

Solenoid Valves

**The right solenoid valve
for any job**



Sporlan Solenoid Valves

Benefits



- Molded coil for most sizes.
- Class "F" temperature rating - Coil types MKC-1, MKC-2, and OMKC-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 with most commercially available CFC, HCFC and HFC refrigerants because of high MOPD ratings. Consult Sporlan, Washington, MO for refrigerants not listed.
- Synthetic coated metal gaskets minimize external leaks.

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SOLENOID VALVES

Installation and Service Instructions	Request Bulletin 30-11
3-Way Valves	Request Bulletin 30-20

NOT FOR USE WITH HAZARDOUS OR CORROSIVE FLUIDS

Sporlan Solenoid Valves

Features

Experience

For more than sixty-five years Sporlan 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

Through continuing research Sporlan has produced constant product improvements as well as innovative designs. Examples of Sporlan's research developments include: synthetic coated metal gaskets; solenoid pilot control; synthetic seating; color coded lead wires; floating disc construction; extended solder type connections; Class "F" coil.

Peak Performance

To assure peak performance, Sporlan uses thoroughly proven synthetic materials, resulting in lasting valve seat tightness. The high MOPD ratings of most Sporlan Solenoid Valves allow their use on any application using the common refrigerants.

Unsurpassed Reliability

A combination of top quality materials used in both the internal and external construction ensures unsurpassed product reliability. This is verified by periodic accelerated life tests.

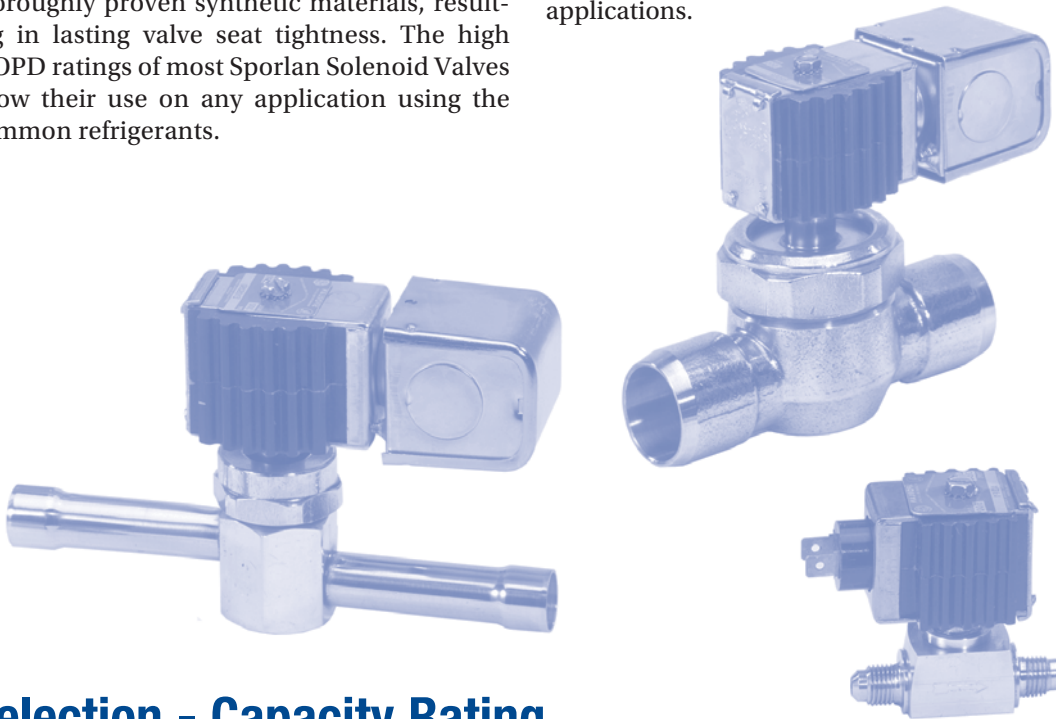
Top Quality

Testing is performed during all phases of production followed by 100% testing for body and seat tightness, electrical characteristics and valve operation.

Sporlan packaging protects this quality for the ultimate user.

Complete Line

Sporlan offers a complete line of solenoid valves to the industry. They are available in all capacities and connection sizes for air conditioning and refrigeration applications.



Selection - Capacity Rating

The following information should be available when selecting a Sporlan Solenoid Valve:

- Refrigerant or fluid to be controlled.
- Capacity required.
- MOPD - Maximum Operating Pressure Differential required.
- Electrical specifications - volts and cycles.

With this information, the correct valve can be selected from the Selection Tables.

For Liquid Line capacity data, see Page 4 and 5 and individual specification pages.

For Suction Line capacity data, see capacity tables Page 6 and 7.

For Discharge Gas capacity data, see capacity tables Page 6 and 7.

All solenoid valves are tested and rated in accordance with A.R.I. Standard No. 760-2001.

404A, 407C, 502, 507

Liquid Capacity Selection Table

TYPE NUMBER			TONS OF REFRIGERATION																	
"A" and "B" Series Valves		"E" SERIES EXTENDED CONNECTIONS		CONNECTIONS Inches	PORT SIZE Inches	404A			407C			502			507					
Without Manual Lift Stem	With Manual Lift Stem	Without Manual Lift Stem	With Manual Lift Stem			1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
CAIDA DE PRESIÓN - ps*																				
Normally Closed	Normally Open	Normally Closed	Normally Open	3/8 NPT Female	0.101	0.6	0.9	1.1	1.2	1.4	0.8	1.2	1.5	1.7	1.9	0.6	0.8	1.0	1.2	1.4
A3P1	-	-	-	1/4 SAE Flare	0.150	1.1	1.5	1.9	2.1	2.4	1.5	2.1	2.6	3.0	3.4	1.0	1.5	1.8	2.1	2.4
A3F1	-	-	-	3/8 NPT Female	3/16	1.9	2.7	3.3	3.8	4.2	2.6	3.7	4.5	5.2	5.8	1.9	2.6	3.2	3.7	4.1
A3S1	-	-	-	3/8 SAE Flare	9/32	3.1	4.4	5.4	6.2	6.9	4.3	6.1	7.4	8.6	9.6	3.0	4.3	5.2	6.0	6.7
-	-	-	-	3/8 SAE Flare	5/16	4.2	6	7.3	8.5	9.5	5.9	8.3	10.2	11.8	13.2	4.2	5.9	7.2	8.3	9.3
B6P1	MB6P1	-	-	1/2 ODF Solder	7/16	6.0	8.5	10.4	12.0	13.4	8.4	11.8	14.5	16.7	18.7	5.9	8.4	10.2	11.8	13.2
B6F1	MB6F1	-	-	5/8 ODF Solder	19/32	9.2	13.1	16	18.5	20.7	12.8	18.2	22.3	25.8	28.8	9.0	12.8	15.7	18.2	20.3
B6S1	MB6S1	-	-	3/4 NPT Female	25/32	15.7	22.3	27.4	31.6	35.4	21.9	31.0	38	44	49.2	15.5	21.9	26.8	31	34.7
B9P2	MB9P2	-	-	1 NPT Female	1	25.5	37.3	46.5	54.4	61.4	35.6	52	64.8	75.9	85.7	25.3	36.9	46	53.8	60.8
B9F2	MB9F2	-	-	2-1/8 ODF Solder	1-5/1	40.8	55.2	65.8	74.6	82.2	56.4	76.3	91.1	103	114	39.5	53.4	63.7	72.2	79.5
B9S2	MB9S2	-	-	2-1/8 ODF Solder																
B10F2	MB10F2	-	-																	
B10S2	MB10S2	-	-																	
B14P2	MB14P2	-	-																	
B14S2	MB14S2	-	-																	
B19S2	MB19S2	-	-																	
B19P2	MB19P2	-	-																	
B19S2	MB19S2	-	-																	
B25P2	MB25P2	-	-																	
B25S2	MB25S2	-	-																	

*Do not use below 1 psi pressure drop, except Types A3 and E3 valves.
Liquid capacities for Refrigerants 404A, 407C, 502 and 507 shown in the above table are based on 40°F evaporating and 100°F liquid.

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

Refrigerant Liquid Temperature °F	40	50	60	70	80	90	100	110	120	130	140
R-404A Correction Factor	1.65	1.56	1.47	1.37	1.28	1.19	1.10	1.00	0.90	0.80	0.70
R-407C Correction Factor	1.50	1.43	1.36	1.29	1.22	1.15	1.08	1.00	0.92	0.85	0.77

Refrigerant Liquid Temperature °F	40	50	60	70	80	90	100	110	120	130	140
R-502 Correction Factor	1.54	1.46	1.39	1.31	1.23	1.16	1.08	1.00	0.93	0.85	0.77
R-507 Correction Factor	1.60	1.52	1.43	1.35	1.26	1.18	1.09	1.00	0.91	0.81	0.70

The 404A, 407C, 502, and 507 factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 40°F. For each 10°F reduction in evaporating temperature, capacities are reduced by approximately 1-1.2%.

Discharge Gas and Suction Capacities 22, 134a, 401A, 402A

VALVE SERIES	DISCHARGE GAS CAPACITIES - Tons						VALVE SERIES	SUCTION CAPACITY* - Tons					
	PRESSURE DROP ACROSS VALVE - psi							1 psi PRESSURE DROP AND EVAPORATING TEMPERATURES					
	2	5	10	25	50	100		40°F	20°F	0°F	-20°F	-40°F	
REFRIGERANT 22							REFRIGERANT 22						
A3 & E3	0.24	0.37	0.52	0.76	1.01	1.15	A3 & E3	0.11	0.08	0.06	0.05	0.04	
E5	0.45	0.72	1.02	1.81	2.40	2.78	E5	0.22	0.16	0.13	0.10	0.08	
B6 & E6	0.84	1.32	1.86	3.05	3.97	4.30	B6 & E6	0.42	0.31	0.25	0.20	0.15	
B9 & E9	1.36	2.14	3.02	4.58	6.28	7.88	B9 & E9	0.66	0.48	0.39	0.31	0.24	
B10 & E10	1.85	2.92	4.12	6.97	9.33	11.0	B10 & E10	0.90	0.67	0.53	0.42	0.32	
B14 & E14	2.64	4.16	5.87	9.59	13.0	15.9	B14 & E14	1.29	0.95	0.76	0.60	0.47	
B19 & E19	3.96	6.28	8.91	14.2	19.4	24.0	B19 & E19	1.92	1.41	1.13	0.89	0.68	
B25 & E25	6.8	10.8	15.2	22.8	31.0	38.3	B25 & E25	3.26	2.39	1.92	1.51	1.17	
E35	10.0	16.5	24.1	39.9	54.9	69.6	E35	4.58	3.28	2.58	2.00	1.51	
E42	20.2	31.8	44.5	66.2	90.3	112	E42	9.50	6.98	5.60	4.41	3.41	
REFRIGERANT 134a							REFRIGERANT 134a						
A3 & E3	0.20	0.31	0.42	0.60	0.73	-	A3 & E3	0.09	0.06	0.04	-	-	
E5	0.38	0.60	0.85	1.42	1.77	-	E5	0.17	0.12	0.09	-	-	
B6 & E6	0.70	1.10	1.55	2.36	2.80	-	B6 & E6	0.32	0.22	0.17	-	-	
B9 & E9	1.13	1.78	2.51	3.66	4.85	-	B9 & E9	0.50	0.35	0.27	-	-	
B10 & E10	1.54	2.43	3.43	5.49	6.93	-	B10 & E10	0.69	0.48	0.37	-	-	
B14 & E14	2.19	3.46	4.88	7.61	9.88	-	B14 & E14	0.99	0.69	0.54	-	-	
B19 & E19	3.29	5.22	7.40	11.3	14.9	-	B19 & E19	1.47	1.02	0.79	-	-	
B25 & E25	5.64	8.94	12.5	18.1	23.7	-	B25 & E25	2.50	1.74	1.34	-	-	
E35	8.23	13.6	19.8	32.0	42.7	-	E35	3.45	2.34	1.77	-	-	
E42	16.8	26.2	36.4	52.7	69.1	-	E42	7.29	5.08	3.92	-	-	
REFRIGERANT 401A							REFRIGERANT 401A						
A3 & E3	0.22	0.34	0.47	0.62	0.84	-	A3 & E3	0.09	0.06	0.05	-	-	
E5	0.41	0.65	0.93	1.49	2.02	-	E5	0.17	0.12	0.10	-	-	
B6 & E6	0.77	1.20	1.69	2.48	2.52	-	B6 & E6	0.34	0.24	0.19	-	-	
B9 & E9	1.24	1.95	2.74	3.83	5.44	-	B9 & E9	0.53	0.37	0.29	-	-	
B10 & E10	1.68	2.65	3.74	5.75	7.88	-	B10 & E10	0.73	0.52	0.40	-	-	
B14 & E14	2.39	3.77	5.32	7.98	11.1	-	B14 & E14	1.04	0.74	0.58	-	-	
B19 & E19	3.59	5.69	8.07	11.9	16.7	-	B19 & E19	1.54	1.09	0.85	-	-	
B25 & E25	6.15	7.55	9.75	19.0	29.7	-	B25 & E25	2.61	1.86	1.45	-	-	
E35	9.0	14.8	21.6	33.5	47.7	-	E35	3.60	2.49	1.90	-	-	
E42	18.3	28.7	39.9	55.2	77.7	-	E42	7.60	5.41	4.22	-	-	
REFRIGERANT 402A							REFRIGERANT 402A						
A3 & E3	0.21	0.33	0.46	0.67	0.91	1.09	A3 & E3	0.09	0.07	0.52	0.04	0.03	
E5	0.39	0.63	0.89	1.42	2.17	2.63	E5	0.18	0.13	0.10	0.08	0.06	
B6 & E6	0.73	1.15	1.61	2.50	3.62	4.17	B6 & E6	0.35	0.25	0.20	0.15	0.11	
B9 & E9	1.18	1.86	2.62	4.02	5.59	7.20	B9 & E9	0.55	0.39	0.31	0.24	0.18	
B10 & E10	1.61	2.54	3.58	5.61	8.38	10.3	B10 & E10	0.76	0.54	0.42	0.33	0.24	
B14 & E14	2.29	3.61	5.10	7.93	11.6	14.7	B14 & E14	1.09	0.77	0.61	0.47	0.35	
B19 & E19	3.45	5.47	7.76	12.1	17.3	22.0	B19 & E19	1.62	1.15	0.90	0.69	0.52	
B25 & E25	5.91	9.37	13.3	20.0	27.6	35.2	B25 & E25	2.75	1.95	1.53	1.17	0.88	
E35	8.89	14.7	21.4	34.1	48.7	63.2	E35	3.93	2.73	2.09	1.58	1.16	
E42	17.6	27.7	38.8	58.3	80.5	103	E42	8.01	5.69	4.45	3.41	2.56	

*Minimum operating capacity is at one psi pressure drop for pilot operated valves.

