


# VENTURI - FLO DISTRIBUTORS

## VENTURI-FLO DISTRIBUTOR NOMINAL CAPACITIES

EVAP TEMP	NUM BER OF OUT- LETS	SIZE O U L E T S																	
		5/32"			3/16"			1/4"			5/16"			3/8"			1/2"		
		TONS			TONS			TONS			TONS			TONS			TONS		
		R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502
+20 OF -6.7 OC	2	.34	.60	.31	.68	1.2	.61	1.4	2.4	1.3	2.7	4.8	2.4	4.8	8.3	4.3	-	-	-
	3	.51	.90	.46	1.0	1.8	.90	2.0	3.6	1.8	4.1	7.1	3.7	7.1	12.5	6.4	10.2	17.9	9.2
	4	.68	1.20	.61	1.4	2.4	1.3	2.7	4.8	2.4	5.4	9.5	4.9	9.5	16.7	8.6	13.6	23.8	12.2
	5	.85	1.50	.77	1.7	3.0	1.5	3.4	6.0	3.1	6.8	11.9	6.1	11.9	20.8	10.7	17.0	29.8	15.3
	6	1.02	1.80	.92	2.0	3.6	1.8	4.1	7.1	3.7	8.2	14.3	7.4	14.3	25.0	12.9	20.4	35.7	18.4
	7	-	-	-	2.4	4.2	2.2	4.8	8.3	4.3	9.5	16.7	8.6	16.7	29.2	15.0	23.8	41.7	21.4
	8	1.36	2.40	1.22	2.7	4.8	2.4	5.4	9.5	4.9	10.9	19.0	9.8	19.0	33.3	17.1	27.2	47.7	24.5
	9	1.53	2.70	1.38	3.1	5.4	2.8	6.1	10.7	5.5	12.2	21.4	11.0	-	-	-	-	-	-
	10	1.70	3.00	1.53	3.4	6.0	3.1	6.8	11.9	6.1	13.6	23.8	12.2	23.8	41.7	21.4	34.0	59.6	30.6
	11	-	-	-	3.7	6.5	3.3	7.5	13.1	6.8	15.0	26.2	13.5	-	-	-	-	-	-
	12	2.04	3.60	1.84	4.1	7.1	3.7	8.2	14.3	7.4	16.3	28.6	14.7	28.6	50.0	25.7	-	-	-
	13	2.21	3.90	1.99	4.4	7.7	4.0	8.8	15.5	7.9	17.7	30.9	15.9	30.9	54.2	27.8	44.2	77.5	39.8
	14	2.38	4.20	2.24	4.8	8.3	4.3	9.5	16.7	8.6	19.0	33.3	17.1	-	-	-	-	-	-
	15	-	-	-	5.1	8.9	4.6	10.2	17.9	9.2	20.4	35.7	18.4	-	-	-	-	-	-
	16	-	-	-	5.4	9.5	4.9	10.9	19.0	9.8	21.8	38.1	19.6	-	-	-	-	-	-
	17	-	-	-	5.8	10.1	5.2	11.6	20.2	10.4	-	-	-	-	-	-	-	-	-
	18	3.06	5.40	2.75	6.1	10.7	5.5	12.2	21.4	11.0	24.5	42.8	22.1	-	-	-	-	-	-
	19	-	-	-	6.5	11.3	5.9	12.9	22.6	11.6	25.8	45.2	23.2	-	-	-	-	-	-
	20	3.40	6.00	3.06	6.8	11.9	6.1	13.6	23.8	12.2	27.2	47.6	24.5	-	-	-	-	-	-
	21	-	-	-	-	-	-	14.3	25.0	12.9	28.6	50.0	25.7	-	-	-	-	-	-
	22	-	-	-	-	-	-	15.0	26.2	13.5	30.0	52.5	27.0	-	-	-	-	-	-
	23	-	-	-	-	-	-	15.6	27.4	14.0	-	-	-	-	-	-	-	-	-
	24	4.08	7.20	3.67	8.2	14.3	7.4	16.3	28.6	14.7	-	-	-	-	-	-	-	-	-
	0 OF -17.8 OC	2	.22	.40	.19	.45	.79	.40	.90	1.6	.81	1.8	3.2	1.6	3.2	5.5	2.9	-	-
3		.33	.60	.29	.68	1.2	.61	1.4	2.4	1.3	2.7	4.7	2.4	4.7	8.3	4.2	6.8	11.8	6.1
4		.44	.80	.39	.90	1.6	.81	1.8	3.2	1.6	3.6	6.3	3.2	6.3	11.1	5.7	9.0	15.8	8.1
5		.55	1.00	.49	1.1	2.0	.99	2.3	3.9	2.1	4.5	7.9	4.1	7.9	13.9	7.1	11.3	19.7	10.2
6		.66	1.20	.59	1.4	2.4	1.3	2.7	4.7	2.4	5.4	9.5	4.9	9.5	16.6	8.6	13.5	23.6	12.2
7		-	-	-	1.6	2.8	1.4	3.2	5.5	2.9	6.3	11.0	5.7	11.0	19.4	9.9	15.8	27.6	14.2
8		.88	1.60	.79	1.8	3.2	1.6	3.6	6.3	3.2	7.2	12.6	6.5	12.6	22.2	11.3	18.1	31.5	16.3
9		.99	1.80	.89	2.0	3.6	1.8	4.1	7.1	3.7	8.1	14.2	7.3	-	-	-	-	-	-
10		1.10	2.00	.99	2.3	3.9	2.1	4.5	7.9	4.1	9.0	15.8	8.1	15.8	27.7	14.2	22.6	39.4	20.3
11		-	-	-	2.5	4.3	2.3	5.0	8.7	4.5	9.9	17.3	8.9	-	-	-	-	-	-
12		1.32	2.40	1.18	2.7	4.7	2.4	5.4	9.5	4.9	10.8	18.9	9.7	18.9	33.2	17.0	-	-	-
13		1.43	2.60	1.28	2.9	5.1	2.6	5.9	10.2	5.3	11.7	20.5	10.5	20.5	36.0	18.5	29.4	51.2	26.5
14		1.54	2.80	1.38	3.2	5.5	2.9	6.3	11.0	5.7	12.6	22.1	11.3	-	-	-	-	-	-
15		-	-	-	3.4	5.9	3.1	6.7	11.8	6.0	13.5	23.6	12.2	-	-	-	-	-	-
16		-	-	-	3.6	6.3	3.2	7.2	12.6	6.5	14.4	25.2	13.0	-	-	-	-	-	-
17		-	-	-	3.8	6.7	3.4	7.7	13.4	6.9	-	-	-	-	-	-	-	-	-
18		1.98	3.60	1.78	4.1	7.1	3.7	8.1	14.2	7.3	16.2	28.4	14.6	-	-	-	-	-	-
19		-	-	-	4.3	7.5	3.9	8.6	15.0	7.7	17.1	29.9	15.4	-	-	-	-	-	-
20		2.20	4.00	1.98	4.5	7.9	4.1	9.0	15.8	8.1	18.0	31.4	16.2	-	-	-	-	-	-
21		-	-	-	-	-	-	9.5	16.6	8.6	18.9	32.9	17.0	-	-	-	-	-	-
22		-	-	-	-	-	-	9.9	17.3	8.9	19.8	34.4	17.8	-	-	-	-	-	-
23		-	-	-	-	-	-	10.4	18.1	9.4	-	-	-	-	-	-	-	-	-
24		2.64	4.80	2.37	5.4	9.5	4.9	10.8	18.9	9.7	-	-	-	-	-	-	-	-	-



