

Equipment Required

FA74005	Damper Drain Tube	
FA65318	6800 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 6800 Spectrum printer.

This maintenance instruction provides the procedures to completely flush a 6800 printer in the following circumstances:

1. Before packing for shipping or storage.
2. To remove contaminated ink.
3. To convert an 'in use' printer to a new ink, in preparation for calibration.
4. To prepare a 'new', unused printer with a new ink, in preparation for calibration.

The detailed '**System Flush**' operation 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 Replacement—Main Ink Filter Purge**' maintenance instructions contained elsewhere in Section 5.

It is important to ensure 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 reported.
- The cycle terminates with all valves off and zero pressure.
- The cycle may be terminated by the operator at any stage by selecting the Abort button in the Sequences property page (Setup menu > Service property sheet). This action takes immediate effect, so no message, such as “Stopping Cycle : Please Wait”, is displayed. It is used for speed in preference to the power switch and is expected to be used, for example, in situations where a pressurized leak has occurred. Use of the Abort button may leave the ink system in an undefined state. If the cycle is terminated for any reason, the ‘use count’ is not incremented.

Procedures



WARNING: HAZARDOUS INKS AND SOLVENTS. SAFETY GLASSES AND SOLVENT RESISTANT PROTECTIVE GLOVES MUST BE WORN THROUGHOUT THE FOLLOWING PROCEDURE. FAILURE TO COMPLY WITH THIS SAFETY WARNING COULD RESULT IN IRRITATION AND REVERSIBLE LOCAL DAMAGE TO THE EYES, AND NON-ALLERGIC CONTACT DERMATITIS.

Part A—System Flush Procedures

1. Before Packing for Shipping or Storage

CAUTION: In the following procedure, use the correct solvent type that corresponds to the ink type being used in the printer.

- 1 Shut down and switch off the printer. Ensure that it is switched off at the mains 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 process detailed in Part B of this maintenance instruction (i.e. Empty Ink Tank, Flush Cycle and Solvent Drain).
- 5 Repeat Item 4 TWO more times before proceeding to Item 6.
- 6 Carry out the Empty Ink Tank part of the System Flush process 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: In the following procedure, use the correct solvent type that corresponds to the ink type being used in the printer.

- 1 Shut down and switch off the printer. Ensure that it is switched off at the mains 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 process detailed in Part B of this maintenance instruction (i.e. Empty Ink Tank, Flush Cycle and Solvent Drain).
- 5 Repeat Item 4 TWO more times before proceeding to Item 6.
- 6 Carry out the Empty Ink Tank part of the System Flush process 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 elsewhere in Section 5.
- 8 The printer may now be recommissioned with fresh ink (one or two bottles, until the 'ink low' status warning has cleared) and fresh solvent (one or two bottles, until the 'solvent low' status warning has cleared).
- 9 Carry out the **Main Ink Filter Purge** element of the '**Main Ink Filter Replacement**' maintenance instruction.

NOTE: If the main ink filter or damper does not fill with ink, the pump needs to 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 Clear Nozzle sequences.
- 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 Start the jet using the [start] key.
- 15 The printer is now clear of contaminated ink and ready for use.

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

- 1 Shut down and switch off the printer. Ensure that it is switched off at the mains 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: In the following operation, ensure that the solvent type added to the ink tank corresponds to the ink type being *cleared* from the printer.

- 4 Carry out the System Flush process detailed in Part B of this maintenance instruction (i.e. Empty Ink Tank, Flush Cycle and Solvent Drain).
- 5 Repeat Item 4 TWO more times before proceeding to Item 6.
- 6 Carry out the Empty Ink Tank part of the System Flush process 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 elsewhere in Section 5.

CAUTION: In the following operation, ensure that the solvent type added to the ink tank corresponds to the ink type that will be *added* to the printer during the recommissioning process.

- 8 Carry out the System Flush process detailed in Part B of this maintenance instruction (i.e. Empty Ink Tank, Flush Cycle and Solvent Drain).
- 9 Repeat Item 8 TWO more times before proceeding to Item 10.
- 10 Carry out the Empty Ink Tank part of the System Flush process 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' status warning has cleared) and the new solvent (one or two bottles, until the 'solvent low' status warning has cleared).
- 12 Carry out the **Main Ink Filter Purge** element of the '**Main Ink Filter Replacement**' maintenance instruction.

NOTE: If the main ink filter or damper does not fill with ink, the pump needs to 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 Clear Nozzle sequences.
- 14 Start the jet by selecting the Jet Test – Start button in the Jet Functions property page (Setup menu > Service property sheet) and run the jet for 10 minutes.
- 15 Stop the jet.
- 16 Carry out the Empty Ink Tank part of the System Flush process once more.

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

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

NOTE: Items 11 to 17 **must** be carried out, despite the apparent duplication of ink commissioning. These steps help to remove traces of solvent remaining from the flushing process, which could decrease the viscosity of the ink causing incorrect calibration.

