



BK705 Ezejet Controller User's Guide

Published by:

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First Edition, 2007

Printed in Canada

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Manual History

Version	Date	Description	ECO No.
1.0	06-Aug-07	Release of manual.	N/A
1.1	02-Sep-08	Expanded Manual to include Atlas and Aurora	1088
1.2	29-Nov-10	Expanded Manual to include 2500/5100 Printheads	

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1.1 Description

The BK705 Ezejet Controller is an entry-level print system utilizing Compose IQ software. It is capable of supporting either Thermal Ink-Jet (TIJ) technology (Apollo or full-process color with the Apollo-4C) or Piezoelectric Ink-Jet technology (Atlas or Aurora). A summary of some of the capabilities of each controller type can be found in Table 1-1.

Table 1-1: Buskro Controller Summary

Support	BK705	BK1705	BK1710	BK1720
Compose IQ	Yes	Yes	Yes	Yes
Tracking Option Capable	Yes	Yes	Yes	Yes
Combo Option Capable (e.g. Atlas & Apollo)	No	Yes	Yes	Yes
Max. inches Apollo (1 to 4" Printheads)	4"	8"	16"	16"
Max. # Apollo-4C Printheads	1	2	4	4
Max. # Atlas or Aurora Printheads	2	4	4	8
Max. inches of Atlas or Aurora Print	3"	4"	12"	24"
Max. # Atlas or Aurora 1250 Printheads (1")	2	4	4	8
Max. # Atlas or Aurora 2250 Printheads (2")	1	2	4	8
Max. # Atlas or Aurora 3250 Printheads (3")	0	0	4	8
Max. # of 2520 Printheads (200 DPI)	1	2	4	8
Max. # of 2530 Printheads (300 DPI)	1	2	4	8
Max. # of 2540 Printheads (400 DPI)	1	2	4	8
Max. # of 5120 Printheads (200 DPI)	0	1	2	4
Max. # of 5130 Printheads (300 DPI)	0	1	2	4
Max. # of 5140 Printheads (400 DPI)	0	1	2	4

Note: The maximum number of printheads or inches of print listed above are based on a single technology application. These values may be different in combo applications.

1.1.1 Controller Stand (P/N BK705-ST)

The controller stand (Figure 1-1) provides a clean method of housing the BK705 components and options (Figure 1-2). It is optional for Apollo systems, but mandatory for all other technologies. It is also supported on four caster wheels to easily move the whole controller around. It can house the computer module, a separate power supply module, an Ink Delivery unit, and computer peripherals such as the monitor, keyboard, and trackball. For increased flexibility and comfort, the stand also provides the ability to set the height of the monitor as well as the position of the keyboard by adjusting it along the aluminum extrusion rails. This can be done by loosening the mounting screws, repositioning the monitor or keyboard tray, and retightening. A description of the range of adjustment can be seen in Section 1.2.

Figure 1-1: BK705 Controller Stand (P/N BK705-ST)



Figure 1-2: BK705 Integrated with Stand and Apollo Ink Delivery Module



1.2 Specifications

1.2.1 Dimensions

1.2.1.1 Controller Stand (BK705-ST)

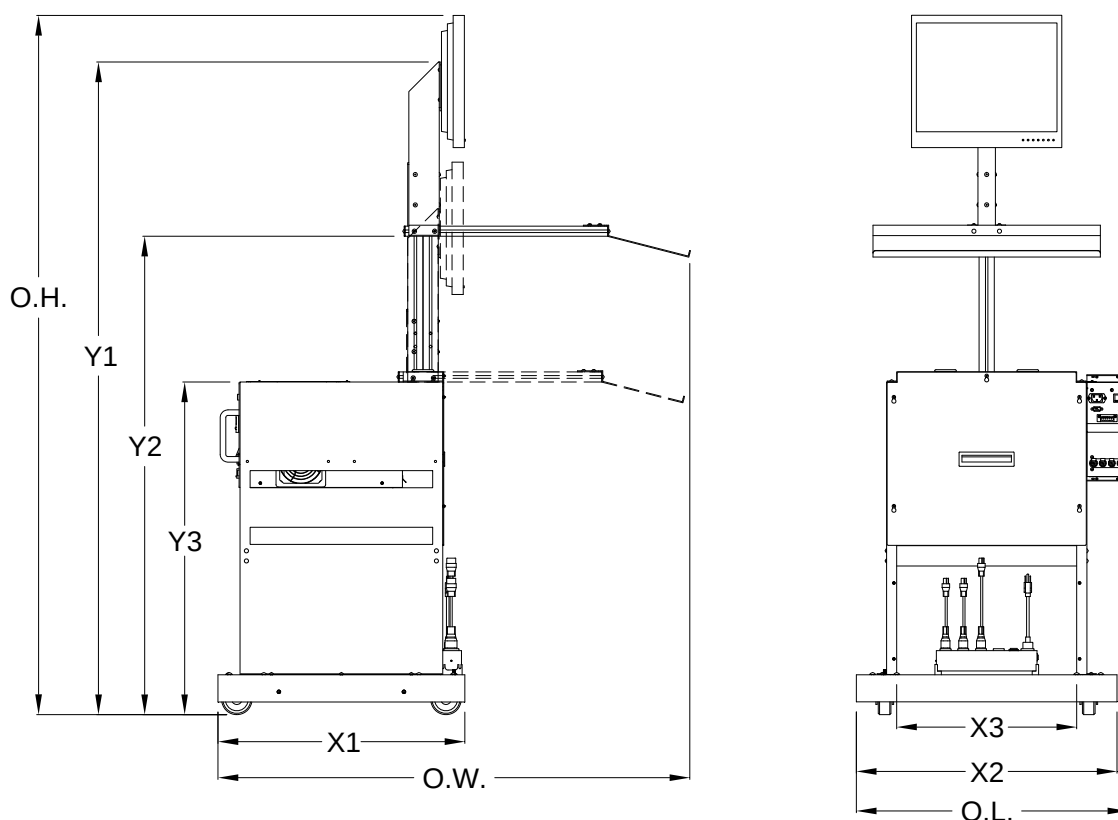


Table 1-2: BK705-ST Dimensions

Symbol	Description	Dimensions	
O.H.	Overall Height (17" LCD Shown)	55.7 - 68.4 in	1415 - 1738 mm
O.L.	Overall Length	26.8 in	680 mm
O.W.	Overall Width	32.3 - 46.5 in	821 - 1182 mm
X1	Width of base	24.3 in	618 mm
X2	Length of base	25.7 in	653 mm
X3	Entrance length of lower cabinet	17.8 in	451 mm
Y1	Height of stand without monitor	54.6 - 64.8 in	1388 - 1646 mm
Y2	Height to keyboard stand	33.9 - 47.3 in	860 - 1200 mm
Y3	Height of cabinet	32.9 in	835 mm

1.2.1.2 BK705 Computer Module (BK-PCM-4H and BK-PCM-8)

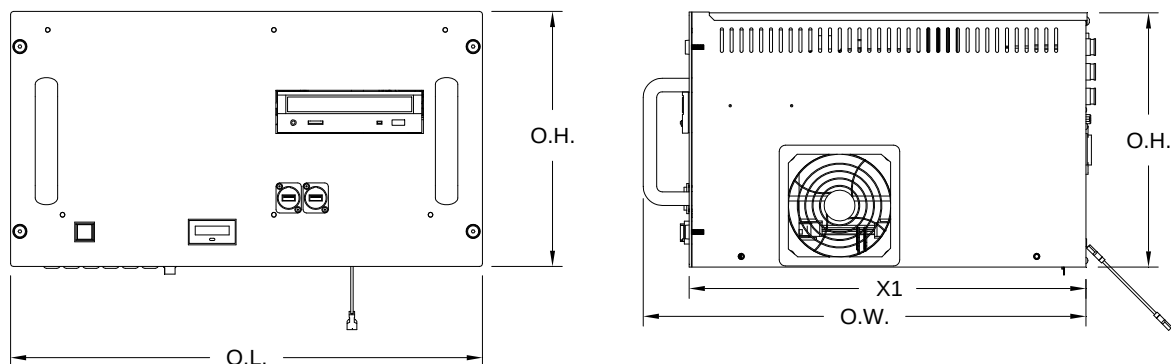


Table 1-3: BK-PCM-4H and BK-PCM-8 Dimensions

Symbol	Description	Dimensions	
O.H.	Overall Height	10.35 in	263 mm
O.W.	Overall Width	18.05 in	458 mm
O.L.	Overall Length	19.20 in	488 mm
X1	Width of chassis	16.18 in	411 mm

1.2.1.3 Apollo Power Supply Module (BK-PSM-4H)

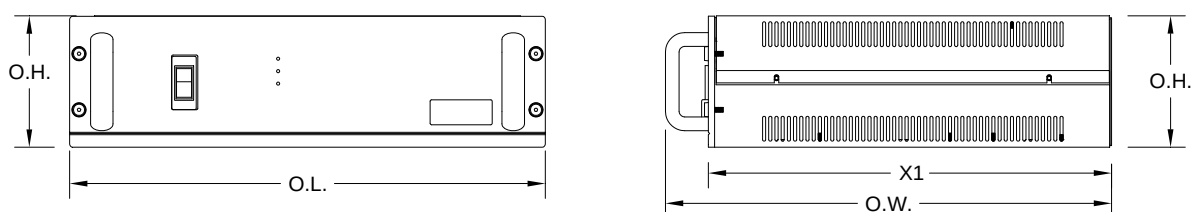


Table 1-4: BK-PSM-4H specifications

Symbol	Description	Dimensions	
O.H.	Overall Height	5.27 in	134 mm
O.W.	Overall Width	18.00 in	457 mm
O.L.	Overall Length	19.19 in	487 mm
X1	Width of chassis	16.27 in	413 mm

1.2.2 Approximate Weight Specifications

Table 1-5: Approximate Weight Specifications (Values are subject to changes)

Part #	Description	Weight	
BK-MON-LCD17	Monitor, LCD, 17in (Box Included)	14 lb	6.4 kg
BK-PCM-4H	Module, Computer, BK705	42 lb	19 kg
BK-PSM-4H	Module, Apollo Power Supply, 4 channel	27 lb	12.3 kg
BK-IDM-4H	Module, Ink Delivery, 4 channel	10 lb	4.5 kg
BK705-ST	Stand, Apollo EzeJet Controller	94 lb	42.6 kg

1.2.3 Electrical Specifications

Table 1-6: BK705 Electrical Specifications

Electrical Requirements		
	Input Line Voltage	100-120, 200-240 VAC
	Current	5 A

2.1 Atlas/Aurora Inkwell Module (IWM)

The Inkwell Module for the Atlas (Monet or Cezanne) and Aurora (Renoir) technologies consists of the ink delivery components and all related electronics. By default, the Atlas and Aurora inkwells include support for up to two printheads on the BK705. This however depends on the printhead type.

2.1.1 System Support Board (SSB)

The System Support Board (Figure 2-1) 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 SSB are summarized in Table 2-1.

Figure 2-1: System Support Board

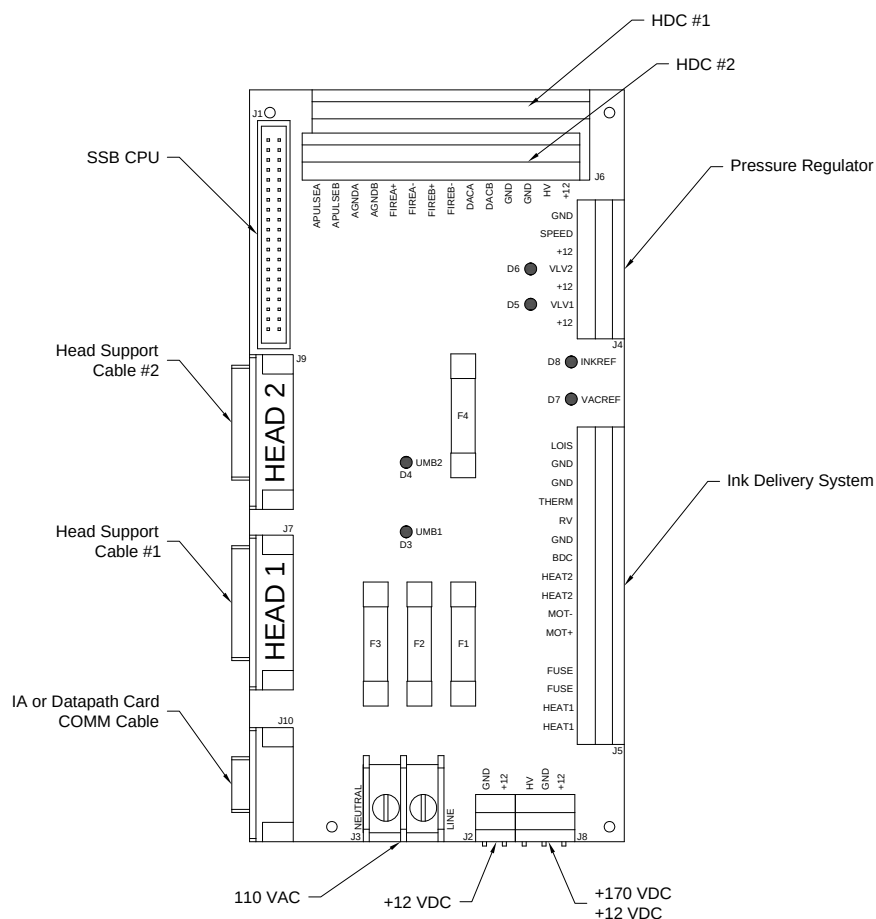


Table 2-1: System Support Board Connections

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 Image Accelerator or 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

Note: Printheads that utilize the QHIB (Quad Head Interface Board) like the 2500 and 5100 series printheads require the QHIB SSB (P/N 9106100). All other Atlas and Aurora printheads use the Atlas SSB (P/N 9100969).

2.1.2 System Support Board CPU II (SSB CPU II)

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

1. Communicates with the Image Accelerator Card via the SSB 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 2-2: System Support CPU II Board

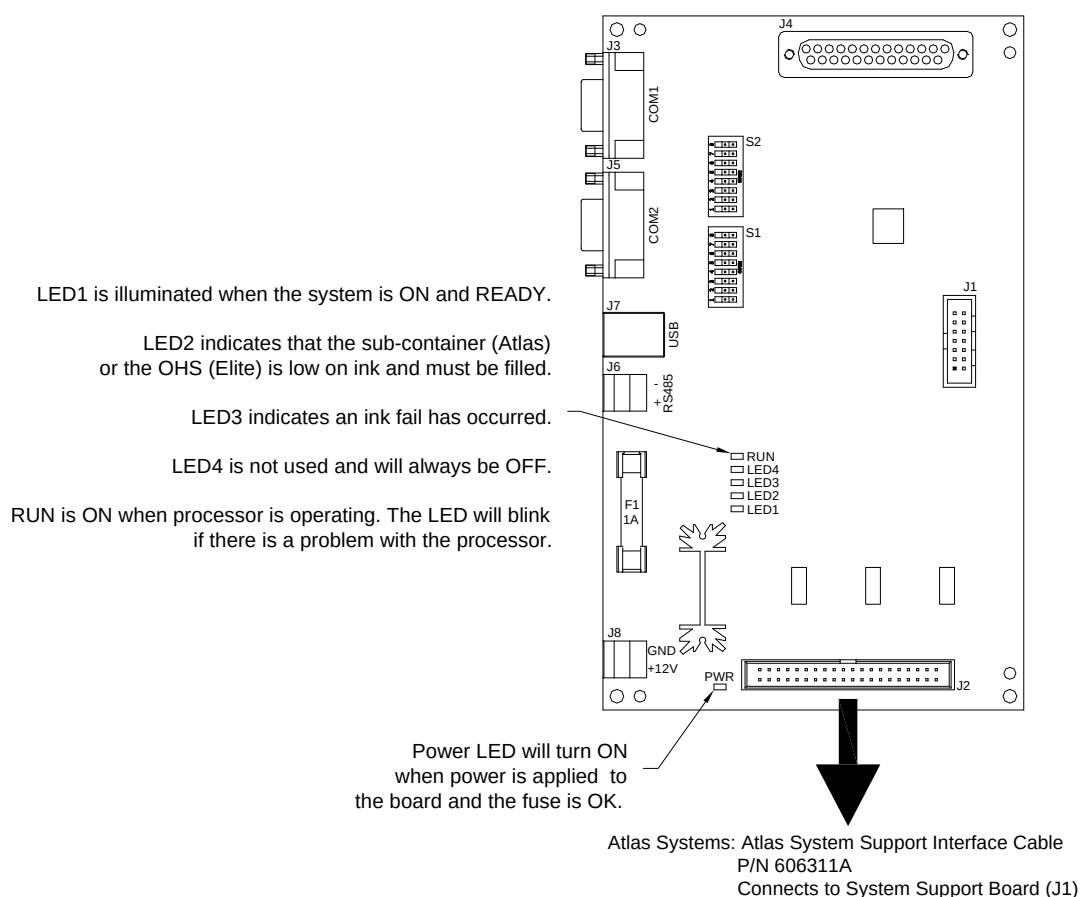


Table 2-2: System Support CPU II Board - S1 DIP Switch Settings (Open = Off)

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 or Aurora 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

Table 2-3: System Support CPU II Board – S2 DIP Switch Settings (Open = Off)

DIP	Setting	Function
1	ON OFF	Turn ON for New Protocol (e.g. 2500 or 5100 Series) Turn OFF for Old Protocol (Elite)
2	ON OFF	Turn ON for QHIB Based Printheads (e.g. 2500 or 5100 Series) Turn OFF for IHIB/THIB Based Printheads (e.g. 1250 or 2250)
3	ON OFF	Turn ON for 3 or 4 array Printheads (e.g. 2530, 2540, 5130, 5140) Turn OFF for 1 or 2 array Printheads (e.g. 1250, 2250, 2520, 5120)
4	OFF	Reserved
5	OFF	Reserved
6	OFF	Reserved
7	OFF	Reserved
8	OFF	Reserved

Note: Printheads that utilize the QHIB (Quad Head Interface Board) like the 2500 and 5100 series printheads must use the New Protocol.

Elite heads must use the Old Protocol.

Atlas and Aurora printheads that utilize the IHIB or THIB (e.g. 1250 or 2250) can use either old or new protocol.

In order to use the New Protocol, “New System Support” must be checked in the Compose Advanced Options (Setup → Options Tab → Advanced >> →) as shown in Figure 2-3.

Figure 2-3: New System Support Check Box for New Protocol

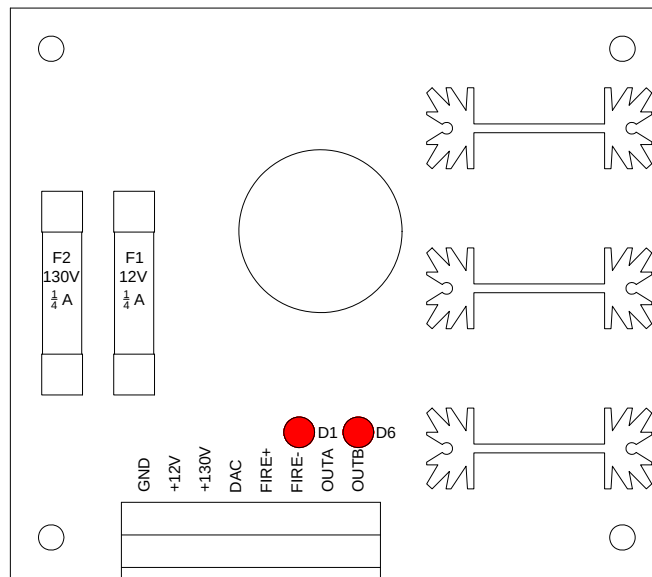
The screenshot shows a window titled "Advanced Options" with a blue header. Inside, there is a list of settings, each with a checkbox and a description. The "New System Support" option is checked (indicated by a green checkmark) and is highlighted with a red rectangular box. The other options are unchecked.

Option	Checked	Description
Streaming Print Engine	☐	Checked to enable the Streaming Print Engine for Web applications.
Auto Trigger	☐	Checked to enable automatic triggering.
No Stop Circuit	☐	Checked if the stop signal is not connected to the Transport.
Bed Mounted Heads	☐	Checked if Print Heads are mounted inside the Transport Bed.
Reverse Travel	☐	Checked if the Transport travels from right to left.
New System Support	☒	Checked if using the new System Support electronics.
Enable IAP	☒	Checked to enable IAP.

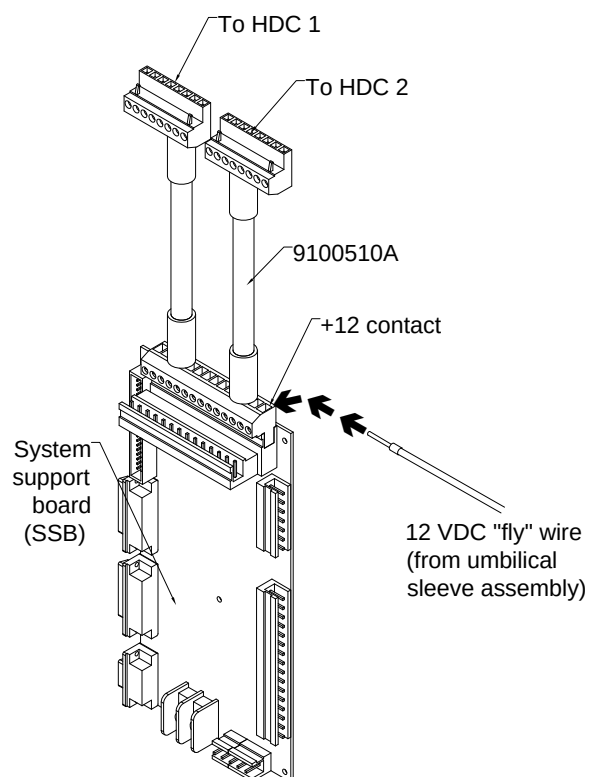
2.1.3 Head Drive Circuit Board (HDC)

The Head Drive Circuit Board (Figure 2-4) 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 2-4: Head Drive Circuit Board



One HDC board is required for each 1250 printhead (1", 256 DPI) while two are required for a 2250 (2", 256 DPI) or 2520 (2.5", 200 DPI). In the case of a 2530 or 2540, three or four HDC boards respectively are required. When a 2250 or 2520 printhead is utilized, a dual HDC cable (9100510A) replaces the two single HDC cables (9100197A) and a 12V wire from the Printhead umbilical is connected to the 12V contact on the SSB board (Figure 2-5). In the case of the 2530, one dual HDC cable and one single HDC cable is used to connect to the three HDC boards. In the case of the 2540, two dual HDC cables are used to connect to the four HDC boards.

Figure 2-5: Dual HDC cable on the SSB

2.1.4 Lung Vacuum

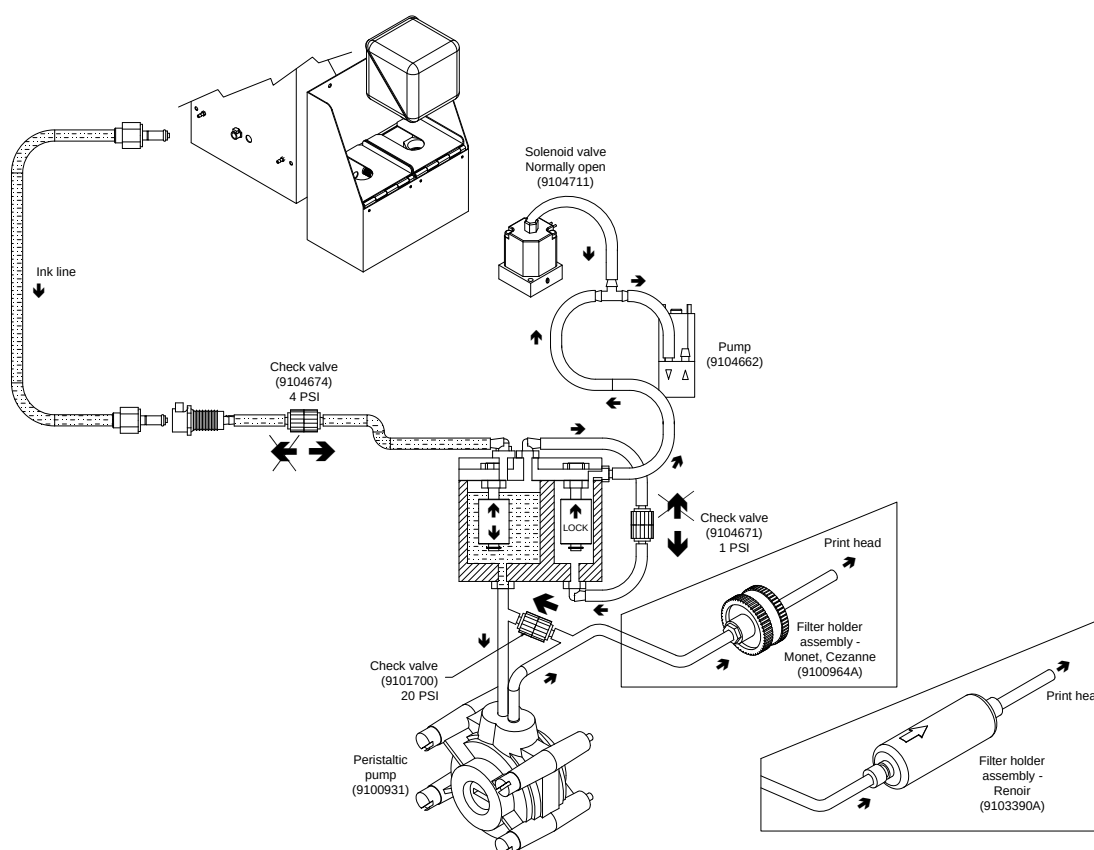
The purpose of the lung vacuum is to remove gas from the ink which can form bubbles that cause jetouts. The lung vacuum should measure approximately –23.5 inches of mercury (in Hg). If the vacuum drops below 14 in Hg, there may be a loss in jets during printing. If a large volume of ink is purged out 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.

2.1.5 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:

1. Ink starts in the ink container and is fed into the subcontainer.
2. The float switch determines if the correct amount of ink is 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 line through the relief valve.
4. The hydrophilic filter filtrates ink before exiting the inkwell.
5. Ink travels from the inkwell to the printhead through the umbilical.
6. The printhead solenoid valves open and close to supply ink to each printbar individually.

Figure 2-6: Ink Supply Line



2.1.6 Maintaining the Ink Line

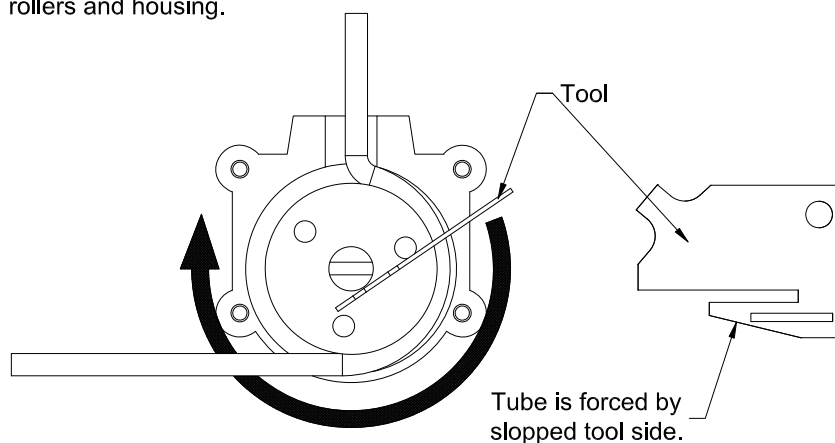
In order to ensure optimum performance, it is important to replace the relief valve, filter, and the tubing once every six months. In order to do this, refer to the following instructions:

1. Turn off the system and wear splash safety goggles and gloves before any maintenance work is done. Use caution as ink lines can be pressurized.
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. Replace the relief valve. The arrow on the relief valve must point towards the subcontainer line.
4. Replace the filter. Note that the filter used depends on the type of ink (See Appendix B for the part number of the proper filter).
5. Replace the tubing in the peristaltic pump using the tool provided (Figure 2-7).
6. 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 more frequently than specified above (especially in the peristaltic pump). This should be determined by regularly inspecting the tubing for signs of wear.

Figure 2-7: Installing Tubing in the Peristaltic Pump

1. Position the tool below the shaft to allow proper clockwise movement.
2. Fully rotate the tool in the direction shown until the tube is squeezed in between the rollers and housing.



2.1.7 Replacing the Ink Bottle

Once the ink bottle is empty and the ink level in the subcontainer drops, an ink low icon will appear (Figure 2-8). At this time, a fresh bottle of ink should be installed.

Figure 2-8: Ink Low Alarm

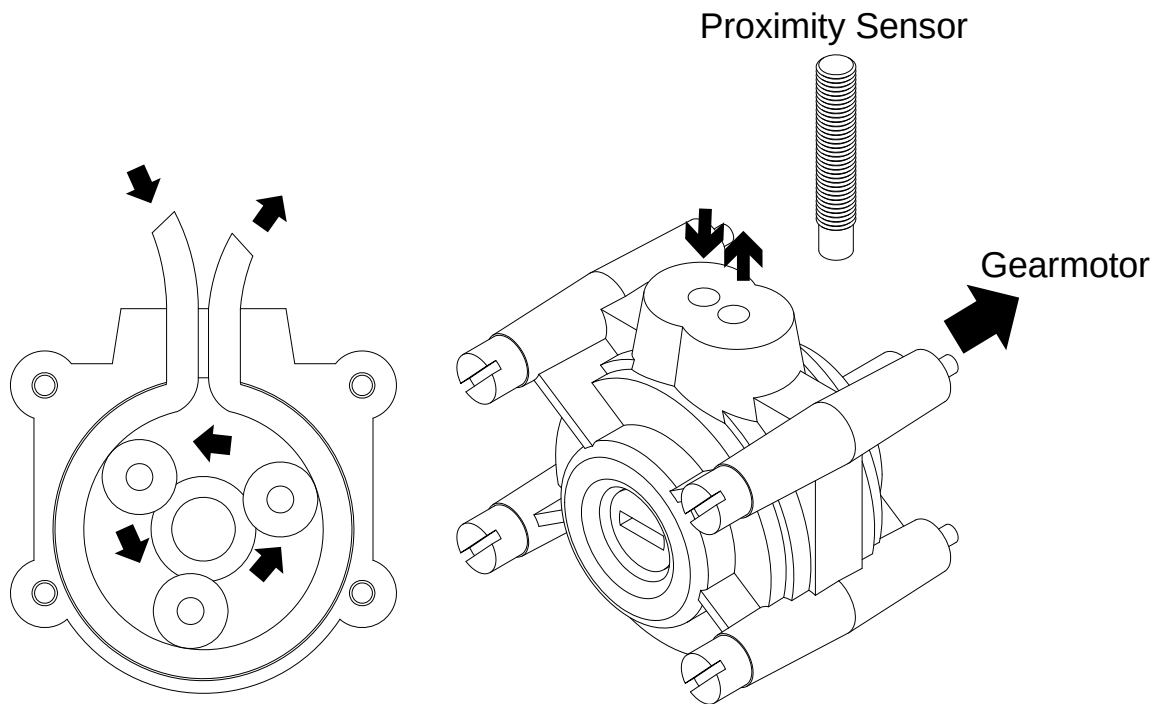


Note: Ink must **NOT** be recycled by placing used ink back into the bottle. Not only can this damage the printhead, but it may also contaminate the filter and result in the ink line bursting due to backpressure.

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.

2.1.8 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 2-9). The 12 VDC gearmotor drives the pump in a counter-clockwise direction.

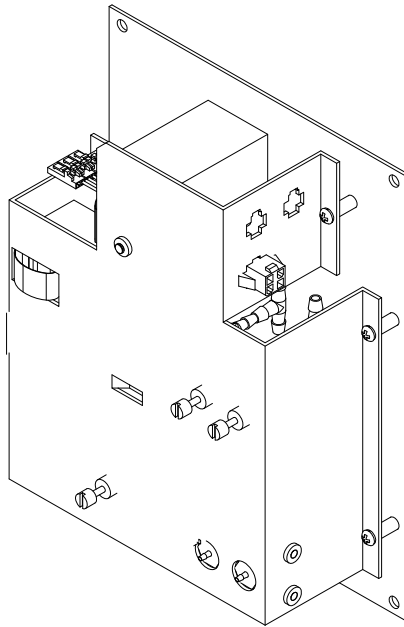
Figure 2-9: Peristaltic Pump Head

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

2.1.9 Pressure Regulator, Meniscus Vacuum

The pressure regulator controls the meniscus vacuum and the purge pressure. The meniscus vacuum is responsible for maintaining a continuous negative pressure (-3.3 in Wg for 1250 printheads and -4.7 for 2250, 2500, and 5100 printheads) required to prevent ink “weeping” (leaking out of the head) and for creating a positive purge pressure (50 in Wg) to prime the printheads. The pressure regulator generates the positive and negative pressures. 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.

Figure 2-10: Pressure Regulator (BK-PVM-700)



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 is powered off, there is likely a leak in the meniscus line or the solenoid is not closing properly.

2.2 Apollo Ink Delivery Module (IDM)

The Apollo IDM provides a large 350 mL ink cartridge which distributes ink to up to eight pens simultaneously for a total vertical coverage of 4” per IDM. Some advantages of using the IDM include the larger ink supply (350 mL versus the standalone 42 mL ink pens), the common ink distribution (to avoid having one ink pen run out of ink before another which can cause waste), and generally lower ink costs. The two available kits are 705-IDM4H-15NA (for North America) and 705-IDM4H-15WD (outside of North America).

Figure 2-11: Apollo Ink Delivery Module

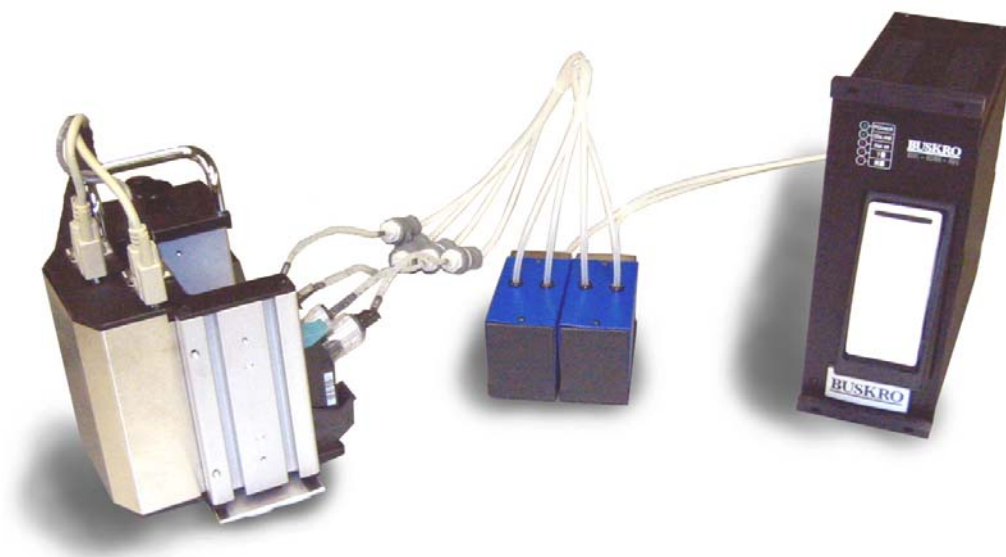


Figure 2-12: Apollo Ink Delivery Module on a BK705



Some advantages of using the Apollo Ink Delivery Module are:

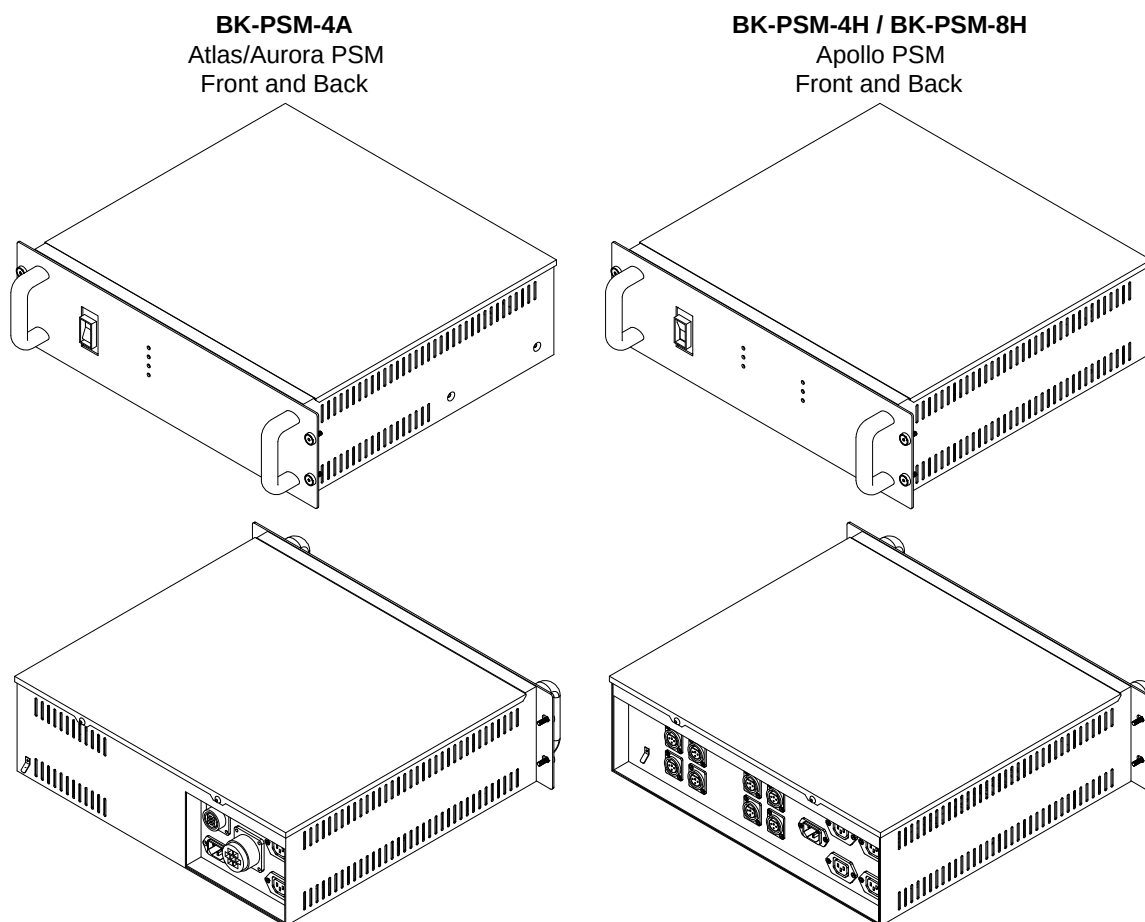
1. **Convenient Ink Management** – The ink is distributed and pumped, both vertically and horizontally, over a maximum of 15’ distance from an operator-accessible point to all remotely located ink pens.
2. **On-the-Fly Refill and Level Sensing** – The replaceable 350 mL ink cartridge is equipped with level sensing that alerts the operator when ink is low. This prompts the user to replace the ink cartridge.
3. **Common Ink Distribution** – The Ink Delivery Module features a common manifold that distributes ink to up to eight ink pens (the pens are the HP 45A “cartridges” in the printhead). This ensures uniform ink filling to all pens which can reduce individual failure. For example, if the user relies on individual ink pens, if one pen runs out of ink before another (e.g. one pen might be printing a heavier part of the layout), it may result in wasted pieces due to failed printing. When an Ink Delivery Module is used, all pens are supplied by a single source to avoid this problem.
4. **Reduced Intervention** – The large 350 mL supply reduces operator intervention during operation.
5. **Front Panel Indicators** – The Ink Delivery Module features a series of five indicator LEDs. These LEDs indicate whether or not there is Power, if the system is Online and ready to print, if ink is low, if ink is out, or if there is an error.

For more information on the Apollo Ink Delivery Module, refer to the BK-IDM-4H manual or contact a Buskro representative.

2.3 Power Supply Module

The Power Supply Module (Figure 2-13) 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 2-13: Power Supply Modules (PSM)



2.4 Serial Communications Connectors

The communications package utilizes a “smart” high-speed communications card known as the RocketPort Card. It is designed to plug into a PCIe slot on the computer motherboard and has connectors for serial communications cables. The serial communications and the RocketPort Card are discussed in detail in Appendix F.

2.5 Field Connection Board

The Field Connection Board (FCB) serves as an interface and electrical isolation between the controller’s internal circuitry and external equipment. The FCB has a number of inputs and outputs. The inputs mainly deal with sensor signals (jam detectors, photo sensors, a shaft encoder, and a cycle input) that are brought out on individual connectors on the connector panel associated with the FCB. They are also available as a group on a single input cable connector. The outputs are also brought out on a cable connector and provide relay contact outputs for such functions as a stop signal to the inkjet equipment, control of a stack function (to control the speed of a conveyor for stacking purposes), and a diverter.

When the Buskro controller is used with a standard Buskro base, all communications with the base are internal through a ribbon cable and the connections on FCB are not needed.

The external connections provide a more general interface to allow the controller to work with a variety of equipment that does not necessarily conform to Buskro’s standards. The actual operation and connections to the board are discussed in detail in Appendix E.

2.6 Datapath and Image Accelerator Card

The Datapath (Figure 2-14) and the Image Accelerator (Figure 2-15) Cards connect to the motherboard through the PCI Bus and perform the following functions:

- When a Buskro transport base is present, interfaces with the Base Interface board or Base control board to receive sensor inputs from the base.
- Where a Buskro transport base is present, interfaces with the Base Interface board or Base control board to control the base and conveyor.
- Provides a communication port for control and monitoring of the “life” support elements.
- Receives configuration information from Compose IQ.
- Transmits status information to Compose IQ, the inkjet control software.
- Controls printhead firing sequence.
- Transfers image data via the data ports.

Each Buskro controller is equipped with either a Datapath or Image Accelerator Card. All new controllers are equipped with an Image Accelerator Card.

Figure 2-14: Datapath Card with Expansion Board



The Datapath Card supports four data connections for printheads. An expansion board is required to add support for an additional four data connections (for a maximum of eight printheads).

Figure 2-15: Image Accelerator Card with HeadIF Board

The Image Accelerator Card is a replacement for the Datapath card. It is a newer, faster card with more features. For an overview summary of the differences between the Datapath and Image Accelerator Cards, reference Table 2-4.

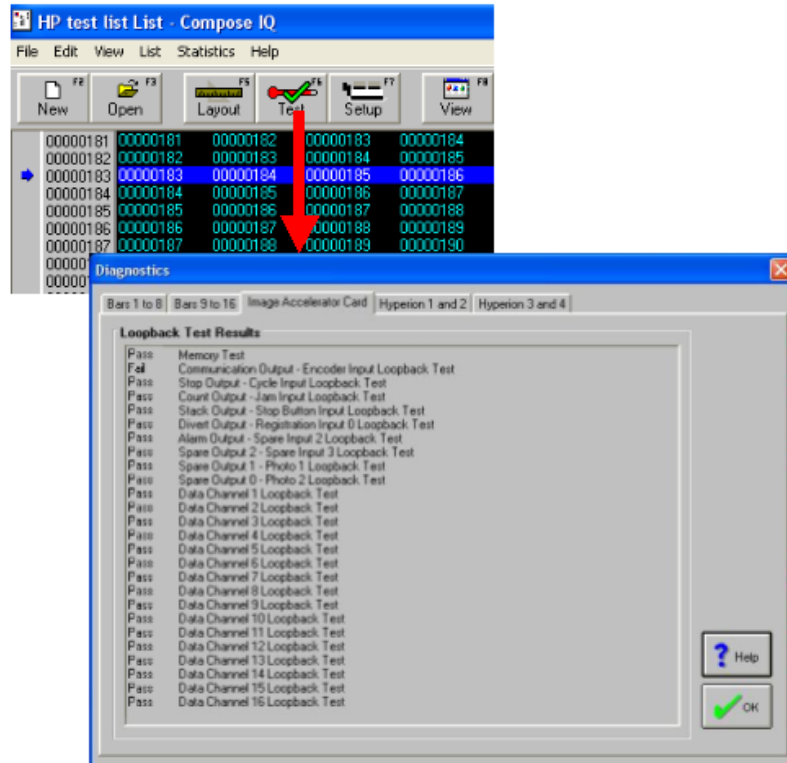
Table 2-4: Datapath and Image Accelerator Card Comparison

	Datapath	Image Accelerator
Release Date	1997	2008
RoHS Compliant (Environmental Standard)	No	Yes
Bus Standard	PCI	PCI
Compatible with newer motherboards?	No	Yes
License Method	Lock Chip or Dongle	Dongle
Expansion Hardware	Expansion Board	HeadIF Card
Firmware	EPROM (Hardware Updates)	Flash Memory (Software Updates)
Compose Version	V8.00 or Earlier	V8.01 or Higher
Maximum Data Ports	8	16
Data Transfer	Partial Streaming	Full Streaming
Tracking Resolution	1"	¼"
Self Diagnostics	No	Yes
Double Data Rate	No	Yes
Input Protection	Not opto-isolated	Opto-isolated
Hyperion Support	No	Yes

2.6.1 Image Accelerator Card Diagnostics

The Image Accelerator Card has the ability to diagnose itself to assist with troubleshooting. It is able to test its internal memory, all inputs and outputs, and all the data channels (print ports). This can be accessed through the Test / Diagnostics screen (Figure 2-16).

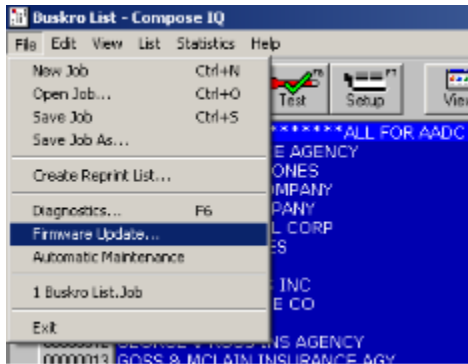
Figure 2-16: Image Accelerator Card Diagnostics



2.6.2 Firmware Updates

With Buskro's new line of electronics (Image Accelerator Card, HP Interface Board II, and SSB CPU II), firmware updates can be made directly through Compose (Figure 2-17). This simplifies the upgrade process by eliminating the need to replace a hardware EPROM for each firmware change.

Note: NEVER interrupt a Firmware update. If the update does not complete successfully, retry the update.

Figure 2-17: Firmware Update

The firmware update procedure is as follows:

1. Choose “**File**” then “**Firmware Update**”. The current firmware version is displayed in the dialog box. The “**Update**” button is only enabled for existent boards.
2. To update the Image Accelerator Card, press the “**Update**” button beside “**Accelerator FPGA**”. The update takes approximately 30 seconds to complete. The update progress is displayed in the progress bar.
3. Before updating an HP Interface Board II or SSB CPU II, power down the system and set the Program DIP Switch on the respective board (position 8) to ON. Then reboot the system.
4. To update the HP Interface Board II or SSB CPU II, press the update button. The update takes approximately 4 minutes to complete. The update progress is displayed in the progress bar.
5. After updating an HP Interface Board II or SSB CPU II, power down the system and set the Program DIP Switch on the respective board (position 8) to OFF. Then reboot the system.
6. If the Compose Release notes indicate that the CPLD on the board requires updating, power down the system and set the CPLD Program DIP Switch (position 7) to ON and the Program DIP Switch (position 8) to OFF before rebooting the system. The RUN LED will blink rapidly to indicate the CPLD programming progress, after which the RUN LED will resume its normal (1 second on, 1 second off) blink rate.
7. After updating the CPLD, power down the system and set the CPLD Program DIP switch (position 7) OFF. Then reboot the system.

2.7 Optional Hardware

2.7.1 Serial Card (P/N BK-COMM)

The Serial Card is a “smart” high-speed serial communications card equipped with its own processor. It is designed to plug into a PCI slot on the computer motherboard and has 4 connectors for serial communications cables. These connectors are standard RS-232 connectors in a DB-25 configuration and use a null modem. More information can be found in the Appendix.

2.7.2 Expansion Board (P/N BK-EXP-1700)

The Expansion Board is only used with the Datapath Card. It is used to add the capacity for four more data ports (for up to four more printheads), allows for a second technology to be added, and provides access to use the Tracking Board.

