

User's Manual

Diagraph Ink Delivery System Stand-Alone (IDS/SA)

5802-677
Revision D



Diagraph Corporation • 3401 Rider Trail South
Saint Louis / Earth City, MO • 63045 • © 2000

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Printed in the United States of America

IDS/SA SPECIFICATIONS

Size Height: 5.0 inches (12.7 cm)
 6.0 inches (15.24 cm) with feet attached
 Width: 8.25 inches (20.96 cm)
 Depth: 15.0 inches (38.1 cm)

Weight 18 pounds

Electrical Connections 115 VAC at 60 Hz or 230 VAC at 50 Hz input power

Fluid Connections 1/8 inch female coupling for ink inlet
 1/4 inch female coupling for ink outlet

	Control	Location	Function
Manual Controls	Mode Switch	Front Panel	ON/OFF
	Voltage/Fuse Selector	Front Panel	Voltage Selection
	Pump Prime Button	Front Panel	Over-ride auto-shutoff
	Air Purge Button	Rear Panel	Evacuates system of air.

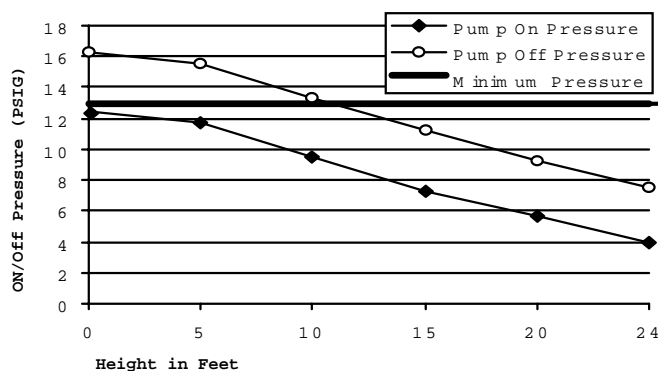
Enclosure Industrial Grade Stainless Steel

Ink Accumulator Capacity 1.4 oz (40ml) ink available for printing

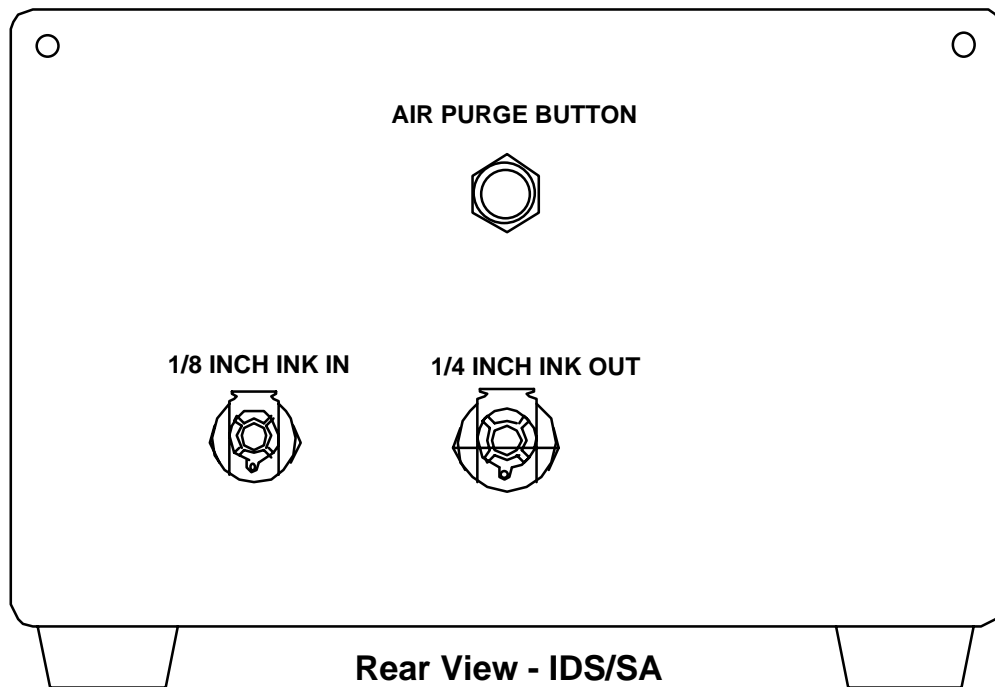
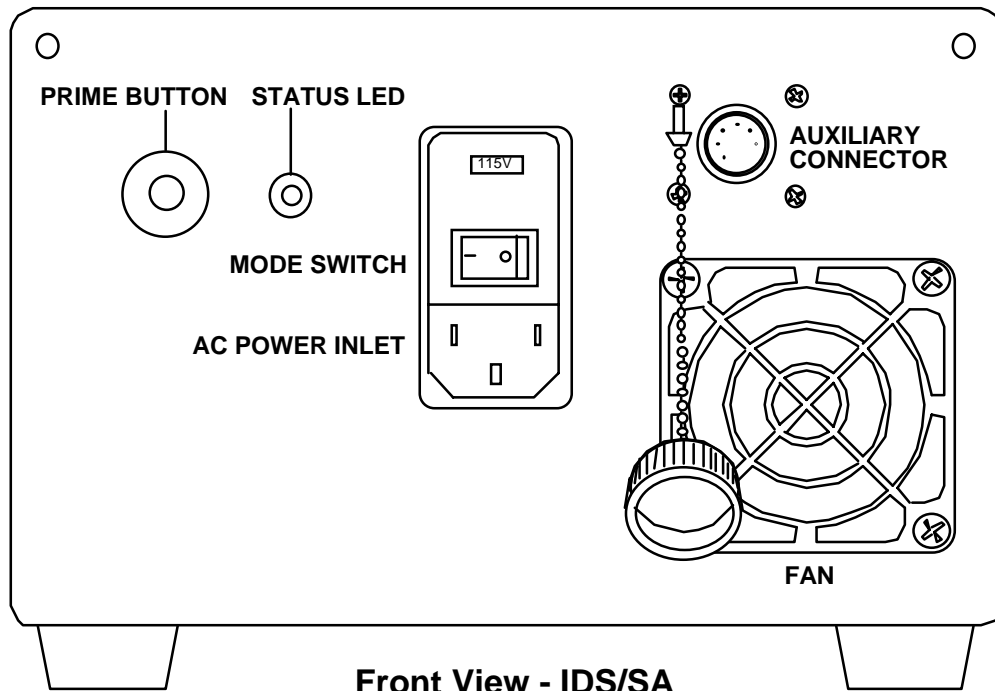
Operating Temperature Between 40°F to 100°F (4.4°C to 37.8°C)

