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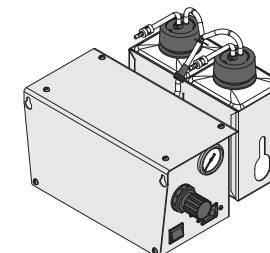
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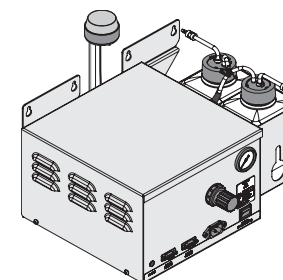
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[techdoc@matthews.se](mailto:techdoc@matthews.se)

[www.matthewsmarking.com](http://www.matthewsmarking.com)



HP-ISU



HP-ISU Advanced

**Ink Supply Units**  
HP Series

## **Operator Manual**

Version: 2 Issue: 1

Order number: 795 571.02



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# General Information

## About this Manual

This manual gives information which is necessary for the user to be able to install, run and maintain Jet-A-Mark HP series ink supply units.

Unless otherwise stated, the information in this manual applies to both the HP-ISU and the HP-ISU Advanced. In these situations "*HP-ISU*" will be used as a collective term for both the HP-ISU and the HP-ISU Advanced.

For example, the sentence "Switch off the *HP-ISU*." shall be read as "Switch off the HP-ISU or HP-ISU Advanced."

## Security Notices

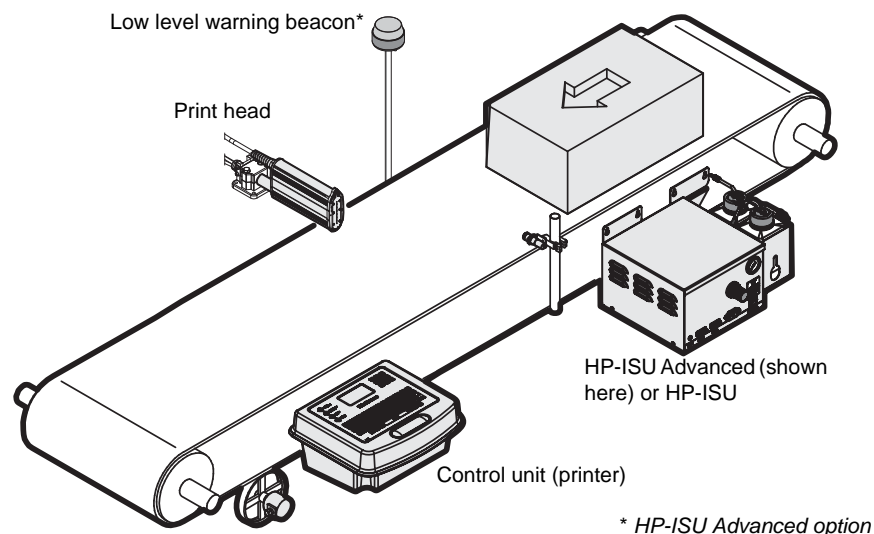
- **Danger** - Only authorised personnel may open the ink supply unit's lids and panels.
- **Danger** - The ink supply unit contains electrically conducting fluids and high voltage components.
- **Danger** - Refer to the appropriate "Material Safety Data Sheets" for information on the fluids used with your ink supply unit. These documents state whether or not the fluid is flammable and what action to take if the fluid comes into contact with eyes or skin.
- **Caution** - Use only the correct Matthews inks and cleaners. Failure to do so will damage the unit and void the warranty.
- **Caution** - Never pressurise a bottle while it is positioned outside the ink supply unit. This may damage the bottle and cause leakage.
- **Caution** - Running the print head/s without fluid will cause damage. Therefore, check regularly for kinks or other stoppages in the lines and replace ink or cleaner fluid as soon as the low level warning light comes on.
- **Caution** - Never let the system stand dry. Always replace ink or cleaner fluid as soon as it becomes necessary.

- **Caution** - To avoid ink and cleaner fluid spill, ensure that all tubes (including connections and joints) are mounted so that they can not be damaged or inadvertently detached.

**General Information**

# Overview

The HP-ISU and HP-ISU Advanced units are high pressure ink and cleaner fluid delivery systems for use with print heads from the DOD•3000 and DOD•8000 series.



## Description

Air is pumped into each 1 litre (0,21 UK gallon, 0,26US gallon) bottle forcing the contents up through the pick-up tube, through a filter and then on to the print head.

