

# GAS POWERED SUCTION STOP VALVE

## Type CK-2-DN

Port Size: 32mm to 150mm (1¼" - 4")  
FOR AMMONIA, R12, R22, R502  
AND OTHER COMMON REFRIGERANTS

### FEATURES

- Low Pressure Drop
- Heavy Return Spring
- Manual Opening Stem
- Use in Vertical or Horizontal Line
- Normally Open
- Main Valve Can be Installed on Side
- Design Pressure (PS): 28 bar (406 psig)
- Complies with Pressure Equipment Directive 97/23/EC

### Description

These piston type, pressure powered, normally open, heavy duty, cast iron bodied valves are built with control valve precision. All are equipped with flanges and manual lift stem. The 32mm (1¼") port size has a PTFE main seat; 40mm (1-5/8") port and larger have a metal to metal seat.

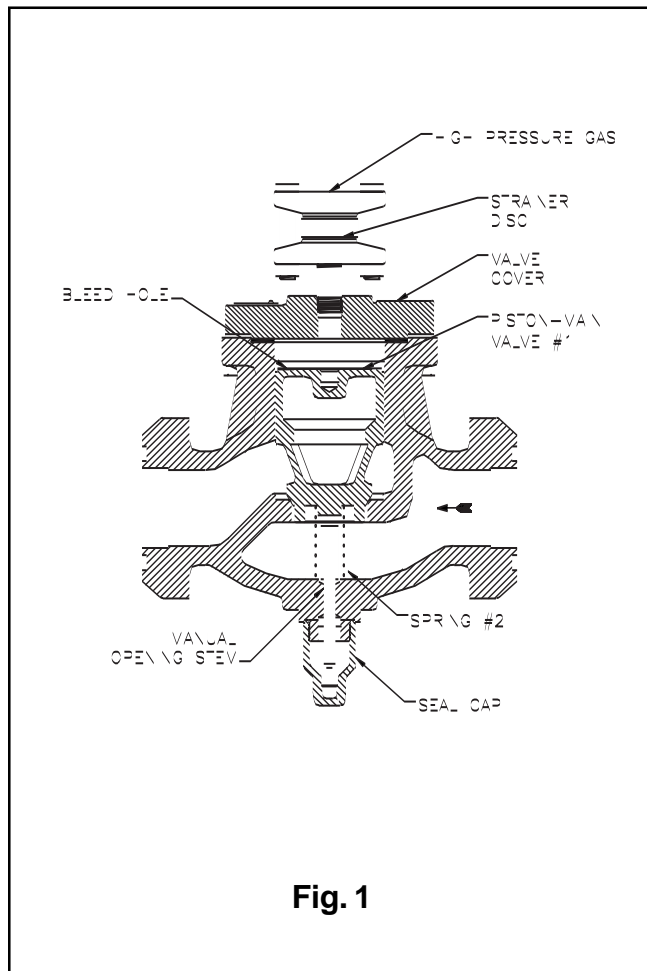


Fig. 1

## BULLETIN DN50-12B

### Type CK2-DN



January 2007

### Installation, Service and Parts Information

### Purpose

These special valves are used on low temperature applications to positively close suction lines and both liquid legs and gas returns on flooded evaporators. Because of the spring, no line pressure drop is required to open the valve; therefore, on suction line applications pressure drop is nominal; on flooded evaporators normal gravity circulation is unrestricted. Being pressure powered to close, this valve can overcome sticking at low temperatures caused by the presence of viscous oil.

### Principles of Operation

For closing of the CK-2, condenser gas pressure or pressure from another source is admitted to the inlet on top of #1 Piston. The gas pressure acting on the #1 Piston forces the piston down, compressing #2 Spring, firmly seating on the valve seat bead. The valve will not close unless pressure above the piston exceeds the downstream pressure by at least 0.35 bar (5 psi). For opening the CK-2 Valve the remote pressure source must be closed. The higher pressure above #1 Piston will equalize through the piston bleed hole to the lower pressure downstream of main valve allowing #2 Spring to open valve fully. The valve will not open until pressure above the piston is equalized with the downstream pressure after de-energizing, or closing, of the pilot solenoid valve.

