

SINGLE SWITCH INDICATING MECHANICAL TEMPERATURE CONTROLLER

This single switch indicating temperature controller operates fuel valves or relays which start and stop heating or cooling systems in a wide variety of applications. It is the smallest and most compact of the indicating mechanical instruments. It derives its simplicity and efficiency from the Piston-Pak filled systems sensing element.



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ISO 9002 REGISTERED

**SPECIFICATIONS
INSTALLATION
OPERATION**

INVERT 9

Partlow

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QUALITY INSTRUMENTATION DESIGNED & MANUFACTURED IN THE USA

Dynapar, Veeder Root, and Eagle Signal Brands:

Sales, Repair, and Application Support:
1675 Delany Rd.
Gurnee, IL. 60031
847-662-4150 Sales/Order Entry Fax
847-782-5277 Applications Support Fax
800-873-8731 Sales/Order Entry
800-234-8731 Applications Support

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Please disregard all phone numbers and addresses in this manual. The phone numbers and address on this page are the correct phone number and addresses to use for sales, repair, and application support.

MF79 PRODUCT SPECIFICATIONS

Dimensions	6 3/4" W X 6 5/16" H X 4" D.
Wall Mounting	Brackets supplied with instrument.
Panel Mount Cutout	5 1/4 inches wide X 5 15/16 inches high.
Switch Type	Three wire single pole double throw.
Switch Sensitivities	Normal 1% of range (Factory standard #79 Switch). Super Sensitive 1/2% of element range (Optional #73 Switch).
Electrical Hookup	Terminal block accessible through top cover hatch.
Conduit Openings	One 7/8 inch diameter hole on each side of the case for 1/2 inch conduit fitting; drill guide hole spotted in the rear of the case showing operational rear opening locations.
Electrical Rating	50VA, inductive; 500VA, non inductive; 250V maximum AC only.
Agency Approvals	Underwriters Laboratories and Canadian Standards
Approx. Net Weight*	5 lbs
Approx. Ship. Weight*	8 lbs

* Weight may vary depending on element length.

Note:

It is strongly recommended that Partlow equipped applications incorporate a high or low limit protective device which will shut down the equipment at a preset temperature condition in order to preclude possible damage to property or product.

This document should accompany the instrument to its final installation in order to provide operational and service assistance to the end user.

MF79 ORDER MATRIX



MF79*
(Requires L-Type element plunger).

ACCESSORIES

- 1 None
- 2 237A Weather Resistant**
- 3 266 Fungus Proofing

* The standard switch on an MF79 is a #79 and offers an accuracy of 1% of span. Accuracy of 0.5% of span may be achieved by specifying a #73 Switch. However, a #73 Switch must be ordered individually and will be shipped separate. User must remove the factory standard #79 switch and install the #73 Switch. (See SWITCH REPLACEMENT section in this document, page 4). To order the #73 Switch specify part #64403018.

** Requires an inverted dial scale. Check with factory on availability.

PISTON-PAK THERMAL SENSING ELEMENT

A Piston-Pak Thermal Sensing Element must be specified for each MF79. Use Partlow Form Number 3028 "Mechanical Products Cross Reference and Pricing Guide" to configure the matrix number for the sensing element.

INSTALLATION AND WIRING

LOCATION

The element head assembly is subject to ambient temperature limitations of -30°F to 125°F (-35°C to 52°C) for low temperature head assemblies, and 32°F to 150°F (0°C to 66°C) for high temperature head assemblies. These temperature limitations must be considered when determining the instrument location. It should be located in an area as free from vibration as possible.

MOUNTING

The instrument(s) may be surface or flush mounted. For flush mounting proceed as follows: Cut the panel opening to the sizes illustrated in Figure 1 (at right). Then drill 7/32 inch clearance holes where indicated in Figure 1 and if desired, tap for # 10 flat head screws.

