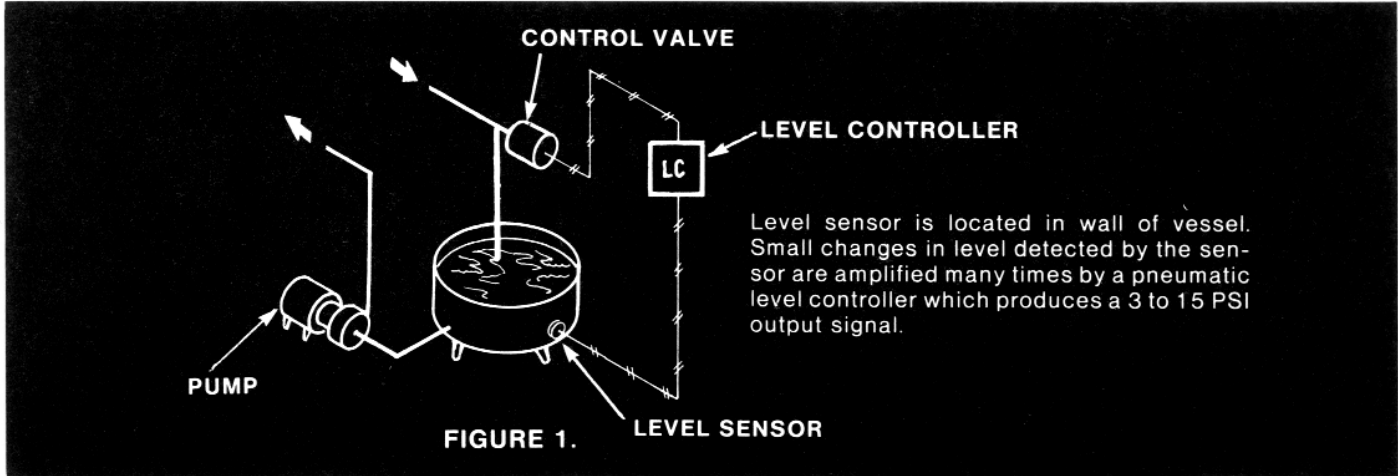


Tank Mate Sanitary Balance Tank Level Control



FEATURES

- Clean-in-Place
- No Floats—No Probes
- High Accuracy Level Control
- Insensitive to Foam, Air, Viscosity and Temperature
- Low Level Recycle
- Adjustment Set Point
- Modulates either Valves or Variable Speed Pumps

APPLICATIONS (Figures 1 & 2)

- HTST Balance Tanks
- Surge Tanks
- Fillers
- Hoppers

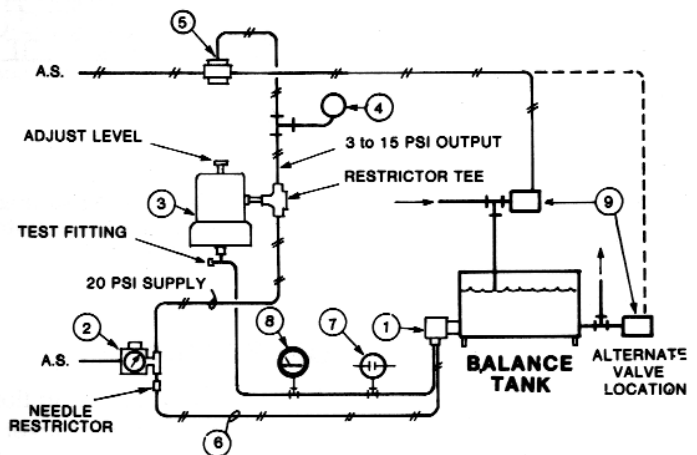
The Tank Mate Balance Tank Level Control maintains a constant level in a tank from full flow to tight shutoff. No matter how rapidly the process may change, the level will be held within 1/2" or better.

And there's nothing in the Tank. The model 200 Level Sensor is attached to the side of the tank, either in a 2" clamp fitting or it can be flush welded. The pneumatic sensing is done by a supersensitive 316SS diaphragm, which will respond to changes of level of less than 1/2". The sensor is 3A certified and can be cleaned in place along with the tank.

HOW IT WORKS

The Model 200 Level Sensor is a 1:1 pressure repeater which produces a pneumatic signal equal to the liquid pressure. This pressure is transmitted through 1/4" tubing to the Level Controller.

