

Atlas UVC Print System



Atlas UVC Print System User's Guide

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Manual History

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1.1	31-Jul-03	Corrections to Appendices	N/A
		References to Atlas (with Monet ink) removed.	
		Updated maintenance procedures for Renoir.	
2.0	15-Mar-05	Release of generation 3 ink formulation and related changes.	592

Atlas UVC

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General Information

Chapter

1.1 Description

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

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

1.1.1 Renoir Ink

The Renoir ink used in the Atlas-UVC system is UV curable ink. Unlike the Monet ink printheads, the Atlas-UVC is only available in a single head configuration (BK791-U) to provide 1 inch of vertical print for a single printhead. This results in a vertical resolution of 256 DPI and a software selectable horizontal resolution ranging from 110 to 660 DPI.

The main advantage of the Atlas-UVC Renoir ink is its ability to dry on a wide variety of materials including high gloss materials, plastic, and even metal. Although the Monet ink is strong in this category, the Renoir ink is stronger. In addition, although both the Monet and Renoir inks are capable of the same resolutions, the Renoir ink produces a darker, shinier image. In terms of ink costs, the Renoir ink cost is lower than water or wax based inks (Apollo or Elite respectively) but more expensive than Monet. Although Renoir inks can be jetted at the same speed as Monet inks, the overall print speed is lower because of the required curing speeds.

1.1.2 Stray UV Light

It is important that any ink related components (i.e. printhead or inkwell) avoid unnecessary exposure to UV light (i.e. sunlight) or excessive heat (greater than 55°C). This may cause premature curing of the ink. As a result, all covers must be attached and the controller should be situated away from natural light.

1.2 System Drawings

1.2.1 Inkwell Dimensions



Table	1-1:	Inkwell	Dim	ensions
-------	------	---------	-----	---------

Symbol	Description	Dimensions	
0.L.	Overall Length	26.45"	672 mm
O.W.	Overall Width	9.75"	248 mm
O.H.	Overall Height	19.54"	496 mm
I.L.	Inkwell Length	21.10"	536 mm
I.W.	Inkwell Width	9.00"	229 mm
I.H.	Inkwell Height	11.00"	279 mm
X1	Power Supply Assembly Width	15.24"	387 mm
X2	Power Supply Assembly Location	2.96"	75 mm
X3	Mounting Hole Location (Both Sides of Inkwell)	2.36"	60 mm
X4	Mounting Hole Spacing (Both Sides of Inkwell)	4.50"	114 mm
Y1	Height from bottom of inkwell to top of power supply cover	16.56"	421 mm
Y2	Rib height	0.30"	8 mm
Н	Mounting Holes (2 on each side of Inkwell)	10-32 U	NF (4X)



1.2.2 Printhead Dimensions

 Table 1-2: Printhead Dimensions on Standard BK79B-22 Bridge

Symbol	Description	Dimer	nsions
O.L.	BK791 (Single Head) overall length from center of rail	11.32"	288 mm
XS1	BK791 overall shield length	8.53"	217 mm
ZH	BK791 height to top surface	8.80"	224 mm
YH	BK791 shield width	4.92"	125 mm
O.H.	Overall height to top of umbilical	13.60"	345 mm
O.W.	Overall width of bridge	23.45"	596 mm
X1	Bridge rail mount length	4.75"	121 mm
Z1	Bridge rail mount height	5.00"	127 mm
Y1	Bridge rail mount thickness	0.75"	19 mm
XM	Bridge rail mount mounting screw spacing	3.50"	89 mm
YM	Bridge rail mount mounting screw spacing	22.70"	577 mm
Y3	Bridge rail length	22.00"	818 mm
Zmat	Height adjustment	1.25"	32 mm

1.2.3 Printhead Components



Table 1-3: <i>E</i>	3K79 Series	Printhead	<i>Components</i>
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Item	Description
1	Mounting screw (four 1/4-20 UNC)
2	Bridge rail mount (two per bridge)
3	Printhead shield
4	Printhead handle (one on single head, two on dual head)
5	Printhead umbilical (connect to inkwell)
6	Priming button (one on single head, two on dual head)
7	Bridge rail (standard 22" but custom length possible for other transport bases)
8	Lateral adjustment release knob
9	Height adjustment knob
10	Release knob for maintenance



1.2.4 Single Head Printhead Specifications (BK791)

 Table 1-4: Single Head Printhead Specifications

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

1.2.5 Production Specifications

Resolution	Single Head (BK791)		Dual Head (BK792)	
(DPI)	Surface Speed Production Rate		Surface Speed	Production Rate
110	984 fpm (5.0 m/s)	40,000 pph	984 fpm (5.0 m/s)	40,000 pph
220	984 fpm (5.0 m/s)	40,000 pph	757 fpm (4.0 m/s)	40,000 pph
330	827 fpm (4.2 m/s)	40,000 pph	531 fpm (2.7 m/s)	35,000 pph
440	630 fpm (3.2 m/s)	40,000 pph	394 fpm (2.0 m/s)	26,000 pph
660	413 fpm (2.1 m/s)	28,000 pph	256 fpm (1.3 m/s)	17,000 pph

 Table 1-5: Theoretical Production Rates for Atlas High-Speed Driver

Legend:

DPI	Dots Per Inch	m/s	Meters Per Second
fpm	Feet Per Minute	pph	Pieces Per Hour

Note: The values shown in **Table 1-5** indicate jetting speeds. For Monet inks, this represents actual printing speeds. For Renoir inks, the jetting speed is identical but the production rates will be slower due to required curing.

For more information on Renoir curing speeds, ask Buskro for information on the BK750 Curing Station.

The BK792 Dual Head is not available for Atlas-UVC.

Renoir Ink Safety



2.1 Introduction

The Renoir ink is an acrylate-based UV curable ink. Since the chemistry of UV curable inks are different from conventional solvent or water-based inks, the hazards associated with handling them are different and require more attention. Since Renoir inks in liquid form (*before curing* or hardening) can cause eye and skin irritation, it is important to wear the proper protection to reduce exposure to direct contact.

Energy curable printing inks such as the Renoir inks are well established. As with all printing processes, CEPE (European Council of the Paint, Printing Ink and Artists' Colors Industry) emphasizes that it is the legal responsibility of users to carry out risk assessments based on their specific applications and in doing so to refer to the MSDS (**Section 2.3**) or contact the supplier if necessary. Attention must also be paid to any specific national legislation, code, practice or guidelines.

If good working practices are not observed, it is possible that prolonged direct skin contact with these materials could cause skin irritation. The effect can depend upon intensity and duration of contact as well as individual susceptibility. Persons known to have a history of skin sensitization should not be employed using these materials. Certain individuals may develop sensitization or allergic reaction after repeated exposure and will need to be moved from the source of contact. As a result, it is essential to observe the guidance in this chapter as well as comply with obligations in the supplier's Material Safety Data Sheets (MSDS).

2.1.1 Spills and Cleaning

In case of spills, protective gloves made from Nitrile are required. Full protective clothing should also be worn to prevent skin contact with the ink. The spill area should be cleaned immediately and thoroughly washed with a hot detergent solution. This is because the ink will not dry by evaporation and will remain as a continued source of exposure. Any used wipers and gloves from the clean-up or wash-up operation should be placed in a separate, labeled container to prevent accidental exposures of others in the work area.

If clothing becomes exposed to the ink, remove and wash residual material from exposed skin by showering. This will prevent continued exposure. Badly soiled leather items like belts and shoes should be discarded. Protective clothing and cleaning rags can be adequately cleaned by an industrial cleaning service. They should not be laundered at home. Cleaning services should also be cautioned about handling contaminated clothing and/or wipers. Disposable wipers are an alternative provided they are disposed of in a separate bag or container.

2.2 Safe Handling

In order to properly handle Renoir ink, the items in **Table 2-1** and the following must be fully understood:

- 1. Carefully read the suppliers Material Safety Data Sheet (Section 2.3).
- 2. Wear appropriate protective clothing, gloves, and eye protection when handling inks, servicing or maintaining the system, purging printheads, and cleaning spills.
- 3. Clean up spills immediately and thoroughly with a hot detergent solution.
- 4. Avoid prolonged skin contact with ink. Wash with neutral pH soap and water if exposed and avoid sources of UV light (i.e. sunlight) until cleaned. Do NOT use solvents as they will degrease the skin and possibly promote irritation.
- 5. Change protective clothing and gloves when significantly contaminated. All clothing must be laundered before re-use.
- 6. Do not launder any contaminated clothing at home.
- 7. Eating, drinking, and smoking are prohibited in the immediate area where Renoir inks are handled or used. This is to avoid accidental ingestion.
- 8. Hands must be thoroughly washed before washroom and standard break periods.

Note: Seek medical advice immediately if ink contacts the eyes or if severe skin damage occurs. Reference the MSDS (Section 2.3).

Eve Protection Required
Wear splash-proof eye goggles to prevent any possibility of eye contact. This is especially important when servicing the system because ink may be under pressure in the ink delivery system.
Protective Gloves Required
Use protective gloves made of Nitrile .
Protective Clothing Recommended
Wear appropriate clothing to prevent any possibility of skin contact.

Table 2-1: Required Protection

2.2.1 Storage

Since Renoir inks are reactive, they must be stored under conditions that will prevent polymerization and product degradation. The containers should be stored using the following guidelines:

- Avoid excessive heat and direct sunlight.
- Avoid areas where they can be contaminated by oxidizing agents, peroxides or free radical initiators.
- Keep containers closed.
- Store in an area where the ambient temperature is between 50 80 °F (10-27°C).

