

Equipment Required

FA74005	Damper Drain Tube	
FA16005	Cover Removal Tool	
FA900005	Beaker 0.25 Litre	
FA900003	Solvent Cleaning Bottle	
FA940021	Syringe Polypropylene 50 ml	as required
FA999045	Gloves Latex Medical (large))
FA999046	Gloves Latex Medical (medium)) as required
FA999047	Gloves Latex Medical (small))
FA999076	Safety Spectacles Blue	
	Correct solvent for the ink used in the printer	as required
	Absorbent, lint-free paper towel	
	Waste container—15 litres capacity	
	Empty solvent bottle—base removed	

Introduction

NOTE: This maintenance instruction is not applicable to the 6900 Spectrum printer.

This maintenance instruction provides the procedures to completely flush a 6900 printer in the following four circumstances:

1. To prepare the printer to be shipped or for storage.
2. To remove contaminated ink.
3. To change an 'in use' printer to a new ink, in preparation for calibration.
4. To prepare a new printer with a new ink, in preparation for calibration.

The detailed 'System Flush Procedure' referred to within the individual procedures for the above circumstances, is provided separately in Part B of this maintenance instruction.

The procedure for purging the main ink filter is referred out to the 'Main Ink Filter Purging' maintenance instruction, which is provided earlier in this section of Chapter 5.

It is important to make sure that the procedures outlined in this maintenance instruction are followed carefully to achieve reliable printer operation.

Printer Conditions during the Flush Cycle

- The system Flush Cycle will not run if the pressure test at the beginning of the cycle fails.
- The level of solvent in the ink tank is checked at each stage of the cycle, and the cycle terminates if the level is low. If this error is detected, the advisory message "Flush Cycle Stopped" is displayed.
- The cycle terminates with all valves off and zero system pressure.
- The cycle can be terminated by the operator at any stage by pressing the **Stop Sequence** key on the **System Flush** page. This action takes immediate effect, so no advisory message, such as "Stopping Cycle : Please Wait", is displayed. It is used for speed in preference to the mains power supply switch in situations, for example, where a pressurized leak has occurred. Use of the **Stop Sequence** key may leave the ink system in an undefined state. If the cycle is terminated for any reason, the sequence counter is not incremented.

Procedures



WARNING: HAZARDOUS SUBSTANCES. THIS PRINTER USES SOLVENT AND SOLVENT-BASED INKS THAT CAN BE HAZARDOUS. THESE INKS AND SOLVENTS ARE HIGHLY FLAMMABLE, AND THE LIQUID, VAPOUR OR SPRAY CAN CAUSE IRRITATION TO THE EYES AND SKIN.

WEAR SAFETY GLASSES AND SOLVENT-RESISTANT PROTECTIVE GLOVES DURING THE FOLLOWING PROCEDURE.

THERE IS A RISK OF SEVERE IRRITATION AND TEMPORARY (REVERSIBLE) DAMAGE TO THE EYES, AND IRRITATION OF THE SKIN IF THIS SAFETY WARNING IS IGNORED.

Part A—System Flush Circumstances

1. To Prepare the Printer to be Shipped or Stored

CAUTION: Printhead Damage and Print Failures. The printhead can be damaged or the printer can fail if the wrong solvent is allowed to enter the ink or solvent tanks. Make sure that the solvent used during the following procedure is the correct type for the ink and solvent used in the printer. Use only Linx solvents.

- 1** Shut down and switch off the printer. Make sure that it is switched off at the mains electrical supply.
- 2** Remove the ink and solvent filler caps.
- 3** Unlock the security latch on the front of the top cover and remove the cover. Position the cover so that the keyboard and display can be accessed.
- 4** Carry out the 'System Flush Procedure' described in Part B of this maintenance instruction (that is, 'Empty Ink Tank', 'Flush Cycle' and 'Solvent Drain').
- 5** Repeat step 4 **two** more times before proceeding to step 6.
- 6** Carry out the 'Empty Ink Tank' part of the 'System Flush Procedure' once more. The solvent tank should be empty, but if it is not, syphon off any remaining solvent.
- 7** Reposition the damper back in its original location in the ink system enclosure.
- 8** Refit the top cover and secure the locking latch.
- 9** Refit the ink and solvent filler caps.
- 10** The printer is now flushed ready for packing.

