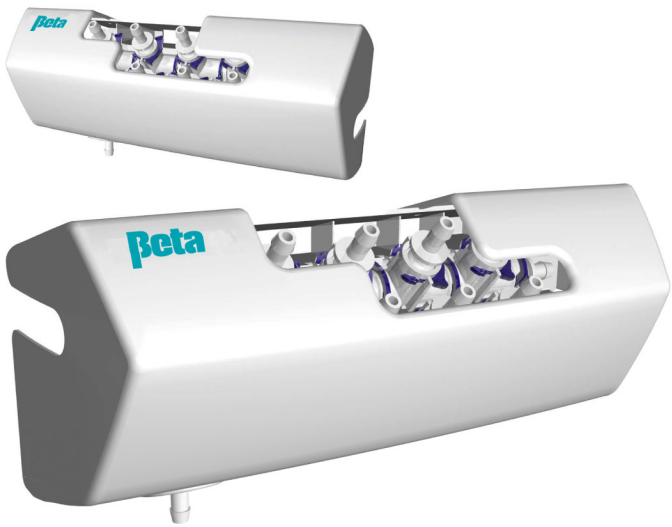
Manifold QF
Installation & Setup Guide



Contents

Safety

Although an auxiliary piece of equipment to the L5000 units, the same measures taken when working with the L5000 apply to any work being undertaken on the manifold. The following safety notes apply both to the manifold and the L5000.

Always wear the required Personal Protective equipment (including gloves and goggles that must be worn when potentially exposed to any hazardous materials and when carrying out hazardous work tasks). Turn the main dispenser unit off during cleaning and note that parts may be contaminated with product. If possible, flush out tubing with water prior to undertaking any maintenance. For information on products that can be used with this manifold please carefully read the product label and Material Safety Data Sheets (MSDS).

High Voltage. Disconnect all power to the L5000 unit prior to servicing the manifold. Servicing should only be performed by qualified service personnel.

High voltage trigger signals may be present even when the L5000 unit is switched off

The addition or replacement of pumps, pump tubes or other components should only be performed by qualified personnel.

Any disassembly of the manifold or addition of extra ports should only be carried out by qualified personnel.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

It is recommended that for any wiring passing into the L5000 enclosure that fittings which provide strain relief are used. These include cable glands, strain reliefs or conduit. It is recommended that Heyco strain relief bushes or equivalent are used with their corresponding locknuts.

These symbols on or inside the unit mean:

Caution risk of electric shock

Introduction

E and XL manifolds are equipped with a safety interlock that prevents chemical from being pumped if there is not adequate water flow. Prior to the first feed, approximately 3 seconds of water flush will occur to establish flow.

In the case of multiple product feeds, there will be a 3 second flush between feeds to re-establish flow and separate the chemicals.

After the last chemical has pumped, a short break will occur in the flush prior to the transport time beginning. This ensures all the chemical is flushed from the manifold and helps to prevent chemical degradation inside the manifold.

Note: E manifolds are not compatible with the XL dispenser.

Installation Standards

Ensure that the unit is always installed in accordance with local regulatory requirements.

Any specific installation recommendations relating to this unit are explained in this Installation and Setup Guide

Required Tools and Supplies for Installation (These items are not included in the Manifold QF installation kits)

1. Tube Cutters
2. Medium Cross-head screwdriver
3. Medium Flat-head screwdriver (or nut spinner for Stepped Hose Clips)
4. Electric Drill (and 5.5mm Drill Bit)
5. Connection fittings to connect water supply to source
6. 12mm (½") ID Hose for water inlet and outlet connections
7. Adjustable Spanner
8. Stopwatch (for calculating flush transport time)

Other possible items

1. Installation template provided in box
2. Step Ladder

Specifications

Dimensions 3-8 Port	400x165x150mm
Weight (8 Port)	1600g
Product Inlets	3 to 8
ID Inlet and Outlet Hose	12mm (1/2”)
ID Chemical Inlet Hose	10mm (3/8”)
Minimum water flow	2 L/m (0.5 US gal/min)
Max Inlet Water Pressure (Dynamic)	1-4 bar (15 – 60 psi)
Max Internal Operating Pressure (XL)	1.66 bar (25 psi)
Max Water Temp	30°C (86°F)
Solenoid Valve	24V DC
Flow Switch	N/O

