

2022 LIST PRICE SCHEDULE & PARTS LIST PRICING





MVP13-ACT



AW300H-ACT

ACT™ FEATURES

10+ years of premium corrosion protection
Over 120,000 valves installed in 1000+ plants
Available on ALL Hansen valves
Multi-layer protection
Lower cost of maintenance
Standard installation process



EZB-ACT



HT100-ACT



MCV40-1MCV-ACT

To Order: Add the “-ACT” suffix to standard model number; for example: GS200H-ACT, 2” HA4AW-ACT.
Note: For ACT pricing use [Technical Equipment Discount Schedule](#)

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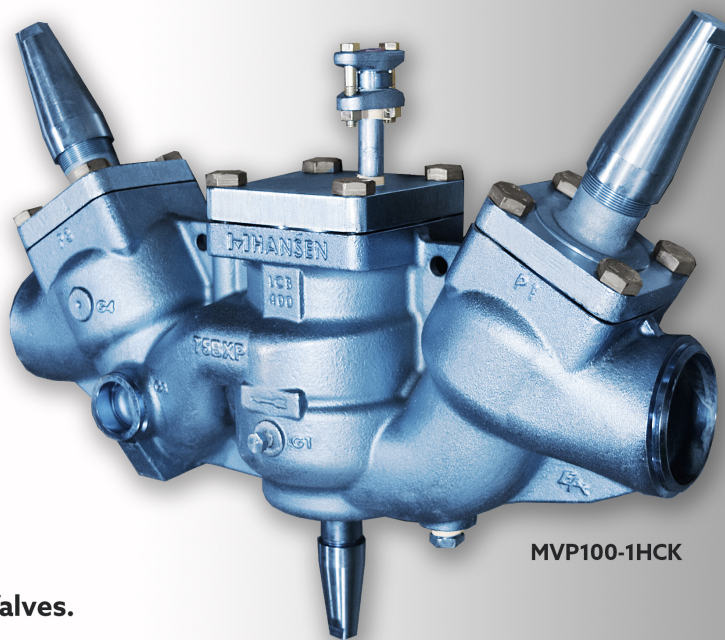
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SOMETHING **BIG** IS COMING TO HANSEN'S MVP

- With the addition of the 2-1/2", 3" and 4" port sizes, HANSEN now offers the **LARGEST** and **MOST COMPLETE** integrated valve family.
- Featuring **ACT**® Anti-Corrosion Technology as standard!
- Now Evaporator Control Groups (stations) can be completely designed with MVP valves.
- 3-Positions (Stop-Control-Stop) for reduced pressure drop.
- Integrates HANSEN'S **INHERENTLY SAFER** HCK5D Two-Step Gas Powered Suction Stop Valves.



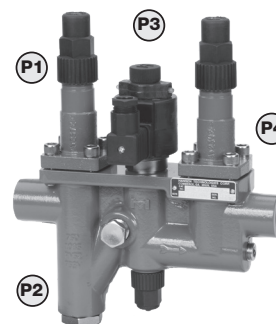
MVP100-1HCK

MVP MULTI-VALVE PLATFORM VALVE STATION

The MVP is a rugged, compact refrigerant control valve station offering multiple variations and functions to accommodate a wide range of capacities and application requirements. Standard features include manual opening stem, 60 mesh strainer (100 mesh strainer standard on MVP13), seal caps and 600 psig (41 bar g) pressure rating. Gauge port connections available. Interchangeable parts and parts kits with existing Hansen valves. Ships pre-tested and assembled for quick, easy two weld installation.

To Order: Specify MVP valve station size, configuration (1 thru 8) and connection size and style (SW/BW/ODS). Specify control valve configuration (solenoid/pressure regulator/motorized), coil voltage and connection (leaded or DIN), pressure setting range (See Page 8) and options if required. For Pressure Regulator Variations, see page 9 for List Extra pricing. Unless specified, Solenoid will have standard coil with 18" leads and 1/2" fitting, 115V; Pressure Regulators will have standard pressure range and factory setting. For Gas-Powered configurations (-1 and -8) add required HS8A pilot solenoid valve (see Page 4).

Approximate weight: MVP13, 16 lbs (7 kg); MVP20-32, 35 lbs (16 kg); MVP40-50, 75 lbs (34 kg) MVP65-80, 190 lbs (86 kg); MVP100, 250 lbs (114 kg).



MVP WITH SOLENOID CONTROL VALVE

Model	Port Size inch (mm)	Connection inch (mm)	Configuration (Position 4)						
			SHUT-OFF	HAND EXP	STOP-CHECK/HAND EXP	STOP-CHECK	CHECK	BLANK	MCXV/MCR
			1	2	3	4	5	6	7
MVP13	1/2" (13)	1/2" (13)	\$1,664	\$1,687	\$1,901	\$1,880	\$1,655	\$1,440	\$6,655
		3/4" (20)	\$1,749	\$1,760	\$1,976	\$1,965	\$1,695	\$1,481	\$6,732
		1" BW (25)	\$1,827	\$1,846	\$2,065	\$2,041	\$1,734	\$1,518	\$6,815
MVP20	3/4" (20)	3/4" (20)	\$2,196	\$2,209	\$2,506	\$2,492	\$2,161	\$1,861	\$7,300
		1" (25)	\$2,271	\$2,326	\$2,624	\$2,568	\$2,198	\$1,900	\$7,418
		1-1/4" (32)	\$2,550	\$2,574	\$2,872	\$2,845	\$2,334	\$2,038	\$7,664
		1-1/2" BW (40)	\$2,957	\$3,068	\$3,366	\$3,257	\$2,539	\$2,244	\$8,158
MVP25	1" (25)	1" (25)	\$2,599	\$2,656	\$3,034	\$2,980	\$2,607	\$2,227	\$7,746
		1-1/4" (32)	\$2,880	\$2,904	\$3,283	\$3,258	\$2,750	\$2,365	\$7,993
		1-1/2" BW (40)	\$3,285	\$3,395	\$3,775	\$3,667	\$2,950	\$2,571	\$8,487
MVP32	1-1/4" (32)	1-1/4" (32)	\$2,970	\$2,992	\$3,500	\$3,474	\$2,998	\$2,491	\$8,082
		1-1/2" BW (40)	\$3,350	\$3,454	\$3,959	\$3,858	\$3,189	\$2,683	\$8,542
MVP40	1-1/2" (40)	1-1/2" (40)	\$3,999	\$4,090	\$4,675	\$4,582	\$3,986	\$3,404	\$9,663
		2" (50)	\$4,183	\$4,273	\$4,854	\$4,766	\$4,078	\$3,497	\$9,848
		2-1/2" BW (65)	\$4,657	\$4,983	\$5,568	\$5,240	\$4,314	\$3,731	\$10,556
MVP50	2" (50)	2" (50)	\$4,385	\$4,472	\$5,135	\$5,047	\$4,357	\$3,695	\$10,045
		2-1/2" BW (65)	\$4,859	\$5,186	\$5,844	\$5,520	\$4,595	\$3,932	\$10,759

MVP WITH PRESSURE REGULATOR CONTROL VALVE

Model	Port Size inch (mm)	Connection inch (mm)	Configuration (Position 4)					
			SHUT-OFF	HAND EXP	STOP-CHECK/ HAND EXP	STOP-CHECK	CHECK	BLANK
			1A*	2A*	3A*	4A*	5A*	6A*
MVP20	3/4" (20)	3/4" (20)	\$2,168	N/A	N/A	\$2,482	\$2,133	\$1,821
		1" (25)	\$2,249	N/A	N/A	\$2,559	\$2,172	\$1,862
		1-1/4" (32)	\$2,544	N/A	N/A	\$2,855	\$2,319	\$2,006
		1-1/2" BW (40)	\$2,971	N/A	N/A	\$3,282	\$2,533	\$2,221
MVP25	1" (25)	1" (25)	\$2,433	N/A	N/A	\$2,815	\$2,442	\$2,062
		1-1/4" (32)	\$2,714	N/A	N/A	\$3,096	\$2,585	\$2,203
MVP32	1-1/4" (32)	1-1/4" (32)	\$2,835	N/A	N/A	\$3,345	\$2,869	\$2,360
		1-1/2" BW (40)	\$3,217	N/A	N/A	\$3,724	\$3,059	\$2,550
MVP40	1-1/2" (40)	1-1/2" (40)	\$3,860	N/A	N/A	\$4,441	\$3,846	\$3,264
		2" (50)	\$4,045	N/A	N/A	\$4,626	\$3,939	\$3,356
MVP50	2" (50)	2" (50)	\$4,307	N/A	N/A	\$4,970	\$4,334	\$4,975
		2-1/2" BW (65)	\$4,781	N/A	N/A	\$5,441	\$5,026	\$5,665

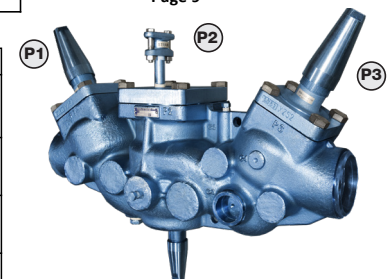
Pressure Regulator Variation Reference	
Variation	List Adder
S	\$517
B	\$517
SB	\$804
D	\$951
L	\$282
O	\$424
K	\$92
P	\$140
Q	\$2,672
M	\$1,689

*For Pressure Regulator Variations and Details add suffix (such as: S, B, D, L) and add List Adder, see above and Page 9

LARGE MVP -ACT is Standard

Model	Port Size Inch (mm)	Connection Inch (mm)	P1 = SHUT-OFF, P2 = CONTROL, P3 = SHUT-OFF				
			MVP-1 SOLENOID	MVP-1A REGULATOR*	MVP-1HCK GAS-POWERED	MVP-1MCV MOTORIZED	MVP-8HCK GAS-POWERED
MVP65	2-1/2" (65)	2-1/2" BW (65)	\$5,864	\$5,436	\$5,969	\$9,983	\$4,923
MVP80	3" (80)	3" BW (80)	\$8,537	\$7,864	\$7,874	\$12,410	\$7,125
MVP100	4" (100)	4" BW (100)	\$12,097	\$12,096	\$11,358	\$16,599	\$9,919

*See Pressure Regulator Variation Reference above



MVP-1HCK

MVP Options	Port Size			
	MVP13 1/2" (13 mm)	MVP20 to MVP32 3/4" to 1-1/4" (20 to 32 mm)	MVP40 to MVP50 1-1/2" to 2" (40 to 50 mm)	MVP65 to MVP100 2-1/2" to 4" (65 to 100 mm)
MCV/MCR=Motorized Control Valve*	List Extra \$4,161	List Extra \$4,161	List Extra \$4,303	See Above MCV-1MCV
NO=Normally Open, List Extra per coil	List Extra \$235	List Extra \$235	List Extra \$235	List Extra \$235
E=Extended Neck and Stainless Steel Trim on SOV (1 & 4 Only)	List Extra \$162	List Extra \$262	List Extra \$305	—
H=Handwheels and Bar Handle on HEV	List Extra \$84	List Extra \$84	List Extra \$136	—
S=100 Mesh Strainer Basket	STANDARD	List Extra \$158	List Extra \$273	—
X=Explosion Proof Solenoid Coil, List Extra per coil	—	List Extra \$842	List Extra \$842	List Extra \$842
D=Drain Plug, Strainer	List Extra \$29	STANDARD	STANDARD	—
SD=Two Step Solenoid	—	List Extra \$783	List Extra \$783	List Extra \$783

* For Motorized Control Valve in Position 4, See above MVP WITH SOLENOID CONTROL VALVE - Configuration #7

SOLENOID VALVES

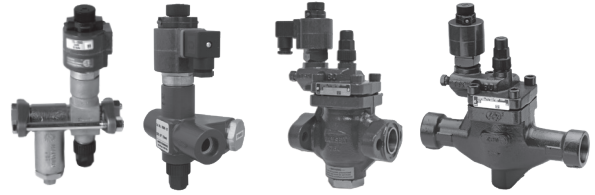
Flanged and Weld-in

(For Ammonia, Halocarbons, CO₂)

For use in liquid, suction, hot gas, discharge and purge lines. Compact and reliable. Tested to ensure reliable operation, safety and tightness.

To Order: Specify model, port size, connection style and size, coil connection style, voltage, and strainer; weld-in or ACT if required. Unless specified, standard coil with 1/2" fitting will be supplied; DIN Coil with Socket, **List Extra \$15**

HS4AX Explosion Proof (Class I, Division II) available (115V Standard, 230V or 24 VAC), **List Extra \$842** Normally Open Solenoid, **List Extra \$235**.



HS8A with Strainer

HS8W with Strainer

HS4A

HS4W

LESS STRAINER

Model	Port Size inch (mm)	Flange Styles and Sizes Connections Available			List Price Less Strainer with Flanges		List Price Weld-In Less Strainer	Weight lbs (kg)	
		FPT, SW, WN (DN)		ODS (DN/ODS) (Standard)	FPT, SW	WN, ODS			
		Standard	Also						
HS2+	5/32" (4)	1/2" (15)	1/4", 3/8" (7,10)	—	\$396	—	—	2	(0.9)
HS2F	5/32" (4)	1/2" (15)	1/4", 3/8", 3/4" (7,10,20)	5/8" (16)	\$415	\$445	—	3	(1.4)
HS2B	5/32" (4)	1/4" (7)			\$420	—	—	2	(0.9)
HS6	5/32" (4)	1/2" (15)	1/4", 3/8", 3/4" (7,10,20)	5/8" (16)	\$441	\$471	—	4	(1.8)
HS8A	1/2" (13)	1/2" (15)	3/8", 3/4" (10,20)	5/8" (16)	\$530	\$560	—	5	(2.3)
HS7	3/4" (20)	3/4" (20)	1", 1 1/4" (25,32)	7/8" (22)	\$744	\$778	—	17	(7.7)
	1" (25)	1" (25)	1 1/4" (32)	1 1/8" (28)	\$953	\$987	—	17	(7.7)
	1 1/4" (32)	1 1/4" (32)	1 1/2" WN** (40)	1 3/8" (35)	\$1,178	\$1,212**	—	17	(7.7)
HS4A HS4W	3/4" (20)	3/4" (20)	1", 1 1/4" (25,32)	7/8" (22)	\$807	\$841	\$978	23	(10)
	1" (25)	1" (25)	1 1/4" (32)	1 1/8" (28)	\$982	\$1,016	\$1,201	23	(10)
	1 1/4" (32)	1 1/4" (32)	1 1/2" WN** (40)	1 3/8" (35)	\$1,184	\$1,449	\$1,437	23	(10)
	1 1/2" (40)	1 1/2" (40)	2" (50)	1 5/8" (42)	\$1,655	\$1,690	\$1,934	47	(21)
	2" (50)	2" (50)	—	2 1/8" (54)	\$1,816	\$1,851	\$2,136	47	(21)
	2 1/2" (65)	2 1/2" (65)	3" (80)	2 5/8" (67)	\$2,491	\$2,540	\$2,912	75	(34)
	3" (80)	3" (80)	—	3 1/8" (79)	\$3,609	\$3,702	\$4,179	86	(39)
	4" (100)	4" (100)	—	4 1/8" (105)	\$5,158	\$5,299	\$5,759	134	(61)
5" (125)	5" BW (125)	—	—	—	—	\$8,305	250	(113)	
6" (150)	6" BW (150)	—	—	—	—	\$13,071	270	(122)	

WITH STRAINER

Model	Port Size inch (mm)	Flange Styles and Sizes Connections Available			List Price With Strainer and Flanges		List Price Weld-In* With Strainer	Weight lbs (kg)	
		FPT, SW, WN (DN)		ODS (DN/ODS) (Standard)	FPT,SW	WN,ODS			
		Standard	Also						
HS6	5/32" (4)	1/2" (15)	1/4", 3/8" (7, 10)	5/8" (16)	\$562	\$592	—	6	(2.7)
HS8A	1/2" (13)	1/2" (15)	3/4" (20)	5/8" (16)	\$651	\$681	—	7	(3.2)
HS8W	1/2" (13)	1/2" (15)	3/4" (20) 1" BW (25)	5/8", (16), 7/8", (22), 1" (28), 1 1/8" (28)	—	—	\$807	7	(3.2)
HS7	3/4" (20)	3/4" (20)	1", 1 1/4" (25, 32)	7/8" (22)	\$1,034	\$1,068	—	26	(12)
	1" (25)	1" (25)	1 1/4" (32)	1 1/8" (28)	\$1,243	\$1,277	—	26	(12)
	1 1/4" (32)	1 1/4" (32)	1 1/2" WN** (40)	1 3/8" (35)	\$1,468	\$1,502	—	26	(12)
HS4A HS4W	3/4" (20)	3/4" (20)	1", 1 1/4" (25, 32)	7/8" (22)	\$1,097	\$1,131	\$1,605	32	(15)
	1" (25)	1" (25)	1 1/4" (32)	1 1/8" (28)	\$1,272	\$1,306**	\$1,816	32	(15)
	1 1/4" (32)	1 1/4" (32)	1 1/2" WN** (40)	1 3/8" (35)	\$1,474	\$1,739	\$2,052	32	(15)
	1 1/2" (40)	1 1/2" (40)	2" (50)	1 5/8" (42)	\$2,287	\$2,322	\$3,075	79	(36)
	2" (50)	2" (50)	—	2 1/8" (54)	\$2,448	\$2,483	\$3,552	79	(36)
	2 1/2" (65)	2 1/2" (65)	3" (80)	2 5/8" (67)	\$3,367	\$3,416	\$4,561	125	(57)
	3" (80)	3" (80)	—	3 1/8" (79)	\$4,667	\$4,760	\$6,193	150	(68)
	4" (100)	4" (100)	—	4 1/8" (105)	\$7,247	\$7,388	\$9,019	236	(107)
5" (125)	5" BW (125)	—	—	—	—	\$12,545	500	(227)	
6" (150)	6" BW (150)	—	—	—	—	\$20,451	540	(245)	

**1-1/2" WN Flanges List Extra \$232

* Weld-in valves supplied as separate pieces, not as welded assemblies. Weld-in connection style 1/2" to 2 1/2" (13 to 65 mm) SW, 3"-6" (80 to 150 mm) BW.

HS2 † has threaded end connections instead of flanges.

Note: Valves less flanges for replacement, deduct list price of equivalent flange kit from above, see page 7. Strainer 1/4" plug standard ST100, 1/4" plug optional **ST050D**, **List Extra \$29**. Close-coupled HCK4 check valves also available, refer to page 14. 1 1/4" is standard 2-bolt flange design; 4-bolt flange style available to replace 1 1/4" R/S, **HS4A-4 10% List Extra**. Valves for CO₂, contact factory.

HS4D/HS4DW TWO STEP DUAL SOLENOID VALVE

Flanged and Weld-in

This heavy duty, reliable two step dual solenoid design allows for closed, partially open and fully open valve positions. Reverts to closed position in the event of power failure. Includes two encapsulated solenoid coils. Available with close-coupled strainer/check valve and optional wireless pilot lights. Flange-to-flange drop in for standard HS4A.

To Order: Specify model, port size, connection style and size, coil connection style, voltage, and strainer, weld-in or ACT if required. Unless specified, standard coil with 1/2" fitting will be supplied.



HS4D

LESS STRAINER

Model	Port Size inch (mm)	Flange Styles and Sizes Connections Available				List Price Less Strainer with Flanges		List Price Weld-In Less Strainer	Weight lbs (kg)
		FPT, SW, WN (DN)		ODS (DN/ODS) (Standard)	FPT,SW	WN,ODS			
		Standard	Also						
HS4D HS4DW	3/4" (20)	3/4" (20)	1", 1 1/4" (25,32)	7/8" (22)	\$1,743	\$1,777	\$1,920	30 (13.6)	
	1" (25)	1" (25)	1 1/4" (32)	1 1/8" (28)	\$1,764	\$1,798	\$1,976	30 (13.6)	
	1 1/4" (32)	1 1/4" (32)	1 1/2" WN** (40)	1 3/8" (35)	\$1,849	\$1,883	\$2,087	30 (13.6)	
	1 1/2" (40)	1 1/2" (40)	2" (50)	1 5/8" (42)	\$2,383	\$2,418	\$2,639	58 (26)	
	2" (50)	2" (50)	—	2 1/8" (54)	\$2,678	\$2,713	\$2,973	58 (26)	
	2 1/2" (65)	2 1/2" (65)	—	2 5/8" (67)	\$3,173	\$3,222	\$3,556	90 (41)	
	3" (80)	3" (80)	—	3 1/8" (79)	\$4,668	\$4,761	\$5,184	100 (45)	
	4" (100)	4" (100)	—	4 1/8" (105)	\$6,175	\$6,316	\$6,816	138 (63)	

WITH STRAINER

Model	Port Size inch (mm)	Flange Styles and Sizes Connections Available				List Price With Strainer and Flanges		List Price Weld-In* With Strainer	Weight lbs (kg)
		FPT, SW, WN (DN)		ODS (DN/ODS) (Standard)	FPT,SW	WN,ODS			
		Standard	Also						
HS4D HS4DW	3/4" (20)	3/4" (20)	1", 1 1/4" (25, 32)	7/8" (22)	\$2,033	\$2,067	\$2,535	44 (20)	
	1" (25)	1" (25)	1 1/4" (32)	1 1/8" (28)	\$2,054	\$2,088	\$2,591	44 (20)	
	1 1/4" (32)	1 1/4" (32)	1 1/2" WN** (40)	1 3/8" (35)	\$2,139	\$2,173	\$2,702	44 (20)	
	1 1/2" (40)	1 1/2" (40)	2" (50)	1 5/8" (42)	\$3,015	\$3,050	\$3,780	99 (45)	
	2" (50)	2" (50)	—	2 1/8" (54)	\$3,310	\$3,345	\$4,114	99 (45)	
	2 1/2" (65)	2 1/2" (65)	3" (80)	2 5/8" (67)	\$4,049	\$4,098	\$5,205	158 (72)	
	3" (80)	3" (80)	—	3 1/8" (79)	\$5,726	\$5,819	\$7,198	179 (81)	
	4" (100)	4" (100)	—	4 1/8" (105)	\$8,264	\$8,405	\$10,076	266 (121)	

* Weld-in valves supplied as separate pieces, not as welded assemblies. Weld-in connection type 3/4" to 2 1/2" (20 to 65 mm) SW, 3" to 4" (80 to 100 mm) BW.

**1-1/2" WN Flanges List Extra \$232

ENCAPSULATED SOLENOID COILS

Watertight encapsulated solenoid coils. Available with 18" (450 mm) wire leads with 1/2" NPSM fitting for conduit, and plug-in DIN connection socket. Wire leads are standard for 115V, 208/230V, or 24V; 50/60Hz. Weight 1 lb (0.5 kg).

To Order: Specify catalog number, voltage and connection.

Encapsulated Solenoid Coil Kit (Coil, Knob & O-Ring)			
Catalog No.	Voltage	Connection	List Price
70-1085	115V	18" leads, 1/2" NPSM conduit	\$110
70-1086	230V	18" leads, 1/2" NPSM conduit	
70-1087	24VAC	18" leads, 1/2" NPSM conduit	
Plug-in Encapsulated Solenoid Coil Kit (Coil, Knob & O-Ring)			
70-1088	115V	Plug-in less DIN socket	\$113
70-1089	230V	Plug-in less DIN socket	
70-1090	24VAC	Plug-in less DIN socket	
70-1091	24VDC	Plug-in less DIN socket	
Plug-in Encapsulated Solenoid Coil with DIN Socket Kit (Coil, Knob & O-Ring)			
70-1092	115V	Plug-in with DIN socket	\$125
70-1093	230V	Plug-in with DIN socket	
70-1094	24VAC	Plug-in with DIN socket	
70-1095	24VDC	Plug-in with DIN socket	
Solenoid Coil Kit with Junction Box (Replacement Coil for use with AP/APW Purgers)			
70-1105	115V	Junction Box	\$131
70-1106	230V	Junction Box	
Solenoid Coil Kit with Conduit Connection (Replacement Coil for use with AP/APW)			
70-1155	115V	Conduit (60" leads)	\$117
70-1156	230V	Conduit (60" leads)	



Standard Coil



Plug-in Coil



Plug-in Coil with DIN Socket

BEACON PILOT LIGHTS AND ADAPTER KITS FOR SOLENOID COILS

Convenient and easy to install; no extra wiring required. Designed to sit atop all solenoid coils except normally open solenoid model. Kits include pilot light, o-ring and knob.

To Order: Specify catalog number.

Catalog No.	Description	List Price
70-1100	RED Pilot Light Kit; AC Coils Only	\$97
70-1101	AMBER Pilot Light Kit; AC Coils Only	
70-1102	GREEN Pilot Light Kit; AC Coils Only	



Beacon Pilot Light Kit

FLANGES & ADAPTER RINGS

Hansen flanges through 1 1/4" (32 mm) port are the 2-bolt oval flange style, standard. From 1 1/2" to 4" (40 to 100 mm), the standard is 4-bolt square. All flanges are male tongue only. ODS solder flange construction is steel bored to accept copper tubing.

To Order Flange Kits: Specify flange size, and connection style and size. Example: Number 100 Flange Kit with 3/4" FPT. For a union, order Union Kit plus appropriate Flange Kit. Contains one pair of flanges (of the same size and style) without bolts, nuts or gaskets for a Hansen flanged valve.

If ordering flange gaskets in quantities of 12 or more, **Deduct Extra 50%**.

To Order Adapter Rings: Specify FAR (Female Adapter Rings) or MAR (Male Adapter Rings), and flange size; Examples: FAR100, MAR100.

To Order Union Kits: Specify model number. Contains one female adapter ring, bolts, nuts and two flange gaskets.