EVAPORATOR TEMPERATURE CORRECTION FACTORS

Evaporator Temperature °F	40	30	20	10	-0	-10	-20	-30	-40
Multiplier	1.00	0.97	0.94	0.91	0.89	0.84	0.83	0.80	0.78

Capacities based on 100°F condensing temperature, isentropic compression plus 50°F, 40°F evaporator and 65°F suction gas. For capacities at other conditions use the multipliers in table at left.

404A, 407C, 502, 507

Discharge Gas and Suction Capacities

VALVE SERIES	DISCHARGE GAS CAPACITIES - Tons						VALVE SERIES	SUCTION CAPACITY* - Tons				
	PRESSURE DROP ACROSS VALVE - psi							1 psi PRESSURE DROP AND EVAPORATING TEMPERATURES				
	2	5	10	25	50	100		40°F	20°F	0°F	-20°F	-40°F
REFRIGERANT 404A							REFRIGERANT 404A					
A3 & E3	0.21	0.33	0.47	0.69	0.92	1.09	A3 & E3	0.10	0.07	0.05	0.04	0.03
E5	0.40	0.64	0.91	1.47	2.19	2.62	E5	0.19	0.13	0.10	0.08	0.08
B6 & E6	0.75	1.17	1.65	2.54	3.65	4.13	B6 & E6	0.36	0.25	0.20	0.15	0.11
B9 & E9	1.21	1.90	2.68	4.10	5.67	7.26	B9 & E9	0.56	0.40	0.31	0.24	0.18
B10 & E10	1.62	2.59	3.66	5.72	8.48	10.3	B10 & E10	0.78	0.55	0.43	0.32	0.24
B14 & E14	2.34	3.69	5.21	8.09	11.8	14.7	B14 & E14	1.11	0.78	0.61	0.46	0.35
B19 & E19	3.52	5.59	7.93	12.3	17.5	22.2	B19 & E19	1.65	1.16	0.90	0.69	0.51
B25 & E25	6.04	9.57	13.6	20.3	28.0	35.4	B25 & E25	2.80	1.97	1.53	1.17	0.87
E35	9.05	14.9	21.8	34.8	49.5	63.8	E35	3.99	2.74	2.09	1.57	1.15
E42	18.0	28.3	39.6	59.4	81.6	108	E42	8.15	5.74	4.46	3.41	2.54
REFRIGERANT 407C							REFRIGERANT 407C					
A3 & E3	0.25	0.39	0.55	0.80	1.07	1.24	A3 & E3	0.10	0.07	0.06	0.04	-
E5	0.47	0.76	1.07	1.70	2.55	3.01	E5	0.20	0.14	0.11	0.08	-
B6 & E6	0.88	1.38	1.95	2.99	4.24	4.69	B6 & E6	0.39	0.27	0.21	0.16	-
B9 & E9	1.43	2.24	3.16	4.82	6.64	8.42	B9 & E9	0.61	0.43	0.33	0.26	-
B10 & E10	1.93	3.06	4.32	6.73	9.90	11.8	B10 & E10	0.84	0.59	0.46	0.35	-
B14 & E14	2.76	4.35	6.14	9.53	13.8	17.0	B14 & E14	1.20	0.85	0.66	0.50	-
B19 & E19	4.15	6.58	9.34	14.4	20.5	25.7	B19 & E19	1.78	1.25	0.98	0.74	-
B25 & E25	7.12	11.3	16.0	23.9	32.8	41.0	B25 & E25	3.02	2.13	1.66	1.27	-
E35	10.5	17.4	25.4	40.5	58.0	74.2	E35	4.22	2.90	2.22	1.66	-
E42	21.2	31.3	46.7	69.8	95.5	120	E42	8.80	6.22	4.84	3.69	-
REFRIGERANT 502							REFRIGERANT 502					
A3 & E3	0.19	0.30	0.41	0.60	0.80	0.93	A3 & E3	0.09	0.06	0.05	0.04	0.03
E5	0.36	0.57	0.81	1.32	1.92	2.25	E5	0.17	0.12	0.10	0.07	0.06
B6 & E6	0.66	1.04	1.46	2.25	3.18	3.50	B6 & E6	0.33	0.24	0.19	0.14	0.11
B9 & E9	1.07	1.69	2.38	3.63	4.99	6.32	B9 & E9	0.52	0.37	0.29	0.23	0.17
B10 & E10	1.46	2.30	3.25	5.07	7.44	8.86	B10 & E10	0.71	0.51	0.40	0.31	0.24
B14 & E14	2.08	3.28	4.63	7.18	10.4	12.8	B14 & E14	1.01	0.73	0.58	0.45	0.34
B19 & E19	3.13	4.97	7.04	10.9	15.4	19.3	B19 & E19	1.51	1.08	0.85	0.66	0.50
B25 & E25	5.37	8.51	12.1	18.0	24.6	30.8	B25 & E25	2.56	1.84	1.45	1.12	0.85
E35	8.05	13.3	19.4	30.9	43.6	55.7	E35	3.66	2.57	1.99	1.51	1.12
E42	16.0	25.1	35.1	52.5	71.8	89.6	E42	7.47	5.36	4.22	3.27	2.48
REFRIGERANT 507							REFRIGERANT 507					
A3 & E3	0.21	0.32	0.45	0.67	0.90	1.06	A3 & E3	0.09	0.07	0.05	0.04	0.03
E5	0.39	0.62	0.89	1.43	2.13	2.56	E5	0.18	0.13	0.10	0.08	0.06
B6 & E6	0.73	1.14	1.60	2.47	3.55	4.03	B6 & E6	0.35	0.25	0.19	0.15	0.11
B9 & E9	1.17	1.85	2.61	3.84	5.52	7.07	B9 & E9	0.55	0.39	0.30	0.23	0.17
B10 & E10	1.59	2.52	3.56	5.57	8.26	10.0	B10 & E10	0.76	0.54	0.42	0.32	0.24
B14 & E14	2.27	3.59	5.06	7.88	11.5	14.4	B14 & E14	1.09	0.77	0.60	0.46	0.34
B19 & E19	3.43	5.44	7.71	11.9	17.1	21.6	B19 & E19	1.62	1.14	0.89	0.68	0.51
B25 & E25	5.87	9.31	13.2	19.8	27.3	34.5	B25 & E25	2.75	1.94	1.51	1.16	0.86
E35	8.82	14.5	21.2	33.9	48.2	62.2	E35	3.93	2.70	2.07	1.56	1.14
E42	17.5	27.5	38.5	57.8	79.5	101	E42	8.00	5.65	4.41	3.37	2.52

*Minimum operating capacity is at one psi pressure drop for pilot operated valves.

EVAPORATOR TEMPERATURE CORRECTION FACTORS

Evaporator Temperature °F	40	30	20	10	0	-10	-20	-30	-40
Multiplier	1.00	0.97	0.94	0.91	0.89	0.84	0.83	0.80	0.78

Capacities based on 100°F condensing temperature, isentropic compression plus 50°F, 40°F evaporator and 65°F suction gas. For capacities at other conditions use the multipliers in table at left.

Types A3, E3 and E5 Series 22, 134a, 401A, 402A, 404A, 407C, 502, 507



Type A3P1



Type A3F1



Type E3S130 or E5S130

UL and SP Listed
CE Approved

Application

Types A3 and E3 series are hermetic, direct-acting type solenoid valves primarily for refrigeration and air conditioning applications. The flow rate of the E3 and A3 are identical, therefore, the E3 may be freely substituted for the A3.

The **E5 series** are compact solenoid valves with pilot operated disc construction and are rated at 2.8 tons R-22 at 3 psi pressure drop vs. 1.6 for the A3S1. These valves **may be mounted horizontally, on their side or in a vertical line.**

The **Types E3 and E5 series solenoid valves** feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E3" and "E5" series can be installed using either low or no silver content brazing alloy.

The MKC-1 coil is Class "F" temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

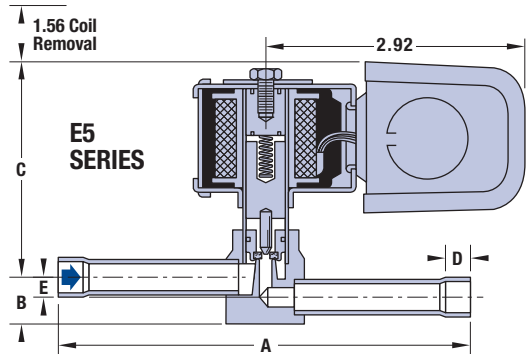
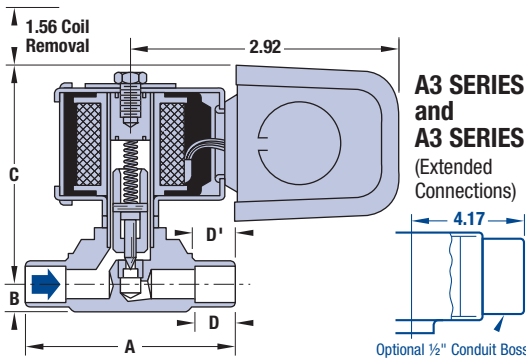
When ordering Body Assembly, specify Valve Type and Connections.

When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-1 120/50-60..

Dimensions - Inches

VALVE SERIES	TYPE	A	B	C	FITTING DEPTH		E OFFSET	
					D	D'		
					ODF	ODM		
A3	A3P1	1.88	0.44	2.20	-		-	
	A3S1	1/4 ODF	2.07	0.28	2.36	0.44		
		3/8 ODF	2.25					
	A3F1	2.38	0.22	2.42	-			
E3	E3S120	4.63	0.55	2.04	0.31	-	0.28	
	E3S130	4.56	0.49	2.10			0.19	
E5	E5S120	4.63	0.53	2.48	0.31	-	0.23	
	E5S130	4.56						



Specifications - MKC-1 Coil

VALVE SERIES	TYPE	CONNECTIONS Inches Sizes shown in Blue will be furnished unless otherwise specified	PORT SIZE INCHES	MOPD psi		NOMINAL LIQUID CAPACITIES								Coil Ratings		
						Tons of Refrigeration										
						REFRIGERANTS										
						22	134a	401A	402A	404A	407C	502	507	Pressure Drop - psi		
AC	DC	3	2	2	3	3	3	3	3	3	Standard Volts/Cycles	Watts				
												AC	DC			
A3	A3P1	3/8 NPT Female	0.101	300	175	1.6	1.2	1.3	1.1	1.1	1.5	1.0	1.0	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	15
	A3S1	1/4 ODF - 3/8 ODM & 3/8 ODF - 1/2 ODM														
	A3F1	1/4 SAE Flare														
E3	E3S120	1/4 ODF x 1/4 ODF	0.150	300	175	2.8	2.1	2.3	1.9	1.9	2.6	1.8	1.8			
	E3S130	3/8 ODF x 3/8 ODF														
E5	E5S120	1/4 ODF x 1/4 ODF	0.150	300	175	2.8	2.1	2.3	1.9	1.9	2.6	1.8	1.8			
	E5S130	3/8 ODF x 3/8 ODF														

- Maximum rated pressure 500 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost.
- For other voltages and cycles, consult Sporlan, Washington, MO 63090.
- See Pages 19 and 20 for water and steam valves.

- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.
- For mounting holes and/or bracket information see Bulletin 30-11.
- E3 and E5 series with mounting holes are NOT standard.

22, 134a, 401A, 402A, 404A, 407C, 502, 507 Types B6 and E6 Series

Application

Types B6 and E6 Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves **may be mounted horizontally, on their side or in a vertical line**. They are suitable for suction line service because very low pressure differential, 1 psi, is required for full operation.

The **Type E6 series solenoid valves** feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E6" series can be installed without disassembly using either low or no silver content brazing alloy.

The MKC-I coil is Class "F" temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-1 120/50-60.

Dimensions – Inches

VALVE SERIES	TYPE	A	*B	C	FITTING DEPTH		E
					ODF	ODM	
					OFFSET		
B6	B6P1	1.94	0.44	2.66	-	-	-
	B6S1	3/8 ODF			0.44		
		1/2 ODF			0.50		
	B6F1	2.50			-		
E6	E6S130	4.63	0.75	2.44	0.31	-	0.31
	E6S140	5.00			0.38		

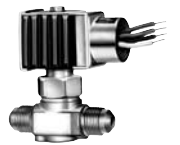
*Add 1.12" for Valves with Manual Lift Stem.



Type B6S1

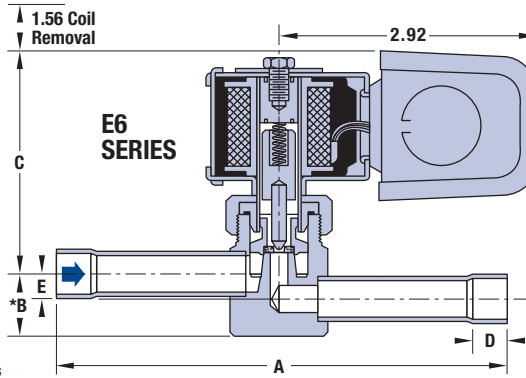
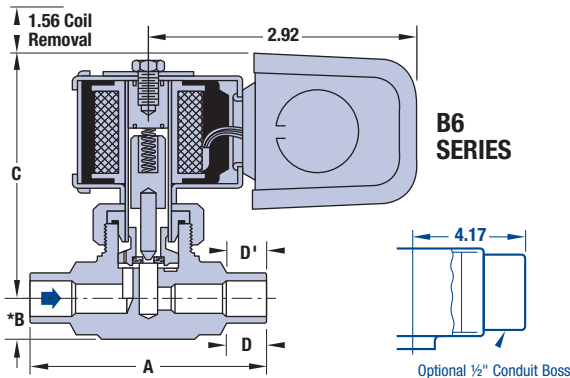


Type E6S130



Type B6F1

UL and SB Listed
CE Approved



Specifications - MKC-1 Coil

VALVE SERIES	TYPE	CONNECTIONS Inches Sizes shown in Blue will be furnished unless otherwise specified	PORT SIZE inches	MOPD psi		NOMINAL LIQUID CAPACITIES Tons of Refrigeration								Coil Ratings		
						REFRIGERANTS										
						22	134a	401A	402A	404A	407C	502	507			
						Pressure Drop - psi										
AC	DC	3	2	2	3	3	3	3	3	3	STANDARD VOLTS/CYCLES	WATTS				
												AC	DC			
B6	B6P1	3/8 NPT Female	3/16	300	175	4.9	3.8	4.1	3.3	3.3	4.5	3.2	3.2	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	15
	MB6P1															
	B6S1	3/8 ODF - 1/2 ODM & 1/2 ODF - 5/8 ODM														
	MB6S1															
	B6F1	3/8 SAE Flare														
MB6F1																
E6	E6S130	3/8 ODF x 3/8 ODF	3/16	300	175	4.9	3.8	4.1	3.3	3.3	4.5	3.2	3.2	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	15
	ME6S130															
	E6S140	1/2 ODF x 1/2 ODF														
	ME6S140															

- Maximum rated pressure 500 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.
- See Pages 19 and 20 for water and steam valves.

- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.
- For mounting holes and/or bracket information see Bulletin 30-11.
- E6 series with mounting holes are NOT standard.

Types B9 and E9 Series 22, 134a, 401A, 402A, 404A, 407C, 502, 507



Type OB9S2
Normally Open



Type MB9S2
Normally Closed



Type E9S240
Normally Closed

UL and SP Listed
CE Approved

Application

Types B9 and E9 Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves **may be mounted horizontally, on their side or in a vertical line**. These valves are also suitable for suction line service because very low pressure differential, 1 psi, is required for full operation.

The **Type E9 series solenoid valves** feature extended solder type connections as standard. One important benefit to the user is that all valves in the **"E9"** series can be installed without disassembly using either low or no silver content brazing alloy.

The MKC-2 and OMKC-2 coils are Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

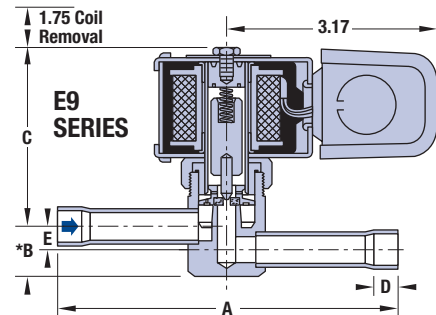
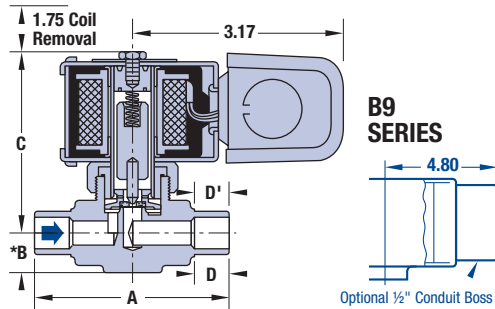
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-2 120/50-60; OMKC-2 120/50-60.

Dimensions - Inches

VALVE SERIES	TYPE	A	*B	C		D		E
				Normally Closed	Normally Open	ODF	ODM	
B9	B9P2	2.06	0.56	2.75	3.36	-		-
	B9S2	2.88				0.50		
	B9F2	2.88				-		
E9	E9S230	4.63	0.81	2.65	3.24	0.31	-	0.38
	E9S240	5.00	0.75	2.70	3.30	0.38	-	0.31
	E9S250	6.50	0.69	2.24	3.33	0.50	-	

*Add 1.12" for Valves with Manual Lift Stem.



Specifications - MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	STANDARD CONNECTIONS Inches	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES								Coil Ratings		
						Tons of Refrigeration										
						REFRIGERANTS										
						22	134a	401A	402A	404A	407C	502	507	Pressure Drop - psi		
B9	B9P2	3/8 NPT Female	9/32	300	250	8.1	6.2	6.6	5.3	5.4	7.4	5.2	5.2	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18
	B9S2	1/2 ODF - 5/8 ODM														
	MB9S2															
	OB9S2															
	B9F2	3/8 SAE Flare		300	250											
	MB9F2															
E9	E9S230	3/8 ODF x 3/8 ODF	300	250	8.1	6.2	6.6	5.3	5.4	7.4	5.2	5.2	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18	
	ME9S230															
	OE9S230															
	E9S240															
	ME9S240	1/2 ODF x 1/2 ODF	275													
	OE9S240															
	E9S250															
	ME9S250			5/8 ODF x 5/8 ODF												300
OE9S250																

- Maximum rated pressure 500 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.
- See Pages 19 and 20 for water and steam valves.

- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.
- For mounting holes and/or bracket information see Bulletin 30-11.
- E9 series with mounting holes are NOT standard.

22, 134a, 401A, 402A, 404A, 407C, 502, 507 Types B10 and E10 Series

Application

Types B10 and E10 Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves **may be mounted horizontally, on their side or in a vertical line.** They are suitable for suction line service because very low pressure differential, 1 psi, is required for full operation.

The **Type E10 series solenoid valves** feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E10" series can be installed without disassembly using either low or no silver content brazing alloy.

The MKC-2 and OMKC-2 coil are Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-2 120/50-60; OMKC-2 120/50-60.

Dimensions - Inches

VALVE SERIES	TYPE	A	*B	C		D		E
				Normally Closed	Normally Open	FITTING DEPTH		
						ODF	ODM	
B10	B10S2	3.25	0.59	3.15	3.44	0.62	0.50	-
	B10F2					-	-	
E10	E10S240	5.00	0.86	3.13	3.42	0.38	-	0.39
	E10S250	6.50				0.50	-	

*Add 1.12" for Valves with Manual Lift Stem.



Type MB10S2
Normally Closed

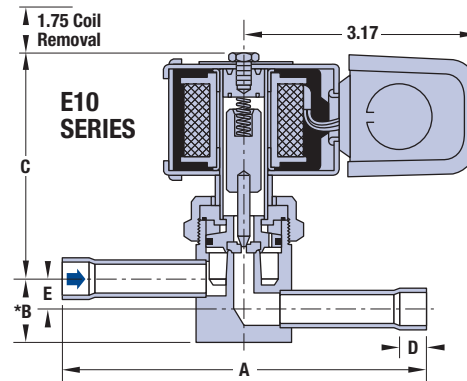
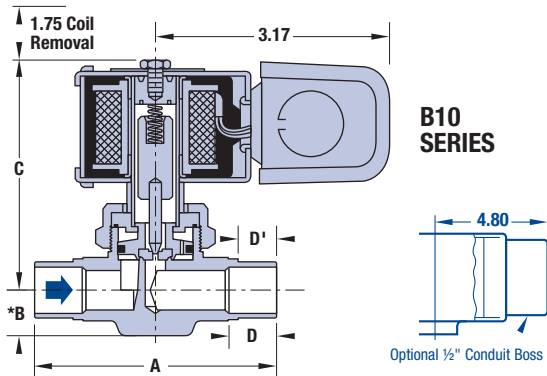


Type E10S250
Normally Closed



Type OB10S2
Normally Open

UL and SR Listed
CE Approved



Specifications - MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	STANDARD CONNECTIONS Inches	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES							Coil Ratings					
						TONS OF REFRIGERATION												
						REFRIGERANTS												
						22	134a	401A	402A	404A	407C	502			507			
						Pressure Drop - psi												
				AC	DC	3	2	2	3	3	3	3	3	STANDARD VOLTS/CYCLES		WATTS		
						3	2	2	3	3	3	3	3	AC	DC			
B10	B10S2	5/8 ODF x 3/4 ODM	5/16	300	250	11.1	8.5	9.1	7.3	7.3	10.2	7.2	7.2	24/50-60	15	18		
	MB10S2																	
E10	B10F2	1/2 SAE Roscar	5/16	300	250	11.1	8.5	9.1	7.3	7.3	10.2	7.2	7.2	120/50-60	15	18		
	MB10F2																	
	E10S240	1/2 ODF x 1/2 ODF															275	
	ME10S240																	
	OE10S240	5/8 ODF x 5/8 ODF															300	250
	E10S250																275	
ME10S250																		
OE10S250																		

- Maximum rated pressure 500 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost.
- For other voltages and cycles, consult Sporlan, Washington, MO 63090.
- See Pages 19 and 20 for water and steam valves.

- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.
- For mounting holes and/or bracket information see Bulletin 30-11.

Types B14 and E14 Series 22, 134a, 401A, 402A, 404A, 407C, 502, 507



Type E14S250
Normally Closed



Type MB14S2
Normally Closed



Type OB14S2
Normally Open

UL and SP Listed
CE Approved

Application

Types B14 and E14 Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves may be mounted horizontally, on their side or in a vertical line. These valves are also suitable for suction line service because very low pressure differential, 1 psi, is required for full operation.

The **Type E14 series** solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E14" series can be installed without disassembly using either low or no silver content brazing alloy.

The MKC-2 and OMKC-2 coils are Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

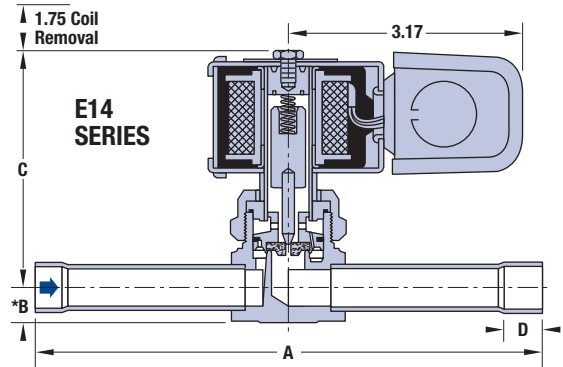
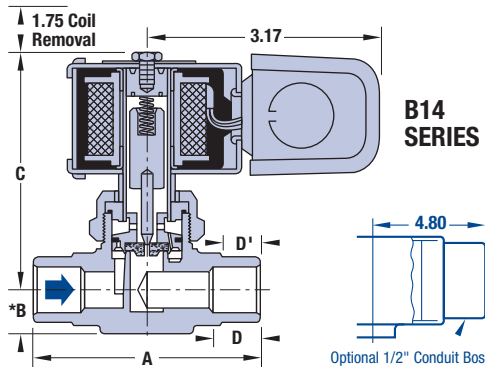
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-2 120/50-60; OMKC-2 120/50-60.

