

SOLENOID VALVES TYPE SA SERIES



TYPE SA 5 A3 TYPE SA 17 A3 TYPE SA 32 P3 TYPE SA 42 P3 TYPE SA 50 P3

INTRODUCTION:

SA series is a direct or servo operated valve for liquid, suction and hot gas lines with ammonia or fluorinated refrigerants.

SA series valves are supplied complete or as separate components, i.e. Valve body, coil and flanges can be ordered separately.

TECHNICAL INFORMATION:

Refrigerants

R 717 (Nh3), R 22, R 134a, R 404a, R 502 etc.

TEMPERATURE OF MEDIUM:

-40, + 80°C with 18W coil.
Max. 130°C during defrosting.

Type	FLANGED CONNECTIONS Inches Sizes Underlined will be furnished unless otherwise specified	PORT SIZE Inches / mm	MOPD SIZE psi AC	NOMINAL LIQUID CAPACITIES Tones of Refrigeration / kW					STANDARD COIL RATINGS	
				AMMONIA						
				Pressure Drop - psi						
				1	2	3	4	5	Volts / Cycles	Watts
SA5A3	¼, ¾ or Weld	0.15	250	8.0	11.3	13.7	16	17.8	230/50 110/50	18
		<u>12</u>		28.2	40	48.7	56.3	62.66		
SA17A3	½, ¾ or Weld	17/32	275	73	95	122	143	160		
		<u>13.5</u>		257	334.4	429	503	563		
SA32P3	1 or 1½ Weld	1	250	125	176	225	250	280		
		<u>25</u>		440	619.5	792	880	985.6		
SA42P3	1½ Weld	1 5/16	300	275	390	500	550	625		
		<u>33</u>		968	1372.8	1760	1936	2200		
SA50P3	2 Weld	1 9/16	300	500	725	875	1000	1110		
		<u>39.6</u>		1760	2552	3080	3520	3907		

1) Safe working pressure 300 psi

2) Type SA42P3 & SA50P3 are available with special spring construction for suction line services. To order and prefix 'S'to type no. Eq SSA42P3

3) Solenoid valve type SA5A3, SA 17 A3 are available with built in strainer. Strainer for SA32P3 is also available separately.

SOLENOID VALVES FOR FLUORINATED REFRIGERANTS



SIX PROVEN BENEFITS OF SOLENOID VALVES

- Molded coil for most sizes.
- Class "F" temperature rating - Coil types TKC-1, TKC-2, and SKC-2.
- Extremely rugged, simple design - few parts
- "E" Series may be brazed without disassembly.
- Tight closing through use of synthetic seating material.
- Can be used on Refrigerants 12, 22, 134a and 502 because of high MOPD ratings.

SELECTION - CAPACITY RATINGS:

The following information should be available when selecting a Solenoid Valve

1. Refrigerant or fluid to be controlled.
2. Capacity required.
3. MOPD - Maximum operating pressure differential required.
4. Electrical specifications - volts and cycles.

With this information the correct valve can be selected from the Selection Tables. For liquid line capacity data, see individual specification pages.

SELECT SPECIFY STANDARDIZED

MANIK SOLENOID VALVES because **UNSURPASSED RELIABILITY** is due to a combination of top quality materials used in both the internal and external construction. This is verified by periodic accelerated life tests.

TOP QUALITY is controlled by constant testing during all phases of production followed by 100% testing for body and seat tightness, electrical characteristics, and valve operation. MANIK packaging protects this quality for the ultimate user.

A COMPLETE LINE of Solenoid Valves is offered to the industry. They are available in all capacities and connection sizes for air conditioning and refrigeration applications.

LONG EXPERIENCE - For more than 30 years MANIK has provided sound engineering principles and craftsmanship to produce top quality solenoid valves and other flow control devices for the air conditioning and refrigeration industry.

CONTINUING RESEARCH has produced constant product improvements as well as innovative designs. Examples of research developments include, solenoid pilot control, synthetic seating, floating disc construction, molded-finned coil, extended solder type connections, Class "F" coil.