Capacity shown is the total distributor capacity for the indicated number of outlets. Ratings are based on average condensing temperature, 15 p.s.i. (103kPa) drop across the distributor, and 1°F (.6°C) subcooled liquid refrigerant entering the expansion valve.

NOTE: Do not select distributor for use on loads below 25% or above 150% of the above values.


For R-500 capacities, multiply R-12 capacities by 1.2.

FOR FINAL SELECTION OF DISTRIBUTOR TYPE No. and CATALOGUE NO. REFER TO PAGE 115-a

# VENTURI - FLO DISTRIBUTORS

## VENTURI-FLO DISTRIBUTOR NOMINAL CAPACITIES

EVAP TEMP	NUM BER OF OUT- LETS	SIZE OUTLETS																	
		5/32"			3/16"			1/4"			5/16"			3/8"			1/2"		
		TONS			TONS			TONS			TONS			TONS			TONS		
		R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502	R12	R22	R502
-20 OF -28.9 OC	2	.14	.26	.12	.30	.53	.27	.60	1.1	.54	1.2	2.1	1.1	2.1	3.7	1.9	-	-	-
	3	.21	.39	.18	.45	.79	.40	.90	1.6	.81	1.8	3.2	1.6	3.2	5.5	2.9	4.5	7.9	4.1
	4	.28	.52	.25	.60	1.1	.54	1.2	2.1	1.1	2.4	4.2	2.2	4.2	7.4	3.8	6.0	10.5	5.4
	5	.35	.65	.31	.75	1.3	.67	1.5	2.6	1.4	3.0	5.3	2.7	5.3	9.2	4.8	7.5	13.2	6.8
	6	.42	.78	.37	.90	1.6	.81	1.8	3.2	1.6	3.6	6.3	3.2	6.3	11.1	5.7	9.0	15.8	8.1
	7	-	-	-	1.1	1.8	.99	2.1	3.7	1.9	4.2	7.4	3.8	7.4	12.9	6.7	10.5	18.4	9.5
	8	.56	1.04	.50	1.2	2.1	1.1	2.4	4.2	2.2	4.8	8.4	4.3	8.4	14.7	7.6	12.0	21.1	10.8
	9	.63	1.17	.56	1.4	2.4	1.3	2.7	4.7	2.4	5.4	9.5	4.9	-	-	-	-	-	-
	10	.70	1.30	.63	1.5	2.6	1.4	3.0	5.3	2.7	6.0	10.5	5.4	10.5	18.4	9.5	15.0	26.3	13.5
	11	-	-	-	1.7	2.9	1.5	3.3	5.8	3.0	6.6	11.6	5.9	-	-	-	-	-	-
	12	.84	1.56	.75	1.8	3.2	1.6	3.6	6.3	3.2	7.2	12.6	6.5	12.6	22.1	11.3	-	-	-
	13	.91	1.69	.81	2.0	3.4	1.8	3.9	6.8	3.5	7.8	13.7	7.0	13.7	23.9	12.3	19.5	34.2	17.6
	14	.98	1.82	.88	2.1	3.7	1.9	4.2	7.4	3.8	8.4	14.7	7.6	-	-	-	-	-	-
	15	-	-	-	2.3	4.0	2.1	4.5	7.9	4.1	9.0	15.8	8.1	-	-	-	-	-	-
	16	-	-	-	2.4	4.2	2.2	4.8	8.4	4.3	9.6	16.8	8.6	-	-	-	-	-	-
	17	-	-	-	2.6	4.5	2.3	5.1	8.9	4.6	-	-	-	-	-	-	-	-	-
	18	1.26	2.34	1.13	2.7	4.7	2.4	5.4	9.5	4.9	10.8	18.9	9.7	-	-	-	-	-	-
	19	-	-	-	2.9	5.0	2.6	5.7	10.0	5.1	11.4	20.0	10.3	-	-	-	-	-	-
	20	1.40	2.60	1.26	3.0	5.3	2.7	6.0	10.5	5.4	12.0	21.0	10.8	-	-	-	-	-	-
	21	-	-	-	-	-	-	6.3	11.1	5.7	12.6	22.0	11.3	-	-	-	-	-	-
	22	-	-	-	-	-	-	6.6	11.6	5.9	13.2	23.1	11.9	-	-	-	-	-	-
	23	-	-	-	-	-	-	6.9	12.1	6.2	-	-	-	-	-	-	-	-	-
	24	1.68	3.12	1.51	3.6	6.3	3.2	7.2	12.6	6.5	-	-	-	-	-	-	-	-	-
	-40 OF -40 OC	2	.10	.18	.09	.21	.37	.18	.42	.76	.37	.84	1.5	.75	1.5	2.6	1.4	-	-
