

4800 Maintenance Instruction

System Flush Procedure



Equipment Required

BP900005	Beaker 0.25 Litre	
BP940021	Syringe Polypropylene 50 ml	as required
BP999045	Gloves Latex Medical (large))
BP999046	Gloves Latex Medical (medium)) as required
BP999047	Gloves Latex Medical (small))
BP999076	Safety Spectacles Blue	
	Correct solvent for the ink used in the printer	as required
	Absorbent, lint-free paper towel	
	Empty solvent bottle—base removed	

Introduction

NOTE: The System Flush option referred to in this maintenance instruction describes the option as it existed prior to Version 1.1 software. With v1.1 this option was modified. Once the System Flush option in this instruction has been understood the new option in v1.1 will be self-explanatory, as the on-screen prompts guide the operator easily through the procedure in a similar manner.

Refer to Section 5: "Maintenance" > The Diagnostics Menu > System Flush (v1.1 software).

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

This maintenance instruction provides the procedures to completely flush a 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 convert a "new", unused printer to a new ink, in preparation for calibration.

The individual "Preparation", "Short Cycle Procedure" and "Flush Cycle Procedure" operations, associated with the procedures for the above circumstances, are provided separately, later in this maintenance instruction.

The operations for emptying the ink tank and purging the main ink filter are referred out to the "Draining the Ink System" and "Main Ink Filter Replacement—Main Ink Filter Purge" maintenance instructions contained elsewhere in Section 5.

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The LINX logo consists of the letters 'L', 'I', 'N', and 'X' in a white, serif font, arranged horizontally within a black rectangular box. The letters are spaced out, with a small dot above the 'I' and a small dot below the 'N'.

Printer Conditions During the 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 will be checked at each stage of the cycle, and the cycle will terminate if this is low. If this error is detected the warning message, "Flush Cycle Stopped" will be reported in the screen status line.
- The cycle will terminate with all valves off and zero pressure.
- The cycle may be terminated by the operator at any stage by the selection of the Stop Cycle option. This action will take immediate effect, so no message, such as "Stopping Cycle : Please Wait", will be 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 Stop Cycle option will leave the ink system in an undefined state. If the cycle is terminated for any reason, the "use count" will not be 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.

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** Carry out the "Preparation" actions detailed in this maintenance instruction.
- 2** Prior to the system being flushed with solvent, all ink (or as much ink as possible) should be removed from the ink tank. Carry out the "**Draining the Ink System**" maintenance instruction, but use a waste container of at least 15 litres capacity instead of the 5 litres specified in the instruction. Note that this procedure will be repeated so the printer top cover should be left off.
- 3** Carry out the "Short Cycle Procedure" detailed in this maintenance instruction.
- 4** Repeat the "**Draining the Ink System**" maintenance instruction.
- 5** Repeat the "Short Cycle Procedure".
- 6** Repeat the "**Draining the Ink System**" maintenance instruction.
- 7** Carry out the "Flush Cycle Procedure" detailed in this maintenance instruction.
- 8** Repeat the "**Draining the Ink System**" maintenance instruction. The solvent tank should be empty, but if it is not, any remaining solvent should be syphoned off.
- 9** The printer is now flushed ready for packing.

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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 Carry out the "Preparation" actions detailed in this maintenance instruction.
- 2 Prior to the system being flushed with solvent, all ink (or as much ink as possible) should be removed from the ink tank. Carry out the "**Draining the Ink System**" maintenance instruction, but use a waste container of at least 15 litres capacity instead of the 5 litres specified in the instruction. Note that this procedure will be repeated so the printer top cover should be left off.
- 3 Carry out the "Short Cycle Procedure" detailed in this maintenance instruction.
- 4 Repeat the "**Draining the Ink System**" maintenance instruction.
- 5 Repeat the "Short Cycle Procedure".
- 6 Repeat the "**Draining the Ink System**" maintenance instruction.
- 7 Carry out the "Flush Cycle Procedure" detailed in this maintenance instruction.
- 8 Repeat the "**Draining the Ink System**" maintenance instruction. The solvent tank should be empty, but if it is not, any remaining solvent should be syphoned off.
- 9 Replace the main ink filter and the pre-pump filter/ink tank dip tube. Maintenance instructions for these tasks can be found elsewhere in Section 5.
- 10 The printer may now be recommissioned with fresh ink (one or two bottles, until low ink status warning has cleared) and fresh solvent (one or two bottles, until low solvent status warning has cleared).
- 11 Carry out the **Main Ink Filter Purge** element of the "**Main Ink Filter Replacement**" maintenance instruction.

NOTE: If the main ink filter or damper do not fill with ink, the pump needs to be primed. This should be done with the printer switched OFF. Insert the nozzle of a syringe (Linx part number BP940021—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.
- 12 Carry out at least six Clear Nozzle sequences.
- 13 Start the jet using the [start] button.
- 14 The printer is now clear of contaminated ink and ready for use.