The pneumatic Level Controller contains a level set point adjustment which can be set at any point on the range. Also included is a sensitivity or gain adjustment which can be tuned into the system to provide a maximum speed of response. Likewise a simple linkage change permits setting for either direct or reverse action.



Item	Part	Description
1A	200 WFC	Level Sensor—Welding Mount
1B	200 CFC-2"	Level Sensor—2" Clamp Mount
2	40-103-30	Air Flowset—Set At 20 PSI
3	51-108	Level Controller: Range 0 to 30" or 0 to 100"
4	20-126	30 PSI Pressure Gauge
5	20-74	Booster Relay: ___ 1:2, ___ 1:3, ___ 1:4
6	40-111	100 Feet 1/4" Poly Tubing
7	140-63	Pressure Switch
8	20-80	Level Gauge—Panel Mount

FIGURE 2. Diagram of LEVEL CONTROL SYSTEM

The level controller processes the signal from the level sensor and outputs a 3 - 15 PSI signal. This signal is transmitted to a booster relay producing a high power signal which is transmitted to the throttling control valve.

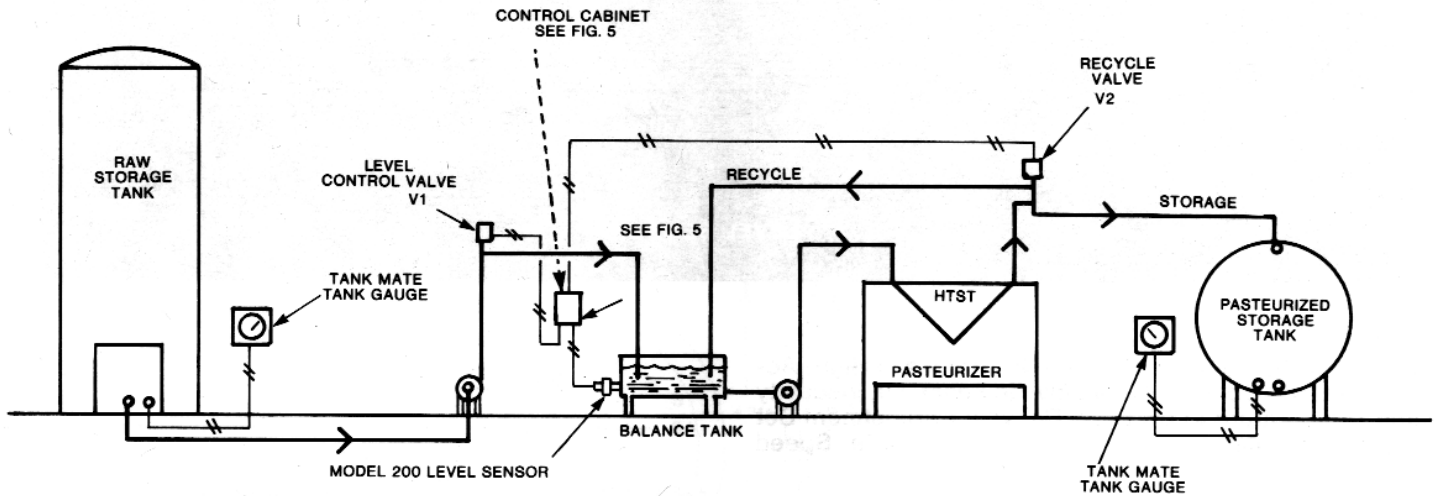


FIG. 4. HTST Pasteurizing Control System
Balance Tank Level Control with Automatic Low Level Recycle

OPERATION

- 1** Under **normal** conditions Valve V1 modulates to maintain constant level in balance tank.
- 2** In case of a **failure** of the raw supply low level in balance tank causes Valve V2 to transfer from Storage position to Recycle position. System remains in Recycle until raw supply is reactivated.

THE HTST RECYCLER (Fig. 4)

The Tank Mate Level Sensor adapts particularly well to the automatic control of pasteurizing systems. Low level in the balance tank can be readily detected with a simple pressure switch located in the signal line from the Level Sensor. If the level falls to a predetermined low level, the pressure switch will trip and cause an immediate control response.