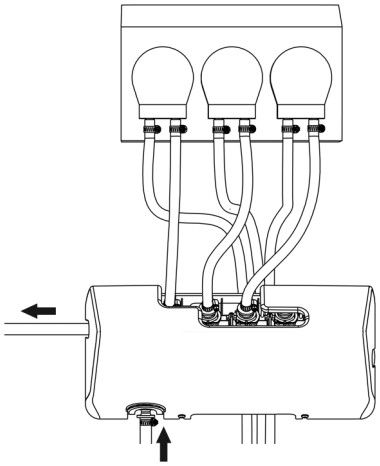
Materials

Cover	Acrylic Capped ABS
Backplate	PP
Tee Pieces	PP
Connector O-Rings	EPDM & Viton
NRV’s	PP, Hasteloy Springs, Perfluoroelastomer

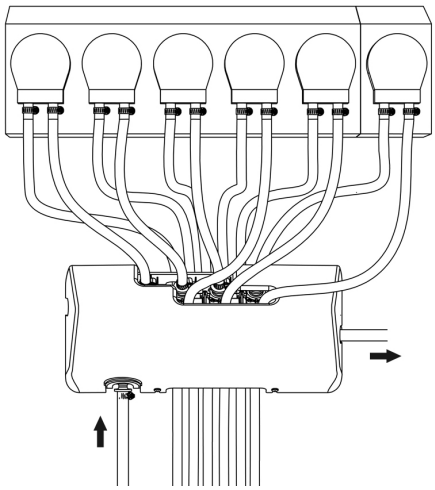
Static and Dynamic Pressures

Static pressure is in this case defined as the pressure when no flow is occurring. Dynamic pressure is defined as the pressure in a system when flow is occurring. Dynamic pressure is generated by any resistance to flow in the system.

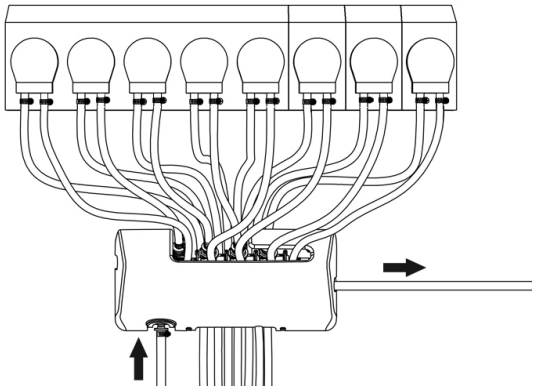
Overall System Configurations



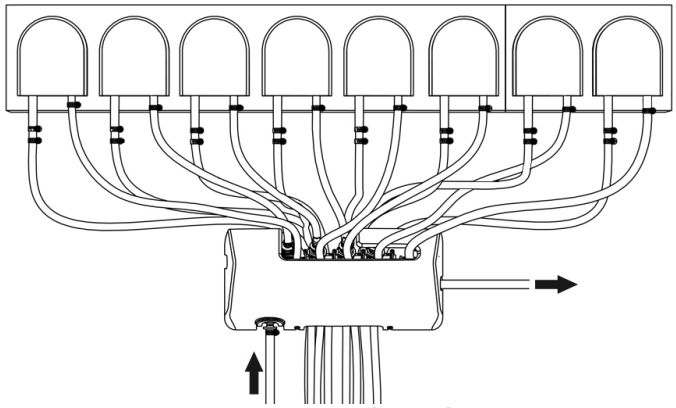
3 Port Configuration



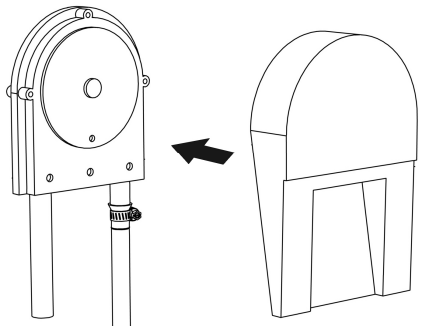
6 Port Configuration



8 Port OPL Configuration



8 Port XL Configuration



XL Only
Fit 1206377 – Connector Big Wheel Tube Inserts and 1207001 – Safety Shield Big Wheel

