



SOLENOID VALVES



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TYPE : SFA

REFRIGERANTS

Suitable for all common refrigerant including R-717 (Ammonia), R-12, R-22, R-134a, R-404a, R-502 etc.

INTRODUCTION

The primary purpose of an electrically operated solenoid valve is to control automatically the flow of fluids, liquids or gases. Solenoid valves may be applied on a wide variety of applications. This flanged, industrial refrigeration duty solenoid valve is very simple and compact but rugged in construction. These are direct acting or pilot operation solenoid valves for liquid suction and hot gas lines with ammonia or fluorinated refrigerant.

Ammonia Solenoid valve type SFA5 is direct operating type & type SFA 17, SFA 25, SFA 32, SFA 40, SFA 50 are higher capacity pilot operated solenoid valves for refrigeration controls & air conditioning applications.

Ammonia Solenoid Valves type SFA series are supplied complete or as separate components, i.e., valve body, coil and flanges can be ordered separately.

TECHNICAL SPECIFICATION

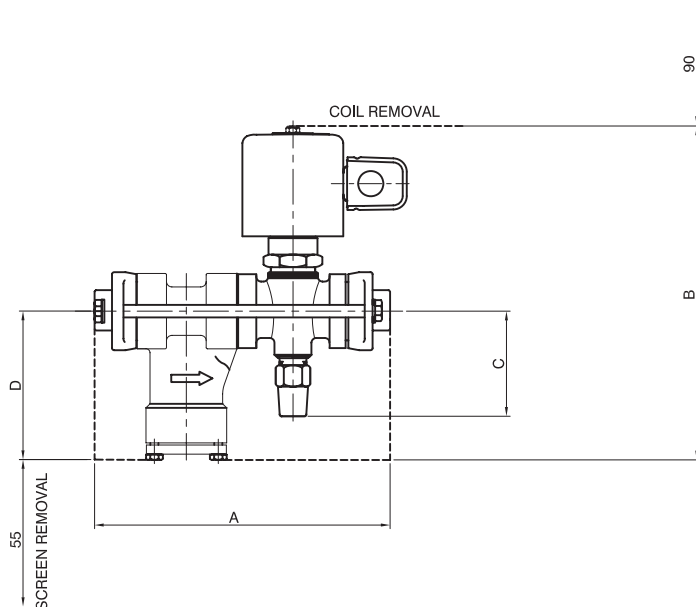
Body	: ASTM A352 LCC
Solenoid Tube	: Stainless Steel
Plunger	: Stainless Steel
Stem	: Manual Opening
Coil	: Same for all Superfreeze SFA Series Solenoid Valves
Temperature of medium	: -40°C to +80°C with 18 Watt Coil, 230V AC
	: Max.130°C during defrosting.
Working Pressure	: 300 psig (21 bar)
Body Testing	: 450 psig (32 bar)
Counter flanges are included.	



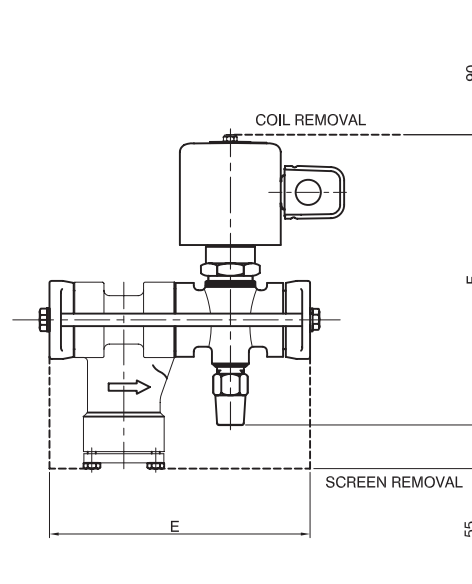
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DIMENSIONS



SOLENOID VALVE WITH STRAINER
(BUTT WELD)



SOLENOID VALVE WITH STRAINER
(SOCKET WELD)

