Bulletin C519a
January, 1999

HANSEN TECHNOLOGIES CORPORATION

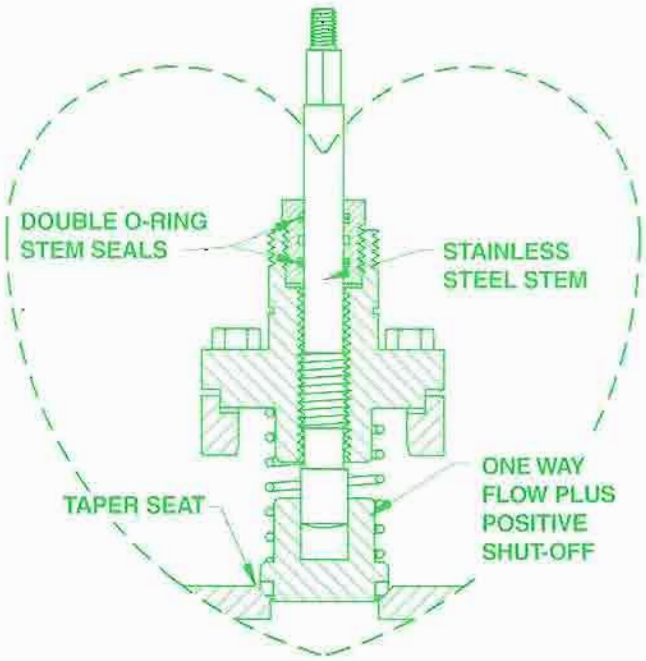
2½"(65 mm) Stop/Check Valve: SCK250C

Specifications, Applications, Service Instructions & Parts

COMBINATION STOP/CHECK VALVES

1¼" through 6"
(32 mm through 150 mm)
Angle for refrigerants

KEY FEATURES



INTRODUCTION

These durable, carbon-steel-bodied valves are a combination stop valve and normally-spring-closed check valve. Valves open wide for full flow in the arrow direction on the valve body and promptly reseat when reverse flow occurs. Stainless steel valve stems facilitate positive manual closing while Teflon disc seats assure reliable, long-life seating. Use of these combination valves reduces pressure drop, minimizes space requirements, and simplifies installation.

APPLICATIONS

Stop/check valves can be used instead of separate shut-off valves and check valves in refrigeration liquid, suction, and hot gas lines. They are ideal for liquid pump and compressor discharge applications and eliminate the need for pressure relief between the conventional check valve and stop valve. Their design makes them particularly well suited for small package equipment and compact assemblies where space may not be available for two separate valves.

ADDITIONAL FEATURES

Single seat means no trapping liquid.
Dampening chamber design minimizes potential check valve chatter.
Angle style standard, globe available upon request.
Seal cap standard, handwheels available.
Material and sizes match US pipe.
Only 1 psi(.07) bar pressure drop required for open.
Identified by bright green seal cap and bonnet groove.
Suitable for ammonia, R22, R134a and other compatible refrigerants.

MATERIAL SPECIFICATIONS

Body:
1¼" to 3"(32 to 80 mm): forged steel, ASTM A350 Grade LF2
4" to 6"(100 to 150 mm): cast steel, ASTM A352 Grade LCB Charpy Impact Test: –58°F (–50°C)
Bonnet: Steel, ASTM A350 Grade LF2
Stem: Stainless steel
Spring: Steel
Disc assembly: Steel, Teflon seat
Packing nut: Steel
Stem packing: Dual neoprene O-rings
Seal cap: Aluminum, safety vented, (bright green)
Safe working pressure: 365 psig (25 bar)
Temperature range: –50°F to 240°F (–45°C to 115°C)
Temperatures below –50°F (–45°C) at lower pressures

ADVANTAGES

These combination stop/check valves avoid the need for a separate check valve and shut-off valve and also reduce pressure drop and the number of welded joints.

For refrigerant liquid pump discharge, the combination stop/check reduces the pressure drop, space required, and liquid trapping between the separate check valves and stop valves.

For a small screw compressor, the combination stop/check in the discharge line (or even in high temperature suction line) saves pressure drop, space, connections, and total cost.