2.2.2 Disposal

For the US. All waste materials must be disposed of in accordance with local, state, and federal regulations. These products as shipped are not corrosive, reactive, or flammable under the federal RCRA definition. Waste products should be prevented from contaminating any waterways, sewers, etc.

For EC countries. In common with many other materials, the uncured products are typically classified as "hazardous waste" for disposal purposes (*European Waste Catalogue No 08-03-12 for waste inks and No 08-03-14 for ink sludge*). Disposal should be done according to national regulations. It is *not* anticipated that they would have an adverse effect on the disposal process and may provide a positive energy source in the case of incineration. (*See EC Directive 91/689/EEC*)

2.2.3 First aid

Skin contact. In the event of an accident involving skin contact with substantial amounts of UV-curable inks, clothing should be removed and the body showered using soap and water. Particular attention should be given to those areas not easily cleaned, i.e., hair, ears, nose and eyes. If skin redness or irritation should develop, consult a physician.

Eye contact. In the case of eye contact, flush eyes with large quantities of water for at least 15 minutes. Consult a physician.

Inhalation. Although unlikely to occur with normal use of these products, move affected person to fresh air. If necessary, administer oxygen. Combustion of these products forms vapors that are extremely irritating to the respiratory system and must be avoided. If an accidental fire occurs in any area where these products are stored, proper respiratory protection must be used.

Ingestion. Do not induce vomiting. Consult a physician.

2.3 Material Safety Data Sheet (MSDS)

For Product Questions call:	(603) 443-5300
For Health and Safety Questions call	1: (603) 443-8320

I. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	RENOIR UV Curable Black Ink (Kappa)
Product Code:	Spectra P/N 03604 – Black, 03611 – Low Black
Product Vendor:	Spectra
	101 Etna Road
	Lebanon, NH 03766-1422 USA
Revision Number:	1
Revision Date:	2002-01-30

II. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Chemical Name	%
	Acrylate, NOS	10 - 30
2235-00-9	Vinylcaprolactam	10 - 30
26570-48-9	Polyethylene Glycol Diacrylate	1 – 5

Composition Comments: Also contains; Multifunctional Acrylate NOS, not classified as irritant, 70 - 90%. The specific identify of these components is being withheld as a trade secret.

III. HAZARDS IDENTIFICATION

Irritating to eyes, respiratory system and skin.

IV. FIRST-AID MEASURES			
Inhalation:	Move the exposed person to fresh air at once.		
Eyes:	Remove victim immediately from source of exposure. Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.		
Skin:	Remove affected person from source of contamination, Remove contaminated clothing. Wash skin thoroughly with soap and water for several minutes. Continue to rinse for at least 15 minutes. Get medical attention if irritation persists after washing.		
Ingestion:	DO NOT INDUCE VOMITING! NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Remove victim immediately from source of exposure. Get medical attention.		

V. FIRE FIGHTING MEASURES

Extinguishing Media:	Fire can be extinguished using: Powder, foam or CO2. DO NOT use water if avoidable.			
Special Fire Fighting Procedures:	Use water SPRAY only to cool containers! Do not put water on leaked material. Avoid water in straight hose stream; will scatter product and spread fire.			
Unusual Fire and Explosion Hazards:	Generates massive smoke during fire.			
Hazardous Combustion Products:	Carbon monoxide (CO). Carbon dioxide (CO2).			
VI. ACCIDENTAL REL	EASE MEASURES			
Spill Clean up Methods:	Wear necessary protective equipment. Absorb in vermiculite, dry sand or earth and place into containers. Shovel into dry containers. Cover and move the containers. Flush the area with water.			
VII. HANDLING AND S	TORAGE			
Usage Precautions:	Avoid inhalation of vapors. Avoid spilling, skin and eye contact.			
Storage Precautions:	Keep in cool, dry, ventilated storage and closed containers. Keep in original container. Protect from light, including direct sun rays, Store separated from: Acids. Alkalis. Oxidizing material. Avoid storing for very long periods.			
VIII. EXPOSURE CON	TROLS/PERSONAL PROTECTION			
Ingredient Comments:	OES = Occupational Exposure Standard.			
Protective Equipment:	Gloves Spectacles			
Process Conditions:	Provide eyewash station.			
Ventilation:	All handling to take place in well ventilated area.			
Respirators:	No specific recommendation made, but respiratory protection may still be required under exceptional circumstances when excessive air contamination exists.			
Protective Gloves:	Protective gloves and goggles must be used if there is a risk of direct contact or splash. Use protective gloves made of: Nitrile.			
Eye Protection:	Wear splash-proof eye goggles to prevent any possibility of eye contact.			
Other Protection:	Wear appropriate clothing to prevent any possibility of skin contact.			
Hygienic Work Practices:	DO NOT SMOKE IN WORK AREA! Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes wet or contaminated. Promptly remove any clothing that becomes contaminated. Use appropriate skin cream to prevent drying of skin. No eating or drinking while working with this material.			

IX. PHYSICAL AND CHEMICAL PROPERTIES Appearance: Liquid. **Solubility Description:** Immiscible with water. X. STABILITY AND REACTIVITY **Stability:** Normally stable. Avoid: Heat, sparks, flames. **Conditions to Avoid:** Will react violently with: Free radical initiators. Strong oxidizing agents. Strong alkalis. Hazardous May polymerize. **Polymerization:** Polymerization Store in original container to avoid contamination. Avoid alkalis, strong acids **Description:** and heat. Hazardous Fire creates: Carbon monoxide (CO). Carbon dioxide (CO2). **Decomposition Products:** XI. TOXICOLOGICAL INFORMATION **Toxic Concentration:** LC50: No standard. Toxicological Acrylate components have irritant properties. Prolonged or repeated contact **Information:** with skin or mucus membranes may result in irritant symptoms such as redness, blistering or dermatitis. Symptoms may be delayed. Suspect skin sensitization hazard. **XII. ECOLOGICAL INFORMATION:** Ecological None known. information: XIII. DISPOSAL CONSIDERATIONS: **Disposal Methods:** Dispose of in suitable combustion chamber. Collect in marked containers and deliver to approved depot. Dispose of in accordance with Local Authority requirements. Dispose of containers as special waste. **XIV. TRANSPORT INFORMATION:**

General:

Not regulated.

Label for Supply:	Irritant.	
Risk Phrases:	R-36/37/38 Irritating to eyes, respiratory system and skin.	
Safety Phrases:	S-26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.	
	S-24/25: Avoid contact with skin and eyes.	
UK Regulatory References:	S-60: This material and its container must be disposed of as hazardous waste. Chemicals (Hazard information and packaging) Regulations 1993	
Environmental Listing:	Rivers (Prevention of Pollution) Act 1961. Control of Pollution Special Waste Regulations) Act 1980.	
EU Directives:	System of specific information relating to Dangerous Preparations. 91\155.	
Approved Code of Practice:	Classification and Labeling of Substances and Preparations Dangerous for Supply.	
Guidance Notes:	Occupational Exposure Limits EH40. Introduction to Local Exhaust Ventilation HS (G) 37. CHIP for everyone HSG (108).	
XVI. OTHER INFORMATION:		
Information Sources:	Dangerous Properties of Industrial Materials Report, N. Sax et. al.	
Revision Date:	January 30, 2002	

XV. REGULATORY INFORMATION:

2.4 Questions and Answers

2.4.1 Is the Renoir ink safe to use?

Yes. Tests conducted show a low oral toxicity. The materials can irritate the eyes and are classified as low to moderate skin irritants. However, proper precautions (protective clothing, gloves, and goggles) should still be taken to prevent ingestion and skin or eye exposure to the uncured ink.

2.4.2 Is it a problem that the ink smells "different"?

No. Although there is a distinct odor, it does not pose a health and safety problem. Since the vapour pressure of the ink is very low, the concentration in the atmosphere is extremely low.

2.4.3 Are there hazards associated with the cured ink?

No. Once cured, the various components of the ink "lock" together and are no longer freely available to cause skin irritation etc. However, it is important to ensure that the ink is properly cured by using the proper curing equipment such as the BK750 curing station.

System Support Box



3.1 Introduction

The system support box is essentially the inkwell containing the ink delivery system and all related electronics. The architecture of the system can be seen in **Figure 3-1** while the components can be seen in **Figure 3-2**.









3.2 Atlas System Support Board (ASSB)

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





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

Table 3-1: Atlas Syst	em Support I	Board Conne	ections
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3.3 System Support Board CPU (SSB CPU)

The System Support Board CPU (**Figure 3-4**) provides the intelligence for the ASSB. The SSB CPU board performs the following functions:

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

Figure 3-4: System Support Board CPU



Table A - System Support Board CPU DIP Switch Assignments

DIP	Setting	Function			
8	ON	Factory Reset (all other DIP switches must be Off)			
	OFF	When not performing Factory Reset			
7	ON	For Re	v E Board	1	
	OFF	For Re	v A-D Bo	ard	
6	OFF	Contro	ller Gain I	Bit 1	
5	ON	For ATLAS Printheads			
	OFF	For ELITE Printheads			
4	ON	For ATLAS Printheads			
	OFF	For ELITE Printheads			
3	ON	For ATLAS Printheads			
	OFF	For ELITE Printheads			
1 and 2		Pos 1	Pos 2	System Support Box Address	
		OFF	OFF	For Printheads 1 and 2	
		ON	OFF	For Printheads 3 and 4	
		OFF	ON	For Printheads 5 and 6	
		ON	ON	For Printheads 7 and 8	

3.4 Head Drive Circuit Board (HDC)

The Head Drive Circuit Board (**Figure 3-5**) generates the high and low voltage signal required to fire the printhead and also regulates the printhead voltage. When the low voltage signal is received by the HDC board, LED D1 turns on. When the high voltage signal is outputted by the HDC board in order to fire the printhead, LED D6 turns on.