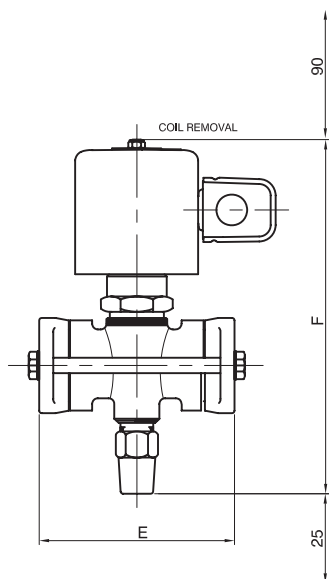
Dimension Details Solenoid Valve with Strainer (Butt and Socket weld)

Type	Flanged End		A	B	C	D	E	F
SFA 5	1/2"	15	180	230	74	94	152	158
SFA 17	3/4"	20	245	237	89	108	220	214

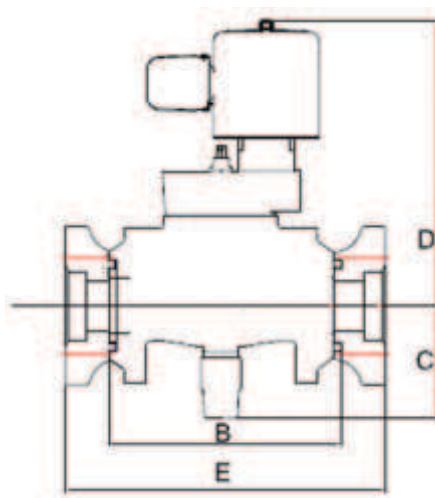


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SOLENOID VALV ES



SFA 5,17



SFA 25, 32, 40

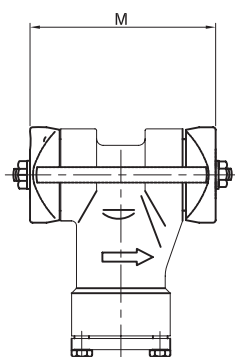
Dimension Details of Solenoid valve (Butt and Socket Weld)

Type	Flanged Size MM	B	C	D	E	F
SFA 5	15	47	74	135	93	209
SFA 17	20	85	89	137	138	226
SFA 25	25	152	85	157	215	241
SFA 32	32	152	85	157	215	241
SFA 40	40	168	85	170	224	255

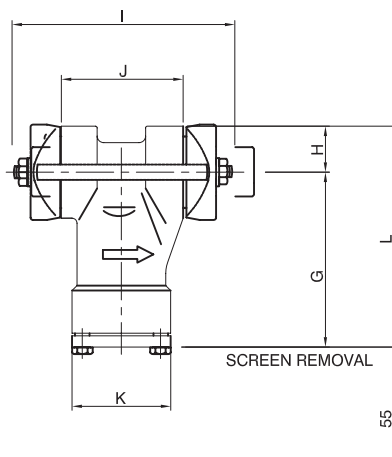


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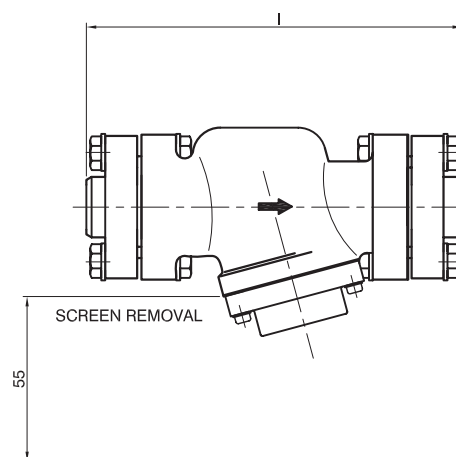
SOLENOID VALV ES



STRAINER (SOCKET WELD)



STRAINER (BUTT WELD)
(STA 5 AND STA 17)



STRAINER (BUTT WELD)
(STA 25, STA 32)

