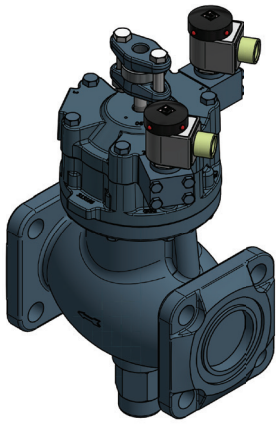
Dual Gas Powered Suction Stop Valve

Product Bulletin 50-24 E

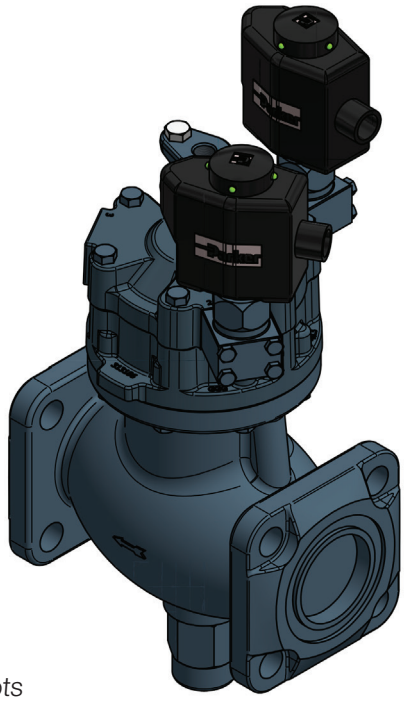
Type: CK-2D



Purpose:

The CK-2D normally open gas powered suction stop valve from Parker offers an economical solution to the equalization step in the defrost cycle. Another feature of the CK-2D is its ability to stay closed if power is loss during a defrost cycle. This can prevent potentially damaging shock to refrigeration piping.

The CK-2D valve is typically used in applications like overfeed or flooded systems, wet return lines, and on the liquid and gas return legs of flooded evaporators.



CK-2D with S6A Pilots

Contact Information:

Parker Hannifin Corporation
Sporlan Division –
Refrigeration Business Unit
2445 South 25th. Avenue
Broadview, IL 60155-3891

phone (708) 681-6300
fax (708) 681-6306

www.parker.com/rs
rsd_orders@parker.com

Product Features:

- Suitable for Ammonia, R-22, R-134a, R-404A, R-410A, R-507, and Other Common Refrigerants.
- Economical Solution to Evaporator Equalization after Defrost.
- Low Pressure Drop.
- Heavy Return Spring.
- Normally Open.
- Manual Opening Stem.
- Integrated S6B Pilot Solenoids.
- Complies with ASME B31.5 and PED 2014/68EU.
- Port Sizes: 40 to 100 mm (1-5/8 to 4”).
- Use in Vertical or Horizontal Lines.
- Temperature Range: -51 to 104°C (-60 to 220°F).
- Maximum Rated Pressure (MRP): 28 barg (406 psig).
- Minimum Pressure Drop to Close: 0.35 bar (5 psi).

ENGINEERING YOUR SUCCESS.

Table of Contents

Technical Data

Body Material . . . . . Ductile Iron

Seat Material . . . . . Ductile Iron

Refrigerant Temperature Range* . . . -51 to 104°C (-60 to 220°F)

Ambient Temperature Range:

AC Coils . . . . . -60 to 60°C (-76 to 140°F)

DC Coils . . . . . -25 to 60°C (-13 to 140°F)

Maximum Rated Pressure (MRP) . . . . . 28 bar (406 psig)

Minimum Pressure to Open. . . . . 0 bar (0 psig)

Minimum Pressure above, Inlet Pressure to Close Valve . . . . . .0.35 bar (5 psig)

Complies with ASME B31.5 and PED 2014/68EU

* Recommended application temperature above -32°C (-25°F). Contact factory for proper selection assistance, if required.

Description

The CK-2D is based on the same valve body and operational principles as the standard CK-2 valves making for easy field replacements. This heavy duty gas-powered valve is suitable for ammonia, R-22, other refrigerants, certain oils and other fluids approved for use in refrigeration. The CK-2D is a pilot operated, dual-position valve. The CK-2D is a normally open valve and will open on power failure. This valve is equipped with a manual opening stem.

The Type CK-2D Gas-Powered Valve is furnished with FPT Internal NPT (U.S. Standard Taper Pipe Thread), Socket Weld, Weld Neck or ODS (solders over copper piping of given diameter) connections. The valve may be easily removed from between the flanges for servicing.

Purpose & Applications

These valves are employed as low pressure drop, gas-powered suction stop valves for low temperature evaporators. Because of the return spring, there is no line pressure drop required to open the valve during refrigeration. This allows for a minimal pressure drop penalty in the suction line. The CK-2D will positively close the suction line allowing for defrost to occur. The dual position feature permits the evaporator pressure to equalize through the CK-2D with the suction pressure after a defrost cycle has occurred. The intermediate stage allows for this equalization to occur in a controlled manner without the need for an externally piped equalizing solenoid.

