

### LP916A, B, & C PNEUMATIC REMOTE BULB THERMOSTAT

#### Engineering Data

## SPECIFICATIONS

### MODELS:

LP916A: Direct acting.

LP916B: Changes from direct to reverse acting with a change in main line pressure (for automatic changeover systems). Direct acting at 18 psi (125 kPa) supply pressure. Reverse acting at 9 psi (60 kPa) or 13 psi (90 kPa) supply pressure.

LP916C: Reverse acting.

MAXIMUM SAFE AIR PRESSURE: 25 psi (175 kPa).

MAXIMUM SAFE TEMPERATURE: Duct-mounted models, 190F (88C); all others, 135F (57C).

DIMENSIONS: 5 x 2-3/4 x 3 inches deep.

### MOUNTING:

Integral Mounting Bracket Model: Typically mounted inside the end compartment of a unit ventilator or fan coil unit. May be duct mounted using mounting bracket AK3993.

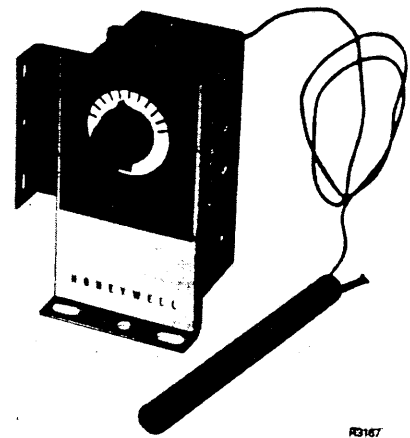
Mounting Kit Model: May be mounted directly from the top or with mounting bracket assemblies 316016A, B, or C.

## OPERATION

The direct acting LP916A, used with normally open heating valves, lowers the branch line pressure as the temperature at the sensing element falls. This causes the valve to modulate open, maintaining the setpoint temperature.

The LP916B has an automatic switchover mechanism. A main line pressure of 13 psi (90 kPa) provides reverse action (cooling), while a main line pressure of 18 psi (125 kPa) provides direct action (heating).

The LP916C is factory set and adjusted for reverse action only. When applied with a normally-open valve



AIR CONNECTIONS: Two 1/4-inch (6 mm) O.D. barb fittings. A convenient plug-in branch line pressure gage port is provided on the front.

### FITTINGS:

Integral Mounting Bracket Model: Hangers, mounting screws and Tinnerman clips are included with the device.

Mounting Kit Model: Ordered separately. See ACCESSORIES.

for cooling, the branch line pressure drops with a rise in temperature. This causes the valve to modulate open, maintaining the setpoint temperature.

In fan coil or duct mount applications (Fig. 1 and 2) the LP916 senses temperature to operate a normally-open controlled medium valve.

In a typical mixed air application (Fig. 3), the LP916 senses temperature and controls a damper to maintain a proper air mix. Use model with wide throttling range for best control.

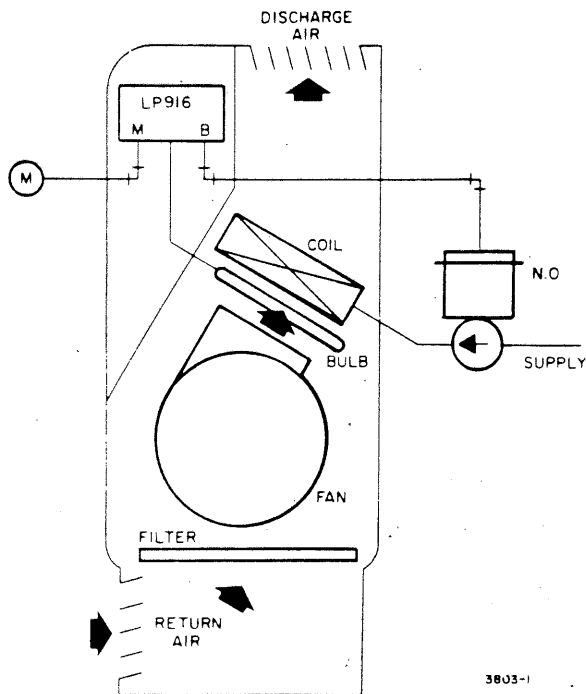


Fig. 1. Typical Fan Coil Application.