WN Flange
2-Bolt

SW Flange
4-Bolt

For Valve Port Size	Flange Size	Flange Connection Size (All Flanges are Male Tongue Only)		Flange Connection Style			Adapter Rings		Union Kit	
				FPT or SW Flange Kit	WN or ODS Flange Kit	Weight lbs (kg)	MAR List	FAR List	Model	List Price
		FPT, SW, WN, (DN)	ODS (DN/ODS)	List Price	List Price					
up to 1/2"	050	1/4", 3/8", 1/2", 3/4" (7, 10, 13, 20)	3/8" (16)	\$70	\$100	1 (0.5)	\$38	\$30	UK050	\$62
3/4", 1", 1 1/4"	100	3/4", 1", 1 1/4" WN (20, 25, 32)	3/4", 1 1/4", 1 3/8" (22, 28, 35)	\$88	\$122	3 (1.4)	\$45	\$41	UK100	\$78
	100	1 1/2" WN (40)	-	-	\$353	5 (2.3)				
		SW, WN, (DN)	ODS (D/OD)	SW Flange Kit	WN or ODS Flange Kit	Weight lbs (kg)	Adapter Rings		Union Kit	
1 1/2", 2"	200	1 1/2", 2" (40, 50)	1 3/4", 2 1/8" (42, 54)	\$140	\$175	8 (3.6)	\$62	\$110	UK200	\$174
2 1/2"	250	2 1/2", 3" (65)	2 3/4" (67)	\$241	\$290	15 (6.8)	\$72	\$140	UK250	\$201
3"	300	3" (80)	3 1/4" (79)	\$273	\$366	14 (6.4)	\$74	\$158	UK300	\$225
4"	400	4" (100)	4 1/4" (105)	\$418	\$559	22 (10)	\$108	\$206	UK400	\$293

REFRIGERANT STRAINERS (FILTERS)

For refrigerants or oil. Close-couples to flanged valves, 60 Mesh (233 micron) stainless steel screen, ST050 has 100 Mesh (150 micron), 1/2" threaded pumpout plug standard ST200 & larger; 1/4" plug standard ST100, 1/4" plug optional ST050D

To Order: Specify catalog number and connections. When ordering less flanges for close-coupling, specify for close-coupling to receive correct length bolts. WN or ODS flanges available at extra cost. Weld-in connections: 3/4" thru 2" (20 to 50mm) SW inlet x BW outlet; 2 1/2" (65 mm) SW; 3" to 6" (80 to 150 mm) BW. For CO₂ service, contact factory.

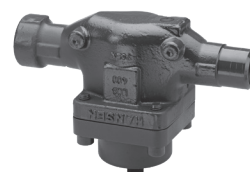
Options for Strainers

Perforated Metal Strainer Basket: For protection of compressors in suction side port applications 1 1/2" to 3" (40 to 80 mm); contact factory.

Cloth (Filter) Bags: Available 3/4" to 4" (20 to 100 mm) for system start-up, see Page 37. Requires ST100HD heavy duty strainer basket.



ST200



STW

For Valve Size inch (mm)	Model	List Price			Weight lbs (kg)
		FPT, SW ‡ †	Less Flanges	Weld-In	
5/32" - 1/2" (4-13)	ST050	\$221	\$121	—	3 (1.4)
	ST050D†	\$250	\$150		
3/4" - 1 1/4" (20-32)	ST100, STW100	\$419	\$290	\$615	14 (6.4)
	ST100HD, STW100HD*	\$484	\$355	\$682	
	ST100/100, STW100/100**	\$576	\$447	\$772	
1 1/2" - 2" (40-50)	ST200, STW200	\$882	\$632	\$1,141	41 (19)
	ST200/100, STW200/100**	\$1,153	\$903	\$1,416	
2 1/2" (65)	ST250, STW250	\$1,257	\$876	\$1,649	68 (31)
	ST250/100, STW250/100**	\$1,672	\$1,291	\$2,062	
3" (80)	ST300, STW300	\$1,489	\$1,058	\$2,014	79 (36)
4" (100)	ST400, STW400	\$2,713	\$2,089	\$3,260	128 (58)
5" (125)	STW500	—	—	\$4,240	240 (109)
6" (150)	STW600	—	—	\$7,380	260 (118)

‡ WN or ODS flanges also available; see above

† ST050D includes drain plug.

* Includes stainless steel screen with perforated metal backup.

** 100 mesh (150 micron rating) stainless steel screen.

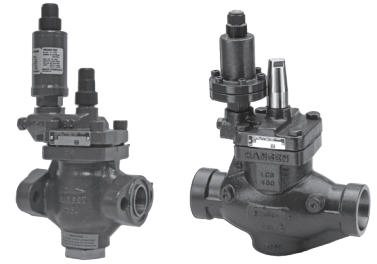
HA4A/HA4W REFRIGERANT PRESSURE REGULATORS

Flanged and Weld-in (For Ammonia, Halocarbons, CO₂)

The complete line of modular Pressure Regulators has been designed for simple, reliable operation. These pressure regulators use a series of easily changed, screw-in control modules (pilots) to determine regulating functions. Shipped fully assembled and 100% pressure tested. CRN Registration and CSA Certification standard.

To Order: Specify model, port size, connection style and size, range, and strainer; weld-in or ACT if required.

Explosion Proof (Class I, Division II) available: HA4ADX, HA4ASX and HA4ABX (120 V STD), **List Extra \$842** .
Normally open pilot solenoid (HA4ADNO, HA4ASNO, HA4ABNO), **List Extra \$235**



HA4A

HA4W

LESS STRAINER

Model	Port Size inch (mm)	Flange Styles and Sizes Connections Available			List Price Less Strainer with Flanges		List Price Weld-In Less Strainer	Weight lbs (kg)
		FPT, SW, WN (DN)		ODS (DN/ODS) Standard	FPT,SW	WN,ODS		
		Standard	Also					
HA4A HA4W	¾"† (20)	¾" (20)	1", 1¼", 1½" (25, 32)	⅞" (22)	\$663	\$697	\$840	26 (12)
	1" (25)	1" (25)	1¼", 1½" (32)	1½" (28)	\$806	\$840	\$1,024	26 (12)
	1¼" (32)	1¼" (32)	1½" WN** (40)	1¾" (35)	\$1,041	\$1,075	\$1,292	26 (12)
	1½" (40)	1½" (40)	2" (50)	1¾" (42)	\$1,506	\$1,541	\$1,780	50 (23)
	2" (50)	2" (50)	—	2½" (54)	\$1,726	\$1,761	\$2,049	50 (23)
	2½" (65)	2½" (65)	3" (80)	2¾" (67)	\$2,272	\$2,321	\$2,691	78 (35)
	3" (80)	3" (80)	—	3½" (79)	\$3,147	\$3,240	\$3,714	89 (40)
	4" (100)	4" (100)	—	4½" (105)	\$4,695	\$4,836	\$5,404	137 (62)
	5" (125)	5" BW (125)	—	—	—	—	\$7,642	250 (113)
	6" (150)	6" BW (150)	—	—	—	—	\$12,974	270 (122)

WITH STRAINER

Model	Port Size inch (mm)	Flange Styles and Sizes Connections Available			List Price With Strainer and Flanges		List Price Weld-In* With Strainer	Weight lbs (kg)
		FPT, SW, WN (DN)		ODS (DN/ODS) Standard	FPT,SW	WN,ODS		
		Standard	Also					
HA4A HA4W	¾"† (20)	¾" (20)	1", 1¼" (25, 32)	⅞" (22)	\$953	\$987	\$1,455	35 (16)
	1" (25)	1" (25)	1¼" (32)	1½" (28)	\$1,096	\$1,130	\$1,639	35 (16)
	1¼" (32)	1¼" (32)	1½" WN** (40)	1¾" (35)	\$1,331	\$1,365	\$1,907	35 (16)
	1½" (40)	1½" (40)	2" (50)	1¾" (42)	\$2,138	\$2,173	\$2,921	82 (37)
	2" (50)	2" (50)	—	2½" (54)	\$2,358	\$2,393	\$3,190	82 (37)
	2½" (65)	2½" (65)	3" (80)	2¾" (67)	\$3,148	\$3,197	\$4,340	128 (58)
	3" (80)	3" (80)	—	3½" (79)	\$4,205	\$4,298	\$5,728	153 (69)
	4" (100)	4" (100)	—	4½" (105)	\$6,784	\$6,925	\$8,664	239 (108)
	5" (125)	5" BW (125)	—	—	—	—	\$11,882	500 (227)
	6" (150)	6" BW (150)	—	—	—	—	\$20,354	540 (245)

* Weld-in-line valves supplied as separate pieces, not as welded assemblies. Weld-in connection type ¾" to 2½" (20 to 65 mm) SW, 3" to 6" (80 to 150 mm) BW.
† 25% & 50% Reduced Capacity Plugs are available.

Note: Valves less flanges for replacement, deduct list price of equivalent flange kit from above, see page 7. Close-coupled HCK4 check valves also available, refer to page 14. 1¼" is standard 2-bolt flange design; 4-bolt flange style available to replace 1¼" (32 mm) R/S, **H4A4-4, 10% List Extra**.
For CO₂ service, contact factory.

**1-1/2" WN Flanges List Extra \$232

REGULATOR PRESSURE SETTINGS

The HA4A regulator family can control temperature, inlet, outlet, or differential pressure. Regulator variations are available that enable one regulator to perform several functions. Combinations of variations also available.

Regulators include a manual opening stem, and ¼" FPT gauge port. Shipped fully assembled and tested.

HA4A Standard Regulator includes upstream pressure control module. Controls inlet pressure for evaporator, condenser or heat recovery control or defrost relief.

Single Control Module: Range A, 0 to 150 psig (0 to 10 bar g)

Alternates: Range B, 30 to 300 psig (2 to 21 bar g)

Range C, 100 to 550 psig (6 to 38 bar g) **List Extra \$224 note "requires CO2 rated valve"**

Range D, 30 to 450 psig (0 to 31 bar g)

Range V, 20" to 130 psig (-0.67 to 9 bar g) **List Extra \$238**

PRESSURE REGULATOR VARIATIONS

To Order: Specify regulator model, port size, flange connection style and size, range, coil connection style, voltage if applicable, combination of variation and special variation options desired, and strainer if required. Optional strainers are generous close-coupled, 60 mesh (233 Micron Rating) or 100 mesh accessible (150 Micron Rating). **Explosion Proof (Class I, Division II) available, List Extra \$842.**

Variation	Description	Range					List Extra
		A	B	C	D	V	
S	Electric Shut-Off Controls pressure when electrically energized; closed when not energized. For temperature control and defrost, or similar uses. Specify voltage, range, and special variation if required.	✓	✓	✓	✓	✓	\$517
B	Electric Wide-Opening Controls pressure when not electrically energized; open when energized. For defrost regulation or heat recovery and wide-opening for maximum cooling or similar. Specify voltage, range, and special variation if required.	✓	✓	✓	✓	✓	\$517
SB	Electric Wide-Opening and Shut-off Closed when both coils not energized. Controls pressure when S1 coil electrically energized. Open when P coil is electrically energized. For defrost regulation or similar uses or wide-opening for maximum cooling.	✓	✓	✓	✓	✓	\$804
D	Dual Pressure Regulator Controls at lower pressure when electrically energized, at higher pressure when not energized. Used for two pressure (temperature) control or defrost pressure relief and pressure (temperature) control. Specify voltage, range, and special variation if required.	✓	✓	✓	✓	✓	\$951
L	Differential Pressure For pump relief, oil control, or any differential pressure control.	✓					\$282
O	Outlet Pressure Opens as outlet pressure drops. For hot gas bypass to suction, crankcase pressure control, or for receiver pressure control.		✓			✓	\$424
K	Reseating Relief Defrost relief or high-to-low system relief. Set and Tagged. Specify Setting; otherwise setting will be at 70 psig (4.8 bar).	✓	✓	✓	✓		\$92
R	Regulator only with External Connection for Remote Pilot See pages 10 and 11 for AR1, AR3 and M3E25 External Connection.						See Pages 10 and 11
P	Pneumatically Compensated Air pressure or other pressure in bonnet raises inlet pressure setting at 1:1 ratio.	✓				✓	\$140
M	Electric Motor Compensated "M" Hardware CAM and Pilot (Less Motor) Commonly used for precise room temperature control or liquid chiller control. A motor changes regulator pressure setting in accordance with temperature controller. Includes control module, cam, motor bracket. Specify low rise or high rise cam and range.	✓	✓			✓	\$1,689
Options	Honeywell Motor Mounting Kit, Part No. 75-1143						\$38
	Motor, HONEYWELL (75-1143 Mounting Kit Included)						\$2,060
	115VAC/230VAC: 24VAC Transformer TR40, Part Number 75-0718						\$299
	Temperature Controller with Sensor, Part Number 75-0854						\$692
	Digital Readout for Controller, Part Number 75-0855						\$400

PRESSURE REGULATOR ACCESSORIES

Quality bottom mount gauges with 3½" (90 mm) diameter face and safe plastic lens; ¼" MPT connection. Stainless steel gauge features ¼" stainless steel NPT bottom connection, glycerine filled with clear polycarbonate lens. Scale is printed in pressure and temperature.

To Order: Specify model number.




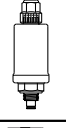
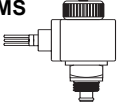

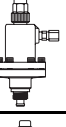


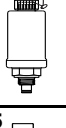

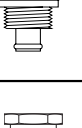
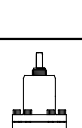

GA1-S

Model	Description	List Price
GA1	Ammonia Gauge (psi/degree F) 30" to 300 psig	\$207
GA1M	Ammonia Gauge (bar/degree C) -1 to 11 bar	
GA2	Ammonia Gauge (psi/degree F) 30" to 150 psig	
GA2M	Ammonia Gauge (bar/degree C) -1 to 21 bar	
G3	Halocarbon/Ammonia Gauge (psi/bar only) 30" to 350 psig	\$207
G4	Halocarbon/Ammonia Gauge (psi/bar only) 30" to 150 psig	
HGV1	HGV1 Long Neck® Gauge Valve, ¼" MPT x FPT	\$115
GA1-S	Stainless Steel Ammonia Gauge (psi/degree F) 30" to 300 psig	\$330
GA1M-S	Stainless Steel Ammonia Gauge (bar/degree C) -1 to 11 bar	
GA2-S	Stainless Steel Ammonia Gauge (psi/degree F) 30" to 150 psig	
GA2M-S	Stainless Steel Ammonia Gauge (bar/degree C) -1 to 21 bar	
G5M-S	Stainless Steel Halocarbon Gauge (bar/degree C) -1 to 12 bar	\$330
G6M-S	Stainless Steel Halocarbon Gauge (bar/degree C) -1 to 25 bar	

CONTROL MODULES (PILOTS) FOR REGULATORS

Control modules enable the main regulator to perform different control functions. Pilots are factory installed, or can be retrofitted. Non-rising stem can be adjusted by using a ¼" wrench. Catalog numbers are for the screw-on pilot module.

To Order: Specify control module catalog number, range, setting and coil connection style and voltage if applicable.

Control Module	Description	List Price	Weight lbs (kg)
	Inlet Pressure. Specify Range.		
	Range A: Part Number 75-1097	\$392	5 (2)
	Range B: Part Number 75-1098		
	Range D: Part Number 75-1205	\$613	
Range C: Part Number 75-1204	\$627		
	Inlet Pressure. Range A: Part Number 75-1126		
	M3W compact welded pressure pilot is standard on ¾" to 1¼" (20 to 32mm) valves.	\$392	5 (2)
	Solenoid. Part Number 70-1052 Normally Closed		
	Facilitates on/off control of flow through control module. <i>Requires solenoid coil, see page 8 for selection.</i>	\$190	1 (.5)
	Part Number 70-1113 Normally Open	\$422	1 (.5)
	Outlet Pressure. Specify Range.		
	Range B: Part Number 75-1101	\$751	6 (3)
	Range V: Part Number 75-1100		
	Differential Pressure. Range A: Part Number 75-1081		
		\$518	5 (2)
	Pneumatically Compensated. Range A: Part Number 75-1081		
	Air or other pressure in bonnet raises inlet pressure setting on a 1:1 ratio.	\$518	5 (2)
	Range V: Part Number 75-1249	\$755	
	Reseating Relief. Set and Tagged. Specify Range and Setting.		
	Range A: Part Number 75-1103	\$468	5 (2)
	Range B: Part Number 75-1104		
Range D: Part Number 75-1203			
	Standard setting (for ammonia defrost) 70 psig (4.8 bar).		
	Range C: Part Number 75-1202	\$692	
	Reseating Relief. Range A: Part Number 75-1127		
	Compact welded pressure pilot is standard on valves sizes ¾" to 1¼" (20 to 32 mm). Standard setting (for ammonia defrost) 70 psig (4.8 bar).	\$468	5 (2)
	External Connection. Part Number 35-1015		
	Enables a remote pressure source to be introduced to the regulator via a pilot line (replaces a pilot). ¼" FPT with separate 4" (100 mm) long weld nipple.	\$151	1 (.5)
	Stopping Plugs. Part Number 75-1063		
	To be used in regulator's pilot valve port when port is not utilized. Stopping plugs have square head and are marked with "0".	\$35	.5 (.2)
	Straight Through Plugs. Part Number 75-1064		
	To be used in regulator's pilot valve port when port is not utilized. Straight through flow plugs have a hex head and are marked with "1".	\$35	.5 (.2)
	Electric Motor. Specify Range. (Module Only)		
	Range A: Part Number 75-1193	\$459	5 (2)
	Range B: Part Number 75-1283		
Range V: Part Number 75-1285	\$697		

MODULAR REGULATOR BODIES

Modular regulator bodies less pilots and less flanges. Model AR1 (one pilot port) and Model AR3 (three pilot ports). Includes flange gaskets, bolts and nuts, and a plugged 1/4" outlet pressure access port for connecting outlet or differential control module sensing lines or gauges.

To Order: Specify model number and port size.

AR1, LESS FLANGES

Model		Port Size inch (mm)	List Price		Weight lbs (kg)
Flanged	Weld-in		Less Flanges	Weld-in	
75-1082	75-2434	3/4" (20)	\$567	\$832	24 (11)
75-1083	75-2435	1" (25)	\$605	\$912	24 (11)
75-1084	75-2436	1 1/4" (32)	\$828	\$1,165	24 (11)
75-1085	75-2428	1 1/2" (40)	\$1,204	\$1,615	48 (22)
75-1086	75-2429	2" (50)	\$1,462	\$1,923	48 (22)
75-1087	75-2418	2 1/2" (65)	\$1,904	\$2,561	76 (34)
75-1088	75-2415	3" (80)	\$2,756	\$3,592	87 (40)
75-1089	75-2412	4" (100)	\$4,150	\$5,276	135 (61)



AR1

AR3, LESS FLANGES

Model		Port Size inch (mm)	List Price		Weight lbs (kg)
Flanged	Weld-in		Less Flanges	Weld-in	
75-1090	75-2520	3/4" (20)	\$700	\$966	24 (11)
75-1091	75-2521	1" (25)	\$739	\$1,048	24 (11)
75-1092	75-2536	1 1/4" (32)	\$975	\$1,316	24 (11)
75-1093	75-2522	1 1/2" (40)	\$1,367	\$1,781	48 (22)
75-1094	75-2523	2" (50)	\$1,611	\$2,071	48 (22)
75-1095	75-2519	2 1/2" (65)	\$2,053	\$2,709	76 (34)
75-1096	75-2524	3" (80)	\$2,905	\$3,743	87 (40)
75-1128	75-2525	4" (100)	\$4,297	\$5,427	135 (61)



AR3

SMALL PRESSURE REGULATORS

Compact, flanged pressure regulators ideal for pilot application. Frequently used as small relief devices and as remote pilots for main regulators. Standard flange is 1/2" FPT. 3/4" FPT and 1/2", 3/4" SW; WN available **List Extra \$27**. 1/4" FPT Gauge Port. Optional close-coupled inlet strainer type **ST050 (D) List \$121 (\$150)**.

To Order: Specify model, range, connection style and size, and strainer if required. For CO₂ service, contact factory.

Model	Function	Range	List Price	Weight lbs (kg)
HA2B	Back Pressure	A: 0 to 150 psig (0 to +10 bar)	\$439	8 (3.6)
		B: 30 to 300 psig (+2 to +21 bar)	\$439	
		C: 100 to 550 psig (6 to 38 bar)	\$663	
		D: 30 to 450 psig (0 to 31 bar)	\$439	
		V: 20" to 130 psig (-0.67 to +9 bar)	\$677	
HA2A	Back Pressure (high capacity)	A: 0 to 150 psig (0 to +10 bar)	\$555	9 (4.1)
		B: 30 to 300 psig (+2 to +21 bar)	\$555	
		C: 100 to 550 psig (6 to 38 bar)	\$779	
		D: 30 to 450 psig (0 to 31 bar)	\$555	
HA2BK	Relief	A: 0 to 150 psig (0 to +10 bar)	\$531	8 (3.6)
		B: 30 to 300 psig (+2 to +21 bar)	\$531	
		C: 100 to 550 psig (6 to 38 bar)	\$755	
		D: 30 to 450 psig (0 to 31 bar)	\$531	
		V: 20" to 130 psig (-0.67 to +9 bar)	\$769	
HA2BO	Outlet	V: 20" to 130 psig (-0.67 to +9 bar) B: 30 to 300 psig (+2 to +21 bar)	\$863	9 (4.1)
HA2BL	Differential	A: 0 to 150 psig (0 to +10 bar)	\$721	8 (3.6)
HA2BP	Pneumatic	A: 0 to 150 psig (0 to +10 bar)	\$579	8 (3.6)
HA2BM	Motor**	A: 0 to 150 psig (0 to +10 bar) (less motor)	\$2,141	12 (5.4)



HA2A

** See page 9 for motor and controller options.

HCK2/HCK2W GAS-POWERED SUCTION STOP VALVES

Flanged and Weld-in

Heavy duty, flanged and weld-in, gas-powered suction stop valves. Gas power to close, internal bleed to open. Rugged ductile iron body. 1/2" SW (FPT on request) flange union with internal disc strainer included. 5" and 6" (125 and 150 mm) are integral butt weld end only.

To Order: Specify model, port size, pilot solenoid and strainer if applicable, voltage and connection size and style.



HCK2

Model	Port Size inch (mm)	Connections Available Flange Styles and Sizes		List Price						Weight lbs (kg) Complete with Pilot & Flanges
		FPT, SW, WN (DN)		Less Pilot Solenoid			Add Pilot Solenoid			
		Standard	Also	FPT,SW	WN,ODS	Weld-In**	Without Strainer	* With Strainer	Model	
HCK2 HCK2W	1 1/4" (32)	1 1/4" (32)	1 1/2" WN*** (40)	\$948	\$982	—	\$441	\$562	HS6	22 (10)
	1 1/2" (40)	1 1/2" (40)	2" (50)	\$1,229	\$1,264	\$1,501				46 (21)
	2" (50)	2" (50)	1 1/2" (40)	\$1,303	\$1,338	\$1,616				46 (21)
	2 1/2" (65)	2 1/2" (65)	3" (80)	\$1,803	\$1,852	\$2,212	\$530	\$651	HS8A	78 (35)
	3" (80)	3" (80)	—	\$2,277	\$2,370	\$2,825				90 (41)
	4" (100)	4" (100)	—	\$3,456	\$3,597	\$4,142				142 (64)
	5" (125)	5" BW (125)	—	—	—	\$6,605				250 (113)
	6" (150)	6" BW (150)	—	—	—	\$10,461	270 (122)			

* Optional weld-in pilot solenoid, **Type HS8W with integral strainer, List Each \$807.**

** Weld-in connection type 1 1/2" to 2 1/2" (40 to 65 mm) SW, 3" to 6" (80 to 150 mm) BW, add 'W' suffix, i.e. HCK2W.

**1-1/2" WN Flanges List Extra \$232

HS9B/HS9BW GAS-POWERED SOLENOID VALVES

Flanged and Weld-in

Solenoid exhaust to open, solenoid gas power to close (with dual pilot solenoid valves). Rugged, ductile iron body. 1/2" SW (FPT on request) flange union with an internal disc strainer is included. 5" and 6" (125 and 150 mm) are integral butt weld end only. Pilot solenoid valves provided in prepiped assembly, including standard coils with 18" wire leads.

To Order: Specify model, port size, voltage and connection size and style.

Note: Pilot valve assembly direct weld-in available upon request. Pilot valve assembly is flanged.



HS9B

Model	Port Size inch (mm)	Connections Available Flange Styles and Sizes			List Price				Weight lbs (kg) Complete with Pilots & Flanges
		FPT, SW, WN (DN)		Pilot Line FPT	With 2 Pilot Solenoid Valve Assembly				
		Standard	Also		FPT, SW	WN, ODS	Weld-In*		
HS9B HS9BW	1 1/4" (32)	1 1/4" (32)	1 1/2" WN** (40)	1/2"	\$2,448	\$2,482	—	29 (13)	
	1 1/2" (40)	1 1/2" (40)	2" (50)	1/2"	\$2,708	\$2,743	\$3,859	53 (24)	
	2" (50)	2" (50)	1 1/2" (40)	1/2"	\$2,742	\$2,777	\$3,938	53 (24)	
	2 1/2" (65)	2 1/2" (65)	3" (80)	1/2"	\$3,422	\$3,471	\$4,713	84 (38)	
	3" (80)	3" (80)	—	1/2"	\$4,165	\$4,258	\$5,571	96 (44)	
	4" (100)	4" (100)	—	1/2"	\$5,526	\$5,667	\$6,644	148 (67)	
	5" (125)	5" BW (125)	—	1/2"	—	—	\$10,653	259 (117)	
	6" (150)	6" BW (150)	—	1/2"	—	—	\$14,226	279 (126)	

* Weld-in connection type 1 1/2" to 2 1/2" (32 to 65 mm) SW, 3" to 6" (80 to 150 mm) BW.

**1-1/2" WN Flanges List Extra \$232

Simple – Safe – Reliable

HCK5D/HCK5DW GAS-POWERED TWO STEP SUCTION STOP VALVES

Flanged and Weld-in

Heavy duty, flanged or weld-in, gas-powered two step suction stop valves. Self-equalizing with a delayed opening feature after defrost or power failure. Internal, controlled bleed down piston design. 1/2" SW (FPT on request) flange union with internal disc strainer included.

To Order: Specify model, port size, voltage and connection size and style.



