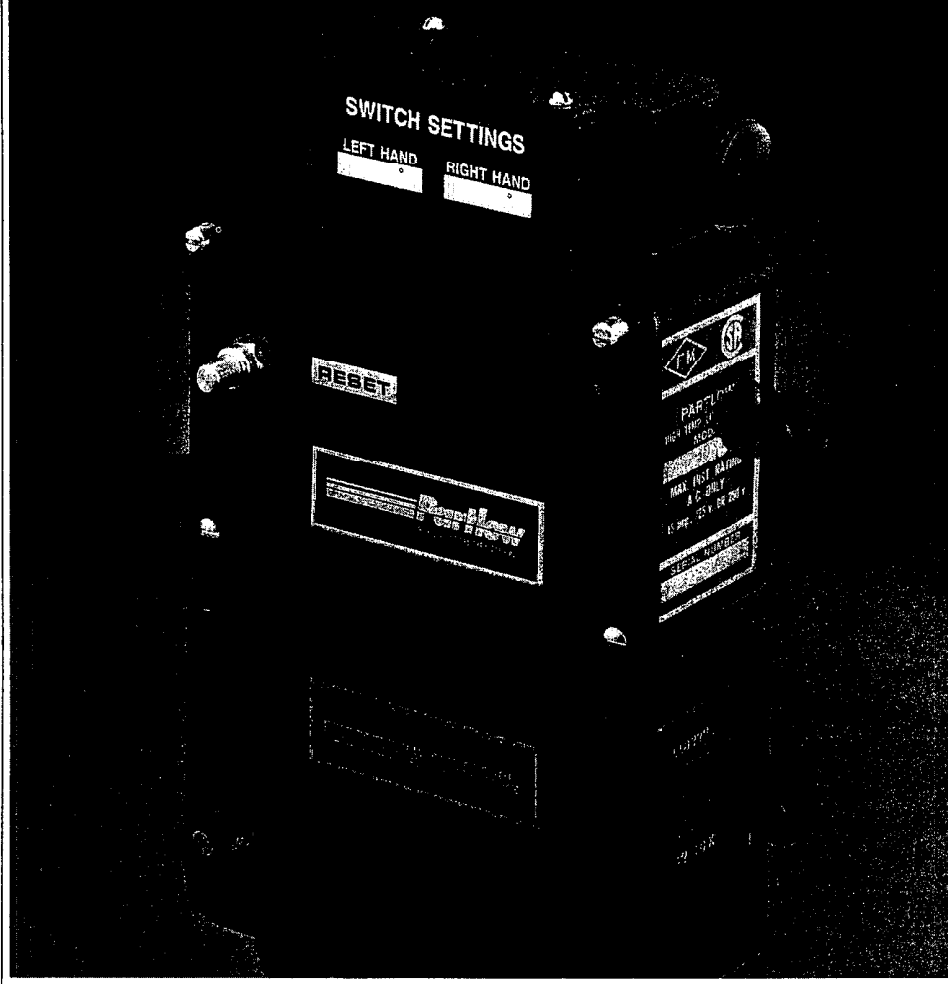


NON INDICATING HIGH TEMPERATURE LIMIT DEVICE

The N5-10X is a Factory Mutual approved high temperature limit device with element failure protection. It derives its simplicity and efficiency from the Piston-Pak filled systems sensing element.



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ISO 9002 Registered

SPECIFICATIONS INSTALLATION OPERATION

N5-10X

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.
Gurnee, IL. 60031
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.

N5-10X 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
Electrical Rating	15 amps, 125 or 250 AC only
Number of Switches	One element failure (low temp limit), one high limit safety switch, manually resettable
Electrical Connections	Terminal block in conduit outlet box
Conduit Openings	1/2" NPT fittings on each side of conduit box
Agency Approvals	FM, CSA
Approx. Net Weight*	2 1/4 lbs
Approx. Ship. Weight*	5 1/2 lbs

* Weight may vary depending on element length

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

N5-10X ORDERING

N5-10X*	Ordering Number NS00056
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* A Type-B element plunger is required.

