



2001HSP
Peristaltic Sample Pump

Installation and Operation Manual



2001HSP Peristaltic Sample Pump

JANUARY 2014

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1.0 - System Overview

The 2001HSP Peristaltic Sample Pump consists of a gearmotor and peristaltic pumphead.



**Model 2001HSP
Pump, Motor & Gearbox**

1.1 Safety

In the interests of safety, this pump and the tubing selected should only be used by competent, suitably trained personnel after they have read and understood this manual, and considered any hazard involved. Any person who is involved in the installation or maintenance of this equipment should be fully competent to carry out the work.

Maintenance and repair should be performed by qualified personnel only. Make sure that no voltage is applied while work is being carried out on the pump or motor. The motor must be secured against accidental start up.

1.2 Warranty

Flomotion Systems, Inc. warrants the 2001 Series pumps to be free of defects in material and workmanship for a period of eighteen months from the date of sale to the user, or two years from the date of shipment, whichever ever occurs first. An MC Series control, or any component contained therein, which under normal use becomes defective within the stated warranty time period, shall be returned to Flomotion Systems, Inc., freight prepaid, for examination (contact Flomotion Systems, Inc. for authorization prior to returning any product). Flomotion Systems, Inc. reserves the right to make the final determination as to the validity of a warranty claim, and sole obligation is to repair or replace only components, which have been rendered defective due to faulty material or workmanship. No warranty claim will be accepted for components which have been damaged due to mishandling, improper installation, unauthorized repair and/or alteration of the product, operation in excess of design specifications or other misuse, or improper maintenance. Flomotion Systems, Inc. makes no warranty that its products are compatible with any other equipment, or to any specific application, to which they may be applied and shall not be held liable for any other consequential damage or injury arising from the use of its products. This warranty is in lieu of all other warranties, expressed or implied. No other person, firm or corporation is authorized to assume, for Flomotion Systems, Inc., any other liability in connection with the demonstration or sale of its products.

1.3 Receiving

Inspect all cartons for damage, which may have occurred during shipping. Carefully unpack equipment and inspect thoroughly for damage or shortage. Report any damage to carrier and/or shortages to supplier. All major components and connections should be examined for damage and tightness, with special attention given to PC boards, plugs, knobs and switches.

1.4 Customer Modification

Flomotion Systems, Inc., its sales representatives and distributors, welcome the opportunity to assist our customers in applying our products. Many customizing options are available to aid in this function. Flomotion Systems, Inc. cannot assume responsibility for any modifications not authorized by its engineering department.

1.5 Information for Returning Pumps

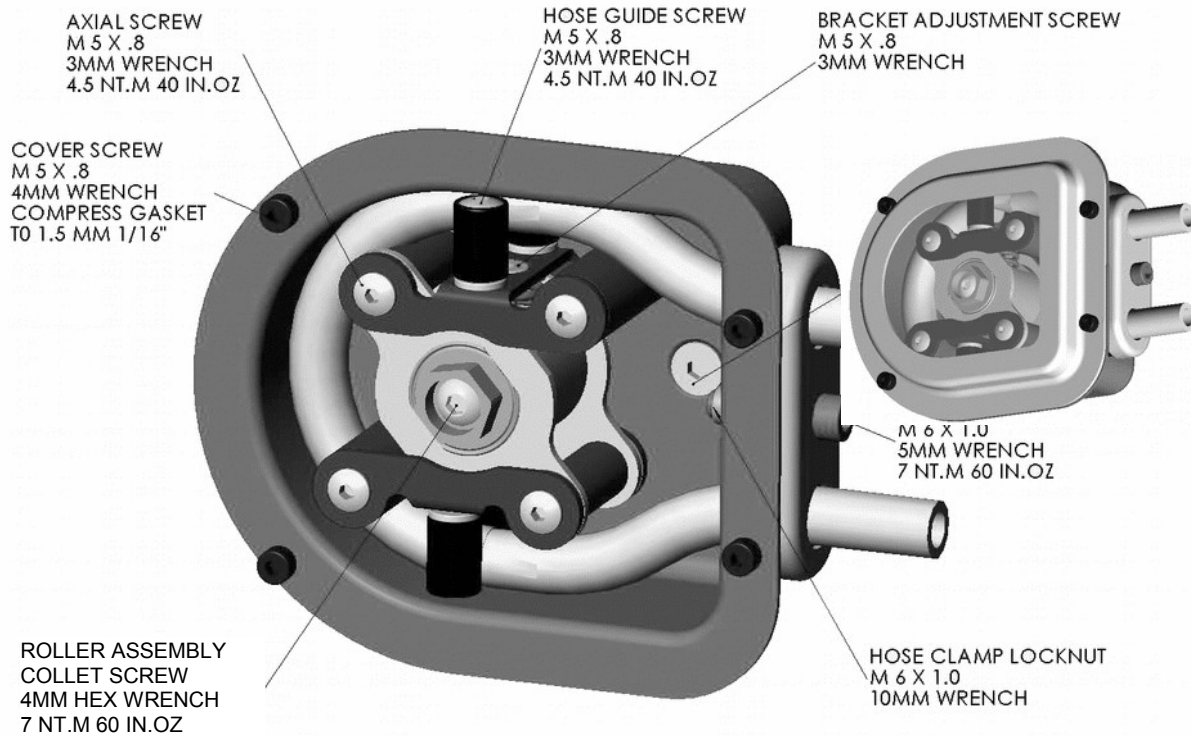
Equipment that has been contaminated with, or exposed to, body fluids, toxic chemicals or any other substance hazardous to health must be decontaminated before it is returned to Flomotion Systems or its distributor.