Fuses System: 2 MDL-2 250V, 2A
 Fan: 1 125V, 315 mA

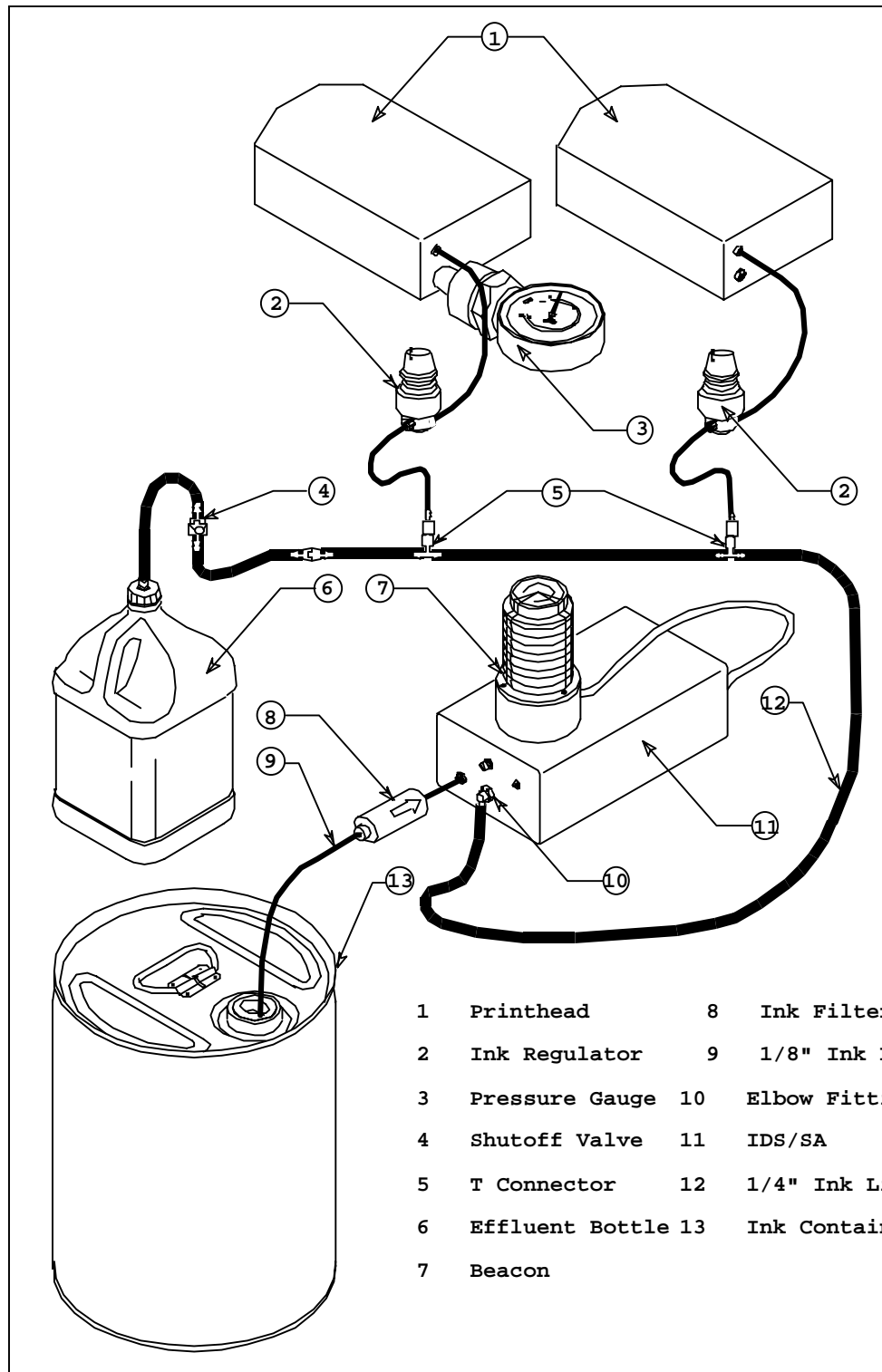
	IV Printhead Size	Max No. Printheads
Diagraph Printhead Supply Capacities	1/2"	12
	7/8"	8
	2"	4
	Barcode	4



Views



The illustration below shows the plumbing of a multiple printhead system.



Ink Line Connections to the IDS/SA

These instructions presuppose the installation of bracketry and with printheads and ink regulators.

Requisite parts of a new system

The IDS/SA ships with

- 20 feet of 1/4 inch tubing with a male elbow in one end (the IDS/SA connection) and a 1/4 inch male coupling in the other;
- an ink filter assembly comprised of 1/8 inch tubing, a filter and a 1/8 inch male coupling in each end;
- a beacon;
- a power cord;
- two mounting brackets;
- spare parts kit;
- documentation.

Even a single printhead system will need all of these items plus a pressure gauge and an effluent bottle.

The previous illustration shows these items in a normal two printhead plumbing configuration.

Plumbing the system

☐ Setting up the primary ink line

Before starting, get a pair of diagonal cutters to cut the cable ties on the packaging and the tubing itself. If you are mounting the IDS/SA to a conveyor, you will also need a 5/16 inch hex wrench, two bolts and two nuts to make the attachment.

- 1 Place the IDS/SA on a shelf or mount it to a conveyor. It can operate on its feet or hanging sideways with the long side parallel to the conveyor.

If you decide to hang the IDS/SA sideways, remove all four feet (hex wrench), position a mounting bracket over the foot holes, and reconnect the feet. Tighten down with the hex wrench. Hang the IDS/SA on the side of the conveyor with two bolts (see Figure 3A on next page).

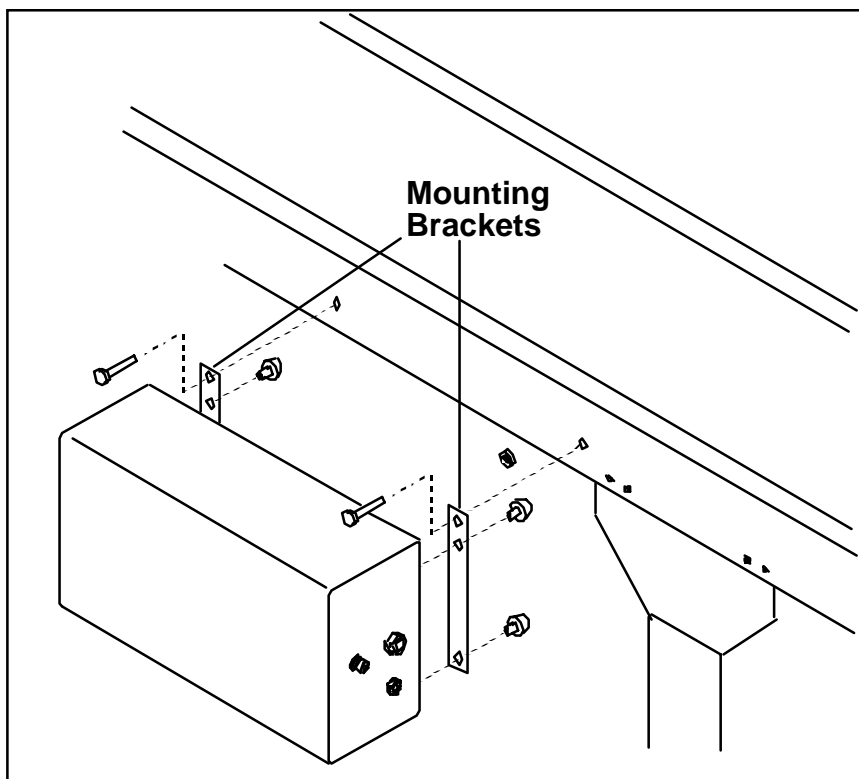
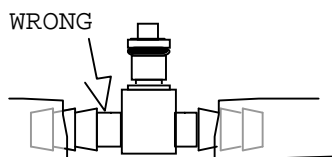
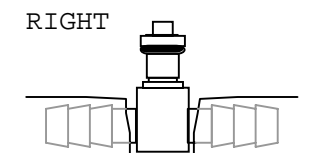
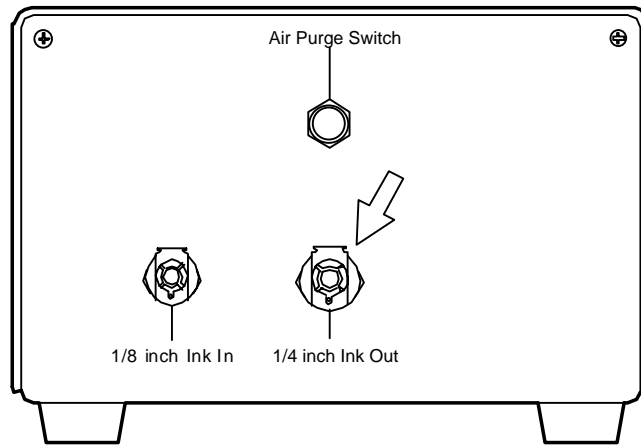


Figure 3A

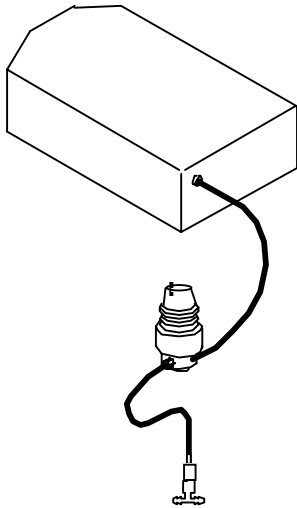


Be sure to slide the tubing over all of the exposed barbs to prevent it from coming off under pressure.

