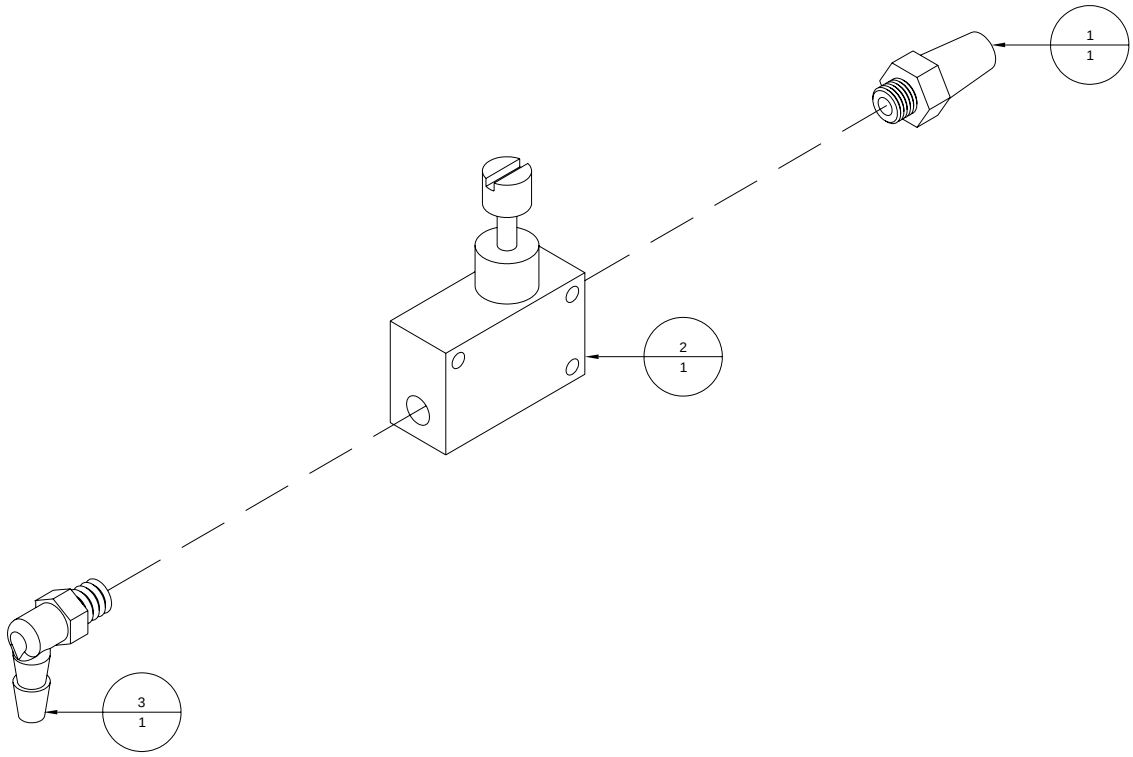


Table A-20: *Flow Control, Purge Pressure (9103020A)*

Item	Part Number	Quantity	Description	Reference
1	9102960	1	Valve , Flow Control, 10-32 UNF	
2	9103020	1	Fitting, 10-32 UNF, Elbow, 1/8" I.D.	

Figure A-20: *Flow Control, Purge Pressure (9103020A)*

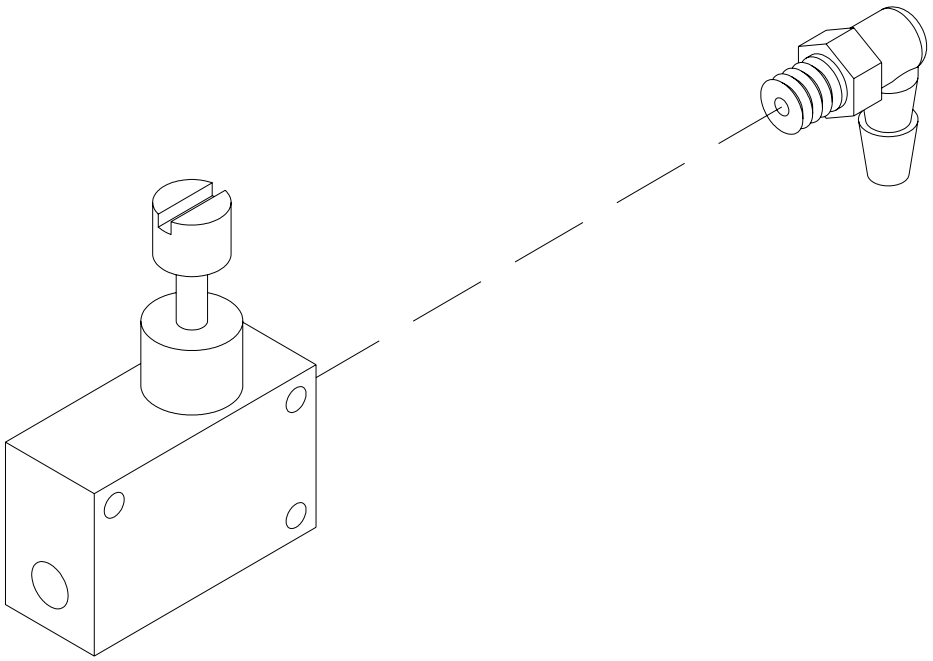


Table A-21: *Meniscus Pump Assembly, Heavy Duty (9103473A)*

Item	Part Number	Quantity	Description	Reference
1	609000	1	Shrink Wrap, 3/16" I.D. x 1"	
2	9102426	2	Terminal, Male Crimp	
3	9103312	1	Connector, Male, 2-Pin, SL	
4	9103473	1	Pump, 12 VDC, diaphragm, brushless	

Figure A-21: *Meniscus Pump Assembly, Heavy Duty (9103473A)*

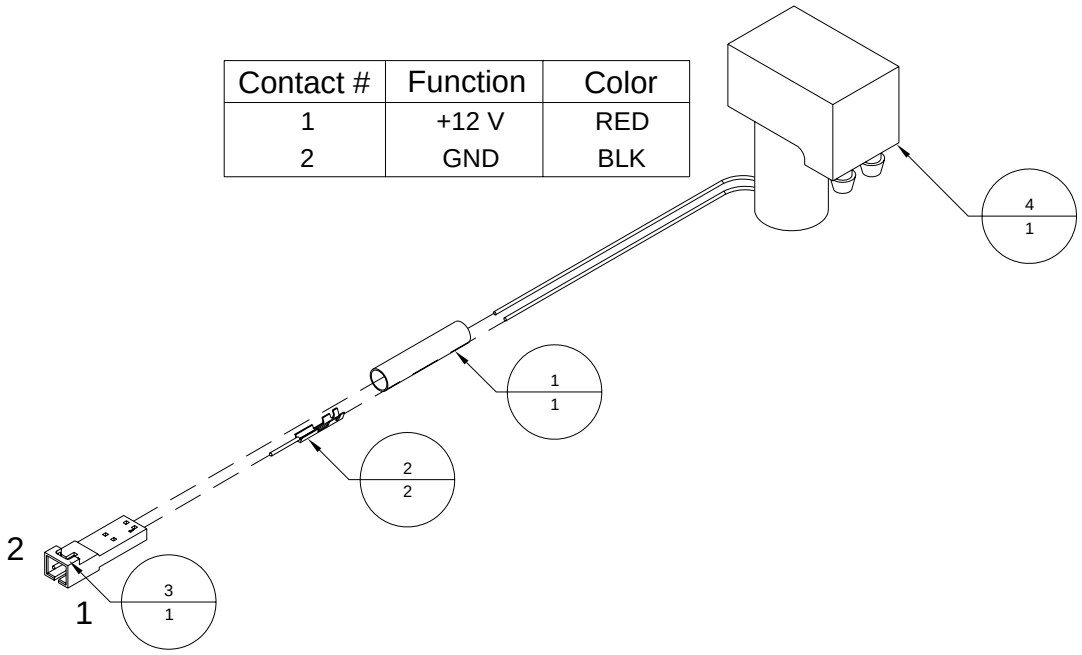
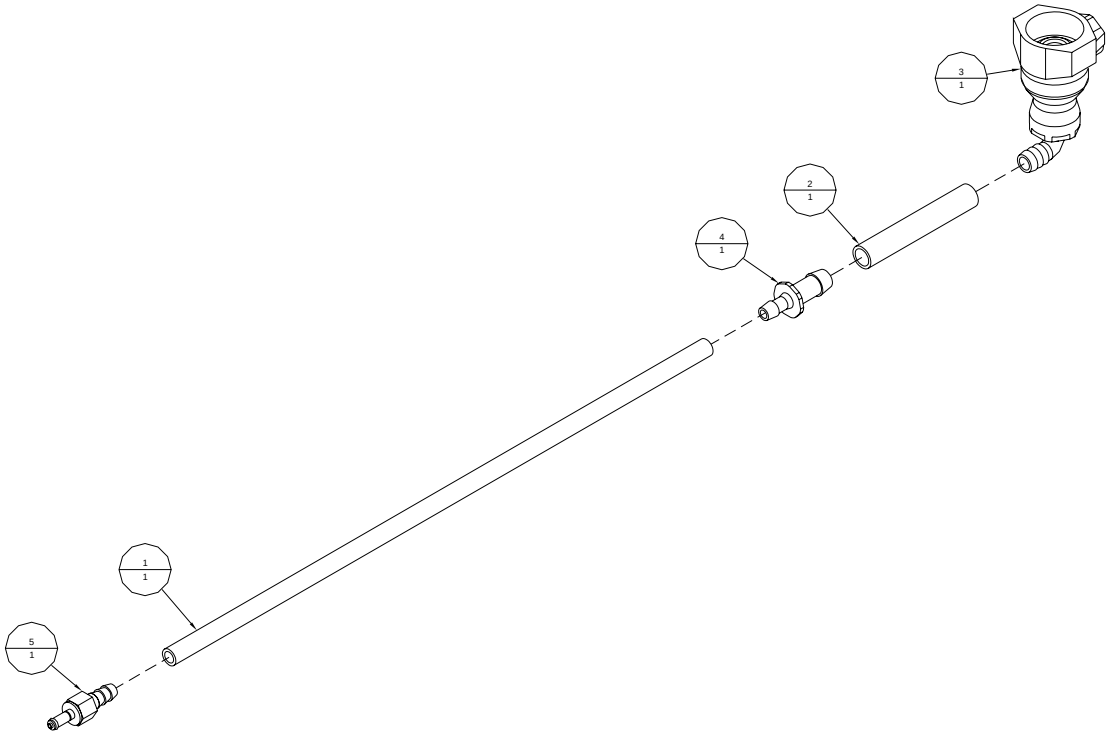


Table A-22: *Bottle Coupling Housing (9103909A)*

Item	Part Number	Quantity	Description	Reference
1	9102132	1	Tubing, Pharmed, 3/8" x 1/4", Almond, 15"	
2	9103908	1	Tubing, Pharmed, 1/2" x 3/8", Almond, 3"	
3	9103909	1	Coupling, UDC Series, Non-spill, 3/8" ID, Elbow	
4	9103911	1	Fitting, Straight Thru, 3/8 I.D.x1/4" I.D.	
5	9103912	1	Coupling, 1/4" I.D. Tubing, Inline, PP, Shutoff	

Figure A-22: *Bottle Coupling Housing (9103909A)*



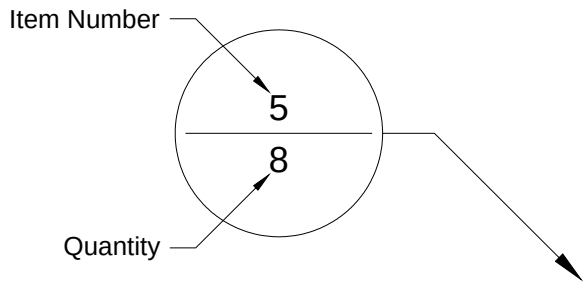
BK1710 Assembly Drawings

Appendix **B**

List of Tables

List of Figures

Balloon Annotation and Parts Listing



Item	Part Number	Quantity	Description	Reference
1				
2				

The following is a description of how to interpret the information in this section:

Item:

This column indicates the item number used for each unique part in an assembly drawing. It is matched with the top number in the balloon pointing at the associated part.

Part Number:

This column represents the Buskro part number.

Quantity:

This represents the total number of a given part in an assembly. It is matched with the bottom number in the balloon pointing at the associated part.

Description:

This column contains a brief description of the part.

Reference:

This column indicates the page location for sub-assemblies.

Table B-1: *Module, Cezanne Ink Delivery, 4 Channel (BK-IDM-4C)*

Item	Part Number	Quantity	Description	Reference
1	BKINK-CEZBK1000	1	Ink, Cezanne Black, 1L	
2	9102942A	1	Pumping Station Assembly, Atlas	Page B-5
3	9103431A	1	Ink bottle bracket assembly	Page B-10

Figure B-1: *Module, Cezanne Ink Delivery, 4 Channel (BK-IDM-4C)*

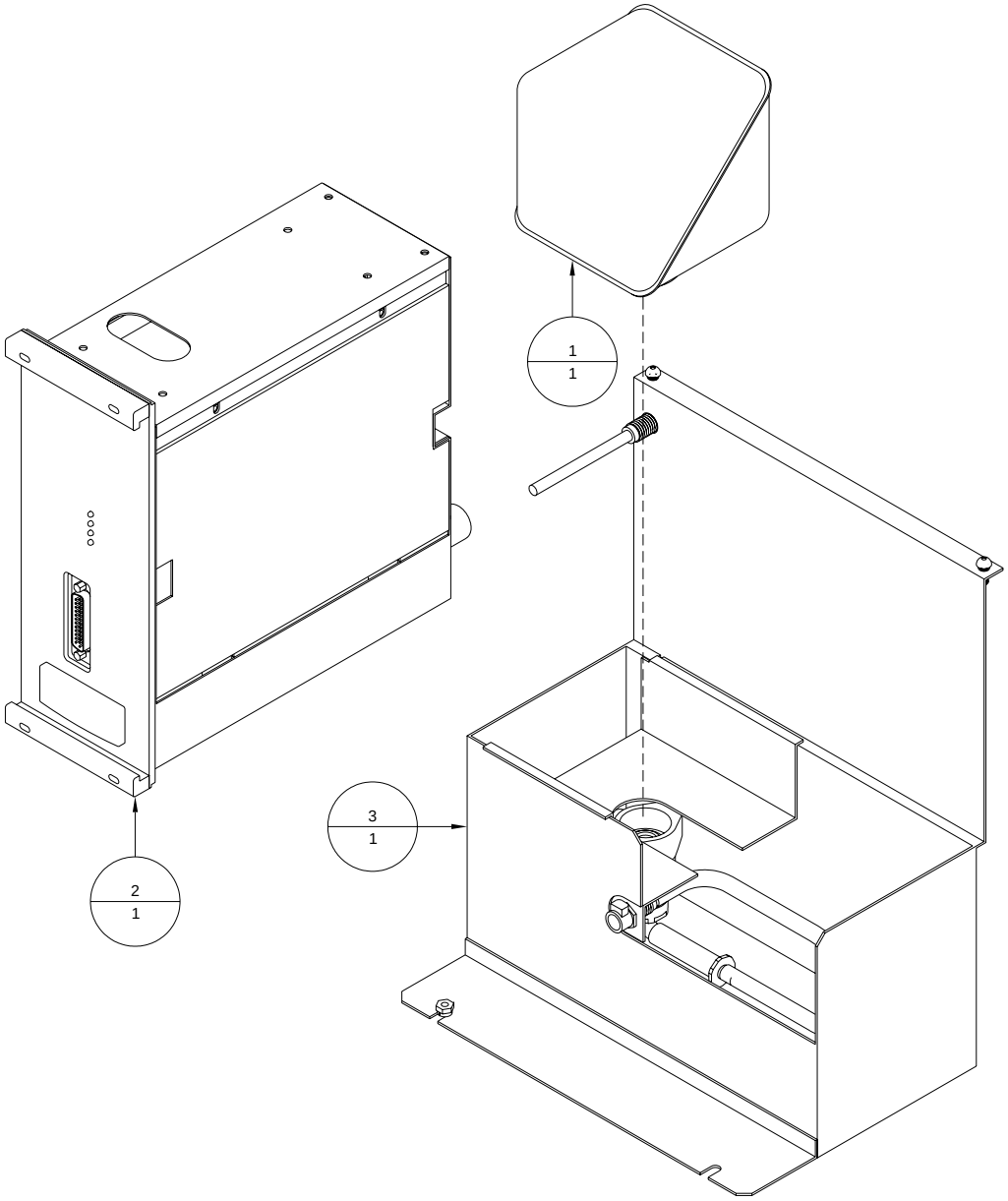


Table B-2: *Filter Holder Assembly (9100149A)*

Item	Part Number	Quantity	Description	Reference
1	9100149	2	Connector, 1/8" NPT, 1/8" ID	
2	9102675A	1	Filter Body Assembly	

Figure B-2: *Filter Holder Assembly (9100149A)*

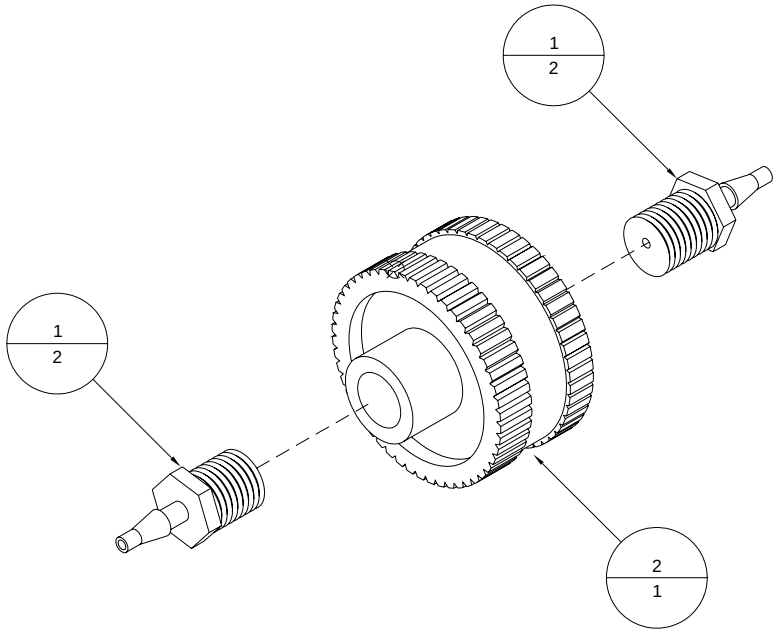


Table B-3: *Ink/Exhaust line assembly (9102152A)*

Item	Part Number	Quantity	Description	Reference
1	9101691	2	Coupling Insert,1/8" I.D.Tubing,In-line,Hose Barb	
2	9102116	1 x 24”	Tubing, Pharmed, 1/4"x 1/8" (Almond)	

Figure B-3: *Ink/Exhaust line assembly (9102152A)*

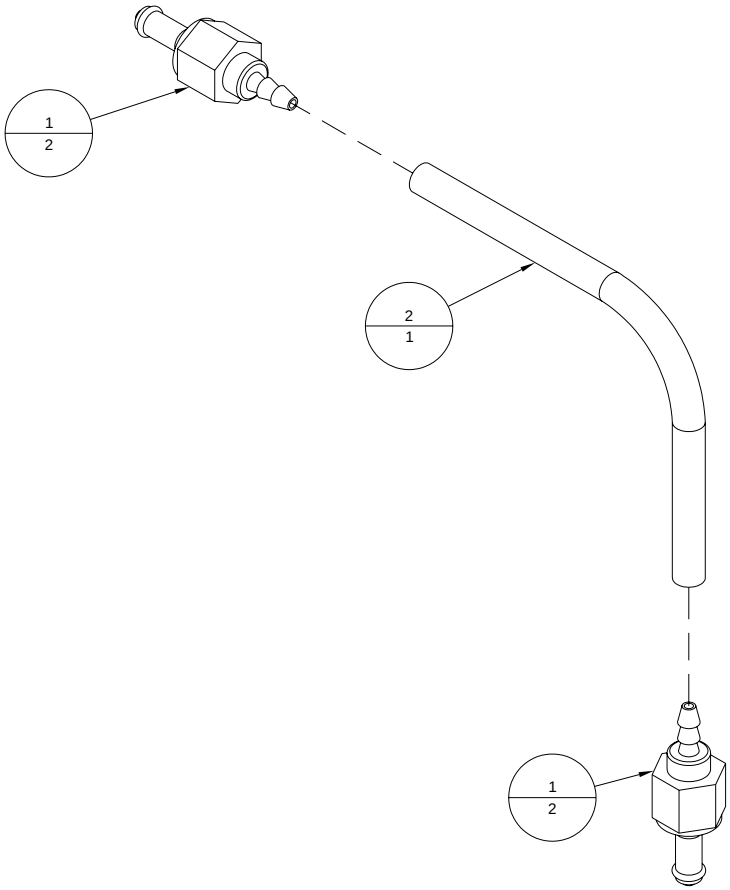


Table B-4: *Pumping Station Assembly, Atlas (9102942A)*

Item	Part No.	Quantity	Description	Reference
1	401309	4	Screw, PHMS, M2.5 x 6 mm	
2	402210	4	Screw, SHCS, 6-32 UNC x 1/4"	
3	403510	9	Screw, BHCS, 8-32 UNC x 1/4"	
4	420006	6	Nut, 6-32 UNC	
5	420008	1	Nut, 10-32 UNF	
6	420010	1	Nut, 1/4-20 UNC	
7	439006	6	Lockwasher, No.6	
8	439009	1	Lockwasher, No. 10	
9	439010	1	Lockwasher, 1/4" I.D.	
10	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
11	609120	1	Terminal, Ring, 1/4", 16-14 AWG, Non-Insulated	
12	615322	2	Female Screwlock, 4-40 UNC	
13	9102681	1 x 12”	Wire, #14, Green/Yellow Hookup	
14	9102940	1	Plate, Front, Pumping station module	
15	9102941	2	Handle, Module	
16	9102942	1	Bracket, Main, Pumping station	
17	9103015	1	Board, Reservoir Connector	
18	9103016A	1	Atlas pumping subbracket assembly	Page B-7
19	9103019A	1	Manifold block assembly - Atlas	Page B-8
20	9103054	2	Cover, Controller Module, Side	
21	9103109	4	Screw, Truss, 8-32 UNC x 1/4"	
22	9103429	1	Tray, Spill	
23	9103429A	1	Cable, Drive, Atlas pumping module	

Figure B-4: *Pumping Station Assembly, Atlas (9102942A)*

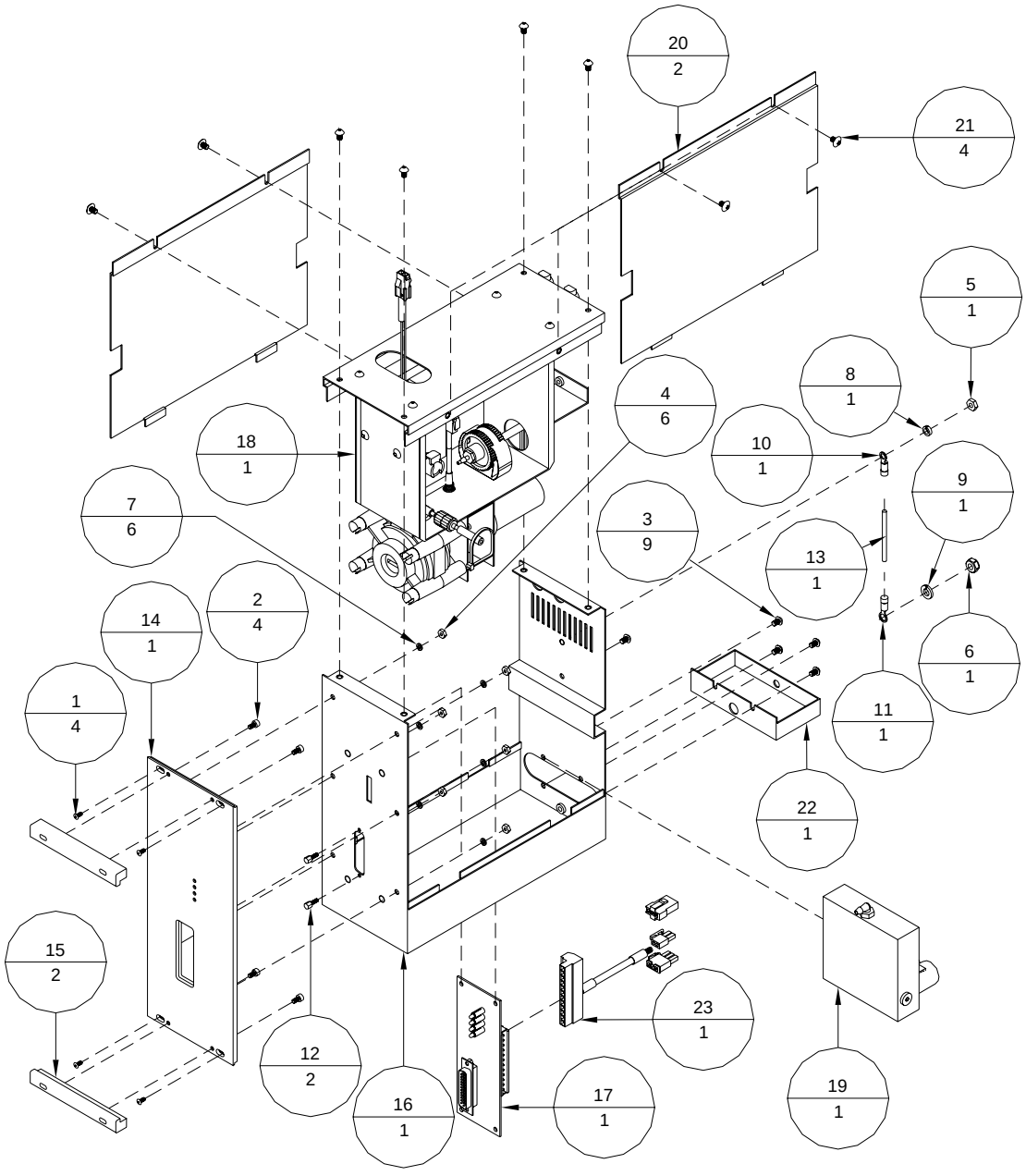


Table B-5: *Atlas Pumping Subbracket Assembly (9103016A)*

Item	Part Number	Quantity	Description	Reference
1	401310	3	Screw, PHMS, 4-40 UNC x 1/4"	
2	403510	4	Screw, BHCS, 8-32 UNC x 1/4"	
3	404510	3	Screw, BHCS, 10-32 UNF x 1/4"	
4	404550	1	Screw, BHCS, 10-32 UNF x 3/4"	
5	615140	15	Lashing Tie, Small	
6	630004A	1	Cycle Proximity Switch Assembly	
7	9100149A	1	Filter Holder Assembly - IDS	Page B-2
8	9100876	1	Coupling, 0.5" DIA	
9	9100931	1	Peristaltic Pump Head	
10	9100936A	1	Gearmotor Assembly	
11	9100971	1	Gripper Clip	
12	9101290	2	Fitting, Tee, 1/8" I.D.	
13	9101700	1	Check Valve, 1/8" I.D.	
14	9102116	3 x 1”	Tubing, Pharmed 1/4"x 1/8"	
15	9102116	2 x 3”	Tubing, Pharmed 1/4"x 1/8"	
16	9102116	1 x 8”	Tubing, Pharmed 1/4"x 1/8"	
17	9103016	1	Bracket, Atlas ID module, Top	
18	9103017	1	Bracket, Atlas pumping components	
19	9103034A	1	Subcontainer Assembly, Atlas	Page B-9

