

# Solenoid Valves

**The right solenoid valve for any job.**



Benefits

Sporlan Solenoid Valves

- 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 Valve Company, Washington, MO for refrigerants not listed.
- Synthetic coated metal gaskets minimize external leaks.

Contents

SELECTION .....	3	Type E42 Series .....	16
		Types MA42 and MA50 Series .....	17
CAPACITIES		Types MA5A3	
Liquid Line .....	4	and MA17A3 (Ammonia) .....	18
Suction Line .....	6	Types MA32, MA42	
Air & Water .....	23	and MA50 (Ammonia) .....	19
Steam .....	23	Built-In Check Valve Series .....	20
Discharge Gas .....	6	Industrial Solenoid Valves .....	22
SPECIFICATIONS		GENERAL .....	24
Types A3, E3 and E5 Series .....	8	DESIGN .....	25
Types B6 and E6 Series .....	9	CONSTRUCTION DETAILS .....	26
Types B9 and E9 Series .....	10	NET and SHIPPING WEIGHTS .....	26
Types B10 and E10 Series .....	11	ELECTRICAL SPECIFICATIONS .....	27
Types B14 and E14 Series .....	12	IDENTIFICATION .....	28
Types B19 and E19 Series .....	13	APPLICATION .....	30
Types B25 and E25 Series .....	14		
Types B33 and E34 Series .....	15		
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.

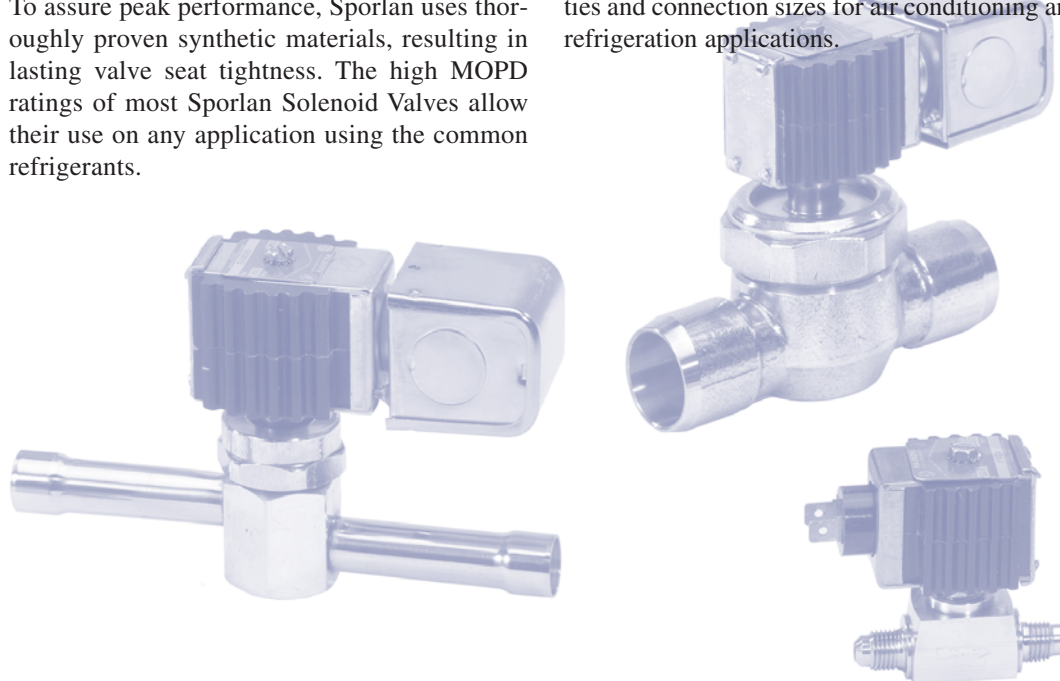
## Top Quality

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. 760-94.

Liquid Capacity Selection Table

22, 134a, 401A, 402A

TYPE NUMBER				TONS OF REFRIGERATION											
"A" and "B" Series Valves		"E" Series Extended Connections		PORT SIZE Inches	CONNECTIONS Inches	PRESSURE DROP — psi*									
Without Manual Lift Stem	With Manual Lift Stem	Without Manual Lift Stem	With Manual Lift Stem			22									
Normally Closed	Normally Open	Normally Closed	Normally Open			1	2	3	4	5	1	2	3	4	5
A3P1	---	---	---	---	3/8 NPT Female	---	---	---	---	---	---	---	---	---	---
A3F1	---	---	---	---	1/4 SAE Flare	---	---	---	---	---	---	---	---	---	---
A3S1	---	---	---	---	1/4 ODF Solder	0.9	1.3	1.6	1.9	2.1	0.8	1.2	1.5	1.8	2.0
	---	---	---	---	3/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	1/4 ODF Solder	1.6	2.3	2.8	3.3	3.6	1.5	2.1	2.6	3.0	3.4
---	---	---	---	---	3/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
B6P1	---	---	---	---	3/8 NPT Female	---	---	---	---	---	---	---	---	---	---
B6F1	---	---	---	---	3/8 SAE Flare	---	---	---	---	---	---	---	---	---	---
B6S1	---	---	---	---	3/8 ODF Solder	2.9	4.0	4.9	5.7	6.4	2.7	3.8	4.6	5.3	5.9
	---	---	---	---	1/2 ODF Solder	---	---	---	---	---	---	---	---	---	---
B9P2	OB9P2	---	---	---	3/8 NPT Female	---	---	---	---	---	---	---	---	---	---
B9F2	OB9F2	---	---	---	3/8 SAE Flare	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	3/8 ODF Solder	4.7	6.6	8.1	9.3	10.4	4.4	6.2	7.5	8.7	9.7
B9S2	OB9S2	---	---	---	1/2 ODF Solder	---	---	---	---	---	---	---	---	---	---
B10F2	OB10F2	---	---	---	1/2 SAE Flare	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	1/2 ODF Solder	6.4	9.1	11.1	12.8	14.3	6.0	8.5	10.4	12.0	13.4
B10S2	OB10S2	---	---	---	5/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
B14P2	OB14P2	---	---	---	1/2 NPT Female	9.1	12.9	15.8	18.2	20.3	8.5	12.0	14.7	17.0	18.9
B14S2	OB14S2	---	---	---	5/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
B19S2	OB19S2	---	---	---	5/8 ODF Solder	13.9	19.8	24.2	28.0	31.4	13.0	18.4	22.6	26.1	29.2
B19P2	OB19P2	---	---	---	3/4 NPT Female	---	---	---	---	---	---	---	---	---	---
B19S2	OB19S2	---	---	---	7/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
B25P2	OB25P2	---	---	---	1 NPT Female	---	---	---	---	---	---	---	---	---	---
B25S2	OB25S2	---	---	---	7/8 ODF Solder	23.8	33.8	41.4	47.8	53.5	22.2	31.5	38.6	44.6	49.9
	---	---	---	---	1-1/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
B33S2	OB33S2	---	---	---	1-1/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
	---	---	---	---	1-3/8 ODF Solder	33.2	47.0	57.6	66.5	74.4	31.0	43.8	53.7	62.0	69.4
---	---	---	---	---	1-5/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	1-5/8 ODF Solder	73.5	104	127	147	164	68.6	96.9	119	137	153
	---	---	---	---	2-1/8 ODF Solder	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	1-1/2 NPT Female	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	1-5/8 or 2-1/8 ODF Solder	60.9	82.3	98.2	111	123	56.7	76.7	91.5	104	114
	---	---	---	---	Solder	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	2 NPT Female	---	---	---	---	---	---	---	---	---	---
---	---	---	---	---	2-1/8 or 2-5/8 ODF Solder	109	147	175	199	219	101	137	163	185	204
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

\*Do not use below 1 psi pressure drop, except Types A3, E3 and MA5 valves.  
Liquid capacities for Refrigerants 22, 134a, 401A and 402A shown in the above table are based on 40°F evaporating and 100°F liquid case.

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

Refrigerant Liquid Temperature °F	Refrigerant Liquid Temperature °F											
	40	50	60	70	80	90	100	110	120	130	140	
R-22	1.33	1.27	1.22	1.17	1.11	1.06	1.00	0.94	0.89	0.83	0.77	
R-134a	1.39	1.33	1.26	1.20	1.13	1.07	1.00	0.93	0.87	0.80	0.73	

These 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 1/2%.

Refrigerant Liquid Temperature °F	Refrigerant Liquid Temperature °F											
	40	50	60	70	80	90	100	110	120	130	140	
R-401A	1.34	1.29	1.23	1.17	1.12	1.06	1.00	0.94	0.88	0.82	0.75	
R-402A	1.57	1.48	1.39	1.29	1.20	1.10	1.00	0.90	0.79	0.68	0.56	

404A, 407C, 502, 507, 717

Liquid Capacity Selection Table

TYPE NUMBER										PORT SIZE Inches	CONNECTIONS Inches	TONS OF REFRIGERATION																											
"A" and "B" Series Valves				"E" Series Extended Connections				PRESSURE DROP — psi*																															
Without Manual Lift Stem				With Manual Lift Stem		Without Manual Lift Stem				With Manual Lift Stem		404A				407C				502				507				717											
Normally Closed	Normally Open	Normally Closed	Normally Open	Normally Closed	Normally Open	Normally Closed	Normally Open	Normally Closed	Normally Open	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5										
A3P1	---	---	---	---	---	---	---	---	---																														
A3F1	---	---	---	---	---	---	---	---	---																														
A3S1	---	---	---	---	---	---	---	---	---																														
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B6P1	---	---	---	---	---	---	---	---	---																														
B6F1	---	---	---	---	---	---	---	---	---																														
B6S1	---	---	---	---	---	---	---	---	---																														
B9P2	OB9P2	---	---	---	---	---	---	---	---																														
B9F2	OB9F2	---	---	---	---	---	---	---	---																														
B9S2	OB9S2	---	---	---	---	---	---	---	---																														
B10F2	OB10F2	---	---	---	---	---	---	---	---																														
B10S2	OB10S2	---	---	---	---	---	---	---	---																														
B14P2	OB14P2	---	---	---	---	---	---	---	---																														
B14S2	OB14S2	---	---	---	---	---	---	---	---																														
B19S2	OB19S2	---	---	---	---	---	---	---	---																														
B19P2	OB19P2	---	---	---	---	---	---	---	---																														
B19S2	OB19S2	---	---	---	---	---	---	---	---																														
B25P2	OB25P2	---	---	---	---	---	---	---	---																														
B25S2	OB25S2	---	---	---	---	---	---	---	---																														
B33S2	OB33S2	---	---	---	---	---	---	---	---																														
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\*Do not use below 1 psi pressure drop, except Types A3, E3 and MA5 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 case. Refrigerant 717 capacities are based on 5°F evaporating and 86°F liquid.