WIRING

The conduit hole should be used to make all electrical connections through. Make necessary electrical connections using short sections of flexible cable or conduit according to applicable electrical codes, ordinances and regulations regarding the use of conduit, etc. Next, access the connection terminal block by unscrewing the two screws on the top and removing the top cover hatch. The terminal block is labeled H, C and L (See Figure 2, below). H represents normally-open, C common and L-normally closed. Make your necessary electrical connections using Figure 2 as a guide.

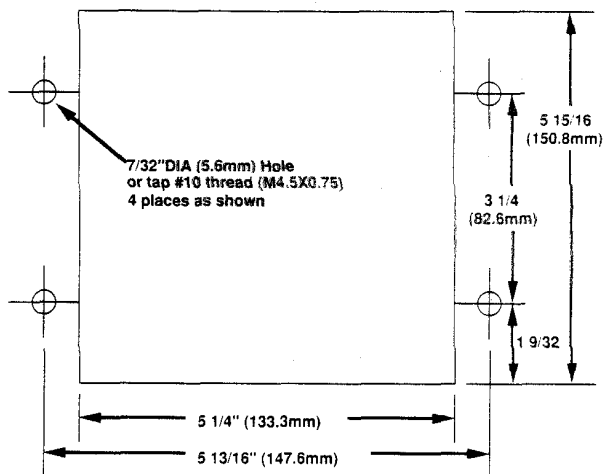
PLACING THE THERMAL SENSING ELEMENT

Locate the thermal sensing bulb in the most agitated part of the medium to be measured and completely immerse it. (When U and Y-type bulbs are used note separation coupling between bulb and capillary). Be sure to immerse the element up to the coupling for correct temperature indication. Do not bend capillary to less than 1/2 inch radius and never bend it too close to the element bulb or element head. Pencil type bulbs must never be bent as this will affect instrument accuracy. U and Y-type bulbs may be bent, but never to less than a two inch radius. Anchor the excess capillary securely to prevent vibration damage. These bulbs may be elevated up to 40 feet above the instrument without affecting calibration. For elevations over 40 feet consult with your local Partlow Representative, Distributor or the Factory.

STUFFING BOX INSTALLATION (IF APPLICABLE)

Overtightening of 21-T-105 steel or stainless steel stuffing boxes can damage the thermal element by restricting the capillary bore. To prevent damage, the stuffing box gland nut should be turned 1/2 to 3/4 of a revolution from a finger-tight position. This is equivalent to a torque of 65 to 100 inch pounds for steel and 130 to 180 inch-pounds for stainless steel.

Figure 1 - Panel Cutout Illustration (in inches)



INSTRUMENT OPERATION

Prior to putting the instrument into service check it against an accurate test thermometer. As with any precision instrument minor adjustments may be necessary after shipment and installation. If you are unfamiliar with how to perform this check refer to the CHECKING TEMPERATURE and RE-ZEROING section of this document.

Control temperature is established by turning the knob on the front cover. The knob moves the red set pointer along the scale to the desired setting. This positions a single snap-acting switch in at the control point. The black indicating pointer moves up or downscale in response to the Piston-Pak thermal sensing element. When the indicating pointer moves in line with the red setpointer, the snap-acting switch is actuated and opens or closes the circuit controlling the heating or cooling input to the application.

MAINTAINING YOUR MF79

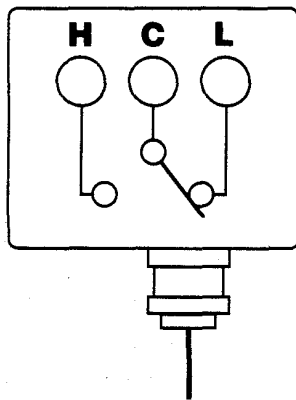
CHECKING TEMPERATURE

When checking and verifying your temperature be sure to use a test thermometer of known accuracy. Position the test thermometer sensing bulb or probe adjacent to the thermal sensing bulb from the MF79. Turn the red set pointer on the MF79 to the desired process temperature or above. Wait for the temperature to stabilize, then compare the test thermometer reading with that of the MF79 (Black indicating pointer). If the two readings do not agree, the MF79 should be re-zeroed.