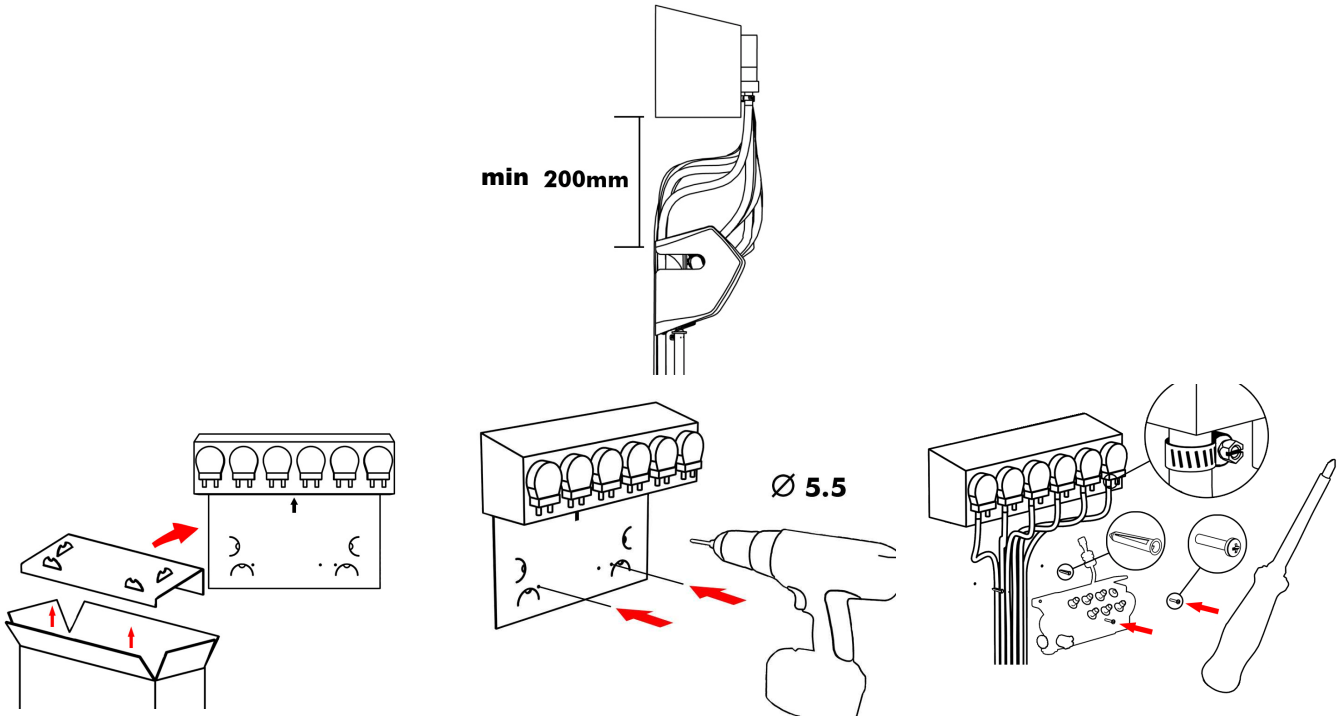
Manifold Installation

Before installing the manifold, verify that the dispenser is switched off by disconnecting the power and turning the switch off. The LED should not be lit.

If working inside the L5000 enclosure, care must be taken as high voltage trigger signals from the washer may be present, even with the L5000 switched off.

1. Fixing to the wall

The pick up tubes between the product and the inlet side of the pumps should be put in place prior to the unit being mounted on the wall. Hoses should have enough slack so they can be run behind the mounted unit.



- Remove from packaging and remove drilling template from box
- Centre arrow under unit and drill the two Ø 5.5mm (7/32”) mounting holes (set at 200mm below pump unit)
- Loosen cover screws at the base of unit to allow removal of the cover
- Install chemical pick up tubes onto inlet side of pumps
- Use supplied wall plugs and screws to mount unit over pick up tubes

2. Water Connection to the Unit

The user is responsible for connecting the manifold in accordance with local plumbing codes or water board regulations. This may include, but is not limited too, the use of a reduced-pressure principle backflow prevention device, or other means of domestic water supply isolation.