2.7.3 Image Accelerator Expansion Module (P/N BK-EXP-IAC)

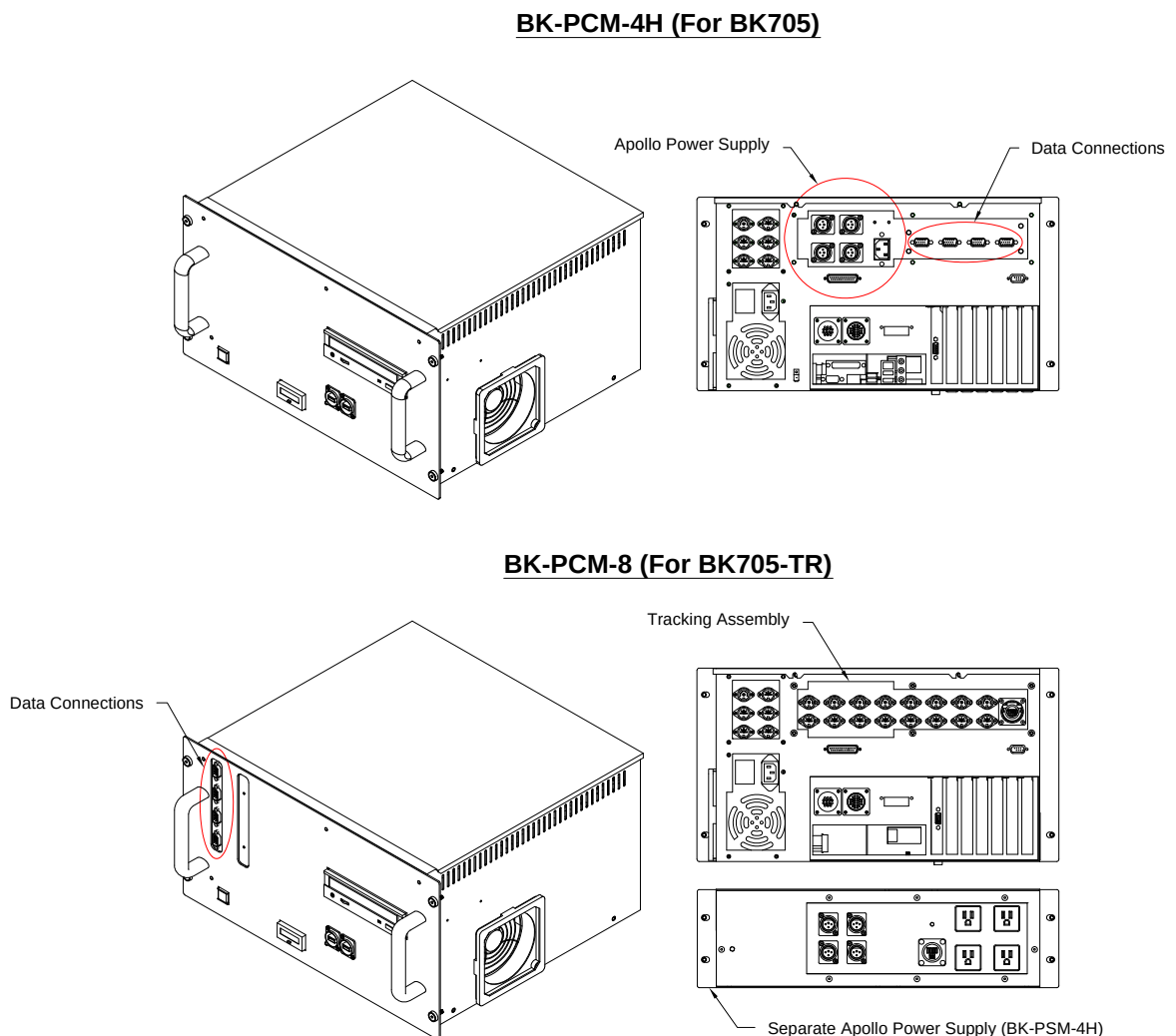
The Expansion Module is used to add the capacity for an additional four data ports for systems utilizing the Image Accelerator Board. This kit is not required to add multiple technologies or to access the Tracking Board as these features are inherent in the Image Accelerator Card. To activate these features, the appropriate license option is required (BKLI-OPT-CBO for multiple technologies and BKLI-OPT-TRK for Tracking).

2.7.4 Tracking Board (P/N BK-TRACK-1700)

By purchasing the Tracking option for the BK705, this provides users with the ability to track each product as it travels through the system which is comprised of a series of zones (e.g. inkjet zone, inserter zone, etc). It is also possible to track products through non-Buskro equipment. For more information, contact a Buskro representative.

For Atlas or Aurora systems, the tracking board can be ordered (BK-TRACK-1700). For Apollo systems, the tracking controller (P/N BK705-TR) should be ordered instead of the standard controller (P/N BK705). Since a tracking board assembly is required (P/N BK-TRACK-1700), a slightly different computer assembly is needed. Instead of using the integrated Apollo power supply found in the computer assembly of the standard Apollo BK705, a separate power supply (P/N BK-PSM-4H) is used. In addition, the computer module faceplate changes to support data connections in the front instead of the back. In this configuration, the computer assembly is the same as the one used in the BK1705, BK1710, and BK1720 controllers. Figure 2-18 provides a visual representation of the differences.

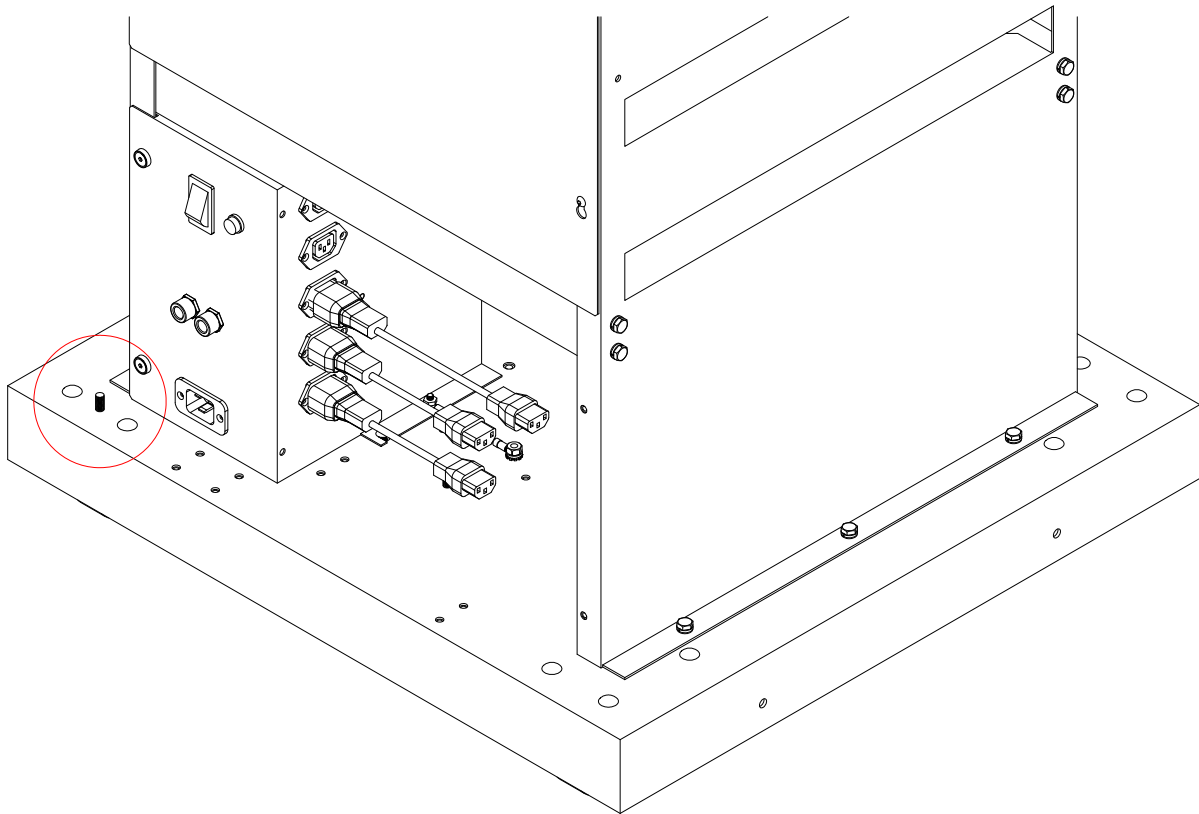
Figure 2-18: Computer Assemblies with and without Tracking



2.8 Grounding

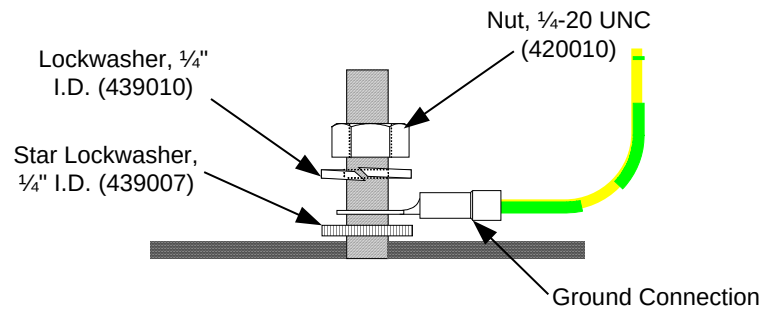
Proper grounding is essential for proper operation of equipment as well as for safety. If a system is improperly grounded, it can result in an array of intermittent or even permanent operational problems. In the case of the BK705 Controller stand, each individual panel is connected together with a common ground using ground wires. The individual modules also need to be grounded to the stand (e.g. computer or power supply modules) through the available ground tabs or studs. It is also important to ground the controller to the transport base. A ground stud on the stand is available to connect a ground wire to other equipment in the system (Figure 2-19).

Figure 2-19: BK705 Ground Stud



When connecting to a ground stud, it is important to use a star lockwasher to cut into the finish of the cabinet (Figure 2-20). This is because paint or finishes can act as an insulator. It is recommended to use an AWG 12 or heavier green/yellow wire when connecting the ground between machines.

Figure 2-20: Ground Stud



3.1 Introduction

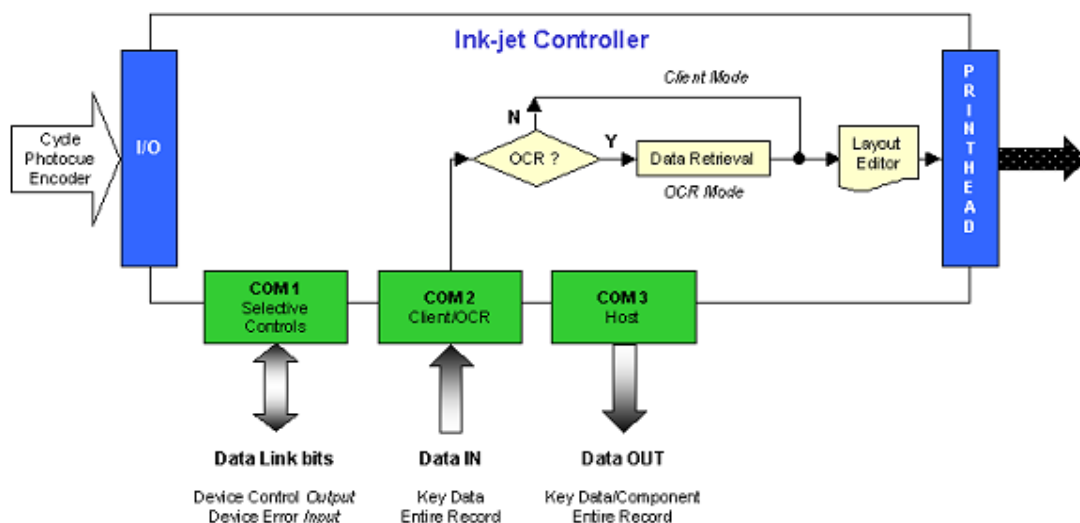
In general, Buskro print technology is designed to work with a Buskro controller equipped with Compose IQ software. Compose IQ is a Windows[®] based application that controls all operational aspects of a Buskro inkjet system. This easy-to-use control software delivers powerful job setup, layout, production management, record control, diagnostics, and reporting.

Compose IQ is a built-in package capable of supporting systems applications in which machine control, data acquisition, print sequencing, and product tracking or a combination thereof may be required. Essentially, the software provides the following rudimentary tools:

- Product tracking and print sequencing
- Communication with reading devices or other controllers via the COM2 serial port
- Data output communication with other devices via COM3
- Machine control utilizing a PLC with communication via COM1
- Data acquisition and record retrieval in OCR mode

The software offers three distinct building blocks for the implementation of a system. This includes client (*slave*) mode, OCR mode, and selective device control supporting host mode (*master*) for data echo requirements. Figure 3-1 below illustrates the different configurations:

Figure 3-1: Block diagram of various models and the I/O devices required



3.2 Host/Client Mode

3.2.1 Client Mode

Client mode permits the controller to accept data *directly* from another controller (device) via the serial COM2 port, and at the appropriate time, print out some or all of the data based on the image layout. A number of baud rates and physical definition tools are offered to tailor the controller to the physical delays of the system and provide a data communication link with a host controller (device).

3.2.2 Host Mode

Host mode provides a means whereby a portion or all of the printed record data is output on COM3 such that it can be acquired and used by a downstream controller/device. This capability allows for the creation of distributed systems in which a number of printers can be networked together and controlled by a host controller.

3.3 OCR Mode

The OCR mode functions in much the same way as the client mode with the addition of a lookup and data retrieval process occurring prior to image creation. This capability supports reading devices that send limited data via the serial COM2 port, representing a key that maps onto a defined component of the data file such that a search will find and retrieve the entire record corresponding to the key. As with the client mode, the resulting record's components are then printed out as defined by the image layout.

3.4 Selective Inserting Mode

Completing the suite of controller products is a selective device control operation. With this, individual records are sourced from the aforementioned applications or the resident database and subsequently queried prior to the printing operation. As a result, various upstream and downstream devices can be actuated via a PLC based on the contents of these records. Included with this is a data echo feature that outputs all or part of the printed record on the COM3 serial port for communication with other downstream client controllers. This creates a distributed network of printers.

PLC control and communication is enabled through the COM1 port where a number of virtual input/output points are transmitted and stored directly in the PLC for further processing. Using this type of system architecture, logical functions are performed by the generic printer controller with the PLC providing localized system customization to implement the instructions supplied by the controller.

3.5 Compose IQ Dongle

The Dongle is a serialized device that is installed in one of the USB ports of the controller. It acts as the license enabling mechanism for users with a Compose Version of 6 or later. It must have a valid dongle information file encrypted within it to become active. The correct dongle information file specific to the serial number of the physical dongle and to the print technology and Compose functionality purchased is required. The Dongle is field-programmable so that options may be added without swapping Dongles. The Dongle requires drivers that are loaded with Compose V6.03 or later. In the Compose Help system the *driver* installation procedure is listed.

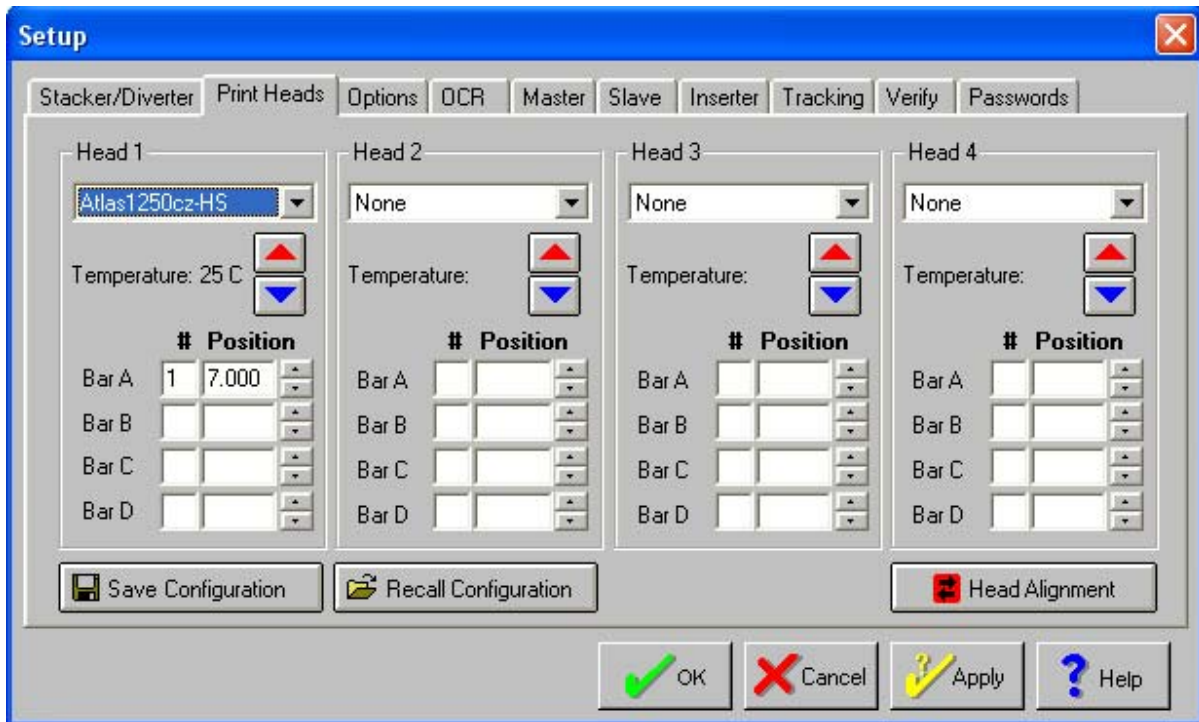
3.6 Compose Software

For more detailed information about Compose IQ, reference the help file included with the software. Only some of the basic functions are described in this manual.

3.6.1 Printhead Drivers

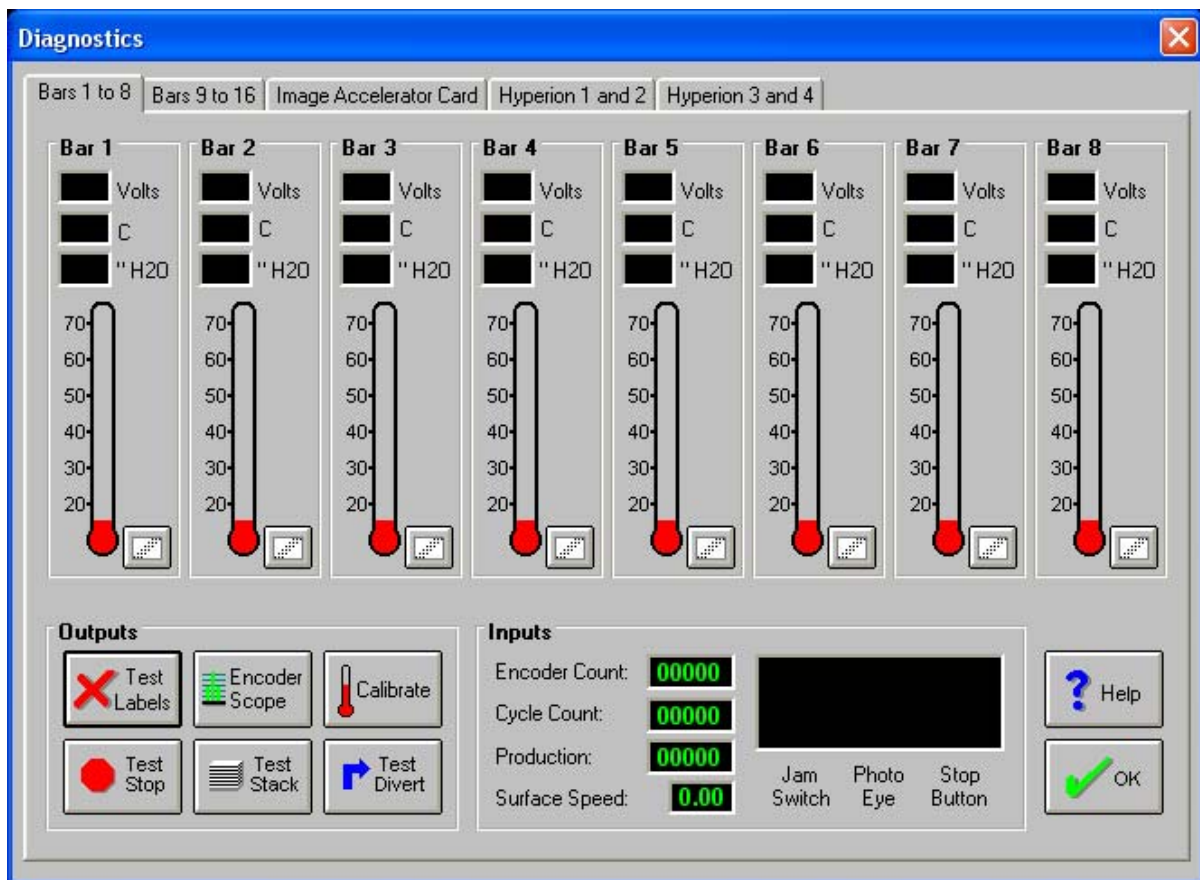
In order to integrate the print technology with Compose, the proper printhead driver must be specified in the Setup menu as well as its relative distance from the photo sensor (Figure 3-2).

Figure 3-2: Compose Setup Window



3.6.2 Diagnostics Screen

The Compose diagnostic screen displays the voltage and temperature readings for each printbar (Figure 3-3). 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 for an Atlas or Aurora printhead is 80-100 volts. The temperature reading depends on the ink technology used.

Figure 3-3: Compose Diagnostics Window

Note: Only trained technicians should make adjustments to the Voltage as it can affect print performance.

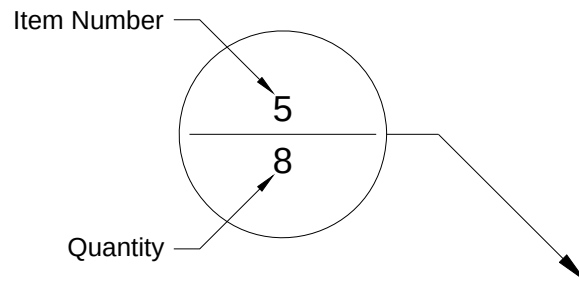
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Balloon Annotation and Parts Listing



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: BK705 – Apollo Ezejet Controller

Item	Part Number	Quantity	Description	Reference
1	9101627	1	Buskro Serial Number Label	
2	9103134A	1	Kit, Accessory, BK705 (Includes Trackball)	
3	9103285A	1	Dongle Assembly	
4	BK-MON-LCD17	1	Monitor. 17" LCD display	
5	BK-PCM-4H	1	Module, Computer, Apollo BK705	Page A-5

Figure A-1: BK705 – Apollo Ezejet Controller

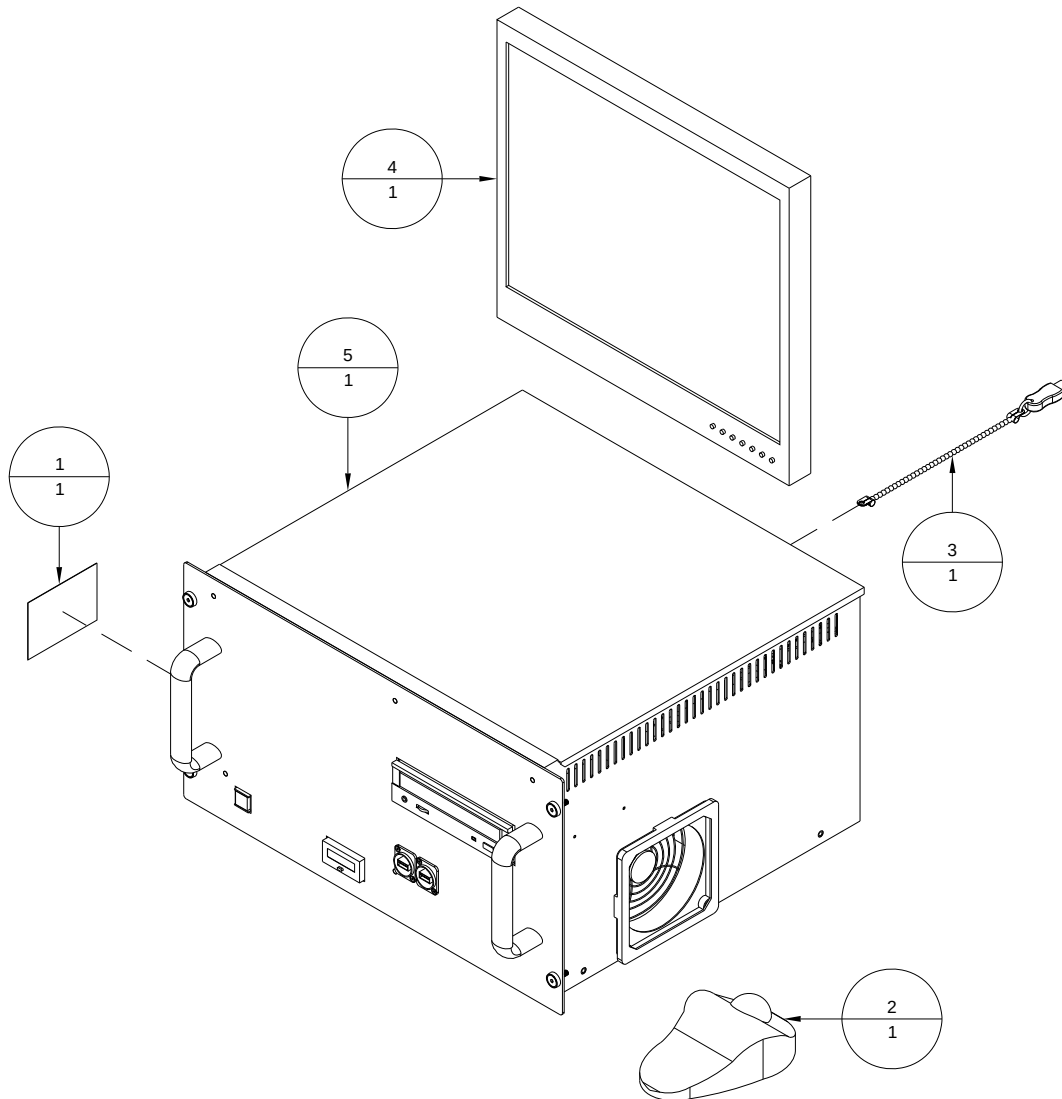


Table A-2: BK705-TR – Apollo Ezejet Controller with Tracking

Item	Part Number	Quantity	Description	Reference
1	404520	6	Screw, BHCS, 10-32 UNF x 3/8"	
2	9101627	1	Buskro Serial Number Label	
3	9103134A	1	Kit, Accessory, BK705 (Includes Trackball)	
4	9103285A	1	Dongle Assembly	
5	9104512	1	Cord, Set, 10A/250V, 1m, Harmonized, IEC	
6	BK-MON-LCD17	1	Monitor. 17" LCD display	
7	BK-PCM-8	1	Computer PCM Chassis Assembly	Page A-6
8	BK-PSM-4H	1	Module, Apollo Power Supply, 4 Channel	
9	BK-TRACK-1700	1	Tracking Board Assembly, BK-PCM	

Figure A-2: BK705-TR – Apollo Ezejet Controller with Tracking

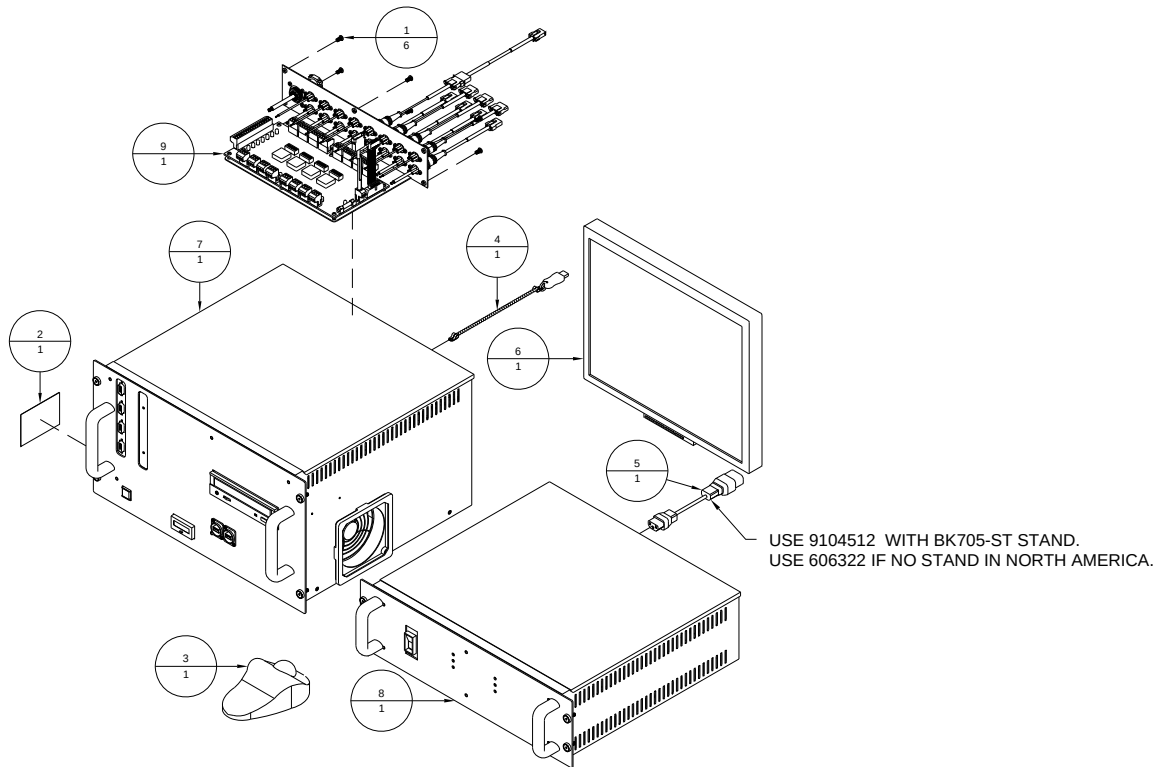


Table A-3: *BK705-ST – BK705 Controller Stand*

Item	Part Number	Quantity	Description	Reference
1	404050	2	Screw, FHCS, 10-32 UNF x 3/4"	
2	404520	5	Screw, BHCS, 10-32 UNF x 3/8"	
3	405530	2	Screw, BHCS, 1/4-20 UNC x 1/2"	
4	405650	18	Screw, HHMS, 1/4-20 UNC X 3/4"	
5	439010	18	Lockwasher, 1/4 in I.D.	
6	440010	18	Washer, 1/4 in ID	
7	609110	8	Connector, Push-on, 16-14 AWG, Blue	
8	9102068	16	Bolt, Carriage, 1/4-20 UNC, 3/4" LG.	
9	9102681	4	Wire #14, Green/Yellow hookup, 3" Lg.	
10	9103219A	4	Caster Wheel Assembly	Page A-9
11	9103315	2	Washer, Cup, 10-32 UNF Flat Head Screw	
12	9104462	1	Platform, LC Apollo	
13	9104463	2	Side Bracket, BK705	
14	9104465	2	Cross Bracket, BK705 Stand	
15	9104466A	1	Back Cover Assembly, BK705	Page A-18
16	9104486A	1	Monitor/Keyboard Stand, BK705	Page A-19
17	9104511	1	Cord Set, 10A/250V, 2m, Harmonized, IEC-IEC	
18	9104512	2	Cord Set, 10A/250V, 1m, Harmonized, IEC-IEC	
19	9104912A	1	Power Distribution Box Assembly	Page A-22

Figure A-3: *BK705-ST – BK705 Controller Stand*

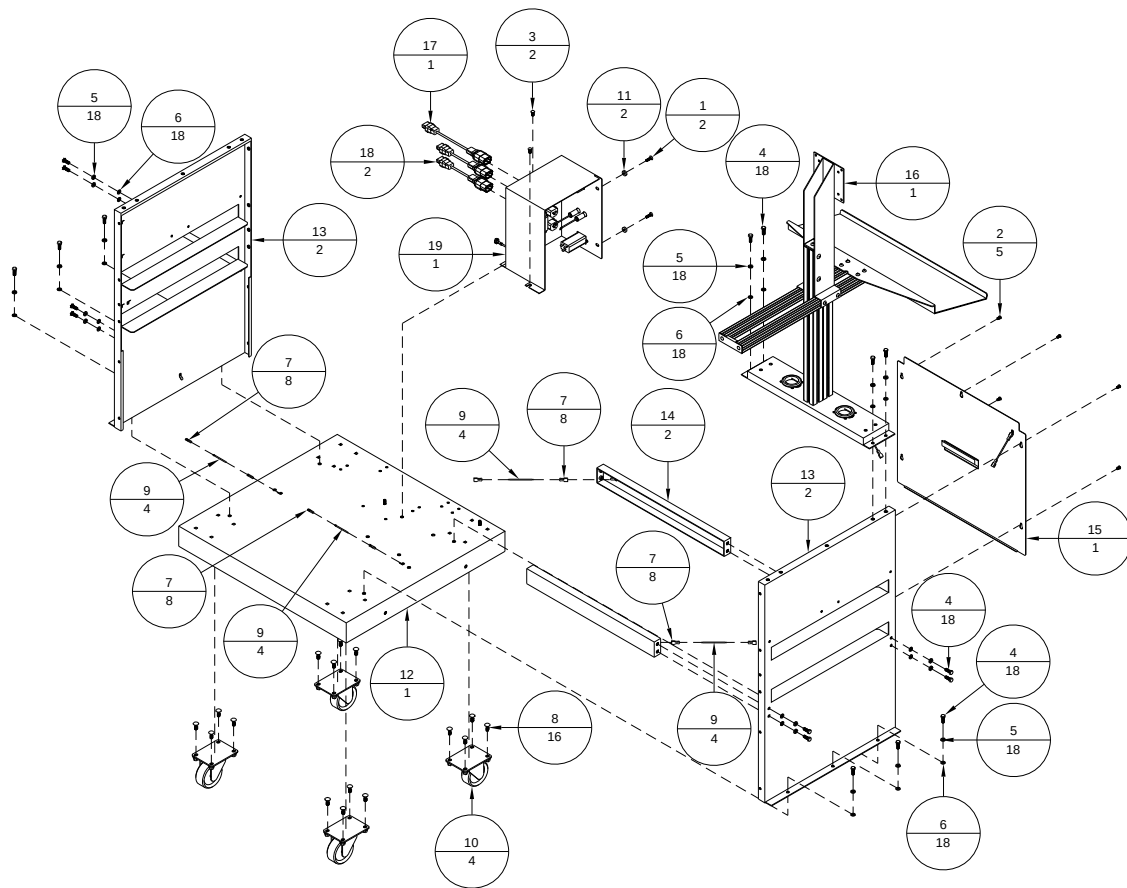


Table A-4: *BK-PCM-4H – Module, Computer, Apollo BK705*

Item	Part Number	Quantity	Description	Reference
1	404520	6	Screw, BHCS, 10-32 UNF x 3/8"	
2	420008	6	Nut, 10-32 UNF	
3	439009	6	Lockwasher, No. 10	
4	606322	1	Cord, Set, 10A/125VAC, 90", N.A., IEC	
5	9104130A	1	Computer PCM Chassis Assembly, Universal	Page A-12
6	9104135A	1	Image Accelerator Card Assembly	Page A-14
7	9104415A	1	Power Supply Assembly, BK-PCM-4H, Apollo	Page A-16
8	9104423A	1	Faceplate assembly, BK-PCM-4H	Page A-17

Figure A-4: *BK-PCM-4H – Module, Computer, Apollo BK705***NOTE:**

FOR NORTH AMERICA USE POWER CORD 606322.
 FOR INTERNATIONAL USE POWER CORD 9103256.
 WHEN USED WITH A STAND (BK705-ST) USE POWER
 CORDS INCLUDED WITH THE STAND.

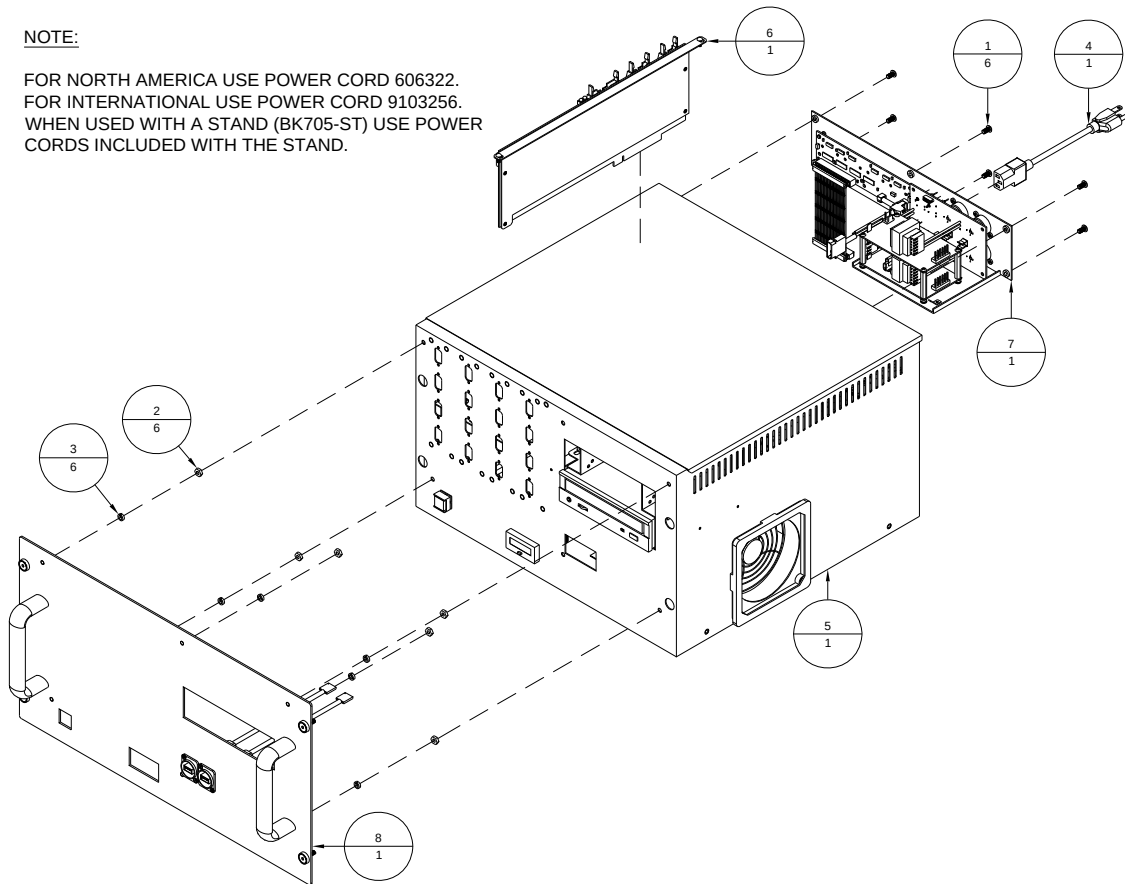


Table A-5: *BK-PCM-8 – Module, Computer Assembly, Universal*

Item	Part Number	Quantity	Description	Reference
1	404520	6	Screw, BHCS, 10-32 UNF x 3/8"	
2	420004	2	Nut, 4-40 UNC	
3	420008	6	Nut, 10-32 UNF	
4	439004	2	Lockwasher, No. 4	
5	439009	6	Lockwasher, No. 10	
6	9103177	1	Cover, Computer Cabinet	
7	9104116A	1	HeadIF Assembly	Page A-10
8	9104127	1	Bracket, Blocking 4-Channel	
9	9104130A	1	Computer PCM Chassis Assembly	Page A-12
10	9104135A	1	Image Accelerator Card Assembly	Page A-14
11	9104194A	1	Faceplate Assembly, BK-PCM-8	Page A-15

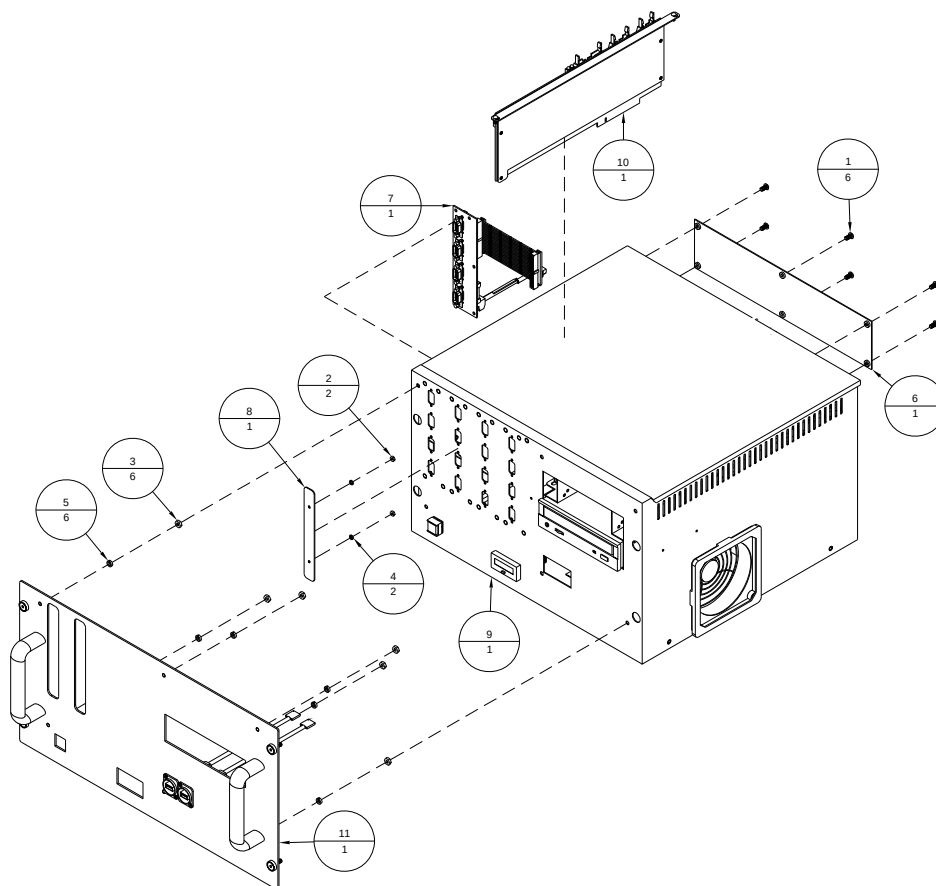
Figure A-5: *BK-PCM-8 – Module, Computer Assembly, Universal*

Table A-6: 9102781A – Fan Assembly, 12 VDC

Item	Part Number	Quantity	Description	Reference
1	609000	1	Shrink Wrap, 3/16" I.D., 1"	
2	614008	2	Contact, Male, 24-18 AWG, Mate-n-lok	
3	614009	1	Connector, 4-Pin, Male, Mate-n-lok	
4	9102781	1	Fan, 12VDC, Flight II 120	

Figure A-6: 9102781A – Fan Assembly, 12 VDC

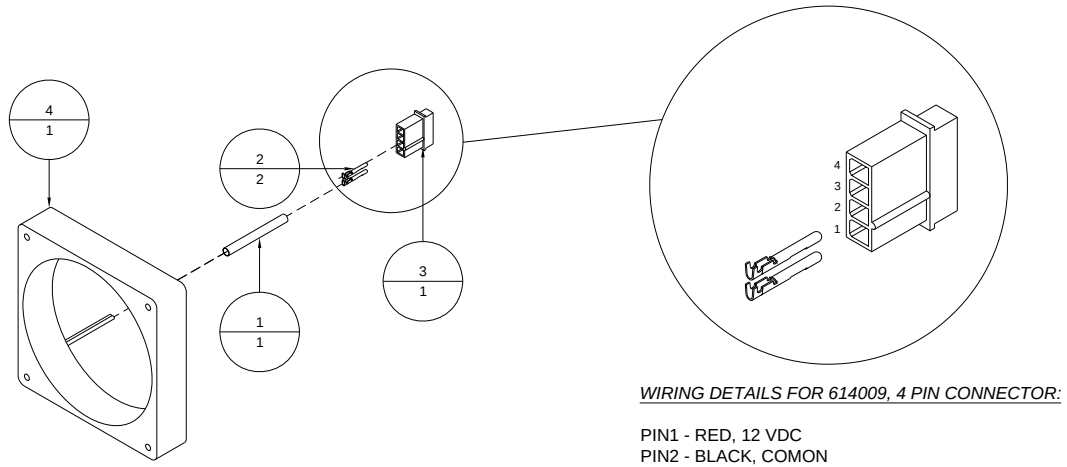


Table A-7: 9103178A – Field Connection Board Assembly, BK-PCM

Item	Part Number	Quantity	Description	Reference
1	401310	12	Screw, PHMS, 4-40 UNC x 1/4"	
2	402310	4	Screw, PHMS, 6-32 UNC x 1/4"	
3	440530	4	Washer, #6, Nylon	
4	615063	5	Connector, Female, 3-Pin, BLA3	
5	615066	1	Connector, Female, 4-Pin, BLA4	
6	9100711A	5	Field Sensor Cable Assembly	
7	9100723A	1	Field Encoder Cable Assembly	
8	9100724A	2	Jam/Proxi/Photocue Extension Cable	
9	9100725A	1	Shaft Encoder Extension Cable	
10	9100731	1	Board, Field Connection	
11	9103178	1	Connector Plate, BK-PCM	

Figure A-7: 9103178A – Field Connection Board Assembly, BK-PCM

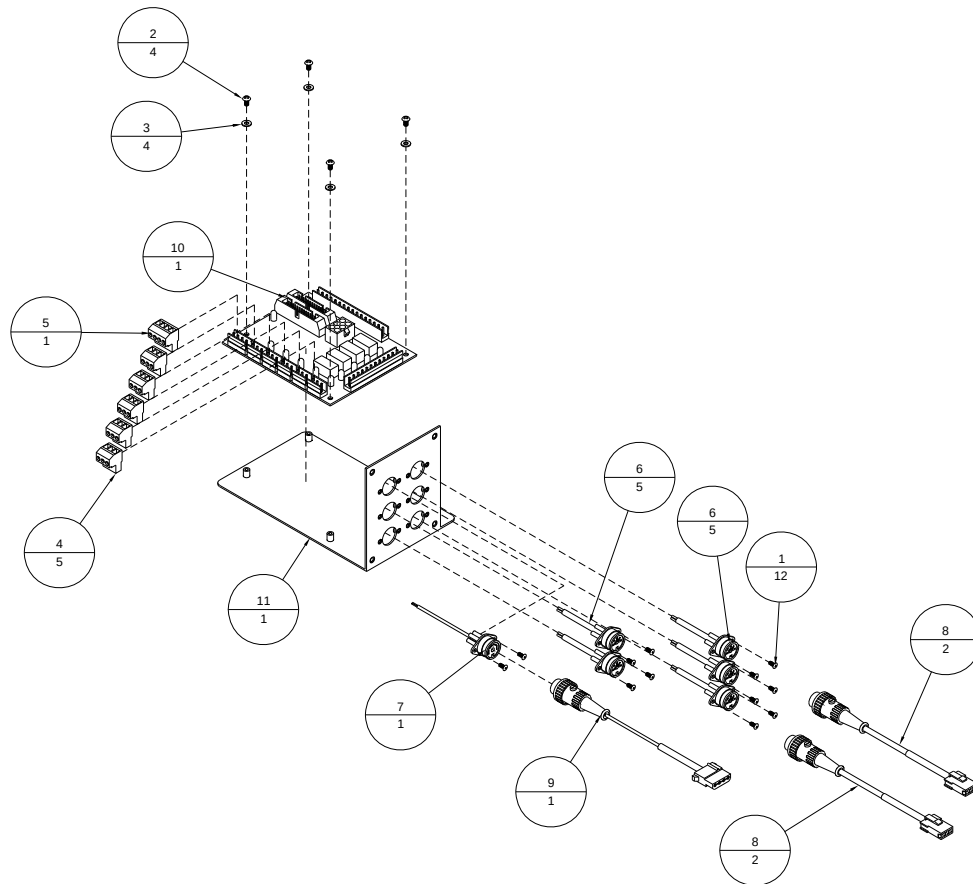


Table A-8: 9103219A – Caster Wheel Assembly

Item	Part Number	Quantity	Description	Reference
1	420015	4	Nut, 5/16-18 UNC	
2	439015	4	Lockwasher, 5/16 I.D.	
3	440015	4	Washer, 5/16" ID	
4	9103219	1	Caster Wheel, 3" dia.	

