HANSEN TECHNOLOGIES

Bulletin S121c
MAR 2025

Specifications, Applications, Service Instructions & Parts

HS7
SOLENOID VALVE
3/4", 1", 1-1/4" PORT
(20, 25, 32 mm)

Flanged
3/4" thru 1 1/4"
FPT, SW, WN, ODS
for refrigerants

HS7 Solenoid Valve

C US CE CRN Canadian Registration

INTRODUCTION

This flanged, heavy duty, pilot-operated, industrial refrigeration solenoid valve controls the flow of refrigerant. When electrically energized, a slight pressure difference across the valve causes it to open wide; when de-energized, a spring promptly closes the main Teflon seat to stop all flow in the arrow direction on the valve body.

APPLICATIONS

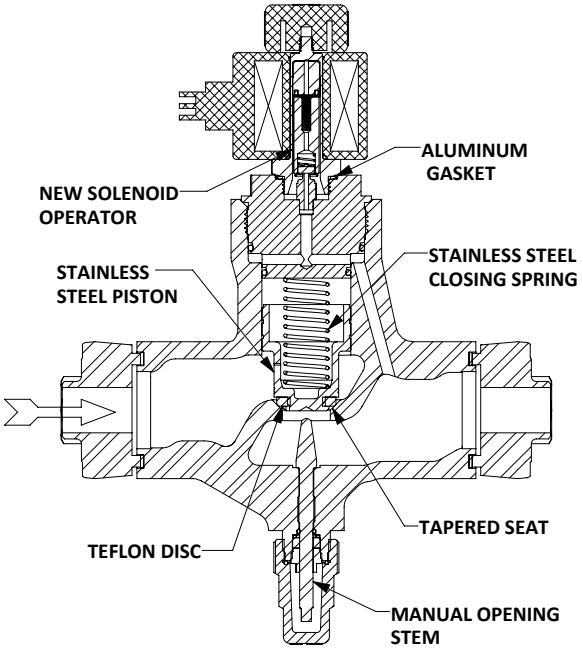
This advanced design valve is ideal as a standard, stock, ammonia liquid line solenoid valve. While primarily for ammonia, this valve is also suitable for R22, R134a, CO2 and other approved refrigerants. Most common use is to automatically stop liquid line feed to recirculating liquid overfeed evaporators, to float switch controlled accumulators, and to thermal expansion valves; it is also suitable for hot gas defrost, and evaporator suction. (Note: for gravity liquid drain or equalization applications use low pressure drop HCK2 gas-powered suction stop valve or HS9B gas-powered solenoid valve.) Effective in 2025, the HS7 product line will include Hansen's new robust solenoid operator that features a rugged stainless steel housing and is sealed to the body with a reliable aluminum gasket. For information on the previous version, see the previous revisions of this bulletin.

MAXIMUM RATINGS, AMMONIA†

PORT SIZE	3/4" (20mm)	1" (25mm)	1 1/4" (32mm)
Liquid, Receiver Pressure Tons (kW), .2 bar Δ P	200 (765)	263 (983)	400 (1530)
Recirculation, 4 to 1 Tons (kW), .2 bar Δ P	45 (228)	63 (293)	90 (455)
Hot Gas, for 0°F Tons (kW)	21 (73)	27 (94)	40 (140)
Suction, 2 psi drop at 20°F Tons (kW), .15 drop at -7°C	12 (42)	16 (56)	24 (84)
Flow Factor Cv (Kv)	8.0 (7.0)	10.5 (9.0)	16.3 (14)

† For flow near maximum ratings, piping should be one size larger than port.