A certificate included at the rear of these operating instructions, or signed statement, must be attached to the outside of the shipping container.

This certificate is required even if the pump is unused. If the pump has been used, the fluids that have been in contact with the pump and the cleaning procedure must be specified along with a statement that the equipment has been decontaminated.

2.0 – 2001HSP Series Pump

The 2001 Series pumphead has two spring-loaded working rollers, which automatically compensate for minor variations in tubing wall thickness, giving extended tube life.

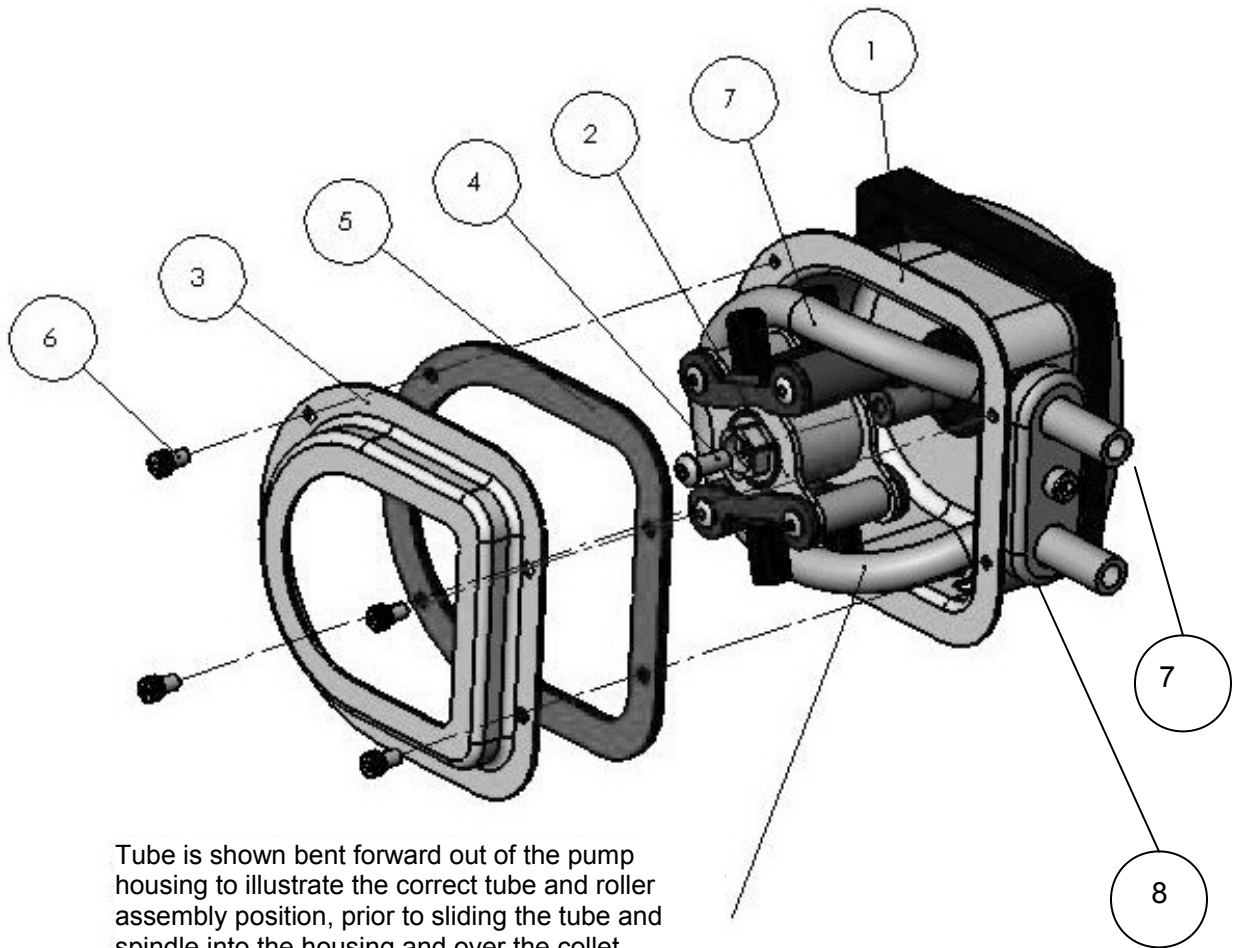