Figure 3-5: Head Drive Circuit Board



3.5 Lung Vacuum

The purpose of the lung vacuum is to remove air from the ink before it reaches the jetting module in the printhead. This enhances jetting performance. In general, ink saturated with air travels from the IDS into the lung cavity in the printhead. Since the lung cavity is separated by a fine membrane, only air is allowed to pass through the membrane in order to remove it from the ink. The lung vacuum should measure in the range of 14 to 16 inches of mercury (in Hg). If the vacuum drops below 14 in Hg, there may be a loss in jets during printing.

Note: The lung pressure should measure –16 in Hg.

To measure the lung vacuum, a gauge is required. This can be ordered from Buskro under P/N 9100337A (Lung Vacuum Gauge Assembly).

3.5.1 Lung Vacuum Function

The lung vacuum is generated by the 12 VDC pump shown in **Figure 3-6**. To generate the lung vacuum, the IDS must be powered ON by switching the main switch on the side of the system support box. Each time the system support box is powered ON, the lung vacuum pump will *instantaneously* generate approximately 15 in Hg of vacuum.

Figure 3-6: Lung Vacuum Pump in the IDS



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

3.5.2 Physical Connection

The lung vacuum pump is connected to the printhead through a series of hoses and fittings. The vacuum supply route can be seen in **Figure 3-7**.

Figure 3-7: Lung Vacuum Supply Route (Dual Head Shown)



3.6 Ink Supply Line

The ink supply line controls the flow of ink from the ink container (located in the ink bottle holder) to the printhead. The sequence of the ink flow from the container is summarized below and can be seen in **Figure 3-8**:

- 1. Ink starts in the ink container and is gravity fed into the solenoid valve for the Monet ink or directly to the sub-container for Renoir ink.
- The solenoid valve opens and closes to allow ink flow to the sub-container (Monet ink only).
- 3. The sub-container float switch determines the amount of ink in the sub-container.
- 4. The peristaltic pump head pumps ink through the filter. If pressure reaches 20 psi, ink is released back into the sub-container through the relief valve.
- 5. The hydrophilic filter filtrates ink before exiting the system support box.
- 6. Ink travels from the system support box to the printhead.
- 7. The printhead solenoid valves open and close to supply ink to each printbar individually.

Note: For Monet inks, it is important to have the vent tubing clipped in the tube holder with the tip of the tube above the ink bottle holder. The vent tube eliminates vacuum developing in the sub-container that could cause an ink level misreading.

For Renoir inks, the vent tubing must be connected to a coupling at the top of the ink bottle holder box. This leads to an empty ink bottle.



Figure 3-8: Ink Supply Route (Dual Head Shown)

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

3.6.1 Maintaining the Ink Line

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

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

Note: It is important to follow all safety precautions as described in Chapter 2.0.

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

For additional information on maintenance, refer to Chapter 5.0.

Figure 3-9: 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.



3.6.2 Replacing and Maintaining the Ink Bottle

When replacing an ink bottle, follow the instructions shown in **Figure 3-10**. Once the new bottle is installed, check the connection by pulling the plastic coupling body. Then plug the chrome coated coupling body on the hose into the panel mounted coupling insert installed in the main container.

During continuous printing, it is possible to create a vacuum in the ink bottle. If this occurs, the ink bottle will appear to collapse. When this happens, remove the plastic coupling with the bottle upright. This will release the pressure.

Figure 3-10: Ink Bottle Replacement



this damage the head, but may also contaminate the filter and result in the ink line bursting due to back pressure. In addition, aggressive chemicals such as isopropyl alcohol or acetone should not be added to the ink bottle. Buskro is not responsible for any damage caused by improper use of the ink.

3.6.3 Peristaltic Pump Head

The peristaltic pump head is responsible for pumping ink from the sub-container 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 3-11**). The 12 VDC gearmotor drives the pump in a counter-clockwise direction.





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

The float switch (**Figure 3-12**) is responsible for sensing the ink level within the subcontainer. If ink is below a specified level, the switch will close and cause the solenoid valve to open (Monet). This will cause the sub-container to refill to the required level.

Figure 3-12: Sub-container with Float Switch





3.7 Pressure Regulator, Meniscus Vacuum

The meniscus vacuum is responsible for maintaining a continuous negative pressure (-2.5 to -3.3 inches of water) required to prevent ink "weeping" (leaking out of the head) and for creating a positive purge pressure (42 inches of water) to prime the printheads. The positive and negative pressures are generated by the pressure regulator. The meniscus vacuum line can be seen in **Figure 3-13**. In order to prevent ink from being drawn into the pressure regulator, a hydrophobic filter is installed for each printbar to stop ink from passing through. This filter is also used to filter air used when purging the printhead. If ink enters the filter, it must be replaced.

The two solenoid valves (Solenoid 1 and Solenoid 2 in **Figure 3-13**) are used to maintain the meniscus vacuum when the system support box is powered off. This prevents ink from leaking out of the printhead. The solenoids are closed through a 12 VDC relay in the terminal block assembly (**Section 3.10**).

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





3.8 Atlas Power Supply, 170 VDC

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

Figure 3-14: Atlas Power Supply, +170 VDC



3.9 Power Supply, 12 VDC

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

Figure 3-15: 12 VDC Power Supply



3.10 Terminal Block Assembly

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

Figure 3-16: Terminal Block Assembly



Atlas UVC Printhead



4.1 Features

4.1.1 Universal front/back Mounting

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

4.1.2 Rugged Umbilical

All printhead "life support" requirements emanating from the controller are ported through a single ruggedly encased umbilical providing excellent protection. These essential elements, which include vacuum, ink, and data lines, are equipped with sealed, drip-free connectors for rapid connection to the controller.

4.1.3 Individual Height Control

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

4.1.4 Leveling Control for Print Optimization

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

4.1.5 Portable

Since the printhead is capable of sliding relative to the mounting assembly, the BK79 series printhead can be easily attached or removed from the mount for unparalleled portability.

4.1.6 Scalable Bridge Arrangement

The printhead bridge uses a standard aluminum extrusion with two end mounts. As a result, the extrusion can be cut to length to straddle any custom application.

4.1.7 Convenient Maintenance System

The BK79M printhead mount is equipped with a convenient release knob that automatically raises the printhead for rapid access to the printhead face in the event wiping and purging is required.

4.1.8 Ease of Servicing

The printhead is equipped with two removable covers providing complete access to the printbar, electronics, valves, and hoses for easy servicing and/or removal. In addition, the printbar itself is equipped with a rapid disconnect and filter for clean ink flushing when needed.

4.2 Components

4.2.1 The Printbar

The printbar is a monochrome 256-jet head that uses Drop-On-Demand (DOD) technology that applies voltage to the Piezo-electric crystals in the head to jet ink. In the case of single head printheads, only one printbar is used while in dual head printheads, two printbars are included for each head. An illustration of the printbar can be seen in **Figure 4-1**.



Figure 4-1: The Printbar

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

For single head printheads, 1 inch of print coverage is available at 256 DPI vertically. The horizontal DPI is software selectable through Compose (110, 220, 330, 440, and 660 DPI).

4.2.2 Lung Vacuum

The lung vacuum is designed to de-aerate the ink to prevent loss of jets due to air bubbles. It is described in **Section 3.5** and should measure approximately 16 inches of mercury (16 in Hg).

4.2.3 Ink Supply Line

The ink supply line is described in **Section 3.6**.

4.2.4 Meniscus Vacuum

The meniscus vacuum described in **Section 3.7** should measure approximately 2.5-3.3 inches of water (in Wg). If the meniscus vacuum is too low, ink may leak from the printhead. Conversely, if the meniscus vacuum is too high, there may be a loss of jets during printing. If either of these conditions are observed, the meniscus vacuum can be measured using a low-pressure gauge (P/N 9100338A). If an incorrect meniscus vacuum is measured at the head, another reading should be taken directly from the pressure regulator to ensure that the problem is not in the meniscus vacuum line itself.

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

4.2.5 Priming Button

The priming button(s), located on the top of the printhead assembly, is available to remove air from the printhead. To prime the printhead, the button must be pressed and held for a minimum of **2 seconds**. A number of conditions must be met in order for priming to occur. These conditions are outlined below.

- 1. The Atlas System Support Box power must be ON.
- 2. The printhead must be at its operating temperature (Section 6.2.2).
- 3. The ink refill process must be inactive.
- 4. There must be sufficient ink in the sub-container of the Ink Delivery System.
- 5. A period of 10 seconds must elapse between the start of one prime to the start of another.

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

4.2.6 Dual Atlas Connector Interface Board (DACIB)

The DACIB (**Figure 4-2**) is used to interface the printhead with the system support box and the datapath card through the head support cable and head data cable respectively. It is used on both single and dual printheads.