Dimensions - Inches

VALVE SERIES	TYPE	A	*B	C		D D'	
				Normally Closed	Normally Open	FITTING DEPTH	
				ODF	ODM		
B14	B14P2	2.41	0.56	3.28	3.62	-	
	B14S2	3.00				0.62	0.50
E14	E14S250	6.88	0.47	3.25	3.51	0.50	-

*Add 1.12" for Valves with Manual Lift Stem.



Specifications - MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	STANDARD CONNECTIONS Inches	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES								Coil Ratings			
						TONS OF REFRIGERATION											
						REFRIGERANTS											
						22	134a	401A	402A	404A	407C	502	507				
						Pressure Drop - psi											
				AC	DC	3	2	2	3	3	3	3	3	3	STANDARD VOLTS/CYCLES	WATTS	
														AC		DC	
B14	B14P2	1/2 NPT Female	7/16	300	250	15.8	12.0	12.9	10.4	10.4	14.5	10.2	10.2	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18	
	B14S2			300	250												
	MB14S2	5/8 ODF - 7/8 ODM		275													
	OB14S2																
E14	E14S250	5/8 ODF x 5/8 ODF	300	250	15.8	12.0	12.9	10.4	10.4	14.5	10.2	10.2	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18		
	ME14S250		300	250													
	OE14S250	7/8 ODF x 7/8 ODF	275														
	E14S270		300	250													
ME14S270																	

- Maximum rated pressure 500 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.

- See Pages 19 and 20 for water and steam valves.
- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.
- For mounting holes and/or bracket information see Bulletin 30-11.

22, 134a, 401A, 402A, 404A, 407C, 502, 507 Types B19 and E19 Series

Application

Types B19 and E19 Series are pilot operated solenoid valves for refrigeration and air conditioning applications. They are suitable for suction service because very low pressure differential, 1 psi, is required for full operation. These valves **may be mounted horizontally, on their side or in a vertical line.**

The **Type E19 series solenoid valves** feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E19" series can be installed without disassembly using either low or no silver content brazing alloy.

The MKC-2 and OMKC-2 coil are Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-2 120/50-60; OMKC-2 120/50-60.

Dimensions - Inches

VALVE SERIES	TYPE	A	*B	C		D		D'	
				Normally Closed	Normally Open	FITTING DEPTH		ODM	
						ODF	ODM		
B19	B19P2	3.00	0.81	3.31	3.83	-		-	
	B19S2	5/8 ODF				3.87	0.88		0.75
		7/8 ODF					0.62		0.75
E19	E19S250	6.88	3.41	3.87	0.50	-			
	E19S270	7.13			0.75	0.75			

*Add 1.12" for Valves with Manual Lift Stem.



Type E19S250
Normally Closed

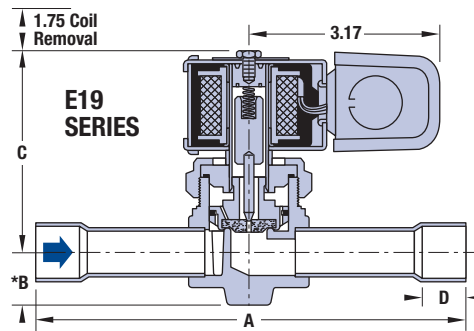
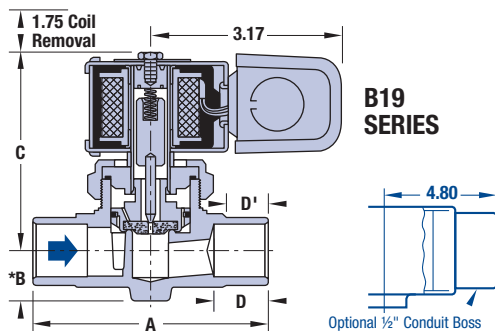


Type MB19S2
Normally Closed



Type OB19S2
Normally Open

UL and SP Listed
CE Approved



Specifications - MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	CONNECTIONS Inches Sizes shown in Blue will be furnished unless otherwise specified	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES								Coil Ratings			
						TONS OF REFRIGERATION											
						REFRIGERANTS											
						22	134a	401A	402A	404A	407C	502	507				
Pressure Drop - psi																	
AC	DC	3	2	2	3	3	3	3	3	3	3	3	3	STANDARD VOLTS/CYCLES	WATTS		
														AC	DC		
B19	B19P2	3/4 NPT Female	9/32	300	250	24.2	18.4	19.8	16.0	16.0	22.3	15.7	15.7	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18	
	B19S2	7/8 ODF - 1-1/8 ODM		300	250												
	MB19S2			275													
	OB19S2																
E19	E19S250	5/8 ODF x 5/8 ODF	9/32	300	250	24.2	18.4	19.8	16.0	16.0	22.3	15.7	15.7	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18	
	ME19S250	7/8 ODF x 7/8 ODF		300	250												
	E19S270			275													
	ME19S270																
	OE19S270																
ME19S290	1-1/8 ODF x 1-1/8 ODF	300	250														

- Maximum rated pressure 500 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.

- See Pages 19 and 20 for water and steam valves.
- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.
- For mounting holes and/or bracket information see Bulletin 30-11.

Types B25 and E25 Series 22, 134a, 401A, 402A, 404A, 407C, 502, 507



Type MB25S2
Normally Closed



Type E25S290
Normally Closed



Type OB25S2
Normally Open

UL and SF Listed
CE Approved

Application

Types B25 and E25 Series are pilot operated solenoid valves for refrigeration and air conditioning applications. They are suitable for suction service because very low pressure differential, 1 psi, is required for full operation. These valves may be mounted horizontally, on their side or in a vertical line.

The **Type E25 series solenoid valves** feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E25" series can be installed without disassembly using either low or no silver content brazing alloy.

The MKC-2 and OMKC-2 coils are Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

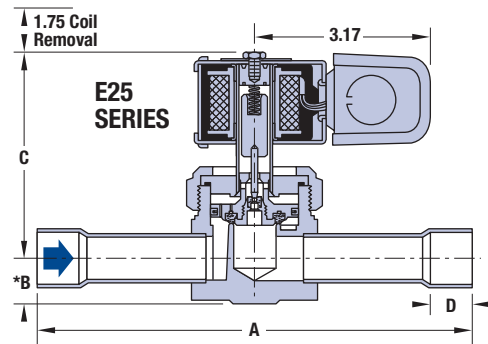
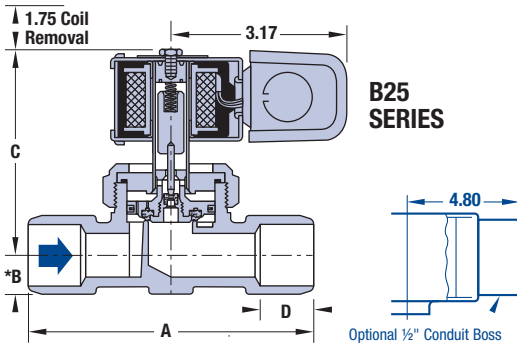
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-2 120/50-60; OMKC-2 120/50-60.

Dimensions - Inches

VALVE SERIES	TYPE	A	*B	C		D	
				Normally Closed	Normally Open	FITTING DEPTH	
						ODF	
B25	B25P2	3.50	0.72	3.78	4.06	-	
	B25S2	7/8 ODF				4.88	0.75
		1-1/8 ODF					0.91
E25	E25S270	7.50				0.75	
	E25S290	8.50				0.91	

*Add 1.12" for Valves with Manual Lift Stem.



Specifications - MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	CONNECTIONS Inches Sizes shown in Blue will be furnished unless otherwise specified	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES								Coil Ratings		
						TONS OF REFRIGERATION										
						REFRIGERANTS										
						22	134a	401A	402A	404A	407C	502	507			
Pressure Drop - psi										STANDARD VOLTS/CYCLES	WATTS					
3	2	2	3	3	3	3	3	AC	DC							
B25	B25S2	1-1/8 ODF Solder	25/32	300	250	41.4	31.5	33.8	27.3	27.4	38.0	26.8	26.8	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18
	MB25S2	7/8 ODF x 1-1/8 ODM & 1-1/8 ODF Solder														
	OB25S2	1-1/8 ODF Solder														
E25	E25S270	7/8 ODF x 7/8 ODF	25/32	300	250	41.4	31.5	33.8	27.3	27.4	38.0	26.8	26.8	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18
	ME25S270															
	OE25S270															
	E25S290	1-1/8 ODF x 1-1/8 ODF		300	250											
	ME25S290															
OE25S290																

- Maximum rated pressure 500 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.

- See Pages 19 and 20 for water and steam valves.
- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.
- For mounting holes and/or bracket information see Bulletin 30-11.

22, 134a, 401A, 402A, 404A, 407C, 502, 507 Types E35 Series

Application

Types E35 Series solenoid valves are pilot operated for refrigeration and air conditioning applications. They are suitable for suction service because very low pressure differential, 1 psi, is required for full operation. The E35 Series may be mounted horizontally, on their side or in a vertical line.

The **Type E35** series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E35" series can be installed without disassembly using either low or no silver content brazing alloy.

The MKC-1 and OMKC-1 coils are Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

W 1-5/8" ODM Type L tubing may be slipped over 1-3/8" fitting, without the use of a coupling.

When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example:
MKC-1 120/50-60; OMKC-1 120/50-60

Ordering Instructions

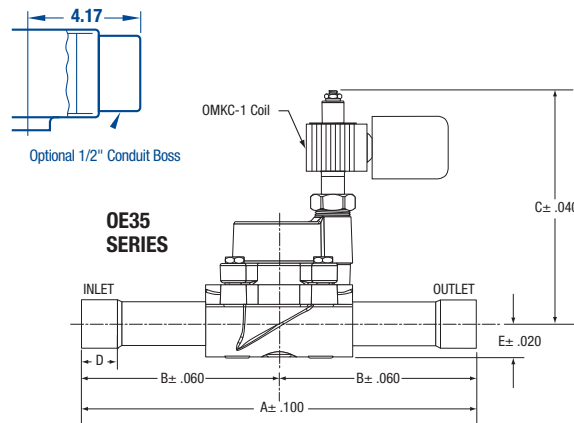
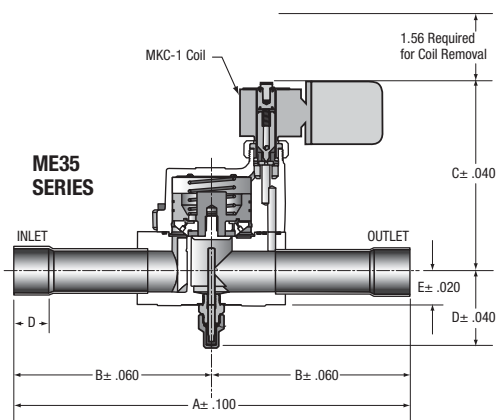
Dimensions - Inches

VALVE SERIES	TYPE	FITTING Size	A	B	C		D	
					Normally Closed	Normally Open	FITTING DEPTH	*F
E35	E35S190	1-1/8	10.06	4.81	4.81	5.94	0.91	0.84
	E35S1110	1-3/8	11.06	5.94			0.97	0.84

*Add 1.12" for Valves with Manual Lift Stem.



Type ME35S1110
Normally Closed



UL and SP Listed
CE Approved

Specifications - MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	CONNECTIONS Inches Sizes shown in Blue will be furnished unless otherwise specified	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES TONS OF REFRIGERATION							Coil Ratings			
						REFRIGERANTS										
						22	134a	401A	402A	404A	407C	502				507
						Pressure Drop - psi										
AC	DC	3	2	2	3	3	3	3	3	3	STANDARD VOLTS/CYCLES	WATTS				
												AC	DC			
E35	E35S190	1-1/8 ODF x 1-1/8 ODF	1	300	250	70.9	53.0	56.9	46.6	46.5	64.8	46.0	45.6	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	10	15
	ME35S190															
	OE35S190			275												
	E35S1110	21-3/8 ODF x 1-3/8 ODF		300	250											
ME35S1110			275													
OE35S1110																

- Maximum rated pressure 500 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.

- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.

Type E42 Series 22, 134a, 401A, 402A, 404A, 407C, 502, 507



Type ME42S2130

Listed
 Approved

Application

Type E42 Series are large capacity, pilot operated solenoid valves designed for refrigeration and air conditioning applications. Suitable for suction service because very low pressure differential, 1 psi, is required for full operation.

The Type E42 series may be brazed into line without disassembly as valves contain extended solder type connections. Use caution to place wet rag or chills on extensions at body to prevent excessive overheating.

The E42 Series may be mounted horizontally, on their side or in a vertical line. The E42 series is a Class "F" temperature rated coil that is provided as standard, therefore a high temperature coil is **not** required for discharge service.