2. To Remove Contaminated Ink

CAUTION: Printhead Damage and Print Failures. The printhead can be damaged or the printer can fail if the wrong solvent is allowed to enter the ink or solvent tanks. Make sure that the solvent used during the following procedure is the correct type for the ink and solvent used in the printer. Use only Linx solvents.

- 1 Shut down and switch off the printer. Make sure that it is switched off at the mains electrical supply.
- 2 Remove the ink and solvent filler caps.
- 3 Unlock the security latch on the front of the top cover and remove the cover. Position the cover so that the keyboard and display can be accessed.
- 4 Carry out the 'System Flush Procedure' described in Part B of this maintenance instruction (that is, 'Empty Ink Tank', 'Flush Cycle' and 'Solvent Drain').
- 5 Repeat step 4 **two** more times before proceeding to step 6.
- 6 Carry out the 'Empty Ink Tank' part of the 'System Flush Procedure' once more. The solvent tank should be empty, but if it is not, syphon off any remaining solvent.
- 7 Replace the main ink filter and the ink tank dip (pick-up) tube. Maintenance instructions for these tasks can be found earlier in this section of Chapter 5.
- 8 The printer may now be recommissioned with fresh ink (one or two bottles, until the 'ink low' warning has cleared) and fresh solvent (one or two bottles, until the 'solvent low' warning has cleared).
- 9 Carry out the 'Main Ink Filter Purging' maintenance instruction.

NOTE: If the main ink filter or damper do not fill with ink, the pump must be primed. This must be done with the printer switched **off**. Insert the nozzle of the syringe (Linx part number FA940021—Syringe Polypropylene 50 ml) into the Luer fitting on the damper. Withdraw the syringe plunger to draw ink through the pump. Continue withdrawing the plunger until ink is present in the pipe on the outlet side of the pump. Note that the syringe is a disposable item, with a limited functional life of approximately two applications when used with solvent-based inks.

- 10 Carry out at least six Nozzle Clear sequences (refer to the 'Jet Alignment and Nozzle Cleaning' maintenance instruction).
- 11 Reposition the damper back in its original location in the ink system enclosure.
- 12 Refit the top cover and secure the locking latch.
- 13 Refit the ink and solvent filler caps.
- 14 Press the [start] key to start the jet.
- 15 The printer is now clear of contaminated ink and ready for use.

3. To Change an 'In Use' Printer to a New Ink, in Preparation for Calibration

- 1 Shut down and switch off the printer. Make sure that it is switched off at the mains electrical supply.
- 2 Remove the ink and solvent filler caps.
- 3 Unlock the security latch on the front of the top cover and remove the cover. Position the cover so that the keyboard and display can be accessed.

CAUTION: Printhead Damage and Print Failures. Make sure that the solvent added to the ink tank during the following process is the correct type for the ink type that is *cleared* from the printer.

- 4 Carry out the 'System Flush Procedure' described in Part B of this maintenance instruction (that is, 'Empty Ink Tank', 'Flush Cycle' and 'Solvent Drain').
- 5 Repeat step 4 **two** more times before proceeding to step 6.
- 6 Carry out the 'Empty Ink Tank' part of the 'System Flush Procedure' once more. The solvent tank should be empty, but if it is not, syphon off any remaining solvent.
- 7 Replace the main ink filter and the ink tank dip (pick-up) tube. Maintenance instructions for these tasks can be found earlier in this section of Chapter 5.

CAUTION: Printhead Damage and Print Failures. Make sure that the solvent added to the ink tank during the following process is the correct type for the ink type that will be *added* when the printer is recommissioned.

- 8 Carry out the 'System Flush Procedure' again (that is, 'Empty Ink Tank', 'Flush Cycle' and 'Solvent Drain').
- 9 Repeat step 8 **two** more times before proceeding to step 10.
- 10 Carry out the 'Empty Ink Tank' part of the 'System Flush Procedure' once more. The solvent tank should be empty, but if it is not, syphon off any remaining solvent.
- 11 The printer may now be recommissioned with the new ink (one or two bottles, until the 'ink low' warning has cleared) and the new solvent (one or two bottles, until the 'solvent low' warning has cleared).
- 12 Carry out the 'Main Ink Filter Purging' maintenance instruction.