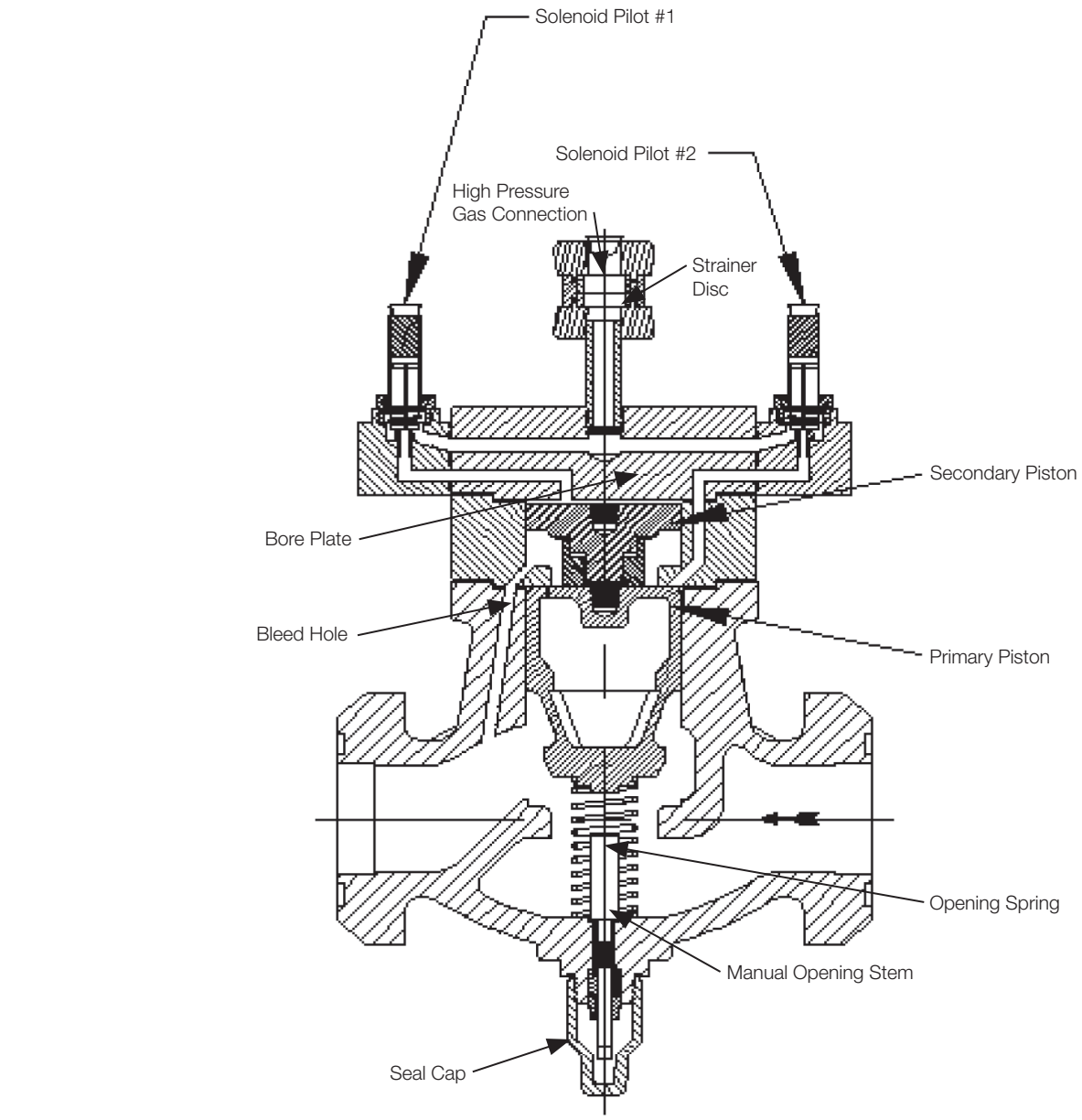
This valve is designed for a positive closing of the suction line, liquid overfeed, flooded evaporator gas return lines during defrosting in low temperature applications. Due to it is a gas power suction stop valve that closes, the valve can operate even under oil conditions. Recommendations assume no highly viscous oil, dirt, moisture or foreign substance in refrigerant; also no abnormal shock impact below -32°C (-25°F).

CK-2D Valve General Information

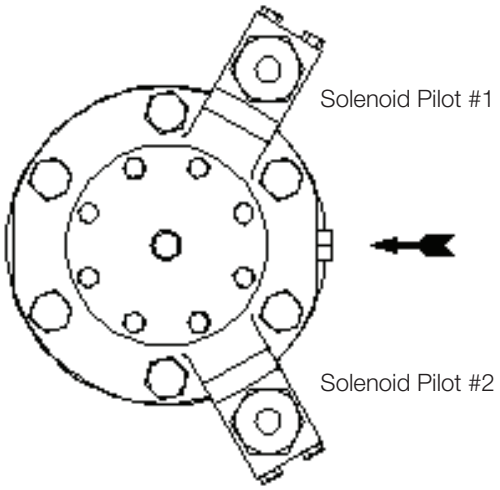
Port Size		Flow Coefficient		Connections				Pilot Solenoid	Weight			
				FPT[1], SW, WN		ODS			With Flanges		Less Flanges	
mm	inch	Kv	Cv	mm	inch	mm	inch		Kg	Lbs	Kg	Lbs
40	1⅝	32	37	38*,50	1½*, 2	54*,66	2⅛*, 2⅝	S6B[2]/S6A	28	62	26	57
50	2	44	51	40,50*	1½, 2*	54*,66	2⅛*, 2⅝	S6B[2]/S6A	28	62	26	57
65	2½	70	82	65*,80	2½*, 3	66*,80	2⅝*, 3⅛	S6B[2]/S6A	36	79	34	75
75	3	103	120	75	3	80*,92	3⅛*, 3⅝	S6B[2]/S6A	50	110	49	108
100	4	171	200	100	4	105	4⅛	S6A	74	163	60	132

*Standard Connection.
1. FPT Flanges are only available in sizes: 32 to 50 mm (1-¼ to 2”).
2. Valves containing S6B coils can be installed in a vertical or horizontal position.

