

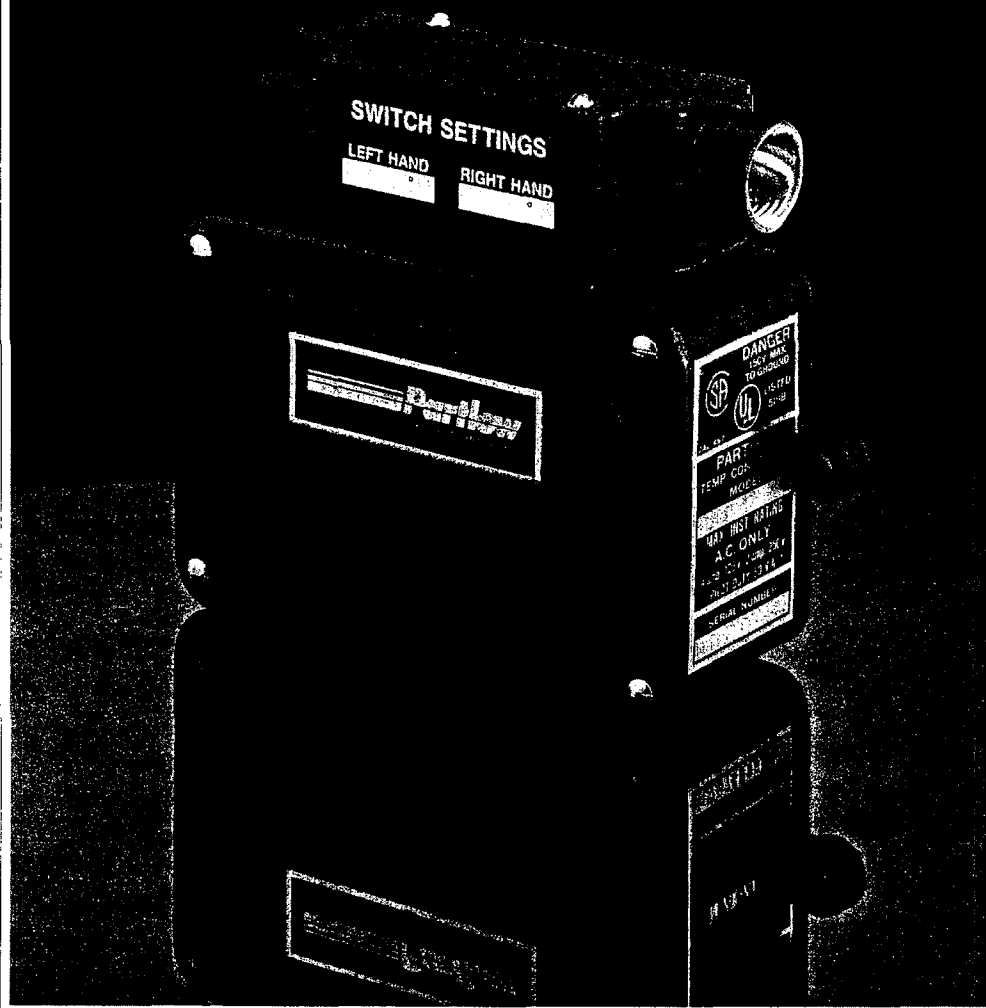
NON INDICATING TWO SWITCH TEMPERATURE CONTROLLER

The N79-79 is a two switch, non indicating control with unlimited differential setting capabilities between switches. It derives its simplicity and efficiency from the Piston-Pak filled systems sensing element.

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SPECIFICATIONS INSTALLATION OPERATION

N79-79



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

NorthStar Brand:

Sales, Repair, and Application Support:
1675 Delany Rd.
Gurnee, IL. 60031
847-782-5288 Sales/Order Entry Fax
847-782-5277 Applications Support Fax
800-326-6216 Sales/Order Entry
800-326-6216 Applications Support

Partlow, West, Rustrak, and LFE Brands:

Sales, Repair, and Application Support:
1675 Delany Rd.
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847-662-4150 Sales/Order Entry Fax
847-782-5277 Applications Support Fax
800-873-8731 Sales/Order Entry
800-866-6659 Applications Support

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.

N79-79 PRODUCT SPECIFICATIONS

Dimensions	5 7/16" W x 5 1/8" H x 2 3/16" D
Mounting Type	Surface only. Brackets integral part of instrument
Switch Differential. (between switches)	0 to 100% of element range
Electrical Rating	50VA inductive, 500VA non-inductive, 250VAC maximum
Electrical Connections	24" Pigtail connection located in top conduit box. Connections made using wire nut connection. Switches are labeled 1 & 2 color coded, color coded Red - common, Blue - normally closed, White - normally open.
Conduit Openings	1/2" NPS fittings on each side of conduit box
Agency Approvals	UL, CSA
Approx. Net Weight*	2 1/4 lbs
Approx. Ship. Weight*	5 1/2 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.

