



Solenoid Valve with Built-In Check Valve

CE6-HP Series

SPORLAN



ENGINEERING YOUR SUCCESS.

CE6-HP SERIES SOLENOID VALVES

- For Refrigerants 22, 134a, 401A, 402A, 404A, 407C, 407F, 410A, 507
- Bi-Directional Solenoid Valve
- Supermarket Pumpdown Control
- Prevents Heat Pump Refrigerant Migration
- Extended Solder Type Connections
- MKC-1 Coil, Class F

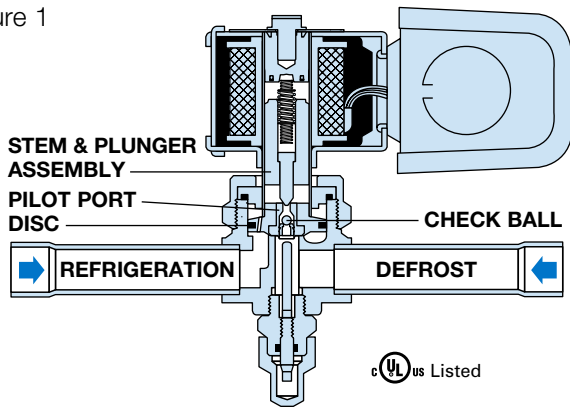


APPLICATION

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

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

Figure 1



CE6S1-HP* BI-DIRECTIONAL SOLENOID VALVE

* The "C" is used in this nomenclature to represent the check valve feature and the "-HP" designates high pressure.

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.

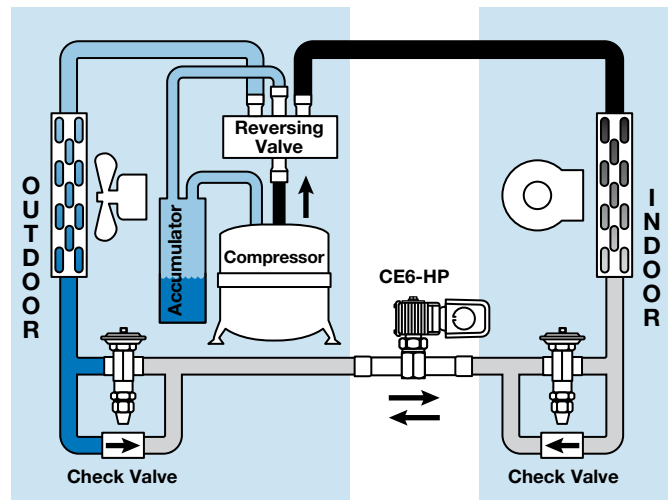
For Heat Pumps

See Figure 2. This valve may be used on some heat pump applications when sized correctly. (Refer to capacities at 40°F

evaporator temperature, see page 4 of this Bulletin.) For heat pumps with long lines that require shut off in both directions, use two solenoid valves with the outlets pointing towards each other.

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

Figure 2



HEATING MODE

- Discharge Gas – High Pressure Vapor
- Saturated – High Pressure Liquid & Vapor
- Liquid – High Pressure
- Saturated – Low Pressure Liquid & Vapor
- Suction Gas – Low Pressure Vapor

CE6S1-HP BI-DIRECTIONAL SOLENOID HEATING MODE (shown above)

Typically, the valve is installed with normal flow to the outdoor coil. When de-energized, this prevents migration of refrigerant to the outdoor coil during heating mode.

