



MAINTENANCE INSTRUCTION

PRESSURE SWITCH — TYPE 9013

DESCRIPTION

Pressure switches, Fig. 1, are used in connection with the air brake system to provide one or a combination of protective functions depending on application or customer requirements.

The main components of the pressure switch are:

1. Diaphragm
2. Actuating linkages
3. Electrical contacts

The oil resisting diaphragm, Fig. 2, is acted upon by air pressure from piping connected at the coupling

at the bottom of the switch. The diaphragm in turn transmits this force to a system of spring loaded arms and levers.

The main pressure spring, Figs. 2 & 3, may be adjusted by means of the nut at the top to close (or open) the electrical switch contacts at the desired air pressure.

A differential spring and cam lever assembly, mounted inside the switch on the left side, is designed to hold the electrical contacts in the "picked up" position until air pressure on the diaphragm has reached the desired "drop out" value. The differential spring may also be adjusted



New Style

25520



Old Style

8442

Fig. 1 - Typical Pressure Switches

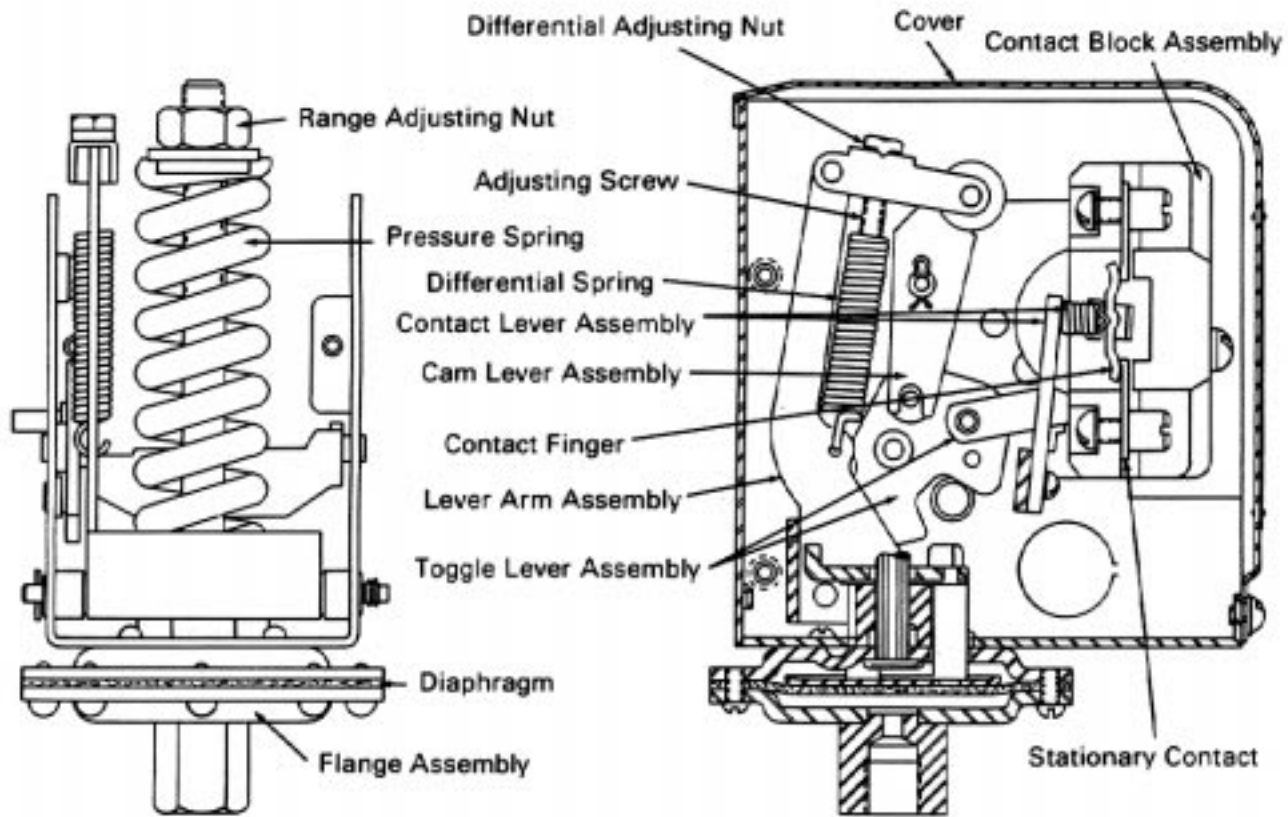
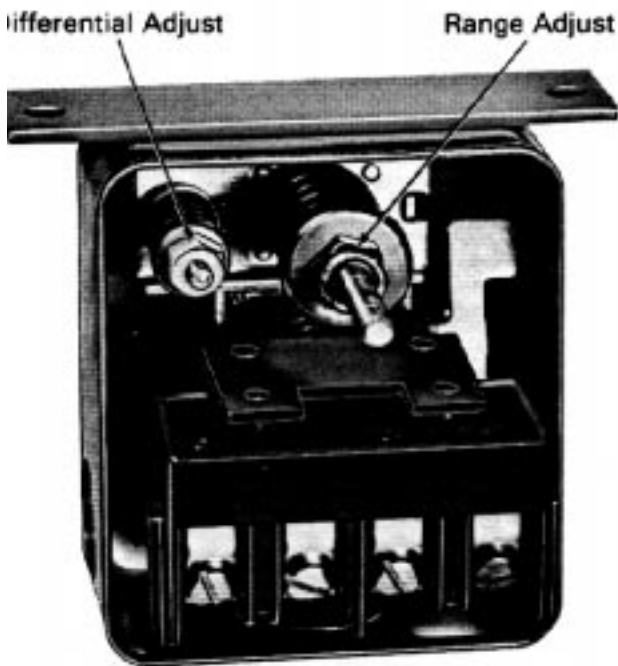


Fig.2 - Cross Section Of Old Style Pressure Switch

8445



28821

Fig.3 - New Style Pressure Switch With Cover Removed

By means of the nut provided at the top, rear of the switch.

