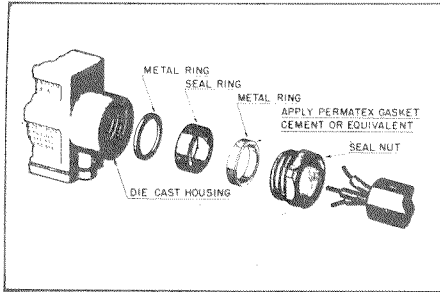


**CONDUIT SEAL**



Use one of the packets below for an adequate conduit seal.

Packet	Cable O.D. Inches
2PA13	280" - 344"
2PA6	400" - 435"
2PA16	435" - 470"
2PA1	530" - 570"

**LUBRICATING INSTRUCTIONS FOR ROLLER PLUNGER SWITCHES ONLY (Q9 or QN8)**

For maximum life, periodically put a **drop** or two of lightweight oil on the roller. Specific application conditions will determine the frequency of lubrication.

**WIRING INSTRUCTIONS**

All enclosed switches now incorporate a grounding lug or screw.

Care should always be used in wiring any switch. If solderless connectors are to be used:

1. Use only insulated type connectors.
2. Position connectors in order to provide as much spacing as possible.

**NEMA RATINGS  
NON-HAZARDOUS LOCATIONS**

**Type 1 enclosure** — intended for indoor use primarily to provide a degree of protection against contact with enclosed equipment.

**Type 3 enclosure** — intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, sleet, and external ice formation.

**Type 4 enclosure** — intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose-directed water.

**Type 13 enclosure** — intended for indoor use primarily to provide a degree of protection against dust, spraying of water, oil, and noncorrosive coolant.

**Warranty/Remedy**

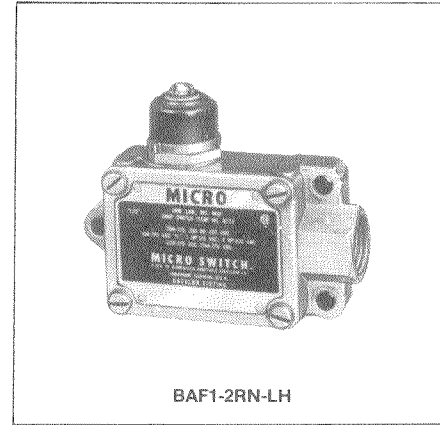
Seller warrants its products to be free from defects in design, material and workmanship under normal use and service. Seller will repair or replace without charge any such product it finds to be so defective on its return to Seller within 18 months after date of shipment by Seller. **The foregoing is in lieu of all other expressed or implied warranties (except of title), including those of merchantability and fitness for a particular purpose.** The foregoing is also purchaser's sole remedy and is in lieu of all other guarantees, obligations, or liabilities or any consequential, incidental, or punitive damages attributable to negligence or strict liability, all by way of example.

**MICRO SWITCH Worldwide Sales and Service**

MICRO SWITCH serves its customers through a worldwide network of sales offices and distributors. For application assistance, pricing or name of nearest Authorized Distributor, contact a nearby MICRO SWITCH sales office. Or, write MICRO SWITCH, Freeport, Illinois 61032; phone 815/235-6600.

While we provide application assistance on MICRO SWITCH products, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

**Installation instructions for  
type F enclosed switches**



**INSTALLATION**

Use three 1/4-inch screws to mount the switch. The switch enclosure is classified as NEMA types 1, 3\*, 4\*, and 13\* when a sealed conduit connection is used.

F types are side mounted only.

1. Mount on flat, rigid surface.
2. Connect conduit to complete seal. A convenient cable conduit seal is available. See page 4.

**IMPORTANT**

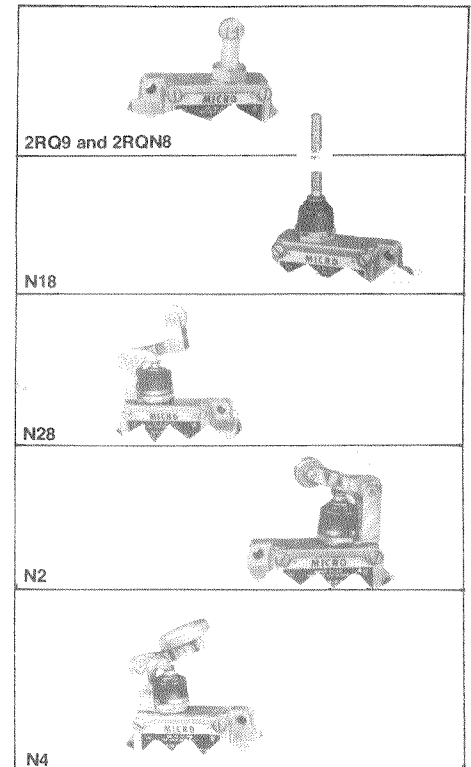
**Don't:**

1. Drill or machine housing.
2. Lubricate any internal part of switch.
3. Allow internal conduit condensation to drain into switch.

\*Except BAF1-2RQ9 listings.

**DESCRIPTION OF ACTUATORS**

"Q" type actuators are unsealed at the plunger while "N" specifies a sealed plunger. The 2RQ9 is a roller plunger without a seal. The 2RQN8 uses an O-ring to seal the plunger. All other N type actuators have a seal boot. The switch may be operated by cams or slides with a rise of less than 30°. The N18 has a flexible coil spring actuator which is approximately 4 inches long. The switch may be mounted to operate by a motion in any direction except pull. The N28 is a one-way roller lever actuator, the N2 is a roller lever actuator best suited for slide or cam operation, and the N4 is a large button-type actuator designed for easy hand operation. The N28, N2 and N4 are field adjustable horizontally and vertically.