REFRIGERANT LIQUID TEMPERATURE CORRECTION FACTORS

Refrigerant Liquid Temperature °F		40	50	60	70	80	90	100	110	120	130	140
R-404A		1.58	1.49	1.39	1.30	1.20	1.10	1.00	0.90	0.79	0.68	0.57
R-407C		1.45	1.38	1.30	1.23	1.15	1.08	1.00	0.92	0.84	0.75	0.67
Correction Factor												
R-717		1.27	1.24	1.21	1.17	1.14	1.11	1.08	1.05	1.02	1.00	0.99
Correction Factor												

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, the above capacities are reduced by approximately 3/4%.

# 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	0.39	0.56	0.77	0.99	1.11	A3 & E3	0.11	0.09	0.07	0.05	0.04
E5	0.45	0.71	1.02	1.83	2.36	2.69	E5	0.22	0.17	0.14	0.11	0.08
B6 & E6	0.84	1.31	1.85	3.10	3.89	4.15	B6 & E6	0.42	0.34	0.27	0.21	0.16
B9 & E9	1.35	2.13	3.00	4.65	6.20	7.71	B9 & E9	0.66	0.53	0.42	0.32	0.24
B10 & E10	1.83	2.90	4.09	7.07	9.17	10.6	B10 & E10	0.91	0.73	0.57	0.44	0.33
B14 & E14	2.62	4.13	5.83	9.72	12.8	15.5	B14 & E14	1.30	1.04	0.82	0.63	0.48
B19 & E19	3.93	6.23	8.84	14.4	19.1	23.4	B19 & E19	1.94	1.54	1.21	0.93	0.70
B25 & E25	6.74	10.7	15.1	23.0	30.5	37.4	B25 & E25	3.28	2.62	2.06	1.59	1.19
B33, E34, and MA32	9.44	14.9	21.1	31.3	43.5	59.1	B33, E34, and MA32	4.41	3.52	2.77	2.13	1.60
E42	21.0	33.1	46.8	67.2	89.0	109	E42	9.57	7.64	6.00	4.62	3.48
MA42	20.4	30.4	41.1	59.8	79.0	95.8	MA42	8.53	6.81	5.35	4.12	3.10
MA50	36.4	54.2	73.4	91.8	107	108	MA50	13.5	10.7	8.44	6.51	4.89
REFRIGERANT 134a							REFRIGERANT 134a					
A3 & E3	0.20	0.32	0.46	0.60	0.71	0.72	A3 & E3	0.09	0.07	0.05	---	---
E5	0.37	0.59	0.84	1.44	1.72	1.74	E5	0.17	0.13	0.10	---	---
B6 & E6	0.70	1.09	1.54	2.39	2.70	2.70	B6 & E6	0.32	0.25	0.19	---	---
B9 & E9	1.12	1.77	2.50	3.72	4.76	5.30	B9 & E9	0.51	0.39	0.30	---	---
B10 & E10	1.52	2.41	3.40	5.56	6.74	6.92	B10 & E10	0.70	0.54	0.41	---	---
B14 & E14	2.17	3.43	4.84	7.73	9.65	10.3	B14 & E14	1.00	0.77	0.58	---	---
B19 & E19	3.26	5.17	7.34	11.5	14.5	15.8	B19 & E19	1.49	1.14	0.86	---	---
B25 & E25	5.60	8.87	12.6	18.4	23.2	25.2	B25 & E25	2.53	1.94	1.46	---	---
B33, E34, and MA32	7.84	12.4	17.6	25.7	35.2	46.6	B33, E34, and MA32	3.39	2.61	1.97	---	---
E42	17.4	27.5	38.9	53.6	67.6	73.3	E42	7.36	5.66	4.26	---	---
MA42	17.2	25.6	34.6	47.6	59.6	63.9	MA42	6.56	5.04	3.80	---	---
MA50	30.7	45.7	61.8	67.8	69.9	69.9	MA50	10.4	7.96	6.00	---	---
REFRIGERANT 401A							REFRIGERANT 401A					
A3 & E3	0.20	0.33	0.47	0.62	0.74	0.74	A3 & E3	0.09	0.07	0.05	---	---
E5	0.38	0.61	0.86	1.48	1.77	1.81	E5	0.18	0.14	0.10	---	---
B6 & E6	0.72	1.12	1.58	2.46	2.79	2.79	B6 & E6	0.34	0.26	0.20	---	---
B9 & E9	1.15	1.82	2.56	3.83	4.90	5.49	B9 & E9	0.53	0.41	0.32	---	---
B10 & E10	1.56	2.47	3.49	5.73	6.96	7.16	B10 & E10	0.73	0.57	0.44	---	---
B14 & E14	2.23	3.52	4.97	7.95	9.96	10.6	B14 & E14	1.05	0.82	0.62	---	---
B19 & E19	3.35	5.31	7.53	11.8	15.0	16.3	B19 & E19	1.55	1.21	0.92	---	---
B25 & E25	5.74	9.11	12.9	18.9	23.9	26.1	B25 & E25	2.63	2.05	1.57	---	---
B33, E34, and MA32	8.05	12.7	18.0	26.4	36.2	48.0	B33, E34, and MA32	3.54	2.75	2.10	---	---
E42	17.9	28.3	40.0	55.1	69.7	75.9	E42	7.68	5.98	4.57	---	---
MA42	17.8	26.5	35.8	49.0	61.5	66.2	MA42	6.84	5.33	4.07	---	---
MA50	31.7	47.3	63.9	70.0	72.4	72.4	MA50	10.8	8.41	6.42	---	---
REFRIGERANT 402A							REFRIGERANT 402A					
A3 & E3	0.21	0.34	0.49	0.68	0.89	1.05	A3 & E3	0.09	0.07	0.06	0.04	0.03
E5	0.39	0.63	0.89	1.62	2.13	2.55	E5	0.19	0.15	0.11	0.08	0.06
B6 & E6	0.73	1.14	1.60	2.76	3.55	3.99	B6 & E6	0.36	0.28	0.22	0.16	0.12
B9 & E9	1.18	1.85	2.61	4.09	5.52	7.05	B9 & E9	0.57	0.44	0.34	0.25	0.19
B10 & E10	1.60	2.52	3.57	6.26	8.25	9.99	B10 & E10	0.78	0.61	0.47	0.35	0.25
B14 & E14	2.28	3.59	5.07	8.58	11.5	14.3	B14 & E14	1.11	0.87	0.67	0.50	0.37
B19 & E19	3.43	5.45	7.73	12.7	17.1	21.5	B19 & E19	1.66	1.29	0.99	0.74	0.54
B25 & E25	5.89	9.33	13.2	20.3	27.3	34.4	B25 & E25	2.80	2.19	1.67	1.26	0.92
B33, E34, and MA32	8.23	13.0	18.4	27.4	38.2	52.3	B33, E34, and MA32	3.77	2.94	2.25	1.69	1.23
E42	18.3	28.9	40.8	59.2	79.5	100	E42	8.18	6.37	4.88	3.66	2.67
MA42	17.3	25.7	34.8	52.8	70.6	88.4	MA42	7.29	5.68	4.35	3.26	2.38
MA50	30.8	45.9	62.1	82.6	101	104	MA50	11.5	8.97	6.87	5.15	3.76

\*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	0.96	0.93	0.90	0.87	0.84	0.81	0.78	0.75

