



## Gradual Switch & Pressure Regulator

The 2390-501 Series Gradual Switch is designed to allow manual setting of a desired pressure up to main air pressure, where the application requires remote positioning of final control devices, remote control point adjustment of a pressure signal is desired.

The 2390-505 and 2390-510 have been designed with an internal high pressure selector relay, primarily for use as a minimum position switch for damper operation when used with actuators having a 5 or 10 psig span respectively.

Various dial plates are available for each model and for specific switch applications.

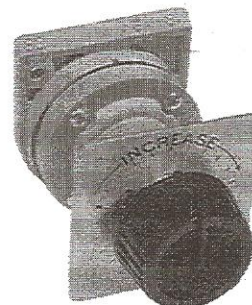
The 2390-515 Pressure Regulator has been designed to allow the manual setting of any desired air pressure, up to main air pressure, where the application requires remote positioning of final control devices, remote control point adjustment of receiver controllers, or any other application where manual setting of an output pressure is desired.

**Table-1 ORDERING DATA.**

TAC WHOLESALE NUMBER	REPLACES MODEL	FUNCTION	COMMENTS
2390-501	S510	Gradual switch	0 to 20 psig output
2390-505	S511-5	Minimum position switch	5 psig span output
2390-510	S511-10	Minimum position switch	10 psig span output
2390-515	S515	Pressure regulator	

**Table-2 DIAL PLATES.**

TAC WHOLESALE NUMBER	REPLACES MODEL	DIAL MARKINGS
22-301	50-10	Warmer, arrow - clockwise
22-302	50-02	Warmer, arrow - counter clockwise
22-303	50-03	Increase, arrow - clockwise
22-304	50-04	Increase, arrow - counter clockwise
22-305	50-05	0 to 100
22-306	50-06	Blank
22-351	50-51	10 Divisions
22-353	50-53	0 to 20 psig



2390-501



2390-515

**Table-3 MOUNTING BRACKETS.**

TAC WHOLESALE NUMBER	REPLACES MODEL	DESCRIPTION
22-150	K502	Mounting bracket for 2390-515
22-155	K511	Single switch bracket
22-156	K512	One switch & one 2" gauge bracket
22-157	K514	Two switches & two 2" gauge bracket

### SPECIFICATIONS

**Action:** Proportional.

**Main Air Pressure:** 20 psig operating, 30 psig maximum.

**Air Capacity:** 8.0 SCFH.

**Air Consumption:** 29 SCIM.

**Maximum Ambient Temperature:** 140° F

**Mounting:** Designed for use on 22-120. TAC Pneumodular manifold socket. These devices can also be mounted on a panel face or surface mounted by using the appropriate mounting bracket (see Mounting Bracket ordering information).

**Connections:** Barbed nipples for 1/4" O.D. polyethylene or 5/32" I.D. polyurethane tubing.

**Material:**

**Case,** Glass filled nylon.

**Dial plates:** Anodized aluminum

**Knob:** Black sunburst plastic

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**Caution:** THIS DEVICE SHOULD BE INSTALLED BY A QUALIFIED SERVICE TECHNICIAN WITH DUE REGARD FOR SAFETY, AS IMPROPER INSTALLATION COULD RESULT IN A HAZARDOUS CONDITION.

## GENERAL INSTRUCTIONS

These devices are to be used on clean, dry oil free control air only and will operate properly when mounted in any position.

The inherent reliability of these devices is enhanced and prolonged through regular inspection and preventive maintenance by a qualified control expert. Should any of these devices become inoperative, it should be replaced by a new unit.

## OPERATION & ADJUSTMENTS

### 2390-501 GRADUAL SWITCH

#### OPERATION

A 300° clockwise rotation of the adjustment knob will increase the output pressure by 20 psig, usually from 0 to 20 psig.

#### ADJUSTMENT

This device is factory adjusted for a 0 to 20 psig range. For special applications (and if a higher main air pressure is applied), the 2390-501 can be adjusted for a higher 20 psig range, such as 5 to 25 psig, as follows:

1. Turn the adjustment knob until the output pressure is at the midpoint of the desired range.
2. Loosen the adjustment knob (3/32" hex wrench) and place the indicator at the midpoint of the dial and retighten the knob.

### 2390-505 and 2390-510 MINIMUM POSITION SWITCHES

#### OPERATION

A 300° rotation of the adjustment knob will change the output either by 5 psig on the 2390-505 or 10 psig on the 2390-510. The starting pressures can be adjusted for any 5 or 10 psig span respectively. Of course, the output cannot exceed main air pressure. For example, using a 2390-505, with a start point of 8 psig, the output will vary from 8 psig to 13 psig as the adjustment knob is rotated 300°. When an external signal is applied in addition to main air pressure, the output will be the higher of the manually selected pressure or the external signal.

#### ADJUSTMENT

1. Turn the adjustment knob until the output pressure is at the midpoint of the desired range.
2. Loosen the adjustment knob (3/32" hex wrench) and place the indicator at the midpoint of the dial and retighten the knob.