- 2 Construct a spine from the 1/4 inch tubing and the T connectors, one connector for each regulator. Plan to position each regulator conveniently close to the printhead it will be supplying.
- 3 Starting at the end of the tubing fitted with the elbow connector, play out enough tubing to reach from the IDS/SA to the first printhead. Cut the tubing and insert the barbed end of a T connector.
- 4 Reconnect the tubing to the other hose barb on the T connector and route the tubing to the next regulator.
- 5 Cut the tubing and insert the barbed end of a T connector for the second regulator.
- 6 Repeat the previous steps until you have one T connector in the supply line for each regulator.
- 7 Attach the cut end of the remaining 1/4 inch tubing to the last printhead T connector.
- 8 Cut the tubing off about 6 inches beyond the last T connector and insert the male coupling. Connect the male coupling to the female coupling on the tube from the effluent bottle.
- 9 Connect the elbow coupling in the 1/4 inch tubing to the female coupling marked **OUT** on the IDS/SA.

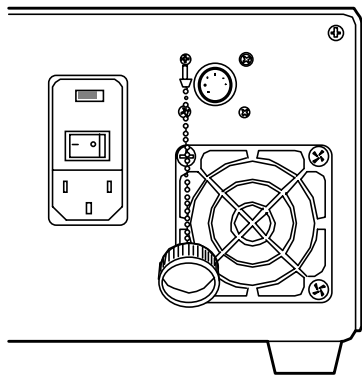


□ **Connecting the printheads**



Connect the ink line with the male quick disconnect from each regulator to the female coupling on its printhead. Listen for a click when you push the connector into the fitting. The thumb tab on the coupling will be in its out position when successfully attached. You can test its security by gently tugging on the ink line to assure connection.

Connecting the Beacon to the IDS/SA



- 1 Set the Low Ink Beacon where it can be seen by floor personnel.
- 2 Remove the cap from the 9 pin circular connector on the front of the IDS/SA.
- 3 Connect the beacon to the IDS/SA front panel using the attached cable with the nine-pin circular connector. The beacon will flash when an ink pail is empty or an error condition exists.

Connecting to the Ink Pail



Wear safety goggles whenever working with ink or ink supply lines. Check with your supervisor for additional safety directives.



Remember that the IDS/SA works only with porous and non-porous Diagraph ink. DO NOT USE PIGMENTED INK.

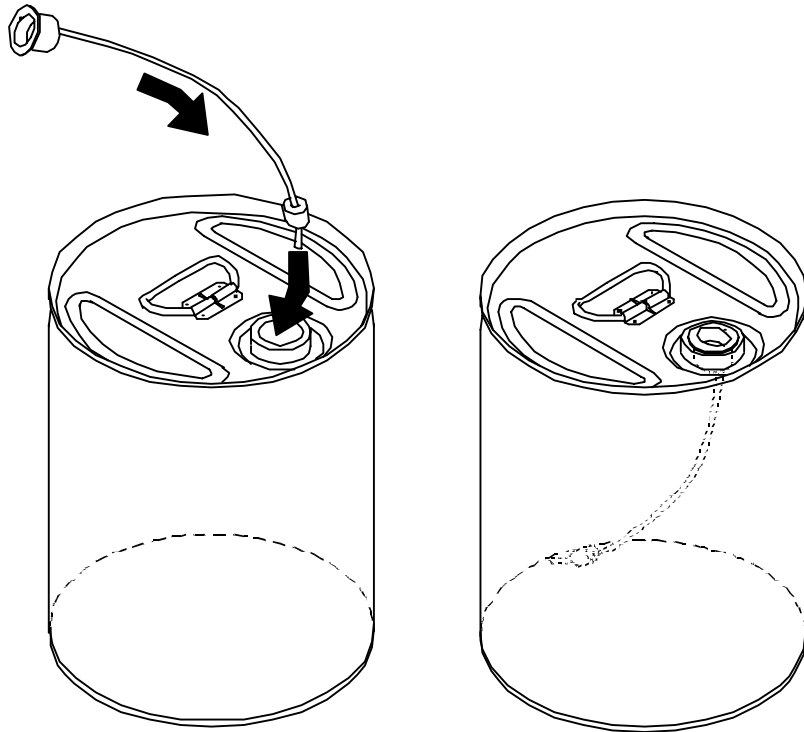
The following instructions cover the installation of a pail of non-porous ink. The porous ink instructions are in the next section.

- 1 Place a pail of Diagraph ink on the floor near the IDS/SA.
- 2 Remove the plastic cap and tube assembly attached to the side of the pail.



The cap has been designed to remove the maximum amount of ink from the pail. DO NOT cut the ink feed tube or reposition the weight attached to the end

- 3 Unscrew the metal cap and pry out the cap cover with a screwdriver. Take care not to splash ink while prying off the cover.



- 4 Insert the tube into the pail and orient toward the handle.



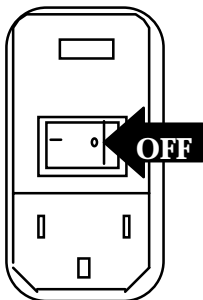
Allowing the container to impact the floor will squirt ink.
AVOID SQUIRTING INK. by handling the container carefully.

- 5 Set the bung in the opening and press down firmly with the heel of your hand. Press until it snaps into place. **DO NOT HAMMER.** Hammering can damage the lid and the container and prevent a good connection between the ink supply and the IDS/SA.
- 6 Position the ink pail at a height that is approximately the same as the IDS/SA. This placement will ensure that the pump in the IDS/SA will successfully pull ink into the system at initial startup.
- 7 Connect the 1/8 inch ink supply line from the IDS/SA to the female coupling in the ink pail bung. Make sure the couplings snap into place.



If the system runs out of ink completely, flush the printheads when the next ink pail is set up. This will enable the system to prime itself before printing resumes. Instructions for flushing appear later in this section.

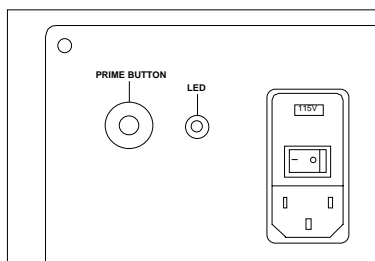
Powering Up the IDS/SA



Press down the OFF side of the rocker switch in the power module before connecting the power cord.

- 1 Plug the power cord into the power entry module of the IDS/SA.
- 2 Plug the power cord into wall current of 115V or 230V—check the window in the top of the power module for the power setting of this unit.
- 3 Press the rocker switch to activate ON mode.

PRIMING



When all ink lines are in place, you need to fill the system with ink in order to print a message. This is called **priming** and is necessary for all new installations.

Before starting, make sure that the IDS/SA is in the OFF mode:

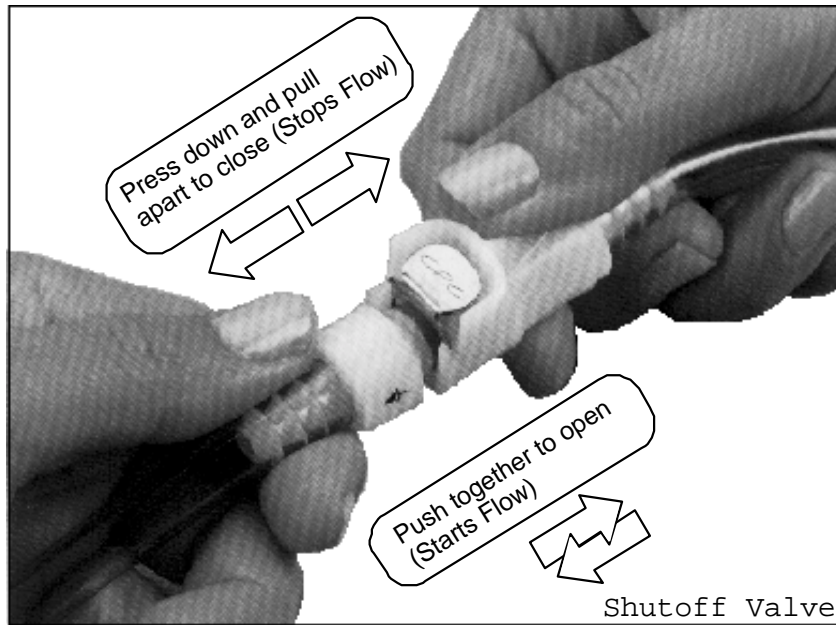
- Fan OFF
- Panel LED OFF
- Beacon OFF
- Rocker switch OFF (zero depressed)



Check all ink line fittings again to ensure that all are intact and no ink will leak.