IMPORTANT: The 2001HSP is equipped with a pump cover for safety and protection against liquid spills. The cover must be installed whenever the pump is in use.

2.1 Tubing, Spindle and Cover Installation

! IMPORTANT: Disconnect pump controller from power supply BEFORE changing tubing!

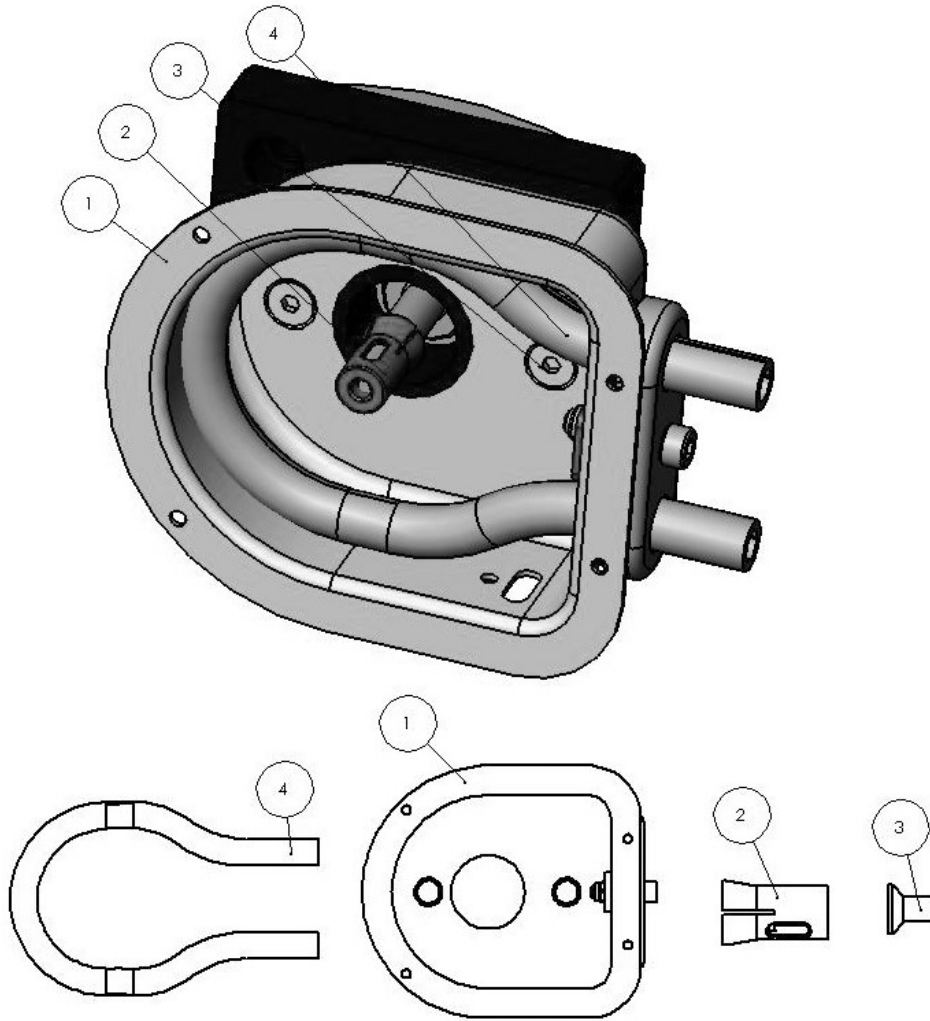
| Item No. | Qty | Part No. | Description |
|----------|-----|----------|--|
| 1 | 1 | n/a | Pump Body |
| 2 | 1 | 100329 | Roller Assembly |
| 3 | 1 | 100330 | Cover |
| 4 | 1 | 100324 | Collet Screw |
| 5 | 1 | 100305C | Cover Gasket |
| 6 | 4 | 100307C | Cover Screw |
| 7 | 1 | n/a | Tube |
| 8 | 1 | n/a | Tube Seal - Grommet (size is based on tubing size selection) |



