

IN-LINE CHECK VALVES

Type CK4A

NRV (Non-Return Valves)

Sizes:	Type
125mm (5")	CK4A-20
150mm (6")	CK4A-24
200mm (8")	CK4A-32

FEATURES

- Installs in any position
- Positive spring closing action
- Lapped, metal-to-metal seat
- 500 psig maximum rated pressure
- Flanged
- In-Line
- Compact

GENERAL

These compact check valves are spring closing with a lapped, stainless steel or chrome plated seat for positive closing action. A minimum pressure difference of only 0.04 bar (0.60 psi) is required to hold the valve in the fully open position. Removable seat plate with combination O-ring as the primary seal and a metal-to-metal beveled knife edge as the secondary seal (see Fig. 1) allows the valves to be disassembled for maintenance.

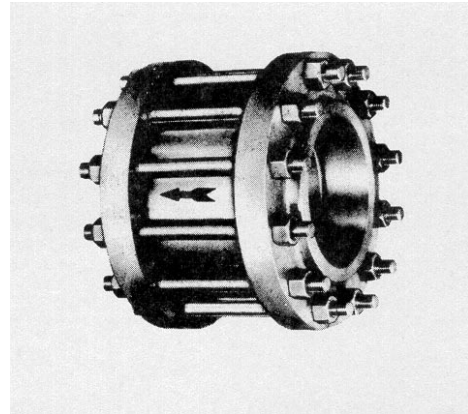
Check valves are available with or without flanges, studs, nuts, and gaskets. The standard valve will accept 300 pound ANSI weld neck or slip-on flat face flanges. The valves are suitable for use with Ammonia, R-12, R-22 and R-502 refrigerants and may be installed in any position.

PURPOSE

The Type CK4A Check Valves prevent backward flow of fluid in refrigerant suction, hot gas or liquid lines. The primary use for these valves is in discharge and suction lines of screw compressor systems. They are also suited for high speed piston compressor discharge and for compressor suctions down to -50°C (-60°F).

Certain refrigerant flows pulsate sufficiently or with a frequency in harmony with the valve's natural frequency, which can cause "slapping" or even wholesale failure.

BULLETIN 50-20B Type CK4A



March 2002
Installation, Service and Parts Information

These valves are not recommended for slow speed compressor discharge lines (See CK-1, Bulletin 50-1 OB) or for any compressor discharge where a low speed machine discharges into the same downstream header, or for use on side-port suction lines on a screw compressor installation.

INSTALLATION

Keep dirt from entering the valve. Do not remove protective packaging until ready to install. Install the valve where it can be serviced easily.

The Type CK4A Check Valves may be installed in any position. The valve must be installed with the arrow pointing in the flow direction. After installing the valve, tighten the flange nuts evenly. Refer to Flange Stud Torque Requirements table, page 4.

OPERATION

See Figures 1 and 2. These are light spring-closing check valves. An increase in the pressure drop across the valve overcomes the force of the closing spring and the disc is forced away from its seat, permitting flow. As the flow decreases, or ceases, the disc is forced back against its seat by the expansion of the closing spring. Flow is then stopped.

SERVICE

Dirt or other foreign material in the system is the greatest single cause of valve malfunction.

Before disassembling a check valve for servicing, read and become familiar with the Safe Operating Instructions in this bulletin as well as in the current issue of Safety Bulletin RSB. Check the following chart for possible symptoms and corrections.

Symptom	Probable Reason	Correction
Valve does not close or there is leakage through valve	Dirt or chips under valve seat.	Disassemble valve and clean. Replace any damaged parts. Lap disc and seat if scored.
Valve chatters	Valve is oversized.	Replace with smaller port size or a Type CK-1 Check Valve.
Valve chatters	Slow speed piston compressor. (Approx. 800 RPM or less).	Replace with a Type CK-1 Check Valve. (See Bulletin 50-07)

DISASSEMBLY

Caution – If a check valve is to be disassembled or removed, make sure that all refrigerant is pumped out of the line. Refer to Fig. 2. After removing the valve from between the flanges, remove the parts in the numerical order shown in the exploded view. In all CK4A check valves, the seat plates with the O-rings are removed by

gently tapping out the seat from the opposite end of the valve body by using a wooden dowel. Position the dowel against the backside of the seat. A series of gentle taps on the dowel, relocated at alternate positions around the seat, will assure easy removal of the seat plate.

ASSEMBLY

Before assembling, metal parts must be clean and dry. Gaskets should be lightly coated with refrigerant oil. The O-ring should be lightly coated with silicone grease instead of refrigerant oil.

Refer to Figure 2. Assemble the valve in the reverse numerical order shown in the exploded view. Make sure the O-ring is firmly seated and permanently retained by the seat plate when reassembled. Before inserting the seat plate into the valve body, the knife edge (See Fig. 1) should be inspected for burrs and cleanliness. This machined edge acts as a secondary seal when the seat plate is firmly positioned against it. After this has been done, the seat plate and the valve body should be reassembled.