4.3 Printhead Adjustments

In order to provide flexibility, each printhead is designed to allow individual lateral, vertical, and angular adjustments. This is achieved by adjusting the associated knobs and screw shown in **Figure 4-3**.





4.3.1 Lateral Adjustment

Lateral adjustment is achieved by turning the release knob (**Figure 4-3**) counter-clockwise and sliding the printhead along the rail. Once in position, the release knob should be turned clockwise to lock the printhead in place. This adjustment provides proper placement of print on the piece.

4.3.2 Height Adjustment

Height adjustment is achieved by turning the height adjustment knob (**Figure 4-3**). Clockwise rotation raises the printhead while counter-clockwise lowers it. This adjustment provides the ability to run a range of material thicknesses up to 1.25". In general, the printhead should be as close to the material (without interfering with transport) as possible in order to obtain optimum print quality.

4.3.3 Angular Adjustment (Printhead Leveling)

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





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

4.3.4 Raising the Printhead

In order to simplify maintenance and service, the printhead housing can slide vertically relative to the mounting assembly. In order to clean or wipe the printhead, the maintenance release knob shown in **Figure 4-5** can be pulled to automatically raise the head to the required level. When cleaning is completed, the printhead can be pushed down until it snaps in place.

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

Figure 4-5: Raising the Printhead



Service elevation

4.4 **Printhead Connections**

There are five main types of connections from the printhead to the inkwell. They are:

- 1. Ink Umbilical Black tubing
- 2. Lung Vacuum Blue tubing
- 3. Meniscus Vacuum Clear tubing
- 4. Data Cable 15-Pin Cable
- 5. Head Cable 26-Pin Cable

Each single head printhead uses one of each of these cables while dual head printheads use an additional meniscus line. In addition, the ink line and meniscus connectors are different between the Monet and Renoir systems in order to prevent mixing technologies.

Note: Monet and Renoir inks cannot be used in the same ink delivery system or printhead or *SERIOUS* damage can occur. This is due to chemical compatibilities of the inks with the components used.

Always turn OFF the controller before disconnecting the data or head cables otherwise the printhead can be damaged.

Maintenance



5.1 Enhanced Maintenance

As of Compose V6.05, enhanced maintenance features were added to partially automate the maintenance requirements for the Atlas-UVC system. This includes enhanced purge and firing sequences for maintaining the printhead and recovering lost jets, maintenance alarms to notify users of the maintenance needs of the system, and automated maintenance when the printheads sit for long periods of time.

Note: The enhanced maintenance features require at least Compose V6.05, Datapath EPROM V6.3, and the System Support EPROM V4.3.

5.1.1 Enhanced Maintenance Firing and Purging

The enhanced maintenance features are available under the **Diagnostics Screen** in Compose (**Figure 6-2**). Pressing the **Test Fire** buttons in combination with the **Shift** or **Ctrl** keys on the keyboard accesses them. Alternatively, the keyboard function keys (F1 to F8 with F1 referring to Head 1, F2 for Head 2, to F8 for Head 8) can be pressed instead of the **Test Fire** button.

Button	Description
	Test Fire button. Test fires the head with 10 pulses.
Shift +	Maintenance Firing Sequence. Fires all jets and automatically uses
	known techniques for jet recovery such as increasing jetting voltage,
	and creating a frequency sweep.
Ctrl +	Maintenance Purge. Creates a 2-second pressure purge that is
	repeated four times. There is a 2-second delay between purges.
Shift Ctrl	Combines the Maintenance Firing Sequence with the Maintenance
	Purge.

Table 5-1: Enhanced Maintenance Controls

5.1.2 Maintenance Alarms

In order to ensure that maintenance is completed, Compose will display alarm icons.

 Table 5-2: Maintenance Alarms

Icon	Description
Ŷ	Warning icon appears after four hours. At this point, it is recommended that
	the user activate the Maintenance Firing Sequence or Maintenance Purge to
Bar 1	remove this warning icon. There is an alarm icon for each head.
n->	Error icon appears after five hours. At this point, printing is locked out until
T.	maintenance is performed. This icon can be removed by activating the
Bar 1	Maintenance Firing Sequence or Maintenance Purge. There is an alarm icon for
2.20.1	each head.

5.1.3 Automatic Maintenance

The purpose of the automatic maintenance is to maintain the system between jobs when the system is idle. This ensures that that the printhead jets are exercised and that ink is regularly refreshed. In order to access this function, place the ink catch tray underneath the printhead, go to the **File** pull-down menu and select **Automatic Maintenance**. This will display the dialog box shown in **Figure 5-1**.

Figure 5-1: Automatic Maintenance Dialog Box



This feature will automatically run the Maintenance Firing Sequence every 15 minutes.

Note: Ensure that an ink catch tray is placed underneath the printhead before activating the automatic maintenance. It is important to check the tray regularly to see if ink needs to be removed in order to avoid overfilling. This process expels approximately 1 cc of ink per hour.

5.1.4 Maintenance Jets

The maintenance jet feature in Compose is used to fire unused jets during printing in a manner not visible to the naked eye. In a given print job, it is highly unlikely that 100% of the jets are always in use. As a result, maintenance jets are fired to exercise unused jets during printing. This feature can be found in the **Advanced Options** dialog box shown in **Figure 5-2**. The recommended value is 20, but this can be optimized by visually inspecting the print. Although a higher value is recommended to help exercise the jets, this will also increase the possibility of seeing the maintenance jets on the piece. The higher the value, the more likely the maintenance jets will become visible on the piece.

Figure 5-2: Advanced Options Dialog Box

Streaming Print Engine	1	Checked to enable the Streaming Print Engine for Web applications.		
Auto Triager	2	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	v	Checked if using the new System Support electronics.		
Maintenance Jet Level:	0 ÷	Maintenance Jet Level in dots per product.		
Photo Sensor Debounce: 0.500 " + Photo Sensor debounce distance in inches.				
Photo Sensor Delay: 5.0 ms Photo Sensor response time in milliseconds.				
Encoder Divisor:	19 +	Number of encoder pulses between Photo Sensor reads.		
Font Error Level:	1	Font Error detection level for East Asian fonts.		
Master Port 1: COM3	Verify Port 1	1: COM8 PLC Port: COM1		
Master Port 2: COM5	 Verify Port 2 	2: COM9 CCR/Slave Port: COM2		
Master Port 3: COM6	 Verify Port 3 	3: COM10 Remote Port: TCP/IP		
Master Port 4: COM7	▼ Verify Port 4	4: COM11 V HP Ink Port None V None V		

5.1.5 Printhead Cleaning (Priming)

Priming is recommended when a printhead has not been in use for an extended time period or if a loss of jets is visible in the print (i.e. a void in the image). This is done to remove trapped air bubbles at the orifice plate. To prime and clean the printhead:

- 1. Put on Nitrile gloves and follow the safety procedures in **Chapter 2.0**.
- 2. Pull the maintenance release knob to raise the printhead.
- 3. Place the ink tray (P/N 9101302) underneath the printhead. Alternatively, hold a lint free fibreless wipe (P/N 800900) underneath the printhead.
- Press the priming button on the top of the printhead. Hold for approximately 10 seconds to allow ink to drip out of the printhead and then release. Alternatively, the Maintenance Firing Sequence and Maintenance Purge can be applied (Section 5.1.1).
- 5. Using the specified wipes, lightly press against the bottom of the printhead and move the wipe in the direction shown in **Figure 5-3**.
- 6. Repeat steps 3-4 with the second priming button on dual head designs.

Figure 5-3: Priming and Wiping (Dual Head Shown)



Note: A soft, fibreless wipe with no chemical additives must be used to clean the printhead otherwise it can be damaged or fibers from the wipe may cause blockage. No other wipes are acceptable (i.e. paper towels, toilet paper, tissue paper, or sponges).

5.2 Renoir Ink Printhead Maintenance

The Atlas-UVC (BK791-U) printhead uses UV curable ink known as Renoir ink. Since the Renoir ink has different properties from the Monet ink, maintenance requirements are different. As a result, it is important to follow the proper maintenance section based on the technology being used. Reference the safety procedures in **Chapter 2.0**.

5.2.1 Renoir Printhead Shut-down

To shut-down the printhead overnight, reference the following steps:

- 1. Follow the priming procedure outlined in Section 5.1.5.
- 2. Run the Maintenance Firing Sequence (Section 5.1.1).
- 3. Run the Maintenance Purge (Section 5.1.1).
- 4. Shut off the power to the system support box (inkwell) and the controller.

5.2.2 Renoir Printhead Start-up

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

- 1. Put on Nitrile gloves and follow the safety procedures in Chapter 2.0.
- 2. Turn the controller and system support box power ON.
- 3. Start Compose and wait until the "**Normal Status**" icon appears. It should take approximately 1 minute for the printhead to heat up to its operating temperature. The temperature can be read in the diagnostics screen (**Section 6.2.2**).
- 4. Follow the priming procedure outlined in Section 5.1.5.

5.2.3 Renoir Printhead Regular Maintenance

The key to proper printhead maintenance is to exercise the printhead jets and to regularly refresh the ink in the printhead. This is normally done by running the system during a print job and following the daily maintenance requirements. In cases where there are longer idle times, more care is needed to ensure maintenance is completed as recommended.

Note: If regular maintenance is not properly followed, this can result in a permanent loss of jets in the printhead.