NOTE: If the main ink filter or damper do not fill with ink, the pump must be primed. This must be done with the printer switched **off**. Insert the nozzle of the syringe (Linx part number FA940021—Syringe Polypropylene 50 ml) into the Luer fitting on the damper. Withdraw the syringe plunger to draw ink through the pump. Continue withdrawing the plunger until ink is present in the pipe on the outlet side of the pump. Note that the syringe is a disposable item, with a limited functional life of approximately two applications when used with solvent-based inks.

- 13 Carry out at least six Nozzle Clear sequences (refer to the 'Jet Alignment and Nozzle Cleaning' maintenance instruction).
- 14 Access the **Jet Functions** page (Print Monitor > Menu > Maintenance) and start the jet by pressing the **Jet Test – Start** key.
- 15 Run the jet for 10 minutes.
- 16 Stop the jet.

- 17** Carry out the 'Empty Ink Tank' part of the 'System Flush Procedure' once more.

NOTE: It is important to make sure that the ink tank, damper, and main ink filter are drained completely of ink.
- 18** The printer may now be recommissioned with **fresh**, new ink (one or two bottles, until the 'ink low' warning has cleared), which must be of the **same batch and viscosity**, as marked on the ink bottle label.

NOTE: Steps 11 to 18 **must** be carried out, despite the apparent duplication of ink commissioning. These steps help to remove traces of solvent that remain from the flushing process, which could decrease the viscosity of the ink and cause incorrect calibration.
- 19** Repeat the 'Main Ink Filter Purging' maintenance instruction.

NOTE: If the main ink filter or damper do not fill with ink, the pump must be primed. This must be done with the printer switched **off**. Insert the nozzle of the syringe (Linx part number FA940021—Syringe Polypropylene 50 ml) into the Luer fitting on the damper. Withdraw the syringe plunger to draw ink through the pump. Continue withdrawing the plunger until ink is present in the pipe on the outlet side of the pump. Note that the syringe is a disposable item, with a limited functional life of approximately two applications when used with solvent-based inks.
- 20** Place an earthed container under the printhead because solvent will be present in the pipes.
- 21** Reposition the damper back in its original location in the ink system enclosure.
- 22** Refit the top cover and secure the locking latch.
- 23** Refit the ink and solvent filler caps.
- 24** The printer is now ready for calibration. Refer to the 'Ink Conversion Calibration (Offset Calibration)' maintenance instruction.

4. To Prepare a New Printer with New Ink, in Preparation for Calibration

- 1 Shut down and switch off the printer. Make sure that it is switched off at the mains electrical supply.
- 2 Remove the ink and solvent filler caps.
- 3 Unlock the security latch on the front of the top cover and remove the cover. Position the cover so that the keyboard and display can be accessed.
- 4 Replace the main ink filter and the ink tank dip (pick-up) tube. Maintenance instructions for these tasks can be found earlier in this section of Chapter 5.

CAUTION: Printhead Damage and Print Failures. Make sure that the solvent added to the ink tank during the following process is the correct type for the ink type that will be added when the printer is recommissioned.

- 5 Carry out the 'Flush Cycle' and 'Solvent Drain' parts of the 'System Flush Procedure' described in Part B of this maintenance instruction.
- 6 Carry out the 'Empty Ink Tank' part of the 'System Flush Procedure' described in Part B of this maintenance instruction.

CAUTION: Printhead Damage and Print Failures. Make sure that the solvent added to the ink tank during the following process is the correct type for the ink type that will be added when the printer is recommissioned.

- 7 Repeat steps 5 and 6 **two** more times.
- 8 At this stage the solvent tank should be empty, but if it is not, syphon off any remaining solvent.
- 9 The printer may now be recommissioned with the new ink (one or two bottles, until the 'ink low' warning has cleared) and the new solvent (one or two bottles, until the 'solvent low' warning has cleared).
- 10 Carry out the 'Main Ink Filter Purging' maintenance instruction.