Figure B-5: *Atlas Pumping Subbracket Assembly (9103016A)*

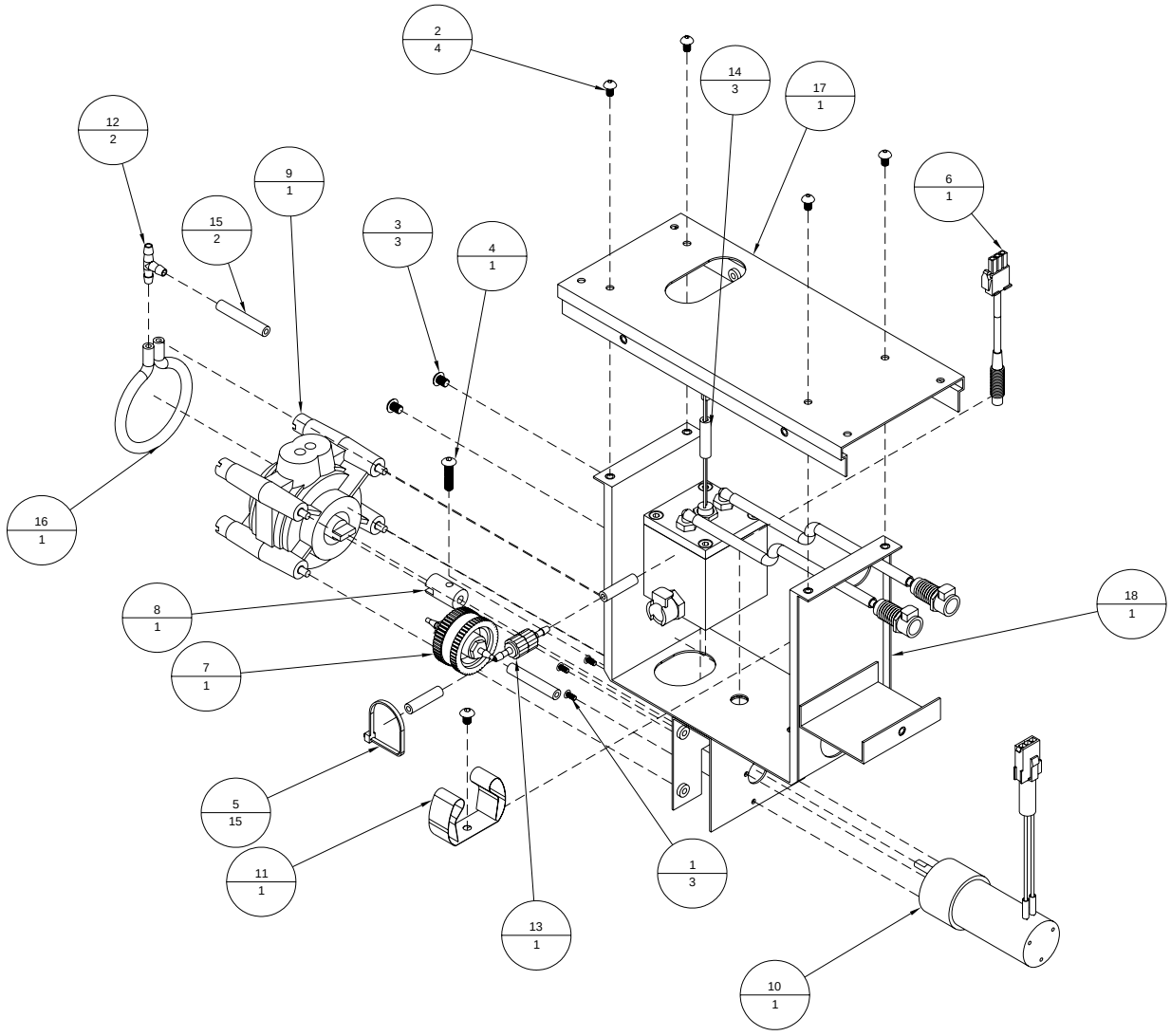


Table B-6: *Manifold Block Assembly (9103019A)*

Item	Part Number	Quantity	Description	Reference
1	9102085	1	Connector "L", 1/8-27 NPT, 1/8" I.D.	
2	9102150	4	Coupling Body, 1/8" NPT	
3	9103019	1	Manifold block, Atlas	
4	9103290	4	Caplug, VC series, 0.750" dia, Black	
5	9104542	1	Plug, Threaded, 5/16-24 UNF, O-ring EPDM PC	

Figure B-6: *Manifold Block Assembly (9103019A)*

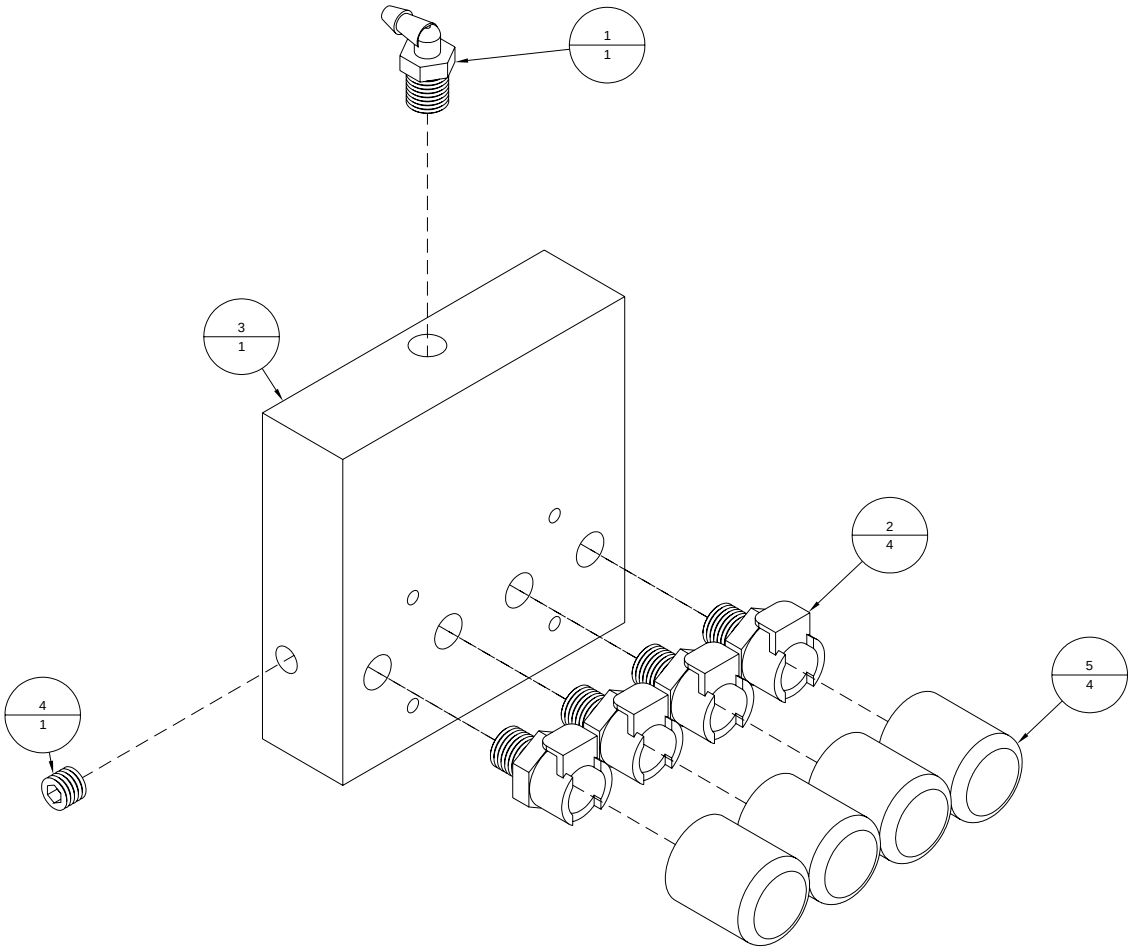


Table B-7: *Subcontainer Assembly (9103034A)*

Item	Part Number	Quantity	Description	Reference
1	404220	4	Screw, SHCS, 10-32 UNF x 3/8"	
2	609000	1	Shrink wrap, 3/16" I.D., 5" LG	
3	9100206	1	Receptacle, 2-Pin, Mini-Fit Jr	
4	9100207	2	Contact, Male, 18-22 AWG, Series 5558	
5	9100877	1	O-Ring, 1-7/8 x 1-3/4 x 1/16, EPDM peroxide cured	
6	9100966	1	Float Switch, Micro-miniature w/nut	
7	9101166	1	Drainable Subcontainer	
8	9101297	1	O-Ring, 7/16 x 5/8 x 3/32, EPDM peroxide cured	
9	9101582	1	Fitting, 10-32 Thread to Tube 1/8" I.D.	
10	9101692	2	Coupling Body, 1/8 in I.D. Tubing, Panel mount	
11	9102085	2	Connector inL in, 1/8-27 NPT, 1/8 in I.D.	
12	9102116	2 x 5.8”	Tubing, Pharmed 1/4" x 1/8" (Almond)	
13	9102150	1	Coupling Body, 1/8" NPT	
14	9103034	1	Cover, Subcontainer, Atlas	

Figure B-7: *Subcontainer Assembly (9103034A)*

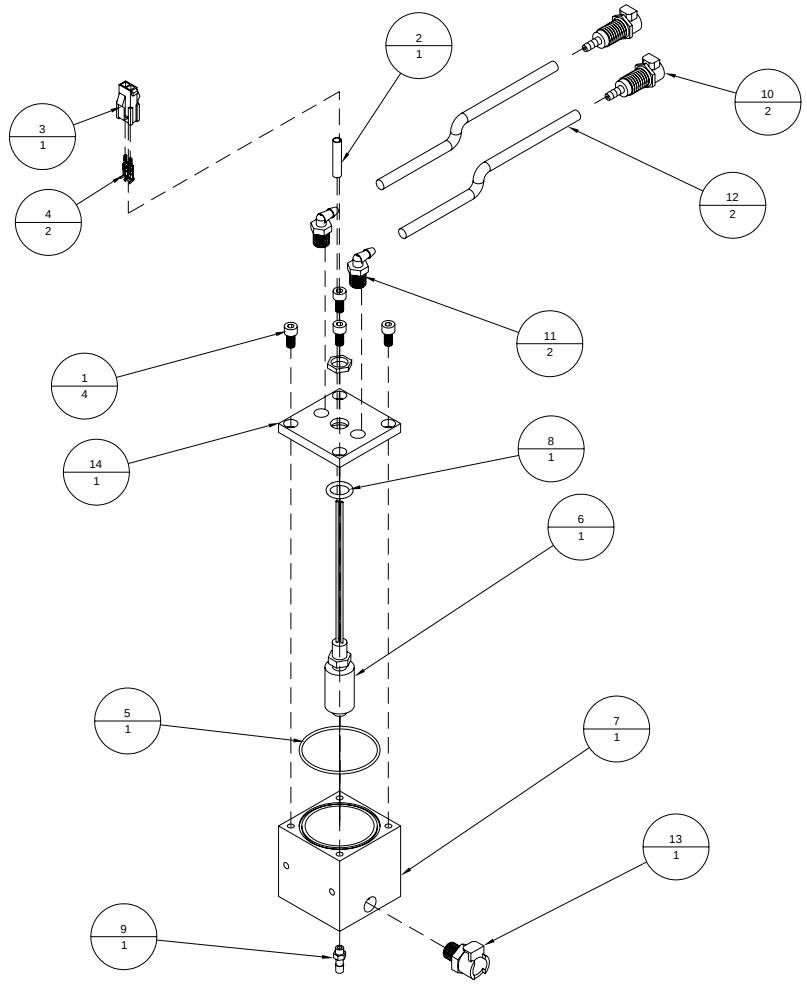
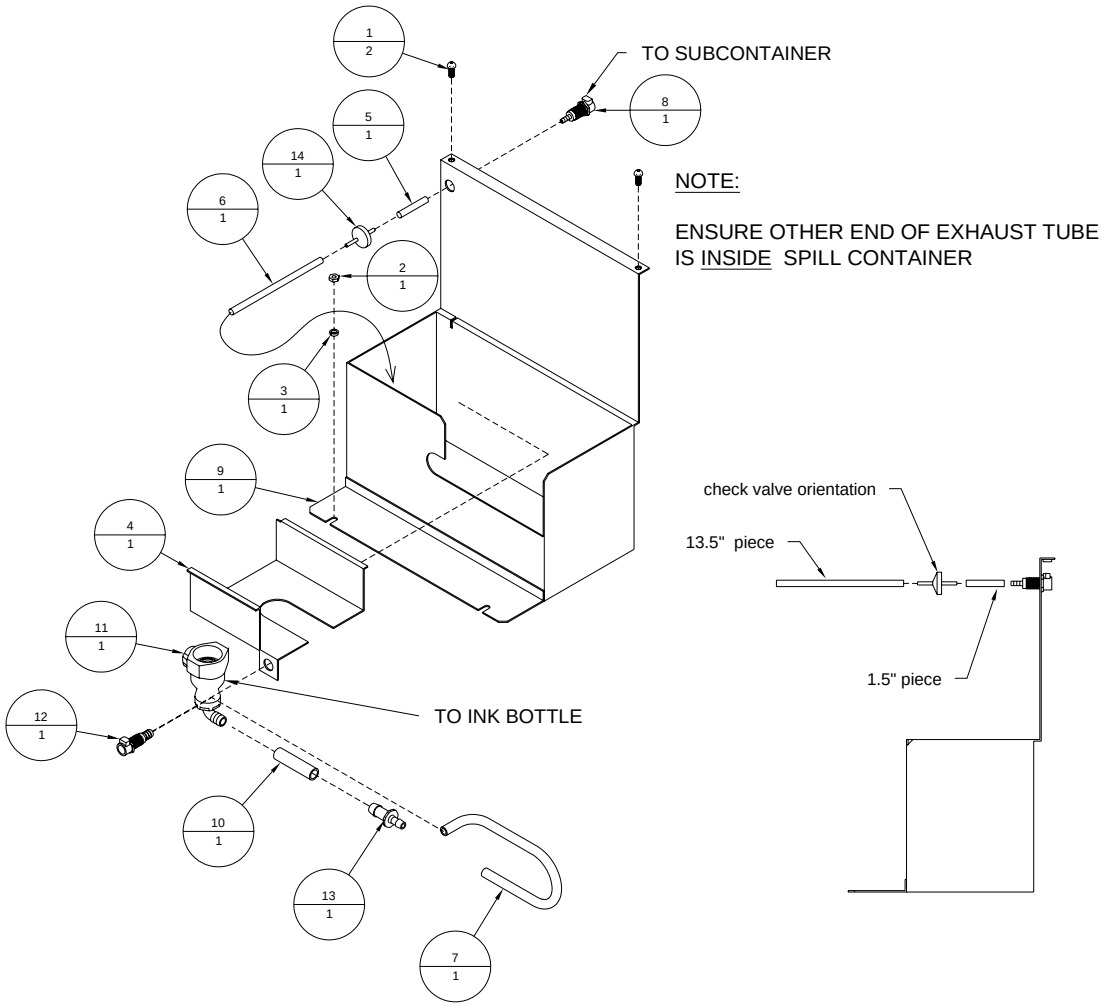


Table B-8: *Ink Bottle Bracket Assembly, Cezanne (9103431A)*

Item	Part No.	Quantity	Description	Reference
1	404530	2	Screw, BHCS, 10-32 UNF x 1/2"	
2	420008	1	Nut, 10-32 UNF	
3	439009	1	Lockwasher, No. 10	
4	9101770	1	Bracket, Ink bottle	
5	9102116	1 x 1.5”	Tubing, Pharmed, 1/4"x 1/8"	
6	9102116	1 x 13.5”	Tubing, Pharmed, 1/4"x 1/8"	
7	9102132	1 x 7.5”	Tubing, Pharmed, 3/8" x 1/4", Almond	
8	9102625	1	Coupling, Panel Mount, 1/4" O.D. Straight Thru	
9	9103430	1	Bracket, Ink bottle	
10	9103908	1 x 2”	Tubing, Pharmed, 1/2" x 3/8", Almond	
11	9103909	1	Coupling, UDC Series, Non-spill, 3/8" I.D., Elbow	
12	9103910	1	Coupling, 1/4" I.D. Tubing, Panel mount, PP, Shutoff	
13	9103911	1	Fitting, Straight Thru, 3/8 I.D.x1/4" I.D. tube-to-tube, PP	
14	9104580	1	Check Valve, 1/8" ID. Tubing, 0.18 psi	

Figure B-8: *Ink Bottle Bracket Assembly, Cezanne (9103431A)*



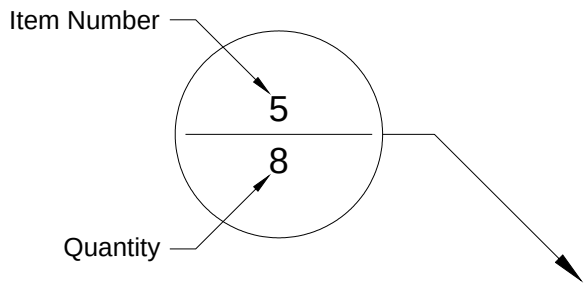
Printhead Assembly Drawings

Appendix C

List of Tables

List of Figures

Balloon Annotation and Parts Listing



Item	Part Number	Quantity	Description	Reference
1				
2				

The following is a description of how to interpret the information in this section:

Item:

This column indicates the item number used for each unique part in an assembly drawing. It is matched with the top number in the balloon pointing at the associated part.

Part Number:

This column represents the Buskro part number.

Quantity:

This represents the total number of a given part in an assembly. It is matched with the bottom number in the balloon pointing at the associated part.

Description:

This column contains a brief description of the part.

Reference:

This column indicates the page location for sub-assemblies.

Table C-1: *Printhead, Cezanne, 1", 6' Umbilical (BK791-C-06)*

Item	Part Number	Quantity	Description	Reference
1	404240	2	Screw, SHCS, 10-32 UNF x 5/8"	
2	404510	8	Screw, BHCS, 10-32 UNF x 1/4"	
3	9101302	1	Ink Tray	
4	9101598	1	Bracket, Top Port, Single/Dual	
5	9101735	4	Fitting, Half	
6	9101773	2	Collar, Locking Shaft	
7	9101776A	1	Umbilical Assembly, BK791, 6'	Page C-18
8	BK791-C	1	Printhead, BK791 Cezanne	Page C-6
9	BK79M-1	1	Mount, BK791 Series Printhead	Page C-9

Figure C-1: *Printhead, Cezanne, 1", 6' Umbilical (BK791-C-06)*

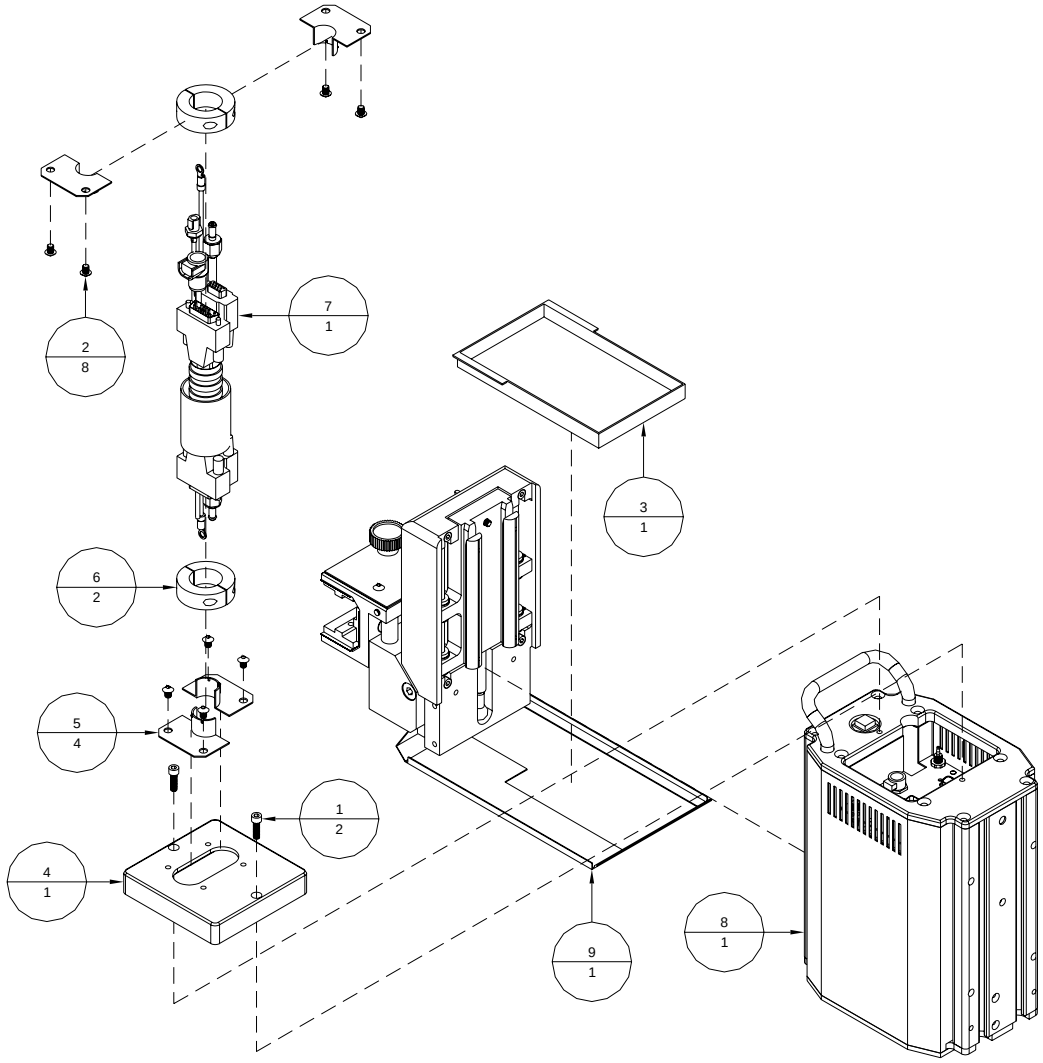


Table C-2: *Printhead, Cezanne, 1", 15' Umbilical, BK1710 (BK791-C-15E)*

Item	Part Number	Quantity	Description	Reference
1	404240	2	Screw, SHCS, 10-32 UNF x 5/8"	
2	404510	8	Screw, BHCS, 10-32 UNF x 1/4"	
3	9101302	1	Ink Tray	
4	9101598	1	Bracket, Top Port, Single/Dual	
5	9101735	4	Fitting, Half	
6	9101773	2	Collar, Locking Shaft	
7	9102220A	1	Umbilical Assembly, BK791, BK1710, 15'	Page C-24
8	BK791-C	1	Printhead, BK791 Cezanne	Page C-6
9	BK79M-1	1	Mount, BK791 Series Printhead	Page C-9

Figure C-2: *Printhead, Cezanne, 1", 15' Umbilical, BK1710 (BK791-C-15E)*

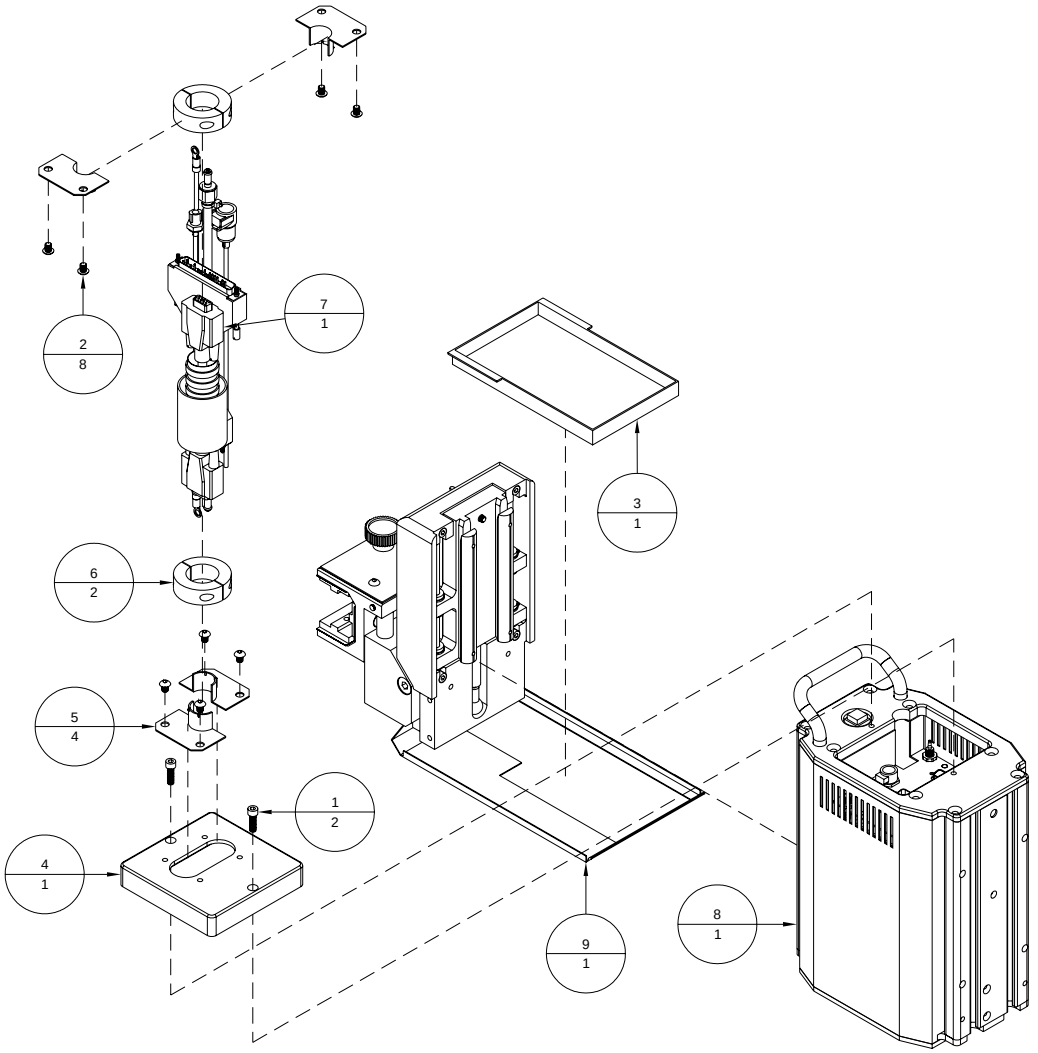


Table C-3: *Printhead, Cezanne, 1", 15' Umbilical, NSS (BK791-C-15ERM80)*

Item	Part Number	Quantity	Description	Reference
1	404240	2	Screw, SHCS, 10-32 UNF x 5/8"	
2	404510	8	Screw, BHCS, 10-32 UNF x 1/4"	
3	9101302	1	Ink Tray	
4	9101598	1	Bracket, Top Port, Single/Dual	
5	9101735	4	Fitting, Half	
6	9101773	2	Collar, Locking Shaft	
7	9102108	1	Shield, Reversible Singlehead	
8	9102114	1	Shield, Reversible Singlehead, Reverse (Not Shown)	
9	9102220A	1	Umbilical Assembly, BK791, BK1710, 15 ft	Page C-24
10	BK791-C	1	Printhead, BK791 Atlas Cezanne	Page C-6
11	BK80M-1	1	Mount, Sapphire, BK80 Bridge Ass'y	Page C-10

Figure C-3: *Printhead, Cezanne, 1", 15', NSS, BK80 (BK791-C-15ERM80)*

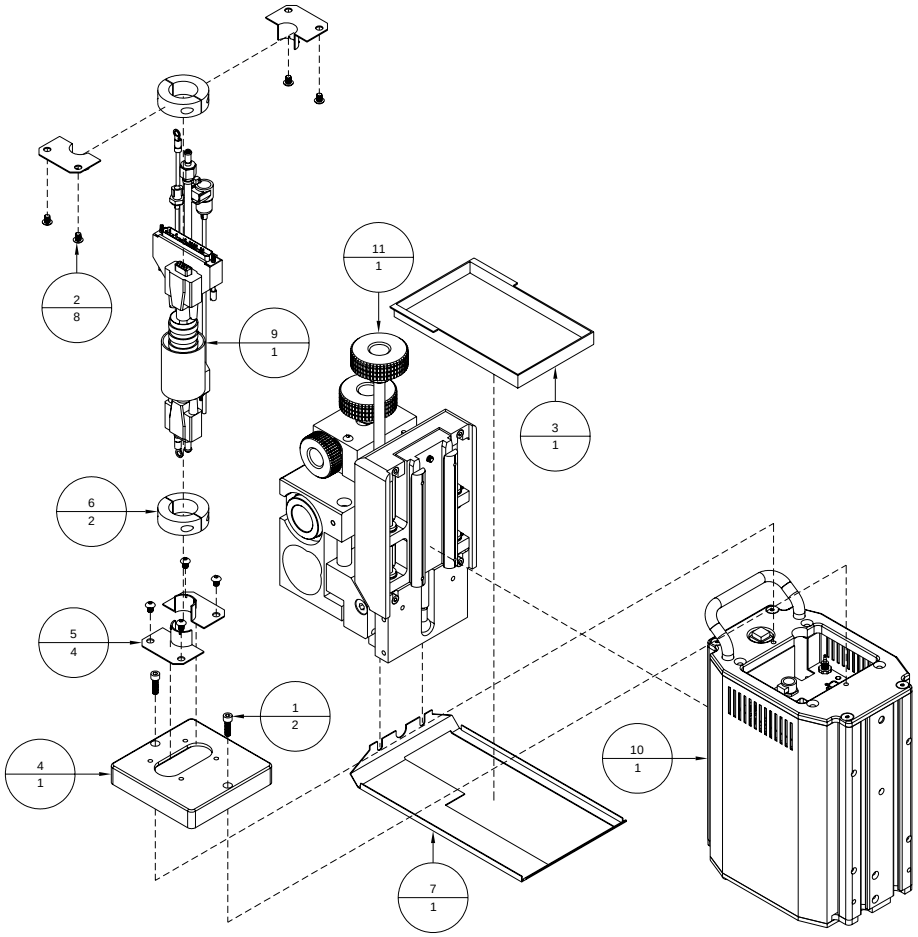


Table C-4: *Printhead, Cezanne 2250, 15', BK80 (BK792-C-15-RM80)*

Item	Part Number	Quantity	Description	Reference
1	438171	4	Thumbscrew, SS w/shoulder 10-32 UNF X 1/2"	
2	9103451	1	Tray, Ink	
3	9104049	1	Shield, Triple slant head guard	
4	BK792-C	1	Printhead, Cezanne 2250	Page C-7
5	BK80M-6	1	Mount, Printhead 2250, BK80 Bridge	Page C-11

