The oil pressure transducer is located at the SB-2 manifold. The differential pressure is measured as the difference between the Oil Pressure Transducer at SB-2 and the Filter Pressure Transducer located in the oil separator. This value is compared to the limits in the control panel logic. If the oil filter differential reaches 20 PSID, a warning message is displayed by the control panel display. If the oil filter reaches 25 PSID, a safety shutdown is initiated. See Figure 18.

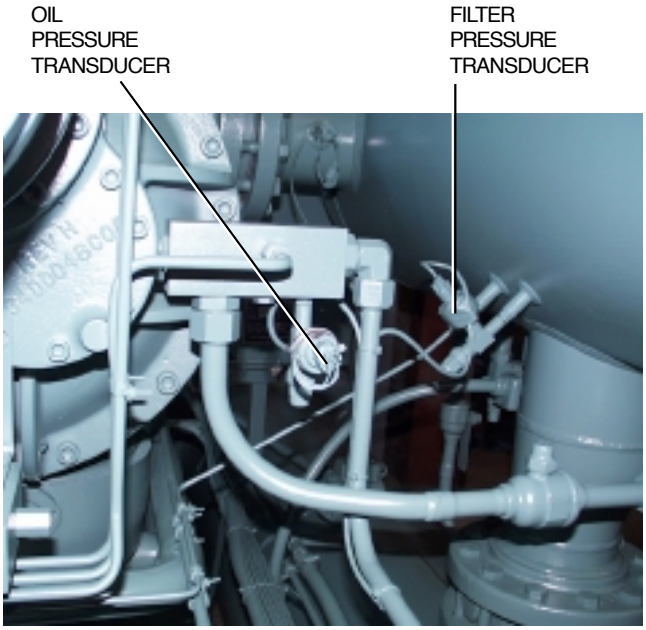

FIG. 18 – OIL AND FILTER PRESSURE TRANSDUCERS

An oil supply line from the manifold at SB-2 is piped to the capacity control directional valve at Port P. The 4-way capacity control solenoid (directional) valve directs oil pressure against one side or the other of the slide valve piston. The opposite side of the slide valve is relieved to suction pressure at compressor port SC-11. The differential pressure between the P port and the suction pressure at Compressor Port SC-11 is what provides the force to load or unload the slide valve and provide capacity control. Refer to Fig. 26, Capacity Control Schematic Diagram.

Oil flows from the oil manifold at SB-2 to the brazed plate, refrigerant cooled oil cooler. Cool oil leaving the brazed plate heat exchanger flows to the eductor block manifold. The oil circuit is separate from the eductor oil management system. See Figure 19.

The eductor block manifold oil circuit contains the Seal Oil Pressure Transducer and a High Oil Temperature

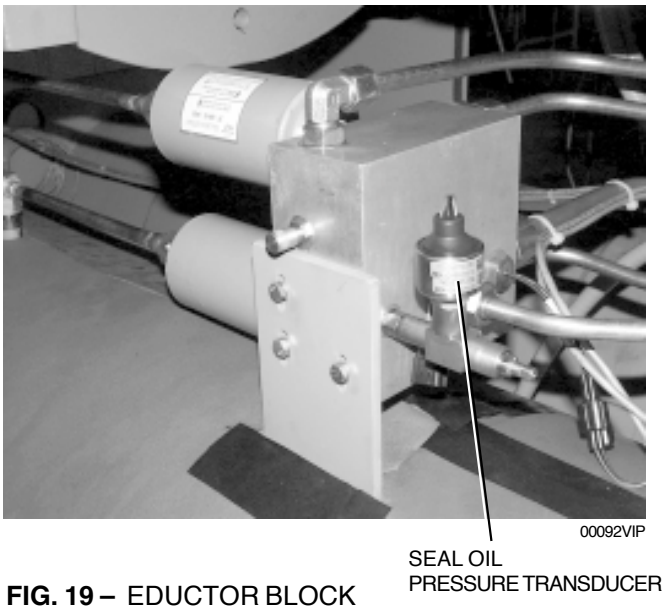

FIG. 19 – EDUCTOR BLOCK

Safety sensor. The Seal Oil Pressure is monitored by the control panel. The differential pressure between the Seal Oil Pressure and the Evaporator Pressure Transducer is calculated and compared to the control panel logic. If the differential reaches the set point (30 PSID for R-22 and 20 PSID for R-134a, the control panel will initiate a safety shutdown. A high oil temperature safety shutdown will be initiated at 170ºF (77ºC).

The oil leaving the oil eductor manifold block flows into the compressor at compressor port SB-3 to lubricate the compressor bearings and shaft seal. All of the oil that is injected into the compressor mixes with refrigerant gas during compression. The oil and refrigerant gas is discharged into the oil separator, where it is separated and returned to the oil sump. A high discharge temperature safety is located in the discharge line, between the compressor and oil separator. This safety will initiate a safety shutdown at 210ºF (99ºC).

Oil is separated from the refrigerant gas in the oil separator in a three step process.

In the first stage of oil separation, high velocity oil and refrigerant gas in the compressor discharge line under goes a rapid reduction in velocity as it enters the large diameter oil separator. Most of the oil drops out of the refrigerant gas stream due to the reduction in velocity. The oil falls by gravity into the oil reservoir located in the bottom of the oil separator.

The second stage of oil separation is accomplished by directing the refrigerant gas through mesh pads that have an extended surface area. Smaller liquid oil drop-