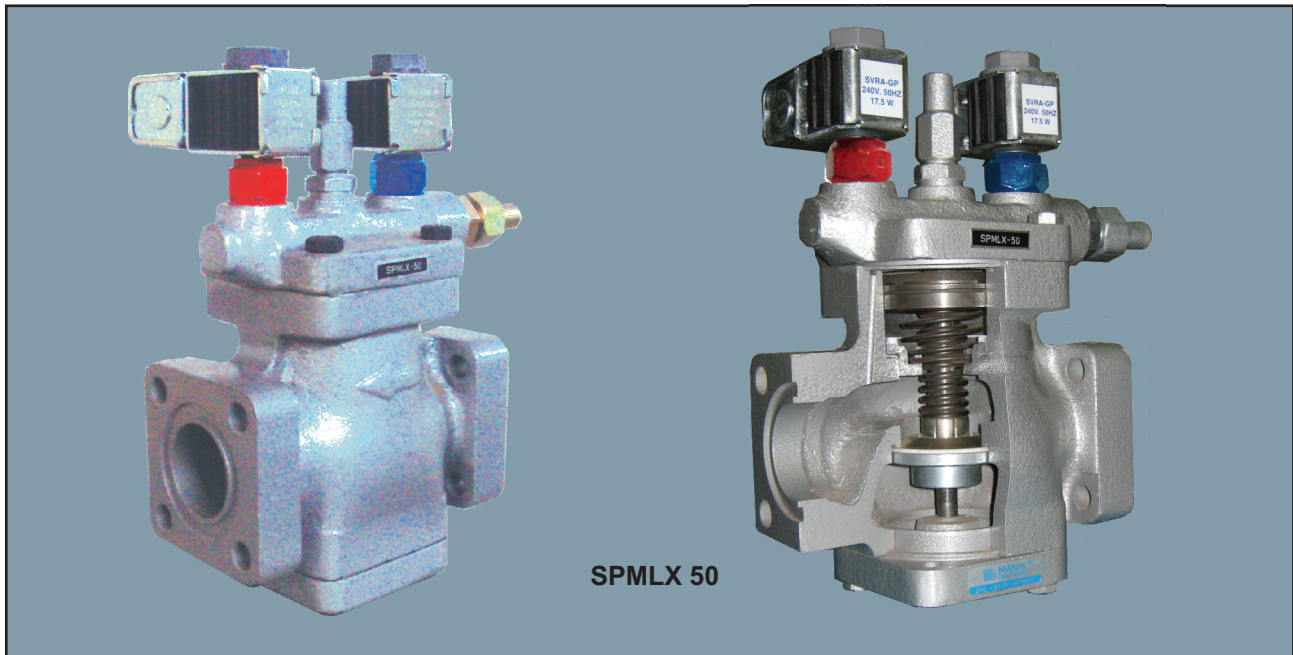
PEAK PERFORMANCE is assured with the use of thoroughly proven synthetic materials resulting in lasting valve seat tightness. The high MOPD ratings of most MANIK Solenoid Valves allow their use for any application using common refrigerants.

APPLICATION - Types A3 and E3 series are hermetic, direct acting type solenoid valves primarily for refrigeration and air conditioning applications. The flow rates of the E3 and A3 are identical, therefore, the E3 may be freely substituted for the A3. The A3 must be mounted in a horizontal line with the coil at the top.

Types B6, B9, B10, B14, B19, B25 and E6, E9, E10, E14, E19, E25 Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves may be mounted horizontal, on side, or in a vertical line. They are suitable for suction line service because of very low pressure.

SOLENOID VALVES

TYPE SPMLX, TWO-STEP ON/OFF



DATA SHEET SOLENOID VALVES, type SPMLX, two-step on/off

SPMLX are 2-step servo-controlled main valves with screwed-on pilot solenoid valves. SPMLX valves use an external pressure source for opening (which means that no differential pressure across the SPMLX valve is required). SPMLX are used in suction lines for the opening against high differential pressure, e.g. after hot gas defrost in large industrial refrigeration systems with ammonia or fluorinated refrigerants.

SPMLX, opens in two steps :

Step one opens to approx. 10% of the capacity, when the pilot solenoid valves are activated.

