

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 noted on the Warranty Card.

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.



Cole-Parmer Instrument Co.

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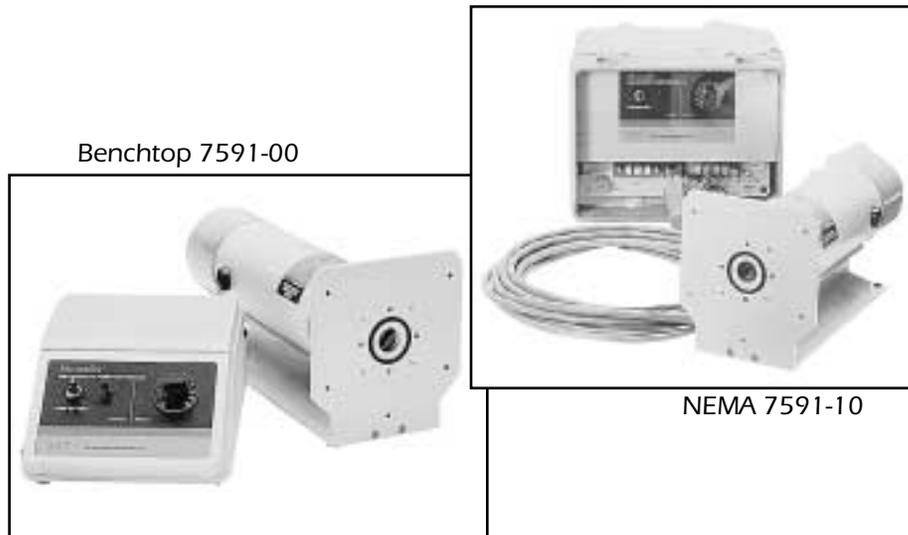


OPERATING MANUAL

MASTERFLEX® I/P®

MODULAR PUMP DRIVES

Model Nos.
7591-00, 7591-05
7591-10, 7591-15



Benchtop 7591-00

NEMA 7591-10



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SAFETY PRECAUTIONS

DANGER: High voltages exist in the Drive/Controller.



WARNING: Disconnect the AC power input line cord before connecting the drive motor cable.



WARNING: No user serviceable parts are inside of this controller. Refer servicing to your dealer.



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.

SETUP AND DRIVE OPERATION

INTRODUCTION AND GENERAL DESCRIPTION

This controller and drive system, when coupled with a MASTERFLEX® I/P®-compatible Pump Head, provide variable-flow fluid transfer. The motor and controller can be mounted in separate locations for better protection or control. Select from Benchtop or NEMA-rated controllers. The NEMA-rated motor and controller withstand wet or hostile environments and can operate manually or remotely via a 4–20 mA input signal.

VARIETY OF PUMP HEADS ACCEPTED

Mount up to 2 MASTERFLEX® I/P® Pump Heads and all MASTERFLEX® I/P®-compatible Pump Heads (up to rated torque). See individual Pump Heads for flow rates.

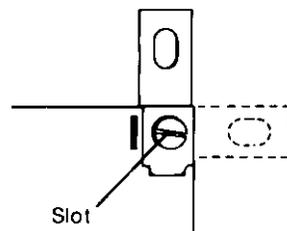
SETUP AND DRIVE OPERATION

1. Unpack the drive, save packing material until proper product operation has been verified.
2. Mount Pump Head and load tubing (see Pump Head manual).
3. Connect the drive motor cable to the cable from the controller.
4. Connect the AC power input line cord to the AC receptacle.
5. Selecting motor direction turns pump on. The LED indicator turns GREEN.
6. Adjust flow rate with speed control potentiometer.

OPTIONAL: WALL MOUNTING (7591-10, -15 only)

The NEMA controller is furnished with a 24-ft. long CONTROLLER CABLE for convenient wall mounting away from the pumping operation.

1. Select a mounting location. The 4 brackets (furnished) can be installed vertically or horizontally in the enclosure slots, as shown, to help accommodate any space limitations.
2. Use the accompanying bolts and lockwashers to secure the brackets to the NEMA enclosure.



Optional wall mounting for NEMA Controller. (Broken line denotes horizontal bracket arrangement.)

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REMOTE OPERATING PROCEDURE (7591-10, -15 only)

WARNING: Turn off AC power before connecting the external remote control cable.



1. Connect the remote speed control to the terminal strip on the bottom of the controller. (See Figure 1.)
2. Set the front panel CONTROL switch to the EXTERNAL position.

NOTE: When the CONTROL switch is in the EXTERNAL position, motor speed can be controlled only from the external source. The front panel speed control is inoperative.

3. Set the front panel DIRECTIONAL switch for the desired direction of rotation.
4. Set the speed control on the remote control to a setting that will provide the desired flow rate and lock the control.
5. 4–20 mA loop control:
 - <4 mA (stop pump)
 - 4 mA (minimum speed)
 - 20 mA (maximum speed)
 - ± 3% linearity control
 - 1.8 V DC (nom.) input voltage drop
 - > 250 V isolation potential

NOTE: The speed control can be adjusted at any time, either before starting the drive or while the drive is running.