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	0.22	0.35	0.51	0.70	0.91	1.06	A3 & E3	0.10	0.07	0.06	0.04	0.03
E5	0.40	0.64	0.91	1.66	2.17	2.56	E5	0.19	0.15	0.11	0.08	0.06
B6 & E6	0.75	1.17	1.65	2.82	3.60	3.99	B6 & E6	0.36	0.28	0.22	0.16	0.12
B9 & E9	1.21	1.90	2.68	4.19	5.64	7.16	B9 & E9	0.58	0.45	0.34	0.25	0.18
B10 & E10	1.64	2.59	3.66	6.40	8.41	10.1	B10 & E10	0.79	0.61	0.47	0.35	0.25
B14 & E14	2.34	3.69	5.21	8.79	11.7	14.5	B14 & E14	1.13	0.88	0.67	0.50	0.36
B19 & E19	3.53	5.59	7.93	13.0	17.4	21.8	B19 & E19	1.69	1.30	0.99	0.74	0.53
B25 & E25	6.04	9.60	13.6	20.8	27.8	34.9	B25 & E25	2.86	2.21	1.68	1.26	0.91
B33, E34, and MA32	8.46	13.4	18.9	28.1	39.1	53.5	B33, E34, and MA32	3.84	2.97	2.26	1.69	1.22
E42	18.8	29.7	41.9	60.7	81.1	102	E42	8.33	6.45	4.91	3.66	2.65
MA42	17.8	26.5	35.9	54.0	72.1	89.6	MA42	7.42	5.75	4.38	3.26	2.36
MA50	31.8	47.3	64.0	84.2	101	104	MA50	11.7	9.07	6.91	5.15	3.73
REFRIGERANT 407C							REFRIGERANT 407C					
A3 & E3	0.24	0.38	0.55	0.76	0.96	1.06	A3 & E3	0.10	0.08	0.06	0.04	---
E5	0.44	0.71	1.00	1.80	2.31	2.58	E5	0.20	0.16	0.12	0.09	---
B6 & E6	0.83	1.30	1.83	3.05	3.78	3.98	B6 & E6	0.39	0.30	0.23	0.17	---
B9 & E9	1.34	2.10	2.97	4.58	6.08	7.49	B9 & E9	0.62	0.48	0.36	0.27	---
B10 & E10	1.81	2.86	4.05	6.95	8.96	10.21	B10 & E10	0.85	0.66	0.50	0.37	---
B14 & E14	2.59	4.08	5.76	9.57	12.6	15.0	B14 & E14	1.21	0.94	0.72	0.54	---
B19 & E19	3.88	6.16	8.74	14.2	18.7	22.7	B19 & E19	1.80	1.40	1.06	0.79	---
B25 & E25	6.66	10.56	15.0	22.7	29.9	36.3	B25 & E25	3.06	2.37	1.81	1.35	---
B33, E34, and MA32	9.33	14.8	20.9	30.9	42.9	58.2	B33, E34, and MA32	4.11	3.19	2.43	1.81	---
E42	20.7	32.7	46.3	66.1	87.3	105.6	E42	8.92	6.92	5.27	3.92	---
MA42	20.1	30.0	40.6	58.9	77.4	92.7	MA42	7.95	6.16	4.70	3.50	---
MA50	35.9	53.6	72.4	89.8	103.2	103.3	MA50	12.5	9.73	7.41	5.52	---
REFRIGERANT 502							REFRIGERANT 502					
A3 & E3	0.19	0.31	0.45	0.62	0.80	0.91	A3 & E3	0.09	0.07	0.05	0.04	0.03
E5	0.36	0.57	0.81	1.47	1.90	2.20	E5	0.17	0.14	0.11	0.08	0.06
B6 & E6	0.66	1.04	1.46	2.49	3.14	3.41	B6 & E6	0.33	0.26	0.20	0.15	0.11
B9 & E9	1.07	1.69	2.38	3.71	4.97	6.24	B9 & E9	0.52	0.41	0.32	0.24	0.18
B10 & E10	1.46	2.30	3.26	5.66	7.38	8.68	B10 & E10	0.72	0.57	0.44	0.33	0.25
B14 & E14	2.08	3.28	4.63	7.77	10.3	12.6	B14 & E14	1.03	0.81	0.63	0.47	0.35
B19 & E19	3.13	4.97	7.05	11.5	15.3	19.0	B19 & E19	1.54	1.21	0.93	0.70	0.52
B25 & E25	5.37	8.51	12.1	18.4	24.5	30.3	B25 & E25	2.60	2.04	1.58	1.19	0.88
B33, E34, and MA32	7.5	11.9	16.8	24.9	34.7	47.3	B33, E34, and MA32	3.50	2.74	2.12	1.60	1.18
E42	16.7	26.4	37.3	53.7	71.4	88.4	E42	7.59	5.95	4.60	3.48	2.57
MA42	15.8	23.5	31.8	47.8	63.4	77.8	MA42	6.76	5.31	4.10	3.10	2.29
MA50	28.2	42.0	56.8	73.9	87.5	88.0	MA50	10.7	8.38	6.47	4.90	3.61
REFRIGERANT 507							REFRIGERANT 507					
A3 & E3	0.21	0.34	0.49	0.68	0.89	1.04	A3 & E3	0.09	0.07	0.06	0.04	0.03
E5	0.39	0.63	0.89	1.62	2.12	2.51	E5	0.19	0.15	0.11	0.08	0.06
B6 & E6	0.73	1.14	1.60	2.75	3.52	3.92	B6 & E6	0.36	0.28	0.21	0.16	0.12
B9 & E9	1.18	1.85	2.61	4.09	5.50	6.99	B9 & E9	0.56	0.44	0.33	0.25	0.18
B10 & E10	1.60	2.52	3.57	6.24	8.21	9.86	B10 & E10	0.78	0.60	0.46	0.34	0.25
B14 & E14	2.28	3.59	5.07	8.56	11.4	14.2	B14 & E14	1.11	0.86	0.66	0.49	0.36
B19 & E19	3.43	5.45	7.72	12.7	17.0	21.3	B19 & E19	1.65	1.28	0.98	0.73	0.53
B25 & E25	5.88	9.30	13.2	20.3	27.1	34.1	B25 & E25	2.80	2.17	1.66	1.24	0.90
B33, E34, and MA32	8.23	13.0	18.4	27.4	38.1	52.1	B33, E34, and MA32	3.76	2.92	2.23	1.66	1.21
E42	18.3	28.9	40.8	59.1	79.1	99.3	E42	8.16	6.33	4.83	3.61	2.62
MA42	17.3	25.7	34.8	52.7	70.3	87.6	MA42	7.27	5.64	4.31	3.22	2.34
MA50	30.8	46.0	62.2	82.1	99.3	101.7	MA50	11.5	8.90	6.80	5.08	3.69

\*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	0.96	0.93	0.90	0.87	0.84	0.81	0.78	0.75

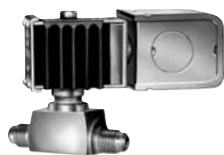
Capacities based on 100°F condensing temperature, isentropic compression plus 50°F, 40°F evaporator and 65°F suction gas. For capacities at other conditions use the multipliers in table at left.

# 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. On applications where the "A3" port is not the metering device the E5 may be used. 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.

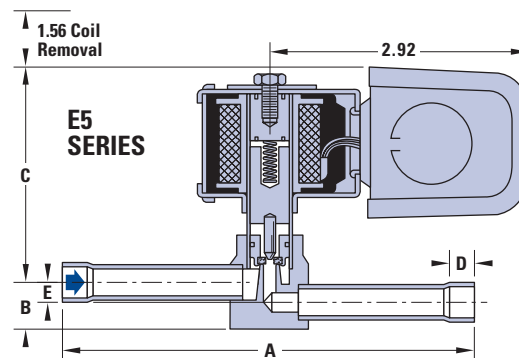
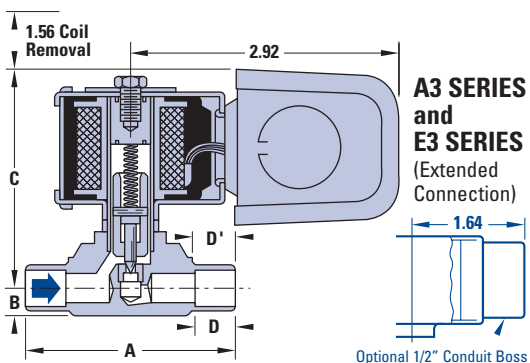
When ordering Body Assembly, specify Valve Type and Connections.

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	D	D'	E
						FITTING DEPTH		OFFSET
						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 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	STANDARD VOLTS/CYCLES	WATTS AC	DC
A3	A3P1	3/8 NPT Female	.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	.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	.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 Valve Company, Washington, MO 63090.
- See Pages 22 and 23 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-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.

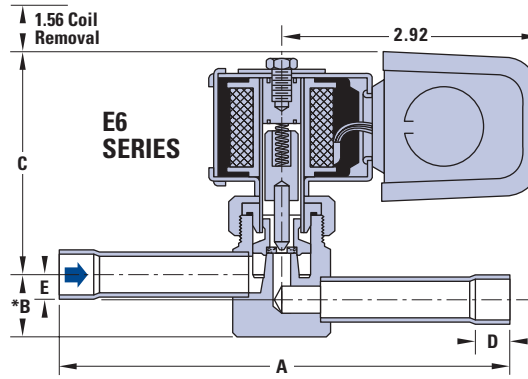
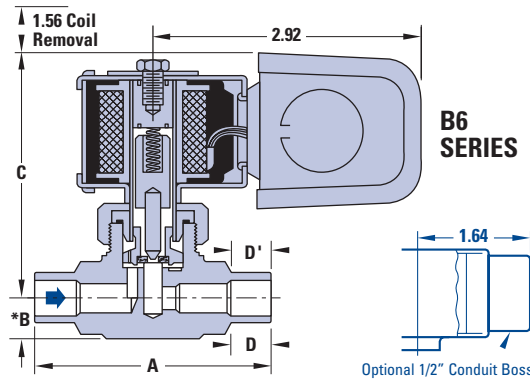
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

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

### Dimensions – Inches

VALVE SERIES	TYPE		A	*B	C	D	D'	E
						FITTING DEPTH		OFFSET
						ODF	ODM	
B6	B6P1		1.94	0.44	2.66	—		—
	B6S1	3/8 ODF	2.50			0.44		
		1/2 ODF				0.50		
	B6F1					—		
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 SF 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	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														
	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 Valve Company, Washington, MO 63090.
- See Pages 22 and 23 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.

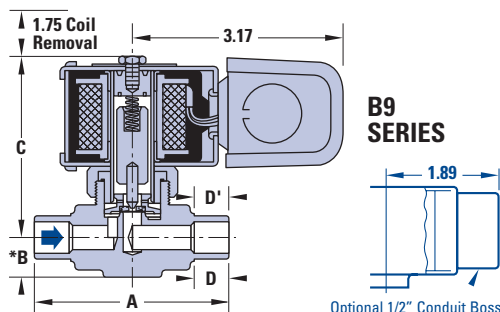
When ordering Coil Assembly **ONLY**, specify Coil Type, Voltage and Cycles.

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

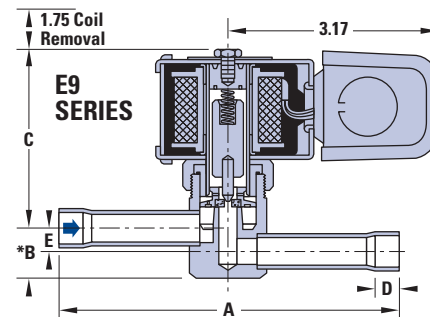
## Dimensions – Inches

VALVE SERIES	TYPE	A	*B	C		D	D'	E
				NORMALLY CLOSED	NORMALLY OPEN	FITTING DEPTH		
						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.



Optional 1/2" Conduit Boss



## Specifications — MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	STANDARD CONNECTIONS Inches	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	3	STANDARD VOLTS/CYCLES	WATTS AC	DC		
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
	MB9P2															
	OB9P2			275												
	B9S2	1/2 ODF - 5/8 ODM		300	250											
	MB9S2															
	OB9S2			275												
	B9F2	3/8 SAE Flare		300	250											
MB9F2																
OB9F2	275															
E9	E9S230	3/8 ODF X 3/8 ODF		300	250											
	ME9S230															
	OE9S230															
	E9S240	1/2 ODF X 1/2 ODF		275												
	ME9S240															
	OE9S240															
	E9S250	5/8 ODF X 5/8 ODF	300	250												
	ME9S250															
OE9S250	275															

- 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 Valve Company, Washington, MO 63090.
- See Pages 22 and 23 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.