- 18** Repeat the **Main Ink Filter Purge** element of the '**Main Ink Filter Replacement**' maintenance instruction.

NOTE: If the main ink filter or damper does not fill with ink, the pump needs to 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.

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

4. To Convert a 'New', Unused Printer to a New Ink, in Preparation for Calibration

- 1 Shut down and switch off the printer. Ensure that it is switched off at the mains 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 elsewhere in Section 5.

CAUTION: In the following operation, ensure that the solvent type added to the ink tank corresponds to the ink type that will be *added* to the printer during the recommissioning process.

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

CAUTION: In the following operation, ensure that the solvent type added to the ink tank corresponds to the ink type that will be *added* to the printer during the recommissioning process.

- 7 Repeat Items 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 commissioned with the new ink (one or two bottles, until the low ink status warning has cleared) and the new solvent (one or two bottles, until low solvent status warning has cleared).
- 10 Carry out the **Main Ink Filter Purge** element of the '**Main Ink Filter Replacement**' maintenance instruction.

NOTE: If the main ink filter or damper does not fill with ink, the pump needs to 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 Clear Nozzle sequences.
- 12 Start the jet by selecting the Jet Test – Start button in the Jet Functions property page (Setup menu > Service property sheet) and run the jet for 10 minutes.
- 13 Stop the jet.
- 14 Carry out the Empty Ink Tank part of the System Flush process once more.

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

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

NOTE: Items 9 to 15 **must** be carried out, despite the apparent duplication of ink commissioning. These steps help to remove traces of solvent remaining from the flushing process, which could decrease the viscosity of the ink causing incorrect calibration.

- 16** Repeat the **Main Ink Filter Purge** element of the '**Main Ink Filter Replacement**' maintenance instruction.

NOTE: If the main ink filter or damper does not fill with ink, the pump needs to 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.

- 17** Place an earthed container under the printhead as solvent will be present in the pipes.

- 18** Reposition the damper back in its original location in the ink system enclosure.

- 19** Refit the top cover and secure the locking latch.

- 20** Refit the ink and solvent filler caps.

- 21** The printer is now ready for calibration. Refer to the '**Ink Conversion Calibration (Offset Calibration)**' maintenance instruction, which follows this instruction.

Part B—System Flush Wizard

Preparation

The Flush Cycle part of the System Flush operation thoroughly flushes all the valves and pipework with solvent.

During the system flush, the solvent tank needs to 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 necessitate drawing off some solvent first to see the warning message appear, and then refilling with solvent until the warning message clears from the Event Message box in the Main Window.

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

Empty Ink Tank

- 1 Switch the printer on and access the Flush Wizard (Setup menu > Service sub-menu):

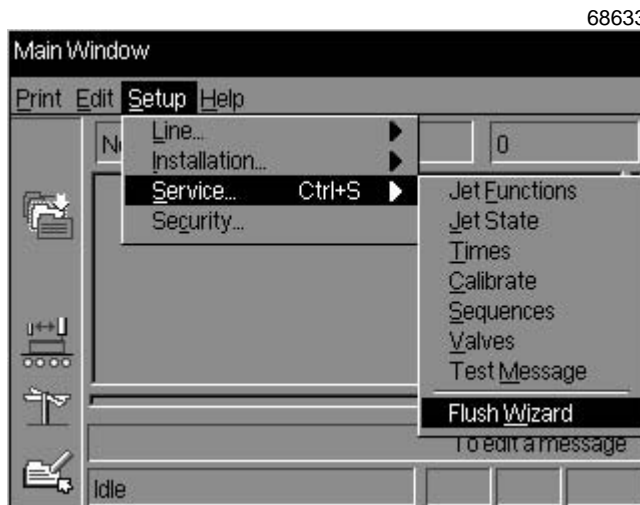


Figure 1. Flush Wizard in the Service Sub-Menu

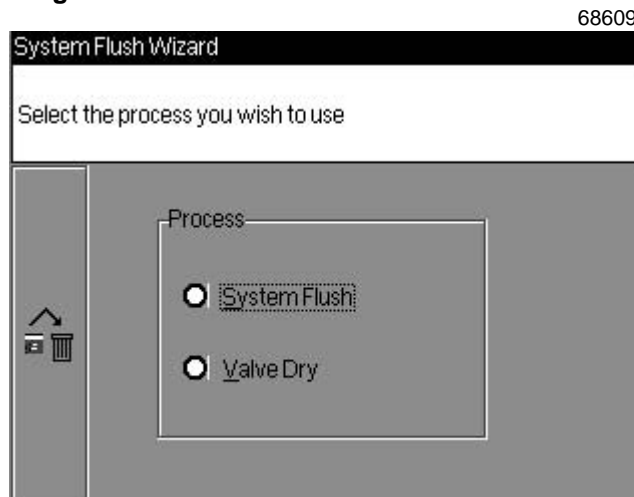


Figure 2. Flush Process Options

- 2 Select the System Flush option. The Next (➡) icon is displayed only after one or other of the option radio buttons is selected:

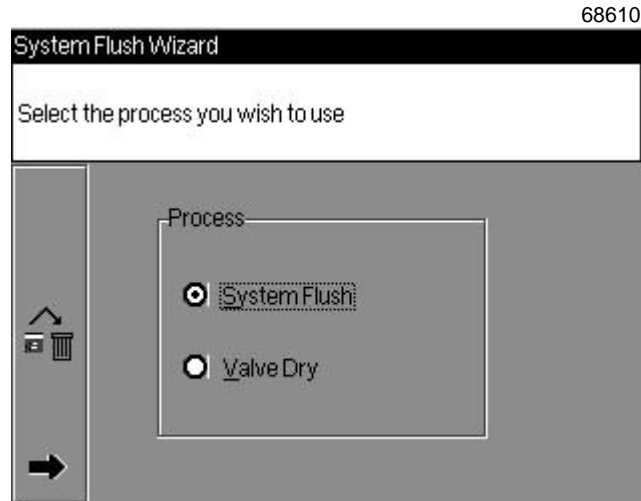


Figure 3. Selecting the System Flush Option



NOTE: The Valve Dry option is for use only by Linx during the manufacturing process and is NOT to be used by service personnel.

- 3 Select the Next (➡) icon using Hot key 6, which displays the following dialog box. On entry to the System Flush it is necessary to perform a number of actions on the printer before the flushing cycles can begin. At this point it is possible to return to the previous dialog box by selecting the Previous icon using Hot key 5:

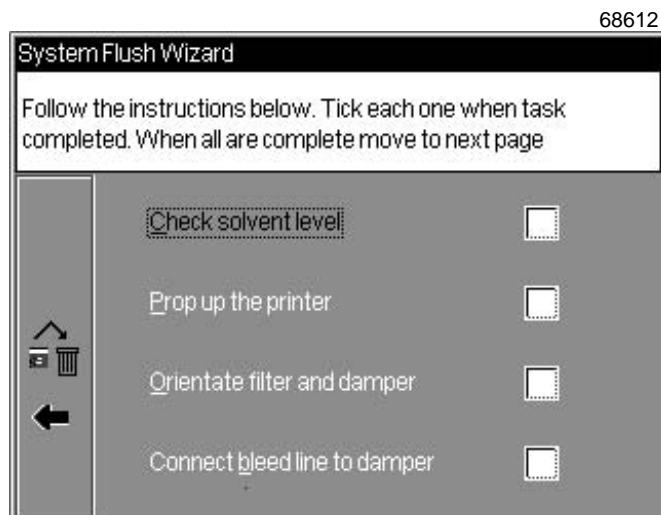


Figure 4. Pre-Flush Required Actions

- 4 Carry out the actions listed in the following dialog box, expanded details of which are given below. Once each of the required actions has been completed, tick the appropriate item check box. Each item is enabled only after the previous one has been ticked:

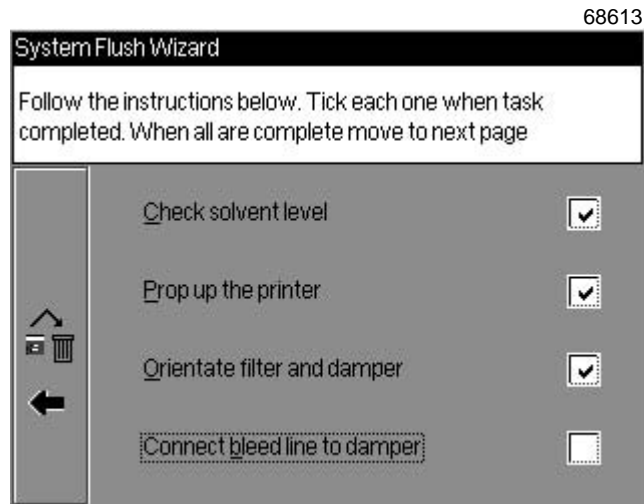


Figure 5. Selecting the Pre-Flush Required Actions

- (a) Check the solvent level (refer to Preparation above).
- (b) Prop up the printer. Before commencing the flushing procedures, the printer must be raised by approximately 50 mm at the front left-hand side to aid drainage of the tanks, as the ink and solvent dip tubes are situated at the rear right-hand side of the tanks. Note that it may be necessary to syphon the remaining solvent from the solvent tank after carrying out the System Flush.



WARNING: LETHAL VOLTAGE. DANGEROUS VOLTAGES ARE PRESENT IN THIS EQUIPMENT WHEN ELECTRICAL POWER IS APPLIED. EXTREME CARE MUST BE TAKEN WHEN WORKING ON THE PRINTER WHILE POWER IS APPLIED TO IT AND THE TOP COVER IS REMOVED. THE CORRECT, STANDARD ELECTRICAL SAFETY PRECAUTIONS MUST BE TAKEN. THERE IS A DANGER OF DEATH OR INJURY FROM ELECTRIC SHOCK IF THE CORRECT ELECTRICAL SAFETY PRECAUTIONS ARE NOT TAKEN.