PISTON-PAK THERMAL SENSING ELEMENT

A Piston-Pak Thermal Sensing Element must be specified for each N5-10X. 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 in 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 terminations are located in the conduit box on top of instrument. Switch terminations are labeled 1, 2, 3. See Figure 2 for wiring connections.

Note: Element Fail switch is toggled causing the NC contact to be open.

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)

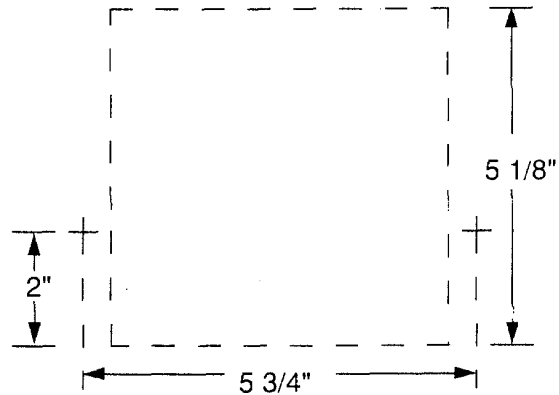
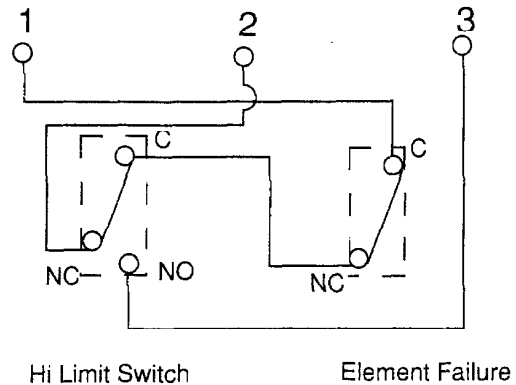


Figure 2 - Wiring



Note: Illustration is with Hi Temp Switch not tripped and Element Failure Switch not below setting.

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. Factory-set switch settings are printed on label on front of conduit box; they should be checked after installation. If not factory-set, label is left blank to record settings made in the field (pencil marking permits erasing). For Switch checking and setting procedure, see MAINTENANCE section.

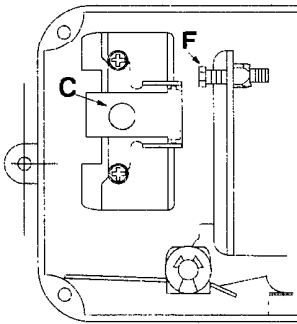
Two switches integral to the instrument provide both Hi limit shut down protection and also maintain element status (missing or broken). Both switches are wired in series, either switch actuation will shut down the process. The High Limit switch, once actuated, will not reset automatically, it must be reset manually after the reason for actuation is determined and the temperature is allowed to fall below the trigger point.

MAINTAINING YOUR N5-10X

TO SET OR CHECK HIGH-LIMIT SWITCH (left-hand switch)

Be certain the test thermometer is of known accuracy. Position test thermometer sensing bulb or probe next to the Partlow thermal sensing bulb. Remove front cover of limit device, exposing switches and lever-arms. The first switch in the model number designation is the right-hand switch in the instrument; the second switch in the model number is the left-hand switch. Switch adjustments are made by turning adjustment screw F with wrench provided (see Figure 3, at left). Facing hex end of screw, counterclockwise lowers switch actuation point; clockwise raises switch actuation point. If not factory-set, turn adjustment screw F clockwise enough to insure that switch will not prematurely actuate before high-limit temperature is reached. Run process temperature up to desired high-limit setting and allow to stabilize. **Note: If switch is factory-set, actuation should take place when high-limit temperature is reached. If factory-set switch actuates before high-limit temperature is reached, turn adjustment screw F clockwise to free it from switch contact and reset by pressing reset point C.** Make sure test thermometer indicates desired high-limit temperature; then turn adjustment screw F slowly counterclockwise until switch actuates. Lower process or sensing bulb temperature and manually reset switch by pressing reset point C. Re-check switch setting by again running process up to high-limit temperature and note when actuation occurs. If necessary, repeat above procedure.