3		.15	.27	.13	.32	.55	.28	.63	1.1	.56	1.3	2.2	1.2	2.2	3.9	2.0	3.5	5.5	3.2
4		.20	.36	.18	.42	.76	.37	.84	1.5	.75	1.7	2.9	1.5	2.9	5.1	2.6	4.2	7.6	3.8
5		.25	.45	.22	.53	.92	.47	1.1	1.8	.99	2.1	3.7	1.9	3.7	6.4	3.3	5.3	9.2	4.8
6		.30	.54	.27	.63	1.1	.56	1.3	2.2	1.2	2.5	4.4	2.3	4.4	7.7	4.0	6.3	11.0	5.7
7		-	-	-	.74	1.3	.66	1.5	2.6	1.4	2.9	5.2	2.6	5.1	9.0	4.6	7.4	12.9	6.7
8		.40	.72	.36	.84	1.5	.75	1.7	2.9	1.5	3.4	5.9	3.1	5.9	10.3	5.3	8.5	14.7	7.7
9		.45	.81	.40	.95	1.7	.85	1.9	3.3	1.7	3.8	6.6	3.4	-	-	-	-	-	-
10		.50	.90	.45	1.1	1.8	.99	2.1	3.7	1.9	4.2	7.4	3.8	7.4	12.9	6.7	10.6	18.4	9.5
11		-	-	-	1.2	2.0	1.1	2.3	4.1	2.1	4.6	8.1	4.1	-	-	-	-	-	-
12		.60	1.08	.54	1.3	2.2	1.2	2.5	4.4	2.3	5.0	8.8	4.5	8.8	15.5	7.9	-	-	-
13		.65	1.17	.58	1.4	2.4	1.3	2.7	4.8	2.4	5.5	9.6	5.0	9.6	16.7	8.6	13.8	24.0	12.4
14		.70	1.26	.63	1.5	2.6	1.4	2.9	5.2	2.6	5.9	10.3	5.3	-	-	-	-	-	-
15		-	-	-	1.6	2.8	1.5	3.2	5.5	2.9	6.3	11.0	5.7	-	-	-	-	-	-
16		-	-	-	1.7	2.9	1.5	3.4	5.9	3.1	6.7	11.8	6.0	-	-	-	-	-	-
17		-	-	-	1.8	3.1	1.6	3.6	6.3	3.2	-	-	-	-	-	-	-	-	-
18	.90	1.62	.81	1.9	3.3	1.7	3.8	6.6	3.4	7.6	13.2	6.8	-	-	-	-	-	-	
19	-	-	-	2.0	3.5	1.8	4.0	7.0	3.6	8.0	14.0	7.2	-	-	-	-	-	-	
20	1.00	1.80	.90	2.1	3.7	1.9	4.2	7.4	3.8	8.4	14.7	7.7	-	-	-	-	-	-	
21	-	-	-	-	-	-	4.4	7.7	4.0	8.8	15.4	7.9	-	-	-	-	-	-	
22	-	-	-	-	-	-	4.6	8.1	4.1	9.2	16.1	8.3	-	-	-	-	-	-	
23	-	-	-	-	-	-	4.8	8.5	4.3	-	-	-	-	-	-	-	-	-	
24	1.20	2.16	1.08	2.5	4.4	2.3	5.0	8.8	4.5	-	-	-	-	-	-	-	-	-	



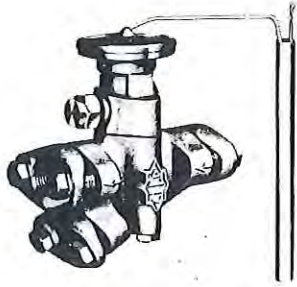
Capacity shown is the total distributor capacity for the indicated number of outlets. Ratings are based on average condensing temperature, 15 p.s.i. (103kPa) drop across the distributor, and 10°F (6°C) subcooled liquid refrigerant entering the expansion valve.

NOTE: Do not select distributor for use on loads below 25% or above 150% of the above values.

For R-502 capacities, multiply R-12 capacities by 1.2.

FOR FINAL SELECTION OF DISTRIBUTOR TYPE No. and CATALOGUE NO. REFER TO PAGE 115-a

# THERMOSTATIC EXPANSION VALVES FOR AMMONIA (R717)



## TYPE TG WITH FLANGE CONNECTIONS

Alco Thermo valves for ammonia have the same compact "come-apart" design features and rugged construction used in other Alco Thermo valves. A discharge tube in the outlet controls capacity, prevents frosting of valve, and retards erosion of pin and seat. Type TG valves are equipped with an integral inlet strainer.