Tube is shown bent forward out of the pump housing to illustrate the correct tube and roller assembly position, prior to sliding the tube and spindle into the housing and over the collet.

NOTE: Tube Seal (Grommet) size is based on tubing size selection.

2.2 Mounting Pump on Gearbox, Installation of Collet



| Item No. | Qty | Part No. | Description |
|----------|-----|----------|---|
| 1 | 1 | 10333 | Pump Housing with Tube Seal & Tube Seal Cover |
| 2 | 1 | 100306 | Collet |
| 3 | 2 | 100330 | Pump Mounting Screws |
| 4 | 1 | na | Hose |

2.3 Pump Mounting and Collet Installation Procedure

1. To install the pump housing on the gearbox, slide it over the central pilot on the gearbox adaptor plate. Next install and torque the mounting screws to 5 NT.M (45 in. oz).
2. Next install the collet on the gearbox shaft. There is a slot in the collet that the flat drive tang on the gearbox shaft must slide into. Orient the collet to allow the drive tang to slide into the slot and push the collet completely onto the gearbox shaft. When the collet bottoms out it is in the correct position.

2.4 Hose and Roller Installation

! IMPORTANT: Disconnect pump controller from power supply BEFORE changing tubing!

Disassembly:

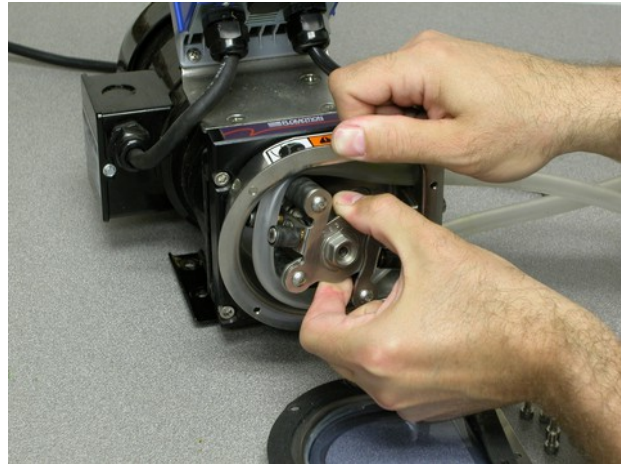
1. Remove four (4) 4mm pump cover screws.
2. Loosen Tube Seal Clamp Screw with 5mm hex wrench.



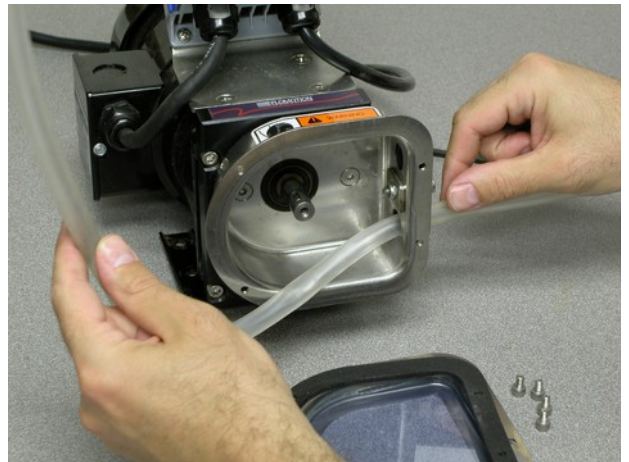
3. Remove 5mm collet screw.