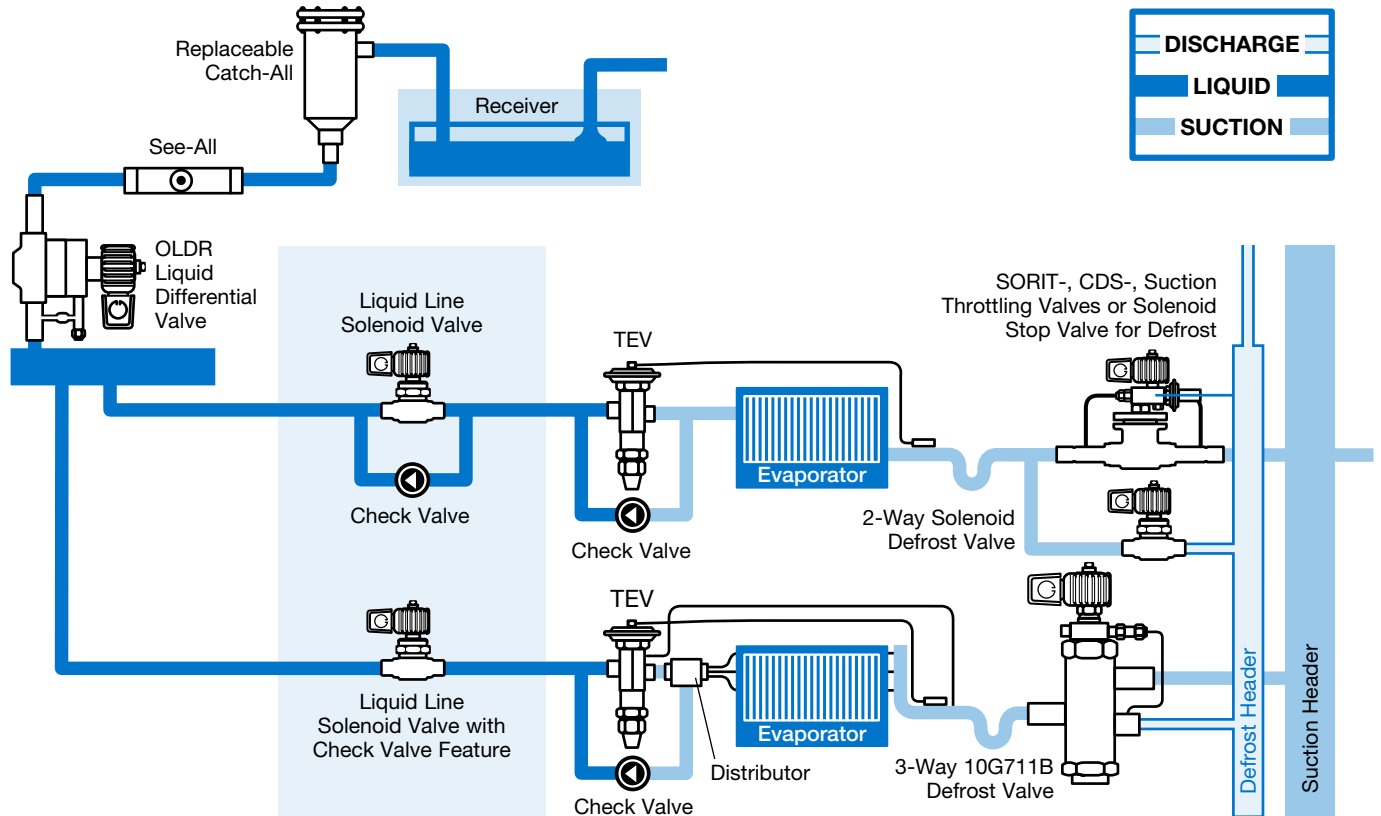
COOLING MODE

Typically the valve is installed with normal flow to the outdoor coil. When in cooling mode, the valve is in reverse flow.

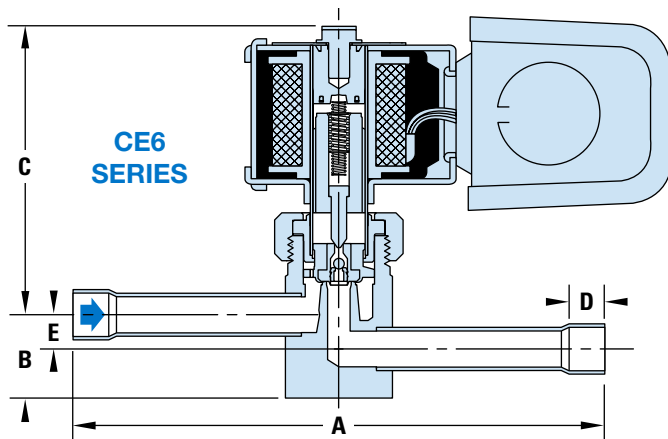
For Supermarkets

See Figure 3. 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.