HCK5D

NOW AVAILABLE IN MVP (see page 3)

Model	Port Size inch (mm)	Connections Available Flange Styles and Sizes		List Price						Weight lbs (kg) Complete with Pilot & Flanges
		FPT, SW, WN (DN) ODS (DN/ODS)		Less Pilot Solenoid			Add Pilot Solenoid			
		Standard	Also	FPT,SW	WN,ODS	Weld-In**	Without Strainer	* With Strainer	Model	
HCK5D HCK5DW	1 1/2" (40)	1 1/2" (40)	2" (50)	\$2,073	\$2,108	\$2,358				59 (27)
	2" (50)	2" (50)	1 1/2" (40)	\$2,145	\$2,180	\$2,477				59 (27)
	2 1/2" (65)	2 1/2" (65)	3" (80)	\$2,633	\$2,682	\$3,059	\$530	\$651	HS8A	91 (41)
	3" (80)	3" (80)	—	\$3,081	\$3,174	\$3,643				103 (47)
	4" (100)	4" (100)	—	\$4,562	\$4,703	\$5,263				155 (70)

* Optional weld-in pilot solenoid, **Type HS8W with integral strainer, List Each \$807.**

** Weld-in connection type 1 1/2" to 2 1/2" (40 to 65 mm) SW, 3" to 4" (80 to 100 mm) BW, add 'W' suffix, i.e. HCK5DW.

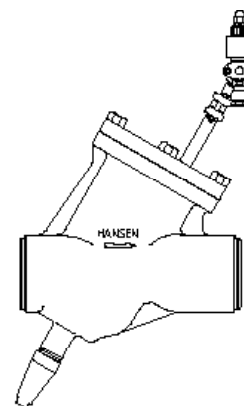
HCK5W GAS-POWERED SUCTION STOP VALVES

Weld-In

HCK5W Suction Stop Valves are available having delayed opening in case of power failure. A pressure pilot gradually bleeds down evaporator pressure to a safe differential. Pressure and solenoid pilots provided in prepiped 3/4" FPT flanged assembly.

To Order: Specify model, port size, voltage and connection size and style.

Model	Port Size inch (mm)	Connections Available Flange Styles and Sizes		List Price			Weight lbs (kg) Complete with Pilot & Flanges
		FPT, SW, WN (DN), ODS		With Pilot Assembly			
		Standard	Also	FPT,SW	WN,ODS	Weld-In	
HCK5W	5" (125)	5"BW (125)	—	—	—	\$7,741	263 (119)
	6" (150)	6"BW (150)	—	—	—	\$11,596	283 (128)



HCK5W

HCK4 IN-LINE CHECK VALVES

Flanged

Compact, flanged, in-line (non-return) check valves open wide for flow in arrow direction on body, valves close when pressure reversals occur. Seat discs and springs are stainless steel.

HCK4LR Gravity Drain Low Pressure Drop

The HCK4LR series of in-line gravity drain check valves are dependable, compact and rugged. The HCK4LR gravity drain check valves feature a low wide-opening pressure differential suitable for liquid transfer systems and other low pressure drop applications. Available in 2", 3" and 4" (50, 80, and 100 mm); add suffix "LR" to model.

Kits available with spacer for direct replacement of Wolf-Linde/H.A. Phillips:

3" (80 mm) Replacement Kit, Part No. 72-1001, List \$1,101

4" (100 mm) Replacement Kit, Part No. 72-1002, List \$1,718

To Order: Specify model, flange connection style and size. For CO₂ service, contact factory; UL Listed.



HCK4

Model	Port Size inch (mm)	List Price			Weight lbs (kg)
		FPT, SW	WN, ODS	Less Flanges w/Adapter†	
HCK4-2	5/8" (16)	\$231	\$261	\$199	2 (0.9)
HCK4-3	3/4" (20)	\$260	\$294	\$217	5 (2.3)
HCK4-4	1" (25)	\$323	\$357	\$280	5 (2.3)
HCK4-5*	1 1/4" (32)	\$430	\$464	\$387	5 (2.3)
HCK4-7	1 1/2" (40)	\$571	\$606	\$493	14 (6.4)
HCK4-8	2" (50)	\$638	\$673	\$560	15 (6.8)
HCK4-9	2 1/2" (65)	\$937	\$986	\$768	26 (12)
HCK4-0	3" (80)	\$1,206	\$1,299	\$1,007	27 (12)
HCK4-1	4" (100)	\$1,939	\$2,080	\$1,629	35 (16)
HCK4-8LR	2" (50)	\$638	\$673	—	15 (6.8)
HCK4-0LR	3" (80)	\$1,206	\$1,299	—	27 (12)
HCK4-1LR	4" (100)	\$1,939	\$2,080	—	35 (16)

† Adapter ring MAR needed for close-coupling to valves. Special loaded check valves for defrost condensate float drain applications are available, specify model HCK4-2-10, HCK4-2-18 or HCK4-2-30 (used with liquid drainer HD101, see page 27).

* 1 1/4" is standard 2-bolt flange design; HCK4-6 4-bolt flange style available to replace 1 1/4" R/S, contact factory.

HCK1/HCK1W PISTON TYPE CHECK VALVES

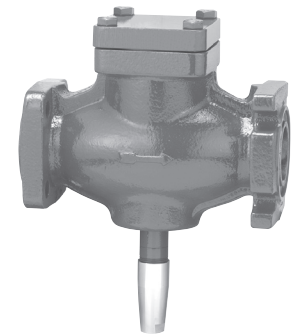
Flanged and Weld-in

Heavy duty, piston type check valves control the flow of refrigerant, and compressor discharge. Valves open wide for flow in arrow direction on valve body and close when flow reversals occur.

The HCK1 is suitable for compressor or pump discharge, hot gas lines and pulsating pressure applications. Contact factory for Screw Compressor Side Port Applications. Suitable for Ammonia, R-22, R-134a, and other approved refrigerants.

To Order: Specify model, flange connection style and size.

Model	Port Size inch (mm)	List Price		Weld-In*	Weight lbs (kg)
		FPT, SW	WN, ODS		
HCK1 HCK1W	3/4" (20)	\$541	\$575	\$717	20 (9)
	1" (25)	\$570	\$604	\$786	20 (9)
	1 1/4" (32)	\$817	\$851	\$1,066	20 (9)
	1 1/2" (40)	\$1,067	\$1,102	\$1,336	44 (20)
	2" (50)	\$1,143	\$1,178	\$1,455	44 (20)
	2 1/2" (65)	\$1,473	\$1,522	\$1,877	76 (35)
	3" (80)	\$2,035	\$2,128	\$2,576	88 (40)
	4" (100)	\$3,141	\$3,282	\$3,815	146 (66)
	5" (125)	—	—	\$5,758	250 (113)
6" (150)	—	—	\$9,564	270 (122)	



HCK1

* Weld-in connection type 3/4" to 2 1/2" (20 to 65 mm) SW, 3" to 6" (80 to 150 mm) BW.

COMBINATION STOP/CHECK VALVES

Socket Weld and Butt Weld

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 reseal 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. Angle body is standard. Straight through bodied valves available on special order; contact factory. Handwheels also available.

To Order: Specify catalog number. Check valve capacity prior to ordering, line sizing is not recommended.



HSCK200C

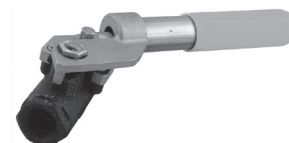
Catalog Number		Port Size inch (mm)	List Price	Weight lbs (kg)	
Socket Weld	HSCK125C	1¼" (32)	\$718	7	(3.2)
	HSCK150C	1½" (40)	\$776	8	(3.6)
	HSCK200C	2" (50)	\$1,073	12	(5.4)
Butt Weld	HSCK250C	2½" (65)	\$1,477	21	(9.5)
	HSCK300C	3" (80)	\$1,902	29	(13)
	HSCK400C	4" (100)	\$2,450	44	(20)
	HSCK500C	5" (125)	\$3,897	65	(29)
	HSCK600C	6" (150)	\$4,925	82	(37)

LIQUID DRAIN BALL VALVES

Spring return ball valves available with carbon steel or stainless steel valve bodies.

To Order: Specify catalog number.

Catalog Number		Size inch (mm)	List Price	Weight lbs (kg)	
Carbon Steel	50-2644	½" (13)	\$436	1.3	(0.6)
	50-2645	¾" (20)	\$536	2.0	(0.9)
	50-2646	1" (25)	\$562	2.3	(1.0)
Stainless Steel	50-2647	½" (13)	\$514	1.3	(0.6)
	50-2648	¾" (20)	\$626	2.0	(0.9)
	50-2649	1" (25)	\$719	2.3	(1.0)



Liquid Drain Ball Valve

SHUT-OFF VALVES**(For Ammonia, Halocarbons, CO₂)**

Rugged shut-off valves are a strong, reliable component for modern industrial refrigeration applications and suitable for liquid, suction, hot gas, discharge, recirculating liquid or oil lines.

Screwed Bonnet Threaded Valves feature non-leak stainless steel stems, and ductile iron bodies. Threaded, Socket Weld and Butt Weld Bolted Bonnet Valves feature large bonnet bolts for exceptional strength, non-leak stainless steel stems, and forged steel or low temperature cast steel bodies.

To Order: Specify model. For CO₂ service, contact factory for pricing.

CE Mark for 1 1/4" (32 mm) and larger; **10% List Extra.**

5/8" thru 4-1/8" ODS angle valves available, **20% List Extra.**



GSB076H

AW200C

Size inch (mm)	End Connection	Globe		Angle		List Prices		Weight lbs (kg)	
		Handwheel	Seal Cap	Handwheel	Seal Cap	Globe	Angle	Globe	Angle
3/8" (10)	Thrd/Scrw'd Bonnet	GT038H	GT038C	AT038H	AT038C	\$170	\$170	3 (1.4)	3 (1.4)
1/2" (13)	Thrd/Scrw'd Bonnet	GT051H	GT051C	AT051H	AT051C	\$174	\$174	3 (1.4)	3 (1.4)
	Threaded	GTB051H	GTB051C	ATB050H	ATB050C	\$201	\$201	5 (2.3)	5 (2.3)
	Socket Weld	GSB051H	GSB051C	ASB050H	ASB050C	\$203	\$203	5 (2.3)	5 (2.3)
	Butt Weld	GWB051H	GWB051C	AWB050H	AWB050C	\$222	\$222	5 (2.3)	5 (2.3)
3/4" (20)	Thrd/Scrw'd Bonnet	GT076H	GT076C	AT076H	AT076C	\$199	\$199	3 (1.4)	3 (1.4)
	Threaded	GTB076H	GTB076C	ATB075H	ATB075C	\$240	\$240	5 (2.3)	5 (2.3)
	Socket Weld	GSB076H	GSB076C	ASB075H	ASB075C	\$241	\$241	5 (2.3)	5 (2.3)
	Butt Weld	GWB076H	GWB076C	AWB075H	AWB075C	\$262	\$262	5 (2.3)	5 (2.3)
1" (25)	Threaded	GTB101H	GTB101C	ATB100H	ATB100C	\$251	\$251	6 (2.7)	6 (2.7)
	Socket Weld	GSB101H	GSB101C	ASB100H	ASB100C	\$254	\$254	6 (2.7)	6 (2.7)
	Butt Weld	GWB101H	GWB101C	AWB100H	AWB100C	\$275	\$275	6 (2.7)	6 (2.7)
1-1/4" (32)	Threaded	GTB126H	GTB126C	ATB125H	ATB125C	\$349	\$349	6 (2.7)	6 (2.7)
	Socket Weld	GSB126H	GSB126C	ASB125H	ASB125C	\$349	\$349	6 (2.7)	6 (2.7)
	Butt Weld	GWB126H	GWB126C	AWB125H	AWB125C	\$382	\$382	6 (2.7)	6 (2.7)
1-1/2" (40)	Socket Weld	GS150H	GS150C	AS150H	AS150C	\$485	\$485	20 (9)	15 (6.8)
	Butt Weld	GW150H	GW150C	AW150H	AW150C	\$516	\$516	20 (9)	15 (6.8)
2" (50)	Socket Weld	GS200H	GS200C	AS200H	AS200C	\$559	\$559	21 (9.5)	16 (7.2)
	Butt Weld	GW200H	GW200C	AW200H	AW200C	\$579	\$579	21 (9.5)	16 (7.2)
2-1/2" (65)	Socket Weld	GS251H	GS251C	AS251H	AS251C	\$750	\$750	40 (18)	25 (11)
	Butt Weld	GW251H	GW251C	AW251H	AW251C	\$769	\$769	40 (18)	25 (11)
3" (80)	Butt Weld	GW301H	GW301C	AW301H	AW301C	\$1,113	\$1,113	41 (19)	26 (12)
4" (100)	Butt Weld	GW402H	GW402C	AW402H	AW402C	\$1,440	\$1,440	50 (23)	43 (20)
5" (125)	Butt Weld	GW500H	GW500C	AW500H	AW500C	\$2,621	\$2,430	79 (37)	64 (29)
6" (150)	Butt Weld	GW600H	GW600C	AW600H	AW600C	\$3,034	\$2,809	108 (49)	88 (40)
8" (200)	Butt Weld	GW800H	GW800C	AW800H	AW800C	\$6,430	\$5,955	249 (113)	196 (89)
10" (250)	Butt Weld	GW1000H	GW1000C	AW1000H	AW1000C	\$13,655	\$12,643	379 (172)	312 (142)
12" (300)	Butt Weld	GW1200H	GW1200C	AW1200H	AW1200C	\$19,900	\$18,434	703 (320)	583 (265)
14" (350)	Butt Weld	GW1400H	GW1400C	AW1400H	AW1400C	\$39,932	\$36,958	895 (407)	718 (326)
16" (400)	Butt Weld	-	-	AW1600H	AW1600C	-	\$51,108	-	1037 (470)
18" (450)	Butt Weld	-	-	AW1800H	AW1800C	-	\$62,061	-	1216 (553)

*Note: 1" and 1-1/4" Threaded/Screwed Bonnet Valves were obsoleted in June 2013.

HAND EXPANSION VALVES

(For Ammonia, Halocarbons, CO₂)

Precision-calibrated, adjustable, slotted plug flow regulating Hand Expansion Valves are ideal for metering or flashing expansion of liquid refrigerants. Featuring slotted plugs for linear flow regulation along with Teflon seat discs for tight closing. Slotted plugs increase accuracy and are more tolerant of dirt particles than metal-seated tapered-plug expansion valves.

Valve stems are stainless steel and have double seals to eliminate stem leakage. The patented non-leak seal plus packing design permits low torque operation for valve adjustments since the packing nut requires little tightening. Bar handle or yellow seal caps distinguish these regulators from shut-off valves.

To Order: Specify model. For CO₂ service, contact factory for pricing.
 CE Mark for 1 1/4" (32 mm) and larger, **10% List Extra.**
 5/8" thru 4-1/8" ODS angle valves available, **20% List Extra.**



RSB076H
SOCKET WELD

VSB125C
SOCKET WELD

Size inch (mm)	End Connection	Globe		Angle		List Prices		Weight lbs (kg)	
		Bar Handle	Seal Cap	Bar Handle	Seal Cap	Globe	Angle	Globe	Angle
3/8" (10)	Thrd, Scrwd Bonnet	RT038H	RT038C	VT038H	VT038C	\$184	\$184	3 (1.4)	3 (1.4)
1/2" (13)	Thrd, Scrwd Bonnet	RT051H	RT051C	VT051H	VT051C	\$191	\$191	3 (1.4)	3 (1.4)
	Threaded	RTB051H	RTB051C	VTB050H	VTB050C	\$218	\$218	5 (2.3)	5 (2.3)
	Socket Weld	RSB051H	RSB051C	VSB050H	VSB050C	\$223	\$223	5 (2.3)	5 (2.3)
	Butt Weld	RWB051H	RWB051C	VWB050H	VWB050C	\$241	\$241	5 (2.3)	5 (2.3)
3/4" (20)	Thrd, Scrwd Bonnet	RT076H	RT076C	VT076H	VT076C	\$214	\$214	3 (1.4)	3 (1.4)
	Threaded	RTB076H	RTB076C	VTB075H	VTB075C	\$245	\$245	5 (2.3)	5 (2.3)
	Socket Weld	RSB076H	RSB076C	VSB075H	VSB075C	\$250	\$250	5 (2.3)	5 (2.3)
	Butt Weld	RWB076H	RWB076C	VWB075H	VWB075C	\$262	\$262	5 (2.3)	5 (2.3)
1" (25)	Threaded	RTB101H	RTB101C	VTB100H	VTB100C	\$289	\$289	6 (2.7)	6 (2.7)
	Socket Weld	RSB101H	RSB101C	VSB100H	VSB100C	\$292	\$292	6 (2.7)	6 (2.7)
	Butt Weld	RWB101H	RWB101C	VWB100H	VWB100C	\$312	\$312	6 (2.7)	6 (2.7)
1-1/4" (32)	Threaded	RTB126H	RTB126C	VTB125H	VTB125C	\$365	\$365	6 (2.7)	6 (2.7)
	Socket Weld	RSB126H	RSB126C	VSB125H	VSB125C	\$365	\$365	6 (2.7)	6 (2.7)
	Butt Weld	RWB126H	RWB126C	VWB125H	VWB125C	\$401	\$401	6 (2.7)	6 (2.7)
1-1/2" (40)	Socket Weld	RS150H	RS150C	VS150H	VS150C	\$558	\$558	20 (9)	15 (6.8)
	Butt Weld	RW150H	RW150C	VW150H	VW150C	\$629	\$629	20 (9)	15 (6.8)
2" (50)	Socket Weld	RS200H	RS200C	VS200H	VS200C	\$632	\$632	21 (9.5)	16 (7.2)
	Butt Weld	RW201H	RW201C	VW201H	VW201C	\$656	\$656	21 (9.5)	16 (7.2)
2-1/2" (65)	Butt Weld	RW251H	RW251C	VW251H	VW251C	\$1,015	\$1,015	40 (18)	25 (11)
3" (80)	Butt Weld	RW301H	RW301C	VW301H	VW301C	\$1,370	\$1,370	41 (19)	26 (12)
4" (100)	Butt Weld	RW402H	RW402C	VW402H	VW402C	\$1,770	\$1,770	50 (23)	43 (20)

*Note: 1" and 1-1/4" Threaded/Screwed Bonnet Valves were obsoleted in June 2013.

SHUT-OFF AND HAND EXPANSION VALVES: EXTENDED NECK

Extended Neck Shut-off and Hand Expansion Valves are available with bolted bonnet design, 316 stainless steel stem and packing nut.

Extended Neck valves meet or exceed the insulation thickness recommended in IAR Piping Handbook. Contact factory for pricing.

PRESSURE RELIEF VALVES

Designed to provide emergency relief from excessive pressure in refrigerant containing vessels. Built in strict conformance with ASME Boiler and Pressure Vessel Code requirements for safety relief devices. Each valve bears the ASME code symbol of certification (UV). Capacities are rated by the National Board of Boiler and Pressure Vessel Inspectors. All pressure relief valves feature an installation date tag.

Reduced Capacity

Reduced capacity pressure relief valves meet discharge line sizing requirements; pressure drop through the Hansen three-way dual manifold valve is less than 3% of the pressure setting. Green date tag indicates reduced capacity valve. Add "R" suffix to model number.

To Order: Specify model number, inlet/outlet connection size and pressure setting. For reduced capacity, dual or dual union options, add appropriate suffix to model number. For CO₂ service, contact factory.

Setting Certificate, access to electronic version of setting certificate now included; see Hantech.com.



H5600R

Model	Connections		List Price		Weight			
			Single	Dual†	Single		Dual	
	Bottom Inlet	Side Outlet	Standard	Standard	lbs	(kg)	lbs	(kg)
H5600A	½" FPT	¾" FPT	\$475	\$1,359	4	(1.8)	12	(5.4)
H5601	½" FPT	1" FPT	\$479	\$1,367	4	(1.8)	12	(5.4)
H5602	¾" FPT	1" FPT	\$573	\$1,595	4	(1.8)	12	(5.4)
H5613	1" FPT	1¼" FPT	\$812	\$2,342	8	(3.6)	27	(12.2)
H5604	1¼" FPT	1½" FPT	\$1,297	\$3,616	8	(3.6)	27	(12.2)

Reduced Capacity Pressure Relief Valves

H5600R	½" FPT	¾" FPT	\$475	\$1,359	4	(1.8)	12	(5.4)
H5602R	¾" FPT	1" FPT	\$573	\$1,595	4	(1.8)	12	(5.4)
H5632R	¾" FPT	1" FPT	\$573	\$1,595	4	(1.8)	12	(5.4)
H5633R	1" FPT	1¼" FPT	\$812	\$2,342	8	(3.6)	27	(12.2)
H5634R	1¼" FPT	1½" FPT	\$1,297	\$3,616	8	(3.6)	27	(12.2)

†Dual Pressure Relief Valve Kit includes two pressure relief valves, a three-way dual shut-off valve, and two nipples, unassembled. Add "D" suffix to model number.

Standard pressure settings: 150*, 175, 200, 225, 250*, 275, 300*, 325, 350 psig. 400 psig (27.6 bar g) available for all models except H5601 and H5602. (*Stock pressure settings.) Custom pressure settings in psig, bar, or kPa are available upon request. Minimum pressure setting is 150 psig. For halocarbon systems, rupture disc assemblies are required; see below.

THREE-WAY DUAL SHUT-OFF VALVES

For parallel installation of pressure relief valves in accordance with ANSI/ASHRAE 15-2007 Safety Code for Mechanical Refrigeration (pressure vessels having 10 cubic feet or more of internal gross volume, shall be fitted with dual pressure relief valves). Considered the only acceptable type of shut-off valve for use with refrigerant relief piping because one valve remains operational, while the other is being replaced; thereby eliminating the need to remove refrigerant from the vessel. UPDATED NOTE: 600 PSIG SWP

To Order: Specify model number and connection size.

Model*	Size	List Price		Weight lbs (kg)	
		FPT	SW, BW		
		Standard	Standard		
H8021	½"	\$323	\$388	3	(1.3)
H8022	¾"	\$339	\$404	3	(1.3)
H8024	1"	\$536	\$641	10	(4.5)
H8025	1¼"	\$746	\$896	10	(4.5)



H8021

* Standard Inlet and outlet connections are threaded female NPT all the same size. Add "S" suffix (socket weld) or "W" suffix (butt weld) to model number, ie H8021S, H8022W

RUPTURE DISC ASSEMBLY

Relief device used in series with a pressure relief valve. Two 1/8" FPT side ports are provided for installation of a pressure gauge or switch to indicate a discharge. For halocarbon systems, rupture disc assemblies are required; see below.

To Order: Specify model number, pressure setting (150, 250, 300, 350 or 400* psi), and optional pressure gauge or pressure switch. *400 psi available for RDA1 and RDA2 only.

1/8" MPT Pressure Gauge, **HG25: List Price \$126.** 1/8" MPT Pressure Switch, **HPS: List Price \$514.**

Stamped capacity of relief valve when installed with rupture disc device between the inlet of the valve and the vessel shall be multiplied by a factor 0.90 of the rated relieving capacity of the relief valve alone.

Model	Connection Size MPT x MPT	List Price				Weight lbs (kg)	
		150, 250, 300 PSIG	350 PSIG	400 PSIG	400 PSIG		
RDA1	½" MPT x MPT	\$641	\$1,282	\$1,282	1	(0.5)	
RDA2	¾" MPT x MPT	\$825	\$1,650	\$1,650	2	(0.9)	
RDA4A	1" MPT x FPT	\$935	\$1,870	—	2	(0.9)	
RDA5A	1¼" MPT x FPT	\$1079	\$2,158	—	3	(1.4)	



Three Way Dual Relief Valve with Rupture Disc Assembly and Pressure Gauges



Self-Alarming Relief Valves!

Detects when relief valve lifts.
Provides bright LED indication.
Includes ACT Coating.

NEW!!! Optional Version of **POP-EYE™** for Computer Interface or Remote Notification will be Available Late Spring 2022

EZ-SRV™ CARTRIDGE RELIEF VALVES

Designed to provide emergency relief from excessive pressure in refrigerant containing vessels. These valves are built in strict conformance with both ASME Boiler and Pressure Vessel Code requirements and ISO 4126 — Safety Devices for Protection of Excessive Pressure. Each valve bears the ASME code symbol of certification (UV), and features an installation date tag. Valve capacities are rated by the National Board of Boiler and Pressure Vessel Inspectors (NB).

EZ-SRV™ cartridge valves offer the same reduced capacities as Hansen H5600 “R” series relief valves. The revolutionary cartridge design allows for quick, easy replacement with no need to disconnect from the relief piping. The EZ-Fitting is available with welded or threaded end connections. EZ-Fittings have a built-in 1/4” NPT gauge port connection to facilitate safer and controlled servicing. A 1/4” MPTxFTPT gauge valve such as the H7771 can be installed in gauge port to facilitate servicing. The optional HG27 compact gauge has two pressure needles. The black needle shows current pressure and the red tell-tale needle shows highest pressure seen by gauge.

Retrofitting Existing Valves

The Hansen EZ-Adapter component simplifies retrofitting of existing Hansen relief valves. The EZ-Adapter provides the same centerline dimensions as the H5600 series relief valve installed with a 2” long nipple, thereby minimizing piping changes to discharge line connections.

OPTIONAL ACCESSORIES

HG27 Gauge, 2” Face, Tell-tale needle 0-600 psi. 1/4” MPT; List \$178

H7771 Angle Gauge Valve, 1/4” MPTxFTPT; List \$98

Setting Certificate, access to electronic version of setting certificate now included; see Hantech.com



H7771 Gauge Valve shown with HG27 Gauge



EZ-SRV™ Cartridge Relief Valve shown with EZ-Fitting



EZ-SRV™ Cartridge Relief Valve

REFRIGERANT GAS SERVICE ONLY RELIEF VALVES

CATALOG NUMBER (EZ-SRV + EZ-FITTING)		CONNECTION SIZE		EQUIVALENT H5600 SERIES VALVE	LIST PRICE		REPLACEMENT EZ-SRV CARTRIDGE VALVE ONLY	
THREADED	WELDED	BOTTOM INLET	SIDE OUTLET		SINGLE	DUAL †	CATALOG NUMBER	LIST PRICE
EZB-BT1	EZB-BW1	1/2" (13 MM)	3/4" (20 MM)	H5600R	\$522	\$1,367	EZB	\$347
EZB-BT2	EZB-BW2	3/4" (20 MM)	1" (25 MM)	H5602R	\$610	\$1,559	EZB	\$347
EZC-BT2	EZC-BW2	3/4" (20 MM)	1" (25 MM)	H5632R	\$670	\$1,679	EZC	\$403
EZE-BT4	EZE-BW4	1" (25 MM)	1-1/4" (32 MM)	H5633R	\$958	\$2,452	EZE	\$640
EZF-BT5	EZF-BW5	1-1/4" (32 MM)	1-1/2" (40 MM)	H5634R	\$1,769	\$4,284	EZF	\$1,180

† Currently available as threaded connection only. Includes a three-way dual shut-off valve, two EZ-SRV and two EZ-Fittings.