The rate, at which air is pumped into the bottles (line pressure), is set using the pressure adjust knob and by reading off the resulting pressure at the pressure gauge.

The HP-ISU Advanced indicates low ink or cleaner fluid level by activating an optional warning beacon and by transmitting a signal to an external alarm handler.

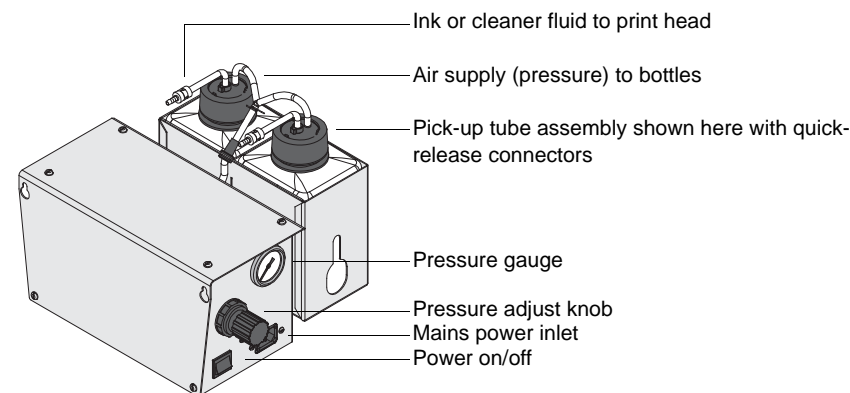
The following table shows a comparison between the HP-ISU and the HP-ISU Advanced.

	HP-ISU	HP-ISU Advanced
Fluid capacity	2 x 1 litre (0,21 UKG, 0,26USG)	2 x 1 litre (0,21 UKG, 0,26USG)
Mains voltage requirements	Fixed	Universal
Fluid level detection and alarm	No	Yes
Pressure gauge and adjust	Yes	Yes
For use with print head series <sup>(a)</sup>	DOD•3000 and DOD•8000 series	DOD•3000 and DOD•8000 series

a.Note that these ink supply units are not for use with print heads from the Standard series.

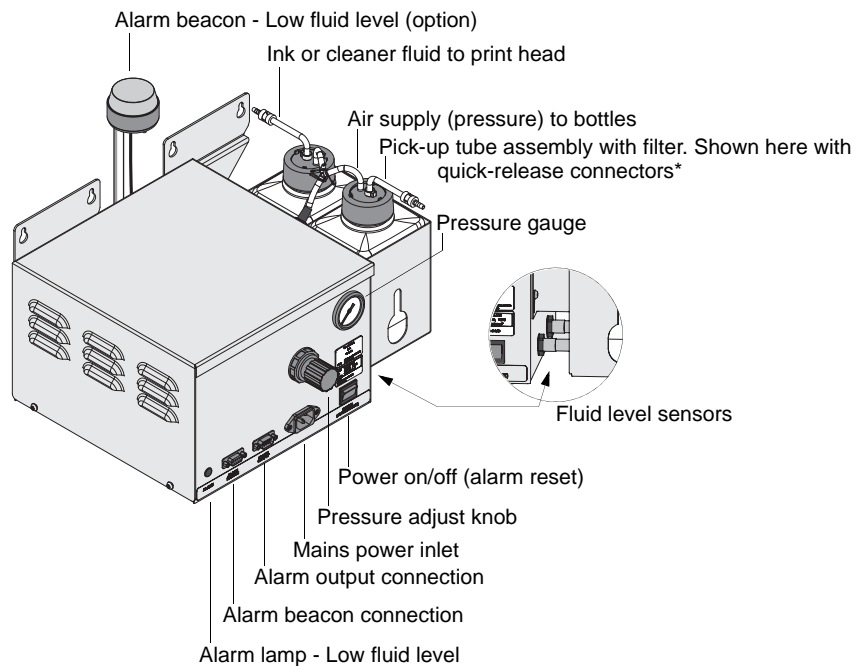
## External Parts

### HP-ISU

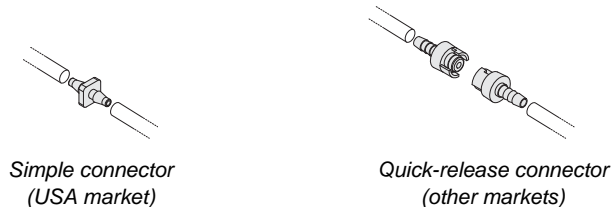


# Overview

## HP-ISU Advanced



\* The type of tube connection used depends on where the unit was purchased.



