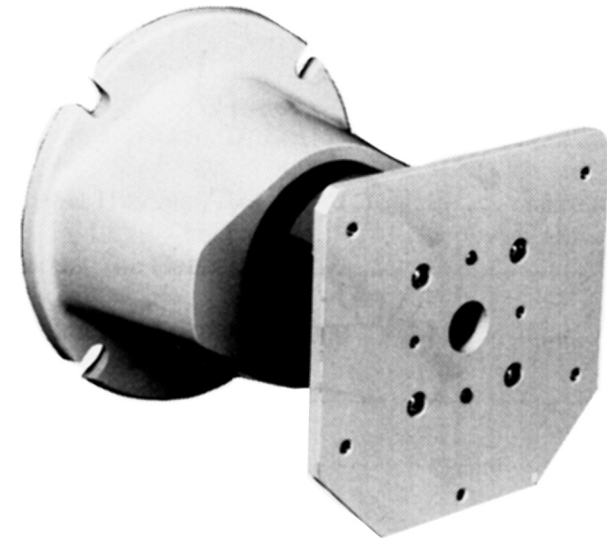


OPERATING MANUAL

MASTERFLEX® I/P®

NEMA 56C MOTOR-TO-PUMP ADAPTER

Model No.	Gear Ratio
77490-00	3.1:1
77490-10	4.8:1
77490-20	9.7:1
77490-30	17.8:1



MASTERFLEX®

(US & Canada only) Toll Free 1-800-MASTERFLEX • 1-800-637-3739

(Outside US & Canada) 1-847-549-7600 • 1-847-381-7050

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Edition 09

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Printed in U.S.A.

WARRANTY

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

The Manufacturer warrants this product to be free from significant deviations from published specifications. If repair or adjustment is necessary within the warranty period, the problem will be corrected at no charge if it is not due to misuse or abuse on your part as determined by the Manufacturer. Repair costs outside the warranty period, or those resulting from product misuse or abuse, may be invoiced to you.

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.

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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, has not been submitted for FDA approval.

DESCRIPTION

Series 77490 MOTOR-TO-PUMP ADAPTERS enable compatible NEMA 56C motors to drive peristaltic pumps. All kinds of liquids can be delivered at desired flow rates. Each assembly is composed of a planetary gear system in a rugged aluminum housing with a mounting gasket, plus a motor shaft adapter.

Four Adapter models, each with different gear ratios, are available to obtain desired flow rates, depending upon motor speed, Pump Head type, tubing size and material, plus backpressure conditions.

The Adapters are compatible with all MASTERFLEX® I/P® Standard, EASY-LOAD® and High Performance short-shaft Pump Heads.

APPLICATION DATA

To obtain a proper match of system components for efficient operation, an evaluation of the expected operating conditions should be made. Motor **loading** is the most important factor. It determines whether one or two Pump Heads can be used. Also, operating conditions, such as fluid density, viscosity and temperature, contribute to loading the pump in varying degrees. Backpressure, tubing size and material are additional factors. Tubing materials like TYGON®, NORPRENE®, PHARMED® BPT and VITON® (fluoroelastomer) increase the load more than silicone and C-FLEX® tubing. Even motor temperature and voltage may have an effect on load capabilities.

Keep these considerations in mind when selecting motor horsepower or torque. Sometimes it may be necessary to compensate for difficult or unusual operating conditions. Refer to your motor specifications for details.

Cleaning

Wash with mild detergent. Do not immerse nor use excessive fluid.

SPECIFICATIONS

Series 77490 Adapter

Model No.	Gear Ratio	Input Speed (max.)	Output Speed (max.)	Output Torque (max.)	
				oz-in	kg-cm
77490-00	3.1:1	2015 rpm	650	864	62
77490-10	4.8:1	3120 rpm	650	864	62
77490-20	9.7:1	3600 rpm	370	640	46
77490-30	17.8:1	4800 rpm	270	760	55

Drive Mounting: NEMA 56C

Pump Mounting: MASTERFLEX I/P Short-Shaft

Operating Temperature: 32°F (0°C) to 104°F (40°C)

Storage Temperature Range: 14°F (-10°C) to 149°F (65°C)

Weight: 4 lbs (1.8 kg)

Dust/Water Resistance: IP34 with pump and motor mounted

Dimensions: 5 3/4 in × 6 1/2 in × 6 1/2 in

L × W × H: (146 x 165 x 165 mm)

Humidity: 0-95%

Altitude: Less than 2000 meters

(3) Mount the Gasket

- Place the GASKET over the 56C motor face, as shown in the drawing.

(4) Mount the Adapter Housing

- To minimize noise and maximize planetary gear longevity, the optimum procedure recommended for assembly of the Adapter Housing to the 56C Motor Housing is to set up vertically (motor shaft up) per installation sketch on previous page.
- Align the flat on the SHAFT ADAPTER with the mating “D” hole in the GEAR mechanism.
- Maintain the above alignment and carefully place the Adapter flange against the face of the 56C motor housing.
- It may be necessary to turn the Adapter to obtain the proper Pump Head orientation. This is necessary because the tubing in the I/P Standard Pump Heads exits from the *top*, and tubing in the I/P EASY-LOAD exits from the *side*. Also, be sure to allow adequate space for operation of the tube loading lever on the EASY-LOAD pumps.

