

The installation of direct reading gauges at the pump is necessary to provide the operator with first-hand information as to the performance of the pump during operation. The pressure and the compound gauges on a fire pump are vital to effective operation by the pump operator, for by observing these gauges, it can be determined exactly what the pump is doing.

The gauges register the exact amount of pressure output from, or input to, the pump, at the point where they are attached.

Gauges used on fire department pumpers are of the "Bourdon" type, so named after their inventor.

Bourdon gauges are of three general types: Namely, the pressure gauge, which indicates the amount of positive pressure; the vacuum gauge, which is used to indicate the inches of mercury; and the compound gauge, which is used to indicate both pressure and vacuum.

Pressure gauges are installed on the discharge side of all positive displacement pumps. Straight vacuum gauges have very little use on pumpers, but the compound gauge is installed on the suction or intake side of all pumps and is usually provided in place of the straight pressure gauge on the discharge side of centrifugal pumps. The reason is that the centrifugal pump has a continuous waterway, and when a vacuum is applied to the pump, it applies to the entire pump. Under ordinary circumstances, a straight pressure gauge would be damaged with such use.

Both the pressure and compound gauge are usually provided with a gauge cock in the tube connection to the pump. The function of this control is twofold: first, it permits operation of the pump if the gauge is removed; second, it permits the operator to adjust the movement of the gauge needle if it is oscillating excessively due to pump pulsation. Gauge cocks should be closed to the point where the needle gives a good steady reading without undue vibration.

Therefore, operators should have frequent practice sessions in operating their pumpers in order to be thoroughly familiar with the behavior of gauges under varying conditions, and so that they can develop a clear understanding of the limitations of the various size mains and hydrants. Frequent study of compound gauge readings will help develop these skills.

When a pumper is receiving water from a hydrant, the gauge reading, before any hose discharge lines are opened, will show the static pressure in the water system. As streams are placed in operation, the inlet gauge pressure will fall because the movement of the water causes pressure losses due to friction in the supply mains, hydrants and suction or supply hose.

# Information Sheet #1

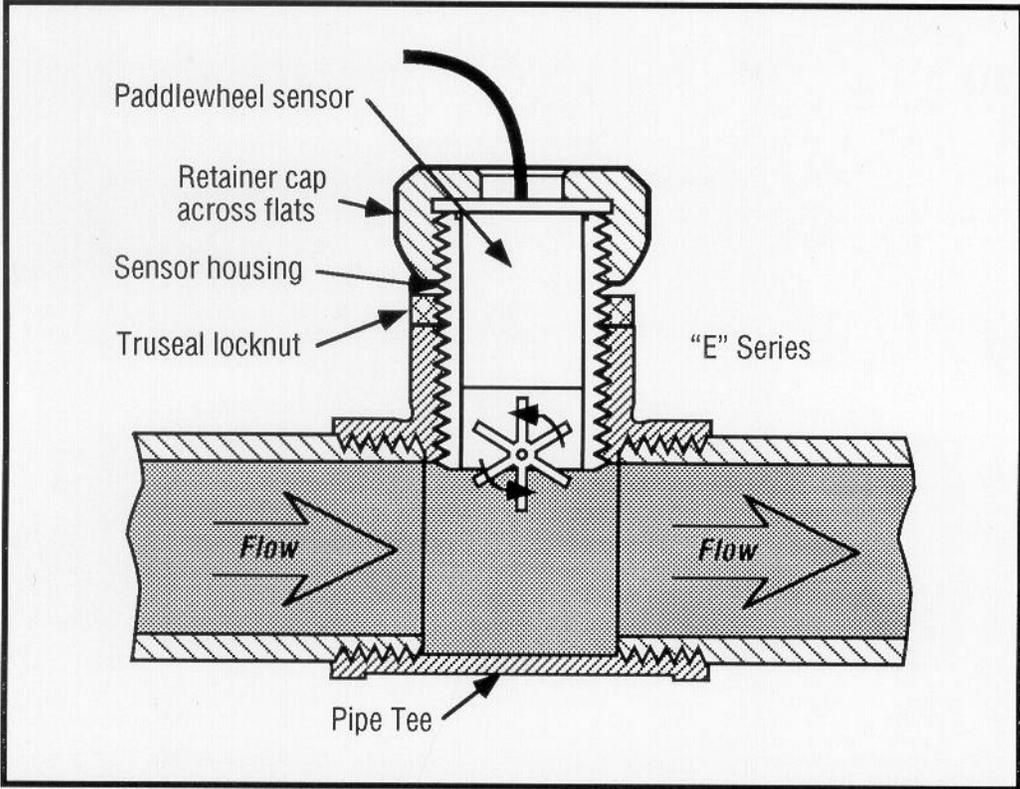
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PUMP GAUGES AND FLOWMETERS

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Observation of the gauge on the intake side of the pump will tell the operator what performance may be expected from the water system, at least through the hydrant to which the pumper is connected.

The difference between the static pressure and the flow pressure will indicate the additional amount of water that can be obtained from the hydrant. This also indicates the residual pressure at which flows may be obtained.



The paddlewheel sensor is another type of sensor used in flowmeters.