*Ink under pressure - Always wear safety glasses and rubber gloves when handling ink.*

Here are a few general points to keep in mind when using the high pressure ink supply unit (HP-ISU):

- To avoid ink and cleaner fluid spill, ensure that all tubes (including connections and joints) are mounted so that they can not be damaged or inadvertently detached.
- Never pressurise a bottle while it is positioned outside the ink supply unit. This may damage the bottle and cause leakage.
- Only use Matthews approved inks and cleaner fluids. These inks have been specially designed for Matthews ink jet print heads and will ensure correct operation.
- Remember that the line pressure can have a dramatic effect on printout quality. Factors such as the positioning of the ink supply unit in relation to the print head it is supplying (see below) and when the ink filter was last replaced (after 30 litres or 6 months is strongly recommended) will affect the line pressure.
- Check, on a regular basis, that there is enough ink and cleaner fluid.
- Never refill an ink or cleaner bottle.



# Installing

Before carrying out these instructions, please read the documentation received with your control unit and print heads for installation instructions which are related to these units. This manual only covers information which is specific to the *HP-ISU*.

It is important that the different steps that make up the installation are carried out in the correct order. The order is:

- 1 Plan the installation.  
See “Preparation” on page 5.
- 2 Position the *HP-ISU* in relation to other equipment.  
See “Positioning” on page 5.
- 3 Connect up the tubing and start the *HP-ISU*.  
See “Starting Up” on page 6.

## Preparation

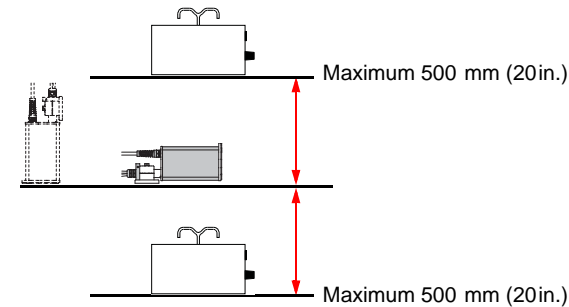
Think through the Installation — it’s a good idea to ask yourself the following questions before starting the installation. The answers could affect how or where you install the *HP-ISU*.

- Where should the *HP-ISU* be positioned for ease of access and so that it is as close as possible to the print head?
- Where is the best place to position the warning beacon (HP-ISU Advanced only) so that an alarm situation is easily detected by the relevant personnel?
- What other external equipment shall be connected to the HP-ISU Advanced?  
Perhaps your mainframe computer needs to know when there is an alarm.

## Positioning

- 1 The *HP-ISU* can either be positioned on a flat surface or hung on a wall using the holes provided. See “Dimensions” on page 13.  
Positioning the unit too far above or below the print head will have an affect on the line pressure and, consequently, the printout quality. Position the

*HP-ISU*, in relation to the print head, according to the following diagram:



- 2 To avoid ink and cleaner fluid spill, ensure that all tubes (including connections and joints) are mounted so that they can not be damaged or inadvertently detached.

## Connecting Alarm Equipment (HP-ISU Advanced only)

See also “The Low Level Alarm (HP-ISU Advanced only)” on page 14.

The HP-ISU Advanced is equipped with sensors which are sensitive to the presence of fluids. These are used to activate an alarm when the level of ink or cleaner fluid in the bottles becomes low.



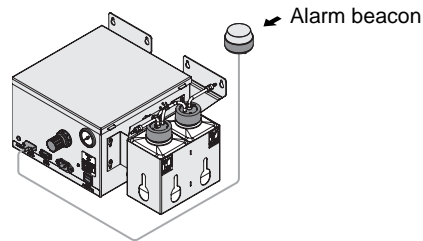
*As running the print heads dry will cause damage it is **strongly recommended** that the alarm equipment is installed so that an alarm situation is easily detected by the relevant personnel.*

## Alarm Beacon

See also “Dimensions” on page 13.

# Installing

When the ink or cleaner fluid level is low the alarm beacon will start to flash.