Valve		Press.Equal.		Capacity (2)		Cage Assembly		Discharge Tube			Power	Conn	Capillary	
Cat.No.	Type(1)	Type	Conn.	Tons	kW	Cat.No.	Part No.	Cat.No.	P/N	Orifice	Element	Size	Lgth.	Style
116126	TG1AZ	Ext-B	1/8"	1.0	3.5	116135	XC741-B0B(3)	116144	A7351	.031	Int. Equal.	1/2"	4.5m	Ext. Strap-on Type May also be used with Bulb Well
116127	TG1AZ	Int-A	NPT	1.0	3.5	116136	XC741-B0A(3)				XB1049AZ-3A			
116128	TG2AZ	Ext-B	Int.	2.0	7.0	116137	XC741-B1B(4)				Cat.No.116152			
116129	TG2AZ	Int-A		2.0	7.0	116138	XC741-B1A(4)				Ext. Equal.			
116130	TG3AZ	Ext-B	1/4"	3.0	10.6	116139	XC741-B5B(4)	116145	A735-10	.039	XB1049AZ-3B	FPT	(15')	
116131	TG3AZ	Int-A	SAE	3.0	10.6	116140	XC741-B5A(4)				Cat.No.116151			
116132	TG5AZ	Ext-B	Male	5.0	17.6	116141	XC741-B2B(4)	116146	A735-2	.046	Prefix 3 before A	Flgd.		
116133	TG7 1/2 AZ	Ext-B	Flare	7.5	26.4	116142	XC741-B2 1/2 B(4)	116147	A735-3	.062	or B = 4.5m(15')			
116134	TG10AZ	Ext-B	Ext.	10.0	35.2	116143	XC741-B3B(4)	116148	A735-5	.078	Capillary Lgth.			

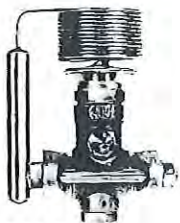
- Power assembly charge symbol "Z" or "X" is suffixed to part number to obtain complete valve type number. "Z" Cross Charge is recommended for standard installations operating at either low or high temperature — Example: TG1AZ, TG10AZ. "Z" Superheat adjustment range is 1 to 11°C (2 to 20°F). "X" Charge is recommended for central station, truck installations, or special applications requiring high operating superheats — Example: TG2AX, TG20AX. "X" Superheat adjustment range is 10 to 22°C (18 to 40°F).
  - Capacities are based on 30°C(86°F) condensing, —15°C(+5°F) evaporator, vapor free liquid at valve inlet and 965 kPa (140 psi) pressure drop across valve.
  - These cage assemblies are identical except for discharge tube. Installation of proper discharge tube therefore determines capacity.
  - These cage assemblies are identical except for discharge tube. Installation of proper discharge tube therefore determines capacity.
- 11.10.1 — 10/76



## TYPE TEA WITH FLANGE CONNECTIONS

Danfoss TX Valves for Ammonia have flange connections and can be supplied with or without external line strainer. Every valve is supplied with orifice assembly as specified in the Table below. All valves have external equalizer connections.

Range D : —50° to 0°C (—58° to +32°F).  
 Maximum Bulb Temperature 100°C (212°F).  
 Maximum Test Pressure 2758 kPa (400 PSIG).



TEA 20

CAT.NO.	ASSEMBLED VALVE TYPE	CODE NO.	CONN. Inlet & Outlet	NOMINAL * CAPACITY			CAP. LGTH.	ORIFICE ASSEMBLY		
				TONS	kW	kcal/h		CAT.NO.	CODE NO.	
11626	TEA 20-1**	68G6000	1/2" Weld Flanges	1	3.5	3000	5 m (16.5')		68G2050	
11627	TEA 20-2	68G6001		2	7.0	6000		6-0466**	11636	68G2051
11628	TEA 20-3	68G6002		3	10.6	9000		11637	68G2052	
11629	TEA 20-5	68G6003		5	17.6	15000		11638	68G2053	
11630	TEA 20-8	68G6004		8	28.1	24000		11639	68G2054	
11631	TEA 20-12	68G6005		12	42.2	36000		11640	68G2055	
11632	TEA 20-20	68G6006		20	70.3	60000		11641	68G2056	
SEPARATE POWER ELEMENT (All sizes)				CAT.NO. 116100				CODE NO. 68G3250		
SEPARATE FA15 STRAINER (All sizes)				CAT.NO. 11699			CODE NO. 6 - 0042			

\* Nominal Capacity is the valve capacity at —15°C(+5°F) evaporator temperature and 32°C(+90°F) condensing temperature and based on approx. +4°C(+7°F) sub-cooling ahead of Valve.

\*\* TEA 20-1 consists of orifice assembly 68G2050 PLUS separate discharge orifice Code No. 6 - 0466. Capacities of any TEA 20 valves can be changed in the field by fitting any of the orifice assemblies mentioned above.

LARGER VALVE SIZES (TYPE TEA 85), FULL CAP. TABLES & LITERATURE AVAILABLE ON REQUEST. KK.10.A2.02

## PRESSURE REGULATING VALVE SELECTION GUIDE

**GENERAL DEFINITION:** A device for regulating the flow of refrigerant, whether liquid or vapour in refrigeration and air conditioning systems.

This selection guide briefly describes the main types, their common names and identification of the "Makes" contained in this Catalogue.

It should be remembered that due to the wide variety of control systems in use, one type of valve may perform several functions; and when coupled with other types of control valves (Solenoid Valves, Check Valves etc.), their application may be extended. Therefore only the more common applications are detailed herein.

### CAPACITY REGULATORS (Page 117)

- ALSO KNOWN AS** HOT GAS BY-PASS REGULATORS/VALVES  
DISCHARGE BY-PASS REGULATORS/VALVES  
DISCHARGE PRESSURE REGULATORS/VALVES  
Often abbreviated to HGBP Regulator/Valve.
- DESCRIPTION** Used to control the compressor capacity and prevent suction pressure from falling to objectionably low levels.  
May be used in systems with one or more evaporators where compressor itself has no capacity regulation or can extend compressor capacity reduction below the last step of cylinder unloading.
- APPLICATION METHODS**  
— By-Pass to Suction Line — piped so that discharge gas is admitted to the suction line to flow against the direction of the suction gas.  
To prevent overheating of the compressor, a Liquid Injection Valve is sometimes required for de-superheating.  
— By-Pass to Evaporator Inlet — usually fitted between the TX valve and the refrigerant distributor. The advantage of this method is that the artificial load imposed on the evaporator causes the TX valve to respond to the increase in superheat, thus eliminating the need for the liquid injection valve. This type of system must be equipped with a Venturi-Flo refrigerant distributor (i.e. no restrictor orifice).  
— It is recommended that a solenoid valve be installed ahead of the by-pass regulator permitting the system to operate on an automatic pump-down cycle and also guarding against leakage during the "off" cycle.
- ALSO USED FOR** By-Pass control valve for air cooled condensers.