- 1 Depress rocker switch to ON (the 1 side of the switch). The LED lights to a steady glow, the beacon flashes and the fan starts.
- 2 Open the shutoff valve in the ink tubing to the effluent bottle.

For the next three steps, position yourself so that you can reach both the Prime button and the in-line shutoff valve while keeping an eye on the low-ink beacon.



- 3 Push and hold the silver Prime button for 5 seconds, until ink squirts into the effluent bottle.
- 4 Continue to hold the Prime button and close the shutoff valve.
- 5 Continue to hold the Prime button until the low-ink beacon stops flashing then release it. The system will continue to pressurize after releasing the Prime button. The total time for holding the Prime button should not exceed 30 seconds. If you hold it more than 30 seconds, the will pump will automatically shut off and an error condition will exist.
- 6 Listen for the pump to stop running and check for air in the ink lines. If you see no bubbles, skip steps 6 and 7 and start the "Flushing the Printhead" directions.
- 7 *Optional:* Common problem areas for air are at loops and where the tubing drapes over bracketry. If you spot air in the line, manipulate the tubing so that the trapped air moves toward the effluent bottle.
- 8 *Optional:* If you have air in the ink lines at the effluent bottle, quickly open and close the shutoff valve to exhaust it.

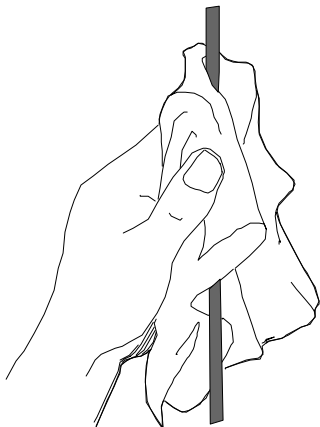
If the system failed to prime, check Troubleshooting.



Warning: If the beacon continues to flash, check immediately for an ink leak. If you discover one, press the rocker switch to idle mode and fix the leak.

If there is no ink leak but the system continues to register low ink (flashing beacon), then turn to the Troubleshooting Section.

FLUSHING THE PRINTHEADS



Diagraph IV printheads ship with conditioner inside and printheads already in service have either conditioner or ink inside. In either case, before they can print successfully, fresh ink must flow through them to flush out air bubbles. This section explains how to flush the printheads with fresh ink.

When flushing the printheads, start with the last printhead in the system, the one just before the effluent bottle. Have a clean cloth ready to wipe up any conditioner or ink that may escape when connecting and disconnecting ink line couplings.

Prevent ink drips by enclosing the couplings in a rag when changing connections.

- 1 Disconnect the effluent bottle from the male coupling that terminates the ink-feed line to the printheads.
- 2 Move the bottle to the last printhead in the system and connect it to the Ink Out port (male coupling) on the back of the printhead.

Wipe up any drops that might leak out when making the connection.

- 3 Open the effluent bottle's shutoff valve: conditioner or ink will start to flow into the bottle.
- 4 Watch the bottle until you see the conditioner changeover to ink or ink move in a good flow, then close the shutoff valve.
- 5 Disconnect the effluent bottle's female coupling from the printhead and wipe up any ink drops.
- 6 Move the effluent bottle assembly to the next printhead and repeat the process.

Once the effluent bottle contains conditioner and ink, be sure to use it and store so it can not be knocked over, punctured or damaged.

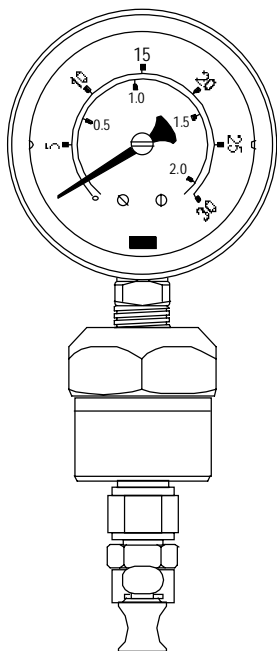


When the effluent bottle is full, dispose of the waste in accordance with local, state and federal regulations.

CHECKING INK PRESSURE

PRECAUTIONS

Observe the following precautions while using and cleaning the Diagraph ink pressure gauge.



- Do not probe into the isolator with objects during cleaning. Use the appropriate conditioner in a wash bottle and an ink acid brush.
- Remember that pressure measurements are relative to the height from which they are taken. When you measure printhead pressure, keep the gauge at the same level as the printhead. Read the gauge either horizontally or vertically as long as the height does not change.
- Do not leave the gauge hanging from the printhead fluid exit very long. Its weight will fatigue the fitting, eventually breaking it off, which will allow pressurized ink to flow freely from the printhead and the system will lose its prime.
- Check your gauge for accuracy at least once a year. Do this whenever you question its readings or after dropping it.

USING THE GAUGE

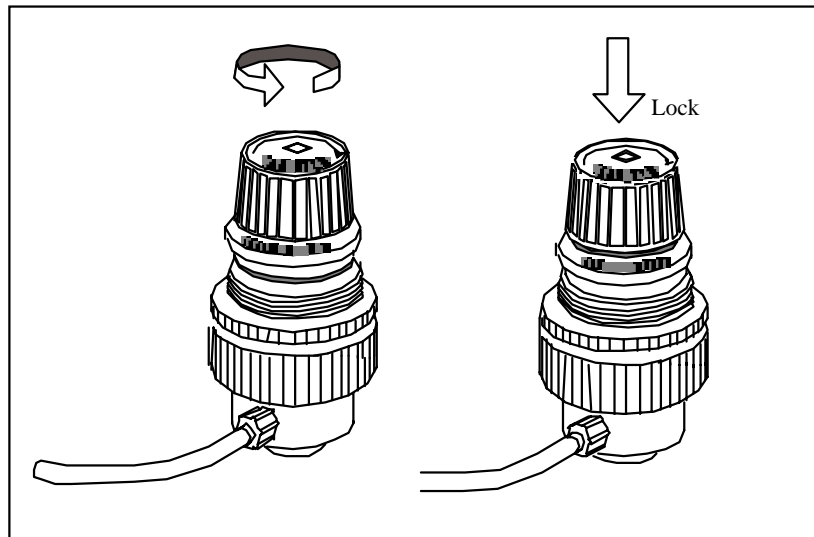
- 1 Connect the ink pressure gauge to the fluid export fitting on the printhead.
- 2 Observe the pressure gauge and SLOWLY turn the ink regulator knob clockwise to pressurize the ink line. Refer to the table and increase the pressure until it reaches the proper specification.

Variations in pressure produce different dot sizes: the higher the pressure, the larger the dot. Over-pressurizing a printhead however can cause leaks.



If the gauge indicates pressure higher than specification, FULLY CLOSE THE INK REGULATOR. Do not start pressurizing again until you have purged the head and the pressure reading is zero. (When purging, be sure to hold a cloth in front of the printhead.)

PRINthead	PRESSURE(PSI)
1/2 inch	5 ± 1
7/8 inch	6 ± 1
1 inch	8 ± 1
1-1/2 inch	7 ± 1
2 inch	8 ± 1
Bar Code	9 ± 1



- 3 When the pressure reaches specification and holds steady, snap down the red lock ring on the regulator to hold the knob in place.
- 4 Check for ink leaks at the printhead orifices.



If you find ink leaks, contact Diagraph at 1-800-526-2531, Option No. 2 before proceeding.

Once in operation, the IDS/SA requires little maintenance. Normal operation requires only ink pail replacements, ink regulator maintenance, ink filter replacement and regular filter changes on the fan.

