

# A measured step forward™

Operations & Maintenance Manual

**PERIDOS**

**Peristaltic Chemical Feed Pumps**



## System Overview

The PERIDOS Chemical Feed Pump consists of a motor, gear-box and peristaltic pump.

### 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

Lutz-JESCO America, Inc. warrants the PERIDOS 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 Lutz-JESCO America, Inc., freight prepaid, for examination (contact Lutz-JESCO America, Inc. for authorization prior to returning any product). Lutz-JESCO America, 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. Lutz-JESCO America, Inc. makes no warranty that its products are compatible with any other equipment, or to any specific applica-



tion, 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 Lutz-JESCO America, 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.

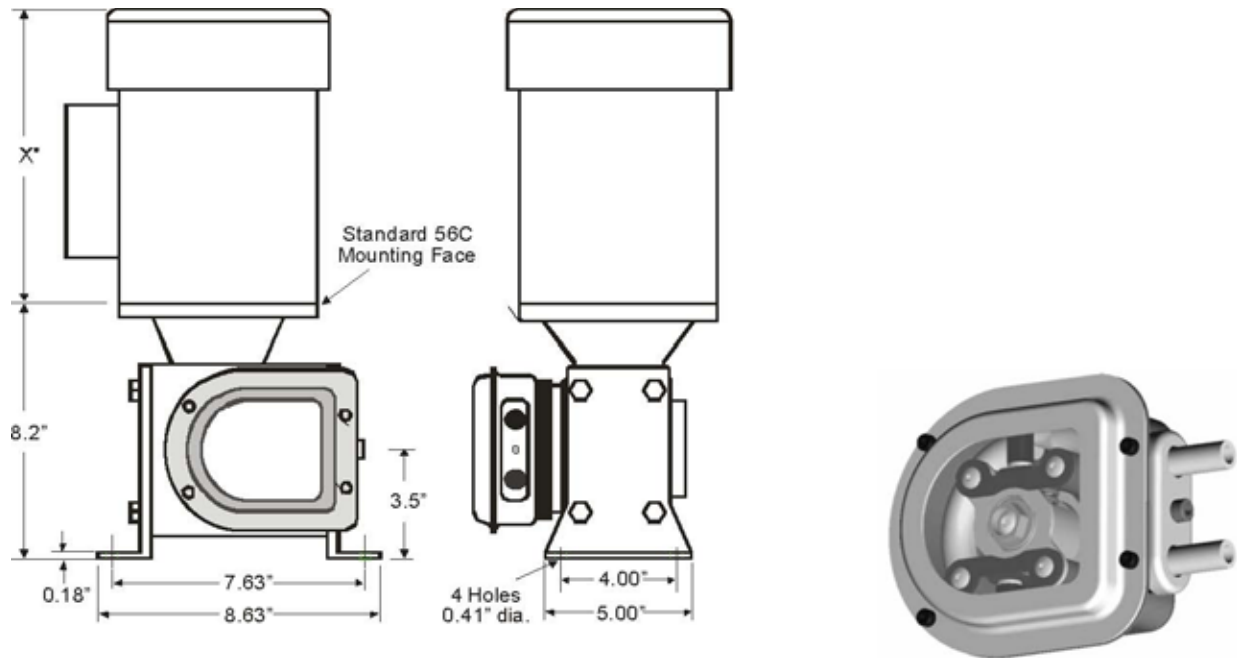
### 1.4 Customer Modification

Lutz-JESCO America, 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. Lutz-JESCO America, Inc. cannot assume responsibility for any modifications not authorized by its engineering department.