To ensure that the product delivery specification provided at the beginning of this document is achievable, it is recommended that the flush manifolds are fitted with 12mm (½") inlet and outlet hose.

Successful operation of the manifold system is reliant on adequate and consistent water supply. In locating a water supply the following points should be considered:

- If possible, before cutting into a water line, check both the static and dynamic pressures are within the specified range
- Ensure that where practical the recommended 12mm (1/2") ID inlet hose is used
- Keep water feed lines as short as possible
- Water supplies in high demand should be avoided if possible to ensure the manifold supply is not interrupted by demand from one or more washers at the same time
- Ensure an isolation valve is fitted to independently switch off the water supply to the manifold

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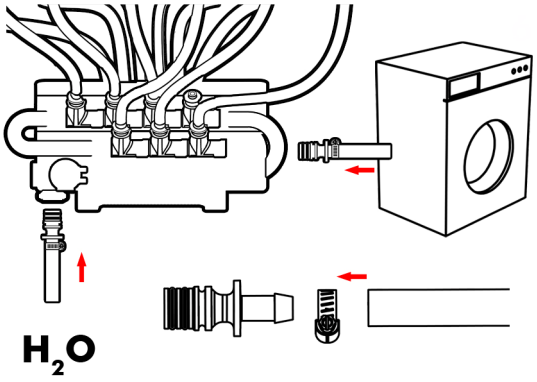
To fit water inlet and outlet:

- Attach 12mm (1/2") ID hose to supplied male hose tail connector using large stepped clip
- Push inlet connector into manifold valve body and secure blue clip
- Remove male (3 port – female) outlet connector from manifold and fix 12mm (1/2") ID hose with second large stepped clip
- Put outlet connector back in place and secure blue clip



You may install a manifold system up to 30 meters (100 feet) away from the washer. This distance is based on using 12mm (½") ID hose.

It may be necessary to reduce the distance between the manifold and the washer to compensate for the effects of high viscosity products and/or low water pressures.

Manifold QF is designed to operate at dynamic pressures between 15 and 60 PSI (1-4 bar). For optimal performance the dynamic inlet pressure should be set to more than 20psi (1.4 bar). This will allow for adequate flow, even during the pressure/flow fluctuations that occur in normal laundry operation.

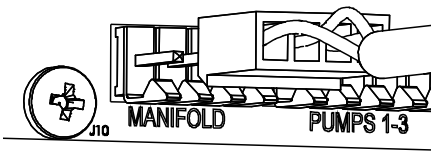
If dynamic inlet water pressure falls below 15 PSI, it is assumed the flow rate will have fallen below a level capable of moving the product to the washer. The unit will stop pumping and a 'No Flow' error will be displayed.

XL manifold ONLY – If internal pressure goes above 25 PSI, the dispenser assumes that the chemical delivery lines are blocked; the dispenser will stop pumping and will display a 'No Flow' error.

3. Electrical Connection to the L5000

When connecting the manifold wire harness, ensure the L5000 unit is isolated from the power supply.

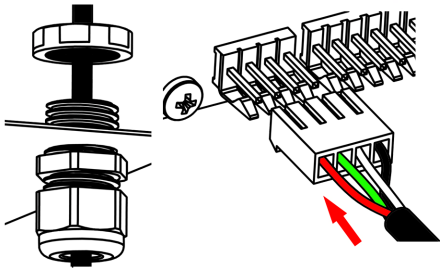
The manifold QF **no longer** requires the use of the L5000 PCB inverter board. If replacing a previous version of the manifold with an inverter board fitted, ensure inverter board is removed.



Wire Harness connected directly to the L5000 Circuit board

Connecting Wire Harness

1. Pass the wire harness through one of the available holes in the bottom of the pump box.
2. Place the retaining nut back onto the harness and in turn the strain relief bush and gently tighten to retain the bush in the base of the unit.
3. **Connect Molex connector directly to the position on the main PCB labelled manifold.**
4. Adjust the length of the cable as required and tighten the strain relief nut.