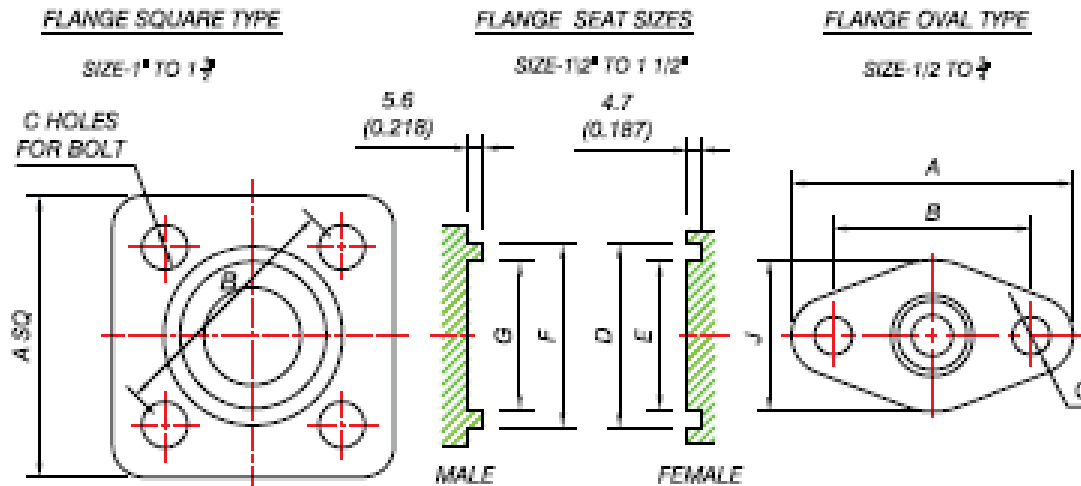
Dimension Details of Strainers (Butt and Socket Weld)

Type	Flanged Size MM	G	H	I	J	K	L	M
STA 5	15	94	22	138	60	52	116	110
STA 17	20	108	28	164	78	60	136	135
STA 25	25	91	44	214	154	80	136	203
STA 32	32	91	88	214	154	80	136	203



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STD SIZE	± 0.050 A (± 1.20)	± 0.015 B (± 0.40)	$+0.015$ C (± 0.40)	$+0.005$ D ($+0.15$)	-0.005 E (-0.15)	0.005 F (-0.15)	$+0.005$ G ($+0.15$)	± 0.050 J (± 1.20)	SOCKET DIA	SOCKET DEPTH	BOLT SIZE
1/2" (15mm)	4.250 (108.0)	2.992 (76.0)	0.500 (14.80)	1.745 (44.3)	1.265 (32.1)	1.735 (44.1)	1.275 (32.4)	2.280 (58.0)	22	10	1/2"
3/4" (20mm)	4.250 (108.0)	2.992 (76.0)	0.625 (14.80)	1.780 (45.2)	1.355 (34.4)	1.770 (45.0)	1.365 (34.7)	2.283 (58.0)	28	13	5/8"
1" (25mm)	3.976 (101.0)	2.400 (90.0)	0.625 (18.50)	2.315 (58.8)	1.890 (48.0)	2.305 (58.6)	1.900 (48.3)	-	34.5	13	5/8"
1 1/4" (32mm)	3.976 (101.0)	2.400 (90.0)	0.625 (18.50)	2.315 (58.8)	1.890 (48.0)	2.305 (58.6)	1.900 (48.3)	-	43.5	13	5/8"
1 1/2" (40mm)	4.250 (108.0)	2.677 (99.0)	0.625 (18.50)	2.775 (70.5)	2.225 (56.5)	2.765 (70.2)	2.235 (56.8)	-	50	13	5/8"





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INSTALLATION

Protect the interior of Valve from dirt and moisture during storage and installation. Mount the valves only in horizontal pipe line with solenoid coil at the top. This valve will work properly only in this position. It is advisable to install a strainer upstream of each valve to prevent entrance of foreign material into the valve and the rest of the system. Use Superfreeze close coupled inlet strainer ahead of solenoid valve to keep any foreign matter entering into the valves.