N79-79 ORDERING

	Ordering Number
N79-79 *	NS00207

* A Type-B element plunger is required.

PISTON-PAK THERMAL SENSING ELEMENT

A Piston-Pak Thermal Sensing Element must be specified for each N79-79. Use Partlow Form 3028 "Mechanical Instrumentation 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) are shipped to be surface mounted. Figure 1 illustrates hole placement for surface mount. The two holes in the mounting brackets are sized for clearance for 1/4" bolts. Drill 9/32 clearance holes on the panel per Figure 1 or drill a #7 drill for 1/4" x 20 NC for tapped hole fastening or a #3 drill for 1/4" x 28 NF tapped hole fastening.

WIRING

Check applicable electrical codes, ordinances and regulations regarding use of conduit, etc. If acceptable, make connections using short sections of flexible cable or conduit. Switch wires are brought out through conduit box and are tagged to represent switch #1 and switch #2. The three wire SPDT switch pigtails are color coded: red is common, blue normally closed, and white normally open. **Note: The circuit is made between red and blue wires when the sensing bulb temperature is below switch setting. When the sensing bulb temperature is above switch setting, the circuit is made between red and white wires. See Figure 2 below.**

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 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. The bulb 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 - Surface Mount illustration (in inches)

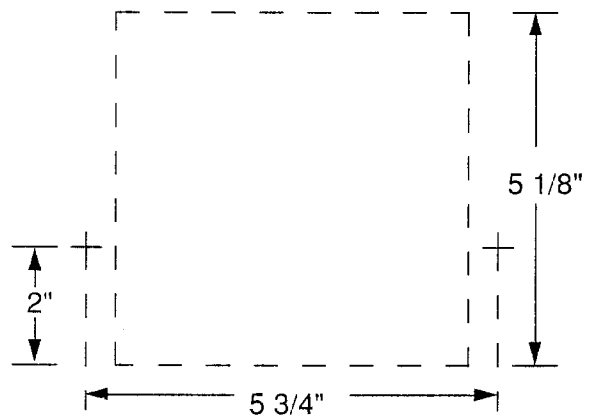
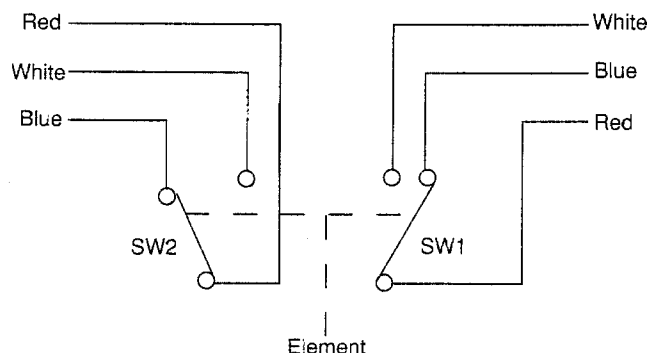


Figure 2 - Wiring



Note: Switch condition is with element below setpoint.

INSTRUMENT OPERATION

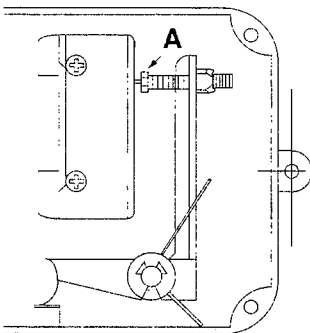
Prior to putting the instrument into service, check it against an accurate test thermometer. As with any precision instrument minor adjustments may be necessary after shipment and installation. If you are unfamiliar with how to perform this check, refer to the CHECKING TEMPERATURE (below) and RE-ZEROING (page 5) section of this document.

Either control switch can be set independently at any point within the element temperature range. The switches operate in reverse to what their individual switch case is marked; the normally-closed side functions as normally-open, and the normally-open side functions as normally-closed. The switch actuating pins are held depressed by the lever-arms when the thermal element temperature is below the switch settings.

As the temperature of the thermal sensing bulb increases, the rising plunger in the element head moves the lever arms away from the switches, releasing the switch pins at the pre-set control points.