Figure A-8: 9103219A – Caster Wheel Assembly

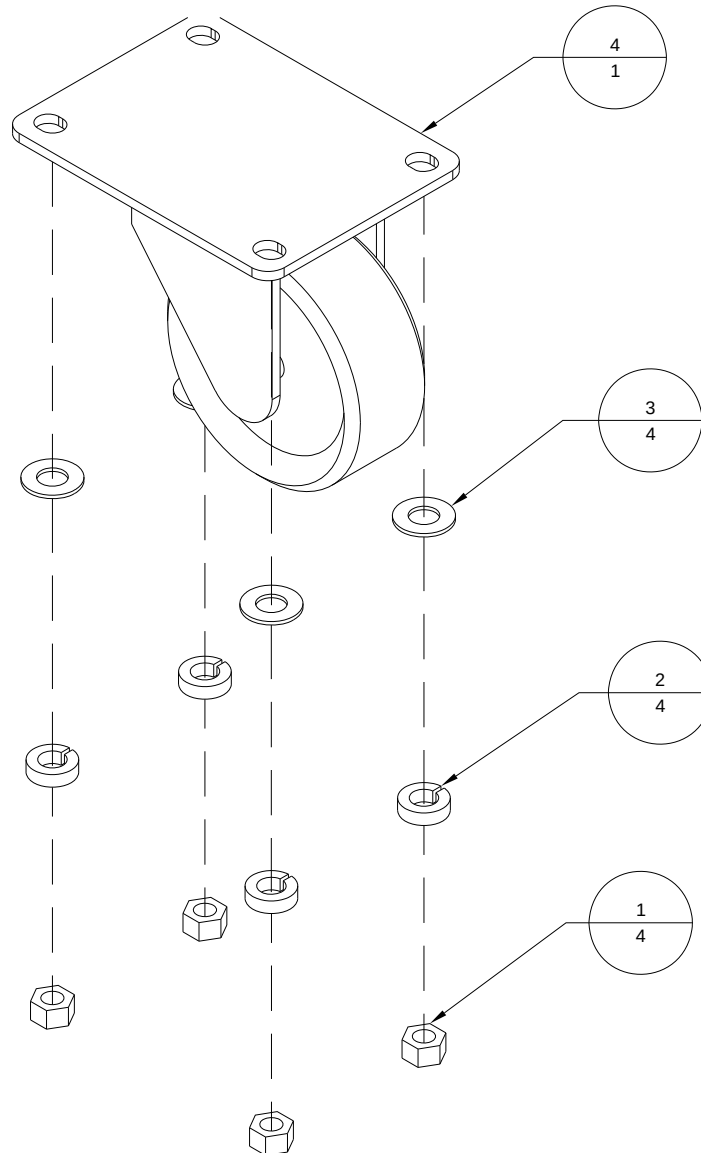


Table A-9: 9104116A – HeadIF Assembly

Item	Part Number	Quantity	Description	Reference
1	615322	8	Female Screwlock, 4-40 UNC	
2	9102011A	1	Cable, 12 VDC Power	
3	9104116	1	Board, Head Interface (HeadIF)	
4	9104334A	1	Cable, Twist Pair, HeadIF Board	

Figure A-9: 9104116A – HeadIF Assembly

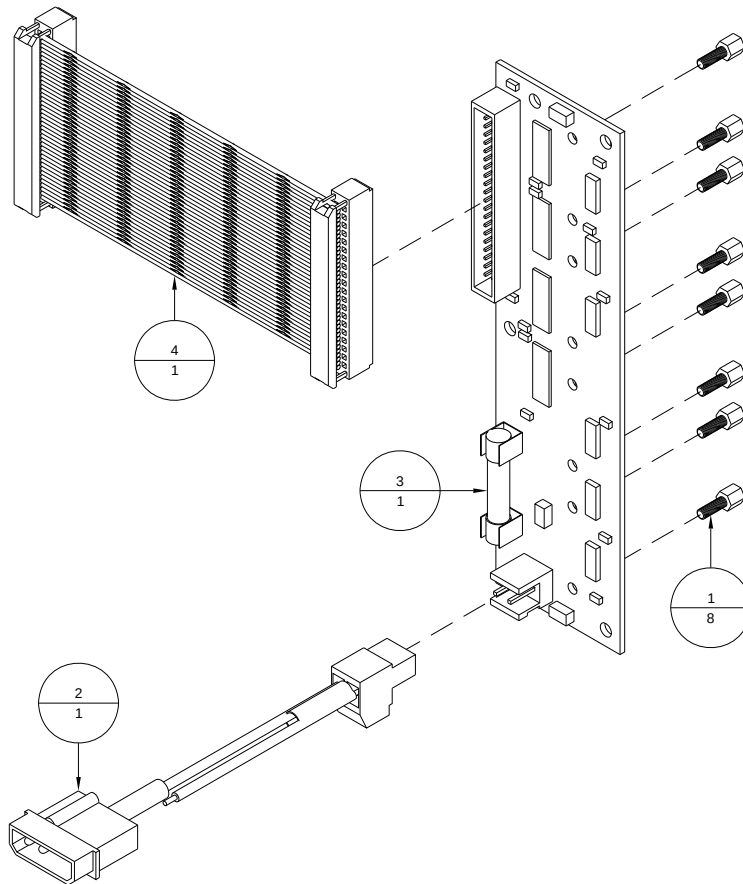


Table A-10: 9104127A – Computer Drive Mount Assembly

Item	Part Number	Quantity	Description	Reference
1	402320	4	Screw, PHMS, 6-32 UNC x 3/8"	
2	413506	4	Screw, BHCS, M3 x 6mm	
3	439006	8	Lockwasher, No.6	
4	440005	8	Washer, #6, I.D.	
5	600333	1	Hard Drive, IDE	
6	803601	1	CD-Rom Drive, Black	
7	9102882	1	Hard Drive Mount	

Figure A-10: 9104127A – Computer Drive Mount Assembly

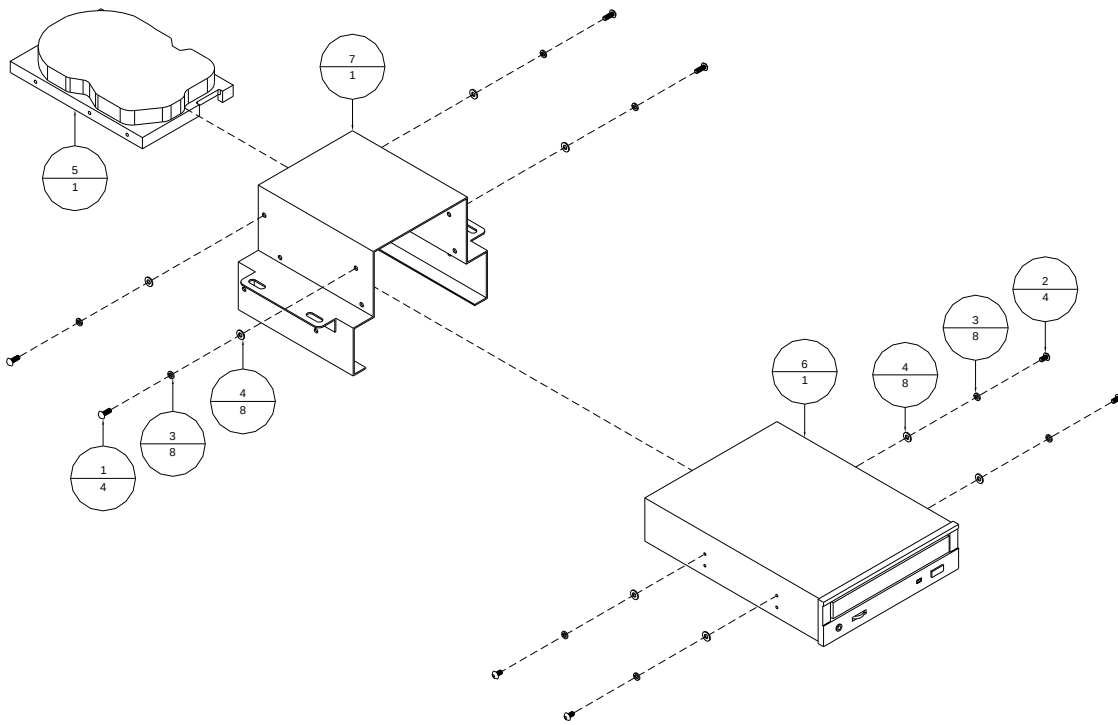


Table A-11: 9104130A – Computer PCM Chassis Assembly, Universal

Item	Part Number	Quantity	Description	Reference
1	401310	8	Screw, PHMS, 4-40 UNC x 1/4"	
2	402310	17	Screw, PHMS, 6-32 UNC x 1/4"	
3	402320	4	Screw, PHMS, 6-32 UNC x 3/8"	
4	403510	4	Screw, BHCS, 8-32 UNC x 1/4"	
5	404520	6	Screw, BHCS, 10-32 UNF x 3/8"	
6	420007	4	Nut, 8-32 UNC	
7	420008	2	Nut, 10-32 UNF	
8	439009	10	Lockwasher, No. 10	
9	440008	8	Washer, #10 ID	
10	600101A	1	Counter Assembly, BK-PCM	
11	609110	2	Connector, Push-on, Blue	
12	614307A	1	Cable, I/O Assembly	
13	615322	4	Female Screwlock, 4-40 UNC	
14	806600	1	Software, Windows	
15	9101863	1	Power Supply, 12V, ATX	
16	9101971	1	Software, Compose IQ	
17	9102681	1	Wire, #14, Green/Yellow Hookup, 20"	
18	9102781A	1	Fan Assembly, 12 VDC	Page A-7
19	9102782	1	Filter, 12VDC Fan, Flight II 120	
20	9102783	1	Fan, Finger Guard Metal, Flight II 120	
21	9103178A	1	Field Connection Board Assembly, BK-PCM	Page A-8
22	9103185	4	Screw, FPHMS 8-32 UNC x 1 3/4"	
23	9103188	6	Cover, Computer Slot	
24	9103196A	1	Cable, Data Ribbon, DB9 Male	
25	9103317A	1	Cable, Switch Pushbutton Assembly	
26	9103471A	1	Cable, FCB Output	
27	9103472A	1	Cable, FCB Input	
28	9104119A	1	Cable, Controller I/O Receptacle, 18"	
29	9104127A	1	Computer Drive Mount Assembly	Page A-11
30	9104130	1	Enclosure, Computer DPI/DPII	
31	9104133	1	Cover, Computer Module	
32	9104294	1	CPU, Pentium 4, Socket 775	
33	9104370	1	Card, Video, PCI Express	
34	9104377	1	Cable, IDE 26" Long, Hard Drive/DVD-Rom	
35	9104724	1	Motherboard, Socket 775	
36	9104418	1	Bracket, DP card support	
37	9104649	1	Memory, 1 GB DDR 2	

Figure A-11: 9104130A – Computer PCM Chassis Assembly, Universal

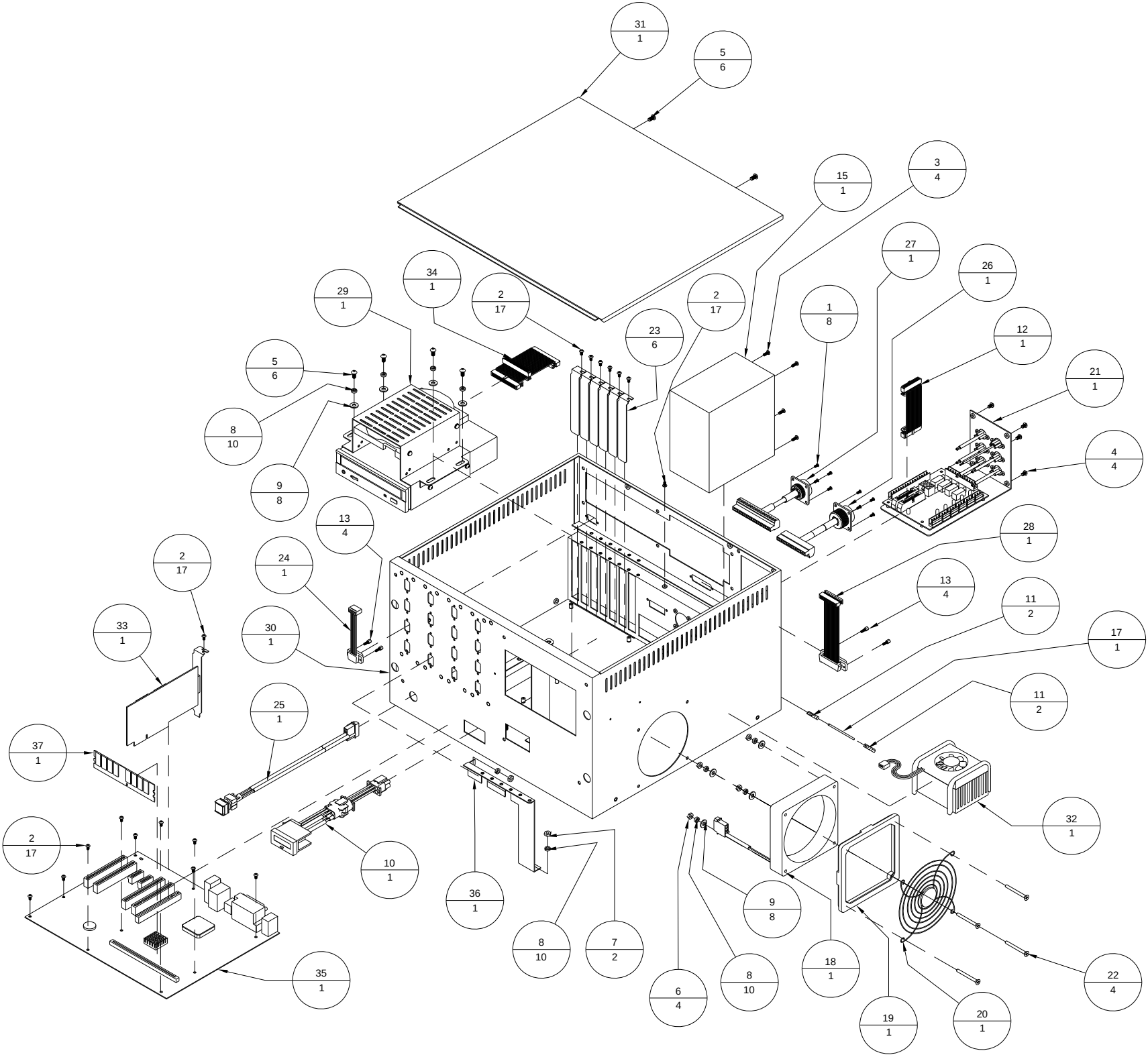


Table A-12: 9104135A – Image Accelerator Card Assembly, PCM

Item	Part Number	Quantity	Description	Reference
1	401310	6	Screw, PHMS, 4-40 UNC x 1/4"	
2	402320	2	Screw, PHMS, 6-32 UNC x 3/8"	
3	440530	6	Washer, #6, Nylon	
4	9104115	1	Card, Image Accelerator	
5	9104135	1	Bracket, Image Accelerator Card	

Figure A-12: 9104135A – Image Accelerator Card Assembly, PCM

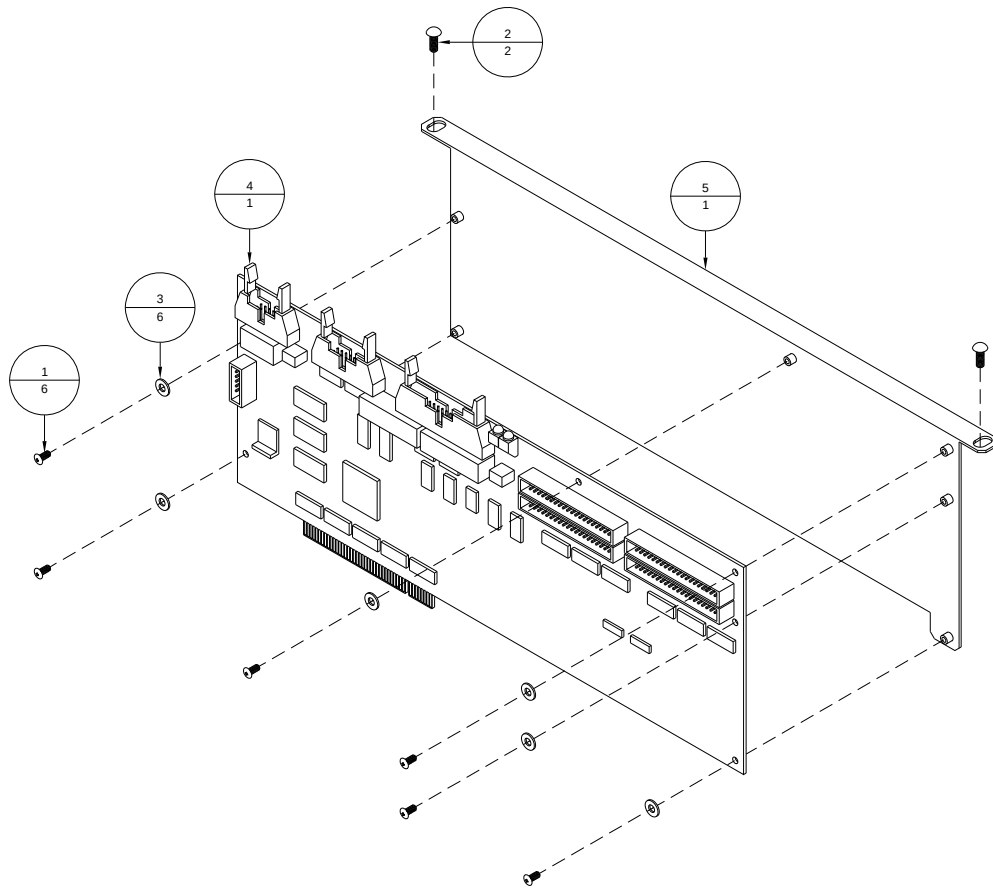


Table A-13: 9104194A – Faceplate Assembly, BK-PCM-8

Item	Part Number	Quantity	Description	Reference
1	401010	4	Screw, FHCS, 4-40 UNC x ¼"	
2	404050	4	Screw, FHCS, 10-32 UNF x ¾"	
3	406530	4	Screw, BHCS, 5/16-18 UNC x ½"	
4	439015	4	Lockwasher, 5/16 ID	
5	9102847	2	Handle, Pull, 5/16-18	
6	9103315	4	Washer, Cup, 10-32 UNF Flat Head Screw	
7	9104119	2	Cable, USB-B to Header	
8	9104132	2	Connector, Serial Bus (USB Adapter)	
9	9104194	1	Faceplate, Computer Module, 8 Channel	

Figure A-13: 9104194A – Faceplate Assembly, BK-PCM-8

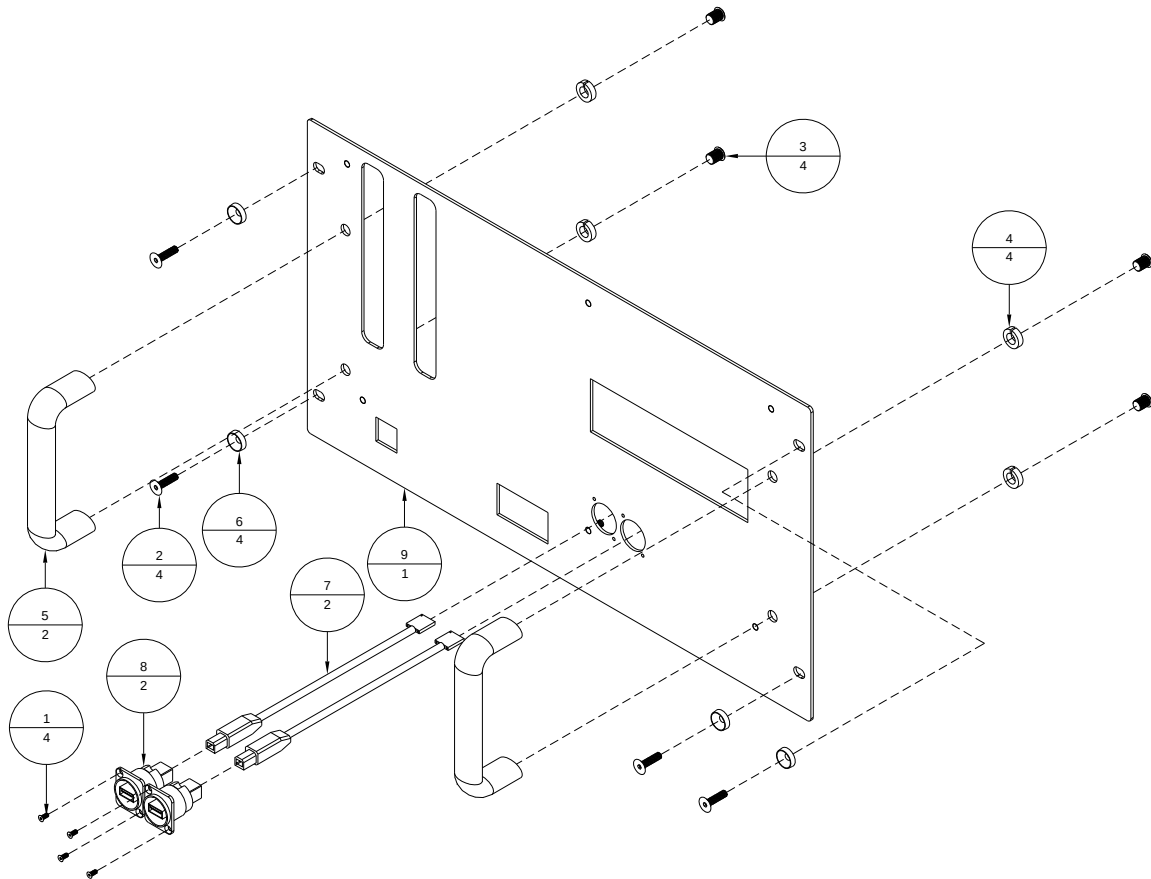


Table A-14: 9104415A – Apollo Power Supply Assembly, BK-PCM-4H

Item	Part Number	Quantity	Description	Reference
1	401010	8	Screw, FHCS, 4-40 UNC x 1/4"	
2	402310	4	Screw, PHMS, 6-32 UNC x 1/4"	
3	9101931	2	Rivet, Plastic	
4	9102362	4	Hex Spacer, 6-32 UNC X 3/4"	
5	9102418	1	Power Supply, Switching, 5.1VDC, 8A	
6	9102419	1	Power Supply, Switching, 28V/1.8A	
7	9102907	1	Board, HP Power Supply	
8	9104116A	1	HeadIF Assembly	Page A-10
9	9104416	1	Bracket, HP-PS-PCM integrated	

Figure A-14: 9104415A – Apollo Power Supply Assembly, BK-PCM-4H

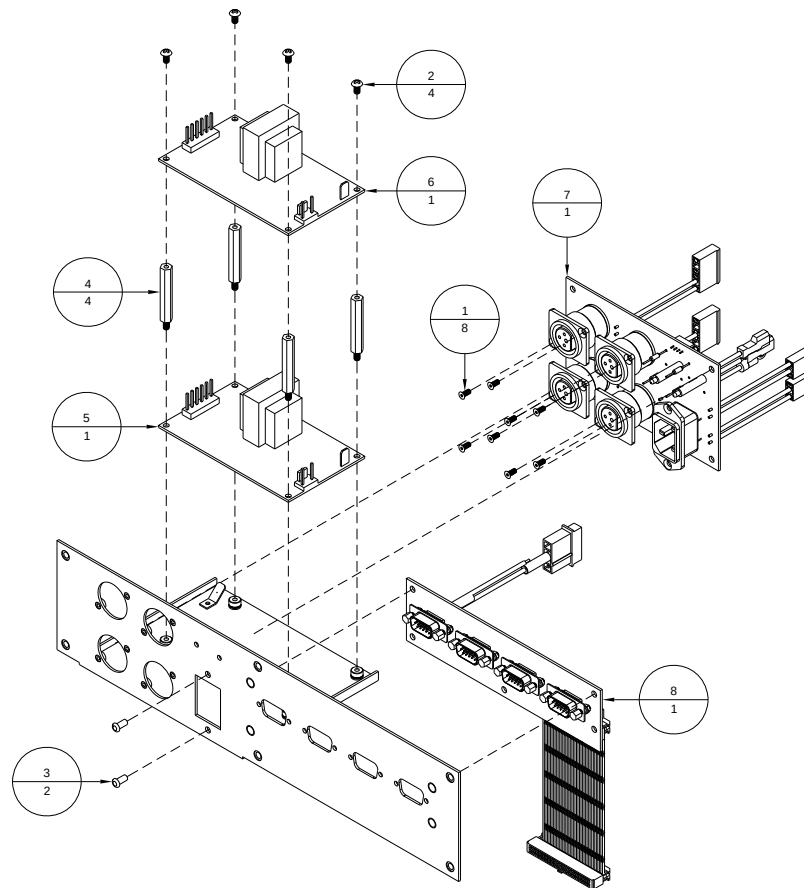


Table A-15: 9104423A – Faceplate assembly, BK-PCM-4H

Item	Part Number	Quantity	Description	Reference
1	401010	4	Screw, FHCS, 4-40 UNC x 1/4"	
2	404050	4	Screw, FHCS, 10-32 UNF x 3/4"	
3	406530	4	Screw, BHCS, 5/16-18 UNC X 1/2"	
4	439015	4	Lockwasher, 5/16 I.D.	
5	9102847	2	Handle, Pull, 5/16-18	
6	9103315	4	Washer, Cup, 10-32 UNF flat head screw	
7	9104119	2	Cable, USB-B to header	
8	9104132	2	Connector, Serial Bus (USB adapter)	
9	9104423	1	Faceplate, PCM-4H	

Figure A-15: 9104423A – Faceplate assembly, BK-PCM-4H

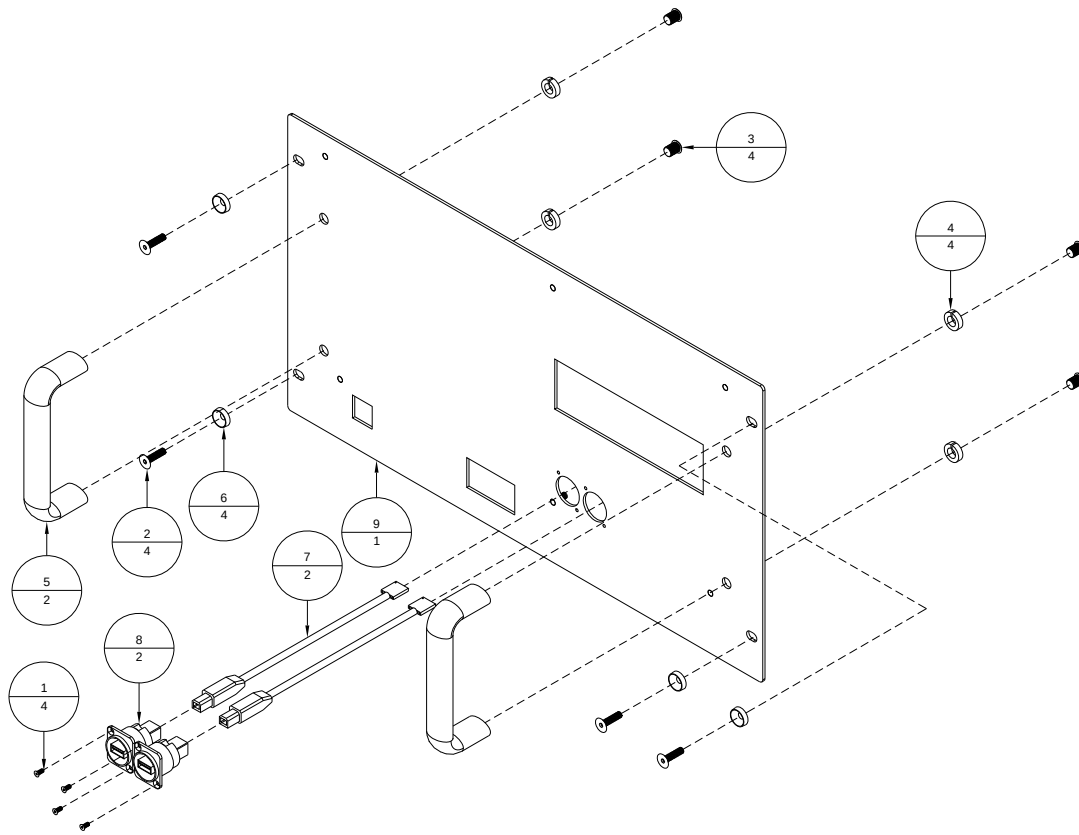


Table A-16: 9104466A – Back Cover Assembly

Item	Part Number	Quantity	Description	Reference
1	609110	2	Connector, Push-On, 16-14 AWG, Blue	
2	9104466	1	Cover, Back	
3	9101640	1	Handle, Panel Snap Style	

Figure A-16: 9104466A – Back Cover Assembly

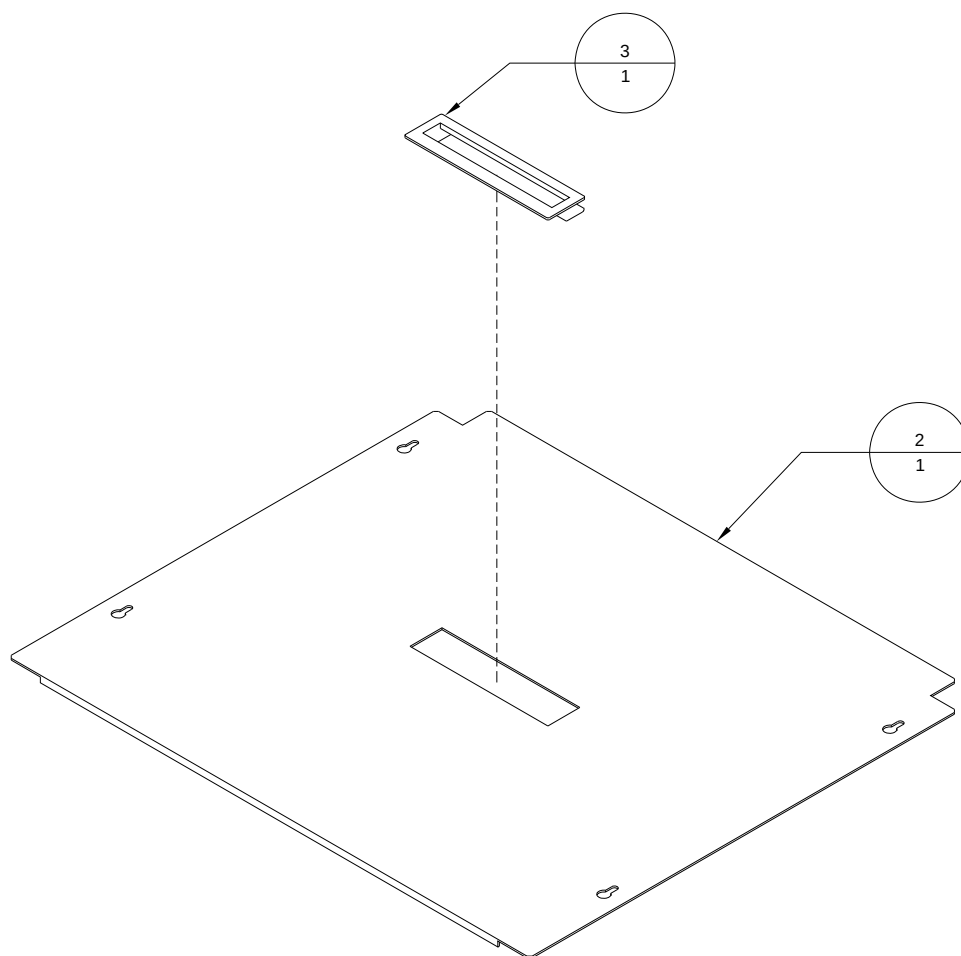


Table A-17: 9104486A – Monitor/Keyboard Stand, BK705

Item	Part Number	Quantity	Description	Reference
1	406530	4	Screw, BHCS, 5/16-18 UNC X 1/2"	
2	609110	2	Connector, Push-on, 16-14 AWG, Blue	
3	9101624	2	End Caps (15 Series)	
4	9102232	2	Frame, Monitor Mount Leg	
5	9102681	1	Wire, #14, Green/Yellow Hookup, 3" Lg.	
6	9103859	2	Rubber Grommet, 1.5" I.D.	
7	9104486	1	Bracket, Monitor Stand Cross Member	
8	9104487A	1	Keyboard Tray Assembly, BK705	Page A-20
9	9104488A	1	Monitor Stand Assembly, BK705	Page A-21

Figure A-17: 9104486A – Monitor/Keyboard Stand, BK705

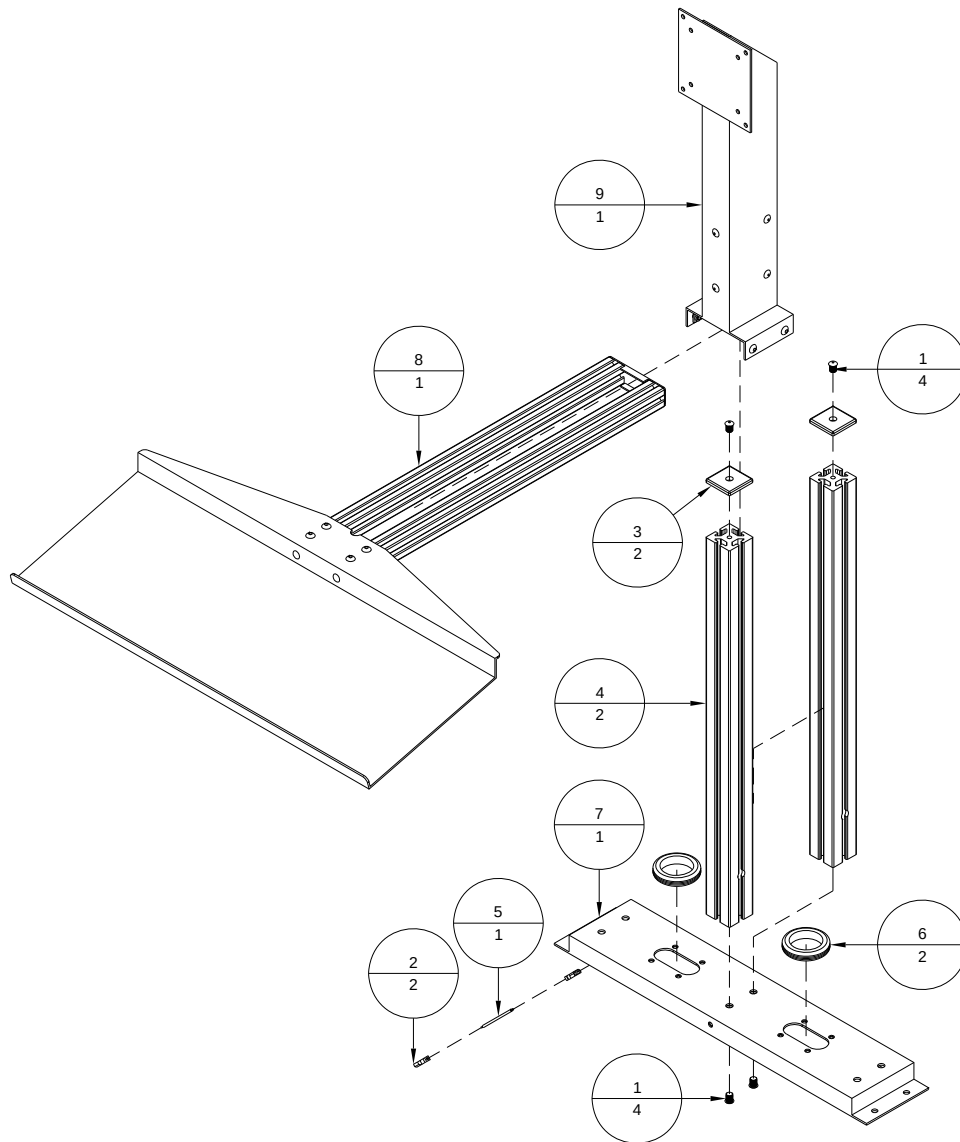


Table A-18: 9104487A – Telescopic Arm/tray Assembly

Item	Part Number	Quantity	Description	Reference
1	405520	4	Screw, BHCS, 1/4-20 UNC, 3/8"	
2	405530	4	Screw, BHCS, 1/4-20 UNC x 1/2"	
3	9101126	2	T-Nut, 1/4-20 UNC, Double	
4	9104431	2	Extrusion Rail, 1 x 1 x 20"	
5	9104487	1	Tray, Keyboard/Mouse	
6	9104489	1	Endcap, Square rail	

Figure A-18: 9104487A – Telescopic Arm/tray Assembly

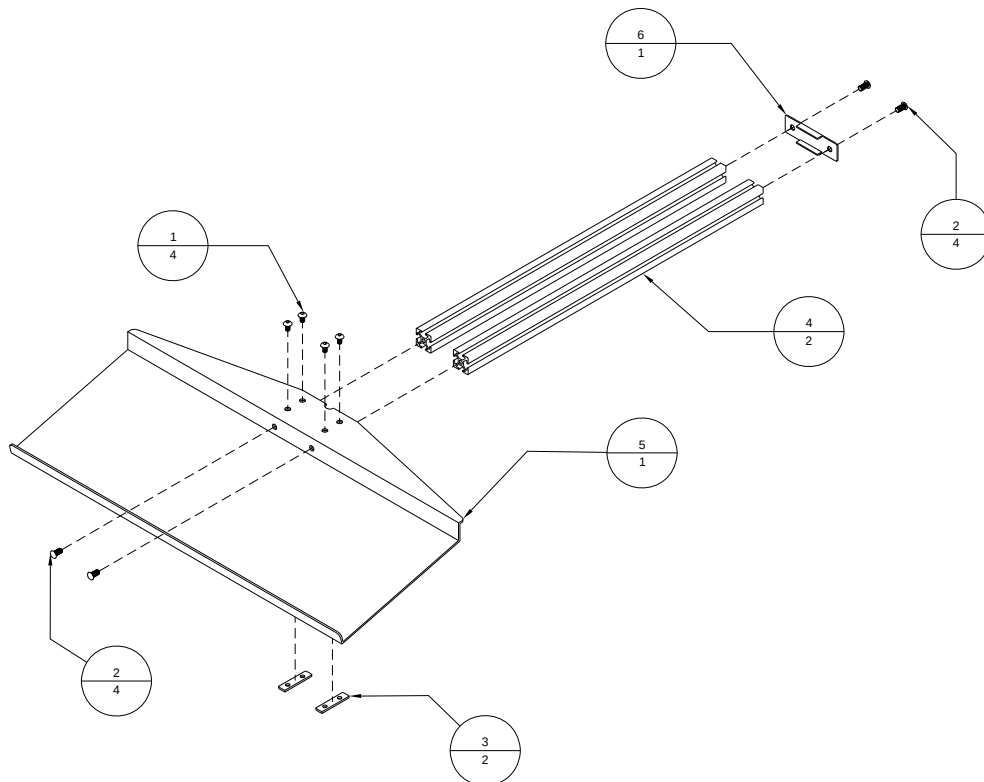


Table A-19: 9104488A – Stand Assembly

Item	Part Number	Quantity	Description	Reference
1	405520	4	Screw, BHCS, 1/4-20 UNC, 3/8"	
2	406530	6	Screw, BHCS, 5/16-18 UNC x 1/2 in	
3	9100361	2	T-Nut, 1/4-20 Triple	
4	9102074	3	T-Nut, Triple, 5/16-18 UNC	
5	9104488	1	Stand, Support	

Figure A-19: 9104488A – Stand Assembly

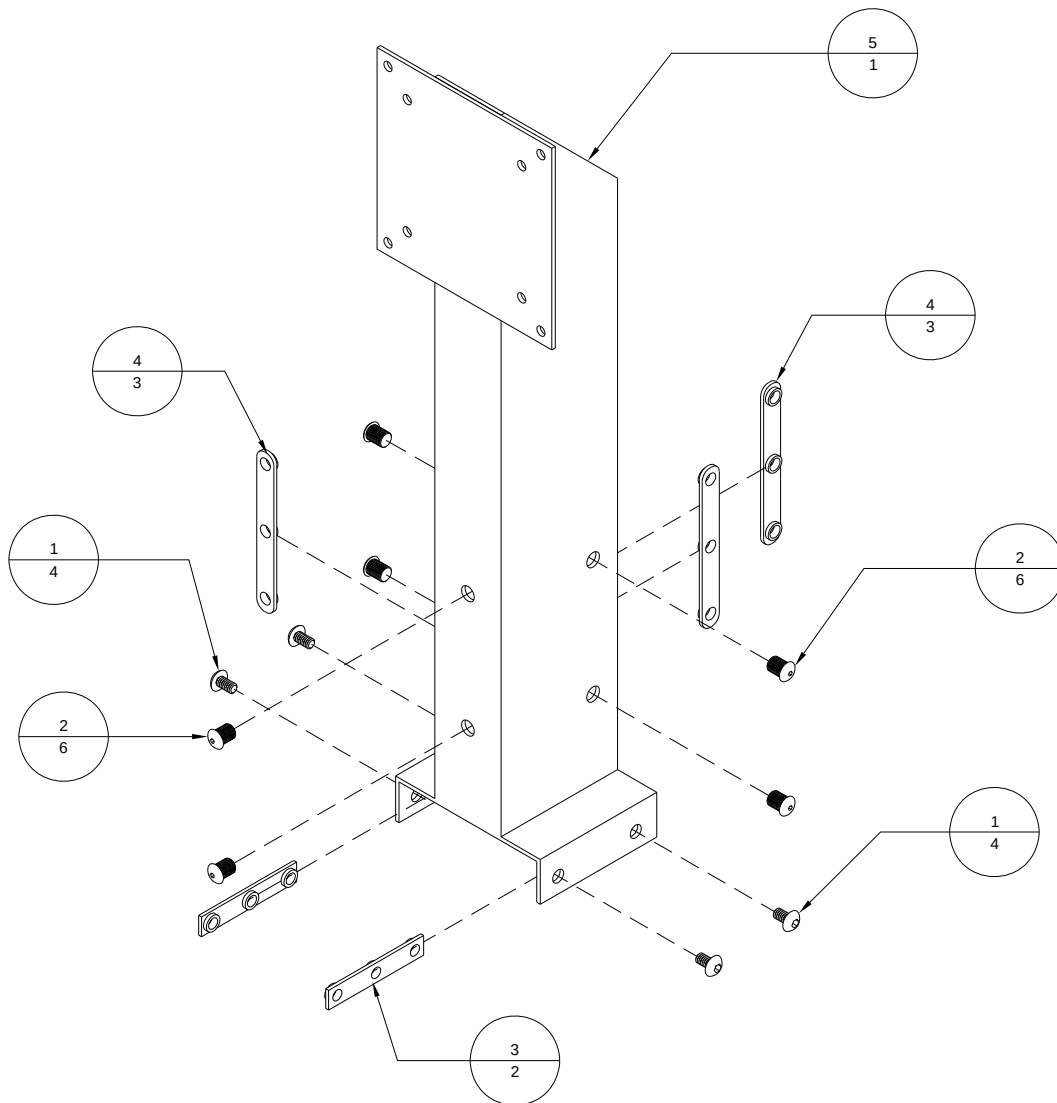


Table A-20: 9104912A – Power Distribution Box Assembly, BK705

Item	Part Number	Quantity	Description	Reference
1	401010	12	Screw, FHCS, 4-40 UNC x ¼"	
2	420008	2	Nut, 10-32 UNF	
3	420010	1	Nut, ¼-20 UNC	
4	439007	1	Lockwasher, ¼", External Tooth	
5	439008	2	Lockwasher, #10, External Tooth	
6	439009	2	Lockwasher, #10	
7	439010	1	Lockwasher, ¼" ID	
8	606000	1	Wire, #16, Black, 6" Lg.	
9	606000	1	Wire, #16, Black, 4" Lg.	
10	606000	4	Wire, #16, Black, 4" Lg.	
11	606000	1	Wire, #16, Black, 4" Lg.	
12	606008	1	Wire, #14, White, 6" Lg.	
13	606009	1	Wire, #16, White, 6" Lg.	
14	606009	1	Wire, #16, White, 4" Lg.	
15	606009	4	Wire, #16, White, 4" Lg.	
16	606009	1	Wire, #16, White, 4" Lg.	
17	609010	1	Wire, #14, Black, 6" Lg.	
18	606037	1	Wire, #22, Black, 4" Lg.	
19	606038	1	Wire, #22, White, 4" Lg.	
20	606359	5	Wire, #16, Green/Yellow, 4" Lg.	
21	609001	1	Shrink Wrap, ¼" ID, 1" Lg.	
22	609110	6	Connector, Push-on, 16-14 AWG, Blue	
23	609111	3	Terminal, Ring, #10, 16-14 AWG, Blue	
24	609113	15	Connector, Push-On, Yellow	
25	609120	1	Terminal, Ring, ¼", 16-14 AWG, Non-Insulated	
26	609530	2	Connector, Push-On, 22-18 AWG, Red	
27	9102247	2	Shrink Wrap, ½" ID	
28	9102601	1	Switch, Rocker, 250VAC/10A, DPST	
29	9102681	2	Wire, #14, Green/Yellow, 6" Lg.	
30	9103167	5	Receptacle, Female, 120 VAC, 15A, IEC	
31	9103308	2	Contact, Female, 20-14 AWG, Mate-n-lok	
32	9103827	2	Fuse Holder, Panel Mount, Shock Proof	
33	9103894	1	Plug, 2-Circuit, Universal Mate-n-lok	
34	9104632	1	Filter, RFI, EEJ Series	
35	9104912	1	Bracket, Power Distribution	
36	9104926	1	Light, Pilot, Green	

Figure A-20: 9104912A - Power Distribution Box Assembly, BK705

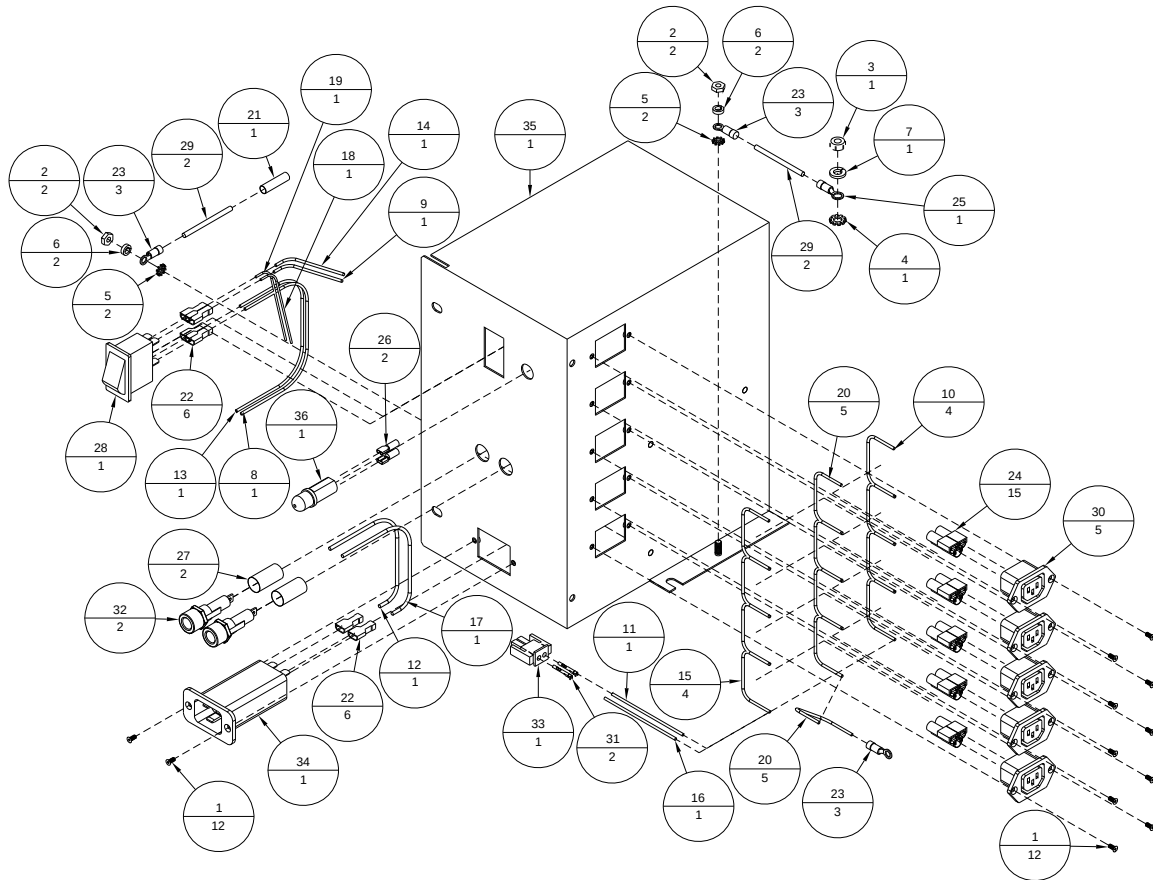
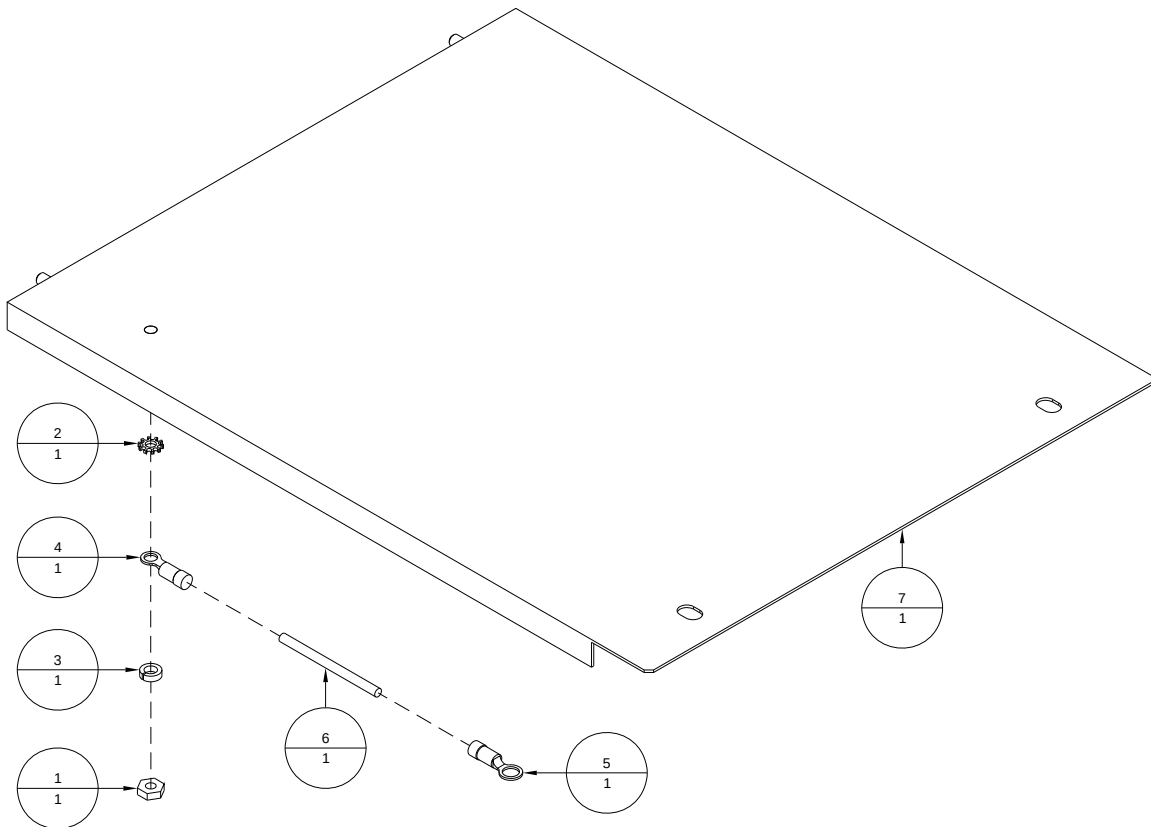


Table A-21: 9104913A – Cover Assembly, BK705

Item	Part Number	Quantity	Description	Reference
1	420008	1	Nut, 10-32 UNF	
2	439008	1	Lockwasher, #10, External Tooth	
3	439009	1	Lockwasher, #10	
4	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
5	609120	1	Terminal, Ring, ¼", 16-14 AWG, Non-Insulated	
6	9102681	1	Wire, #14, Green/Yellow, 20" Lg.	
7	9104913	1	Cover, Ezejet Rear	

Figure A-21: 9104913A – Cover Assembly, BK705



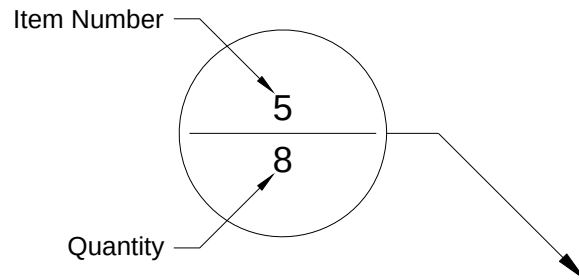
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Balloon Annotation and Parts Listing



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: BK705AU – Controller, BK705 Atlas Monet

Item	Part Number	Quantity	Description	Reference
1	404050	2	Screw, FHCS, 10-32 UNF x 3/4"	
2	404520	4	Screw, BHCS, 10-32 UNF x 3/8"	
3	405520	1	Screw, BHCS, 1/4-20 UNC x 3/8"	
4	420008	8	Nut, 10-32 UNF	
5	439009	8	Lockwasher, No. 10	
6	440008	2	Washer, #10	
7	9101627	1	Buskro Serial Number Label	
8	9103285A	1	Dongle Assembly	
9	9103315	2	Washer, Cup, 10-32 UNF Flat Head	
10	9104907	1	Bracket, Ink Bottle, BK705	
11	9104909	1	Spill Tray	
12	9104913A	1	Cover Assembly, BK705	
13	BK705-ST	1	Controller Stand, BK705	Appendix A
14	BK-IWM-2A	1	Inkwell Module, 2-Channel Monet	Page B-4
15	BK-MON-LCD17	1	Monitor, 17" LCD	
16	BK-PCM-8	1	Module, Computer Assembly	Appendix A
17	BK-PSM-4A	1	Module, Power Supply, Atlas/Aurora	Appendix C

Figure B-1: BK705AU – Controller, BK705 Atlas Monet

NOTE:

BK-PSM-4A IS SHOWN FOR REFERENCE. IT IS INCLUDED FOR THE NORTH AMERICAN CASE (115VAC). FOR THE REST OF THE WORLD (200/230VAC), BK-PSM-4A-WD IS USED.