Figure C-4: *Printhead, Cezanne 2250, 15', BK80 (BK792-C-15-RM80)*

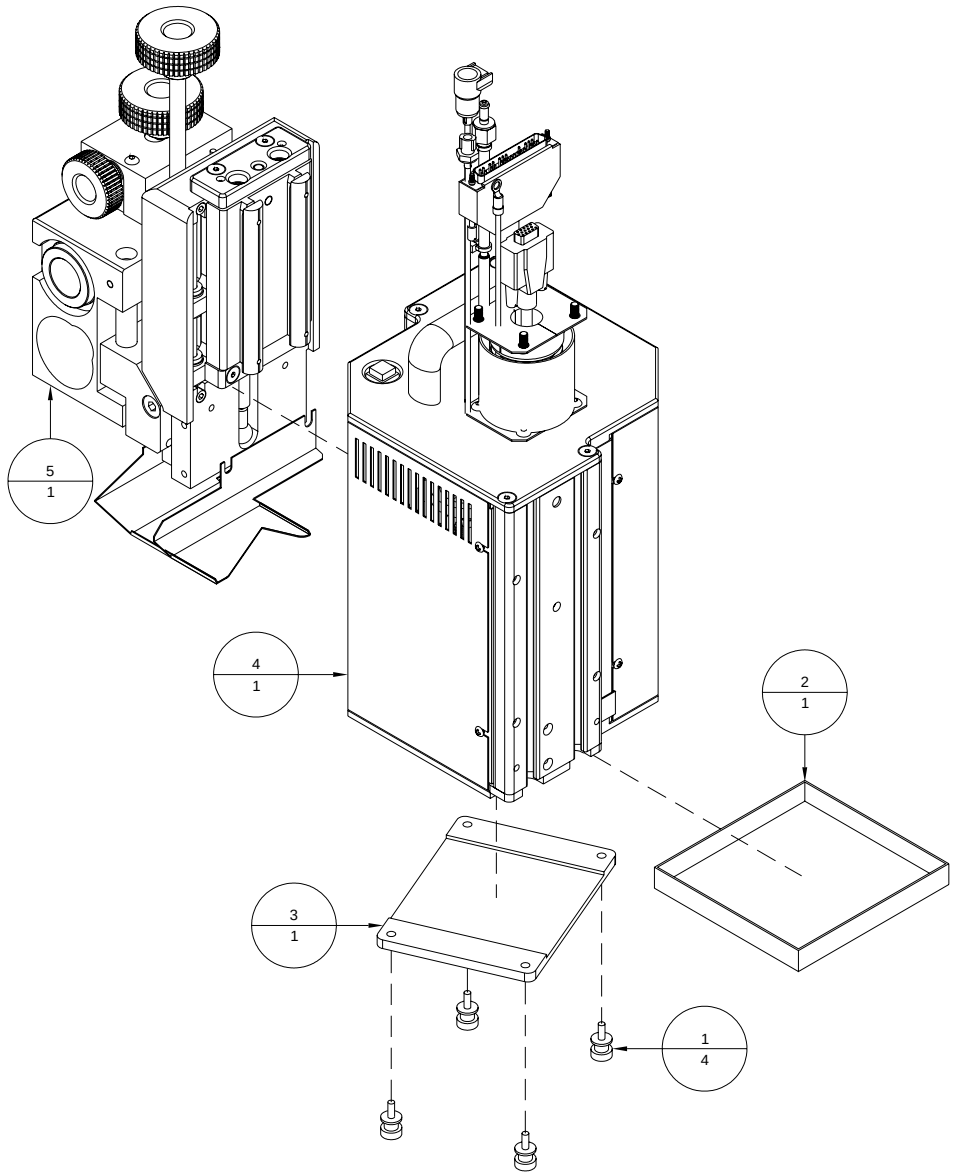


Table C-5: *Printhead, Cezanne 3250, 15', BK80 (BK793-C-15-RM80)*

Item	Part Number	Quantity	Description	Reference
1	438171	4	Thumbscrew, SS w/shoulder 10-32 UNF X 1/2"	
2	9103451	1	Tray, Ink	
3	9104049	1	Shield, Triple slant head guard	
4	BK793-C	1	Printhead, Cezanne 3250	Page C-8
5	BK80M-4	1	Mount, Printhead 2250 / 3250, BK80 Bridge	Page C-11

Figure C-5: *Printhead, Cezanne 3250, 15', BK80 (BK793-C-15-RM80)*

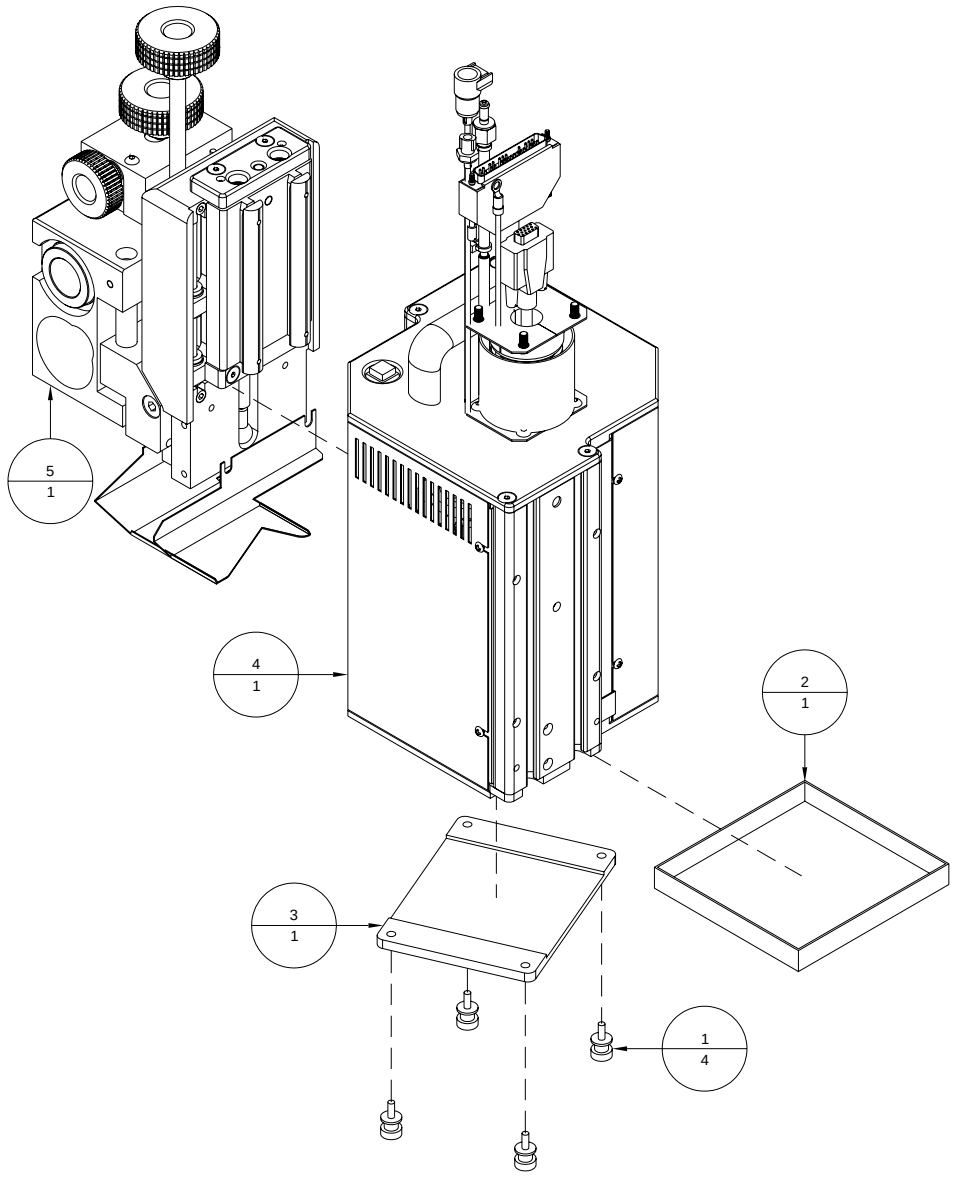
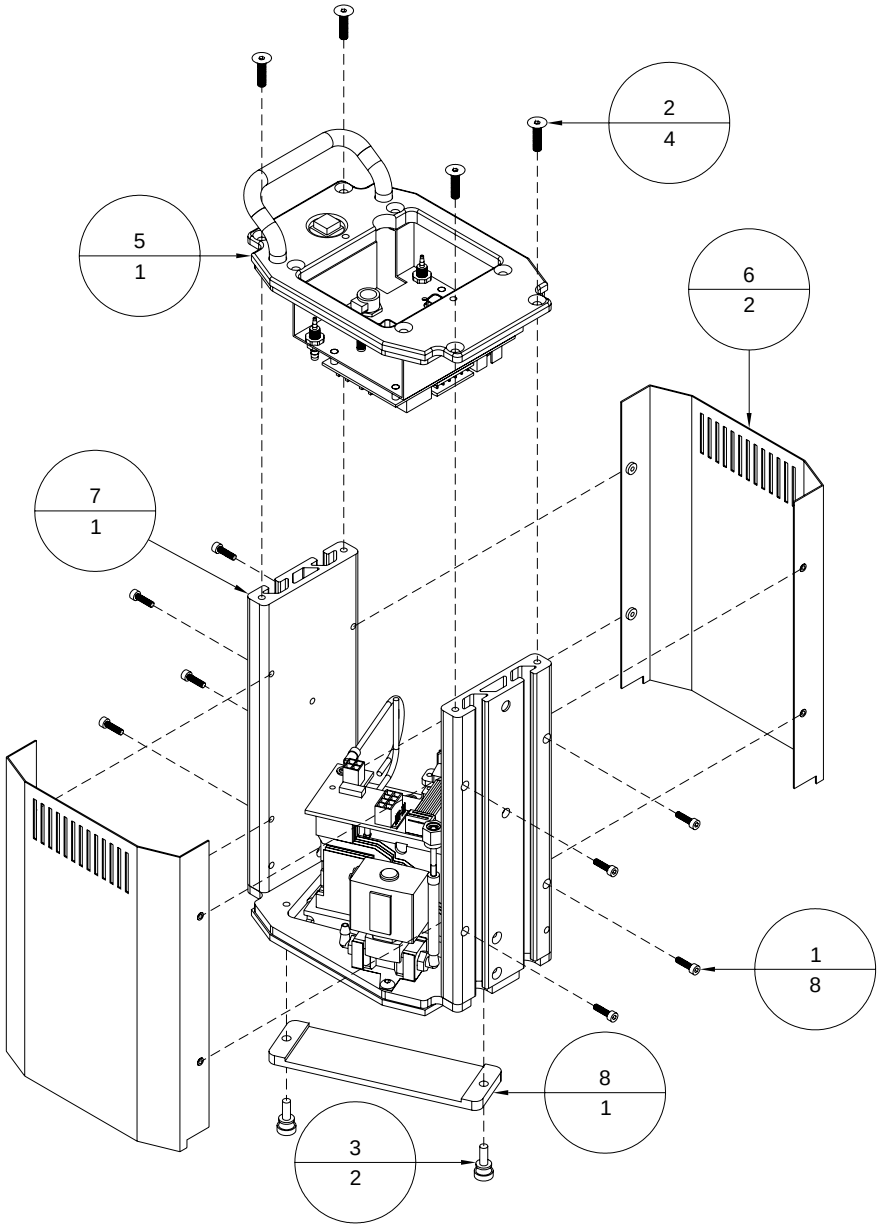


Table C-6: *Printhead, BK791 Atlas Cezanne (BK791-C)*

Item	Part Number	Quantity	Description	Reference
1	402230	8	Screw, SHCS, 6-32 UNC X 1/2"	
2	404050	4	Screw, FHCS, 10-32 UNF x 3/4"	
3	438171	2	Thumbscrew, 10-32 UNF x 3/8"	
4	9100141	1	Printhead Support Chip (Not Shown)	
5	9102106A	1	Top Plate Assembly, Singlehead	Page C-21
6	9102107	2	Cover, Reversible Singlehead	
7	9102108A	1	Bottom Plate Assembly, Atlas Cezanne BK791	Page C-22
8	9103427	1	Plate Cap, Single Head	

Figure C-6: *Printhead, BK791 Atlas Cezanne (BK791-C)*



NOTE:
9100141 IS ASSEMBLED
ON THE DATA PATH CARD.

Table C-7: *Printhead, Cezanne 2250 (BK792-C)*

Item	Part Number	Quantity	Description	Reference
1	402310SS	8	Screw, PHMS, 6-32 UNC x 1/4"	
2	404040	4	Screw, FHCS, 10-32 UNF x 5/8"	
3	9103991A	1	Top plate assembly	Page C-31
4	9103992	2	Cover, Triple Slant Print Head	
5	9105159A	1	Bottom Plate Assembly, Cezanne 2250	Page C-38

Figure C-7: *Printhead, Cezanne 2250 (BK792-C)*

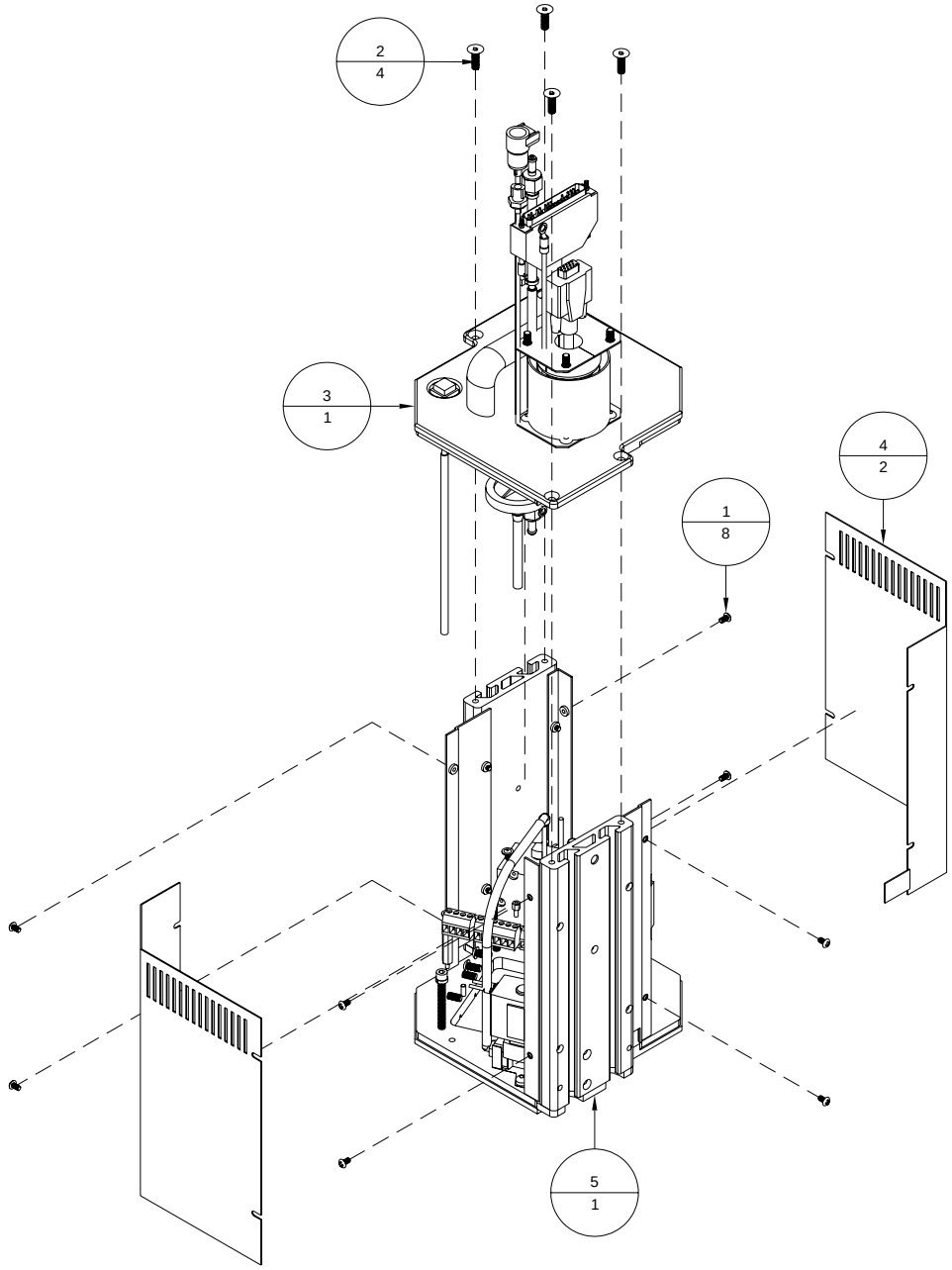


Table C-8: *Printhead, Cezanne 3250 (BK793-C)*

Item	Part Number	Quantity	Description	Reference
1	402310SS	8	Screw, PHMS, 6-32 UNC x 1/4"	
2	404040	4	Screw, FHCS, 10-32 UNF x 5/8"	
3	9103991A	1	Top plate assembly	Page C-31
4	9103992	2	Cover, Triple Slant Print Head	
5	9105161A	1	Bottom Plate Assembly, Cezanne 3250	Page C-41

Figure C-8: *Printhead, Cezanne 3250 (BK793-C)*

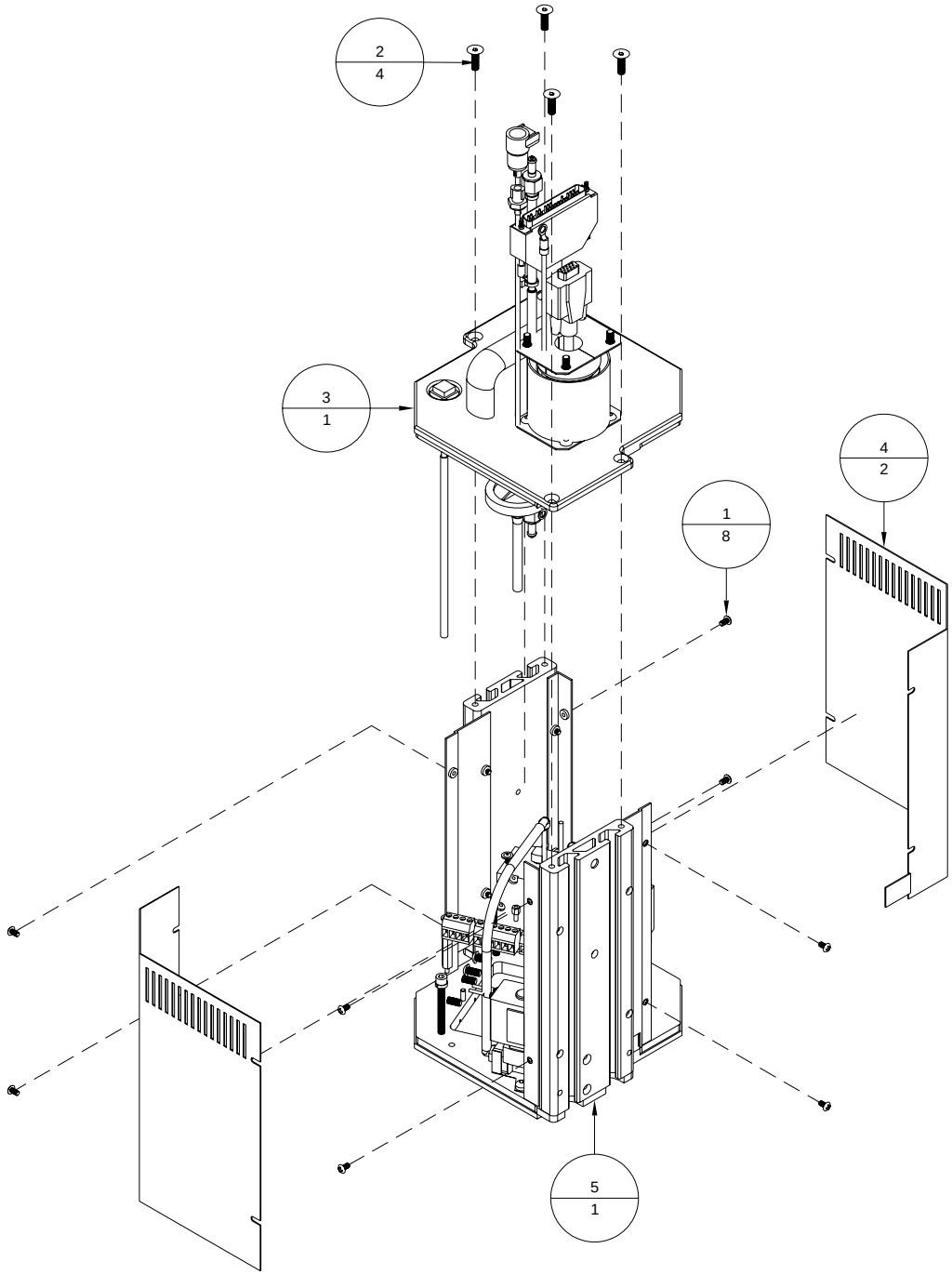


Table C-9: *Singlehead Mount Assembly (BK79M-1)*

Item	Part Number	Quantity	Description	Reference
1	9101874	2	Spring, Compression	
2	9101994A	1	Rail Mounting Assembly	Page C-19
3	9102108	1	Shield, Reversible Singlehead	
4	9102114	1	Shield, Reversible Singlehead, Reverse	
5	9102127	1	Screw, SHCS, 1/4-20 UNC x 1.25"	
6	9102592	1	Shoulder Bolt, 3/8" x 3 1/2, 5/16-18 UNC	
7	9102595A	1	Solid mount assembly	Page C-26
8	9102596	1	Mounting Block, Printhead Slider	

Figure C-9: *Singlehead Mount Assembly (BK79M-1)*

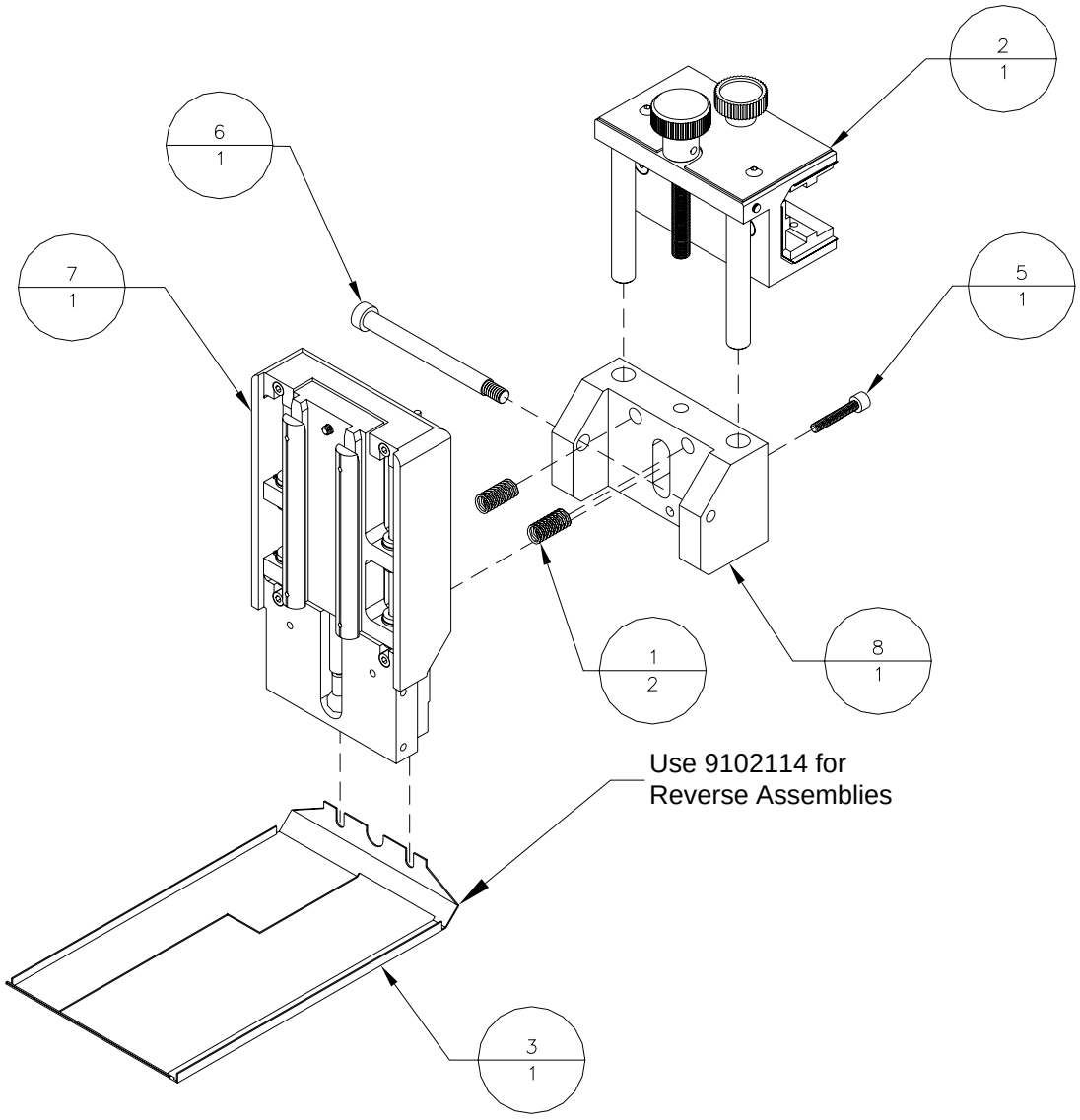


Table C-10: *Mount, Sapphire, BK80 Bridge Assy (BK80M-1)*

Item	Part Number	Quantity	Description	Reference
1	9102595A	1	Solid mount assembly	Page C-26
2	9102819A	1	Bridge mount assembly	Page C-27