NOTE: If the main ink filter or damper do not fill with ink, the pump must be primed. This must be done with the printer switched **off**. Insert the nozzle of the syringe (Linx part number FA940021—Syringe Polypropylene 50 ml) into the Luer fitting on the damper. Withdraw the syringe plunger to draw ink through the pump. Continue withdrawing the plunger until ink is present in the pipe on the outlet side of the pump. Note that the syringe is a disposable item, with a limited functional life of approximately two applications when used with solvent-based inks.

- 11 Carry out at least six Nozzle Clear sequences (refer to the 'Jet Alignment and Nozzle Cleaning' maintenance instruction).
- 12 Access the **Jet Functions** page (Print Monitor > Menu > Maintenance) and start the jet by pressing the **Jet Test – Start** key.
- 13 Run the jet for 10 minutes.
- 14 Stop the jet.
- 15 Carry out the 'Empty Ink Tank' part of the 'System Flush Procedure' once more.

NOTE: It is important to make sure that the ink tank, damper, and main ink filter are drained completely of ink.

- 16** The printer may now be recommissioned with **fresh**, new ink (one or two bottles, until the 'ink low' warning has cleared), which must be of the **same batch and viscosity**, as marked on the ink bottle label.

NOTE: Steps 11 to 16 **must** be carried out, despite the apparent duplication of ink commissioning. These steps help to remove traces of solvent that remain from the flushing process, which could decrease the viscosity of the ink and cause incorrect calibration.

- 17** Repeat the 'Main Ink Filter Purging' maintenance instruction.

NOTE: If the main ink filter or damper do not fill with ink, the pump must be primed. This must be done with the printer switched **off**. Insert the nozzle of the syringe (Linx part number FA940021—Syringe Polypropylene 50 ml) into the Luer fitting on the damper. Withdraw the syringe plunger to draw ink through the pump. Continue withdrawing the plunger until ink is present in the pipe on the outlet side of the pump. Note that the syringe is a disposable item, with a limited functional life of approximately two applications when used with solvent-based inks.

- 18** Place an earthed container under the printhead because solvent will be present in the pipes.
- 19** Reposition the damper back in its original location in the ink system enclosure.
- 20** Refit the top cover and secure the locking latch.
- 21** Refit the ink and solvent filler caps.
- 22** The printer is now ready for calibration. Refer to the 'Ink Conversion Calibration (Offset Calibration)' maintenance instruction.

Part B—System Flush Procedure

Precautions

During the system flush, the solvent tank must contain only enough solvent (approximately 600 ml) to successfully complete the task. However, too much solvent in the solvent tank may result in the ink tank overflowing during the cycle, due to solvent being dumped into the ink tank as solvent is used to fill the system. Therefore, fill the solvent tank just until the System Warning message “3.04 Solvent Low” is cleared. This may require drawing off some solvent first to see the warning message appear, and then refilling with solvent until the warning message clears.

As a precaution, fit an empty solvent bottle (with its base removed) to the ink tank filler tube during the flush cycles in case the tank overflows. Also, it is advisable to put the printhead in a beaker to contain any spillage from the nozzle.

NOTE: The ‘Flush Cycle’ part of the ‘System Flush Procedure’ thoroughly flushes all the valves and pipework with solvent.

Empty Ink Tank

- 1 Switch on the printer.
- 2 Select the **System Flush** option on the **Maintenance** page (Print Monitor > Menu > Maintenance). The first page of the System Flush procedure is displayed with the instruction “Check solvent level.”.