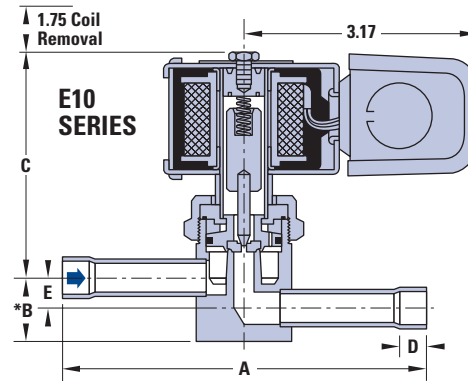
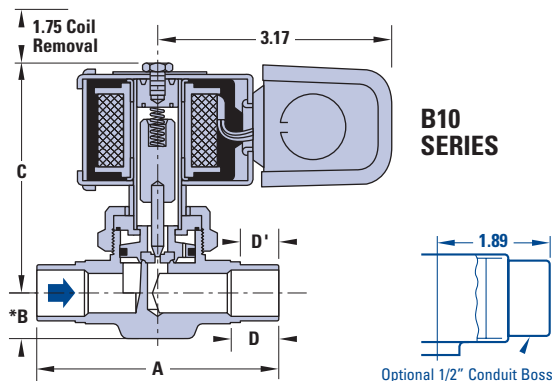
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

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

### Dimensions – Inches

VALVE SERIES	TYPE	A	*B	C		D	D'	E OFFSET
				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	0.88	3.13	3.42	0.38	—	0.37
	E10S250	6.50				0.50		

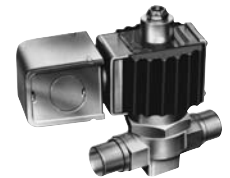
\*Add 1.12" for Valves with Manual Lift Stem.



Type MB10S2  
Normally Closed



Type E10S250  
Normally Closed



Type OB10S2  
Normally Open

UL and CE Listed  
CE Approved

### Specifications – MKC-2 and OMKC-2 Coil

VALVE SERIES	TYPE	STANDARD CONNECTIONS Inches	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	STANDARD VOLTS/CYCLES	WATTS AC    DC													
B10	B10S2	5/8 ODF - 3/4 ODM	5/16	300	250	11.1	8.5	9.1	7.3	7.3	10.2	7.2	7.2	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18												
	MB10S2																											
	OB10S2																											
	B10F2	1/2 SAE Flare		300	250																							
	MB10F2																											
OB10F2																												
E10	E10S240	1/2 ODF X 1/2 ODF		300	250																							
	ME10S240																											
	OE10S240																											
	E10S250	5/8 ODF X 5/8 ODF		300	250																							
	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 Valve Company, Washington, MO 63090.
- See Pages 22 and 23 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.



UL and CSA Listed  
CE Approved

**E14 SERIES**

1.75 Coil Removal

3.17

C

\*B

A

D

This technical drawing illustrates the E14 Series lock assembly. The top view shows a rectangular lock body with a handle on the right. A dimension line indicates a width of 3.17. A vertical dimension line on the left indicates a height of 1.75, labeled 'Coil Removal'. The side view shows the lock body mounted on a base. A dimension line indicates a total length of A. A dimension line indicates a distance from the left edge to the center of the lock body of \*B. A dimension line indicates a distance from the center of the lock body to the right edge of D. A dimension line indicates a distance from the top of the lock body to the top of the base of C. A blue arrow points to the left edge of the base.

## Specifications — MKC-2 and OMKC-2 Coil

Valve Series	Type	Standard Connections Inches	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	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
	MB14P2															
	OB14P2															
	B14S2	5/8 ODF - 7/8 ODM		300	250											
	MB14S2															
	OB14S2															
E14	E14S250	5/8 ODF X 5/8 ODF	300	250												
	ME14S250															
	OE14S250															

- 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 Sporan Valve Company, Washington, MO 63090.
- See Pages 22 and 23 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.

- 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 Sporan Valve Company, Washington, MO 63090.
- See Pages 22 and 23 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.



Type MB25S2  
Normally Closed

Type E25S290  
Normally Closed

Type OB25S2  
Normally Open

UL and SR Listed  
CE Approved

## Application

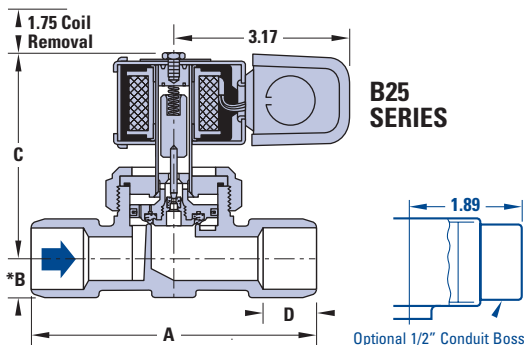
**Types B25 and E25 Series** are pilot operated solenoid valves for refrigeration and air conditioning applications. They are suitable for suction service because very low pressure differential, 1 psi, is required for full operation. These valves **may be mounted horizontally, on their side or in a vertical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

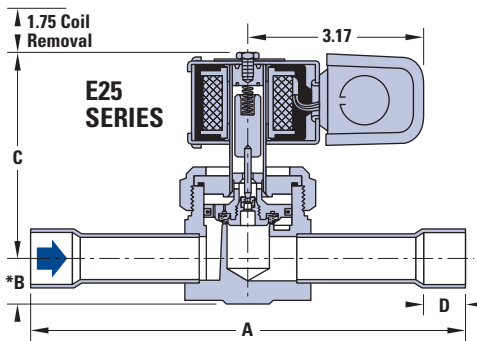
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

**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 <b>BLUE</b> 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	STANDARD VOLTS/CYCLES	WATTS														
				Pressure Drop – psi									AC				DC										
B25	B25P2	1 NPT Female	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											
	MB25P2																										
	OB25P2																										
	B25S2	7/8 ODF – 1-1/8 ODM & <b>1-1/8 ODF Solder</b>		300	250																						
	MB25S2																										
	OB25S2																										
E25	E25S270	7/8 ODF X 7/8 ODF		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 Valve Company, Washington, MO 63090.
- See Pages 22 and 23 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 B33 and E34 Series

### Application

**Types B33 and E34 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 **Type B33 Series** valve **must** be mounted with the coil on top or not more than 45° from the vertical line. The **E34 Series** may be mounted horizontally, on their side or in a vertical line.

The **Type E34** series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the "E34" 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.

The **B33 and E34 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.

- ① Net extra charge for each 1-5/8" ODF flange and bushing same as Type M thermostatic expansion valve.
- ② 1-5/8" ODM Type L tubing may be slipped over 1-3/8" fitting, without the use of a coupling, on extended end type valves.

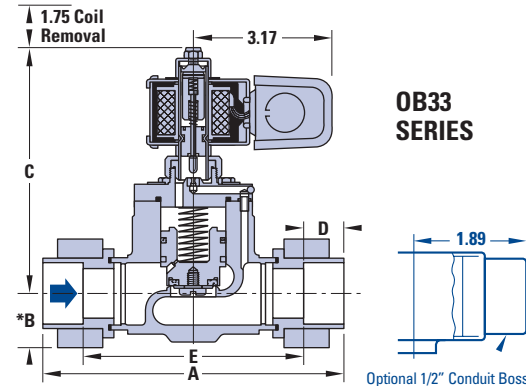
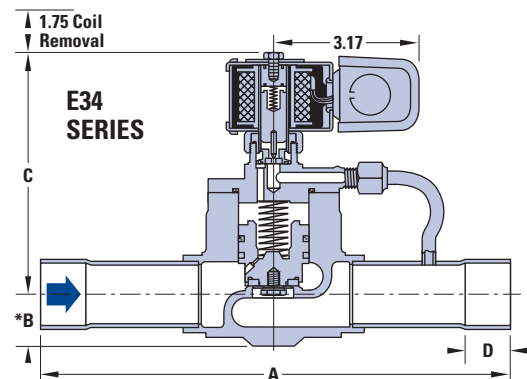
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

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

### Dimensions – Inches

VALVE SERIES	TYPE	FITTING SIZE	A	*B	C		D	E
		ODF			NORMALLY CLOSED	NORMALLY OPEN		
B33	B33S2	1-1/8	6.81	1.20	4.81	5.37	0.94	5.05
		or 1-3/8						
		1-5/8	7.75				1.22	5.43
E34	E34S290	1-1/8	10.06	1.17	5.11	5.60	0.91	—
	E34S2110	1-3/8	11.06				0.97	—

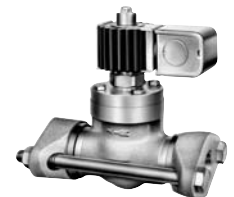
\*Add 0.93" for B33 Series Valves with Manual Lift Stem and 1.12" for E34 Series Valves.



Type MB33S2  
Normally Closed



Type ME34S2110  
Normally Closed



Type OB33S2  
Normally Open

UL and NSF 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	STANDARD VOLTS/CYCLES	WATTS AC DC					
B33	B33S2	1-1/8, 1-3/8 or ① 1-5/8 ODF Solder	1	300	250	57.6	43.8	47.1	38.0	38.1	53.0	37.4	37.3	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18
	MB33S2															
	OB33S2				250											
E34	E34S290	1-1/8 ODF X 1-1/8 ODF		300	250											
	ME34S290				250											
	OE34S290															
	E34S2110	② 1-3/8 ODF X 1-3/8 ODF		300	250											
	ME34S2110															
	OE34S2110				250											

- Maximum rated pressure: Type B33 Series, 500 psi; Type E34 Series, 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 Valve Company, 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

UL and SR Listed  
CE 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.