KEY FEATURES



ADDITIONAL FEATURES

Encapsulated Hansen standard coil
300 psi (20 bar) MOPD, 500 psi (34 bar) for CO2
Teflon main & pilot seats
Manual opening stem
Available close-coupled strainer
Heavy duty, pilot-operation
Vertical or horizontal installation
CSA Certified Status
Non-asbestos gaskets
Wireless pilot lights
CE Available

MATERIAL SPECIFICATIONS

Body: Ductile iron (Nodular Iron GGG-40)
Bonnet-Cartridge: Steel, plated
Piston: Stainless steel
Plunger: Stainless steel
Solenoid Tube: Stainless steel
Pilot Orifice: Stainless steel
Seat: Teflon
Safe Working Pressure: 400 psig (27 bar) 600 psig (41 bar) for CO2
Operating Temperature: –60°F to +240°F
(–50°C to +115°C)

ADVANTAGES

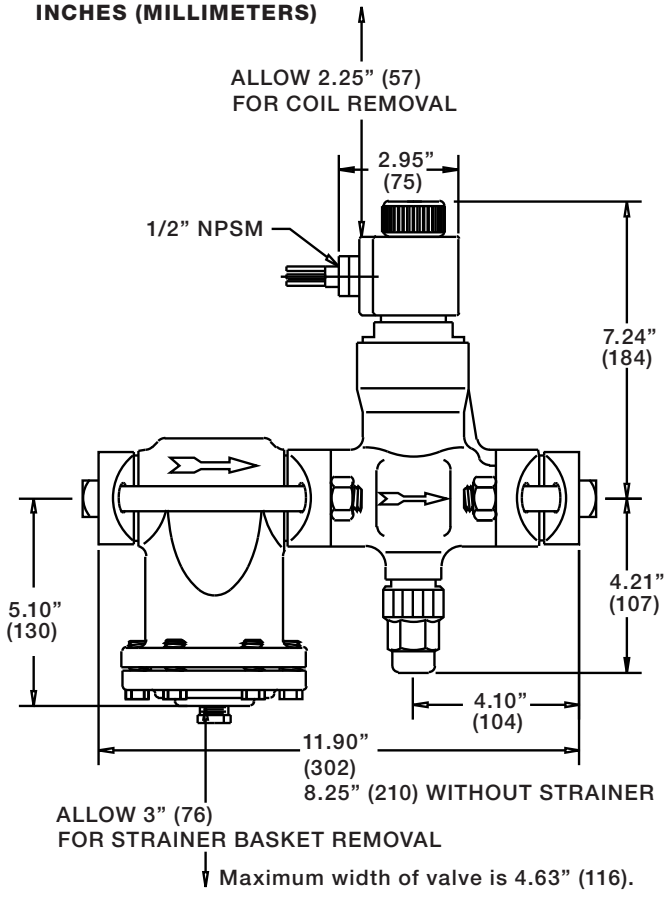
Power saving, low-wattage molded coil; Teflon seats; stainless steel trim including piston; spring-closing; double seal manual opening stem. One standard molded coil fits all Hansen valves. Rugged one piece stainless steel tube and reliable aluminum gasket result in less potential leak paths, suitability for higher pressure ratings, and more resilient to degradation.

INSTALLATION

Protect interior of valve from dirt during installation; normally use close-coupled inlet strainer. Allow 2.25" (57mm) above valve for coil removal, 3" (76 mm) below strainer for screen removal. Match arrow on body with system flow direction. If a pressure reversal can occur, as during hot gas defrost with liquid recirculation, use a check valve on the outlet side of the HS7. For proper flange gasket sealing, care must be taken when threading or welding to assure flanges are parallel to each other and perpendicular to pipe. Also, gaskets should be lightly oiled and all bolts must be tightened evenly.

INSTALLATION DIMENSIONS

INCHES (MILLIMETERS)