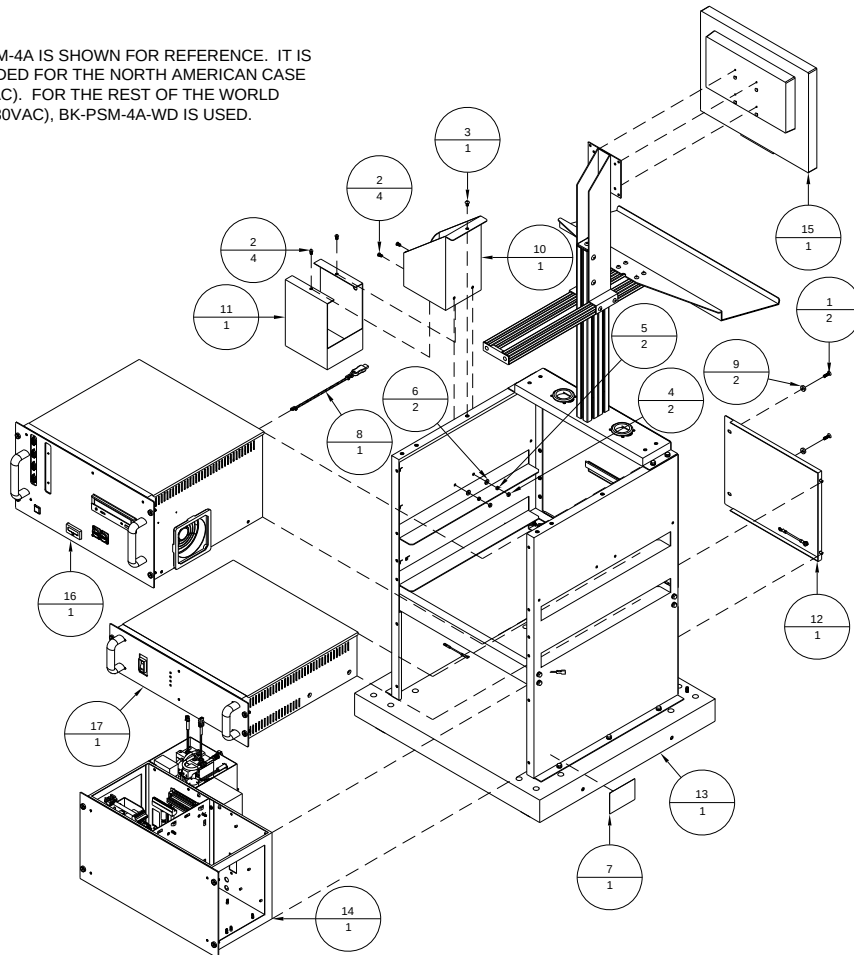


Table B-2: *BK705CU – Controller, BK705 Atlas Cezanne*

Item	Part Number	Quantity	Description	Reference
1	404050	2	Screw, FHCS, 10-32 UNF x 3/4"	
2	404520	4	Screw, BHCS, 10-32 UNF x 3/8"	
3	405520	1	Screw, BHCS, 1/4-20 UNC x 3/8"	
4	420008	8	Nut, 10-32 UNF	
5	439009	8	Lockwasher, No. 10	
6	440008	2	Washer, #10	
7	9101627	1	Buskro Serial Number Label	
8	9103285A	1	Dongle Assembly	
9	9103315	2	Washer, Cup, 10-32 UNF Flat Head	
10	9104907	1	Bracket, Ink Bottle, BK705	
11	9104909	1	Spill Tray	
12	9104913A	1	Cover Assembly, BK705	
13	BK705-ST	1	Controller Stand, BK705	Appendix A
14	BK-IWM-2C	1	Inkwell Module, 2-Channel Cezanne	Page B-5
15	BK-MON-LCD17	1	Monitor, 17" LCD	
16	BK-PCM-8	1	Module, Computer Assembly	Appendix A
17	BK-PSM-4A	1	Module, Power Supply, Atlas/Aurora	Appendix C

Figure B-2: *BK705CU – Controller, BK705 Atlas Cezanne*NOTE:

BK-PSM-4A IS SHOWN FOR REFERENCE. IT IS INCLUDED FOR THE NORTH AMERICAN CASE (115VAC). FOR THE REST OF THE WORLD (200/230VAC), BK-PSM-4A-WD IS USED.

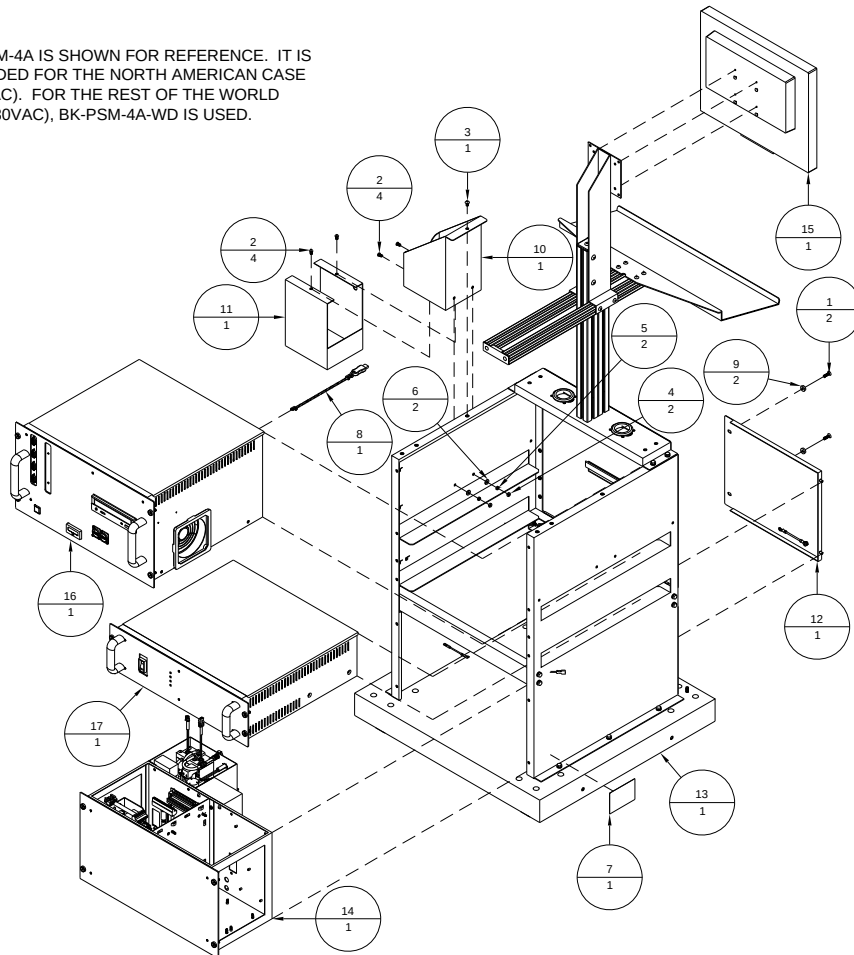


Table B-3: *BK705UU – Controller, BK705 Aurora*

Item	Part Number	Quantity	Description	Reference
1	404050	2	Screw, FHCS, 10-32 UNF x 3/4"	
2	404520	4	Screw, BHCS, 10-32 UNF x 3/8"	
3	405520	1	Screw, BHCS, 1/4-20 UNC x 3/8"	
4	420008	8	Nut, 10-32 UNF	
5	439009	8	Lockwasher, No. 10	
6	440008	2	Washer, #10	
7	9101627	1	Buskro Serial Number Label	
8	9103285A	1	Dongle Assembly	
9	9103315	2	Washer, Cup, 10-32 UNF Flat Head	
10	9104907	1	Bracket, Ink Bottle, BK705	
11	9104909	1	Spill Tray	
12	9104913A	1	Cover Assembly, BK705	
13	BK705-ST	1	Controller Stand, BK705	Appendix A
14	BK-IWM-2U	1	Inkwell Module, 2-Channel Aurora	Page B-6
15	BK-MON-LCD17	1	Monitor, 17" LCD	
16	BK-PCM-8	1	Module, Computer Assembly	Appendix A
17	BK-PSM-4A	1	Module, Power Supply, Atlas/Aurora	Appendix C

Figure B-3: *BK705UU – Controller, BK705 Atlas Aurora*NOTE:

BK-PSM-4A IS SHOWN FOR REFERENCE. IT IS INCLUDED FOR THE NORTH AMERICAN CASE (115VAC). FOR THE REST OF THE WORLD (200/230VAC), BK-PSM-4A-WD IS USED.

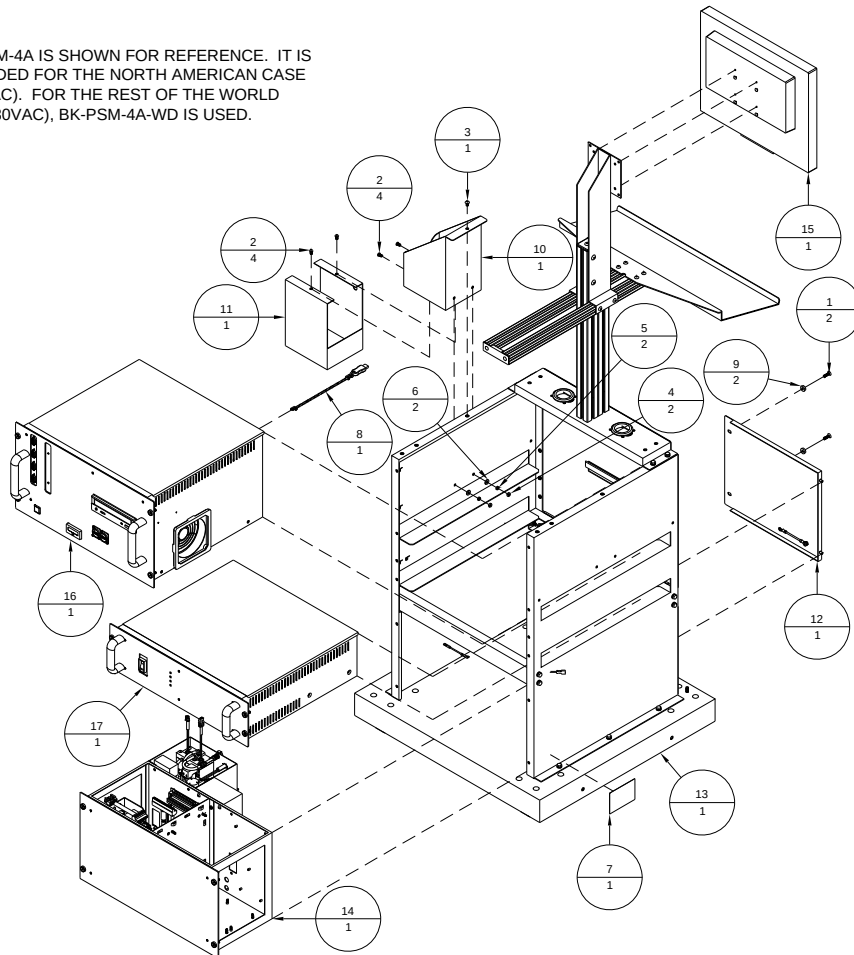


Table B-4: *BK-IWM-2A – Inkwell Module, 2-Channel Monet*

Item	Part Number	Quantity	Description	Reference
1	9102132A	1	Bottle Coupling Assembly, Monet	Page B-12
2	9103767A	1	Inkwell Module, 2-Channel Atlas (Solvent)	Page B-23

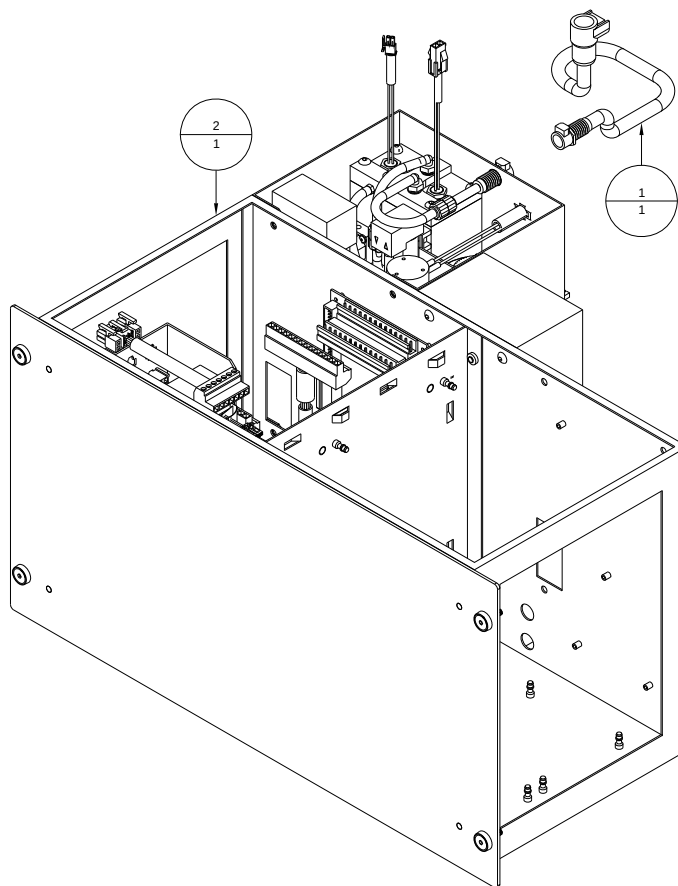
Figure B-4: *BK-IWM-2A – Inkwell Module, 2-Channel Monet*

Table B-5: *BK-IWM-2C – Inkwell Module, 2-Channel Cezanne*

Item	Part Number	Quantity	Description	Reference
1	9103767A	1	Inkwell Module, 2-Channel Atlas (Solvent)	Page B-23
2	9103910A	1	Bottle Coupling Assembly, Cezanne	Page B-28

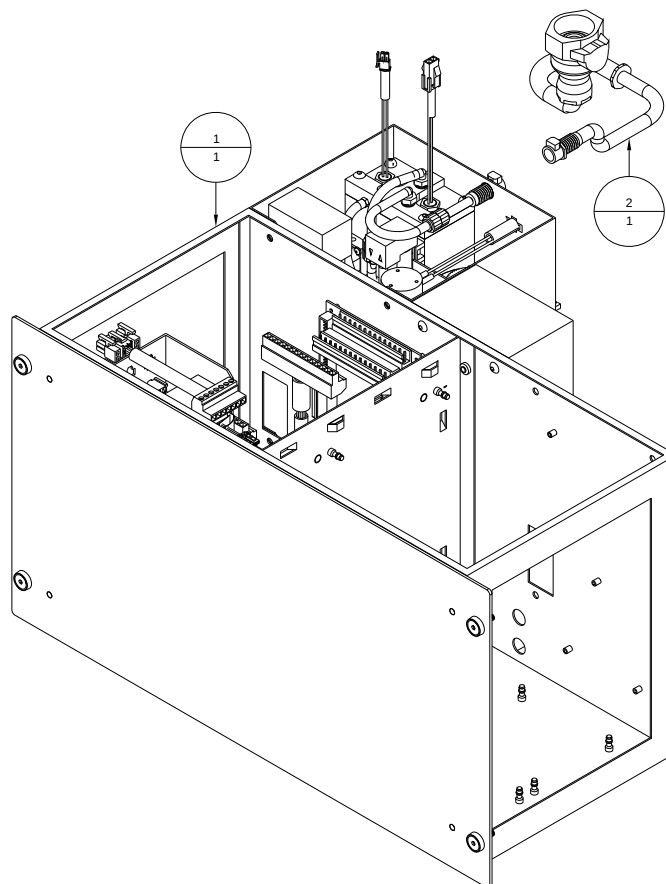
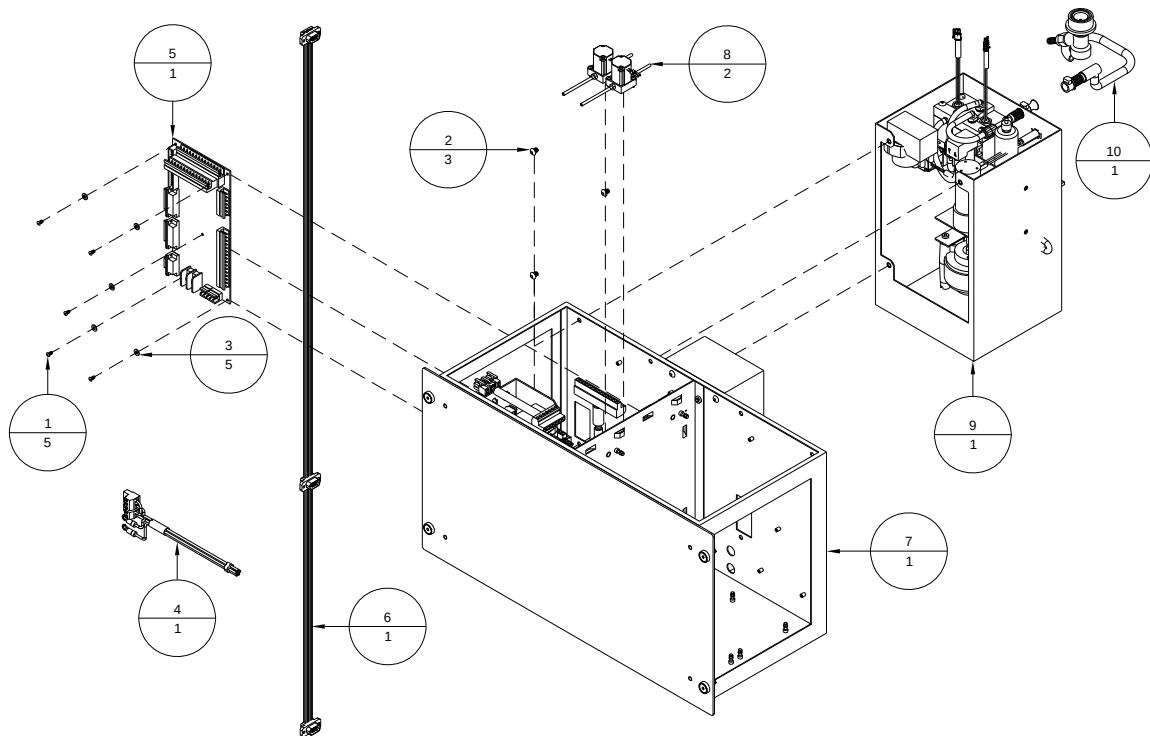
Figure B-5: *BK-IWM-2C – Inkwell Module, 2-Channel Cezanne*

Table B-6: *BK-IWM-2U – Inkwell Module, 2-Channel Aurora*

Item	Part Number	Quantity	Description	Reference
1	401310	5	Screw, PHMS, 4-40 UNC x 1/4"	
2	404510	3	Screw, BHCS, 10-32 UN x 1/4"	
3	440530	5	Washer, #6, Nylon	
4	606052A	1	Cable, Atlas Power Support	
5	9100969 or 9106100	1	Board, Atlas System Support Board, QHIB System Support	
6	9103484A	1	Cable, System Communication	
7	9103680A	1	Universal Enclosure Assembly	Page B-18
8	9103683A	2	Solenoid Valve Assembly	Page B-19
9	9103776A	1	Ink Delivery Module, BK705 Aurora	Page B-24
10	9104497A	1	Bottle Coupling Assembly, Aurora	Page B-29

Figure B-6: *BK-IWM-2U – Inkwell Module, 2-Channel Aurora*

Note: Printheads that utilize the QHIB (Quad Head Interface Board) like the 2500 and 5100 series printheads require the QHIB SSB (P/N 9106100). All other Atlas and Aurora printheads use the Atlas SSB (P/N 9100969).

Table B-7: *BK-PVM-700 – Pressure Regulator, 2-Channel*

Item	Part Number	Quantity	Description	Reference
1	402310	5	Screw, PHMS, 6-32 UNC x 1/4"	
2	403310	3	Screw, PHMS, 8-32 UNC x 1/4"	
3	439005	3	Lockwasher, No. 8	
4	439006	5	Lockwasher, No. 6	
5	440006	2	Washer, No. 8, 1/2" OD x 0.05" Thick	
6	9100148A	2	Solenoid Valve Assembly, 3-Way	
7	9100472	1	Tubing, Silicone, 1/4" OD x 1/8" ID	
8	9100921	1	Pressure Pump	
9	9100971	1	Gripper Clip	
10	9101290	4	Fitting, Tee, 1/8" ID	
11	9102618A	1	Cable, Triple 12VDC	
12	9102715	2	Gripper Clip, 3/8" – 5/8"	
13	9102960A	2	Flow Control, Meniscus Vacuum	Page B-14
14	9103020A	1	Flow Control Assembly, Purge Pressure	Page B-15
15	9103198	2	Screw, SHCS, 8-32 UNC x 1-3/4"	
16	9103473A	2	Meniscus Pump Assembly	
17	9103634	1	Bracket, Mounting	
18	9103635	1	Plate, Mounting	

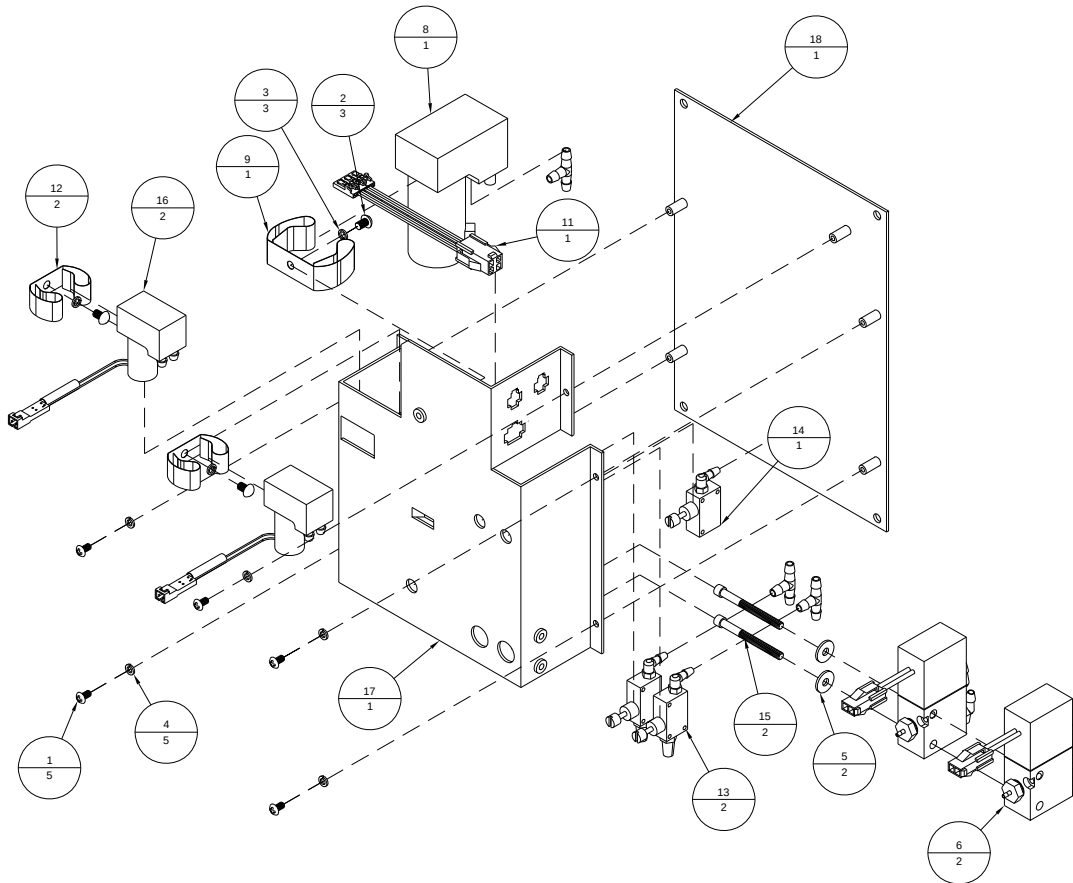
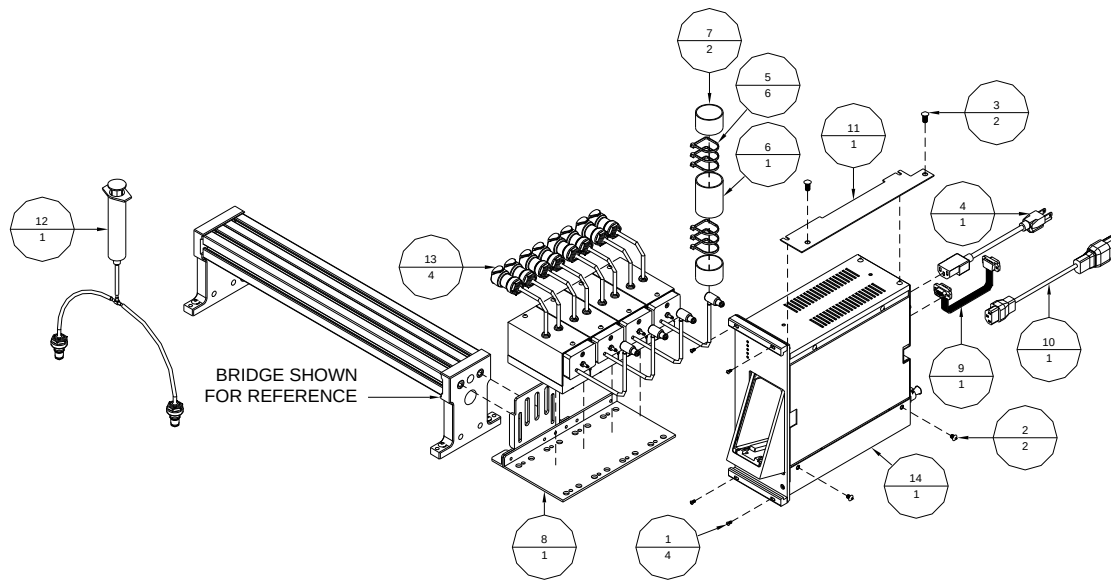
Figure B-7: *BK-PVM-700 – Pressure Regulator, 2-Channel*

Table B-8: 705-IDM4H-15NA - Apollo IDM, 4" BK705, 15', N. America

Item	Part Number	Quantity	Description	Reference
1	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
2	405530	2	Screw, BHCS, 1/4-20 UNC x 1/2"	
3	606322	1	Cord, Set, 10A/125VAC, 90", N.A., IEC	
4	615140	6	Lashing Tie, Small	
5	9101776	1	Sleeving, Braided, Expandable, 166"	
6	9102603	2	Shrink Wrap, 1 1/2" OD, 1/2" ID, 2"	
7	9103243A	1	HP Regulator Mount Assembly	
8	9103565A	1	Cable, Ribbon, DB9 Male To Female, 50"	
9	9104511	1	Cord, Set, 10A/250V, 2m, IEC-IEC	
10	9104533	1	Bracket, BK705 IDM Mount	
11	BK-BULKPRIME	1	Syringe Assembly, Apollo Bulk Ink	
12	BK-BULKREG-15	4	Regulator Module, Apollo, 15'	
13	BK-IDM-4H	1	Module, Apollo Ink Delivery, 4-Channel	

Figure B-8: 705-IDM4H-15NA – Apollo IDM, 4" BK705, 15', N. America



Note: Power cord 9104511 is used with the optional stand (BK705-ST). Otherwise, use 606322.

Figure B-9: 705-IDM4H-15WD – Apollo IDM, 4" BK705, 15', World

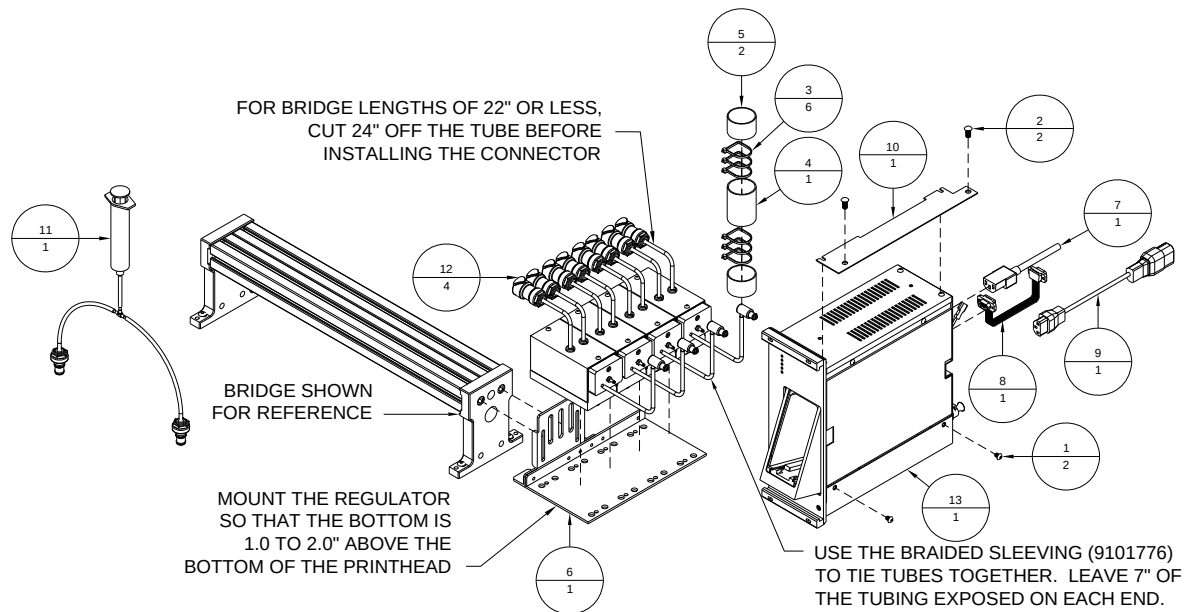


Table B-9: 705-IDM4H-15WD – Apollo IDM, 4" BK705, 15', World

Item	Part Number	Quantity	Description	Reference
1	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
2	405530	2	Screw, BHCS, 1/4-20 UNC x 1/2"	
3	615140	6	Lashing Tie, Small	
4	9101776	1	Sleeving, Braided, Expandable, 166"	
5	9102603	2	Shrink Wrap, 1 1/2" OD, 1/2" ID, 2"	
6	9103243A	1	HP Regulator Mount Assembly	
7	9103256	1	Cord, 10A/250VAC, 3m, Harmonized, IEC	
8	9103565A	1	Cable, Ribbon, DB9 Male To Female, 50"	
9	9104511	1	Cord, Set, 10A/250V, 2m, IEC-IEC	
10	9104533	1	Bracket, BK705 IDM Mount	
11	BK-BULKPRIME	1	Syringe Assembly, Apollo Bulk Ink	
12	BK-BULKREG-15	4	Regulator Module, Apollo, 15'	
13	BK-IDM-4H	1	Module, Apollo Ink Delivery, 4-Channel	

Note: Power cord 9104511 is used with the optional stand (BK705-ST). Otherwise, use 9103256.

Table B-10: 9101767A – Pumping Station Assembly, Atlas (Monet & Cezanne)

Item	Part Number	Quantity	Description	Reference
1	401310	3	Screw, PHMS, 4-40 UNC x 1/4"	
2	404510	1	Screw, BHCS, 10-32 UNF x 1/4"	
3	404550	1	Screw, BHCS, 10-32 UNF x 3/4"	
4	615140	8	Lashing Tie, Small	
5	630004A	1	Cycle Proximity Switch Assembly	
6	9100149A	1	Filter Holder Assembly	
7	9100876	1	Coupling, 0.5" DIA	
8	9100931	1	Peristaltic Pump Head	
9	9100936A	1	Gearmotor Assembly	
10	9100971	1	Gripper Clip	
11	9101290	2	Fitting, Tee, 1/8" ID	
12	9101700	1	Check Valve, 1/8" ID	
13	9101767	1	Bracket, Pumping Station	
14	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 9" Lg.	
15	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 4" Lg.	
16	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 1.5" Lg.	
17	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 1.25" Lg.	
18	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 1.25" Lg.	

Figure B-10: 9101767A – Pumping Station Assembly, Atlas (Monet & Cezanne)

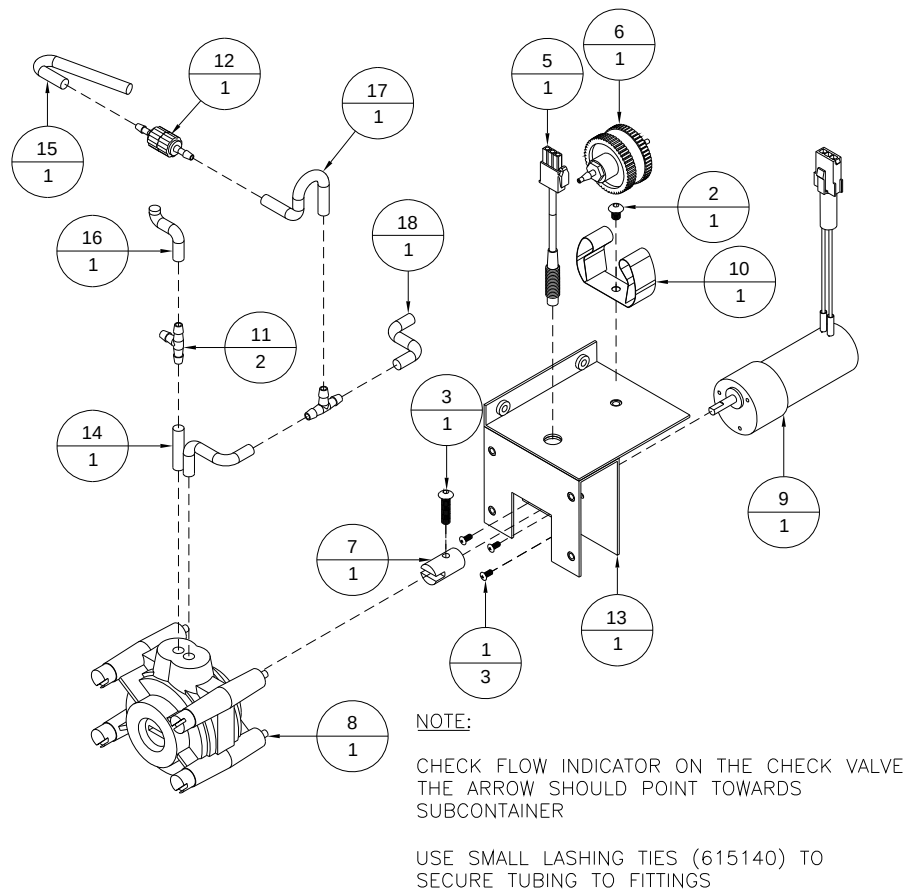


Table B-11: 9101780A – Pumping Station Assembly, Aurora

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	615140	8	Lashing Tie, Small	
4	630004A	1	Cycle Proximity Switch Assembly	
5	9100876	1	Coupling, 0.5" DIA	
6	9100931	1	Peristaltic Pump Head	
7	9100936A	1	Gearmotor Assembly	
8	9101290	2	Fitting, Tee, 1/8" ID	
9	9101700	1	Check Valve, 1/8" ID	
10	9101767	1	Bracket, Pumping Station	
11	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 9" Lg.	
12	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 4" Lg.	
13	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 1.5" Lg.	
14	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 1.25" Lg.	
15	9102116	1	Tubing, Pharmed, 1/4" x 1/8", 1.25" Lg.	
16	9103390A	1	Filter, Assembly, 10 µm	Page B-15

Figure B-11: 9101780A – Pumping Station Assembly, Aurora

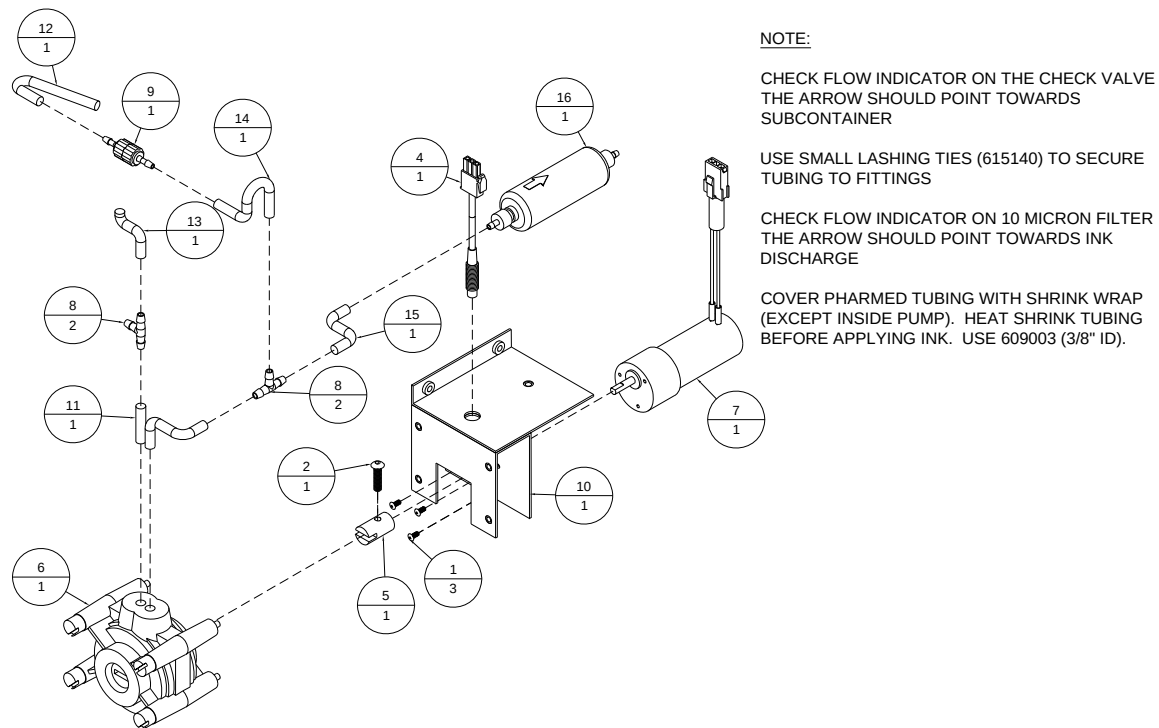


Table B-12: 9102132A – Bottle Coupling Assembly, Monet

Item	Part Number	Quantity	Description	Reference
1	9100967	1	Coupling Body, Puncture Seal, 3/8"	
2	9102132	1	Tubing, Pharmed, 3/8 x 1/4", 13" Lg.	
3	9103910	1	Coupling Body, 1/4" ID, Shutoff	

Figure B-12: 9102132A – Bottle Coupling Assembly, Monet

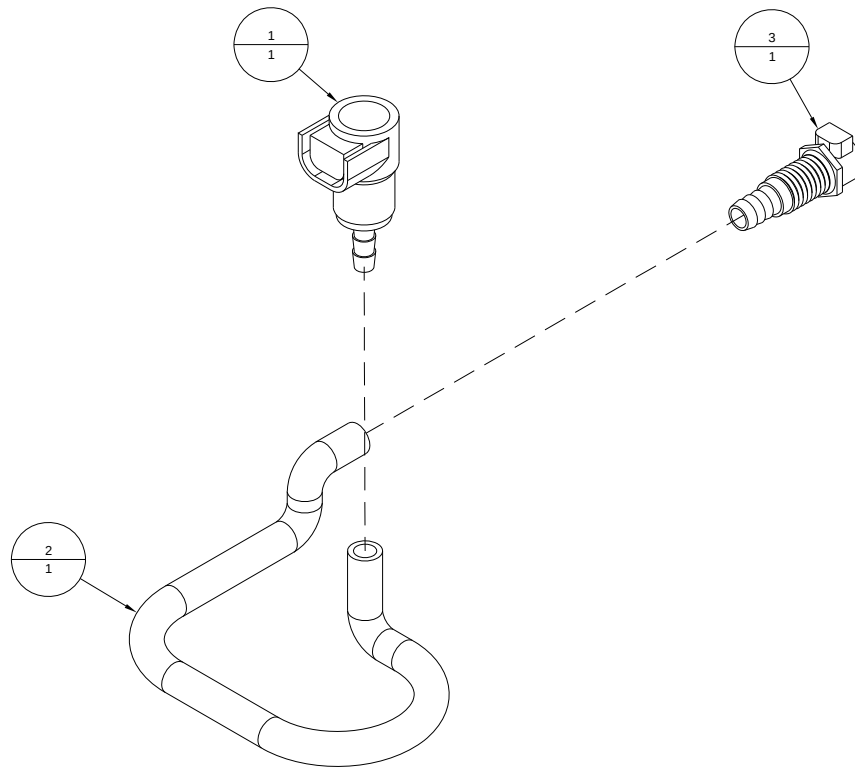


Table B-13: 9102147A – Ink Line Assembly

Item	Part Number	Quantity	Description	Reference
1	9101691	1	Coupling Insert, 1/8" ID, Inline, Hose Barb	
2	9102116	1	Tubing, Pharmed, 1/4 x 1/8", 24" Lg.	
3	9102148	1	Coupling Insert, Elbow, 1/8" ID	

Figure B-13: 9102147A – Ink Line Assembly

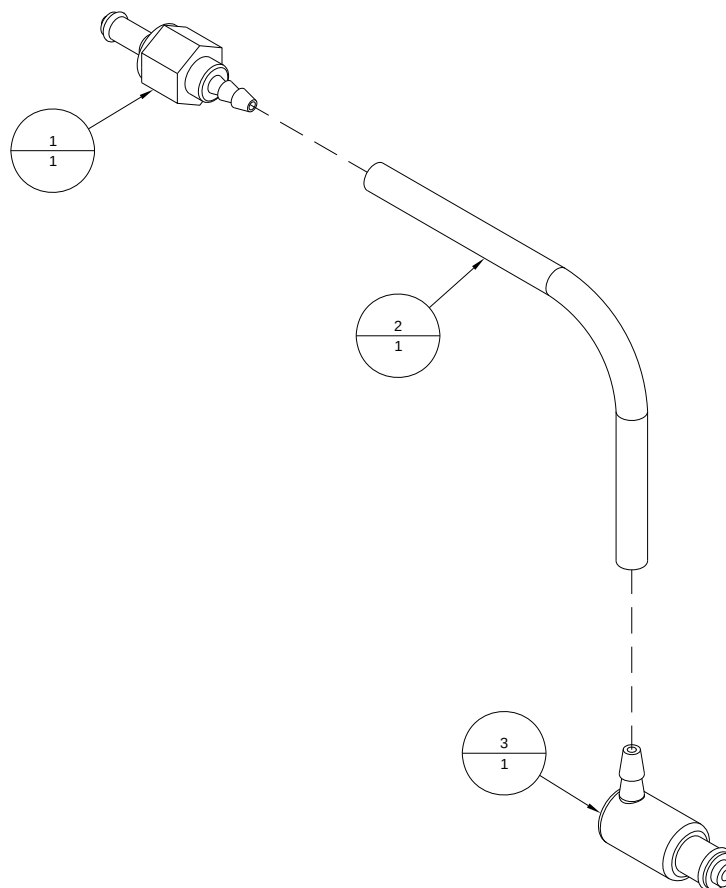


Table B-14: 9102960A – Flow Control, Meniscus Vacuum

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" ID	

Figure B-14: 9102960A – Flow Control, Meniscus Vacuum

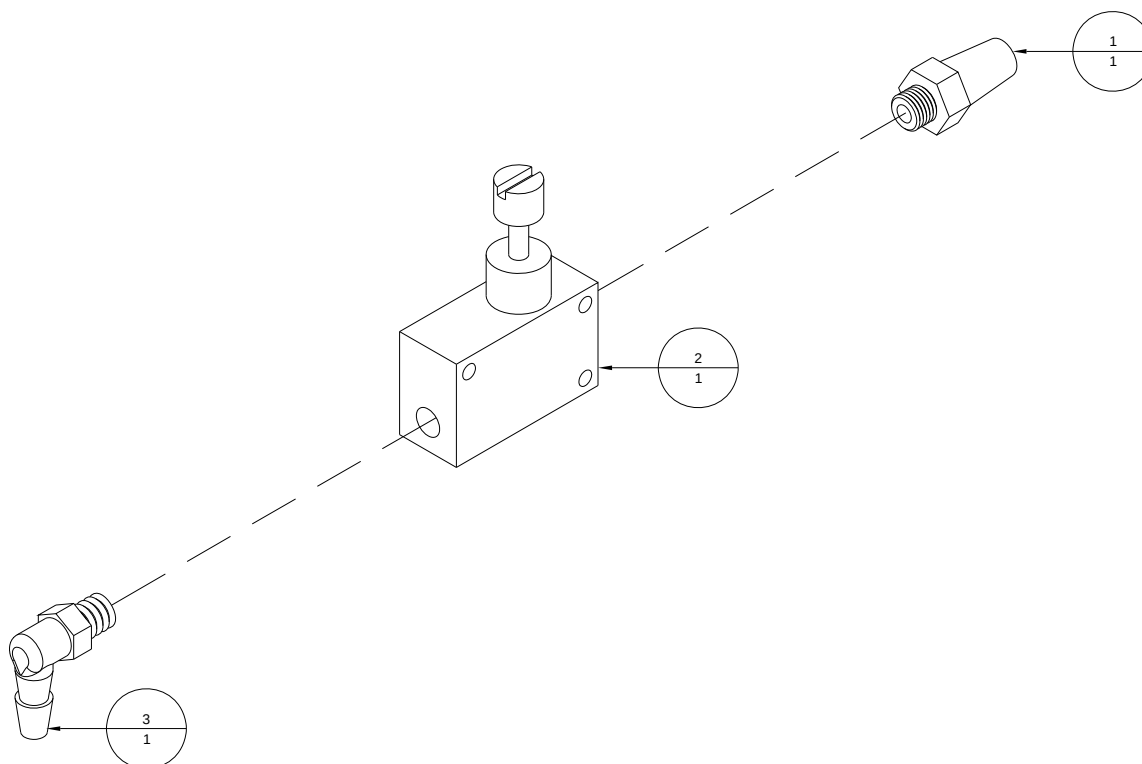


Table B-15: 9103020A – Flow Control, Purge Pressure

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" ID	

Figure B-15: 9103020A – Flow Control, Purge Pressure

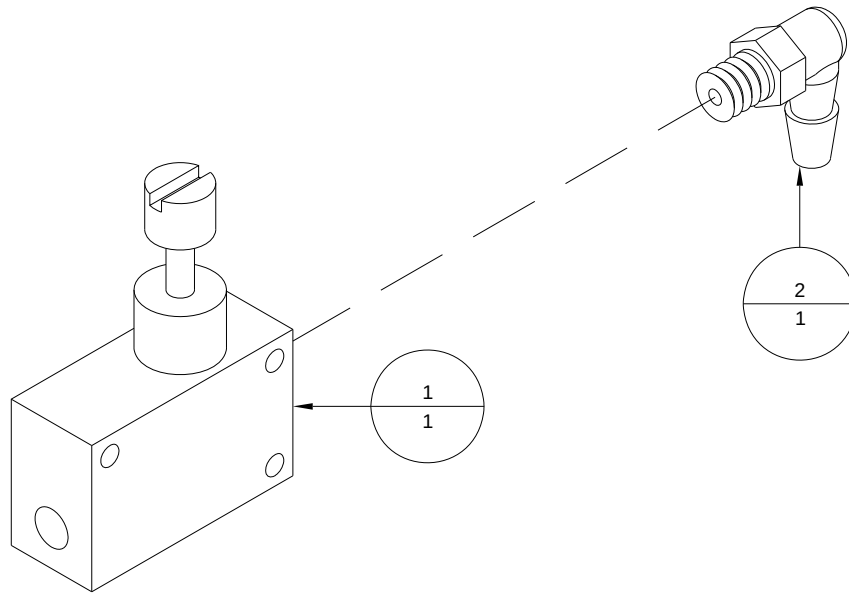


Table B-16: 9103390A – Filter, Assembly, 10 μm

Item	Part Number	Quantity	Description	Reference
1	9103257	2	Luer, Male, 1/8" ID Tubing, Black	
2	9103390	1	Filter, 10 μm , UV	