Standard pressure settings are: 150, 175, 200, 225, 250*, 275, 300*, 325, 350, 400, 450, 500, 550, and 600 psig (41 bar g). Except for EZE & EZF (400 psig/28 bar g max). (*Stock pressure settings.) Custom pressure settings are available; can be set bar or kpa, contact factory. May require extra delivery time.

To Order: Specify catalog number, pressure setting, optional H7771 Gauge Valve and HG27 Pressure Gauge. For halocarbon applications, a rupture disc assembly is required, see page 18.

To Order Dual Kits: Add “D” suffix for Dual Kit to EZ-SRV™ pressure-relief valve catalog number. Specify inlet/outlet connection size and pressure setting.

Example: Dual Kit: EZB-BT1D, set at 250 psig.

REFRIGERANT LIQUID RELIEF VALVES

Hansen offers the EZLQ liquid relief valve, rated U.S. GPM. Typical applications include ASME vessels, oil coolers and other components that can be isolated by control valves or manual shut-off valves.

CATALOG NUMBER (EZ-SRV + EZ-FITTING)		CONNECTION SIZE		LIST PRICE	CAPACITY** GPM - WATER	REPLACEMENT EZ-SRV CARTRIDGE VALVE ONLY	
THREADED	WELDED	BOTTOM INLET	SIDE OUTLET			CATALOG NUMBER	LIST PRICE
EZLQ-BT1	EZLQ-BW1	1/2" (13 MM)	3/4" (20 MM)	\$509	13 GPM@50 PSID 16 GPM@75 PSID 18 GPM@100 PSID	EZLQ	\$334
EZLQ-BT2	EZLQ-BW2	3/4" (20 MM)	1" (25 MM)	\$600			

To Order: Specify catalog number and pressure setting: 50, 75, or 100 psid (3.5, 5.0, or 7.0 bar g).

GAUGE, PURGE & TRANSDUCER VALVES

Threaded

These specially designed refrigerant gauge, purge and transducer valves feature tough, forged steel bodies, compact size, and polished stainless steel stems. The patented o-ring plus packing dual seal design and polished stainless steel stem virtually eliminates stem seal leakage. Safety stems are designed to be non-removable from the body to avoid dangerous stem “blow out”.

Gauge valves are available with seal caps, bar handles or bare stems. Often used to isolate pressure gauges on regulators and safety relief valves. These valves may also be used for pumpout and purging of refrigerant liquid or gas. The transducer valve makes it easy to calibrate or replace the device without pumping down the system.

To Order: Specify catalog number. If ordering 100 or more of any one model, **Deduct Extra 10%**. Weight 0.6 lb (0.3 kg).



H957H



H7771



HGV1



H9490

Now standard with ACT!

Description	Seal Cap		Bar Handle		Bare Stem	
	Model	List Price	Model	List Price	Model	List Price
¼" MPT x FPT, Angle, Long Neck [†]	HGV1*	\$115	HGV1H	\$118	HGV2	\$111
¼" MPT x FPT, Angle	H7771*	\$98	H7771H	\$111	H965	\$93
¼" FPT x FPT, Angle	H7772	\$104	H7772H	\$112	H967	\$97
¼" FPT x FPT, Globe	H957C	\$117	H957H	\$119	H957	\$112
⅜" MPT x FPT, Angle	H7773	\$141	H7773H	\$146		
⅜" FPT x FPT, Angle	H7774	\$143	H7774H	\$146		
⅜" FPT x FPT, Globe	H958C	\$140	H958H	\$148		
½" MPT x 3/8" FPT, Angle	H7777	\$148				
½" MPT x ¼" FPT, Angle	H7778	\$148				
¼" MPT x FPT x FPT, Transducer Valve	H9490	\$183				

Note: H9490 not available with ACT.

† Long Neck[®] valves provide additional length for insulation and pressure gauge turning clearance.

* HGV1 and H7771, available as welded versions, HGV1W and H7771W. Delivered with butt weld inlet connection; same list price as standard version.

REFRIGERANT FLOAT SWITCHES

Steel tank assembly with combination 3/4" FPT/1" butt weld connections. Standard 2" (50 mm) differential prevents most short cycling due to momentary changes in liquid level; other differentials down to 1/2" (13 mm) are available from stock. Optional switch housing heater is available for preventing moisture penetration in humid environments. CSA certification on HLL and HLLS for Canada. Switch assembly is NEMA4X.

To Order: Specify model number. Standard connection 1/2" fitting with three 18" (450 mm) wire leads. Add "E" suffix for switch with 4 wire, grounded DIN plug connector, Example: HLLLE. For CO₂ service, consult factory.



HLL

HLLLE

Model	Description	List Price	Weight lbs (kg)
HLL	Side & Bottom Connections	\$1,093	12 (5.4)
HLLC	Side & Bottom Connections with Metal Cover	\$1,236	13 (5.9)
E	DIN Plug on Any of Above, Add E Suffix. List Extra.	\$65	1 (0.5)
HLLSW	Switch Assembly Replacement Only, Hermetic	\$540	2 (0.9)
HLLSWE	Switch Assembly Replacement for DIN Plug "E"	\$605	2 (0.9)
COV	Metal Cover Only for All HLL	\$149	1 (0.5)
HTR1*	10 Watt 115V Heater for All HLL	\$292	1 (0.5)
HTR2*	10 Watt 230V Heater for All HLL	\$292	1 (0.5)

* To order float switch with heater, add HTR1 or HTR2, example: HLL/HTR1, 115v.

UL Recognized Component







H1100-R

SEE-LEVEL™ LIQUID INDICATORS

Liquid indicators for simple indication of true liquid levels in industrial and commercial refrigeration systems. Pre-stressed glass lens fused in steel retainer ring. Optional frost shield for clear viewing in frost conditions. Suitable for Ammonia, R-22, R-134a, CO₂ and other approved refrigerants. Housings meet requirements of ASME and PED for direct welding to vessels, receivers, level columns or liquid lines. Each unit marked for material traceability by lot code; certifications available on request. Large diameter Fused Metal reflex lens for easy viewing; clear lens also available. Frost shield length is suitable for temperatures down to -60°F (-51°C). Standard housing can be welded (fillet weld) into a 1.94" / 2" diameter opening or 1 1/2" socket weld fitting, or butt welded to a 1 1/2" pipe (Schedule 80). The scarfed (saddle milled) housing is available for simplified welding over a 1.5" (38 mm) hole, onto 2 1/2", 3", or 4" pipe, such as for level columns or liquid lines. Zinc plating standard.

To Order: Specify model number, and whether material certificate is required. 600 psi (41 bar g) standard rating.

Model Reflex Lens	Model Clear Lens	Description	List Price	Weight lbs (kg)
H1100-R	H1100	 Standard SEE-LEVEL™	\$245	2 (0.9)
H1100-RN	H1100-N	 With Frost Shield	\$293	2 (0.9)
H1100C-R	H1100C	 With Saddle Milled Housing	\$270	2 (0.9)
H1100C-RN	H1100C-N	 With Saddle Milled Housing With Frost Shield	\$317	2 (0.9)

VARI-LEVEL ADJUSTABLE LEVEL CONTROLS FOR REFRIGERANTS

The Vari-Level® consists of a level probe for a 3" or 4" pipe level column, a control unit for ON-OFF of up to five relay operated level control points: typically, a high alarm/cutout, operating level, and low alarm/cutout (3 points). For Ammonia, R-22, R-134a and other compatible refrigerants. CSA/US Certified and CE Mark standard.

Control Unit

Bright digital LED displays percent level in vessel. Each level control point is adjustable for height and operating differential with a built-in level simulator. Standard electrical input is 115V, 50/60Hz; 230V, 50/60Hz available. Options: 4-20 mA output module, MOD420, available for computer interface or remote digital readout. Mounts inside control unit.

Probes

Probe connection 3/4" MPT. Probes available in standard lengths. Custom lengths made to order. Probe length cannot be shortened in field. 50 feet (15 m) of cable included. Longer cable lengths available, **List Extra \$62** per each additional 50 feet (15 m). For low temperature applications below -60°F (-51°C), a 5" (125 mm) extended stainless steel neck is available: **List Extra \$486**.

Level Columns

Level Columns are 3" Schedule 40 pipe. Columns include one level sight glass for re-calibration plus high level float switch connections. Top probe connection on column is a 3/4" FPT; connections to vessel are combination 1" FPT / 1 1/4" butt weld. Top or bottom 3/4" FPT level column cap for field level column fabrication using 3" standard pipe: **Part No. 77-1053, List \$88**.

To Order: Specify model number, refrigerant, active probe length, and voltage. Custom level probe and level column lengths available in 1" increments; nonreturnable. **Add \$279 List Extra** to next longer length probe or column.

Note: Use Technical Equipment Discount Schedule.



LB3



Level Probe

VLT with Digital Readout

Control Unit Less Probe				Weight lbs (kg)
Model	# of Relays	Control Points (Typical)	List Price	
LB1	1	Operating Level	\$1,569	10 (5)
LB2	2	Operating and Low Level	\$1,729	10 (5)
LB3	3	Operating, Low and High Level	\$1,881	10 (5)
LB5	5	Operating (2), Low Level (2), and High Level	\$2,381	10 (5)
Options				
MOD420	4-20 mA Output Module		\$608	.5 (.2)
PSU	Optional 115VAC/230VAC:24VDC power supply unit		\$452	.5 (.2)

Probe					Level Column		
Model	Active Probe Length*	Nominal Insertion Length	List Price	Weight† lbs (kg)	Model	List Price	Weight† lbs (kg)
LP-02	20" (510)	25" (635)	\$843	11 (5)	LC-02	\$823	38 (17)
LP-03	30" (760)	35" (890)	\$930	12 (5.5)	LC-03	\$851	50 (23)
LP-04	40" (1015)	45" (1140)	\$1,081	13 (6)	LC-04	\$899	61 (28)
LP-06	60" (1525)	65" (1650)	\$1,199	16 (7.3)	LC-06	\$1,198	80 (36)
LP-08	80" (2030)	85" (2160)	\$1,428	18 (8.2)	LC-08	\$1,333	97 (44)
LP-10	100" (2540)	105" (2670)	\$1,616	22 (10)	LC-10	\$1,495	115 (52)
LP-12	120" (3050)	125" (3175)	\$1,857	26 (11.8)	LC-12	\$1,754	145 (66)
LP-14	144" (3660)	149" (3785)	\$2,959	30 (13.6)	-	-	-
LP-16	168" (4270)	173" (4395)	\$3,647	35 (16)	-	-	-

†Weight includes probes and level columns packed in crates. (Shipping Weight).

TECHNI-LEVEL™ TRANSDUCER PROBES

Level transducer probes with 4-20 mA isolated output for refrigerant level control in computer operated plants. Electronics are located on top of probe. 50 feet (15 m) of two wire cable is included. Level column connection on probe is 3/4" MPT. For Ammonia, R-22, R-134a and other approved refrigerants. CSA/US Certified.

Options

Built-in LCD digital readout. Add suffix "DR" to model, **List \$603**

Optional remote digital readout (RDR), **List \$799**.

Optional 115 VAC/230 VAC:24 VDC power supply unit (PSU), **List \$452**.

To Order: Specify model number, refrigerant, active probe length, and application. For CO₂ service, contact factory (40" to 120" only). Level Columns may be ordered for use with this product (for probe lengths up to 120" only), see Vari-Level® above. For low temperature applications below -60°F (-51°C), a 5" (125 mm) extended stainless steel neck is available, **List Extra \$485**. Explosion proof available **Add List \$1736**

Note: Use Technical Equipment Discount Schedule.

Level Transducer Probe				
Model	Active Probe Length* inch (mm)	Nominal Insertion Length inch (mm)	List Price	Weight† lbs (kg)
VLT-02	20" (510)	25" (635)	\$1,724	11 (5)
VLT-03	30" (760)	35" (890)	\$1,855	12 (5.5)
VLT-04	40" (1015)	45" (1140)	\$1,992	13 (6)
VLT-06	60" (1525)	65" (1650)	\$2,126	16 (7.3)
VLT-08	80" (2030)	85" (2160)	\$2,317	18 (8.2)
VLT-10	100" (2540)	105" (2670)	\$2,578	22 (10)
VLT-12	120" (3050)	125" (3175)	\$2,866	26 (11.8)
VLT-14	144" (3660)	149" (3785)	\$4,055	30 (13.6)
VLT-16	168" (4270)	173" (4395)	\$4,766	35 (16)

*Custom Level Probe and Level Column lengths are available; nonreturnable.

Add \$263 List Extra to next longer Length probe.

†Weight includes probes and level columns packed in crates. (Shipping Weight).

RECEIVER LEVEL TRANSDUCER PROBES (For Halocarbon Systems, especially Supermarkets)

Designed to be inserted directly into refrigerant receivers and facilitate the continuous measurement of refrigerant liquid levels. The following results can be tracked: refrigerant loss detection, refrigerant inventory measurements, warnings of excessive refrigerant levels, and insufficient refrigerant quantity.

Factory pre-calibrated and tested with no moving parts to break, jam, or fail.

Horizontal Receiver Probes (SHP) can also be used in short [less than 30" (762 mm) insertion] vertical receivers.

For vertical receivers 12" to 20" (305 to 508 mm) diameter (other diameters need special engineering). Maximum insertion length is 69" (1752 mm).

Output signal 0-5V, 0-10V, or 1-6V.

Optional, 3-wire 4-20 mA output available, Model SHA or SVA, List Extra \$279.

To Order: Specify model number; insertion length; refrigerant; and receiver diameter. Standard connection (3/4" NPT) or Rotalock connection (1 1/4" -12") available. Custom probe lengths available; nonreturnable.

Add \$279 List Extra to next longer length. For applications where refrigerant liquid temperature is below 32°F (0°C), use Techni-Level™ or Vari-Level level probes. Heavy-Duty construction is available for liquid temperatures below 50°F to 32°F, Model SSHP or SSVF, List Extra \$321

Note: Use Technical Equipment Discount Schedule.



SHP

SVP

For Horizontal Receivers, Standard Connection		
Model	Insertion Length inch (mm)	List Price
SHP06	6" (152)	\$1,002
SHP08	8" (203)	\$1,027
SHP10	10" (254)	\$1,050
SHP12	12" (305)	\$1,076
SHP14	14" (356)	\$1,128
SHP16	15.3" (388)	\$1,153
SHP20	19.2" (487)	\$1,175
SHP24	23.1" (586)	\$1,239
SHPxx	Custom Length	FACTORY
For Vertical Receivers, Standard Connection		
Model	Insertion Length inch (mm)	List Price
SVP30	30" (762)	\$1,068
SVP36	36" (914)	\$1,103
SVP48	48" (1219)	\$1,171
SVP54	54" (1372)	\$1,206
SVP60	60" (1524)	\$1,240
SVP69	69" (1753)	\$1,278
SVPxx	Custom Length	FACTORY

SINGLE POINT LEVEL CONTROLS

Designed to detect the presence of liquid refrigerant at a specific location in receivers/vessels, intercoolers, control pressure receivers, packaged chillers, compressor packages, pump packages, surge drums, and flooded evaporators.

May be used in place of float switches, for high and low level alarms in conjunction with plant computers, PLCs, or shut-off solenoid valves.

The relay output from the SPS level switch is suitable for direct connection to solenoids, alarms, and computers. No moving parts; plug-in electronics. Unaffected by normal splash or oil coating. Watertight NEMA 3R sensor housing. Sensor connection 1/2" MPT.

To Order: Specify model number and refrigerant. Standard connection is 1/2" MPT.

Adapter for use with Hansen See-Level™ and Phillips Level Eye®: **Part No. 77-1009, List \$149**

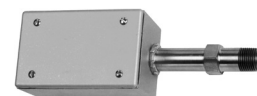
Adapter for use with Henry Type LI liquid indicators: **Part No. 77-1010, List \$149**

Note: Use Technical Equipment Discount Schedule.

Model		Description	List Price
Ammonia	Halocarbon		
SPLN	SPLF	Sensor 24V, 80mA	\$610
SPSN(1)	SPSF(1)	Switch 115V, 10A	\$689
SPSN(2)	SPSF(2)	Switch 230V, 5A	



SPL



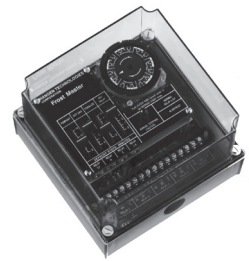
SPS

FROST MASTER® DEFROST CONTROLLERS

Frost Master® defrost controllers (timers) operate various control valves and fan relays to efficiently remove frost and ice accumulation from evaporator surfaces. There are four easy-to-set defrost steps: PUMPOUT, HOT GAS, EQUALIZE, and FAN DELAY. Defrost time and step duration are always visible. ¼" (6.4 mm) spade terminals for optional sensor defrost initiation and termination are provided. Available with 24-Hour or 7-Day Scheduling. SPDT relays, 10 amp switch rating with battery backup and NEMA 4 enclosure (watertight). CSA/NRTL Certified. Weight 4 lbs (1.8 kg).

To Order: Specify model number. The Frost Master® may be ordered less enclosure and with necessary metal mounting plate for panel installation, add "L" suffix to model number. CE Mark not available.

Note: Use Technical Equipment Discount Schedule.



Frost Master® FM-71

FROST MASTER® PLUS

The Frost Master® Plus includes an additional fifth defrost step, SOFT GAS, for individually timed opening of small soft (hot) gas solenoid valve prior to primary, hot gas solenoid valve for evaporator defrosting. Features built-in, adjustable temperature terminate with clamp-on defrosted sensor.

To Order: Specify model number. CE mark not available.

Note: Use Technical Equipment Discount Schedule

Model	Description	List Price	Weight lbs (kg)
FM-11-B	Frost Master® with Enclosure; 24 Hour Clock; 115V 50/60Hz	\$1,262	4 (1.2)
FM-71-B	Frost Master® with Enclosure; 7 Day Clock; 115V 50/60Hz		
FM-01	Frost Master® with Enclosure; Remote Initiate; 115V 50/60Hz		
FM-12-B	Frost Master® with Enclosure; 24 Hour Clock; 230V 50/60Hz		
FM-72-B	Frost Master® with Enclosure; 7 Day Clock; 230V 50/60Hz		
FM-02	Frost Master® with Enclosure; Remote Initiate; 230V 50/60Hz		
FMP-11-B	Frost Master® Plus with Enclosure; 24 Hour Clock; 115V 50/60Hz	\$1,590	4 (1.2)
FMP-71-B	Frost Master® Plus with Enclosure; 7 Day; 115V 50/60Hz		
FMP-01	Frost Master® Plus with Enclosure; Remote Initiate; 115V 50/60Hz		



Remote Initiate Model FM-01

Note: In 2011, Grasslin timeclocks ("B" suffix) became standard; previously, Diehl timeclocks ("A" suffix) were used.

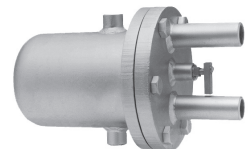
TS2 Temperature Sensor, List \$ 97

HIGH SIDE FLOATS (FLOAT DRAIN REGULATORS)

Ideal for metering high-pressure refrigerant liquid to a lower-pressure vessel without allowing refrigerant gas to pass. Self-contained, requires no pilot valve-to-main valve piping. For individual condenser drain to a single evaporator or to a controlled pressure receiver, condensate removal from heat recovery coil, liquid drain from hot gas defrost main, or defrosting evaporator liquid draining. Each valve is supplied with combination 1" weld / ¾" FPT. Vent/purge and oil drain connections for optional use (½" FPT for HT100 size).

To Order: Specify model number, refrigerant, inlet temperature and pressure, outlet temperature and pressure, and flow rate in tons or lbs/minute (kW or kg/s). For other operating conditions and refrigerants, contact factory.

Note: Use Technical Equipment Discount Schedule.



HT200N

Ammonia		R22		Connections	List Price	Weight lbs (kg)
Model	+86°F to +10°F (+30°C to -15°C)	Model	+86°F to +10°F (+30°C to -15°C)			
HT100N	20 Tons (70 kW)	HT100F	5.5 Tons (19 kW)	¾" FPT (20mm)/ 1" Weld (25mm)	\$2,566	34 (15)
HT200N	125 Tons (439 kW)	HT200F	33 Tons (116 kW)	1½" Weld (40mm)	\$3,189	71 (32)
HT300N	360 Tons (1266 kW)	HT300F	100 Tons (351 kW)	2" Weld (50mm)	\$4,348	121 (55)

DEFROST CONDENSATE LIQUID DRAINER

Designed for liquid condensate drain of an evaporator during hot gas defrost. Adjustable vent valve bypass.

To Order: Specify model number, refrigerant, inlet temperature and pressure, outlet temperature and pressure, and flow rate in tons or lbs/minute (kW or kg/s).

Note: Limited 100 psid MOPD on HD101. Use Technical Equipment Discount Schedule.



HD101

Ammonia		R22		Connections	List Price	Weight lbs (kg)
Model	Capacity	Model	Capacity			
HD101N	42 Tons (147 kW)	HD101F	11 Tons (39 kW)	¾" FPT (20mm)/ 1" Weld (25mm)	\$2860	40 (18)

NON-ELECTRICAL

PROVEN RELIABILITY

FIELD ADJUSTABLE

PXV/PXVW PULSE WIDTH EXPANSION VALVE

Pulse width modulating liquid refrigerant expansion valve, with a specially designed high cycle, long life solenoid operator. Controller uses a 4-20mA input signal to monitor the liquid flow to the system. The PXVW60 body has an integral 100 mesh (150 micron) strainer screen and direct weld assembly. PXV5 and PXV15 are flange-to-flange drop-in for Sporlan type D thermostatic expansion valve.

To Order: Specify model, connection style and size, coil connection style and voltage. Unless specified, standard coil with 1/2" fitting will be supplied. Contact factory for other refrigerants and capacities.

Flanges available: **1/2" NPT Flange, Part No. 30-0164, List \$42; 1/2" SW Flange, Part No. 20-1520, List \$39.**

Note: Use Technical Equipment Discount Schedule.

Model	Connections Styles and Sizes Available	Capacity Tons of Ammonia	List Price
PXV5	Less Flanges	5 (18 kW)	\$730
PXV15	Less Flanges	15 (53 kW)	\$730
PXVW60	1/2", 3/4" SW 1/2", 3/4", 1" BW 5/8", 7/8", 1-1/8" ODS	15 to 60 (53 to 212 kW) Adjustable	\$873
CONTROLLERS			
PXVC-PT	Superheat/Supercooling Controller (includes TS2 temp sensor; requires PT2 pressure transducer, not included)		\$485
PXVC-DX	DX Controller for PXV, PXVW (HPT not included, see below)		\$383
PXVC-T	Temperature Controller for PXV, PXVW (includes TS1 temp sensor)		\$418
PXVC-L	Level Controller for PXV, PXVW (level sensor not included)		\$383
PXVC-P	Pressure Controller for PXV, PXVW (transducer not included, see PT3 below)		\$383
PXVC-CI	Control Interface Module for PXV, PXVW (4-20mA input, pulse-width output)		\$383
SENSORS			
HPT717	Pressure/Temperature Transducer, NH3, 3/4" NPT		\$1,322
HPT507	Pressure/Temperature Transducer, R-507, 3/4" NPT		\$1,398
HPT134	Pressure/Temperature Transducer, R-134a, 3/4" NPT		\$1,398
PT2	Pressure Transducer, 15" - 85 psig, 4-20mA, 1/4" MPT		\$470
PT3	Pressure Transducer, 15" - 285 psig, 4-20mA (for PXVC-P)		\$839
IMW	Immersion Well for above, SS, 4" insert, 1/2" MPT		\$40
ACCESSORIES			
WTE3	Water tight Enclosure (NEMA4), for above controllers		\$191
PSU2	Compact Power Supply (100-240VAC: 24VDC) for above enclosure		\$260
RDR	Optional remote digital readout		\$799
TR40*	AC Transformer 115/230 VAC:24VAC (40 VA), powers PXVC only (75-0718)		\$299
TR92	AC Transformer 115/230VAC:24VAC (92 VA), powers PXVC +24V coil (35-0037)		\$233

* Use Valves & Controls Discount Schedule.



PXV



PXVW60



PXVC

OIL TEMPERATURE VALVES

Three-way valve used to control the oil temperature of screw compressors or other oil-cooling circuits. Suitable for oils operating with ammonia, halocarbons, and other compatible refrigeration systems.

To Order: Specify model number, size, connection style, and temperature setting. For other temperatures, consult factory. CE mark not available for HOTW.

Note: Use Technical Equipment Discount Schedule.

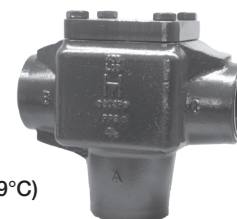
Model	Size	Range					List Price	Weight lbs (kg)
		A	B	D	F	H		
HOTV	1" SW		✓	✓		✓	\$922	11 (5)
	1½" SW	✓	✓	✓	✓	✓	\$1,748	18 (8)
	2" SW, BW	✓	✓	✓	✓	✓	\$1,936	16 (7)
	2½" SW, BW	✓	✓	✓			\$3,370	48 (22)
	3" BW	✓	✓	✓			\$4,391	48 (22)
HOTW	1½" SW	✓	✓	✓	✓	✓	\$1,748	18 (8)
	2" SW	✓	✓	✓	✓	✓	\$1,936	16 (7)

Temperature Settings

- Range A: 130°F (54°C)
- Range B: Standard 120°F (49°C)
- Range D: 140°F (60°C)
- Range F: 150°F (66°C)
- Range H: 110°F (43°C)



HOTV/HOTW
(1 1/2" & 2")



HOTV
(1", 2 1/2" & 3")

AUTO-PURGER® NONCONDENSIBLE GAS PURGER

(For Ammonia Only)

Reduce condensing pressure and lower power costs by removing noncondensable gases such as air in a refrigeration system. The AUTO-PURGER® AP08 allows up to eight locations to be individually purged, AP16 allows up to 16 points, AP24 allows up to 24 points. One AUTO-PURGER® is typically sufficient for a 1500 ton (5275 kW) system [or a 750 ton (2638 kW) system operating below 0 psig (0 bar g)]; same capacity for all refrigerants. Isolation shut-off valve kits with strainers included. Automatic water bubbler flush system eliminates water bottle attention. Water conditioning cartridge is available for hard water supply. Standard electrical supply is 115V/60Hz; 230V/60Hz, 220V/50Hz and 110V/50Hz are available. Canadian CSA certification.