Step two opens automatically after the pressure differential across the valve reaches approximately 1.5 bar.

FEATURES:

- Simple and inexpensive installation
- Stabilizes working conditions and eliminates pressure pulsations during opening after defrosting
- Replaces SPML with bypass solenoid valve, 2 signals and one timer
- Screw thread pilot valve fitting
- Only one signal required for both pilot solenoid valves
- Provides safety against pressure "shocks" as the valve can only open fully when $p < 1.5$ bar

Type	Size	Refrigerants ¹⁾	Opening differential pressure ⁴⁾ Δp bar			Temperature of media $^{\circ}\text{C}$ ⁵⁾	Max. working pressure PB ³⁾ bar	Max. test pressure p^1 bar
			Fully open Min.	Max. (MOPD)				
				10 W a. c.	20 W d. c.			
SPMLX	32	R 717 (NH ₃), R 22, R 134a, R 404A, R 12, R 502	0 ²⁾	21	14	-50 → +120	28	42
	40							
	50							
	65							
	80							
	100							
125								

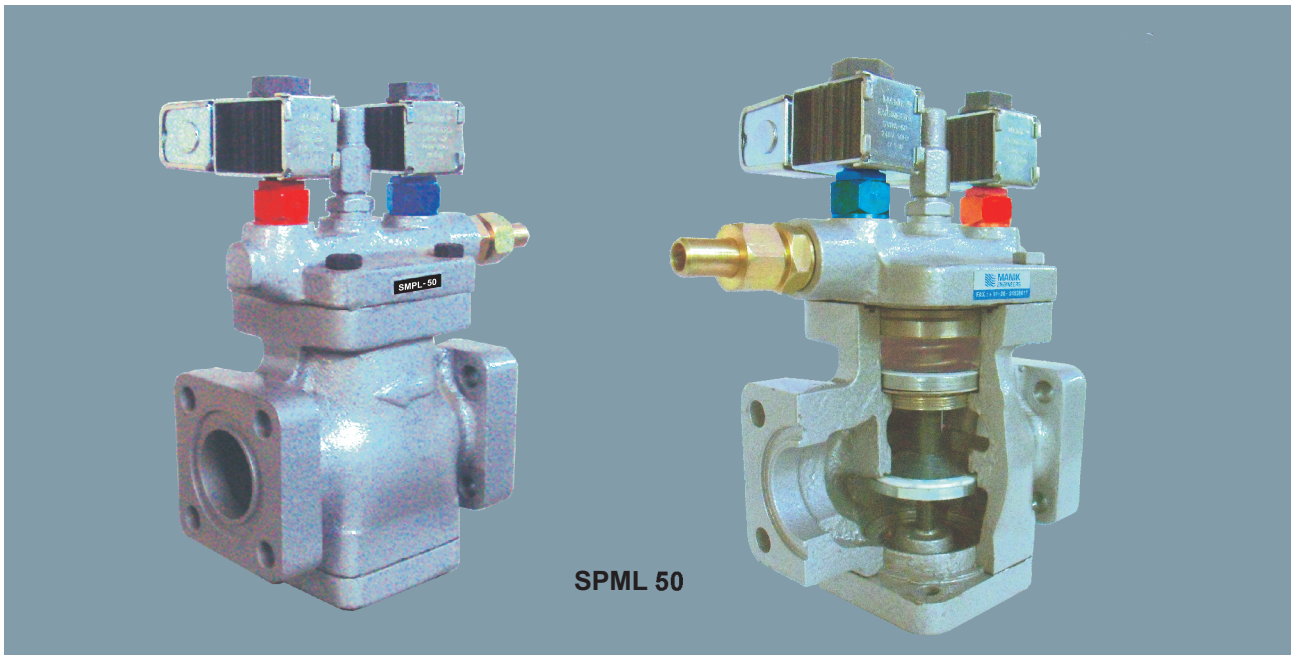
1) Besides the refrigerants specified, other fluorinated refrigerants can be used within the pressure and temperature range of the valves.

2) The external pilot pressure must be at least 1 bar higher than the inlet pressure.