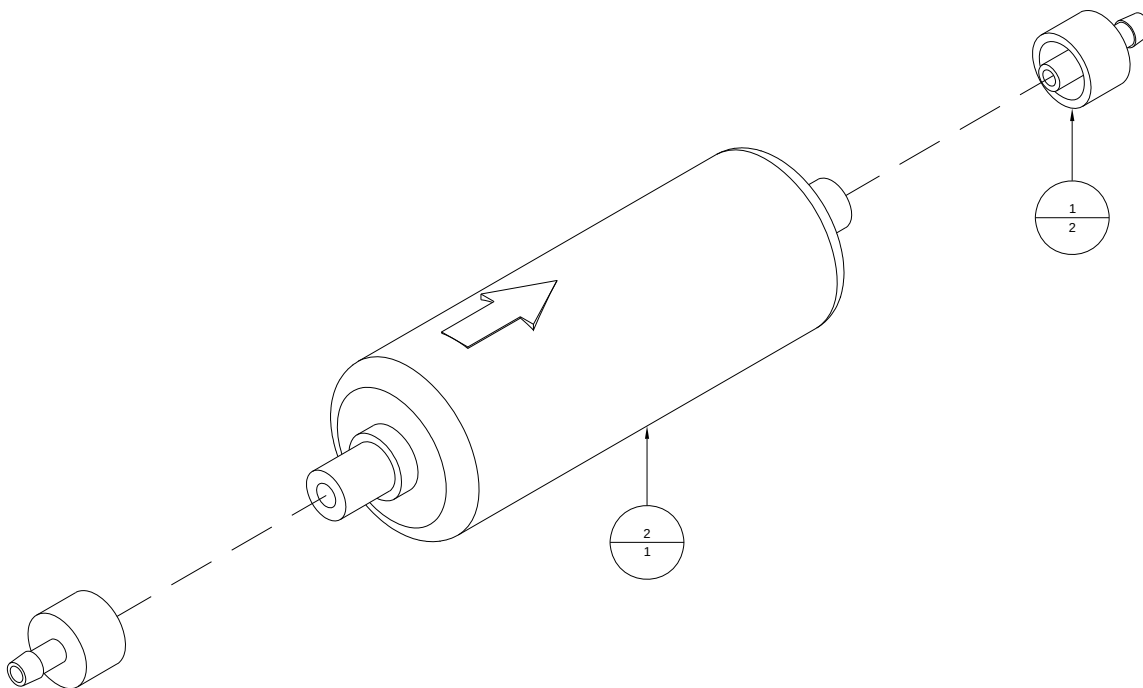
Figure B-16: 9103390A – Filter, Assembly, 10 μm 

Table B-17: 9103677A – Cover, Blank 6U

Item	Part Number	Quantity	Description	Reference
1	404050	4	Screw, FHCS, 10-32 UNF x ¾"	
2	9103315	4	Washer, Cup, 10-32 UNF Flat Head	
3	9103677	1	Cover, Blank 6U	

Figure B-17: 9103677A – Cover, Blank 6U

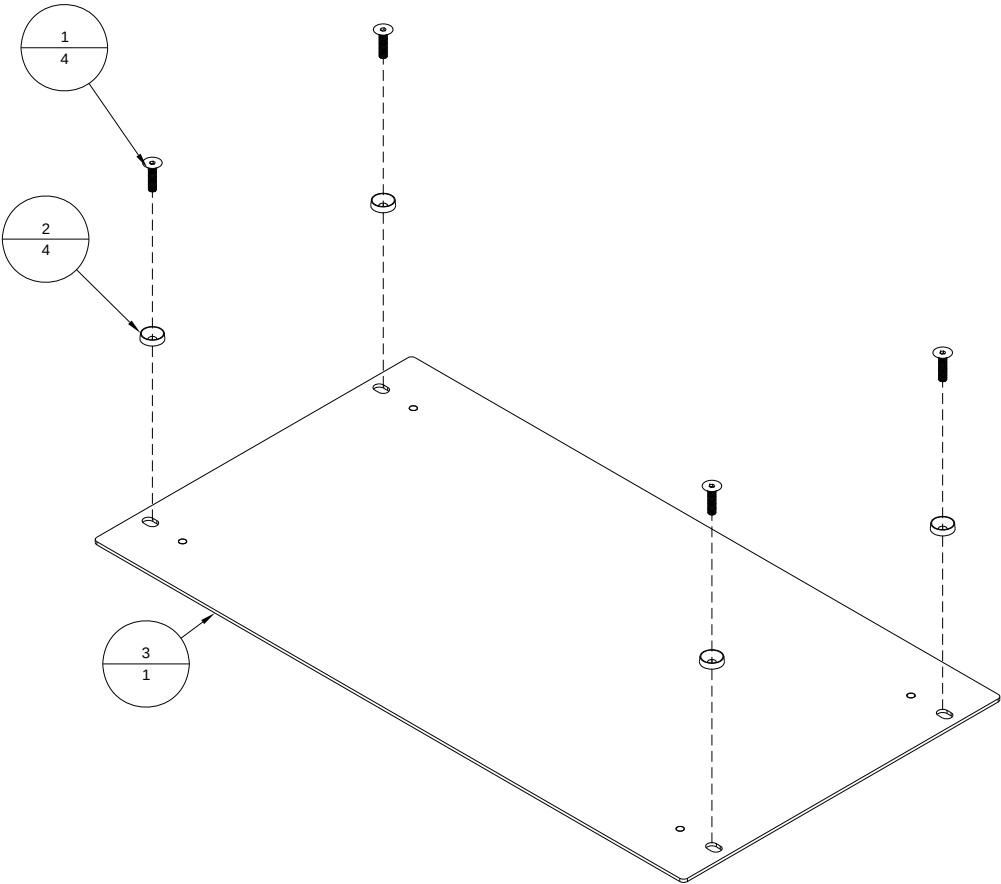


Table B-18: 9103680A – Universal Enclosure Assembly

Item	Part Number	Quantity	Description	Reference
1	404510	5	Screw, BHCS, 10-32 UNF x ¼"	
2	420008	8	Nut, 10-32 UNF	
3	439008	1	Lockwasher, No. 10, External Tooth	
4	439009	11	Lockwasher, No. 10	
5	606311A	1	Cable, System Support Interface	
6	609111	2	Terminal, Ring, #10, 16-14 AWG, Blue	
7	9100197A	2	Cable, HDC, 21" Lg.	
8	9100206A	1	Cable, Pressure Regulator	
9	9100994	2	Board, Head Drive Circuit (HDC)	
10	9102681	1	Wire, #14, Green/Yellow, 6 " Lg.	
11	9103677A	1	Cover, Blank 6U	Page B-17
12	9103680	1	Chamber, Electronics Module	
13	9103762	1	Bracket, Chamber Mediate	
14	9103764A	1	Power Distribution Box Assembly	Page B-20
15	9103810	4	Knurled Brass Thumb Nut, 10-32 UNF	
16	9104380	1	Board, System Support CPU (SSB II)	
17	BK-PVM-700	1	Pressure Regulator, 2 Channel	Page B-7

Figure B-18: 9103680A – Universal Enclosure Assembly

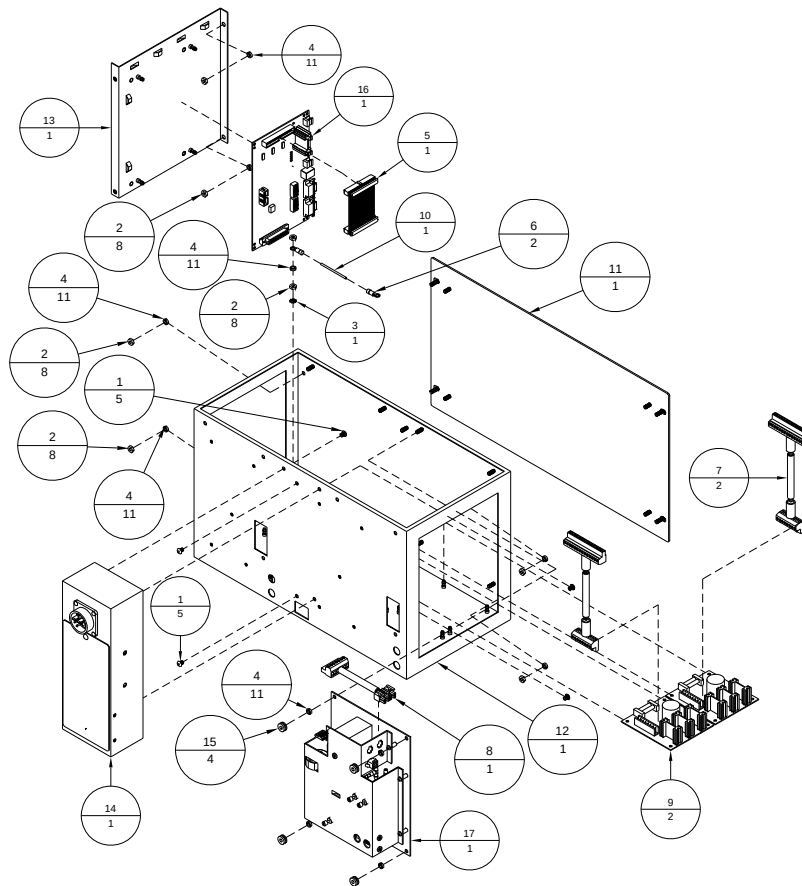


Table B-19: 9103683A – Solenoid Valve Assembly

Item	Part Number	Quantity	Description	Reference
1	401330	2	Screw, PHMS, 4-40 UNC x 1/2"	
2	439004	2	Lockwasher, No. 4	
3	9100170	1	Tubing, Viton, 1/8 x 1/16", 12" Lg.	
4	9100170	1	Tubing, Viton, 1/8 x 1/16", 23" Lg.	
5	9101583	2	Fitting, Tube 1/16" ID	
6	9103540	2	Ferrule, #24 AWG, Light Blue	
7	9103683	1	Solenoid Valve, 2-Way, 12 VDC	

Figure B-19: 9103683A – Solenoid Valve Assembly

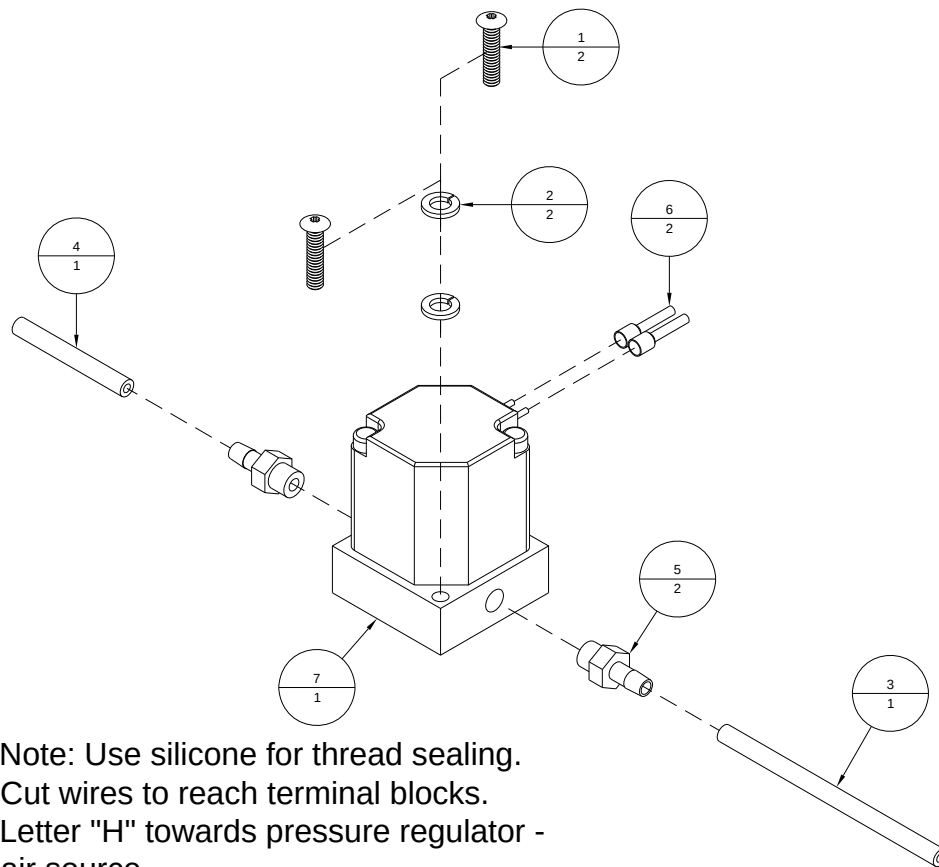


Table B-20: 9103764A – Power Distribution Box Assembly

Item	Part Number	Quantity	Description	Reference
1	402320	4	Screw, PHMS, 6-32 UNC x 3/8"	
2	404320	1	Screw, PHMS, 10-32 UNF x 3/8"	
3	420008	4	Nut, 10-32 UNF	
4	439008	1	Lockwasher, No. 10, External Tooth	
5	439009	3	Lockwasher, No. 10	
6	440008	2	Washer, #10 ID	
7	609110	1	Connector, Push-On, 16-14 AWG, Blue	
8	609111	2	Terminal, Ring, #10, 16-14 AWG, Blue	
9	615021	1	T-Rail, DIN, 5.5" Lg.	
10	9102050	1	Terminal Marker, WS 12/6, L	
11	9102051	1	Terminal Marker, WS 12/6, N	
12	9102052	2	Terminal Marker, WS 12/6, 12VDC	
13	9102053	1	Terminal Marker, WS 12/6, 170VDC	
14	9102681	1	Wire, #14, Green/Yellow, 8" Lg.	
15	9102681	1	Wire, #14, Green/Yellow, 5" Lg.	
16	9103433	1	Ferrule, #14 AWG, Blue	
17	9103436	5	Terminal Block, Z-Roofstyle	
18	9103437	2	Terminal Block, Z-Roofstyle, Ground	
19	9103438	2	End Plate	
20	9103439	1	Cross-Connection	
21	9103439A	1	Cable, Power Distribution	
22	9103442	2	End Bracket	
23	9103764	1	Bracket, Power Distribution	
24	9103767	1	Cover, Power Box	

Figure B-20: 9103764A – Power Distribution Box Assembly

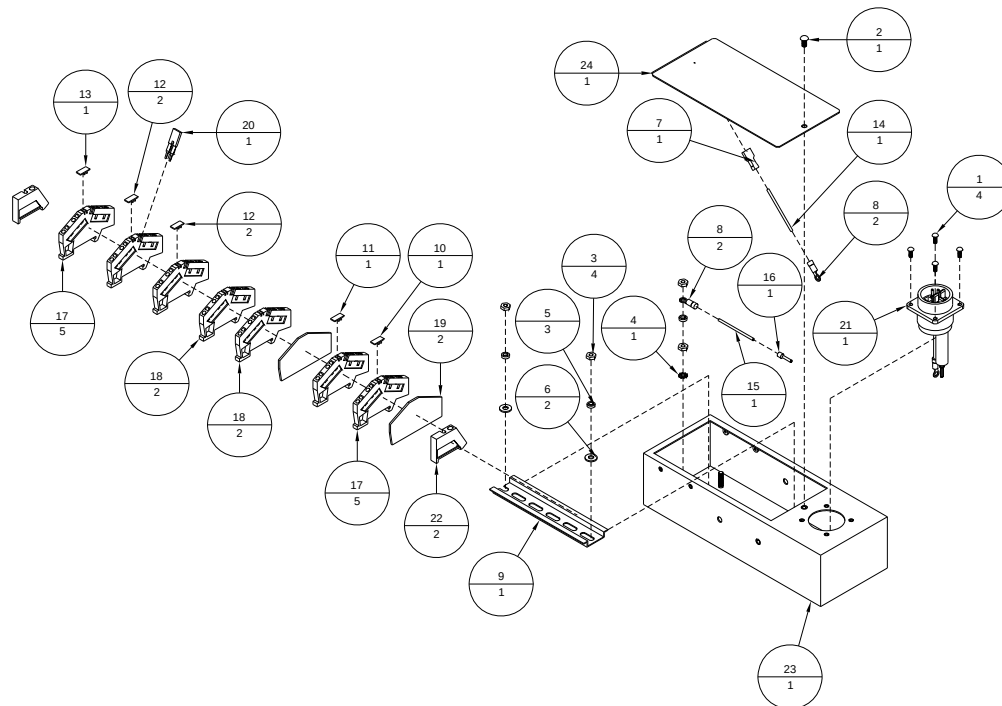
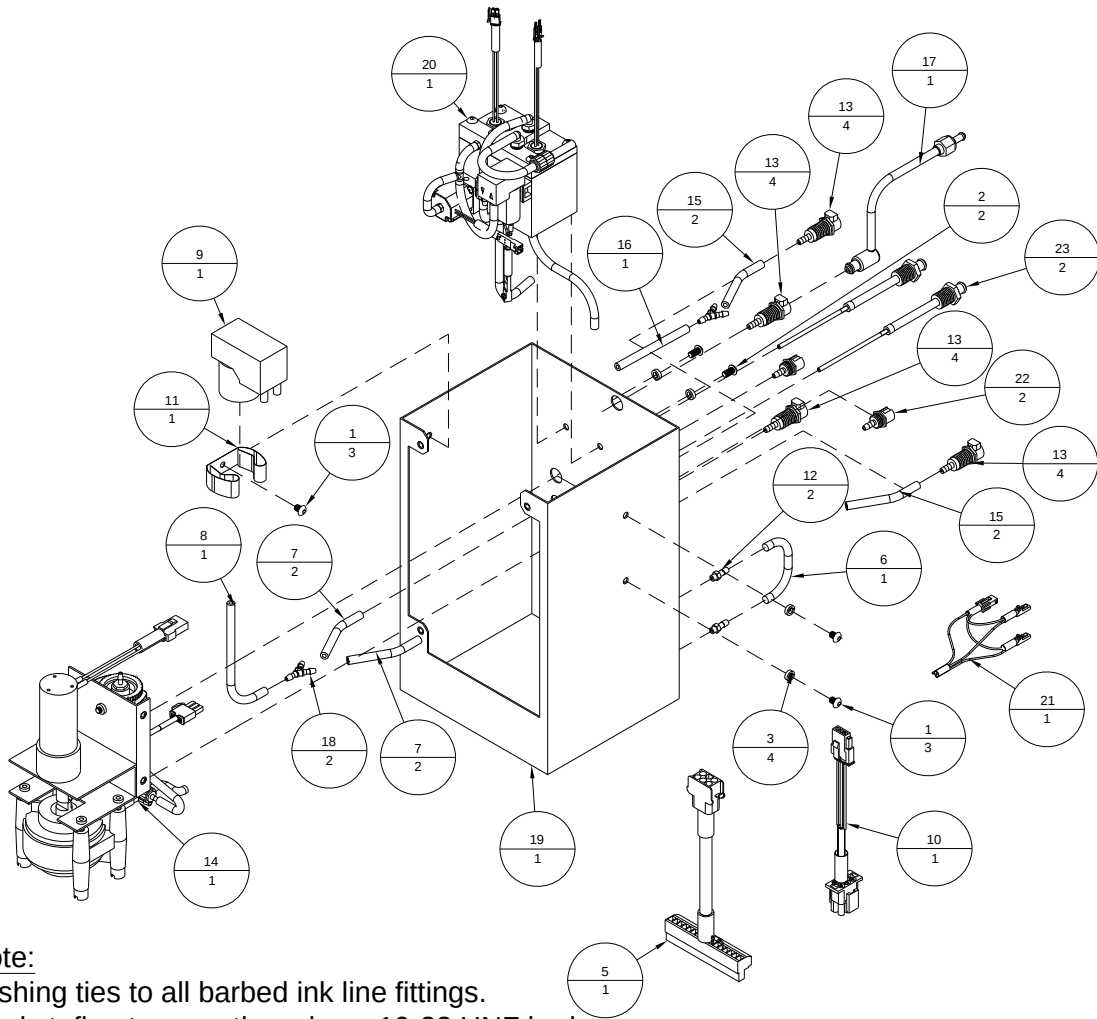


Table B-21: 9103766A – Ink Delivery Module, BK705 Atlas (Monet & Cezanne)

Item	Part Number	Quantity	Description	Reference
1	404510	3	Screw, BHCS, 10-32 UNF x ¼"	
2	404520	2	Screw, BHCS, 10-32 UNF x 3/8"	
3	439009	4	Lockwasher, No. 10	
4	615140	12	Lashing Tie, Small	
5	640301A	1	Cable, IDS Drive	
6	9100472	1	Tubing, Silicone, ¼" OD x 1/8" ID, 4" Lg.	
7	9100472	2	Tubing, Silicone, ¼" OD x 1/8" ID, 3" Lg.	
8	9100472	1	Tubing, Silicone, ¼" OD x 1/8" ID, 5" Lg.	
9	9100921	1	Lung Vacuum Pump	
10	9100921A	1	Adapter Cable Assembly	
11	9100962	2	Coupling, Hose Barb, Panel Mount, 1/16"	
12	9100971	1	Gripper Clip	
13	9101582	2	Fitting, 10-32 Thread to Tube 1/8" ID	
14	9101692	4	Coupling Body, 1/8" ID Tubing	
15	9101767A	1	Pumping Station Assembly	Page B-10
16	9102116	2	Tubing, Pharmed, ¼ x 1/8", 3" Lg.	
17	9102116	1	Tubing, Pharmed, ¼ x 1/8", 8" Lg.	
18	9102147A	1	Ink Line Assembly	Page B-13
19	9103712	2	Fitting, Y Tube-to-tube, 1/8 ID, Nylon	
20	9103766	1	Chamber, Ink Delivery, 2-Channel	
21	9103784A	1	Ink Reservoir Assembly, BK705	Page B-26
22	9104430A	1	Cable, BK705 Dual Chamber Adapter	
23	9104610	2	Coupling, Panel Mount, 1/8" ID Shutoff	

Figure B-21: 9103766A – Ink Delivery Module, BK705 Atlas (Monet & Cezanne)

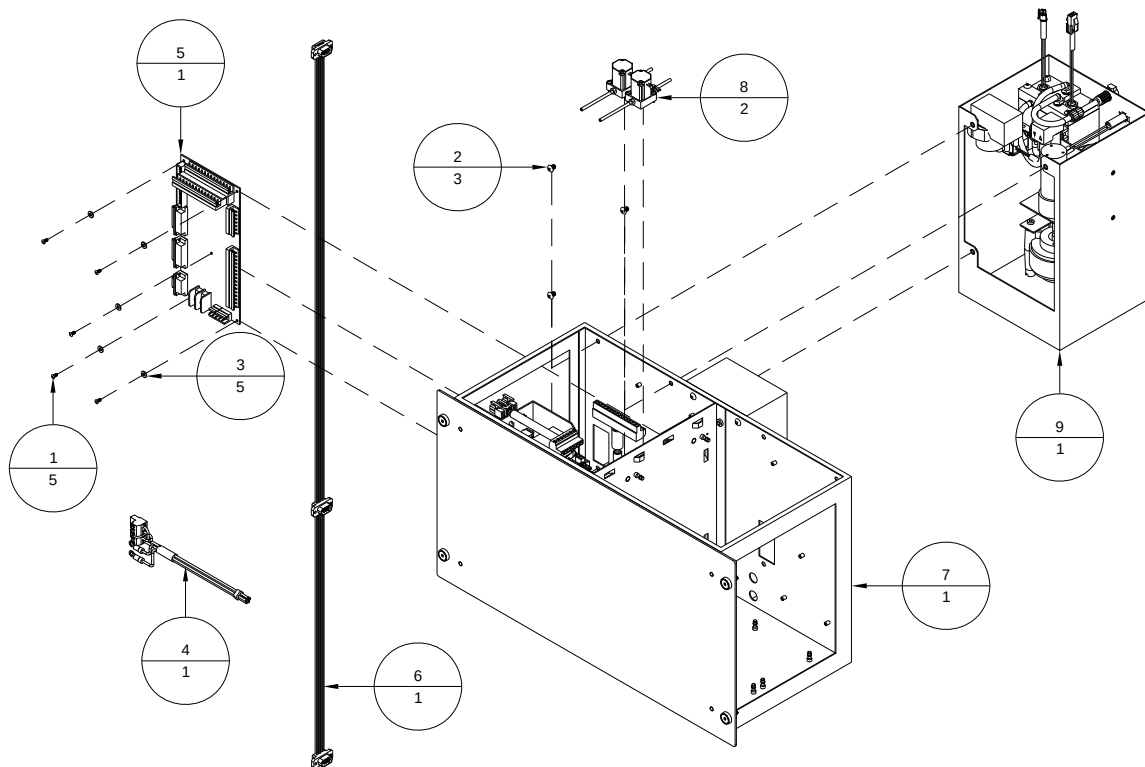
**Note:**

Lashing ties to all barbed ink line fittings.
 Apply teflon tape on threads on 10-32 UNF barb fittings.

Table B-22: 9103767A – Inkwell Module, 2-Channel Atlas (Monet & Cezanne)

Item	Part Number	Quantity	Description	Reference
1	401310	5	Screw, PHMS, 4-40 UNC x 1/4"	
2	404510	3	Screw, BHCS, 10-32 UNF x 1/4"	
3	440530	5	Washer, #6, Nylon	
4	606052A	1	Cable, Atlas Power Support	
5	9100969 or 9106100	1	Board, Atlas System Support Board, QHIB System Support	
6	9103484A	1	Cable, System Communication	
7	9103680A	1	Universal Enclosure Assembly	Page B-18
8	9103683A	2	Solenoid Valve Assembly	Page B-19
9	9103766A	1	Ink Delivery Module, BK705 Atlas	Page B-21

Figure B-22: 9103767A – Inkwell Module, 2-Channel Atlas (Monet & Cezanne)



Note: Printheads that utilize the QHIB (Quad Head Interface Board) like the 2500 and 5100 series printheads require the QHIB SSB (P/N 9106100). All other Atlas and Aurora printheads use the Atlas SSB (P/N 9100969).

Table B-23: 9103776A – Ink Delivery Module, BK705 Aurora

Item	Part Number	Quantity	Description	Reference
1	404510	3	Screw, BHCS, 10-32 UNF x ¼"	
2	404520	2	Screw, BHCS, 10-32 UNF x 3/8"	
3	439009	4	Lockwasher, No. 10	
4	609003	1	Shrink Wrap, 3/8" ID, 32" Total	
5	615140	12	Lashing Tie, Small	
6	640301A	1	Cable, IDS Drive	
7	9100472	1	Tubing, Silicone, ¼" OD x 1/8" ID, 4" Lg.	
8	9100472	2	Tubing, Silicone, ¼" OD x 1/8" ID, 3" Lg.	
9	9100472	1	Tubing, Silicone, ¼" OD x 1/8" ID, 5" Lg.	
10	9100921	1	Lung Vacuum Pump	
11	9100921A	1	Adapter Cable Assembly	
12	9100962	2	Coupling, Hose Barb, Panel Mount, 1/16"	
13	9100971	1	Gripper Clip	
14	9101582	2	Fitting, 10-32 Thread to Tube 1/8" ID	
15	9101780A	1	Pumping Station Assembly, Aurora	Page B-11
16	9102116	2	Tubing, Pharmed, ¼ x 1/8", 3" Lg.	
17	9102116	1	Tubing, Pharmed, ¼ x 1/8", 8" Lg.	
18	9102147A	1	Ink Line Assembly	Page B-13
19	9102625	4	Coupling, Panel Mount, ¼" OD Through	
20	9102627	4	Plug, Body, EPDM O-Ring	
21	9103712	2	Fitting, Y Tube-to-tube, 1/8 ID, Nylon	
22	9103766	1	Chamber, Ink Delivery, 2-Channel	
23	9103784A	1	Ink Reservoir Assembly, BK705	Page B-26
24	9104430A	1	Cable, BK705 Dual Chamber Adapter	
25	9104610	2	Coupling, Panel Mount, 1/8" ID Shutoff	

Figure B-23: 9103776A – Ink Delivery Module, BK705 Aurora

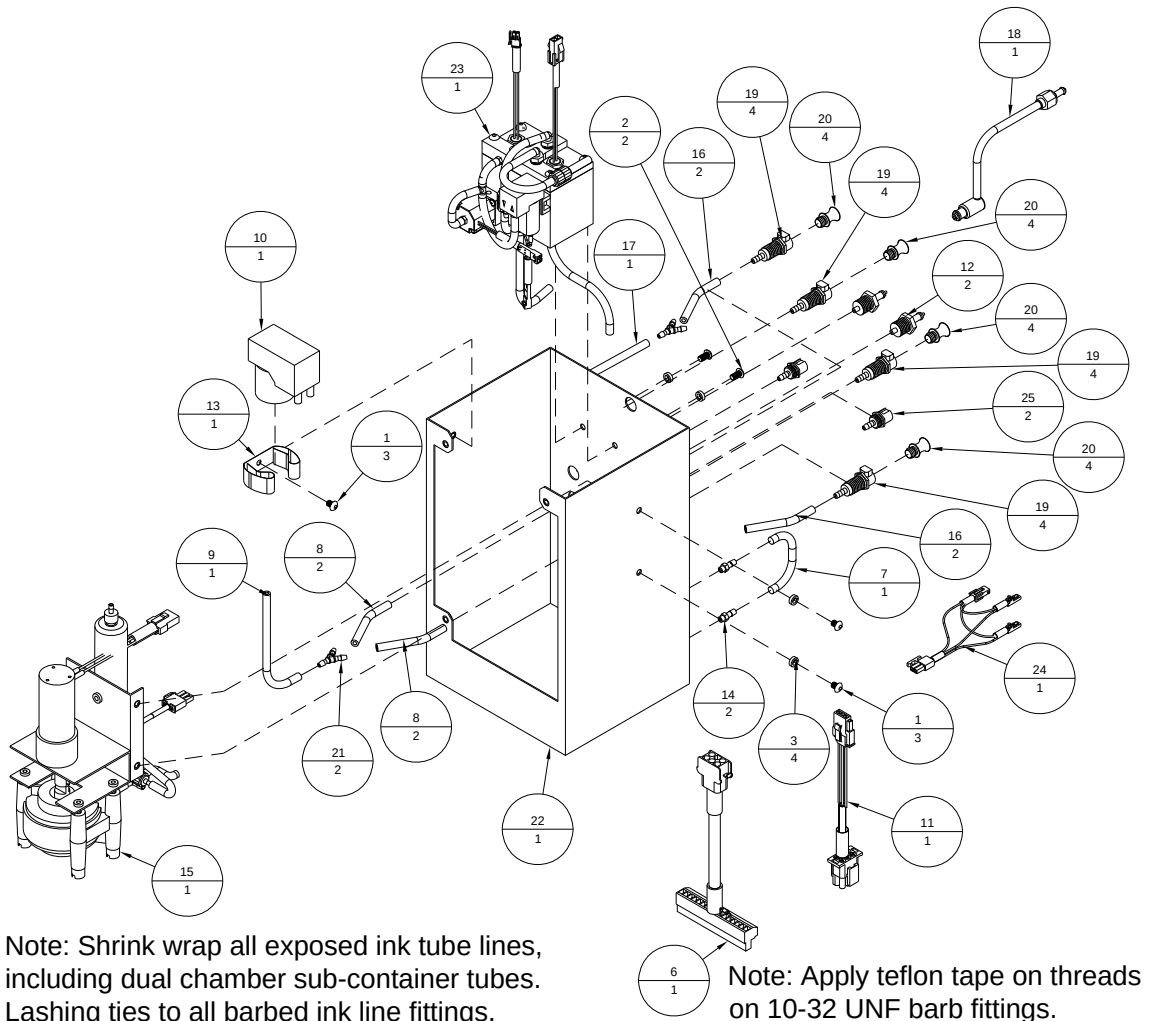


Table B-24: 9103784A – Ink Reservoir Assembly, BK705

Item	Part Number	Quantity	Description	Reference
1	401330	2	Screw, PHMS, 4-40 UNC x 1/2"	
2	404520	1	Screw, BHCS, 10-32 UNF x 3/8"	
3	404530	3	Screw, BHCS, 10-32 UNF x 1/2"	
4	404550	3	Screw, BHCS, 10-32 UNF x 3/4"	
5	439004	2	Lockwasher, No. 4	
6	439009	7	Lockwasher, No. 10	
7	615102	1	Tie Mount	
8	615140	20	Lashing Tie, Small	
9	615141	1	Lashing Tie, Large	
10	9100149	1	Connector, 1/8" NPT, 1/8" ID	
11	9100472	1	Tubing, Silicone, 1/4" OD x 1/8" ID, 3" Lg.	
12	9100472	1	Tubing, Silicone, 1/4" OD x 1/8" ID, 2.5" Lg.	
13	9100472	1	Tubing, Silicone, 1/4" OD x 1/8" ID, 1.5" Lg.	
14	9100472	1	Tubing, Silicone, 1/4" OD x 1/8" ID, 1" Lg.	
15	9100472	1	Tubing, Silicone, 1/4" OD x 1/8" ID, 3" Lg.	
16	9100877	1	O-Ring, 1-7/8 x 1-3/4 x 1/16, EPDM P.C.	
17	9101290	1	Fitting, Tee, 1/8" ID	
18	9102085	2	Connector, 1/8-27 NPT, 1/8" ID	
19	9102116	1	Tubing, Pharmed, 1/4 OD x 1/8" ID, 4.5" Lg	
20	9102116	1	Tubing, Pharmed, 1/4 OD x 1/8" ID, 1" Lg.	
21	9102116	1	Tubing, Pharmed, 1/4 OD x 1/8" ID, 5" Lg.	
22	9102116	1	Tubing, Pharmed, 1/4 OD x 1/8" ID, 5" Lg.	
23	9104660	1	Reservoir, Ink/Air	
24	9104661A	1	Reservoir Cover Assembly	Page B-30
25	9104662A	1	Pump Assembly	
26	9104671	1	Check Valve, 1/8" ID Barbed, 1 PSI	
27	9104674	1	Check Valve, 1/8" ID Barbed, 4 PSI	
28	9104711A	1	Solenoid Valve Assembly, 3-Way, N.O.	
29	9104717	1	O-Ring, 1-1/8 x 1 x 1/16, EPDM P.C.	

Figure B-24: 9103784A – Ink Reservoir Assembly, BK705

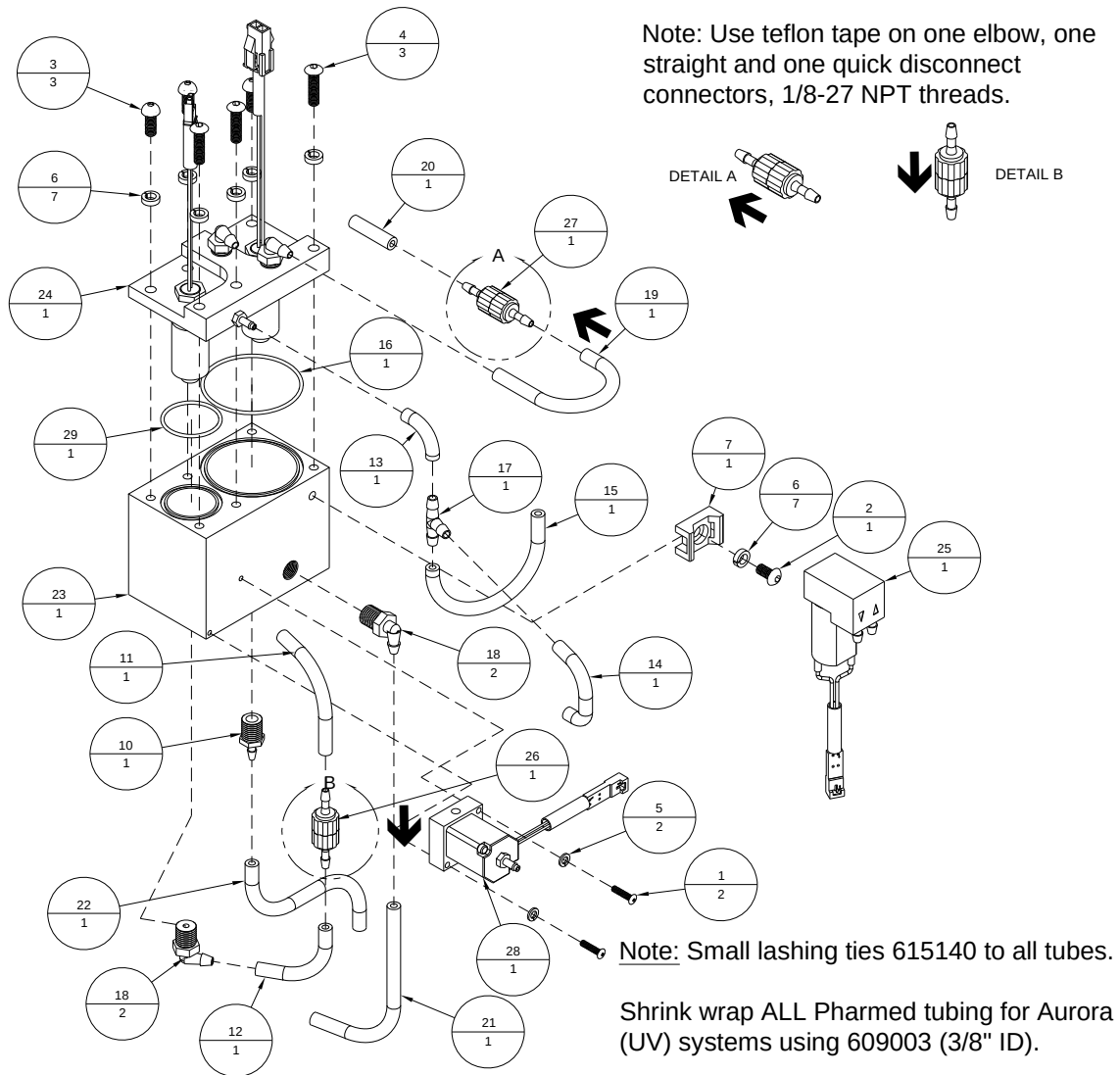


Table B-25: 9103910A – Bottle Coupling Assembly, Cezanne

Item	Part Number	Quantity	Description	Reference
1	9102132	1	Tubing, Pharmed, 3/8" x 1/4", 10" Lg.	
2	9103908	1	Tubing, Pharmed, 1/2" x 3/8", 3" Lg.	
3	9103909	1	Coupling, UDC Series, 3/8" ID, Elbow	
4	9103910	1	Coupling, 1/4" ID, Panel Mount, Shutoff	
5	9103911	1	Fitting, 3/8 ID to 1/4 ID	

Figure B-25: 9103910A – Bottle Coupling Assembly, Cezanne

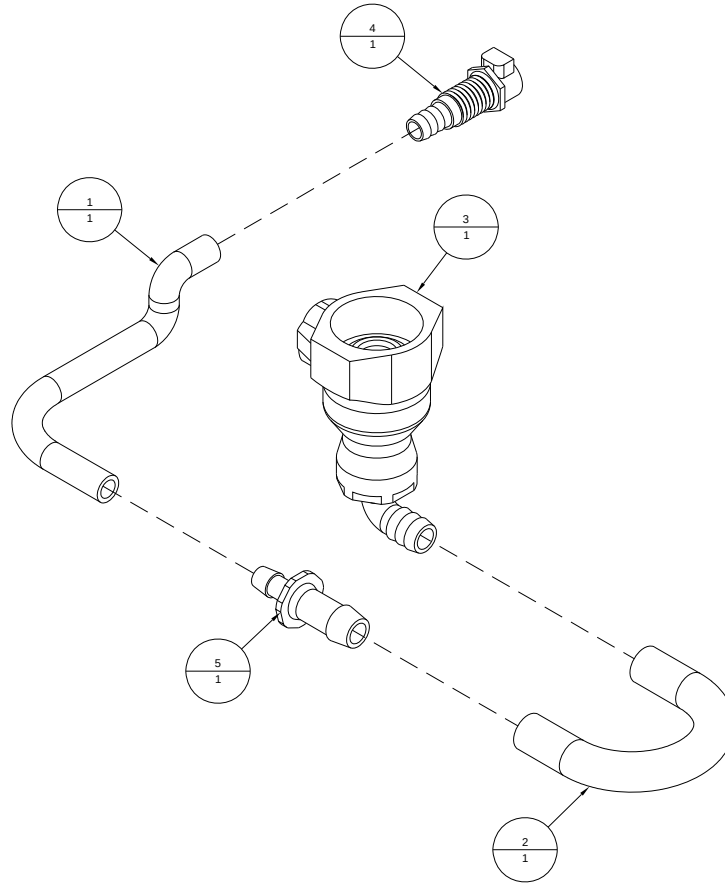


Table B-26: 9104497A – Bottle Coupling Assembly, Aurora

Item	Part Number	Quantity	Description	Reference
1	9102132	1	Tubing, Pharmed, 3/8" x 1/4"	
2	9102236	1	Coupling, Renoir Ink Bottle Cap	
3	9102247	1	Shrink Wrap, 1/2" ID, 13" Lg.	
4	9104497	1	Coupling Body, 1/4" ID, Panel Mount	

Figure B-26: 9104497A – Bottle Coupling Assembly, Aurora

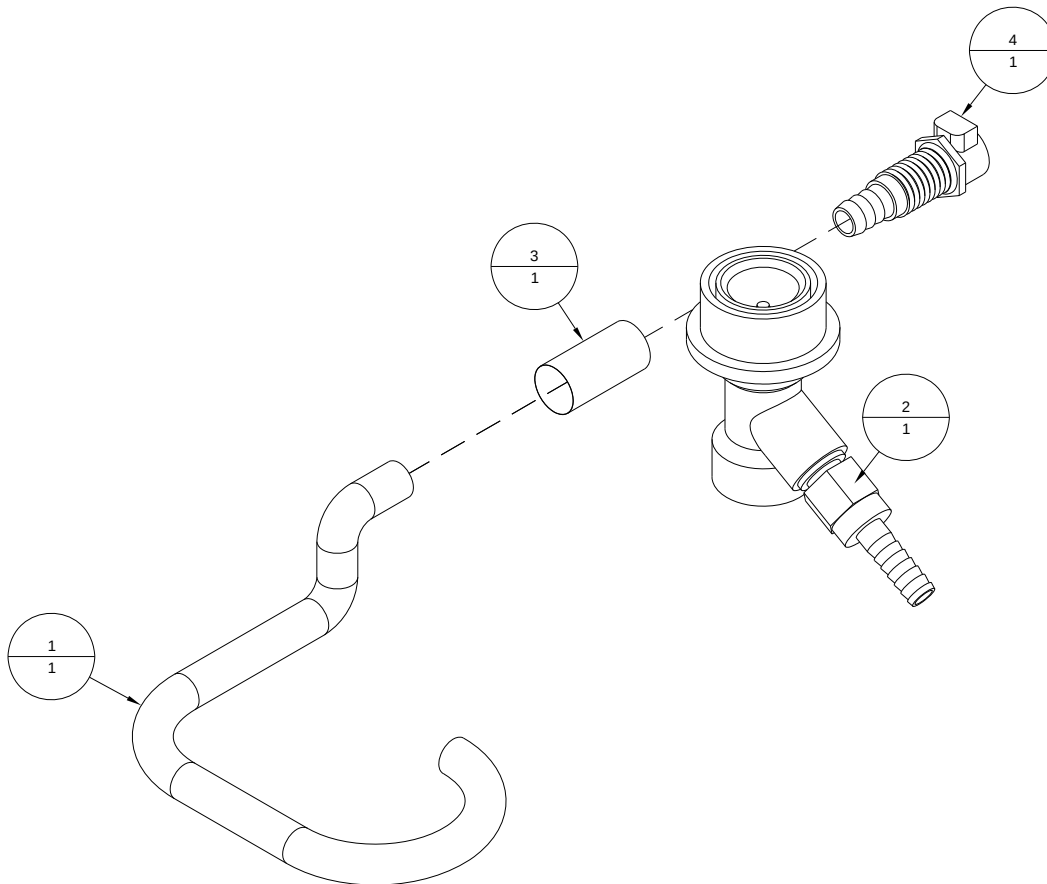
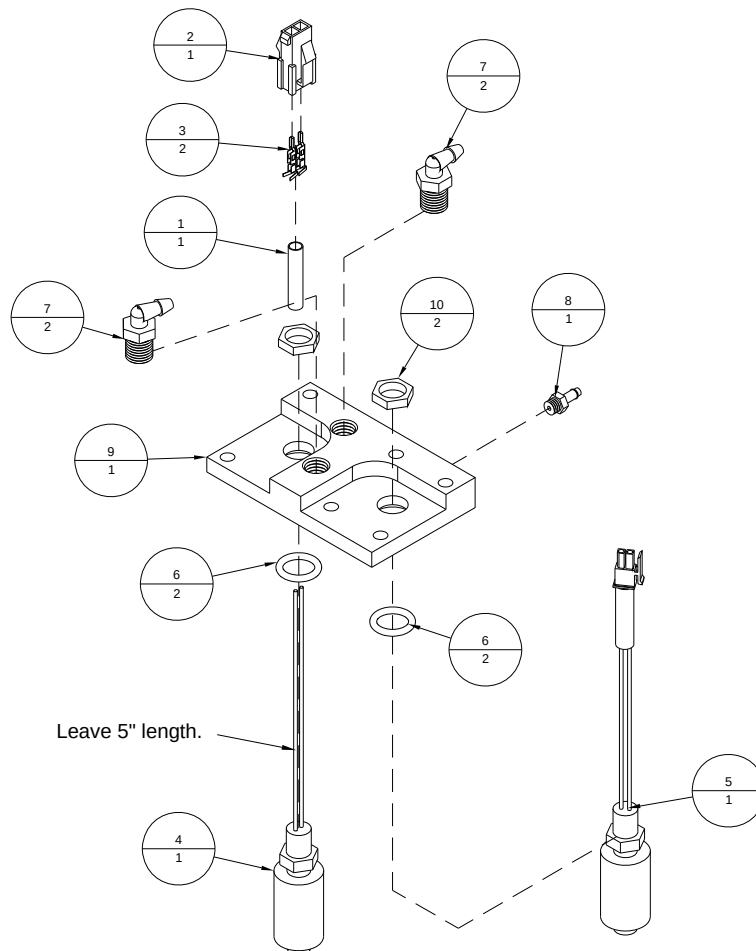


Table B-27: 9104661A – Reservoir Cover Assembly

Item	Part Number	Quantity	Description	Reference
1	609000	1	Shrink Wrap, 3/16" ID, 5" Lg	
2	9100206	1	Receptacle, 2-Pin, Mini-Fit Jr	
3	9100207	2	Contact, Male, 18-22 AWG, Series 5558	
4	9100966	1	Float Switch, Micro-miniature	
5	9100966A	1	Float Switch Assembly, Secondary	
6	9101297	2	O-Ring, 7/16 x 5/8 x 3/32, EPDM P.C.	
7	9102085	2	Connector, Elbow, 1/8-27 NPT, 1/8" ID	
8	9102973	1	Fitting, 10-32 UNF x 1/8 ID	
9	9104661	1	Cover, Reservoir	
10	N/A	2	Included with 9100966	

Figure B-27: 9104661A – Reservoir Cover Assembly

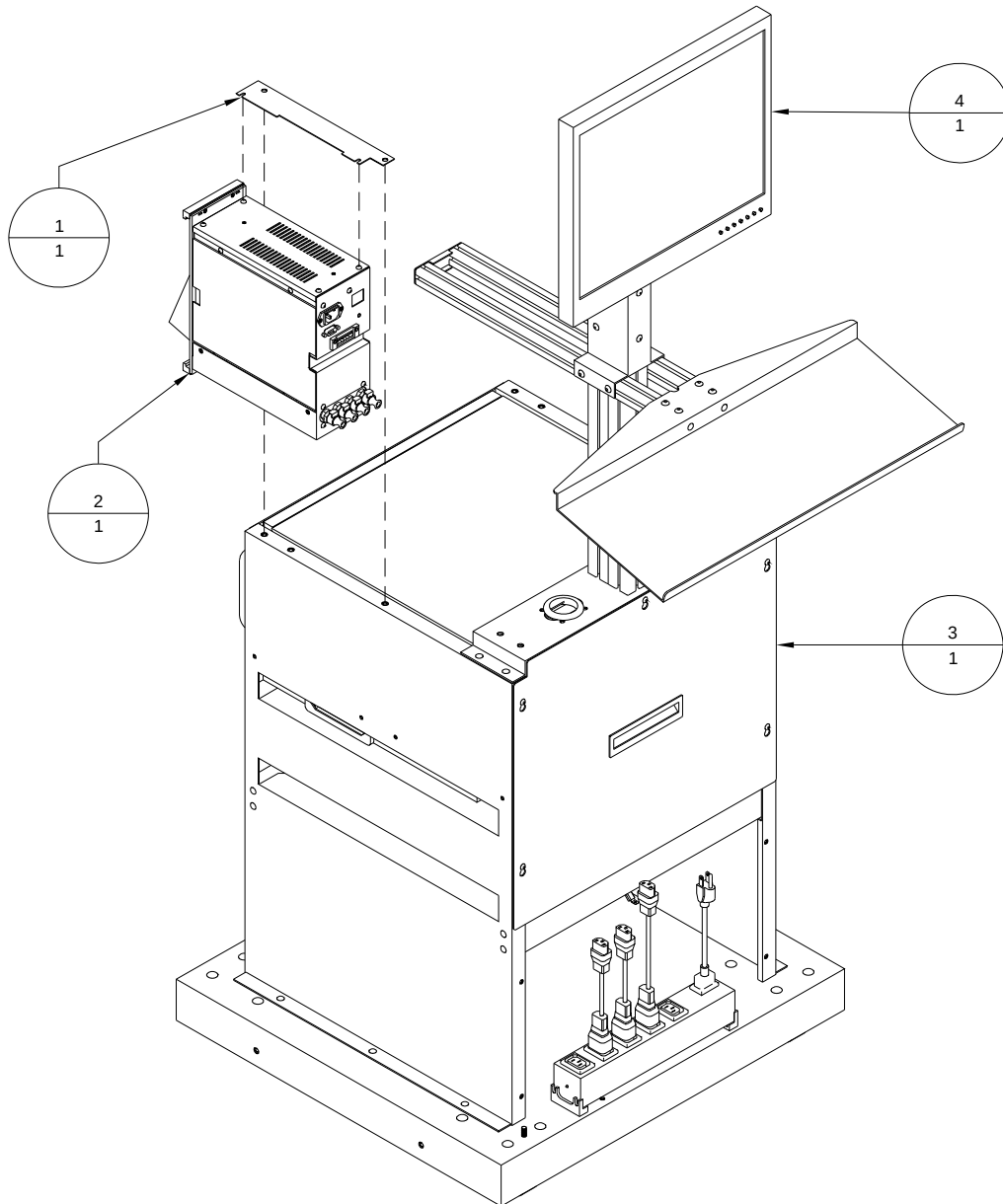


Note: Use teflon tape on two elbow connectors, 1/8-27 NPT threads.