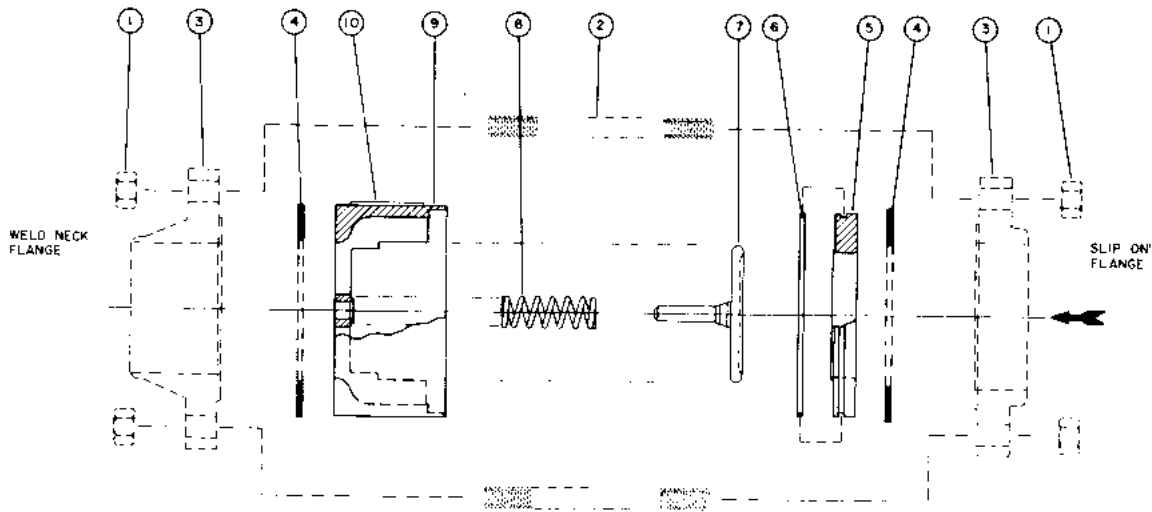
The valve body has a bevelled edge (See Figs. 1 and 2) to insure easy insertion of the O-ring and seat plate assembly. When the check valve is assembled and ready for installation between its supporting flanges already in the pipeline, it is advisable to install, loosely, only the bottom four or six flange studs and companion nuts. This will allow for both 'nesting' of the valve assembly on the studs and the proper placement of gaskets on the valve and the flat face flange. It will also help in adjustment and proper fitting of the check valve assembly before final tightening of all flange studs and nuts.

Refer to Flange Stud Torque Requirements table, page 4, for proper tightening of flange studs.

Port Sizes		Type	Connections Available ANSI 300	Flow Coefficients**		Net Weight with Flanges				Dimensions (in)*	
						Slip-On		WN			
mm	inch		Slip-On, WN	Kv	Cv	kg	lbs	kg	lbs	Diameter	Length
125	5"	CK4A-20	5"	240	280	44	97	48	105	8-3/8	4-1/8
150	6"	CK4A-24	6"	389	455	62	136	64	142	9-3/4	4-5/8
200	8"	CK4A-32	8"	670	783	94	208	103	226	12	5-5/8

* Valve only. Does not include flanges or gaskets. Dimensions approximate.

** Based on valve installed in a horizontal line.



Repair Kits for Type CK4A Check Valves

ITEM NO.	DESCRIPTION	QTY.	PORT SIZE		
			125 mm (5")	150 mm (6")	200 mm (8")
5	Valve Seat	1	Available Only With Kit		
6	O-Ring	1			
7	Disc Assembly	1			
8	Comp. Spring	1			
5,6,7,8	Repair Kit	—	202093	202094	202095
4	Flange Gasket Pkg.	2	202206	202207	202208

SAFE OPERATION AND WARRANTY

SAFE OPERATION

People doing any work on a refrigeration system must be qualified and completely familiar with the system and the Refrigerating Specialties Company valves involved or all other precautions will be meaningless. This includes reading and understanding pertinent Refrigerating Specialties Company product bulletins and the current Safety Bulletin RSB prior to installation or servicing work.

WARRANTY

All Refrigerating Specialties products are warranted against defects in workmanship and materials for a period of one year from date of shipment from originating factory. This warranty is in force only when products are properly installed, 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 Refrigerating Specialties Company. 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, accidents, misuse or abuse. Products disabled by dirt or other foreign substances will not be considered defective.

The express warranty above constitutes the only warranty of Refrigerating Specialties products and is in lieu of all other warranties expressed or implied, written or oral, including any warranty of merchantability or warranty of fitness for a particular purpose, and in no event is Refrigerating Specialties Company 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 Company, nor to assume for Refrigerating Specialties Company any other liability in connection with any of its products.

FACTORY REPAIR AND REBUILDING

For the convenience of our customers, we have a standard factory repair and rebuilding service. Repairable returned valves are disassembled, cleaned, sandblasted, worn parts replaced, reassembled, and repainted as may be required.

FLANGE TABLE

Valve Size		WELDING FLANGES							
		Nominal Pipe Size		Slip-On Socket I. D.		Weld Neck Neck O.D.		Part Number	
mm	Inches	Inches	NW No. ♦	Inches	mm	Inches	mm	Slip-On	Weld Neck
125	5	5	125	5.675	144.14	5.563	141.30	300091	300090
150	6	6	150	6.735	171.07	6.625	168.28	300093	300092
200	8	8	200	8.735	221.87	8.625	219.08	300095	300094

♦ NW - Metric Equivalent Nominal Size for Steel Tubing.

Definitions: I.D. - Inside Diameter
O.D. - Outside Diameter

FLANGE STUD TORQUE REQUIREMENTS

Valve Port Size	Stud Dimensions		Torque★
	Diameter	Length	
125 mm (5")	19 mm (3/4")	225 mm (9")	14.5 mkg (105 ft. lb.)
150 mm (6")	19 mm (3/4")	263 mm (10½")	14.5 mkg (105 ft. lb.)
200 mm (8")	22mm (7/8")	300 mm (12")	22.1 mkg (160 ft. lb.)

★ For Non-Burred, Clean, Lightly Oiled Thread

Flange Shape

Flange Styles

Nominal Pipe Size	Flange Outside Diameter		Diameter of Bolt Circle		Number of Bolts
	Inches	mm	Inches	mm	
125 mm (5")	11	279	9.25	235	8
150 mm (6")	12.5	318	10.62	270	12
200 mm (8")	15	381	13.00	330	12