The E42 series are steel body valves and therefore are not recommended for water or steam service.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

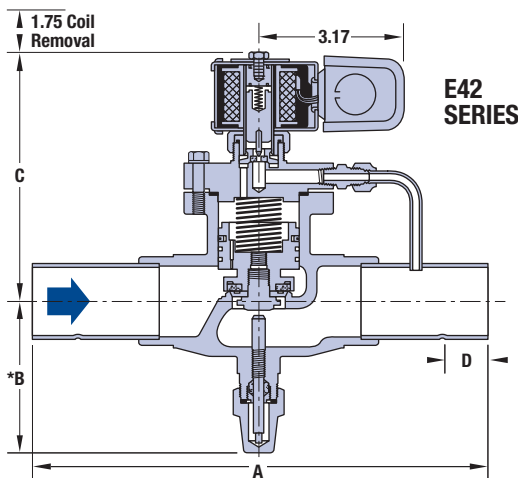
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: MKC-2 120/50-60; OMKC-2 120/50-60.

Dimensions - Inches

VALVE SERIES	TYPE	A	*B	C		D
				Normally Closed	Normally Open	
E42	ME42S2130	11.06	3.53	5.70	6.31	ODF
	ME42S2170					1.09
						1.34

*Deduct 2-1/8" for E42 Series Valves less Manual Lift Stem.



Specifications - MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	STANDARD CONNECTIONS Inches	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES							Coil Ratings			
						TONS OF REFRIGERATION										
						REFRIGERANTS										
						22	134a	401A	402A	404A	407C	502				507
Pressure Drop - psi													STANDARD VOLTS/CYCLES	WATTS		
AC	DC	3	2	2	3	3	3	3	3	3	AC	DC				
E42	E42S2130	1-5/8 ODF x 1-5/8 ODF	1-5/16	300	250	127	96.9	104.0	83.9	84.2	117.0	82.5	82.4	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18
	ME42S2130															
	OE42S2130															
	E42S2170	2-1/8 ODF x 2-1/8 ODF		300	250											
	ME42S2170															
	OE42S2170			275												

- Maximum rated pressure 450 psi.
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.

- Available with conduit boss or junction box at no extra charge.
- For capacity at other pressure drops, see Pages 4 and 5.

22, 134a, 401A, 402A, 404A, 407C, 502, 507 Built-In Check Valve Series

Application

A solenoid valve with a built-in check valve is designed to replace a liquid line solenoid valve in parallel with a check valve for reverse flow. This valve may be applied in the liquid line of a supermarket case for positive shutoff during pumpdown control, while allowing full flow in the reverse direction during reverse gas defrost. It may also be used in the liquid line of a heat pump to prevent migration of refrigerant to the outdoor unit during the heating mode, while allowing full flow in the reverse direction during the cooling mode. **CAUTION:** This valve will not close in the reverse flow/cooling mode.

See Figure 1. The check ball is small and inserted into the pilot port of the disc. When the valve is energized for operation in the refrigeration flow direction, the pressure on top of the disc is bled off through the pilot port and the disc raises. When the evaporator goes into defrost or the heat pump switches to the cooling mode, the solenoid valve **must be energized**. The reverse flow causes the check ball to close the pilot port from the bottom, pushing the disc up, fully opening the valve.

The check valve disc also requires a modification in the stem and plunger assembly. Therefore, the disc and stem and plunger assembly must be changed to convert a standard solenoid valve to one with a built-in check valve. Internal parts kits are available for solenoid valves with the built-in check valve. See Bulletin 122, Replacement Parts.

For Supermarkets

See Figure 2. For reverse gas defrost, a liquid line solenoid valve can be installed with a check valve in parallel, to allow reverse flow to the liquid header. This adds the expense of labor and materials. Or, a Sporlan liquid line solenoid valve with the built-in check valve feature can be installed, saving time and money.

For Heat Pumps

This valve may be used on some heat pump applications when sized correctly. (Refer to capacities at 40°F evaporator temperature, see Page 18 of this Bulletin.) For heat pumps with long lines that require shut off in both directions, use two solenoid valves with the outlets pointing towards each other.



Type CE14S250



Type CMB19S2

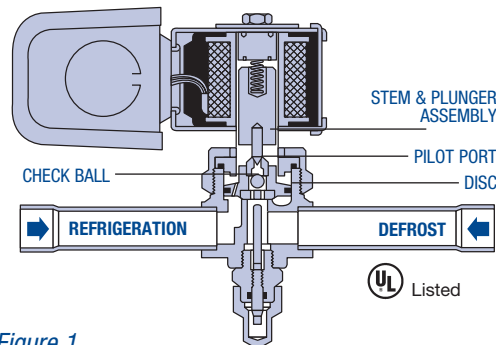
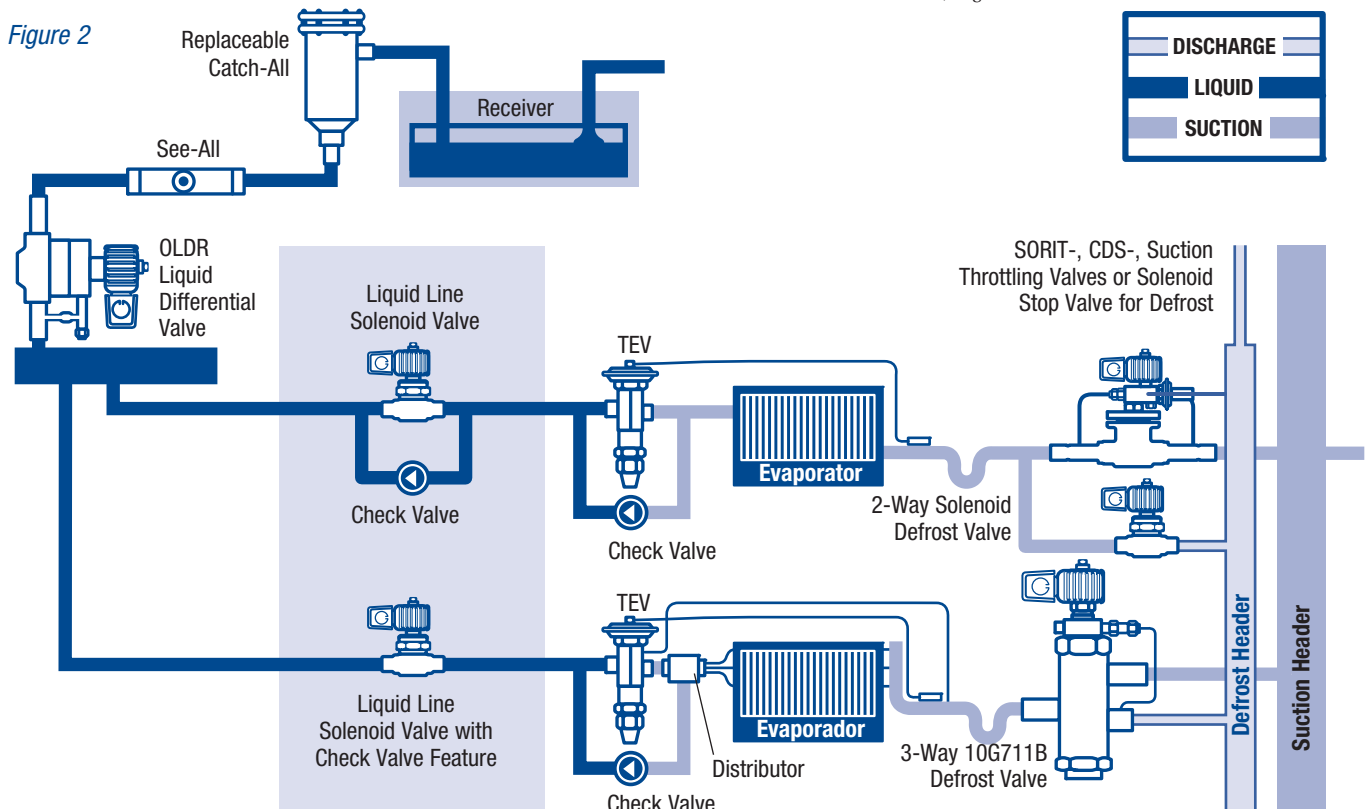


Figure 1

CME14S2* REVERSE FLOW SOLENOID VALVE

* The "C" is used in this nomenclature to represent the check valve feature. See Solenoid Valve Nomenclature, Pages 25-26.



Built-In Check Valve Series 22, 134a, 401A, 402A, 404A, 407C, 502, 507

Extreme care should be taken when brazing connections to avoid damage to internal synthetic parts.

* The "C" is used in this nomenclature to represent the check valve feature. See Solenoid Valve Nomenclature, Page 26.

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

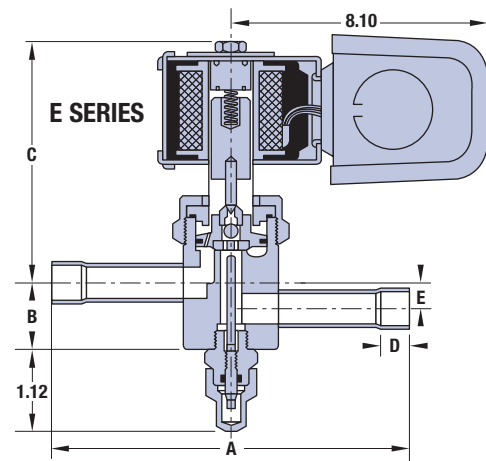
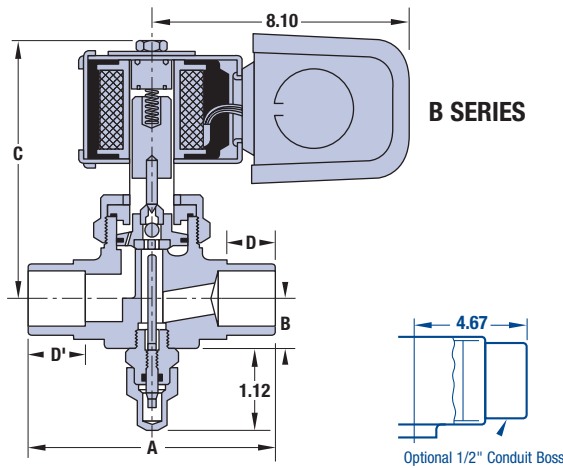
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

Example: CME10S250* 120/50-60

Kit: KS-CB10/CE10*

Dimensions - Inches

TYPE	A	B	C	FITTING DEPTH		E
				ODF	ODM	
				OFFSET		
C(M)E9S230	4.63	0.81	2.65	0.31	-	0.38
C(M)E9S240	5.00	0.75	2.70	0.38	-	0.31
C(M)E10S250	6.50	0.88	3.13	0.50	-	0.37
CB14S2	3.00	0.56	3.28	0.62	0.50	-
CE14S250	6.88	0.48	3.25	0.50	-	-
C(M)E19S270	7.13	0.81	3.31	0.75	-	-



Specifications - Reverse Refrigeration Flow, Liquid Line Capacity (Tons) **

VALVE TYPE	R-22 3 psi		R-134a 2 psi		R-401A 2 psi		R-402A 3 psi		R-404A 3 psi		R-407C 3 psi		R-502 3 psi		R-507 3 psi	
	EVAPORATOR °F															
	40	0	40	0	40	0	5	40	0	40	0	40	0	40	0	40
C(M)B9, C(M)E9	6.6	6.2	5.1	4.6	5.5	5	-	3.9	-	3.9	6.1	5.6	-	3.9	-	3.8
C(M)B10, C(M)E10	8.1	7.6	6.2	5.6	6.6	6.1	-	4.8	-	4.8	7.4	6.8	-	4.7	-	4.7
C(M)B14, C(M)E14	12.9	12.2	10.2	9.3	11	10.2	-	7.7	-	7.8	12	11	-	7.6	-	7.6
C(M)B19, C(M)E19	9.3	8.8	6.2	5.6	6.6	6.1	-	5.4	-	5.1	8.2	7.5	-	5.5	-	5.1

** Valve sizing should be based on expected reverse liquid flow condensing capabilities of the evaporator(s) being defrosted.
 + Due to flow restrictions, C(M)E19 model capacity does not surpass C(M)E14 models until pressure drop exceeds 10 psi.
 • See Page 4 and 5 for Forward Refrigerant Flow.
 • Liquid capacities shown in the above table are based on 100°F liquid temperature entering the valves.

for Air, Water, Steam and Light Oil

Industrial Solenoid Valves

Application

These valves are suitable for most types of industrial applications. Ideal for water, glycol, most refrigerant oils and heat transfer fluids, air lines to chucking devices, steam lines, etc. Use the disc type valves for high temperature and steam applications up to 25 psia. Use the teflon diaphragm type valve for high temperature and steam applications over 5 psig (225°F) but do not exceed 10 psig (240°F). For applications above 240°F, consult Sporlan, Washington, MO. These valves **may be mounted horizontally, on their side or in a vertical line.**

Direct Acting Type

The **W3P1** is the ideal size for use on air chucking devices. Generally a very tight seat is required for this type of application. This can be achieved by using a neoprene seat in the **W3P1** in place of the standard teflon. **To order specify RW3P1.**

Disc Type

In certain areas of the country, particularly hard water localities, the integral brass seats in solenoid valves may deteriorate very rapidly. This problem is solved by using a stainless steel seat insert in the brass body in place of the usual brass seat. Valves from the **W6** series through the **W25** series have this feature. These valves are also equipped with teflon seating

materials for long life. The **W14** series through the **W25** series are also equipped with a closing spring on top of the disc to assist in valve closing.