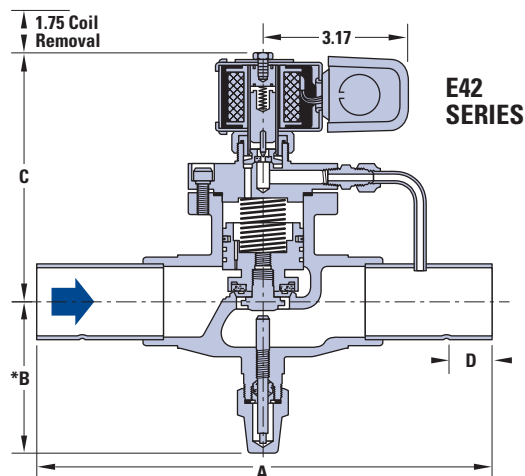
When ordering Coil Assembly **ONLY**, specify Coil Type, Voltage and Cycles.

**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	1.09
	ME42S2170					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 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	STANDARD VOLTS/CYCLES	WATTS AC	DC
E42	E42S2130	1-5/8 ODF X 1-5/8 ODF	1-5/16	300	250	127	96.9	104	83.9	84.2	117	82.5	82.4	24/50-60 120/50-60 208-240/50-60 120-208-240/50-60	15	18
	ME42S2130															
	OE42S2130			275												
	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 Valve Company, 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 Types MA42 and MA50 Series

## Application

**Types MA42 and MA50 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 **MA42 and MA50** series valves must be mounted in a horizontal line with the coil at the top. For hot gas applications, add prefix **H** for types MA42 and MA50 series only to type number. **Example:** HMA50P3.

The MA42 and MA50 series are steel body valves and therefore are **not** recommended for water or steam service.

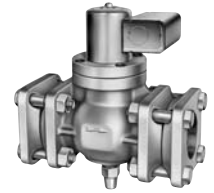
## Ordering Instructions

Be sure to specify Valve Type, Connections, Voltage and Cycles.

**Example:** MA42S3 1-5/8ODF 120/50-60.

## Dimensions – Inches

VALVE SERIES	TYPE	A	B	C		D
				NORMALLY CLOSED	NORMALLY OPEN	
MA42	MA42P3	8.75	3.06	6.69	–	6.62
	MA42S3					
MA50	MA50P3	9.88	3.88	7.12	–	7.38
	MA50S3					



Type MA42P3

## 4-Bolt Flanges

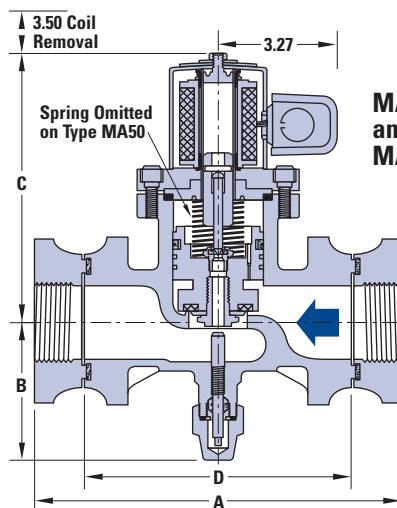
TYPE	E	F	G	H	K	BOLT CIRCLE Diameter	BOLT SIZE
*MA42P3	–	2.12	2.75	0.16	–	3.81	5/8
MA42S3	1.09				7.59		
*MA50P3	–	2.50	3.25	0.16	–	4.50	5/8
MA50S3	1.19				8.53		

\*Pipe flanges are one piece construction as shown in valve cross-section.



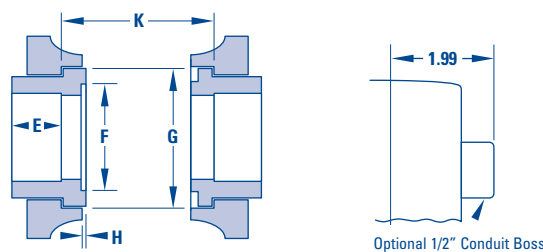
Type MA50S3

UL and NSF Listed



MA42 SERIES and MA50 SERIES

## Roughing in Dimensions



## Specifications – KC-3 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	STANDARD VOLTS/CYCLES	WATTS AC	DC				
MA42	MA42P3	1-1/2 NPT Female	1-5/16	300	175	98.2	96.7	82.5	65.1	65.8	91.1	63.7	64.2	24/50-60 120/50-60 208/50-60 240/50-60 Dual 120-240/60	18	25
	MA42S3	1-5/8 or 2-1/8 ODF Solder														
MA50	MA50P3	2 NPT Female	1-9/16			175	137	147	116	118	163	114	115			
	MA50S3	2-1/8 or 2-5/8 ODF Solder														

- Maximum rated pressure 300 psi.
- Dual voltage 4-wire coils, 120-240/60 are available at slight additional cost. For other voltages and cycles, consult Sporlan Valve Company, 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.

# Types MA5A3 and MA17A3

717 (Ammonia)



Type MA5A3 shown with XD Strainer and DA Thermostatic Expansion Valve



Type MA17A3

UL and SR Listed

## Application

**Type MA5A3** solenoid valve is of the direct acting type and designed specifically for ammonia service. The type **MA17A3** is a pilot operated solenoid valve for ammonia service. It is also available with a direct connected stem, plunger and piston assembly for suction line applications. To specify, add prefix **D** to the type number. **Example: DMA17A3.** MOPD for direct connected valves is 200 psi.

For hot gas applications add prefix **H** to type number. **Example: HMA17A3.**

Both of these valves **must** be mounted in a horizontal line with the coil at the top.

## Ordering Instructions

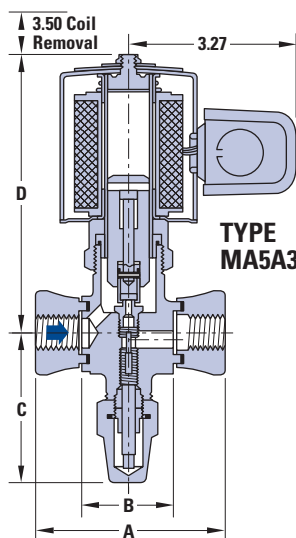
Be sure to specify Valve Type, Connections, Voltage and Cycles.

## Dimensions – Inches

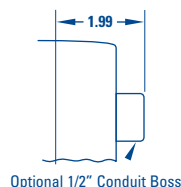
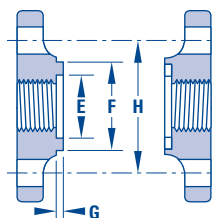
TYPE	A	B	C	D
<b>MA5A3</b>	3.25	1.69	2.75	5.00
<b>MA17A3</b>	5.12	3.25	2.94	5.12

## 2-Bolt Flanges

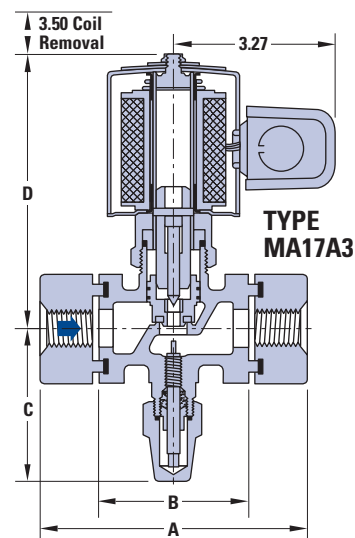
TYPE	E	F	G	H	BOLT SIZE
<b>MA5A3</b>	0.75	1.12	0.12	2.00	7/16
<b>MA17A3</b>	1.25	1.75	0.16	2.69	1/2



TYPE  
MA5A3



Optional 1/2" Conduit Boss



TYPE  
MA17A3

## Specifications – KC-3 Coil

TYPE	FLANGE CONNECTIONS Inches  Sizes shown in <b>BLUE</b> will be furnished unless otherwise specified.	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES Tons of Refrigeration					COIL RATINGS		
					AMMONIA							
					Pressure Drop – psi							
			AC	DC	1	2	3	4	5	STANDARD VOLTS/CYCLES	WATTS	
										AC	DC	
MA5A3	1/4, 3/8 or 1/2 NPT Female	.140	250	200	8.0	11.3	13.8	16.0	17.8	24/50-60 120/50-60 208/50-60 240/50-60 Dual 120-240/60	18	25
MA17A3	1/2, 3/4 or 1 NPT Female	17/32	275	225	70.9	100	122	141	157			

- Maximum rated pressure 300 psi.
- Dual voltage 4-wire coils, 120-240/60 are available at slight additional cost. For other voltages and cycles, consult Sporlan Valve Company, Washington, MO 63090.

- Available with conduit boss or junction box at no extra charge.
- Available with strainer inlet and one flange, with two flanges or without flanges.



## 717 (Ammonia)

## Types MA32, MA42 and MA50

## Application

Types MA32, MA42 and MA50 are large capacity, 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.

For hot gas applications, add prefix **H** to the type number. **Example: HMA42P3, HMA32P3, etc.**

All of these valves **must** be mounted in a horizontal line with the coil at the top.

## Ordering Instructions

Be sure to specify Valve Type, Connections, Voltage and Cycles.