Depending on switch type and application the electrical contacts may be either, both normally open, both normally closed, or one normally open and one normally closed. The contacts change position (open or close) through actions of a spring loaded contact finger assembly, upon which the toggle linkage of the switch assembly acts in response to air pressure on the diaphragm.

ADJUSTMENTS

Changes in the switch operating limits are made by varying the spring preload on the linkage arms. These adjustments are accessible when the front cover of the switch is removed. The two adjustments provided on this type of switch are:

RANGE

The range adjustment determines the "pickup" or low pressure point. Should it be necessary to adjust the pressure at which the switch "picks up" or functions, this can be done by means of the range adjusting nut, Figs. 2 and 3. Always adjust the range spring nut first, until the desired operating point on falling pressure is obtained. This adjustment

changes both the high and low operating points, but should always be adjusted for the low operating point.

Turning this nut clockwise will increase the spring pressure on the diaphragm which will then require a greater air pressure to actuate the switch. Turning the adjusting nut in the opposite direction will serve to lower the pressure requirements for switch operation.

DIFFERENTIAL

The pounds pressure between "pick up" and "dropout" is referred to as the differential. The differential can be adjusted by means of the differential adjusting nut, Figs. 2 and 3. Turning this nut downward will increase spring pressure and the differential. To reduce the differential the nut can be backed off.

After adjusting the pressure switch, check adjustment by simulating an operating cycle. If the switch does not perform satisfactorily, the range and the differential adjustment cycles should be repeated until the switch is correctly adjusted.

MAINTENANCE

INSPECTION

The pressure switch has been carefully designed and manufactured to provide long life and trouble free operation. Inspection of switch operation should be made, however, at intervals specified in the Scheduled Maintenance Instruction. Such attention will ensure continued satisfactory operation.

If faulty operation of the switch is suspected, it should be removed for bench testing. A suitable test set-up is shown in Fig. 4.

REPLACEMENT OF SUB-ASSEMBLIES

ELECTRICAL CONTACTS

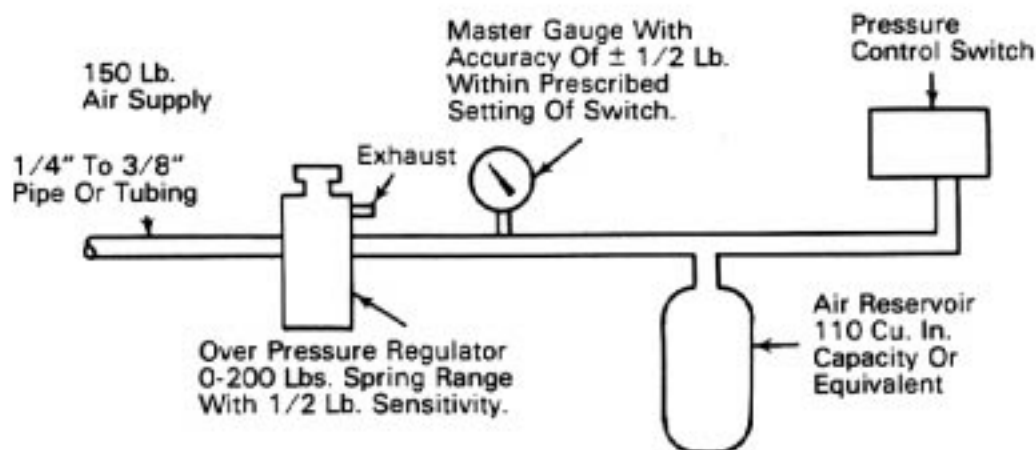
When the contacts on the old style pressure switch, Fig. 2, are worn to the base metal they may be replaced either individually or as a complete stationary or movable assembly.

Upon removal of the switch cover all contacts can be easily inspected or replaced by first removing the ceramic insulating block to expose them. This is done by removing the two machine screws that hold the block to the switch housing.

The stationary contacts are in the block and are individually held in place by a machine screw and nut which also serves as a terminal for external circuit connections.

The bridge type movable contacts are spring loaded and may be easily removed from their guides by depressing the spring and turning the contact sideways.

When the contacts become worn on the new style pressure switches, Fig. 3, the contacts are replaced as a kit. The replacement contact kit includes movable contacts and stationary contact blocks.



14548

Fig.4 - Bench Test Set-Up For Pressure Switches

DIAPHRAGM

During periodic inspections, the diaphragm should be inspected for wear, cracks or other indications of deterioration. Replacement is readily accomplished by removing the machine screws which hold the lower half of the connecting flange and diaphragm in place.

LUBRICATION

During periodic inspections, one drop of light engine oil should be applied to each of the moving parts in the actuating linkage.

The pressure switch cover should be kept in place at all times to protect the switch components from dust and dirt.