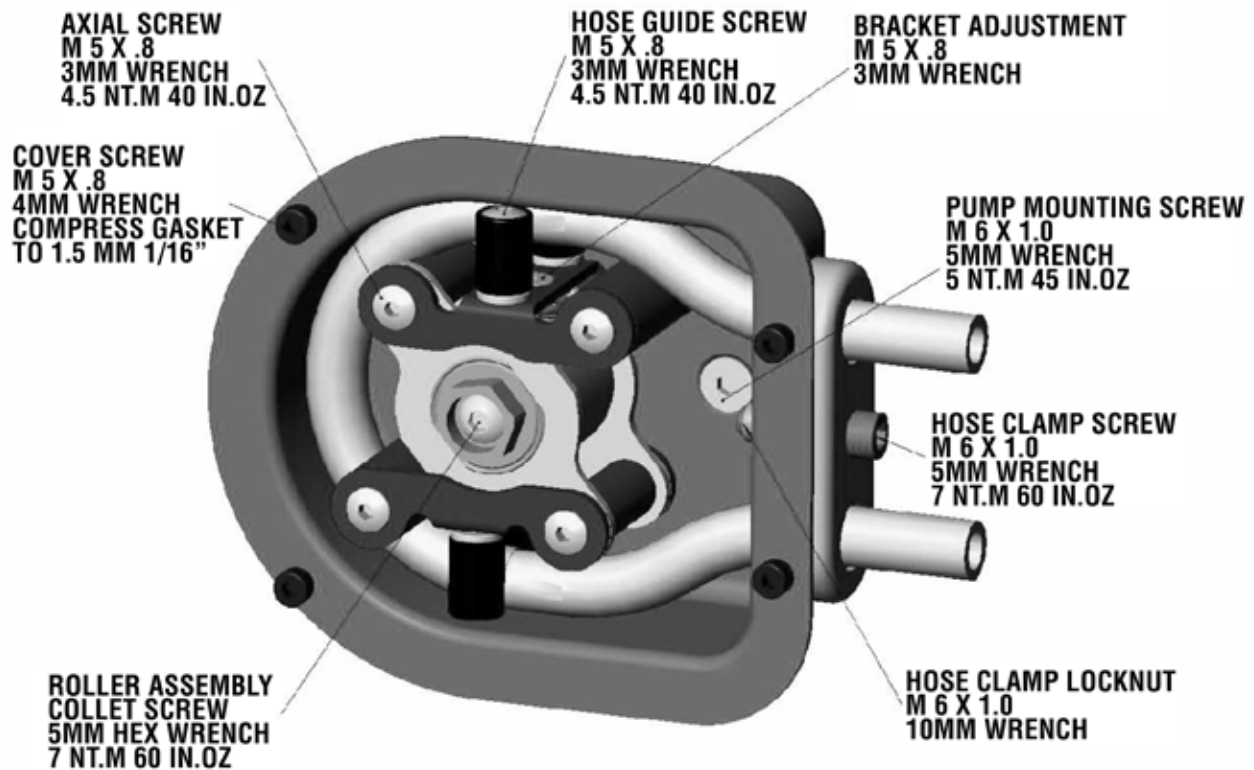
### 1.5 Information for Returning Pumps

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 Lutz-JESCO America, Inc. or its distributor.

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.



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

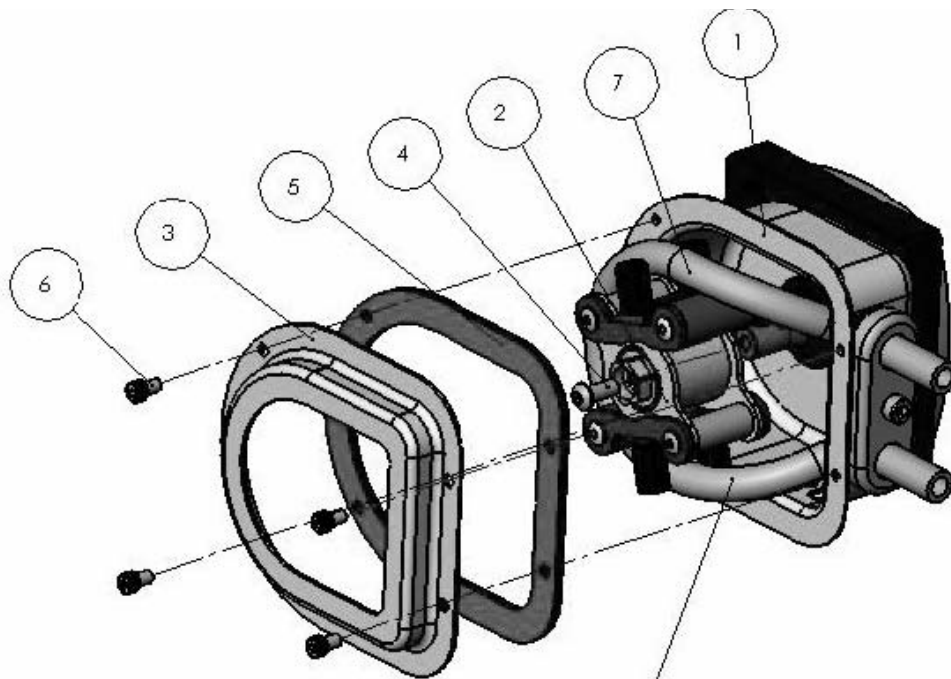


**IMPORTANT:** The PERIDOS Series is equipped with a pump cover for safety and protection against chemical spills. The cover must be installed whenever the pump is in use.

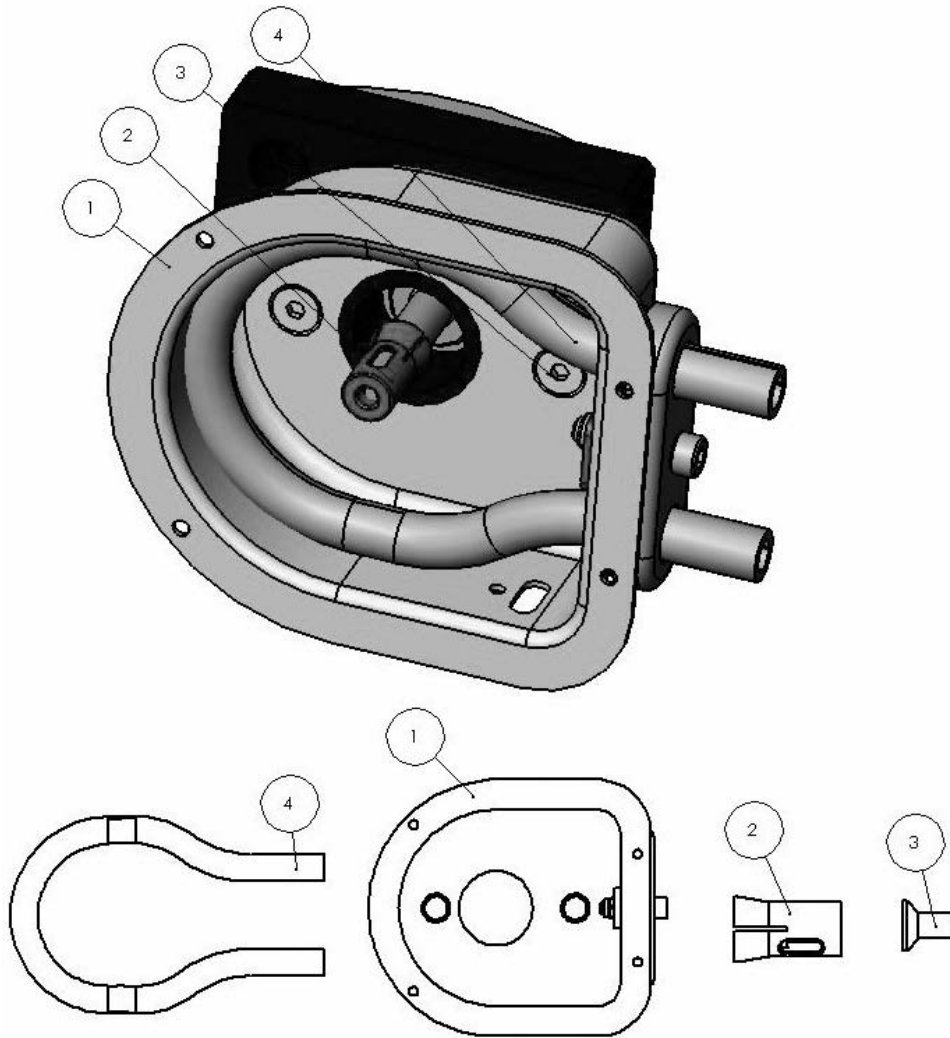
## 2.1 Tubing, Spindle and Cover Installation