Parts Description



Cross Section View



Top View

Figure 1: CK-2D Valve Part Descriptions 40mm to 100mm (1-5/8” to 4”) Port Size

Principle of Operation

The CK-2D is a normally open valve which uses discharge gas to power the valve closed. For closing of the CK-2D, either energize both solenoid coils simultaneously, or energize solenoid coil #2 initially allowing condenser gas pressure or pressure from another source to act on the secondary piston forcing it down and closing the valve to the 1st stage. Then while keeping solenoid coil #2 energized, solenoid coil #1 is energized allowing gas pressure to act on the primary piston forcing it down, compressing the spring fully, and firmly seating on the valve seat bead.

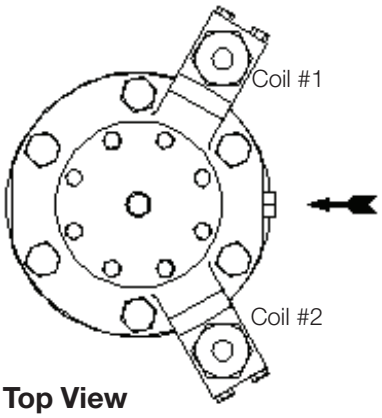
Sporlan Division - Refrigeration Business Unit recommends utilizing an oil free source of gas such as that from the top of the high-pressure receiver, or rotary screw compressor system. The valve will not close unless pressure above the pistons exceeds the downstream pressure by at least 0.35 bar (5 psi). If an attempt is made to fully close the valve by only energizing solenoid coil #1, a far greater amount of pressure will be required to act upon the main piston. So, to fully close the valve: energize both solenoid coils simultaneously; or energize solenoid coil#2, then solenoid coil #1.

For line equalization solenoid coil #1 is de-energized, while solenoid coil #2 remains energized, allowing the primary piston to move up to the bottom of the secondary piston (top), allowing for evaporator equalization after defrost. So, for equalization: keep solenoid coil #2 energized while de-energizing solenoid coil #1. This will allow the valve to open the equivalent of a 1" valve.

The length of time the valve is left in the equalization position is controlled by the time set in the equalization stage on the defrost controller or PLC.

After the termination of the hot gas injection period, any style of suction stop valve must reopen in order for refrigeration to resume. For the CK-2D to open, the valve's pilot solenoids de-energize, thereby interrupting the pilot stream flow of discharge gas to the top of the valve's pistons. (See Figure 1 and 2).

De-energizing only the solenoid feeding the lower piston will allow some flow to pass and equalize pressures between the coil and the suction line. It is imperative to allow sufficient time for this equalization. By design, a standard CK-2 or a competitive valve of similar design would open immediately as residual coil pressure surges through the valve should power to the pilot solenoid suddenly be interrupted during a defrost.



Top View

CK-2D Function		
Coil	**Action**	**Function**
#1	De-energized	**Full Open** (Normal Operation During Refrigeration)
#2	De-energized	
#1	Energized	**Full Close** (Defrost)
#2	Energized	
#1	De-energized	**Equalization**
#2	Energized	

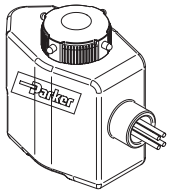
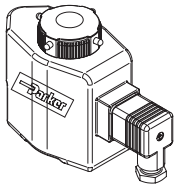
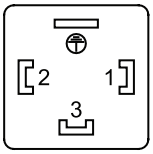
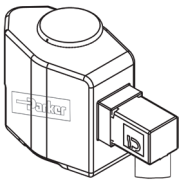
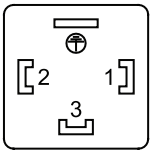
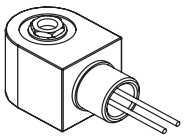
SEQUENCY TO CLOSE: First energize Coil #2 and then Coil #1. This way you avoid bypass gas and close the valve.

Electrical

The pilot solenoids used on CK-2D stop valves, type S6A or S6B, are unique to the Sporlan Division - Refrigeration Business Unit line of control valves. The coils are designed for long life and powerful opening force. The standard coil housing meets special requirements, this sealed construction can withstand direct contact with moisture and ice. For class "H" coil construction will permit coil temperatures, as measured by resistance method, as high as 180°C (356°F). By definition, class "F" coil construction will permit coil temperatures, as measured by resistance method, as high as 155°C (311°F). Final coil temperatures are a function of both fluid and ambient temperatures.

The higher fluid temperatures require lower ambient temperatures so the maximum coil temperature is not exceeded. Conversely, low fluid temperatures permit higher ambient temperatures. A solenoid coil should never be energized except when mounted on its corresponding solenoid tube.

The solenoid coil must be connected to an electrical line with Volts and Hertz the same as stamped on the coil The supply circuits must be properly sized to give adequate voltage at the coil leads even when other electrical equipment is operating. The coil is designed to operate with line voltage from 85% to 110% of rated coil voltage. Operating with a coil voltage above or below these limits may result in coil burnout. Also, operating with a coil voltage below the limit will definitely result in lowering the valve's maximum opening pressure differential.