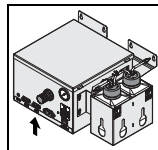
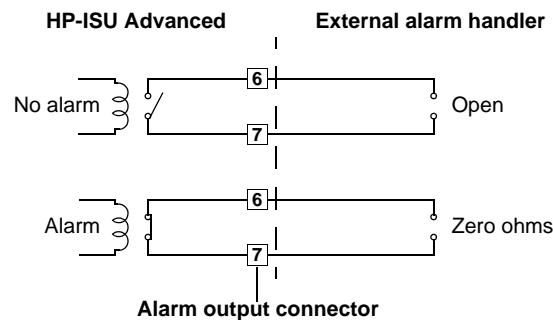
Connect the beacon to the alarm beacon connector as shown above.

## External Alarm Handler

When the ink or cleaner fluid level is low the HP-ISU Advanced closes a switch. This potential free switch closure signals an alarm which can be handled by an external device such as a host computer. The external device is connected to the Alarm output connector according to the following.

### Signal requirements

Maximum 40VDC, 1A (minimum 10mA)



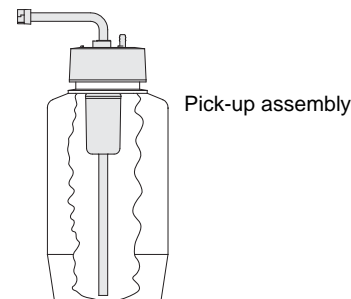
## Starting Up



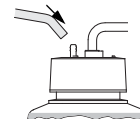
*Always wear safety glasses and rubber gloves when handling ink.*

**- Never pressurise a bottle while it is positioned outside the ink supply unit. This may damage the bottle and cause leakage.**

- 1 Place a full, clean<sup>(1)</sup> bottle (complete with pick-up assembly) in each of the bottle compartments. Ensure that these bottles contain ink or cleaner fluid so that the print heads do not run dry and that the low fluid level alarm (HP-ISU Advanced only) is not activated when the unit is switched on.



- 2 Connect the air tubes to both bottles.

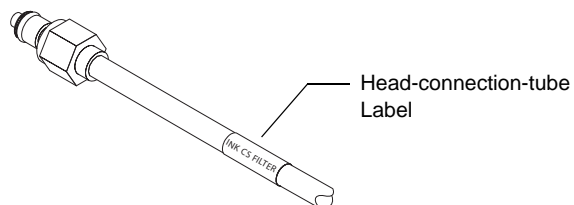


- 3 Connect the print head(s)<sup>(2)</sup> using the head-connection-tubes supplied. One for the ink supply, and one for cleaner fluid. The head-connection-tubes are labelled as

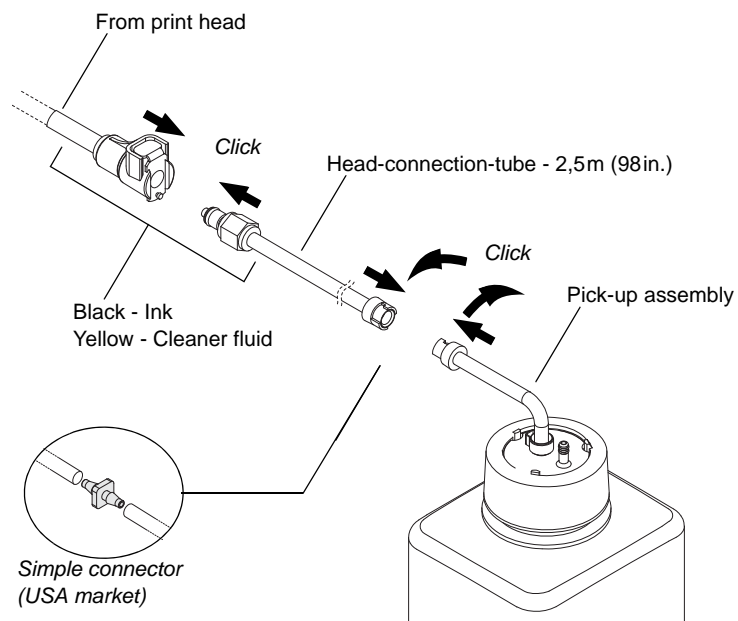
1. Ink deposits, etc., may cause the bottles to stick causing problems when lifting out from the bottle compartments.  
2. Only print heads from the DOD•3000 and DOD•8000 ranges.

follows:

- Ink - "INK CS FILTER"
- Cleaner - "CLN CS FILTER"



Note that the tube connectors between the head connection tubes and the pick-up assemblies do not seal when released.