ALCO	DANFOSS	FAS	FLOCON	REF. SPEC.	SINGER
CPHE - Directing Acting FAB - Integral Pilot Operated	CPC, PHC, CPCE + LG CPR + CPC - for air cooled condensers 6F - Manual Throttle Valve	LR, LRX	A9E, A9SE	A4AO	237

### CRANKCASE PRESSURE REGULATING VALVES (Page 118)

- ALSO KNOWN AS** HOLD BACK VALVES  
SUCTION PRESSURE REGULATORS  
STARTING REGULATORS  
OUTLET REGULATORS  
DOWNSTREAM REGULATORS  
Often abbreviated to CPRV
- DESCRIPTION** A valve which regulates the suction pressure to a pre-determined maximum in order to prevent the compressor motor overloading — which may be due to any or all of the following:—  
— high load on start-up.  
— high suction pressure at termination of defrosting cycle.  
— surges in suction pressure.  
— prolonged operation at excessive suction pressures.  
— low voltage and high suction pressure conditions.
- APPLICATION METHODS** Installed in the suction line ahead of the compressor, the valve establishes the maximum pressure at the compressor inlet, thus providing overload protection for the compressor motor. They may be used with multiple or single evaporator systems, either direct expansion or flooded evaporator designs.
- ALSO USED FOR** High to Low side by-pass.  
By-Pass control for air cooled condensers.

ALCO	DANFOSS	FLOCON	REF. SPEC.	SINGER
OPR FA5	CPL PM/HSA + CVMO	A7A10, A720	A2B0, A4A0	237

PRESSURE REGULATING VALVE SELECTION GUIDE — Cont'd. next page.

## PRESSURE REGULATING VALVE SELECTION GUIDE

— Cont'd. from previous page.

### EVAPORATOR PRESSURE REGULATING VALVES (Page 119)

**ALSO KNOWN AS** BACK PRESSURE REGULATOR/VALVE  
 CONSTANT PRESSURE VALVE \*  
 UPSTREAM REGULATOR  
 INLET PRESSURE REGULATOR  
 SUCTION LINE REGULATOR  
 Often abbreviated to EPR  
 \*Sometimes referred to as a Constant Pressure Regulator but should not be confused with the same "general" term applied to an automatic expansion valve.

**DESCRIPTION** Used to maintain a constant evaporating pressure and hence a constant evaporator temperature plus protection against too low an evaporating pressure since the regulator closes when the pressure in the evaporator falls below the setting.

**APPLICATION METHODS** Installed in the suction line near the evaporator outlet.  
 Available in two main types — direct operated and pilot operated. Pilot operated Regulators may be integral types, or remote Pilot actuated either by pressure or temperature.

**ALSO USED FOR** Freeze-up or frost protection.  
 Maintaining evaporator pressure during a defrost.  
 Providing a safety or pressure relief function.

ALCO	DANFOSS	FLOCON	REF. SPEC.	SINGER
IPR	CPP, CPT, PM + CVT	A7A	A2B, A2A	235
EPRV - Integral Pilot	PM + CVP/CVPP	A7A1	A4A	238
722 - Remote Pilot	HSA + CVM/CVMP/CVMT	A72	A4W	239

### CONDENSER PRESSURE REGULATORS (Page 120) for Air Cooled Condensers

**ALSO KNOWN AS** HEAD PRESSURE CONTROL VALVES

**DESCRIPTION** To maintain a constant and sufficiently high condensing pressure in air cooled condensers at low ambient temperatures.  
 The valve must maintain liquid subcooling and prevent liquid line flash-gas and also provide adequate pressure at the inlet side of the TX valve to obtain sufficient pressure drop across the valve port.

**APPLICATION METHODS** Dependant on the type of control circuit employed or recommended by the air cooled condenser manufacturer, the control may be either a single three-way modulating type valve or two separate valves to achieve the same function.

ALCO	DANFOSS	SINGER
HP5T, HP8T, HP14T	CPR + CPC	237 + 239

### CONDENSER PRESSURE REGULATORS (Page 124) for Water Cooled Condensers

**ALSO KNOWN AS** PRESSURE CONTROLLED WATER VALVES  
 TEMPERATURE CONTROLLED WATER VALVES

**DESCRIPTION** The water valves are used for regulating the quantity of water in refrigeration systems with water cooled condensers. Using the water valves results in modulating regulation of the condensing pressure so that it is kept almost constant during operation.

DANFOSS	FAS	PENN
PRESSURE CONTROLLED WVFX, WVS	WR	PRESSURE ACTUATED V46 — 2 Way
TEMPERATURE CONTROLLED AVTA, WVTS		V48 — 3 Way TEMPERATURE ACTUATED V47

### THERMOSTATIC INJECTION VALVES (Page 117)

**ALSO KNOWN AS** LIQUID INJECTION VALVES.

**DESCRIPTION** Used to prevent compressor overheating and high discharge temperatures when —  
 1. An R717 compressor operates either at low suction pressures or at high condensing temperatures.  
 2. A compressor operates both at low suction pressures and at high condensing temperatures — especially with R22.  
 3. A compressor operates with By-Pass to suction line hot-gas By-Pass.