Pilot	Type	Image	Terminal Diagram	Classification	Voltages/ Frequencies	Wattage (Holding)	Certifications
S6A	Leaded		 Start Winding: White Wire End Winding: Black Wire	Class "F" approved system with housing meeting 3R and 4 requirements 18" Leaded Wires NEMA 3R and 4	24 VAC/50 Hz 24 VAC/60 Hz 115 VAC/50 Hz 120 VAC/60 Hz 208 VAC/60 Hz 230 VAC/50 Hz 240 VAC/50 Hz 240 VAC/60 Hz 12 VDC [1] 24 VDC [1]	– – 34.0 34.0 32.5 32.5 35.0 37.5 – 32	CSA UL [2]
	DIN QD		Ground  Terminal 1- Power Terminal 2- Electrical Neutral	Class "F" approved system with housing meeting 3R and 4 requirements NEMA 3R and 4 IP65	24 VAC/50 Hz 48 VAC/50 Hz 115 VAC/50 Hz 230 VAC/50 Hz 240 VAC/50 Hz	– 42.5 N/A 34.5 30.0	CSA CE UL [2]
			Ground  Terminal 1- Power Terminal 2- Electrical Neutral	Class "F" approved system with housing meeting 3R and 4 requirements NEMA 3R and 4	24 VAC/60 Hz 120 VAC/60 Hz 240 VAC/60 Hz 24 VDC [1] 48 VDC [1]	– 35.5 37.5 32.0 42.5	CSA UL [2]
S6B	Leaded		 Start Winding: White Wire End Winding: Black Wire	Standard Molded Class "H" #18 AWG 18" Leaded Wires NEMA 3R and 4	110/120 VAC 50/60 Hz 208 VAC 60 Hz 220-240 VAC 50/60 Hz	18.5 W	CE

Notes:
- Consult factory for other voltages/frequencies.
- See current price list ILP- for coil part numbers.
- Optional LED pilot light knob kit (green or red) that indicates when the coil is energized. LED knob kits can be used with 115 to 240 Volts AC coils only.

[1] DC coils are limited to an ambient temperature of -25°C to 60°C (-13°F to 140°F).
[2] Only on approved coils.

CK-2D General Coil Information

S6B Coils						
Coil (Volts/Hz)	Power Lead	Neutral Lead	Inrush Current (Amps)	Running Current (Amps)	Fuse Size (Amps)	Temp °C (°F)
110-120 /50-60	Black	Green	0.66	0.42	1	180 (356)
208/50	Black	Green	0.35	0.22	1	
220-240 /50-60	Black	Green	0.33	0.21	1	

S6A Coils						
Coil (Volts/Hz)	Power Lead	Neutral Lead	Inrush Current (Amps)	Running Current (Amps)	Fuse Size (Amps)	Temp °C (°F)
24/50	Brown	White	6.82	2.99	4	250 (482)
24/60	Brown	White	6.70	2.73	4	250 (482)
48/50	Brown	White	–	1.07	–	250 (482)
115/50	Purple	White	1.22	0.21	1	90 (194)
120/60	Blue	White	1.18	0.46	1	90 (194)
208/60	Red	White	0.63	0.24	1	90 (194)
230/50	Yellow	White	0.65	0.26	1	90 (194)
240/50	Black	White	0.59	0.24	1	90 (194)
240/60	Orange	White	0.60	0.23	1	98 (208)
12 DC	Brown	White	–	–	–	–
24 DC	Brown	White	6.70	6.70	–	204 (400)
48 DC	Brown	White	–	–	–	–

Note: Leaded coils are provided with 18 gauge wires at 914 mm (36”) in length.

