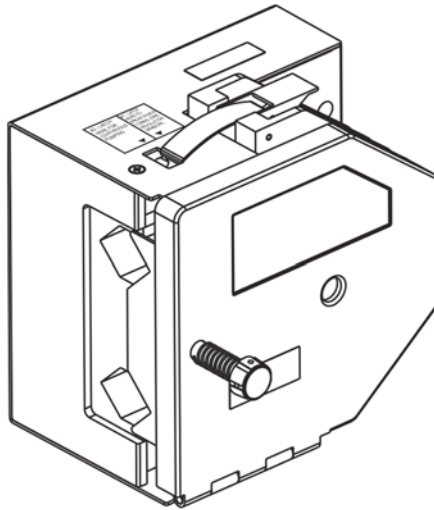


MASTERFLEX[®] I/P[®]

**HIGH-PERFORMANCE
HAZARDOUS-DUTY
PUMP HEAD
77600-82**



WARNINGS:



Turn drive off before removing or installing tubing. Fingers or loose clothing could be caught in the rollers. Stop the drive when changing the tubing or its position in the rotor mechanism (the rotor is partially exposed when the LOADING LEVER is in the open position).



Periodically examine bearings and moving parts for excessive wear that can cause overheating of surfaces from friction.



Select tubing for chemical compatibility. Ground or electrically bond containers during fluid transfer to avoid electrostatic charge buildup that can ignite vapors when discharged. Refer to NFPA 77.

ATEX Rating: The models are rated as Group II, Category 3 (Zone 2) equipment using constructional safety (c) protection, with a T6 (<85° C) temperature classification for use in Gas Group IIC (acetylene) environments:

E  II 3 G c IIC T6

North American Rating: Class I, Division 2, Groups A, B, C, & D, T6

EXPLANATION OF SYMBOLS



CAUTION: Risk of danger. Consult the Operator's Manual for nature of hazard and corrective actions.



CAUTION: Risk of crushing. Keep fingers away from rotor while pump is in operation. Stop pump before loading or unloading tubing.



WARNING: Risk of Ignition. Periodically examine bearings and moving parts for excessive wear that can cause overheating of surfaces from friction. Ground or electrically bond containers during fluid transfer to avoid electrostatic charge buildup that can ignite vapors when discharged.



WARNING: PRODUCT USE LIMITATION

This product is not designed for, nor intended for, use in patient-connected applications; including, but not limited to, medical and dental use, and, accordingly have not been submitted for FDA approval. FDA approval.

PUMP FOR LIQUIDS – ORIGINAL INSTRUCTIONS

MASTERFLEX, I/P, EASY-LOAD – Reg TM Cole-Parmer

C-FLEX, NORPRENE, PHARMED, TYGON — Reg TM Saint-Gobain Performance Plastics Corp.

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INTRODUCTION

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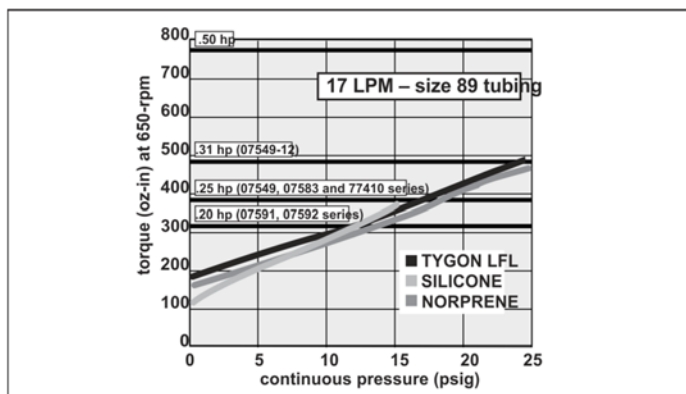
MASTERFLEX®

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The MASTERFLEX® I/P® High Performance Pump Head delivers in excess of 17 L/min flow at normal MASTERFLEX operating speeds and pressures. It is designed for optimal pumping in the clockwise direction. There are two mounting positions. Tubing entry and exit are either on the left side or on top of the pump when mounted on a MASTERFLEX® I/P® drive. The pump will operate with any MASTERFLEX® I/P® drive that accepts two or more Pump Heads. However, maximum operating pressure depends on the drive and tubing material selected, as shown below.



SETUP AND OPERATION

Pump Drive Compatibility

The High Performance Pump Head has a standard shaft interface to accommodate MASTERFLEX® I/P® Pump Drives.