RE-ZEROING YOUR MFS

Be sure that the process temperature is stable. Move the red set pointer to the temperature indicated by the test thermometer. Remove the setting knob on the instrument cover (See exploded view illustration, page 6). Loosen the set screw S (Figure 3, below) and using the 3/16 inch wrench provided with the MF79 turn shaft J until the black indicating pointer reading matches the test thermometer reading. Tighten the set screw S. Check the adjustment by allowing the temperature to stabilize and compare the readings. Repeat these steps if necessary.

Figure 2 - 3 Wire Switch



NOTE: Illustration shows switch condition below set point C to H will be continuous above set point.

SWITCH REPLACEMENT & #73 SWITCH INSTALLATION

Turn the power to the MF79 off. Remove the setting knob and cover (See exploded view illustration, page 6) and remove the two screws holding the switch to the switch arm. Take out the existing switch and remove the wires. Re-connect the wires to the replacement switch one wire at a time to avoid confusion. (When installing a #73 switch re-connect the wires to the same respective terminals as on the #79 switch). Then re-assemble the switch in the mechanism, replace the MF79 front cover and knob. Then turn on the power. **Note: After replacing the switch it may be necessary to make an adjustment to the switch actuation screw E (Figure 4, below). If, during normal process temperature cycling, the black indicating pointer registers a constant differential over or under the red set pointer adjust the actuation screw E to correct. Lengthening the screw lowers the temperature while shortening it raises the temperature.**

BRAKE TIGHTENING

Periodically the setting shaft brake may require tightening. If the brake is too loose, the overtravel movement of the black indicating pointer will tend to drag the red set pointer upscale from its set position. To tighten the brake, turn the adjustment screw U clockwise (Figure 5, below). **Do not over-tighten.**

Figure 3 - Re-Zeroing

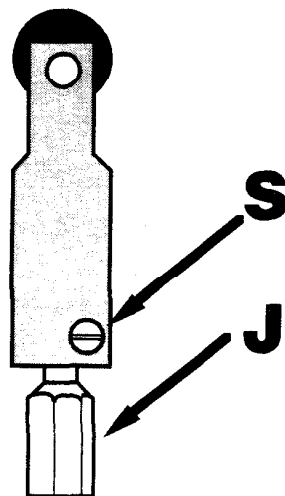


Figure 4 Switch Replacement

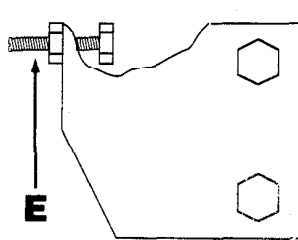
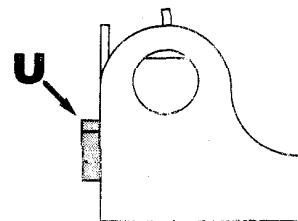


Figure 5 - Brake Tightening



PISTON-PAK THERMAL SENSING ELEMENT IDENTIFICATION

An element designation number is stamped on the bottom of the element head. This is a coded description of the element specifications and should be used whenever a replacement element is ordered. The number appearing on the side of the element head (Figure 6, below) is the element age code, which may be required in establishing warranty.

ORDERING/SPECIFYING THE PISTON-PAK SENSING ELEMENT

The sensing element is ordered separately from the MF79 and requires its own matrix number. To determine the correct sensing element configuration for your instrument(s) and application see Partlow Form 3028 "Mechanical Products Cross Reference and Pricing Guide."

ELEMENT REPLACEMENT

To change a thermal sensing element start by removing screws D (Figure 7, below) and withdrawing the element from the instrument body. Then remove the element bulb from the medium. Install the new element and replace screws D. Insert the new element bulb into the medium being measured.

Note: After the element has been replaced, check the temperature setting, re-zeroing may be necessary. If so, see the CHECKING TEMPERATURE section.