- 5 Set the pressure according to the following (see "Adjusting the Line Pressure" on page 11):

For DOD • 3000 print heads:

MEK based inks: 0,4 - 0,7 bar (5.8 - 10,1 PSI)

Other inks: 0,6 - 1,0 bar (8.7 - 14,5 PSI)

For DOD • 8000 print heads:

see the documentation received with the print heads.

Note that the pump will enter an idle state after one minute and the system pressure will drop slightly. Fine adjust the system pressure, as required, to compensate for this.

- 4 Connect the power cable and switch the *HP-ISU* on.



# Maintenance

## Replacing the Ink or Cleaner Fluid Bottle

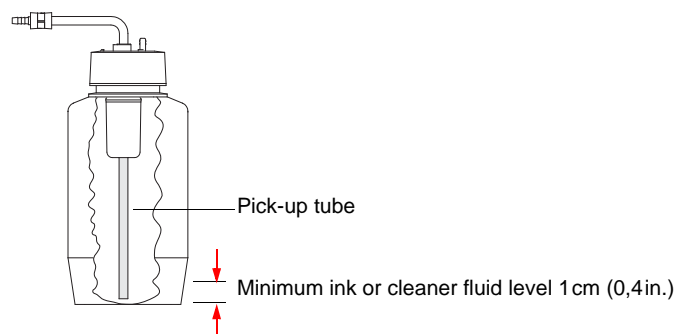
See also “The Low Level Alarm (HP-ISU Advanced only)” on page 14.



*Ink under pressure - Always wear safety glasses and rubber gloves when handling ink.*

*Never run the print head dry (without ink or cleaner fluid) as this will cause damage.*

Replace the bottle when there is approximately 1 cm (0,4in.) ink or cleaner fluid left in the bottom. If the level is allowed to pass the bottom of the pick-up tube, air will be pumped into the system and affect printout and possibly cause damage to the print head.

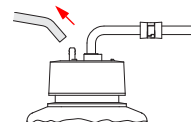


- A bottle must never be refilled or reused
- Use only recommended inks and cleaner fluids
- Never pressurise a bottle while it is positioned outside the ink supply unit. This may damage the bottle and cause leakage.

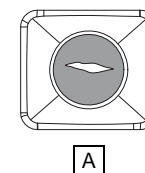
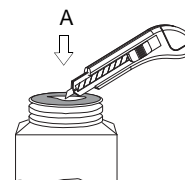
Be prepared with paper towels to catch any ink drops.

- 1 If necessary, ensure that the print head does not print for the next few minutes.
- 2 Switch the ink supply unit off.

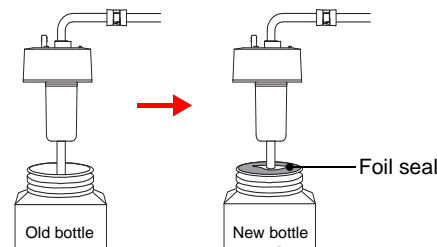
- 3 Release the pressure in the bottle by pulling the air tube off of its nipple.



- 4 Remove the cap from the new bottle but **do not remove the foil seal** that covers the top of the bottle.
- 5 Use a knife and make a cut in the middle of the foil seal, so that the pick-up tube can be inserted.



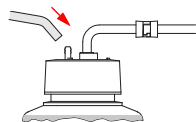
- 6 Remove the pick-up tube from the old bottle and position it above the new one. Then carefully push the pick-up all the way down, through the cut in the foil seal



- 7 Screw the pick-up tube cap on to the new bottle.
- 8 Move the new bottle, complete with pick-up tube assembly, into the bottle holder.

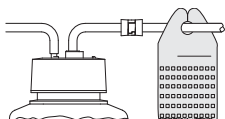
# Maintenance

- 9 Connect the air tube.



- 10 Switch the ink supply unit on.

- 11 Mark the appropriate square on the filter change check tag (see “The Filter Change Check Tag” on page 11).



## Replacing the Ink Filter (Pick-up Tube Assembly)

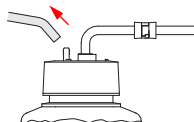


*Ink under pressure - Always wear safety glasses and rubber gloves when handling ink. Never run the print head dry (without ink or cleaner fluid) as this will cause damage.*

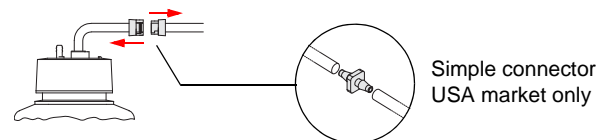
When the maximum amount of ink or cleaner fluid, shown on the Filter Change Check Tag (see “The Filter Change Check Tag” on page 11), has passed through the filter, it must be replaced with a new, according to the following:

Be prepared with paper towels to catch any ink drops.