(5) Install Adapter Bolts

- With all the components properly aligned, use the four 3/8 in BOLTS provided to secure the Adapter assembly to the motor.
- Use the proper procedure for tightening the four bolt flange, i.e., number the BOLTS 1 thru 4 in a CW or CCW direction. Tighten gradually and alternately 1 & 3 then 2 & 4. Final torque to be 16.5/19.5 (ft-lb). If feasible, (while in this position) run or jog motor slowly and listen for any objectionable gear noise. If noisy, loosen bolts, turn adapter shaft or slowly jog motor, then retighten bolts as above.

The last step is installation of the Pump Head to the PUMP HEAD MOUNTING PLATE. Refer to instructions furnished with the Pump Head. For maximum life, install the pump housing using the two 1.0 inch cap head screws supplied with the pump.

MAINTENANCE

While there are no serviceable parts, replaceable parts include the SHAFT ADAPTER (No. A-3870) and the GASKET (No. A-3871), available through your dealer.

EQUIPMENT SELECTION

The procedure for teaming-up a 77490 Adapter with the appropriate motor and Pump Head is very straightforward:

(1) Verify Required Flow Rates

Table 1 shows maximum flow rates for individual 77490 Adapters and standard tubings.

Use only MASTERFLEX® Precision tubing with MASTERFLEX Pumps to ensure optimum performance. Use of other tubing may void applicable warranties.

Be sure the Adapter to be installed will accommodate the intended range of pumping applications.

Table 1

Adapter No.	Max. Flow Rate for Tubing No.						Gear Ratio	Max. Motor Speed (rpm)
	I/P® 26		I/P® 73		I/P® 82			
	GPM	LPM	GPM	LPM	GPM	LPM		
77490-00	1	4	2.1	8	3.5	13.1	3.1:1	2015
77490-10	1	4	2.1	8	3.5	13.1	4.8:1	3120
77490-20	0.6	2.2	1.2	4.4	2	7.5	9.7:1	3600*
77490-30	0.4	1.6	0.75	2.9	1.4	5.4	17.8:1	4800*

*These speeds may be increased slightly under light loads, i.e., low pressure pumping with silicone or C-FLEX tubing.

(2) Select Motor

Table 1 also shows motor speed capacities for individual Adapters. Besides having a NEMA 56C mounting face, the motor to be used must not exceed the speeds indicated.

For general guidance in determining motor size, 1/5 horsepower is required to pump water at 2 GPM through a single I/P® 73 MASTERFLEX tube at 30 psig (0 psig, for two I/P® 73 tubes). In no case will a motor hp greater than 1/2 be required for the Pump Heads compatible with the Series 77490 Adapters.

Note: Tubing numbers shown refer to the last two digits of the tubing catalog number. For example, silicone tubing catalog number is 96410-73, thus the tubing number in this manual is referred to as simply I/P® 73.

Table 2 shows the volume per pump revolution for specific tubing numbers. Use Tables 1 and 2 as a guide in selecting the proper tubing for the required flow rate.

Table 2

I/P® Tubing No.	Volume Per Pump Revolution	
	Gallons	Liters
26	0.0016	0.0060
73	0.0032	0.012
82	0.0054	0.020

(3) Select a Compatible Pump Head

Series 77490 Adapters are compatible with all MASTERFLEX I/P Standard, EASY-LOAD and High Performance short-shaft Pump Heads.

(4) Optional Tandem Operation

A single motor can drive up to two Pump Heads.

With the proper system components selected, the next step is installation.

INSTALLATION

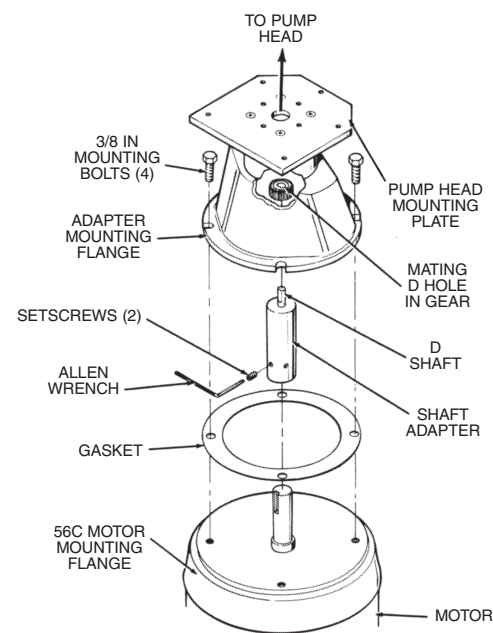
The 77490 Adapters can be installed between the selected motor and Pump Head in just a few minutes. First, check the motor manufacturer's specifications to ensure that the motor meets the NEMA 56C mounting requirements. Then proceed with these steps:

(1) Mount the Motor Drive

- Select a site and mounting surface appropriate for the pumping operations. Refer to the motor manufacturer's instructions.

(2) Install the Shaft Adapter

- The following drawing shows the proper alignment of all components.



Series 77490 Adapter components aligned with a drive motor and Pump Head.

- Mount the SHAFT ADAPTER on the 56C MOTOR drive shaft.
- Tighten the two SETSCREWS. Use the 5/16 in Allen wrench provided. If the motor shaft has a flat, be sure that one of the SET SCREWS is tightened against it.