4. Remove the roller assembly.



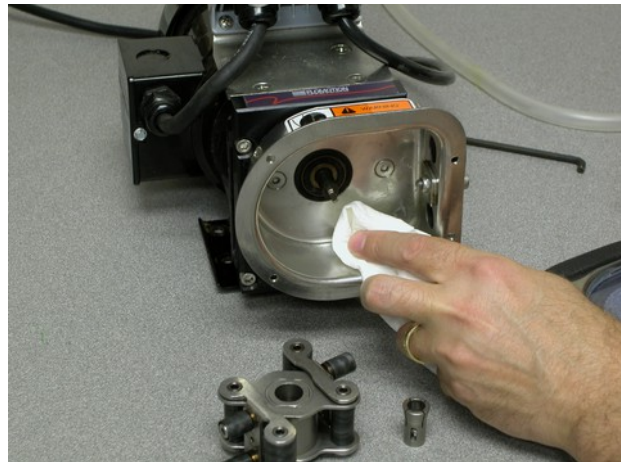
5. Remove worn pump tubing from pumphead.



6. Remove and inspect collet for wear. Note that the collet may remain in the roller assembly when the roller assembly is removed from the pump shaft.



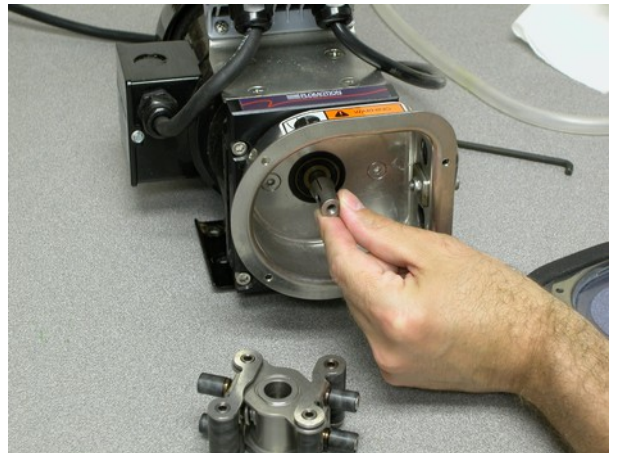
7. Clean inside of pump housing with damp rag or an appropriate cleaning solution to remove any chemical or tubing residue.



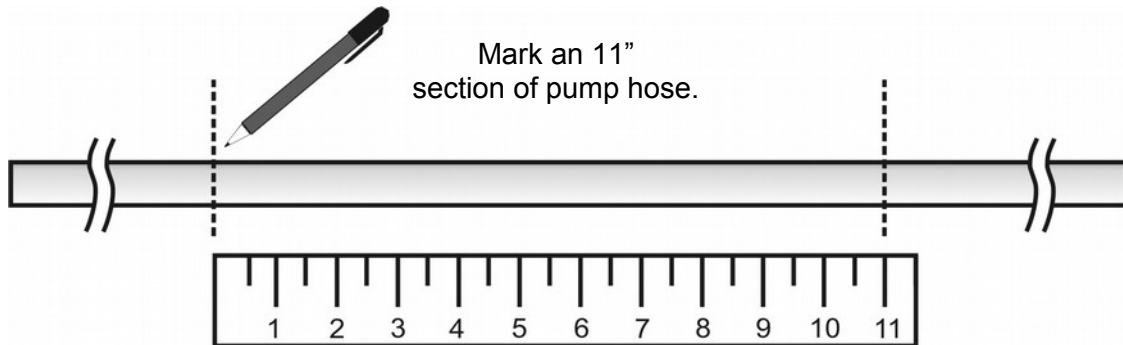
Reassembly:

1. Reinstall the collet onto the pump shaft.

There is a slot in the collet that the flat drive tang on the gearbox shaft must slide into. Orient the collet to allow the drive tang to slide into the slot and push the collet completely onto the gearbox shaft. When the collet bottoms out it is in the correct position.