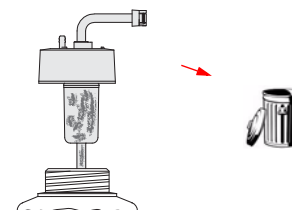
- 1 If necessary, ensure that the print head does not print for the next few minutes.
- 2 Switch the ink supply unit off.
- 3 Release the pressure in the bottle by pulling the air tube off of its nipple.



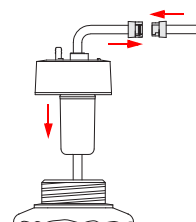
- 4 Disconnect the ink or cleaner fluid tube. Note that ink or cleaner fluid may drip from the separated tubes. USA versions use a different connector, as shown below.



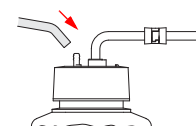
- 5 Discard the used pick-up tube assembly taking care not to turn it upside down as ink or cleaner fluid will spill out.



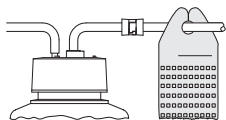
- 6 Screw the new pick-up tube assembly onto the bottle and connect to the ink or cleaner fluid tube.



- 7 Connect the air tube.

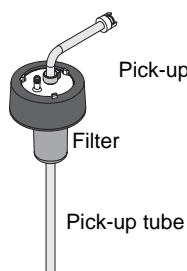


- 8 Replace the filter change check tag.



- 9 Switch the ink supply unit on.

## The Filter Change Check Tag



Pick-up tube assembly

Filter

Pick-up tube



Filter change check tag

The filter change check tag is used to keep a record of the quantity of ink that has passed through the ink bottle's ink filter (contained in the pick-up tube assembly). This is done because the ink filter must be replaced after 30 litres of ink has passed through it.

Each time a bottle of ink is emptied the appropriate square is marked with an X, and this is done until all 30 squares are marked.

Remember also that a new filter change check tag must be placed on the ink tube and the old one thrown away.

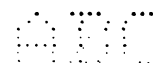
The filter, in a bottle containing cleaner, needs only to be replaced once a year.

## Adjusting the Line Pressure

Before adjusting the line pressure, check that the dot size is set correctly at the control unit and that the ink supply unit is correctly positioned in relation to the print head.

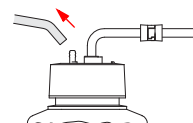


An excessively bold printout or small satellite dots around the main dots can be caused by the pressure setting being too high, the dot size setting being too high or the *HP-ISU* being positioned too far above the print head.

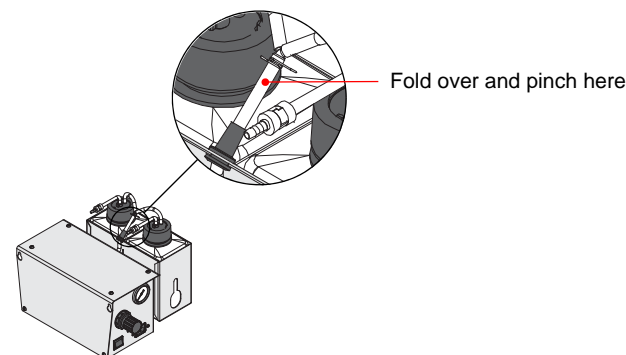


An excessively weak printout can be caused by the pressure setting being too low, the dot size setting being too low or the *HP-ISU* being positioned too far below the print head.

- 1 Switch the ink supply unit off.
- 2 Release the pressure in the system by pulling an air tube off of its nipple.



- 3 Pull the pressure adjust knob out and then turn it fully anti-clockwise.
- 4 Fold over and pinch the air tube where it comes out of the frame.



# Maintenance

- 5 Switch the *HP-ISU* on.
- 6 Turn the pressure adjust knob clockwise until the pressure gauge reads the required pressure.

For DOD • 3000 print heads:

MEK based inks: 0,4 - 0,7 bar (5.8 - 10,1 PSI)

Other inks: 0,6 - 1,0 bar (8.7 - 14,5 PSI)

For DOD • 8000 print heads:

see the documentation received with the print heads.

Note that the pump will enter an idle state after one minute and the system pressure will drop slightly. Fine adjust the system pressure, as required, to compensate for this.