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

- 1 Carry out the "Preparation" actions detailed in this maintenance instruction.
- 2 Prior to the system being flushed with solvent, all ink (or as much ink as possible) should be removed from the ink tank. Carry out the "Draining the Ink System" maintenance instruction, but use a waste container of at least 15 litres capacity instead of the 5 litres specified in the instruction. Note that this procedure will be repeated so the printer top cover should be left off.

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.

- 3 Carry out the "Short Cycle Procedure" detailed in this maintenance instruction.
- 4 Repeat the "Draining the Ink System" maintenance instruction.

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.

- 5 Repeat the "Short Cycle Procedure".
- 6 Repeat the "Draining the Ink System" maintenance instruction.

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.

- 7 Carry out the "Flush Cycle Procedure" detailed in this maintenance instruction.
- 8 Repeat the "Draining the Ink System" maintenance instruction. The solvent tank should be empty, but if it is not, any remaining solvent should be syphoned off.
- 9 Replace the main ink filter and the pre-pump filter/ink tank dip 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 which will be *added* to the printer during the recommissioning process.

- 10 Repeat the "Short Cycle Procedure".
- 11 Repeat the "Draining the Ink System" maintenance instruction.

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

- 12 Repeat the "Flush Cycle Procedure".
- 13 Repeat the "Draining the Ink System" maintenance instruction.

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

- 14 Repeat the "Flush Cycle Procedure".
- 15 Repeat the "Draining the Ink System" maintenance instruction. The solvent tank should be empty, but if it is not, any remaining solvent should be syphoned off.
- 16 The printer may now be recommissioned 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 the low solvent status warning has cleared).

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- 17 Carry out the **Main Ink Filter Purge** element of the “**Main Ink Filter Replacement**” maintenance instruction.

NOTE: If the main ink filter or damper do not fill with ink, the pump needs to be primed. This should be done with the printer switched OFF. Insert the nozzle of a syringe (Linx part number BP940021—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 Carry out at least six Clear Nozzle sequences.
- 19 From the DIAGNOSTICS menu, set the TOF Correction option to Off so that there will be no possibility of solvent being added.
- 20 Using the Quick Start Jet option, run the jet for 10 minutes.
- 21 Set the TOF Correction option back to On.
- 22 Repeat the “**Draining the Ink System**” maintenance instruction.

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

NOTE: Items 16 to 23 **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.
- 24 Repeat the **Main Ink Filter Purge** element of the “**Main Ink Filter Replacement**” maintenance instruction.

NOTE: If the main ink filter or damper do not fill with ink, the pump needs to be primed. This should be done with the printer switched OFF. Insert the nozzle of a syringe (Linx part number BP940021—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.
- 25 Place an earthed container under the printhead because solvent will be present in the pipes.
- 26 The printer is now ready for calibration. Refer to the “**Ink Conversion Calibration**” maintenance instruction.

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

- 1 Replace the main ink filter and the pre-pump filter/ink tank dip tube. Maintenance instructions for these tasks can be found elsewhere in Section 5.
- 2 Carry out the “Preparation” actions detailed in this maintenance instruction.

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

- 3 Carry out the “Short Cycle Procedure” detailed in this maintenance instruction.
- 4 Carry out the “Draining the Ink System” maintenance instruction, but use a waste container of at least 15 litres capacity instead of the 5 litres specified in the instruction. Note that this procedure will be repeated so the printer top cover should be left off.

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

- 5 Carry out the “Flush Cycle Procedure” detailed in this maintenance instruction.
- 6 Repeat the “Draining the Ink System” maintenance instruction.

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

- 7 Repeat the “Flush Cycle Procedure”.
- 8 Repeat the “Draining the Ink System” maintenance instruction. The solvent tank should be empty, but if it is not, any remaining solvent should be syphoned off.
- 9 The printer may now be recommissioned 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 do not fill with ink, the pump needs to be primed. This should be done with the printer switched OFF. Insert the nozzle of a syringe (Linx part number BP940021—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 From the DIAGNOSTICS menu, set the TOF Correction option to Off so that there will be no possibility of solvent being added.
- 13 Using the Quick Start Jet option, run the jet for 10 minutes.
- 14 Set the TOF Correction option back to On.

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The LINX logo consists of the word "LINX" in a white, serif, all-caps font, centered within a solid black rectangular box.