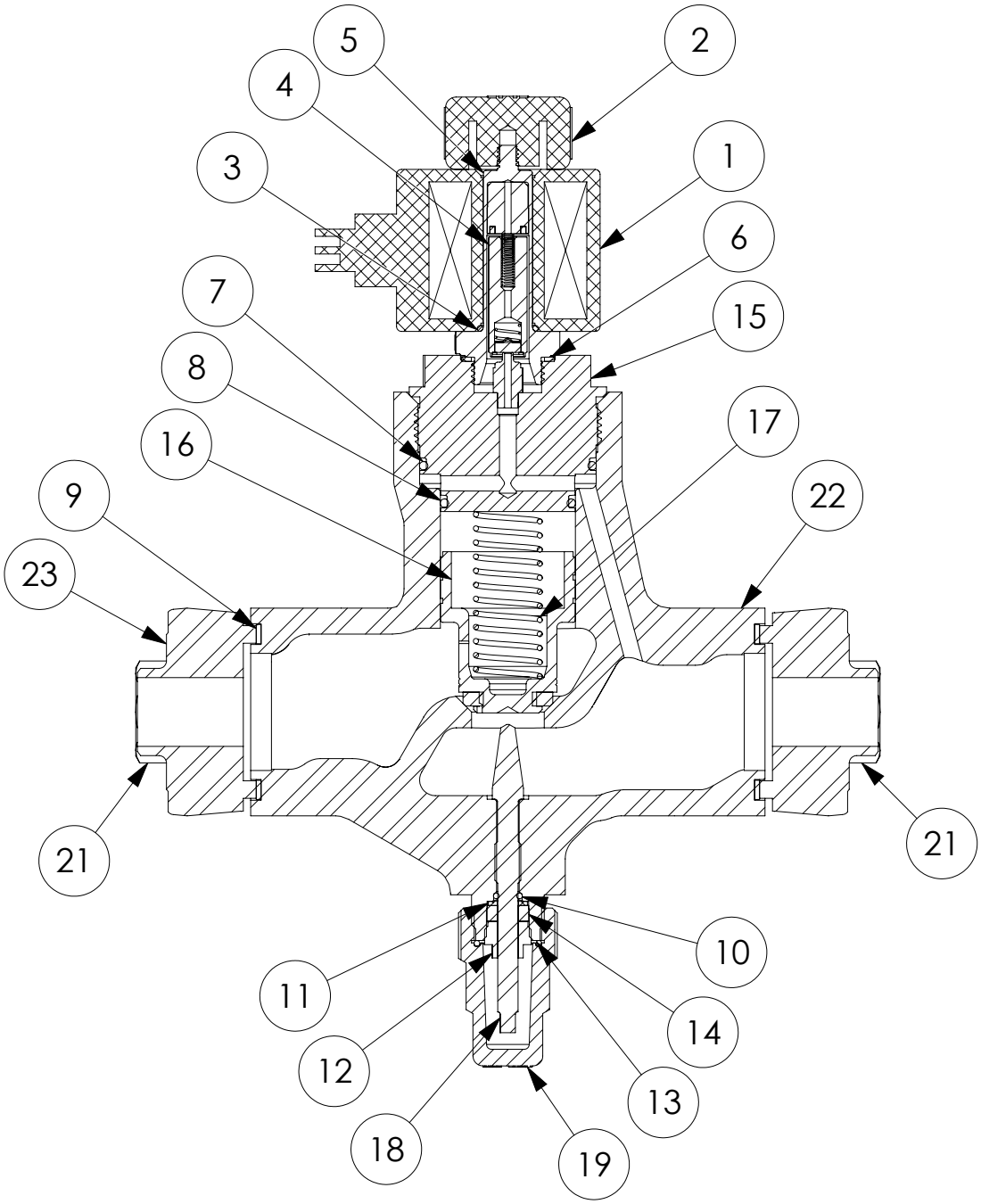


ELECTRICAL

The coil draws 16 watts and will operate properly between 85% and 110% of rated voltage (24V coil draws 19 watts). Standard coil connection is a 1/2" fitting (NPSM) for conduit, with two 18" wire leads and ground wire. Coils with DIN plug or 1/2" NPSM quick disconnect plug are available. Contact the factory. All coils are totally encapsulated and meet NEMA 3R (rainproof) and NEMA 4 (splashproof, approx. IP65) requirements. The coil should only be energized while on the solenoid tube. Otherwise, immediate coil burnout may occur. To avoid bending the solenoid tube, remove the coil from valve before connecting any electrical conduit. Pilot lights are available.