**APPLICATION METHODS** Liquid injected into a gas to be desuperheated should be injected in a manner which provides homogeneous mixing of the liquid and superheated gas.  
 Preferred method is to pipe the hot gas and liquid injection into a Tee to permit good mixing before it enters the suction line. A good mix with the suction gas may be gained by injecting the liquid/hot gas mixture into the suction line at approx. a 45° angle against the flow of suction gas to the compressor.

DANFOSS — TEAT
----------------

# CAPACITY REGULATING VALVES

## HOT GAS BYPASS



CPH



### DIRECT OPERATED REGULATORS

Type CP regulators offer significant ALCO features: "Take-apart" construction which allows easy serviceability without removing the body flange from the line, stainless steel diaphragm and a contoured power element, and the unique "U" gland packing material which eliminates stem friction and packing leaks. Types CPHE 3 thru 6 use a balanced double-ported cage assembly.

Vacuum service is obtainable by counterlock adjustment of side mounted adjusting screw. A 1/4" SAE male flare External Equalizer is standard. Types CPHE 1 and 2 can be supplied with internal equalizer - omit "E" from the model number (CPH-1 or CPH-2).

Adjustment range is 0 to 552 kPa (0 to 80 psig). These valves are also available on special order with 0 to 276 kPa (0 to 40 psig) range.

VALVE TYPE		CONNECTIONS ANGLE STYLE**	BY-PASS CAPACITY *						CAGE ASSEMBLY		POWER ASSEMBLY	
CAT. NO.	MODEL		R12		R22		R502		CAT. NO.	Part No.	CAT. NO.	Part No.
			kW	Tons	kW	Tons	kW	Tons				
11751	CPHE-1	3/8" ODF x 5/8" ODF			1.8	0.5	1.8	0.5	102122	X22440-B5B	11764	X7118-4
11752	CPHE-2	1/2" ODF x 5/8" ODF			3.5	1.0	1.8	0.5	102126	X22440-B8B		
11753	CPHE-3		1.8	0.5	3.5	1.0	3.5	1.0	102115	X11873-B5B		
11754	CPHE-4	7/8" ODF x 1-1/8" ODM	3.5	1.0	7 to 14	2 to 4	7 to 10.6	2 to 3	102131	X9117-B9B	11763	X7428-2
11755	CPHE-5		7.0	2.0	14 to 21	4 to 6	10.6 to 14	3 to 4	102132	X9166-B10B		
11756	CPHE-6	1-1/8" ODM x 1-1/8" ODM	10.6	3.0	17.6 to 24.6	5 to 7	14 to 21	4 to 6	102134	X9144-B13B		

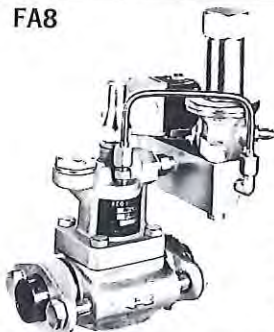
\* At Evap. Temp. Range +4°C to -40°C (+40°F to -40°F)

\*\* Straight-thru connection style available on request

15.30.Dec.1977

MANUFACTURERS BULLETIN WITH FULL CAPACITY DETAILS AVAILABLE ON REQUEST

### FA8



NOTE: These valves are externally equalized and available in 0-552 kPa (0-80 psig) range only.

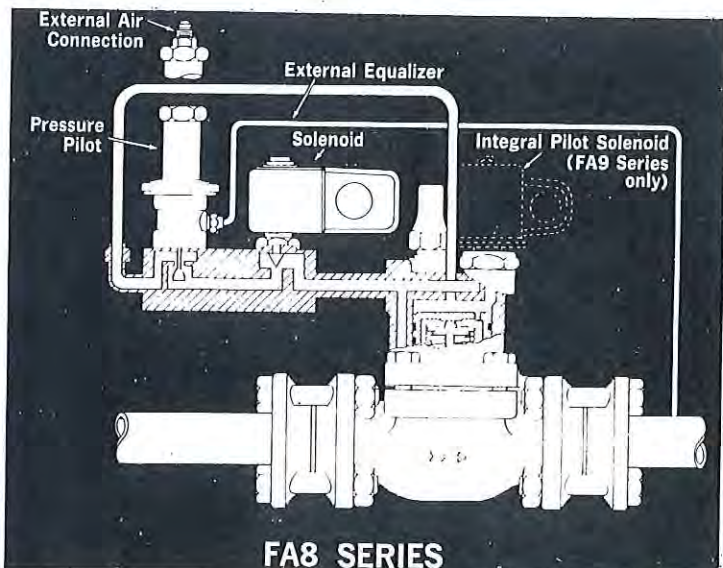
### PILOT OPERATED REGULATORS

The FA8 regulator is a completely integral unit requiring no external connections other than the inlet and outlet connection and a 1/4" SAE male flare external equalizer connection. The FA8 is equipped with Teflon seat material and is designed for high discharge gas temperature. It is equipped with an integral solenoid and a CP type pilot assembly. When suction pressure falls below the set point of the pilot, the regulator will open, permitting hot gas to bypass from the system high side to the suction or low side. Vacuum service obtainable by counterlock adjustment of side mounted adjusting screw.