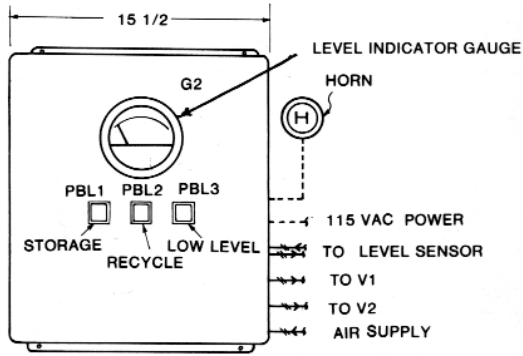


FIG. 5. PC30 HTST Recycler Control Cabinet

Low level in the balance tank can be caused by a number of reasons. But whatever the reason, it is important that the tank not run dry. If the tank runs dry, air will be taken into the system and cause harmful effects to the process equipment down stream.

The Recycler prevents this by sensing the low level and immediately causing the system output to be recycled back into the balance tank as shown in Fig. 4.

Balance tank low level can be caused inadvertently by loss of raw product supply should the supply tank run dry. Or, low level can be produced deliberately in order to minimize intermixing when changing from one product to another product. Also, at shutdown the level can be dropped prior to a water flush in order to reduce dilution.

HIGH/LOW PUMP CONTROL

Two Point Level Control When constant level control is not called for, often two point control is used as shown in Fig. 6. Here control is obtained by starting and stopping a pump.

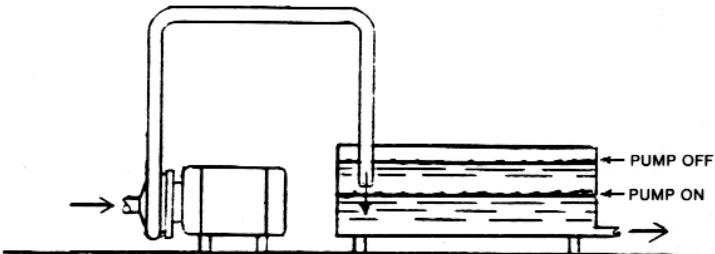


FIG. 6. In two-point control, as shown, the pump starts when the level falls and stops when the level rises.

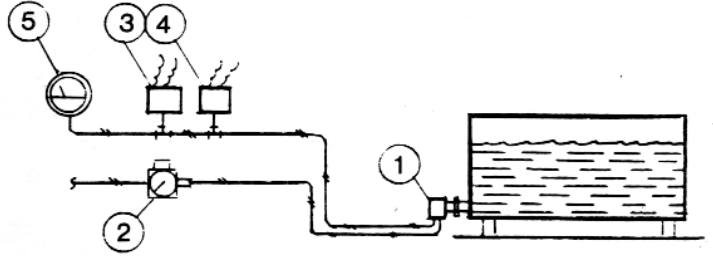


FIG. 7. Basic components of high/low pump control system

Item	Part	Description
1A	50-151	Model 200CFC - 2" Level Sensor—Clamp Mount
1B	50-152	Model 200WF Level Sensor—Welding Mount
2	40-103	Air Flowset
3	140-63	Pressure Switch—Low Level*
4	140-63	Pressure Switch—High Level*
5	20-80	4" Level Gauge

*SPDT, 10 Amp. Switch.

FIG. 8. Model 200 CFC—
Level Sensor with 2" clamp
mount for vertical surfaces

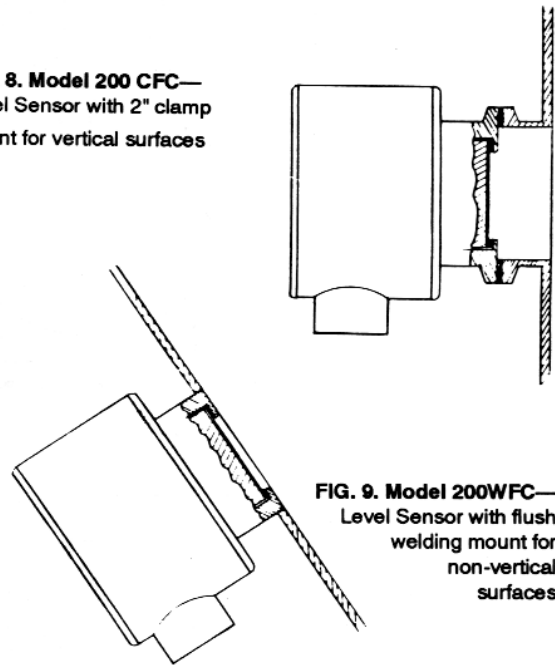


FIG. 9. Model 200WFC—
Level Sensor with flush
welding mount for
non-vertical
surfaces