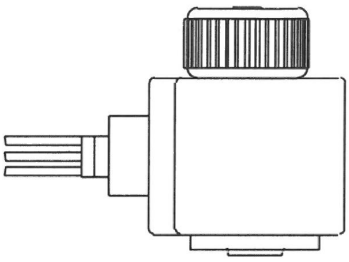
PARTS LIST

ITEM	DESCRIPTION	QTY.	KIT NO
1a	**Coil Kit (115V) 1/2" Fitting w/leads Coil**	**1**	**70-1085**
1b	**Kit (208/230V) 1/2" Fitting w/leads Coil**	**1**	**70-1086**
1c	**Kit (24V) 1/2" Fitting w/leads**	**1**	**70-1087**
	Coil Kit (Other Voltages / Connections)		**FACTORY**
	Above kit consists of:		
1	Bare Coil	1	N/A
2	Coil Knob	1	70-0579
3	Coil O-Ring	1	70-0340
	Solenoid Tube/Plunger Kit	**1**	**70-1182**
	Above kit consists of:		
4	Plunger	1	
5	Solenoid Tube	1	
6	Solenoid Tube Gasket	1	
2	Coil Knob	1	
3	Coil O-Ring	1	
	Gasket Kit	**1**	**70-1017**
	Above kits consist of		
7	Upper Body O-Ring	1	
8	Lower Body O-Ring	1	
9	Flange Gasket	2	
10	Stem O-Ring	1	
11	Stem Washer	1	
12	Packing Nut	1	
14	Stem Packing	1	
13	Seal Cap O-Ring	1	
	Bonnet Cartridge Kit	**1**	**70-1179**
	Above kits consist of		
15	Cartridge Assembly	1	
	Gasket Kit	1	
	Solenoid Tube/Plunger Kit	1	
	Piston Assembly Kit 3/4"	**1**	**70-1019**
	Piston Assembly Kit 1"	**1**	**70-1020**
	Piston Assembly Kit 1 1/4"	**1**	**70-1021**
	Above kits consist of		
16a	Piston Assembly 3/4"	1	
16b	Piston Assembly 1"	1	
16c	Piston Assembly 1 1/4"	1	
17	Closing Spring	1	
7	Upper Body O-Ring	1	
8	Lower Body O-Ring	1	
	Stem Kit	**1**	**70-1022**
	Above kits consist of		
18	Stem	1	
	Gasket Kit	1	
	Seal Cap Kit	**1**	**70-1023**
	Above kits consist of		
19	Seal Cap	1	
13	Seal Cap O-Ring	1	
	Bolt and Nut Kit		
	For HS7 less Strainer (a)		**70-1024**
	For HS7 with Strainer (b)		**70-1025**
	Above kits consist of		
20	Nut	4	
21a	Bolt (less Strainer) 2.75"	4	
21b	Bolt (with Strainer) 2.75"	2	
21b	*Bolt (with Strainer) 6.5"*	2	
19	Stem	1	
22	Body	1	
23	Flanges	2	

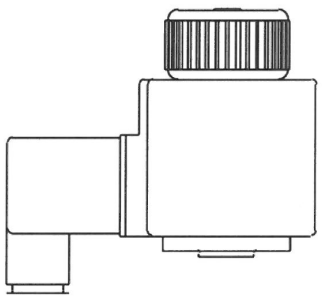


Voltage	Frequency (Hertz)	Inrush Amps	Holding Amps	Resistance at Room Temperature (Ohms)
115 VAC	60	0.73	0.24	56 ± 6
	50	0.93	0.31	
208/230 VAC	60 (208V)	0.32	0.11	226 ± 23
	60 (240V)	0.41	0.14	
	50 (230V)	0.47	0.16	
24 VAC	60	3.42	1.14	2 ± .2
	50	4.56	1.52	
24 VDC	DC	1.20	1.20	20 ± 2

STANDARD



DIN PLUG COIL



SERVICE AND MAINTENANCE

Failure to open: wrong voltage coil; low line voltage; controlling switch or thermostat not contacting; coil is burned-out; inlet/outlet pressure differential too high; less than 2 psi (0.14 bar) pressure drop across valve; piston or plunger is jammed closed with dirt.

Failure to close: controlling switch or thermostat not opening contacts; manual opening stem is turned in; piston or plunger is jammed upward by dirt; damage or dirt at main valve seat or pilot valve seat.