R12 - R22 - R502						R717					
Valve Type		Connections Flanged	By-Pass Capacity - Tons *			Valve Type		Port Size	Connections	Cap. Tons	Cap.* cu.ft/h
CAT. NO.	Model		R12	R22	R502	CAT. NO.	Model				
	FA8 - 11F	7/8" ODF				11769	FA8 - 11H	3/8"	3/4" FPT	12.5	551
	FA8 - 12F	7/8" ODF	4 to 6	8 to 16	7 to 12	11770	FA8 - 12H	1/2"	3/4" FPT	31.3	1380
	FA8 - 13F	7/8" ODF	7 1/2 to 12	14 to 30	12 to 25	11771	FA8 - 13H	3/4"	3/4" FPT	54.0	2390
	FA8 - 14F	1-3/8" ODF	15 to 20	30 to 45	25 to 35	11772	FA8 - 14H	1"	1" FPT	126.0	5550
	FA8 - 15F	1-3/8" ODF	25	45 to 65	35 to 50	11773	FA8 - 15H	1-1/4"	1 1/4" FPT	143.8	6340
	FA8 - 16F	1-5/8" ODF	30 to 45	55 to 100	50 to 90	11774	FA8 - 16H	1-1/2"	1 1/2" FPT	223.5	9850
	FA8 - 18F	2-1/8" ODF	50 to 100	90 to 100	80 to 100	11775	FA8 - 18H	2"	2" FPT	377.0	16650

\* Evap. Temp. Range +4°C to -40°C (+40°F to -40°F)

\* Based on 38°C (100°F) Cond., 4°C (40°F) Evap. and isentropic compression



### SOLENOID COILS

CAT.NO.	TYPE	ELECTRICAL
123253	AMG	208 - 240 Volt 50/60 Hz. AC
123254	AMG	480 Volt 50/60 Hz. AC

The FA8 Series for Ammonia service is also one integral factory assembled unit containing the main regulator, a pressure pilot and a pilot solenoid for positive valve closure during pump down.

#### OPTIONAL FEATURES - available on special order.

When a pneumatic controller is required to provide temperature compensation, regulators may be ordered with a 1/4" SAE male flare external air connection (type EAC). This connection makes it possible to raise or lower the set point of the valve in a 1:1 ratio.

Example: An increase of 7 kPa (1 psi) air pressure will raise the set point 7 kPa (1 psi) above the spring setting.

The FA9 Series valves are identical to the FA8 except that they have an additional integral pilot solenoid as an automatic wide open feature. They are used on ammonia systems which require full compressor unloading on start-up.

Manufacturers Bulletins with full Capacity and Application details available on request.

(Bulletin 15.30, Dec. 1977 and 11.10 - 10/76 for R717)

# CAPACITY REGULATING VALVES

## HOT GAS BYPASS

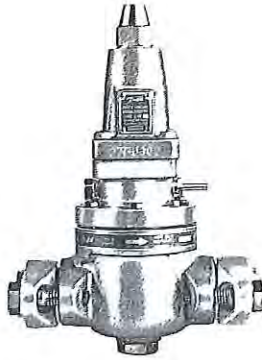


Type CPC For fluorinated refrigerants

Type PHC For fluorinated refrigerants and ammonia



CPC



PHC

Type CPC can be used as a Capacity Regulator for Hot Gas By-Pass purposes in systems with one or several evaporators where the compressor itself has no capacity regulation.

Type CPC can also be used for limitation of the compressor suction pressure in the downward direction. Furthermore, Type CPC can be used together with Type CPR for maintaining constant condensing and receiver pressure in conjunction with air-cooled condensers (Refer Page 120).

Type PHC is for use in systems with one or more evaporators where the compressor is not equipped with another form of capacity regulation, and on systems with capacity regulated one or two stage compressors where infinite regulation is required in the lowest stage. The PHC adapts suction capacity to meet momentary cold requirements and is suitable for both fluorinated refrigerants and ammonia.

VALVE TYPE			RANGE kPa (psig)	Conn.	NOMINAL CAPACITY *						Max. Test Press.	Max. Perm. Temp.		
CAT. NO.	MODEL	CODE No.			R12		R22		R502				R717	
					kW	Tons	kW	Tons	kW	Tons	kW	Tons		
117126	CPC 12	34N0155	0 to 1275 (0 to 185)	1/2" ODS	12	3.3	22	6.3	19	5.3	—	—	2600 kPa (377) 2350 (341)	100°C (212°F)
117127	CPC 15	34N0156		5/8" ODS	12	3.3	22	6.3	19	5.3	—	—		
117128	CPC 22	34N0158		7/8" ODS	12	3.3	22	6.3	19	5.3	—	—		
117129	CPC 28	34N0160		1-1/8" ODS	20	5.6	3.8	11.0	31	8.9	—	—		
117130	CPC 35	34N0161		1-3/8" ODS	20	5.6	3.8	11.0	31	8.9	—	—		
117156	PHC-3	26H2130	-50 to 600 (15" to 85)	3/4" W.F.	9.7	2.7	19	5.3	16	4.3	52	15	2800 kPa (400)	140°C (284°F)
117157	PHC-8	26H2133		3/4" W.F.	33	9.3	64	18	54	15	178	51		
117158	PHC-12	26H2136		1" W.F.	45	13	88	25	73	21	244	70		

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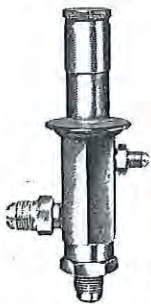
\* The rated capacity indicates the regulator capacity at evap. temp. -10°C (+14°F) and condensing temp. +25°C (+77°F) at a reduction of suction pressure by .69 kPa (10 psi).

REFER TO MANUFACTURERS BULLETIN FOR COMPLETE CAPACITY AND APPLICATION DATA



### Type CPCE + LG For fluorinated refrigerants

(Primarily designed for systems with one evaporator)



CPCE

Type CPCE Regulators are used to adapt compressor capacity to actual evaporator load. They are installed in a by-pass between the high and low pressure sides of a system. They are especially suitable for hot-gas injection at the evaporator inlet, between the TX valve and the liquid distributor. CPCE regulators are equipped with a connection for an external pilot line which is connected to the suction line immediately before the compressor, thus controlling

the degree of opening of the regulator by the compressor suction pressure, independent of the pressure drop on the evaporator side.

For hot-gas injection, a Liquid-gas Mixer Type LG should be used and is mounted between the expansion valve and the liquid distributor. The Liquid-gas Mixer can also be used in connection with hot-gas defrosting or with reverse-cycle systems.