5.2.4 Periods up to 3 days

Renoir Inks can be left in the printhead for a period of 3 days with the machine switched off. It is switched off in order to drop the temperature applied to the ink in order to minimize the possibility of increasing ink viscosity over time (which can occur at elevated temperatures over extended periods of time). It is important to follow the daily shutdown procedure found in **Section 5.2.1**. Alternatively, the automatic maintenance feature can be activated (**Section 5.1.3**).

5.2.5 Periods of 3-30 days

For Atlas UVC printheads that are unused for 3-30 days, it is important to continue to regularly cycle the ink through the jetting assembly. This is to avoid causing jet blockages in the printhead. In order to do this, the automatic maintenance feature must be activated to automatically expel ink at set intervals (**Section 5.1.3**). In order to do this, an ink tray (9101302) must be placed under the printhead to catch the ink and there must be sufficient ink in the inkbottle to supply this process. It is also highly recommended that the operator print a full test pattern every 3 days to ensure that no jets have been lost.

Note: It is important to check the ink tray regularly to prevent overfilling and to check the ink supply to ensure there is sufficient ink to allow for maintenance.

It is highly recommended that the operator print a full test pattern every 3 days to ensure that no jets have been lost.

5.2.6 Periods greater than 30 days

For Atlas UVC printheads that are unused for a period greater than 30 days, it is recommended that the same procedure found in **Section 5.2.5** be followed. Alternatively, the Renoir ink can be completely removed from the printhead and thoroughly flushed and filled with the proper flushing fluid (9101048). To properly flush the printhead, the Renoir Flushing kit can be purchased (BK-FLUSH-R). The proper flushing instructions can be found in the flushing kit. The flushing fluid should be replaced every 30 days.

5.3 Ink Line Replacement

In order to properly maintain the integrity of the ink line, it is recommended that it be fully replaced once a year. This includes replacing all tubing and couplings, and flushing out fixed ink line hardware such as the subcontainer and the solenoid valves. In order to simplify this task, the UBK-UVIDM-700 can be purchased for the Ink Delivery Module maintenance and UBK-UV791 can be purchased for each individual printhead. In addition, the tubing in the peristaltic pump should be replaced every six months as described in **Section 3.6.1**.

Compose Settings



6.1 Integration

In general, Buskro print technology is designed to work with a Buskro controller (i.e. BK700 Portable Controller) equipped with Compose software. Due to the modular design of the Controller, all Buskro inkwells are designed with the same mounting configuration. Specific information on the BK700 Controller and the requirements for integrating it with the print technology can be found in the Controller manual.

6.2 Compose Software

The Compose software is a Windows[®] based application that controls all operational aspects of a Buskro inkjet system. Detailed information is not provided in this manual.

6.2.1 Printhead Drivers

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

Setup			×
Stacker/Diverter Print Head	Options OCR Master	Slave Inserter Tracking	Verify Passwords
Head 1	Head 2	Head 3	Head 4
Type: Atlas-DV	Type: None	Type: None	Type: None
Temperature: 40 C	Temperature:	Temperature:	Temperature:
# Position	# Position	# Position	# Position
Print Bar A 1 9.980 🛨	Print Bar A	Print Bar A 📄 🛨	Print Bar A
Print Bar B 📄 🕂	Print Bar B	Print Bar B	Print Bar B
Print Bar C 📃 🕂	Print Bar C	Print Bar C	Print Bar C
Print Bar D	Print Bar D	Print Bar D	Print Bar D
Save Configuration	🖻 Recall Configuration		E Head Alignment
		🖌 OK 🗶 Cancel	🤣 Apply 👔 Help

Figure 6-1: Compose Setup Window

Print Technology	Product Code	Inches of Print	Driver Name
Atlas	BK791-A	1	Atlas
			Atlas-HS (High Speed)
Atlas DV (Dual Head)	BK792-A	2.5	Atlas-DV
			Atlas-DV-HS (High Speed)
Atlas UVC	BK791-U	1	Atlas-UVC
			Atlas-UVC-HS (High Speed)

 Table 6-1: Printhead Driver

6.2.2 Diagnostics Screen

The Compose diagnostic screen displays the voltage and temperature readings for each printbar. In the case of the Atlas-DV, two printbars will be listed for a single printhead as shown in **Figure 6-2**. In the case of Atlas single head or Atlas UVC, only one bar will be shown for each printhead.

The voltage value is preset before shipment and normally ranges between 90 and 110 Volts. The temperature reading depends on the ink technology used. For the Atlas or Atlas-DV heads, the temperature should be approximately 40°C while the Atlas-UVC is approximately 52°C. This temperature should NEVER be increased otherwise it may cause the ink to prematurely cure resulting in permanent loss of jets.





6.2.3 Printhead Voltage Setting

Each individual printbar is tuned to operate at a specific drive voltage (normally 90-110V). This drive voltage is written on each printbar and requires the proper voltage setting in Compose. The minimum and maximum voltage setting for the printhead is 70 and 200 respectively.

In order to properly set the voltage, the COMPOSE4.INI file must be modified using a text editor. Within the INI file, the keyword **"HeadVolt"** must be found. The temperature for each individual printbar can be set here. A sample section of the COMPOSE4.INI file can be seen below:

[Head Support] ResMaxWarmup=25 (for ELITE only) LOISTrip=88 UMBDelay=50 (for ELITE only) VacRefStroke=3 (for ELITE only) VacRefTime=120 (for ELITE only) HeadVolt1=100.0 HeadVolt2=100.0 HeadVolt3=100.0 HeadVolt5=100.0 HeadVolt6=100.0 HeadVolt8=100.0

Note: The proper voltage is set at the factory.

Troubleshooting



7.1 Troubleshooting Guide

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

Table 7-1	Trouble	Shooting	Guide
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Problem	Example	Action
Lines in Print	LITE HEAD	 Prime system Measure Lung Vacuum (need 16 in Hg) Hold a wipe soaked with flushing solution on the orifice plate for 10-15 seconds
Head Prints every other Channel	ELITE HEAD 2	 Check Data Cable to Printhead Defective HDC Board
Head missing ¼ of print		 Check flex connectors at the head Defective driver chips on head that must be factory repaired
Split Image	Buskro Ltd without having to knock 1410 Bayly St. Unit 16 1410 Bayly , st. Unit 16 1410 , dayly St. Unit 16 1410 Bayly St. Unit 16 1410 Bayly St. Unit 16	 Verify v1.3 PCI Controller Chip or higher on the Data Path Card Belt speed is below minimum speed of 0.15 m/s
Ink is Dripping from Print Head		 Measure meniscus vacuum (need <2.5 in Wg) Check meniscus hose and hydrophobic filter for ink blockage Check solenoid valve that allows permanent meniscus vacuum

Problem	Example	Action
No ink in the Ink Supply Line		 Check that the UMB LED is lit on the SSB Measure ink low reading on head (LOIS/GND) (should be below 4.3 VDC for low ink) Check solenoid valve installed in the printhead Check PVC membrane disc in the filter holder mounted behind peristaltic pump head. Replacement is necessary if ink is recycled from the ink tray No ink in the sub-container
Peristaltic Pump constantly pumping ink		 Low ink level in the head (temporary) SSB malfunction LOIS malfunction
Pump Fail Icon	×	 Loss of power in 12 VDC wiring related to float switch installed inside the sub-container.
Low on ink icon		 Sub-container low on ink (temporary)
Print is streaking	uble Dolphin Cryster 42	 Check 3 Pin connector on printhead Change 10 Pin ribbon cable on printhead
Warning Icon appears	Bar 1	Run the maintenance firing and purging sequence.
Error Icon appears and printing is disabled	Bar 1	Run the maintenance firing and purging sequence.

Inkwell Assembly Drawings

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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.

Item	Part Number	Quantity	Description	Reference
1	401310	4	Screw, PHMS, 4-40 UNC x ¼"	
2	402510	10	Screw, BHCS, 6-32 UNC x 1/4"	
3	404510	16	Screw, BHCS, 10-32 UNF x 1/4"	
4	420008	3	Nut, 10-32 UNF	
5	603300	1	Circuit Breaker Switch, 115VAC	
6	606330A	1	Main Power Supply Cable	
7	614114A	1	Panel Mount Counter Cable	
8	615131	1	Cable Clamp, ¾", Metal	
9	803020	2	Electrical Warning Label	
10	9100138A	1	Ink Delivery Module – 1", 2"	Page A-6
11	9100212A	1	Cable, System Communication	
12	9100717	1	Plug, Mate-n-lok, 6 Pin	
13	9100748A	1	I/O Panel Mount Cable	
14	9100895A	1	External Tubing Assembly	Page A-7
15	9100979	1	UV/Solvent Inkwell Container	
16	9101165	2	Drawer Slide	
17	9101217	1	Rear Door	
18	9101219A	1	Power Supply Housing Assembly, 4"	Page A-13
19	9101220	1	Housing Cover	
20	9101285	1	Roller Catch - Brake	
21	9101788	1	Bracket, Umbilical Mount	
22	9101796	1	Eye Protection Label	
23	9102151A	1	Syringe Assembly	Page A-18
24	9102156A	1	Ink Bladder Holder Assembly	Page A-21
25	9102157	1	Cover, Blind, 3", 4" Atlas	

Table A-1: In	nk Delivery	System, 2	?", Rei	noir (UV	(IDS2)
		~	- ,		/ (~-/

Figure A-1: Ink Delivery System, 2", Renoir (UV) (IDS2)



