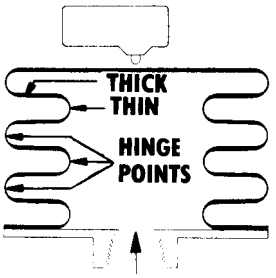
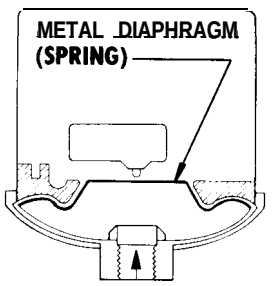
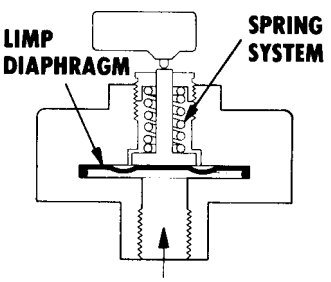
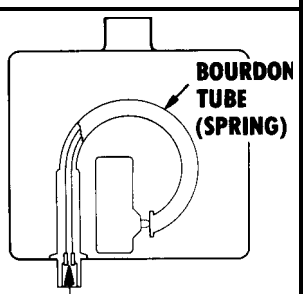
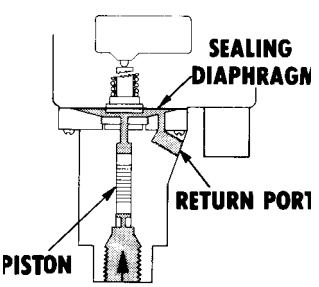
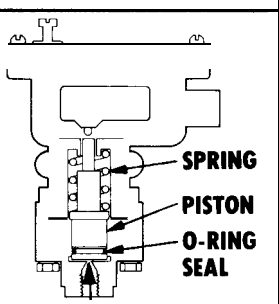
"TRACE" PRESSURE SWITCH DESIGN PRINCIPLES

A Trace Pressure Switch is one in which the sensing element moves (traces) with every change in pressure.

DESIGN PRINCIPLE	CONSTRUCTION (sensing element)	ADVANTAGES	DISADVANTAGES
BELLOWS		1. Narrow deadband. 2. Small diameter. 3. Inexpensive to manufacture. 4. Materials available for wide range of pressures and medias.	1. Settings drift in use. 2. Indeterminate service life. 3. Critical to vibration. 4. Sensitive to ambient temperature change.
METAL DIAPHRAGM		1. Very accurate in upper 2/3 of range. 2. Very low pressure range capability. 3. Wide media capability because of different diaphragm materials. 4. Narrow deadbands.	1. Tracing element – shorter service life. 2. Critical to shock and vibration. 3. Settings drift as metal fatigues. 4. Expensive to manufacture.
LIMP DIAPHRAGM		1. Very accurate in upper 2/3 of range. 2. Relatively narrow deadbands. 3. Low pressure range capability. 4. Wide media capability because of different diaphragm materials.	1. Synthetic diaphragms can age resulting in indeterminate service life. 2. Certain diaphragm materials are temperature sensitive. 3. Spring system critical to shock and vibration. 4. Some diaphragms easily damaged.
BOURDON TUBE		1. Very accurate in upper 2/3 of range. 2. Narrow deadband for high pressures. 3. Extremely sensitive to pressure changes. 4. Very versatile pressure range capability.	1. Extremely critical to pump ripple or surge pressure. 2. Critical to vibration because of length. 3. Critical of ambient temperature changes because of tube length. 4. Quality tube expensive. 5. Tracing type element – shorter service life.
PISTON (UNSEALED)		1. Much narrower deadband than the sealed piston switch. 2. No breakaway force required on first actuation due to no O-ring seal. 3. Not critical to pump ripple or surge pressure. 4. Not critical to vibration. 5. Wide pressure range capability.	1. Extremely critical to dirt, even extremely fine particles. 2. Expensive to install because of drain line.
PISTON (SEALED)		1. Not critical to pump ripple or surge pressure. 2. Not critical to dirt in system. 3. Not critical to vibration.	1. Wider deadband due to seal friction. 2. Higher initial breakaway force for first actuation due to seal friction ("stiction").