

CHECK VALVE

Type CK1

Port Size 20 - 150mm (3/4" - 6")

FOR AMMONIA, R12, R22, R502

AND OTHER COMMON REFRIGERANTS

FEATURES

- Manual Opening Stem
- Low Pressure Drop
- Piston Type Gravity Closing
- Flanged
- Design Pressure (MRP): 27.6 bar (400 psig)
- Rugged; Heavy Duty

Description

These piston type, gravity closing, heavy duty check valves are suitable for Ammonia, R-12, R-22, R-502, other refrigerants, certain oils and other fluids approved for use in refrigeration. All CK1 check valves are flanged and have a manual opening stem for manual operation. They may be ordered with male adapter rings (through 4" size) for close coupling. The 20-32 mm (3/4 - 1-1/4") port size valve has a PTFE seat; larger valves have a metal to metal seat. A minimum pressure difference of .03 bar (0.5 psi) is required to open the valve.

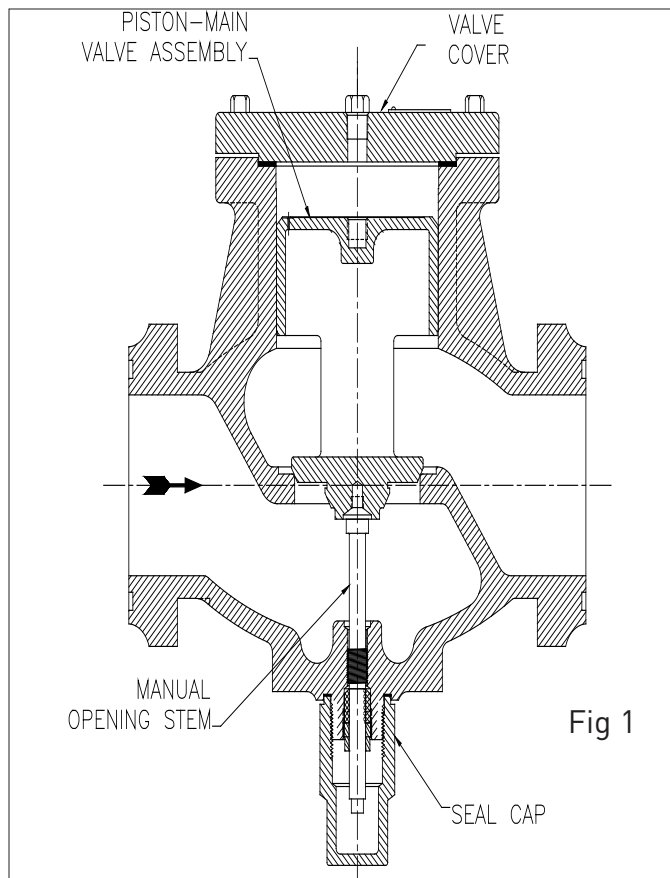
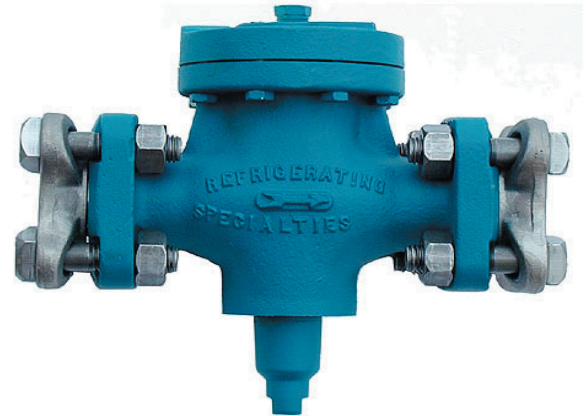


Fig 1



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Purpose

The Type CK1 Check Valves prevent backward flow of fluid in refrigerant suction, hot gas or liquid lines. They are recommended for compressor discharge lines, also for liquid lines and suction lines with temperatures as low as -30°C (-25°F).