CHANGING INK CONTAINERS

The IDS/SA delivers ink over long distances to multiple printheads (up to 300 feet in a horizontal run) and provides a reservoir of ink for continuous printing even when the ink pail is empty. The following procedure explains how to change ink while the system continues to print. Two sets of instructions for changing ink follow because Diagraph ink ships in different containers. Determine if your ink is porous or non-porous and REPLACE WITH THE SAME KIND OF INK. Changing ink types from any one kind to another without first flushing the system with conditioner can damage the ink jet system.



NEVER USE PIGMENTED INK IN THE IDS/SA.

The IDS/SA was not designed to operate with pigment particles and will clog up—permanently.

You do not need to stop printing to change the ink if you start the changeover process as soon as the low-ink beacon starts to flash. When the flashing starts, you have anywhere between 5 and 30 minutes of print time remaining. The amount of time depends on the number of printheads in the system—few printheads means a unhurried ink changeover while many heads means swift action. A system printing without a container will produce dots that diminish in size until they disappear completely.

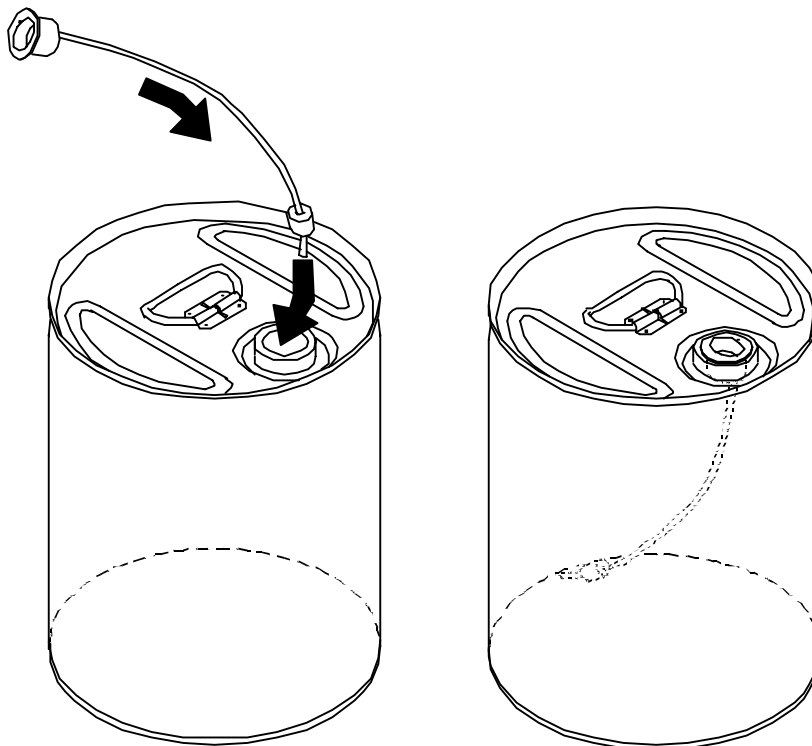
Allowing the system to run when the beacon is flashing without swapping in a new pail of ink will not pump more ink out of the old pail. When the beacon starts to flash, the IDS/SA has stopped pumping ink from the pail because it is empty.

Changing Non-Porous Ink (Labeled “TSO”) _____



Wear eye protection and use appropriate safety equipment when changing pails of ink.

- 1 Disconnect the 1/8 inch ink supply line from the IDS/SA to female coupling in the ink pail bung. Dispose of the empty ink container in accordance with local, state and federal regulations.
- 2 Place a new pail of Diagram ink on the floor near the IDS/SA.
- 3 Remove the plastic cap and tube assembly attached to the side of the pail. Note that the cap has been designed to remove the maximum amount of ink from the pail. DO NOT cut it or reposition the weight on the end.
- 4 Unscrew the metal cap and pry out the cap cover with a screwdriver. Take care not to splash ink while prying off the cover.



- 5 Insert the tube into the pail and orient toward the handle.

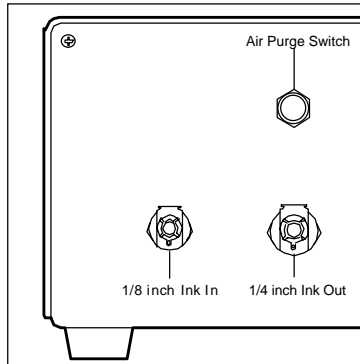


Allowing the container to impact the floor will squirt ink out of the cap. AVOID SQUIRTING INK by handling the container carefully.

- 6 Set the bung in the opening and press down firmly with the heel of your hand. Make sure you completely cover the bung with your hand to prevent ink from squirting out.

- 7 Press the bung until it snaps into place. DO NOT HAMMER. Hammering can damage the lid and the container and prevent a good connection between the ink supply and the IDS/SA.

Once the bung is in place, take care when moving the pail to prevent ink spurring.



- 8 Connect the 1/8 inch ink supply line from the IDS/SA to the female coupling in the ink pail bung. Make sure that the couplings snap into place.
- 9 If you can see air bubbles in the ink line from the pail to the IDS/SA, push the Air Purge button for two to three seconds or until the air bubbles pass into the pail.
- 10 Push and hold the Prime button until the Beacon goes off (30 seconds or less).

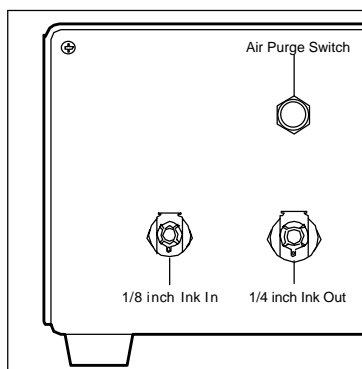
Printing will not be interrupted during this process as long as you change the ink immediately after the low ink beacon comes on.

Changing Porous Ink (Labeled “TWP”)



Wear eye protection and use appropriate safety equipment when changing pails of ink.

- 1 Disconnect the 1/8 inch ink supply line from the IDS/SA to female coupling in the ink pail cap. Dispose of the empty ink container in accordance with local, state and federal regulations.
- 2 Place a new five-gallon plastic pail of Diagraph ink on the floor near the IDS/SA.
- 3 Remove the plastic cap and tube assembly attached to the side of the pail. Note that the cap has been designed to remove the maximum amount of ink from the pail. DO NOT cut it or reposition the weight on the end.
- 4 Unscrew the plastic shipping cap and dispose of it.
- 5 Insert the tube from the cap and tube assembly into the pail and screw the cap on tightly.



- 6 Connect the 1/8 inch ink supply line from the IDS/SA to the female coupling in the ink cap. Make sure that the couplings snap into place.
- 7 If you can see air bubbles in the ink line from the pail to the IDS/SA, push the Air Purge button for two to three seconds or until the air bubbles pass into the pail.
- 8 Push and hold the Prime button until the Beacon goes off (30 seconds or less).

Printing will not be interrupted during this process as long as you change the ink immediately when the low ink beacon comes on.

Ink Regular Maintenance

If you see dot sizes fluctuating from time-to-time that correlate to increases and decreases in the ink pressure (as measured with a Diagraph pressure gauge), your ink regulator may be in need of maintenance. Dot diameters will decrease when the ink regulator input pressure is less than 2.0 PSI greater than its adjusted output pressure. Be sure always to supply at least 2.0 PSI more pressure to the ink regulator than you need for the printhead in use.

Decreases may also be caused by obstructions in the valve seat of the ink regulator. Sometimes, obstructions in the valve seat can cause the pressure to creep up over a fifteen minute period of time. For example, you may set the pressure to 5.0 PSI only to find fifteen minutes later, that it has increased to 7.0 PSI.

In either case, the following maintenance procedure can remove obstacles from the valve seat area of the ink regulator, restoring normal operation:

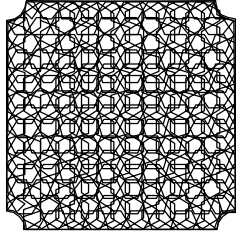
- 1 Unplug the ink regulator from the printhead. (You may use ink, but conditioner is preferred for this procedure.)
- 2 Plug the ink regulator into an effluent bottle.
- 3 Rotate the regulator pressure adjustment clockwise until it stops, then counterclockwise until it stops. Repeat this six to twelve times.