Exploded View & Material List

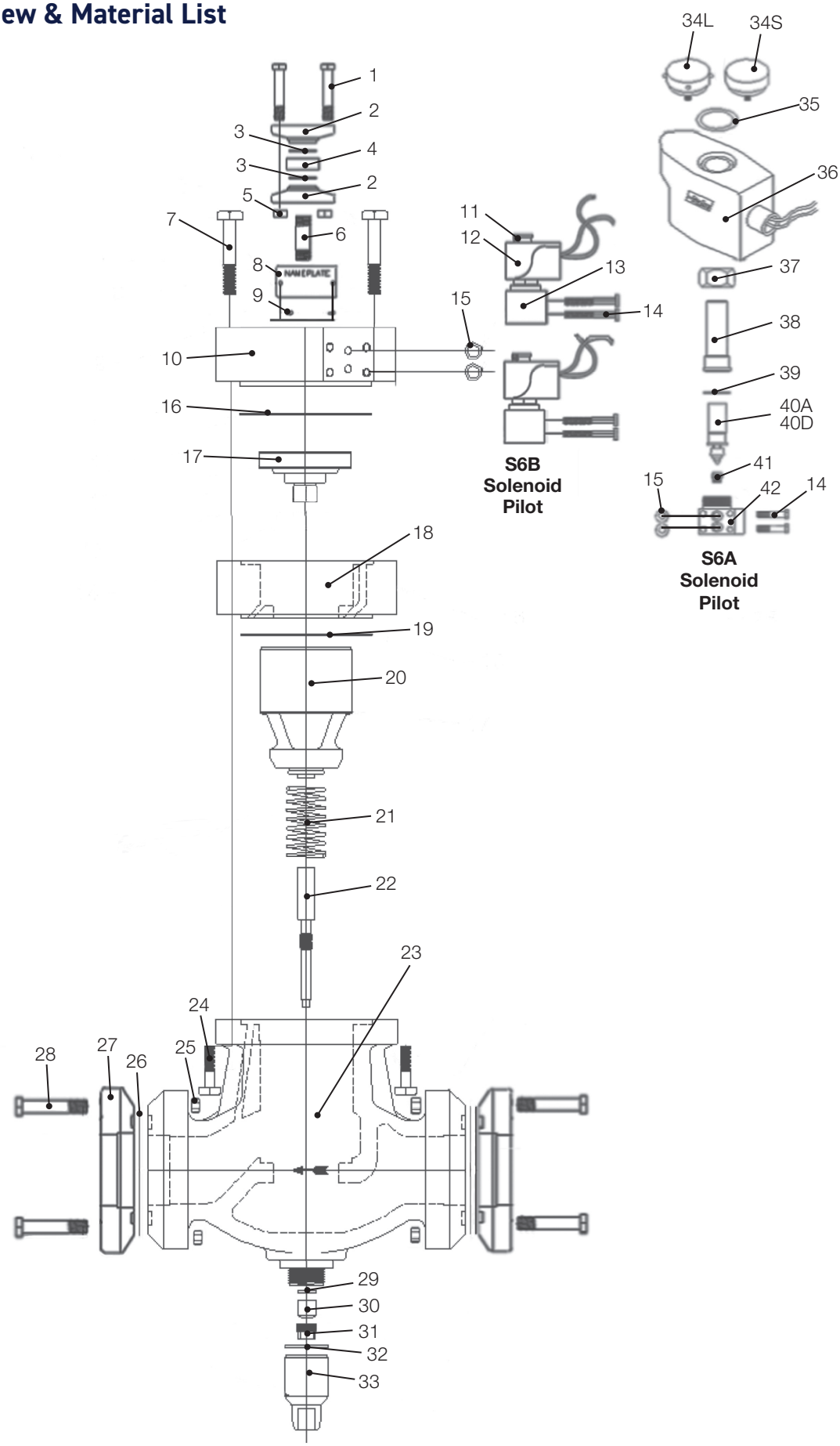


Figure 2: Explosion View CK-2D Dual Gas Powered Suction Stop Valve

CK-2D Material List

Item	Description	Material	Qty
1	Bolt, Disc Strainer 7/16" 14 x 2- ½" L	Steel Grade 5 Zinc	2
2	Flange, Disc Strainer	ASTM A-105	2
3	Gasket, Disc Strainer	Garlock 2930 Non-asbestos	2
4	Strainer, Disc, 60 mesh	Carbon 1213/1215	1
5	Nut, Disc Strainer	416 SS	2
6	Pipe, Nipple ⅜" x 2L Disc Strainer	1117 Steel	1
7	Screw, Cover - Adapter, CK-2D, Body 40 to 50 mm (1-⅝ to 2") ⅜" - 16 X 2- ¼" L	Steel Grade 5 Zinc	6
	Screw, Cover - Adapter, CK-2D, Body 65 mm (2-½") ⅜" - 16 X 2- ½" L		
	Screw, Cover - Adapter, CK-2D, Body 75 mm (3") ⅝" - 11 X 4- ½" L		
	Screw, Cover - Adapter, CK-6D, Body 100 mm (4") ⅝" - 11 X 5 L		
8	Name Plate, CK-2D	Aluminum	1
9	Bolt, Name Plate, CK-2D	Stl. Zinc Plated	2
10	Adapter, CK-2D	Cast Iron GGG 40.3	1
11	Clip Retainer for S6B Coil Solenoid Pilot	Spring Steel	1
12	Coil for S6B Solenoid Pilot	Standard Molded Class H	1
13	Body, S6B Solenoid Pilot	AISI 1214 steel	1
14	Bolt, S6A/S6B Solenoid Pilot HEX HD ¼" - 20 x 2-¼" L	Steel Grade 5 Zinc	8
15	O-ring, S6A & S6B	Neoprene	6
16	Gasket, Adapter/Cover, CK-2D	Garlock 2930 Non-asbestos	1
17	Piston, Top, CK-2D	1215 CRS or 1117 Steel and 1018 CR	1
18	Bore Plate, CK-2D	Cast Iron GGG 40.3	1
19	Gasket, Body, CK-2D	Garlock 2930 Non-asbestos	1
20	Piston Plug, CK-2D	Ductile Iron per ASTM A-536	1
21	Spring, Manual Opening, CK-2D	ASTM A229	1
22	Stem, Manual Opening, CK-2D	416 SS	1
23	Body CK-2D	Ductile Iron per DIN GGG 40.3	1
24	Screw, Bore Plate, CK-2D Body 40 to 65 mm (1-⅝ to 2-½") 5/16" - 18 X 1- ¼" L	Steel Grade 5 Zinc	8
25	Nut Flange, CK-2D Body 40 to 50 mm (1-⅝ to 2") ⅝" - 11	Steel	8
	Nut Flange, CK-2D Body 65 to 75 mm (2-½ to 3") ¾" - 10		
	Nut Flange, CK-2D Body 100 mm (4") 7/8" - 9		

Item	Description	Material	Qty
26	Gasket, Flange, CK-2D	Garlock 2930 Non-asbestos	2
27	Male Flange, CK-2D Body 40 to 100 mm (1-⅝ to 4")	ASTM A-105	2
28	Bolt Flange, CK-2D Body, 40 to 50 mm (1-⅝ to 2") BLT, SQ HD ⅝" - 11X 3-¼"L	ASTM A 307 GR A ZINC	8
	Bolt Flange, CK-2D Body, 65 to 75 mm (2-½ to 3") BLT, SQ HD ¾" - 10 X 3-¾"L		
	Bolt Flange, CK-2D Body, 100 mm (4") BLT, SQ HD 7/8"- 9 X 4-½"L		
29	Washer, Flat, CK-2D	Soft AISI 1010 Carbon Steel	1
30	Packing, Stem, CK-2D	ASTM F2168	1
31	Nut, Packing, CK-2D	416 SS	1
32	Gasket, Seal Cap Bottom, CK-2D	Nylon	1
33	Seal Cap, CK-2D	Aluminum 2011-T3	1
34L	LED Knob Kit, S6A Coil, Solenoid Pilot	–	1
34S	Standard Knob Kit, S6A Coil, Solenoid Pilot	–	1
35	O-ring, S6A Coil Solenoid Pilot	Ethylene Propylene	1
36	Coil for S6A Solenoid Pilot	Encapsulated	1
37	Nut, Solenoid Tube, S6A Solenoid Pilot	Steel AISI 1010 or AISI 12L14	1
38	Solenoid Tube S6A, VAC Coil, Solenoid Pilot	304 S.S.	1
39	Gasket, Tube S6A, Solenoid Pilot	Wolverine	2
40A	Plunger/Needle Assembly S6A, VAC Coil	Silicon Iron B Steel	1
40D	Plunger/Needle Assembly S6A, VDC Coil	Silicon Iron B Steel	1
41	Seat Assembly, S6A Solenoid Pilot	416 S.S. ASTM A484	1
42	Body, S6A Solenoid Pilot	ASTM A536	1