- 7 Push the knob in to lock into position.
- 8 Unpinch the air tube and push the tube back onto its nipple.
- 9 Turn the HP OFF and then back ON.

After one minute the system will be pressurized and should have reached the same pressure as when the tube was pinched.

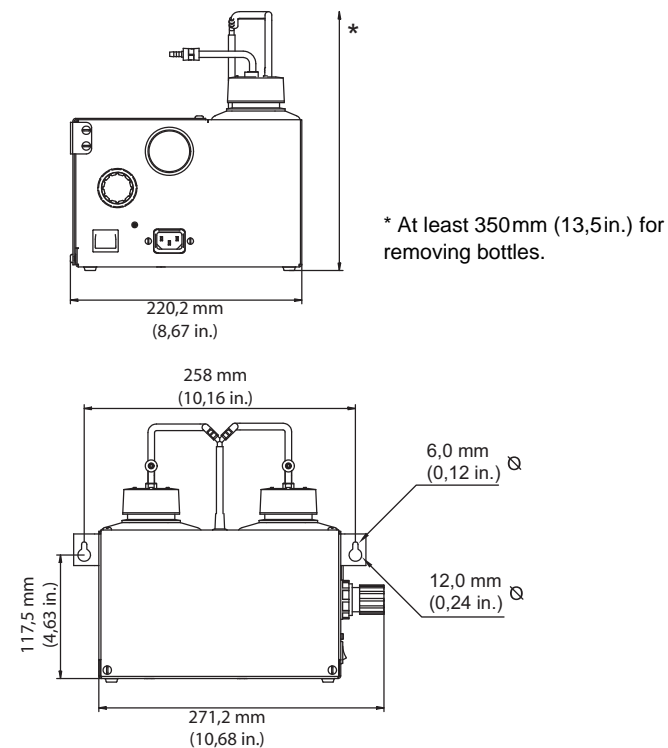


# Appendices

## Dimensions

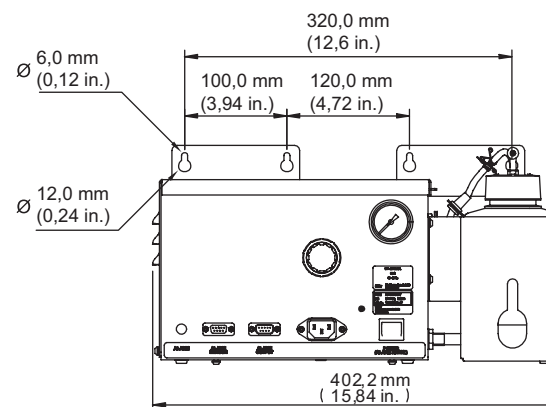
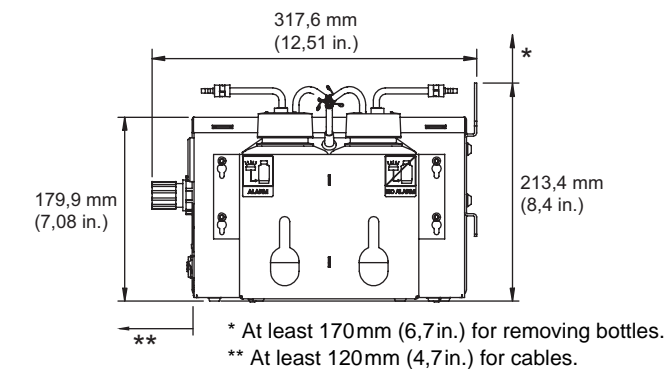
### HP-ISU

Weight (including fluids): 7,5kg (16,5lb.)



### HP-ISU Advanced

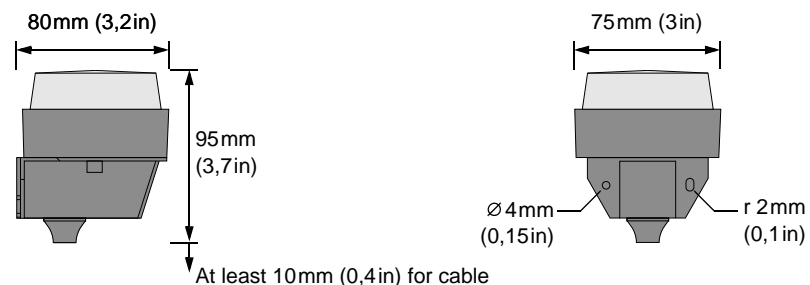
Weight (including fluids): 11 kg (24,3lb.)