## Dimensions – Inches

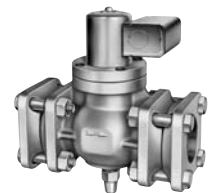
TYPE	A	B	C	D
MA32P3	8.25	5.88	3.06	5.94
MA42P3	8.75	6.62	3.06	6.69
MA50P3	9.88	7.38	3.88	7.12

## 4-Bolt Flanges

TYPE	E	F	G	BOLT CIRCLE Diameter	BOLT SIZE
MA32P3	1.81	2.31	0.12	3.50	5/8
MA42P3	2.12	2.75	0.16	3.81	5/8
MA50P3	2.50	3.25	0.16	4.50	5/8

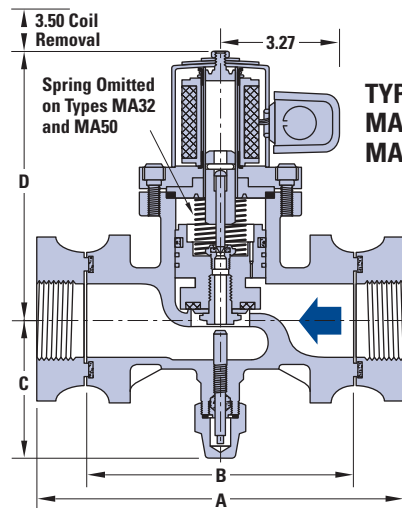


Type MA32P3

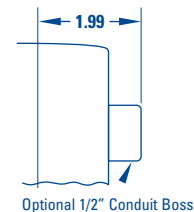
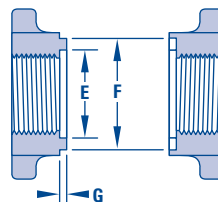


Type MA42P3

UL and NSF Listed



TYPES MA32P3,  
MA42P3 and  
MA50P3



Optional 1/2" Conduit Boss

## Specifications – KC-3 Coil

TYPE	FLANGE CONNECTIONS Inches Sizes shown in <b>BLUE</b> will be furnished unless otherwise specified.	PORT SIZE Inches	MOPD psi		NOMINAL LIQUID CAPACITIES Tons of Refrigeration					COIL RATINGS		
					AMMONIA							
					Pressure Drop – psi							
			AC	DC	1	2	3	4	5	STANDARD VOLTS/CYCLES	WATTS AC      DC	
MA32P3	1 or 1-1/4 NPT Female	1	250	175	126	178	219	253	283	24/50-60 120/50-60 208/50-60 240/50-60 Dual 120-240/60	18	25
MA42P3	1-1/2 NPT Female	1-5/16	300	175	317	429	511	582	639			
MA50P3	2 NPT Female	1-9/16	300	175	566	765	913	1039	1140			

- Maximum rated pressure 300 psi.
- Available with conduit boss or junction box at no extra charge.

- Dual voltage 4-wire coils, 120-240/60 are available at slight additional cost. For other voltages and cycles, consult Sporlan Valve Company, Washington, MO 63090.

# Built-In Check Valve Series

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



Type CE14S250



Type CMB19S2

## 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 for positive shutoff during pumpdown control, while allowing full flow in the reverse direction during the heating mode. **CAUTION: This valve will not close in the reverse flow/heating 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 heating mode, the solenoid valve **is 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 21 of this Bulletin.)

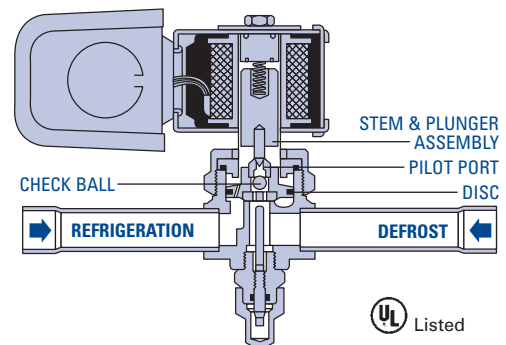
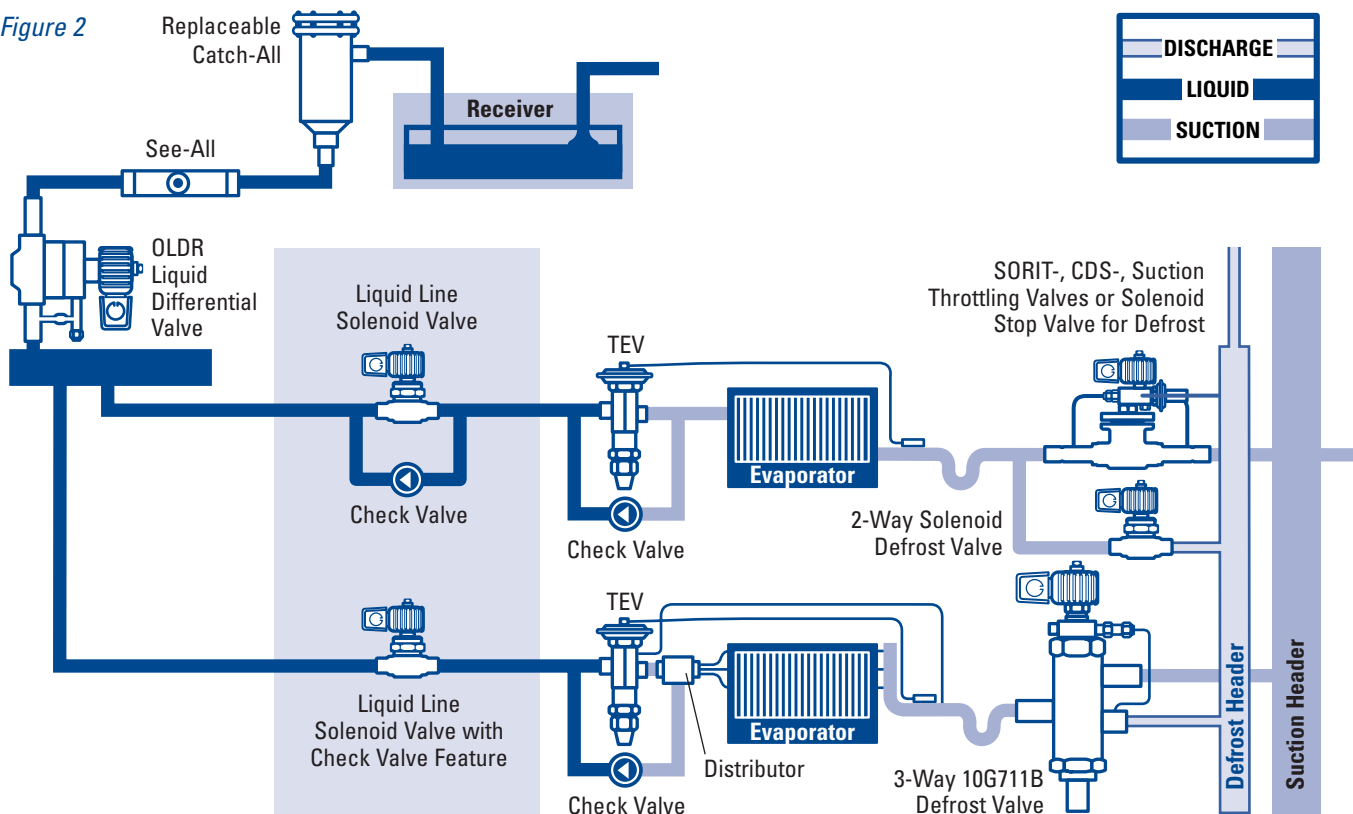


Figure 1  
CME14S2\* REVERSE FLOW SOLENOID VALVE

\*The "C" is used in this nomenclature to represent the check valve feature. See Solenoid Valve Nomenclature, Pages 28-29.

Figure 2



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

# Built-In Check Valve Series

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

## 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: CE10S250\***

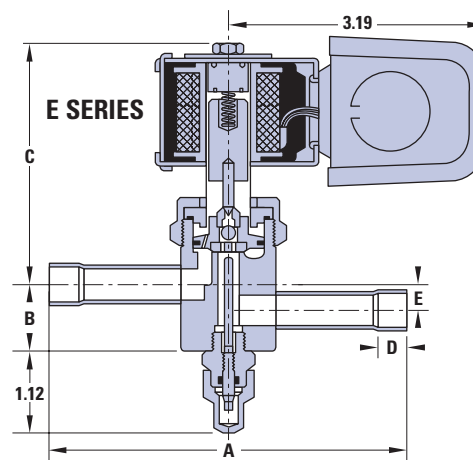
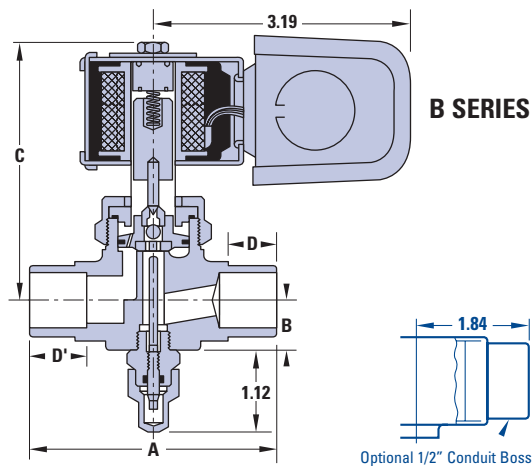
**Valve with Manual Lift Stem: CME10S250\***

**Kit: KS-CB10/CE10\***

\* The "C" is used in this nomenclature to represent the check valve feature. See Solenoid Valve Nomenclature, Pages 28-29.

## Dimensions – Inches

VALVE SERIES	TYPE	A	B	C	FITTING DEPTH		E
					ODF	ODM	
<b>C(M)B9</b>	C(M)B9S2	2.88	0.56	2.75	0.50	—	—
<b>C(M)E9</b>	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
<b>C(M)B10</b>	C(M)B10S2	3.25	0.59	3.15	0.62	0.50	—
<b>C(M)E10</b>	C(M)E10S240	5.00	0.88	3.13	0.38	—	0.37
	C(M)E10S250	6.50	—	—	0.50	—	—
<b>C(M)B14</b>	C(M)B14S2	3.00	0.56	3.28	0.62	0.50	—
<b>C(M)E14</b>	C(M)E14S250	6.88	0.48	3.25	0.50	—	—
<b>C(M)B19</b>	C(M)B19S2	5/8 ODF	3.87	0.81	3.31	0.62	0.62
	7/8 ODF	—	—	—	—	0.88	0.75
<b>C(M)E19</b>	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	40	0	40	0	40	0	40	0	40	0
C(M)B9, C(M)E9	6.6	6.2	5.1	4.6	5.5	5.0	—	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	11.0	10.2	—	7.7	—	7.8	12.0	11.0	—	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.

<sup>+</sup> 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.