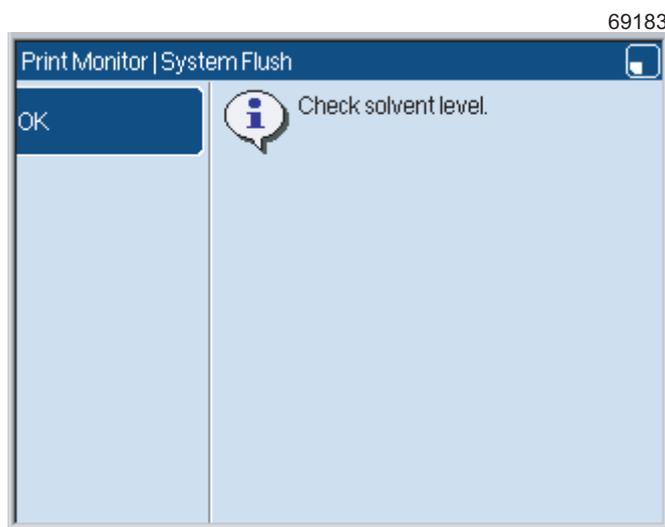


Figure 1. System Flush—First Page

- 3 To continue with the System Flush procedure, it is necessary to perform a number of actions on the printer before the flush cycles can begin. These required actions are displayed on each successive **System Flush** page, and must be performed in accordance with the following expanded explanations for each instruction. Once each action has been completed, press the **OK** key, which displays the next instruction.
- 4 **Check solvent level.** Carry out the actions described in ‘Precautions’ at the beginning of this ‘Part B—System Flush Procedure’.

- 5 Prop up the printer.** (Not applicable to the 6900 Spectrum printer—see NOTE below.) Before commencing the ink draining procedure, the printer must be raised by approximately 50 mm at the front left side to aid drainage of the ink. This is because the ink dip tube is situated at the rear right side of the tank.

NOTE: The 6900 Spectrum printer does not require propping up, but the **OK** key must be pressed to continue the procedure.



WARNING: LETHAL VOLTAGE. DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT WHEN ELECTRICAL POWER IS APPLIED.

EXTREME CARE MUST BE TAKEN WHEN WORK IS DONE ON THE PRINTER WHILE ELECTRICAL POWER IS APPLIED AND THE TOP COVER IS REMOVED. THE CORRECT, STANDARD ELECTRICAL SAFETY PRECAUTIONS MUST BE TAKEN.

THERE IS A DANGER OF INJURY OR DEATH FROM ELECTRIC SHOCK IF THE CORRECT ELECTRICAL SAFETY PRECAUTIONS ARE NOT TAKEN.

- 6 Orientate filter and damper.** Ignore the instruction regarding the filter. Carefully lift the feed damper clear of the ink system enclosure. Hold the feed damper in the vertical position with the drain cap uppermost.
- 7 Connect bleed line to damper.** Remove the damper drain cap and connect the Damper Drain Tube Luer fitting (included in the Damper Drain Tube kit) to the damper drain. Insert the other end of the drain tube into a waste container of at least 5 litres capacity. Orientate the damper so that the drain is at the bottom, that is, at its lowest position, as shown in the following illustration.

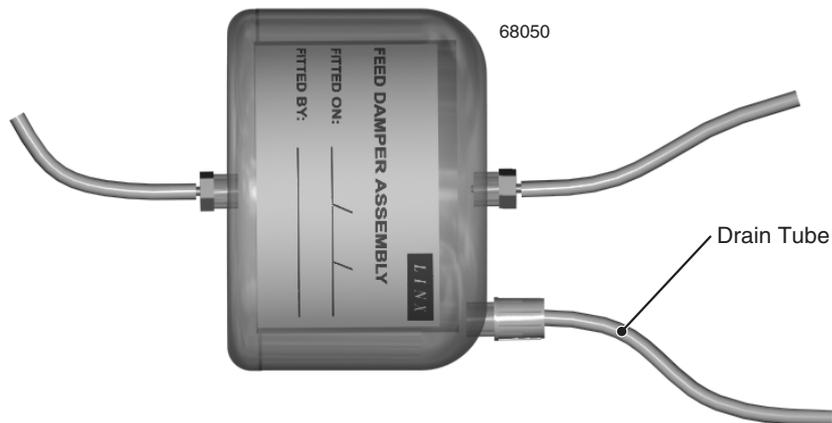


Figure 2. Feed Damper Orientation with Drain Tube Connected

- 8 When the required actions have been completed, the following page is displayed.