The L5000 dispenser will automatically detect the presence of the manifold when it is switched on.

4. Connection of Product Feed Lines to L5000 and Manifold

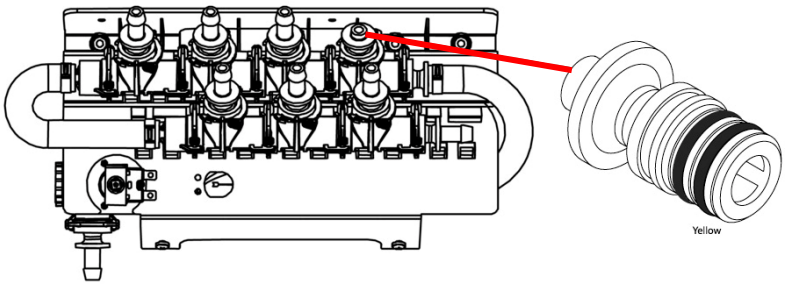
Once the manifold is installed on the wall, the product tubes can be fitted. The 0.5m lengths of tube supplied are for use connecting the outlet side of the L5000 pumps to the manifold. The pick up tubes are not supplied with the kit.

XL ONLY – it is recommended when fitting manifold QF with the XL dispenser that the pump tubes are fitted with 1206377 – Connector Big Wheel Tube Inserts and 1207001 – Safety Shield Big Wheel.

With the pick up tubes installed, the feed lines between the L5000 unit and the manifold can be installed. The lengths of tube supplied are 0.5m and can be cut to length as necessary. Hose clamps are supplied to secure the feed line at both ends.

Valve plugs are included in the installation kit and should be used instead of the installed chemical inlet NRV's on any ports that are to be left unconnected to the L5000 unit. These NRV's should be retained in case of a future expansion requirement.

The cropped air inlet valve should not be removed from its original position and should not be exchanged for a chemical inlet valve as this would prevent the manifold from flushing correctly at the end of the feed cycle.



Cropped air inlet valve

To install the feed lines:

1. Remove intended chemical inlet NRV
2. Slide hose clamp into place on tube
3. Push chemical inlet NRV into place in the tube
4. Slide hose clamp down and secure tube in place on connector
5. Push connector back into place in the manifold and secure blue clip
6. Measure tube length required to reach intended pump and cut to length
7. Slide second hose clamp onto tube and use to secure end of tube to pump outlet fitting
8. Remove all unused NRV's (except cropped air inlet) and replace with PP Plug\s provided in kit

After installing the feed lines it is very important that all the blue clips are securely pushed back into place. Failure to do so could lead to the NRV's being forced out of the manifold body by the flush water pressure.

With the manifold body installed, the cover can be put back into place. The cover is retained by two screws at the base of the unit and two arrow clips (1207419) at the top of the unit.