# Industrial Solenoid Valves

for Air, Water, Steam and Light Oil



Type W3P1  
Direct Acting Type



Type R184P1  
Diaphragm Type

## 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 psig. 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 Valve Company, 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
Stainless Steel Insert Seat	Buna-N Diaphragm	Series	Port Size 1/32"	Connection Size 1/8"	Pipe Connections	MKC-1 Coil

## Specifications

TYPE	STANDARD CONNECTIONS Inches	PORT SIZE Inches	MOPD psi	DIAPHRAGM	STAINLESS STEEL INSERT SEAT	COIL RATINGS		
			AC			STANDARD VOLTS/CYCLES	WATTS	COIL

### Disc Type

W3P1	1/4 NPT Female	.109	150	—	No	24/50-60 120/50-60 208-240/50-60 Dual 120-208-240/50-60	10	MKC-1
W6P1	3/8 NPT Female	3/16			Yes		15	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	Teflon	No	24/50-60 120/50-60 208-240/50-60 Dual 120-208-240/50-60	10	MKC-1
BR183P1				Buna-N				
KR183P1				Teflon	Yes			
KBR183P1				Buna-N				
R184P1	1/2 NPT Female			Teflon	No			
BR184P1				Buna-N				
KR184P1				Teflon	Yes			
KBR184P1				Buna-N				
R246P1	3/4 NPT Female	3/4	Teflon	No				
BR246P1			Buna-N					
KR246P1			Teflon	Yes				
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 Valve Company, 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.

for Air, Water, Steam and Light Oil

# Industrial Solenoid Valves

## Ordering Instructions

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

When ordering Body Assembly, specify Valve Type and Connections.

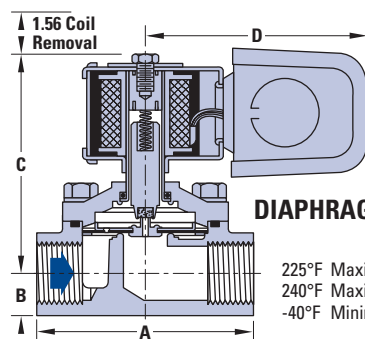
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.

**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.**

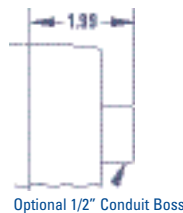
## Dimensions – Inches

TYPE	CONNECTIONS (Pipe)	A	B	C	D
W3P1	1/4	1.88	0.44	2.20	2.89
W6P1	3/8	1.94		2.66	
W14P2	1/2	2.41	0.56	3.28	
W19P2	3/4	3.00	0.81	3.31	3.17
W25P2	1	3.50	0.72	3.78	
R183P1 Series	3/8	2.75	0.53	2.97	
R184P1 Series	1/2				2.89
R246P1 Series	3/4	3.06	0.57	3.09	

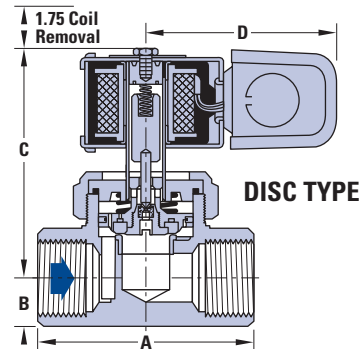


**DIAPHRAGM TYPE**

225°F Maximum Fluid Temperature, Buna-N Diaphragm  
240°F Maximum Fluid Temperature, Teflon Diaphragm  
-40°F Minimum Fluid Temperature



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	7.25	10.8	
W14P2	–	–	5.9	9.0	12.7	24.2	39.5	MKC-2
W19P2	–	–	8.8	12.5	19.1	41.0	61.0	
W25P2	–	–	14.5	21.5	32.5	74.0	114.0	MKC-1
R183P1 Series	3.6	6.2	8.1	11.4	16.1	32.5	47.4	
R184P1 Series	4.1	7.1	9.2	13.0	18.3	37.0	54.0	
R246P1 Series	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	7.5	8.6	10.4	11.8	10.8	13.8	14.9	15.2	17.1	17.1	MKC-1
W6P1	23	26	32	37	34	44	46	49	53	53	
W14P2	77	88	107	123	109	139	155	165	179	179	
W19P2	133	151	183	210	194	248	264	281	304	304	MKC-2
W25P2	222	298	308	355	339	433	447	525	514	514	

TYPE	*POUNDS PER HOUR		COIL
	5 psi ΔP	10 psi ΔP	
R183P1	105	152	MKC-1
KR183P1			
R184P1	119	173	
KR184P1			
R246P1	168	245	
KR246P1			

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

\* Exhaust to atmosphere.



# General

## Sporlan Solenoid Valves

### 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

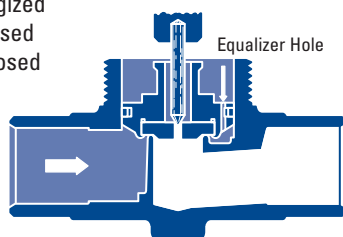
In a pilot operated valve, the stem and plunger assembly opens a pilot port. This releases the pressure on top of the disc, piston or diaphragm which then moves upward and opens the main valve port. Figure 3 illustrates the four phases of the operating cycle of a typical pilot operated valve. The operation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

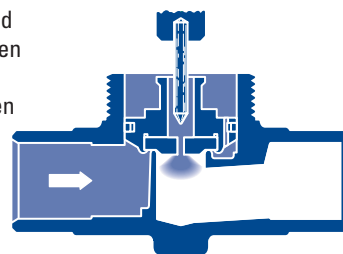
Coil De-Energized  
Pilot Port Closed  
Main Port Closed

**A**



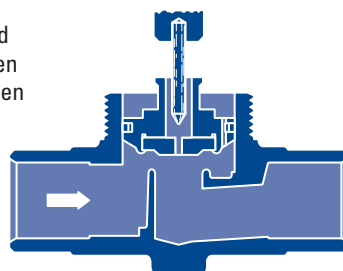
Coil Energized  
Pilot Port Open  
Main Port  
About to Open

**B**



Coil Energized  
Pilot Port Open  
Main Port Open

**C**



Coil De-Energized  
Pilot Port Closed  
Main Port Closing

**D**

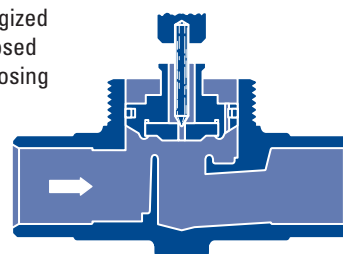


Figure 3

## Sporlan Solenoid Valves

## General

disc is held off the seat by the pressure difference across the port. 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. 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 30, 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.



Figure 4

# Construction Details

## Sporlan Solenoid Valves

VALVE SERIES	PORT SIZE Inches	TYPE OF OPERATION	COIL KIT	*BODY MATERIAL	TYPE OF SEATING		STEM AND PLUNGER ASSEMBLY	PISTON DISC OR DIAPHRAGM
					MAIN PORT	PILOT PORT		
A3P1	.101	Direct Acting	MKC-1	Brass	Synthetic to Metal	---	Stainless Steel	---
A3F1					Metal to Metal			
A3S1								
E3								
E5	.150	Pilot Operated	MKC-2 and †OMKC-2	Brass Forging	Synthetic to Metal	Stainless Steel Pin to Synthetic Seat		Disc
E6, ME6	3/16							
B6, MB6	9/32			Brass				
B9, MB9, OB9								
E9, ME9, OE9								
E10, ME10, OE10	5/16		Brass Forging					
B10, MB10, OB10	7/16							
B14, MB14, OB14, E14, ME14, OE14								
B19, MB19, OB19, E19, ME19, OE19								
B25, MB25, OB25, E25, ME25, OE25			19/32					
MA32P3	25/32		KC-3	Steel Casting				
B33, MB33, OB33, E34, ME34, OE34	1							MKC-2 and †OMKC-2
E42, ME42, OE42	1-5/16							
MA42								
MA50								
MA17A3	17/32							
MA5A3	.140	Direct Acting	MKC-1	Brass	---	---		
W3P1	.101							
W6P1	3/16	Pilot Operated	MKC-2	Brass Forging	Stainless Steel Pin to Synthetic Seat	Disc		
W14P2	7/16							
W19P2	19/32							
W25P2	25/32		MKC-1		Stainless Steel Port to Synthetic Plunger Seat	Diaphragm		
R183	9/16							
R184								
R246	3/4							

\*All "E" Series Valves have Copper Extended Solder Type Connections. †Normally Open Solenoid Valve ONLY.

## Approximate Net and Shipping Weights<sup>‡</sup>

VALVE SERIES WITH COIL	WEIGHT – lbs.		VALVE SERIES WITH COIL	WEIGHT – lbs.		VALVE SERIES WITH COIL	WEIGHT – lbs.	
	NET	SHIPPING		NET	SHIPPING		NET	SHIPPING
A3, E3, E5, W3	1.0	1.2	B19, E19, W19	2.3	2.6	E42	10	12
B6, E6, W6	1.0	1.2	B25, E25, W25	3.1	3.4	MA50	36	38
B9, E9	1.5	1.7	MA32	19	20	MA5A3	4.5	5.5
B10, E10	2.0	2.3	B33, E34	6.5	7	MA17A3	8.5	9.5
B14, E14, W14	2.0	2.3	MA42	25	27	R18, R24	2.3	2.8

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

## Sporlan Solenoid Valves

Sporlan Solenoid Valves are constructed to insure long, trouble-free life. They employ proven design features for reliable performance on all applications. 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 26 lists the materials and construction details of Sporlan Solenoid Valves. Sporlan Valve 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.

## Construction Details

**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.

The number 3 size coil is dipped twice with a high temperature varnish. The dipping procedure is done while the coil is hot to achieve the best penetration of the varnish. The coils are oven cured after each dip to achieve maximum protection. The special high temperature varnish is water repellent.

**High Temperature Coils (KC-3 only)** — for steam and other high temperature applications of similar construction. The major difference is in the use of high temperature insulating materials both in the coils and on the lead wires. High temperature coils are only required for valves employing the KC-3 type coil.

## 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. High temperature coils are offered in all standard voltages and cycles (KC-3 only). They are not available in 208/50, 230/50, 480/50-60 and dual 120-240/60. For other voltages and cycles, consult Sporlan Valve Company, Washington, MO.

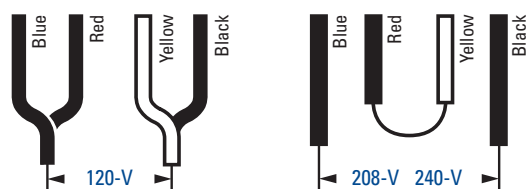
**Surge Protector** — Sporlan supplies a surge protector for all 115 volt DC coils. A wiring diagram for this application is illustrated and discussed in the Installation Section in Bulletin 30-11.