Caution: The inside mechanism(s), particularly the inside of the element housing, should never be oiled. However, if the instrument is subject to corrosion or gunking conditions, the mechanical linkage should be sprayed periodically with corrosion inhibiting CRC 2-26, 3-36, or 5-56. Use only CRC 2-26, 3-36, or 5-56 as other lubricants may cause build up and sticking of internal parts. CRC 2-26 may be purchased from Partlow in a 15 oz. container (part #63600401). CRC 5-56 may be purchased locally from any hardware or automotive store.

Figure 6 - Element ID

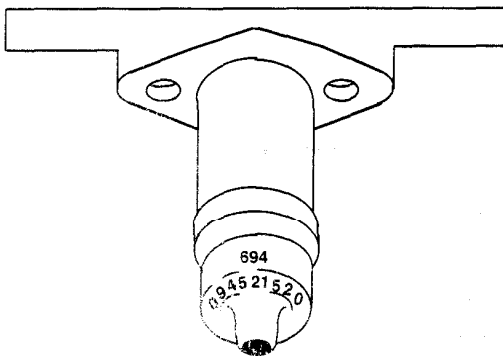
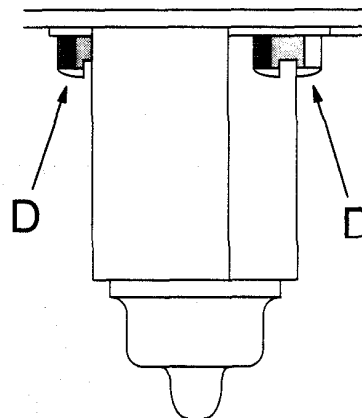


