



A Tank Mate level sensor mounted at or as near as possible to the bottom of a vessel provides a constant measure of the hydrostatic pressure of the liquid in the vessel against a sensitive diaphragm. The liquid pressure is matched in a 1:1 ratio by an air pressure against the opposite side of the diaphragm to provide an accurate, useful output for gauging or process control functions.

These sensors, bearing the 3A symbol, are made of 316L stainless steel, and have a stainless steel diaphragm with a Teflon seal between the diaphragm and sensor shell. This construction is impervious to most food ingredients and the materials commonly used in CIP (clean in place) applications. Sensors are furnished for either flush welding mounting or 2" sanitary clamp mounting. Flush welding sensors are packaged with a throwaway welding fixture necessary to protect the shell during welding.

Before shipping, complete customer ordered gauging systems are shop assembled and tested to an accuracy of at least 1% of full scale. The system requires a regulated 20 PSI input air supply. An air restrictor in the input side of the sensor reduces the volume to 1 CFH. To maximize continuing accuracy in the field it is important to have clean, dry instrument air furnished to the system, and all tubing connections must be tight and leak free.

In order to synchronize full tank/full scale reading of the gauge it may be necessary to install a Tank Mate Ratio Relay in the system. For more information on Ratio Relays see Tank Mate Bulletin No. 818.

For pneumatic dial gauging sensor output is directed to an 8½" circular scale master tank gauge with a very sensitive 15 PSI movement. It is possible to furnish a scale up to 19" long with as many as 300 graduations inscribed to match the tank and products with units as specified. The gauge has a dry bourden tube movement with no liquids present. Other gauging options available include a 6" dial gauge that can be



Model 200 WFC Sensor Model 200 CFC Sensor

used as master or repeater gauge, and an economical 4" level indicator (see Bull. 816, Econo-Mate System).

If tank contents are to be read digitally it will be necessary to install a P/I (pressure to current converter/transmitter) in the system to provide the 4-20 mA output necessary for the digital gauging function. The Tank Mate MC58 P/I Transmitter (Bull. No. 820) will provide the output necessary for the digital gauging function. Two types of digital gauges are available from Tank Mate: the Model 610 DPM with built-in power supply (Bull. No. 821) for use with linear, or silo-type tanks and the Curve-Master (Bull. No. 813) for use with non-linear tanks (horizontal, dished head, or irregular shapes).

The drawing on the next page illustrates how components might be assembled to make up a typical gauging system.

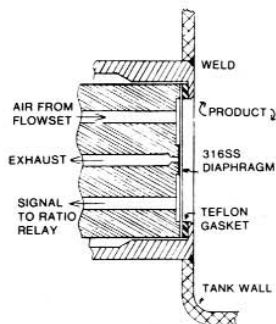
PRINCIPLE OF OPERATION —

Pneumatic Sensing

The system functions by matching liquid pressure inside the tank with an air pressure on the back side of the flexible stainless steel diaphragm.

An increase in the product pressure (or level) causes the diaphragm to flex inwardly, thereby shutting off the exhaust. This permits the air pressure to increase until it equals the product pressure. As the air pressure behind the diaphragm increases, the output (signal) pressure also increases. When air pressure equals liquid pressure, excess air escapes through the exhaust nozzle and the output pressure remains steady.

Decreasing product pressure (or level) allows air to exhaust until a new pressure balance is achieved. The flexing action is rapid and the output (signal) pressure essentially equals the product pressure at all times.



SPECIFICATIONS

Materials of Construction

- Sensor Shell** 316L stainless steel
- Diaphragm** 316 stainless steel
- Gasket** Teflon

Input Air Pressure 20 PSI (Reduced to 1 CFH at sensor)