2. Mark an 11" section of tubing, which will be the portion, contained within the pump. Leave sufficient excess on the suction and discharge sides of the pump for the desired connections. If you leave the excess intake tubing in a coil near the pump it will make it easy to feed a new section of tubing through the rollers when the section in the pump becomes worn.

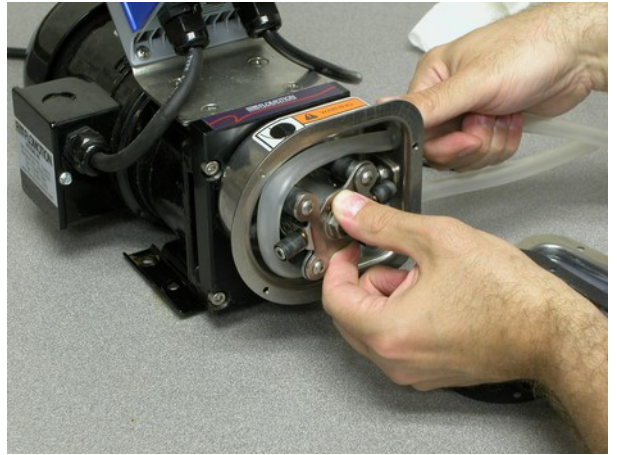


3. Install tubing into the pumphead.

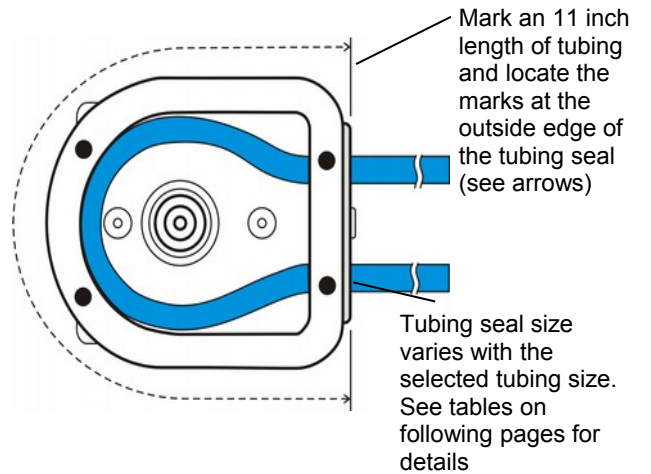
Note: During tubing installation the loop of tubing may develop a twist. Examine the tube for this condition and if needed turn one end of the tube where it exits the tubing clamp to eliminate the twist. Correctly adjusted the tubing loop will be flat and parallel to the front face of the pump housing.



4. Loop tubing around roller assembly between guides as shown. Remove slack in tubing while rotating roller assembly and sliding onto collet.



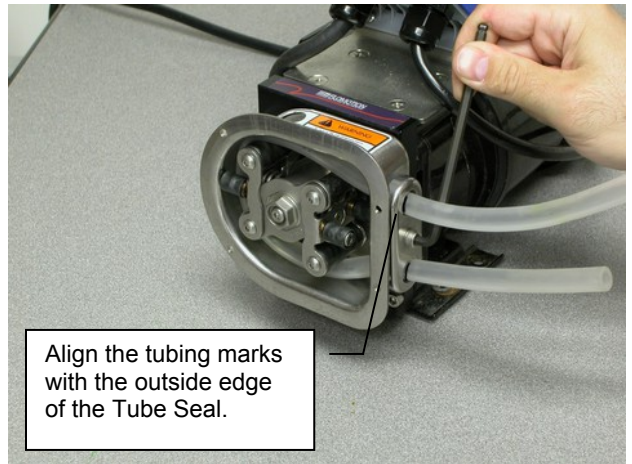
5. Align marks on tubing with outside edge of the tubing clamp.



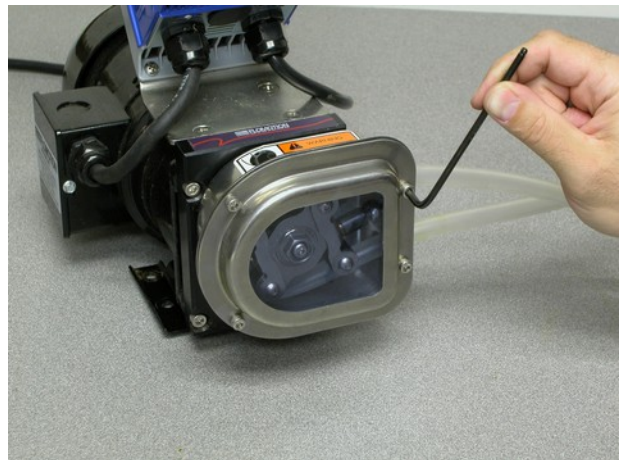
6. Reinstall collet screw firmly.