Before opening the valve for service, be sure it is isolated from the system and all refrigerant is removed. Disconnect electrical power from coil. Remove the coil by unscrewing the coil knob. Use a large wrench to unscrew the bonnet-cartridge proceeding cautiously to avoid any refrigerant still remaining inside the valve. Remove closing spring and piston. Check for dirt on piston or seat. Polish with fine emery cloth and replace or else install new parts. Check and replace bonnet-cartridge O-rings if necessary, using refrigerant oil or grease.

Effective July 1, 2025, Hansen will discontinue the sale of solenoid tube and plunger kits, as well as other service kits for the old solenoid operator. Instead, Hansen recommends a full cartridge replacement when service parts are needed for the old module or to convert to the new module version. Please note that the new tube and plunger kit can NOT be used on old solenoid module body.

Check face of Teflon seat in plunger, plunger spring, gasket mating surfaces, and seat orifice in body. Clean, polish, or replace parts as necessary. Always replace the solenoid tube when replacing the plunger. The seat orifice is integral with the body.

When replacing the aluminum gasket, it is common for the aluminum gasket to stick to the base or tube during removal. In this case, take care to not scratch or damage the mating parts of the body or tube when removing.

Reassemble the solenoid tube to the body by torquing the hex tube to the body. Factory torque is 75 ft-lbs (102 Nm). Take care not to over-torque the tube. Reassemble bonnet-cartridge to valve body, using 75 foot-pounds torque to tighten secondary, metal, knife edge seal. Carefully check the valve for leaks before restoring to service.

CAUTION

Hansen valves are only for refrigeration systems. These instructions must be completely read and understood before selecting, using or servicing Hansen valves. Only knowledgeable, trained refrigeration mechanics should install, operate, or service these valves. Stated temperature and pressure limits should not be exceeded. Bonnets, solenoid tubes, etc. should not be removed from valves unless system has been evacuated to zero pressure. Must also see Safety Precautions in current List Price Bulletin and Safety Precautions Sheet supplied with product.

WARRANTY

All Hansen products, except electronics, are guaranteed against defective materials or workmanship for one year F.O.B. factory. Electronics are guaranteed against defective materials or workmanship for 90 days F.O.B. factory. No consequential damages or field labor is included.

ORDERING INFORMATION

Flange Connection Style & Sizes Inches (Millimeters)		
FPT, SW, WN		ODS
STD	ALSO	STD
3/4" (20)	1" (25) 1 1/4" (32)	7/8" (22)
1" (25)	3/4" (20) 1 1/4" (32)	1 1/8" (28)
1 1/4" (32)	3/4" (20) 1" (25)	1 3/8" (35)

FPT: Female Pipe Thread (American National Standard)
SW: Socket Weld to accommodate American and API pipe
WN: Weld Neck to match American Schedule 40 pipe
ODS: Outside Diameter Sweat, for copper tube size

Standard encapsulated solenoid coil is included for 50/60Hz 208/230, 115, or 24 volts; other voltages offered. Standard coil connection is a 1/2" fitting (NPSM). Coils with DIN plug or 1/2" NPSM quick disconnect plug are available; please specify when ordering. Pilot lights are also available.

OPTIONAL BEACON PILOT LIGHTS

Pilot Light Kit includes Beacon pilot light, knob and o-ring. A/C Coils Only.

PILOT LIGHT KIT		
COLOR	OLD VERSION PN	NEW VERSION PN
RED	70-1100	70-1175
AMBER	70-1101	70-1176
GREEN	70-1102	70-1177

TO ORDER:

Specify type, connection type and size, volts, and strainer if required. Unless otherwise specified, standard coil with 1/2" connection will be supplied.

Note: Finished valve part numbers with the new solenoid operator are the same as the older version, but kit part numbers will be different.

TYPICAL SPECIFICATIONS

"Refrigerant solenoid valves shall have encapsulated, watertight coils, Teflon seats, steel or ductile iron bodies, spring closing pilot and main valve seats, and be suitable for a safe working pressure of 400 psig (27 bar), as manufactured by Hansen Technologies Corporation or approved equal."

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