3) Max. working pressure is limited to PB = 21 bar at temperature of medium below -20 °C

4) Max. Δp at open valve = 1 bar.

5) For lower temperature applications (-50 °C to -60 °C), bolts in flanges and on top and bottom covers must be changed to stainless steel.



SPML 50

INSTRUCTIONS

SPML valves are servo-operated main valves with screwed-on pilot solenoid valves. SPML valves use an external pressure source for opening (which means that no differential pressure across the SPML valve is required in order to maintain open state). This makes the valve especially suitable for low-pressure suction lines.

The SPML valves can be used in all types of refrigeration systems:

- Direct expansion
- Pump recirculation
- Natural circulation

Within their specified pressure and temperature ranges SPML valves can be used for fluorinated refrigerants (R 22, R 134a, R 404A, R 12, R 502, etc.) or ammonia (R 717).

SPML pilot-operated solenoid valves can be installed in:

- Suction lines
- Return lines (liquid/vapour)
- Pressure-equalising lines
- Bypass lines

FEATURES

The SPML valves can be used for all normal, non-flammable refrigerants, including R 717, and non-corrosive gases/liquids - assuming seals of the correct material are used.

Large range of flanges with connection dimensions in accordance with standards: DIN, ANSI, SOC and SA.

Inexpensive and simple installation.

Pilot valves screwed directly into the valve cover.

Only one signal required for both pilot solenoid valves.

The valve has a pressure gauge connection so that inlet pressure can be measured.

The SPML main valve top cover can be oriented in any direction without the function of pilot valves being affected.

The valve can be equipped with an AKS 45 electronic position indicator as an accessory.

Especially suitable for systems where low pressure drop is required.

SPML remains open even though the pressure drop across the valve is 0 bar.

DESIGN

Connections

There is a very wide range of connection possibilities with SPML main valves:

- Welding, DIN (2448)
- Welding, ANSI (B 36.10)
- Welding socket, ANSI (B 16.11)
- Solder connection, DIN (2856)
- Solder connection, ANSI (B 16.22)

The SPML main valve top cover can be oriented in any direction without the function of pilot valves being affected.

Seals

Do not contain asbestos.

TECHNICAL DATA

- Refrigerants
Can be used for all normal, non-flammable refrigerants, including R 717, and non-corrosive gases / liquids - assuming seals of the correct material are used. Use with flammable hydrocarbons are not recommended; please contact Manik Engineers.
- Temperature range: $-60/+120^{\circ}\text{C}$ ($-76/+248^{\circ}\text{F}$).
- Surface
SPML 32 - 65:
The external surface is zinc-chromated to give good protection against corrosion.

SPML 80 - 125:

The surface of the SPML 80 - 125 is treated with a multi-layer painting.

- Pressure range
The valve is designed for:
Max. working pressure: 28 bar g (406 psig)
Test pressure: 42 bar g (609 psig)
Opening differential pressure:
0 bar g (0 psi g) as valve is kept open by external pilot pressure.
Max. (MOPD), solenoid valves only (10 W a.c. [NC] / 12 W a.c. [NO] or 20 W d.c.): 21 bar g (305 psig).

Solenoid valves, type SVRA 3 to 40 and SVRAT 10 to 20



Introduction

SVRA is a direct or servo operated solenoid valve for liquid, suction and hot gas lines with ammonia or fluorinated refrigerants.

SVRA valves are supplied complete or as separate components, i.e. valve body, coil and flanges can be ordered separately.

SVRAT is an assisted lift, servo operated solenoid valve for liquid, suction and hot gas lines with ammonia and fluorinated refrigerants.

SVRAT is specially designed to open - and stay open - at a pressure drop of 0 bar. The SVRAT solenoid valve is thus suitable for use in all plants where the required opening differential pressure is 0 bar.

SVRAT is available as components, i.e. valve body, flanges and coil must be ordered separately. SVRAT 10, 15 and 20 all have spindle for manual operation.

Technical data

Refrigerants

R 717 (NH₃), R 22, R 134a, R 404A, 410 A, R 744 (CO₂), R 502 etc.

Temperature of medium

-40 → +105°C. Max. 130°C during defrosting.