7. Tighten tube seal clamp screw. Be sure to tighten firmly to prevent “tubing walk.” Tubing walk can occur when the tube seal is the wrong size or is not sufficiently tight to keep the rollers from pulling the tubing through the pump as it rotates.

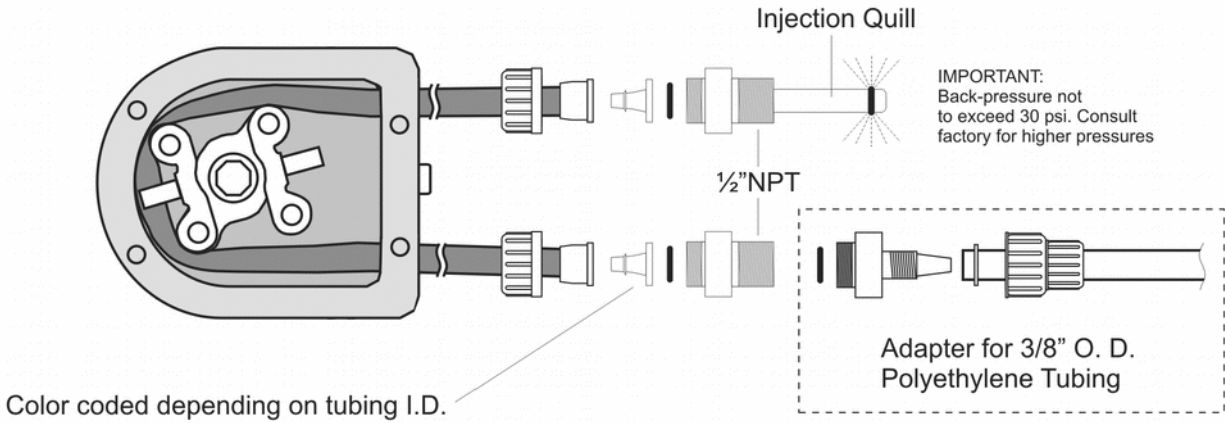


8. Inspect pump cover gasket. Replace if damaged. Reinstall pump cover gasket and cover.



2.5 Tubing & Connections

Tubing adapters are available for many configurations. See the drawing below for details.



| 2001HSP Estimated Pumping Capacity* | | | | | | |
|-------------------------------------|------------------|------------------|---------------------|-------------------|-------------------|--------------------|
| Tubing No. | #119 | #120 | #15 | #24 | #35 & 121 | #36 & 122 |
| Tubing Size (bore) | 1.6mm (1/16") | 3.2 mm (1/8") | 4.8 mm (3/16") | 6.4 mm (1/4") | 8 mm (5/16") | 9.6 mm (3/8") |
| ml/min @ 45 rpm | 20 (0.32 gph) | 85 (1.34 gph) | 184.5 (2.92 gph) | 333 (5.28 gph) | 495 (7.85 gph) | 648 (10.27 gph) |
| ml/rev | 0.45 | 1.88 | 4.1 | 7.4 | 11 | 14.4 |