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

Item No.	Qty	Part No.	Description
1	1	n/a	Pump Collet & Hose Assy.
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	Hose



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



Item No.	Qty	Part No.	Description
1	1	10333	Pump Housing with Hose Seal
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! ! IMPORTANT Make sure pump suction and discharge lines are completely drained and isolated. Note that the hose seal size must match the selected tubing size.

### 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.



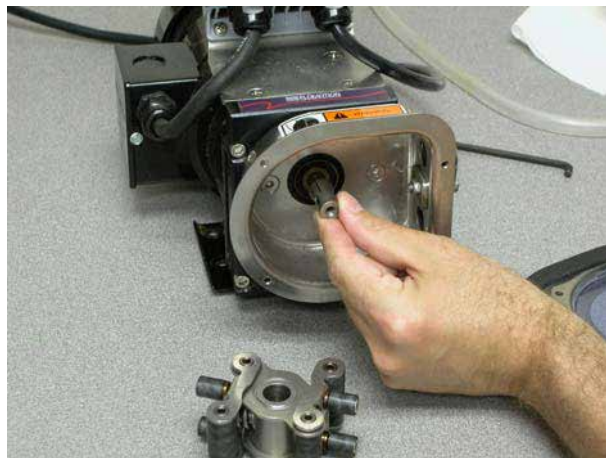
7. Clean inside of pump housing with damp rag or an appropriate cleaning solution to remove any chemical or tubing residue.



**Reassembly:**

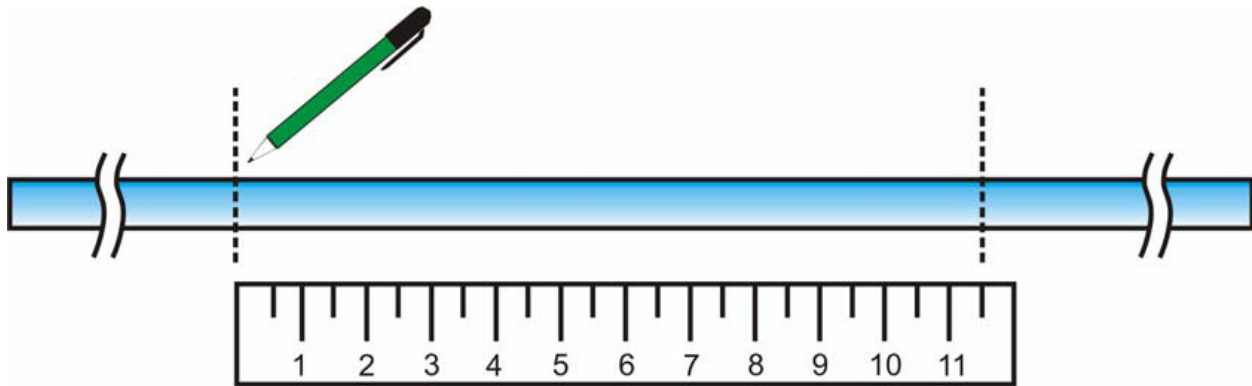
1. Reinstall the collet onto the pump shaft.

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.



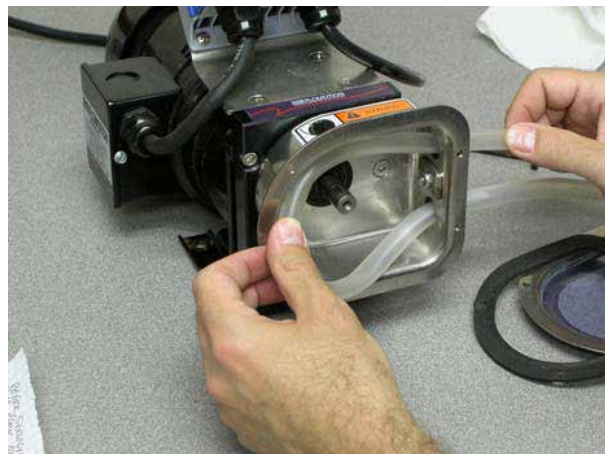


2. Mark an 11.5" section of hose, which will be the portion contained within the pump. Leave sufficient excess on the suction and discharge sides of the pump for the desired connections. If you leave the excess intake hose in a coil near the pump it will make it easy to feed a new section of hose through the rollers when the section in the pump becomes worn.