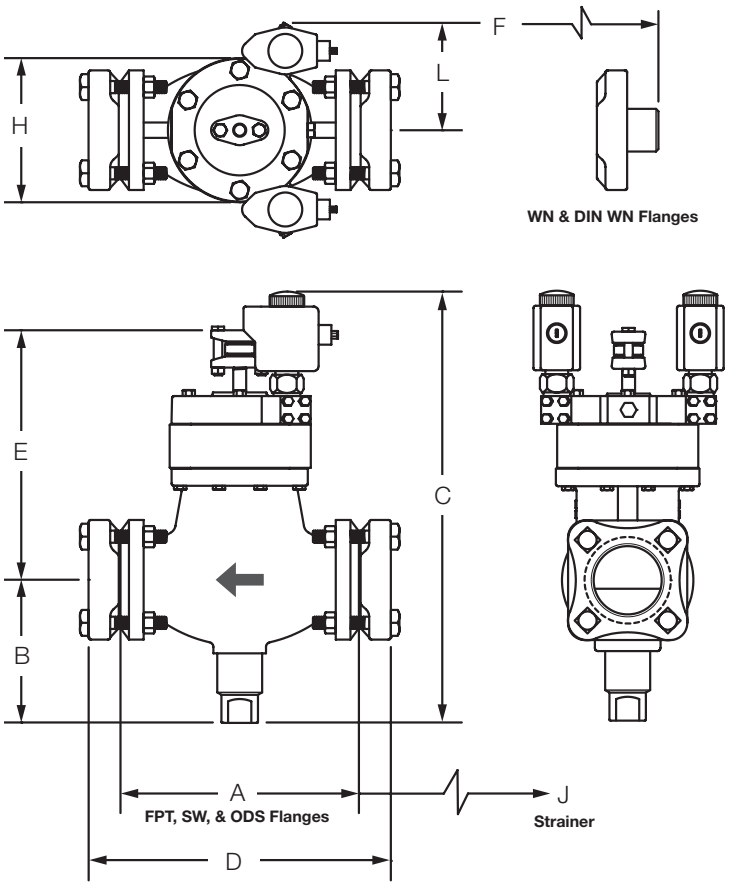
CK-2D Replacement Part Kits

Item	Kit Description		Port Size				
			40 mm (1⅝")	50 mm (2")	65 mm (2½")	75 mm (3")	100 mm (4")
1-6	Strainer Kit, Disc with Flanges, Bolts, Nuts, and Gaskets	10mm (⅜") FPT	201665				
		10mm (⅜") SW	201704				
		13mm (½") FPT	201706				
		13mm (½") SW	201707				
		20mm (¾") SW	201710				
1(2), 5(2)	Bolts and Nuts, for Disc Strainer		201580				
3(2), 4	Strainer Kit, Disc		200912				
3(12)	Gasket Kit, Disc Strainer		202078				
7(6), 10, 16-19, 24(8)	Adapter/Bore Plate Kit, CK-2D		251003*		251009*	—	
7(6), 10, 16-19	Adapter/Bore Plate Kit, CK-2D		—			251015*	251021*
11(12)	Clip Retainer for S6B Coil, Kit		206516				
12	Coil, S6B, Solenoid Pilot		Refers to current price list ILP- to get the coil part number according to voltage and frequency				
15(2), 13, 14(4)	Modular Solenoid Pilot, S6B		205073				
14(4), 15(2)	Bolt/O-ring Kit, S6A or S6B Solenoid Pilot		201574				
15(12)	O-ring Pkg, Pressure Pilot		202424				
19-20	Piston Plug Kit, CK-2D		201140	201139	201117	201121	201226
21	Spring Kit, CK-2D		301490		301494	301505	301500
22, 29-31	Stem Kit, CK-2D		201133		201118	201216	251123
25(4), 26(1), 28(4)	Union Kit per Flange CK-2D		206516		206217	206218	206219
25(8), 28(8)	Bolts and Nuts Pkg. Flanges per CK-2D Valve		201604		201614		206052
26(12)	Gasket Kit, Flange CK-2D		202081		202082	202083	202084
27(2)	Flange, CK-2D Body	FPT	200039	200040	—	—	—
		SW	200041	200042	200049	200054	200063
		WN	200043	200044	200050	200055	200064
		2-⅛ ODS	200046		—	—	—
		2-⅝ ODS	200047		200051	—	—
		3-⅛ ODS	—	—	200052	251241	—
		3-⅝ ODS	—	—	—	200057	—
		4-⅛ ODS	—	—	—	—	200065
29-31	Packing Kit, Manual Opening Stem CK-2D		202100			202101	
32-33	Cap Kit, CK-2D		202110		202144	202111	
34S, 35	Standard Knob Kit, S6A Solenoid Pilot (no LED)		205237				
34L, 35	LED Knob Kit, S6A Solenoid Pilot	Green	208543				
		Red	208544				
36	Coil, S6A Solenoid Pilot		Refers to current price list ILP- to get the coil part number according to voltage and frequency				
37-39	Tube Kit, Solenoid S6A		209320				
39, 40A, 41	Plunger Seat Kit, S6A VAC		201630				
39, 40D, 41	Plunger Seat Kit, S6A VDC		202102				
14(4), 15(2), 37-42	Modular Solenoid Pilot, S6A VAC		251138				

