

Type S7A



August, 2001 Installation Information

Solenoid Valve

TYPE S7A

Port Size 3/4"-1" (20-25mm)

Compact, low capacity, wafer mount solenoid valve for service with most refrigerants and their corresponding lubricants. Requires R/S industrial coils offered as open frame, optional remote pilot lights or encapsulated, optional integral pilot light. Both coil styles available with 18 in. leads or DIN connector.

Purpose

A solenoid valve is an electrically operated device used to control the flow of liquids or gases in a fully open or fully closed configuration. Solenoid valves do not modulate; they either permit or prevent fluid flow in the normal direction.

Principles of Operation

The **S4A, S4W, S5A, S7A, S7F and S8F** are normally closed pilot operated solenoid valves that employ the Refrigerating Specialties Industrial operator and the corresponding selection of R/S industrial coils. Starting from the closed position, the plunger needle is seated in the pilot port preventing pilot stream flow. Energization of the solenoid coil forms a magnetic field, drawing the plunger upward. The plunger strikes the needle lifting it out of its seated position. This permits pilot stream flow through the seat. De-energization of the solenoid coil breaks the magnetic field and permits the spring-assisted needle to return to seat, interrupting the pilot stream flow.

S7A

When energized, the pilot port is opened. This permits flow of the trapped refrigerant from the top of the piston, which reduces pressure above the piston. The piston is then forced upward by the upstream pressure acting on the piston-main valve. This opens the valve port to allow flow through the valve. This piston-main valve is then held up magnetically by the plunger-needle assembly and no pressure drop is required to keep the valve open. If no pressure difference across the valve is present when the solenoid coil is energized, the plunger-needle assembly, opening the valve lifts the piston main valve off the seat. When de-energized the pilot port is closed and the pressure above and below the piston-main valve is equalized through the bleed hole in the piston. The weights of the plunger-needle and the piston-main valve assembly cause the piston-main valve to drop to its seat and stop the flow. The pressure difference across the valve, acting upon the area of the valve seat, holds the piston-main valve in a tightly close position.

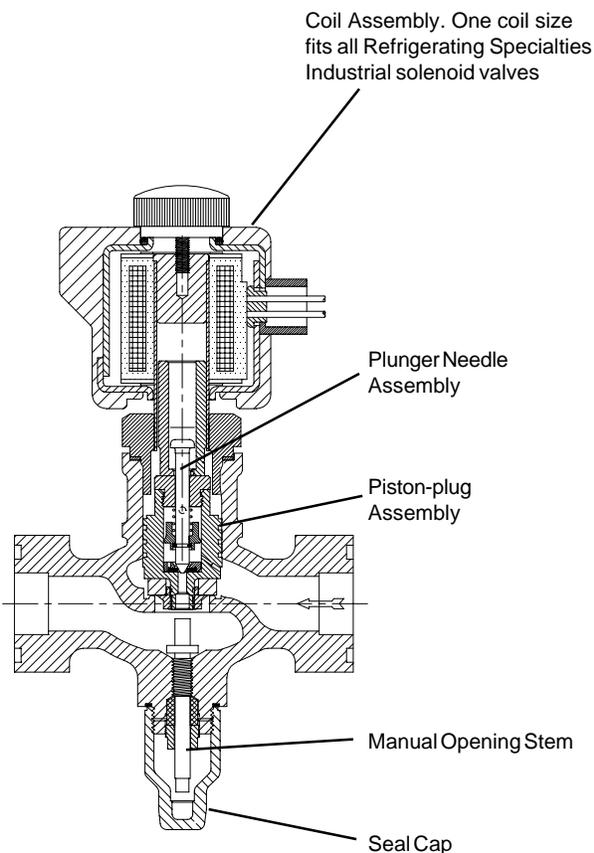


Fig. 1

Installation

Refer also to Safety Installation Bulletin RSBCV. Do not remove the protective covers from the inlet and outlet of the valve until ready to install. They protect the interior from dirt and other foreign matter.

Select a location for installation where the valve will be easily accessible for adjustment and maintenance. Avoid locations where personnel, traffic, material handling or other equipment may damage the valve. If the valve surfaces will be cold, avoid areas where ice may accumulate in the body.