To Order: Specify model number, refrigerant, and voltage. Note: Use Technical Equipment Discount Schedule.



NEW!!! Welded Construction is standard ("W" Suffix)

Model	Description	List Price	Weight lbs (kg)
AP08W	AUTO-PURGER® Deluxe, 8 Points.	\$23,676	350 (158)
AP16W	AUTO-PURGER® Deluxe, 16 Points.	\$27,032	360 (162)
AP24W	AUTO-PURGER® Deluxe, 24 Points.	\$30,739	370 (167)
APCW	AUTO-PURGER® for Computerized Plants.	\$20,127	340 (153)
AP01W	AUTO-PURGER® Basic, 1 Point (See WBA and INS Options Below).	\$17,091	330 (149)

For Halocarbons, See APMF and NEAPF, Specify Refrigerant.

Options			
NEMA 4	Watertight Construction Option. List Extra to Any Above AUTO-PURGER®.	\$3,683	—
HS8A-ST*	½" Port Purge Point Solenoid Valve with Strainer. 115V 50/60 Hz, ½" FPT or SW Each.	\$651	6 (2.7)
MVP13-1*	MVP Valve Station (Shut-Off, Strainer, 1/2" Port Solenoid, Shut-Off) 115V 50/60 Hz, ½" SW Each.	\$1,664	16 (7)
Options			
WCH	Water Conditioning Housing for WCC Below, 3/4" FPT. (Doesn't include WCC)	\$396	—
WCC	Water Conditioning Cartridge, Replacement.	\$274	—
WBA	Water Bubbler Flush System Option for AP01W. (Standard on AP08W, AP16W, AP24W, and APCW.)	\$1,974	—
INS	Insulation Option for AP01W. (Standard AP08W, AP16W, AP24W, APCW.)	\$1,374	—
H5600R*	Relief Valve, 1/2" x 3/4" 300 psig.	See Page 18	—
DPS	Differential Pressurestat System to Detect Loss of Foul Gas Pressure (AP only). APW Contact Factory	\$1,245	—
Supplemental Kits			
APLK	Purging Log Kit	\$448	—
APPLT	Beacon Pilot Light Kit for AP (4-Green and 2-Amber)	\$356	—

* Use Valves & Controls Discount Schedule for HS8A-ST, MVP13-1, and H5600R.

NON-ELECTRIC MINI AUTO-PURGER® NEAP

(For Ammonia & Halocarbons)

The Non-Electric Mini AUTO-PURGER® (NEAP) is a simplified version of our well known purgers for packaged units or small plants featuring easy start-up and automatic operation. Suitable for Class I, Division II (Explosion Proof) applications with welded piping construction. One NEAP Purger suitable for smaller ammonia and halocarbon systems to 100 tons (350 kW).

Isolation Valve Package VPM

Optional isolation valve package (VPM) consists of three flanged welded assemblies which include the necessary shut-off valves and gauge valves for the "Foul Gas" line, Suction line and Liquid line. VPMF for halocarbons also includes filter dryers and moisture indicating sight glasses.

To Order: Specify model number, voltage, and refrigerant. Note: Use Technical Equipment Discount Schedule.



MINI AUTO-PURGER NEAP

Model	Description	List Price	Weight lbs (kg)
NEAP	Mini AUTO-PURGER®, Ammonia	\$8,735	145 (66)
VPM	Valve Package, Ammonia	\$1,312	15 (7)
NEAPF	AUTO-PURGER®, Halocarbons	\$9,283	145 (66)
VPMF	Valve Package, Halocarbons	\$2,052	15 (7)

AUTO-PURGER® APM
(For Ammonia & Halocarbons)

The AUTO-PURGER® M (APM) can purge up to a maximum of four points which makes it ideal for smaller refrigeration plants. Typically, this purger will handle up to a 200 ton (700 kW) ammonia or halocarbon system. It features welded piping construction and comes pre-assembled, pre-wired, tested, insulated, and includes an automatic water bubbler flush system. Standard voltage is 115V 50/60Hz; 230V 50/60Hz is available. CSA and CE mark available.

Isolation Valve Package VPM

Optional isolation valve package (VPM) consists of three flanged welded assemblies which include the necessary shut-off valves and gauge valves for the “Foul Gas” line, Suction line and Liquid line. VPMF for halocarbons also includes filter dryers and moisture indicating sight glasses.

To Order: Specify model number, voltage, and refrigerant.

Note: Use Technical Equipment Discount Schedule.



AUTO-PURGER® APM

Model	Description	List Price	Weight lbs (kg)
APM	AUTO-PURGER® APM, 4 Points, Ammonia	\$14,101	200 (91)
VPM	Valve Package, Ammonia	\$1,312	15 (7)
APMF	AUTO-PURGER® APMF, 4 Points, Halocarbons (R134a, R404A, R507A)	\$14,878	200 (91)
VPMF	Valve Package, Halocarbons	\$2,052	15 (7)
H5600R*	Relief Valve, 1/2" x 3/4" 300 psig.	See Page 18	4 (1.8)
RDA1*	Rupture disc, 1/2" 300 psig. Required for halocarbons system.	See Page 18	1 (0.5)
APMPLT	Beacon Pilot Light Kit for APM (2-Green and 2-Amber)	\$247	—
NEMA 4	Watertight Construction Option. List Extra to Any Above AUTO-PURGER®.	\$607	—
HS8A-ST*	1/2" Port Purge Point Solenoid Valve with Strainer, 115V 50/60 Hz, 1/2" FPT or SW	\$651	6 (2.7)
MVP13-1*	MVP Valve Station (Shut-Off, Strainer, 1/2" Port Solenoid, Shut-Off) 115v 50/60Hz, 1/2" SW	\$1,664	16 (7)

* Use Valves & Controls Discount Schedule for HS8A-ST, MVP13-1, H5600R and RDA1.

AUTO-PURGER® PLUS GAS (AIR) & WATER PURGER
(For Ammonia Only)

AUTO-PURGER® PLUS is a totally automatic, electronically controlled non-condensable gas (air) and water purger for reducing the energy costs of operating an ammonia refrigeration system. Shipped preassembled, prewired, insulated, and includes an automatic water bubbler, a relief valve, and an isolation service valve package. One AUTO-PURGER® is typically sufficient for a 1500 ton (5275 kW) system [or a 750 ton (2638 kW) system operating below 0 psig (0 bar g)]. All models are suitable for ammonia only. Standard electrical supply is single phase, 20A, 115V, 50/60 Hz; 10A, 230V, 50/60 Hz is available. Canadian CSA certification.

AUTO-PURGER® PLUS Technology Package, (now Standard), includes 6" (150mm) color touch screen display, with ethernet connection, alarm history log, with multi-lingual operating instructions. Features built-in troubleshooting guide.

To Order: Specify model number and voltage.



AUTO-PURGER® PLUS

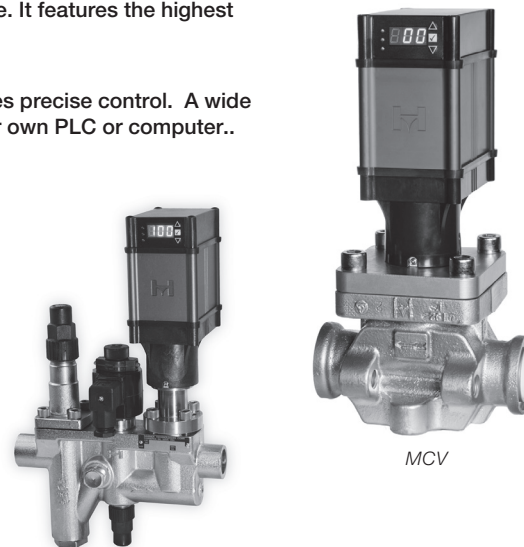
Model	Description	List Price	Weight lbs (kg)
APPT08	AUTO-PURGER® Plus with Technology Package, 8 Points.	\$39,367	410 (186)
APPT16	AUTO-PURGER® Plus with Technology Package, 16 Points.	\$43,484	410 (186)
APPT24	AUTO-PURGER® Plus with Technology Package, 24 Points.	\$47,942	410 (186)
APPTC	AUTO-PURGER® Plus with Technology Package for Computerized Plants.	\$36,103	410 (186)
HS8A-ST*	1/2" Port Purge Point Solenoid Valve with Strainer, 115V 50/60 Hz, 1/2" FPT or SW.	\$651	6 (2.7)
MVP13-1*	MVP Valve Station (Shut-Off, Strainer 1/2" Port Solenoid, Shut-Off) 115v 50/60Hz, 1/2" SW	\$1,664	16 (7)

MCV MOTORIZED CONTROL VALVES

The All NEW, Hansen MCV is a highly reliable and rugged, direct operated Motorized Control Valve. It features the highest rated MOPD and SWP. Valve position is displayed on a forward facing, bright LED readout.

Whether controlling flow, level, temperature or pressure, the MCV Motorized Control Valve provides precise control. A wide variety of control signal options allows the customer flexibility to control the valve by utilizing their own PLC or computer..

- Plug and Play logic for quick and hassle-free installation
- Self Calibrating - Automatic calibration on power - up
- One high-torque motor fits all ¾" - 2" valves (20 to 50mm)
- MOPD and Safe Working Pressure (SWP): 800 psig weld-in line or 400 psig flanged
- Various Input Control Signal Choices: 0-20 mA, 4-20 mA, 0-5 V, 0-10 V, 1-6 V, and dry contact
- Power Input: 24V AC or DC, Loss of Power back-up available
- Front facing, bright LED Readout of valve position and 4-20mA feedback output signal
- Fine motor control: 200 steps per revolution



MCV

Now Available on MVP13 - MVP100 Multi-Valve Platform, see pages 2 & 3

Nominal Size		Valve Type		Flow Factor (Cv)	List Price		Weight lb (kg)
inch	(mm)	Standard	Weld-in		Flanged	Weld-in	
7/32"	(5)	MCXV/A		.6			18 (8)
9/32"	(7)	MCXV/B		.11	\$3,659	—	
1/16"	(2)	MCXV/C		.2			
¾"	(20)	MCR20	MCRW20	2.2	\$3,656	\$3,894	18 (8)
		MCV20	MCVW20	6.4			
1"	(25)	MCR25	MCRW25	3.9	\$3,792	\$4,073	
		MCV25	MCVW25	11.7			
1¼"	(32)	MCR32	MCRW32	5.5	\$3,972	\$4,287	
		MCV32	MCVW32	16.4			
1½"	(40)	MCR40	MCRW40	12	\$4,318	\$4,659	36 (16)
		MCV40	MCVW40	35			
2"	(50)	MCR50	MCRW50	16	\$4,501	\$4,885	
		MCV50	MCVW50	47			
3"	(80)	MCR80	MCRW80	35	\$6,214	\$6,850	75 (34)
		MCV80	MCVW80	104			
4"	(100)	MCR100	MCRW100	47	\$8,088	\$8,774	123 (56)
		MCV100	MCVW100	166			

To Order: MCR / MCV: Specify valve type, nominal size, connection style and size (¾", 1", 1¼" FPT or SW; 1½", 2" SW), and recommended strainer (see page 7). Weld neck flange and ODS available. See controller options on page 31.

Note: Use Technical Equipment Discount Schedule

ACCESSORIES

Cat. Number	Description	List Price
MCT	Manual Control Tool	\$384
HUPS	Power Backup System for loss of Power Close/Open (Includes Battery Backup and DC power Supply for up to 3 MCV/R's)	\$1,356
75-1327	KIT,POWER SUPPLY,24VDC,60W,MCV,HUPS COMPONENT	\$210



MCT



HUPS



NOTE: Use Technical Equipment Discount Schedule

POWERHEAD CONVERSION KITS (SMV to MCV)

Part Number	Description	List Price
75-1363	7/32" MCXV/A Conversion Kit: Motor Actuator, bonnet, bolts, cartridge, oring, gasket, grease, dongle	\$2,644
75-1364	9/32" MCXV/B Conversion Kit: Motor Actuator, bonnet, bolts, cartridge, oring, gasket, grease, dongle	\$2,644
75-1362	1/16" MCXV/c Conversion Kit: Motor Actuator, bonnet, bolts, cartridge, oring, gasket, grease, dongle	\$2,644
75-1318	3/4 to 1-1/4" Conversion Kit: Motor Actuator, bonnet, bolts, cartridge, oring, gasket, grease, dongle	\$2,644
75-1319	1-1/2" to 2" Conversion Kit: Motor Actuator, bonnet, bolts, cartridge, o- ring, gasket, grease, dongle	\$3,305
75-1347	3" Conversion Kit: Motor Actuator, bonnet, bolts, cartridge, oring, gasket, grease, dongle (New V-port required)	\$3,461
75-1348	4" Conversion Kit: Motor Actuator, bonnet, bolts, cartridge, oring, gasket, grease, dongle (New V-port required)	\$4,090



Kit Includes all parts necessary to field-convert an existing HMXV, HMMR/V, HMSV to the new style MCV/R. However, a MCT tool is required and a new V-Port Kit may also be required. For Power-Close HMXVC, HMMRC/HMMVC models, a HUPS will be required; see page 28.

Note: **USE PARTS DISCOUNT SCHEDULE**

VALVE CONTROLLERS FOR MOTORIZED CONTROL VALVES

Hansen stand-alone controllers are suitable for applications where computer control is either not desired or not available. Controllers require 24V AC or DC power. A separate, external 24 VDC power supply (such as PSU) may be required to power level or pressure transducers.

To Order: Specify model number. For DX Controllers and Sensors See page 25

Note: Use Technical Equipment Discount

CONTROLLERS		
PXVC-PT	Superheat/Supercooling Controller (includes TS2 temp sensor; requires PT2 pressure transducer, not included see below)	\$485
PXVC-DX	DX Controller (HPT not included, see below)	\$383
PXVC-T	Temperature Controller (includes TS1 temp sensor)	\$418
PXVC-L	Level Controller (level sensor not included)	\$383
PXVC-P	Pressure Controller (transducer not included, see PT3 below)	\$383
SENSORS		
PT2	Pressure Transducer, 15" - 85 psig, 4-20mA, 1/4" MPT	\$470
PT3	Pressure Transducer, 15" - 285 psig, 4-20mA (for PXVC-P)	\$839
IMW	Immersion Well for above, SS, 4" insert, 1/2" MPT	\$40
ACCESSORIES		
WTE3	Water tight Enclosure (NEMA4), for above controllers	\$191
PSU2	Compact Power Supply (100-240VAC: 24VDC) for above enclosure	\$260
RDR	Optional remote digital readout	\$799



PXVC

HPT PRESSURE/TEMPERATURE TRANSDUCER

The HPT Pressure/Temperature Transducer is designed to measure both temperature and pressure within a single connection. Electronics calculate superheat or subcooling for the specified refrigerant with a 4-20 mA Output.

Refrigerant	Catalog Number		List Price
	Standard -35°F to +150°F (-37°C to +65°C)	Low Temperature -60°F to +150°F (-51°C to +65°C)	
For Ammonia	HPT717	HPTL717	\$1,322
For R-22	HPT22	HPTL22	\$1,398
For R-134a	HPT134	HPTL134	
For R-404A	HPT404	HPTL404	
For R-507A	HPT507	HPTL507	
For Propane	HPT290	HPTL290	



HPT

Standard model is suitable for ammonia. Also suitable for halocarbons, propane, and carbon dioxide with the appropriate refrigerant key. Standard model HPT is suitable for -35°F to +150°F (-37°C to +65°C).

Low temperature model HPTL is suitable for -60°F to +150°F (-51°C to +65°C). Low temperature models have a longer insertion length. To Order: Specify model number and refrigerant. Note: Use Technical Equipment Discount Schedule.

GAS DETECTION SENSORS

Sensor technologies available for Ammonia, Halocarbon, CO₂ and other Hansen approved gases.

To Order: Specify model, range and refrigerant. Shipping weight: 2 lbs (.91 kg).

Note: Use Technical Equipment Discount Schedule

Ammonia Sensors						
Catalog No.			Sensor Type	Ranges (PPM)	List Price	
Standard 0F (-17C)	Harsh -40F(-40C)	Extreme -60F(-51C)				
HGD-EC-NH3-100			Not Offered	Electrochemical	0-100	\$1,463
Not Offered	Not Offered	Not Offered	Not Offered	Electrochemical	0-250	N/A
HGD-EC-NH3-1000			Not Offered	Electrochemical	0-1,000	\$1,463
HGD-EC-NH3-5000			Not Offered	Electrochemical	0-5,000	\$1,463

Halocarbon Sensors						
Catalog No.			Sensor Type	Ranges (PPM)	List Price	
Basic 32F(0C)	Harsh -40F(-40C)	Extreme -60F(-51C)				
HGD-SC-R22-1000			Not Offered	Semiconductor	0-1,000	\$1,306
HGD-SC-R134A-1000			Not Offered	Semiconductor	0-1,000	\$1,306
HGD-SC-R404A-1000			Not Offered	Semiconductor	0-1,000	\$1,306
HGD-SC-R407A-1000			Not Offered	Semiconductor	0-1,000	\$1,306
HGD-SC-R410A-1000			Not Offered	Semiconductor	0-1,000	\$1,306
HGD-SC-R507A-1000			Not Offered	Semiconductor	0-1,000	\$1,306

CO2 Sensors					
Catalog No.			Sensor Type	Ranges (PPM)	List Price
Basic 32F(0C)	Harsh -40F(-40C)	Extreme -60F(-51C)			
Not Offered	HGD-IR-CO2-10000	Not Offered	Infrared	0-10,000	\$1,507

Gas Detection Monitors		
Catalog No.	# Channels	List Price
HGD-C-2	2	\$1,261
HGD-C-8	8	\$2,660



HANSEN monitor

Note: Older Style Gas Sensors (HEC, HVSC, HSC, etc.) and Gas Monitors (HLM2/HLM6) are no longer available. Replacement Gas Sensor Element Kits are still available, see Page 33.

GAS DETECTION ACCESSORIES

Gas Detection Sensor Calibration Kit

Calibration Kit includes portable carrying case with space for two 17 liter gas cylinders, valve, and hose connection to sensor. **HGD Calibration Kit #31-1037 / HEC Calibration Kit #31-1000, List Price \$514.** Cylinder will calibrate approximately three sensors. Other gases available upon request. Only available in USA.

Note: Use Technical Discount Schedule. **Gas cylinders sold separately.**

Calibration Gas Cylinders

Refrigerant Gas	Range (PPM)		Catalog No.		List Price
Ammonia *	100 *		31-0031		\$223
Ammonia *	250 *		31-0032		
Ammonia *	1000 *		31-0033		
Ammonia	10,000		31-0034		
R22	1,000	3,000	31-0035	31-0078	
R404/R507	3,000		31-0079		
R134a	3,000	5,000	31-0080	31-0124	
R401a	3,000		31-0081		
R402a	3,000		31-0082		
R410	5,000		31-0130		
* 34L Cylinder: 31-0164, 31-0165, 31-0166 @ \$452 List					



Calibration Kit
(Gas Cylinder Sold Separately)

GAS Alert System

The GAS Alert System is equipped with a gas monitor readout, flashing LED light and an audible alarm for use with Hansen Gas Sensors. Includes a NEMA4X (IP65) enclosure for mounting indoors or outdoors; 24VAC/DC. Additional ranges available by request.

Catalog No.	Range (PPM)	List Price
GAS-100	0-100	\$2,356
GAS-250	0-250	
GAS-1K	0-1,000	
GAS-3K	0-3,000	
GAS-10K	0-10,000	



GAS Alert System

HANSEN HERMETIC PUMPS

Suitable for liquid transfer, liquid pressure boost, recirculating (overfeed) liquid ammonia, R22, R134a and other approved refrigerants. No rotary shaft seals to leak. No lubricating oil, oil heater, or grease needed. Stock models listed; other sizes and stages available. CSA certification for Canada.



Hermetic Pump with Pump Guardian

Standard pumps furnished with inlet and outlet flanges, Q-max and Q-min flow control orifices for motor protection, differential pressurestat to monitor flow. CNF Series supplied with integral motor winding temperature sensors. Hansen pumps standard with Pump Guardian. Voltage: 440/3/60 is standard; 220/3/60 are available. For 50Hz applications, contact factory. Q-min (vent/bypass line) flange connection sizes: CAM 1, 1/2"; CNF32, CNF40, 1"; CNF50, 1 1/4". Standard flanges weld neck; special ODS connections available for CAM series; contact factory for pricing. Pump repair and rebuilding services available; contact factory.

To Order: Specify refrigerant, required pumping head, PSID, GPM, temperature, available NPSH, voltage and cycles. For pump pricing, contact factory. CO₂ service available. Nominal Ratings performance capacities are based on 60Hz.

Note: Use Technical Equipment Discount Schedule.

Refrigerant	Model Number (Impeller Dia)	Nom HP	Weld Neck Flanged Connections*		System Required Minimum NPSH† feet	Nominal Ratings										
			Inlet	Outlet		With Q-Max Orifice & Pump Guardian					With Flow Regulator					
						GPM	PSID	List	Weight lbs (kg)	Flow Reg Model No	GPM	PSID	List Extra	Weight lbs (kg)		
Ammonia	CAM 1/3 AGX 1.0 (80 mm)	1 1/2	1"	3/4"	2.5	7	25		73	(33)	HFC14N	14	22		80	(36)
	CAM 2/2 AGX 3.0 (114/130 mm)	3	1 1/2"	1 1/4"	3.5	26	18		124	(56)	HFC32N	32	20		130	(59)
	CAM 2/3 AGX 3.0 (114/130 mm)	3	1 1/2"	1 1/4"	3.5	27	25		133	(60)	HFC32N	32	33		140	(64)
	CAM 2/5 AGX 3.0 (114 /130mm)	3	1 1/2"	1 1/4"	3.5	22	50		154	(70)	HFC32N	32	60		160	(73)
	CNF 32-160 AGX 3.0 (169 mm)	3	2"	1 1/4"	4.5	50	25		142	(64)	HFC60N	60	37		149	(68)
	CNF 40-160 AGX 4.5 (169 mm)	5	2 1/2"	1 1/2"	5.5	75	25		164	(74)	HFC98N	98	38		195	(89)
	CNF 40-200 AGX 6.5 (209 mm)	7 1/2	2 1/2"	1 1/2"	5.5	75	36		205	(93)	HFC98N	98	51		236	(107)
	CNF 50-160 AGX 6.5 (158 mm)	7 1/2	3"	2"	5.5	150	25		182	(83)	HFC185N	185	40		213	(97)
	CNF 50-200 AGX 8.5 (180 mm)	10	3"	2"	6.5	150‡	31		268	(122)	HFC185N	185‡	47		299	(136)
R22, R134a, and Other Compatible Refrigerants	CAM 1/3 AGX 1.0 (80 mm)	1 1/2	1"	3/4"	2.5	9	35		73	(33)	HFC14F	14	45		80	(36)
	CAM 2/2 AGX 3.0 (114/130 mm)	3	1 1/2"	1 1/4"	3.5	22	35		124	(56)	HFC32F	32	40		130	(59)
	CAM 2/3 AGX 4.5 (114/130 mm)	5	1 1/2"	1 1/4"	3.5	27	35		145	(66)	HFC32F	32	65		152	(69)
	CNF 40-160 AGX 6.5 (150 mm)	7 1/2	2 1/2"	1 1/2"	5.5	70	35		170	(77)	HFC95F	95	55		201	(91)
	CNF 50-160 AGX 8.5 (130 mm)	10	3"	2"	5.5	140‡	35		214	(97)	HFR175F	175‡	40		245	(111)

CONTACT FACTORY FOR CURRENT PRICING

CONTACT FACTORY FOR CURRENT PRICING

† Shown in feet; includes 1.5 feet reserve for inlet piping losses.; ‡ Larger pumps available.

PUMP GUARDIAN PUMP CONTROLLER

Designed to safeguard refrigerant liquid pumps. Alerts operators of harmful operating conditions. Prevents excess-recycling and unnecessary damage. Provides protection against cavitation, low liquid level, insufficient or loss of pump pressure, and motor-temperature. Nonvolatile electronic memory. For use with Hansen Hermetic refrigerant pumps; requires a Pressure-Stat to monitor pressure, Part No. 61-0418, see Parts List Pricing.



PG1

To Order: Specify model number and voltage (115V or 230V; 50/60Hz). Note: Use Technical Equipment Discount Schedule.

Model	Description	List Price	Weight lbs (kg)
PG1	Pump Guardian	\$1,205	3 (1.4)

This listing is not intended to be a complete offering of spare parts. Items not listed will be promptly quoted; please contact Hansen Customer Service at 800.426.7368 or via email at sales@hantech.com with part number and description of part.

Note: Use Parts Discount Schedule. If ordering quantity of 12 or more flange gaskets, 50% discount.