**Note:** These switches have knob stops for a 300° rotation so the initial adjustment may require two or more steps.

## MOUNTING INSTRUCTIONS

### PANEL MOUNTING

**Inside:** These devices have been designed to be mounted on a TAC Pneumodular socket. One socket, one gasket and two mounting screws are required in addition to the appropriate manifold backplate. Refer to the TAC Pneumodular Parts and Accessories Data Sheet (1-627) for complete ordering information.

**Surface:** The 2390-501, 505 and 510 may also be mounted on a panel face (1/2" maximum panel thickness) using a 1-1/64" mounting hole. See Figure 1.

### FIELD MOUNTING

These devices may also be mounted without the backplate, socket or gasket to replace competitive and old Robershaw devices by using the appropriate mounting bracket as shown in the chart on page 1.

**Note:** The 2390-515 comes packaged with a plastic mounting strap and an adhesive base. The appropriate mounting bracket as shown in the chart on page 1 may be used if desired and must be ordered separately.

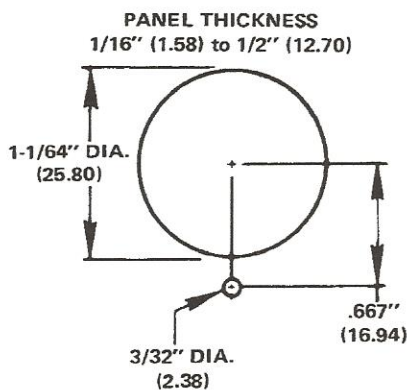


Figure-1 Minimum Centerline Spacing for Panel Cutout 2" (50.8).

## REPLACEMENT OF OLD DEVICES

To replace older models of gradual switches, such as the 2390-101 or factory models S10, S21, S30, S31, S40 or S41 with a -11 designation (Example: S10-11) a 22-172 washer adaptor must be used. See Figure 2.

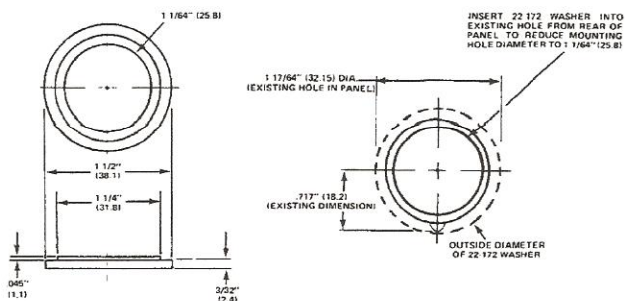


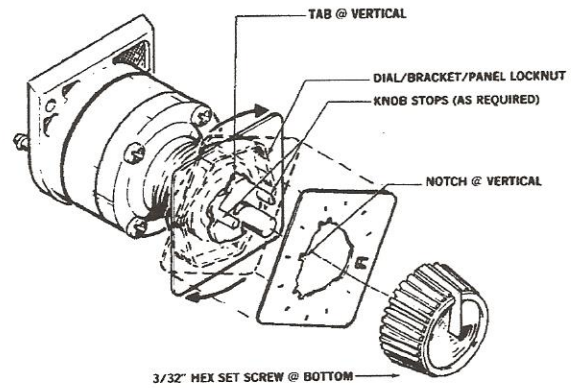
Figure-2

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## DIAL PLATE INSTALLATION

With the knob removed and the lockout run back for clearance, turn the dial plate to fit over the projections on the front of the switch body. Align and engage the vertical notch in the dial plate with the tab behind the top switch body protection. Tighten the lockout against the back of the dial and replace the knob, see Figure 3.



DIAL PLATE INSTALLATION

Figure-3

## TYPICAL INSTALLATIONS

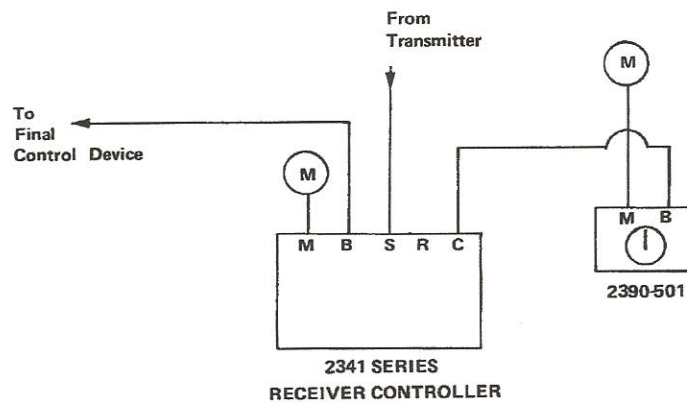


Figure-4

## GRADUAL SWITCH

The 2390-501 Gradual Switch provides a varying signal to the controller to provide remote control point adjustment.