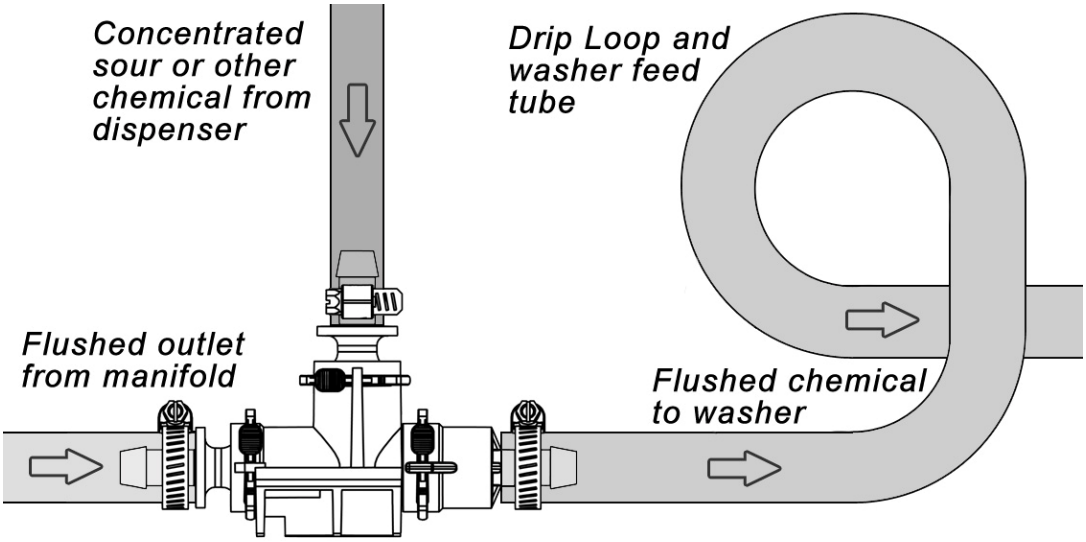
Routing Incompatible Chemicals

It is important that incompatible chemicals are not pumped into any manifold at the same time. With the manifold installed, the L5000 dispenser will not allow two pumps to run at the same time.

Flush water passes through the manifold before and after the chemicals have been flushed **and with the inclusion of the air inlet valve and break in the flush prior to the transport flush beginning, the manifold should remain with either air or fresh water in, between operations**

Incompatible chemicals must not be run together into the manifold for safety reasons. Instead of putting sour and other incompatible chemicals together, they should be separated and run to a **sour flush kit QF (P/N 1209059)**. To prevent the possibility of any corrosion to the washer, even on stainless steel, the following illustration should be used to configure the system to prevent any chemical drip.

In cases where a corn-starch based product is being used, it may be best to route the bleach separately and inject the acidic product upstream of the starch to prevent starch build up. **In cases where synthetic, non-cornstarch products are being used, it is critical to keep air leaks out of the starch line, as these can cause clogging.**



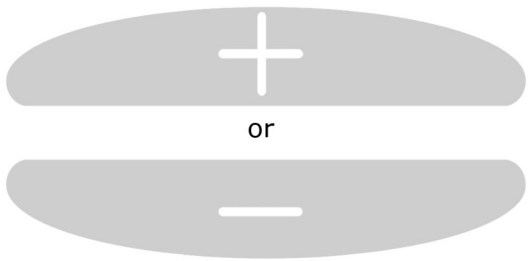
5. Programming

When the manifold is connected to the dispenser, the dispenser recognizes the manifold and further programming screens will appear in the programming menu. If these manifolds do not appear then the manifold is not correctly installed and will not function.

The Transport Time Screen will feature in the menu when the manifold is connected. This screen allows the time required for the product to be flushed to the laundry machine to be set.

The programming section detailed here deals only with the aspects relevant to the flush manifold. For further comprehensive programming information the manual for the relevant L5000 dispenser should be consulted.

Programming, data retrieval and system diagnostics of the L5000 dispensers is done through the programmer, using the following keys:

	+ or – keys change the value of the blinking number or letter. Pressing + and – simultaneously will change any alphanumeric character to 'M' and will change any numeric field to its minimum value.
	The CURSOR key moves the cursor around the screen to allow the different fields to be changed
	The ACTION key initiates an action such as priming. This button does not change settings.
	The MENU key advances to the next menu screen

Passwords

Passwords are used on the L5000 range to control access to the programming and technician levels of the system. Three levels of access exist, the first of which is a default 'operator' setting. Two further levels exist; technician and programmer levels both require different passwords.

The 'operator' setting gives access to view diagnostic screens and formula selection screens. Password '**123**' provides second level 'technician' access. With this password access is gained to screens allowing pump priming, viewing of formula count logs, viewing of pump run times and several further diagnostic screens.

Password '890' provides 'programmer' access to all screens and features. At this level, the user may also change passwords. The extra screens are displayed after the technician screens.

No-Flow Alarms

When the flush manifold is installed further conditions can trigger a 'no-flow' alarm. A 'No Flow' error will occur if:

- An electrical or mechanical problem prevents the pump from working.
- E manifold – the water flow is insufficient
- XL manifold – the water flow is insufficient or, the water pressure exceeds 25psi during a flush. A no flow error can occur at anytime during the feed process as he pressure is constantly monitored.

If a no-flow error condition occurs, the planned feed is aborted. Subsequent feeds will be attempted but will continue to generate no-flow errors if the fault condition remains. Only when flow and pressure fall back within the specified range will feeds resume.