Before installing the valve, check to see that all chips, scale, dirt and other foreign material are removed from the pipes; also be sure the arrow on the valve body is pointing in the flow direction. Remove the protective covers from the valve.

Mount valves with R/S Industrial operators (**S4A, S4W, S5A, S7A, S7F and S8F**) only in horizontal pipeline with solenoid at the top; they will work properly only in this position.

In a liquid line the Solenoid Valve should be near the expansion valve inlet. It is advisable to install the RSF close coupled companion strainer ahead of the valve for protection against dirt and chips.

Install with the arrow on the valve body in the direction of flow. If the valve is backwards, the flow will not be stopped when the valve is electrically de-energized. Solenoid Valves can stop flow only in the direction from normal inlet to normal outlet (as shown by the arrow on the body). If reversal of pressure occurs in the system so the outlet pressure exceeds the inlet pressure the main valve plug will be blown away from its seat and reverse flow will occur. If a system has this type of pressure reversal (as encountered during hot gas defrost with liquid recirculation systems), a check valve such as Refrigerating Specialties Division Type CK4A will need to be added. Check valves must be installed downstream to avoid trapping liquid.

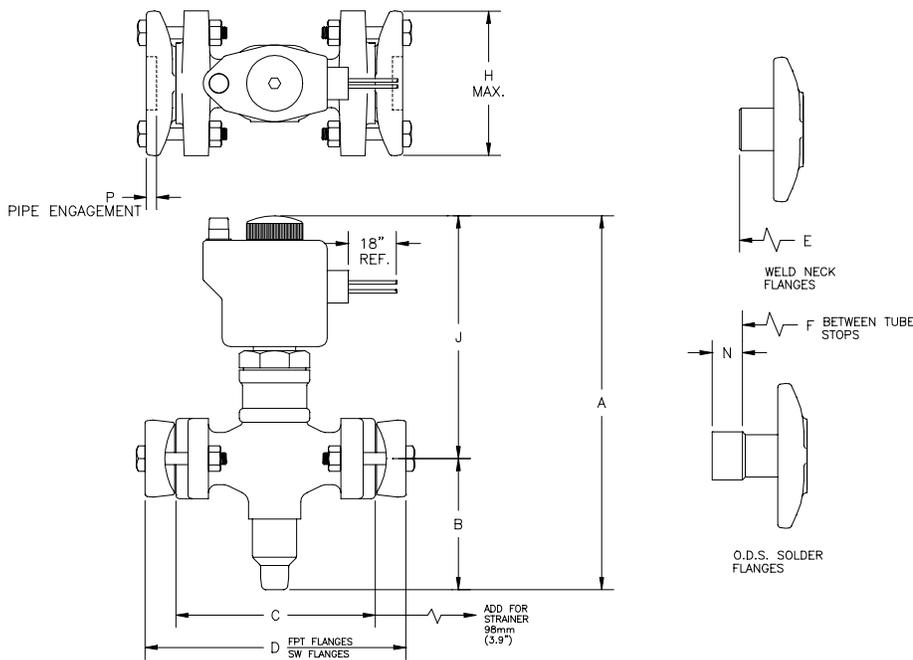
If the valve is to be insulated be sure to allow access to the manual opening stem and strainer cover.

Do not insulate the coil or coil housing.

Connect the solenoid lead wires only to an electrical supply source as indicated on the solenoid coil. The power source must be capable of supplying full, constant voltage. The wires to which the solenoid leads are connected must be of suitable gauge, and must be insulated and enclosed appropriate to the voltage and the environmental or conformity requirements.

For parts selection see Bulletin 30-92, latest edition.

For solenoid coil availability see RSBCV latest edition.



ALLOW 100mm (4") ABOVE VALVE FOR REMOVAL OF COIL HOUSING ASSEMBLY.
ALLOW 25mm (1") BELOW VALVE TO OPERATE MANUAL OPENING STEM.

DIMENSIONAL DATA		
	MM	INCH
A	282	11.1
B	102	4
C	157	6.2
D	216	8.5
E	261	10.3
F	239	9.4
H	117	4.6
J	180	7.1
N	25	1
P	13	0.5