Figure C-10: *Mount, Sapphire, BK80 Bridge Assy (BK80M-1)*

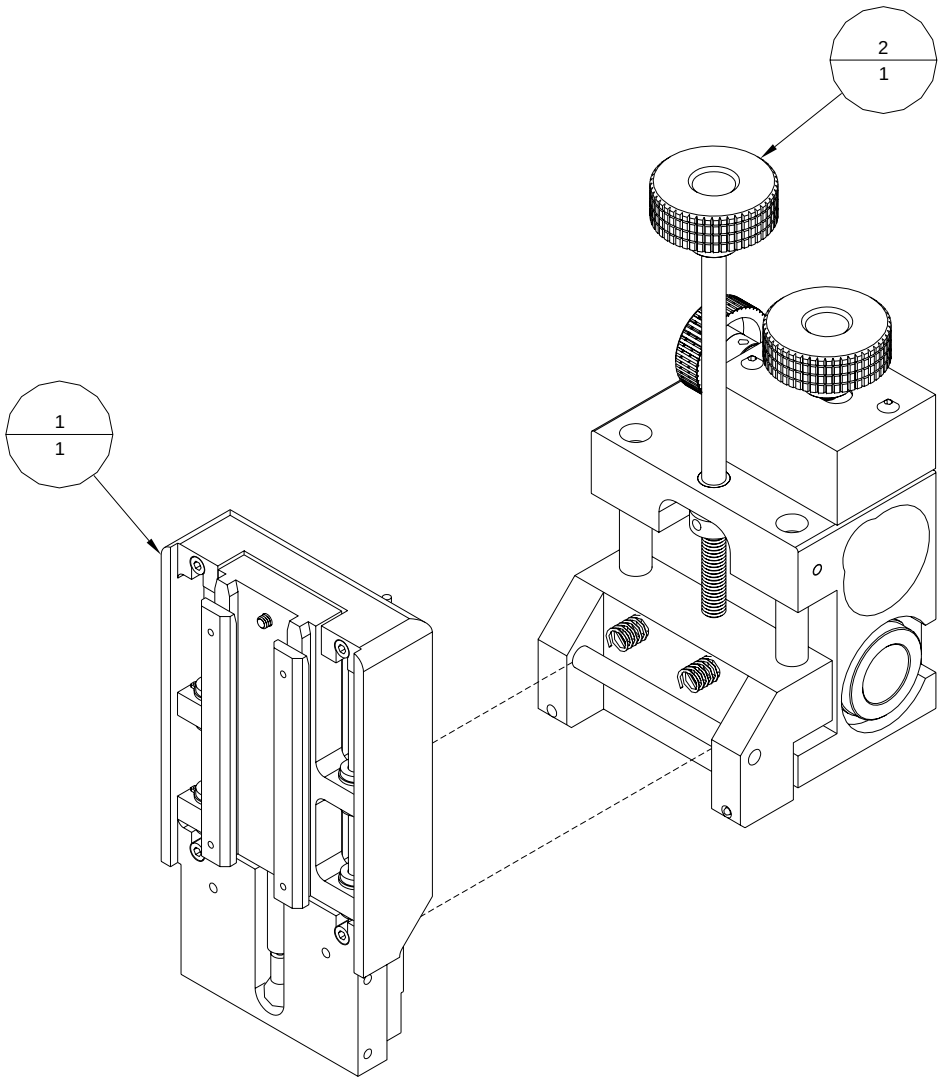


Table C-11: *Mount, Printhead 2250/3250, BK80 (BK80M-4, BK80M-6)*

Item	Part Number	Quantity	Description	Reference
1	9102819A	1	Bridge mount assembly	Page C-27
2	9104006 9104118	1	Shield, Upstream, 3" (For 3250) Shield, Upstream, 2” (For 2250)	
3	9104008A	1	Printhead Support Assembly, Angle	Page C-33
4	9104013 9104017	1	Shield, Downstream, 3" (For 3250) Shield, Downstream, 2” (For 2250)	

Figure C-11: *Mount, Printhead 2250/3250, BK80 (BK80M-4, BK80M-6)*

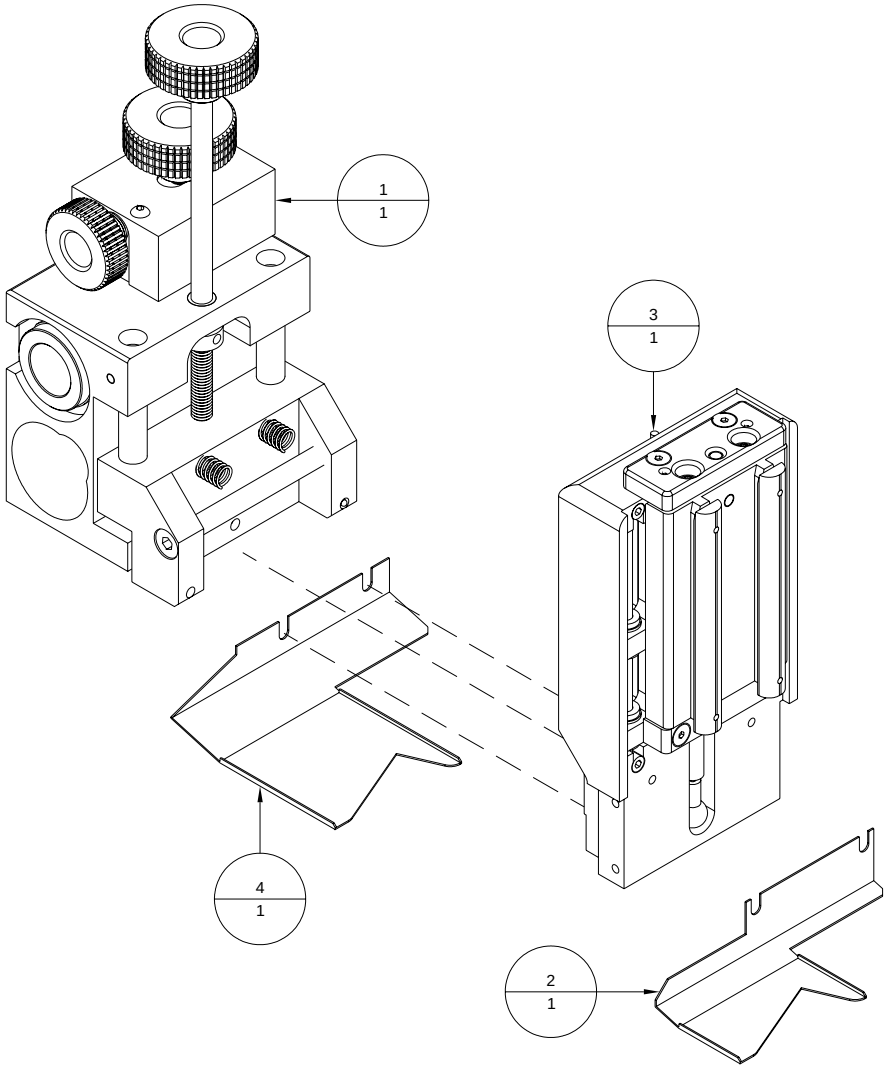


Table C-12: *Ink Umbilical Assembly, 15' (9101212A)*

Item	Part Number	Quantity	Description	Reference
1	609003	1 x 16”	Shrink Wrap, 3/8" I.D.	
2	615140	2	Lashing Tie	
3	9101212	1	Connector - Inline (1/4-1/4)	
4	9101691	2	Coupling Insert,1/8" I.D.,In-line,Hose Barb	
5	9102111	1 x 167”	Tubing, Polyethylene, 1/4" x 1/8", Black	
6	9102116	1 x 16”	Tubing, Pharmed, 1/4"x 1/8" (Almond)	

Figure C-12: *Ink Umbilical Assembly, 15' (9101212A)*

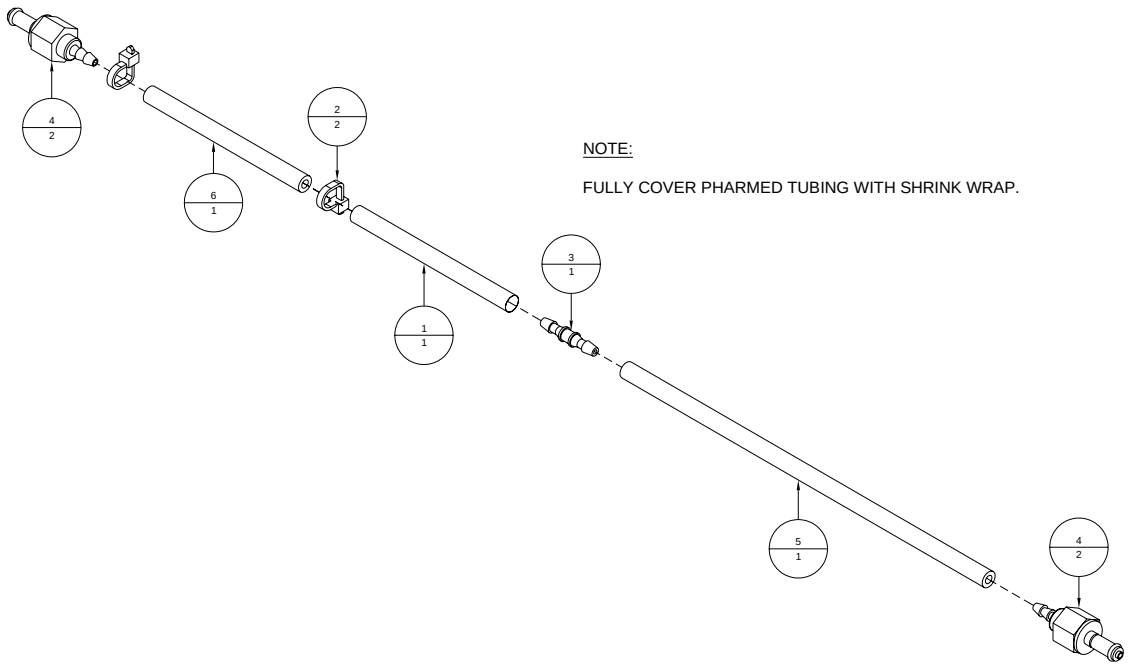
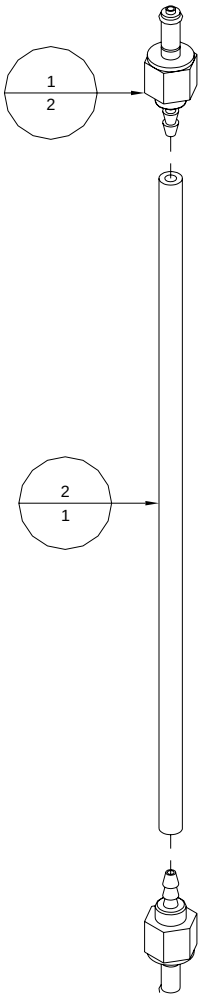


Table C-13: *Umbilical, Ink Line Assembly, Atlas, 6' (9101691A)*

Item	Part Number	Quantity	Description	Reference
1	9101691	2	Coupling Insert, In-line, 1/4" O.D.	
2	9102111	1 x 72”	Tubing, PE, Black, 1/8"x1/4"	

Figure C-13: *Umbilical, Ink Line Assembly, Atlas, 6' (9101691A)*



NOTE:

Use heat gun to soften tube ends before coupling attachment.

Table C-14: *Meniscus Vacuum Hose Assy, Atlas, 15' (9101694A)*

Item	Part Number	Quantity	Description	Reference
1	9100961	1	Coupling, In-line	
2	9102333	1	Tubing, Teflon, 1/8" O.D. x 1/16" I.D., White	

Figure C-14: *Meniscus Vacuum Hose Assy, Atlas, 15' (9101694A)*

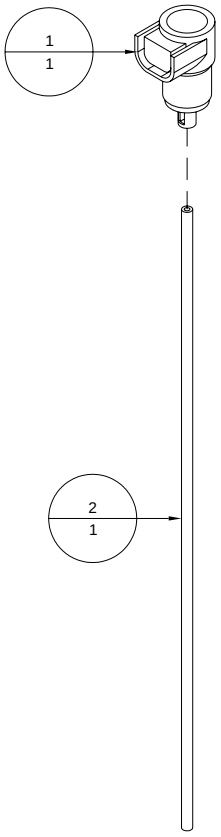


Table C-15: *Meniscus Vacuum Hose Assy, Atlas, 6' (9101696A)*

Item	Part Number	Quantity	Description	Reference
1	9100961	1	Coupling, In-line	
2	9102333	1	Tubing, Teflon, 1/8" O.D. x 1/16" I.D., White	

Figure C-15: *Meniscus Vacuum Hose Assy, Atlas, 6' (9101696A)*

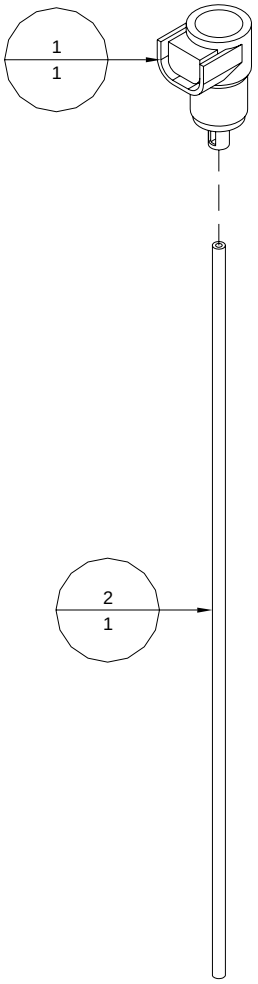


Table C-16: *Lung Vacuum Hose Assembly (9101697A)*

Item	Part Number	Quantity	Description	Reference
1	9100982	1	Coupling, In-line	
2	9103454	1	Tubing, Teflon, 1/8" x 1/16", Blue	

Figure C-16: *Lung Vacuum Hose Assembly (9101697A)*

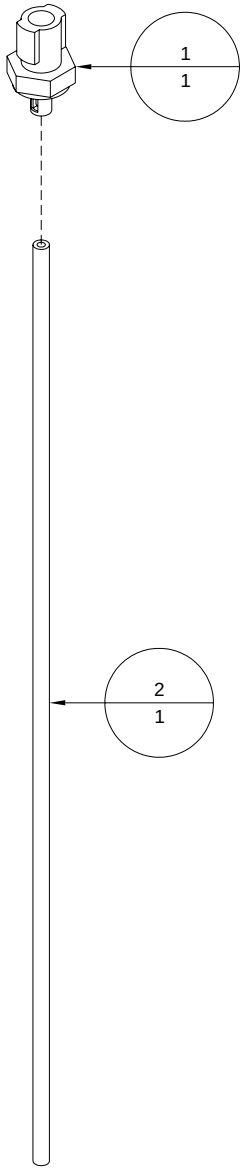


Table C-17: *Lung Vacuum Hose Assembly, 15 ft (9101699A)*

Item	Part Number	Quantity	Description	Reference
1	9100982	1	Coupling, In-line	
2	9103454	1	Tubing,Teflon, 1/8" x 1/16", Blue	

Figure C-17: *Lung Vacuum Hose Assembly, 15ft (9101699A)*

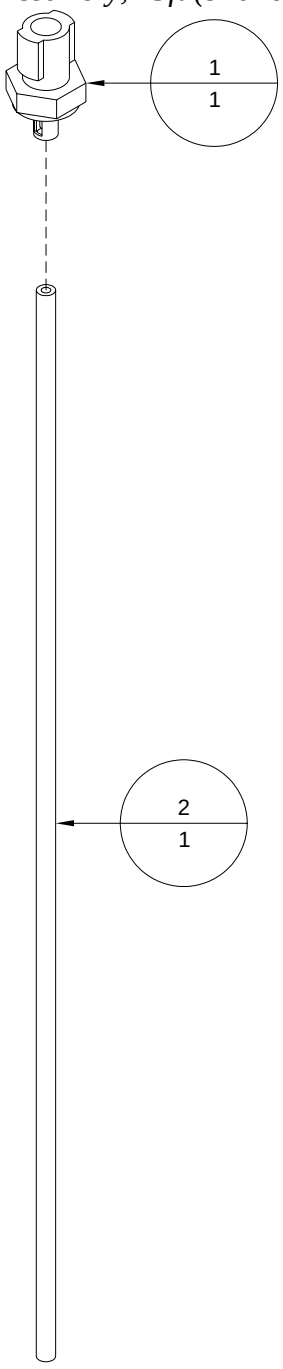


Table C-18: *Umbilical Assembly, BK791, 6' (9101776A)*

Item	Part Number	Quantity	Description	Reference
1	606023	1 x 72”	Wire, #18, Green	
2	606323	1	Cable, Monitor Extension, 6'	
3	609116	2	Terminal, Ring, #10, 22-18 AWG, Red	
4	9101161A	1 x 72”	Cable, Head Support, Atlas	
5	9101691A	1	Umbilical, Ink Line Assembly, 6'	Page C-13
6	9101696A	1	Meniscus Vacuum Hose Assembly, Atlas, 6'	Page C-15
7	9101697A	1	Lung Vacuum Hose Assembly	Page C-16
8	9101775	1 x 60”	Hose, Corrugated Loom	
9	9101776	1 x 60”	Sleeving, Braided Expandable	

Figure C-18: *Umbilical Assembly, BK791, 6' (9101776A)*

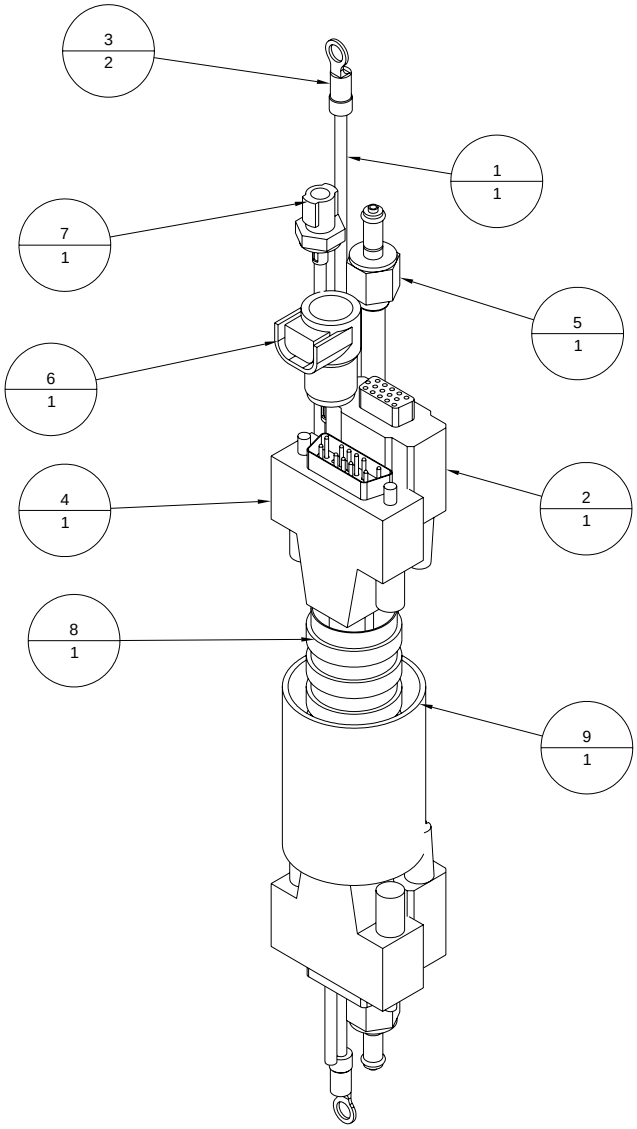


Table C-19: *Rail Mounting Assembly (9101994A)*

Item	Part Number	Quantity	Description	Reference
1	404030	6	Screw, FHCS, 10-32 UNF x 1/2"	
2	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
3	404807	3	Screw, SHSS, 10-32 UNF x 3/16"	
4	438010	1	Knob, Gate Adjustment	
5	505463	1	Flange Bushing, 1/4 ID X 3/8 OD X 3/8 LG	
6	505464	1	Flange Bushing, 1/4 ID x 3/8 OD x 1/2 LG	
7	9101128	2	Dowel Pin, 1/2" DIA x 4"	
8	9101260	18	Shim, 1.25 x 2.812 x 0.005", 15 Series	
9	9101398	1	Economy T-slot Stud, 5/16-18 UNC X 1"	
10	9101603	3	Bearing Pad, 15 Series, 4.3" Long	
11	9101994	1	Rail Mounting Bracket	
12	9101995	1	Rod, Threaded, 3/8-24 UNF	
13	9102155	1	Rail Bracket Cover	
14	9102240	1	Knob, Thumb, Knurled	

Figure C-19: *Rail Mounting Assembly (9101994A)*

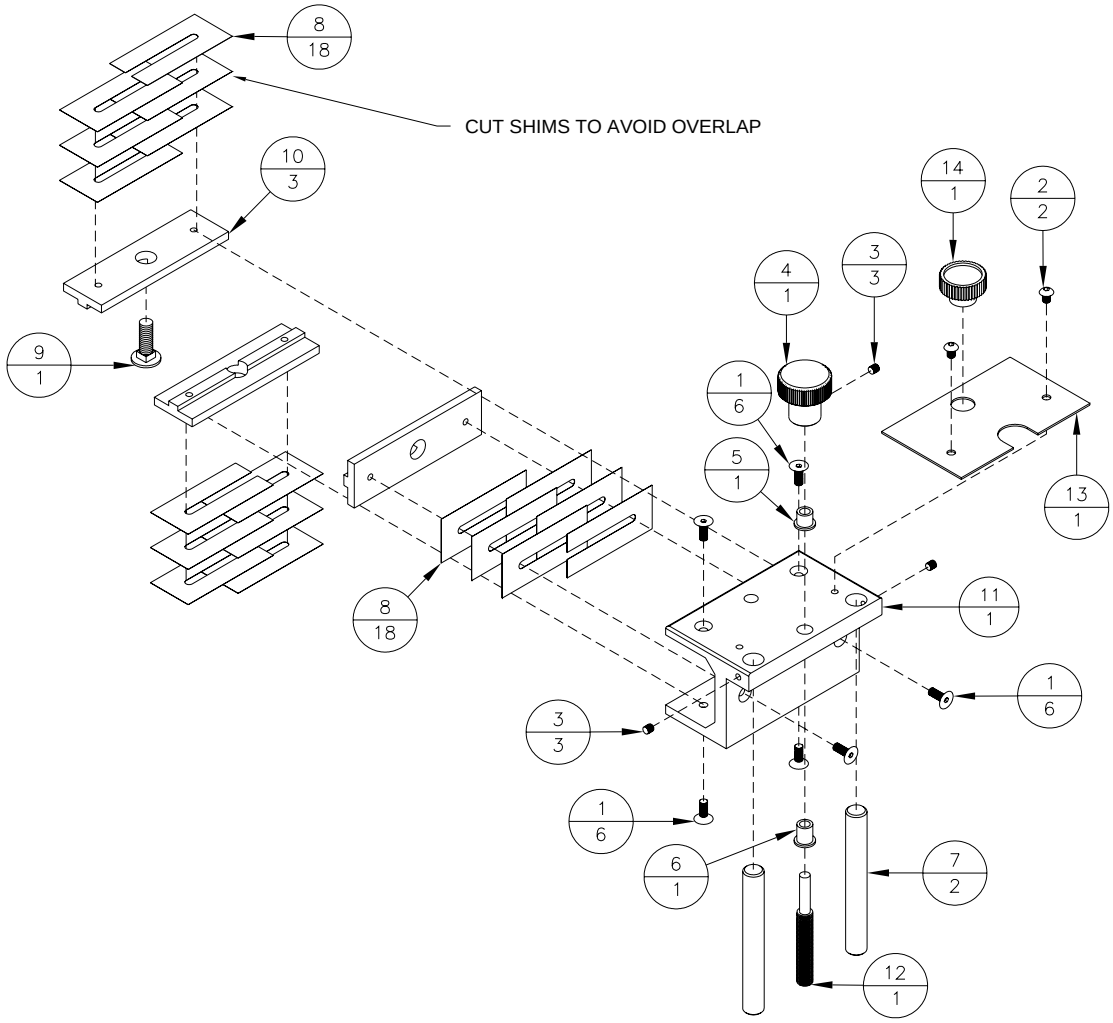


Table C-20: *Solenoid Valve Assembly (9102085A)*

Item	Part Number	Quantity	Description	Reference
1	9101436	1	Solenoid Valve, 12 VDC	
2	9102085	2	Connector, Elbow, 1/4" O.D. tube	

Figure C-20: *Solenoid Valve Assembly (9102085A)*

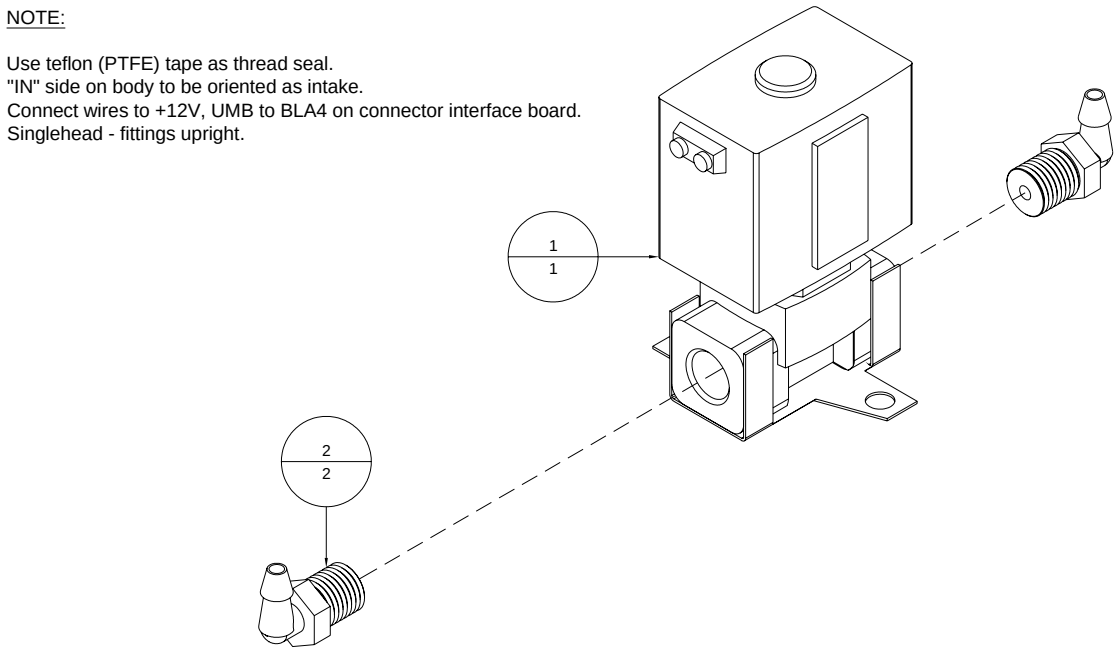


Table C-21: *Top Plate Assembly, Singlehead (9102106A)*

Item	Part Number	Quantity	Description	Reference
1	404030	4	Screw, FHCS, 10-32 UNF x 1/2"	
2	404520	2	Screw, BHCS, 10-32 UNF x 3/8"	
3	615140	3	Lashing Tie, Small	
4	9100216A	1	Priming Button Cable	
5	9100472	2	Silicone Tubing, 1/4" ID x 1/8" ID, 3" Long	
6	9100965	1	Air Filter	
7	9101774	1	Handle, Double Curved	
8	9102106	1	Plate, Top, Reversible Singlehead	
9	9102109A	1	Port Bracket Assembly, Singlehead	Page C-23
10	9102111	1 x 6.5”	Tubing, PE, 1/4" x 1/8", UV Resistant	

Figure C-21: *Top Plate Assembly, Singlehead (9102106A)*

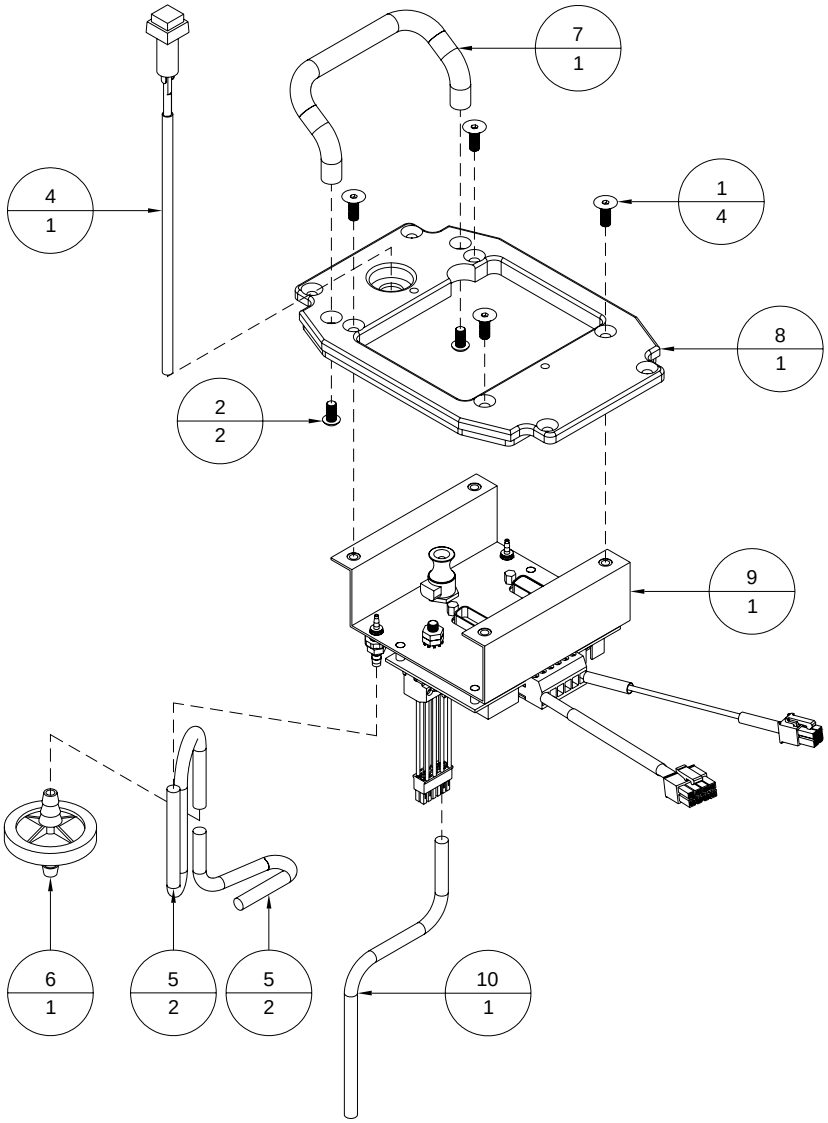


Table C-22: *Bottom Plate Assembly, Cezanne BK791 (9102108A)*

Item	Part Number	Quantity	Description	Reference
1	404050	4	Screw, FHCS, 10-32 UNF x 3/4"	
2	404285	1	Screw, SHCS, 10-32 UNF x 2"	
3	404510	3	Screw, BHCS, 10-32 UNF x 1/4"	
4	414212	2	Screw, SHCS, M4 x 12	
5	436325	2	Dowel Pin, 1/8"DIA x 5/8"	
6	439008	1	Lockwasher, No.10, External Tooth	
7	440005	2	Washer, #6, I.D.	
8	609116	3	Terminal, Ring, #10, 18-22 AWG, Red	
9	609119	1	Terminal, Ring, #4, 18-22 AWG, Red	
10	615140	3	Lashing Tie, Small (Not Shown - See Note)	
11	9100135A	1	Cable, Data Ribbon, Atlas	
12	9101591	1	Insulation Block, Fixed	
13	9101697	1	Tubing, PVC, 1/8" x 1/16", Blue, 5"	
14	9101697	1	Tubing, PVC, 1/8" x 1/16", Blue, 1"	
15	9102085A	1	Solenoid Valve Assembly	Page C-20
16	9102088	2	Extrusion, Al, Profile 8	
17	9102105	1	Plate, Bottom, Reversible Singlehead	
18	9102246	1 x 5”	Wire, #18, Green/Yellow	
19	9102246	1 x 12”	Wire, #18, Green/Yellow	
20	9102350A	1	Ferrule Assembly, Atlas BK791 Printhead	Page C-25
21	9103562	1	Check Valve, 1/16" I.D., 1.5 PSI	
22	9105156	1	Printhead, Atlas PH 256/30, Cezanne	