Monitor the level of fluid in the effluent bottle to ensure it does not run over during this procedure.

- 4 Set the ink regulator off (completely counterclockwise), then plug it back into the printhead.
- 5 Connect the Pressure Gauge to the printhead fluid exit.
- 6 Increase the ink flow until you reach the desired pressure.
- 7 Monitor the ink pressure while the printhead is printing. Note that the gauge drops as much as 0.75 PSI (usually less) during the print cycle.
- 8 Increase the ink pressure such that the nominal printhead pressure is centered within the deflection of the gauge while printing.
- 9 Check the pressure fifteen minutes after setting it. It should be within the same range ± 0.5 PSI. If it is not, repeat the procedure. If you have already repeated the procedure, the regulator should be replaced.

Fan Filter Replacement



Replace the fan filter at least once a year or more frequently. As a guide, replace it whenever it is covered with dust.

Make sure that the IDS/SA is unplugged and in an area free from contaminants to change the filter.

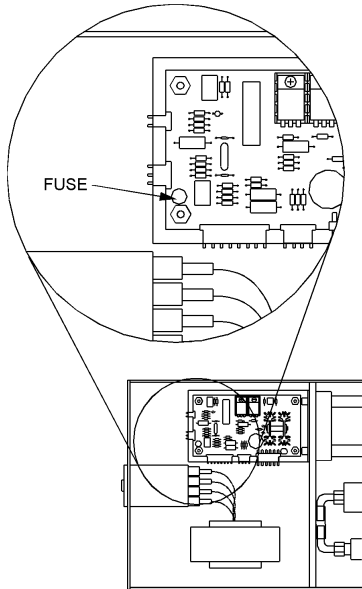
Pry loose the plastic filter cover, remove the old filter and insert a new one from the IDS/SA Spare Parts Kit.

Discard the old filter.



Be sure to wear the appropriate safety equipment as prescribed by your supervisor when troubleshooting or operating this equipment.

ERROR CONDITIONS



When the IDS/SA encounters an error condition, it will respond by turning off the pump, flashing the status LED and illuminating the low ink beacon.

The following error conditions produce error reporting:

- The fuse for the fan has blown. Note its location in the illustration at left.
- The accumulator failed to reach the minimum pressure position within approximately 30 seconds after the PRIME button was pushed.
- The accumulator remains between the medium and maximum pressure points for approximately 40 seconds during a pump on condition.


For continued, satisfactory performance of the IDS/SA, take prompt action when you become aware of error reporting.


Note that you cannot eliminate the error without turning the unit OFF and then ON again. Prompt action will prolong the useful life of the pump

INDICATION SIGNALS The chart below identifies the signal combinations for the status LED on the front panel and the low ink beacon and explains what these combined signals mean.

LED	BEACON	INDICATION	ACTION
OFF	OFF	Unit is OFF.	The system is OFF. Power ON to begin operation.
ON	Flashing	IDS/SA is ON and the ink is LOW.	Verify that the ink container is empty and replace it with a full one of the same kind of ink. See the Changing Ink Containers section.
ON	OFF	IDS/SA is ON and the ink accumulator is pressurized	None. The IDS/SA is working to its specifications.
Flashing	Flashing	Error Condition	Check Troubleshooting Section for diagnoses and remedies.

Troubleshooting

Problem Type	Problem	Possible Causes	Corrective Actions
Electrical	You receive a shock from the metal housing of the IDS/SA.	Incorrectly wired wall outlet.	Unplug the unit immediately and check the wall outlet with an outlet tester. If the tester indicates incorrect wiring, contact plant maintenance and request a wiring change.
	 Frayed or damaged power cord. <i>A frayed or damaged power cord can cause electrical shock</i>	Cord damaged by collision or mishandling.	Do not touch the damaged cord and notify your supervisor immediately. Do not leave the frayed or damaged power cord unattended.
Fan	The fan has stopped.	1 Unit is unplugged.	Check the power cord and make sure that the wall outlet is live, and the power cord is plugged into the wall and firmly pressed into the power module.
	The fan has stopped.	2 The power module switch is OFF.	Turn the power module switch ON.
		3 A blown fuse in the power module.	Unplug the IDS/SA, remove the fuses in the power module and, using an ohmmeter, replace all that read > 1.0 (5700-748).
		4 The blown micro-fuse on the controller board.	Unplug the IDS/SA, remove the cover and replace the micro-fuse (5700-369) on the controller board, if it reads > 1.0 on an ohmmeter.
		5 The fan motor has burned out.	Contact Diagraph at 1-800-526-2531 for a replacement fan assembly, Diagraph part number 5700-765.

Problem Type	Problem	Possible Causes	Corrective Actions
Leak 	Ink leaks from the couplings mounted in the IDS/SA. <i>It is unsafe to operate the IDS/SA with ink leaking.</i>	Broken or worn fittings.	<ul style="list-style-type: none"> • Turn the unit OFF and unplug power cord. • Disconnect the ink inlet at the unit. • Connect the effluent bottle to the printhead ink line to depressurize the system. • Disconnect the effluent bottle when ink stops flowing. • Loosen the cover screws and remove the stainless cover from the unit. • If internal leakage is observed, see the following page on troubleshooting internal leaks. • If source of ink leakage is apparent, replace the affected components. • If source of ink leakage is not apparent, check to see if the couplings for ink input or output require replacement. • If the source of ink leakage is not apparent, contact Diagraph at 1-800-526-2531 for exchange or replacement.
Leak	Ink container is leaking.	Container has been punctured during shipping or handling.	Contain ink seepage using the appropriate spill hazard kit as prescribed. Review the ink's MSDS and dispose of in accordance with local, state, and federal regulations. Contact Diagraph for replacement ink.

Problem Type	Problem	Possible Causes	Corrective Actions
Leak	Ink is leaking from inside the IDS/SA	Internal damage.	<ul style="list-style-type: none"> • Turn the unit OFF and unplug it from the wall. • Disconnect the ink inlet at the unit. • Connect the effluent bottle to the printhead ink line to depressurize the system; disconnect the effluent bottle when ink stops flowing. • Disconnect the ink output to the printheads from the unit. • Loosen the cover screws and remove the stainless cover from the unit. • If the source of ink leakage is apparent, look into replacing the affected components. All components identified in the drawing at left are replaceable except for the accumulator. • If the source of ink leak is not apparent or if the accumulator is leaking, contact Diagraph at 1-800-526-2531 for service or exchange.

A - Elbow (6105-149)

B - Tubing (1301-875)

C - Elbow (6105-149)

D - Accumulator (5700-902)

E - Manifold (5700-888)

F - Check Valve (5700-738)

H - Coupling (5700-561)

I - Tubing (1301-875)

J - Elbow (6105-149)

K - Elbow (6105-149)

L - Hose Barb (5700-160)

M - Elbow (5700-889)

N - Fitting (1902-260)

O - Push Button Valve (57800-737)

P - Connector (1199-158 & 1199-160)

Q - Pump (5700-098)

R - Tubing (1301-468)

S - Coupling (1900-758)

Leak	Regulator is leaking.	<ol style="list-style-type: none"> 1 Body or fittings are loosened. 2 Broken component. 	<ul style="list-style-type: none"> • Disconnect the ink outlet to the printheads from the unit. • Connect the effluent bottle to the printhead ink lines to depressurize the system. Disconnect the effluent bottle when no more ink is flowing. • Disconnect the ink regulator from the printhead and printhead ink main line. • Examine the ink regulator to see if the body coupling is tight. If it is not, it should be hand tightened. <p>(Continued on next page)</p>
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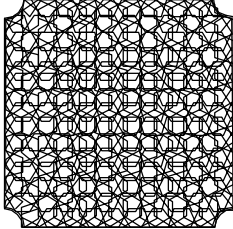
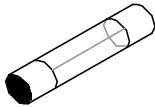