3. Install tubing into the pumphead.

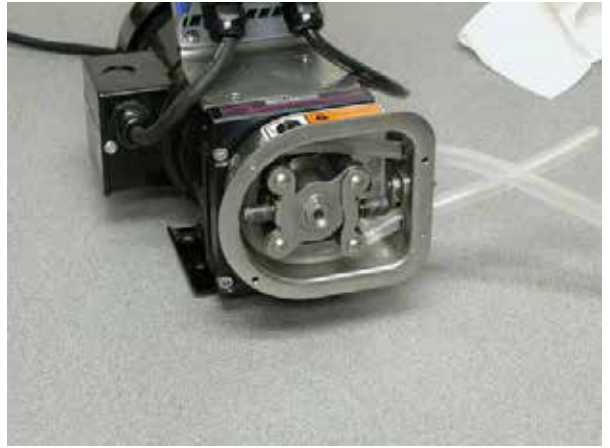
Note: during hose installation the loop of hose may develop a twist. Examine the hose for this condition and if needed turn one end of the hose where it exits the hose clamp to eliminate the twist. Correctly adjusted the hose loop will be flat and parallel to the front face of the pump housing.



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 inside edge of pump housing.



6. Reinstall collet screw firmly.



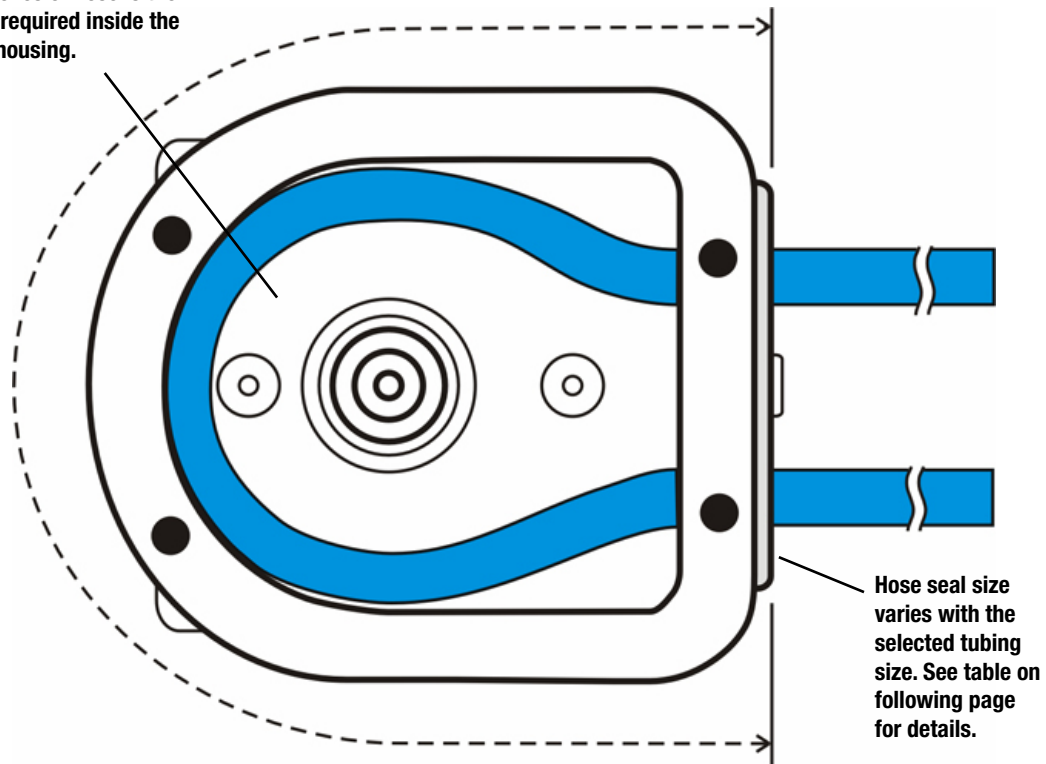
7. Tighten hose seal clamp screw. Be sure to tighten firmly to prevent "tubing walk." Tubing walk can occur when the hose seal is the wrong size or is not sufficiently tight to keep the rollers from pulling the hose through the pump as it rotates.



8. Inspect pump cover gasket. Replace if damaged. Reinstall pump cover gasket and cover. 11.5 inches



11.5 inches of hose is the length required inside the pump housing.



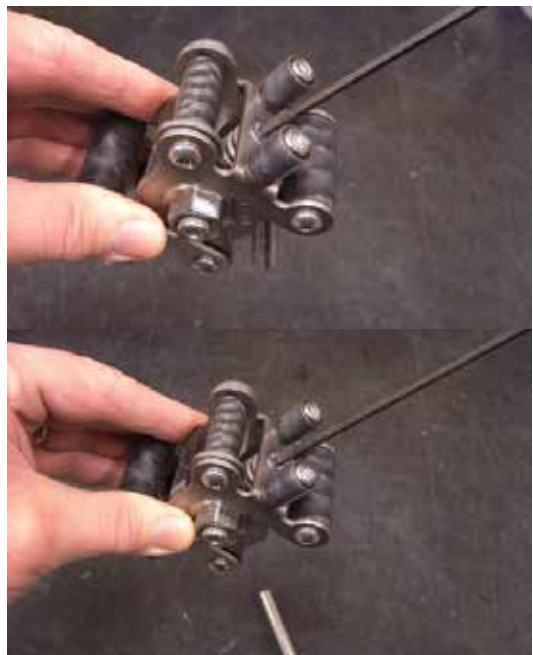
9. Slip the 0.375" gage pin under one of the large rollers.