* The current Bore Plate and Adapter assemblies are not compatible with like components manufactured prior to February 2020. Because of a design change, they must be replaced as a set as they cannot be match with either component of the prior design. The current bore plate and adapter assemblies "are" compatible with valves bodies past and present.

Dimensions

CK-2D Valve Dimensions



Clearance Zone:

1. The top of the CK-2D requires a clearance of 76 mm (3") for the removal of the disc strainer, operation of pilot regulator.
2. The bottom of the CK-2D valve requires a clearance of 102 mm (4") for the removal of bottom cover.
3. Both the left and right side of the CK-2D valve requires a minimum of 76 mm (3") on each side.

Port Size		A		B*		C**		E		H		J	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
40	1-⅝	251	9.9	140	5.5	472	18.6	272	10.7	140	5.5	251	9.9
50	2	251	9.9	140	5.5	472	18.6	272	10.7	140	5.5	251	9.9
65	2½	252	9.9	142	5.6	500	19.7	297	11.7	159	6.2	315	12.4
75	3	311	12.2	216	8.5	597	23.5	330	13.0	176	7.0	315	12.4
100	4	359	14.1	219	8.6	652	25.7	361	14.2	222	8.9	363	14.3

* Allow 25mm (1") below valve to operate manual opening stem.
**Allow 38mm (1½") above valve for removal of coil.

Port Size		D						F					
		FPT*, SW			ODS			WN			DIN WN		
mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch	Connection	mm	inch
40	1-⅝	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
50	2	1½"	307	12.1	2⅛"	307	12.1	1½"	366	14.4	38mm	364	14.4
		2"			2⅝"			2"	378	14.9	50mm	371	14.6
65	2½	2½"	318	12.5	2⅝"	318	12.5	2½"	389	15.3	65mm	388	15.3
		3"			3⅛"			3"	406	16.0			
75	3	3"	376	14.8	3⅛"	376	14.8	3"	465	18.3	75mm	465	18.3
					3⅝"								
100	4	4"	432	17.0	4⅛"	432	17.0	4"	551	21.7	100mm	552	21.7

* FPT flanges are only available in 40 - 50mm (1-⅝" - 2")

Installation

All personnel working on valves must be qualified to work on refrigeration systems. If there are any questions contact Sporlan Division - Refrigeration Business Unit before proceeding with the installation.

All valves are packed for maximum protection. Unpack carefully, checking to make sure all items are unpacked. Save the enclosed instruction for the installer and eventual user.

⚠ Do not remove the protective coverings from the inlet and outlet of the valve until the valve is ready to be installed.

Protect inside of valve from dirt and chips during installation.

Never install the valve with its pilot section directly beneath the main valve. The direct mounted pilot solenoid on all port size valves should be maintained above the center line on a horizontal pipe. When used on a suction or wet return line, the arrow on the valve should point in the direction of normal fluid flow. When used on either gas or liquid legs of a flooded evaporator, the arrow on the valve body should point from the evaporator to the surge drum.

The CK-2D Suction Stop Valve with S6B Pilot Solenoids may be installed on its side or vertically upright in either vertical or horizontal pipelines. The CK-2D Valves with S6A pilot solenoids may be installed on its side or vertically upright pipe line only.

If the CK-2D is replacing a S9A, or other gas powered suction stop valve of the market, the gas feed pilot solenoid must be removed of the installation and work with the solenoid pilots that CK-2D has only.

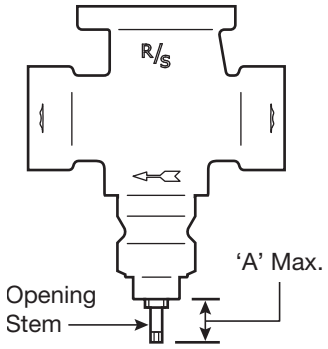
When used on a suction or wet return line, the arrow on the valve should point in the direction of normal fluid flow. When used on either gas or liquid legs of a flooded evaporator, the arrow on the valve body should point from the evaporator to the surge drum.

Before putting valves into service, all pipe connections, valve seats, bonnet seals, and stem seals should be tested for leaks at pressure levels called for in appropriate codes.

In low temperature applications the CK-2D should be powered with an oil free source of gas such as that from the top of the high-pressure receiver or a rotary screw compressor system. The CK-2D should not be used at temperatures below -32°C (-25°F) if an oil free source of high-pressure gas cannot be utilized to power the valve.

Manual Opening Operation

All valves contain a manual lift stem. If it is desired to hold open the CK-2D manually, remove Bottom Sealing Cap and turn the Lifting Stem inward as far as possible. The valve cannot close now until the Seat Lift Stem is once again turned out.