Ambient temperature and enclosure for coil
See "Coils for solenoid valves" RD.3J.E.2.02.

Type	Opening differential pressure with standard coil (Δp bar)				Temperature of medium °C	Max. working pressure PB bar	kv-value ¹⁾ m ³ /h
	Min.	Max. (= MOPD) liquid ²⁾					
		10 W a.c.	12 W a.c.	20 W d.c.			
SVRA 3	0.00	21	25	14	-40 → 105	42	0.23
SVRA 10	0.05	21	25	18	-40 → 105	42	1.5
SVRAT 10	0.00	14	21	16	-40 → 105	42	1.5
SVRA 15	0.05	21	25	18	-40 → 105	42	2.7
SVRAT 15	0.00	14	21	16	-40 → 105	42	2.7
SVRA 20	0.05	21	25	13	-40 → 105	42	4.5
SVRAT 20	0.00	14	21	13	-40 → 105	42	4.5
SVRA 25	0.20	21	25	14	-40 → 105	42	10.0
SVRA 32	0.20	21	25	14	-40 → 105	42	16.0
SVRA 40	0.20	21	25	14	-40 → 105	42	25.0

¹⁾ The kv-value is the water flow in m³/h at a pressure drop across valve of 1 bar, $\rho = 1000 \text{ kg/m}^3$.

²⁾ MOPD for media in gas form is approx. 1 bar greater.

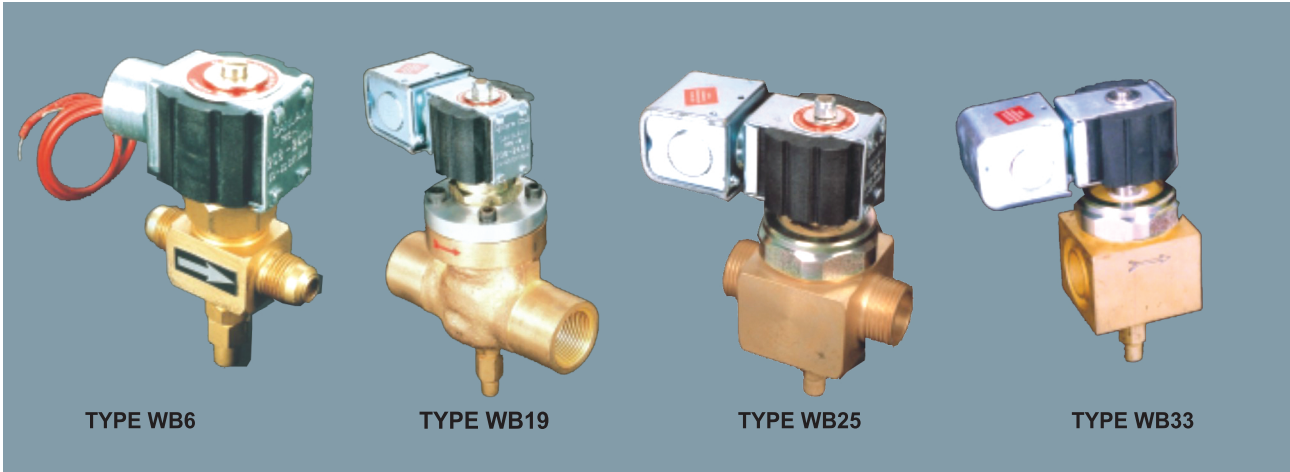
Type	Rated capacity) [kW]											
	Liquid				Suction vapour				Hot gas			
	R717	R22	R134a	R404A	R717	R22	R134a	R404A	R717	R22	R134a	R404A
SVRA 3	21.8	4.6	4.3	3.2			6.5	2.1	1.7	1.7		
SVRA/T 10	142.0	30.2	27.8	21.1	9.0	3.4	2.5	3.1	42.6	13.9	11.0	11.3
SVRA/T 15	256.0	54.4	50.1	38.0	16.1	6.2	4.4	5.5	76.7	24.9	19.8	20.3
SVRA/T 20	426.0	90.6	83.5	63.3	26.9	10.3	7.3	9.2	128.0	41.5	32.9	33.9
SVRA 25	947.0	201.0	186.0	141.0	59.7	22.8	16.3	20.4	284.0	92.3	73.2	75.3
SVRA 32	1515.0	322.0	297.0	225.0	95.5	36.5	26.1	32.6	454.0	148.0	117.0	120.0
SVRA 40	2368.0	503.0	464.0	351.0	149.0	57.0	40.8	51.0	710.0	231.0	183.0	188.0