- 15** Repeat the “**Draining the Ink System**” maintenance instruction.
- NOTE: It is important to ensure 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 low ink status warning has cleared) which must be of the **same batch and viscosity**, as marked on the ink bottle label.
- NOTE: Items 9 to 16 **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.
- 17** Repeat the **Main Ink Filter Purge** element of the “**Main Ink Filter Replacement**” maintenance instruction.
- NOTE: If the main ink filter or damper do not fill with ink, the pump needs to be primed. This should be done with the printer switched OFF. Insert the nozzle of a syringe (Linx part number BP940021—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** The printer is now ready for calibration. Refer to the “**Ink Conversion Calibration**” maintenance instruction.

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Preparation

Before commencing the flushing procedures, the printer should 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.

During the flush, the solvent tank needs to contain 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, the solvent tank should be filled just until the System Warning error message "3.04 Solvent Low" is cleared. This may necessitate drawing off some solvent first to see the error message appear and then refilling with solvent until the error message clears. As a precautionary measure, an empty solvent bottle, with its base removed, should be fitted 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.

Short Cycle Procedure

- 1 Ensure that the ink tank is **empty** before continuing with the following Short Cycle procedure.
- 2 Select the System Flush option from the DIAGNOSTICS menu, which will display the primary SYSTEM FLUSH menu:

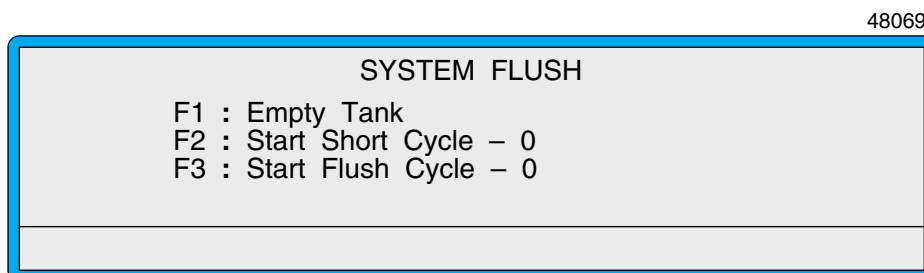


Figure 1. Primary System Flush Menu

- 3 The Short Cycle operation is used to remove the ink from the main ink filter and the damper. Scroll to the Start Short Cycle option and select it by pressing [enter]. The SYSTEM FLUSH screen content will change to the following:

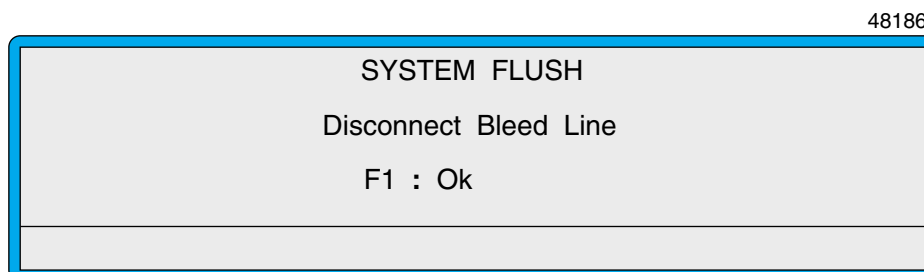


Figure 2. System Flush Screen with "Disconnect Bleed Line" Message

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- The operator is reminded to disconnect the bleed line from the damper (and refit the damper drain cap) before proceeding. Then select Continue by pressing [enter] and the following screen will be displayed:

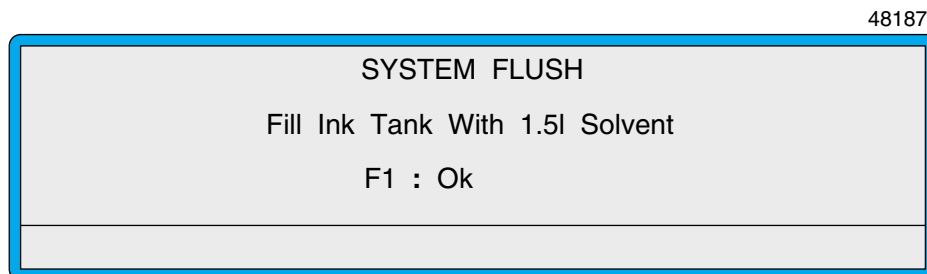


Figure 3. System Flush Screen with “Fill Ink Tank with 1.5l Solvent” Message

- The operator is prompted to fill the ink tank with 1.5 litres of solvent. Then select Continue by pressing [enter] and the following screen will be displayed:

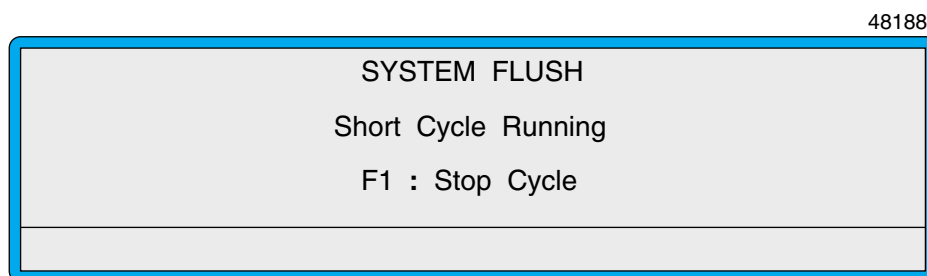


Figure 4. System Flush Screen with “Short Cycle Running” Message

- The Short Cycle operation is now being carried out. If the Stop Cycle option is selected during this operation, the Short Cycle will be aborted.