Figure C-22: *Bottom Plate Ass'y, Cezanne BK791 (9102108A)*

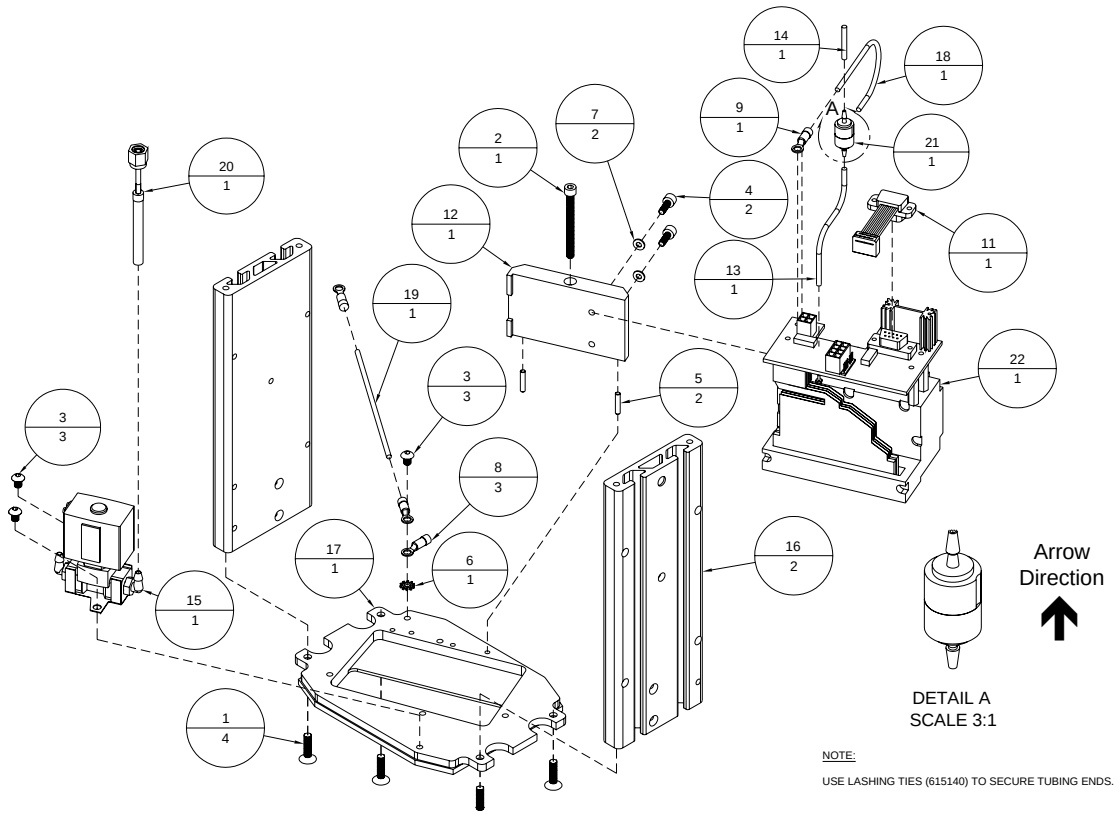


Table C-23: *Port Bracket Assembly, Singlehead (9102109A)*

Item	Part Number	Quantity	Description	Reference
1	401310	4	Screw, PHMS, 4-40 UNC x 1/4"	
2	420008	2	Nut, 10-32 UNF	
3	439008	1	Lockwasher, No.10, External Tooth	
4	606014A	1	Cable, Singlehead Control, Atlas	
5	615066	1	Connector, Female, 4-Pin, BLA4	
6	615322	4	Female Screwlock, 4-40 UNC	
7	9100214A	1	Cable, Printhead Flying Lead	
8	9100472	1	Tubing, Silicone, 1"	
9	9101170	1	Fitting, Straight Reducer, 1/8 To 1/16 ID	
10	9101588	2	Connector, Reducing Bulkhead, 1/8" x 1/4"	
11	9101599	1	Dual Atlas Interface Board	
12	9102109	1	Mounting Bracket, Singlehead	
13	9102625	1	Coupling, Panel Mount, 1/4" O.D. Straight Thru	
14	9102627	1	Plug, Body, EPDM O-ring	

Figure C-23: *Port Bracket Assembly, Singlehead (9102109A)*

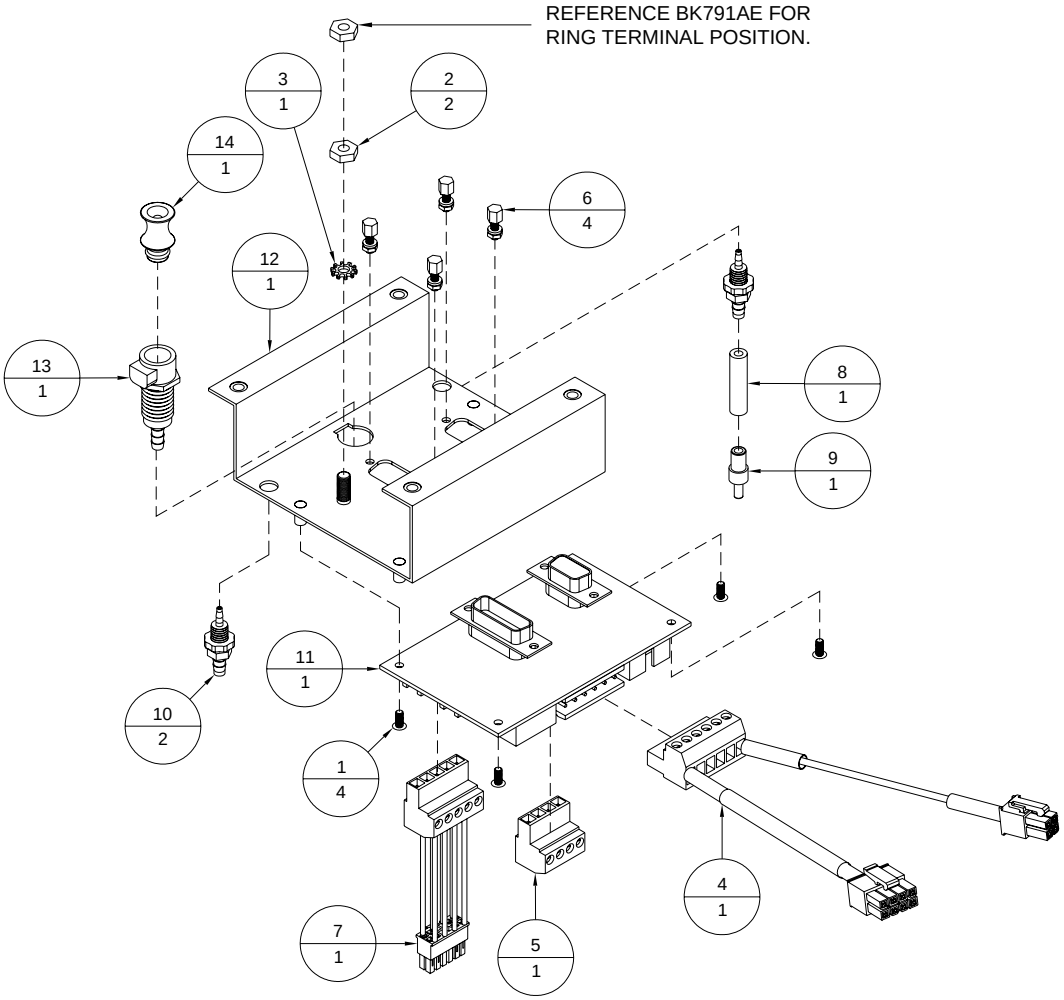


Table C-24: *Umbilical Assembly, BK791, BK1710, 15' (9102220A)*

Item	Part Number	Quantity	Description	Reference
1	606023	1 x 15’	Wire, #18, Green	
2	609116	2	Terminal, Ring, #10, 22-18 AWG, Red	
3	9101212A	1	Ink Umbilical Assembly, 15'	Page C-12
4	9101694A	1	Meniscus Vacuum Hose Assembly, 15'	
5	9101699A	1	Lung Vacuum Hose Assembly, 15'	Page C-17
6	9101775	1	Hose, Corrugated Loom, 170"	
7	9101776	1	Sleeving, Braided Expandable, 170"	
8	9102687A	1	Cable, Printhead Data, 15'	
9	9102916A	1	Cable, Head Support, BK1710, 15'	

Figure C-24: *Umbilical Assembly, BK791, BK1710, 15' (9102220A)*

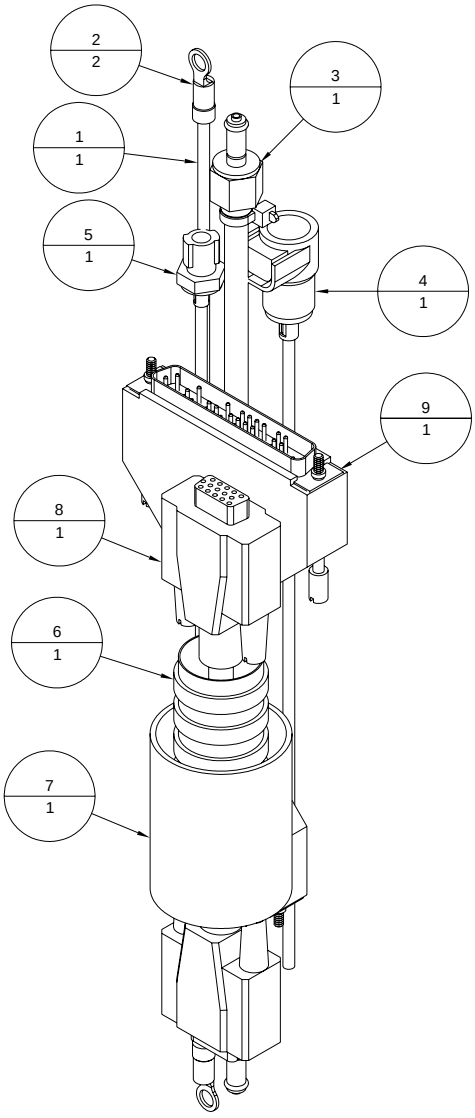


Table C-25: *Ferrule Assembly, Atlas BK791 Printhead (9102350A)*

Item	Part Number	Quantity	Description	Reference
1	9100938	1	Fitting, Nut	
2	9100958	1	Ferrule Set	
3	9101170	1	Fitting, Straight Reducer, 1/8 To 1/16 ID	
4	9101695	1	Tubing, PE, 1/8" x 1/16", UV Resistant, 9"	
5	9102111	1	Tubing, PE, 1/4" x 1/8", UV Resistant, 2"	

Figure C-25: *Ferrule Assembly, Atlas BK791 Printhead (9102350A)*

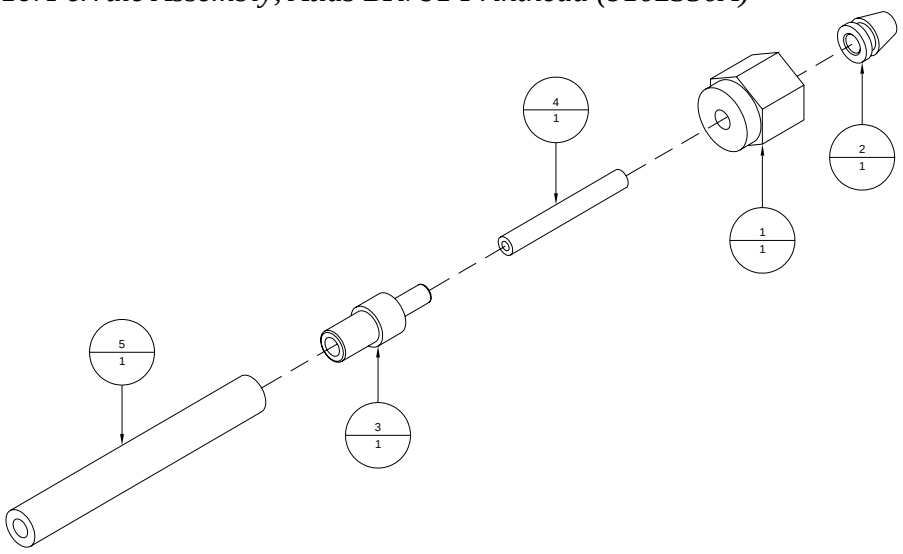


Table C-26: *Printhead Support Assembly, Solid (9102595A)*

Item	Part Number	Quantity	Description	Reference
1	402250	4	Screw, SHCS, 6-32 UNC X 3/4"	
2	404230	4	Screw, SHCS, 10-32 UNF x 1/2"	
3	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
4	437050	8	Retaining Ring, 1/2" I.D., External	
5	9101996	1	Gas Spring	
6	9102094	2	Profile Bar	
7	9102126	1	Locknut, M4 x 0.7, Nylon Insert	
8	9102128	1	Screw, SHCS, 1/4-20 UNC x 3/8", SS	
9	9102341	4	Bushing, Linear Ball Bearing	
10	9102411	2	Rod, 0.25" OD x 5.19" Lg.	
11	9102594	1	Mount, Printhead, Solid	
12	9102595	1	Shuttle Block, Solid Mount	
13	9102792	1	Plunger, 3/8-16 UNC, Lever Type, Non-Locking	

Figure C-26: *Printhead Support Assembly, Solid (9102595A)*

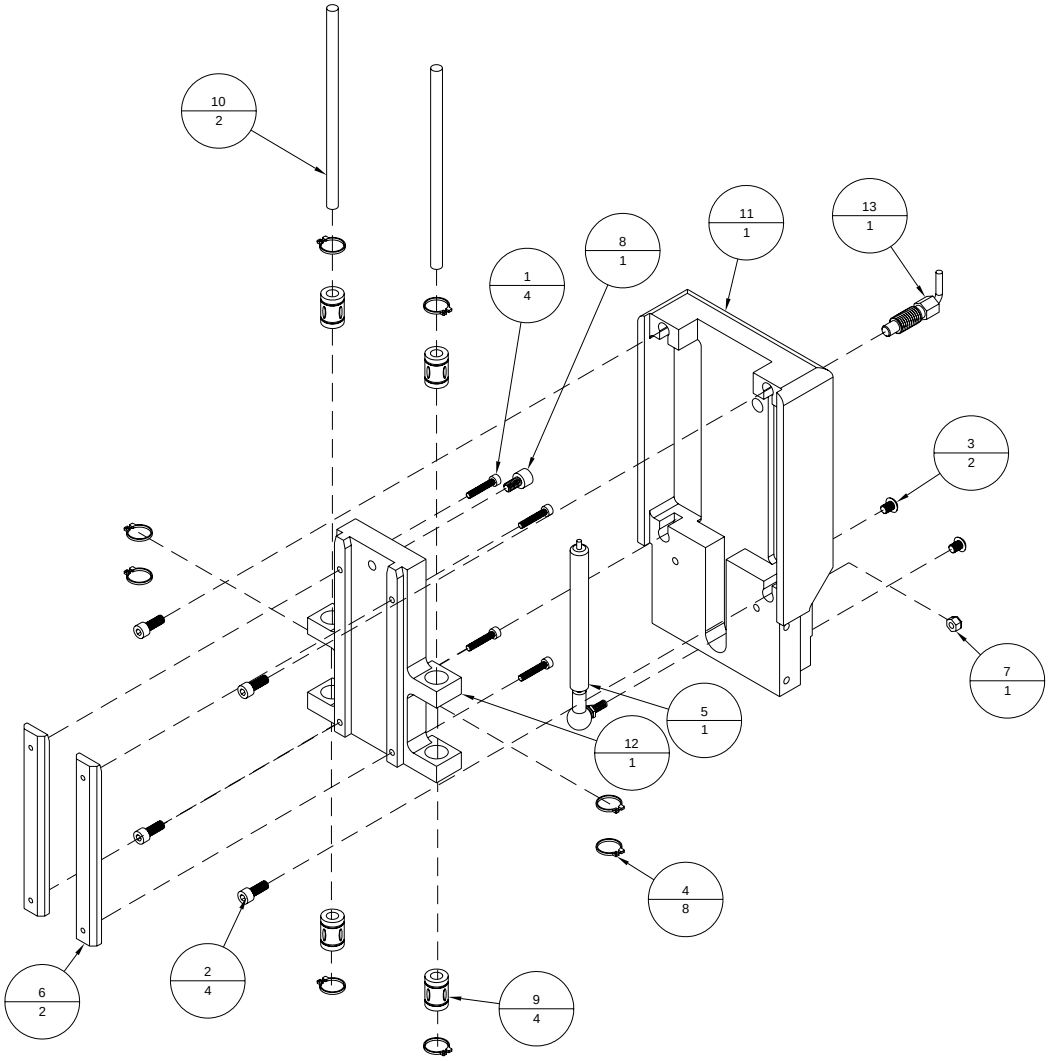


Table C-27: *Bridge Mount Assembly (9102819A)*

Item	Part Number	Quantity	Description	Reference
1	131020	1	Collar, 3/8" I. D.	
2	212533	2	Linear Bearing, 1" ID	
3	404520	3	Screw, BHCS, 10-32 UNF x 3/8"	
4	404807	2	Screw, SHSS, 10-32 UNF x 3/16"	
5	404810	2	Screw, SHSS, 10-32 UNF x 1/4"	
6	437156	4	Retaining Ring, 1 9/16" ID, External	
7	439009	3	Lockwasher, No. 10	
8	505384	1	Flange Bushing, 3/8 ID X 1/2 OD X 1/2 LG	
9	9101128	2	Dowel Pin, 1/2" DIA x 4"	
10	9101874	2	Spring, Compression	
11	9102592	1	Shoulder Bolt, 3/8" x 3 1/2, 5/16-18 UNC	
12	9102819	1	Mount, Linear bearing, Automatic	
13	9102877	1	Bearing, Thrust, 1/4" I.D.	
14	9102879	1	Rod, Threaded, Thickness	
15	9102883	1	Mounting Block, Slider	
16	9102884	1	Plunger, spring loaded, Threaded, 1/4-20 UNC	
17	9102885	1	Knob, Diamond cut, Knurled, 2" dia.	
18	9103460A	1	Locking mechanism	Page C-29

Figure C-27: *Bridge Mount Assembly (9102819A)*

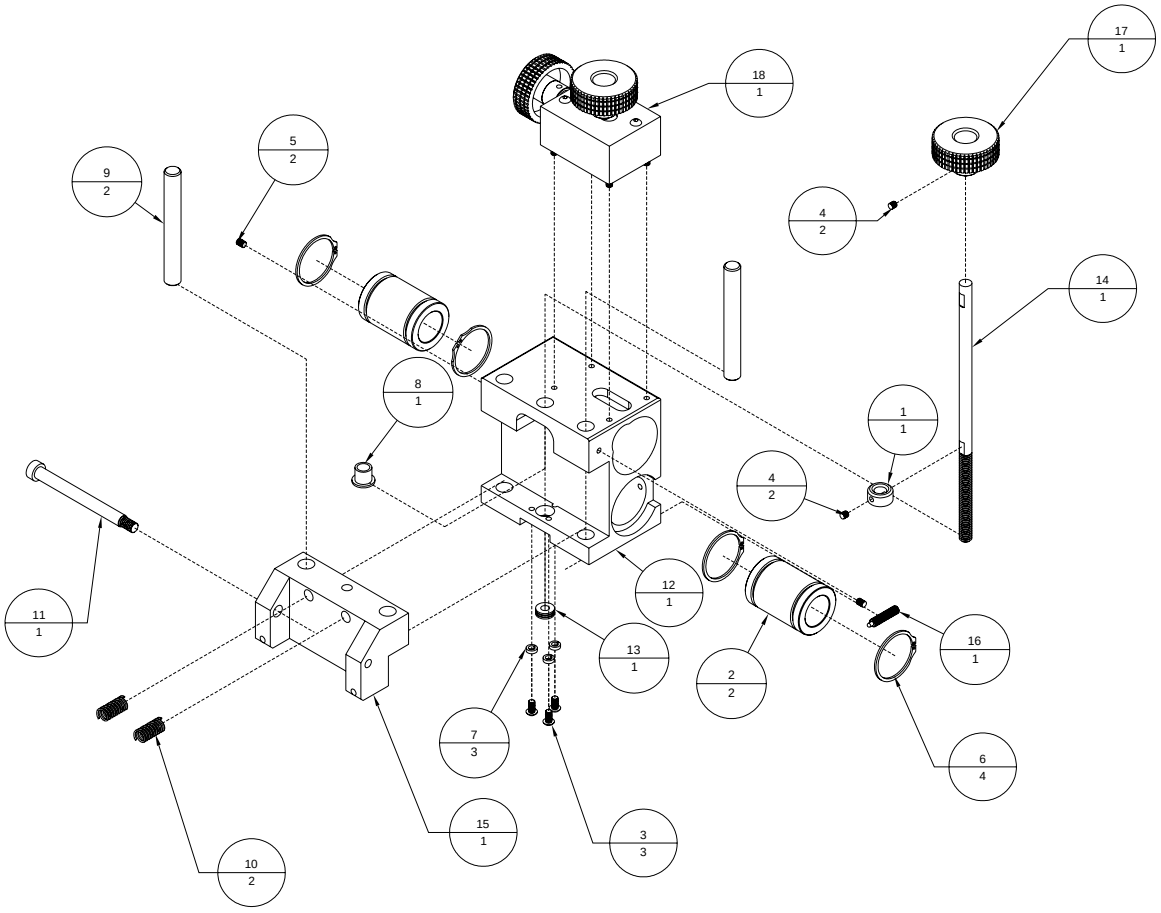


Table C-28: *Umbilical Assembly, Sapphire, 15 ft. (9102911A)*

Item	Part Number	Quantity	Description	Reference
1	404520	8	Screw, BHCS, 10-32 UNF x 3/8"	
2	606023	1 x 15 ft	Wire, #18, Green, Hookup	
3	609116	2	Terminal, Ring, #10, 22-18 AWG, Red	
4	9101212A	1	Ink Umbilical Assembly, 15'	Page C-12
5	9101694A	1	Meniscus Vacuum Hose Assembly, 15'	Page C-14
6	9101699A	1	Lung Vacuum Hose Assembly, 15'	Page C-17
7	9101735	4	Fitting, Half	
8	9101773	2	Collar, Locking Shaft	
9	9101775	1	Hose, Corrugated Loom, 170"	
10	9101776	1	Sleeving, Braided Expandable, 170"	
11	9102687A	1	Cable, Printhead Data, 15'	
12	9102914A	1	Cable, Sapphire, Head support	

Figure C-28: *Umbilical Assembly, Sapphire, 15 ft (9102911A)*

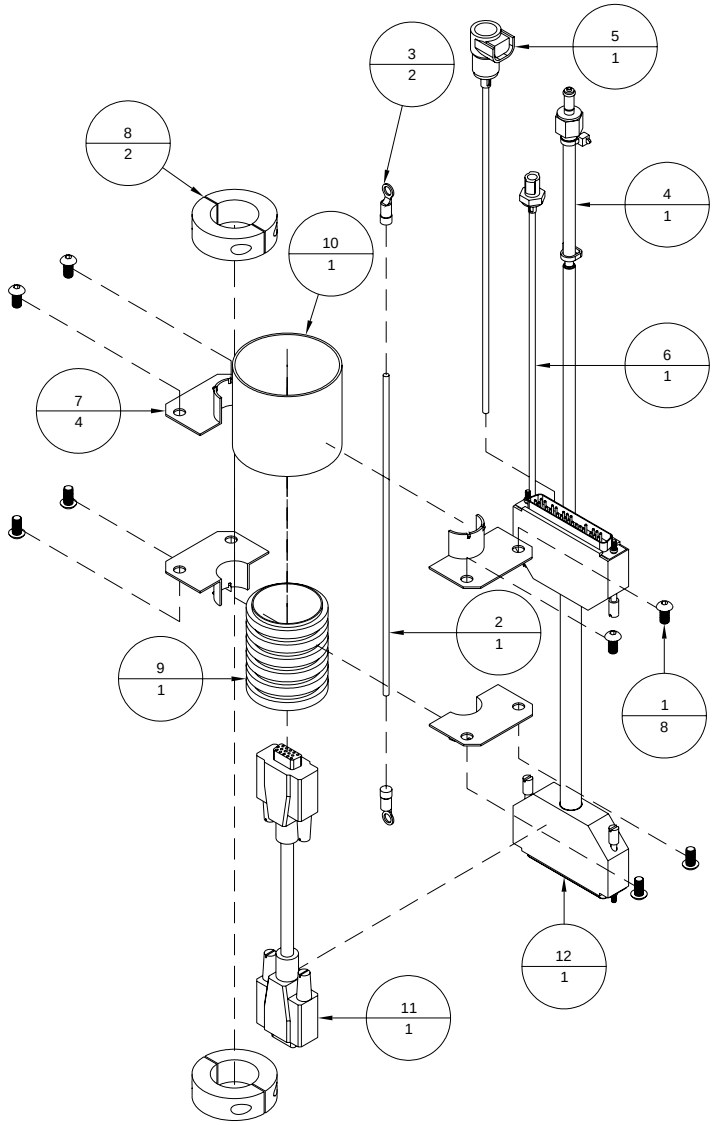


Table C-29: *Locking Mechanism (9103460A)*

Item	Part Number	Quantity	Description	Reference
1	404275	4	Screw, SHCS, 10-32 UNF x 1 1/4	
2	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
3	404805	4	Screw, SHSS, 10-32 UNF x 1/8"	
4	404807	2	Screw, SHSS, 10-32 UNF x 3/16"	
5	436348	2	Dowel Pin, 1/4"DIA x 2"	
6	505056	6	Flange Bushing, 1/4 ID X 3/8 OD X 1/4 LG	
7	9102885	1	Knob, Diamond cut, Knurled, 2" dia.	
8	9103457	1	Knob, Diamond cut, Knurled, 1.57" dia.	
9	9103458	1	Threaded rod, 3/8-16 UNC	
10	9103459	1	Slider nut, 3/8-16 UNC	
11	9103460	2	Bracket, slider block	
12	9103461	1	Threaded rod, 3/8-24 UNF, lateral adjustment	
13	9103462	1	Cover, Lateral adjustment mechanism	
14	9103463	1	Pin, Brass, 3/16" dia x 0.6" long	

Figure C-29: *Locking Mechanism (9103460A)*

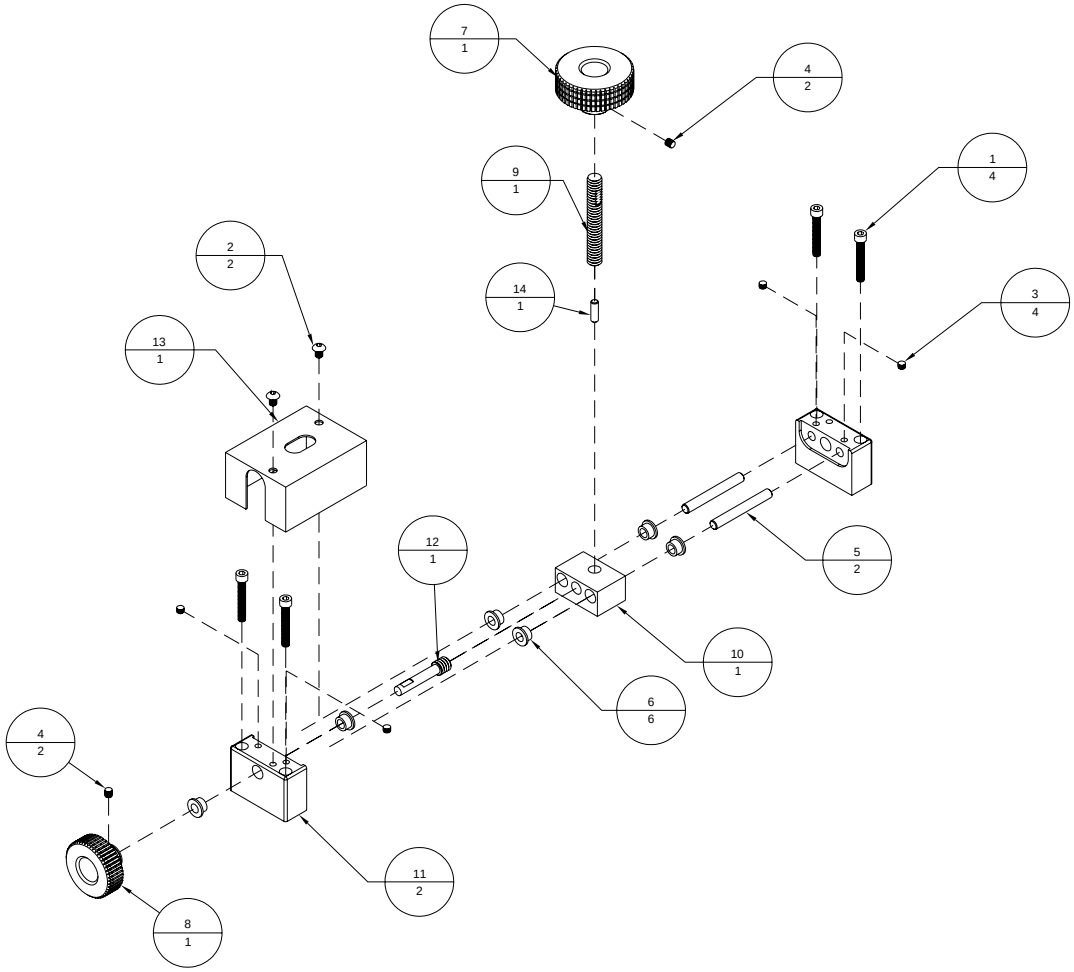


Table C-30: *Ferrule Assembly, BK791 Upgrade (9103922A)*

Item	Part Number	Quantity	Description	Reference
1	9100938	1	Fitting, Nut	
2	9100958	1	Ferrule Set	
3	9101695	1	Tubing, Polyethylene, 1/8" x 1/16", UV Resistant	
4	9102116	1 x 6”	Tubing, Pharmed, 1/4"x 1/8" (Almond)	
5	9103922	1	Connector, Elbow reduction, 1/8" to 1/16" I.D.	