- (c) Orientate the damper. Carefully lift the feed damper clear of the ink system enclosure. Hold the feed damper in the vertical position with the drain cap uppermost.

- (d) Connect bleed line to damper. Remove the 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 15 litres capacity. Orientate the damper so that the drain is at the bottom, i.e. at its lowest position, as shown in the following illustration:

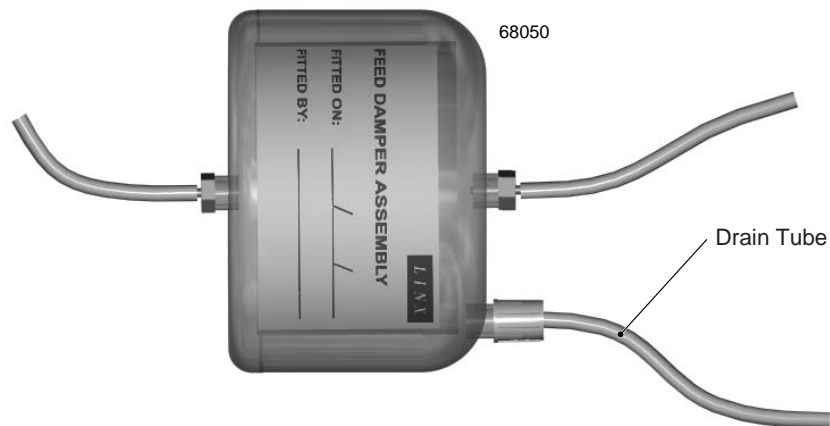


Figure 6. Feed Damper Orientation with Drain Tube Connected

- 5 When all the item check boxes have been ticked the Next (➡) icon is displayed:

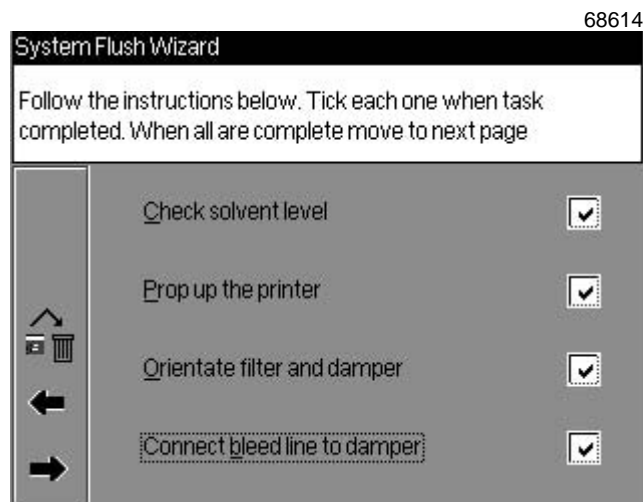


Figure 7. All Pre-Flush Required Actions Selected

- 6 Select the Next (➡) icon using Hot key 6, which displays the following dialog box:

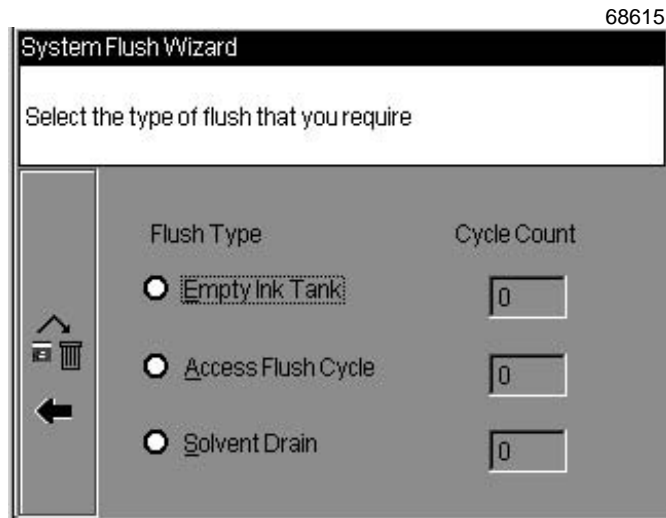


Figure 8. Flush Type Selection Dialog Box

- 7 Select the Empty Ink Tank option:

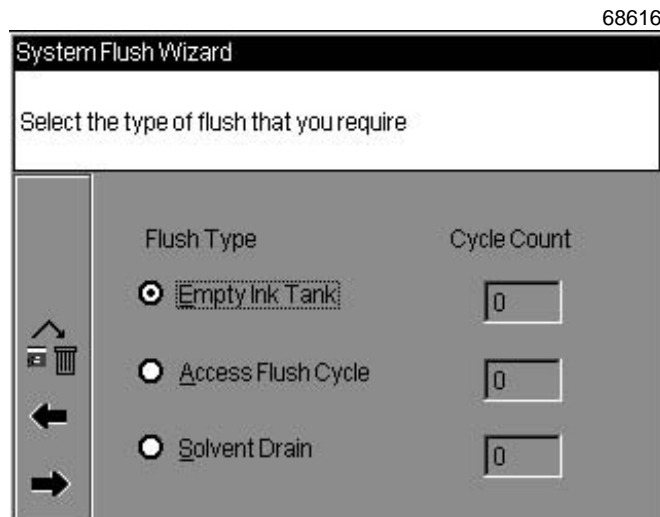


Figure 9. Selecting the Empty Ink Tank Option

- 8 Select the Next (➡) icon using Hot key 6, which displays the following dialog box:

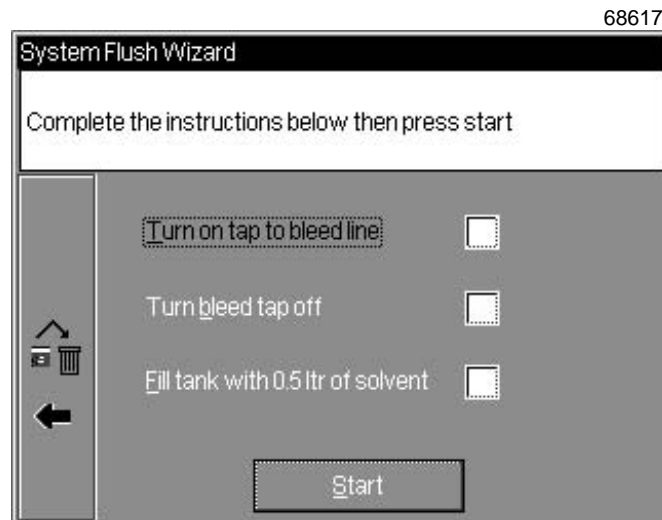


Figure 10. Pre-Empty Ink Tank Required Action



NOTE: 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, but the item check box must be ticked in order to continue the flush cycle.

- 9 Tick the "Turn on tap to bleed line" check box, which enables the Start button. (For the Empty Ink Tank sequence it is only necessary to tick the first check box to proceed.):

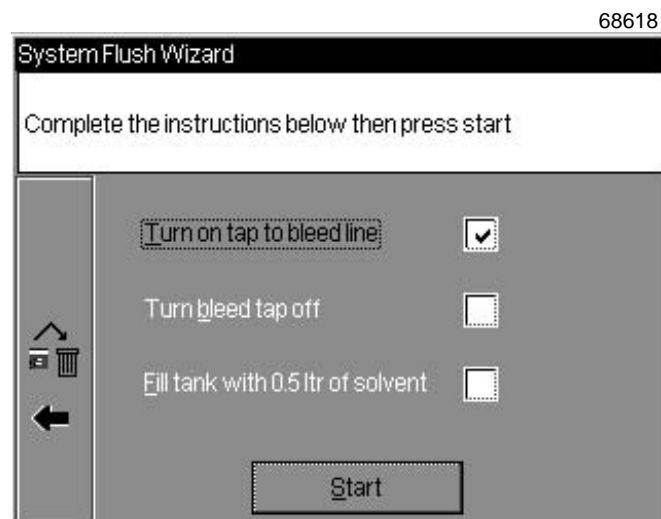


Figure 11. Selecting the Pre-Empty Ink Tank Required Action

CAUTION: Pump damage. Do not allow the ink system pump to run dry. Initiate the Empty Ink Tank sequence only the number of times required to empty the system of ink or solvent. The pump should not be run for longer than 30 seconds after it becomes noisy through ink starvation (cavitation). Damage to the pump will result if it is allowed to run continuously in a dry condition.

- 10 Select the Start button. A “Tank now emptying” progress dialog box is displayed, with the estimated time to completion (in seconds) shown below the progress bar. The pump will run at maximum flow for approximately 1 minute and 40 seconds, and then automatically stop on completion of the Empty Ink Tank sequence. The sequence can be terminated by selecting the Abort button, in which case the Cycle Count in the Flush Type selection dialog box is not incremented:

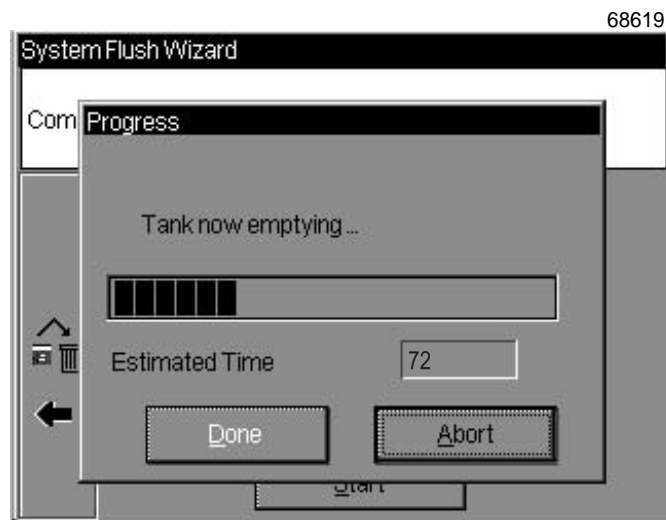


Figure 12. “Tank now emptying” Progress Dialog Box

- 11 On completion of the Empty Ink Tank sequence the Done button is enabled and the Abort button is disabled:

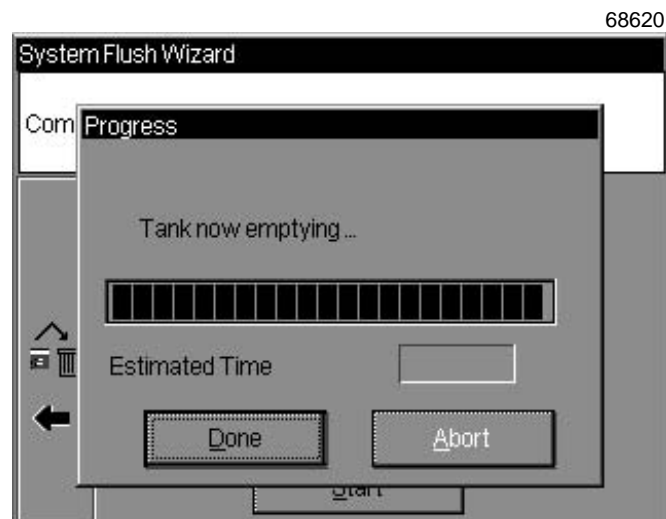


Figure 13. “Tank now emptying” Progress Completed

- 12 Select the Done button, which returns control to the Flush Type selection dialog box where the Empty Ink Tank Cycle Count has now incremented to 1:

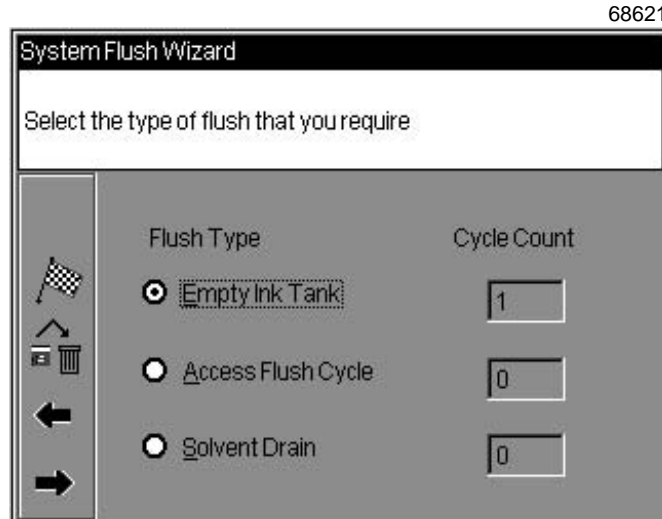


Figure 14. Flush Type Selection Dialog Box

- 13 Ensure that the ink tank is **empty** before continuing with the following Flush Cycle sequence. If the tank is not empty after a single Empty Ink Tank sequence, repeat Items 8 to 12. Select the Abort button when the audible pitch of the pump changes indicating that the ink tank is empty.
- 14 At some point towards the end of the Empty Ink Tank sequence(s) the 'ink low' condition will be reached. Ensure that the System Event dialog box is displayed with the warning message "3.03 Ink Low". Accept the warning by pressing the [✓] key.

Flush Cycle

- 15 Select the Access Flush Cycle option:

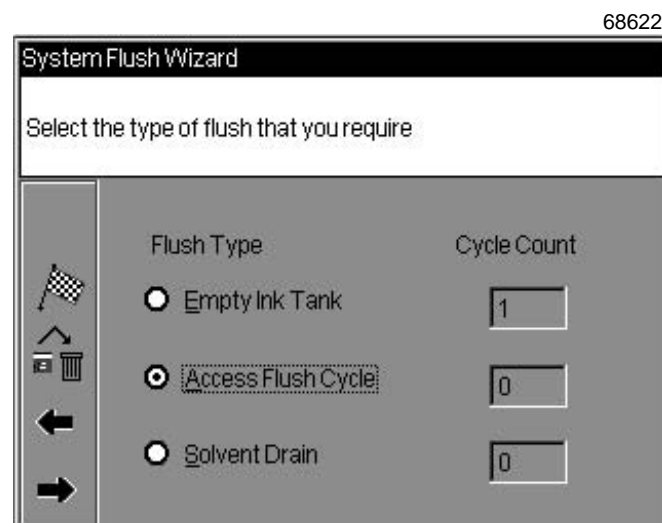


Figure 15. Selecting the Access Flush Cycle Option

- 16 Select the Next (➡) icon using Hot key 6, which displays a dialog box containing the actions required before the Flush Cycle can begin.
- 17 Disconnect the drain tube from the damper and refit the drain cap.