10. Turn the tension adjustment screw clockwise until snug.  
Do not over tighten.



11. Hold the roller Assembly as shown and turn the adjustment screw slowly counter clockwise until the gage pin falls out.



12. Mark this position on the head of the adjustment screw with a line using a permanent marker for reference.

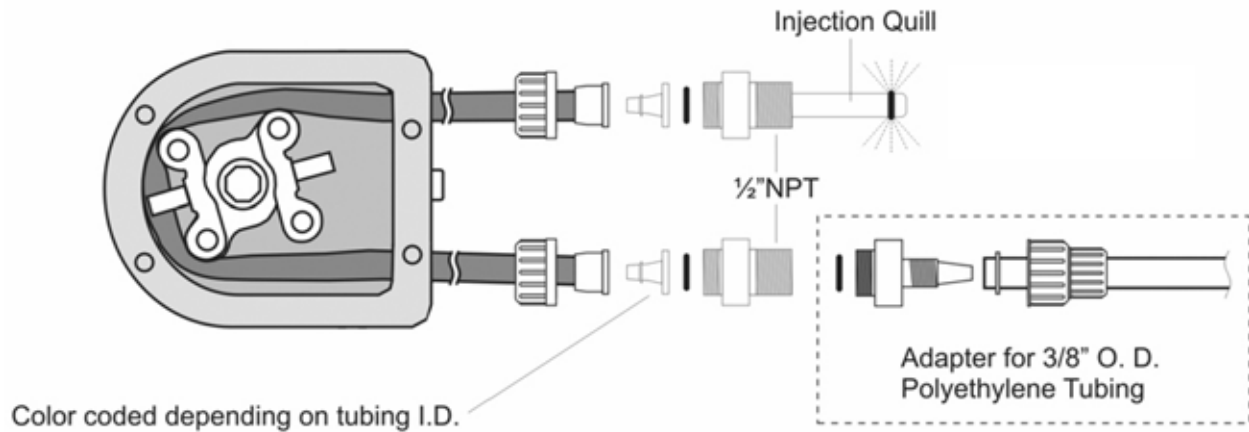


**Repeat this process for the other roller.**



## 2.5 Tubing & Connections

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

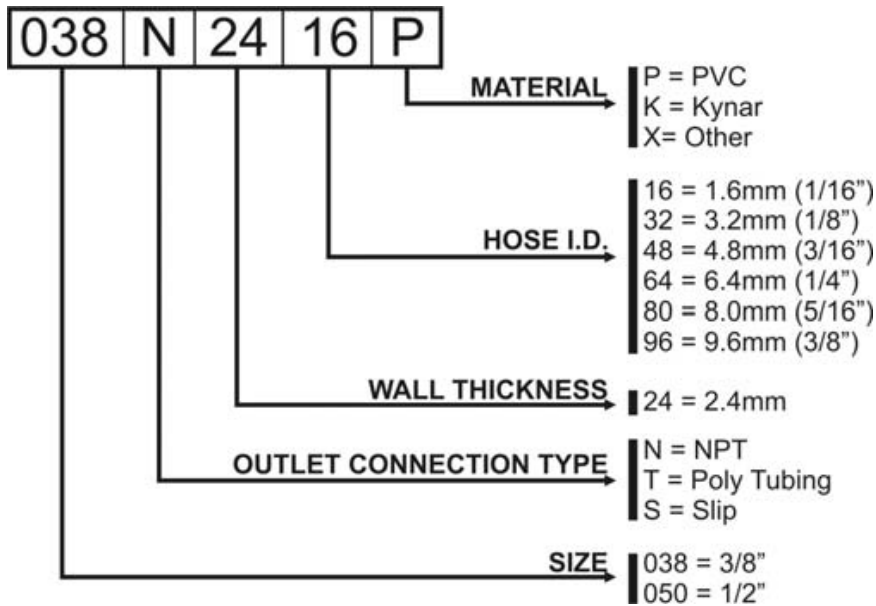


2001V & VE Estimated Pumping Capacity*							
Tubing No.	#119	#120	#15	#24	#35	#36	
Tubing Size	1.6mm bore (1/16")	3.2mm bore (1/8")	4.8mm bore (3/16")	6.4mm bore (1/4")	8mm bore (5/16")	9.6mm bore (3/8")	
Extended Range	ml/min @ 0.6-72.5 rpm	27-33 (0.0044 - 0.52 gph)	1.13 - 136 (0.018 - 2.2 gph)	2.34 - 283 (0.037 - 4.5 gph)	3.78 - 457 (0.060 - 7.2 gph)	6.0 - 725 (0.095 - 11.5 gph)	8.4 - 1015 (0.133 - 16.1 gph)
	ml/min @ 1.6-220 rpm	0.81 - 99 (0.013 - 1.57 gph)	3.38 - 414 (0.053 - 6.6 gph)	7.0 - 858 (0.111 - 13.6 gph)	11.3 - 1386 (0.179 - 22 gph)	18 - 2200 (0.29 - 34.9 gph)	27-33 (0.0044 - 0.52 gph)
Standard Range	ml/min @ 2.4-72.5 rpm	1.08 - 33 (0.017 - 0.52 gph)	4.5 - 136 (0.07 - 2.2 gph)	9.36 - 283 (0.15 - 4.5 gph)	15.1 - 457 (0.24 - 7.2 gph)	24 - 725 (0.38 - 11.5 gph)	27-33 (0.0044 - 0.52 gph)
	ml/min @ 8.8-220 rpm	3.96 - 99 (0.063 - 1.57 gph)	16.5 - 414 (0.26 - 6.6 gph)	34.3 - 858 (0.54 - 13.6 gph)	55.4 - 1386 (0.88 - 22 gph)	88 - 2200 (1.39 - 34.9 gph)	27-33 (0.0044 - 0.52 gph)
ml/rev*	0.45	1.88	3.9	6.3	10	14	