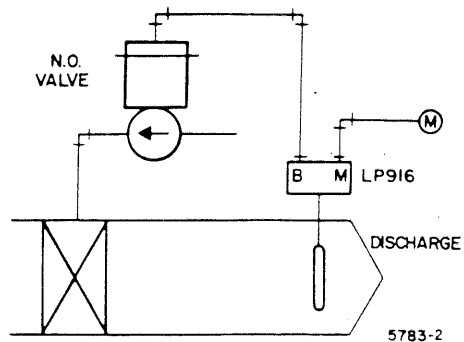


Fig. 2. Typical Duct Mount Application.

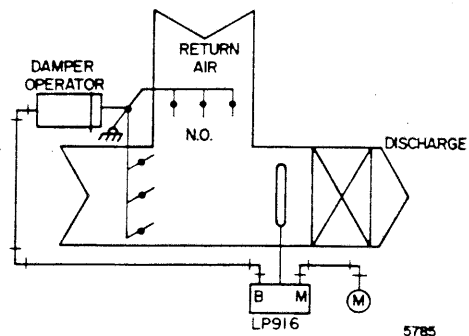


Fig. 3. Typical Mixed Air Application.

## ORDERING PROCEDURE

When ordering, specify:

1. Integral mounting bracket model, including: model number, setpoint range, scale marking, throttling range, restriction size, and bulb size.

2. Mounting kit model, including: model number, setpoint range, scale marking, throttling range, restriction size, bulb size, and Mounting Bracket Assembly 316016A, B, or C.
3. Duct mounting bracket (if needed).

## ACCESSORIES

Gage Adaptor CCT729.

Duct Mounting Bracket AK3993.

Mounting Kit Model:

Part No.	Screw No. 10-32NF x 14 in. Fil Hd Slot (2)	Screw No. 10 x 5/8 in. (2) Binder Hd Sheet Metal (2)	Screw No. 8-1/2 in.	Knob	Plate	Bracket	Tinner- man Clip	Hanger (2)
316016A	X	X		X	X	X	X	X
316016B	X	X	X	X	X	X	X	X
316016C	X			X	X			

# THEORY OF OPERATION

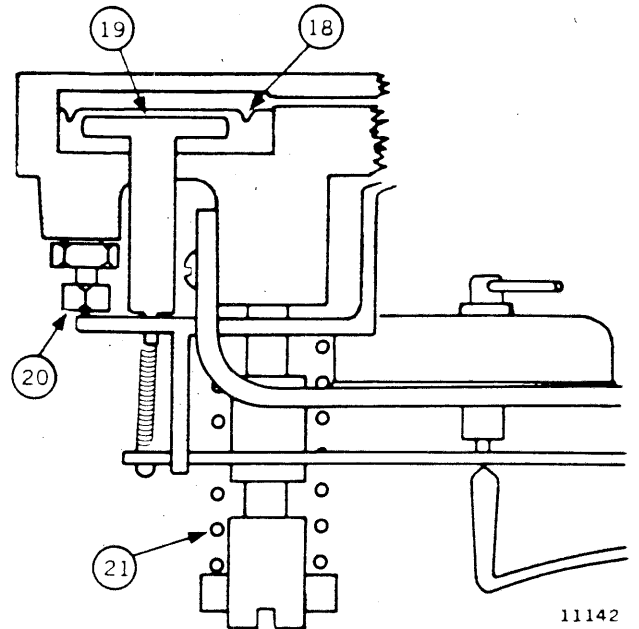
Refer to Figures 4 and 5.

Temperature change is sensed by the bulb of the thermal element (15), resulting in a slight change in the fluid volume. This volume change is converted into motion and is transmitted to the main lever (3). The main lever actuates the flapper (9) over the nozzle (13) which results in a change in branch line pressure.