- 18 Tick the “Turn bleed tap off” check box.
- 19 Add 1.0 litre of solvent to the ink tank. If this is the first time the Flush Cycle has been run (Cycle 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 Tick the “Fill tank with 0.5 ltr of solvent” check box, which enables the Start button:

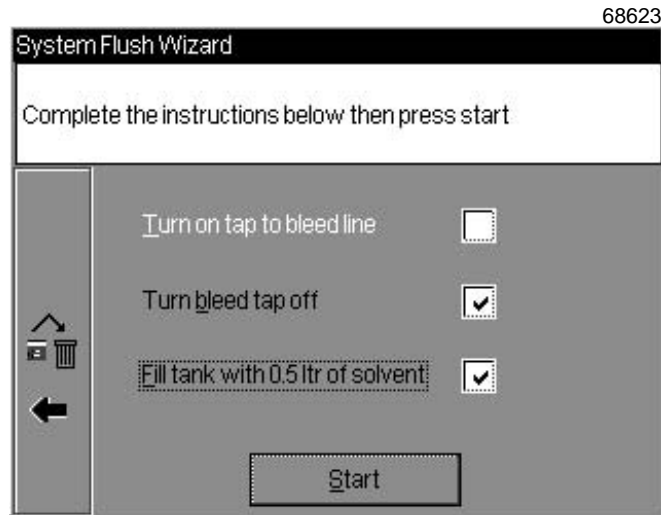


Figure 16. Selecting the Pre-Flush Cycle Required Actions

- 21 Select the Start button. A “System flush in progress” progress dialog box is displayed, with the estimated time to completion (in seconds) shown below the progress bar. The sequence can be terminated by selecting the Abort button, in which case the Cycle Count in the Flush Type selection dialog box is not incremented:



Figure 17. “System flush in progress” Progress Dialog Box

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 may be ignored, except when the software will not allow the sequence to continue and action is required as detailed in Item 19.

- 22 On completion of the Flush Cycle sequence the Done button is enabled and the Abort button is disabled.
- 23 Select the Done button, which returns control to the Flush Type selection dialog box where the Flush Cycle Count has now incremented to 1.

Solvent Drain

- 24 Select the Solvent Drain option:

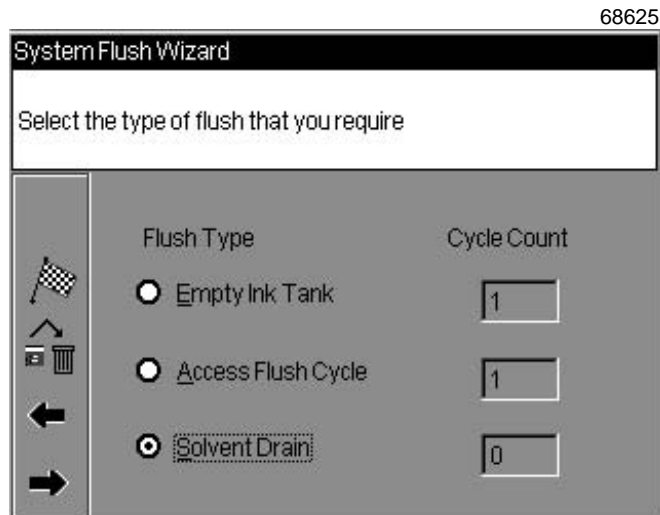


Figure 18. Selecting the Solvent Drain Option

- 25 Select the Next (➡) icon using Hot key 6, which displays a dialog box containing the actions required before the Solvent Drain can begin.
- 26 Ensure that the drain tube from the damper is disconnected and the damper drain cap is refitted before proceeding.
- 27 Tick the “Turn bleed tap off” check box, which enables the Start button:

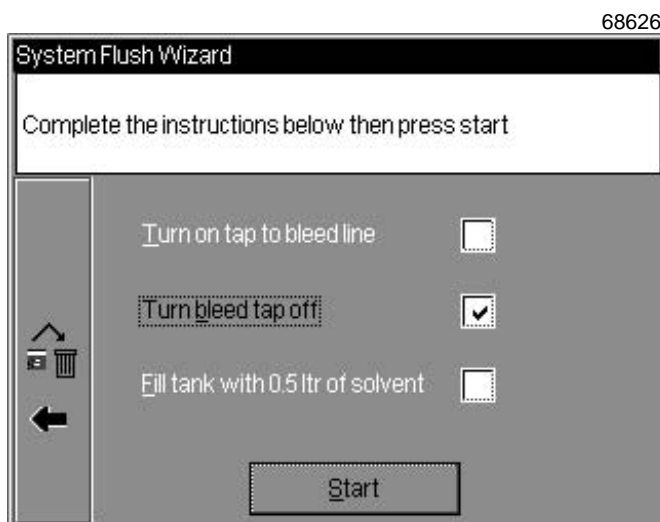


Figure 19. Selecting the Pre-Solvent Drain Required Action

- 28 Select the Start button. A “Solvent now draining” progress dialog box is displayed, with the estimated time to completion (in seconds) shown below the progress bar. The sequence can be terminated by selecting the Abort button, in which case the Cycle Count in the Flush Type selection dialog box is not incremented. On completion of the Solvent Drain sequence the Done button is enabled and the Abort button is disabled:

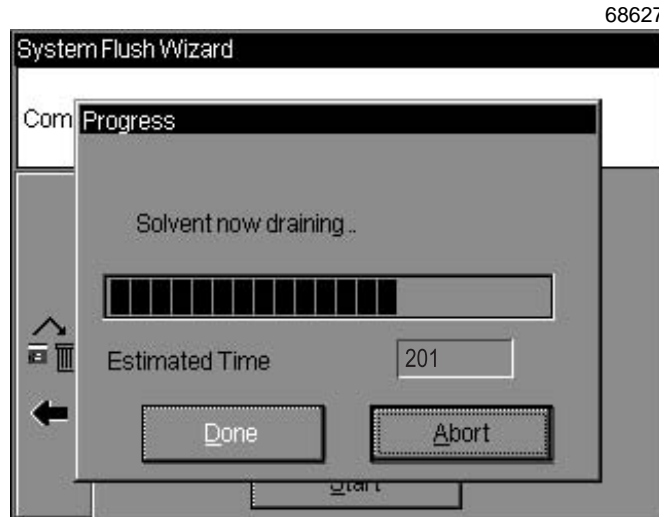


Figure 20. “Solvent now draining” Progress Dialog Box

- 29 Select the Done button, which returns control to the Flush Type selection dialog box where the Solvent Drain Cycle Count has now incremented to 1:

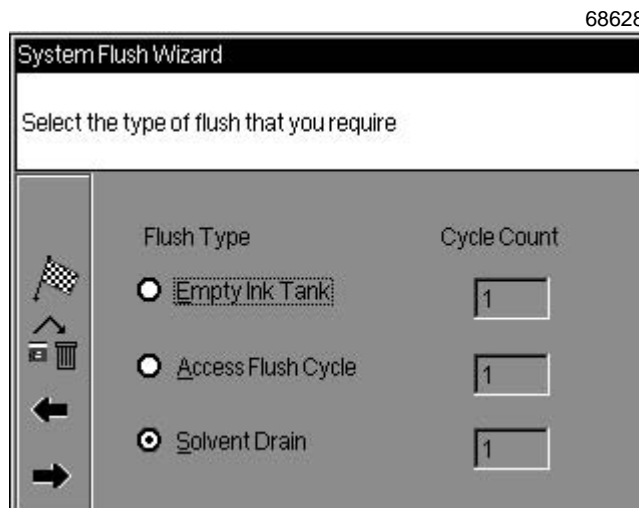


Figure 21. Flush Type Selection Dialog Box

- 30 To conclude the System Flush Wizard select the Finish icon (chequered flag) using Hot key 3, which displays the Wizard Summary dialog box:



Figure 22. Wizard Summary Dialog Box

- 31 When the System Flush is completed, it will be necessary to flush the gutter line (from the gutter through the gutter valve). To do this, first exit the System Flush Wizard (to the Main Window) by selecting the Done button. (Selecting the Cancel button returns control to the Flush Type selection dialog box.)
- 32 Access the Jet State property page (Setup menu > Service property sheet) and enter a Set Pressure of 4.49 bar (65 p.s.i.):

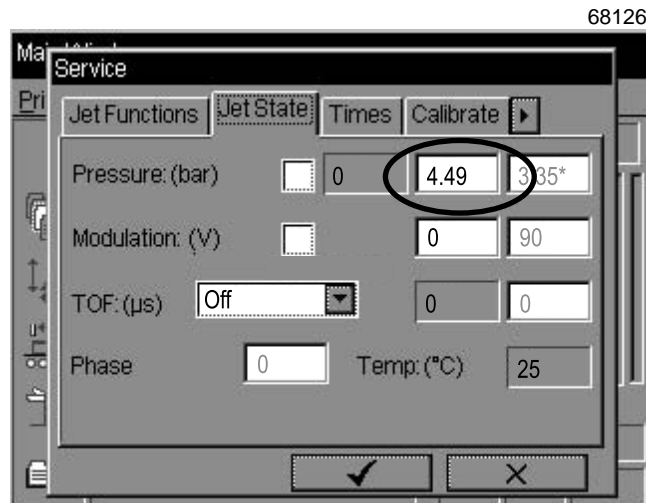


Figure 23. Set Pressure of 4.49 bar in the Jet State Property Page

- 33 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.
- 34 Set the Set Pressure option to 0.
- 35 Return to Part A of this maintenance instruction.