Principles of Operation

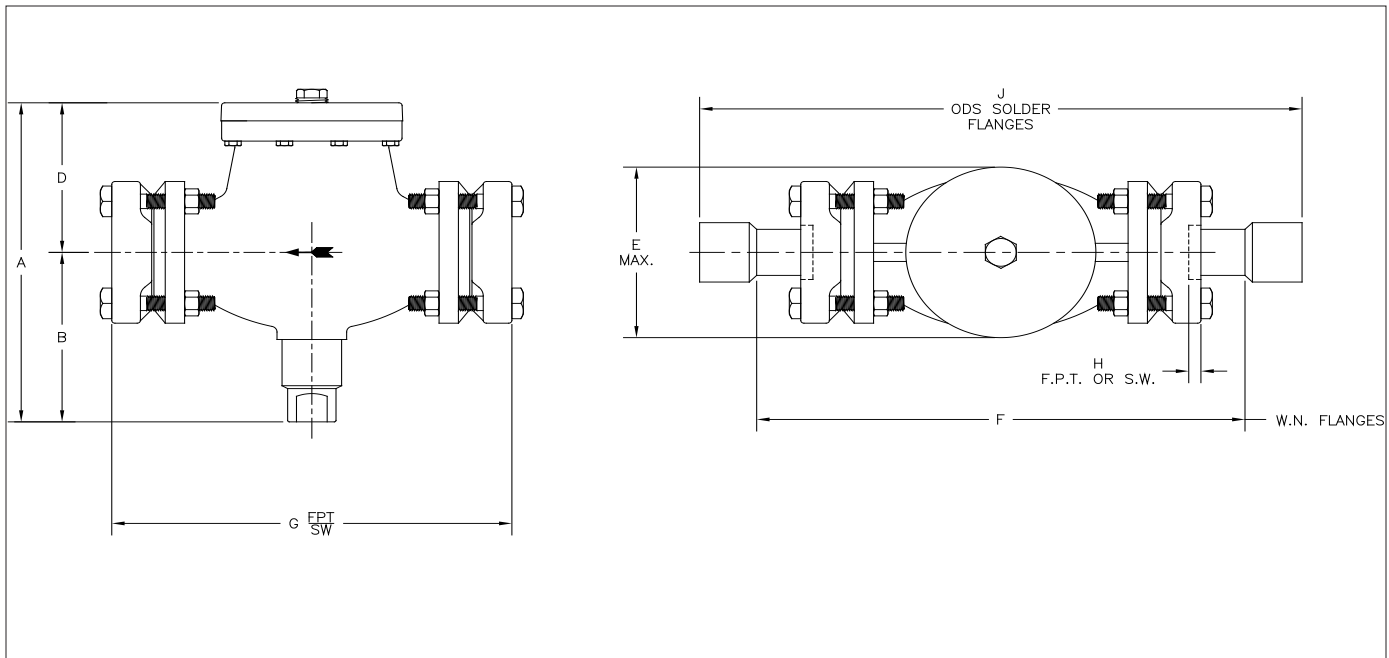
This piston type check valve opens by the pressure difference between valve inlet and outlet. The pressure difference must be a minimum of .03 bar (0.5 psi).

When upstream pressure exceeds downstream pressure, the pressure on the bottom side of the piston will lift the assembly and allow flow through the valve. On opening, pressure above the piston assembly will be relieved through the piston bleed hole, permitting the piston to travel its full vertical distance and open the valve to its full open position.

When upstream and downstream pressures are equalized, the weight of the piston will cause it to drop tight against its seat bead and stop flow. Should downstream pressure rise, the additional pressure acting on the top of the valve seat will further assist in seating the valve closed.

Manual Opening Stem (See Fig. 1)

If it is desired to manually open the CK1 check valve, the following procedure should be followed. For access to the stem, the seal cap on the bottom of the valve must be removed. This must be done with caution, as refrigerant may be trapped inside the seal cap. Manual opening is accomplished by turning the stem clockwise until only the flats on the end of the stem protrude from the packing nut. To reset for automatic operation, turn the stem counterclockwise as far as it goes. Loosen the packing nut before turning stem, and retighten after turning stem.