Valve should be installed so that arrow on the valve body is in direction of normal refrigerant flow. Like all solenoid valves these valves can stop only in direction from normal inlet to normal outlet (as shown by the arrow in the body). In case of this type of pressure reversal (as encountered during hot gas defrost with liquid recirculation systems) a check valve must be installed in series with the solenoid valve which liquid hammer will not occur when valve open or closed. For proper flange gasket sealing care must be taken to prevent flow reversal. Pipe sizing, rating, anchoring and similar precaution should be taken to ensure taken when welding to assure flanges are parallel to each other and perpendicular to pipe. The gasket should be lightly oiled and all bolts tightened evenly.

The manual opening stem on these valve is the purpose of opening the valve with our energizing the solenoid coils. For access to stem the seal cap of the bottom of the valve must be removed. This must be done with caution as refrigerant may have been trapped inside the seal cap.

ELECTRICAL

Standard coil voltages is $220V_{\pm 10\%}$, 50/60Hz other voltages available on request. Coils draw 18 Watts. Name plate of coil voltages should be checked before wiring. The supply circuit must be properly sized to give adequate voltage at the coil leads even when other electrical equipment is operation. Coil should only be energized while on solenoid tube; otherwise immediate coil burnout may occur.

SERVICE AND MAINTENANCE

Failure to open:

1. Coil is of incorrectly high voltage- Check coil voltage printed on the coil / name plate.
2. Low line voltage- Check line voltage at coil leads with volt meter.
3. Failure to electrically energize check controlling switch or controlling circuit (controlling switch or thermostat not contacting)
4. Inlet outlet pressure differential too high.- The MOPD across the valves should be 275
5. Coil is burned out – Replace with proper coil
6. Plunger / needle assembly is jammed due to dirt or sludge- Disassemble the valve. Before opening the valve for service be sure it is isolated from the system and all refrigerant is removed. Disconnect power source to solenoid coil. Remove every trace of dirt from the inside of the valves. Thoroughly clean all parts and re assemble using of light film of refrigeration oil on the piston/plunger.(Use Superfreeze close coupled inlet strainer ahead of solenoid valve to keep any foreign matter entering into the valves.)



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Failure to close :

- a) Controlling switch or thermostat are not opening contacts- Check wiring and controls
- b) Manual opening stem is turned in permitting flow through the valve.
- c) Dirt under the seat preventing proper sitting – Disassemble and clean valves as mentioned in point 6 above.
- d) Seat parts eroded, worn or damaged and therefore leaking – Disassemble, clean, and replace parts using proper replacement kit.
- e) Noise in Solenoid Valve – A partially open Solenoid Valve is apt to develop a mechanical chatter which may be amplified to an objectionable level by the system piping. This type of noise can be caused by low voltage, excessive pressure differential of foreign material, causing the valve to “hang” in a partially open position. The noise can usually be eliminated by removing the cause of the sticking. A Solenoid Valve with a loose or miss-assembled coil and housing can exhibit an electrical hum. This type of noise is corrected by either tightening the coil housing nut securely, or by reassembling the valve parts in their proper order. Rarely, this may be caused by loose coil sleeves, in which cases deforming slightly will eliminate the hum.
- f) Plunger / needle assembly is jammed due to dirt or sludge- Disassemble and clean valve as mentioned in point No. 6 above.(Use Superfreeze close coupled inlet strainer ahead of solenoid valve to keep any foreign matter entering into the valves.)

SAFE OPERATION

Superfreeze valves are only for refrigeration system. People doing any work on refrigeration system must be qualified and completely familiar with the system. All instructions should be completely understood and followed while using the valves. Stated temperature and pressure limit should not be exceeded. Solenoid tubes should not be removed from the valves unless system has been evacuated to zero pressure. For the protection of people and products all refrigerant must be removed from the section to be worked on before a valve, strainer or other device is opened or removed.

Check valves must never be installed upstream of Solenoid Valves or regulators with electric shutoff, nor should hand valves upstream of solenoid valves or down stream of check valves be closed until the liquid has been removed. It is advisable to properly install relief devices in any section where liquid expansion could take place.

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