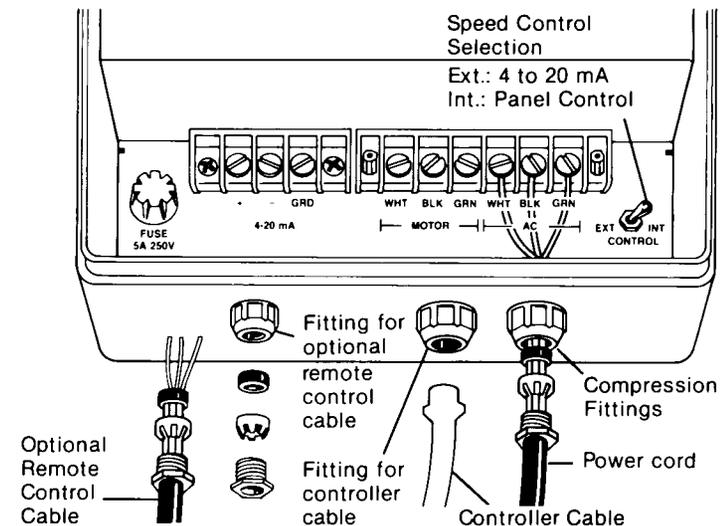


Figure 1.

MAINTENANCE

CLEANING

Keep the drive enclosure clean with mild detergents. Never immerse or use excessive fluid.

MOTOR BRUSH CHECK/REPLACEMENT

NOTE: Brushes should be checked every 6 months or 2000 operating hours.

1. Place the FWD-OFF-REV switch in the OFF position.
2. Disconnect the AC line cord from the AC receptacle.
3. Disconnect the motor cable from the controller.
4. Remove the two rubber caps (**see Figure 2**), then carefully unscrew each brush cap on opposite sides of the motor. Withdraw the brush, and examine it for wear.

NOTE: Replace both brushes if either brush is less than 0.300 in (7.6 mm) long from base to point.

5. Screw brush caps into brush holder on each side of motor and replace rubber caps.
6. Connect motor to controller.
7. Connect AC line cord to AC receptacle.

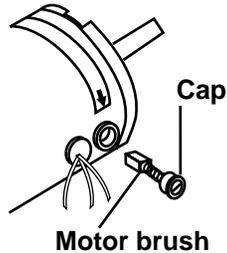


Figure 2. Brush Replacement

FUSE REPLACEMENT

1. Place the FWD-OFF-REV switch in the OFF position.
2. Disconnect the AC line cord from the rear of the unit.
3. Remove and check the fuse located on the front panel and replace if defective.
4. Reconnect AC line cord.

REPLACEMENT PARTS

DANGER: High voltages exist in the Drive/Controller.



WARNING: No user-serviceable parts are inside of this controller. Refer servicing to your dealer.



Description	Model no.			
	7591-00	7591-05	7591-10	7591-15
Brushes (2 per set)	07520-04	07520-04	07520-04	07520-04
Brush Cap Holder	07520-03	07520-03	07520-03	07520-03
Fuses	77500-02	77500-08	77500-02	77500-08
Motor Only	07591-50	07591-55	07591-50	07591-55
Controller Only	07591-60	07591-65	07591-70	07591-75
Rubber Caps and Brushes Kit	07553-03	07553-03	07553-03	07553-03

TROUBLESHOOTING

Troubleshooting

SYMPTOM	CAUSE	REMEDY
Motor does not rotate when switched to FWD or REV. POWER indicator does not glow.	Defective line cord or fuse.	<ol style="list-style-type: none"> 1. Check that unit is plugged into a live line. 2. Check line cord for continuity and replace if defective. 3. Check fuse and replace if defective.
Motor does not rotate when switched to FWD or REV. Power indicator glows. Speed control setting is greater than 0.	Defective Motor or Controller.	<ol style="list-style-type: none"> 1. Place the FWD-OFF-REV switch in the OFF position. 2. Test motor and controller. <ol style="list-style-type: none"> a) Check the drive motor cable connection to the controller. b) Replace motor with similar unit. Reconnect the drive motor to the controller. Retest. c) Replace controller with similar unit. Reconnect the drive motor to the controller. Retest.

SPECIFICATIONS

Operating Temperature:	0° to 40°C (32° to 104°F)
Storage Temperature:	-25° to 60°C (-13° to 140°F)
Chemical Resistance:	Exposed material is paint, plastic, aluminum and vinyl
Line Voltage Limits:	90-130V, 50-60 Hz 190-260V, 50-60 Hz
Speed Range:	20 to 650 rpm
Typical Power:	0.15 kW (0.2 hp)
Motor:	6 watts, max. dissipation
Controller:	
Fuses:	
115V Units:	6 A
230V Units:	3 A
Torque:	22 kg·cm (305 oz-in)
Speed Regulation:	±3% Line Regulation ±3% Load Regulation ±3% Warm-Up Drift
Controller Enclosure Rating:	IP22 (7591-00,-05) IP55 (7591-10,-15)
Motor Enclosure Rating:	IP34
Humidity (non-condensing):	0% to 90%
Display:	GREEN Indicator
Dimensions (L × W × H):	
Motor:	359mm × 141mm × 152mm (14-1/8 in × 5-9/16 in × 6 in)
Controllers: (7591-00,-05)	194mm × 165mm × 89mm (7-5/8 in × 6-1/2 in × 3-1/2 in)
Controllers: (7591-10,-15)	178mm × 298mm × 248mm (7 in × 11-3/4 in × 9-3/4 in)
Weight:	
Motor:	6.8 kg (15 pounds)
Controllers: (7591-00, -05)	1.8 kg (4 pounds)
Controllers: (7591-10, -15)	3.6 kg (8 pounds)