ITEM	DESCRIPTION	PRICE	ITEM	DESCRIPTION	PRICE
20-1018	FLOAT SWITCH, HLLSW, LONG LEADS FOR AP, APW, APP, APPT	\$632	20-2622	KIT, FUSE, 3 AMP, 230V FOR APP & APPT	\$15
20-1131	8-POINT TIMER BOARD LESS PLUG-IN CONNECTOR, AP, APW	\$1,823	20-2623	KIT, FUSE, 8 AMP, 230V FOR APP & APPT	\$15
20-1179	LEVEL CONTROL. VALVE W/HEATER 120V FOR AP, APW	Factory	20-2626	KIT, PLC MODULE, THERMOCOUPLE INPUT, ENHANCED	\$953
20-1183	(WHITE) CHECK VALVE, 1 PSID W/1/32" ORIFICE FOR AP, APW	\$253	20-2627	KIT, PLC MODULE, CURRENT INPUT, APP & APPT	\$699
20-1184	(BLUE) CHECK VALVE, 30 PSID FOR AP, APW	\$253	20-2628	KIT, PLC MODULE, AC OUTPUT, APP & APPT	\$188
20-1185	(GREEN) CHECK VALVE, 225 PSID FOR AP, APW	\$260	20-2629	KIT, PLC MODULE, AC INPUT/OUTPUT, APP & APPT	\$188
20-1186	METERING VALVE FOR AP, APW, APP, APPT	\$612	20-2743	KIT, LIQUID FEED VALVE, AP	Factory
20-1196	TIMER BOARD CABLE FOR AP, APW	\$70	20-2744	KIT, LIQUID FEED RETRO FIT, AP	Factory
20-1197	PURGER TO TIMER CABLE, AP, APW	\$67	30-1103	TSTAT REPLACE KIT, 1-1/2" & 2", RG A 130F(54C) NOMINAL	\$374
20-1198	METERING VALVE SEAL KIT	\$45	30-1104	TSTAT REPLACE KIT, 1-1/2" & 2", RG B 120F(49C) NOMINAL	\$374
20-1205	TRANSFORMER-115/60HZ-24V/60HZ, AP, APW	\$127	30-1105	TSTAT REPLACE KIT, 1-1/2" & 2", RG D 140F(60C) NOMINAL	\$374
20-1214	CHECK VALVE SEAL KIT	\$30	30-1106	TSTAT REPLACE KIT, 2-1/2" & 3", RG A 130F(54C) NOMINAL	\$876
20-1280	4-DIGIT COUNTER WITH RESET & BRACKET, AP, APW	\$232	30-1109	TSTAT REPLACE KIT, 2-1/2" & 3", RG B 120F(49C) NOMINAL	\$876
20-1281	5 AMP FUSE, 115V FOR AP, APW	\$15	30-1112	TSTAT REPLACE KIT, 1", RG B 120F(49C) NOMINAL	\$369
20-1311	3/4" FPT X 1/2" LIQUID DRAINER, AP, APW	\$701	30-1113	TSTAT REPLACE KIT, 1", RG D 140F(60C) NOMINAL	\$369
20-1379	O-RING (-238) BUBBLER	\$15	30-1115	TSTAT REPLACE KIT, 1", RG G 170F(77C) NOMINAL	\$369
20-1441	POWER ELEMENT, LEVEL CONTROL, 115V, AP, APW	Factory	30-1118	TSTAT REPLACE KIT, 1-1/2" & 2", RG H 110F(43C) NOMINAL	\$374
20-1460	WATER BUBBLER BRUSH	\$45	31-1003	HEC-KIT, ELEMENT, NH3, 0-1000 PPM, STANDARD	\$976
20-1498	TIME DELAY RELAY, 1 HR FIX W/OFF SWITCH, 120V MXE CE	\$453	31-1004	HEC-KIT, ELEMENT, NH3, 0-10,000 PPM, STANDARD	\$1,227
20-1499	PURGER CONT BRD W/PLUG-IN CONN. ALL 'AP' MODELS	\$1,222	31-1005	HEC-KIT, ELEMENT, NH3, 0-1,000 PPM, HARSH/EXTREME	\$1,227
20-1500	8-PT TIMER BRD W/PLUG-IN CONN. 'AP' MODELS EXCEPT APC	\$1,878	31-1006	HEC-KIT, ELEMENT, NH3, 0-10000 PPM, HARSH/EXTREME	\$718
20-1647	LEVEL CONTROL VALVE W/HEATER, 230 V FOR AP, APW	Factory	31-1007	HVSC-KIT, ELEMENT, NH3, 0-10000 PPM, VENT LINE	\$356
20-1648	1/2" METERING VALVE STRAINER FOR AP, APW, APP, APPT	\$285	31-1024	HEC-KIT, ELEMENT, NH3, 0-100PPM, STANDARD(100,250)	\$976
20-1698	3AMP FUSE, FAST ACTING 5MM	\$15	31-1025	HEC-KIT, ELEMENT, NH3, 0-100PPM, HARSH(100,250)	\$1,203
20-1737	METERING STRAINER BASKET KIT	\$132	31-1026	HEC-KIT, ELEMENT, NH3, 0-250PPM, STANDARD	\$983
20-1738	FLOAT BALL ASSEMBLY FOR AUTO-PURGER	\$345	31-1027	HEC-KIT, ELEMENT, NH3, 0-250PPM, HARSH/EXTREME	\$1,227
20-1752	15WATT, 120V HEATER FOR SPORLAN LVL CONTRL	Factory	31-1033	HGD-KIT, ELECTROCHEMICAL, ELEMENT, NH3, 0-100PPM	\$929
20-1845	4-POINT POWER BOARD FOR APM	\$1,514	31-1034	HGD-KIT, ELECTROCHEMICAL, ELEMENT, NH3, 0-1000PPM	\$929
20-1857	PRESSURE TRANSDUCER KIT FOR APM	\$1,110	31-1035	HGD-KIT, ELECTROCHEMICAL, ELEMENT, NH3, 0-5000PPM	\$929
20-1948	ROTARY SWITCH WITH LEADS FOR AP08	\$1,564	31-1036	HGD-KIT, ELEMENT, SEMICONDUCTOR, R22, 0-1000PPM	\$503
20-1959	UNIVERSAL WATER BUBBLER KIT	\$682	31-1038	HGD-KIT, ELEMENT, SEMICONDUCTOR, R134A, 0-1000PPM	\$503
20-1985	WATER FLOW CONTROLLER FOR AP, APM, & APP	\$98	31-1039	HGD-KIT, ELEMENT, SEMICONDUCTOR, R404A, 0-1000PPM	\$503
20-2166	O-RING FOR NEAP FLOAT BALL SEAT	\$15	31-1040	HGD-KIT, ELEMENT, SEMICONDUCTOR, R410A, 0-1000PPM	\$503
20-2167	VESSEL COVER O-RING FOR NON-ELECTRICAL AUTO-PURGER	\$27	31-1041	HGD-KIT, ELEMENT, SEMICONDUCTOR, R507A, 0-1000PPM	\$503
20-2177	STRAINER/ORIFICE SCREEN ASSEMBLY KIT FOR APM	\$98	31-1043	HGD-KIT, ELEMENT, SEMICONDUCTOR, R407A, 0-1000PPM	\$503
20-2199	80 PSID CHECK VALVE ASSM TEMP VLV, FOR NEAP PURGER	\$310	40-1003	KIT, BLUE INSTALL DATE TAG	\$19
20-2200	TEMPERATURE VALVE ASSEMBLY KIT FOR NEAP PURGER	\$214	40-1004	KIT, GREEN INSTALL DATE TAG (R & EZB/C/E/F)	\$19
20-2201	FLOAT BALL PLUNGER KIT FOR NEAP PURGER	\$147	40-1007	O-RING KIT, EZB/C (10 SETS)	\$22
20-2202	KIT, FLOAT BALL SEAT, NEAP	\$145	40-1011	KIT, POP-EYE TEST MAGNET	\$34
20-2203	STRAINER ORIFICE KIT FOR NEAP	\$190	50-1005	HANDWHEEL KIT FOR 1/2" - 1-1/4" SHUT-OFF VALVE	\$48
20-2204	225 PSI CHECK VALVE KIT FOR APM & NEAP PURGER	\$155	50-1011	BONNET ASSY, 1 1/4" OLD STYLE THRD BONNET, EXP. REG.	\$217
20-2207	SIGHT GLASS, NEAP	\$39	50-1012	BAR HANDLE KIT FOR 3/8" - 1-1/4" EXPANSION VALVE	\$44
20-2226	7-DAY TIME CLOCK FOR AUTO-PURGER, 115V 50/60HZ	\$535	50-1021	BONNET ASSEMBLY, 1", 1-1/4" OLD STYLE THRD BONNET SOV	\$173
20-2285	STRAINER/ORIFICE SCREEN ASSEMBLY KIT FOR APMF	\$173	50-1023	GASKET KIT 1-1/2", 2" AS/GS RS/VS SHUT-OFF VLV	\$45
20-2300	4-POINT CONTROL BOARD ASSEMBLY FOR APM	\$1,842	50-1024	KIT, BONNET ASSY FOR 1-1/2", 2" AS/GS SOV	\$349
20-2303	TEMPERATURE SENSOR FOR THE APM AND APMF	\$70	50-1026	HANDWHEEL KIT FOR 1-1/2"-2" AS/GS SHUT-OFF VALVE	\$79
20-2369	THERMOSTATIC EXPANSION VLV 1 TON, NEAP	\$1,065	50-1027	SEAL CAP KIT W/GASKET 1-1/2", 2" AS/GS SHUT-OFF VLV	\$98
20-2379	80 PSID CHECK VALVE ASSEMBLY FOR APM	\$277	50-1028	BONNET ASSEMBLY, 1/2" & 3/4" AT, GT, AW, GW SHUT-OFF	\$130
20-2390	SPORLAN GASKET, PXV, LMC	\$14	50-1036	KIT, SEAL CAP, BLACK, 3/8"-1-1/4" AS/GS, AT/GT, 3/8"-1/2" GAUGE	\$43
20-2400	KIT, BASIC, MAINTENANCE FOR AP	\$1,339	50-1037	HANDWHEEL KIT FOR 2-1/2" & 3" 4" SHUT-OFF VALVE	\$110
20-2401	KIT, COMPLETE, MAINTENANCE FOR AP	\$2,118	50-1038	SEAL CAP KIT FOR BLUE 2-1/2", 3", 4" SHUT-OFF VALVE	\$162
20-2428	ELECTRIC HEATER, 115V	\$365	50-1039	BAR HANDLE KIT 1-1/2", 2" RS/VS, RW/WW EXPANSION REG	\$61
20-2429	THERMOCOUPLE, APP PLATE	\$238	50-1040	GASKET KIT FOR 3/8"-1-1/4" AS/GS, AT/GT SOV	\$34
20-2430	THERMOCOUPLE, APP LIQUID	\$317	50-1041	BONNET ASSM FOR 3/8", 1/2" 3/4" AS/GS, AT/GT S-OFF VL	\$147
20-2431	THERMOCOUPLE, APP SHELL	\$309	59-1042	SEAT DISC ASSY KIT, 1/2, 3/4 SW, 3/8, 1/2, 3/4 FPT SHUT-OFF	\$74
20-2432	KIT, VAPOR TRAP, APPT	\$1,009	50-1043	GASKET KIT FOR 2-1/2", 3", AS/GS, AW/GW SHUT-OFF VLV	\$47
20-2477	ELECTRIC HEATER, 230V	\$285	50-1044	BONNET ASSEMBLY FOR 2-1/2" & 3" AS/GS, AW/GW SHUT-O	\$453
20-2489	CHECK VALVE, 1 PSID NO ORIFICE, FOR APP	\$239	50-1046	THROTTLING PLUG ASSEM 1-1/2" RS/VS EXPANSION REG.	\$232
20-2596	KIT, THERMOSTATS, W/ BUSHINGS & BRACKETS	\$461	50-1048	KIT, YELLOW SEAL CAP, 1-1/2" - 2" HEV	\$81
20-2620	KIT, FUSE, 2 AMP, 115V FOR APP & APPT	\$14	50-1054	KIT, THROTTLING PLUG ASSY, RS/RSB/VS/VS076 EXP REG	\$105
			50-1065	GASKET KIT, 4" SHUT-OFF VALVE, AW/GW	\$64
			50-1066	BONNET ASSEMBLY KIT, 4" AW/GW SHUT-OFF VALVE	\$618
			50-1067	SEAT DISC ASSY FOR 4" AW, GW SHUT-OFF VALVE	\$155
			50-1070	KIT, GASKET 1/4" GAUGE, PURGE & NEEDLE VALVES	\$22
			50-1071	SC KIT FOR HANSEN, GAUGE VLV, 1/4"	\$45

ITEM	DESCRIPTION	PRICE	ITEM	DESCRIPTION	PRICE
50-1081	BONNET ASSY KIT, 6" SHUTOFF VALVE, AW/GW	\$1,196	75-0138	FLANGE GASKET, 1 1/2" - 2" HA4A, HS4A, ETC	\$17
50-1082	GASKET KIT, 5" SHUTOFF VALVE, AW/GW	\$78	75-0189	PLUG, 1/4" NPT HEX HEAD	\$15
50-1083	GASKET KIT, 6" SHUT-OFF VALVE, AW/GW	\$83	75-0196	GASKET	\$20
50-1084	GASKET KIT, 8" SHUT-OFF VALVE, AW/GW	\$158	75-0253	FLANGE GASKET, 4" HA4A, HS4A, ETC	\$23
50-1089	HANDWHEEL KIT, 5" & 6" SHUT-OFF VALVE, AW/GW	\$168	75-0263	SEAT RING REMOVAL TOOL, 2 1/2" HA4A/HS4A	\$192
50-1090	HANDWHEEL KIT, 8" SHUT-OFF VALVE, AW/GW	\$309	75-0264	SEAT RING REMOVAL TOOL, 1 1/2" - 2" HA4A/HS4A	\$298
50-1091	SEAL CAP KIT, 5" & 6" SHUT-OFF VALVE, AW/GW	\$155	75-0265	SEAT RING REMOVAL TOOL, 4" HA4A/HS4A	\$255
50-1092	SEAL CAP KIT, 8" SHUT-OFF, AW/GW	\$257	75-0709	HIGH RISE CAM, 30 PSI HONEYWELL	\$363
50-1094	BONNET ASSY KIT, 1/2" & 3/4" 4-BOLT SHUT-OFF VALVE,	\$173	75-0710	LOW RISE CAM, 60 PSI HONEYWELL	\$363
50-1095	BONNET ASSY KIT 1-1/4" 4-BOLT SHUT-OFF VALVE	\$173	75-0759	SEAT RING REMOVAL TOOL, 5" - 6"	\$1,645
50-1106	BONNET ASSY KIT, 1" 4-BOLT EXPANSION VALVE	\$175	75-1004	PISTON/SEAT KIT, 2" HCK2	\$239
50-1107	BONNET ASSY KIT, 1-1/4" 4-BOLT EXPANSION VALVE	\$203	75-1005	PISTON/SEAT KIT, 2 1/2" HCK2	\$293
50-1122	GASKET KIT, 10" BW SHUT-OFF VALVE, AW/GW	\$348	75-1006	PISTON/SEAT KIT, 3" HCK2	\$310
50-1171	KIT, GASKET 1/2" - 1 1/4" EXT. NECK SHUT-OFF	\$27	75-1007	GASKET KIT, 1 1/2" - 2" HCK2, HS9B	\$45
50-1172	BONNET KIT FOR 1/2" AND 3/4" EXT. NECK SOV	\$201	75-1008	GASKET KIT, 2 1/2" HCK2, HS9B	\$48
50-1212	GREEN SEAL CAP KIT W/O-RING, 3/4" - 1-1/4" MVP	\$44	75-1009	GASKET KIT, 3" HCK2, HS9B	\$59
50-1217	KIT, BONNET, 3/4" - 1 1/4", BLANK, MVP-6	\$215	75-1014	KIT, SEAL CAP, 1-1/2", 2" & 3" HS4A/HA4A	\$85
61-0001	DIFFER PRES-STAT 30 SEC DELAY, MANUAL RESET	\$675	75-1017	GASKET KIT, 4" HCK2, HS9B	\$70
61-0418	DIFFERENTIAL PRESSURE STAT, NO DELAY NEMA 4	\$794	75-1018	PISTON KIT, 4" HA4A, HS4A	\$364
65-1003	FLOAT BALL ASSEMBLY KIT FOR HT100MN	\$774	75-1019	PISTON KIT, 3/4" - 1 1/4" HA4A, HS4A	\$171
65-1018	FLOAT BALL ASSEMBLY KIT FOR HT200MN	\$1,040	75-1020	V-PORT/SEAT, 3/4" HA4A, HS4A, HS4D, MVP20	\$152
65-1019	GASKET KIT FOR HT200	\$132	75-1021	V-PORT/SEAT, 1" HA4A, HS4A, HS4D, MVP25	\$201
65-1020	GASKET KIT FOR HT300	\$154	75-1022	V-PORT/SEAT, 1 1/4" HA4A, HS4A, HS4D, MVP32	\$209
65-1023	FLOAT BALL ASSEMBLY KIT FOR HT300MN	\$1,342	75-1023	GASKET KIT, 3/4" - 1 1/4" HA4A, HS4A	\$40
65-1025	FLOAT BALL ASSEMBLY KIT FOR HD101N	\$774	75-1025	PISTON KIT, 1 1/2" - 2" HA4A, HS4A	\$281
67-0007	24 HOUR TIME CLOCK, 120V/230V (OLD FM/P-11/12-A)	\$201	75-1026	PISTON KIT, 2 1/2" HA4A, HS4A	\$365
67-0009	7 DAY TIMECLOCK 120V/230V (OLD FM/P-71/72-A)	\$201	75-1027	PISTON KIT, 3" HA4A, HS4A	\$437
67-0029	TIMESWITCH, 24HR GRASSLIN 115V(FM/P-11/12-B)	\$201	75-1028	PISTON KIT, 4" HA4A, HS4A	\$487
67-0030	TIMESWITCH, 7-DAY GRASSLIN 115V(FM/P-71/72-B)	\$201	75-1029	V-PORT/SEAT, 1 1/2" HA4A, HS4A, HS4D, MVP40	\$225
70-0065	GASKET, 050 FLANGE AND CNTRL VLV PILOT PORT	\$17	75-1030	V-PORT/SEAT, 2" HA4A, HS4A, HS4D, MVP50	\$292
70-0132	3/4", 1", 1 1/4" FLANGE GASKET	\$17	75-1031	V-PORT/SEAT, 2 1/2" HA4A, HS4A, HS4D	\$320
70-0579	KNOB, ENCAPSOLATED COIL	\$41	75-1032	V-PORT/SEAT, 3" HA4A, HS4A, HS4D	\$345
70-0592	PILOT LIGHT KNOB	\$27	75-1033	V-PORT/SEAT, 4" HA4A, HS4A, HS4D	\$378
70-1001	BONNET CARTRIDGE KIT, HS8A/HS8 SOLENOID VALVE	\$217	75-1039	GASKET KIT, 1 1/2" - 2" HA4A, HS4A	\$48
70-1002	PISTON ASSEMBLY KIT, HS8A/HS8 SOLENOID VALVE	\$117	75-1040	GASKET KIT, 2 1/2" HA4A, HS4A	\$59
70-1003	STEM KIT, HS8A/HS8 SOLENOID VALVE	\$114	75-1041	GASKET KIT, 3" HA4A, HS4A	\$64
70-1005	GASKET KIT, HS8A/HS8 SOLENOID VALVE	\$48	75-1042	GASKET KIT, 4" HA4A, HS4A	\$70
70-1006	KIT, BOLT & NUT, HS6 & HS8A (LESS STRAINER)	\$16	75-1047	3/4" - 1 1/4" SINGLE PORT ADAPTOR KIT, HA4A, HS4A, MVP	\$250
70-1007	KIT, BOLT (LONG) & NUT, HS6 & HS8A (WITH STRAINER)	\$16	75-1048	3/4" - 1 1/4" 3- PORT ADAPTOR KIT, HA4A, HS4A, MVP, HS4D	\$421
70-1011	GASKET KIT, HS6 SOLENOID VALVE	\$44	75-1049	1 1/2" - 2" SINGLE PORT ADAPTOR KIT, HS4A, HS4A, MVP	\$410
70-1059	SOLENOID TUBE/PLUNGER KIT, STANDARD SOLENOID	\$131	75-1050	1 1/2" - 2" 3-PORT ADAPTOR KIT, HS4A, HS4A, MVP, HS4D	\$521
70-1068	REMOVABLE SEAT/ORIFICE KIT, APM (SOLENOID B OR C)	\$57	75-1051	2 1/2" - 3" SINGLE PORT ADAPTOR KIT, HS4A, HS4A	\$448
70-1069	REMOVABLE SEAT/ORIFICE KIT, APM (SOLENOID A)	\$57	75-1052	2 1/2" - 3" 3- PORT ADAPTOR KIT, HS4A, HS4A, HS4D	\$646
70-1072	SOLENOID TUBE/PLUNGER KIT, PXV/PXVW	\$229	75-1053	4" SINGLE PORT ADAPTOR KIT, HA4A, HS4A	\$652
70-1075	SEAL CAP KIT, HS8A, HS6, PRESSURE MODULES	\$22	75-1056	GASKET KIT, 1/14" HCK2, HS9B	\$45
70-1109	UPPER PISTON KIT, 3/4" - 1 1/4" HS4D	\$171	75-1071	PORT O-RING & GASKET	\$17
70-1110	UPPER PISTON KIT, 1 1/2" - 2" HS4D	\$186	75-1073	PISTON/SEAT KIT, 1 1.2: HCK2	\$217
70-1111	UPPER PISTON KIT, 2 1/2" - 3" HS4D	\$263	75-1107	DIAPHRAM KIT, CONTROL MODULES (M3, M3K, MP3P/L)	\$47
70-1114	SOLENOID TUBE/PLUNGER KIT, NORMALLY OPEN SOLENOID	\$357	75-1108	DIAPHRAM KIT, CONTROL MODULES, RGE V (M3O)	\$47
70-1125	GASKET KIT, PXVW (USE WITH 78-0016 FOR HS8W)	\$48	75-1110	PISTON KIT, 5" - 6" HA4W, HS4W	\$1,365
70-1128	ADJUSTABLE STEM KIT, PXVW	\$112	75-1111	GASKET KIT, 5" - 6" HA4W, HS4W	\$130
70-1129	PISTON/SEAT KIT, PXVW	\$151	75-1112	V-PORT/SEAT KIT, 5" HA4W, HS4W	\$827
70-1130	CONNECTOR/GASKET/SCREW KIT, DIN COIL	\$20	75-1113	V-PORT/SEAT KIT, 6" HA4W, HS4W	\$992
70-1132	PISTON/SEAT KIT, HS8W	\$233	75-1114	4" 3-PORT ADAPTOR KIT, HA4A, HS4A, HS4D	\$1,242
70-1133	BONNET CARTRIDGE KIT, PXVW	\$434	75-1120	KIT, PISTON/SEAT, HS9B, 4"	\$683
70-1136	KIT, OLD HS8A PISTON, V-NOTCH	\$117	75-1129	V-PORT/SEAT KIT, 3/4" HA4AO/AK, MVP20-AO/AK (5# SPRG)	\$154
70-1145	KIT, SEAT/TOOL, HS8W	\$159	75-1130	V-PORT/SEAT KIT, 1" HA4AO/AK, MVP25-AO/AK (5# SPRG)	\$201
72-0066	O-RING (-115) SOLENOID TUBE AND CHECK VALVE	\$14	75-1131	V-PORT/SEAT KIT, 1 1/4" HA4AO/AK, MVP32-AO/AK (5# SPRG)	\$216
75-0093	BOTTOM COVER/ADAPT GASKET, 2 1/2"-3" STR/CONTRL. VALVE	\$23	75-1140	DIAPHRAM KIT, HA4AM CONTROL MODULE	\$44
75-0094	SEAT RING REMOVAL TOOL, 3" HA4A/HS4A	\$216	75-1216	KIT, PISTON/SEAT, HCK5D, 1-1/2" & 2"	\$865
75-0125	FLANGE GASKET, 2 1/2" HA4A, HS4A, ETC	\$17	75-1217	KIT, PISTON/SEAT, HCK5D, 2-1/2"	\$865
75-0128	GASKET, ADAPTOR	\$23	75-1219	KIT, PISTON/SEAT, HCK5D, 4"	\$1,628
75-0137	FLANGE GASKET, 3" HA4A, HS4A, ETC	\$20	75-1220	KIT, GASKET, HCK5D, 1-1/2" & 2"	\$44