For a large defrosting evaporator fed by pumped low pressure liquid, the combination stop/check is useful to prevent pressure loss through the liquid line during hot gas defrost.

While the check cannot be separately serviced, in most systems there exists other stop valves which can be used to isolate the stop/check valve if necessary.

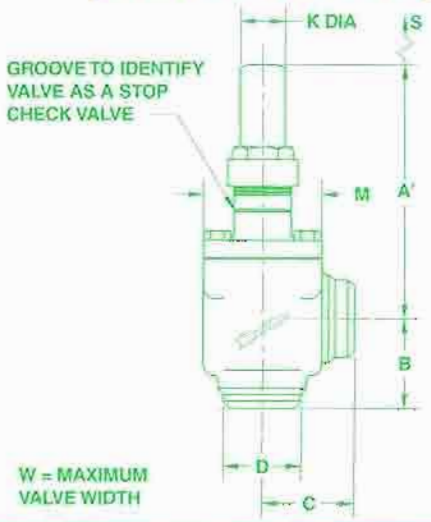
CONNECTION DIMENSIONS

Match US pipe having these gauges:
1¼", 1½": Schedule 80 steel
2" to 6": Schedule 40 steel

FLOW COEFFICIENTS

Size		Angle			
		Cv	(Kv)	Equiv. Length, Feet	(M)
1¼"	(32)	42	(36)	8	(2.4)
1½"	(40)	50	(43)	11	(3.3)
2"	(50)	83	(72)	26	(7.9)
2½"	(65)	140	(121)	22	(6.7)
3"	(80)	205	(177)	31	(9.4)
4"	(100)	310	(268)	54	(16.5)
5"	(125)	600	(519)	45	(13.7)
6"	(150)	820	(709)	61	(18.6)

INSTALLATION DIMENSIONS (INCHES & METERS)



Size (mm)	A'	B	C	D	K	M	S	W
1¼" (32)	6.88 (175)	2.25 (57)	2.25 (57)	1.66 (42)	1.50 (38)	2.88 (73)	2.00 (51)	3.00 (76)
1½" (40)	6.88 (175)	2.25 (57)	2.25 (57)	1.94 (49)	1.50 (38)	2.88 (73)	2.00 (51)	3.00 (76)
2" (50)	8.25 (210)	2.75 (70)	2.75 (70)	2.38 (60)	1.88 (48)	3.63 (92)	2.38 (60)	3.75 (95)
2½" (65)	9.38 (238)	3.38 (86)	3.38 (86)	2.88 (73)	2.00 (51)	4.50 (114)	2.50 (64)	4.63 (118)
3" (80)	11.13 (283)	3.35 (85)	3.35 (85)	3.5 (89)	2.38 (60)	5.00 (127)	2.75 (70)	5.00 (127)
4" (100)	11.63 (295)	4.25 (108)	4.25 (108)	4.5 (114)	2.38 (60)	6.13 (156)	3.00 (76)	6.5 (165)
5" (125)	17.50 (445)	4.75 (121)	4.75 (121)	5.56 (141)	2.38 (60)	8.25 (210)	3.25 (83)	6.75 (171)
6" (150)	17.75 (451)	5.38 (137)	5.38 (137)	6.63 (168)	2.38 (60)	9.5 (241)	3.5 (89)	7.75 (197)