## Appendices

### Alarm Beacon (HP-ISU Advanced only)

Xenon beacon with 60/min. flash rate. Cable length: 2 m (79 in)

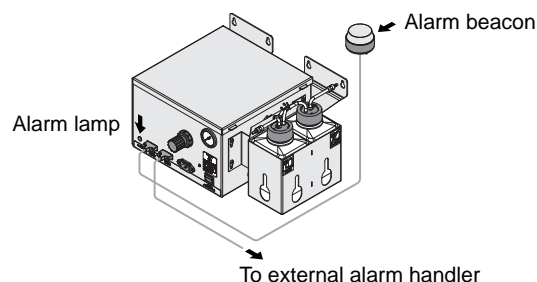


### The Low Level Alarm (HP-ISU Advanced only)

See also “Replacing the Ink or Cleaner Fluid Bottle” on page 9.

The HP-ISU Advanced is equipped with sensors which are sensitive to the presence of fluids. These are used to activate an alarm when the level of ink or cleaner fluid in the bottles becomes low.

When an alarm is activated the following occurs:



- The alarm lamp on the HP-ISU Advanced will light (red).
- The alarm beacon (included) will start to flash.
- Pins 6 and 7 at the alarm output contact are shorted together by an internal relay. This

signal can be used by an external alarm handler such as a computer or PLC.

Note that there is a delay of three seconds between when an alarm is activated and when the alarm actually goes off. This is to avoid unintentional or accidental alarms.

### Resetting an Alarm

Switching the HP-ISU Advanced off and then on again will reset the alarm.

The correct sequence of events when an alarm has been activated is:

- 1 Switch the HP-ISU Advanced off.
- 2 Replace the ink or cleaner fluid bottle. See “Maintenance” on page 9.
- 3 Switch the HP-ISU Advanced on.

### Shipping Instructions



*Always wear safety glasses when handling ink.*

When returning the *HP-ISU* for repair, etc. please:

- ensure that no fluids are included in the shipment. Remove any bottles and wipe away any ink deposits.
- enclose a note showing which cleaner fluid type is being used.
- (if necessary) enclose a note describing the fault and any relating information.

## Troubleshooting

If the following does not help, please contact your dealer.

Fault	Possible cause	Remedy
No printout or poor printout quality. <sup>(a)</sup>	Incorrect line pressure.	See “Adjusting the Line Pressure” on page 11.
	Ink not reaching print head.	Check all tubing.
	Ink filter blocked.	See “Replacing the Ink Filter (Pick-up Tube Assembly)” on page 10.
No low level alarms (HP-ISU Advanced)	Sensor/s faulty or need cleaning.	Check sensors.
	Object or substance (ink deposits, etc.) between sensor and bottle.	Remove object or substance.
Incorrect low level alarms (HP-ISU Advanced)	Sensor/s faulty.	Check sensors.

a. This fault can be due to incorrect settings at the control unit or problems with the print head.

## History

The following table shows which manual should be used with which *HP-ISU* model.

Manual's version number	Ink Supply Unit serial number	Update information
V2 I1	<ul style="list-style-type: none"> <li>• HP Basic - 21740 and upwards</li> <li>• HP Advanced - 1000 and upwards</li> </ul>	Removed information regarding transportation screws -- no longer relevant as a new pump type is used.

Manual's version number	Ink Supply Unit serial number	Update information
V1 I2	<ul style="list-style-type: none"> <li>• HP Basic - 101 to 21739</li> <li>• HP Advanced - 101 to 999</li> </ul>	a) Image added to "start Up" procedure (page 6). b) Instruction for replacing an Ink/Cleaner bottle modified (page 9). c) Instruction for replacing the ink filter modified. Picture of American connector included (page 10).
V1 I1	<ul style="list-style-type: none"> <li>• HP Basic - 101 to 21739</li> <li>• HP Advanced - 101 to 999</li> </ul>	First manual

## User Notes

HP-ISU ☐ HP-ISU Advanced ☐ Serial number:[illegible]

## Appendices

This image shows a full page of primary-ruled paper. It consists of numerous horizontal dotted lines spaced evenly apart, providing a guide for handwriting practice. The lines are black dots on a white background, and there are no margins or other markings present.[illegible]

This image shows a full page of white paper with horizontal dashed lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.[illegible]