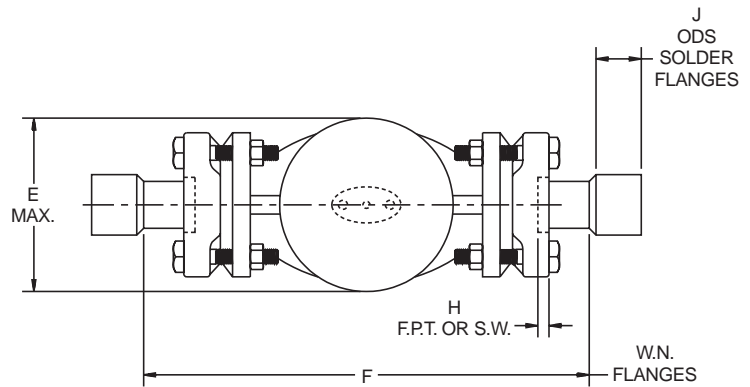
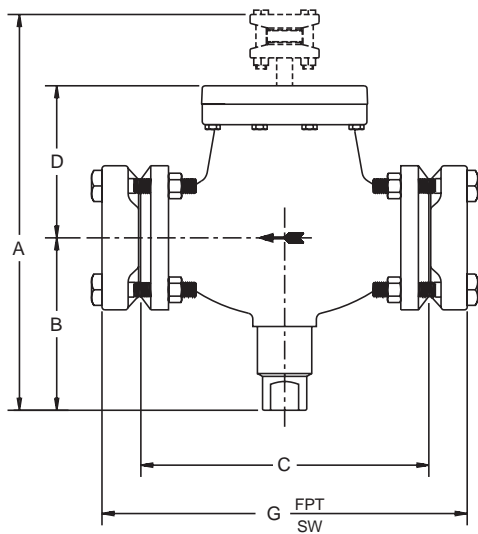
### Service Pointers

**1. Failure to close:** (a) Pilot solenoid is not opening due to low voltage or solenoid coil burnout. (b) Dirt lodged between #1 Valve Piston and cylinder wall (disassemble and remove all dirt and burrs). (c) Manual lift stem is turned in, thereby mechanically holding the #1 Piston up. (d) Strainer/Disc in 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.

**2. Failure to open:** (a) Pilot solenoid is not closing because its manual lift stem is turned in. (b) Dirt lodged between #1 Valve Piston and cylinder wall. (Disassemble and remove all dirt and burrs). (c) #2 Spring may be broken (replace spring). (d) Pressures between remote pressure source and main valve downstream pressures are not equalizing. Check for leakage through the pilot solenoid valve. Check for backward installation of CK-2 preventing equalization with downstream pressure.

**3. Leakage through valve when closed:** (a) There are dirt or chips under the Piston Main Valve. Disassemble valve and clean thoroughly. (b) PTFE main valve disc, on valve size 32mm (1¼") port, may be damaged enough to permit leakage. (Disassemble valve and replace #1 Piston Main Valve). On metal to metal seated valves replace entire Piston Main Valve assembly and lap grind piston face into valve and seat bead if necessary.

<b>CK2</b>	<b>1-1/4" TO 4"</b>
PRESSURE BEARING COMPONENTS	
<b>COMPONENT DESCRIPTION</b>	<b>MATERIAL</b>
BODY	DUCTILE IRON GGG 40.3
SEAL CAP,A4A/S4A	ALUMINUM
COVER, TOP	DUCTILE IRON GGG 40.3



DIMENSIONAL DATA																			
PORT SIZE		A		B		C		D		E		F		G		H		J	
mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
32	1¼	312.7	12.31	122	4.8	203	8.0	96.5	3.8	86.4	3.4	304	12.0	256	10.1	15	0.6	33	1.3
40	1 <sup>5</sup> / <sub>8</sub>	359.9	14.17	139.7	5.5	251	9.9	129.5	5.1	129.5	5.1	371	14.6	307	12.1	15	0.6	38	1.5
50	2	359.9	14.17	139.7	5.5	251	9.9	129.5	5.1	129.5	5.1	371	14.6	307	12.1	15	0.6	38	1.5
65	2½	396.5	15.6	142.2	5.6	251	9.9	160	6.3	147.3	5.8	401	15.8	331	13.0	25	1.0	43	1.7
75	3	475.0	18.7	216	8.5	311	12.2	167.6	6.6	167.6	6.6	478	18.8	389	15.3	29	1.1	48	1.9
100	4	518.2	20.4	217	8.6	359	14.1	208.3	8.2	190.5	7.5	571	22.5	450	17.7	32	1.3	55	2.2
125	5	586.7	23.15	298.4	11.7	381	15.0	198.1	7.8	228.6	9.0	576.6	22.7	485	19.1	30.5	1.2	—	—
150	6	628.6	24.7	355.6	14.0	514.3	20.2	108.3	7.1	294.6	11.6	706.1	27.8	617	24.3	35.6	1.4	—	—

For replacement parts and prices, consult  
**PARTS KITS LIST PRICE SCHEDULE**  
**INDUSTRIAL AND FLO-CON (PK)**

ITEM	DESCRIPTION
2	Bolt
3	Cover
4	Gasket, Cover
5	Piston Plug Asm
6	Seal Cap
7	Gasket
8	Packing Nut
9	Packing
10	Washer
11	Opening Stem
15	Gasket
16	Bolt
17	Cover, Bottom
18	Gasket
19	Body
22	Spring
39	Disc Strainer Asm

