Capacity Range: 50 to 100 GPH (fuel oil; < 100 SSU); 190 to 380 L/hr (fuel oil; < 20 cSt)



Selas Oil-Air Ratio Regulators (Product No. 5301) are used to proportion fuel flows to modulating oil burners.





Applications:

Modulating oil burners

How It Works

Combustion air flows produce a proportional pressure signal that is applied to the regulator to set the outlet oil pressure. On initial adjustment, the desired oil flow rate is set to match the burner air capacities. The regulator holds this oil-to-air ratio at all firing rates.

Pressure balancing of the oil control system eliminates complicated valve linkages on these burners. Heat input turndown over a 10to-1 range is achieved by varying the position of the combustion air control valve. This simple single valve control is readily interlocked with control motors to process temperature, pressure or other functions to provide precisely the heat required at any time.

Oil-Air Ratio Regulators have a unique balanced valve design for inlet oil pressure in the 40 psig to 100 psig range. A constant oil pressure is required at the OAR inlet.



Operating Principles

The OAR regulator will efficiently control #1, #2, and #4 grades of oil. A load line from the combustion air supply, at least 10 pipe diameters downstream of the combustion air control valve, is connected to the control air impulse line. A 1/4" load line is sufficient.

A reducing regulator should be installed upstream of the OAR regulator to provide constant oil pressure. A variation of 5 psig at the inlet can cause a 2% error in flow control.

Air pressure from the load line forces the main diaphragm upwards, opening the oil outlet valve. The oil pressure in the outlet chamber applies pressure on the oil piston which opposes movement of the main diaphragm and closes the oil outlet valve. Since the main diaphragm has an area 30 times larger than the piston area, oil flows from the regulator at a rate that produces an outlet oil pressure 30 times the inlet air pressure. Since the air and oil orifices in the burner are a fixed size, a proportional change in oil pressure and air pressure results in a constant fuel-air ratio.

For 1 psig combustion air, a 45-50 psig inlet oil pressure is recommended. For 2 psig combustion air, a 75-80 psig inlet oil pressure is recommended.

The valve assembly, main diaphragm and springs move as a single unit. The main diaphragm area is 30 times larger than the seal or oil diaphragm area. The tension spring biases the compression, or push, spring to nearly atmospheric outlet pressure.

Features	Benefits
30:1 oil to air pressure ratio at all firing rates	Creates constant and consistent fuel-air ratio
Pressure balance system for single valve control	Eliminates complicated valve linkages
Variable combustion air control valve	Provides 10:1 turndown range



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