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Flush Cycle Procedure

- 1 Ensure that the ink tank is **empty** before continuing with the following Flush Cycle procedure.
- 2 The Flush Cycle operation is used to thoroughly flush all the valves and pipework. From the primary SYSTEM FLUSH screen scroll to the Start Flush Cycle option and select it by pressing [enter]. The SYSTEM FLUSH screen content will change to the following:

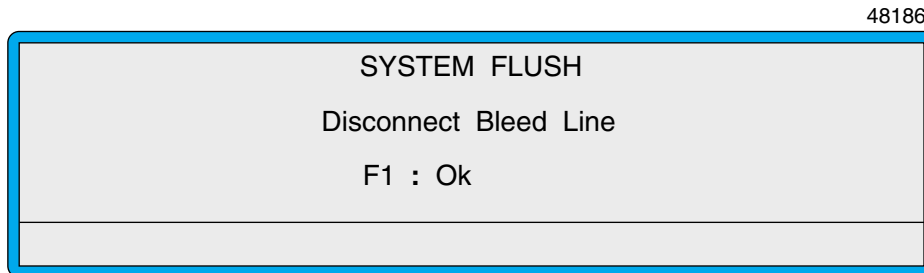


Figure 5. System Flush Screen with “Disconnect Bleed Line” Message

- 3 The operator is reminded to disconnect the bleed line from the damper (and refit the damper drain cap) before proceeding. Ensure that this is done before continuing. Select Continue by pressing [enter] and the following screen will be displayed:

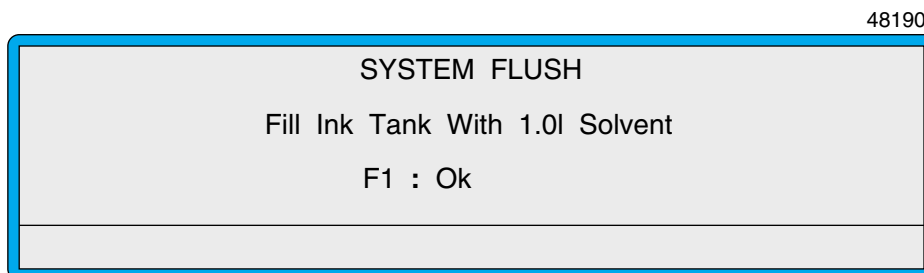


Figure 6. System Flush Screen with “Fill Ink Tank with 1.0l Solvent” Message

- 4 The operator is prompted to fill the ink tank with **1.0 litre** of solvent. If this is the first time this cycle has been run (use count is 0) and a “3.04 Solvent Low” error message is displayed, the flush cycle cannot proceed. If necessary, fill the solvent tank just until the “3.04 Solvent Low” error message is cleared. Then select Continue by pressing [enter] and the following screen will be displayed:

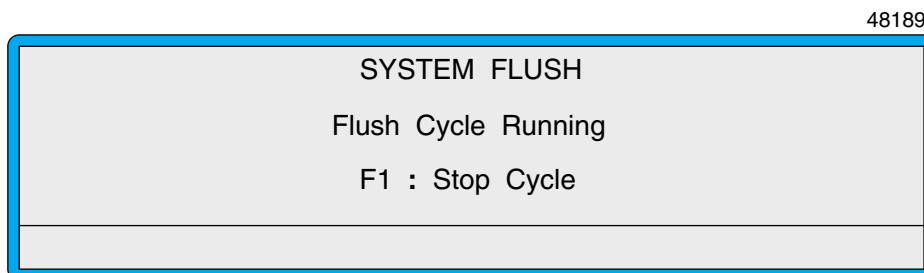


Figure 7. System Flush with “Flush Cycle Running” Message

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- 5 The Flush Cycle operation is now being carried out. If the Stop Cycle option is selected during this operation, the Short Cycle will be aborted.

NOTE: A "3.04 Solvent Low" error 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 cycle to continue and action is required.

- 6 When the Flush Cycle is finished, it will be necessary to flush the gutter line (from the gutter through the gutter valve). In Diagnostics, set the Set Pressure option to 255 and apply solvent to the gutter using a wash bottle until the solvent in the gutter line flows clear. Note that a **minimum** of 250 ml of solvent should be used.
- 7 Set the Set Pressure option to 0.