Table B-28: Ezejet with optional Apollo Ink Delivery Module (For Reference)

Item	Part Number	Quantity	Description	Reference
1	9104533	1	Bracket (Part of 705-IDM4H-15NA or WD)	
2	BK-IDM-4H	1	Ink Delivery, (Part of 705-IDM4H-15NA or WD)	
3	BK-705-ST	1	Stand, Apollo Ezejet	
4	BK705	1	Controller, Apollo Ezejet (BK-705)	

Figure B-28: Ezejet with optional Apollo Ink Delivery Module (For Reference)



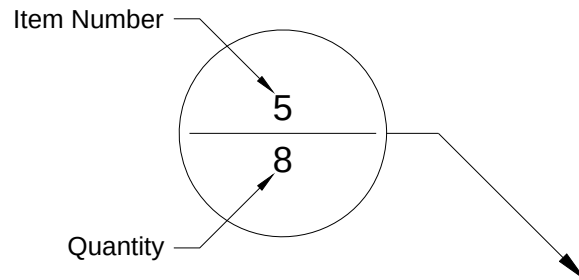
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Balloon Annotation and Parts Listing



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: BK-PSM-4A – Module, Atlas/Aurora Power Supply, Release 2

Item	Part Number	Quantity	Description	Reference
1	401010	6	Screw, FHCS, 4-40 UNC x 1/4"	
2	402320	8	Screw, PHMS, 6-32 UNC x 3/8"	
3	404520	2	Screw, BHCS, 10-32 UNF x 3/8"	
4	420008	9	Nut, 10-32 UNF	
5	439008	2	Lockwasher, #10 External Tooth	
6	439009	8	Lockwasher, #10	
7	606000	2	Wire, #16, Black, 14" Lg.	
8	606001	1	Wire, #16, Red, 12" Lg.	
9	606005	1	Wire, #16, Green, 12" Lg.	
10	606008	1	Wire, #14, White, 8" Lg.	
11	606008	1	Wire, #14, White, 12" Lg.	
12	606009	2	Wire, #16, White, 14" Lg.	
13	606010	1	Wire, #14, Black, 8" Lg.	
14	606039	1	Cable, #14-2, Shielded, BK/RD, 12" Lg.	
15	606359	2	Wire, #16, Green/Yellow, 14" Lg.	
16	609000	3	Shrink Wrap, 3/16" ID, 1" Lg.	
17	609110	8	Connector, Push-on, 16-14 AWG, Blue	
18	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
19	609113	3	Connector, Push-on, Yellow	
20	609116	2	Terminal, Ring, #10, 22-18 AWG, Red	
21	614106A	1	Cable, Atlas/Aurora PSM, Vout	
22	614123	2	Contact, Female, 18-16 AWG, Blue	
23	9101935	4	Screw, PHMS, M3 x 5 mm	
24	9102205	1	Switch, Breaker, 15A, 2 Pole, Green	
25	9102246	1	Wire, #18, Green/Yellow, 8" Lg.	
26	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
27	9102681	1	Wire, #14, Green/Yellow, 20" Lg.	
28	9102862	1	Receptacle, Male, 250 VAC/10A, IEC	
29	9103082A	1	Cable, Atlas/Aurora Power Supply	
30	9103117	1	Board, 170V Power Supply	
31	9103160	1	Receptacle, 17-9 Reverse Sex	
32	9103167	2	Receptacle, Female, 120 VAC, 15A, IEC	
33	9103175A	1	Terminal Block Assembly, Atlas/Aurora	Page C-12
34	9103176	1	Board, Power Supply Display, Atlas/Aur.	
35	9103176A	1	Cable, Power Supply Display Board	
36	9103433	5	Ferrule, #14 AWG, Blue	
37	9103435	8	Ferrule, #16 AWG, Red	
38	9103539A	1	Transformer Assembly, 170VDC	Page C-24
39	9104133	1	Cover, PCM / PSM	
40	9104163	1	Chamber, Atlas Power Supply	
41	9104165	1	Power Supply, Switching, 12VDC/13A	
42	9104192A	1	Faceplate Assembly, Atlas/Aurora PSM	Page C-27
43	9104557	4	Lockwasher, #4, External Tooth	

Figure C-1: BK-PSM-4A – Module, Atlas/Aurora Power Supply, Release 2

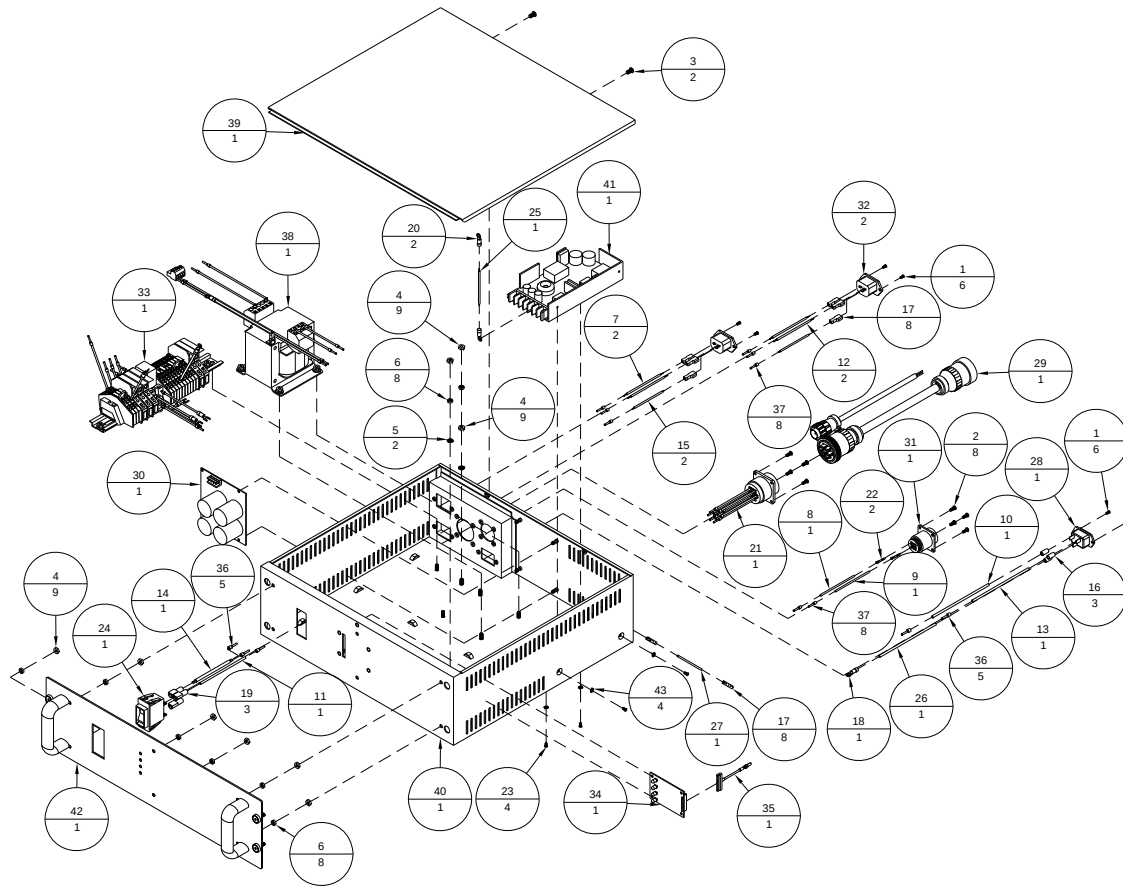


Table C-2: BK-PSM-4A – Module, Atlas/Aurora Power Supply, Release 1

Item	Part Number	Quantity	Description	Reference
1	403520	2	Screw, BHCS, 8-32 UNC x 3/8"	
2	420008	13	Nut, 10-32 UNF	
3	439009	13	Lockwasher, No. 10	
4	440008	6	Washer, #10 ID	
5	606008	1	Wire, #14, White, 12" Lg.	
6	606010	1	Wire, #14, Black, 12" Lg.	
7	606010	1	Wire, #14, Black, 6" Lg.	
8	609111	2	Terminal, Ring, #10, 16-14 AWG, Blue	
9	609113	3	Connector, Push-On, Yellow	
10	9102205	1	Switch, Breaker, 20A, 2 Pole, Green	
11	9102681	1	Wire, #14, Green/Yellow, 10" Lg.	
12	9103082A	1	Cable, Atlas Power Supply	
13	9103109	4	Screw, Trus, 8-32 UNC x 1/4"	
14	9103116	1	Cover, Power Supply Enclosure	
15	9103176	1	Board, Power Supply Display, Atlas	
16	9103176A	1	Cable, Power Supply Display Board	
17	9103411	1	Chamber, Power Supply, Universal	
18	9103412A	1	Faceplate Assembly, Power Supply	Page C-16
19	9103417A	1	Power Supply Subbracket Assembly	Page C-19
20	9103433	3	Ferrule, #14 AWG, Blue	

Figure C-2: BK-PSM-4A – Module, Atlas/Aurora Power Supply, Release 1

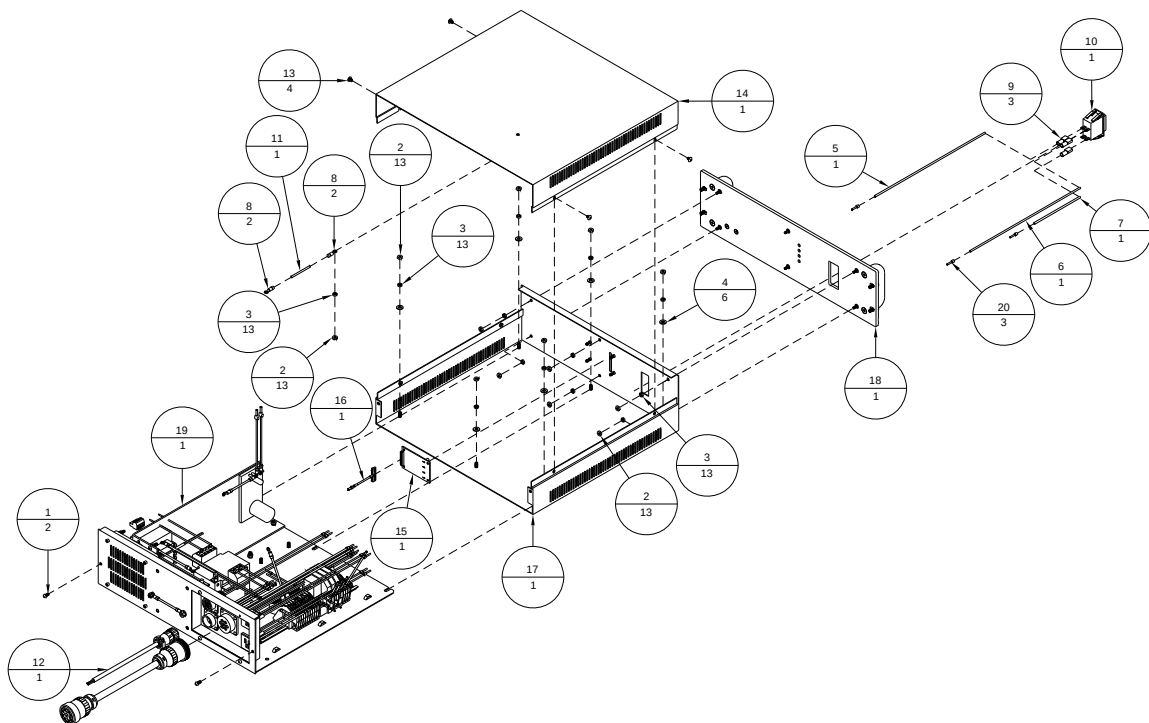


Table C-3: *BK-PSM-4A-WD – Module, Atlas/Aurora Power Supply, 200/230VAC*

Item	Part Number	Quantity	Description	Reference
1	401010	6	Screw, FHCS, 4-40 UNC x 1/4"	
2	402320	8	Screw, PHMS, 6-32 UNC x 3/8"	
3	404520	2	Screw, BHCS, 10-32 UNF x 3/8"	
4	420008	13	Nut, 10-32 UNF	
5	439008	2	Lockwasher, #10 External Tooth	
6	439009	12	Lockwasher, #10	
7	440008	4	Washer, #10 ID	
8	606000	2	Wire, #16, Black, 14" Lg.	
9	606001	1	Wire, #16, Red, 12" Lg.	
10	606005	1	Wire, #16, Green, 12" Lg.	
11	606008	1	Wire, #14, White, 8" Lg.	
12	606008	1	Wire, #14, White, 12" Lg.	
13	606009	2	Wire, #16, White, 14" Lg.	
14	606010	1	Wire, #14, Black, 8" Lg.	
15	606039	1	Cable, #14-2, Shielded, BK/RD, 12" Lg.	
16	606359	2	Wire, #16, Green/Yellow, 14" Lg.	
17	609000	3	Shrink Wrap, 3/16" ID, 1" Lg.	
18	609110	8	Connector, Push-on, 16-14 AWG, Blue	
19	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
20	609113	3	Connector, Push-on, Yellow	
21	609116	2	Terminal, Ring, #10, 22-18 AWG, Red	
22	614106A	1	Cable, Atlas/Aurora PSM, Vout	
23	614123	2	Contact, Female, 18-16 AWG, Blue	
24	9101935	4	Screw, PHMS, M3 x 5 mm	
25	9102205	1	Switch, Breaker, 15A, 2 Pole, Green	
26	9102246	1	Wire, #18, Green/Yellow, 8" Lg.	
27	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
28	9102681	1	Wire, #14, Green/Yellow, 20" Lg.	
29	9102862	1	Receptacle, Male, 250 VAC/10A, IEC	
30	9103082A	1	Cable, Atlas/Aurora Power Supply	
31	9103117	1	Board, 170V Power Supply	
32	9103160	1	Receptacle, 17-9 Reverse Sex	
33	9103167	2	Receptacle, Female, 120 VAC, 15A, IEC	
34	9103176	1	Board, Power Supply Display, Atlas/Aur.	
35	9103176A	1	Cable, Power Supply Display Board	
36	9103177A	1	Terminal Block Assembly, 230V	Page C-14
37	9103433	5	Ferrule, #14 AWG, Blue	
38	9103435	8	Ferrule, #16 AWG, Red	
39	9103539A	1	Transformer Assembly, 170VDC	Page C-24
40	9104133	1	Cover, PCM / PSM	
41	9104163	1	Chamber, Atlas Power Supply	
42	9104165	1	Power Supply, Switching, 12VDC/13A	
43	9104192A	1	Faceplate Assembly, Atlas/Aurora PSM	Page C-27
44	9104557	4	Lockwasher, #4, External Tooth	
45	9104922A	1	Transformer Assembly, BK-PSM-4A-WD	Page C-29

Figure C-3: BK-PSM-4A-WD – Module, Atlas/Aurora Power Supply, 200/230VAC

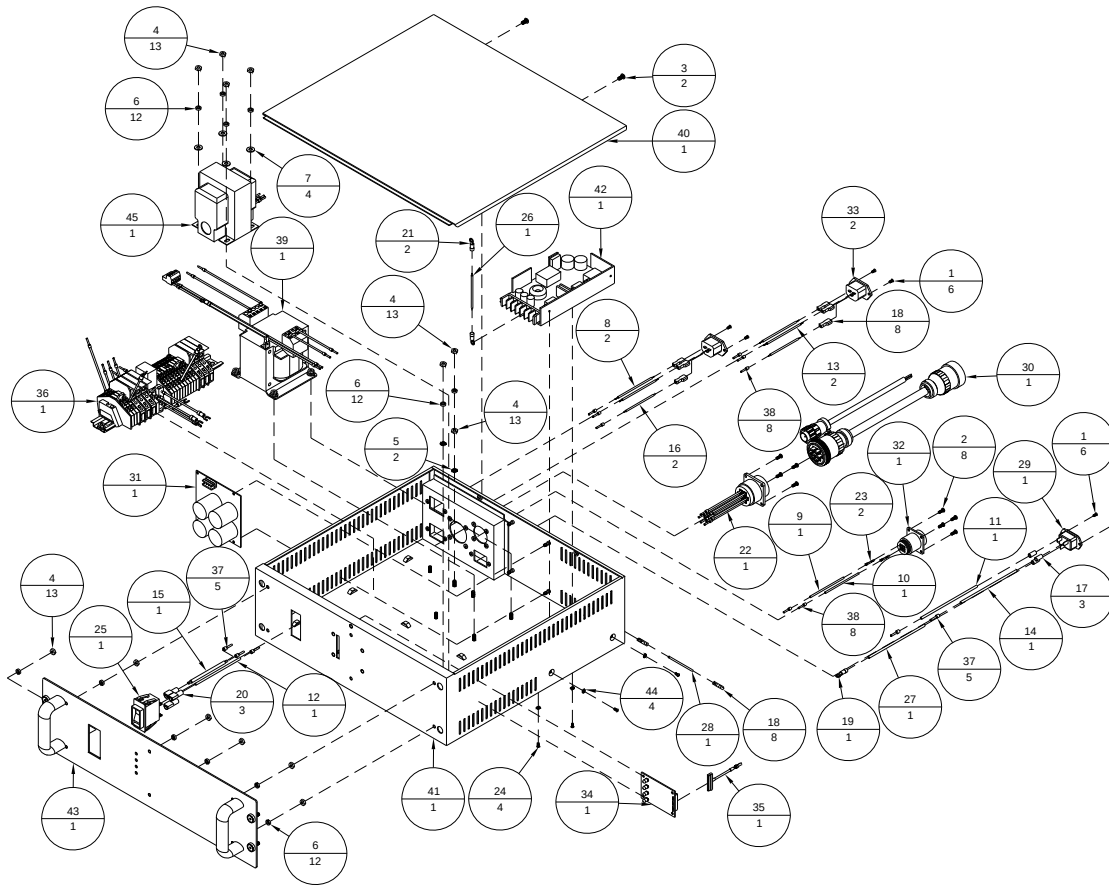


Table C-4: *BK-PSM-4H – Module, Apollo Power Supply*

Item	Part Number	Quantity	Description	Reference
1	401510	4	Screw, BHCS, 4-40 UNC x 1/4"	
2	9104164A	1	Chassis Assembly, Apollo PSM, 4-Ch.	Page C-25
3	9104490	1	Cover, 4-Channel Apollo PSM	

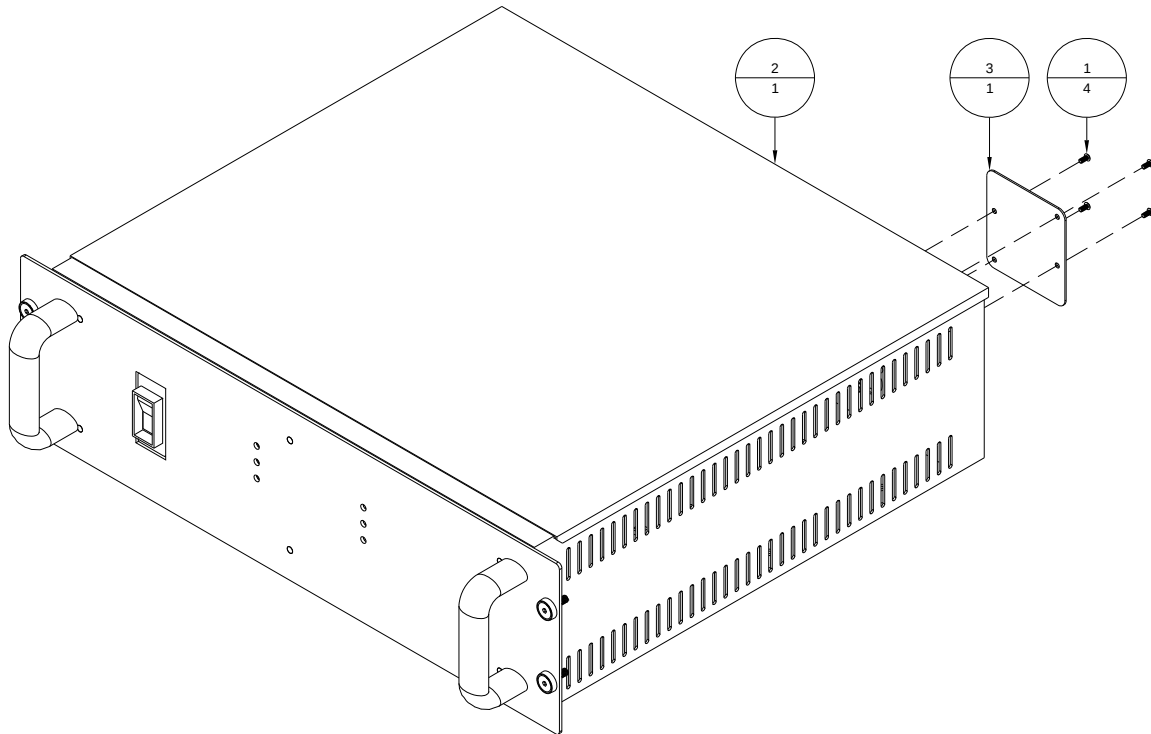
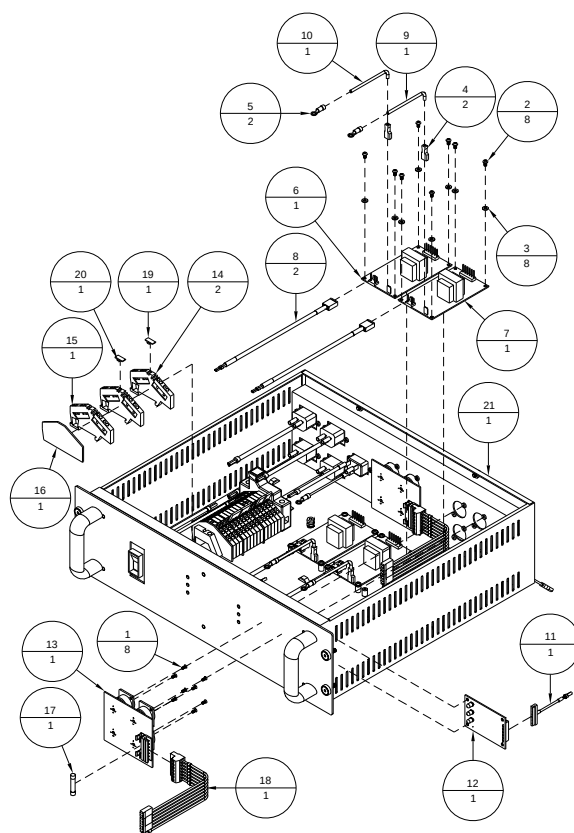
Figure C-4: *BK-PSM-4H – Module, Apollo Power Supply*

Table C-5: *BK-PSM-8H – Module, Apollo Power Supply, 8-Channel*

Item	Part Number	Quantity	Description	Reference
1	401010	8	Screw, FHCS, 4-40 UNC x 1/4"	
2	402310	8	Screw, PHMS, 6-32 UNC x 1/4"	
3	440530	8	Washer, #6, Nylon	
4	609110	2	Connector, Push-on, 16-14 AWG, Blue	
5	609111	2	Terminal, Ring, #10, 12-10 AWG, Non-Ins	
6	9102418	1	Power Supply, Switching, 5.1VDC, 8A	
7	9102419	1	Power Supply, Switching, 28VDC, 1.8A	
8	9102580A	2	Cable, 5VDC, 28VDC Power Input	
9	9102681	1	Wire, #14, Green/Yellow, 17"	
10	9102681	1	Wire, #14, Green/Yellow, 14"	
11	9103176A	1	Cable, Power Supply Display Board	
12	9103414	1	Board, Power Supply Display, Apollo	
13	9103420	1	Board, 5VDC/28VDC Power Supply	
14	9103436	2	Terminal Block, ZDU 4-2/4AN	
15	9103437	1	Terminal Block, Ground, ZPE 4-2/4AN	
16	9103438	1	End Plate, ZAP ZDU 4-2/4AN	
17	9103445	1	Fuse, 3A, 250V, 1/4 x 1-1/4", Slo-blo	
18	9103638A	1	Cable, Apollo Power Supply	
19	9103740	1	Terminal Marker, WS 12/6, 5VDC	
20	9103741	1	Terminal Marker, WS 12/6, 28VDC	
21	9104164A	1	Chassis Assembly, Apollo PSM, 4-Ch	Page C-25

Figure C-5: *BK-PSM-8H – Module, Apollo Power Supply, 8-Channel***NOTE:**

ALL ITEMS EXCEPT 9104164A ARE PART OF UBK-PSM-8H.

Table C-6: 9103171A – Terminal Block Assembly, Atlas/Aurora, Release 1

Item	Part Number	Quantity	Description	Reference
1	420008	2	Nut, 10-32 UNF	
2	439009	2	Lockwasher, No. 10	
3	440008	2	Washer, No. 10	
4	606000	1	Wire, #16, Black, 5" Lg.	
5	606002	1	Wire, #16, Blue, 4" Lg.	
6	606008	1	Wire, #14, White, 6" Lg.	
7	606009	1	Wire, #16, White, 4" Lg.	
8	606010	3	Wire, #14, Black, 4" Lg.	
9	606021	1	Wire, #16, Brown, 5" Lg.	
10	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
11	610100	1	Relay, 120 VAC	
12	615004	1	Relay Base	
13	615021	1	T-Rail, DIN, 12" Lg.	
14	9100096	1	Fuse, 10A, 250V, ¼ x 1-1/4", Slo-blo	
15	9100286	1	Fuse, 2A, 250V, ¼ x 1-1/4", Time Delay	
16	9102050	2	Terminal Marker, WS 12/6, L	
17	9102051	3	Terminal Marker, WS 12/6, N	
18	9102052	1	Terminal Marker, WS 12/6, 12VDC	
19	9102053	1	Terminal Marker, WS 12/6, 170 VDC	
20	9102297	2	Terminal Marker, WS 12/6, L'	
21	9102299	1	Terminal Marker, WS 12/6, GND	
22	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
23	9102767	4	Terminal Marker, WS 12/6, 250V	
24	9102768	1	Terminal Marker, WS 12/6, T2A L	
25	9102769	1	Terminal Marker, WS 12/6, T3A L	
26	9102770	1	Terminal Marker, WS 12/6, T10A L	
27	9103433	9	Ferrule, #14 AWG, Blue	
28	9103435	7	Ferrule, #16 AWG, Red	
29	9103436	11	Terminal Block, Z-Roofstyle	
30	9103437	2	Terminal Block, Z-Roofstyle, Ground	
31	9103438	2	End Plate	
32	9103439	2	Cross-Connection	
33	9103440	4	Fuse Terminal, ZSI 2.5/2, ¼ x 1-1/14, 10A	
34	9103441	2	End Plate, Fuse Terminal	
35	9103442	2	End Bracket, EW 35	
36	9103445	1	Fuse, 3A, 250V, 1/4- x 1-1/4", Slo-blo	
37	9103446	1	Fuse, 5A, ¼" x 1-1/4"	
38	9104363	1	Terminal Marker, WS 12/6, T5A L	

Figure C-6: 9103171A – Terminal Block Assembly, Atlas/Aurora, Release 1

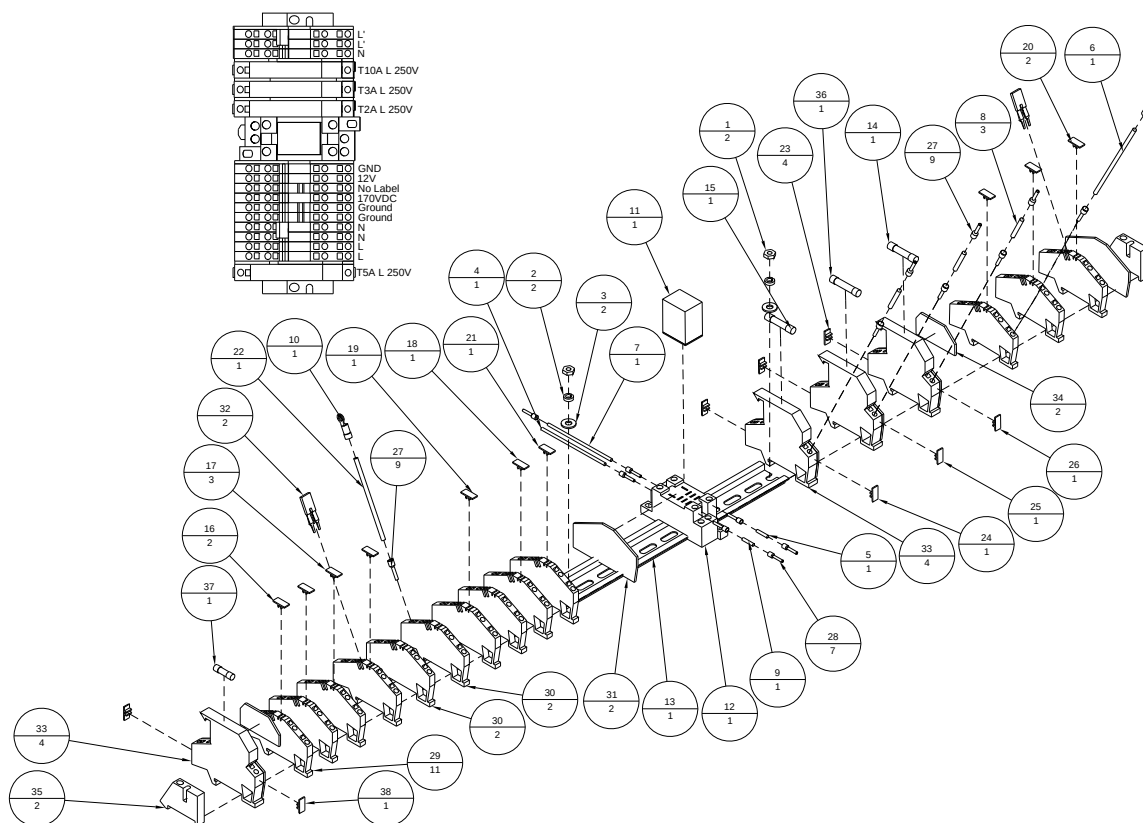


Table C-7: 9103173A – Terminal Block Assembly, Apollo Release 1

Item	Part Number	Quantity	Description	Reference
1	420008	2	Nut, 10-32 UNF	
2	439009	2	Lockwasher, No. 10	
3	440008	2	Washer, #10 ID	
4	615021	1	T-Rail, DIN, 8" Lg.	
5	9100218	1	Label, Fuse, T15A L 250V	
6	9102050	1	Terminal Marker, WS 12/6, L	
7	9102051	3	Terminal Marker, WS 12/6, N	
8	9102297	2	Terminal Marker, WS 12/6, L'	
9	9103436	8	Terminal Block, Z-Roofstyle	
10	9103437	3	Terminal Block, Z-Roofstyle, Ground	
11	9103438	3	End Plate	
12	9103439	2	Cross-Connection	
13	9103442	2	End Bracket, EW 35	
14	9103447	1	Fuse Holder, 13/32" DIA	
15	9103448	1	Fuse, 15A, 250V, 13/32 x 1-1/2", Slo-blo	
16	9103740	1	Terminal Marker, WS 12/6, 5VDC	
17	9103741	1	Terminal Marker, WS 12/6, 28VDC	

Figure C-7: 9103173A – Terminal Block Assembly, Apollo Release 1

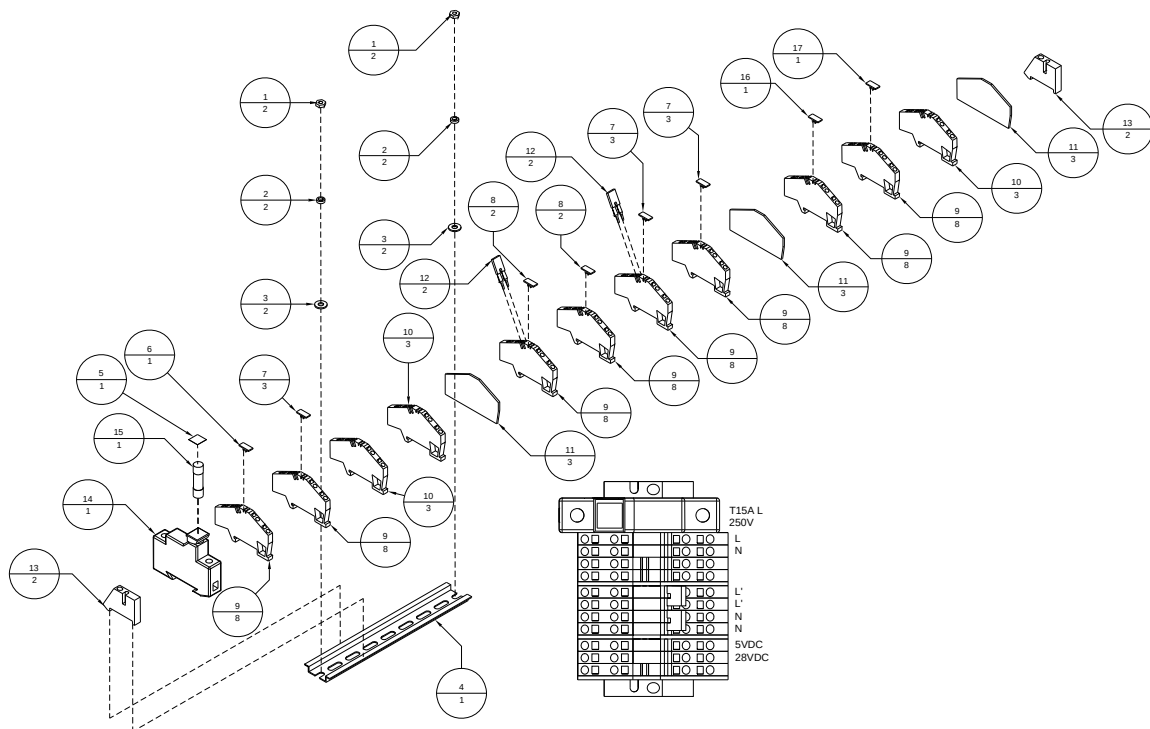


Table C-8: 9103174A – Terminal Block Assembly, Apollo Release 2

Item	Part Number	Quantity	Description	Reference
1	420008	2	Nut, 10-32 UNF	
2	439009	2	Lockwasher, #10	
3	440008	2	Washer, #10 ID	
4	615021	1	T-Rail, DIN, 8" Lg.	
5	9100218	1	Label, Fuse, T15A L 250V	
6	9102045	3	Terminal Marker, WS 12/6, N'	
7	9102050	2	Terminal Marker, WS 12/6, L	
8	9102051	2	Terminal Marker, WS 12/6, N	
9	9102297	3	Terminal Marker, WS 12/6, L'	
10	9103436	12	Terminal Block, Z-Roofstyle	
11	9103437	3	Terminal Block, Z-Roofstyle, Ground	
12	9103438	3	End Plate	
13	9103439	2	Cross-Connection	
14	9103442	2	End Bracket, EW 35	
15	9103447	1	Fuse Holder, 13/32" DIA	
16	9103448	1	Fuse, 15A, 250V, 13/32 x 1-1/2", Slo-blo	
17	9103740	1	Terminal Marker, WS 12/6, 5VDC	
18	9103741	1	Terminal Marker, WS 12/6, 28VDC	
19	9104270	2	Cross-connection, ZQV 4/3	

Figure C-8: 9103174A – Terminal Block Assembly, Apollo Release 2

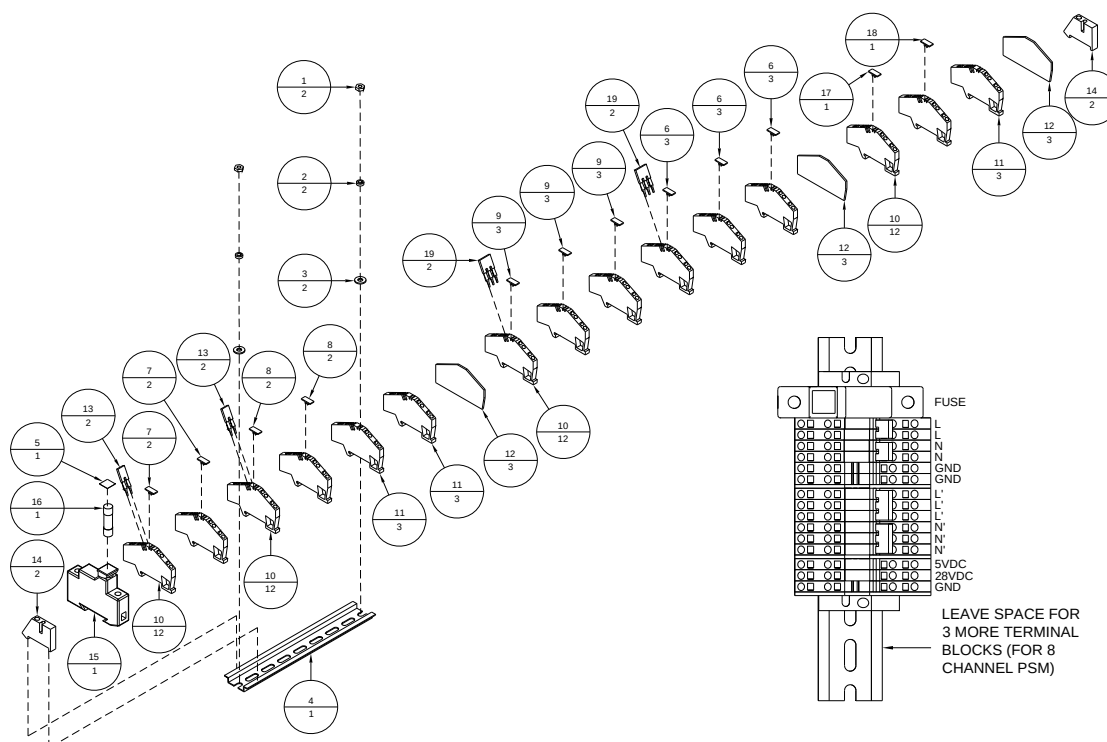


Table C-9: 9103175A – Terminal Block Assembly, Atlas/Aurora Release 2

Item	Part Number	Quantity	Description	Reference
1	420008	2	Nut, 10-32 UNF	
2	439009	2	Lockwasher, #10	
3	440008	2	Washer, #10 ID	
4	606000	3	Wire, #16, Black, 4" Lg.	
5	606002	1	Wire, #16, Blue, 4" Lg.	
6	606009	1	Wire, #16, White, 8" Lg.	
7	606009	1	Wire, #16, White, 4" Lg.	
8	606020	1	Wire, #18, Black, 6" Lg.	
9	606020	1	Wire, #18, Black, 16" Lg.	
10	606021	1	Wire, #16, Brown, 4" Lg.	
11	606026	1	Wire, #18, Blue, 16" Lg.	
12	606029	1	Wire, #18, White, 16" Lg.	
13	606032	1	Wire, #18, Brown, 16" Lg.	
14	609108	4	Terminal, Fork, #10, 22-18 AWG, Red	
15	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
16	610100	1	Relay, 120 VAC	
17	615004	1	Relay Base	
18	615021	1	T-Rail, DIN, 12" Lg.	
19	646007	2	Fuse, 5A, 250V, ¼ x 1-1/4", Time Delay	
20	9100096	1	Fuse, 10A, 250V, ¼ x 1-1/4", Time Delay	
21	9100286	1	Fuse, 2A, 250V, ¼ x 1-1/4", Time Delay	
22	9102046	1	Terminal Marker, WS 12/6, L1	
23	9102050	1	Terminal Marker, WS 12/6, L	
24	9102051	3	Terminal Marker, WS 12/6, N	
25	9102052	1	Terminal Marker, WS 12/6, 12VDC	
26	9102053	1	Terminal Marker, WS 12/6, 170VDC	
27	9102297	2	Terminal Marker, WS 12/6, L'	
28	9102299	1	Terminal Marker, WS 12/6, GND	
29	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
30	9102767	5	Terminal Marker, WS 12/6, 250V	
31	9102768	1	Terminal Marker, WS 12/6, T2A L	
32	9102769	1	Terminal Marker, WS 12/6, T3A L	
33	9102770	1	Terminal Marker, WS 12/6, T10A L	
34	9103433	1	Ferrule, #14 AWG, Blue	
35	9103435	14	Ferrule, #16 AWG, Red	
36	9103436	11	Terminal Block, ZDU 4-2/4AN	
37	9103437	2	Terminal Block, Z-Roofstyle, Ground	
38	9103438	2	End Plate	
39	9103439	2	Cross-Connection, ZQV 4/2	
40	9103440	5	Fuse Terminal, ZSI 2.5/2, ¼ x 1-1/4, 10A	
41	9103441	2	End Plate, Fuse Terminal	
42	9103442	2	End Bracket, EW 35	
43	9103445	1	Fuse, 3A, 250V, ¼ x 1-1/4", Time Delay	
44	9103539	4	Ferrule, #18 AWG, White	
45	9103724	1	Ferrule, Twin #18 AWG, White	
46	9104363	2	Terminal Marker, WS 12/6, T5A L	

Figure C-9: 9103175A – Terminal Block Assembly, Atlas/Aurora Release 2

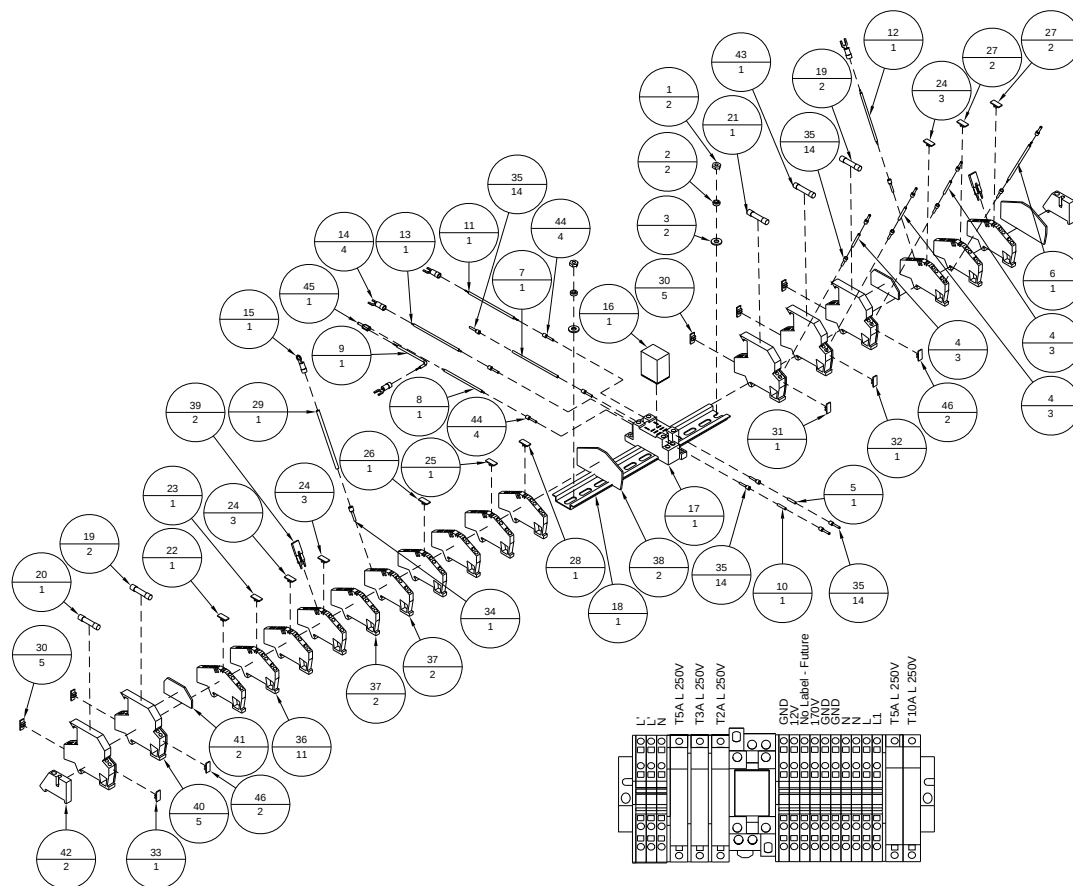


Table C-10: 9103177A – Terminal Block Assembly, Atlas/Aurora PSM, 230V

Item	Part Number	Quantity	Description	Reference
1	420008	2	Nut, 10-32 UNF	
2	439009	2	Lockwasher, #10	
3	440008	2	Washer, #10 ID	
4	606000	3	Wire, #16, Black, 4" Lg.	
5	606002	1	Wire, #16, Blue, 4" Lg.	
6	606009	1	Wire, #16, White, 8" Lg.	
7	606020	1	Wire, #18, Black, 6" Lg.	
8	606020	1	Wire, #18, Black, 16" Lg.	
9	606021	1	Wire, #16, Brown, 4" Lg.	
10	606026	1	Wire, #18, Blue, 16" Lg.	
11	606029	1	Wire, #18, White, 16" Lg.	
12	606032	1	Wire, #18, Brown, 16" Lg.	
13	609108	4	Terminal, Fork, #10, 22-18 AWG, Red	
14	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
15	610100	1	Relay, 120 VAC	
16	615004	1	Relay Base	
17	615021	1	T-Rail, DIN, 12" Lg.	
18	646007	2	Fuse, 5A, 250V, ¼ x 1-1/4", Time Delay	
19	9100096	2	Fuse, 10A, 250V, ¼ x 1-1/4", Time Delay	
20	9100286	1	Fuse, 2A, 250V, ¼ x 1-1/4", Time Delay	
21	9102042	1	Terminal Marker, WS 12/6, 115V	
22	9102046	1	Terminal Marker, WS 12/6, L1	
23	9102050	1	Terminal Marker, WS 12/6, L	
24	9102051	3	Terminal Marker, WS 12/6, N	
25	9102052	1	Terminal Marker, WS 12/6, 12VDC	
26	9102053	1	Terminal Marker, WS 12/6, 170VDC	
27	9102297	2	Terminal Marker, WS 12/6, L'	
28	9102299	1	Terminal Marker, WS 12/6, GND	
29	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
30	9102767	6	Terminal Marker, WS 12/6, 250V	
31	9102768	1	Terminal Marker, WS 12/6, T2A L	
32	9102769	1	Terminal Marker, WS 12/6, T3A L	
33	9102770	2	Terminal Marker, WS 12/6, T10A L	
34	9103433	1	Ferrule, #14 AWG, Blue	
35	9103435	12	Ferrule, #16 AWG, Red	
36	9103436	12	Terminal Block, ZDU 4-2/4AN	
37	9103437	2	Terminal Block, Z-Roofstyle, Ground	
38	9103438	2	End Plate	
39	9103439	2	Cross-Connection, ZQV 4/2	
40	9103440	6	Fuse Terminal, ZSI 2.5/2, ¼ x 1-1/4, 10A	
41	9103441	2	End Plate, Fuse Terminal	
42	9103442	2	End Bracket, EW 35	
43	9103445	1	Fuse, 3A, 250V, ¼ x 1-1/4", Time Delay	
44	9103539	4	Ferrule, #18 AWG, White	
45	9103724	1	Ferrule, Twin #18 AWG, White	
46	9104363	2	Terminal Marker, WS 12/6, T5A L	

Figure C-10: 9103177A – Terminal Block Assembly, Atlas/Aurora PSM, 230V

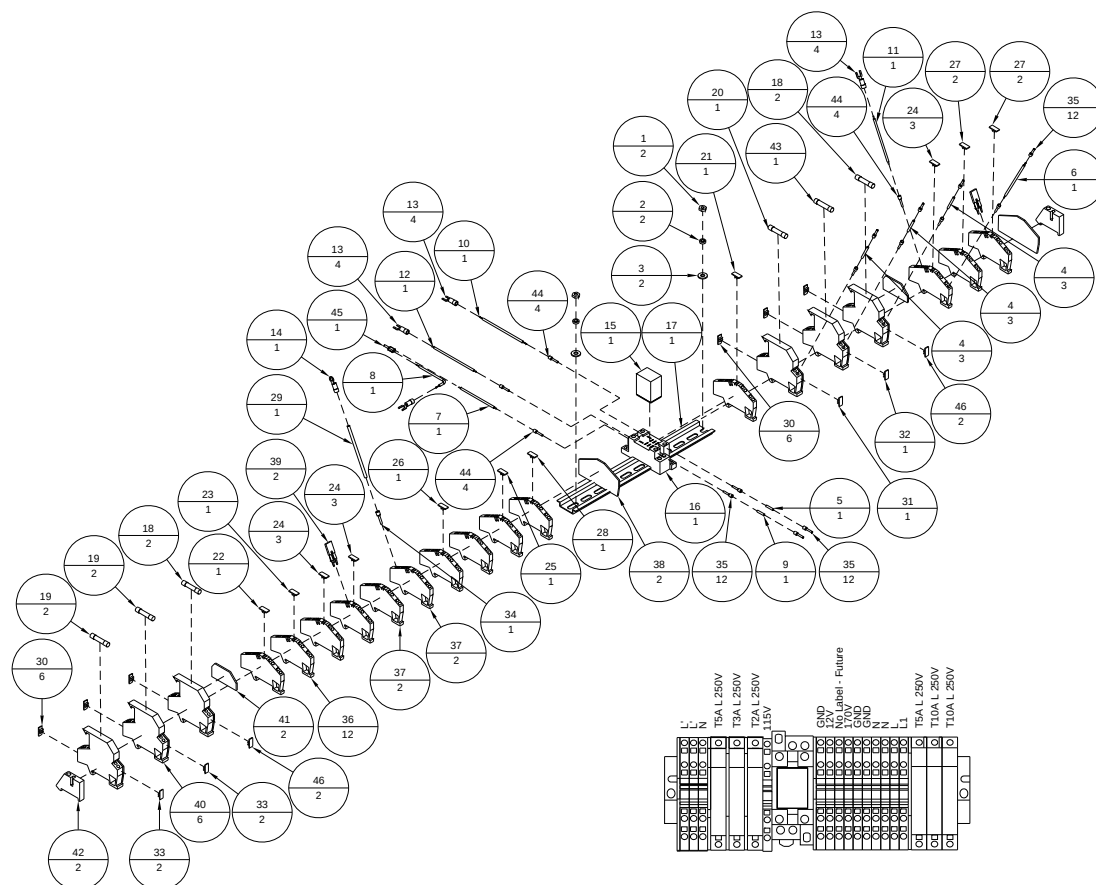


Table C-11: 9103412A – Faceplate Assembly, Atlas/Aurora PSM, Release 1

Item	Part Number	Quantity	Description	Reference
1	404020	2	Screw, FHCS, 10-32 UNF x 3/8"	
2	404050	4	Screw, FHCS, 10-32 UNF x 3/4"	
3	9102846	2	Handle, Pull, 1/4-20	
4	9103112	4	Screw, FHMS, 1/4-20 UNC x 1/2"	
5	9103183	1	Nameplate, Buskro Logo	
6	9103315	4	Washer, Cup, 10-32 UNF Flat Head	
7	9103412	1	Faceplate, Power Supply	