| DIMENSIONAL DATA | | | | | | | | | | | | | | | | | | | |
|------------------|----------|-----|------|-----|------|-----|------|------|-----|-------|------|-----|------|-----|------|------|-----|-----|------|
| PORT SIZE | | A | | B | | C | | D | | E | | F | | G | | H | | J | |
| mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. | mm | in. |
| 20, 25 | 3/4, 1 | 191 | 7.5 | 102 | 4.0 | 158 | 6.2 | 89 | 3.5 | 117 | 4.6 | 239 | 9.4 | 216 | 8.5 | 13 | 0.5 | 265 | 10.4 |
| 32 | 1-1/4 | 219 | 8.6 | 122 | 4.8 | 203 | 8.0 | 96.5 | 3.8 | 117 | 4.6 | 305 | 12.0 | 256 | 10.1 | 15 | 0.6 | 620 | 12.6 |
| 40, 50 | 1-5/8, 2 | 270 | 10.6 | | 5.5 | 251 | 9.9 | | 5.1 | 129.5 | 5.1 | 371 | 14.6 | 307 | 12.1 | 15 | 0.6 | 414 | 16.3 |
| 65 | 2-1/2 | 303 | 11.9 | | 5.6 | 251 | 9.9 | 160 | 6.3 | 147.3 | 5.8 | 401 | 15.8 | 331 | 13.0 | 25 | 1.0 | 424 | 16.7 |
| 75 | 3 | 384 | 15.1 | 216 | 8.5 | 311 | 12.2 | | 6.6 | 167.6 | 6.6 | 478 | 18.8 | 389 | 15.3 | 29 | 1.1 | 500 | 19.7 |
| 100 | 4 | 427 | 16.8 | 217 | 8.6 | 366 | 14.1 | | 8.2 | 190.5 | 7.5 | 571 | 22.5 | 450 | 17.7 | 32 | 1.3 | 615 | 24.2 |
| 125 | 5 | 496 | 19.5 | | 11.7 | 381 | 15.0 | | 7.8 | 228.6 | 9 | | 22.7 | 485 | 19.1 | 30.5 | 1.2 | | |
| 150 | 6 | 537 | 21.1 | | 14.0 | | 20.2 | 180 | 7.1 | 294.6 | 11.6 | | 27.8 | 617 | 24.3 | 35.6 | 1.4 | | |