Figure 7 - Replacing Element



DIMENSIONAL DRAWING

Figure 8 - Dimensional Drawing

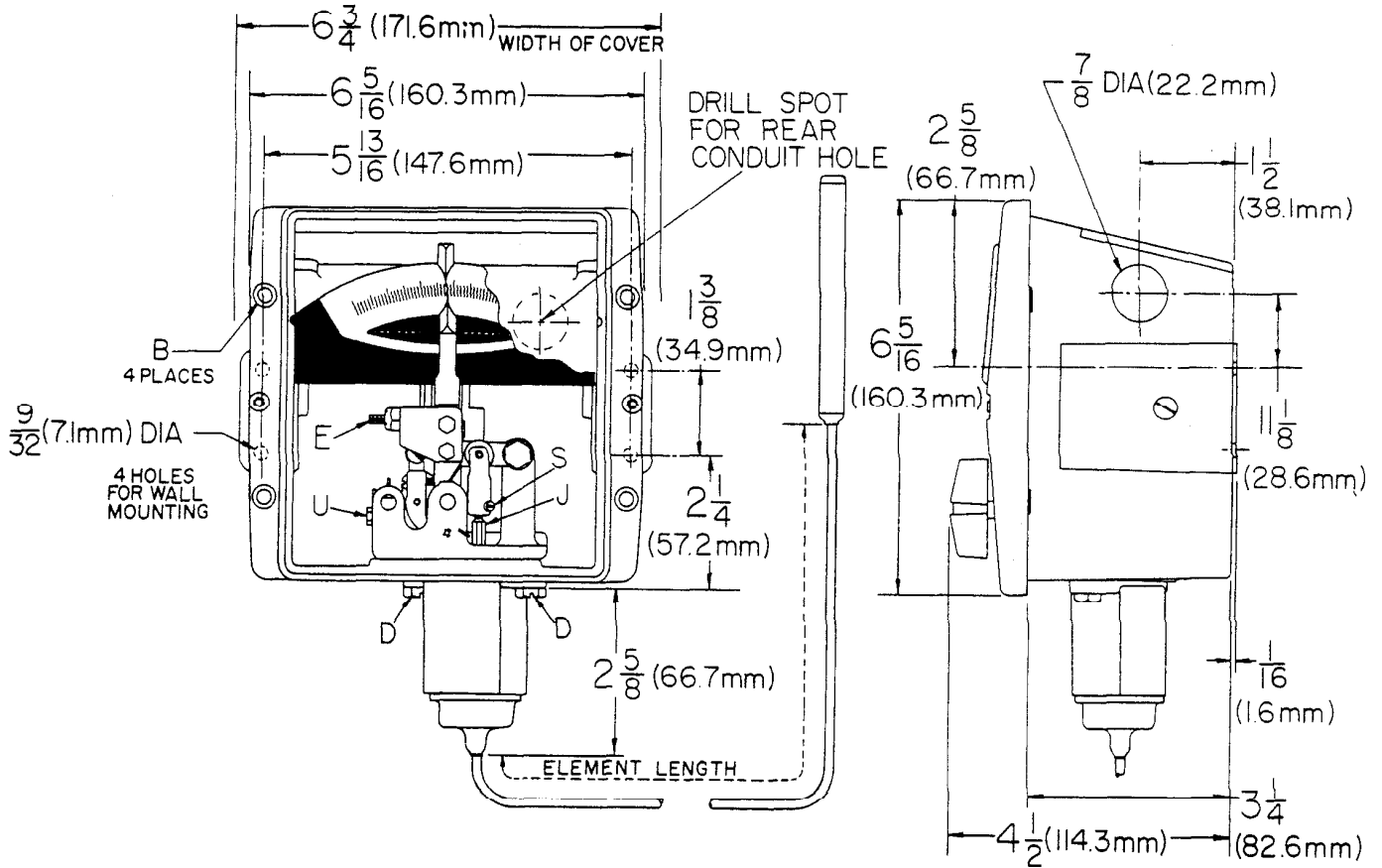
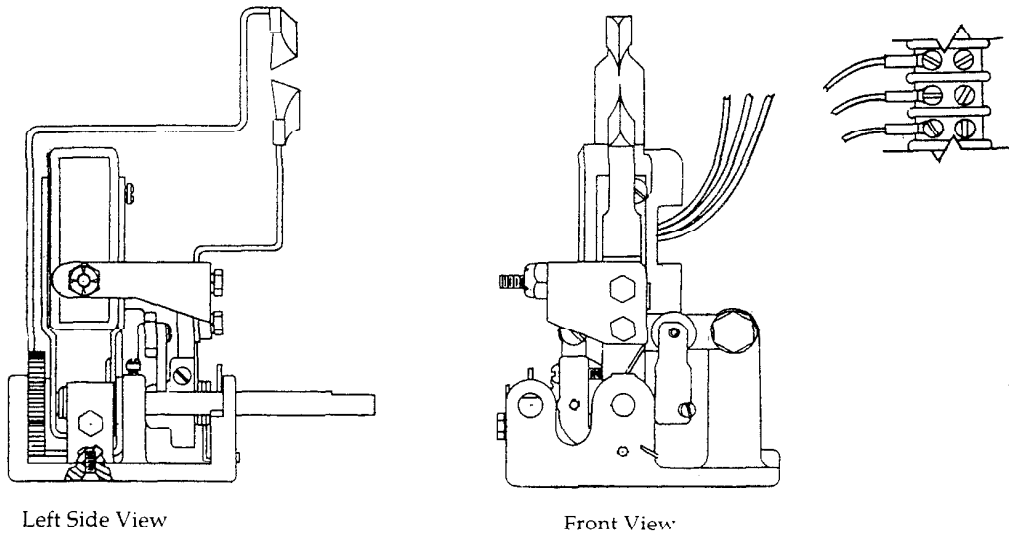