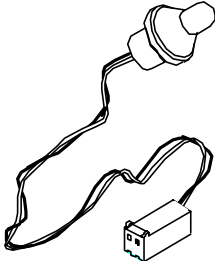
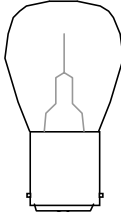
Problem Type	Problem	Possible Causes	Corrective Actions
			<ul style="list-style-type: none"> • Determine if any cracking of the body or loose tubing fittings are responsible. • If any physical damage is observed, contact Diagraph at 1-800-526-2531 for exchange or replacement. • If the tubing fitting is leaking, remove the tube and clean the fittings using the appropriate conditioner. Use a pair of diagonal cutters to remove about 1 inch of tubing, ensure a good square cut. • Reconnect the tubing to the regulator and be sure all components are dry and clean before reassembling. Fittings should be hand tightened. Perform ink regulator maintenance procedure after before using the part.
Light	Beacon not working.	Beacon not connected	Check cable between beacon and unit to ensure it is connected securely and that no damaged connectors are responsible.
	Beacon not illuminated when the LED is flashing.	Beacon lamp is burned out.	Replace the lamp in the beacon. Note that the red plastic dome of the beacon is friction-fitted and VERY difficult to remove.
	Beacon is flashing but the LED is not lit.	LED is burned out.	Unplug the IDS/SA and replace it with an LED assembly (5700-763) from the Spare Parts Kit.
	No lights (beacon or LED).	Unit is unplugged.	Check the power cord and make sure that the wall outlet is live, and the power cord is plugged into the wall and firmly pressed into the power module.

Problem Type	Problem	Possible Causes	Corrective Actions
Light	No lights (beacon or LED).	A fuse in the power module has blown out.	Unplug the IDS/SA, check the fuses in the power module and replace all that are burned out.
Noise	Intermittent noise from inside the IDS/SA.	Pump is loose.	Disconnect power cord. Remove cover and tighten pump mounts.
	Intermittent noise from inside the IDS/SA.	Accumulator is defective.	<ul style="list-style-type: none"> • Set run/idle switch to idle and unplug unit from wall. • Disconnect ink input from container at unit. • Connect effluent bottle to printhead line to depressurize ink supply; disconnect effluent bottle when ink stops flowing. • Disconnect ink output to printheads at unit. • Contact Diagraph at 1-800-526-2531 for service or exchange.
Operation	Unexpected shutdown.	1 Slow ink leak (external)	Determine source of ink leakage and refer to the appropriate troubleshooting procedure for corrective action.
		2 Low line voltage	Check line voltage at outlet. Voltage should not be <90 VAC.

Problem Type	Problem	Possible Causes	Corrective Actions												
Operation	Dot sizes too small, unable to achieve required ink pressure.	1 Too many printheads	Do not exceed the maximum number of printheads per the table below: <table><tr><td>Printhead</td><td>Printhead</td></tr><tr><td><u>Size</u></td><td><u>Max #</u></td></tr><tr><td>1/2"</td><td>12</td></tr><tr><td>7/8"</td><td>8</td></tr><tr><td>2"</td><td>4</td></tr><tr><td>Barcode</td><td>4</td></tr></table>	Printhead	Printhead	<u>Size</u>	<u>Max #</u>	1/2"	12	7/8"	8	2"	4	Barcode	4
		Printhead	Printhead												
		<u>Size</u>	<u>Max #</u>												
		1/2"	12												
7/8"	8														
2"	4														
Barcode	4														
			If you are mixing printhead sizes, one 7/8" equals two 1/2" or one 2"; a barcode = three 1/2".												
		2 Ink flow path obstructed	Check the ink line for sharp bends. Make sure no objects are sitting on the line or pinching it.												
Pump	IDS/SA will not empty the ink pail.	Ink cap installed incorrectly.	Repeat installation instructions.												
	Pump does not cycle on.	Pump is defective (IDS/SA Replacement Pump Assembly Kit #5700-992)	<ul style="list-style-type: none">• Turn unit OFF and unplug from wall.• Disconnect ink input from container at unit.• Connect effluent bottle to printhead line to depressurize ink supply; disconnect effluent bottle when ink stops flowing.• Disconnect ink output to printheads at unit.• Loosen the four screws securing the cover to the unit.• Follow pump replacement procedure in Appendix A.												
	IDS/SA will not empty the ink pail.	Ink cap installed incorrectly.	Repeat installation instructions.												
	Unit does not prime after following the priming instructions.	The IDS/SA sits too far above the pail and the pump can not draw ink up to that height.	Elevate the ink pail so a positive pressure occurs from the pail to the IDS/SA. Run the Priming procedure again.												

Problem Type	Problem	Possible Causes	Corrective Actions
Priming	The Prime button does not respond after holding it more than thirty seconds.	A time-out has probably occurred on the controller.	Reset the Prime button by switching the mode switch from ON to OFF and back to ON. The Prime button should again be active.
	The priming goes on beyond 15 seconds.	1 Punctured or disconnected inkline.	Unplug the IDS/SA and disconnect the ink out tube. Check immediately for the ink leak location. Repair the ink line break and reconnect the IDS/SA.
		2 Flow path obstructed.	Check the ink line for sharp bends. Make sure no objects are sitting on the line or pinching it.

Spare Parts Kit (5700-778)

Qty	Part Number	Part Type	Notes
5	5700-870	Fan Filter Media 	Replacing this filter is a simple operation: pry loose the plastic filter cover, remove the old filter and insert a new one. Make sure that the IDS/SA is unplugged and in an area free from airborne contaminants when changing the filter.
2	5700-748	MDL-2 Fuse 250V, 2A 	Replacing these fuses requires a small blade screwdriver both to pry open the power module cover and to pop out the tray that holds the fuses. Pay close attention when returning the fuse tray with new fuses to orient it to the correct power configuration, 115V or 230V. And be sure to push the power module cover until it snaps closed completely.
2	5700-369	Fuse 125V, 315 mA 	This micro-fuse only powers the fan. Unplug the IDS/SA and remove the stainless steel cover to replace this fuse on the controller board.
1	5700-763	P3 Cable / Panel LED Assembly 	Replacing this assembly requires removing the stainless steel cover. Be sure to disconnect power before removing. The two-pin connector for the LED is the only one inside the IDS/SA and is located on the front edge of the logic board.
1	5700-776	Beacon Lamp 	Accessing the beacon lamp consists simply of removing the red plastic beacon cover. This cover however fits VERY tightly and will require considerable effort to remove it. Take care not to crack the cover when removing and replacing the lamp.

INKS



Wear safety goggles whenever working with ink or ink supply lines. Check with your supervisor for additional safety directives.

Diagraph supplies three kinds of ink jet sytem inks: porous, non-porous and pigmented. **DO NOT USE PIGMENTED INK IN THE IDS/SA.** Use of pigmented ink will void all warrenties, expressed and implied. It is built for use only with porous and non-porous varities.

Compatible Inks

The Diagraph inks identified in the table below have been tested and approved for use in the IDS/SA.



USE ONLY LISTED INKS. Untested inks could impair the operation of the IDS/SA and possibly cause permanent damage.

Diagraph Ink	One Gallon Container	Five Gallon Container	30 Gallon Container
TWP-1 Black	2600-306A	2600-305	2600-912A
TWP-2 Red	2600-309	2600-308	
TWP-3 Green	2600-311	2600-310	
TWP-4 Bright Blue	2600-317	2600-316	
TWP-5 Purple	2600-292	2600-291	
TWP-6 Yellow	2600-284	2600-283	
TWP-8 Bright Orange	2600-296	2600-295	
TWP-9 Brown	2600-288	2600-287	
TWP-GB Black	2600-315	2600-314	
TWP-GB Blue	2600-272	2600-271	
TWP-WR Black	2600-313	2600-312	
TWP Conditioner	2600-252	2600-251	

Diagraph will be adding more inks to this list so check with your Field Sales Representative to keep informed about new inks, new colors and extended capabilities.