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

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

All other coils are supplied with black lead wires.

### 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 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.

**Coil Interchangeability** — Only three coil sizes are required with the complete line of Sporlan Solenoid Valves.

The molded MKC-1 coil will fit every valve in the field presently using the old style KC-1 coil. The molded MKC-2 coil will fit every valve in the field presently using 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 with a new MKC-1 or MKC-2.

Electrical Specifications

Sporlan Solenoid Valves

**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, E33, E34, E42, 180 Solenoid Pilot Control, 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.

To convert solenoid valves using KC-3 coil from AC to DC, some internal and external parts must be changed. As a result, conversion of a solenoid valve of this type in the field is not generally recommended unless the valve can be tested for proper operation prior to installation.

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

VALVE SERIES	RATING – VOLTS/CYCLES	WATTS	COIL
A3, E3, E5, B6, E6 R18, R24, W3 5D, 8D, 12D, 10G	24/50-60, 120/50-60	10	MKC-1
	208-240/50-60		
	Dual 120-208-240/50-60		
B9, E9 B10, E10 B14, E14 B19, E19 B25, E25 B33, E34 E42 180 SPC, 16D	24/50-60, 120/50-60	15	MKC-2 and OMKC-2
	208-240/50-60		
	Dual 120-208-240/50-60		
MA5A, MA17A MA32, MA42 MA50	24/50-60, 120/50-60	18	KC-3
	208/50-60, 240/50-60		
	Dual 120-240/60		

Identification

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, MKC-2 and OMKC-2 will have their electrical specifications shown on the face plate of the coil assembly. See Figure 6.

On those valves using the KC-3 coil, the electrical specifications will be found in two places. One is the small metal plate which is affixed to the top of the valve along with the valve nameplate, Figure 5. In ad-

dition, electrical specifications will also be found on a tape which is permanently attached to the coil itself. 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 Kit, Specify Coil Size, Voltage and Cycles.

**Example: MKC-1 24/50-60 or KC-3 208/50-60.**

### Coil Kits

MKC-1		MKC-2 and *OMKC-2		KC-3	
VALVE SERIES	RATING – VOLTS/CYCLES	VALVE SERIES	RATING – VOLTS/CYCLES	VALVE SERIES	RATING – VOLTS/CYCLES
A3 R183	24/50-60	B9 B33		MA5A MA17A MA32 MA42 MA50	
E3 R184	120/50-60	E9 E34	24/50-60		24/50-60
E5 R246	208-240/50-60	B10 E42	120/50-60		120/50-60
B6 8D	Dual 120-208-240/50-60	E10 180 SPC	208-240/50-60		208/50-60
E6 12D	12 DC	B14 16D	Dual 120-208-240/50-60		240/50-60
W3 10G	24 DC	E14 W14	480/50-60		Dual 120-240/50-60
W6	36 DC	B19 W19	12 DC		480/50-60
	115 DC	E19 W25	24 DC		
		B25	38 DC		
		E25			

\*OMKC-2 Coils used only on normally open solenoid valves.



Figure 5



# Sporlan Solenoid Valves

# Identification

## Nomenclature - A, B and W Series

O	F	H	D	M	B	25	S	2	*	S
Normally Open	① Fungus Proof Coil	② High Temperature Coil	Disc Type D - Direct Connected C - Built-In Check Valve	Manual Lift Stem	Design or Series A, B & W Series	Port Size in 1/32"	Connections P - Pipe F - SAE Flare S - ODF Solder	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 - Spade E - DIN 43650A

① Fungus proof coils must be specified on KC-3 coils only. The MKC-1, MKC-2 and OMKC-2 are fungus proof and meet MIL-I-631C.

② The letter "H" prefix indicates High Temperature Wound Coil. All KC-3 and KC-12 DC coils are also wound for High Temperature Applications so the "H" is required. The standard MKC-1 and MKC-2 are class "F" rated and the "H" is not required.

\* 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 Valve Company, Washington, MO.

\*\* Standard connections are ODF inlet x ODF outlet on "E" Series valves.

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:** MEI0S250 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 Valve Company, 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).

Figure 6



MKC-1, MKC-2 and OMKC-2



KC-3

## 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 12, 1210, 1240	MKC-1 KC-12
B9, MB9 E9, ME9	MKC-2	A9, MA9, 14	MKC-2
B10, MB10 E10, ME10		A10, MA10 20	KC-12
B14, MB14 E14, ME14		A14, MA14 73, 72	MKC-2 KC-12
B19, MB19 E19, ME19		A17, MA17, 43, 4304, 4303, 42, 4202	KC-3
B25, MB25 E25, ME25		A24, MA24, 53, 5304, 5303, 52, 5202	
OB9, OE9 OB10, OE10 OB14, OE14 OB19, OE19 OB25, OE25 OB33 OE42	OMKC-2	—	—
OE34	KC-3	EOB33, OE33	OMKC-2
MA32		90	KC-3
E34, ME34 B33, MB33	MKC-2	B32, MB32, C32, MC32, 9001, 9005	
E34, ME34 E42, ME42		EB33, EMB33 EMB42S3	MKC-2
MA42	KC-3	100	KC-3
MA50		110	
MA5A3		35, 34, 33, 32, 30	
MA17A3		83, 8303, 82, 80	
180	MKC-2	172, 170, †162	KC-12
W3P1	MKC-1	—	—
W6P1		XKA	MKC-1
W14P2	MKC-2	XJQ	MKC-2
W19P2		4306-P, 4308-P	KC-3
W25P2		W24P3, 5306-P, 5308-P	
R183	MKC-1	W7P2	—
R184		—	
R246		—	

† Replacement coils no longer available.

# Application

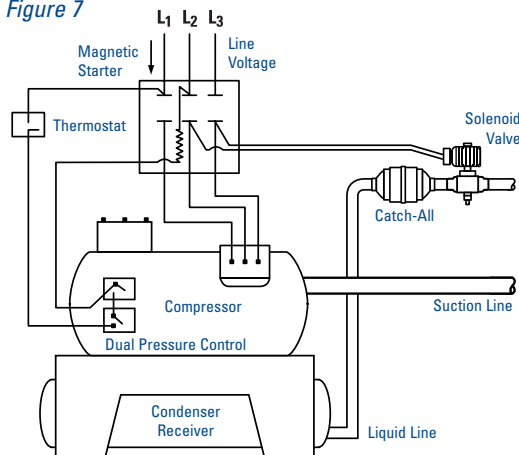
## Sporlan Solenoid Valves

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 Valve Company, 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 systems, a solenoid valve may be used in each of the liquid lines leading to the individual evaporators.

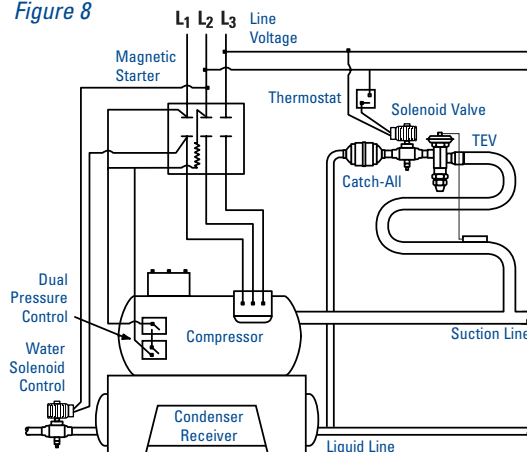
Figure 7



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 thermostat is satisfied, the valve closes and the compressor continues to run until a substantial por-

Figure 8



tion 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, except the MA17A3, are ideally suited for these special applications. They are capable of opening full at pressure drops of 1.0 psi.

The MA17A3 is suitable for suction service when supplied with internal parts which are mechanically connected. With this arrangement, the piston is connected to the stem and plunger assembly and when the coil is energized the plunger assists in supporting the piston. As a result the pressure drop through the valve is reduced to a bare minimum. The MA17A3 with the direct-connected assembly is designated by adding the prefix "D" to the type number.

### Example: DMA17A.

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

### High Temperature Applications

There are some high temperature applications where a high temperature coil construction will be required. The temperature of the fluid or gas flowing through the solenoid valve will generally determine whether a high temperature coil is necessary.

Any valves using the MKC-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.

Valves using the KC-3 coil have been applied on systems whose fluids or gas temperatures reach 180°F. For any temperatures over 180°F, a high temperature coil should be specified.

The high temperature coils should be limited to a maximum of 300°F fluid temperature.

**NOTE:** The MKC-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.

# Sporlan Solenoid Valves

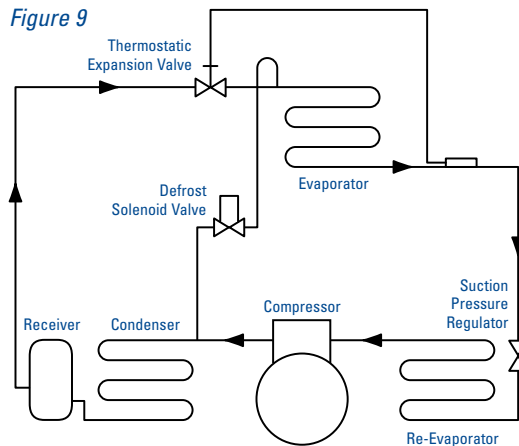
# Application

## 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.

Figure 9



## 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 Valve Company, Washington, MO.

## Water Service

See Pages 22 & 23 — 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® Filter-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® Filter-Driers**, designed for ammonia use, acts as a scale trap to protect system components. Therefore, we recommend using a Sporlan **Catch-All® Filter-Drier** ahead of every solenoid valve on all refrigeration and air conditioning applications. Contact Sporlan Valve Company before adding a **Catch-All® Filter-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
	CURRENT-AMPERES		CURRENT-AMPERES		CURRENT-AMPERES		FOR 100% OF RATED MOPD OF VALVE
	INRUSH	HOLDING	INRUSH	HOLDING	INRUSH	HOLDING	
MKC-1	1.9	.63	.39	.14	.19	.09	60
MKC-2 OMKC-2	3.1	1.4	.60	.26	.31	.13	100
KC-3	7.9	1.9	1.7	.41	.83	.21	250

■ 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 Valve Company for coil characteristics on specific valve types.