Diaphragm Type

These valves are tight seating in applications of normal differential pressure. For applications where differential pressures in the closed position are below 5 psi, it is recommended that a Buna-N diaphragm be used in place of the standard teflon diaphragm. **To order specify BR184P1 or KBR184P1.**

In certain areas of the country, particularly hard water localities, the integral brass seats in solenoid valves may deteriorate very rapidly. This problem is solved by using a stainless steel seat insert in place of the usual brass seat. **Example: KR184P1.**

Nomenclature - Diaphragm Type

K	B	R	18	4	P	1
Asiento Insertado de Acero Inoxidable	Diaphragma Buna-N	Serie	Tamaño de Orificio en 1/32"	Tamaño de CONNECTIONS en 1/8"	CONNECTIONS Type Tubería	Bobina MKC-1



Type W3P1
Direct Acting Type



Type R184P1
Diaphragm Type

Specifications

Type	STANDARD CONNECTIONS Inches	PORT SIZE Inches	MOPD psi		DIAFRAGM	STAINLESS STEEL INSERT SEAT	COIL RATINGS		
			AC	DC			STANDARD VOLTS/CYCLES	WATTS	
						AC		DC	

Disc Type

W3P1	1/4 NPT Female	0.109	150	100	-	No	24/50-60 120/50-60 208-240/50-60 Dual 120-208-240/60	10	15	MKC-1
W6P1	3/8 NPT Female	3/16		125		Yes		15	18	MKC-2
W14P2	1/2 NPT Female	7/16								
W19P2	3/4 NPT Female	19/32								
W25P2	1 NPT Female	25/32								

Diaphragm Type

R183P1	3/8 NPT Female	9/16	150	60	Teflon	No	24/50-60 120/50-60 208-240/50-60 Dual 120-208-240/60	10	15	MKC-1
BR183P1					Buna-N	Yes				
KR183P1					Teflon					
KBR183P1					Buna-N					
R184P1	1/2 NPT Female	9/16	150	60	Teflon	No	24/50-60 120/50-60 208-240/50-60 Dual 120-208-240/60	10	15	MKC-1
BR184P1					Buna-N	Yes				
KR184P1					Teflon					
KBR184P1					Buna-N					
R246P1	3/4 NPT Female	3/4	150	60	Teflon	No	24/50-60 120/50-60 208-240/50-60 Dual 120-208-240/60	10	15	MKC-1
BR246P1					Buna-N	Yes				
KR246P1					Teflon					
KBR246P1					Buna-N					

- Maximum rated pressure: Type W3P1 and Diaphragm Types, 300 psi; All others - 500 psi
- Dual voltage 4-wire coils, 120-208-240/50-60 are available at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO 63090.

- Body - Brass
- Available with conduit boss or junction box at no extra charge.
- 5 psi minimum operating pressure differential W6 thru W25.

Industrial Solenoid Valves for Air, Water, Steam and Light Oil

Ordering Instructions

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.

When ordering Body Assembly, specify Valve Type and Connections.

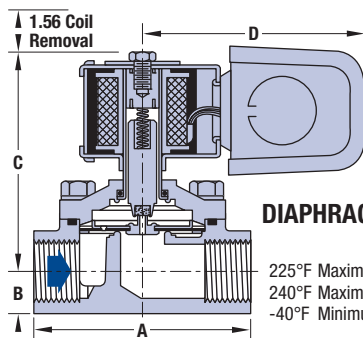
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

**Example: MKC-1 208-240/50-60;
MKC-2 120/50-60.**

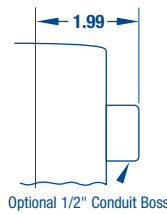
Use a **SPORLAN** filter or strainer in front of every industrial solenoid valve.

Dimensions - Inches

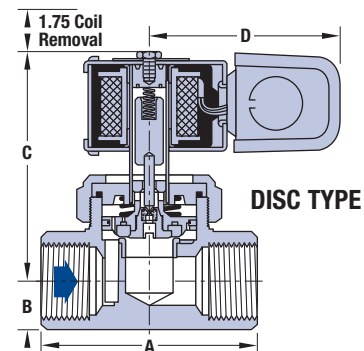
TYPE	CONNECTIONS (Pipe)	A	B	C	D
W3P1	1/4	4.78	1.12	5.59	7.34
W6P1	3/8	4.93		6.76	
W14P2	1/2	6.12	1.42	8.33	8.05
W19P2	3/4	7.62	2.06	8.41	
W25P2	1	8.89	1.83	9.60	7.34
R183P1 Serie	3/8	6.99	1.35	7.54	
R184P1 Serie	1/2				
R246P1 Serie	3/4	7.77	1.45	7.85	



DIAPHRAGM TYPE



Optional 1/2" Conduit Boss



DISC TYPE

Capacities

Water and Air

Type	WATER - GPM					*AIR - CFMFA		COIL
	1 psi ΔP	3 psi ΔP	5 psi ΔP	10 psi ΔP	20 psi ΔP	5 psi ΔP	10 psi ΔP	
W3P1	0.22*	0.38*	0.5	0.7	1.2	2.4	3.4	MKC-1
W6P1	-	-	2.2	3.2	4.5	7.3	10.8	
W14P2	-	-	5.9	9.0	12.7	24.2	39.5	
W19P2	-	-	8.8	12.5	19.1	41.0	61.0	MKC-2
W25P2	-	-	14.5	21.5	32.5	74.0	114.0	
R183P1 Serie	3.6	6.2	8.1	11.4	16.1	32.5	47.4	MKC-1
R184P1 Serie	4.1	7.1	9.2	13.0	18.3	37.0	54.0	
R246P1 Serie	5.8	10.0	12.9	18.3	25.8	52.3	76.4	

* Use RW3P1 to obtain tight seating below 5 psi pressure drop.

Steam – Pounds per Hour

Type	PRESSURE DROP ACROSS THE SOLENOID VALVE - psi										COIL	
	5				10				20			25
	PRESSURE AT INLET OF SOLENOID VALVE - psi											
	5	10	20	25	10	20	25	20	25	25		
W3P1	3.4	3.9	4.7	5.4	4.9	6.3	6.8	6.9	7.8	7.8	MKC-1	
W6P1	10.4	11.8	14.5	16.8	15.4	20.0	20.9	22.2	24.0	24.0		
W14P2	34.9	39.9	48.5	55.8	49.4	63.1	70.3	74.8	81.2	81.2		
W19P2	60.3	68.5	83.0	95.3	88.0	112.5	119.8	127.5	137.9	137.9	MKC-2	
W25P2	100.7	135.2	139.7	161.0	153.8	196.4	202.8	238.1	233.2	233.2		

Type	* POUNDS PER HOUR		COIL
	5 psi ΔP	10 psi ΔP	
R183P1	47.6	69	MKC-1
KR183P1			
R184P1	54	78	
KR184P1			
R246P1	76.2	111.1	
KR246P1			

For steam applications above 5 psig (225°F) and not to exceed 10 psig (240°F) use teflon diaphragm.
* Exhaust to atmosphere.

Sporlan Solenoid Valves

General

Purpose

The primary purpose of an electrically operated solenoid valve is to control automatically the flow of fluids, liquid, or gas. Sporlan Solenoid Valves may be applied on a wide variety of applications.

Basic Types

There are two basic types of solenoid valves. The most common is the normally-closed type, in which the valve opens when the coil is energized, and closes when the coil is de-energized. The other type is the normally-open valve which opens when the coil is de-energized and closes when the coil is energized. The operation of both types is discussed in the following paragraphs.

Principles of Operation

Solenoid valve operation is based on the theory of the electromagnet. The solenoid valve coil sets up a magnetic field when electrical current is flowing through it. If a magnetic metal, such as iron or steel, is introduced into the magnetic field, the pull of the field will raise the metal and center it in the hollow core of the coil. By attaching a stem to the magnetic metal or plunger, this principle is used to open the port of the valve. When the electrical circuit to the coil is broken, the magnetic field will collapse and the stem and plunger either will fall by gravity or be pushed down by the kick off spring.

Some solenoid valves are designed with a hammer blow effect. When the coil is energized, the plunger starts upward before the stem. The plunger then picks up the stem by making contact with a collar at the top. The momentum of the plunger assists in opening the valve against the unbalanced pressure across the port.

Solenoid valves are also classified according to the "stem and plunger" action. The two types are discussed in the following sections.

Direct Acting Solenoid Valves

With this type of valve, the stem and plunger assembly opens the port of the valve directly. This type of construction is limited to the smaller valves with port sizes of less than 1/4 inch. Sporlan Solenoid Valves of this design are the Types A3, E3, MA5A3, 180 Solenoid Pilot Control and W3P1.

Pilot Operated

Normally Closed Solenoid Valves

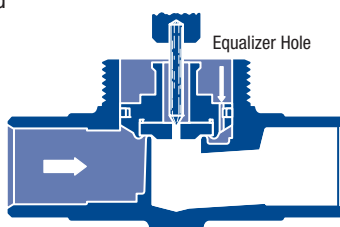
In a pilot operated valve, the stem and plunger assembly opens a pilot port. This releases the pressure on top of the disc, piston or diaphragm which then moves upward and opens the main valve port. Figure 3 illustrates the four phases of the operating cycle of a typical pilot operated valve. The operation is the same whether the valve is a disc, piston or diaphragm type.

Initially the pilot port and the main port are closed as shown in **A**. Pressure at the valve inlet is present on top of the disc as well, because of an equalizer hole drilled through the disc.

When the coil is energized, the stem and plunger assembly is lifted and the pilot port is opened - **B**. The stem and plunger assembly is centered within the coil by the magnetic field. The pilot port, if properly sized for the fluid to be handled, will relieve the pressure on top of the disc. Now the valve inlet pressure will act on a portion of the bottom of the disc, lifting the disc to open the main port - **C**. Once the port is open, the disc is held off the seat by the pressure difference across the port.

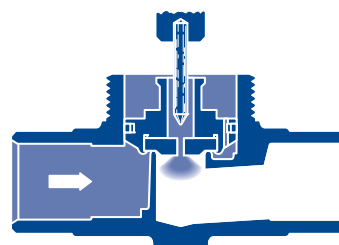
Coil De-Energized
Pilot Port Closed
Main Port Closed

A



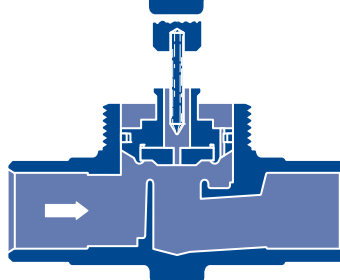
Coil Energized
Pilot Port Open
Main Port
About to Open

B



Coil Energized
Pilot Port Open
Main Port Open

C



Coil De-Energized
Pilot Port Closed
Main Port Closing

D

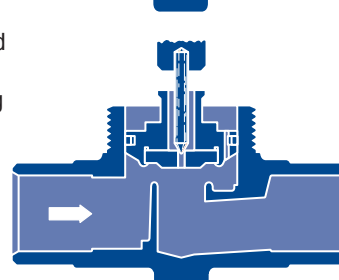


Figure 3

General

When the coil is de-energized, the stem and plunger assembly drops, due to gravity or the kick off spring, and closes the pilot port. As shown in **D** the pressure above the disc is no longer vented to the downstream side of the valve. Fluid flow and pressure drop causes the pressure above the disc to be higher than below the disc, and the disc drops, closing the main port. In some valves the plunger is spring loaded and does not rely on gravity to close. All Sporlan Solenoid Valves except the A3, E3, W3, MA5A3 and 180 SPC are pilot operated and employ either the floating disc, floating piston or floating diaphragm construction. The pilot operated valves require a very low, 1 psi, pressure differential for full operation.

Normally Open Solenoid Valves operate very similar to the normally closed type. The system pressure is utilized to open and close these valves.

The major difference in the normally open construction is that with the coil de-energized, a spring is used to push the stem and plunger assembly upward holding the pilot port open. This then allows the disc to rise, because of the pressure difference between the bottom and top of the disc, and permits flow to take place.

When the coil is energized, the stem and plunger assembly is pulled DOWN, closing the pilot port.

Sporlan Solenoid Valves

The pressure on top of the disc then equalizes with the incoming pressure and the disc moves down closing the main port. The valve will remain closed as long as the coil is energized.

Direct-Connected Piston Assemblies, with the stem and plunger mechanically connected to the piston, are used on applications where the valve must be sized for very small pressure drop, such as on suction lines. While the pilot operated principle is still used to open the valve, the magnetic pull of the coil is utilized to hold the piston open, preventing possible pulsations. A disadvantage of the direct-connected type is the case where dirt prevents free piston movement and the plunger is unable to center itself in the coil. This will cause overheating of the coil and the danger of coil burnout is present. The "floating piston or disc" type permits independent operation of the plunger to allow a complete magnetic circuit regardless of the piston's position and thereby eliminates the possibility of coil burnout due to restricted piston or disc movement. For additional information, see Page 27, Suction Line Service.