Main line air is fed into the thermostat through the integral restriction (12) and to the nozzle (13) and branch line.

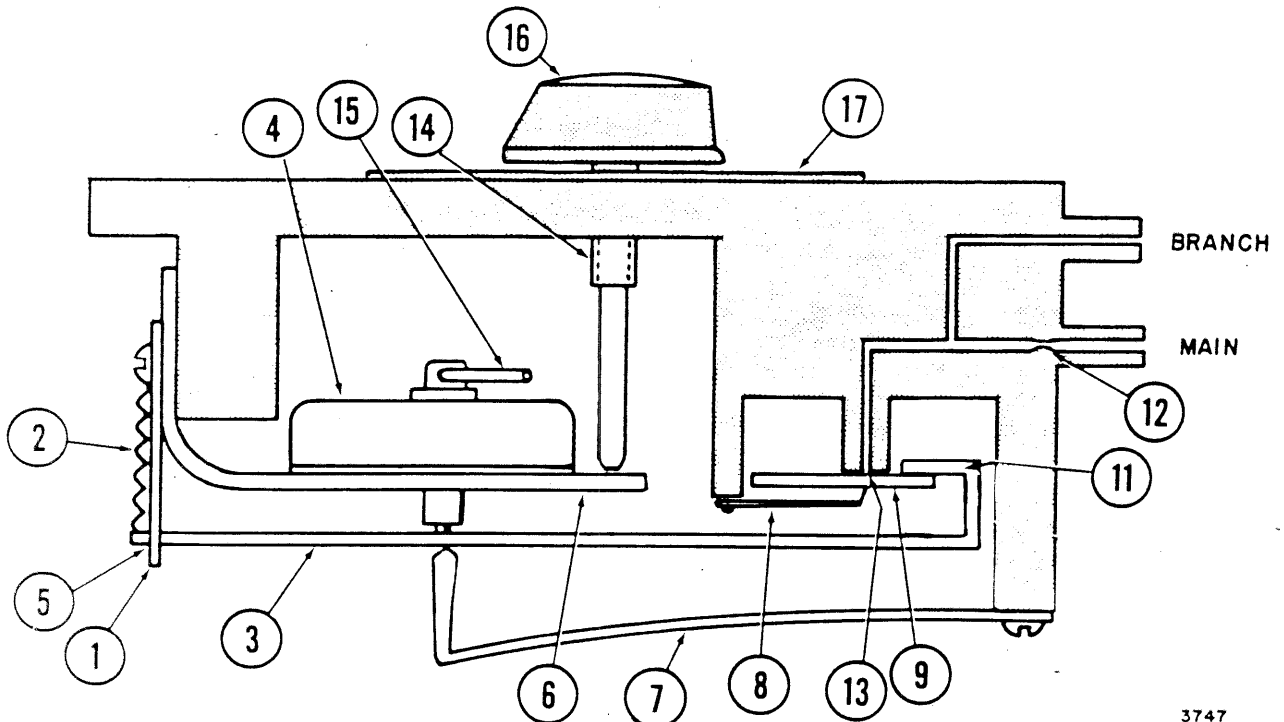
Temperature control point is obtained by moving the position of the thermal element head. The temperature control knob (16) is attached to the threaded shaft (14) which also holds one end of the thermal head lever (6). As the knob is turned, the shaft moves the thermal head lever about a pivot, moving the thermal head up or down. This motion is transferred to the main lever and flapper.

In the LP916B, switchover is accomplished by moving the pivot of the main lever (3). Main air enters the switchover chamber (18). The switchover chamber air pressure force is opposed by a spring force (21). As the main air pressure changes, the main lever pivot moves up or down, resulting in contact of the flapper on the opposite side. The flapper, pivoting on the side of the square nozzle, changes its pivot and reverses the action.



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Fig. 5. Automatic Switchover Mechanism of LP916B.



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Fig. 4. Schematic View of LP916A.

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