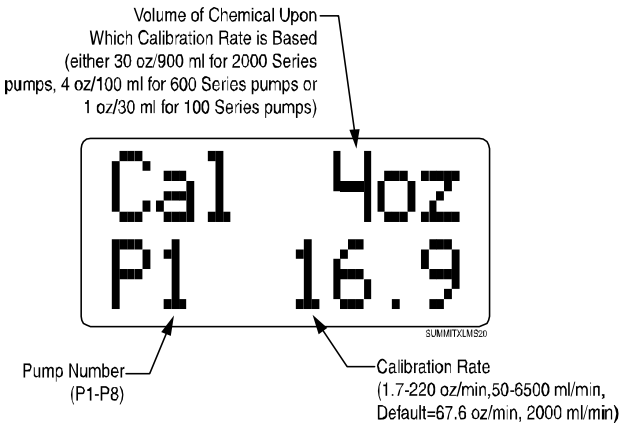
- A trigger is seen by the L5000 to be active for more than five minutes in Smart Relay mode. In this situation the L5000 assumes the trigger is 'stuck' and a no-flow alarm will occur. In this situation, no further feed commands will be sent to the dispenser for that trigger until the trigger has been switched off and on again.
- The dispenser detects thatd a pump has been running continuously for five minutes on an E dispenser or ten minutes on the XL dispenser.

Alarm messages may be cleared by pressing the action key or correcting the issue causing the alarm condition. Pressing the action key will only clear the alarm displayed on the screen. The action key must be pressed once for each separate alarm while the alarm message is displayed on the screen.

On both E and XL manifolds, it is important to use ½"ID discharge hose. If not the reduction in bore size may result in a higher occurrence of no-flow alarms.

Pump Calibration

Manifold QF has simplified the process of calibrating the pumps. The modular system allows the product connector with built in NRV to be removed from the manifold and the pump calibrated with the NRV inline. As the L5000 is based on volumetric calibration, once calibrated there will be no need to adjust formulas to accommodate for differing flow rates when changing chemicals or compensating for tube wear. When operating the unit in Smart Relay Mode, pumped volume is set without having to use the calibrated flow rate in calculating trigger on time.



The image above shows that pump P1 pumps 19.9 ounces (500ml) per minute, calibrated from a pump volume of 4 ounces.

Calibration rate is displayed in the lower right hand corner of the screen. The calibration rate is displayed as xxxx if ml is selected and xxx.x if "oz" is selected.

To calibrate the pumps:

- Remove connector from manifold and position over a suitable measuring cylinder
- The volume to pump is shown in the top right hand corner of the screen:
    - 900ml (30 oz) for the 2000 Series pump
    - 100ml (4 oz) for the 600 Series pump
- Press and hold the ACTION key, collecting the dispensed product in the measuring cylinder. The calibration rate field is replaced by a spinning pump icon on the display
- When the calibration amount has been reached, release the ACTION key and the pump will stop
- The new flow rate is automatically calculated, saved to memory and displayed in place of the default settings

As the calibration is not saved to memory until the calibration screen is exited, it is possible to 'pulse' the pump on and off until the correct amount is reached.

If the pump is not run long enough to calculate a realistic calibration value, "----" will be displayed and the ACTION key should be pressed to resume the calibration.

To ensure accuracy of the calibration it is advisable to get to within two to three additional presses of the ACTION key to reach the desired amount. If anymore than three presses are required it is recommended that the pump number is changed back and the pump recalibrated.

If the calibration amount is exceeded, switch to another pump and then go back, repeating the steps above.

Disconnecting a Flush Manifold

When disconnecting a flush manifold, the unit must be switched off to ensure the dispenser can detect that the manifold has been removed. If the unit is not switched off the dispenser will not detect that the manifold has been disconnected and it is highly likely a 'no-flow' error condition will occur.

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Notice regarding changes

Material in this manual is subject to change without notice. Special circumstances involving important design operation of application information will be released via Equipment Technical Bulletins. Every effort has been made to ensure that this information is accurate, but no guarantee is made as to the accuracy or completeness of this document.