Figure C-11: 9103412A – Faceplate Assembly, Atlas/Aurora PSM, Release 1

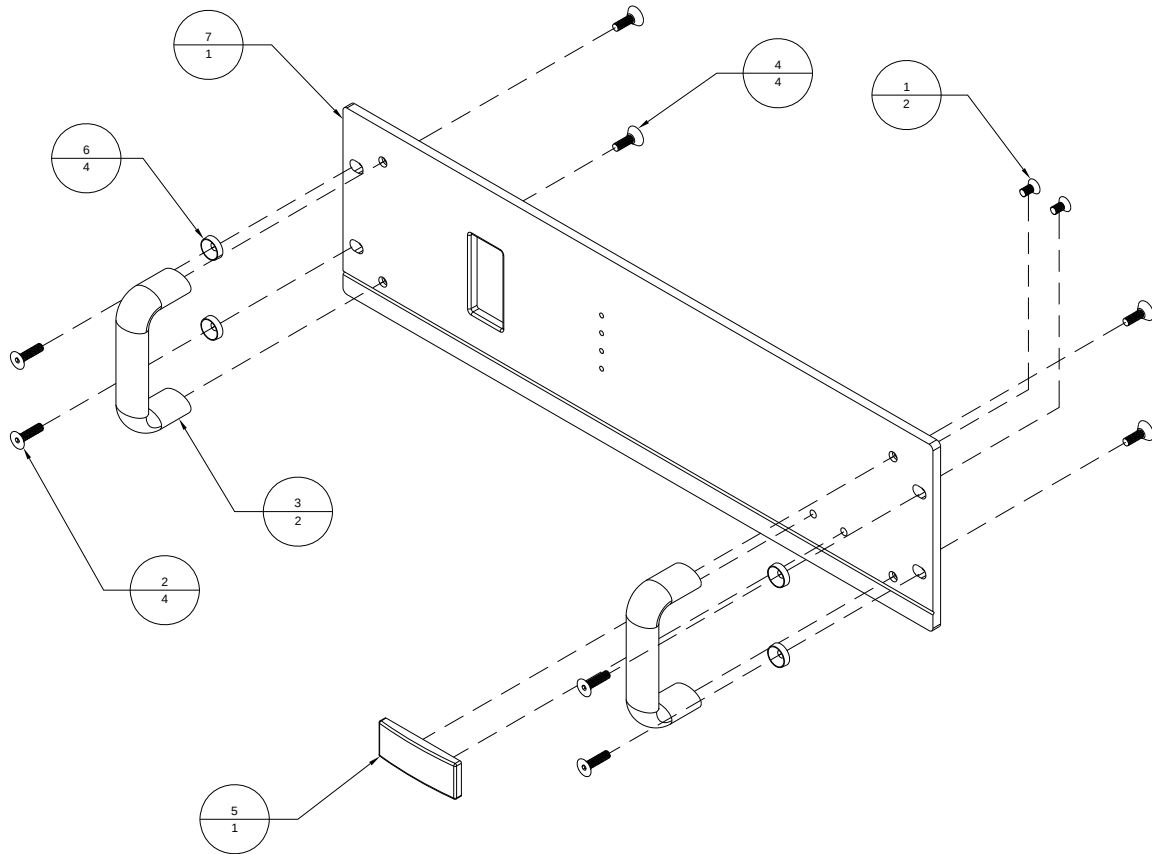


Table C-12: 9103416A – Subbracket Assembly, Atlas/Aurora, Release 1

Item	Part Number	Quantity	Description	Reference
1	402320	12	Screw, PHMS, 6-32 UNC x 3/8"	
2	403530	4	Screw, BHCS, 8-32 UNC x 1/2"	
3	420008	1	Nut, 10-32 UNF	
4	439009	1	Lockwasher, No. 10	
5	606000	2	Wire, #16, Black, 12" Lg.	
6	606001	1	Wire, #16, Red, 12" Lg.	
7	606002	1	Wire, #16, Blue, 12" Lg.	
8	606005	1	Wire, #16, Green, 12" Lg.	
9	606008	1	Wire, #14, White, 6" Lg.	
10	606008	1	Wire, #14, White, 12" Lg.	
11	606009	2	Wire, #16, White, 12" Lg.	
12	606010	1	Wire, #14, Black, 6" Lg.	
13	606010	3	Wire, #14, Black, 12" Lg.	
14	606021	1	Wire, #16, Brown, 12" Lg.	
15	609000	4	Shrink Wrap, 3/16" ID, 1" Lg.	
16	609111	5	Terminal, Ring, #10, 16-14 AWG, Blue	
17	614102	1	Receptacle, 17-3, Male	
18	614106	1	Receptacle, Female, 23-7	
19	614109	3	Pin, Power Contact	
20	614110	7	Socket, Power Contact	
21	614123	2	Contact, Female, 18-16 AWG, Blue	
22	9102681	4	Wire, #14, Green/Yellow, 6" Lg.	
23	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
24	9103160	1	Receptacle, 17-9, Reverse Sex	
25	9103416	1	Subbracket, Atlas/Aurora Power Supply	
26	9103433	17	Ferrule, #14 AWG, Blue	
27	9103567	2	Socket, Straight Blade, 15A/125VAC	

Figure C-12: 9103416A – Subbracket Assembly, Atlas/Aurora, Release 1

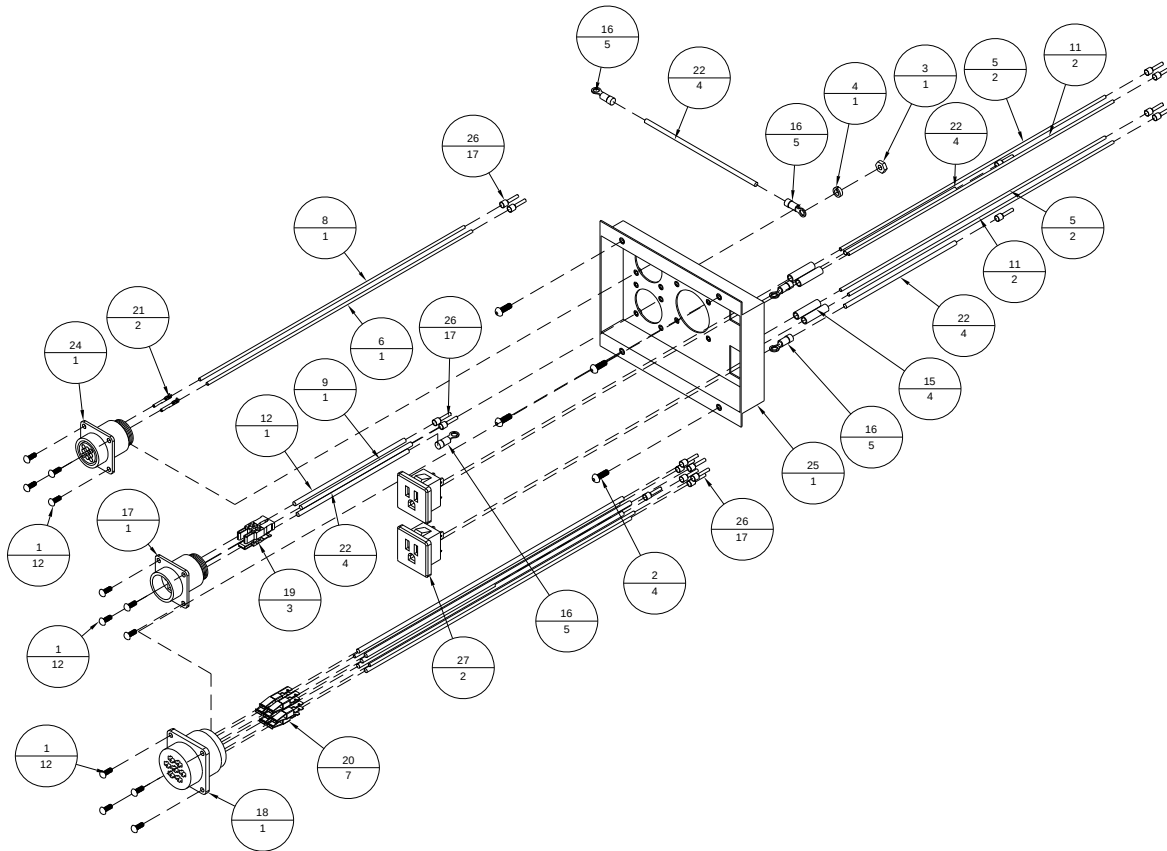


Table C-13: 9103417A – Power Supply Subbracket Assembly, Release 1

Item	Part Number	Quantity	Description	Reference
1	420007	4	Nut, 8-32 UNC	
2	420008	7	Nut, 10-32 UNF	
3	420010	1	Nut, 1/4-20 UNC	
4	439009	12	Lockwasher, No. 10	
5	439010	1	Lockwasher, 1/4" ID	
6	606037	1	Wire, #22, Black, 6" Lg.	
7	606044	1	Wire, #22, Red, 6" Lg.	
8	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
9	609120	1	Terminal, Ring, 1/4", 16-14 AWG, Non-ins.	
10	9101669	2	Shrink Wrap, 1/16" ID, 1" Lg.	
11	9102681	1	Wire, #14, Green/Yellow, 24" Lg.	
12	9102781	1	Fan, 12VDC, Flight II 120	
13	9102783	1	Fan, Finger Guard Metal, Flight II 120	
14	9103117	1	Board, 170V Power Supply	
15	9103171A	1	Terminal Block Assembly, Atlas/Aurora	Page C-8
16	9103198	4	Screw, SHCS, 8-32 UNC x 1-3/4"	
17	9103416A	1	Subbracket Assembly, Atlas/Aurora	Page C-17
18	9103417	1	Bracket, Atlas Power Supply	
19	9103433A	1	Power Supply Assembly, 12VDC	Page C-22
20	9103434	3	Ferrule, #14, Dual Wire, Blue	
21	9103514A	1	Transformer Assembly, Jetting Voltage	Page C-23

Figure C-13: 9103417A – Power Supply Subbracket Assembly

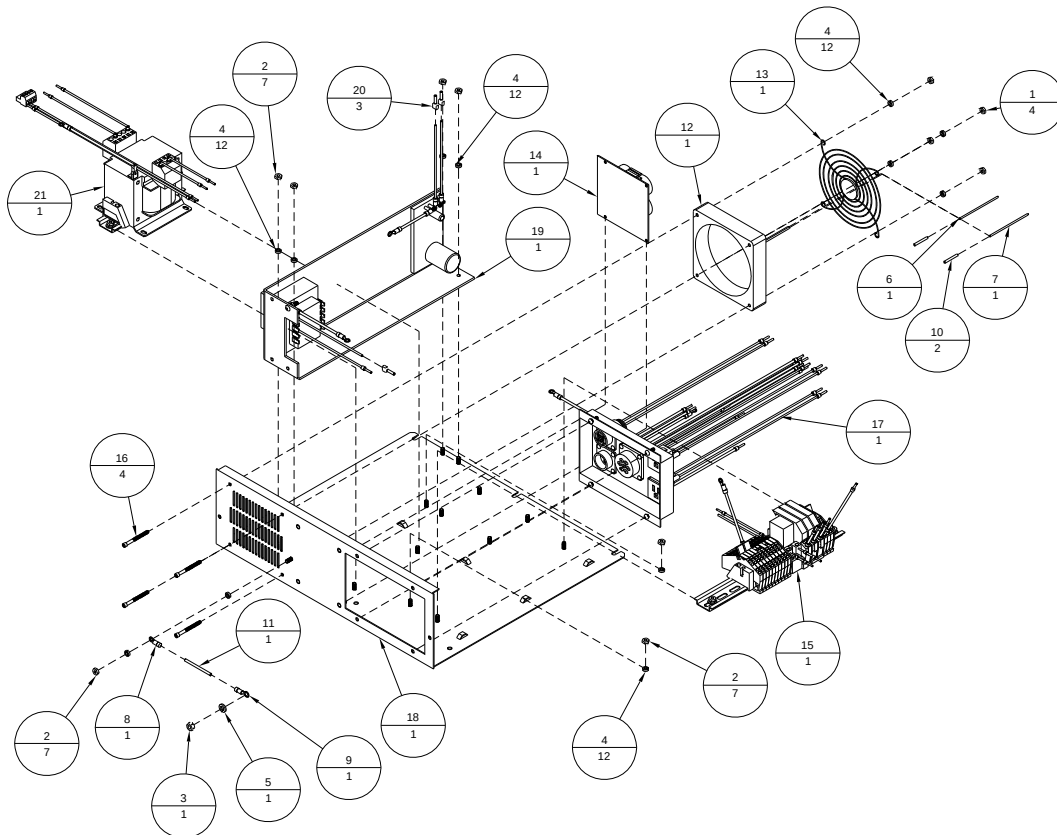


Table C-14: 9103419A – Subbracket Assembly, Apollo, Release 1

Item	Part Number	Quantity	Description	Reference
1	401010	8	Screw, FHCS, 4-40 UNC x 1/4"	
2	402310	4	Screw, PHMS, 6-32 UNC x 1/4"	
3	402320	4	Screw, PHMS, 6-32 UNC x 3/8"	
4	403520	6	Screw, BHCS, 8-32 UNC x 3/8"	
5	420008	1	Nut, 10-32 UNF	
6	439008	1	Lockwasher, No. 10, External Tooth	
7	439009	1	Lockwasher, No. 10	
8	606008	1	Wire, #14, White, 9"	
9	606008	2	Wire, #14, White, 9"	
10	606008	2	Wire, #14, White, 9"	
11	606010	1	Wire, #14, Black, 9"	
12	606010	2	Wire, #14, Black, 9"	
13	606010	2	Wire, #14, Black, 9"	
14	609000	12	Shrink Wrap, 3/16" ID, 1" Lg.	
15	609110	2	Connector, Push-on, 16-14 AWG, Blue	
16	609111	5	Terminal Ring, #10, 16-14 AWG, Blue	
17	614102	1	Receptacle, 17-3, Male	
18	614109	3	Pin, Power Contact	
19	9102362	4	Hex Spacer, 6-32 UNC x 3/4"	
20	9102418	1	Power Supply, Switching, 5.1VDC, 8A	
21	9102419	1	Power Supply, Switching, 28V/1.8A	
22	9102580A	2	Cable, 5VDC, 28VDC Power Input	
23	9102681	2	Wire, #14, Green/Yellow, 6"	
24	9102681	4	Wire, #14, Green/Yellow, 9"	
25	9102681	2	Wire, #14, Green/Yellow, 7"	
26	9103419	1	Subbracket, Apollo Power Supply	
27	9103420	1	Board, 5VDC/28VDC Power Supply	
28	9103433	14	Ferrule, #14 AWG, Blue	
29	9103567	4	Socket, Straight Blade, 15A/125VAC	
30	9103638A	1	Cable, Apollo Power Supply	

Figure C-14: 9103419A – Subbracket Assembly, Apollo, Release 1

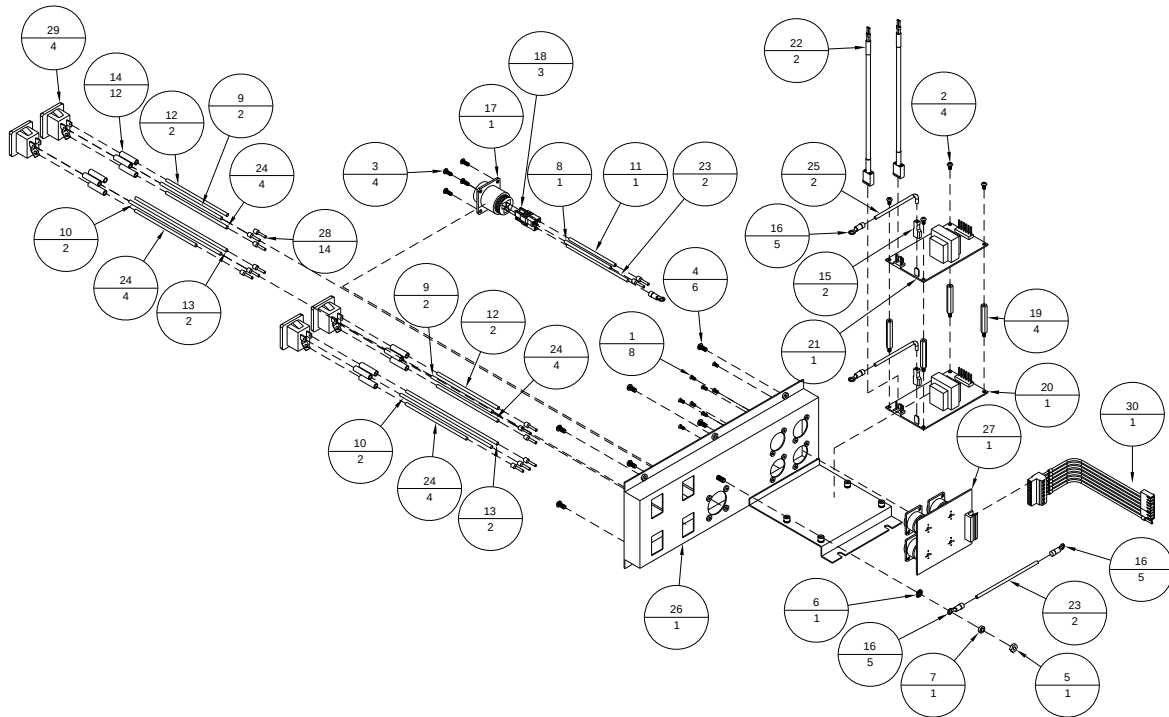


Table C-15: 9103433A – Power Supply Assembly, 12VDC, Release 1

Item	Part Number	Quantity	Description	Reference
1	404550	1	Screw, BHCS, 10-32 UNF x ¾"	
2	420008	1	Nut, 10-32 UNF	
3	439009	1	Lockwasher, No. 10	
4	606000	1	Wire, #16, Black, 14" Lg.	
5	606002	1	Wire, #16, Blue, 14" Lg.	
6	606009	1	Wire, #16, White, 14" Lg.	
7	606021	1	Wire, #16, Brown, 14" Lg.	
8	609114	6	Terminal Ring, #10, 12-10 AWG, Non-ins.	
9	9101209	1	Power Supply, 12VDC, 10.2A	
10	9102681	1	Wire, #14, Green/Yellow, 12" Lg.	
11	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
12	9103433	1	Ferrule, #14 AWG, Blue	

Figure C-15: 91003433A – Power Supply Assembly, 12VDC, Release 1

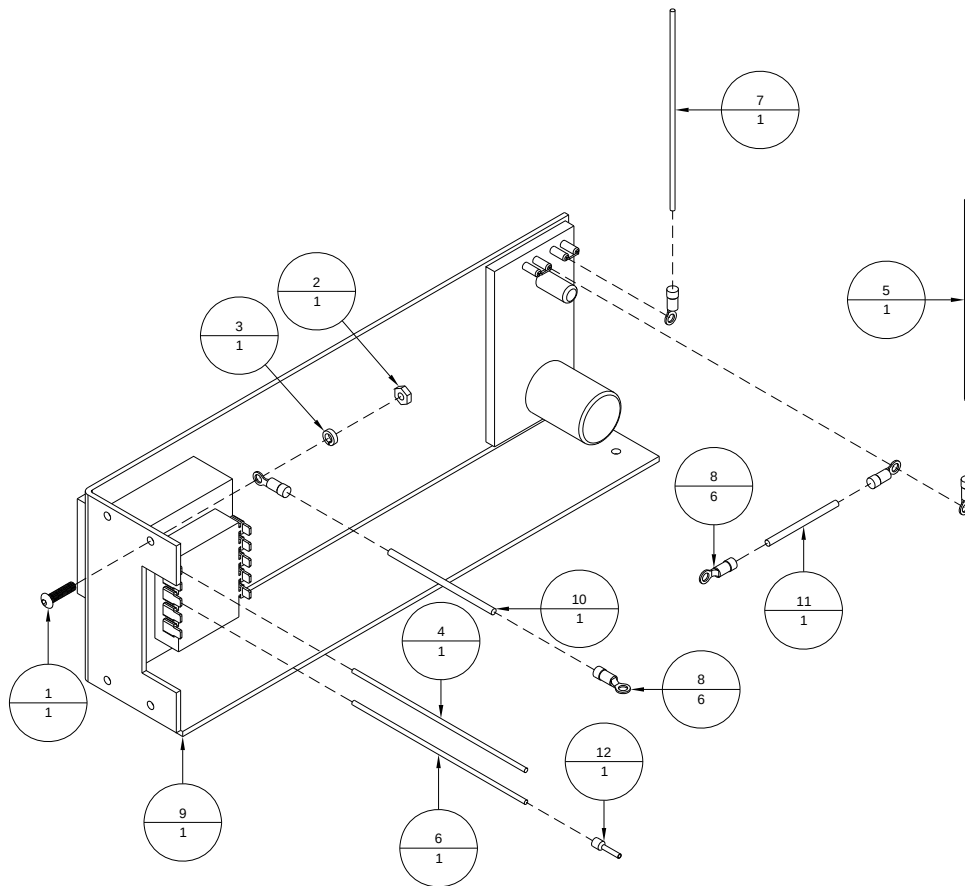


Table C-16: 9103514A – Transformer Assembly, Jetting Voltage, Release 1

Item	Part Number	Quantity	Description	Reference
1	420008	2	Nut, 10-32 UNF	
2	439009	2	Lockwasher, No. 10	
3	440008	2	Washer, #10 ID	
4	606000	1	Wire, #16, Black, 12" Lg.	
5	606001	1	Wire, #16, Red, 12" Lg.	
6	606005	1	Wire, #16, Green, 12" Lg.	
7	606009	1	Wire, #16, White, 12" Lg.	
8	606020	2	Wire, #18, Black, 6" Lg.	
9	609110	1	Connector, Push-on, 16-14 AWG, Blue	
10	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
11	615021	1	T-Rail, DIN, 5.6" Lg.	
12	615066	1	Connector, Female, 4-Pin, BLA4	
13	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
14	9103435	8	Ferrule, #16 AWG, Red	
15	9103442	2	End Bracket, EW 35	
16	9103514	1	Transformer, 120 x 90/100/110/120 VAC	
17	9103539	4	Ferrule, #18 AWG, White	

Figure C-16: 9103514A – Transformer Assembly, Jetting Voltage, Release 1

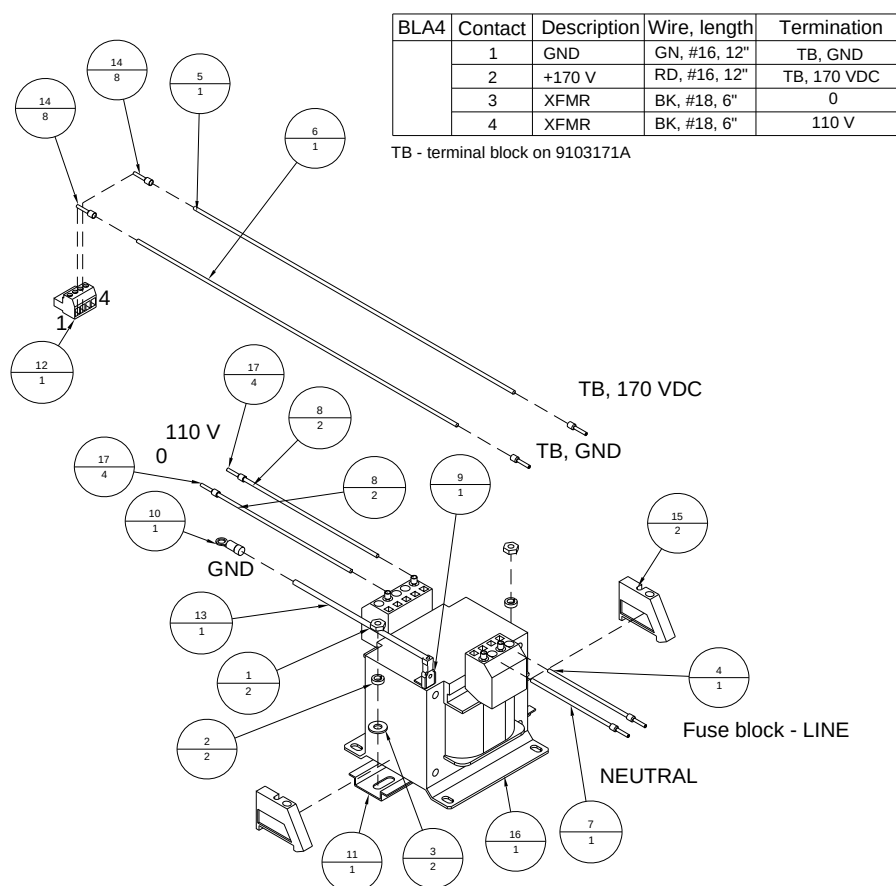


Table C-17: 9103539A – Transformer Assembly, Jetting Voltage, Release 2

Item	Part Number	Quantity	Description	Reference
1	420008	4	Nut, 10-32 UNF	
2	439009	4	Lockwasher, #10	
3	440008	4	Washer, #10 ID	
4	606000	1	Wire, #16, Black, 12" Lg.	
5	606001	1	Wire, #16, Red, 12" Lg.	
6	606005	1	Wire, #16, Green, 12" Lg.	
7	606009	1	Wire, #16, White, 12" Lg.	
8	606020	2	Wire, #18, Black, 6" Lg.	
9	609110	1	Connector, Push-on, 16-14 AWG, Blue	
10	609111	1	Terminal, Ring, #10, 16-14 AWG, Blue	
11	615066	1	Connector, Female, 4-Pin, BLA4	
12	9102681	1	Wire, #14, Green/Yellow, 6" Lg.	
13	9103435	8	Ferrule, #16 AWG, Red	
14	9103514	1	Transformer, 120 x 90/100/110/120 VAC	
15	9103539	4	Ferrule, #18 AWG, White	

Figure C-17: 9103539A – Transformer Assembly, Jetting Voltage, Release 2

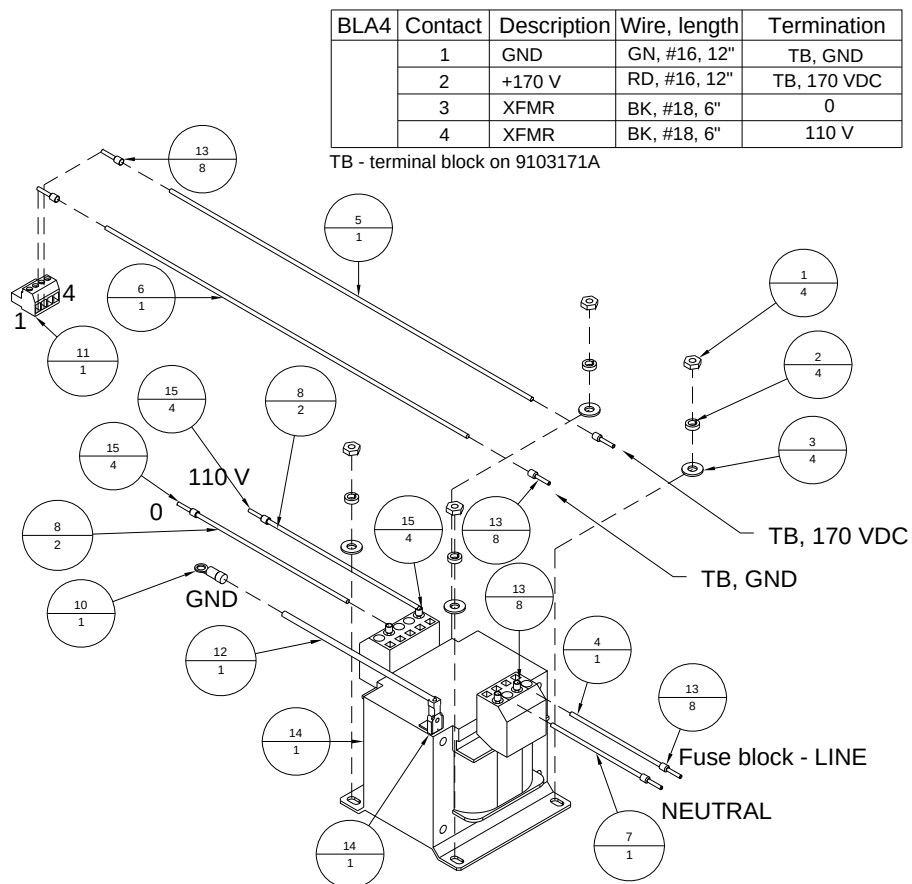


Table C-18: 9104164A – Chassis Assembly, Apollo PSM, 4-Channel, Release 2

Item	Part Number	Quantity	Description	Reference
1	401010	18	Screw, FHCS, 4-40 UNC x 1/4"	
2	402310	8	Screw, PHMS, 6-32 UNC x 1/4"	
3	404520	2	Screw, BHCS, 10-32 UNF x 3/8"	
4	420008	8	Nut, 10-32 UNF	
5	439008	1	Lockwasher, #10, External Tooth	
6	439009	7	Lockwasher, #10	
7	440530	8	Washer, #6, Nylon	
8	606008	1	Wire, #14, White, 12"	
9	606033	4	Cable, #14-3, SJOW-A, 8" Lg.	
10	606039	1	Cable, #14-2, Shielded, BK/RD, 14" Lg.	
11	606040	1	Cable, #14-2, SJOW, BK/WH, 14" Lg.	
12	609000	15	Shrink Wrap, 3/16" ID, 1" Lg.	
13	609110	4	Connector, Push-on, 16-14 AWG, Blue	
14	609111	3	Terminal Ring, #10, 16-14 AWG, Blue	
15	609113	3	Connector, Push-on, Yellow	
16	9102205	1	Switch, Breaker, 15A, 2 Pole, Green	
17	9102418	1	Power Supply, Switching, 5.1VDC, 8A	
18	9102419	1	Power Supply, Switching, 28V/1.8A	
19	9102580A	2	Cable, 5VDC, 28VDC Power Input	
20	9102681	1	Wire, #14, Green/Yellow, 7"	
21	9102681	1	Wire, #14, Green/Yellow, 11"	
22	9102681	1	Wire, #14, Green/Yellow, 20"	
23	9102681	1	Wire, #14, Green/Yellow, 8"	
24	9102862	1	Receptacle, Male, 250VAC/10A, IEC	
25	9103167	4	Receptacle, Female, 120 VAC, 15A, IEC	
26	9103174A	1	Terminal Block Assembly, Apollo PSM	Page C-11
27	9103176A	1	Cable, Power Supply Display Board	
28	9103414	1	Board, Power Supply Display, Apollo	
29	9103420	1	Board, 5VDC/28VDC Power Supply	
30	9103433	17	Ferrule, #14 AWG, Blue	
31	9103445	1	Fuse, 3A, 250V, 1/4 x 1-1/4", Time Delay	
32	9103638A	1	Cable, Apollo Power Supply	
33	9104133	1	Cover, PCM / PSM	
34	9104164	1	Chassis, Apollo Power Supply Module	
35	9104193A	1	Faceplate Assembly, Apollo PSM	Page C-28

Figure C-18: 9104164A – Chassis Assembly, Apollo PSM, 4-Channel, Release 2

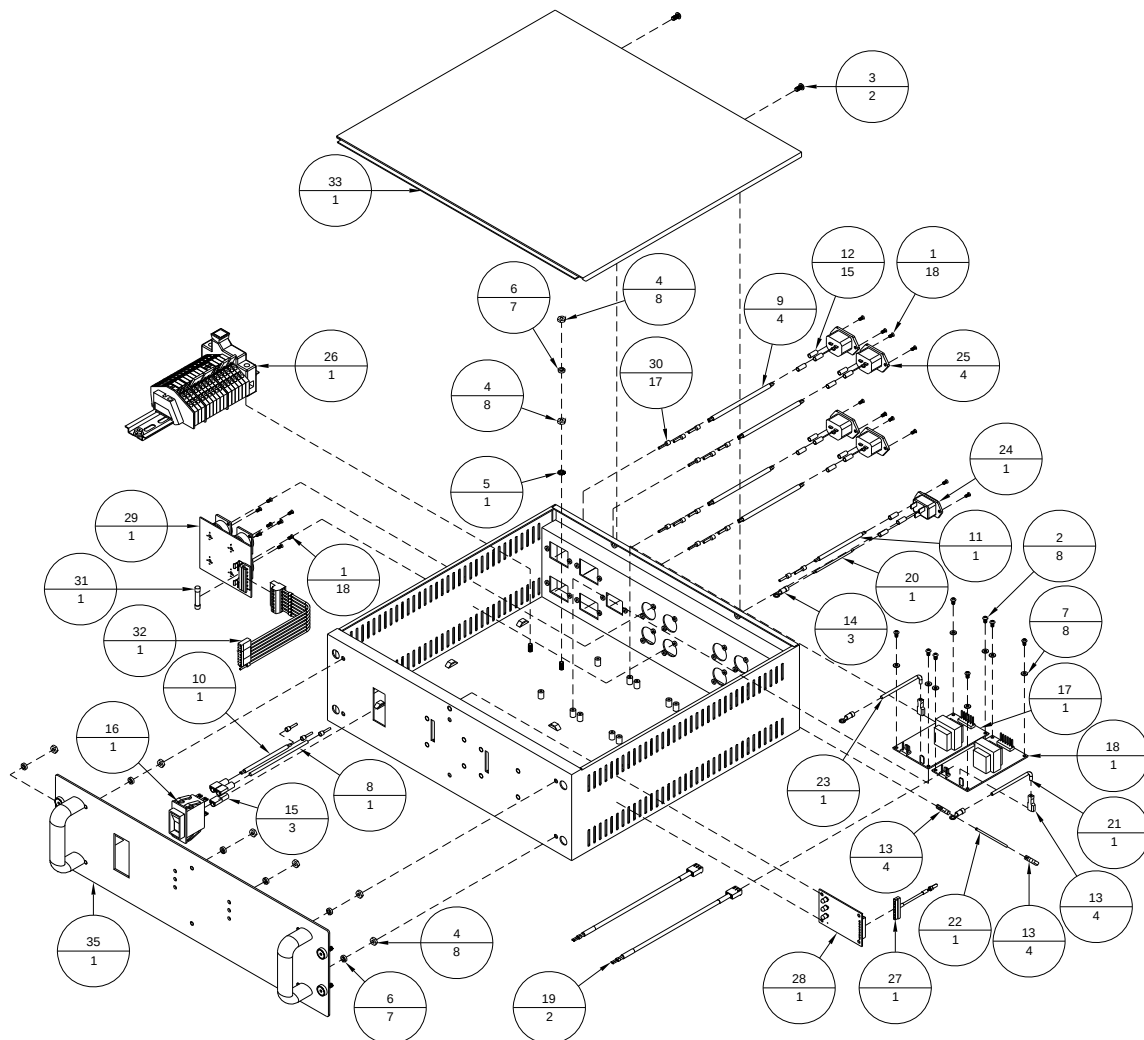


Table C-19: 9104192A – Faceplate Assembly, Atlas/Aurora PSM, Release 2

Item	Part Number	Quantity	Description	Reference
1	404050	4	Screw, FHCS, 10-32 UNF x 3/4"	
2	405530	4	Screw, BHCS, 1/4-20 UNC x 1/2"	
3	439010	4	Lockwasher, 1/4" ID	
4	9102846	2	Handle, Pull, 1/4-20	
5	9103315	4	Washer, Cup, 10-32 UNF Flat Head	
6	9104192	1	Faceplate, Atlas/Aurora PSM	

Figure C-19: 9104192A – Faceplate Assembly, Atlas/Aurora PSM, Release 2

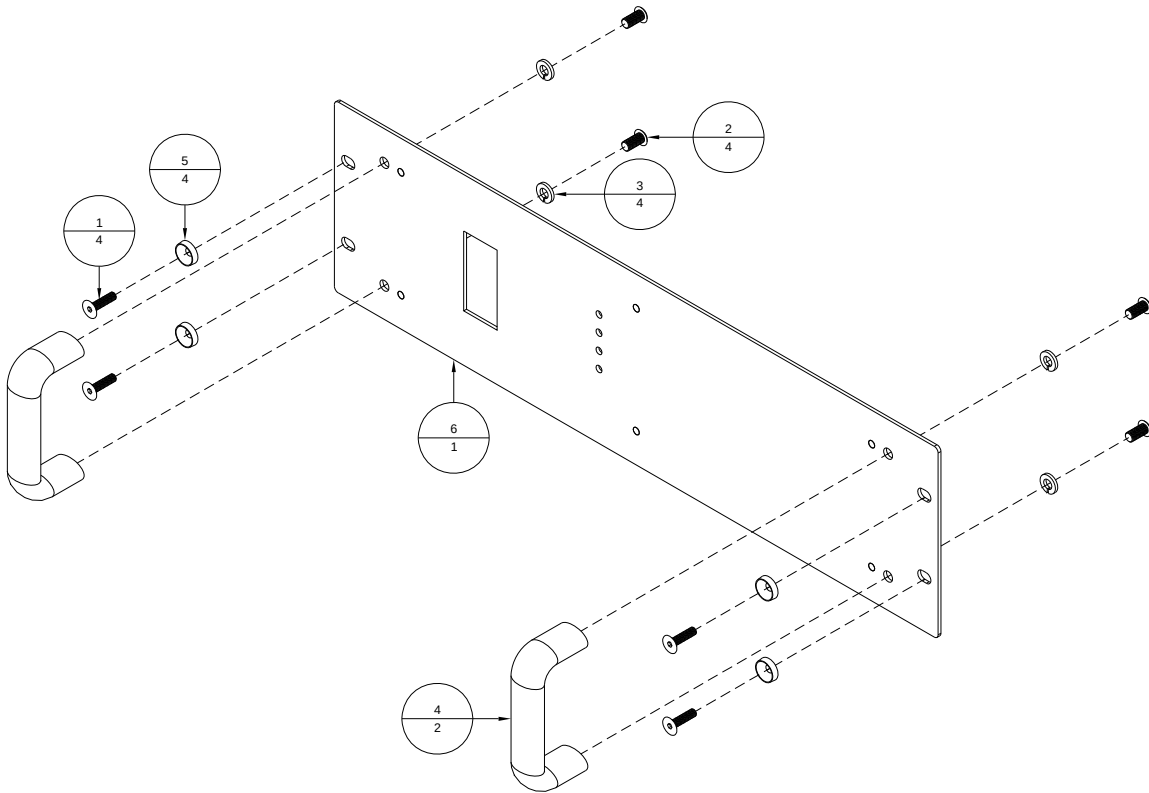


Table C-20: 9104193A – Faceplate Assembly, Apollo PSM, Release 2

Item	Part Number	Quantity	Description	Reference
1	404050	4	Screw, FHCS, 10-32 UNF x ¾"	
2	405530	4	Screw, BHCS, ¼-20 UNC x ½"	
3	439010	4	Lockwasher, ¼" ID	
4	9102846	2	Handle, Pull, ¼-20	
5	9103315	4	Washer, Cup, 10-32 UNF Flat Head	
6	9104193	1	Faceplate, Apollo PSM	

Figure C-20: 9104193A – Faceplate Assembly, Apollo PSM, Release 2

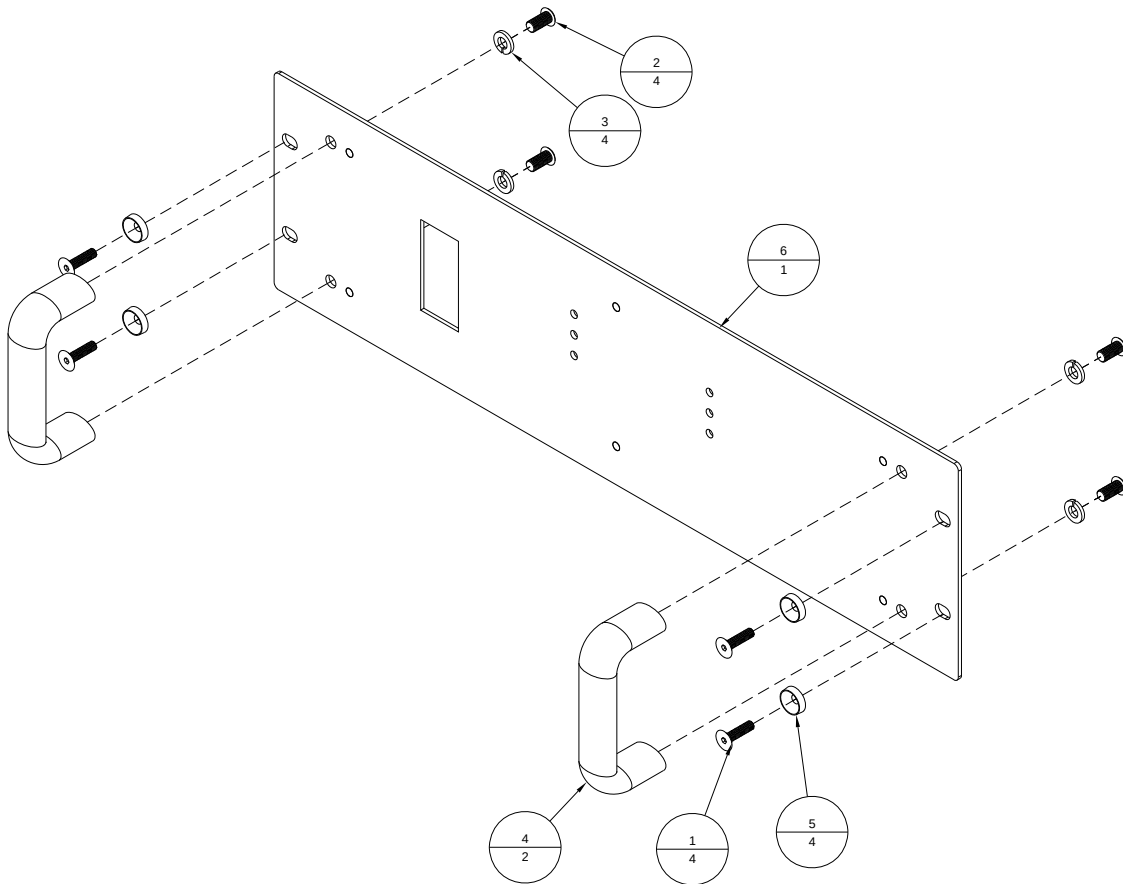
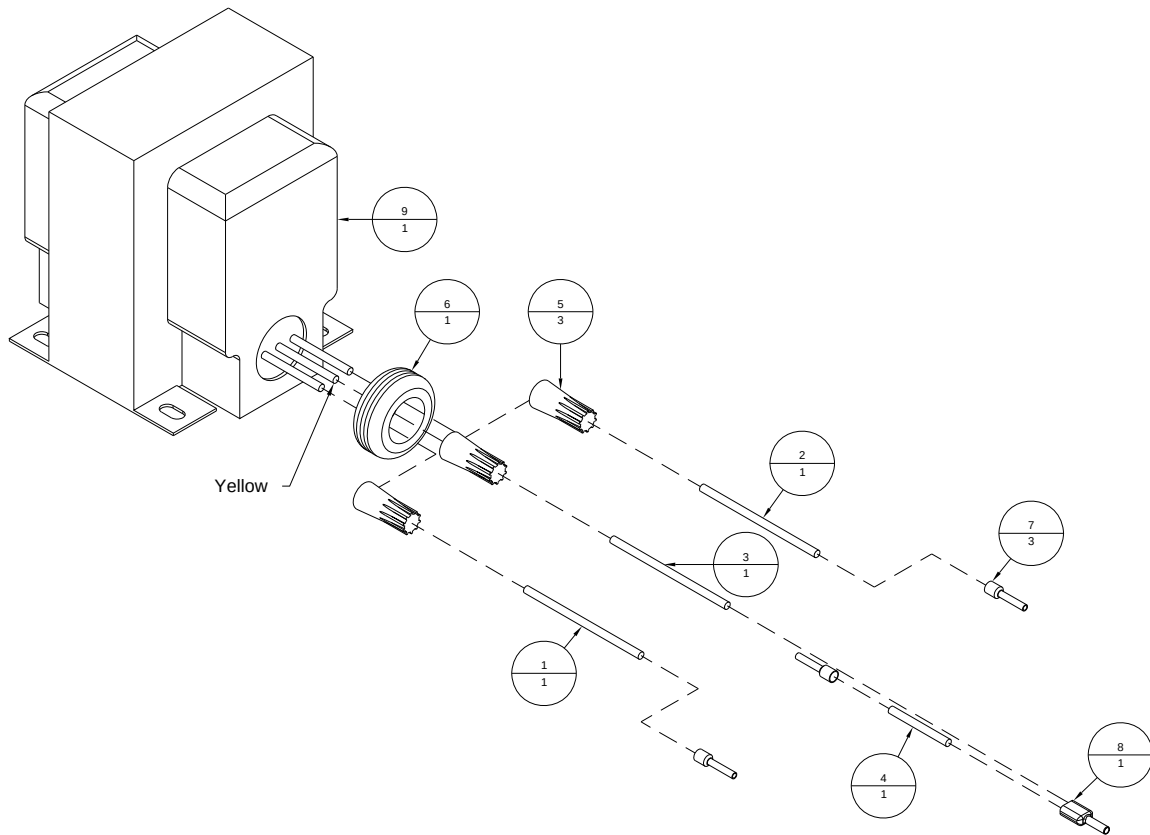


Table C-21: 9104922A – Transformer Assembly, BK-PSM-4A-WD

Item	Part Number	Quantity	Description	Reference
1	606020	1	Wire, #18, Black, 10" Lg.	
2	606022	1	Wire, #18, Red, 10" Lg.	
3	606024	1	Wire, #18, Yellow, 10" Lg.	
4	606029	1	Wire, #18, White, 5" Lg.	
5	609102	3	Marrette, Black	
6	9103201	1	Grommet, Rubber, 5/8" ID	
7	9103539	3	Ferrule, #18 AWG, White	
8	9103724	1	Ferrule, #18 AWG, White, Twin	
9	9104922	1	Transformer, Auto, 200VA, 230/115VAC	

Figure C-21: 9104922A – Transformer Assembly, BK-PSM-4A-WD



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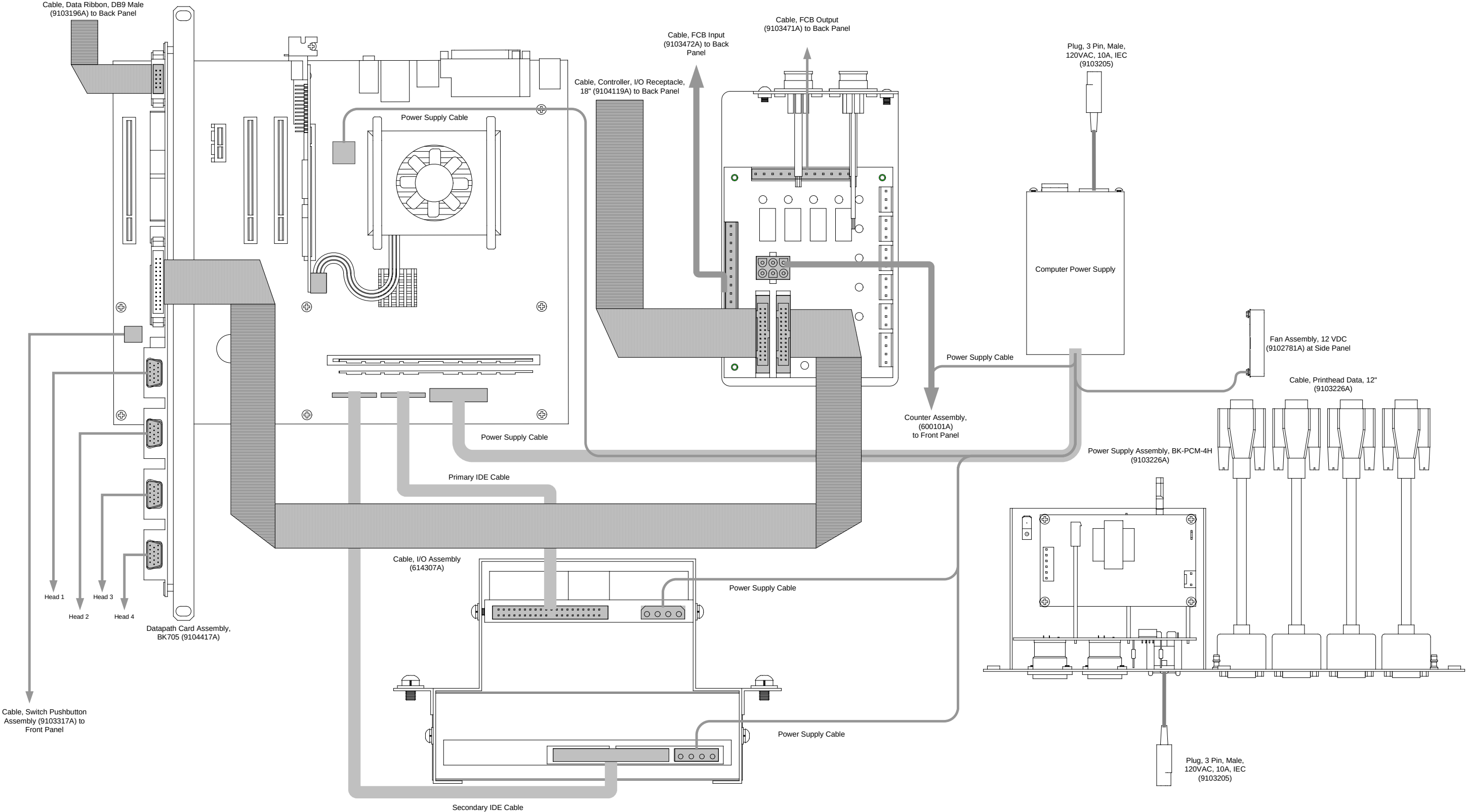