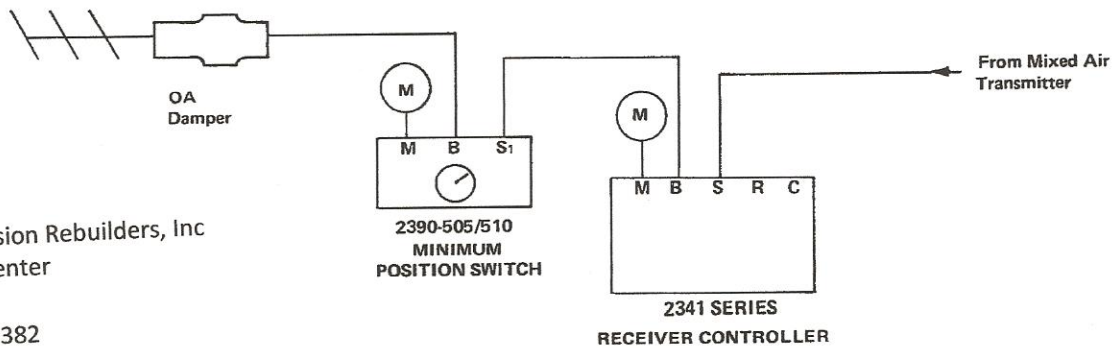


Figure-5

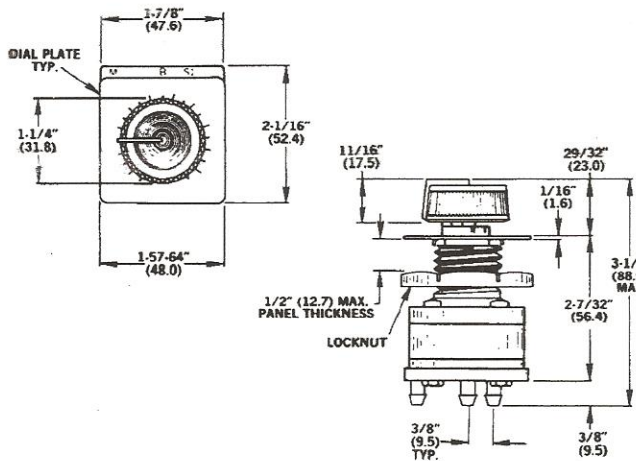
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## MINIMUM POSITION SWITCH

In this application the controller provides a proportional signal to open or close the outside air damper to maintain the proper mixed air temperature. The 2390 Series Minimum Position Switch contains a built in high select relay and provides a means of establishing a minimum signal to the OA Dampers to maintain the minimum volume of OA required by code. The

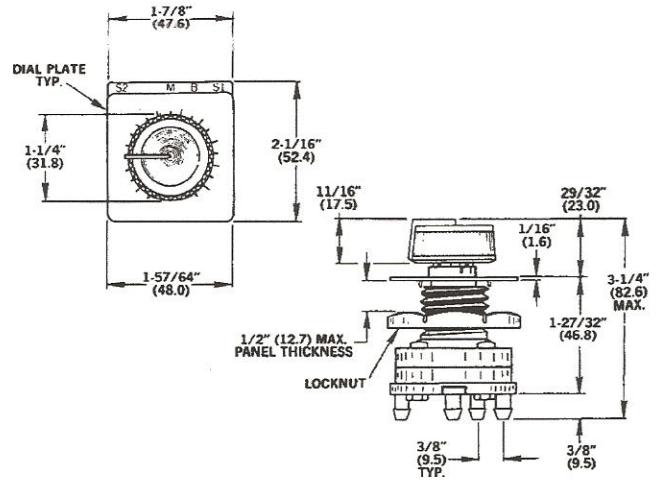
2390-505 and 510 have a 5 psig and 10 psig output range respectively. The appropriate model is chosen to match the span of the actuator being controlled (5 or 10 psig). The pressure required to maintain minimum position is set and whenever the controller output (Branch) pressure is less than the minimum position switch set point, the switch will provide that minimum pressure to the actuator.

# MOUNTING DIMENSIONS



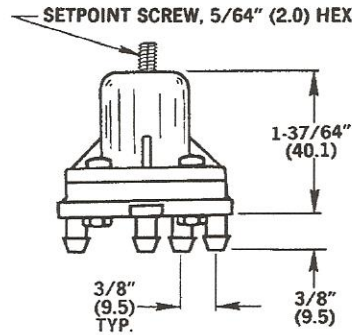
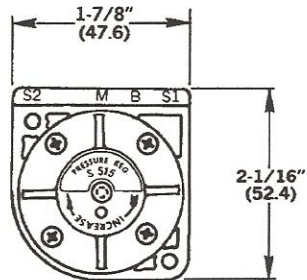
2390-505  
&  
2390-510

Figure-6



2390-501

Figure-7



2390-515

Figure-8

On October 1st, 2009, TAC became the Buildings business of its parent company Schneider Electric. This document reflects the visual identity of Schneider Electric, however there remains references to TAC as a corporate brand in the body copy. As each document is updated, the body copy will be changed to reflect appropriate corporate brand changes.

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