Item	Part Number	Quantity	Description	Reference
1	401310	4	Screw, PHMS, 4-40 UNC x ¼"	
2	402510	20	Screw, BHCS, 6-32 UNC x 1/4"	
3	404510	20	Screw, BHCS, 10-32 UNF x 1/4"	
4	420008	1	Nut, 10-32 UNF	
5	603300	1	Circuit Breaker Switch, 115VAC	
6	606330A	1	Main Power Supply Cable	
7	614114A	1	Panel Mount Counter Cable	
8	615131	1	Cable Clamp, 3/8", Metal	
9	803020	2	Electrical Warning Label	
10	9100138A	1	Ink Delivery Module – 1", 2"	Page A-6
11	9100717	1	Plug, Mate-n-lok, 6 Pin	
12	9100748A	1	I/O Panel Mount Cable	
13	9100895A	1	External Tubing Assembly	Page A-7
14	9100979	1	UV/Solvent Inkwell Container	
15	9101165	4	Drawer Slide	
16	9101207A	1	System Communication Cable	
17	9101217	1	Rear Door	
18	9101219A	1	Power Supply Housing Assembly, 4"	
19	9101220	1	Housing Cover	
20	9101788	1	Bracket, Umbilical Mount	
21	9101796	1	Eye Protection Label	
22	9102112A	1	External Tubing Assembly – 3", 4"	Page A-17
23	9102151A	1	Syringe Assembly	Page A-18
24	9102154A	1	Ink Delivery Module – 3", 4"	Page A-20
25	9102156A	2	Ink Bladder Holder Assembly	Page A-21

Table A-2: Ink Deliver	y System, 4",	Renoir (UV	') (IDS4)
	,,, ,		
Figure A-2: Ink Delivery System, 4", Renoir (UV) (IDS4)



Item	Part Number	Quantity	Description	Reference
1	401310	2	Screw, PHMS, 4-40 UNC x 1/4"	
2	402510	10	Screw, BHCS, 6-32 UNC x 1/4"	
3	404510	10	Screw, BHCS, 10-32 UNF x 1/4"	
4	404550	4	Screw, BHCS, 10-32 UNF x 3/4"	
5	413506	4	Screw, BHCS, M3 x 6mm	
6	9100138	1	Pressure Regulator	
7	9100206A	1	Pressure Regulator Cable	
8	9100969A	1	Electrical Board Bracket Assembly	Page A-11
9	9101049A	1	Side Bracket Assembly	Page A-12
10	9101165	2	Drawer Slide	
11	9101228	1	Main Container	
12	9101285	1	Roller Catch - Roller	
13	9101583A	2	Solenoid Valve Assembly - Air	Page A-14
14	9101584	1	Tray, Ink Spill	
15	9101692A	1	Terminal Bracket Assembly	Page A-15
16	9102154	1	Bracket, IDS, Meniscus Valves	
17	9102714A	1	Solenoid, Pressure Regulator	Page A-22
18	9102815A	1	Board, Pressure Regulator Adaptor	

Table A-3: Ink Delivery Module -1", 2", Renoir (UV) (9100138A)

Figure A-3: Ink Delivery Module -1", 2", Renoir (UV) (9100138A)



Item	Part Number	Quantity	Description	Reference
1	9101691	2	Coupling Insert, 1/8" I.D.	
2	9102110	1	Fitting, 1/8" I.D. to 1/4" I.D.	
3	9102111	6"	Tubing, Black, PE, ¼" x 1/8"	
4	9102111	24"	Tubing, Black, PE, 1/4" x 1/8"	
5	9102112	18"	Tubing, Black, PE, 3/8" x 1/4"	
6	9102236	1	Coupling, Renoir Ink Bottle Cap	

Table A-4:	External	Tubing	Assembly	(9100895A)
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Figure A-4: External Tubing Assembly (9100895A)



Item	Part Number	Quantity	Description	Reference
1	401310	3	Screw, PHMS, 4-40 UNC x ¼"	
2	404550	1	Screw, BHCS, 10-32 UNF x 3/4"	
3	609003	16"	Shrink Wrap, 3/8" ID (Not Shown)	
4	615140	8	Lashing Tie, Small (Not Shown)	
5	9100876	1	Coupling, 0.5" dia.	
6	9100931	1	Peristaltic Pump Head	
7	9100936A	1	Gearmotor Assembly	Page A-9
8	9101164	1	"U" Holder	
9	9101290	2	Connector, Tube to Tube "T", 1/8" I.D.	
10	9101700	1	Check Valve, 1/8" I.D.	
11	9102116	9"	Tubing, Pharmed, 1/4"x 1/8"	
12	9102116	4"	Tubing, Pharmed, 1/4"x 1/8"	
13	9102116	1.25"	Tubing, Pharmed, 1/4"x 1/8"	
14	9102116	1.25"	Tubing, Pharmed, 1/4"x 1/8"	
15	9102116	1.25"	Tubing, Pharmed, 1/4"x 1/8"	

Table A-5: "U" Holder Assembly (9100931A) Particular

Figure A-5: "U" Holder Assembly (9100931A)



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

Figure A-6: Gear Motor Assembly (9100936A)

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



Item	Part Number	Quantity	Description	Reference	
1	402510	2	Screw, BHCS, 6-32 UNC x ¼"		
2	609003	24"	Shrink Wrap, 3/8" ID		
3	609003	2 x 3"	Shrink Wrap, 3/8" ID		
4	615140	6	Lashing Tie, Small (See Note)		
5	615322	4	Female Screwlock, 4-40 UNC		
6	9100960	15"	Tubing, Norprene, 1/8" x ¼"		
7	9100962	2	Coupling Insert, Hose Barb, 1/16" ID		
8	9100963	1	"T" Connector, 1/8" x 1/16" x 1/16"		
9	9100981	2	Coupling Body-Panel Mount, Submin, 1/8" OD		
10	9101162A	2	Cable, Head Support Interface, Atlas		
11	9101231	1	Terminal Bracket		
12	9101285	1	Roller Catch		
13	9101290	1	Fitting, Tee, 1/8" ID		
14	9101697	2 x 2"	Tubing, PVC, Blue, 1/8" x 1/16"		
15	9102116	2 x 3"	Tubing, Pharmed, ¼" x 1/8"		
16	9102116	24"	Tubing, Pharmed, ¼" x 1/8"		
17	9102625	2	Coupling Body, 1/8" ID, Panel Mount		
18	9102627	2	Plug, Body, EPDM O-Ring		
19	9102705A	2	Cable, Printhead Data, 6', Left		

Table A-7: Terminal Bracket Assembly, Reverse (9100962A)

Figure A-7: Terminal Bracket Assembly, Reverse (9100962A)

NOTE:



Item	Part Number	Quantity	Description	Reference
1	401310	5	Screw, PHMS, 4-40 UNC x 1/4"	
2	402510	2	Screw, BHCS, 6-32 UNC x 1/4"	
3	440530	5	Washer, #6, Nylon	
4	606030A	1	Cable, High Voltage Power Supply	
5	606311A	1	Cable, System Support Interface, Atlas	
6	615076A	2	Cable, HDC	
7	9100208	1	System Support CPU Board	
8	9100969	1	System Support Board, Atlas	
9	9100994	2	Head Drive Circuit Board (HDC), Atlas	
10	9101230	1	Electrical Boards Bracket	
11	9101285	1	Catch Stopper (Part of IDS BOM)	

 Table A-8: Electrical Board Bracket Assembly (9100969A)

Figure A-8: *Electrical Board Bracket Assembly (9100969A)*



Item	Part Number	Quantity	Description	Reference
1	404510	6	Screw, BHCS, 10-32 UNF x 1/4"	
2	609003	2.5"	Shrink Wrap, 3/8" ID	
3	615140	4	Lashing Tie, Small (Not Shown)	
4	630004A	1	Cycle Proximity Switch Assembly	
5	640301A	1	Cable, IDS Drive	
6	9100921	1	Lung Vacuum Pump	
7	9100921A	1	Adapter Cable Assembly	
8	9100931A	1	"U" Holder Assembly	Page A-8
9	9100960	1.5"	Tubing, Norprene, 1/8" x 1/4"	
10	9101049	1	Lung Vacuum Pump Bracket	
11	9101170	1	Connector - Inline (1/4" x 1/8")	
12	9101229	1	Side Bracket	
13	9101693A	1	Subcontainer Assembly	Page A-16
14	9102116	2.5"	Tubing, Pharmed, 1/4"x 1/8"	
15	9102625	1	Coupling Body, 1/8" I.D. Straight Thru	
16	9102627	1	Plug, Body, EPDM O-Ring	
17	9103390A	1	Filter, Assembly, 10µm, UV	Page A-23

Table A-9: Side Bracket Assembly (9101049A)

Figure A-9: Side Bracket Assembly (9101049A)



Item	Part Number	Quantity	Description	Reference
1	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
2	404520	4	Screw, BHCS, 10-32 UNF x 3/8"	
3	606000	12"	Wire, #16, Black	
4	606002	2 x 12"	Wire, #16, Blue	
5	606009	12"	Wire, #16, White	
6	606021	2 x 12"	Wire, #16, Brown	
7	609001	2 x 1"	Shrink Wrap, ¼" I.D.	
8	609111A	2	Power S. Cable, 110VAC/170VDC/12VDC	
9	610100	1	Relay, 120 VAC	
10	615003	5	Terminal Block, M10/10, Grey, 10mm 7.5 A	
11	615004	1	Relay Base	
12	615012	3	End Section, FEM6, Grey, 2.5mm	
13	615016	1	End Stop, BAM, 9.1mm	
14	615018	2	Ground Block, M10/10.P, Green & Yellow	
15	615021	5.5"	"T" Rail	
16	615064A	2	Supply Cable, 120 VAC	
17	9101158	2	Power Supply, Atlas, 170 V	
18	9101209	1	Power Supply, 12 VDC, 10.2 A	
19	9101219	1	Power Supply Housing	