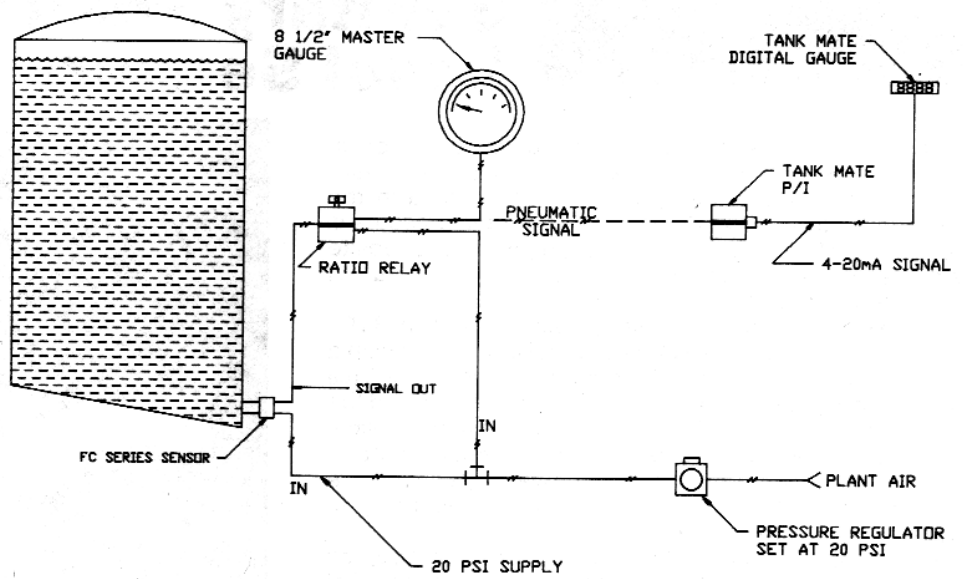
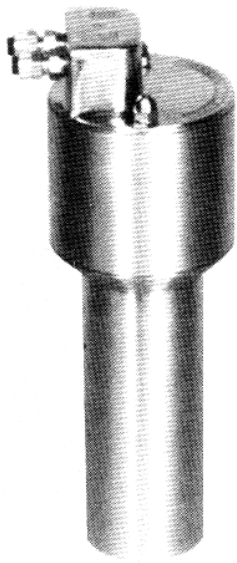
Maximum Temperature Rating 150°F standard model
300°F high temp. model

Accuracy Sensor is capable of reproducing a pressure to within ½" W.C. from 0 to 15 PSI

Sensors bear the 3A symbol

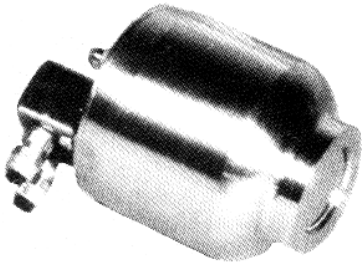
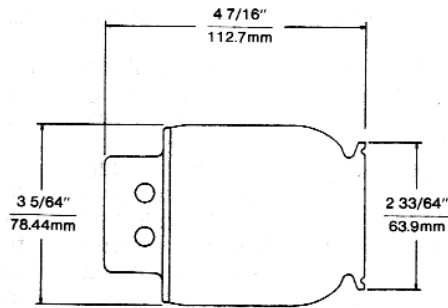
HOW TO ORDER —

Model	Part No.	Application
200 WFC	50-152	Weld in-for single shell tanks
200 CFC	50-151	Clamp type-to 2" ferrule
205 WFC	50-150	Weld in-for insulated tanks, 4½" insulation maximum
208 WF	50-181	Weld in-for insulated tanks, 7½" insulation maximum

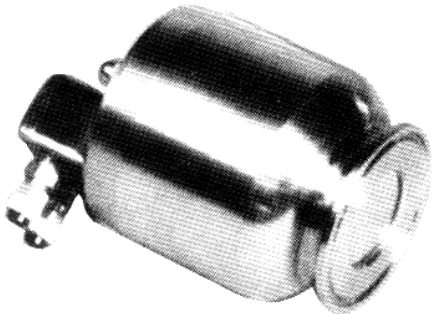
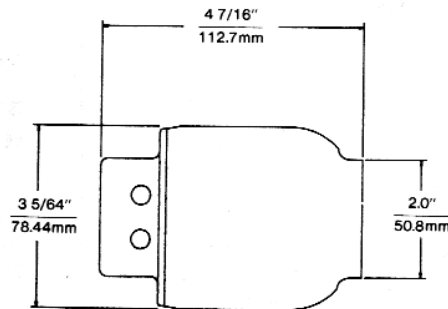


DIMENSIONS - PNEUMATIC LEVEL SENSORS

200 CFC - 2" CLAMP-TYPE LEVEL SENSOR



200 WFC WELD-IN LEVEL SENSOR



**205 WFC WELD-IN LEVEL SENSOR
*208 WF WELD-IN LEVEL SENSOR**