ITEM	DESCRIPTION	PRICE	ITEM	DESCRIPTION	PRICE
75-1221	KIT, GASKET, HCK5D, 3"	\$60	75-1388	V-PORT KIT, 1 1/2" (40) MCR/MVP(P3), CV=12	\$777
75-1222	KIT, GASKET, HCK5D, 4"	\$75	75-1389	V-PORT KIT, 2" (50) MCR/MVP(P3), CV=16	\$532
75-1247	BONNET KIT, MVP20 - 32 (3/4" - 1 1/4"), -3 & -4	\$247	75-1392	MOTOR ACTUATOR, MCV/MCR100 (4") (NO CABLES)	\$1,974
75-1248	BONNET KIT, MVP20-2 (3/4")	\$156	75-1396	V-PORT KIT, 3" (80) MCV80, CV=104	\$958
75-1252	BONNET KIT, MVP40 -50 (1 1/2" - 2"), - 3 & -4	\$449	75-1398	V-PORT KIT, 4" (100) MCR100, CV=47	\$1,214
75-1257	PISTON KIT, MVP20-3 (3/4")	\$176	75-1400	V-PORT KIT, 4" (100) MCV100, CV=166	\$1,214
75-1258	PISTON KIT, MVP25-3 (1")	\$175	75-1403	V-PORT KIT, MCV-MVP, P4, 3/4"-1-1/4", CV=6.4	\$219
75-1259	PISTON KIT, MVP32-3 (1 1/4")	\$178	75-1404	V-PORT KIT, MCV-MVP, P4, 3/4"-1-1/4", CV=11.7	\$219
75-1260	PISTON KIT, MVP40-3 (1 1/2")	\$359	75-1405	V-PORT KIT, MCV-MVP, P4, 3/4"-1-1/4", CV=16.4	\$219
75-1261	PISTON KIT, MVP50-3 (2")	\$368	75-1406	V-PORT KIT, MCV-MVP, P4, 1-1/2"-2", CV=35	\$296
75-1262	PISTON KIT, MVP20-3 & -4 (3/4")	\$136	75-1407	V-PORT KIT, MCV-MVP, P4, 3/4", CV=2.2	\$219
75-1263	PISTON KIT, MVP25-3 & -4 (1")	\$141	75-1408	V-PORT KIT, MCV-MVP, P4, 3/4"-1-1/4", CV=3.9	\$219
75-1264	PISTON KIT, MVP32-3 & -4 (1 1/4")	\$159	75-1409	V-PORT KIT, MCV-MVP, P4, 1-1/2"-2", CV=12	\$296
75-1265	PISTON KIT, MVP40-3 & -4 (1 1/2")	\$260	75-1410	V-PORT KIT, MCV-MVP, P4, 1-1/2"-2", CV=16	\$296
75-1266	PISTON KIT, MVP50-3 & -4 (2")	\$271	75-1411	V-PORT KIT, MCV-MVP, P4, 1-1/2"-2", CV=47	\$296
75-1276	SEAT RING KIT, 3/4" - 1" HA4W/HS4W/MVP20-25	\$316	75-1412	V-PORT KIT, MCV-MVP, P4, 3/4"-1-1/4", 50%, CV=1.2	\$334
75-1277	V-PORT/SEAT KIT, 1" HA4W/HS4W	\$337	75-1413	V-PORT KIT, MCV-MVP, P4, 3/4"-1-1/4", 25%, CV=0.8	\$334
75-1278	SEAT RING KIT, 1 1/4" HA4W/HS4W/MVP32	\$476	75-1414	V-PORT KIT, MCV-MVP, P4, 1-1/2"-2", 50%, CV=6.0	\$169
75-1279	V-PORT/SEAT KIT, 3/4" -25% HA4A/HS4A/HS4D/MVP20	\$154	75-1422	DISC STRAINER/ORIFICE KIT, GAS POWERED VALVE	\$151
75-1280	V-PORT/SEAT KIT, 3/4" -50% HA4A/HS4A/HS4D/MVP21	\$164	75-2444	SEAT RING REMOVAL TOOL, 3/4" - 1 1/4" HA4W/HS4W/MVP	\$168
75-1281	GASKET KIT, BASIC, MVP20 - 32 (3/4" - 1 1/4")	\$32	75-2735	TURNS OPEN TAG, MVP/PXVW60/HEV	\$22
75-1282	GASKET KIT, BASIC, MVP40 - 50 (1 1/2" - 2")	\$39	75-3245	SPOOL KIT, MVP20-2, -3, -4 & -5 (3/4")	\$93
75-1287	SEAT RING KIT, 1 1/2" - 2" HA4A/HS4A/MVP40-50	\$162	75-3246	SPOOL KIT, MVP20-32 -1 (3/4"-1 1/4"), MVP25 & 32 -2, -3, -4 & -5	\$93
75-1304	KIT, P4 1/2" PISTON, STOP/CHECK/EXP	\$121	75-3247	SPOOL KIT, MVP40 - 50 (1 1/2" - 2")	\$149
75-1318	CONVERSION KIT, SMV (3/4" - 1 1/4") to MCV/MCR20 - 32	\$2,682	75-3517	DONGLE KIT, SMV W/PIF to MCV/MCR	\$184
75-1319	CONVERSION KIT, SMV (1 1/2" - 2") to MCV/MCR40 - 50	\$3,352	77-0206	FUSE, VARI-LEVEL CONTROLLER (BUSSMAN #PCC-3)	\$27
75-1321	CABLE KIT, 6.5 FT(2 M) W/PIG TAILS	\$117	77-0526	O-RING(-220 BUNA),FROST SHIELD (HANSEN ONLY)	\$15
75-1322	GASKET KIT, MCV/MCR 20 - 32 (3/4" - 1 1/4")	\$51	77-1000	VLT TRANSMITTER HOUSING ASSEM KIT, 4-20 MA OUTPUT	\$1,601
75-1323	GASKET KIT, MCV/MCR40 - 50 (1 1/2" - 2")	\$55	77-1002	REFLEX LENS KIT, SEE-LEVEL	\$62
75-1325	CARTRIDGE ASSEMBLY KIT, MCV/MCR 20 - 32 (3/4" - 1 1/4")	\$968	77-1003	FROST SHIELD KIT, SEE-LEVEL	\$70
75-1326	CARTRIDGE ASSEMBLY KIT, MCV/MCR40 - 50 (1 1/2" - 2")	\$1,064	77-1005	SHP/SVP TRANSMITTER HOUSING KIT	\$746
75-1327	POWER SUPPLY KIT, HUPS, 24VDC (60W)	\$210	77-1011	VLTRD TRANSMITTER HOUSING ASSEMBLY, 4-20 MA OUTPUT	\$2,277
75-1328	BATTERY BACKUP KIT, HUPS, 24VDC (60W)	\$1,068	77-1022	LP TRANSMITTER HOUSING KIT, NH3 PROBES	\$618
75-1329	CABLE KIT, 16.4 FT (5 M) W/PIG TAILS	\$145	77-1023	LP TRANSMITTER HOUSING KIT, HALO & LP16N	\$709
75-1331	MOTOR ACTUATOR, MCXV/A, B, C (NO CABLES)	\$1,974	77-1043	CLEAR LENS KIT, SEE-LEVEL	\$90
75-1332	MOTOR ACTUATOR, MCV/MCR 20 - 32 (3/4" - 1 1/4") (NO CABLES)	\$1,974	77-1044	FROST SHIELD KIT, EXTENDED, SEE-LEVEL	\$78
75-1333	MOTOR ACTUATOR, MCV/MCR40 - 50 (1 1/2" - 2") (NO CABLES)	\$1,974	77-1049	METAL COVER KIT, VLT/HPT/SPS	\$39
75-1334	MOTOR ACTUATOR, MCV/MCR80 (3") (NO CABLES)	\$1,974	77-1055	RETAINING RING KIT, SEE-LEVEL	\$72
75-1336	KIT, CONVERSION, 1-1/2" - 2" MCV - MVP, P3	\$3,788	77-1058	KIT, APM LEVEL SENSOR, LOW SIDE & DRAINER	\$445
75-1337	KIT, CONVERSION, 3/4" - 1-1/4" MCV - MVP, P3	\$2,967	77-1059	KIT, APM HIGH SIDE SENSOR	\$567
75-1347	CONVERSION KIT, SMV (3") to MCV/MCR80	\$3,511	78-0016	GASKET, ST050 BOTTOM CAP	\$17
75-1348	CONVERSION KIT, SMV (4") to MCV/MCR100	\$4,149	78-0026	GASKET, ST100/ST100D BOTTOM COVER	\$17
75-1349	CARTRIDGE ASSEMBLY KIT, MCV/MCR80 (4")	\$1,571	78-0146	O-RING HEAVY DUTY STRAINER BASKET	\$17
75-1350	CARTRIDGE ASSEMBLY KIT, MCV/MCR100 (3")	\$2,097	78-1001	STRAINER SCREEN KIT, ST050/ST050D (100 MESH)	\$55
75-1351	GASKET KIT, 3" (80) MCV/MCR	\$63	78-1003	STRAINER SCREEN KIT, ST(W)100/ST(W)100D (60 MESH)	\$97
75-1352	GASKET KIT, MCXV/A, MCXV/B, MCXV/C	\$78	78-1005	STRAINER SCREEN KIT, ST(W)200 (60 MESH)	\$134
75-1357	GASKET KIT, 4" (100) MCV/MCR	\$47	78-1006	STRAINER SCREEN KIT, ST(W)250 (60 MESH)	\$151
75-1358	CARTRIDGE ASSEMBLY KIT, MCXV/A, B, C	\$1,013	78-1007	STRAINER SCREEN KIT, ST300 (60 MESH)	\$162
75-1359	MCXV/C NEEDLE KIT, CV=0.2	\$441	78-1008	STRAINER SCREEN KIT, ST400 (60 MESH)	\$242
75-1360	MCXV/A NEEDLE KIT, CV=0.6	\$441	78-1010	STRAINER SCREEN KIT, APM, NEAP	\$60
75-1361	MCXV/B NEEDLE KIT, CV=1.0	\$441	78-1013	STRAINER SCREEN KIT, ST(W)100HD HEAVY DUTY (60 MESH)	\$162
75-1362	CONVERSION KIT, HMXV to MCXV/C	\$2,682	78-1014	STRAINER SCREEN KIT, ST(W)100/100 (100 MESH)	\$257
75-1363	CONVERSION KIT, HMXV/A to MCXV/A	\$2,682	78-1015	STRAINER BAG KIT, ST(W)100HD, MVP20 - 32	\$47
75-1364	CONVERSION KIT, HMXV/B to MCXV/B	\$2,682	78-1016	STRAINER BAG KIT, ST(W)200, MVP40 - 50	\$59
75-1365	V-PORT/SEAT KIT,3/4"-25% HA4AO/AK, MVP20-AO/AK (5# SPR)	\$154	78-1017	STRAINER BAG KIT, ST(W)250, ST(W)300	\$64
75-1366	V-PORT/SEAT KIT,3/4"-50% HA4AO/AK, MVP20-AO/AK (5# SPR)	\$154	78-1018	STRAINER BAG KIT, ST(W)400	\$70
75-1381	V-PORT KIT, 3/4"(20) MCV/MVP(P3),1 1/4"(32) MCR/MVP(P3),CV=6.4	\$450	78-1020	STRAINER SCREEN KIT, MVP20 - 32 (60 MESH)	\$116
75-1382	V-PORT KIT, 1" (25) MCV/MVP(P3), CV=11.7	\$450	78-1021	STRAINER BASKET KIT, PERFORATED METAL, 3" SPECIAL	\$522
75-1383	V-PORT KIT, 1 1/4" (32) MCV/MVP(P3), CV=16.4	\$450	78-1022	STRAINER CAP KIT W/1/4" DRAIN, ST050D	\$55
75-1384	V-PORT KIT, 1 1/2" (40) MCV/MVP(P3), CV=35	\$532	78-1025	STRAINER SCREEN KIT, ST(W)200/100, MVP40 - 50 (100 MESH)	\$418
75-1385	V-PORT KIT, 2" (50) MCV/MVP(P3), CV=47	\$532	78-1026	STRAINER SCREEN KIT, ST(W)250/100 (100 MESH)	\$585
75-1386	V-PORT KIT, 3/4" (20) MCR/MVP(P3), CV=2.2	\$450	78-1027	STRAINER SCREEN KIT, MVP20 -32 (100 MESH)	\$280
75-1387	V-PORT KIT, 1" (25) MCR/MVP(P3), CV=3.9	\$532			

Part Kits - Quick Reference Guide

Shut-off Valves, Screwed Bonnet (GT, AT), Threaded

Size	Gasket Kit	Bonnet O-Ring	Screwed Bonnet Kit	Disc Assembly Kit	Handwheel Kit	Seal Cap Kit
3/8"	50-1040 \$34	50-0453	50-1041	50-1042	50-1005 \$48	50-1036 \$43
1/2"		\$17	\$147	\$74		
3/4"						
1"	50-1023 \$45	50-0017	50-1021	50-1004	50-1026 \$79	50-1027 \$98
1-1/4"		\$17	\$173	\$78		

Shut-off Valves, Bolted Bonnet (GTB, GSB, GS, AS, ASB, AW, GW), Welded

Size	Gasket Kit	Bonnet Gasket/ O-Ring	Bolted Bonnet Kit	Disc Assembly Kit*	Handwheel Kit	Seal Cap Kit
1/2"	50-1040 \$34	50-0805	50-1094	50-1042	50-1005 \$48	50-1036 \$43
3/4"		\$16	\$173	\$74		
1"		50-0806	50-1095	50-1004		
1-1/4"		\$16	\$173	\$78		
1-1/2"	50-1023	50-0259	50-1024	50-1025	50-1026	50-1027
2"	\$45	\$17	\$349	\$185	\$79	\$98
2-1/2"	50-1043	50-0310	50-1044	50-1045	50-1037 \$110	50-1038 \$162
3"	\$47	\$21	\$453	\$128		
4"	50-1065 \$64	50-0537 \$20	50-1066 \$618	50-1067 \$155		
5"	50-1082 \$78	50-0708 \$21	50-1080 \$1013	50-1086 \$171	50-1089 \$168	50-1091 \$155
6"	50-1083 \$83	50-0709 \$38	50-1081 \$1196	50-1087 \$214		
8"	50-1084 \$158	50-0750 \$41	50-1085 \$2220	50-1088 \$231		
10"	50-1122 \$348	50-2223 \$48	50-1125 \$4870	50-1128 \$277	50-1090 \$309	50-1092 \$257
12"	50-1123 \$440	50-2260 \$69	50-1126 \$7076	50-1129 \$506	50-1131 \$334	
14"	50-1124 \$515	50-2243 \$84	50-1127 \$9316	50-1130 \$635	50-1132 \$851	50-1134 \$436
16"	50-1196 \$917	50-2582 \$52	50-1198 \$14976	50-1200 \$699	50-1193 \$2426	50-1194 \$590
18"	50-1197 \$922	50-2584 \$68	50-1199 \$18391	50-1201 \$783		

Note: Kits for Extended Neck Valves (1/2"-4") are also available. *Disc Assembly Kit for 10" above includes seat ring and bonnet O-ring only.

Hand Expansion Valves, Bolted Bonnet (RTB, VTB, VS, RSB, VSB, RW, VW)

Size	Gasket Kit	Bonnet Gasket/ O-Ring	HEV Bolted Bonnet Kit	Throttling Plug Kit (Bolted Bonnet)	Bar Handle Kit	Seal Cap Kit (Yellow)
1/2"	50-1040 \$34	50-0805 \$16	50-1104 \$151	50-1053 \$103	50-1012 \$44	50-1049 \$45
3/4"			50-1105 \$188	50-1054 \$105		
1"		50-0806 \$16	50-1106 \$175	50-1015 \$140		
1-1/4"			50-1107 \$203	50-1016 \$170		
1-1/2"	50-1023	50-0259	50-1031 \$431	50-1046 \$232	50-1039 \$61	50-1048 \$81
2"	\$45	\$17	50-1032 \$409	50-1047 \$302		
2-1/2"	50-1043	50-0310	50-1108 \$653	50-1059 \$551	50-1051 \$75	50-1050 \$78
3"	\$47	\$21	50-1078 \$571	50-1058 \$572		
4"	50-1065 \$64	50-0537 \$20	50-1121 \$722	50-1063 \$529		

Note: Kits for Screwed Bonnet and Extended Neck Valves (1/2"-4") are also available.

Part Kits - Quick Reference Guide

Small Solenoid Valves HS6, HS8A, HS8W, HS7

Size	Gasket Kit	Piston Kit	Cartridge Kit	Seal Cap Kit	Flange Gasket*	Screen Kit (STD)	Strainer Cover Gasket	Tube/Plunger Kit
5/32" (4 mm) HS6	70-1011 \$44	-	-	70-1075 \$22	70-0065 \$17	78-1001 \$55	78-0016 \$17	70-1059 \$131
1/2" (13mm) HS8A	70-1005 \$48	70-1002 \$117	70-1001					
1/2" (13mm) HS8W		70-1132 \$233	\$217					
3/4" (20mm) HS7	70-1017 \$59	70-1019 \$268	70-1018 \$286	50-1071 \$45	70-0132 \$17	78-1003 \$97	78-0026 \$17	
1" (25mm) HS7		70-1020 \$286						
1-1/4" (32mm) HS7		70-1021 \$305						

* If ordering quantity of 12 or more flange gaskets, 50% discount.

HS4A Solenoid Valves & HA4A Regulators

Size	Gasket Kit	Piston Kit	V-Port/Seat Kit	Seal Cap Kit	Flange Gasket*	Adpater Gasket	1-Port Adpapter Kit	3-Port Adapter Kit
3/4" (20mm)	75-1023 \$40	75-1019 \$171	75-1020 \$152	50-1071 \$45	70-0132 \$17	75-0489 \$17	75-1047 \$250	75-1048 \$421
1" (25mm)			75-1021 \$201					
1-1/4" (32mm)			75-1022 \$209					
1-1/2" (40mm)	75-1039 \$48	75-1025 \$281	75-1029 \$225	75-1014 \$85	75-0138 \$17	75-0113 \$17	75-1049 \$410	75-1050 \$521
2" (50mm)			75-1030 \$292					
2-1/2" (65mm)	75-1040 \$59	75-1026 \$365	75-1031 \$320	50-1027 \$98	75-0125 \$17	75-0093 \$23	75-1051 \$448	75-1052 \$646
3" (80mm)	75-1041 \$64	75-1027 \$437	75-1032 \$345		75-0137 \$20			
4" (100mm)	75-1042 \$70	75-1028 \$487	75-1033 \$378	50-1027 \$98	75-0253 \$23	75-0233 \$22	75-1053 \$652	75-1114 \$1242
5" (125mm)	75-1111 \$130	75-1110 \$1365	75-1112 \$827	50-1038 \$162	-	75-0605 75-0606	75-1288	-
6" (150mm)			75-1113 \$992			\$45 \$48		

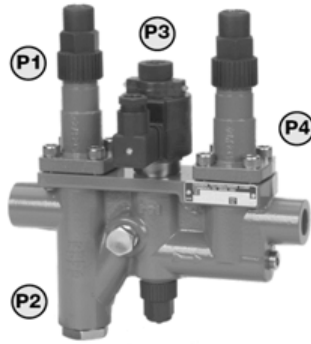
Note: Where appropriated, PED versions of above kits are available - contact factory. 5" & 6" Adapter Gasket requires both parts.

Strainers, Flanged or Welded

For Valve Sizes	Cat. No.	60 Mesh Screen	100 Mesh Screen Kit	Cover Gasket	Cloth Bag (filter) Kit
5/32" thru 1/2"	ST050	-	78-1001 \$55	78-0016 \$17	-
3/4" thru 1"	ST100	78-1003 \$97	78-1014 \$257	78-0026 \$17	-
	ST100HD	78-1013 \$162		78-1015 \$47	
1-1/2" thru 2"	ST200	78-1005 \$134	78-1025 \$418	75-0196 \$20	78-1016 \$59
2-1/2"	ST250	78-1006 \$151	78-1026 \$585	75-0128 \$23	78-1017 \$64
3"	ST300	78-1007 \$162	-		
4"	ST400	78-1008 \$242	-	75-0234 \$21	78-1018 \$70
5" & 6"	STW500 STW600	78-1009 \$891	-	75-0605 75-0606 \$45 \$48	-

Note: 5" & 6" Cover Gasket requires both parts.

Part Kits - Quick Reference Guide



MVP

Position 1	Size	Gasket Kit	Bonnet Gasket	Bonnet Kit	Disc Assembly	Seal Cap Kit	Handwheel Kit
Shut-off Valve	1/2" (13mm)	50-1040	50-0805	50-1094	50-1042	50-1036	50-1005
	3/4" (20mm)		\$16	\$173	\$74		
	1" (25mm)	\$34	50-0806	50-1095	50-1004	\$43	\$48
	1-1/4" (32mm)		\$16	\$173	\$78		
	1-1/2" (40mm) 2" (50mm)	50-1023 \$45	50-0259 \$17	50-1024 \$349	50-1025 \$185	50-1027 \$98	50-1026 \$79

Position 2	Size	60 Mesh Screen Kit	100 Mesh Screen Kit	Cover Gasket
Strainer	1/2" (13mm)	-	78-1001 \$55	78-0016 \$17
	3/4" (20mm)	78-1020	78-1027	50-0806
	1" (25mm)	\$116	\$280	\$16
	1-1/4" (32mm)			
	1-1/2" (40mm) 2" (50mm)	78-1005 \$134	78-1025 \$418	75-0196 \$20

Position 3	Size	Gasket Kit	Piston Kit	V-port/Seat Kit	Seal Cap Kit	Adapter Gasket	1-Port Adapter Kit	3-Port Adapter Kit
Solenoid or Regulator	1/2" (13mm)	70-1005 \$48	70-1132 \$233	-	70-1075 \$22	-	70-1001 \$217	-
	3/4" (20mm)	75-1023 \$40	75-1019 \$171	75-1020 \$152	50-1071 \$45	75-0489 \$17	75-1047 \$250	75-1048 \$421
	1" (25mm)			75-1021 \$201				
	1-1/4" (32mm)			75-1022 \$209				
	1-1/2" (40mm)	75-1039 \$48	75-1025 \$281	75-1029 \$225	75-1014 \$85	75-0113 \$17	75-1049 \$410	75-1050 \$521
	2" (50mm)			75-1030 \$292				

Position 3	Size	Gasket Kit	V-Port/Seat Kit				Cartridge Kit	Actuator Kit
			MCV		MCR/MCX			
Motorized Valve (MCV / MCR)	7/32" (5mm)	75-1338 \$43	-	-	Cv=0.6	75-1375 \$261	75-1339 \$1013	75-1331 \$1974
	9/32" (7mm)		-	-	Cv=1.1	75-1376 \$261		
	1/16" (2mm)		-	-	Cv=0.2	75-1374 \$261		
	3/4" (20mm)	75-1343 \$51	Cv=6.4	75-1381 \$450	Cv=2.2	75-1386 \$450	75-1340 \$968	75-1332 \$1974
	1" (25mm)		Cv=11.7	75-1382 \$450	Cv=3.9	75-1387 \$532		
	1-1/4" (32mm)		Cv=16.4	75-1383 \$450	Cv=6.4	75-1381 \$450		
	1-1/2" (40mm)	75-1344	Cv=35	75-1384 \$532	Cv=12	75-1388 \$777	75-1341	75-1333
	2" (50mm)	\$47	Cv=47	75-1385 \$532	Cv=16	75-1389 \$532	\$1064	\$1974

Part Kits - Quick Reference Guide

Position 4	Size	Gasket Kit	Bonnet Gasket	Bonnet Kit	Disc Assemblv	Seal Cap Kit	Handwheel Kit	Spool or Seat Kit
(-1) Shut-off Valve	1/2" (13mm)	50-1040	50-0805 \$16	50-1094 \$173	50-1042 \$74	50-1036 \$43	50-1005 \$48	75-1302 \$80
	3/4" (20mm) 1" (25mm) 1-1/4" (32mm)		50-0806 \$16	50-1095 \$173	50-1004 \$78			75-3246 \$93
	1-1/2" (40mm) 2" (50mm)	50-1023 \$45	50-0259 \$17	50-1024 \$349	50-1025 \$185	50-1027 \$98	50-1026 \$79	75-3247 \$149

Position 4	Size	Gasket Kit	Hand Expansion (-2)		Stop Check / HEV (-3)		Seal Cap Kit	Bar Handle Kit	Spool or Seat Kit
			Bonnet Kit	Throttl Plug	Bonnet Kit	Throttl Plug			
(-2) Hand Expansion or (-3) Stop/check HEV	1/2" (13mm)	50-1040 \$34	50-1104 \$151	50-1053 \$103	75-1305 \$239	75-1304 \$121	50-1049 \$45	50-1012 \$44	75-1302 \$80
	3/4" (20mm)		75-1248 \$156	50-1054 \$105	75-1247 \$247	75-1257 \$176			75-3245 \$93
	1" (25mm)		50-1106 \$175	50-1015 \$140		75-1258 \$175			75-3246 \$93
	1-1/4" (32mm)		50-1107 \$203	50-1016 \$170	75-1259 \$178				
	1-1/2" (40mm)	50-1023 \$45	50-1031 \$431	50-1046 \$232	75-1252 \$449	75-1260 \$359	50-1048 \$81	50-1039 \$61	75-3247 \$149
	2" (50mm)	50-1032 \$409	50-1047 \$302	75-1261 \$368					

Position 4	Size	Gasket Kit	Stop/Check (-4)		Check (-5)		Seal Cap Kit (Green)	Bar Handle Kit	Spool or Seat Kit
			Bonnet Kit	Piston Kit	Bonnet Kit	Piston Kit			
(-4) Stop/Check or (-5) Check	1/2" (13mm)	50-1040 \$34	75-1305 \$239	75-1303 \$130	75-1306 \$330	75-1303 \$130	50-1212 \$44	50-1012 \$44	75-1302 \$80
	3/4" (20mm)		75-1247 \$247	75-1262 \$136	50-1215 \$215	75-1262 \$136			75-3245 \$93
	1" (25mm)			75-1263 \$141		75-1263 \$141			75-3246 \$93
	1-1/4" (32mm)		75-1264 \$159	75-1264 \$159					
	1-1/2" (40mm)	50-1023 \$45	75-1252 \$449	75-1265 \$260	50-1216 \$341	75-1265 \$260	50-1213 \$98	50-1039 \$61	75-3247 \$149
	2" (50mm)	75-1266 \$271	75-1266 \$271						

Position 4	Size	Gasket Kit	MCX/MRC (-7) V-Port/Seat Kit		Cartridge Kit	Actuator Kit	Spool or Seat Kit
			Cv	Part #			
(-7) Motorized Valve (MCX / MCR)	7/32" (5mm)	75-1373 \$43	Cv=0.6*	75-1371 \$859	75-1358 \$1013	75-1331 \$1974	See V-Port Seat Kit
	9/32" (7mm)		Cv=1.1*	75-1372 \$859			
	1/16" (2mm)		Cv=0.2*	75-1370 \$859			
	3/4" (20mm)	75-1401 \$45	Cv=2.2	75-1407 \$219	75-1380 \$673	75-1332 \$1974	75-3245 \$93
	1" (25mm)		Cv=3.9	75-1408 \$219			75-3246 \$93
	1-1/4" (32mm)		Cv=6.4	75-1403 \$219			
	1-1/2" (40mm)	75-1402 \$48	Cv=12	75-1409 \$296	75-1342 \$756	75-1333 \$1974	75-3247 \$149
	2" (50mm)		Cv=16	75-1410 \$296			

* Kit includes needle and seat.

TERMS & CONDITIONS AND LIMITED WARRANTY

All quotations, products and services provided by Hansen Technologies, Inc. ("Seller") or its representatives to any customer, distributor, original equipment manufacturer, end-user or other purchaser ("Buyer") are furnished only on the terms and conditions stated herein. By ordering and accepting delivery of products and/or services from Seller, Buyer agrees to and accepts these terms and conditions and agrees that, unless modified by separate negotiated agreement as provided below, these terms and conditions, together with the item, quantity, price, and similar terms as set out in Seller's quotation, order acknowledgement and/or invoice, constitute the entire agreement of the parties, superseding all other communications and documentation. Seller hereby expressly rejects any different or additional terms, preprinted or otherwise, contained or referenced in any purchase order or other documentation furnished by Buyer, whether before or receipt thereof is acknowledged by signature or otherwise. No modification of these terms shall be effective unless set out in a **negotiated agreement signed by an authorized officer of Seller.**

QUOTATIONS & PRICES. Quotations are valid only for the period stated therein, and may be changed or withdrawn at any time prior to acceptance without notice. Quotations to non-U.S. Buyers are solicitations or inquiries for offers to purchase. Clerical or typographical errors are subject to correction. Quoted prices and delivery dates are valid only for the quantities, terms and payment schedule specified. Prices do not include, and Buyer is responsible for payment of, any applicable sales, use, value added, goods and services, excise, property, customs, stamp, documentary, import/export, or other taxes, tariffs, fees, duties, withholdings or like charges, whether domestic or foreign, related to the products and/or services supplied hereunder. Any such amounts paid by Seller will be invoiced to and paid by Buyer unless Buyer provides an exemption certificate acceptable to the applicable government authority.