MAINTAINING YOUR N79-79

Figure 3 - Right Hand Switch



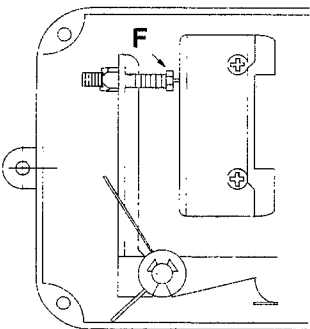
TO SET OR CHECK RIGHT-HAND SWITCH (lowest control point)

Be certain the test thermometer is of known accuracy. Position the test thermometer sensing bulb or probe adjacent to the N79-79 thermal sensing bulb. Remove the front cover of the control, exposing switches and lever-arms. The **first** switch in the model number designation is the **right-hand** switch in the control; the **second** switch in the model number is the **left-hand** switch. Switch adjustments are accomplished by turning hex head adjustment screw A with wrench provided (see Figure 3, at left). Facing hex end of screw, clockwise **lowers** switch deactuation point; counterclockwise **raises** switch deactuation point. Bring process to first desired controlling temperature, or, if factory-set, to temperature marked on right-hand switch label, and allow to stabilize (note test thermometer). If factory-set, switch should deactuate when set temperature is reached. If switch does not deactuate, turn adjustment screw A slowly clockwise until deactuation does occur. If switch has deactuated prematurely, turn adjustment screw A counterclockwise (depressing switch pin); then clockwise until deactuation occurs. Re-check switch setting by lowering temperature, then increasing once more to setting temperature. Switch should deactuate when set temperature is reached. If necessary, repeat above procedure.

TO SET OR CHECK LEFT-HAND SWITCH (highest control point)

Setting the left-hand switch is accomplished in the same manner as was the right-hand switch. Adjustments are made by turning hex head screw F (see Figure 4, at left). Facing hex end of screw, clockwise **lowers** switch deactuation point; counterclockwise **raises** switch deactuation point. Bring process temperature to second control temperature desired, or to factory-set temperature and allow to stabilize (note test thermometer). If factory set, switch should deactuate when set temperature is reached. If switch does not deactuate, turn adjustment screw F slowly until deactuation does occur. If switch has deactuated prematurely, turn adjustment screw F counterclockwise (depressing switch pin) then clockwise until deactuation occurs. Re-check switch setting by lowering temperature then increasing once more to setting temperature. Switch should deactuate when set temperature is reached. If necessary, repeat above procedure. Replace control front cover.

Figure 4 -Left Hand Switch



SWITCH REPLACEMENT

Remove front cover of the control. Remove the two switch holding screws on the defective switch. Take out switch and remove wires. Replace wires on new switch, being certain they are connected to the same corresponding terminals as on the replaced switch. Re-assemble, then using the above procedure, check actuation point of new switch (switch replacement may alter actuation point). Replace instrument's front cover.

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 5, 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 N79-79 and requires its own matrix number. To determine the correct sensing element configuration for your instrument(s) and application see Partlow Form 3028 "Mechanical Instrumentation Products Cross Reference and Pricing Guide."

ELEMENT REPLACEMENT

To change a thermal sensing element, start by removing screws D (Figure 6) 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 mechanism inside the instrument and particularly the inside of the thermal element housing, should never be oiled. However, if the instrument interior is subject to corrosion or gunking conditions, the linkage should be sprayed periodically with corrosion inhibiting CRC2-26, 3-36, or 5-56. Use only CRC2-26, 3-36, or 5-56 as other lubricants may cause buildup and internal parts to stick. CRC2-26 may be purchased from Partlow in a 15 oz. container (part #63600401). CRC5-56 can be purchased at most any hardware or automotive store.