¹⁾ Rated liquid and suction vapour capacity is based on evaporating temperature $t_e = -10^\circ\text{C}$, liquid temperature ahead of valve $t_l = +25^\circ\text{C}$, and pressure drop across valve $\Delta p = 0.15 \text{ bar}$.

Rated hot gas capacity is based on condensing temperature $t_c = +40^\circ\text{C}$, pressure drop across valve $\Delta p = 0.8 \text{ bar}$, hot gas temperature $t_h = +65^\circ\text{C}$, and subcooling of refrigerant $\Delta t_{\text{sub}} = 4 \text{ K}$.

INDUSTRIAL SOLENOID VALVES TYPE WB SERIES

FOR AIR, WATER, BRINE, STEAM AND LIGHT OIL



INTRODUCTION:

WB series is a direct or pilot operated Solenoid Valve. These valves can be supplied with either Flanged type or male/female pipe thread type connections. In most areas, particularly hard water localities, the integral body material seats in Solenoid Valves may deteriorate very rapidly. This problem is eliminated by using stainless steel seat inserted in place of usual body material.

ADVANTAGES OF MANIK SOLENOID VALVES:

- Molded Coil
- 2 Sizes of coils for complete line.
- Extremely rugged, simple design, few parts.
- Tight closing through use of synthetic sealing material
- Stainless steel seat instead of body material.
- Options for various end connections such as

Pipe thread, Flare and Flanged.

- Manual over ride facility for all Solenoid Valves except Wb4.

APPLICATIONS:

These valves are suitable for most types of industrial applications. Ideal for water, light oils, air line to chucking devices, brine, pilot valves to pneumatic controls, steam lines etc. The disc type valves are used for high temperature and stop applications upto 25 psig. These valves may be mounted horizontal on their side or in a vertical line.

The WB4 PI is the ideal size for use on air chucking devices and as pilot valve for pneumatic controls. Generally a very tight seat is required for this type of application.

SPECIFIC ATIONS :

TYPE	PORT SIZE INCHES	MOPD psi AC	Flow Factor Kv1 m ³ /h	STANDARD COIL RATINGS Volts/Cycles	Watts	Coil
Wb 4	1/8	150	0.27	230 AC /	10	TKC-1
Wb 9	3/38	150	0.96	110 AC /	15	TKC-1
Wb 14	7/16	150	1.9	24/50 Hz /		TKC-1
Wb 19	19/32	150	2.87	24 DC		TKC-1
Wb 25	25/32	150	5.1			TKC-1
Wb 33	1 1/32	150	11.5	230 AC /	18	TKC-1
Wb 40	1 1/4	150	18	110 AC /		KC-1
Wb 50	1 9/16	150	29	24/50 Hz		KC-1

Note : The Kv value is the water flow in m³/hr at a pressure drop across value of 1bar, ρ = 1000kg/m³

ORDERING INFORMATION :




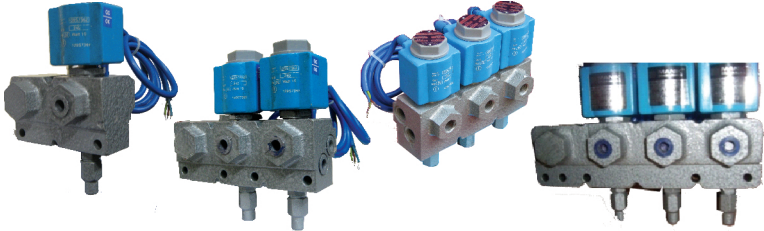


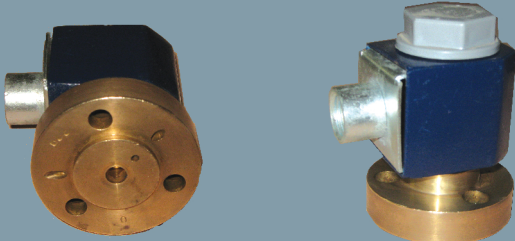
When ordering, complete valves , specify valve type , connections, voltage & cycles.