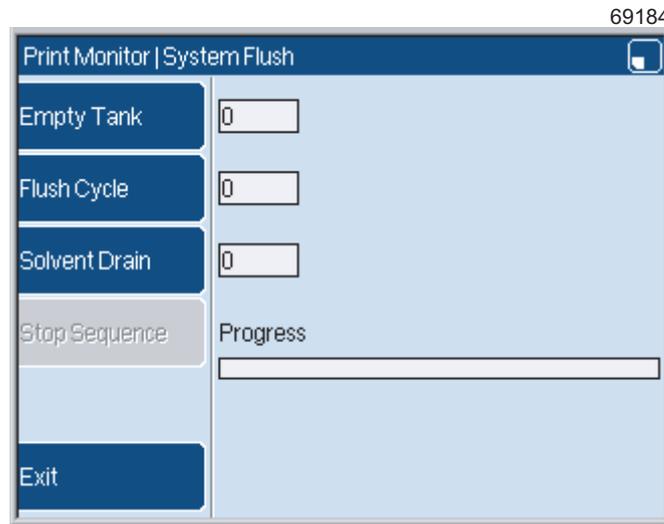


Figure 3. System Flush Options Page

- 9 Press the **Empty Tank** key, which displays the instruction “Turn on tap to bleed line.”.



IMPORTANT: The bleed line tap is used in the Linx manufacturing process only. There is no bleed line in the service engineer’s Damper Drain Tube kit, therefore, any action referring to the bleed line tap should be ignored.

- 10 Due to the unique design of the 6900 Spectrum ink tank, it is not possible to drain all of the ink with the Empty Tank function. Therefore, to enable all of the ink to be removed, proceed with the following step 10 sub-items.

6900 Spectrum Printer Only

- 10a** Disconnect and remove the ink pick-up pipe, which is connected between the ink tank lid (Festo connection) and the pump/PRV (pressure relief valve) T-piece. Discard the pipe but retain the Festo nut.
- 10b** Connect a new 360 mm length of 6 mm OD tube to the pump/PRV T-piece.
- 10c** Remove the mandrel and filter assembly from the ink filler tube using the Mandrel Extraction Tool.
- 10d** Insert the free end of the new length of pipe into the ink tank and push it down until it reaches the base of the tank. Hold the pipe in place for the duration of the Empty Tank sequence to make sure that all the ink is removed.

All 6900 Printers

CAUTION: Pump Damage. Do not allow the ink system pump to run in a dry condition. Use the Empty Tank sequence only the number of times required to empty the system of ink. The pump must not be run for longer than 30 seconds after the change in the sound of the pump indicates that cavitation (ink starvation) has occurred. Damage to the pump can occur if the pump is allowed to run continuously in a dry condition.

- 11 Press the **OK** key to continue the procedure, which starts the pump and increments the sequence count by 1. The pump runs at maximum pressure for approximately 1 minute and 40 seconds, and then automatically stops on completion of the Empty Tank sequence. During the sequence a **Progress** bar gives an indication of how much of the sequence has been completed. Press the **Stop Sequence** key if the audible pitch of the pump changes indicating that the ink tank is empty.