Figure 5 - Sensing Element ID

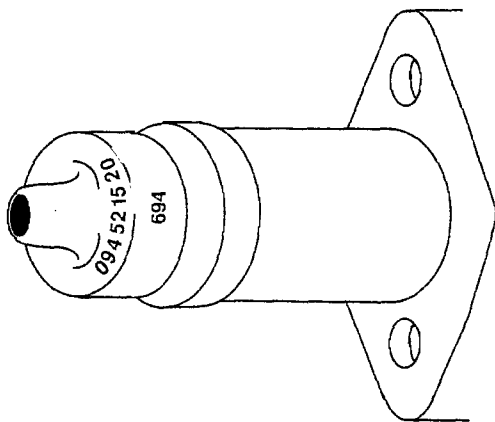
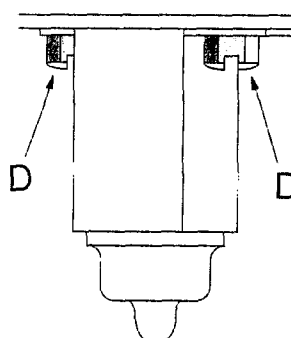
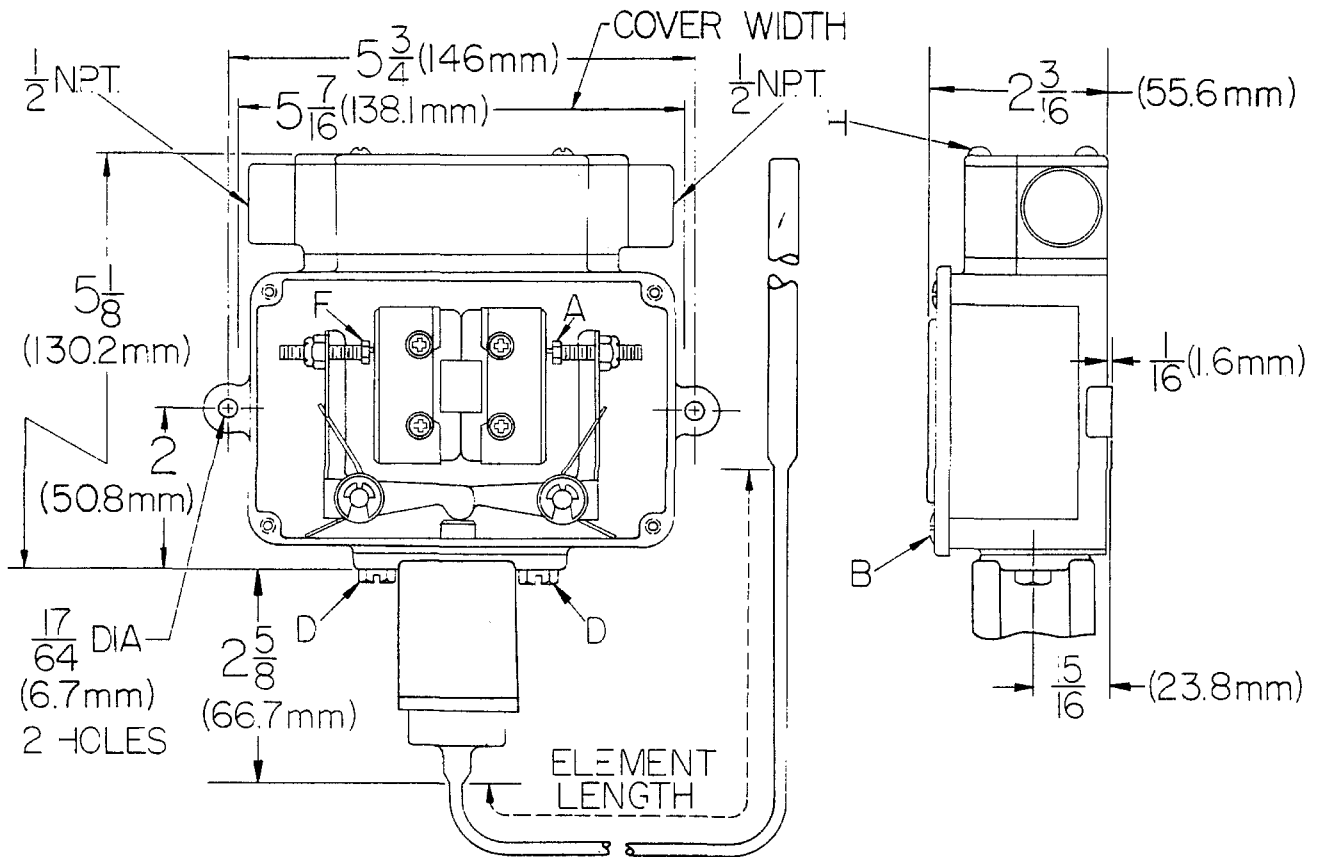


Figure 6 - Replacing Element



DIMENSIONAL DRAWING

Figure 7 - Dimensional Drawing



PARTS LIST

1. Cover **SP10014301**

Includes: Cover, Gasket, and
Cover Screws

2. Switch Replacement Kit **64403021**

Includes: Switch and Switch
Holding Screws

Note: Above kit # is for repairing one switch only, should
both switches need replacement, order 2 kits.

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 if 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 warranties. PARTLOW SHALL NOT BE LIABLE FOR ANY INCIDENTAL DAMAGES, CONSEQUENTIAL DAMAGES, SPECIAL DAMAGES, OR ANY OTHER DAMAGES, COSTS OR EXPENSES, EXCEPTING ONLY THE COST OR EXPENSE OF REPAIR OR REPLACEMENT AS ABOVE DESCRIBED.

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