<b>Tubing and Accessory Part Numbers</b>	
<b>TYGOPRENE TUBING - 50 Ft Length</b>	
TGP.032.024.0	3.2mm (1/8") bore 60 PSI max
TGP.048.024.0	4.8mm (3/16") bore 50 PSI max
TGP.064.024.0	6.4mm (1/4") bore 40 PSI max
TGP.080.024.0	8.0mm (5/16") bore 30 PSI max
TGP.096.024.0	9.6mm (3/8") bore 30 PSI max
<b>FLOPRENE TUBING - 50 Ft Length (Santoprene)</b>	
FLO.016.024.0	1.6mm (1/16") bore 100 PSI max
FLO.032.024.0	3.2mm (1/8") bore 100 PSI max
FLO.048.024.0	4.8mm (3/16") bore 70 PSI max
FLO.064.024.0	6.4mm (1/4") bore 50 PSI max
FLO.080.024.0	8.0mm (5/16") bore 30 PSI max
FLO.096.024.0	9.6mm (3/8") bore 30 PSI max
<b>CONNECTORS / ADAPTORS</b>	
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. (See back for part number and ordering information)	
<b>PUMPHEAD HOSE SEALS</b>	
100329 Hose Seal 1.6mm (1/16") bore	
100330 Hose Seal 3.2mm (1/8") bore	
100331 Hose Seal 4.8mm (3/16") bore	
100332 Hose Seal 6.4mm (1/4") bore	
100333 Hose Seal 8.0mm (5/16") bore	
100334 Hose Seal 9.6mm (3/8") bore	

**Tubing Connector Adapter Order Guide**



## 3.0 – 2001VE Gearbox

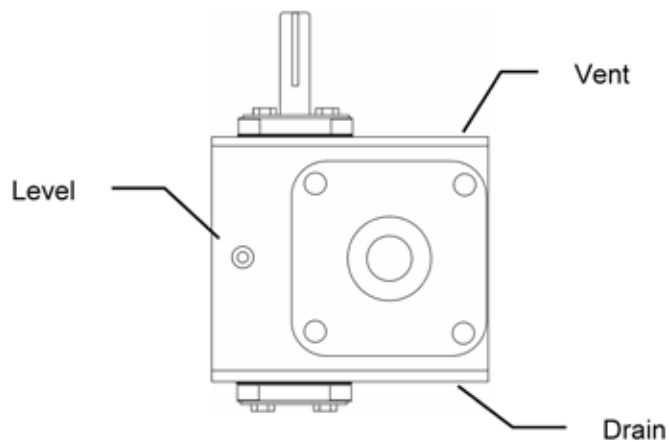
### 3.1 2001VE Gearbox

#### Run-in Period

The maximum efficiency of worm reducers is obtained after a "Run-In" period. The length of time required will depend on the load applied and may be two to four hours at rated load and will be considerably longer at lighter loads. During Run-In a slightly higher than normal current and temperatures along with lower efficiency and output torque can be expected.

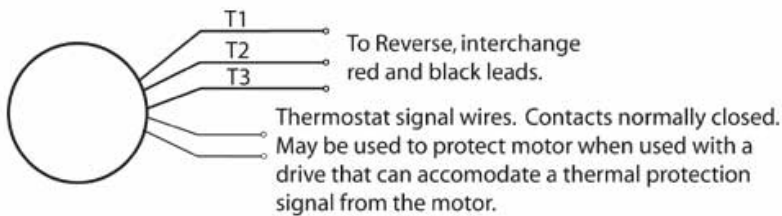
#### 3.2 Maintenance

- Frequently check the oil level.
- Change lubricant every 6,000 (240 days) working hours or after 2 years (synthetic lubricants only).
- Combine a lubricant change with a thorough cleaning of the gear unit.
- Extreme working conditions (high air humidity, aggressive media and large temperature variations) will reduce the interval between lubricant changing intervals.
- All drives are shipped with Mobil SHC 634 or equal synthetic oil.



### 3.3 2001VE MOTOR / GEARBOX SPECIFICATIONS

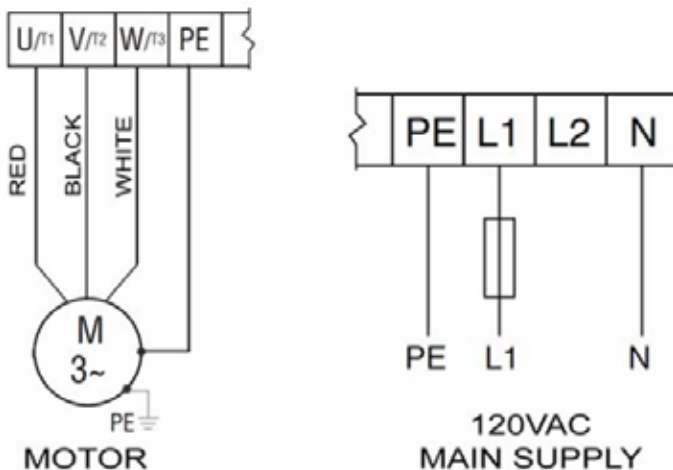
- Motor Type: Permanent Split Capacitor or 3-Phase Inverter Duty
- Roller Rotation: Clockwise (recommended for standard installation as pictured in this manual)  
Counter-clockwise (only for special installation, must flip / exchange suction and discharge lines!)
- Insulation: Class B minimum
- Finish: Powder-coat gloss black. (Thermostat wires not used)



Inverter Duty 3 Phase 230 V  
6 to 90 Hz

(Thermostat wires not used)

### 3.4 2001VE Power & Motor Wiring



## 4.0 – 2001VE Drive Controller



### 4.1 Operation and Wiring

For complete details about the motor drive controller please refer to the included SM Vector Operating Instructions booklet. Shown on the following pages are details specific to the operation with the 2001HE Peristaltic Pump operation.