Figure D-3: BK-PSM-4A – Wiring Diagram, Atlas/Aurora PSM, Release 2, Page 2/2

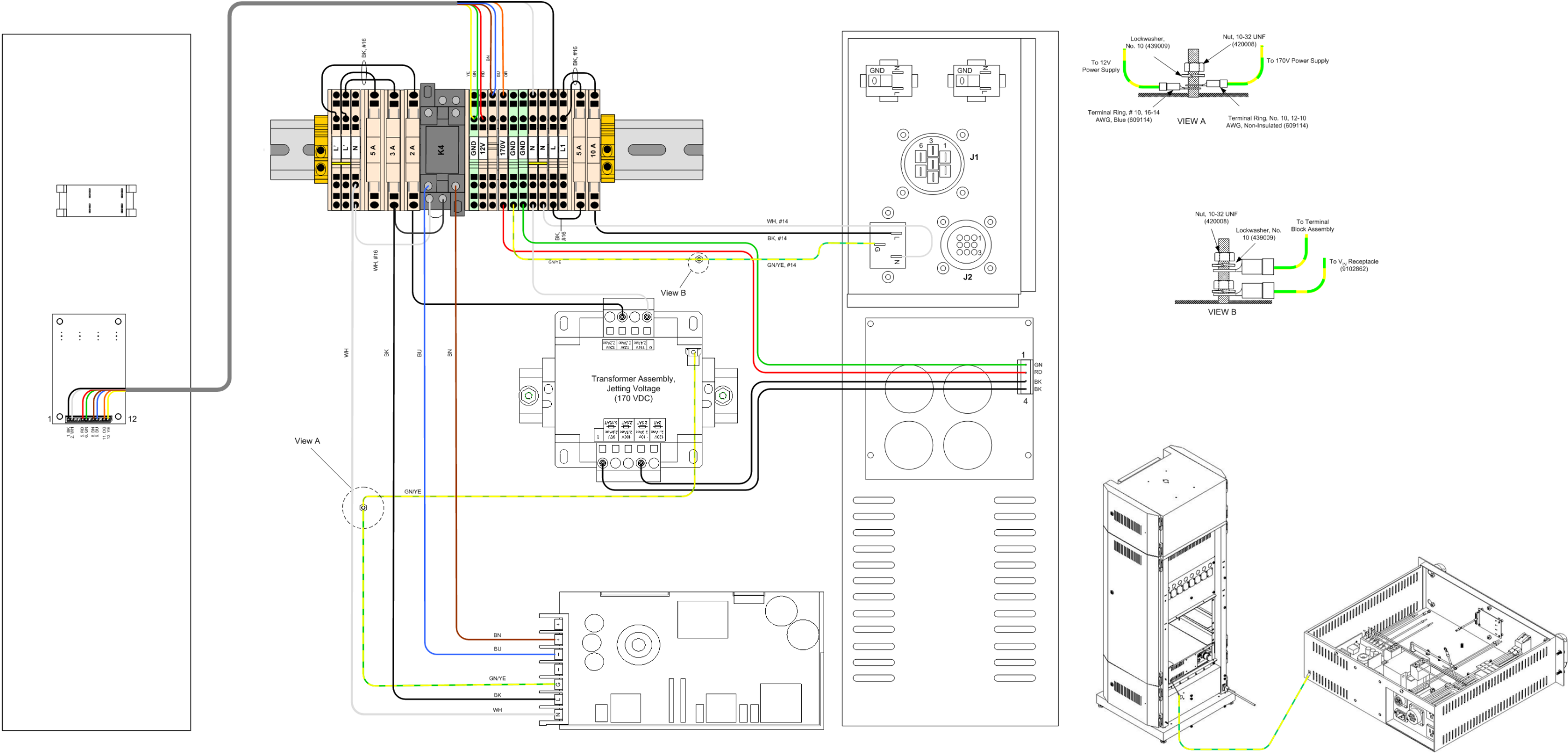


Figure D-4: BK-PSM-4A-WD – Wiring Diagram, Atlas/Aurora, 200/230V, Page 1/2

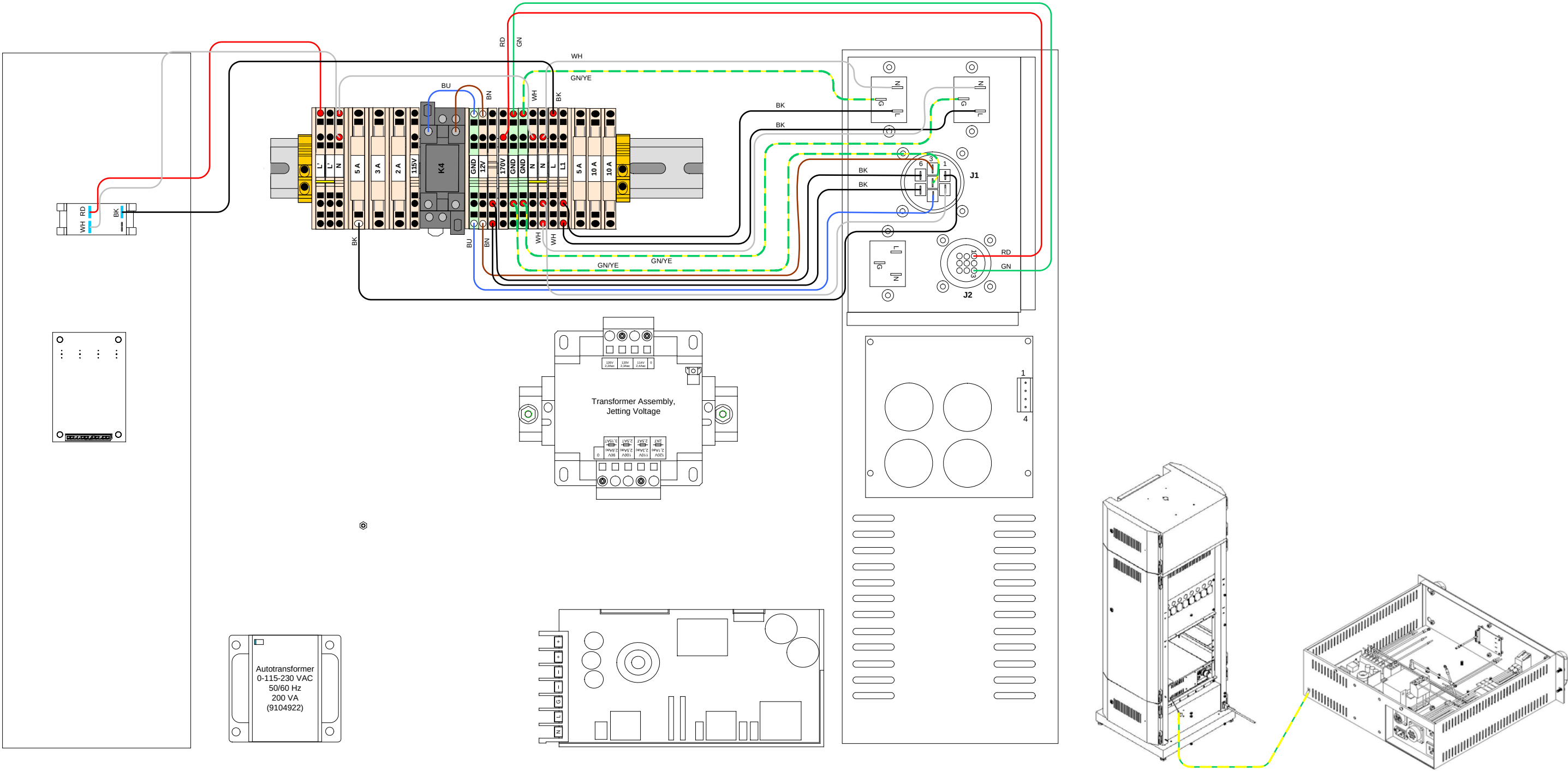


Figure D-5: BK-PSM-4A-WD – Wiring Diagram, Atlas/Aurora, 200/230V, Page 2/2

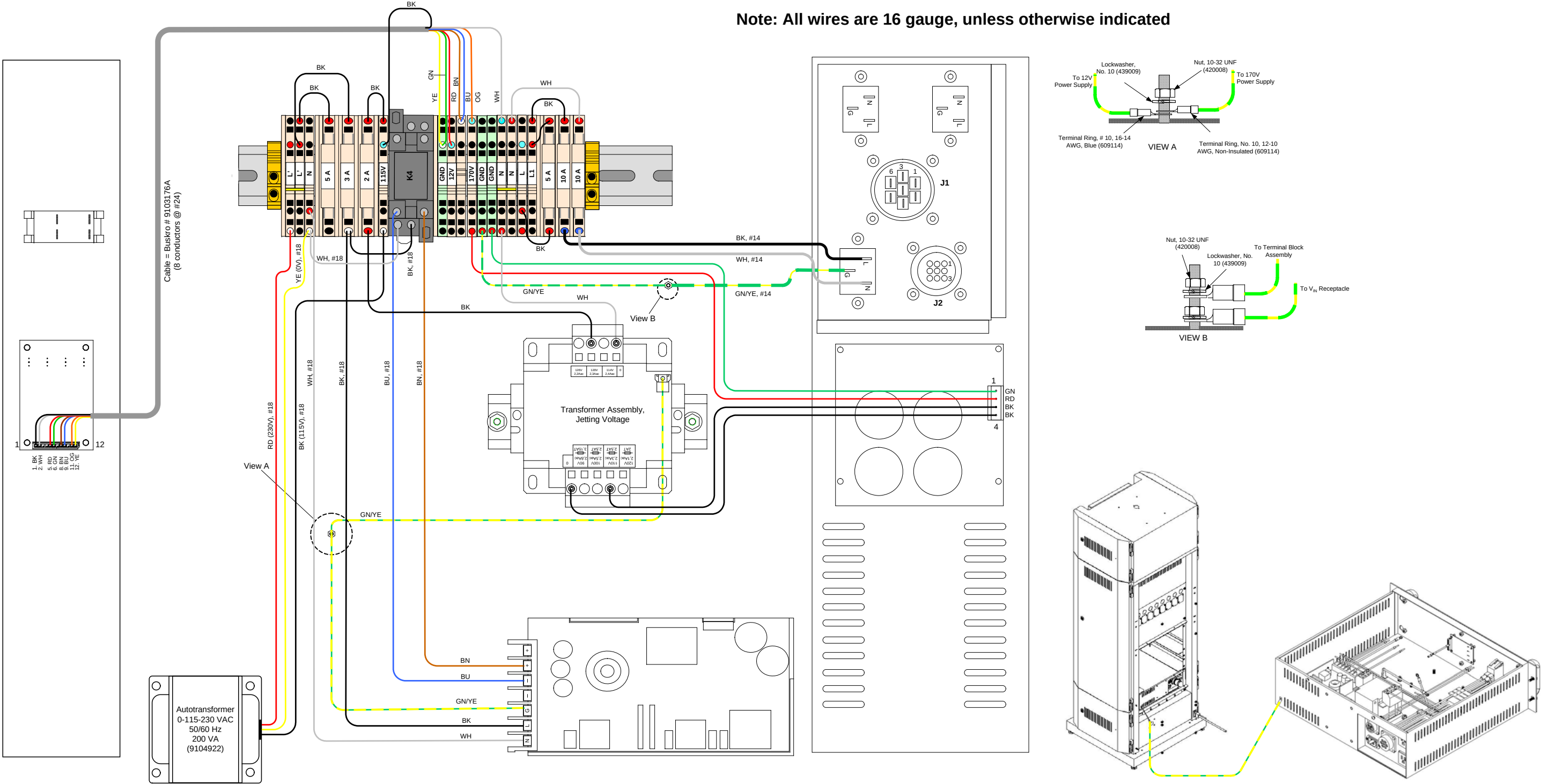


Figure D-8: BK-PSM-4H – Wiring Diagram, Apollo Power Supply, Page 2/2

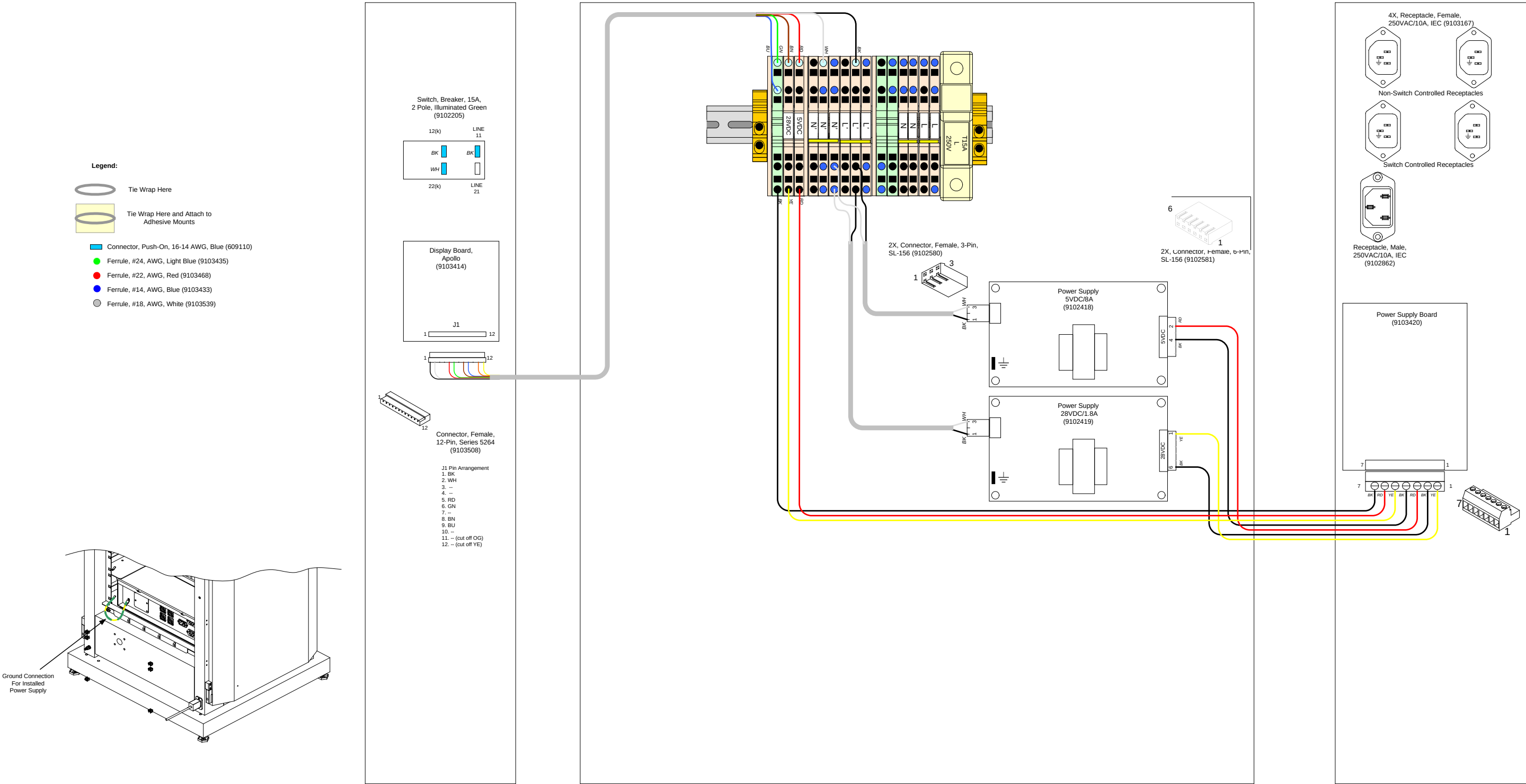
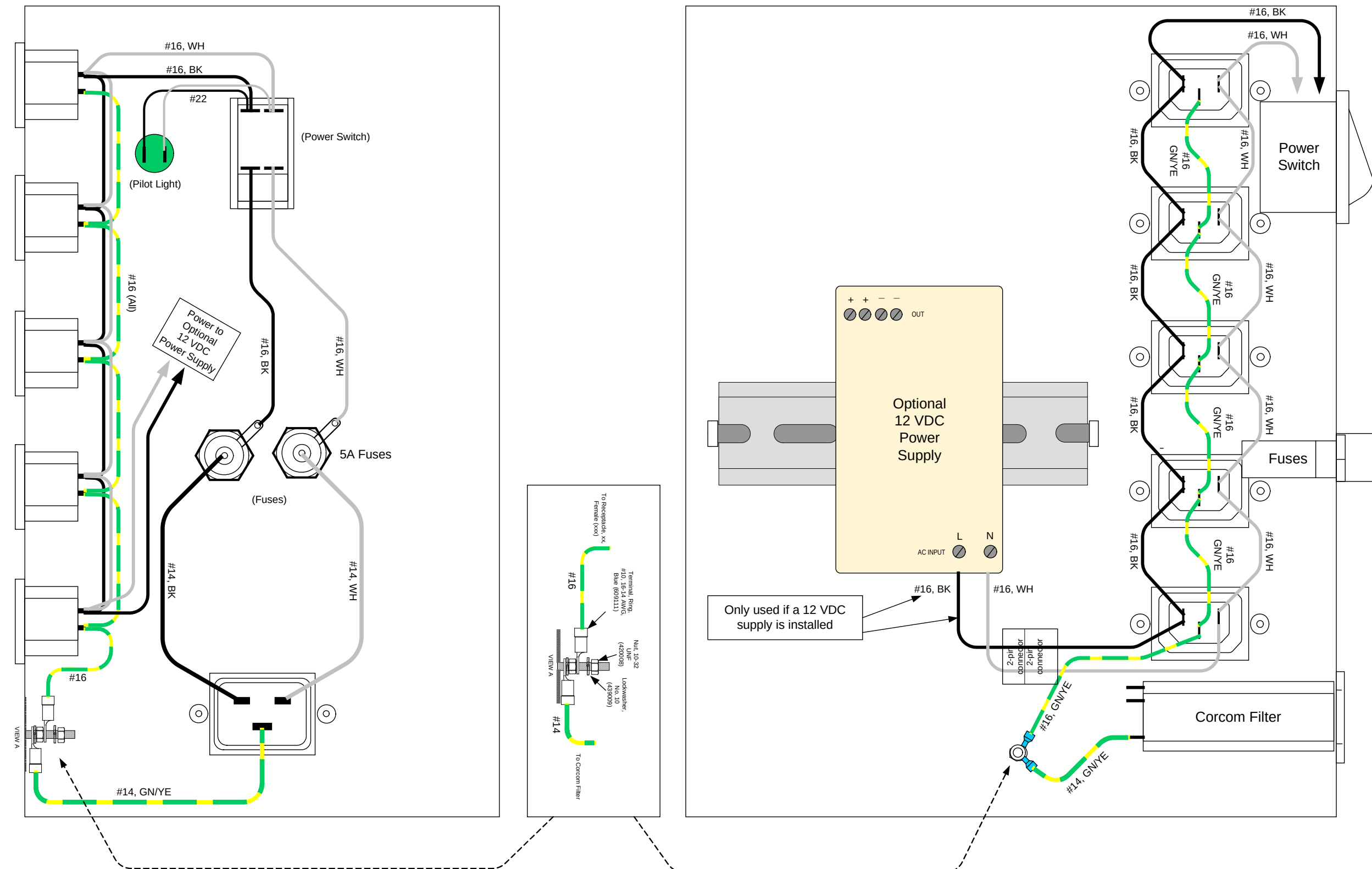


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E.1 Introduction

The Field Connection Board (FCB) shown in Figure E-1 is used to interconnect the field inputs and outputs in the inkjet system with the Base Interface Board, the Datapath card, and an optional Programmable Logic Controller. The inkjet system architecture is illustrated in Figure E-2..

Figure E-1: *Field Connection Board*

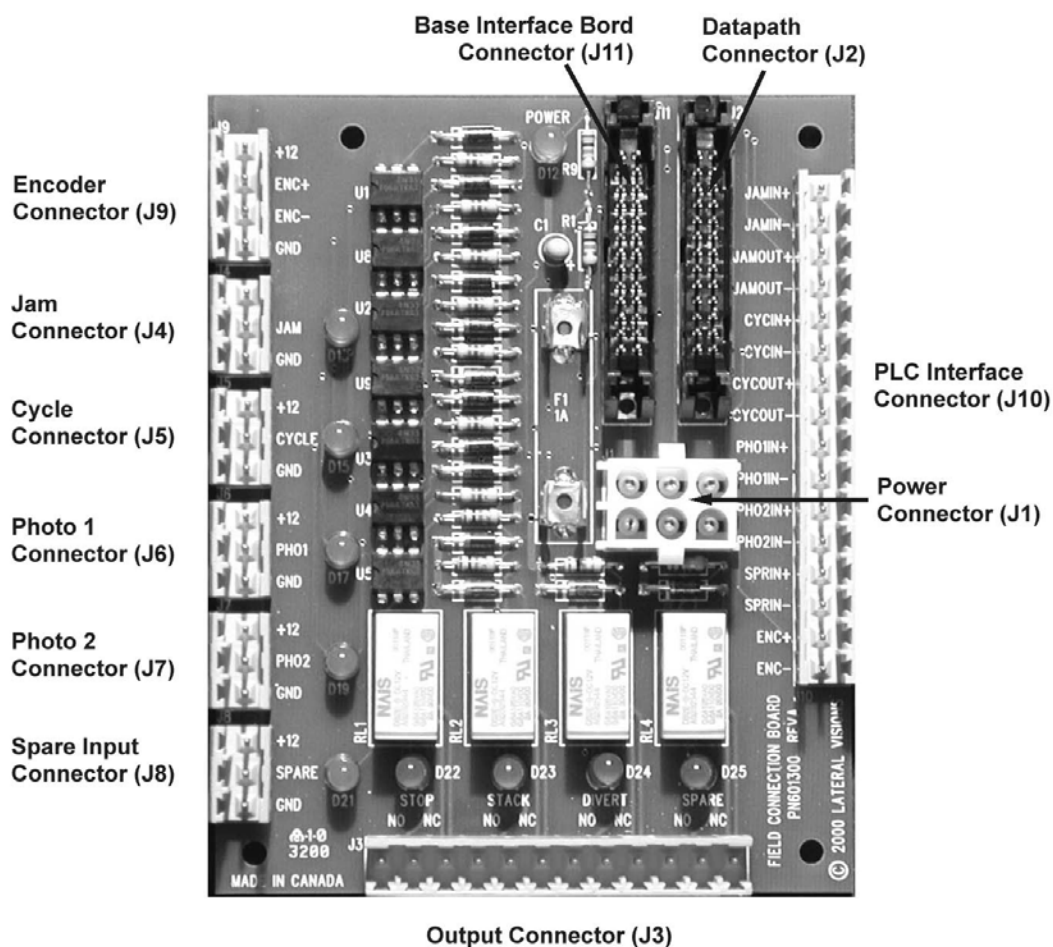
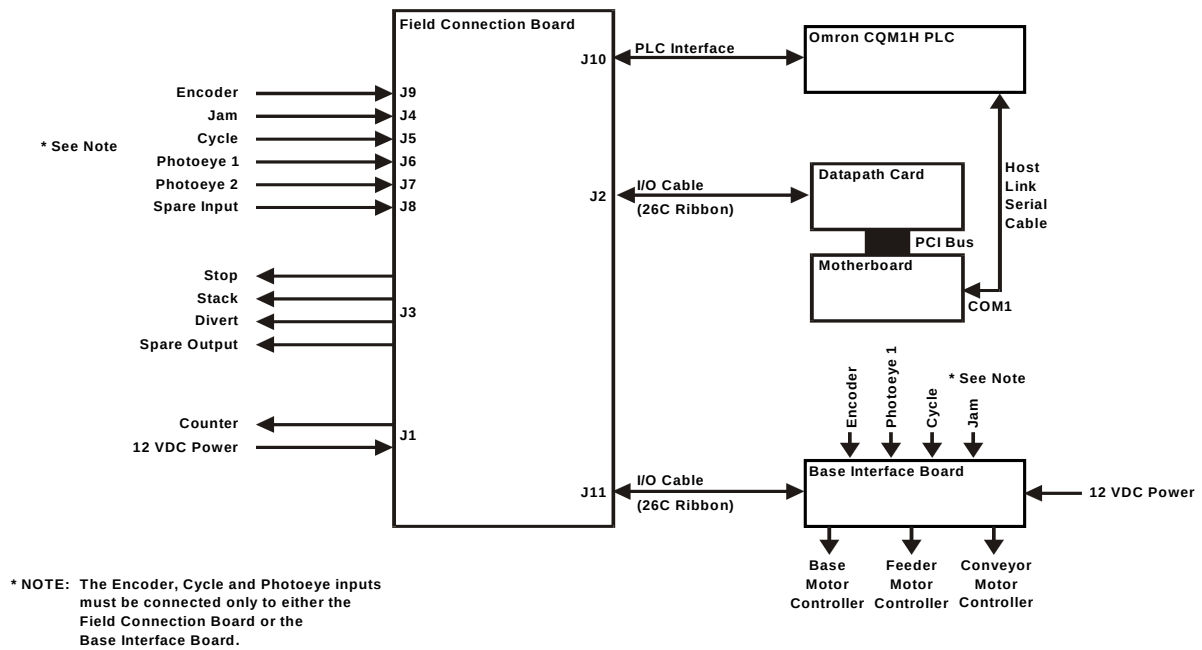


Figure E-2: Inkjet Controller Field Connections



E.2 Field Connection Board Inputs & Outputs

The FCB provides connection points to the inputs of the controller. The inputs can be used by the customer to process signals from external equipment. The inputs are as follows:

Encoder	Provides the transport position and is used to synchronize the jetting process.
Jam	Indicates a material jam condition.
Cycle	Indicates the beginning of a feed cycle.
Photocue 1	Used to detect the material and register the print location.
Photocue 2	Currently not used.
Spare Input	Currently not used.

The FCB provides connection points to the outputs of the controller. The outputs can be used by the customer to control external equipment and include the following:

Stop	Provides a momentary output (0.25 s) indicating that the transport has been commanded to stop by the controller.
Stack	Provides an output to indicate that a stack should be performed on the current cycle. A stack represents a bundle of mail to a post office defined delivery area. The stack function is configured with the inkjet software.
Divert	Provides an output to indicate that a divert should be performed on the current cycle. The divert function is used to divert the stack bundles which fall below a post office defined minimum size. The divert function is configured with the inkjet software.
Spare	Currently not used.

The FCB provides an interface to a Programmable Logic Controller (PLC). The PLC is used in applications where the control of an inserter or similar device is required. The interface provides the ability to receive the field inputs from or send the field inputs to the PLC. The signals of the PLC interface are optically isolated so that the PLC may operate on a different voltage than the Inkjet Controller. The signals provided by the PLC interface include the following:

Encoder	Encoder signal received by the FCB or Base Interface Board, and sent to the PLC. Note that the encoder signal is not optically isolated to allow for high-speed operation.
Jam In	PLC generated jam signal sent to the inkjet controller.
Jam Out	Jam signal received by the FCB or Base Interface Board, and sent to the PLC.
Cycle In	PLC generated <i>Machine Cycle</i> signal sent to the inkjet controller.
Cycle Out	<i>Machine Cycle</i> signal received by the FCB or Base Interface Board, and sent to the PLC.
Photo 1 In	PLC generated <i>Material Detected</i> signal sent to the inkjet controller.

Photo 2 In	PLC generated <i>Photoeye 2</i> signal sent to the inkjet controller. Currently not used.
Spare In	PLC generated spare input signal sent to the inkjet controller. Currently not used.

E.3 Connector Pin Assignments

This section provides the pin assignments for each of the FCB connectors. The connector locations are shown in Figure E-1.

E.3.1 J1 - Power Connector

The Power Connector is a 6-pin male Mate-N-Lock connector. The connector provides 12 Volt DC power to the board. The connector also provides the counter output signal from the board.

Table E-1: *Power Connector (J1)*

Signal	Pin	Description
+12V	1	12 Volt Supply
Count	2	Counter Output (Pulled up to 12V)
NC	3	Not connected
GND	4	Ground
GND	5	Ground
NC	6	Not connected

E.3.2 J2 – Datapath Connector

The Datapath Connector is a 26-pin male header connector. The connector is used to connect the FCB to the Datapath Card through a 26-conductor ribbon cable.

Table E-2: *Datapath Connector (J2)*

Signal	Pin	Description
GND	1	Ground
NC	2	Not connected
NC	3	Not connected
NC	4	Not connected
NC	5	Not connected
CARDON	6	Indicates Datapath Card is powered
PHOTO2	7	Photocue 2 input
STOPBUT	8	Stop button input
CYCLE	9	Machine cycle input
JAM	10	Jam input
SPDO1	11	Spare Output 1
SPDO2	12	Spare Output 2
SPDO3	13	Spare Output 3
DIVERT	14	Divert Output
STACK	15	Stack Output
COUNT	16	Counter Output
STOP	17	Stop Output
GND	18	Ground
ENC+	19	Encoder Positive Input
ENC-	20	Encoder Negative Input
GND	21	Ground
PHOTO1	22	Photocue 1 input
SPDI1	23	Spare Input 1
SPDI2	24	Spare Input 2
SPDI3	25	Spare Input 3
SPDI4	26	Spare Input 4

E.3.3 J3 - Output Connector

The Output connector is a 12-position Weidmüller header connector. The connector provides Stop, Stack, Divert, and 1 Spare output. The Output contacts are rated for 2 Amps at 30 VDC, or 0.6 Amps at 125 VAC.

Table E-3: *Output Connector (J3)*

Signal	Pin	Description
STOPNO	1	Stop (Normally Open) Output
STOPCOM	2	Stop (Common) Output
STOPNC	3	Stop (Normally Closed) Output
STACKNO	4	Stack (Normally Open) Output
STACKCOM	5	Stack (Common) Output
STACKNC	6	Stack (Normally Closed) Output
DIVERTNO	7	Divert (Normally Open) Output
DIVERTCOM	8	Divert (Common) Output
DIVERTNC	9	Divert (Normally Closed) Output
SPARENO	10	Spare (Normally Open) Output
SPARECOM	11	Spare (Common) Output
SPARENC	12	Spare (Normally Closed) Output

E.3.4 J4 - Jam Connector

The Jam connector is a 3-position Weidmüller header connector. The connector is used to connect a *Jam* switch. Grounding the *Jam* input indicates a material jam condition.

Table E-4: *Jam Connector (J4)*

Signal	Pin	Description
NC	1	Not connected
JAM	2	Jam Input (Active Low)
GND	3	Ground

E.3.5 J5 - Cycle Connector

The Cycle connector is a 3-position Weidmüller header connector. The connector is used to connect a *Cycle* switch. The negative going edge of the cycle input is used to indicate the start of a machine feed.

Table E-5: *Cycle Connector (J5)*

Signal	Pin	Description
12V	1	12 VDC
CYCLE	2	Cycle Input
GND	3	Ground

E.3.6 J6 - Photo 1 Connector

The Photo 1 connector is a 3-position Weidmüller header connector. The connector is used to connect a material registration photo detector. Grounding the Photo input indicates that the detector is **not** blocked.

Table E-6: *Photo 1 Connector (J6)*

Signal	Pin	Description
12V	1	12 VDC
PHO1	2	Photocue Input 1
GND	3	Ground

E.3.7 J7 - Photo 2 Connector

The Photo 2 connector is a 3-position Weidmüller header connector. The connector is used to connect a material registration photo detector. Grounding the Photo input indicates that the detector is **not** blocked. This input is currently not used.

Table E-7: *Photo 2 Connector (J7)*

Signal	Pin	Description
12V	1	12 VDC
PHO2	2	Photocue Input 2
GND	3	Ground

E.3.8 J8 - Spare Input Connector

The Spare Input connector is a 3-position Weidmüller header connector. The connector is provided for future use.

Table E-8: *Spare Input Connector (J8)*

Signal	Pin	Description
12V	1	12 VDC
SPARE	2	Spare Input
GND	3	Ground

E.3.9 J9 - Encoder Connector

The Encoder connector is a 4-position Weidmüller header connector. The connector is used to connect the transport shaft encoder.

Table E-9: *Encoder Connector (J9)*

Signal	Pin	Description
12V	1	12 VDC
ENC+	2	Encoder Positive Input
ENC-	3	Encoder Negative Input
GND	4	Ground

E.3.10 J10 - PLC Interface Connector

The PLC interface connector is a 16-pin male header connector. The connector is used to connect the FCB to a Programmable Logic Controller used for Inserter control. The FCB provides optical isolation for the inputs and outputs to the PLC.

Table E-10: *PLC Interface Connector (J10)*

Signal	Pin	Description	Direction
ENC-	16	Encoder Negative (Not Isolated)	To or From PLC
ENC+	15	Encoder Positive (Not Isolated)	To or From PLC
SPRIN-	14	Spare Input Negative	From PLC
SPRIN+	13	Spare Input Positive	From PLC
PHO2IN-	12	Photocue 2 Output Negative	To PLC
PHO2IN+	11	Photocue 2 Output Positive	To PLC
PHO1IN-	10	Photocue 1 Output Negative	To PLC
PHO1IN+	9	Photocue 1 Output Positive	To PLC
CYCOUT-	8	Cycle Output Negative	To PLC
CYCOUT+	7	Cycle Output Positive	To PLC
CYCIN-	6	Cycle Input Negative	From PLC
CYCIN+	5	Cycle Input Positive	From PLC
JAMOUT-	4	Jam Output Negative	To PLC
JAMOUT+	3	Jam Output Positive	To PLC
JAMIN-	2	Jam Input Negative	From PLC
JAMIN+	1	Jam Input Positive	From PLC

E.3.11 J11 - Base Interface Board Connector

The Base Interface Board connector is a 26-pin male header connector. The connector is used to connect the FCB to the Base Interface Board through a 26-conductor ribbon cable.

Table E-11: *Base Interface Board Connector (J11)*

Signal	Pin	Description
GND	1	Ground
NC	2	Not Connected
NC	3	Not Connected
NC	4	Not Connected
NC	5	Not Connected
CARDON	6	Indicates Datapath Card is powered
PHOTO2	7	Photocue 2 Input
STOPBUT	8	Stop Button Input
CYCLE	9	Machine Cycle Input
JAM	10	Jam Input
SPDO1	11	Spare Output 1
SPDO2	12	Spare Output 2
SPDO3	13	Spare Output 3
DIVERT	14	Divert Output
STACK	15	Stack Output
COUNT	16	Counter Output
STOP	17	Stop Output
GND	18	Ground
ENC+	19	Encoder Positive Input
ENC-	20	Encoder Negative Input
GND	21	Ground
PHOTO1	22	Photocue 1 input
SPDI1	23	Spare Input 1
SPDI2	24	Spare Input 2
SPDI3	25	Spare Input 3
SPDI4	26	Spare Input 4

E.4 Output Drive Characteristics

The FCB provides connection points to the outputs of the inkjet controller. The outputs can be used by the customer to control external equipment. The outputs include the following:

Stop	Provides a momentary output (0.25 s) indicating that the transport has been commanded to stop by the controller.
Stack	Provides an output to indicate that a <i>stack</i> should be performed on the current cycle. A stack represents a bundle of mail to a post office defined delivery area. The stack function is configured with the Inkjet software.
Divert	Provides an output to indicate that a <i>divert</i> should be performed on the current cycle. The divert function is used to divert the stack bundles which fall below a post office defined minimum size. The divert function is configured with the Inkjet software.
Spare	Currently unused.

The output contacts are rated for 2 Amps @ 30 VDC, or 0.6 Amps @ 125 VDC/VAC.

Each output provides a *normally open* and a *normally closed* contact. The following diagrams detail each type of connection:

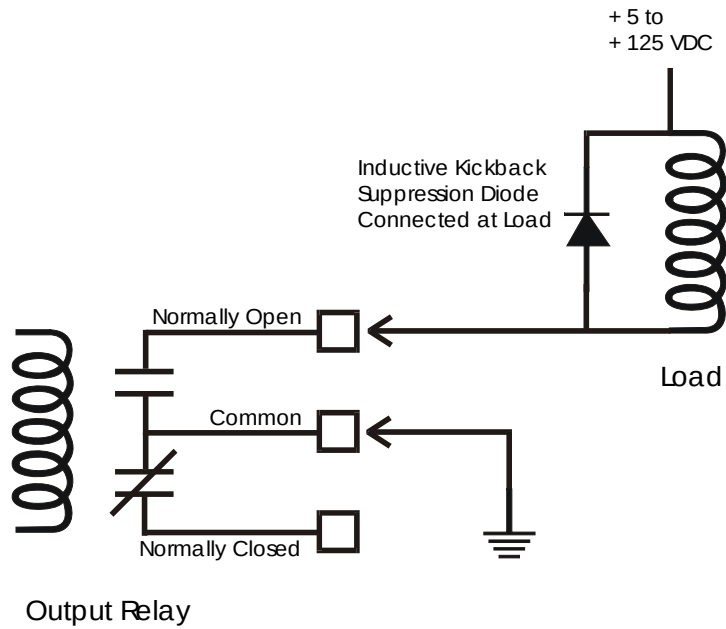
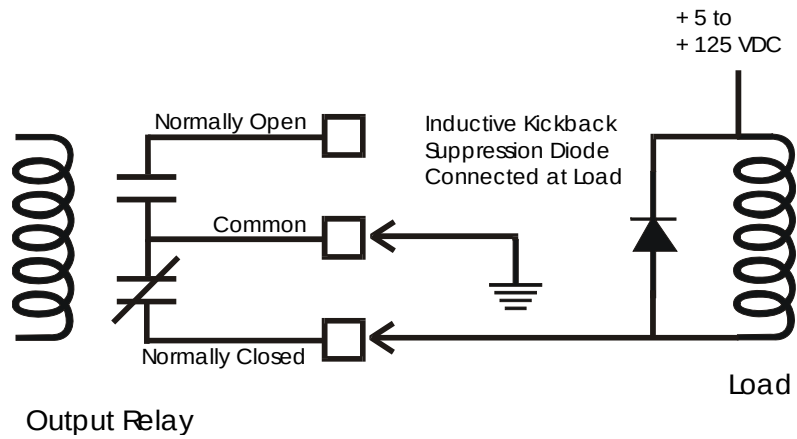
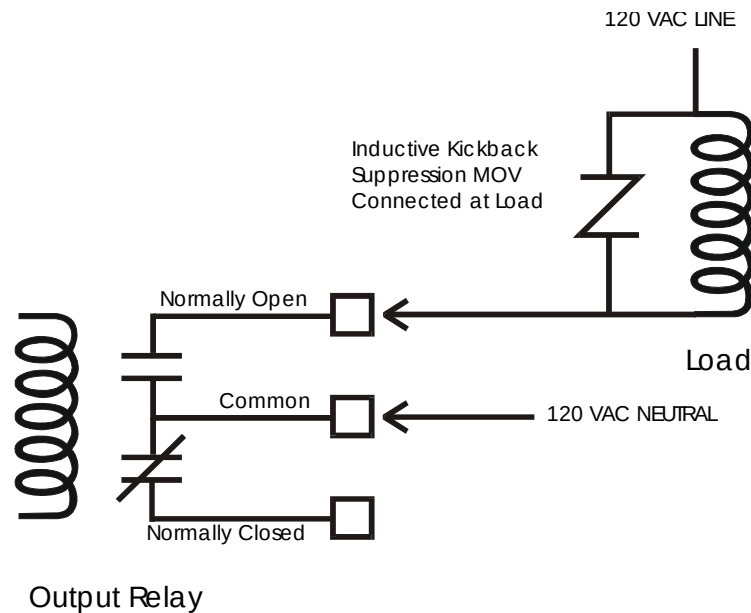
Figure E-3: *Normally Open Connection of a DC Load*Figure E-4: *Normally Closed Connection of a DC Load*

Figure E-5: *Normally Open Connection of an AC Load*

E.5 PLC Interface Characteristics

The FCB provides an interface to a Programmable Logic Controller. The PLC is used in applications where the control of an inserter or similar device is required. The interface provides the ability to receive the field inputs from, or send the field inputs to the PLC. The signals of the PLC interface are optically isolated, so that the PLC may operate on a different voltage from the inkjet controller. The signals provided by the PLC Interface include the following:

Encoder	Encoder signal received by the FCB or Base Interface Board, and sent to the PLC. Note that the encoder signal is not optically isolated to allow for high-speed operation.
Jam In	PLC generated <i>Jam</i> signal sent to the inkjet controller.
Jam Out	<i>Jam</i> signal received by the FCB or Base Interface Board, and sent to the PLC.
Cycle In	PLC generated <i>Machine Cycle</i> signal sent to the inkjet controller.
Cycle Out	<i>Machine Cycle</i> signal received by the FCB or Base Interface Board, and sent to the PLC.

Photo 1 In	Inkjet generated <i>Material Detected</i> signal sent to the PLC.
Photo 2 In	Inkjet generated <i>Photoeye 2</i> signal sent to the PLC. Currently unused.
Spare In	PLC generated <i>Spare Input</i> signal sent to the inkjet controller. Currently unused.

Note that each input signal must be provided by **only one** source (i.e. the FCB, the Base Interface Board, or the PLC). The exception is the *Jam* input, which can be generated by all sources. A material jam is indicated if any of the sources assert their *Jam* input.

The PLC Interface input connections are provided so that a PLC generated signal may be sent to the FCB. Optically isolated input connections are provided for *Jam*, *Cycle*, and one spare. The input connections are directional, with each input having a positive and a negative terminal. Examples of connections to a PLC output using a negative or positive common are shown in Figure E-6 and Figure E-7.

Figure E-6: *Input Connection for Negative Common PLC Output*

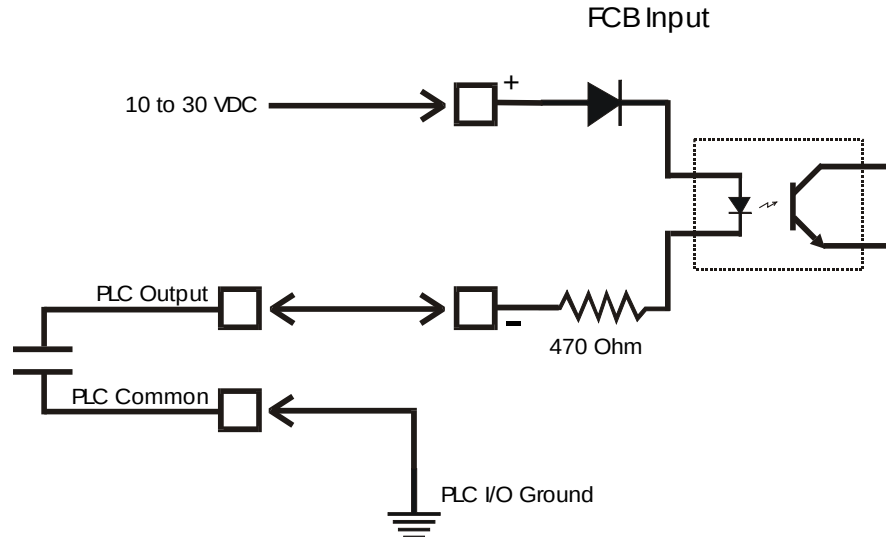
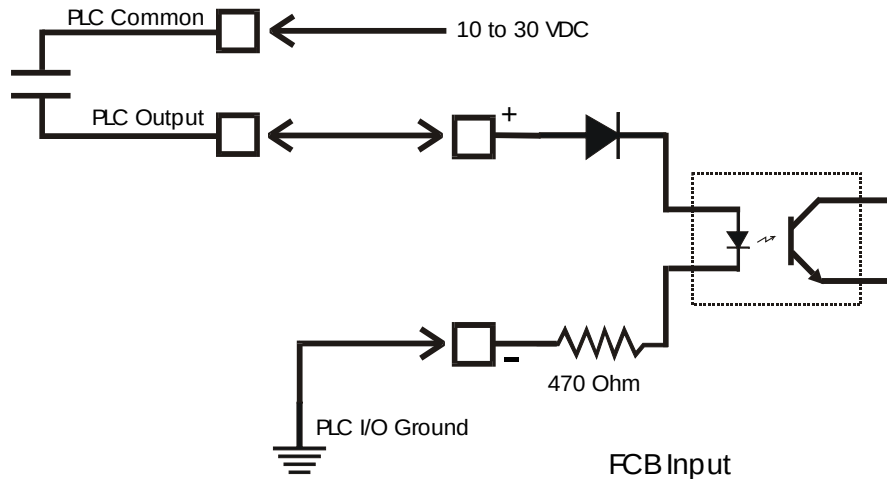
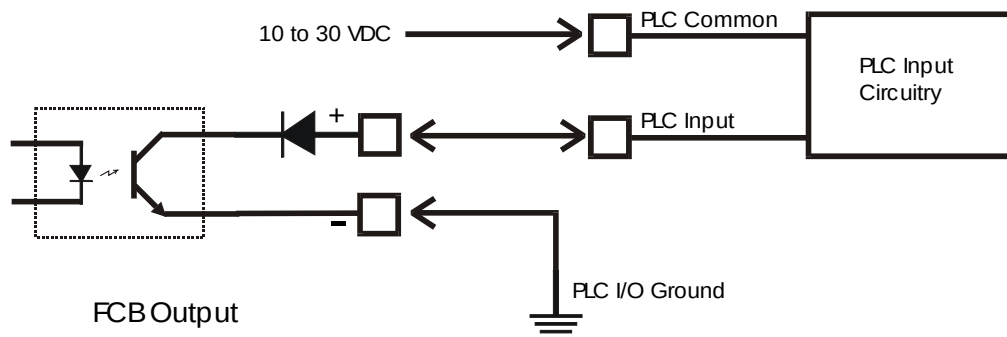


Figure E-7: *Input Connection for Positive Common PLC Output*

The PLC interface provides output connections for the *Jam* and *Cycle* signals. The output connections are provided so that a FCB or Base Interface Board generated signal may be sent to the PLC. The optically isolated output connections are directional, with each output having a positive and a negative terminal. An example of a connection to a PLC input using a positive common is provided in Figure E-8.

The FCB outputs will sink a guaranteed minimum of 20 mA (typically 60 mA), due to the transfer ratio of the output optocoupler. The PLC documentation needs to be consulted to determine if this current is sufficient to operate the inputs at a given PLC I/O voltage.

Figure E-8: *Output Connection for Positive Common PLC Input*

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F.1 Introduction

For communication with other computer equipment the BK700 controller may be equipped with a serial communication card with up to 4 serial ports. Buskro uses Control's RocketPort cards for this purpose.

F.2 Features and Specifications

The heart of the RocketPort card is Control's exclusive AIOPIC chip, a 36 Mhz ASIC (Application Specific Integrated Circuit) that enables the RocketPort to transmit and receive data at rates far higher than multiport cards based on conventional 16550 UART technology—up to 921 Kbps full duplex across all ports simultaneously. While most serial cards use shared dual-port memory which can cause conflicts with other hardware and software products, the RocketPort is I/O memory mapped to avoid shared memory conflicts. This makes installation, configuration, and port expansion easy and hassle-free.

F.2.1 Features

- Up to 32 COM ports can be added in a single slot without using any IRQs
- Dedicated 36 MHz Application Specific Integrated Circuits (ASIC) processors, one per every eight ports, for optimum performance
- ASIC integration reduces the number of components by 80%, resulting in improved reliability and the high Mean Time Between Failure times (MTBF)
- Up to 921 Kbps* transmit-and-receive across all ports simultaneously—sustains fully compressed ISDN throughput
- Both ISDN terminal adapters and modems can be connected to the same card
- I/O mapping eliminates memory conflicts and allows plug-and-play compatibility
- Supports PCI and ISA bus architectures, ensuring compatibility regardless of the host environment
- Supports serial interfaces, including RS-232, RS-422, and RS-485
- Easy installation—no shared memory to configure (and no IRQs required)
- Minimal “host” CPU utilization
- Large FIFOs, 64 times larger than a 16550 UART, maximize speed and minimize data loss while optimizing host efficiency and data integrity

* Speed dependent on hardware configuration and operating system

F.2.2 Approvals

- Canadian EMC Requirements
- FCC Part 15 Class A Certification
- Product Safety UL Recognized
- European EMC Requirements
- ESD and Surge Protection to EN 50082-1 Standard

F.2.3 Specifications

Model # 95860-4
Type Quad/DB25

Table F-1: *Serial Communications Card Specifications*

D.2.3.1 Hardware		
	# of cards/system	1
	# of ports/card	4
	Interrupts	none, 3, 4, 5, 9, 10, 11, 12, 15
	Baud rate	460K
	Data bits	7 or 8
	Parity	odd, even, none
	Stop bits	1 or 2
D.2.3.2 Interfaces		
	Bus interface	PCI
	Communications interface	RS-232
D.2.3.3 Conditions		
	Operating temperature	0 to 40°C
	MTBF (years)	23.5
	Humidity (Non-condensing)	
	System on	8% to 80%
	System off	20% to 80%
D.2.3.4 Physical Specifications		
	Dimensions	5.6" by 4.2"
	Weight (card only)	4 oz - 10 oz
D.2.3.5 Electrical Requirements		
	+ 5 VDC	410 mA
	+ 12 VDC	100 mA
	- 12 VDC	160 mA

F.3 Installation

Note: To avoid conflicts with the Data Path Card (designed to use PCI Slot 4), the RocketPort Card must be installed in PCI Slot 1 or 2.

I/O mapping makes the RocketPort series easy to install. Memory collisions that often occur with cache memory are eliminated, simplifying configuration and installation. To further expedite installation, there are no switches or jumpers to configure for the RS-232 interface box. Simply plug it in with the supplied cable. Selectable IRQs can be easily changed through the device driver configuration. The RocketPort series uses either no interrupts or one interrupt, contingent on the operating system.

For this installation Buskro provides a CD-ROM with all necessary files and detailed instructions on the hardware and software configuration required.