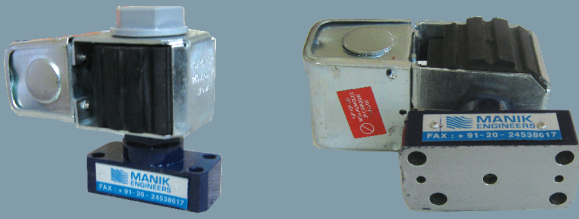
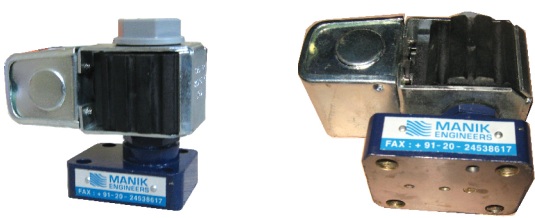

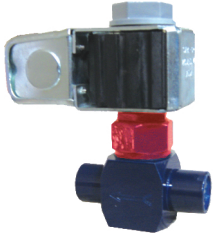
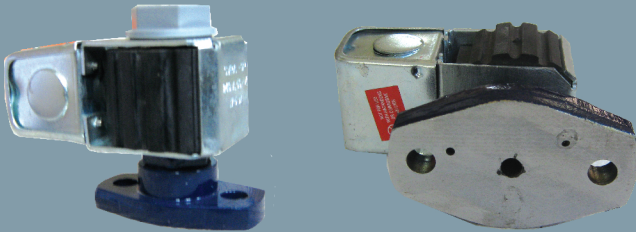
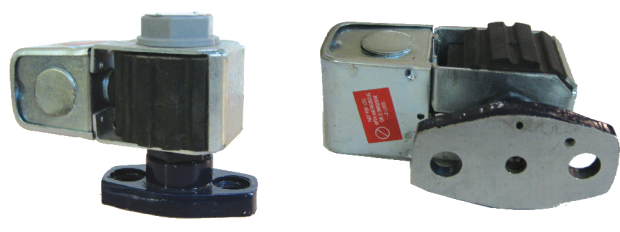

When ordering Body Assembly , specify valve type & connections

When ordering coil Assembly only , specify coil type , voltage and cycles example TKC-1 230V/50Hz, TKC-2 120V50Hz

W	B	19	P	2
Water	Stainless	Port	P-Pipe connection	1 TKC-1 Coil
Air	Steel	Size	F- flare	2 TKC-1 Coil
Oil	Insert	19	S-Flange	
Brine	Seat	32		

COMPRESSOR CAPACITY CONTROL SOLENOID VALVES

Sr. No.	Photo	Model Number	Compressor / Company
1)		MCC1	Bock
2)		MCC6 BK 33	Bock Old Kirlosker FK & GK series Kirloskar
3)		MCC2	Frick Eclipse/ Mycomp
4)		SVRF 104 SVRF 106 SVRF 108 SVRF 116	Sabroe SMC
5)		MCC 4 - NC MCC 5 - NO	CSI Screw NC & NO type
6)		MCC 7-A	Carrier / Carlyle
7)		MCC 14-A	Carrier / Carlyle

8)		MCC8- B	Blue Star / York
9)		MCC9	As per Sample
10)		MCC10-SCVH + NC	Howden Screw NC
11)		MCC11-SCVH + NC	Howden Screw NO
12)		MCC12	Bitzer, Comer Hanbell, Refcom etc.
13)		MCC13	Bitzer, Comer Hanbell, Refcom etc.
14)		MCC3	Mc Quay

Manik MCC Series Compressor Capacity Control Solenoid Valves
MCC series compressor cylinder end unloading solenoid valves are a kind of capacity adjusting valves developed as per requirements of OEM Compressor Manufacturers. They are generally mounted on the cylinder lid of refrigeration compressor or on the body of the compressor.