### 4.2 Programming

The programming differs from the factory defaults shown in the SM Vector Operating Instruction booklet only in relation to the following parameters:

P103	Maximum Frequency	75 Hz (60HZ for explosion proof motor)
P104	Acceleration Time	5 sec
P105	Deceleration Time	5 sec
P121	TB-13A Input	(2) AUTO Reference 4-20mA
P161	Speed at Maximum Signal	75 Hz
P162	Analog Input Filter	0.5 sec
P166	Carrier Frequency	(2) 8kHz

### 4.3 Auto / Manual Speed Toggle Switch

The Auto/Manual toggle switch is located on the right side of the motor drive controller.

When the switch is placed in the MANUAL position the pump speed may be controlled by the up and down arrow keys on the controller.

When the switch is placed in the AUTO position the speed is controlled by an external 4-20mA signal applied to pin 2 (-) and pin 25 (+) of the terminal block..

The Auto/Manual switch is wired to pins 13A and 4 on the terminal block.

## 5.0 - Miscellaneous Diagrams

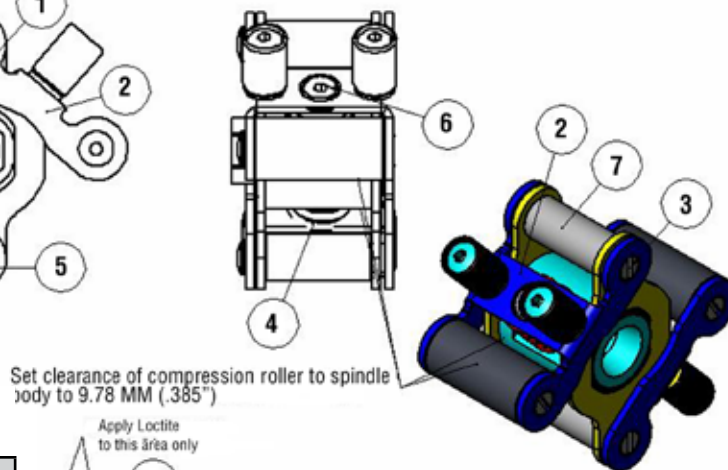
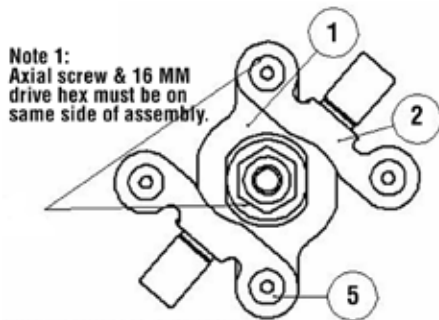
### 5.1 Roller Assembly

#### Reassembly Procedure for the Pump Roller

1. Assemble the previously built up roller bracket assembly (2) to the spindle (1) by sliding an axial (3) thru the roller bracket assembly, spindle (1) and idler roller (9). The axial will only assemble to the roller bracket one way. However, the roller bracket assembly must be oriented correctly with the spindle at this stage or correct roller bracket assembly is not possible. The side of the spindle with the axial screw must be on the same side as the 16 MM drive hex on the spindle. Refer to Note 1. Also, when the roller bracket is moved into final position, the counter sunk hole for the bracket adjustment screw (6) must line up with the threaded hole provided for it. When both these orientations are correct, finish this stage by installing the axial screw and torqueing it to 4.5 NT.M (40 in. oz.) Repeat this process for the 2nd roller bracket.
2. Assemble the springs (4) by lifting the roller bracket away from the spindle and placing the spring in the pocket

provided. Next, begin installation of the bracket adjustment screw by applying blue Loctite to the end of the screw. Coat 6 MM (1/4") of the screw with Loctite. Avoid excessive Loctite. Do not apply Loctite to the female thread of the spindle. Insert the bracket adjustment screw thru the roller bracket. Using a 3 MM allen wrench turn the bracket adjustment screw in until the clearance between the compression roller and body of the spindle is 9.78 MM (.385"). This adjustment should be made within 10 minutes of assembling the screw to the spindle to avoid curing of the Loctite prior to final adjustment. Repeat the spring and adjustment screw installation for the 2nd roller bracket. Next allow the Loctite to cure for 6 hours at 24 degrees C (70 degrees F).

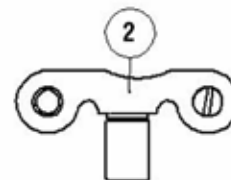
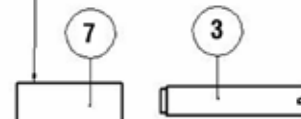
3. After the Loctite has cured, check to see that none has leaked into the collet bore. If any has, remove it to prevent bonding the collet to the roller.
4. The roller assembly is now complete. Refer to pump assembly instructions for further instructions.
5. During repair, inspect all parts and replace any worn or damaged parts as required.