Figure C-30: *Ferrule Assembly, BK791 Upgrade (9103922A)*

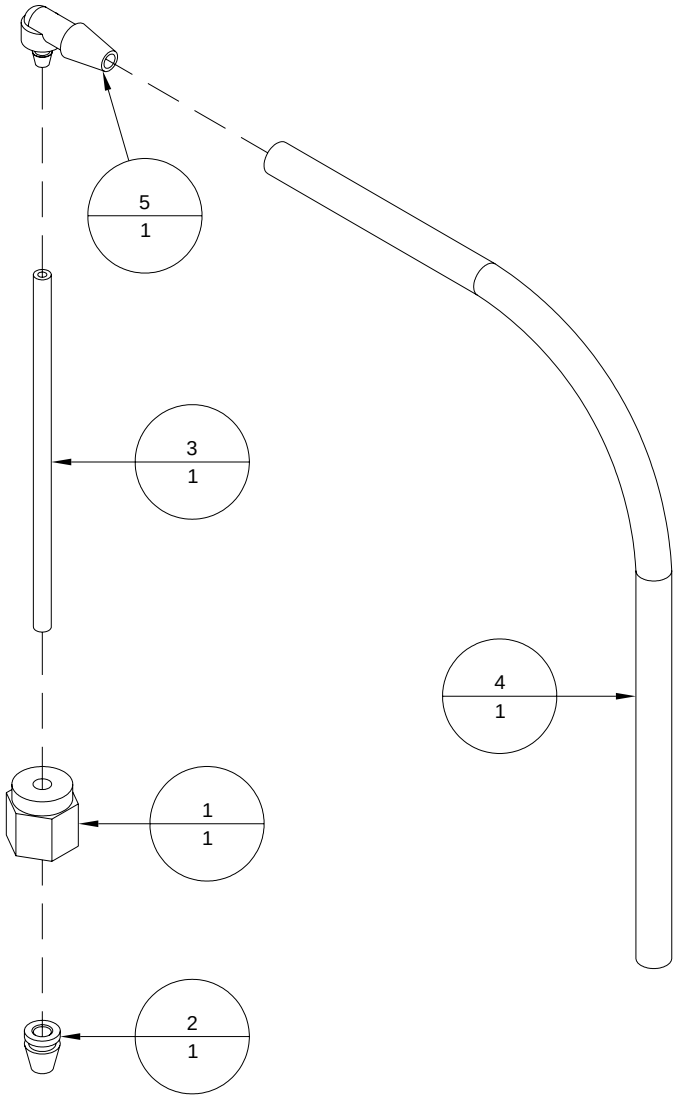


Table C-31: *Top Plate Assembly (9103991A)*

Item	Part Number	Quantity	Description	Reference
1	405540	2	Screw, BHCS, 1/4-20 UNC x 5/8"	
2	615425	1	Hole Plug, 7/8"	
3	9100216A	1	Cable, Priming Button	
4	9100472	1	Tubing, Silicone, 1/4" OD x 1/8" ID, 7"	
5	9100472	1	Tubing, Silicone, 1/4" OD x 1/8" ID, 3"	
6	9100965	1	Filter, Air, 0.2 um	
7	9101170	1	Fitting, Straight Reducer, 1/8 To 1/16 ID	
8	9102846	1	Handle, Pull, 1/4-20	
9	9102911A	1	Umbilical assembly, Sapphire, 15 ft.	Page C-28
10	9103991	1	Plate, Top, 2250 / 3250	

Figure C-31: *Top Plate Assembly (9103991A)*

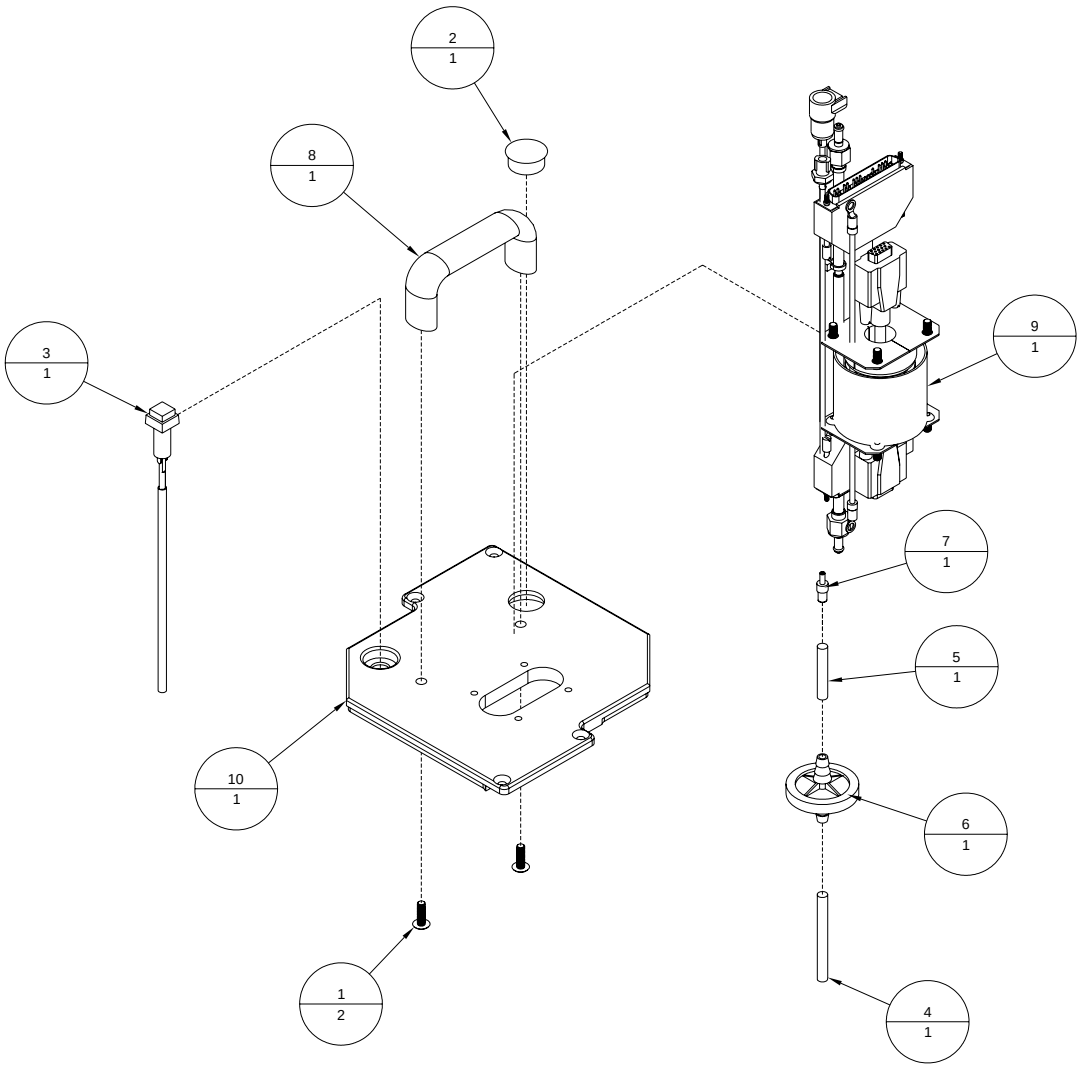


Table C-32: *Solenoid Assembly (9103998A)*

Item	Part Number	Quantity	Description	Reference
1	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
2	439009	2	Lockwasher, No. 10	
3	9101694	1	Coupling Body,1/8" I.D.Tubing,In-line,Hose Barb	
4	9102085A	1	Solenoid valve assembly	Page C-20
5	9102111	5.5”	Tubing, Polyethylene, 1/4" x 1/8", UV Resistant	
6	9103435	2	Ferrule, #16 AWG, Red	
7	9103922A	1	Ferrule Assembly, BK791 Upgrade	Page C-30

Figure C-32: *Solenoid Assembly (9103998A)*

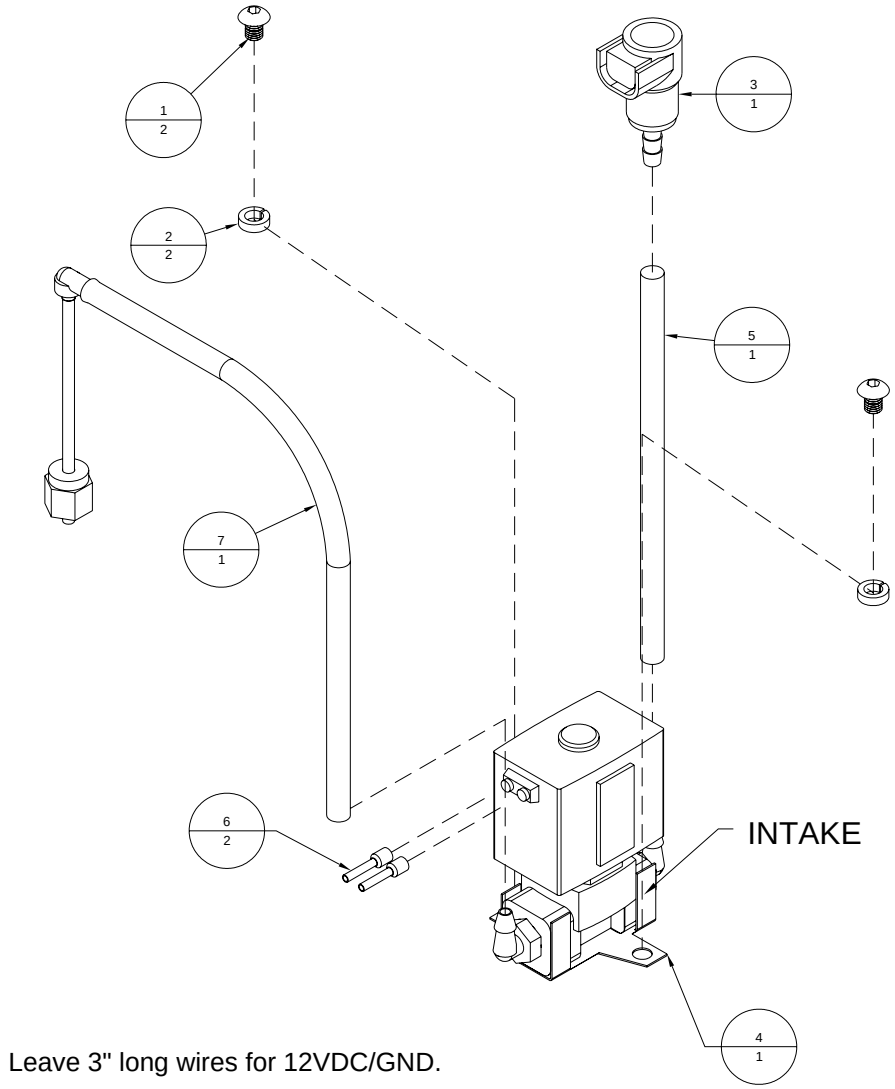


Table C-33: *Printhead Support Assembly, Angle (9104008A)*

Item	Part Number	Quantity	Description	Reference
1	402250	4	Screw, SHCS, 6-32 UNC X 3/4"	
2	404050SS	2	Screw, FHCS, 10-32 UNF x 3/4" SS	
3	404070	2	Screw, FHCS, 10-32 UNF x 1"	
4	404230	4	Screw, SHCS, 10-32 UNF x 1/2"	
5	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
6	405830	1	Screw, SHSS, 1/4-20 UNC x 1/2"	
7	436313	1	Dowel Pin, 1/4"DIA X 1"	
8	437050	8	Retaining Ring, 1/2" I.D., External	
9	505463	1	Flange Bushing, 1/4 ID X 3/8 OD X 3/8 LG	
10	505464	1	Flange Bushing, 1/4 ID x 3/8 OD x 1/2 LG	
11	9101996	1	Gas Spring	
12	9102094	2	Profile Bar	
13	9102126	1	Locknut, M4 x 0.7, Nylon Insert	
14	9102341	4	Bushing, Linear Ball Bearing	
15	9102411	2	Rod, 0.25" OD x 5.19" Lg.	
16	9102594	1	Mount, Printhead, Solid	
17	9102792	1	Plunger, 3/8-16 UNC, Lever Type, Non-Locking	
18	9103993	1	Dowel pin, 1/4" DIA., 0.625" long.	
19	9103994	2	Screw, SHSS, 1/4-20 X 3/8, cone point	
20	9103995	2	Screw, Truss, 8-32 UNC x 1/4"	
21	9104008	1	Shuttle Block, Angular Adjustment	
22	9104010	1	Bracket, Angular, Top	
23	9104011	1	Bracket, Angular, Bottom	
24	9104012	1	Bracket, Swivel	

Figure C-33: *Printhead Support Assembly, Angle (9104008A)*

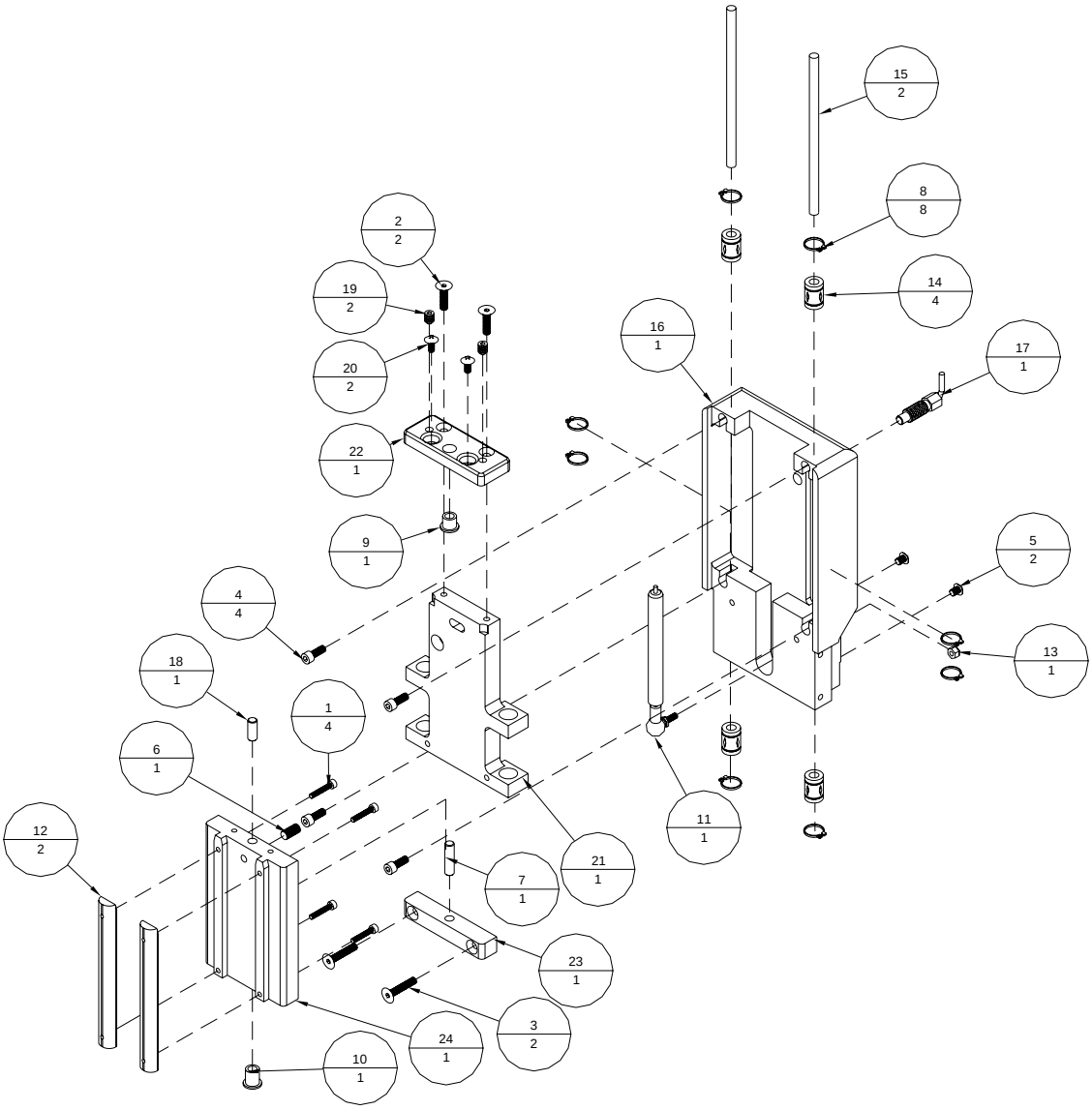
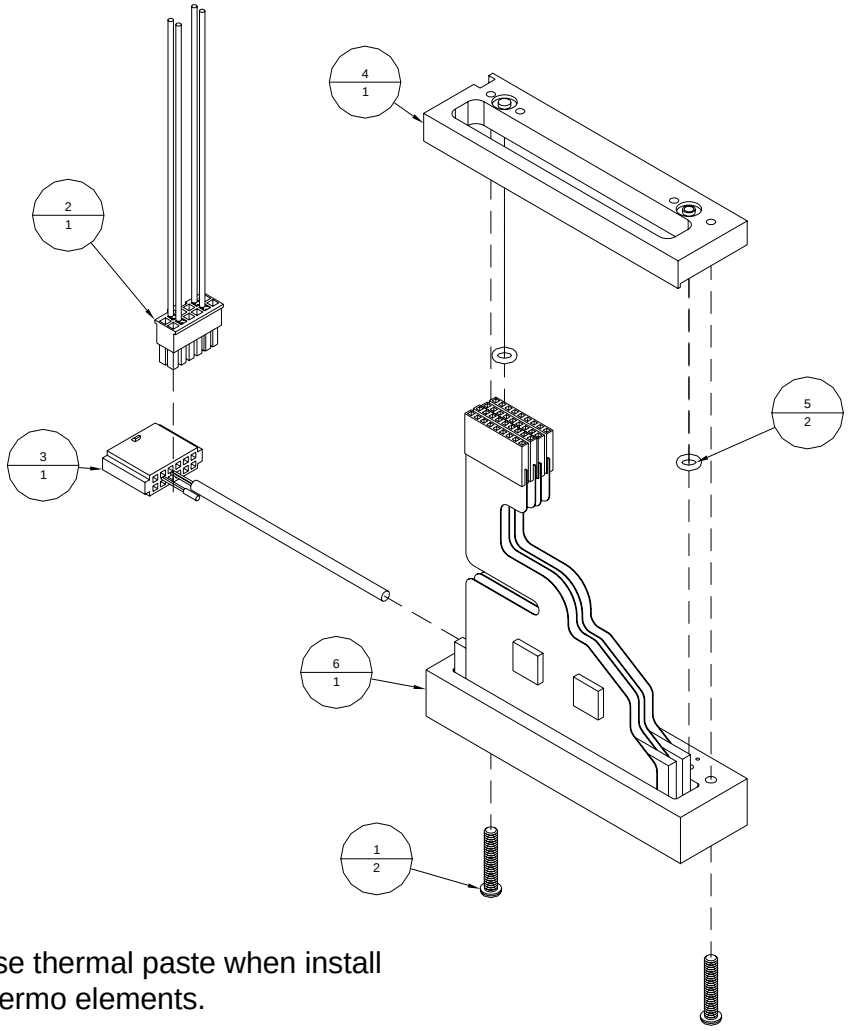


Table C-34: *Slide Bar Assembly, 30 pl, Cezanne (9105157A)*

Item	Part Number	Quantity	Description	Reference
1	9101936	2	Screw, Slotted Pan Head, M3 x 20mm	
2	9102310A	1	Cable, Collar Harness Adapter	
3	9103195	1	Thermo-electric assembly, Jetting assembly	
4	9103988	1	Bar, JA Slide	
5	9104366	2	O-Ring, EPDM, 9/32 x 5/32 x 1/16	
6	9105157	1	Jetting Array, JA256/30 LQ Top Port	

Figure C-34: *Slide Bar Assembly, 30 pl, Cezanne (9105157A)*

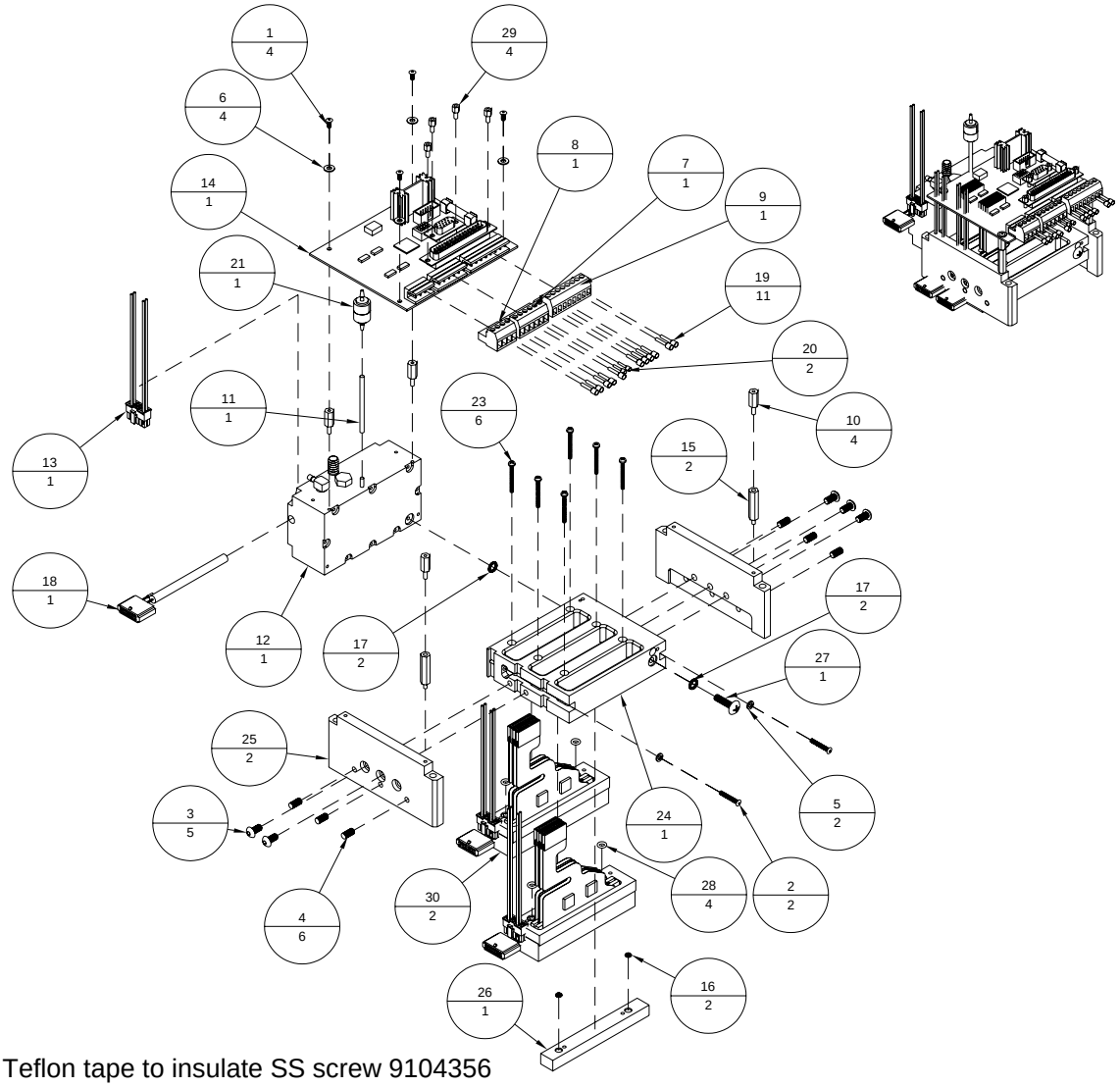


Use thermal paste when install thermo elements.