**ACTUATOR ADJUSTMENT**

**2RQN8 Type**

The roller may be adjusted to any position through 360° from the factory assembled position:

1. Remove cover plate, basic switch and internal plunger (with conical spring).
2. Insert a 1/4-inch hexagon key wrench into the center of the nut and loosen it until the actuator assembly rotates freely. The seal may be damaged if the actuator is not sufficiently loosened.
3. Turn roller to desired position, hold, and tighten the adjusting nut.
4. Replace internal plunger assembly (including conical spring), basic switch and cover.

To replace actuator follow the procedure described in items #1 and #2, but completely remove the nut. Hold on to the actuator assembly when removing the nut. Internal spring pressure will cause them to fly apart.

**2RQ9 Type**

The roller may be adjusted to any position through 360° from the factory assembled position:

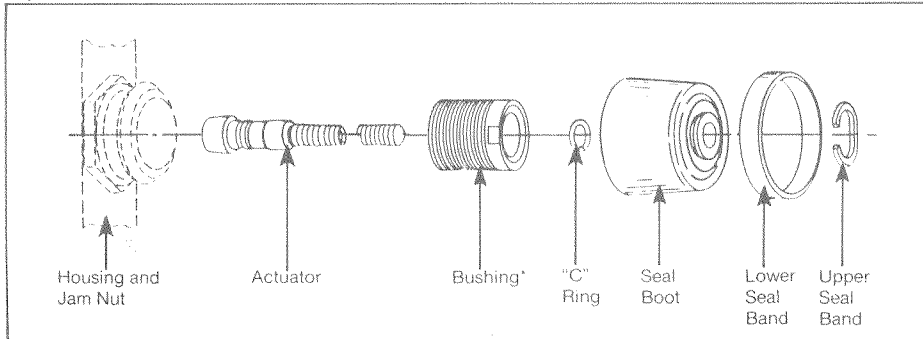
1. Hold bushing with wrench on flats provided.
2. Loosen nut.
3. Reposition and tighten nut.

**N18 Types**

If the actuator or the basic switch is replaced, the actuator may have to be adjusted to duplicate the original operating point of the switch. To adjust the operating point, remove the lower seal band from the base of the seal boot. "Peel back" the seal boot to expose the collar or bushing. Loosen the collar or bushing. Insert a .015-inch thick feeler gage between the base of the internal plunger actuator and the pin plunger of the basic switch. The conical spring may be rotated so as not to interfere with the placement of the feeler gage. Slowly turn the collar or bushing clockwise

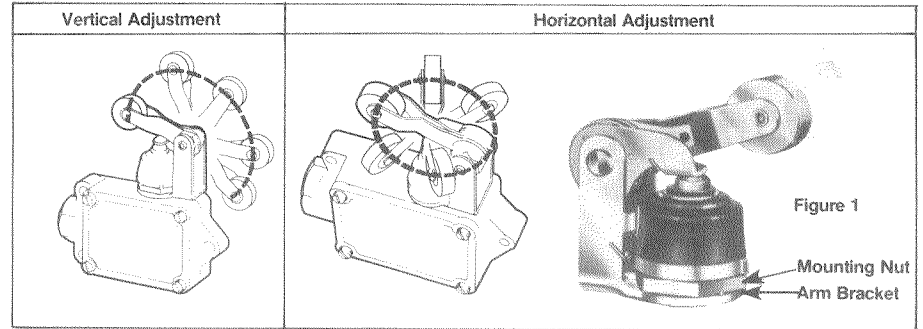
until the basic switch operates. If the collar design includes a set screw, tighten the screw on the collar or the jam nut on the bushing and remove the feeler gage. **IMPORTANT:** Excessive tightening of the set screw may interfere with the operation of the internal switch plunger. Actuate the switch manually several times to check proper operation. Replace the cover plate and reseal the boot on the actuator. Check switch actuation again after resealing the boot. A crimping tool is available to clamp the lower seal band. See page 3.

**Exploded View - 6PA188-F Actuator Packet**



\*Not included in 6PA20 Packet

**N2, N4 and N28 Types**



**Vertical Adjustment Range:**

- N2 - Roller-lever type - 225°
- N4 - Hand-operated type - 180°
- N28 - One-way roller lever type - 180°

**Horizontal Adjustment Range: 360°**

To adjust sealed "N" types, loosen mounting nut, adjust to any position, and tighten mounting nut (Figure 1).

**To adjust:**

Loosen hex nut; adjust arm to desired position; tighten hex nut.

**Calibration:**

1. One serration of lever arm - 8.18°
2. One serration of lever arm and fluted washer as a unit - 8°
3. One serration of lever arm with one serration of fluted washer in opposite direction - 0.18°

**REPLACEMENT PARTS**

**Basic Switch**

Order according to the catalog listing marked on the basic switch being replaced. Basic switch replacement packet includes basic switch, mounting screws, insulator, and cover seal. To remove the basic switch remove the cover plate and the two screws holding the switch. When installing the new basic switch (and after the operating point has been adjusted on the N18) be certain that the conical spring is placed between the top of the basic switch and the bottom of the actuator mechanism. Tighten the mounting screws only until they are "snug" against the side of the basic switch.

**Replacement Actuators or Accessories**

Part	Catalog Listing
N18 Actuator (spring)	6PA20
N18 Actuator (spring and bushing)	6PA188-F
N181 Actuator (cable)	6PA137-F
2RQN8 Actuator (sealed roller plunger)	8PA23
2RQ9 Actuator (unsealed roller plunger)	8PA10
N2 Actuator (roller lever)	6PA2
N28 Actuator (one-way roller lever)	6PA16
N4 Actuator (manual button)	6PA9
Conduit Seal	2PA1 2PA13
	2PA6 2PA16
Seal band crimping tool	10PA3