Figure 9 - Mechanism Drawing



Exploded Illustration and Parts List

1. Cover Assembly
Includes: Cover, Cover Glass, Cover Screws

64415801

2. Knob Assembly
Includes: Knob, Set Screw

64410401

3. Mechanism Assembly
Includes: Micro Switch (#79), Wiring and Terminal Block, Push Rod.

10074014

4. Main Lever Assembly
Includes: Main Lever with Push Rod Cap, Push Rod, Set Screw.

64415901

5. Micro Switch Kit
Includes Terminal Screws
#73
#79

64403018
64403021

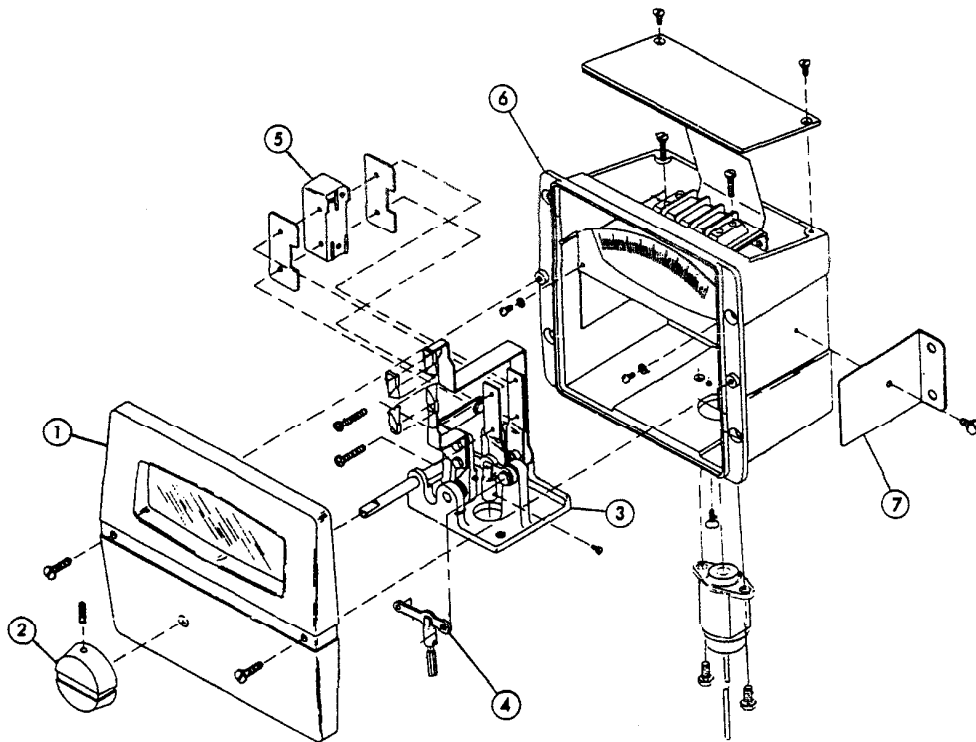
6. Case
Includes: Case, Top Plate, Terminal Block Mounting Brackets and Screws, Mounting Brackets with Screws.

64416001

7. Mounting Brackets
64402002

8. Fastener Kit (Not Shown)
Includes:
Cover Screws (2)
Switch Screws (2)
Dial Screws (2)
Terminal Block Screws (2)
Mechanism Holding Screw (1)
Mounting Bracket Screws (2)
Push Rod Set Screw (1)
Top Plate Screws (2)

64416101



Warranty

These products are sold by The Partlow Corporation ("Partlow") under the warranties set forth in the following paragraph. Such warranties are extended only with respect to a purchase of these products, as new merchandise, directly from Partlow or from a Partlow distributor, representative or reseller, and are extended only to the first buyer thereof who purchases them other than for the purpose of resale.

These products are warranted to be free from functional defects in materials and workmanship at the time the products leave the Partlow factory, and to conform at that same time to the specifications set forth in the relevant Partlow instrumentation sheet, sheets, manual or manuals for such products.

Partlow's sole and exclusive obligation and buyer's sole and exclusive remedy under the above warranties is limited to repairing or replacing, at Partlow's option free of charge, the products which are reported in writing to Partlow at its main office - The Partlow Corporation, 2 Campion Road, New Hartford, New York 13413 or FAX MAIL 1-315-797-0403 and which is so advised by Partlow, are returned with a statement of the observed deficiency to the designated facility during normal business hours, transportation charges prepaid and which upon examination by Partlow are found not to comply with the above

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