ORDERS & ACCEPTANCE: Orders must be presented in writing or via electronic means acceptable to Seller and will be binding upon Seller only when accepted by written or electronic acknowledgment. Seller reserves the right, at its option and without liability, to refuse any order, in whole or in part, or to specify an alternate delivery schedule if orders from all sources exceed Seller's inventory or ability to deliver. For special construction orders, Seller will provide an order acknowledgement outlining acceptance of the order and defining any necessary clarifications to terms and conditions, deliverables, pricing, and project schedule. Where orders are placed, acknowledged, and/or invoiced by electronic transmission, the data transmitted will be deemed "in writing" and "signed," and any printout of electronic transmissions maintained in the ordinary course of business will be considered an "original" and admissible as between the parties to the same extent and under the same conditions as other business records maintained in documentary form. Seller shall be entitled to assume that persons placing orders on behalf of Buyer (electronically or otherwise) are authorized to do so and to accept the terms and conditions herein.

CHANGE AND CANCELLATION: Changes requested by Buyer after order acceptance must be submitted in writing and are subject to written acceptance by an authorized representative of Seller. **Cancelled orders are subject to a minimum charge of 30% of value.** Costs and/or delays resulting from such changes will be solely determined by Seller and binding on Buyer. Provided that Seller receives adequate written notice from Buyer, Buyer may cancel or suspend performance of any order for Seller-standard products for convenience, subject to payment of all reasonable charges as solely determined by Seller, which may include, without limitation, special tooling, work in process, handling and storage costs, costs associated with changes in design or specifications, and incidental and consequential damages. **Orders for special construction products, special order pumps and custom length probes are non-refundable and cannot be cancelled once in production.** Seller's performance is subject to approval of Buyer's credit and Seller, with reasonable cause, may cancel or suspend performance of any order placed by Buyer if Buyer fails to meet any of its obligations herein.

PAYMENT TERMS: Unless otherwise specified in Seller's quotation or order acknowledgement, payment terms for U.S. Buyers are net 30 days from date of invoice, subject to approved credit at the time of order invoicing. Orders from outside the U.S. or Euro Zone require advance remittance by wire transfer; alternate international payment terms are considered upon request. Deposits or down payments, if any, are non-refundable; no discount for early payment is authorized without Seller's written consent. Partial shipments are billed as made and payable on the terms above. Payment terms will not be affected by any delay in delivery, installation or acceptance. Products will remain personal property, even if installed or affixed to any realty or structure. Seller reserves the right to modify payment terms or require prior payment, letter of credit, or COD when, in the opinion of Seller, Buyer's financial condition or previous payment record so warrants. If Buyer becomes delinquent in any payment due, Seller in its discretion may take any and all actions permitted by law, including set off, and may institute credit hold procedures on all open orders. Future orders will not be confirmed until Buyer's account is brought current, including any outstanding interest charges. A service charge (not to exceed 1.5% per month) may be charged on all past due balances. If Seller deems it necessary to refer an account to an agent or attorney for collection, all costs and expenses of collection (including, without limitation, reasonable attorneys' fees) will be charged to Buyer's account, up to the maximum amount allowed by law.

DELIVERY & INSPECTION: All sales are Ex-Works Factory (Incoterms 2010). Title will pass upon issuance of the carrier's bill of lading at Seller's dock (subject to Seller's rights as an unpaid creditor) and, if not previously accepted, receipt of

delivery by or on behalf of Buyer will constitute acceptance of these terms and conditions. Buyer will bear all risk and expense for delivery of goods, including without limitation, shipping, loading, unloading, storage, freight, and insurance. Any shipping contracts made by Seller will be for Buyer's account and, if paid by Seller, will be invoiced to Buyer in addition to the product price. Seller will endeavor to deliver accepted orders promptly; it is understood, however, that dates indicated for delivery or performance represent Seller's best current estimates only and Seller will have no liability for failure to perform within such dates. Products will be packaged for shipment in accordance with Seller's standard commercial practice; however, Seller will not be responsible for loss or damage in transit. Buyer must inspect all items upon arrival and provide written notice to Seller, within 5 business days, of any claim for shortage or other nonconformance. If Buyer fails to give timely notice, all products will be deemed accepted. Use or resale of products in any manner following delivery (regardless of whether installation has occurred) will also constitute acceptance by Buyer. Any claim for loss or damage in transit should be made directly to the delivering carrier.

RETURN POLICY: Except in the case of valid warranty claims, no returns will be accepted after 6 months or without a Return Material Authorization (RMA) number from Seller. Products returned without an RMA number may be returned to Buyer freight collect. To ensure accurate and prompt processing of returns, the RMA number should be referenced on all shipping documents and correspondence. Returned products must be in the same condition as when they were shipped by Seller, and in their original packaging. Returned products must be sent by Buyer freight prepaid and properly boxed to prevent damage in transit. **SELLER WILL NOT ACCEPT ANY C.O.D. PARCELS.** Seller will inspect returned products upon receipt and issue any applicable credits based on the condition of the products and the terms of this policy. For stock items returned, a minimum restocking fee of 25% of the invoice price may be charged. For pressure relief valves (if returned within 60 days from date of shipment from the factory), a 25% restocking fee applies. Pressure relief valves more than 60 days from date of shipment, valves with non-standard pressure settings, special construction products, special order pumps, custom length probes, and end-of-life/last buy orders are non-returnable. After 6 months, all sales are final.

LIMITED WARRANTY:

Product Warranty. Products manufactured by Seller are warranted against defects in materials and workmanship under normal use in a typical operating environment (a) in the case of products other than electric motors and electronic items, for a period of one year from date of shipment from the factory, and (b) in the case of electric motors and electronic items, for a period of ninety (90) days from date of shipment except for where certain Legal Limitations may apply. This warranty extends only to the original Buyer, and shall be in force only upon payment in full for the product(s) to be warranted. Such warranty shall be effective only when products are properly installed, maintained, and serviced in accordance with good commercial practice and in compliance with all local codes and legal requirements, and used and operated in accordance with Seller's catalogs or bulletins for normal refrigeration applications, unless otherwise approved in writing. Products or components not manufactured by Seller are warranted only by the original manufacturer and only if and to the extent set forth in the original manufacturer's warranty, and Seller will have no warranty liability with respect to such third party products or failure of any such supplier to perform under its warranty.

Limited Remedy. Products returned to Seller during the applicable warranty period and found to be defective by factory inspection will be repaired or replaced with a conforming replacement product at Seller's option and without charge. The repaired or replaced product is then warranted for the remaining term of the applicable warranty or 90 days, whichever is longer. Warranty labor repairs may be performed at Seller's designated facility, with Buyer responsible for shipping (FCA Factory) or, at Seller's option, may be performed at Buyer's location, in which case any travel expenses (not to exceed the purchase price of the damaged part) will be borne by Seller, so long as Seller confirms that the defect is covered by warranty and not subject to any Exclusions below. Replaced parts shall become the property of Seller. If repair or replacement is not, in Seller's opinion, commercially feasible, or if Seller refuses or is unable to successfully perform such repair or replacement, Seller will refund an equitable portion of the purchase price paid by Buyer for the product. Seller will not be responsible for any other costs or charges, including without limitation, costs of dismantling, disassembly, de-installation, removal, or reinstallation. Service

required beyond the normal scope of warranty (see Exclusions below) or after expiration of the warranty period are billable repairs. Seller will charge Buyer its then-current prices for parts, labor, and transportation. Receipt and acceptance of a purchase order may be required before commencement of billable repairs. Buyer may also be billed for costs of testing and inspection of returned products with no trouble found Exclusions. Any warranty claim, support claim, or liability is excluded, and Buyer will be solely responsible, for any claim, damage, or liability arising out of (1) improper or faulty installation or failure to provide a suitable installation environment, (2) accident, misuse, abuse, extraordinary wear and tear, or neglect, (3) misapplication, improper use, or failure to follow Seller's operating instructions, safety precautions and bulletins, including lack of routine care or maintenance, use of non-approved refrigerants, or use of products outside of normal or specified operating or environmental conditions, (4) damage, defects, problems, malfunctions, or failures created by any non-Seller products, accessories, software, attachments, or services or their interface with Seller's products, (5) acts of God, electrical power surges, or other causes external to the products, (6) alteration, disassembly, or repair in the field, or (7) any failure to grant Seller the required time and opportunity to carry out any necessary repairs. Products disabled by dirt, debris, or other foreign substances will not be considered defective. Where critical temperature or products are involved, backup temperature controls and alarms are required. It is the responsibility of the installer to add devices (alarms, safety and limit controls, etc.) that protect against or warn of any operating control failure. Users and operators also must be aware that harmful refrigerant properties and pressure could damage products or injure people. Seller's responsibility will in all events be limited to repair or replacement of the failed or defective Seller product(s), and will not include any further liability for or arising out of any third party products with which Seller's products may be installed, combined, or used. **TO THE FULL EXTENT ALLOWED BY LAW, THE FOREGOING LIMITED WARRANTY AND REMEDIES ARE EXCLUSIVE AND EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, REPRESENTATIONS, OBLIGATIONS, OR LIABILITIES, WHETHER WRITTEN OR ORAL, EXPRESS OR IMPLIED, STATUTORY OR OTHERWISE, INCLUDING BUT NOT LIMITED TO WARRANTIES, TERMS, OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, CORRESPONDENCE WITH DESCRIPTION, AND NON-INFRINGEMENT, ALL OF WHICH ARE HEREBY EXPRESSLY DISCLAIMED.**

Certain Legal Limitations. When, under applicable law, implied warranties are not allowed to be excluded in their entirety, such warranties will be limited to the duration of the applicable written warranty. For European customers, if any warranty period specified herein is less than the minimum warranty period required by law, the warranty period will be extended to the period required by law, and any terms herein limiting Seller's liability shall not apply insofar as they conflict with mandatory statutory provisions of the Product Liability Act. No employee, agent, dealer or other person is authorized to modify, vary, or extend Seller's warranties as set out herein or to assume for Seller any other liability in connection with its products. **Service & Support.** To obtain warranty service or technical assistance contact Seller by phone (Toll Free: 800-426-7368), email: info@hantech.com, or web: www.hantech.com/Warranty & Returned Goods. Concerns regarding service and support may be addressed by writing to Hansen Technologies Corporation, 681 Commerce Street, Burr Ridge, IL 60527, USA.

PRODUCT SPECIFICATIONS AND VALIDATION: All products, when delivered by Seller, will conform to Seller's specifications; however, Buyer is responsible for validation of each specific product application and any use of products as a component of or in conjunction with other products or attachments not supplied by Seller for such purpose, including all necessary testing and qualification, and will put in place all necessary systems and protections to ensure that any failure or defect relating to the products will not result in any other or further damage. Seller reserves the right to discontinue or change the design or specifications of any product or component at any time, and will use commercially reasonable efforts to notify Buyer of any decision to discontinue products or material changes in specifications affecting form, fit or function.

USE RESTRICTIONS & REQUIREMENTS: Buyer is responsible for compliance with all applicable laws, regulations, codes, recommendations, and requirements of government authorities and for obtaining all licenses and permits pertaining to the purchase, shipment, import, export, transfer, sale, disposition, installation, operation, and/or use of the products supplied hereunder, including any use or sale as a component of any non-Seller products, it being understood that Seller makes no warranty of any kind regarding compliance with such requirements. Buyer may not (1) modify, alter, disassemble, or make any changes to any products or items provided by Seller or permit any other party to do so without Seller's prior written consent; (2) import, export, sell, transfer, service, store, handle, distribute or use any product or item supplied hereunder in any manner prohibited by applicable laws and regulations, including all applicable export control laws, restrictions and regulations, or contrary to any written warning or instruction given by Seller herein, in the product documentation, on Seller's website, or otherwise; or (3) make any representations or warranties on behalf of Seller as to the quality, merchantability, fitness for a particular use, or other features of the products. Each party

shall defend, indemnify and hold harmless the other from all liabilities, claims, losses, damages, and expenses (including without limitation reasonable attorneys' fees) arising out of any breach of these terms and conditions except as expressly limited herein.

PROPRIETARY INFORMATION: Buyer acknowledges that Seller's products are based upon and embody various confidential and/or proprietary technology, processes, methods, information, know-how, and trade secrets of Seller. Seller shall exclusively own all inventions, technology, know-how, trade secrets, and other proprietary information of any kind used or embodied in the products, documentation, drawings, specifications, software, and other items furnished by Seller, all intellectual property rights with respect thereto, and all reproductions or derivatives thereof in any form ("Proprietary Information"). Buyer shall neither acquire nor claim any right, title or interest in, and shall exercise reasonable care to maintain the confidentiality of, Seller's Proprietary Information, and shall use the same solely as required for its authorized use of Seller's products as supplied hereunder. Buyer may not directly or indirectly (1) copy, adapt, develop, disassemble, reverse engineer, recast, compile, decompile, translate, or create derivative works from any products or items provided by Seller, or permit any other person to do so, (2) remove, alter, or obscure any copyright, trademark, patent, logo, government restricted rights, or other notices or legends from items provided by Seller, or (3) disclose or use Seller's Proprietary Information for commercial purposes or in a manner detrimental to Seller. Disclosures of Proprietary Information may be made only to Buyer's personnel having a specific need to know and a written obligation to protect such information no less restrictive than the restrictions herein, and Buyer will be responsible for any breach by its personnel. It is agreed that any breach of this Section may cause Seller irreparable harm for which recovery of damages would be inadequate, and that immediate injunctive or other equitable relief is appropriate and available to Seller to prevent any violation, threatened or actual, of this Section, in addition to any other remedies and without proof of actual damage.

LIMITATION OF LIABILITY: No claims, regardless of form, arising out of the products or transactions to which these terms apply may be brought by Buyer more than 2 years after the cause of action arises or performance hereunder is completed or terminated, whichever is earlier. **SELLER'S AGGREGATE LIABILITY IN DAMAGES OR OTHERWISE FOR ANY AND ALL CAUSES WHATSOEVER (INCLUDING BUT NOT LIMITED TO ANY CLAIMS FOR INDEMNIFICATION) SHALL BE LIMITED TO THE PURCHASE PRICE PAID OR PAYABLE TO SELLER FOR THE APPLICABLE PURCHASE ORDER. IN NO EVENT WILL SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, EXEMPLARY, OR OTHER INDIRECT LOSSES OR DAMAGES, HOWEVER CAUSED, WHETHER FORESEEABLE OR NOT, AND EVEN IF ADVISED OF THE POSSIBILITY THEREOF. THESE LIMITATIONS WILL APPLY REGARDLESS OF THE FORM OF ACTION, WHETHER CONTRACT, TORT, STRICT LIABILITY, INDEMNIFICATION, OR OTHERWISE, NOTWITHSTANDING THE FAILURE OF THE ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. FOR EUROPEAN CUSTOMERS, THE FOREGOING SHALL BE MODIFIED SOLELY AS REQUIRED UNDER THE PRODUCT LIABILITY ACT, IT BEING AGREED THAT CLAIMS OVER AND ABOVE THOSE UNDER THE PRODUCT LIABILITY ACT WILL NOT BE MADE BY BUYER AGAINST SELLER, AS MANUFACTURER, UNDER ANY THEORY OF LIABILITY, INCLUDING BY MEANS OF INDEMNIFICATION OBLIGATIONS. Buyer acknowledges that these limitations of liability are a material part of the bargain between the parties and are reflected in product pricing, which would be higher without these limitations.**

FORCE MAJEURE: Neither party will be liable for non-performance or delay in performance of any obligation (other than payment of monetary sums due) to the extent caused by events or circumstances beyond its reasonable control and without negligence on its part, provided that the affected party uses reasonable efforts to avoid or remove any causes of non-performance and continues performance with reasonable dispatch whenever such causes are removed. For delays resulting from such causes, performance will be correspondingly extended.

GOVERNING LAW: The place of performance is exclusively the head office of the company delivering. For all customers, these Terms and Conditions, all transactions to which they may apply, and any disputes arising out of products or services supplied hereunder, shall be governed by the laws of the State of Illinois and the United States of America, excluding any conflict of law provisions thereof, and the courts of the State of Illinois or of the United States located in DuPage County, Illinois will have exclusive jurisdiction for all claims. Buyer hereby submits to the jurisdiction of the foregoing courts, as applicable, for the purpose of any such action. The United Nations Convention on Contracts for The International Sale of Goods, the Uniform Law on the Formation of Contracts for the International Sale of Goods, and any international discovery and service of process conventions will be inapplicable.

RMA RETURN MATERIALS & WARRANTY ITEM PROCEDURES

- Go to www.hantech.com/rma
- Request an RMA number issued to return material
- Provide Original Purchase Order #
- An RMA number must be issued and clearly marked on outside of all boxes shipped back to Hansen Manufacturing (Commerce, GA)
- RMA shipments should be returned to:
 - Hansen Technologies
 - Attn: RMA# _____
 - 3475 Old Maysville Road
 - Commerce, GA 30529 USA

RETURNED GOODS POLICY

Products returned are normally subject to a minimum 30% restocking charge. Restocking charge is based on actual invoiced amount. To ensure accurate and prompt processing of your Return, reference your original purchase order number, invoice number and Return Material Authorization (RMA) number in all communications. Freight on all return shipments must be "PREPAID".

Special construction products, special order pumps and custom length probes are non-returnable and cannot be cancelled once in production.

Any claims by Buyer for omissions, shortages, or discrepancies in pricing shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

The following restocking charges apply to new and unused items in original packaging and require no rework to restock.

Time from Invoice Date	Restocking Percent
6 months or less*	30%
Pressure Relief Valves (60 days or less)**	30%

* Higher restocking charges may be applied depending on product condition.

** Pressure relief valves shipped more than 60 days from date code stamped on valve name plate or non-standard pressure settings are non-returnable.

EMERGENCY HOT LINE (866.244.4829)

A Service Fee of \$250 if parts shipment is required.

EXPEDITE FEE

A \$50.00 processing and handling fee will be applied to all expedited orders scheduled for same day ground shipment.

EXPORT RESTRICTIONS

Buyer shall not export or re-export goods in violation of any applicable laws or regulations of the United States or the country in which Buyer obtained them.

MINIMUM BILLING AND PRICING POLICY

VISA, MASTERCARD, AMEX are accepted. Non-standard product order \$300 List Extra. For products requiring CE Mark, please specify when ordering and Add Extra 10% per item. An expedite fee may apply for same day shipping. Material Test Reports (MTR) \$100.00 per line item.

Prices are subject to change without notice.

TECHNICAL BULLETIN UPDATES AND CERTIFICATIONS

Hansen Technologies Corporation strives to offer products which meet and exceed current regulations worldwide. Please visit HANSEN online at www.hantech.com for up-to-date product technical bulletins, certifications regarding CE Mark for PED, ,CRN Registrations, other Statements of Compliance and Safety Precautions.

APPROVED REFRIGERANTS: The following list of refrigerants are approved by Seller and are compatible with our standard gasket material.

R-22 R-134a R-404a R-410 R-507a R-717 R-744 CO2

ANY REFRIGERANT NOT LISTED REQUIRES WRITTEN APPROVAL BY SELLER.



ASIA

EUROPE

CHINA

MIDDLE EAST

NORTH AMERICA

SOUTH AMERICA

HANSEN TECHNOLOGIES CORPORATION

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HANSEN MANUFACTURING & OPERATIONS

3475 Old Maysville Road Commerce, Georgia 30529 USA



This is a summary of safety procedures for the proper selection, installation, use and maintenance of Hansen refrigeration valves or other products hereafter all called components. Hansen components are only for refrigeration systems using ammonia, R22, R134a and other Hansen-approved refrigerants (by the factory in writing). This summary is intended to help you protect your personnel, product, and plant. However, this information must be supplemented by accepted and known industry safety practices and local code requirements.

Hansen valves and other components are designed and built to the highest standards of the refrigeration industry. Refrigerant in the system must be kept free of any foreign matter such as dirt, grit, rust, impure oil, wax, sludge, water, etc. However, for proper performance, components must be correctly chosen, properly installed, and periodically serviced.

All personnel working on valves or refrigeration components must be qualified to work on refrigeration systems. Any person intending to service a valve or component should completely read this summary and the bulletin describing the particular component and its operation before any work begins. Do not remove any part unless the interior pressure of the component is below zero. When installing or servicing valves or components, bonnets and bolts must be properly torqued. If there are any questions, contact Hansen before proceeding with the work.

Abnormal sounds and/or vibrations of piping, fans, pumps, pressure actuated pumping systems and hydraulic pipe pressure surges should be corrected.

If a component has failed under circumstances which caused, or could have caused, injury to personnel or damage to property, a replacement should not be installed until the reason for the previous failure is determined and corrected.

Where critical temperatures or products are involved, backup temperature controls and alarms are required. It is the responsibility of the installer to add devices (alarms, safety and limit controls, etc.) that protect against or warn of any operating control failure. Users and operators also must be aware that harmful refrigerant properties and pressure could damage products or injure people.

As with all electronic and mechanical components, there is a limited life expectancy. An expected maximum life of seven to ten years is typical for an electronic component. This should be understood as only a suggested replacement time period. Actual condition and performance of electronics due to ambient conditions, quality of electrical current, voltage, etc. may necessitate a different replacement schedule. Regardless, all mechanical, electrical, and electronic components should be inspected at least annually and replaced or repaired as necessary to ensure their safe and continuous service. Parts subject to wear should be replaced by factory-original components. Valves exhibiting excessive rust must be maintained, repaired or replaced as necessary.

LIQUID EXPANSION

Temperature increase in a section with trapped 100% liquid can cause extremely high pressures due to the expanding liquid and possibly rupture a gasket, pipe, or various components. When low temperature liquid lines are used, as in a liquid overfeed (recirculation) system, and the lines, valves or other components may be exposed to warm ambient conditions, particular care must be taken. Liquid expansion can occur very rapidly, even if warmed only slightly, with subsequent rupture pressure if not relieved or vented properly.

RELIEF DEVICES

Relief devices must be inspected semiannually for rust, corrosion, and other factors which may prevent valves from operating properly, and should be replaced at intervals of no longer than five years. In addition to normal pressure vessel relief requirements, atmosphere relief devices or relief methods must be used in all parts of a refrigeration system where liquid can be trapped and liquid expansion could take place. Do not use "gas service only" relief devices for liquid relief applications.

VELOCITY SHOCK

Systems must be designed and operated to avoid any velocity shock of liquid being conveyed to valves or components or other equipment. Screw compressor side port feed is very severe duty in this regard and design precautions are necessary. Delayed valve openings or closings or other methods must be utilized where shock is a potential problem.

PROBES

When removing housing (electronics) for service, do not rotate or back-out the probe itself from the pressurized level column. When removing oil from level column, follow standard pump out procedure.

SHUT-OFF VALVES

All valves that could trap liquid when closed must be marked with a warning against accidental closing. Some liquid refrigerant must be removed to be replaced by gas before the shut-off valves are closed on both sides of a control valve or any other component. Also, liquid must be removed before a shut-off valve is closed at the inlet of a solenoid valve or a regulator with a positive electric shut-off, or some outlet pressure regulators, or at the outlet of a check valve, unless these control valves are manually open. To protect personnel, product, and plant, remove the liquid from the section to be isolated before shut-off valves are closed. Make sure the control valve seat ports are open when removing the liquid. Shut-off valves leading to the atmosphere, even if it is temporary, must be plugged or capped to prevent corrosion inside of the valve, as well as leakage due to seat expansion, vibration, dirt, or improper opening; the valve seat should be left cracked open to prevent hydrostatic expansion between the valve and the plug or cap. One must take care when operating valves or regulators with threaded bonnets so that the bonnet does not turn. Bonnets must be torqued to factory specifications after field-servicing. Shut-off valves should be either wide open or closed shut in service. Shut-off valve should not be used as a throttling valve. Use hand expansion valves for throttling gas and liquid.

INSTALLATION

Installation must be done according to all applicable Safety Codes and Standards, and by personnel qualified to install refrigeration systems. Every segment of a refrigeration system, including control valves, must be field pressure tested before system is insulated and put into use. Make sure that correct high and low side pressures are used. Pressure or temperature must never exceed the limits stated in current bulletins. For most up-to-date product bulletins, go to <http://www.hantech.com>.

Allow proper space for installing any valves. Do not use a valve or component to "stretch" or "align" the pipe. Using flange bolts to close a large gap can distort a valve or at least stress it unduly and possibly cause it to malfunction, or the bolts may be damaged or stripped. For proper sealing, gaskets should be lightly oiled and all bolts must be tightened evenly. Make sure the flange tongues are properly aligned with the grooves in the valve or component body. Where necessary, support components by brackets or hangers to avoid overstressing.

Components must not be installed in locations where they can be damaged by material handling or other equipment. Trapped ice buildup must be avoided at or between valves and other equipment. Provide reasonable access to all components for maintenance purposes. Individual valves, control stations, pumps or other components must be provided with isolation valves and means for pumping out or safely purging the refrigerant.

PUMP OUT

For the protection of personnel, product, and plant, all refrigerant must be removed from a valve or any other component of the system before any refrigerant retaining part is loosened. Before opening a valve, make sure all refrigerant has been removed. In particular, beware of strainers and other sections of valves or piping which may trap liquid refrigerant which will require a considerable length of time to remove. Pump out as much refrigerant as possible before discharging remaining refrigerant in a properly protected manner. During pump out, it is normally advisable that control valves be opened manually whenever possible to avoid trapping refrigerant.

At times, it may be necessary to discharge some small amount of refrigerant from the isolated section. When this becomes necessary, certain precautions must be observed. Make sure control of discharge rate can be easily maintained and that a quick shut-off is available. Whenever possible, refrigerant should be discharged into and disposed of in a proper container accepted by applicable safety codes and other standards including environmental. Discharge of refrigerant to atmosphere must be avoided. Never discharge any refrigerant into an area without sufficient ventilation, or into an area where open flame or electrical spark is present. Any oil in the refrigerant may cause a mist that could cause a fire or explosion. To prevent pulling excessive air and moisture into a system, avoid opening the system when it is under noticeable vacuum.

CAUTION

Do not attempt to work on any part of a refrigeration system without help nearby and observing. Disconnect all electric power to components involved. Use "lock-out/tag-out" for electrical and fluid security. Use safety goggles or safety face mask to protect the eyes. Other parts of the body, especially the face, hands, and lungs must also be protected. Protective equipment including breathing apparatus and eye flushing equipment must be readily available, and all personnel involved must be thoroughly trained in its use. Personnel must be especially protected against falling because they may be startled by escaping refrigerant. Always make sure that there is a way out and that everyone can leave the area fast. When seal caps cover manual opening or adjusting stems, the cap must be removed with caution - liquid refrigerant could accumulate under cap. Avoid all possibility of contact with any refrigerant liquid or gas.