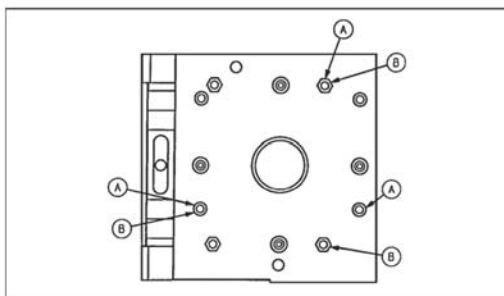
Mounting Pump Head to Drive

1. Check that pump drive is turned OFF.
2. Make sure the plastic tang boot (see Figure 4) is installed on the pump shaft tang. (Operation without the boot could cause damage to the pump shaft.)
3. Align pump shaft tang with slot in motor shaft.
4. Secure pump to pump drive with the four mounting screws (furnished).
 - a. For left side tubing entry and exit, use round mounting holes.
 - b. For top tubing entry and exit, use hexagonal mounting holes.
 - c. When using MASTERFLEX console drives, 77410 and 77411 series, mount the pump according to Figure 1. Use the holes labeled "A" for left tubing entry/exit pump orientation; use holes labeled "B" for top entry/exit orientation.

Selecting Tubing

Pumps accept only I/P® 70, I/P® 88 and I/P® 89 tubing. Use only MASTERFLEX tubing which is surface printed with the tubing designation.

Figure 1. Mounting Holes for Console Drive, 77410 and 77411 Series



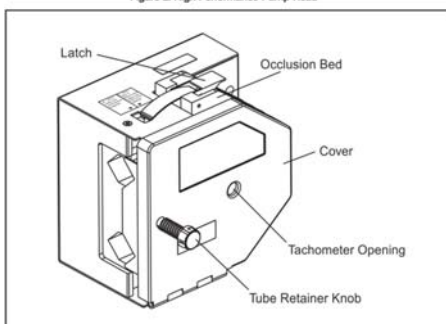
Loading Tubing



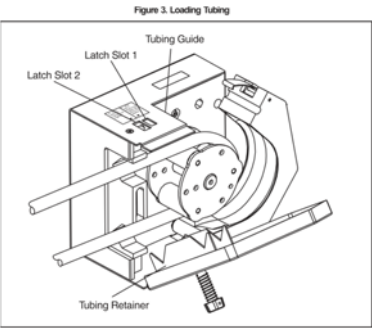
WARNING: Turn off drive before removing or installing tubing. Fingers or loose clothing could be caught in the rollers.

1. Rotate the tubing retainer knob, Figure 2, counterclockwise to release the retainer, then pull to open the cover.
2. Lift the latch to open the occlusion bed.

Figure 2. High-Performance Pump Head



3. Insert the MASTERFLEX tubing inside the tubing guide and around the rotor with the ends of the tubing extending out of the tubing entrance and tubing exit as shown in Figure 3. Center the tubing on the roller.
4. Press the occlusion bed against the tubing, and snap the latch closed.
5. Close the cover, then pull the tubing snug (do not stretch) around the rotor assembly.
6. Tighten the tubing retainer by rotating the tubing retainer knob clockwise sufficiently to prevent the tube from moving.
7. Start the drive. Let the pump rotor turn at least one revolution to break in the tubing, before turning off the drive.
8. Unlatch the bed from slot 1, and relatch it using slot 2. Pump is now ready for operation.



- OPERATION
1. Connect the pump tubing to the desired source and destination.
 2. Start the pump drive and set the desired speed.

MAINTENANCE

Maintenance is limited to replacement of the parts listed in the replacement parts list and cleaning the pump head.

Replacement Parts		
REF	DESCRIPTION	ORDER NUMBER
A	Rotor/Body Kit	77600-69
B	Tubing Retainer Kit	77600-66
C	Occlusion Bed Assembly Kit	77600-67
D	Tang Boot	77600-02
E	Mounting Screws (not shown)	77600-01

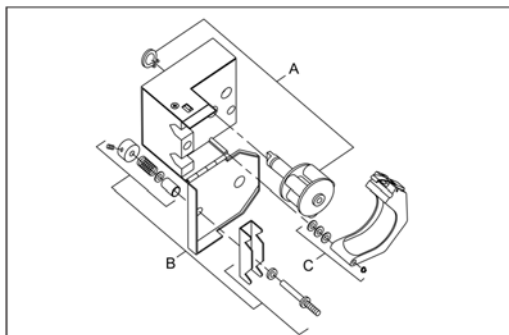


Figure 4. Exploded View of Pump

NOTE: Inspect the Tang Boot after 2,000 hours of operation and replace if necessary.
Cleaning Pump Head

Use mild detergent with water to clean the pump and rotor assembly. Do not immerse nor use excessive fluid.