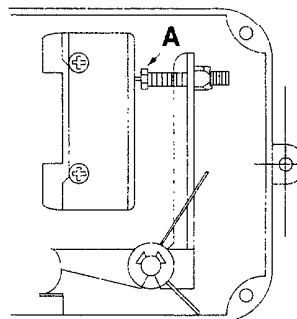
Figure 3 - Left Hand Switch



TO SET OR CHECK ELEMENT-FAILURE SWITCH (right-hand switch)

The element-failure switch operates in reverse to the high-limit switch; its switch pin is held depressed when bulb temperature is below switch setting. If ordered factory-set, note setting printed on label; if not ordered factory-set, but with a calibrated element, Partlow sets switch to actuate at 50°F. Position test thermometer bulb or probe next to the Partlow thermal sensing bulb. Switch adjustments are accomplished by turning adjustment screw A (see Figure 4, at left). Facing hex end of screw, clockwise lowers switch actuation point; counterclockwise raises the switch actuation point. By adding ice cubes, bring temperature of testing bath down to 50°F (or to factory-set temperature specified) and stabilize. When test thermometer reading reaches set point temperature, switch actuation should take place. If switch does not actuate, turn adjustment screw A counterclockwise slowly until actuation does occur. If switch actuates prematurely, turn adjustment screw A clockwise (resetting switch), then counterclockwise until actuation. To recheck switch actuation point, remove the instrument's sensing bulb from test bath (this will simulate a rise in the bath temperature), then re-immerses the bulb. Observe test thermometer to be certain bath temperature is stabilized. Switch actuation should take place when set point (bath) temperature is reached by the sensing bulb. Replace instrument's front cover.

Figure 4 -Right Hand Switch



SWITCH REPLACEMENT

Remove front cover of the control. Remove the two switch holding screws on the old 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 N5-10X 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.

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

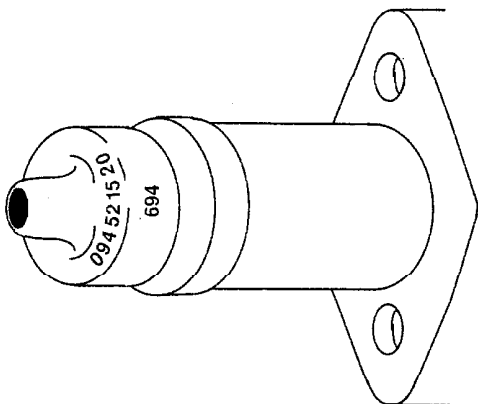
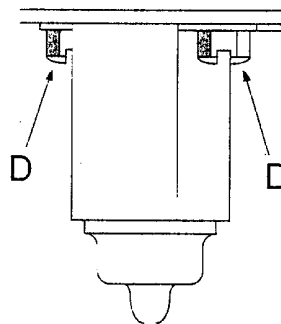
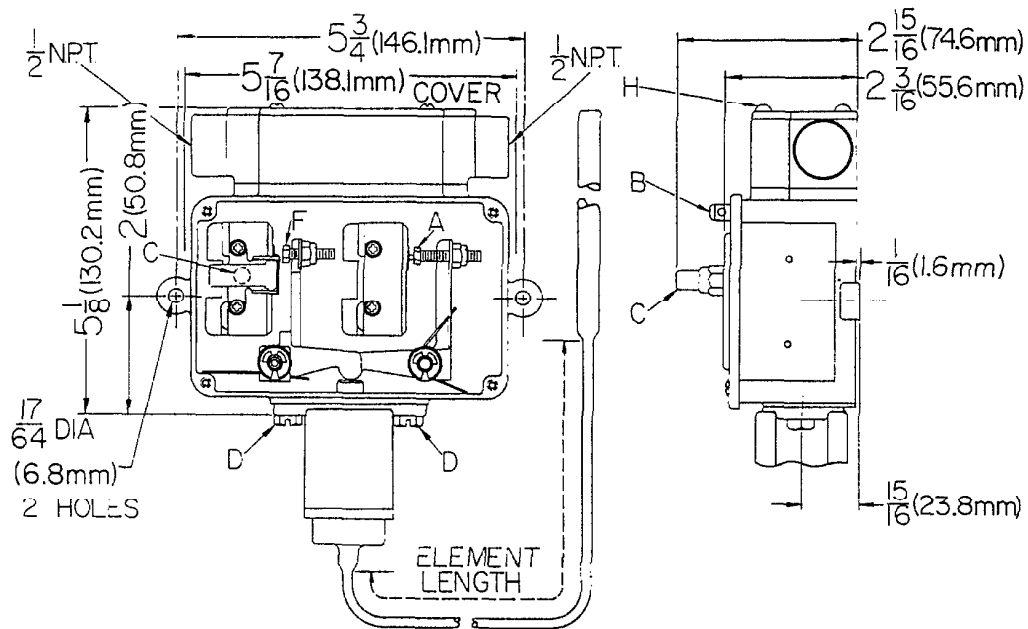