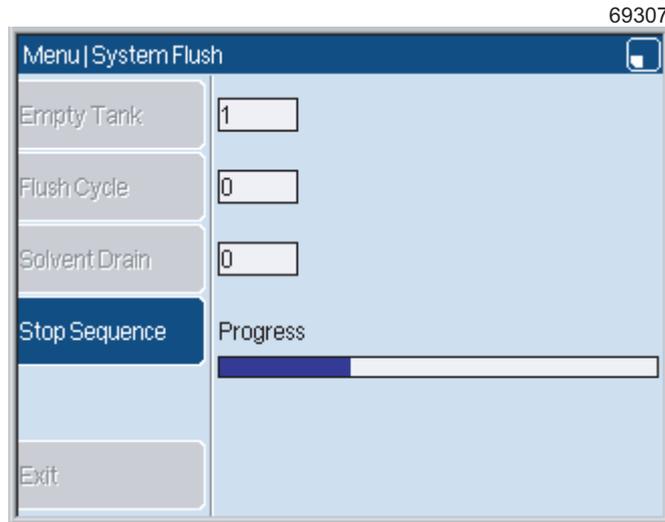


Figure 4. Empty Tank Sequence in Progress

- 12 At some point towards the end of the Empty Tank sequence the 'ink low' condition will be reached. Make sure that the **System Event** page is displayed with the System Warning message "3.03 Ink Low". Press the **OK** key on the **System Event** page to accept the warning.
- 13 Make sure that the ink tank is **empty** before continuing with the following Flush Cycle sequence. If the tank is not empty after a single Empty Tank sequence, select the **Empty Tank** option again to repeat the sequence. Press the **Stop Sequence** key when the audible pitch of the pump changes, indicating that the ink tank is empty.
- 14 At this point the ink pick-up pipe on the 6900 Spectrum must be reconnected to the ink pick-up connection on the tank lid. To do this, proceed with the following step 14 sub-items.

6900 Spectrum Printer Only

- 14a Withdraw the drain pipe from the ink tank and wipe off any surplus ink from the end.
- 14b Cut the pipe to a length of 55 mm using the Tube Cutter.
- 14c Fit the Festo nut (retained earlier) over the end of the newly cut pipe.
- 14d Insert the end of the pipe into the ink pick-up connection on the tank lid, and fit and tighten the Festo nut.
- 14e Refit the mandrel and filter assembly to the ink filler tube using the Mandrel Extraction Tool.

All 6900 Printers

- 15 Disconnect the drain tube from the damper and refit the drain cap.
- 16 Reposition the damper back in its original location in the ink system enclosure.

Flush Cycle

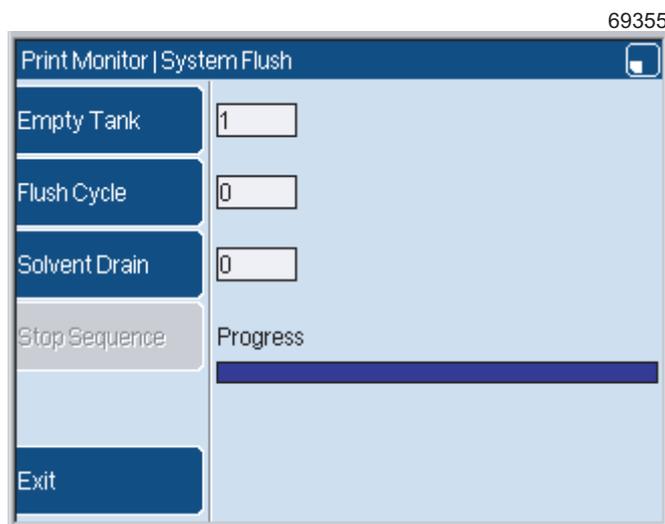


Figure 5. System Flush Options Page—Empty Tank Sequence Count of 1

- 17** Press the **Flush Cycle** key, which displays the instruction “Turn off bleed tap.”.
- 18** Ignore the “Turn off bleed tap.” instruction and press the **OK** key, which displays the instruction “Fill ink tank with 0.5 litres of solvent”.

CAUTION: Printhead Damage and Print Failures. The printhead can be damaged or the printer can fail if the wrong solvent is allowed to enter the ink or solvent tanks. Make sure that the solvent used during the following procedure is the correct type for the ink and solvent used in the printer. Use only Linx solvents.

- 19** It is necessary to add solvent to the ink tank before the Flush Cycle can begin. Add **1.0 litre** of solvent to the ink tank. If this is the first time the Flush Cycle has been run (sequence count is 0) and a “3.04 Solvent Low” warning message is displayed, the Flush Cycle cannot proceed. If necessary, fill the solvent tank just until the “3.04 Solvent Low” warning message is cleared.
- 20** Press the **OK** key to continue, which starts the pump and increments the sequence count by 1. The pump runs at maximum pressure for approximately 1 minute and 40 seconds, and then automatically stops on completion of the Flush Cycle sequence. During the sequence a **Progress** bar gives an indication of how much of the sequence has been completed. The Flush Cycle sequence can be terminated at any time by pressing the **Stop Sequence** key.