Maximum Stem Turns Required to Manually Open Valve

Port Size		Normally	Manual Opening Stem Position to Open	'A' Max.		Approximate Maximum Stem Turns
mm	Inch			mm	Inch	
CK-2D DUAL GAS POWERED SUCTION STOP VALVE						
40 50	1⅝ 2	Opened	IN	27.9	1.1	12
65	2½	Opened	IN	33.0	1.3	14
75	3	Opened	IN	50.8	2.0	17.5
100	4	Opened	IN	43.2	1.7	17

Service Pointers

1. Failure to close:
   (a) One, or both pilot solenoids are not operating due to low voltage or solenoid coil burnout.
   (b) Dirt lodged between one of the valve pistons and the cylinder wall (disassemble and remove all dirt and burrs).
   (c) Manual lift stem is turned in, thereby mechanically holding the pistons in the open position.
   (d) Strainer/Disc in the Pilot line Flanges may be plugged (Remove and clean).
   (e) Pilot pressure source is not high enough; must be at least 0.35 bar (5 psi) above the main valve downstream pressure.
   (f) Solenoid coils are not being energized in the proper sequence.

2. Failure to open:
   (a) Dirt lodged between the valve pistons and the cylinder walls (Disassemble and remove dirt and burrs).
   (b) Main valve spring may be broken (replace spring).
   (c) Pressures between remote pressure source and main valve downstream pressures are not equalizing. Check for leakage through the pilot solenoids. Check for backward installation of the CK-2D preventing the equalization with downstream pressure.
   (d) Viscous oil can prevent the valve from opening.

3. Leakage through valve when closed:
   (a) There are dirt or chips under the main valve piston. Disassemble valve and clean thoroughly.
   (b) Damage to piston plug seat surface or body seat. Replace entire valve piston and lap grind piston face into valve and seat bead if necessary.

CK-2D Bolt Torque Recommendations

Port Size		Bolt Size	Item Description	Torque	
mm	inch			N m	ft lb
40 - 65	1⅝ - 2-½	⅜" - 16	Cover - Adapter Screws	20.3	30
75 - 100	3 - 4	⅝" - 11	Cover - Adapter Screws	101.7	75
40 - 65	1⅝ - 2-½	5/16" - 18	Bore Plate Screws	20.3	15
40 - 100	1⅝ - 4	¼" - 20	S6B or S6A Screws	10.9	8
40 - 100	1⅝ - 4	—	Tube Assembly with Aluminum Gasket - Solenoid Pilot S6A	149.6	110
		—	Tube Assembly with Wolverine Gasket - Solenoid Pilot S6A	81.6	60
		—	Tube Assembly - Solenoid Pilot S6B	20.4	15
10, 13 or 20	⅜, ½ or ¾	7/16" - 14	Flange Bolt for Disc Strainer	38.0	28
40 - 50	1⅝ - 2	⅝" - 11	Flange Bolt	24.3	85
65 - 75	2 ½ - 3	¾" - 10	Flange Bolt	142.4	105
100	4	⅞" - 9	Flange Bolt	203.4	150

Safe Operation (See Bulletin RSBCV)
People doing any work on a refrigeration system must be qualified and completely familiar with the system and the Refrigerating Specialties Division valves involved, or all other precautions will be meaningless. This includes reading and understanding pertinent Refrigerating Specialties Division Product Bulletins and Safety Bulletin RSB prior to installation or servicing work.

Where cold refrigerant liquid lines are used, it is necessary that certain precautions be taken to avoid damage which could result from liquid expansion. Temperature increases in a piping section full of solid liquid will cause high pressure due to the expanding liquid which can possibly rupture a gasket, pipe or valve. All hand valves isolating such sections should be marked, warning against accidental closing, and must not be closed until the liquid is removed. Check valves must never be installed upstream of solenoid valves, or regulators with electric shut-off, nor should hand valves upstream of solenoid valves or downstream of check valves be closed until the liquid has been removed.

It is advisable to properly install relief devices in any section where liquid expansion could take place. Avoid all piping or control arrangements which might produce thermal or pressure shock.

For the protection of people and products, all refrigerant must be removed from the section to be worked on before a valve, strainer, or other device is opened or removed. Flanges with ODS connections are not suitable for ammonia service.

Warranty
All Refrigerating Specialties products are under warranty against defects in workmanship and materials for a period of one year from date of shipment from factory. This warranty is in force only when products are properly installed, field assembled, maintained, and operated in use and service as specifically stated in Refrigerating Specialties Catalogs or Bulletins for normal refrigeration applications, unless otherwise approved in writing by the Refrigerating Specialties Division. Defective products, or parts thereof returned to the factory with transportation charges prepaid and found to be defective by factory inspection, will be replaced or repaired at Refrigerating Specialties option, free of charge, F.O.B. factory. Warranty does not cover products which have been altered, or repaired in the field, damaged in transit, or have suffered accidents, misuse, or abuse. Products disabled by dirt or other foreign substances will not be considered defective.

The express warranty set forth above constitutes the only warranty applicable to Refrigerating Specialties products, and is in lieu of all other warranties, expressed or implied, written including any warranty of merchantability, or fitness for a particular purpose. In no event is Refrigerating Specialties responsible for any consequential damages of any nature whatsoever. No employee, agent, dealer or other person is authorized to give any warranties on behalf of Refrigerating Specialties, nor to assume, for Refrigerating Specialties, any other liability in connection with any of its products.

⚠WARNING – USER RESPONSIBILITY

Failure or improper selection or improper use of the products described herein or related items can cause death, personal injury and property damage.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

For safety information see the Safety Guide at www.parker.com/safety or call 1-800-CParker.

319687RSD ECN: 0372541 08/2023

ISO 9001 CERTIFIED