*Actual flow rates may vary

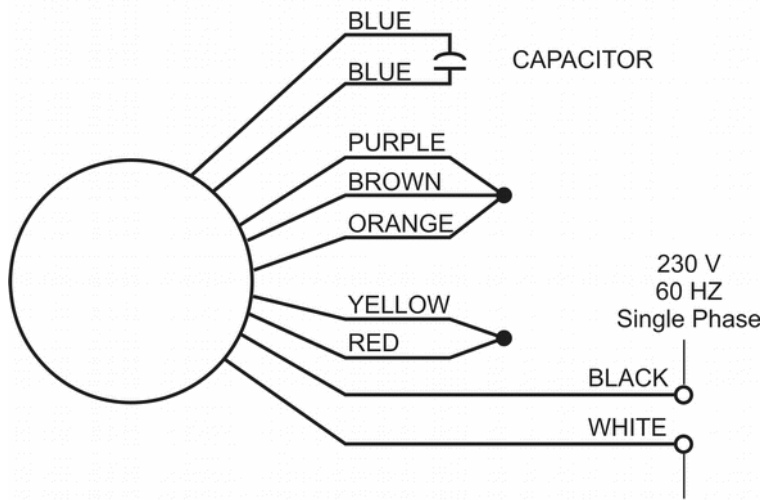
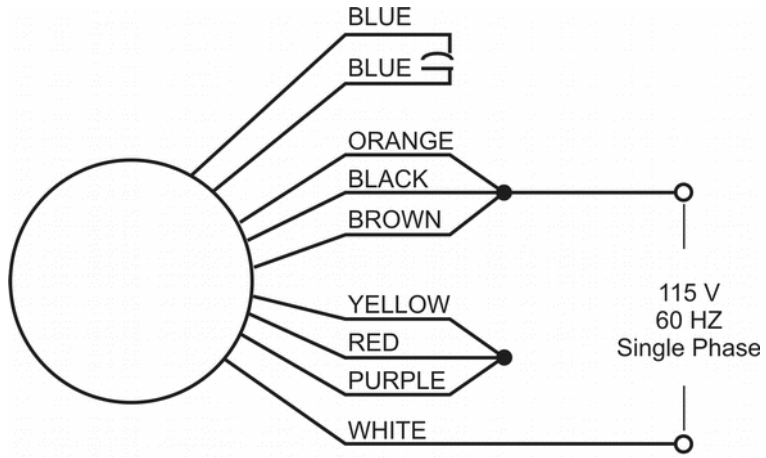
| Tubing and Accessory Part Numbers | | | | | |
|--|------------------------------|-------------|-------------|------------------------------|------------|
| FLOPRENE TUBING - 50 Ft Length (Santoprene) | | | | | |
| FLO.016.024 | 1.6mm (1/16") bore | 100 PSI max | FLO.064.024 | 6.4mm (1/4") bore | 50 PSI max |
| FLO.032.024 | 3.2mm (1/8") bore | 100 PSI max | FLO.080.024 | 8.0mm (5/16") bore | 30 PSI max |
| FLO.048.024 | 4.8mm (3/16") bore | 70 PSI max | FLO.096.024 | 9.6mm (3/8") bore | 30 PSI max |
| CONNECTORS / ADAPTORS | | | | | |
| 1/2" NPTM x pump tubing (bore as required) | | | | | |
| 3/8" PE tubing x pump tubing (bore as required) | | | | | |
| Two-piece Color Coded Hose Barb & Collar Set. | | | | | |
| PUMPHEAD HOSE SEALS | | | | | |
| 100329 | Hose Seal 1.6mm (1/16") bore | | 100332 | Hose Seal 6.4mm (1/4") bore | |
| 100330 | Hose Seal 3.2mm (1/8") bore | | 100333 | Hose Seal 8.0mm (5/16") bore | |
| 100331 | Hose Seal 4.8mm (3/16") bore | | 100334 | Hose Seal 9.6mm 3/8") bore | |

Tubing Connector Adapter Order Guide

TUBING CONECTORS ONLY – Does not include hose barb and collar set.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|---------------------------------|---|---|---|---|---|---|
| 1 – 3 Process Connection Size | | | | | | | |
| 038 | 3/8" OD - PE Tubing Only | | | | | | |
| 050 | 1/2" OD – PE Tubing or 1/2" NPT | | | | | | |
| 4 Process Connection Type | | | | | | | |
| T | PE Tubing | | | | | | |
| N | NPT | | | | | | |
| 5 – 6 Pump Tubing Side | | | | | | | |
| PT | Pump Tubing Side | | | | | | |
| 7 Connector Body Material of Construction | | | | | | | |
| P | PVC | | | | | | |
| T | PTFE (Teflon) | | | | | | |
| K | PVDF (Kynar) | | | | | | |
| X | Other | | | | | | |
| 8 O-Ring Material of Construction | | | | | | | |
| V | Viton | | | | | | |
| E | EPDM | | | | | | |

3.0 - Motor Wiring



4.0 - Dimensions