NOTE: The “3.04 Solvent Low” warning message may be reported during the Flush Cycle as solvent is used to fill the system. This warning can be ignored, except when the software does not allow the sequence to continue and action is required, as described in step 19.

Solvent Drain

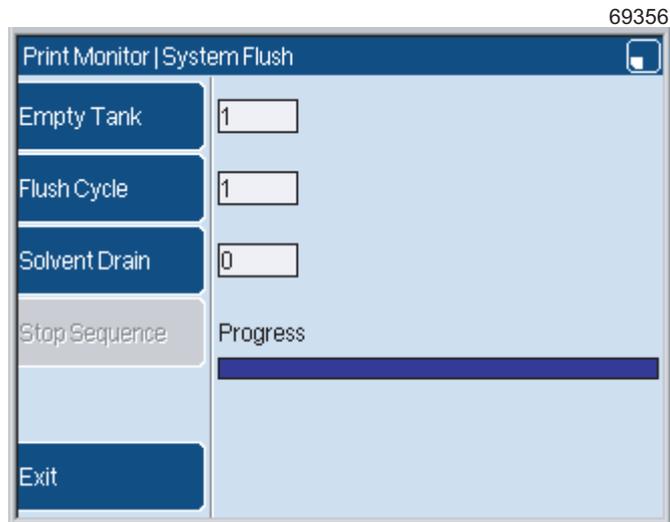


Figure 6. System Flush Options Page—Flush Cycle Sequence Count of 1

- 21 Make sure that the drain tube from the damper is disconnected and the damper drain cap is refitted before proceeding.
- 22 Press the **Solvent Drain** key, which displays the instruction “Turn off bleed tap.”
- 23 Ignore the “Turn off bleed tap.” instruction and press the **OK** key, which starts the pump and increments the sequence count by 1. The pump runs at maximum pressure for approximately 10 minutes, and then automatically stops on completion of the Solvent Drain sequence. During the sequence a **Progress** bar gives an indication of how much of the sequence has been completed. The Solvent Drain sequence can be terminated at any time by pressing the **Stop Sequence** key.
- 24 When the ‘System Flush Procedure’ is completed, it is necessary to flush the gutter line (from the gutter through the gutter valve). To do this, first press the **Exit** key on the **System Flush** page to return to the **Maintenance** page.
- 25 Access the **Edit Pressure** page (Print Monitor > Menu > Maintenance > Monitor Jet) and enter the maximum Set Pressure of 4.49 bar (65.00 p.s.i.).

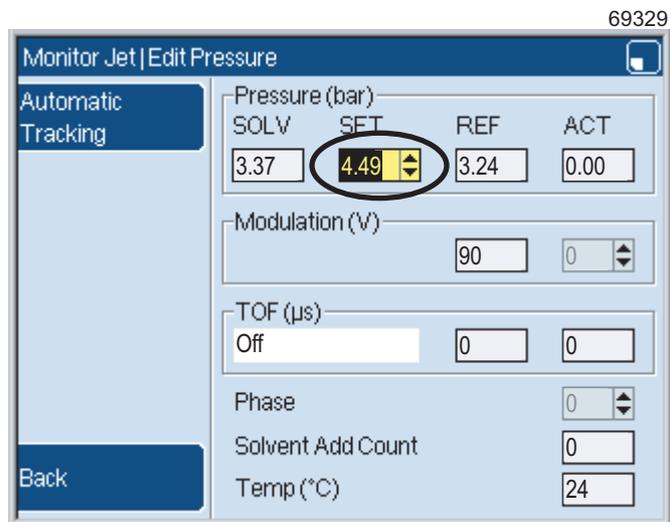


Figure 7. Entering a Set Pressure of 4.49 bar on the Edit Pressure Page

6900 Maintenance Instruction

System Flush



- 26** Apply solvent to the gutter using the solvent cleaning bottle until the solvent in the gutter line flows clear. Note that a **minimum** of 250 ml of solvent must be used.
- 27** On the **Edit Pressure** page, set the Set Pressure to 0.
- 28** Return to Part A of this maintenance instruction.