INSTALLATION

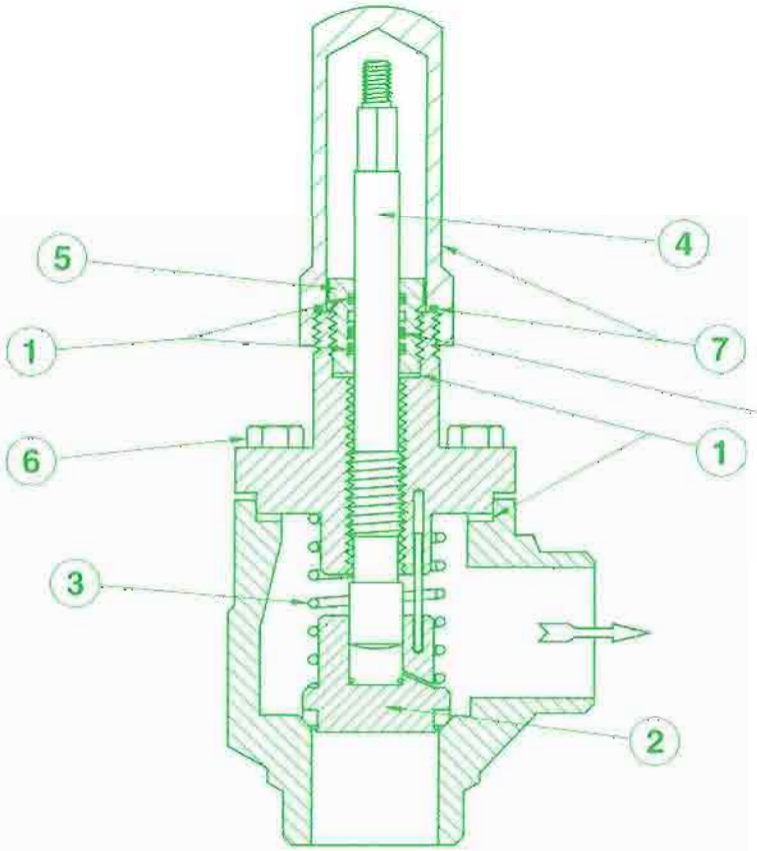
Install these valves with flow in the same direction as the arrow on the body. Installation with the stem in a vertical position is recommended.

Valves should have the bonnet, spring, and disc assemblies removed before welding. This reduces weight, protects Teflon seats from welding heat and weld slag, and facilitates cleaning of welding debris from the valve body prior to operation. Valve stems should be several turns open when removing or replacing the bonnet/disc assembly. Protect Teflon seats when outside the valve body; possibly using cap plugs.

Use of welding rings is optional but recommended. They help with alignment, control gap for full penetration welding, and reduce welding debris entry. Welds should be annealed as necessary in accordance with good practice. Painting of valves is recommended for corrosion protection.

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

PARTS LIST



(GUIDE RING FOR 5" AND 6" ONLY)

Item	Description
1	Gasket Kit: Bonnet Gasket, Stem O-Rings, Packing Nut Gasket, (Guide Ring for 5" & 6" valves only)
2	Disc Assembly: Seat Disc with Guide Pin, Teflon Seat, Dampening O-Ring
3	Spring
4	Valve Stem
5	Packing Nut
6	Bonnet Cap Screw
7	Seal Cap Kit: Aluminum Seal Cap, Seal Cap O-Ring

PARTS LIST CATALOG NUMBERS

Item	1¼" (32 mm)	1½" (40 mm)	2" (50 mm)	2½" (65 mm)	3" (80 mm)	4" (100 mm)	5" (125 mm)	6" (150 mm)
1	55-1001	55-1001	55-1002	55-1003	55-1004	55-1005	55-1006	55-1007
2	55-0166	55-0166	55-0167	55-0168	55-0169	55-0170	55-0189*	55-0190*
3	55-0171	55-0171	55-0172	55-0173	55-0174	55-0175	55-0183	55-0184
4	55-0176	55-0176	55-0177	55-0178	55-0179	55-0181	55-0181	55-0182
5	55-0098	55-0098	55-0099	55-0100	55-0101	55-0101	55-0102	55-0102
6	55-0105	55-0105	55-0106	55-0107	55-0108	55-0109	55-0110	55-0110
7	55-1077	55-1077	55-1078	55-1079	55-1080	55-1081	55-1081	55-1081

*5" & 6" Disc Assembly kit includes only the replaceable Teflon seat disc ring.

VALVE SEAT

If the valve does not seem to be working satisfactorily, isolate the valve from the system and safely pump out refrigerant to zero pressure. With the valve stem open at least one turn, carefully loosen the bonnet bolts. Break gasket seal; then remove bonnet bolts, bonnet, spring and disc assembly. If the conical seat surface in the body is marred, remove marks with emery paper. Replace the entire disc assembly if the Teflon seat disc is damaged; except 5" & 6" (125 to 150 mm), replace only Teflon seat disc ring. The seat disc ring can be replaced by removing the six socket cap screws (4 mm) which hold the retainer and ring in place.