Design

Maximum Operating Pressure Differential

The maximum pressure differential against which a solenoid valve can open is generally abbreviated MOPD. This is illustrated in Figure 4.

MOPD ratings are established at 85% of rated voltage and with a hot coil after its maximum temperature is reached. For any given valve and coil design, the factors that effect MOPD are voltage deviation and coil temperature.

Synthetic Seating

Introduced by Sporlan in 1947, synthetic seating provides permanent seat tightness. Our experience in the use of these superior seating materials provides a reliable basis for durable construction best suited for various applications.

Solenoid Coil

The interchangeability of solenoid coils is necessarily limited by considerations of the varying requirements of power and plunger movement. Nevertheless, only three coil sizes are required for the extensive line of Sporlan Solenoid Valves. Each coil is interchangeable between a number of valves within a given size range.

Maximum Rated Pressure

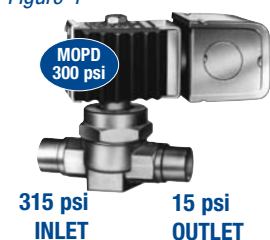
Don't confuse the MOPD rating of a valve with the maximum rated pressure. The rated pressure of a solenoid valve is a design specification indicating the maximum pressure under which the valve should be applied. Actually, the valve must be able to withstand three times its maximum rated pressure and pass fatigue cycle tests, to qualify for listing by Underwriters' Laboratories.

Manual Lift Stem

Occasionally, circumstances require that a solenoid valve be opened independently of the electrical power. Therefore, a manual lift stem is available on all valves from the B6 and E6 series up through the MA50 series.

Sporlan Solenoid Valves are constructed to insure long, trouble-free life. They employ proven design features for reliable performance on all applications.

Figure 4



Sporlan Solenoid Valves

Construction Details

VALVE SERIES	PORT SIZE mm	TYPE DE OPERATION	COIL KIT	* BODY MATERIAL	TYPE OF SEATING		STEM AND PLUNGER ASSEMBLY	PISTON DISC OR DIAPHRAGM							
					MAIN PORT	PILOT PORT									
A3P1	2.57	Direct Acting	MKC-1	Brass	Synthetic to Metal	-	-	-							
A3F1					Metal to Metal										
A3S1															
E3															
E5	3.81	Pilot Operated	MKC-2 and †OMKC-2	Brass Forging	Synthetic to Metal	Stainless Steel Pin to Synthetic Seal	Stainless Steel	Disc							
E6, ME6	4.76														
B6, MB6	7.14														
B9, MB9, OB9															
E9, ME9, OE9															
E10, ME10, OE10	7.94														
B14, MB14, OB14, E14, ME14, OE14	11.11														
B19, MB19, OB19, E19, ME19, OE19	15.08														
B25, MB25, OB25 E25, ME25, OE25	19.84														
E35, ME35, OE35	25.4								MKC-1 and †OMKC-1						
B33, MB33, OB33									MKC-2 and †OMKC-2	Steel Casting					
E42, ME42, OE42															
W3P1	2.56								Direct Acting	MKC-1	Brass		-		-
W6P1	4.76								Pilot Operated	MKC-2	Brass Forging	Synthetic to Metal	Stainless Steel Pin to Synthetic Seal	Stainless Steel	Disc
W14P2	11.11														
W19P2	15.08														
W25P2	19.84														
R183	14.29	MKC-1				Stainless Steel Port to Synthetic Plunger Seal		Diaphragm							
R184															
R246	19.05														

*All "E" Series Valves have Copper Extended Solder Type Connections.

†Normally Open Solenoid Valve ONLY.

Approximate Net and Shipping Weights‡

VALVE SERIES WITH COIL	Weight - lbs.	
	NET	SHIPPING
A3, E3, E5, W3	0.45	0.54
B6, E6, W6	0.45	0.54
B9, E9	0.68	0.77
B10, E10	0.91	1.04
B14, E14, W14	0.91	1.04

VALVE SERIES WITH COIL	WEIGHT - Kgs.	
	NET	SHIPPING
B19, E19, W19	1.04	1.18
B25, E25, W25	1.41	1.54
E35	2.63	2.86
E42	4.54	5.44
R18, R24	1.04	1.27

‡ Weights may vary due to connection sizes, manual lift stem, coil voltage, etc.

Construction Details Sporlan Solenoid Valves

By using modern production equipment, Sporlan consistently provides top quality solenoid valves for air conditioning, refrigeration and other uses. Quality is maintained by strict quality control methods in all phases of production followed by detailed testing of every valve produced.

Extensive use of stainless steel, thoroughly proven synthetic materials and modern sealing methods along with top grade brass, bronze and semi-steel body materials, contribute to Sporlan's high quality product. The table on Page 23 lists the materials and construction details of Sporlan Solenoid Valves. Sporlan reserves the right to change materials that improve the quality, performance and/or integrity of the product.

Coil Construction

Sporlan solenoid coils are constructed with some of the finest materials available for electromagnet coil manufacture.

Standard Coils - The number 1 and 2 coils are wound on a molded Rynite® bobbin. The wound bobbin is then inserted into a mold in a transfer press and encapsulated with a thermoset polyester compound. The coil yoke is assembled afterward and the coils are identified as (O)MKC-1 and (O)MKC-2, US Patent No. 3,818,398. The thermoset polyester is moisture proof, fungus proof and meets military specifications.

Electrical Specifications

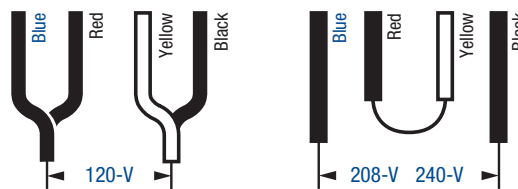
Sporlan Solenoid Valve coils are available in many voltage and cycle ratings. The standard coils required are listed on the Specification pages for the various valves. Dual voltage, direct current (DC) and other alternating current (AC) coils are available for most valve types at slight additional cost. For other voltages and cycles, consult Sporlan, Washington, MO.

Color Coded Lead Wires - For ease of identification, coils are manufactured with the following colored lead wires:

All other coils are supplied with black lead wires.

24/50-60	Orange	208-240/50-60	Red
120/50-60	Blue	Dual Voltage	Black, Bleu,
208/50-60	Yellow		Yellow, Red

Wiring for Dual Voltage Coil



Leads on valves with a conduit boss are **18"** long while coil leads on valves with a junction box are **6"** in length.

Junction Box - All solenoid valves are available with either an integral junction box or a 1/2" conduit connection at no extra charge. All valves are automatically supplied with the integral junction box. If a conduit boss is required, it must be specified on the order.

All junction boxes are equipped with grounding screw provisions and marked in accordance with UL and CSA recommendations.

Conduit Boss - Nema Rating - The Standard (O) MKC-1 and (O)MKC-2 coil assemblies with conduit boss type yokes will satisfy Nema 4 and IP55 (Rain Tight) as well as Nema 1, 2, 3, 3R, 3S, 12 and 13.

DIN Connector -

(O)MKC-1E and (O)MKC-2E coils with Female DIN Connectors will satisfy IP65.

(O)MKC-1E and (O)MKC-2E coils with Female DIN Connectors will satisfy IP65. - Only two coil sizes are required with the complete line of Sporlan Solenoid Valves.

The molded MKC-1 coil will fit the old style KC-1 coil. The molded MKC-2 coil will fit the old style KC-2 coil. Since the molded coils are a complete magnetic assembly, the old housing and related parts should be discarded when replacing the old KC-1 or KC-2.

Sporlan Solenoid Valves

Electrical Specifications

Conversion from AC to DC Coils - The conversion of a solenoid valve from AC to DC service varies with the valves construction and its principle of operation. Valve series A3, E3, E5, B6, E6, B9, E9, B10, E10, B14, E14, B19, E19, B25, E25, B33, E35, E42, all of the W series industrial valves and R-Series diaphragm valves can be converted from AC to DC service by changing coils. However, it is important to note that changing from AC to DC service does lower the valve's MOPD characteristics. This should be taken into consideration since the valve may not be able to open at these lower pressure ratings on some applications.

VALVE SERIES	RATING VOLTS/CYCLES	WATTS	COIL
A3, E3, E5, B6, E6, E35, R18, R24, W3, B5D, 8D, 12D, 10G, 16D	24/50-60, 120/50-60	10	MIKC-1 and OMKC-2
	208-240/50-60		
	Dual 120-208-240/50-60		
B9, E9, B10, E10, B14, E14, B19, E19, B25, E25, B33, E42, 180 SPC	24/50-60, 120/50-60	15	MIKC-1 and OMKC-2
	208-240/50-60		
	Dual 120-208-240/50-60		

Identification

Listed by Underwriters' Laboratories Inc.,
Canadian Standard Association and CE Approved.
UL File No. MH4576 – CSA File No. LR19953

All Sporlan solenoid valves are identified by a valve nameplate, see Figure 5. This nameplate will indicate the valve type number, maximum operating pressure differential (MOPD) and maximum rated pressure (MRP). Any valves using the MKC-1, OMKC-1, MKC-2 and OMKC-2 will have their electrical specifications shown on the face plate of the coil assembly. See Figure 6.

Ordering Instructions

The following table lists the standard coil configurations available. Other AC Voltages and Cycles may be available on special order.

When ordering any Coil Assembly, Specify Coil Size, Voltage and Cycles.

Example: MKC-1 24/50-60

Coil Kit

MKC-1 and OMKC-1		
VALVE SERIES		RATING - VOLTS/CYCLES
A3	R183	24/50-60
E3	R184	120/50-60
E5	R246	208-240/50-60
B6	8D	Dual 120-208-240/50-60
E6	12D	
W3	10G	12DC
W6	E35	24DC

MKC-2 and * OMKC-2		
VALVE SERIES		RATING - VOLTS/CYCLES
B9	B33	24/50-60
E9	E42	120/50-60
B10	180 SPC	208-240/50-60
E10	16D	Dual 120-208-240/50-60
B14	W14	
E14	W19	12DC
B19	W26	24DC
E19		
B25		
E25		

*OMKC Coils used only on normally open solenoid valves.



Figure 5

Identification Sporlan Solenoid Valves

Figure 6



MKC-1, OMKC-1, MKC-2 and OMKC-2

Nomenclature - A, B and W Series

O	D	M	B	25	S	2	*	S
Normally Open	Disc Type D - Direct Connected C - Built-In Check Valve	Manual Lift Stem	Design or Series A, B, & W Series	Port Size en 1/32"	CONNECTIONS P - Pipe F - SAE Flare S - ODF Solder	1 2 Coil Size	Overall Length	Spade Coil

THE ABOVE PREFIXES MAY BE ADDED TO BASIC VALVE TYPE NUMBER (B25S2) TO REQUEST SPECIAL FEATURES. Normally open valves available in B9, E9 through E42 series only, and require OMKC-2 Coil Assembly. Add prefix D for direct connected assembly in MA32 and MA17A3 series. **Example: DMA32P3.**

Nomenclature - E Series

O	C	M	E	10	S	2	5	0	*	S
Normally Open	Built-In Check Valve	Manual Lift Stem	Design Series	Port Size in 1/32"	CONNECTIONS Solder	Coil Size	Connection Size in 1/8"	**CONNECTIONS 0 - ODF X ODF 1 - ODF X ODM 2 - ODM X ODF 3 - ODM X ODM	Overall Length	Coil Connection S - Espada E - DIN 43650A

Q The MKC-1, OMKC-1, MKC-2 and OMKC-2 are fungus proof and meet MIL-I-631C.

2 The standard MKC-1 and MKC-2 are class "F" rated.

* No dash number indicates standard length. Dash numbers -1, -2, -3 etc. thru -18 indicates **nonstandard longer or shorter overall lengths** -19 thru -33 indicates **other deviation from standard**, contact Sporlan, Washington, MO.

** Standard connections are ODF inlet x ODF outlet on "E" Series valves. Minimum quantities may be required for other connections.

The "E" series is identified by an expanded nomenclature compared to the "B" series. Continued is the system of valve identity based on port size. In addition, the "E" series identifies the connection size and type. The advantage of the "E" series nomenclature system is that it allows ease in valve identification of the standard line and can provide considerable information about special valves supplied to manufacturers. Details of the "E" series nomenclature are given above.

Example: ME10S250 is a valve with 5/16" port (10), manual lift stem (M), standard extended 5/8" ODF x 5/8" ODF connections (50) and standard overall length (no dash number).

Lengths and type of connections other than standard may be required to satisfy specific customer requirements. For connections and other special features consult Sporlan, Washington, MO. The specifications pages lists the standard length which applies regardless of type of end connection (ODF x ODF, ODF x ODM, ODM x ODF or ODM x ODM).