Table C-35: *Manifold Assembly, Adjustable, 30 pL, Cezanne 2250 (9105158A)*

Item	Part Number	Quantity	Description	Reference
1	401310	4	Screw, PHMS, 4-40 UNC x 1/4"	
2	401350	2	Screw, PHMS, 4-40 UNC x 3/4"	
3	404520	5	Screw, BHCS, 10-32 UNF x 3/8"	
4	404820	6	Screw, SHSS, 10-32 UNF x 3/8"	
5	439004	2	Lockwasher, No.4	
6	440530	4	Washer, #6, Nylon	
7	615064	1	Connector, Female, 6-Pin, BLA6	
8	615066	1	Connector, Female, 4-Pin, BLA4	
9	615076	1	Connector, Female, 8-Pin, BLA8	
10	9100157	4	Hex Spacer, 4-40 UNC x 1/2"	
11	9101697	1	Tubing, PVC, 1/8" x 1/16", Blue, 3"	
12	9102311	1	Reservoir, Printhead	
13	9102313A	1	Cable, Reservoir harness adapter	
14	9102549	1	THIB, Tri Head Interface Board	
15	9102579	2	Hex Spacer, 4-40 UNC, 1" long	
16	9103168	2	O-ring, EPDM, 3/16" x 1/16", 1/16 thick	
17	9103170	2	O-Ring, EPDM, 11/32" x 7/32", 1/16 thick	
18	9103197	1	Thermo-electric assembly, Reservoir assembly	
19	9103538	11	Ferrule, #20 AWG, Orange	
20	9103540	2	Ferrule, #24 AWG, Light blue	
21	9103562	1	Check Valve, 1/16" I.D., 1.5 PSI	
22	9103682	1	Label, Printhead Serial (Not Shown)	
23	9103986	6	Screw, PHMS, M3 x 25mm	
24	9103987	1	Manifold, Universal, Triple	
25	9103990	2	Bracket, Manifold Support, Triple	
26	9104061	1	Cap, Triple slant block-off	
27	9104365	1	Screw, Truss, 10-32 UNF x 3/4", S.S.	
28	9104366	4	O-Ring, EPDM, 9/32 x 5/32 x 1/16	
29	9104530	4	Hex Spacer, 4-40 UNC x 1/4"	
30	9105157A	2	Slide Bar Assembly, 30 pL, Cezanne	Page C-35

Figure C-35: *Manifold Assembly, Adjustable, 30 pL, Cezanne 2250 (9105158A)*



Teflon tape to insulate SS screw 9104356

Table C-36: *Bottom Plate Assembly, Cezanne 2250 (9105159A)*

Item	Part Number	Quantity	Description	Reference
1	401310	1	Screw, PHMS, 4-40 UNC x 1/4"	
2	402240	8	Screw, SHCS, 6-32 UNC X 5/8"	
3	404040	4	Screw, FHCS, 10-32 UNF x 5/8"	
4	404285	4	Screw, SHCS, 10-32 UNF x 2"	
5	404520	1	Screw, BHCS, 10-32 UNF x 3/8"	
6	436325	2	Dowel Pin, 1/8"DIA x 5/8"	
7	439004	1	Lockwasher, No.4	
8	439009	5	Lockwasher, No. 10	
9	440003	1	Washer, #4 ID	
10	609111	2	Terminal, Ring, #10, 16-14 AWG, Blue	
11	9102088	2	Extrusion, Al, Profile 8	
12	9102681	1 x 7”	Wire, #14, Green/Yellow Hookup	
13	9103989	1	Plate, Bottom, Triple Slant	
14	9103998	2	Bracket, Corner	
15	9103998A	1	Solenoid assembly	Page C-32
16	9103999	2	Bracket, Straight	
17	9105158A	1	Manifold Ass'y, Adjustable, 30 pl, Cezanne 2250	Page C-36

Figure C-36: *Bottom Plate Assembly, Cezanne 2250 (9105159A)*

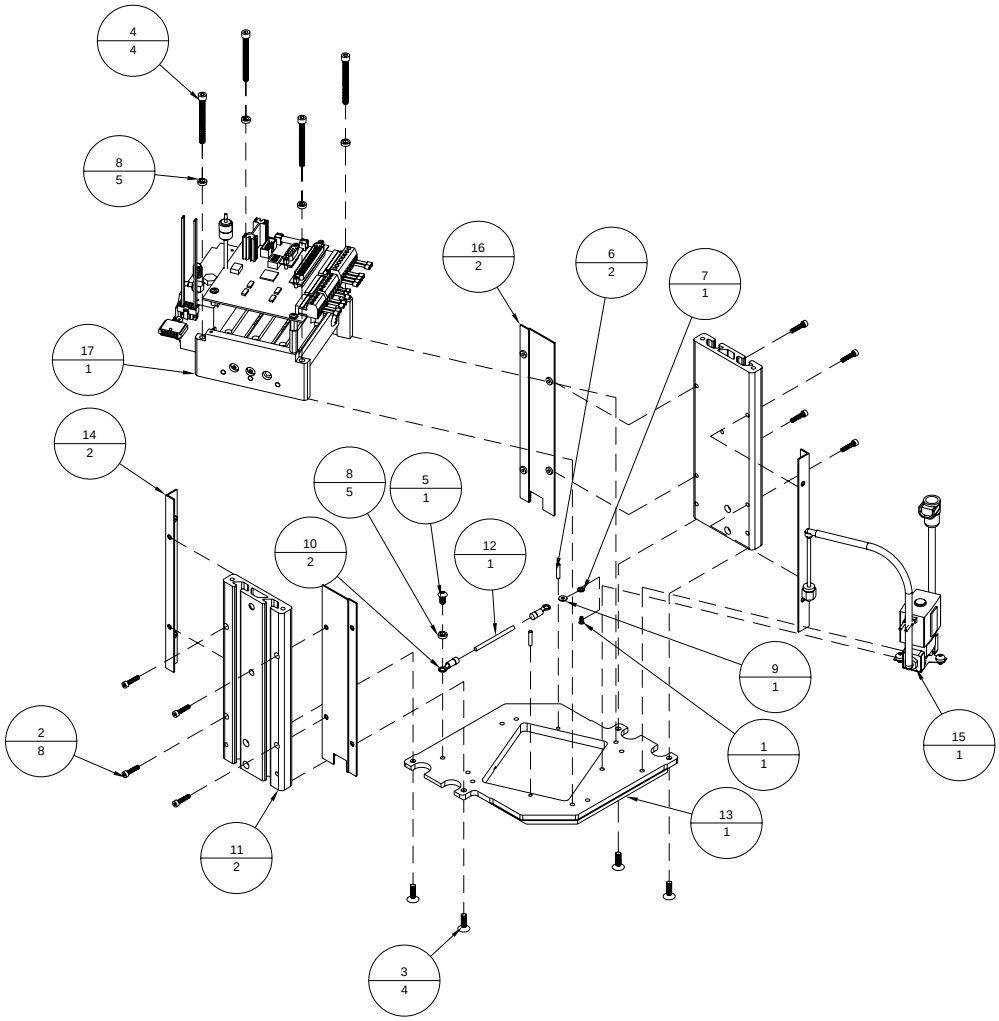
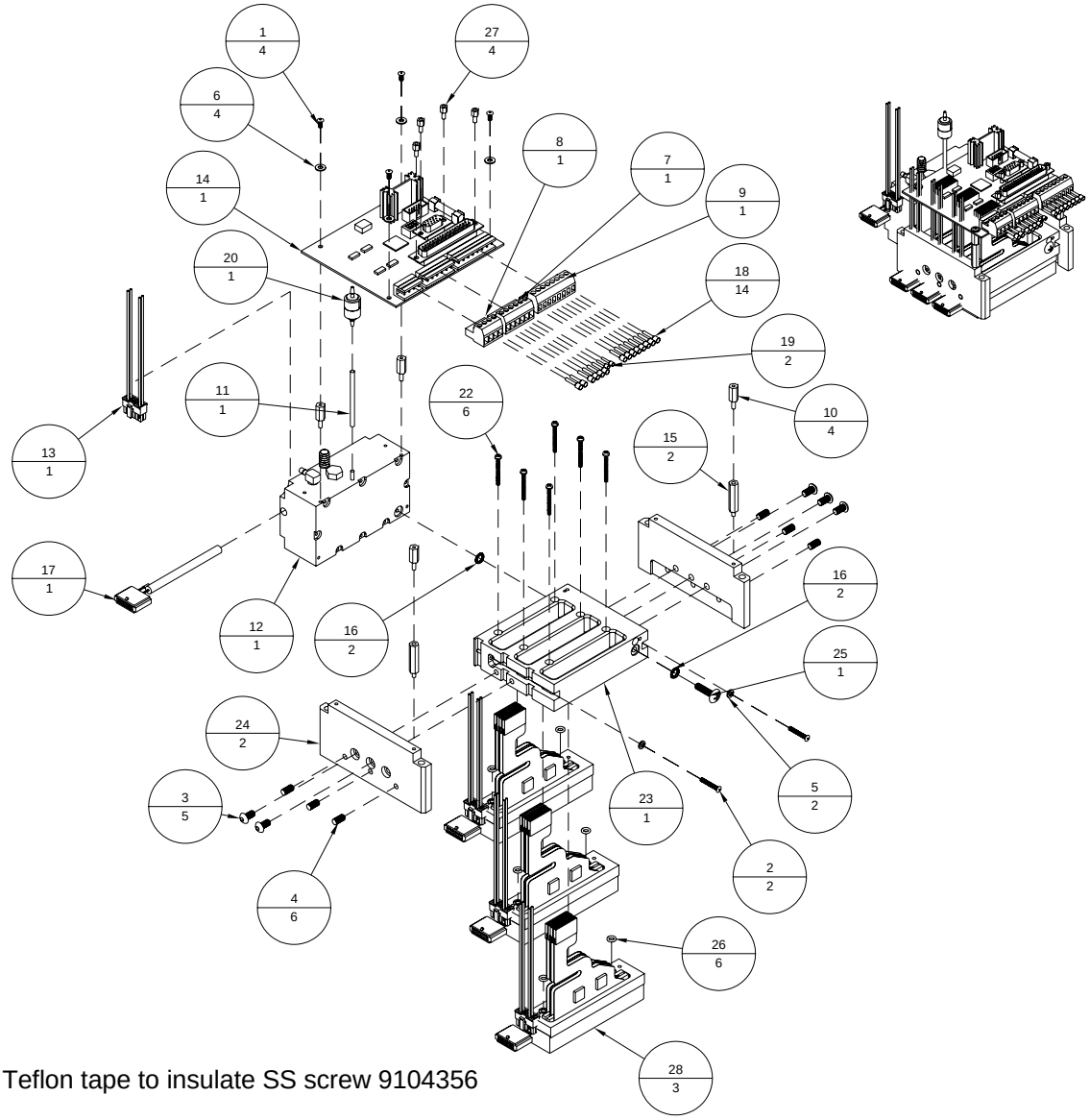


Table C-37: *Manifold Ass'y, Adjustable, 30 pL, Cezanne (9105160A)*

Item	Part Number	Quantity	Description	Reference
1	401310	4	Screw, PHMS, 4-40 UNC x 1/4"	
2	401350	2	Screw, PHMS, 4-40 UNC x 3/4"	
3	404520	5	Screw, BHCS, 10-32 UNF x 3/8"	
4	404820	6	Screw, SHSS, 10-32 UNF x 3/8"	
5	439004	2	Lockwasher, No.4	
6	440530	4	Washer, #6, Nylon	
7	615064	1	Connector, Female, 6-Pin, BLA6	
8	615066	1	Connector, Female, 4-Pin, BLA4	
9	615076	1	Connector, Female, 8-Pin, BLA8	
10	9100157	4	Hex Spacer, 4-40 UNC x 1/2"	
11	9101697	1	Tubing, PVC, 1/8" x 1/16", Blue, 3"	
12	9102311	1	Reservoir, Printhead	
13	9102313A	1	Cable, Reservoir harness adapter	
14	9102549	1	THIB, Tri Head Interface Board	
15	9102579	2	Hex Spacer, 4-40 UNC, 1" long	
16	9103170	2	O-Ring, EPDM, 11/32" x 7/32", 1/16 thick	
17	9103197	1	Thermo-electric assembly, Reservoir assembly	
18	9103538	14	Ferrule, #20 AWG, Orange	
19	9103540	2	Ferrule, #24 AWG, Light blue	
20	9103562	1	Check Valve, 1/16" I.D., 1.5 PSI	
21	9103682	1	Label, Printhead Serial (Not Shown)	
22	9103986	6	Screw, PHMS, M3 x 25mm	
23	9103987	1	Manifold, Universal, Triple	
24	9103990	2	Bracket, Manifold Support, Triple	
25	9104365	1	Screw, Truss, 10-32 UNF x 3/4", S.S.	
26	9104366	6	O-Ring, EPDM, 9/32 x 5/32 x 1/16	
27	9104530	4	Hex Spacer, 4-40 UNC x 1/4"	
28	9105157A	3	Slide Bar Assembly, 30 pL, Cezanne	Page C-35

Figure C-37: *Manifold Ass'y, Adjustable, 30 pL, Cezanne (9105160A)*

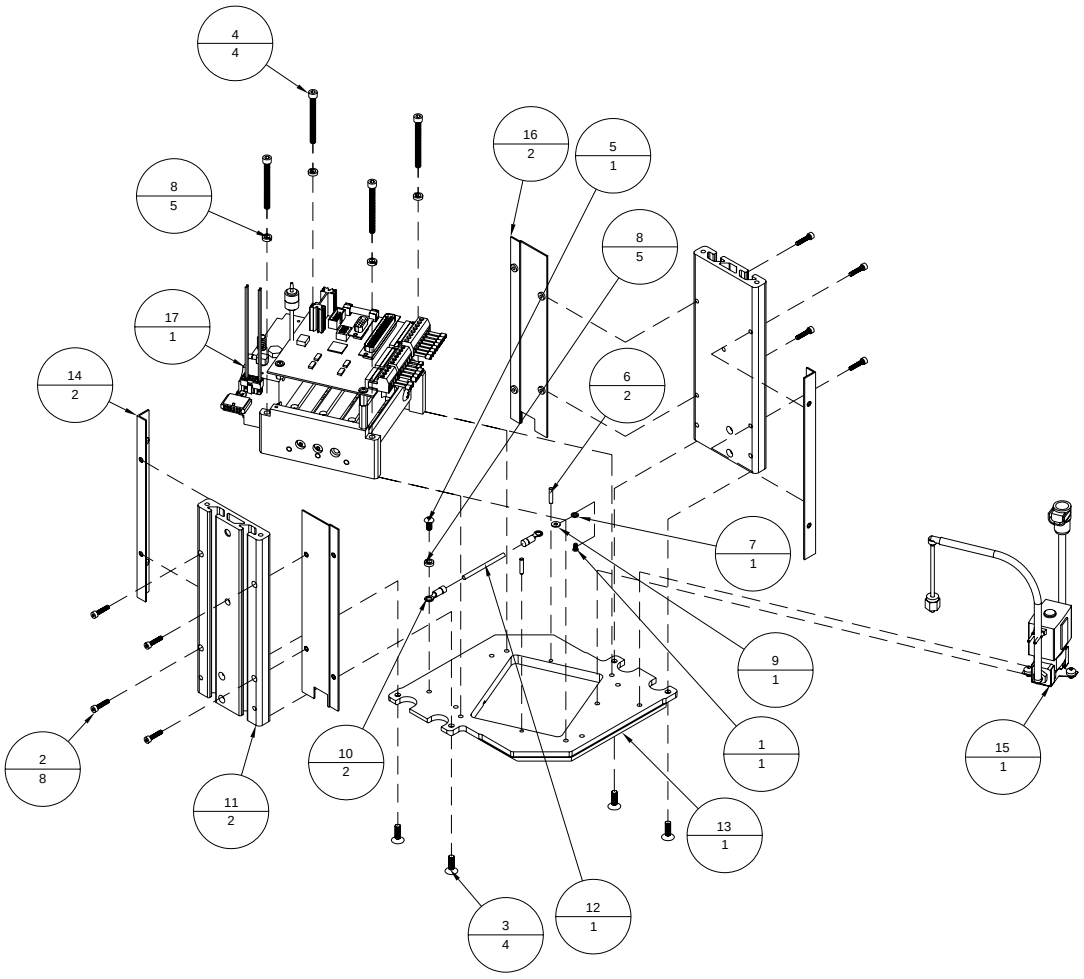


Teflon tape to insulate SS screw 9104356

Table C-38: *Bottom Plate Assembly, Cezanne 3250 (9105161A)*

Item	Part Number	Quantity	Description	Reference
1	401310	1	Screw, PHMS, 4-40 UNC x 1/4"	
2	402240	8	Screw, SHCS, 6-32 UNC X 5/8"	
3	404040	4	Screw, FHCS, 10-32 UNF x 5/8"	
4	404285	4	Screw, SHCS, 10-32 UNF x 2"	
5	404520	1	Screw, BHCS, 10-32 UNF x 3/8"	
6	436325	2	Dowel Pin, 1/8"DIA x 5/8"	
7	439004	1	Lockwasher, No.4	
8	439009	5	Lockwasher, No. 10	
9	440003	1	Washer, #4 ID	
10	609111	2	Terminal, Ring, #10, 16-14 AWG, Blue	
11	9102088	2	Extrusion, Al, Profile 8	
12	9102681	1 x 7”	Wire, #14, Green/Yellow Hookup	
13	9103989	1	Plate, Bottom, Triple Slant	
14	9103998	2	Bracket, Corner	
15	9103998A	1	Solenoid assembly	Page C-32
16	9103999	2	Bracket, Straight	
17	9105160A	1	Manifold Assembly, Adjustable, 30 pl, Cezanne	Page C-39

Figure C-38: *Bottom Plate Assembly, Cezanne 3250 (9105161A)*



Atlas Electrical Drawings

Appendix **D**

List of Schematics

Figure D-1: *Printhead, 1250, Wiring Diagram (BK791AE)*

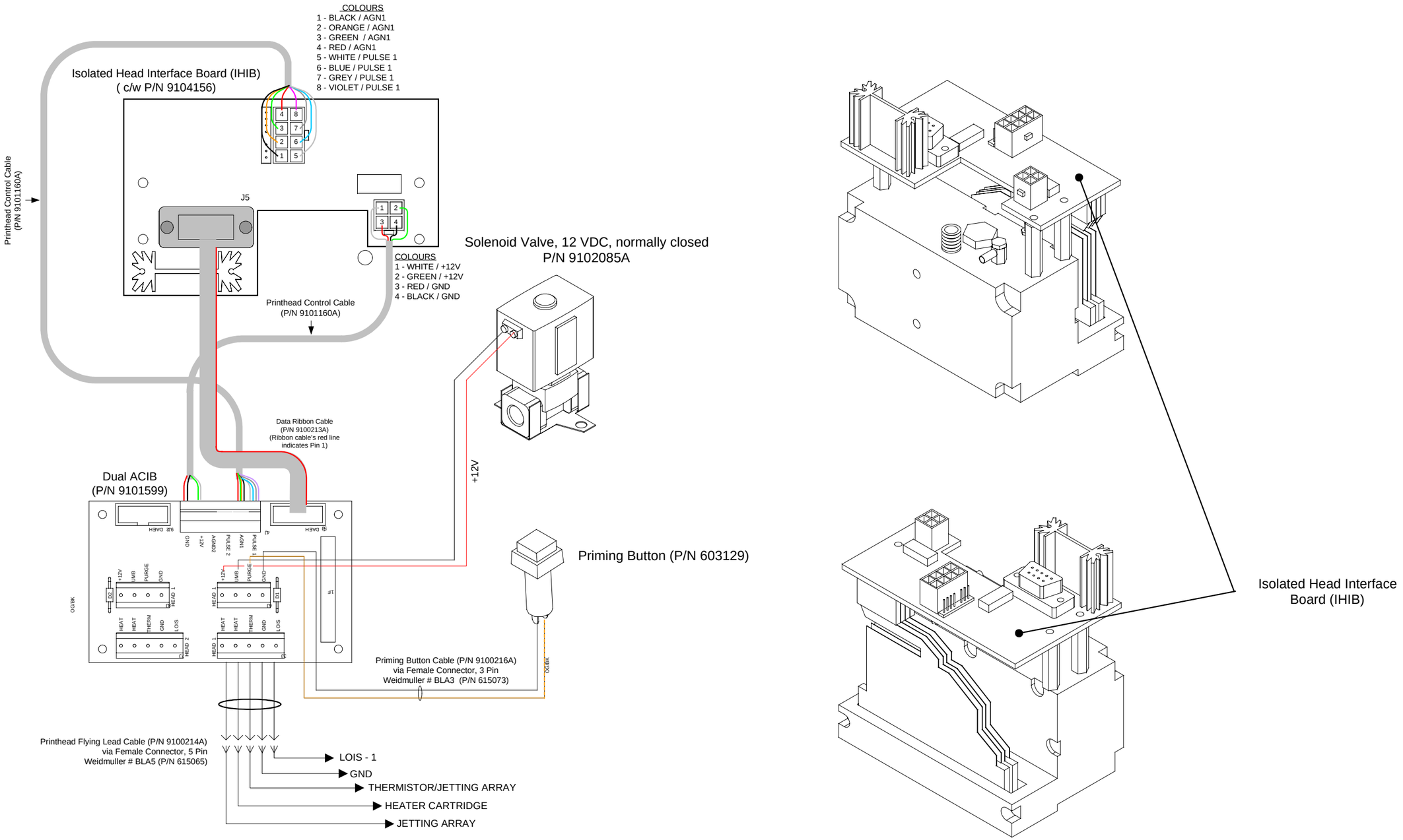
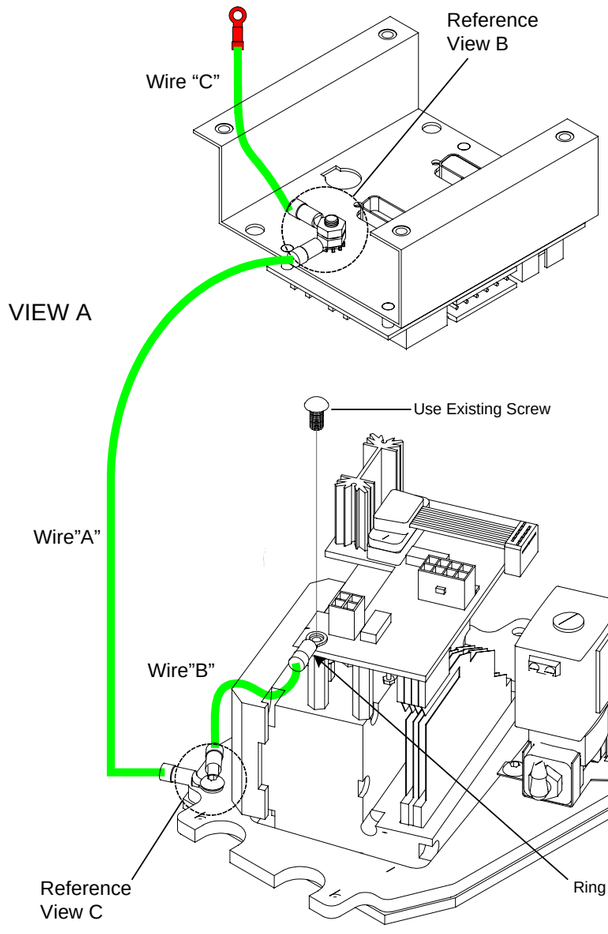
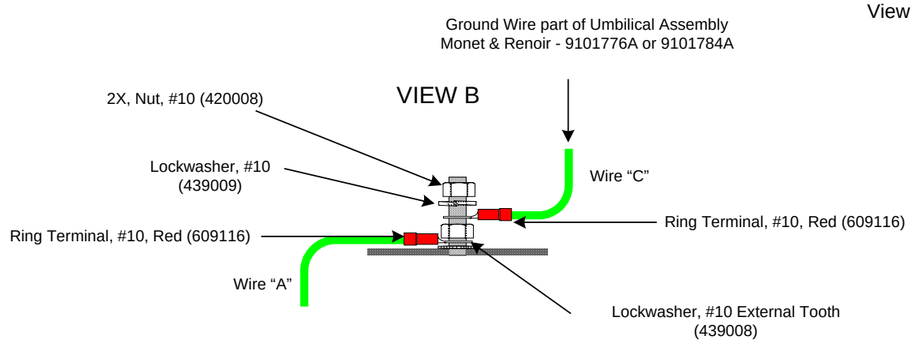
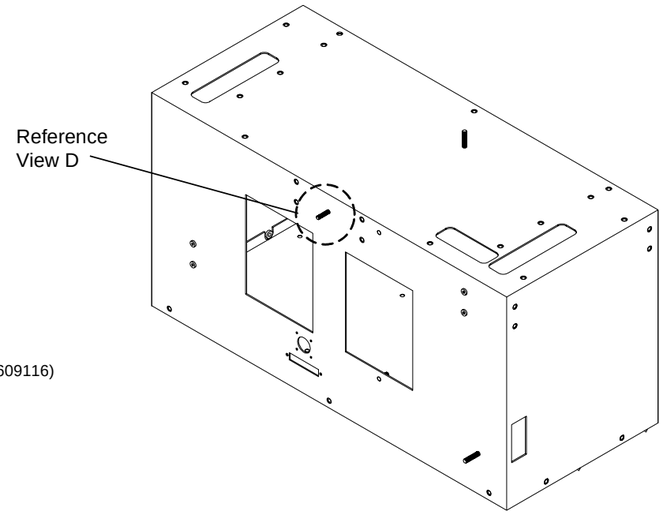


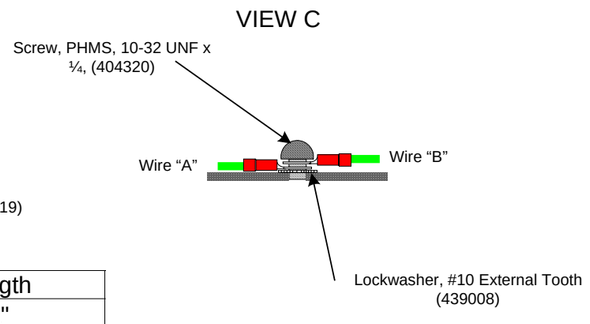
Figure D-2: *Printhead, 1250, Grounding Diagram (BK791AE)*

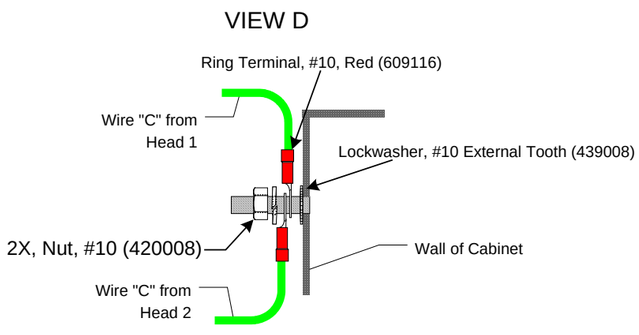






Wire C part of Umbilical Assembly
Monet & Renoir- 9101776A or 9101784A





Connect all umbilical ground wires to ground stud.