Appendix A - Replacing the Pump

Tools & Materials

Replacement pump kit (Part # 57 00-992)
Effluent bottle
Disposable dry wipes
TFE tape or pipe joint compound
3/8 inch socket wrench
Xacto knife



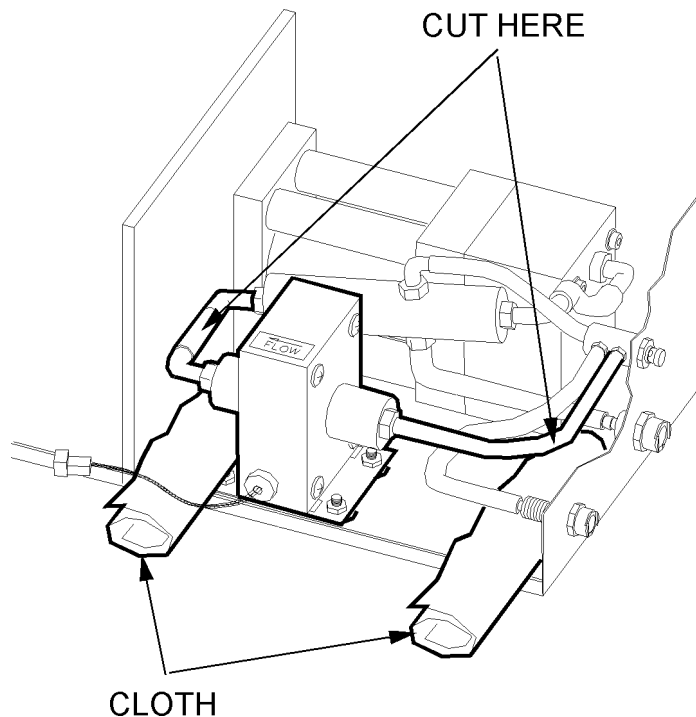
Always wear safety goggles when working with pressurized liquid systems.

Open the IDS/SA pump replacement kit and identify all components. If any parts are missing or were damaged in shipping, contact Diagraph Service.

① Tubing connection to purge switch	⑤ 1/8" ID tubing to manifold elbow
② Coupling to ink container	⑥ Check valve for INK OUT port
③ Molex connector to transformer	⑦ Ink filter
④ 24 Volt AC Pump	⑧ Coupling to IDS/SA INK IN port

■ Removing the Faulty Pump

- 1 Unplug the IDS/SA power cord.
- 2 Connect the effluent bottle to the Ink Out port and wait for the accumulator to depressurize.
- 3 Remove the cover.
- 4 Disconnect the two pin Molex connector from the pump to the transformer and remove the connector from the housing partition.
- 5 Remove the four nuts holding the pump to the base with the 3/8 inch socket wrench. Set aside the nuts.
- 6 Fold a dry wipe and place it under the 1/8 inch fitting on the input side of the pump.



- 7 Using diagonal cutters, cut the 1/8 inch ID tubing connected to the input side of the pump.
- 8 Press the wipe around the severed tubing to absorb any ink.
- 9 Roll a fresh wipe and place it under the elbow fitting on the output side of the pump.
- 10 Position the IDS/SA so that the electrical compartment is closest to you. This repositioning allows you to closely observe the next step and to gain leverage for cutting tubing.
- 11 Using the Xacto knife, cut the tubing between the elbow fitting on the output side of the pump and the elbow fitting on the manifold. Cut toward the metal partition to avoid an accidental puncture.
- 12 When the tubing is cut through, press the wipe around the cut to absorb leaking ink.
- 13 Remove the faulty pump from the housing.
- 14 Use another clean wipe and clean up any drips.
- 15 Using diagonal cutters, carefully nibble away the tubing that remains on the manifold elbow fitting. Take care not to cut or scar the fitting. Clean with a wipe when complete.
- 16 Using diagonal cutters, carefully pinch and pull the 1/8 inch ID tubing from the fitting on the air purge valve. Take care not to cut or scar the fitting. Clean with wipe when complete.

■ **Installing the New Pump**

- 1 Place the new pump in position.
- 2 Use TFE tape or pipe joint compound on the threads of the elbow on the manifold and slide on the tubing from the output side of the pump.
- 3 Use TFE tape or pipe joint compound on the threads of the male fitting on the purge switch and slide on the tubing from the input side of the pump.

- 4 Fit the two pin Molex connector from the pump into the opening in the partition housing and reconnect to the transformer.
- 5 Secure the pump to the housing with the nuts set aside in step 6
- 6 Reconnect ink lines and with the effluent bottle at the end.
- 7 Turn on system power.
- 8 Press the prime button: you should hear the pump start. If it does not, unplug the power cord and check the Molex connector to transformer.
- 9 Hold the prime button until the air evacuates the line and ink runs into the effluent bottle.
- 10 Release the prime button and disconnect the effluent bottle.
- 11 Terminate the end of the ink line.
- 12 Press the prime button until the system comes up to pressure.
- 13 Replace the system cover.

Appendix B – Air Purge Valve Removal

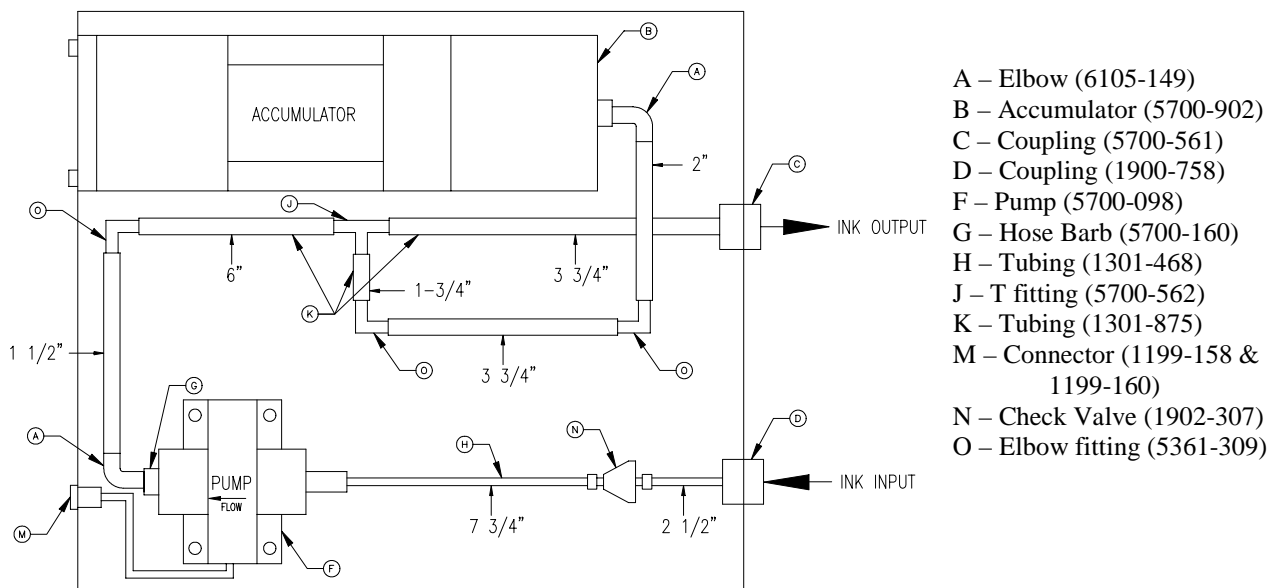
Older units of the IDS/SA have an air purge valve. This air purge valve has been removed from the newer IDS/SA.

IDS/SA without the air purge valve:

The operation of the IDS/SA has not been affected by the removal of the air purge valve.

Connections.....

On the newer units the ink-input line connects directly to the input side of the pump. The output side of the pump connects to a T fitting, which is then connected to the accumulator and the ink output. Appendix A (Replacing the Pump) guides you toward making connections to the air purge valve, ignore these instructions and make the connections per the below figure.



Air bubbles.....

There are two places in the manual that refer to using the air purge valve to remove bubbles from the ink line. Tests have proven that the air bubbles are not removed by the air purge valve. They can only be removed by priming the system per the instructions in the manual.

IDS/SA with the air purge valve:

If you have an older IDS/SA and are not experiencing any problems with the air purge valve, we advise that you leave it in place rather than remove it.