

PLATE HEAT EXCHANGERS

The heat exchanger are made from 316L corrugated plates 24 MILS thick separated by EPDM gaskets. The design pressure is 75 psig. Performance data is included in the component data section of this manual. It is important to keep the feed free of particles because the heat exchanger is very susceptible to plugging. The pressure drop through the heat exchanger is roughly proportional to the square of the flowrate. For example, at twice the design flow, the pressure drop is four times design. At one-half the design flow, the pressure drop is one-fourth design. An increase in pressure drop over the expected value for a given flow indicates plugging.

B. FEED LINE FLOW - (YELLOW)

Filtered feed enters the system at Terminal Point A. The feed supply pressure should be between 20 and 30 psig at PI-7A. The feed temperature should be below 160°F at TT-7B. A sample valve is provided next to PI-7B to take feed samples.

If the feed pressure is too low, the feed flow will be too low. If the feed pressure is too high, the control valve could cycle, resulting in widely varying feed flowrates and poor evaporator control.

From TP-A the feed flows through one of the feed heat exchangers. The feed is cooled to minimize flashing in the body and to heat cooling water from the main condenser which is used elsewhere in the plant. Feed then flows through a magnetic flowmeter FT-7, which measures the feed flow. Flow continues through the fifth effect level control valve, LCV-6 (LCV-5, if Body #6 is on wash), and into the fifth effect body where the feed flashes (if above 130°F) through a distributor pipe. Feed in the body mixes with the recirculating liquor.

The feed flowrate is adjusted to maintain a constant level in the Effect #1 hotwell. The (differential pressure) Level Transmitter LT-6, on the hotwell has two silicone-filled reference legs with diaphragm seals. One seal is mounted in the hotwell below where the level should be controlled. The other seal is located in the evaporator shell far above the desired liquid level. As the level rises above the lower seal, the differential pressure increases. The transmitter sends a signal proportional to level to the reverse acting Level Indicating Controller LIC-6, which adjusts the feed control valve LCV-6 to achieve the proper level. (NOTE: If Body #6 is on wash, Body #5 will receive the incoming feed.)