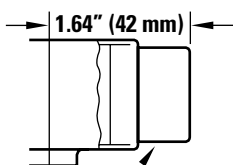
Figure 3
REVERSE HOT GAS DEFROST



DIMENSIONS



Extended Connection



Optional 1/2" (13 mm) Conduit Boss

Inches (mm)

VALVE SERIES	TYPE	A	B	C	D Fitting Depth ODF	E Offset
CE6	CE6S130-HP	4.66" (118 mm)	0.73" (19 mm)	2.59" (66 mm)	0.31" (8 mm)	0.30" (8 mm)
	CE6S140-HP	5.03" (128 mm)	0.73" (19 mm)	2.59" (66 mm)	0.38" (10 mm)	0.30" (6 mm)

ORDERING INSTRUCTIONS

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

When ordering Body Assembly, specify Valve Type and Connections.

Example: CE6S130-HP*
Kit: KS-CE6-HP

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

Example: MKC-1 120/50-60

* The "C" is used in this nomenclature to represent the check valve feature and the "-HP" designates high pressure.

SPECIFICATIONS – MKC-1 Coil

VALVE SERIES	TYPE	STANDARD CONNECTION Inches	PORT SIZE Inches	MOPD psi (bar)		NOMINAL LIQUID CAPACITIES Tons (kW) of Refrigerant										STANDARD COIL RATINGS	
						REFRIGERANTS											
						22	134a	401A	402A	404A	407C	407F	410A	507			
						Pressure Drop – psi (bar)										VOLTS/CYCLES	WATTS
AC	DC	3 (0.20)	2 (0.14)	2 (0.14)	3 (0.20)	3 (0.20)	3 (0.20)	3 (0.20)	5 (0.34)	3 (0.20)	AC	DC					
CE6 NORMAL FLOW	CE6S130-HP	3/8" ODF	0.197	450 (31)	400 (27)	3.63 (12.75)	2.79 (9.81)	3.01 (10.59)	2.44 (8.57)	2.41 (8.48)	3.34 (11.75)	3.46 (12.17)	4.38 (15.42)	2.36 (8.29)	24/50-60 120/50-60 208/50-60 208-240/50-60 120-208-240/50-60	10	15
	CE6S140-HP	1/2" ODF				4.41 (15.50)	3.35 (11.78)	3.61 (12.70)	2.96 (10.40)	2.91 (10.23)	4.05 (14.24)	4.19 (14.74)	5.39 (18.97)	2.85 (10.03)			
CE6 REVERSE FLOW	CE6S130-HP	3/8" ODF				3.03 (10.66)	2.30 (8.10)	2.48 (8.74)	2.03 (7.15)	2.00 (7.03)	2.78 (9.78)	2.88 (10.13)	3.71 (13.04)	1.96 (6.90)			
	CE6S140-HP	1/2" ODF				3.63 (12.75)	2.75 (9.67)	2.97 (10.43)	2.43 (8.56)	2.39 (8.41)	3.33 (11.71)	3.45 (12.13)	4.45 (15.65)	2.34 (8.25)			

Maximum Rated Pressure is 700 psi (48 bar).

Liquid capacity is based on 110°F (43.3°C) condensing temperature, 100°F (38°C) liquid temperature and 40°F (4°C) evaporating temperature.
For each 10°F (-12°C) reduction in evaporating temperature, capacities are reduced by approximately 1.5%.

Refrigerant Liquid Temperature Correction Factors

TEMPERATURE °F	40	50	60	70	80	90	100	110	120	130	140
TEMPERATURE °C	4	10	16	21	27	32	38	43	49	54	60
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
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
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
R-407F	1.42	1.35	1.28	1.21	1.14	1.07	1.00	0.93	0.85	0.78	0.70
R-410A	1.45	1.38	1.30	1.23	1.15	1.08	1.00	0.92	0.83	0.74	0.64
R-507	1.54	1.45	1.36	1.27	1.18	1.09	1.00	0.90	0.80	0.69	0.56

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