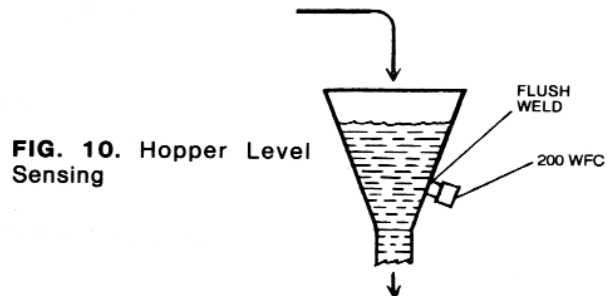


FIG. 10. Hopper Level
Sensing

The two level control points are obtained by means of two pressure switches located in the Level Sensor signal line. These are adjustable and can be set as desired. For example, one switch might be set at 8" of level and the other at 12". When the level falls to 8", the pump will start and will continue until the level rises to 12". The pump will then remain idle until the level falls back to 8". Or the switches might be set at 8" and 10". However the closer the settings, the more often the pump will start and stop.

4" LEVEL INDICATOR (Fig. 11)

This compact, low cost level gauge can read out directly in inches of level. Ranges of from 0 to 10" up to 0 to 150" are available. It can be located remotely and can be either panel mounted or surface mounted.

Note: When actual tank gauging is desired with readout in pounds or gallons, refer to the Tank Mate Master Gauging System, Bulletin 801.

SENSITIVE PRESSURE SWITCH (Fig. 12)

This switch is used with the Model 200 Level Sensor when it is desired to obtain one or more electrical signals at very low levels. Note that from the ranges listed, that settings down to 2" are available. The switch contact can be used as an interlock for valve, pumps, agitators, etc.

Part No. 140-63 PRESSURE SWITCH is adjustable throughout range and has SPDT 10 Amp. switch.

P/N	RANGE Inches W.C.*
140-63-10	2 to 10
140-63-20	3 to 22
140-63-40	5 to 44
140-63-80	9 to 85

Pressure Rating: 10 PSI

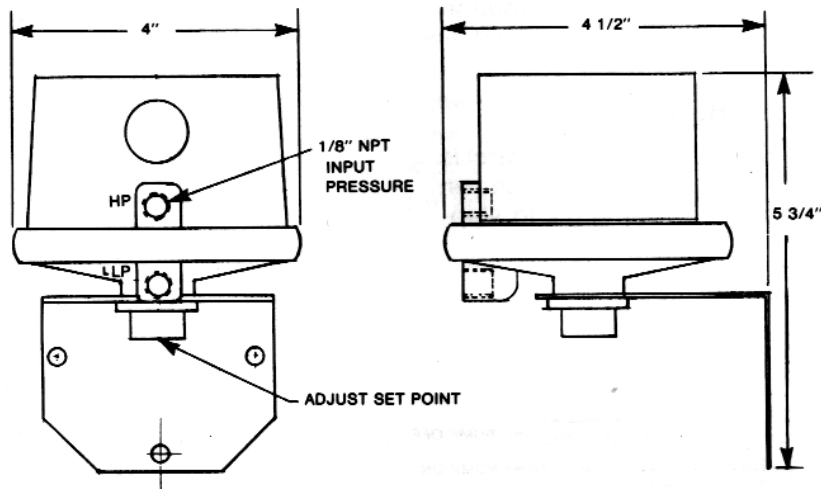
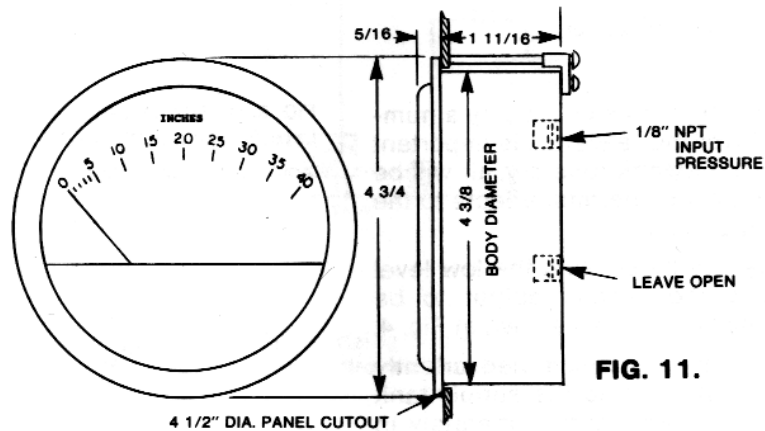


FIG. 12. Sensitive Pressure Switch for control of low levels