Wire	Color	AWG	Length
A	Green/Yellow	18	12"
B	Green/Yellow	18	5"
C	Green/Yellow	18	72” or 180"

Figure D-3: *Wiring Diagram - Pressure Regulator – BK700 (9100138AE)*

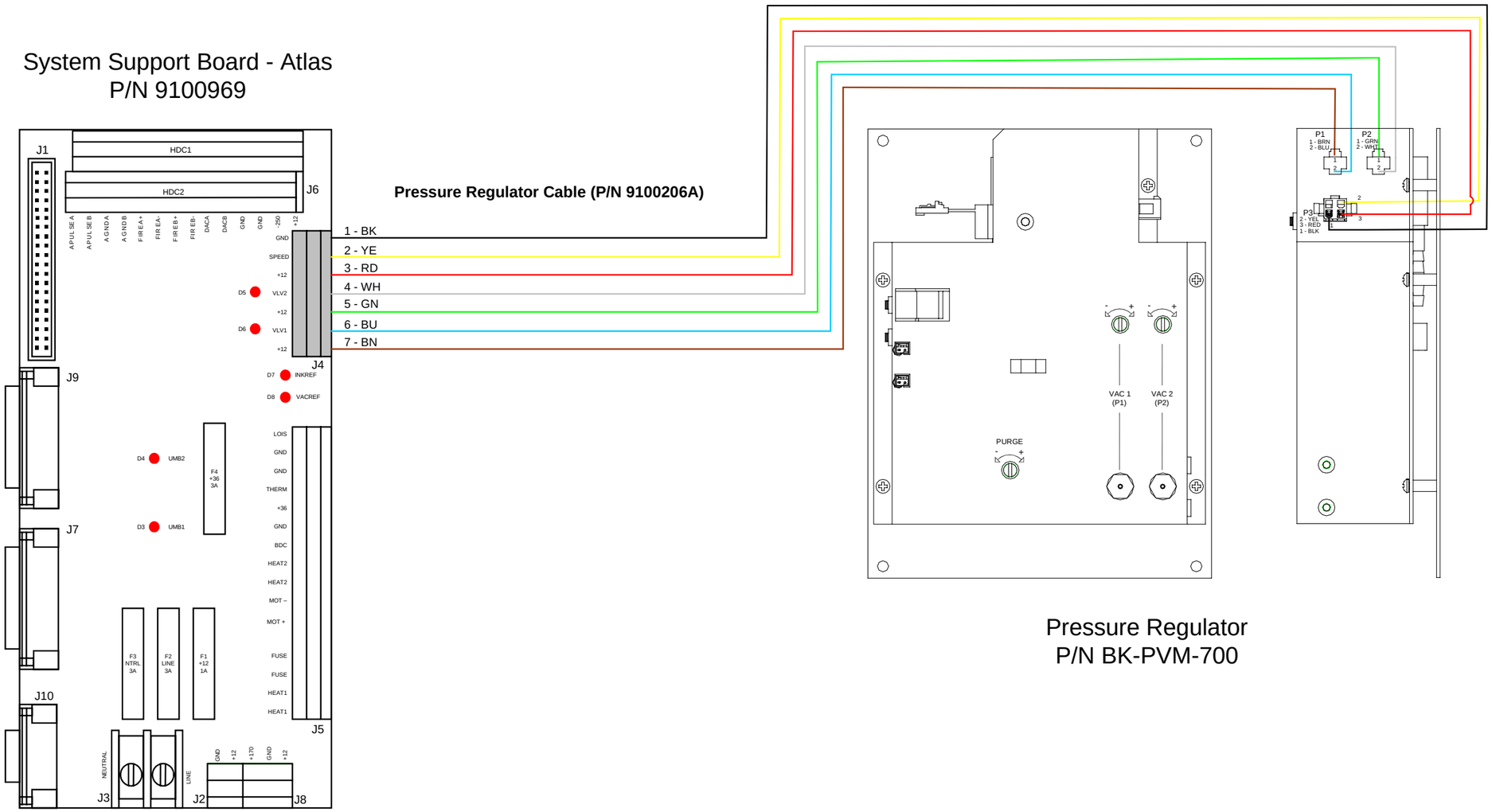


Figure D-4: *Wiring Diagram - System Support Board – BK700*

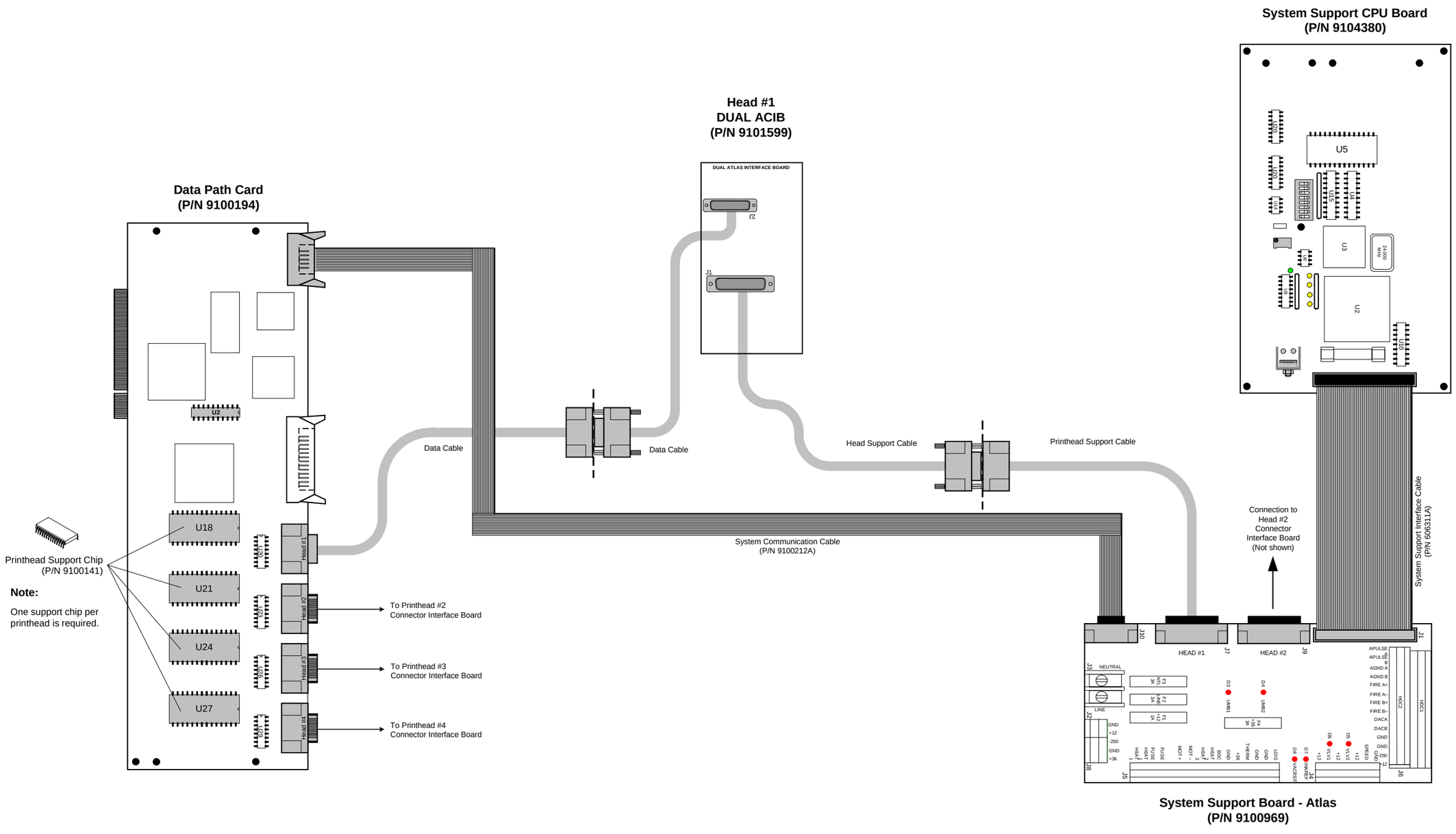
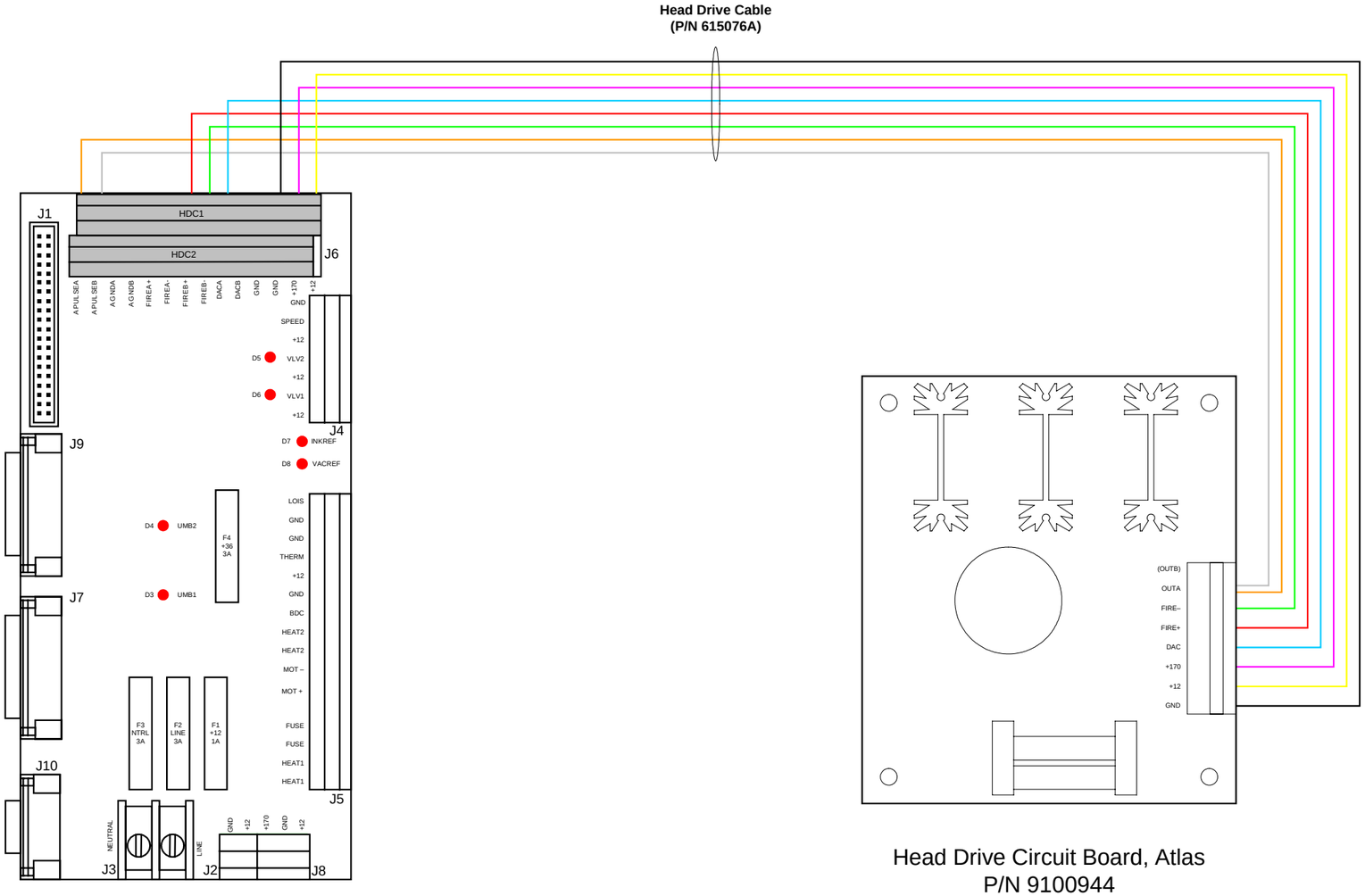


Figure D-5: *Wiring Diagram - HDC Board – BK700 (9100944AE)*



Atlas System Support Board
P/N 9100969

Head Drive Circuit Board, Atlas
P/N 9100944

NOTES

The wiring is identical for both HDC #1 and HDC #2.

Head Drive Cable #1 from HDC #1 connects to the J6-HDC1 on the System Support Board.

Head Drive Cable #2 from HDC #2 connects to the J6-HDC2 on the System Support Board.

WIRING COLORS

HDC:		ASSB:
+12	Yellow	+12
+ 130	Violet	-250
GND	Black	GND
FIRE-	Green	FIREB-
FIRE+	Red	FIREB+
OUTA	White	PULSEB
	Orange	PULSEA
DAC	Blue	DACA
OUTB	not wired	

Figure D-6: *Wiring Diagram - Atlas Inkwell Power – BK700 (9100979AE)*

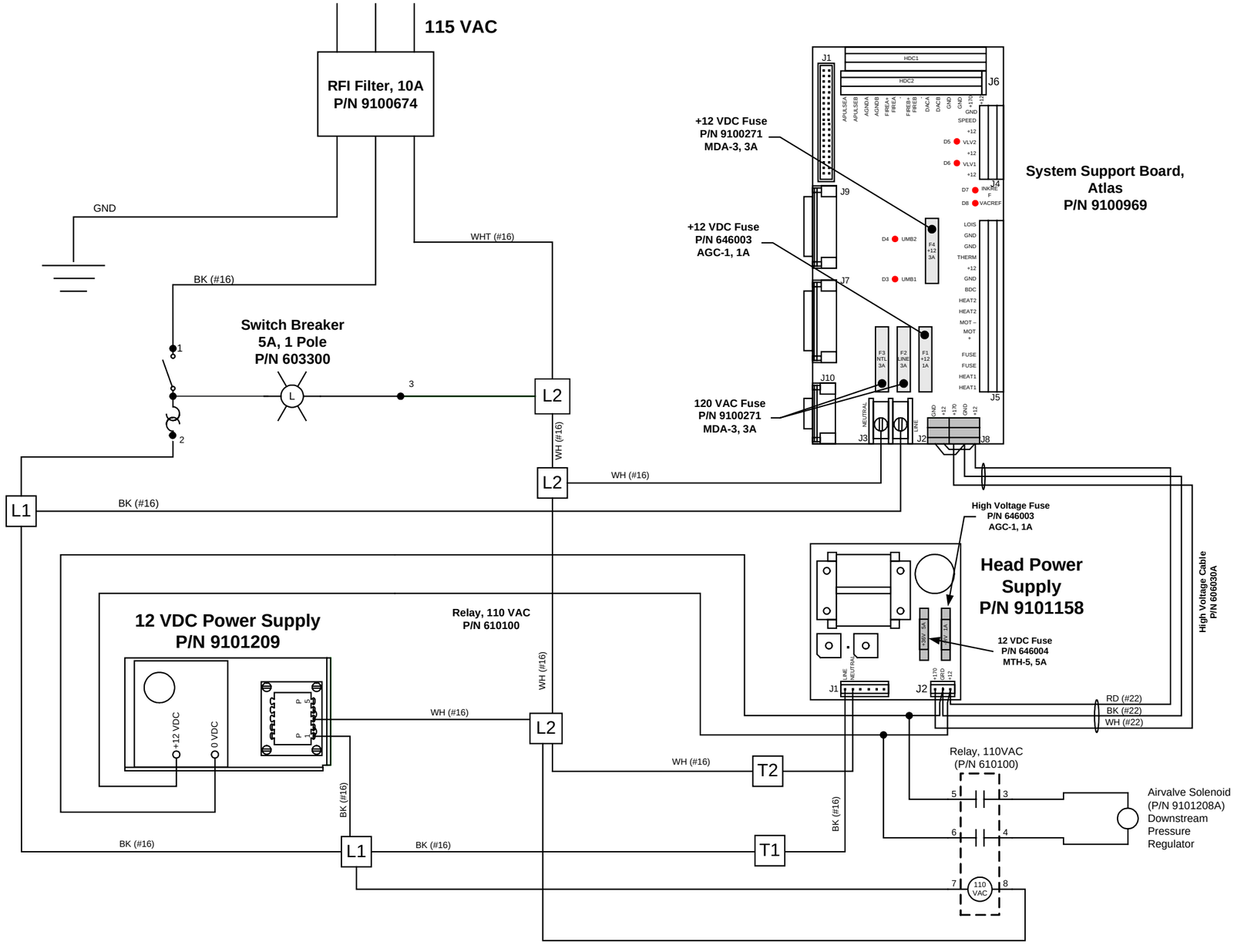
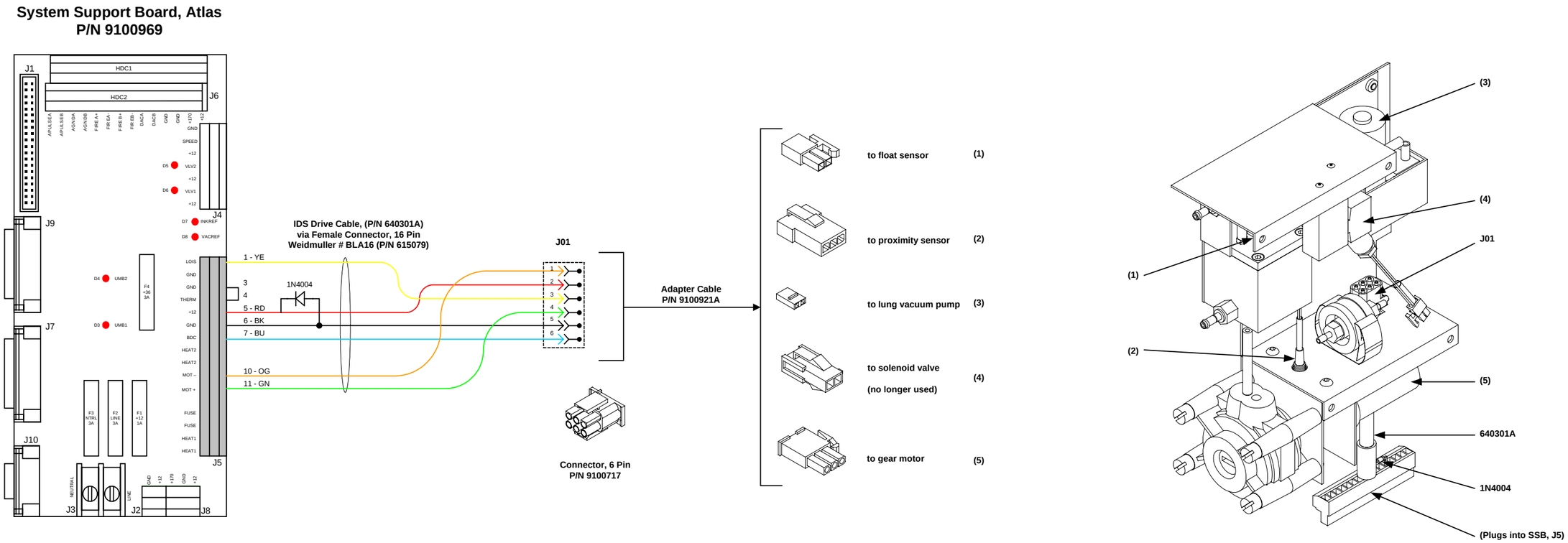


Figure D-7: *Wiring Diagram - Off Head Supply – BK700 (9101229AE)*



Cezanne MSDS Sheet

Appendix E

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME:	**Cezanne Ink**
Item:	**BKINK-CEZBK1000**
Product Type:	**Inkjet Printing Ink, DOT Flammable**
Distributor:	**Buskro Ltd.**
Address:	**1-1738 Orangebrook Court** **Pickering, ON L1W 3G8, Canada**
EMERGENCY TELEPHONE:	**800-424-9300 (CHEMTREC 24 HOUR)**
Information Telephone:	**905-839-6018**
Date Prepared:	**February 28, 2007**
MSDS Version:	**C**

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL FAMILY: **GLYETHER/RESIN/DYE**

HAZARDOUS COMPONENTS	CAS #	WEIGHT %
ETHER	**TS1021**	**45-55%**
No PEL established. OSHA reportable (1%)		
KETONE	**STS084**	**20-30%**
OSHA PEL/ACGIH TWA 50 ppm		
DYE Chromium III	**STS102**	**5-15%**
SARA III Section 313: (1%) reportable		

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

3. HAZARDS IDENTIFICATION

HMIS CODES: **H F P P**
2 * 2 0 I

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

Irritation of respiratory tract, headache, dizziness, nausea and possible narcosis.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE

Eye: Severe irritation, tearing, redness and blurred vision.
Skin: Prolonged or repeated contact may cause sensitization and dermatitis.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

May be harmful if swallowed; may produce central nervous system depression and kidney and liver damage.

ACUTE HEALTH HAZARDS

Severe eye irritation; may cause skin irritation and dermatitis.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

N/A

CHRONIC HEALTH HAZARDS

The injury produced upon repeated administration is generally associated with the liver.

CARCINOGENICITY

Product not tested.

4. EMERGENCY AND FIRST AID MEASURES

SWALLOWED
Do NOT induce vomiting. Call a doctor and contact local poison control center immediately.

EYE CONTACT
Flush eyes thoroughly with water. Seek medical attention if irritation persists.

SKIN CONTACT
Wash contaminated areas with soap and water.

INHALED
Remove victim to fresh air.

5. FIRE FIGHTING MEASURES

Q/C SPEC:	**F542105**
FLASH POINT:	**139 – 141 Degrees F**
METHOD USED:	**TCC**

FLAMMABLE LIMITS IN AIR BY VOLUME
LOWER: 1-2%
UPPER: 10-15%

EXTINGUISHING MEDIA
Water spray, foam, carbon dioxide or dry chemical.

SPECIAL FIREFIGHTING PROCEDURES
Wear self-contained breathing apparatus and protective clothing.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Vapors may form explosive mixture with air. Vapors may travel considerable distance to a source of ignition and flash back.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Eliminate all sources of ignition.
Soak up on paper or other absorbent and scoop into closed containers.
Flush area with plenty of water.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Flammables handling and storage: Store at room temperature. Keep away from heat, sparks, and flame. Store in a standard flammable liquid storage room or cabinet. Keep container closed when not in use. Drums and other metal containers should be grounded before opening or pouring.

OTHER PRECAUTIONS
Special sensitivity: Heat, light, moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION
Use an approved respirator for organic vapors and fumes if ventilation is not adequate.

VENTILATION
Mechanical ventilation is acceptable.
PROTECTIVE GLOVES
Rubber.
EYE PROTECTION
Goggles or safety glasses with side shields.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT
N/A
WORK/HYGIENIC PRACTICES
Avoid contamination of food, drink, etc. No smoking when handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: 212° F
VAPOR PRESSURE (mm of Hg): ND
EVAPORATION RATE (BUTYL ACETATE=1): < 1
PHYSICAL STATE: Liquid
ODOR: Alcohol
SPECIFIC GRAVITY (H2O=1): < 1
VAPOR DENSITY (AIR = 1): ND
MATERIAL VOC: Not measured
COLOR: Black
SOLUBILITY IN WATER: Very Low

10. REACTIVITY

STABILITY
Stable
CONDITIONS TO AVOID
Heat, spark, flames, light.
INCOMPATIBILITY (MATERIALS TO AVOID)
Oxidizing materials.
HAZARDOUS DECOMPOSITION OR BYPRODUCTS
Oxides of Carbon and various Hydrocarbons.
HAZARDOUS POLYMERIZATION
N/A

11. TOXICOLOGICAL INFORMATION

No information available.

12. ECOLOGICAL INFORMATION

Do not discharge product uncontrolled into the environment.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD
Waste shall be disposed of in accordance with federal, state, and local environmental control regulations.

14. TRANSPORTATION INFORMATION

D.O.T. SHIPPING NAME: **Printing Ink, Flammable, 3, UN1210, III**

15. PRODUCT REGULATORY INFORMATION

OSHA STATUS

Product not tested. It is not considered to be toxic per 29CFR1910.1200 but is considered to be a skin/eye irritant.

USA TSCA STATUS

This product meets the requirements of the Toxic Substances Control Act.

INTERNATIONAL EXPORT/IMPORT STATUS

Not determined for every country. Contact BUSKRO LTD. for certification if required. Formulas are proprietary, so ingredient lists may only be released to Customs/Health offices designated to control trade secrets.

SARA TITLE III SECTION 313 TOXIC CHEMICALS

Product not listed.

RCRA HAZARDOUS WASTE NUMBER/STATUS

If discarded in its purchased form, this product would be a federal hazardous waste either by listing or by characteristic. Under RCRA it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40CFR261.20-24).

OZONE-DEPLETING CHEMICALS

No regulated ingredients.

NEW JERSEY

REPORTABLE COMPONENTS	CAS #
ESTER	STS1021
KETONE	STS084
RESIN	STS158
DYE Chromium III	STS102

CALIFORNIA PROPOSITION 65 (CARCINOGENS)

None

CALIFORNIA PROPOSITION 65 (REPRODUCTIVE TOXINS)

None

16. DISCLAIMER

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. This information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. BUSKRO LTD. makes no warranty, express or implied, as to the accuracy or completeness of this information. It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions and/or compliance with federal, state, and local laws and regulations.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME:	**Cezanne Maintenance Spray**
Item:	**BKSPR-CEZ125**
Product Type:	**Inkjet Maintenance Spray**
Distributor:	**Buskro Ltd.**
Address:	**1-1738 Orangebrook Court** **Pickering, ON L1W 3G8, Canada**
EMERGENCY TELEPHONE:	**800-424-9300 (CHEMTREC 24 HOUR)**
Information Telephone:	**905-839-6018**
Date Prepared:	**October 15, 2005**
MSDS Version:	**C**

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL FAMILY: **GLYCOL ETHER/DAA**

HAZARDOUS COMPONENTS	CAS #	WEIGHT %
GLYCOL ETHER	**TS1026**	**35-65%**
OSHA PEL / ACGIH TLV 100 ppm. STEL 150 ppm		
DIACETONE ALCOHOL	**123-42-2 25-35%**	**35-65%**
OSHA PEL/ACGIH TWA 50 ppm.		
PYRROLIDONE, 2-	**616-45-5**	**5-15%**
MANUFACTURER RECOMMENDS PEL 100 ppm		

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

3. HAZARDS IDENTIFICATION

HMIS CODES: **H F P P**
2 2 0 H

INHALATION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

Irritation of respiratory tract, headache, dizziness, nausea and possible narcosis.

SKIN AND EYE CONTACT HEALTH RISKS AND SYMPTOMS OF EXPOSURE

Eye: Severe irritation, tearing, redness and blurred vision.
Skin: Prolonged or repeated contact may cause sensitization and dermatitis.

INGESTION HEALTH RISKS AND SYMPTOMS OF EXPOSURE

May be harmful if swallowed; may produce central nervous system depression and kidney and liver damage.

ACUTE HEALTH HAZARDS

Severe eye irritation; may cause skin irritation and dermatitis.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

N/A

CHRONIC HEALTH HAZARDS

The injury produced upon repeated administration is generally associated with the liver.

CARCINOGENICITY

Product not tested. IAEC, NTP, OSHA listed carcinogen components equal to or greater than 0.1% by weight will be listed in paragraph 2 and described as carcinogens, if any.

4. EMERGENCY AND FIRST AID MEASURES

SWALLOWED
Do NOT induce vomiting. Call a doctor and contact local poison control center immediately.
EYE CONTACT
Flush eyes thoroughly with water. Seek medical attention if irritation persists.
SKIN CONTACT
Wash contaminated areas with soap and water.
INHALED
Remove victim to fresh air.

5. FIRE FIGHTING MEASURES

FLASH POINT: **> 140° F**
METHOD USED: **TCC**

FLAMMABLE LIMITS IN AIR BY VOLUME
LOWER: 1-2%
UPPER: 10-15%

EXTINGUISHING MEDIA
Water spray, foam, carbon dioxide or dry chemical.
SPECIAL FIREFIGHTING PROCEDURES
Wear self-contained breathing apparatus and protective clothing.
UNUSUAL FIRE AND EXPLOSION HAZARDS
Vapors may form explosive mixture with air. Vapors may travel considerable distance to a source of ignition and flash back.

6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Eliminate all sources of ignition.
Soak up on paper or other absorbent and scoop into closed containers.
Flush area with plenty of water.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
Flammables handling and storage: Store at room temperature. Keep away from heat, sparks, and flame. Store in a standard flammable liquid storage room or cabinet. Keep container closed when not in use. Drums and other metal containers should be grounded before opening or pouring.
OTHER PRECAUTIONS
Special sensitivity: Heat, light, moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION
Use an approved respirator for organic vapors and fumes if ventilation is not adequate.
VENTILATION
Mechanical ventilation is acceptable.

PROTECTIVE GLOVES
Rubber.
EYE PROTECTION
Goggles or safety glasses with side shields.
OTHER PROTECTIVE CLOTHING OR EQUIPMENT
N/A
WORK/HYGIENIC PRACTICES
Avoid contamination of food, drink, etc. No smoking when handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: 200° F - 300° F
VAPOR PRESSURE (mm of Hg): ND
EVAPORATION RATE (BUTYL ACETATE=1): < 1
PHYSICAL STATE: Liquid
ODOR: Alcohol
SPECIFIC GRAVITY (H2O=1): < 1
VAPOR DENSITY (AIR = 1): ND
MATERIAL VOC: Not measured
COLOR: Clear Pale Yellow
SOLUBILITY IN WATER: Miscible

10. REACTIVITY

STABILITY
Stable.
CONDITIONS TO AVOID
Heat, spark, flames, light.
INCOMPATIBILITY (MATERIALS TO AVOID)
Oxidizing materials.
HAZARDOUS DECOMPOSITION OR BYPRODUCTS
Oxides of Carbon and various Hydrocarbons.
HAZARDOUS POLYMERIZATION
N/A

11. TOXICOLOGICAL INFORMATION

No information available.

12. ECOLOGICAL INFORMATION

Do not discharge product uncontrolled into the environment.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD
Waste shall be disposed of in accordance with federal, state, and local environmental control regulations.

14. TRANSPORTATION INFORMATION

D.O.T. SHIPPING NAME: Not D.O.T. Regulated

15. PRODUCT REGULATORY INFORMATION

OSHA STATUS

Product not tested. It is not considered to be toxic per 29CFR1910.1200 but is considered to be a skin/eye irritant.

USA TSCA STATUS

This product meets the requirements of the Toxic Substances Control Act.

INTERNATIONAL EXPORT/IMPORT STATUS

Not determined for every country. Contact BUSKRO LTD. for certification if required. Formulas are proprietary, so ingredient lists may only be released to Customs/Health offices designated to control trade secrets.

SARA TITLE III SECTION 313 TOXIC CHEMICALS

Product not listed. SARA listed ingredients at or above De Minimis reporting levels are noted in Section 2, if any.

RCRA HAZARDOUS WASTE NUMBER/STATUS

If discarded in its purchased form, this product would be a federal hazardous waste either by listing or by characteristic. Under RCRA it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified as a hazardous waste (40CFR261.20-24).

OZONE-DEPLETING CHEMICALS

No regulated ingredients.

NEW JERSEY

REPORTABLE COMPONENTS	CAS #
GLYCOL ETHER	TS1026
DIACETONE ALCOHOL	123-42-2
PYRROLIDONE, 2-	616-45-5

CALIFORNIA PROPOSITION 65 (CARCINOGENS)

None

CALIFORNIA PROPOSITION 65 (REPRODUCTIVE TOXINS)

None

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