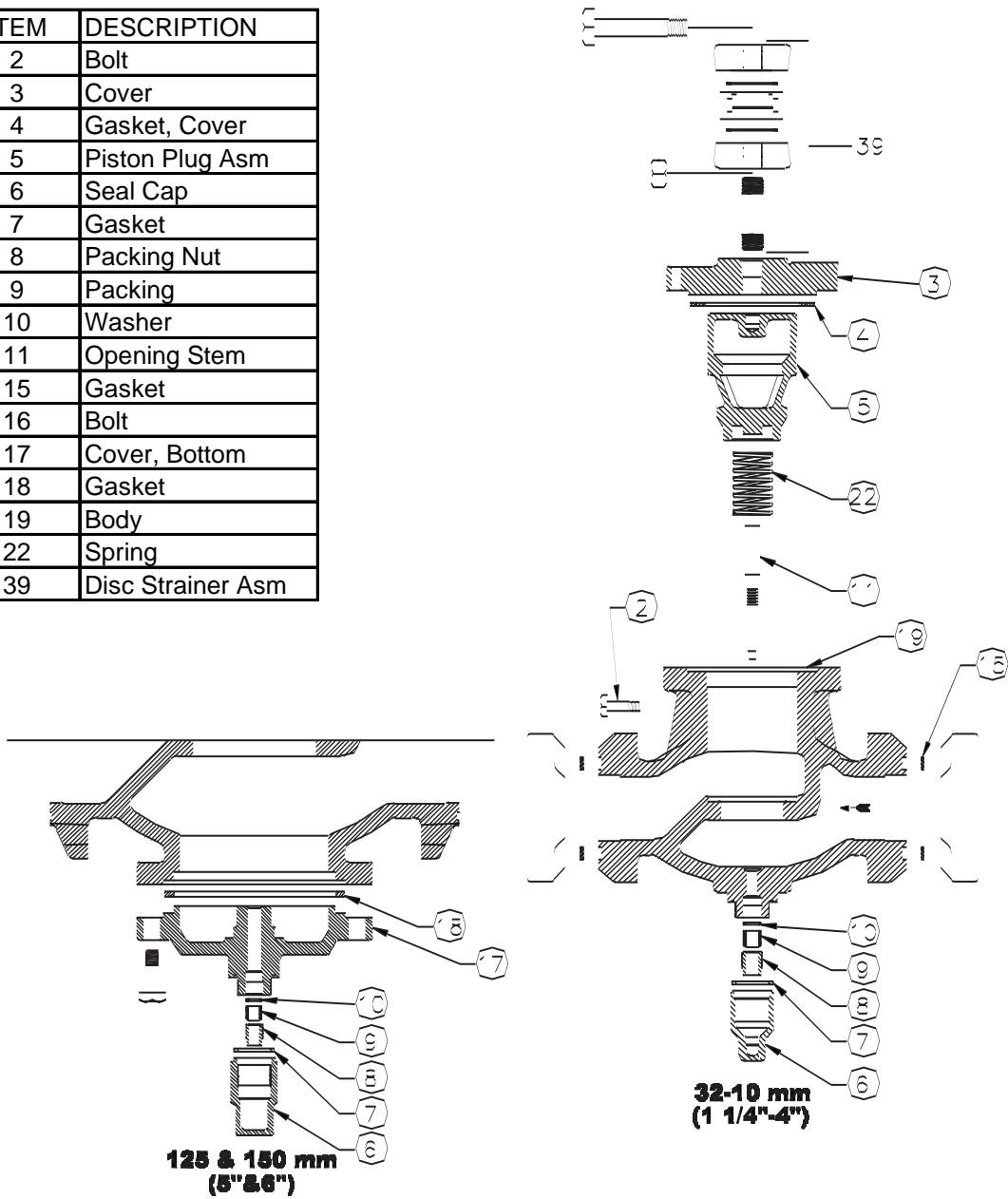


Fig. 3

## Manual Lift Stem

If it is desired to hold open the CK-2 check valve manually, remove #6 Sealing Cap (See Fig. 3) and turn #11 Seat Lifting Stem inward as far as possible. Valve cannot close now until the #11 Seat Lift Stem is once again turned out.

## Installation

Protect inside of valve from dirt and chips during installation. The CK-2 Suction Stop Valve may be installed on its side or vertically upright in either vertical or horizontal pipe lines. When used on suction lines, the arrow on the valve body 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 Type S6N Pilot Solenoid Valve should be located as close to the CK-2 Suction Stop Valve as possible in order to minimize the volume of high pressure gas to be relieved through the internal bleed port of the CK-2, upon termination of the defrost cycle and to assure a more rapid and positive opening of the CK-2 Suction Stop Valve.

## Warranty

All Refrigerating Specialties Products are warranted against defect 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, EXPRESS OR IMPLIED, WRITTEN OR ORAL, INCLUDING ANY WARRANTY OR 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 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 RSBCV 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 shutoff, 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.