Item No.	Qty	Part No.	Description
1	1	100300	Spindle.
2	2	100331	Bracket Assembly
3	2	100314	Axial
4	2	100323	Spring
5	2	100315	Axial Screw
6	2	100319	Bracket Adjustment Screw
7	2	100317	Idler Roller



Apply a lithium based grease containing Moly Disulphide to idler roller prior to assembly.





## 5.2 Hose Seal Installation

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	100308	Hose Clamp
2	1	100326	Lock Nut
3	1	100310	Hose Clamp Screw
4	1	100309-8B	Hose Seal
5	1	100332	Pump Housing

### HOSE SEAL INSTALLATION

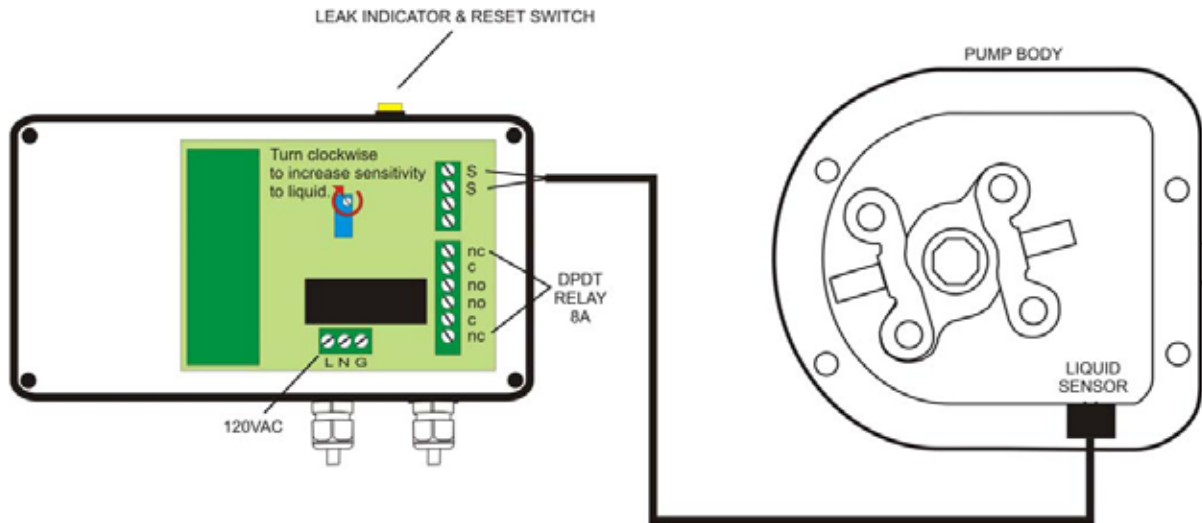
**HOSE SEAL INSTALLATION PROCEDURE**

1. Check to see that the hose seal and the hose used match in size. The hose should be close slip fit to the holes in the hose seal.
2. Begin by applying grease or antiseize to the front of the hose clamp screw (3). This will minimize the chance of galling the stainless components.
3. Nest the hose seal (4) and hose clamp (1) together. Nest insert the hose clamp screw thru the small center hole on the pump housing (5). Start the locknut (2) on the hose clamp screw and tighten the screw until the hose clamp tightens slightly to the housing. Do not over tighten at this stage or the hose will be difficult to install later in the pump assembly process.
4. Align the hose seal and clamp with the holes in the housing to insure the hose when it is installed.
5. During hose adjustment it is not necessary to remove the cover to loosen the hose clamp screw. An internal nut plate holds the locknut from turning, permitting the hose clamp screw to loosen externally.
6. During repair, inspect and replace any worn or damaged parts.

## 6.0 2001 Series Tubing Rupture Detector

### Rupture Detector System Overview

The 2001 Series Tubing Rupture Detector



### 6.1 Alarm Causes

A rupture alarm is triggered by the presence of a conductive fluid in the pump. When the fluid bridges the two stainless steel electrodes on the LIQUID SENSOR the alarm is triggered.

### 6.2 What to do in an alarm condition

To clear the alarm, first stop the pump and disconnect power from the pump controller. Remove the pump cover and remove the ruptured pump tubing. Clean the inside of the pump with a soft rag. Remove any liquid or tubing debris from the inside of the pump and the area around the LIQUID SENSOR. Inspect rollers and clean if necessary.

### 6.3 Resetting the alarm

Press the yellow pushbutton (LEAK INDICATOR & RESET SWITCH) on the top of the Tubing Rupture Detector to reset the alarm.

### 6.4 Resuming Service

Install a fresh tubing insert and the pump is ready to resume service.

## 6.5 Interfacing

A dual 8 Amp DC DPDT relay is provided to signal or control an external device during an alarm condition. Connect the Tubing Rupture Detector NC relay contacts to pins 1 & 4 of the SMVector pump controller.

Program the SMVector Pump Controller step P100, changing the value from 0 to 1.

To do this:

1. Press the M key.
2. Enter password 0225 by holding down the UP arrow key then press the M key when done.
3. P100 is shown on the display.
4. Press the M key and change the P100 value from 0 to 1(Terminal Strip), then press the M key to save your change.

The pump is now set to run only when the Tubing Rupture Detector is not in alarm condition.

## 6.6 Calibration

Turn the sensitivity adjusting screw counter clockwise several turns. Apply a wet rag to the LIQUID SENSOR electrodes. Adjust the sensitivity clockwise slowly until the alarm trips.

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Accessories



Chemical Feed Systems



Measuring and Control Technology



Metering Pumps



Transfer Pumps

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