Current and Superseding Valves

CURRENT VALVE TYPE	CURRENT COIL KIT	OBSOLETE VALVE TYPE	CURRENT COIL KIT
A3, E3	MKC-1	10, †62, †11	MKC-2
E5		-	-
B6, MB6 E6, ME6		A6	MKC-1
B9, MB9 E9, ME9	MKC-2	†12, †1210, †1240	-
B10, MB10 E10, ME10		A9, MA9, 14	MKC-2
B14, MB14 E14, ME14		A10, MA10	-
B19, MB19 E19, ME19	MKC-2	†20	-
B25, MB25 E25, ME25		A14, MA14	MKC-2
OB9, OE9 OB10, OE10 OB14, OE14 OB19, OE19 OB25, OE25 OB33 OE42 OE34		†73, †72	-
E35, ME35	MKC-1	A17, MA17, 43, 4304, 4303, 42, 4202	MKC-3*
E35, ME35		A24, MA24, 53, 5304, 5303, 52, 5202	-
E42, ME42	MKC-2	EOB33, OE33	OMKC-2
180		B32, MB32, MC32, 9001, 9005	MKC-3*
W3P1	MKC-1	(E)B33, (E)MB33, (M)E34	MKC-2
W6P1		EMB42S3	MKC-3*
W14P2	MKC-2	†172, †170, †162	-
W19P2		-	-
W25P2		XKA	MKC-1
R183	MKC-1	XJQ	MKC-2
R184		4306-P, 4308-P	MKC-3*
R246		W24P3, 5306-P, 5308-P	
		W7P2	
		-	-

† Replacement coils no longer available.
* Please contact Parker Aftermarket Customer Service for MKC-3 coils and associated parts.

Sporlan Solenoid Valves

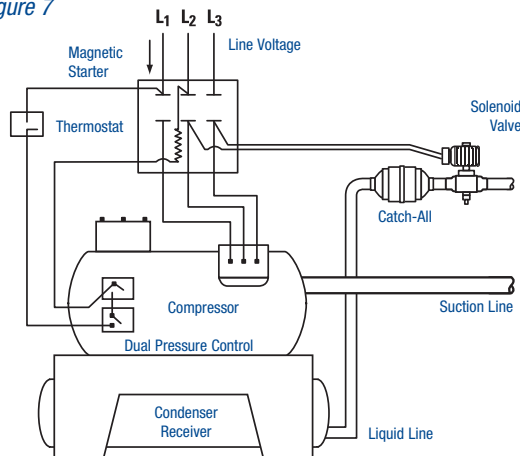
Application

In the majority of cases, Sporlan Solenoid Valves are used for controlling the flow of refrigerants in liquid or suction lines, or in hot gas defrost circuits. They are equally suitable for many other less common forms of refrigerant control. These applications and other related topics are discussed in the following section. For applications not covered, consult Sporlan, Washington, MO.

Liquid Line Service

The primary purpose of a solenoid valve in a refrigerant liquid line is to prevent flow into the evaporator during the off-cycle. On multiple evaporator systems, a solenoid valve may be used in each of the liquid lines leading to the individual evaporators.

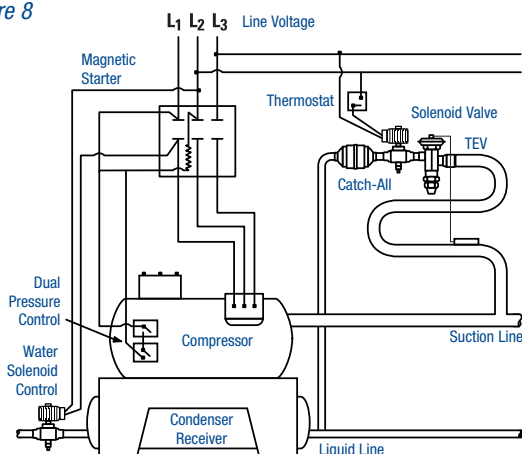
Figure 7



The application of a liquid line solenoid valve depends mainly on the method of wiring the valve with the compressor control circuit. It may be wired so the valve is energized only when the compressor is running. This type of application is illustrated in Figure 7.

Another application known as pump down control, uses a thermostat to control the solenoid valve. See Figure 8 for a wiring and valve location schematic. When the

Figure 8



thermostat is satisfied, the valve closes and the compressor continues to run until a substantial portion of the refrigerant has been pumped from the evaporator. A low pressure cutout control is used to stop the compressor at a pre-determined evaporator pressure. When the thermostat again calls for refrigeration, the solenoid valve opens - causing the evaporator pressure to rise and the compressor to start. This arrangement can be used on either single or multiple evaporators.

Suction Line Service

There are several applications, particularly on suction lines, where pressure drops in excess of 2 psi cannot be tolerated. Therefore, only valves which are capable of opening at very low pressure drops are suitable for this type of use.

All Sporlan refrigeration solenoid valves, are ideally suited for these special applications. They are capable of opening full at pressure drops of 1.0 psi.

For suction line capacities refer to the Tables on Pages 6 and 7.

High Temperature Applications

Any valves using the MKC-1, OMKC-1, MKC-2 or OMKC-2 coil may be used on fluids or gases whose temperature does not exceed 240°F, while the valve ambient is 120°F.

NOTE: The MKC-1, OMKC-1, MKC-2 and OMKC-2 molded coils are satisfactory for use with hot gas bypass and hot gas defrost applications. Their unique molded rib surface radiates heat very rapidly and therefore a high temperature coil is not required in these two sizes.

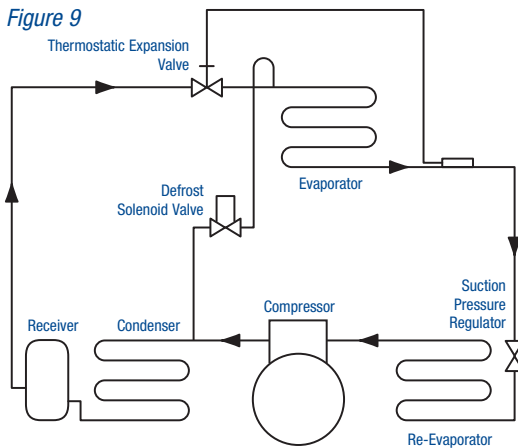
Application Sporlan Solenoid Valves



Gas Defrost Service

There are several piping arrangements used for hot gas defrost systems, one of which is shown in Figure 9. A portion of the compressor discharge gas is passed through the solenoid valve into the evaporator. The solenoid valve may be controlled either manually or automatically for this duty.

Gas defrost valve selection requires a slightly different approach from the simple pressure drop versus tonnage. Be sure to consider the evaporator temperature correction factors shown at the bottom of the discharge gas capacities table in order to make certain that the valve selected does have adequate capacity.



Compressor Capacity Reduction Service

Sporlan Solenoid Valves may be used in conjunction with Sporlan Discharge Bypass Valves for capacity reduction service. For capacity information and further details on the Discharge Bypass Valves see Bulletin 90-40 or consult Sporlan, Washington, MO.

Water Service

See Pages 19 & 20 — Industrial Valves.

Filter-Driers are Essential

Dirt and other system contaminants present a problem for refrigeration and air conditioning controls.

Since pilot operated solenoid valves operate with rather close tolerances, system cleanliness is imperative. The Sporlan **Catch-All® Filters-Drier** filters out minute particles of dirt and other foreign matter, thus protecting the valve.

Filtering is important on ammonia systems also. The replaceable core **Catch-All® Filters-Driers** designed for ammonia use, acts as a scale trap to protect system components. Therefore, we recommend using a **Catch-All® Filters-Drier** ahead of every solenoid valve on all refrigeration and air conditioning applications. Contact Sporlan before adding a **Catch-All® Filters-Drier** in the discharge line.

Transformer Selection for Low-Voltage Control Systems

Many systems utilize low voltage controls, requiring the use of a transformer for voltage reduction, normally to 24 volts. The selection of a transformer is not accomplished by merely selecting one that has the proper voltage requirements. The volt-ampere (VA) rating is equally important. To determine the VA requirement for a specific solenoid valve, refer to the chart below. It should be noted, that insufficient transformer capacity will result in reduced operating power or lowering of the MOPD value.

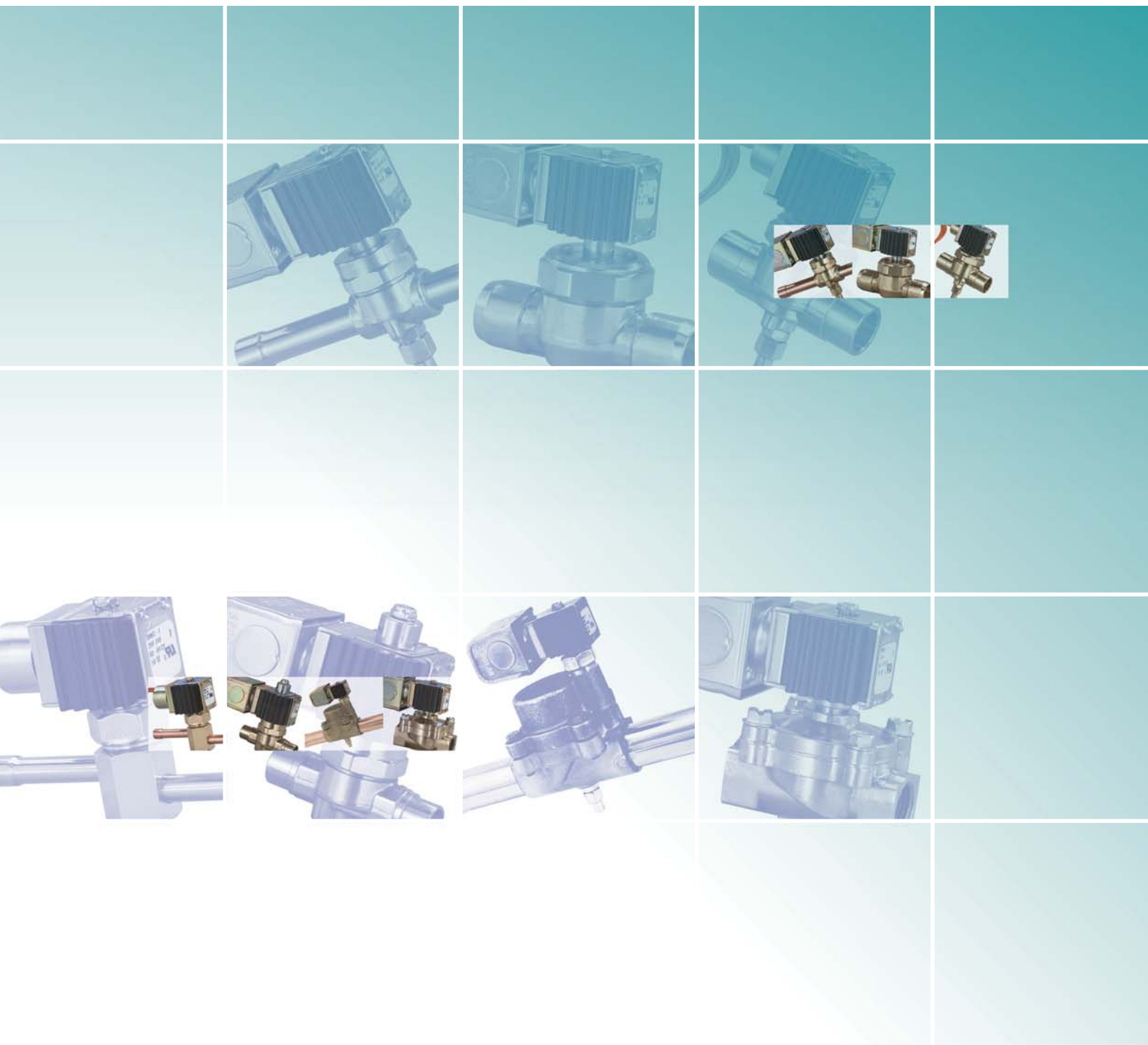
If more than one solenoid valve and/or other accessories are operated from the same transformer, then the transformer VA rating must be determined by adding the individual accessories' VA requirements.

Fusing

Sporlan Solenoid Valves are not supplied with fuses. Fusing should be according to local codes. We recommend fusing the hot leg of the valve wiring with fast acting fuses and the valve should be grounded either through the fluid piping or the electrical conduit.

COIL KIT	24 VOLTS/50-60 CYCLES		120 VOLTS/50-60 CYCLES		240 VOLTS/50-60 CYCLES		TRANSFORMER RATING VOLTS-AMPERES FOR 100% OF RATED MOPD OF VALVE
	CURRENT-AMPERES		CURRENT-AMPERES		CURRENT-AMPERES		
	INRUSH	HOLDING	INRUSH	HOLDING	INRUSH	HOLDING	
MKC-1 OMKC-1	1.9	.63	.39	.14	.19	.09	60
MKC-2 OMKC-2	3.1	1.4	.60	.26	.31	.13	100

- All current values are based on 60 cycles.
- Volt-ampere ratings are based on inrush currents.
- Above values are based on the most severe conditions. - Consult Sporlan for coil characteristics on specific valve types.



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