 Table A-10: Power Supply Housing Assembly, 4" (9101219A)

Figure A-10: Power Supply Housing Assembly, 4" (9101219A)



Table A-11: Solenoid	Valve Assembly - Air	(9101583A)
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Item	Part Number	Quantity	Description	Reference
1	9101208	1	Solenoid Valve, 12 VDC, N.C., Air	
2	9101583	2	Fitting, Nylon, 10-32 UNF, 1/16" I.D.	
3	9101696	3"	Tubing, Polyethylene, 1/8" x 1/16"	
4	9101696	15"	Tubing, Polyethylene, 1/8" x 1/16"	

Figure A-11: Solenoid	Valve Assembly -	Air (9101583A)
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Item	Part Number	Quantity	Description	Reference
1	402510	2	Screw, BHCS, 6-32 UNC x 1/4"	
2	609003	18"	Shrink Wrap, 3/8" ID	
3	609003	2 x 3"	Shrink Wrap, 3/8" ID	
4	615140	6	Lashing Tie, Small (Not Shown)	
5	615322	4	Female Screwlock, 4-40 UNC	
6	9100960	10"	Tubing, Norprene, 1/8" x 1/4"	
7	9100962	2	Coupling Insert, Hose Barb, 1/16" I.D.	
8	9100963	1	"T" Connector, 1/8"x 1/16"x1/16"	
9	9100981	2	Coupling Body-Panel Mount, 1/8" O.D.	
10	9101162A	2	Head Support Ineterface Cable, Atlas	
11	9101231	1	Terminal Bracket	
12	9101285	1	Roller Catch	
13	9101290	1	"T" Connector, Tube to tube, 1/8"	
14	9101697	2 x 2"	Tubing, PVC, Blue, 1/8" x 1/16"	
15	9102116	2 x 3"	Tubing, Pharmed, 1/4" x 1/8"	
16	9102116	18"	Tubing, Pharmed, 1/4" x 1/8"	
17	9102625	2	Coupling Body, 1/8" I.D.	
18	9102627	2	Plug, Body, EPDM O-Ring	
19	9102805A	2	Cable, Printhead Data, Right, 6'	

Table A-12.	Terminal	Bracket	Assembly	(9101692A)
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Figure A-12: Terminal Bracket Assembly (9101692A)



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

Table A-13.	Subcontainer	Assembly	(9101693A)
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Figure A-13: Subcontainer Assembly (9101693A)



Item	Part Number	Quantity	Description	Reference
1	9101691	2	Coupling Insert,1/8" I.D.	
2	9102110	1	Fitting, 1/8" I.D. to 1/4" I.D.	
3	9102111	4"	Tubing, Black, PE, 1/4" x 1/8"	
4	9102111	20"	Tubing, Black, PE, 1/4" x 1/8"	
5	9102112	7"	Tubing, Black, PE, 3/8" x 1/4"	
6	9102236	1	Coupling, Renoir Ink Bottle Cap	

Table A-14: External Tubing Assembly ((9102112A)
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Table A-15: Syringe Assembly (9102151A)

Item	Part Number	Quantity	Description	Reference
1	9101292	1	Syringe, 30 CC.	
2	9102111	6"	Tubing, Black, PE, 1/4" x 1/8"	
3	9212151	1	Coupling Insert, Inline, 1/8" I.D., straight thru	

Figure A-15: Syringe Assembly (9102151A)



Item	Part Number	Quantity	Description	Reference
1	401310	2	Screw, PHMS, 4-40 UNC x 1/4"	
2	402510	10	Screw, BHCS, 6-32 UNC x 1/4"	
3	404510	10	Screw, BHCS, 10-32 UNF x 1/4"	
4	404550	4	Screw, BHCS, 10-32 UNF x 3/4"	
5	413506	4	Screw, BHCS, M3 x 6mm	
6	9100138	1	Pressure Regulator	
7	9100206A	1	Pressure Regulator Cable	
8	9100962A	1	Terminal Bracket Assembly, Reverse	Page A-10
9	9100969A	1	Electrical Board Bracket Assembly	Page A-11
10	9101049A	1	Side Bracket Assembly	Page A-12
11	9101165	2	Drawer Slide	
12	9101228	1	Main Container	
13	9101285	1	Roller Catch - Roller	
14	9101583A	2	Solenoid Valve Assembly - Air	Page A-14
15	9101584	1	Tray, Ink Spill	
16	9102154	1	Bracket, IDS, Meniscus Valves	
17	9102714A	1	Solenoid, Pressure Regulator	Page A-22
18	9102815A	1	Board, Pressure Regulator Adapter	

Table A-16: Ink Delivery Module -3", 4", Renoir (UV) (9102154A)

Figure A-16: Ink Delivery Module – 3", 4", Renoir (UV) (9102154A)



Item	Part Number	Quantity	Description	Reference
1	401010	3	Screw, FHCS, 4-40 UNC x 1/4"	
2	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
3	9101287	1	Multitube Holder	
4	9101305	1	Hole Plug, 1/2" dia.	
5	9101733	1	Cubitainer, 1 ltr	
6	9102116	17"	Tubing, Pharmed, 1/4" x 1/8"	
7	9102156	1	Ink Bottle Holder	
8	9102237	1	Holder Door	
9	9102625	1	Coupling, Panel Mount, 1/4" O.D.	

 Table A-17: Ink Bladder Holder Assembly (9102156A)

Figure A-17: Ink Bladder Holder Assembly (9102156A)

NOTE: 9 For 3" and 4" system as well as for IDUK upgrade kit multitube holder with three screw to be mounted on 4 1 opposite side. 3 Hole plug and coupling body to switch locations. Cubitainer is installed to collect retracted ink from the ventilation branch of the system. 3 đ 0₀0 6 1 Q D 2 1 8 1 5 1

Item	Part Number	Quantity	Description	Reference
1	404075	2	Screw, FHCS, 10-32 UNF x 1 ¼"	
2	420008	2	Nut, 10-32 UNF	
3	439009	2	Lockwasher, No. 10	
4	9100203	2	Contact, Female, 18-22 AWG, Series 5556	
5	9100205	1	Connector, Female, 2-Pin, Mini-Fit Jr	
6	9100472	1"	Tubing, Silicone, ¼" OD x 1/8" ID	
7	9100472	4"	Tubing, Silicone, ¼" OD x 1/8" ID	
8	9102085	3	Connector "L", 1/8-27 NPT, 1/8" ID	
9	9102714	1	Solenoid Valve, Built-in Manifold, 12 VDC	
10	9102820	1	Plate, Mounting, Solenoid Valve	

 Table A-18: Solenoid, Pressure Regulator (9102714A)

Figure A-18: Solenoid, Pressure Regulator (9102714A)



NOTE:

CUT SOLENOID VALVE WIRES TO 6.5".

Table A-19:	Filter,	Assembly,	10µm,	UV
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Item	Part Number	Quantity	Description	Reference
1	9103257	2	Luer, Male, 1/8" ID Tubing, Black	
2	9103390	1	Filter, 10µm, UV	

Figure A-19: Filter, Assembly, $10\mu m$, UV

Printhead Assembly Drawings

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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.

Item	Part Number	Quantity	Description	Reference
1	404240	2	Screw, SHCS, 10-32 UNF x 5/8"	
2	404510	8	Screw, BHCS, 10-32 UNF x ¼"	
3	9101302	1	Ink Tray	
4	9101598	1	Bracket, Top Port, Single/Dual	
5	9101735	4	Fitting, Half	
6	9101773	2	Collar, Locking Shaft	
7	9101776A	1	Umbilical Assembly, BK791, Renoir, 6'	Page B-7
8	BK791-U	1	Printhead, BK791 Atlas UVC	Page B-2
9	BK79M-1	1	Mount, BK791 Series Printhead	Page B-3

 Table B-1: Printhead, BK791 Atlas UVC, w/ Rail Mount (BK791-U-06)

Figure B-1: Printhead, BK791 Atlas UVC, w/ Rail Mount (BK791-U-06)





Item	Part Number	Quantity	Description	Reference
1	402230	8	Screw, SHCS, 6-32 UNC x 1/2"	
2	404050	4	Screw, FHCS, 10-32 UNF x 3/4"	
3	438171	2	Thumbscrew, 10-32 UNF x 3/8"	
4	9100141	1	Printhead Support Chip (Not Shown)	
5	9102106A	1	Top Plate Assembly, Single	Page B-11
6	9102107	2	Cover, Reversible Singlehead	
7	9102107A	1	Bottom Plate Assembly, Single, UV	Page B-12
8	9103427	1	Plate Cap, Single Head	

 Table B-2: Reversible Singlehead Assembly, Atlas UVC (BK791-U)

Figure B-2: Reversible Singlehead Assembly, Atlas UVC (BK791-U)

NOTE:

9100141 IS ASSEMBLED ON THE DATA PATH CARD.



Item	Part Number	Quantity	Description	Reference
1	404510	2	Screw, BHCS, 10-32 UNF x 1/4"	
2	9101983A	1	Head Support Assembly	Page B-8
3	9101994A	1	Rail Mounting Assembly	Page B-9
4	9102108	1	Shield, Reversible Singlehead	
5	9102114	1	Shield, Reversible Singlehead, Reverse	

79M-1)
,

Figure B-3: Singlehead Mount Assembly (BK79M-1)



Table B-4:	Ink Umbilical	Assembly, Atlas	UVC (9101691A)
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Item	Part Number	Quantity	Description	Reference
1	9101691	2	Coupling Insert, In-line, 1/4" O.D.	
2	9102111	72"	Tubing, PE, Black, 1/8"x1/4"	

Figure B-4: Ink Umbilical Assembly, Atlas UVC (9101691A)



 Table B-5: Meniscus Vacuum Hose Assembly, Atlas UVC (9101696A)

Item	Part Number	Quantity	Description	Reference
1	9100961	1	Coupling, In-line	
2	9101696	72"	Tubing, PE, natural, 1/8"x1/16"	

Figure B-5: Meniscus Vacuum Hose Assembly, Atlas UVC (9101696A)



Table B-6: Lung	Vacuum	Hose	Assembly	(9101697A)
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Item	Part Number	Quantity	Description	Reference
1	9100982	1	Coupling, In-line	
2	9101697	72"	Tubing, PVC, 1/8"x1/16", Blue	

Figure B-6: Lung Vacuum Hose Assembly (9101697A)



Also comes in 15' version (9101699A).

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

	Table B-7: Umbilical	Sleeving Assembly,	Single, Atlas	UVC (9101776A)
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Figure B-7: Umbilical Sleeving Assembly, Single, Atlas UVC (9101776A)



Item	Part Number	Quantity	Description	Reference
1	402250	4	Screw, SHCS, 6-32 UNC x 3/4"	
2	402310	4	Screw, PHMS, 6-32 UNC x 1/4"	
3	403306	2	Screw, PHMS, M4 x 6 mm	
4	403310	2	Screw, PHMS, 8-32 UNC x 1/4"	
5	415130	2	Shoulder Bolt, 5/16" x 1/2" (1/4-20)	
6	439009	2	Lockwasher, No. 10	
7	9101165	2	Drawer Slide	
8	9101874	2	Spring, Compression	
9	9101983	1	Mounting Block, Slider	
10	9101996	1	Gas Spring	
11	9102090	1	Support Block, Head Mounting	
12	9102094	2	Profile Bar	
13	9102097	1	Bracket, Printhead Mounting	
14	9102126	1	Locknut, Nylon insert, M4 x 0.7	
15	9102127	1	Screw, SHCS, 1/4-20 UNC x 1.25", Full Thread	
16	9102128	1	Screw, SHCS, 1/4-20 UNC x 3/8"	
17	9102792	1	Plunger, 3/8-16 UNC, Lever Type, Non-Locking	

Table B-8: Head	Support	Assembly	(9101983A)
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Figure B-8: *Head Support Assembly (9101983A)*



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

 Table B-9: Rail Mounting Assembly (9101994A)

Figure B-9: Rail Mounting Assembly (9101994A)



Table B-10 : <i>So</i>	lenoid Valve	Assembly	(9102085A)
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Item	Part Number	Quantity	Description	Reference
1	9101436	1	Solenoid Valve, 12 VDC	
2	9102085	2	Connector, Elbow, 1/4" O.D. tube	

Figure B-10: Solenoid Valve Assembly (9102085A)



Item	Part Number	Quantity	Description	Reference
1	404030	4	Screw, FHCS, 10-32 UNF x 1/2"	
2	404520	2	Screw, BHCS, 10-32 UNF x 3/8"	
3	615140	3	Lashing Tie, Small (Not Shown)	
4	9100216A	1	Priming Button Cable	
5	9100472	2 x 3"	Silicone Tubing, 1/4" OD x 1/8" ID	
6	9100965	1	Air Filter	
7	9101774	1	Handle, Double Curved	
8	9102106	1	Plate, Top, Reversible Singlehead	
9	9102109A	1	Port Bracket Assembly	Page B-13
10	9102111	6.5"	Tubing, PE, 1/4" x 1/8", UV Resistant	

 Table B-11: Top Plate Assembly, Single, Atlas UVC (9102106A)

Figure B-11: Top Plate Assembly, Single, Atlas UVC (9102106A)



Item	Part Number	Quantity	Description	Reference
1	404050	4	Screw, FHCS, 10-32 UNF x 3/4"	
2	404285	1	Screw, SHCS, 10-32 UNF x 2"	
3	404510	3	Screw, BHCS, 10-32 UNF x 1/4"	
4	414212	2	Screw, SHCS, M4 X 12	
5	436325	2	Dowel Pin, 1/8"DIA x 5/8"	
6	440005	2	Washer, #6 ID	
7	606023	5"	Wire, #18, Green, Hookup	
8	606023	12"	Wire, #18, Green, Hookup	
9	609116	3	Terminal, Ring, #10, 18-22 AWG, Red	
10	609119	1	Terminal, Ring, #4, 18-22 AWG, Red	
11	615140	3	Lashing Tie, Small (Not Shown)	
12	9100135A	1	Data Ribbon Cable, Atlas	
13	9101591	1	Insulation Block, Fixed	
14	9101697	5"	Tubing, PVC, 1/8" x 1/16", Blue	
15	9102085A	1	Solenoid Valve Assembly	Page B-10
16	9102088	2	Extrusion, AI, Profile 8 (Item)	
17	9102105	1	Plate, Bottom, Reversible Singlehead	
18	9102153	1	Printhead, Atlas w/ IHIB, 256/30, UV	
19	9102350A	1	Ferrule Assembly, Atlas-UVC Printhead	Page B-14

 Table B-12: Bottom Plate Assembly, Single, Atlas UVC (9102107A)

Figure B-12: Bottom Plate Assembly, Single, Atlas UVC (9102107A)



Item	Part Number	Quantity	Description	Reference
1	401310	4	Screw, PHMS, 4-40 UNC x 1/4"	
2	420008	2	Nut, 10-32 UNF	
3	439008	1	Lockwasher, #10, External Tooth	
4	606014A	1	Singlehead Control Cable, Atlas	
5	615066	1	Female Connector, 4 Pin, BLA4	
6	615322	4	Female Screwlock, 4-40 UNC	
7	9100214A	1	Printhead Flying Lead Cable	
8	9100472	1"	Tubing, Silicone, ¼ O.D. x 1/8 I.D.	
9	9101170	1	Connector, Inline, 1/4" O.D. to 1/8" O.D.	
10	9101588	2	Connector, Reducing Bulkhead, 1/8" x 1/4"	
11	9101599	1	Dual Atlas Interface Board	
12	9102109	1	Mounting Bracket, Singlehead	
13	9102625	1	Coupling Body, 1/8" I.D. Tubing, Panel Mount	
14	9102627	1	Plug, Body, EPDM O-Ring	

 Table B-13: Port Bracket Assembly, Singlehead (9102109A)

Figure B-13:	Port Bracke	et Assembly,	Singlehead	(9102109A)
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ltem	Part Number	Quantity	Description	Reference
1	9100938	1	Fitting, Nut	
2	9100958	1	Ferrule Set	
3	9101170	1	Fitting, Straight Reducer, 1/8 To 1/16 ID	
4	9101695	9"	Tubing, PE, 1/8" x 1/16", UV Resistant	
5	9102111	2"	Tubing, PE, 1/8" x 1/16", UV Resistant	

 Table B-14: Ferrule Assembly, Atlas-UVC Printhead (9102350A)

Figure B-14: *Ferrule Assembly, Atlas-UVC Printhead (9102350A)*


Atlas UVC Schematics

Appendix C

List of Schematics

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Figure C-7: Wiring Diagram - Off Head Supply (9101229AE)	C-7

Figure C-1: Printhead, BK791 Atlas, Wiring Diagram (BK791AE)









Isolated Head Interface Board (IHIB)

Figure C-2: Printhead, BK791 Atlas, Grounding Diagram (BK791AE)



Figure C-3: Wiring Diagram - Pressure Regulator Board (9100138AE)



- Note: If original Elite SSB is used, it must be modified:
 - 1) Replace R20 & R28 with 390 Ohm resistors
 - 2) Replace R19 & R27 with 30 kOhm resistors
 - 3) Replace Diode D2 by a jumper

Pressure Regulator Cable (P/N 9100157A) • via Female Connector, 2 Pin Molex # 39-01-2020 (P/N 9100205)

Pressure Regulator Cable (P/N 9100157A) via Female Connector, 2 Pin Molex # 39-01-2020 (P/N 9100205)

Pressure Regulator Cable (P/N 9100157A) via Female Connector, 4 Pin Molex # 39-00-2039 (P/N 9100203) **Figure C-4:** Wiring Diagram - System Support Board (9100208AE)





Figure C-5: Wiring Diagram - Head Drive Circuit Board, Atlas (9100944AE)



<u>NOTES</u>

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

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

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

WIRING COLORS

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

Figure C-6: Wiring Diagram - Atlas Inkwell Power (9100979AE)



Figure C-7: Wiring Diagram - Off Head Supply (9101229AE)

System Support Board, Atlas P/N 9100969