SPECIFICATIONS

Pump Head Number	Pump Material	Occlusion	Shaft Length	L/S® Tubing
77250-82	PPS/PE/SS	Fixed	Short	L/S® 15,24,35,16HP, 15HP

Typical Flow, Pressure and Vacuum Data:

L/S® Tubing	Flow Rate (cw)			Discharge Pressure*		Vacuum*	Suction Lift* @
	@ 1 rpm mL/min	@ 100 rpm mL/min	@ 600 rpm mL/min	Continuous psig (bar)	Intermittent psig (bar)	@ 600 rpm in (mm) Hg	600 rpm ft (m) H ₂ O
L/S® 16HP**	.9	90	--	100 (6.8)	125 (8.5)	--	--
L/S® 15HP**	1.7	170	--	80 (5.5)	100 (6.8)	--	--
L/S® 15	1.8	--	1100	25 (1.7)	40 (2.7)	26 (660)	29 (8.8)
L/S® 24	3.0	--	1800	25 (1.7)	40 (2.7)	26 (660)	29 (8.8)
L/S® 35	4.3	--	2600	20 (1.4)	35 (2.4)	26 (660)	29 (8.8)
L/S® 36	5.8	--	3400	15 (1.0)	20 (1.4)	24 (610)	27 (8.3)

Number of Rollers	3
Occlusion	Fixed
Maximum Pump Speed (rpm)	600
Nominal Torque Load – Running	up to 180 oz-in (13 kg-cm)
Housing Materials	Stainless Steel (SS), Polyester (PE) body, Polyphenylene Sulfide (PPS) tubing bed, Polypropylene (PP) knob
Roller/Bearing Materials	Stainless Steel (SS)/Sealed Stainless Steel
Rotor Materials	Stainless Steel (SS)
Operating Temperature	32° F to 104° F (0° C to 40° C)
Storage Temperature	-40° F to 149° F (-40° C to 65° C)
Humidity	5% to 95% (non-condensing)
Dimensions (W x H x D)	

Operating‡	3.7 in x 3.5 in x 3.0 in (94 mm x 89 mm x 76 mm)
Open	4.5 in x 3.5 in x 5.1 in (114 mm x 89 mm x 130 mm)
Weight	2.1 lb (0.96 kg)
Noise Level	<70 dBA @ 1 meter
Compliance (for CE mark)	EN809 (EU Machine Directive)

* As tested with NORPRENE®, PHARMED® BPT® and TYGON® tubing.
Values will be less with silicone and C-FLEX.

** L/S® 15HP and L/S® 16HP tubing are only for use with the MASTERFLEX® L/S® High-Performance Pump Head and any MASTERFLEX® L/S® 1 to 100 rpm drive capable of running two or more pump heads.

‡ Use this temperature range for continuous duty operation with no decrease in performance or product life.
Pump Heads will work outside this range with some possible reductions in performance or product life.

WARRANTY

Use only MASTERFLEX precision tubing with MASTERFLEX pumps to ensure optimum performance.
Use of other tubing may void applicable warranties.

This product is warranted against defects in material or workmanship, and at the option of the manufacturer or distributor, any defective product will be repaired or replaced at no charge, or the purchase price will be refunded to the purchaser, provided that: (a) the warranty claim is made in writing within the period of time specified on this warranty card, (b) proof of purchase by bill of sale or receipted invoice is submitted concurrently with the claim and shows that the product is within the applicable warranty period, and (c) the purchaser complies with procedures for returns set forth in the general terms and conditions contained in the manufacturer's or distributor's most recent catalog.

This warranty shall not apply to: (a) defects or damage resulting from: (i) misuse of the product, (ii) use of the product in other than its normal and customary manner, (iii) accident or neglect, (iv) improper testing, operation, maintenance, service, repair, installation, or storage, (v) unauthorized alteration or modification, or (b) post-expiration dated materials.

THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER, AND THE MANUFACTURER AND DISTRIBUTOR DISCLAIM ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. NO EMPLOYEE, AGENT, OR REPRESENTATIVE OF THE MANUFACTURER OR DISTRIBUTOR IS AUTHORIZED TO BIND THE MANUFACTURER OR DISTRIBUTOR TO ANY OTHER WARRANTY. IN NO EVENT SHALL THE MANUFACTURER OR DISTRIBUTOR BE LIABLE FOR INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES.

THE WARRANTY PERIOD FOR THIS PRODUCT IS TWO (2) YEARS FROM THE DATE OF PURCHASE.

PRODUCT RETURN



To limit charges and delays, contact the seller or Manufacturer for authorization and shipping instructions before returning the product, either within or outside of the warranty period. When returning the product, please state the reason for the return.

For your protection, pack the product carefully and insure it against possible damage or loss. Any damages resulting from improper packaging are your responsibility.

TECHNICAL ASSISTANCE

If you have any questions about the use of this product, contact the Manufacturer or authorized seller.

Manufactured by:
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