1¼" to 4" (32 to 100 mm): Check and clean the bleed hole in the disc assembly. To reassemble, open the stem to full open position and place the disc assembly and spring into the body; then carefully align the guide pin on the disc assembly with the hole in the bonnet. Use a new bonnet gasket and tighten bonnet bolts. Test valve for leaks before restoring to service.

5" & 6" (125 & 150 mm): The bonnet, spring and disc assembly are one unit. To inspect spring and seat disc assembly bore, separate this spring loaded unit by cautiously loosening the socket cap slide screw (6 mm) on the side of disc assembly. When socket cap slide screw releases, spring force will push unit apart. Possibly brace the bonnet and disc assembly ends of the unit between two stationary blocks for disassembly. Clean or replace the disc assembly and spring. Reassemble the unit with the stem at full open position, using thread lock sealant on slide screw. Use the new bonnet gasket if necessary and tighten the bonnet bolts. Test the valve for leaks before restoring to service.

STEM PACKING

Tightening of the packing nut is not necessary because the O-ring portion of stem sealing is continuous. If the stem O-rings ever need replacement, follow the instructions below.

Remove the seal cap. Back-seat the stem (wide open position) to seal the O-rings from the refrigerant to permit removal of the packing nut for O-ring replacement. Remove the packing nut carefully. Use a 3 foot (1 meter) pipe wrench handle to achieve 160 ft-lbs (220 Nm) removal torque on 1¼" to 3" (32 to 80 mm) valves or 170 to 200 ft/lbs (230 to 270 Nm) for larger valves. Alternative, use a hammer on the wrench handle. Do not replace the aluminum packing nut gasket unless leaking. Remove the O-rings by using a thin wire or small blade screwdriver to pull the rings out of the grooves, being careful not to scratch the sealing surface. Install new O-rings and guide ring (5" and 6"only). To replace the packing nut, set the nut on the stem and lower it until the oil reservoir (groove between O-rings) is at the top of the stem. Fill the groove with oil and finish replacing nut. Use a 3 foot (1 meter) pipe on wrench handle to achieve necessary torque. Test for leaks by slightly opening the back-seat before returning the valve to service.

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CAUTION

Hansen valves are for refrigeration systems only. These instructions and related safety precautions must be completely read and understood before selecting, using, or servicing these valves. Only knowledgeable, trained refrigeration technicians should install, operate, or service these valves. Stated temperature and pressure limits should not be exceeded. Bonnets should not be removed from valves unless the system has been evacuated to zero pressure. See also the Safety Precautions sheet supplied with product. Escaping refrigerant might cause injury, especially to the eyes and lungs.

WARRANTY

Hansen valves are guaranteed against defective materials or workmanship for one year F.O.B. our factory. No consequential damage or field labor is included.

TYPICAL SPECIFICATIONS

"Weldable refrigerant combination shut-off and check valves shall have stainless steel stems with dual seals, teflon seats with closing springs, forged or cast steel bodies, back-seating design for packing replacement, bonnet threads for seal caps, butt weld ends which are machined dimensionally correct for proper US pipe schedule and gauge, suitability for a safe working pressure of 365 psig (25 bar), as manufactured for Hansen Technologies Corporation, or approved equal."

ORDERING INFORMATION, COMBINATION STOP/CHECK VALVES

Size Inches (mm)	Description	Cat. No.
1¼" (32)	Angle, Seal Cap	SCK125C
1½" (40)	Angle, Seal Cap	SCK150C
2" (50)	Angle, Seal Cap	SCK200C
2½" (65)	Angle, Seal Cap	SCK250C
3" (80)	Angle, Seal Cap	SCK300C
4" (100)	Angle, Seal Cap	SCK400C
5" (125)	Angle, Seal Cap	SCK500C
6" (150)	Angle, Seal Cap	SCK600C

Straight through bodied valves available on special order; contact factory. Handwheels available.

TO ORDER: Specify catalog number.

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