Figure 6 - Replacing Element



DIMENSIONAL DRAWING

Figure 7 - Dimensional Drawing



EXPLODED ILLUSTRATION AND PARTS LIST

1. Cover

SP40003701

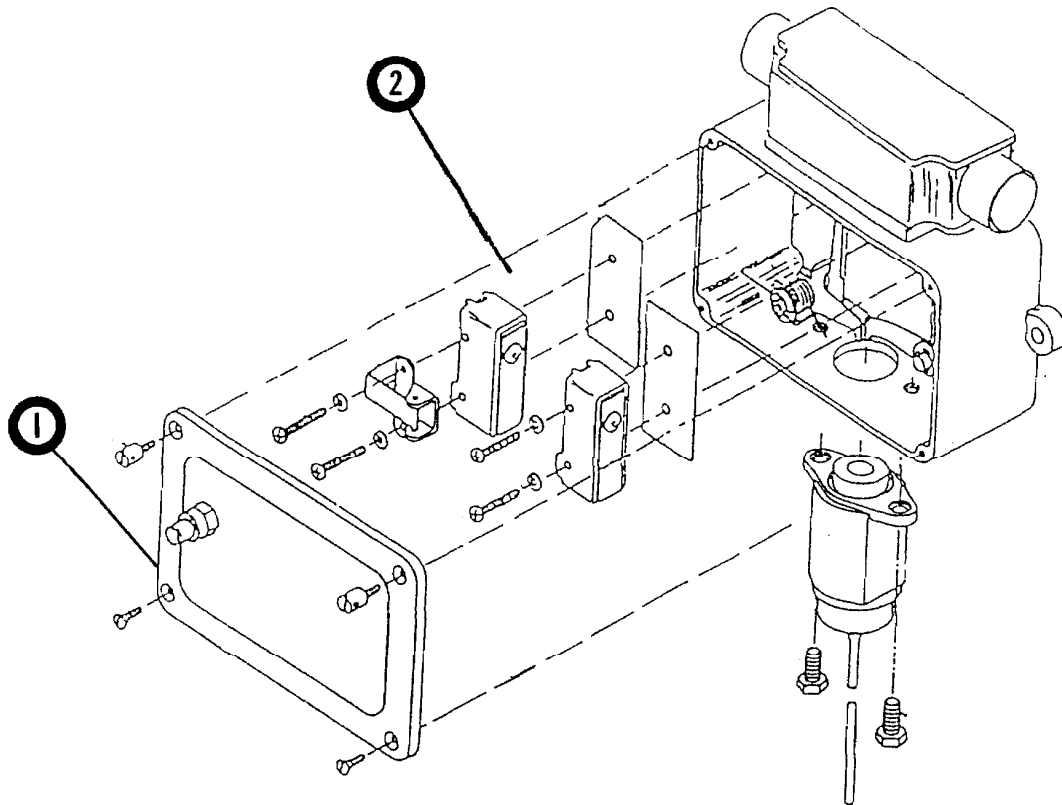
Includes: Cover, Gasket, and
Cover Screws

2. Switches

Includes: Switch and Switch
Holding Screws

#5 Switch
#10X Switch

64403002
64403006



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.

THERE ARE NO EXPRESSED OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE WARRANTIES HEREIN ABOVE SET FORTH. PARTLOW MAKES NO WARRANTY OR MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE PRODUCTS.

The logo for Partlow, featuring the word "Partlow" in a bold, italicized sans-serif font. To the left of the text are three horizontal lines of varying lengths, stacked vertically, resembling a stylized bar chart or a graphic element.

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