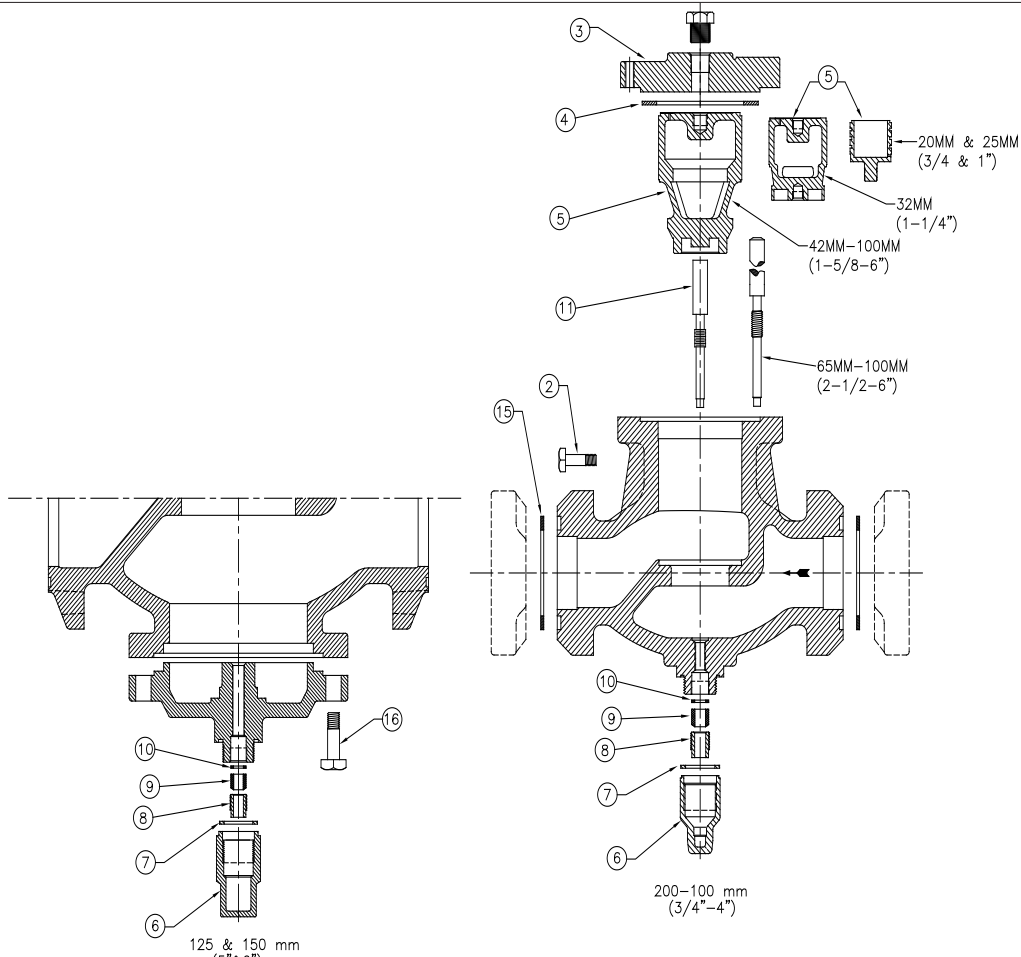
Installation

Protect inside of valve from dirt, chips and moisture during installation. Be sure to remove protective plugs from valve before installation. Install the valve in an accessible location for servicing. **DO NOT INSTALL THE CHECK VALVE AT THE INLET OF A SOLENOID VALVE OR A REGULATOR WITH AN ELECTRIC SHUT-OFF FEATURE. DO NOT INSTALL AT THE INLET OF AN OUTLET PRESSURE REGULATOR IN A SYSTEM WHERE LIQUID MAY BE TRAPPED BETWEEN TWO VALVES.** Check valves should always be installed at the outlet of the valves. The valve must be installed with the flow arrow on the valve pointing in the direction of permissible fluid flow through the valve.

The Type CK1 is for installation on horizontal pipelines only. The valve must be installed with the cover on top. Tighten the flange bolts evenly. Before putting the valve into operation, check the manual opening stem. For automatic operation, turn the stem counterclockwise as far as it goes; turn clockwise for manual open position. The CK1 Check Valves may be closed-coupled to R/S Control Valves and most hand valves by using a Special R/S Male Adapter Ring.

Repair Kits for CK1 3/4" thru 6"(20-150mm)

| Item #'s | Description(Kit) | Qty | 3/4" (20mm) | 1" (25mm) | 1-1/4" (32mm) | 1-5/8" (40mm) | 2" (50mm) | 2-1/2" (65mm) | 3" (75mm) | 4" (100mm) | 5" (125mm) | 6" (150mm) |
|----------|------------------|-----|----------------|--------------|------------------|------------------|--------------|------------------|--------------|---------------|---------------|---------------|
| 3,4 | Cover | 1 | 201225 | 201225 | 200669 | 200673 | 200673 | 200690 | 200676 | 200677 | 200678 | 200681 |
| 4,5 | Piston/Plug | 1 | 201198 | 201196 | 201200 | 201140 | 201139 | 201117 | 201121 | 201226 | 201227 | 202491 |
| 6,7 | Seal Cap | 1 | 202110 | 202110 | 202110 | 202110 | 202110 | 202144 | 202111 | 202111 | 202111 | 202111 |
| 8,9,10 | Packing | 1 | 202100 | 202100 | 202100 | 202100 | 202100 | 202100 | 202101 | 202101 | 202101 | 202101 |
| 9,10,11 | Stem | 1 | 201142 | 201142 | 201125 | 201133 | 201133 | 201118 | 201216 | 201213 | 202363 | 202364 |
| 15 | Flange Gasket | 12 | 202079 | 202079 | 202080 | 202081 | 202081 | 202082 | 202083 | 202084 | | |
| | | 2 | | | | | | | | | 202085 | 202086 |
| 2 | Cover Screw | 6 | | | | | | | 202252 | 202252 | | |
| | Cover Screw | 8 | | | 202541 | | 202540 | | | | 202538 | |
| | Cover Screw | 10 | | | | | | | | | | 202539 |
| 16 | Bottom Cap Bolt | 6 | | | | | | | | | 202250 | |
| | Bottom Cap Bolt | 10 | | | | | | | | | | 202539 |
| 17,18 | Bottom Cap | 1 | | | | | | | | | 200724 | 200755 |



Service Pointers

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 Operation Instructions in this bulletin, as well as, 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. | Stuck piston due to dirt or chips. | Disassemble valve and clean thoroughly. |
| | Burrs on Piston Manual stem is in open position (turned completely in). | Polish or replace piston. Unscrew manual stem (turn counterclockwise) |
| | Eroded or worn seat on piston-main valve | Replace entire piston-main valve assembly. |
| Valve does not open. | Stuck piston, due to dirt or chips. | Disassemble valve and clean thoroughly. |

Warranty

All Refrigerating Specialties products are warranted 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 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 OR ORAL, INCLUDING ANY WARRANTY OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE.**

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.

Safe Operation (See also Bulletin RS-BCV)

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 increase 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 in-stall 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.