VALVE TYPE			Range** kPa (psig)	CONN.	RATED CAPACITY *						Max. Perm. Temp.	Max. Perm. Press.
CAT. NO.	MODEL	CODE No.			R12		R22		R502			
					kW	Tons	kW	Tons	kW	Tons		
117131	CPCE 12	34N0081	0 to 586 (0 to 85)	1/2" Flare	4.2	1.2	12.1	3.4	11.0	3.1	140°C (284°F)	2760 kPa 400 psig
117132	CPCE 12	34N0082		1/2" Soid.								
117133	CPCE 15	34N0083		5/8" Soid.	7.0	2.0	20.0	5.7	18.1	5.2		
117134	CPCE 22	34N0084		7/8" Soid.	10.6	3.0	29.7	8.4	27.1	7.7		

\* Rated Capacity at suction temperature -10°C (+14°F) and condensing temperature +25°C (+77°F), after a suction temperature reduction of 4°C (7.2°F).

\*\* Control pressure when regulator begins to open.



LG

The object of the LG is to create a homogeneous mixture of the hot-gas from the CPCE regulator and the liquid from the TX valve so that the function of the liquid distributor (next in the system) remains unimpaired.

LIQUID-GAS MIXER			CONNECTIONS FOR —		
CAT. NO.	MODEL	CODE NO.	Hot Gas ODF	Expansion Valve ODM	Liquid Distributor ODF
117135	LG 12-16	69G4001	1/2"	5/8"	5/8"
117136	LG 12-22	69G4002	1/2"	7/8"	7/8"
117137	LG 16-28	69G4003	5/8"	1-1/8"	1-1/8"
117138	LG 22-35	69G4004	7/8"	1-3/8"	1-3/8"

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# CAPACITY REGULATING VALVES

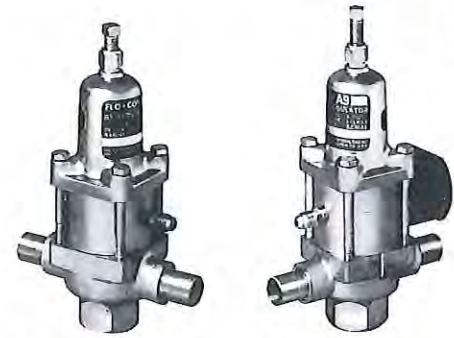
## HOT GAS BYPASS



### Hot Gas Bypass Regulators

Application as hot gas bypass regulators *only*.

- Pilot operated for close control at desired set point.
- Long-life diaphragm. No bellows to fail.
- Contoured plug for precise regulation at reduced capacities.
- Integral electric shut-off available (A9SE).
- External equalizer standard. Internal equalizer available on request.
- 2760 kPa (400 psig) safe working pressure.
- Lightweight and compact for easy handling.
- Sweat-in-place without disassembly for fast installation.
- In-line disassembly for fast service.



**Type A9E**  
Externally equalized

**Type A9SE**  
Externally equalized with pilot solenoid

### Hot gas bypass

#### For variable load control

The hot gas by-pass method delivers an artificial load to the compressor to replace a decrease in load at the evaporator. This helps prevent compressor operation at excessively low suction pressure which could result in oil pumping, short-cycling and temperature variations which, in turn, could lead to compressor failure, lack of oil return and frosted or iced evaporators.

The ideal method of hot gas by-pass on a single evaporator, single compressor system is at the evaporator inlet (Fig. 1). This permits good mixing of hot gas and liquid within the evaporator while still maintaining control of superheat in the suction line with the TXV in its normal location. Improved return of oil to the compressor results from the increased refrigerant velocity in the evaporator.

The easiest method to add to an existing system is the application of hot gas to the evaporator outlet or compressor suction (Fig. 2). This can sometimes eliminate the need for a long hot gas line, but it does require liquid injection through a second TX valve into the suction line to de-superheat the hot gas.

- Ranges:
- A\*\* (Standard) — -34 to 830 kPa (10" to 120 psig).
  - B 550 to 1520 kPa (80 to 220 psig) available on application.

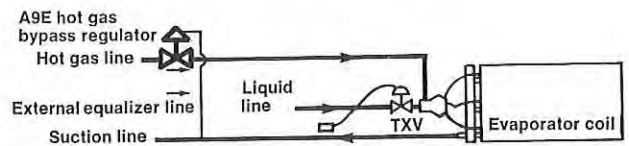


Fig. 1 Hot gas bypass to entrance of evaporator

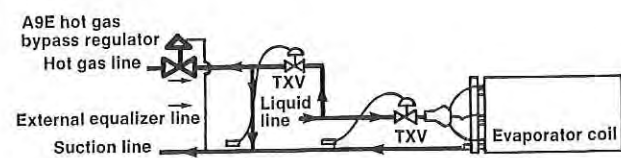


Fig. 2 Hot gas bypass to suction line

TYPE A9E CAT. NO.	TYPE A9SE CAT. NO.	PORT SIZE		CONN. SIZE		NOMINAL CAPACITY *						Press Range (A)**	Max. Refrig. Temp.
		mm	Ins.	mm	Ins.	R12		R22		R502			
117300	117309	15	5/8	15	5/8	4.74	1.28	8.55	2.37	8.10	2.24	-34 to 830 kPa (10" to 120 psig)	93°C (200°F)
117301	117310			22	7/8								
117302	117311			28	1-1/8								
117303	117312	15	5/8	15	5/8	14.8	4.0	26.4	7.4	25.3	7.0		
117304	117313			22	7/8								
117305	117314			28	1-1/8								
117306	117315	22	7/8	22	7/8	30.0	8.2	53.6	15.0	51.4	14.0		
117307	117316			28	1-1/8								
117308	117317			28	1-1/8								
ELECTRICAL SOLENOID COIL 240V. 50Hz.				CAT. NO. 119394		MAN. P/N 83-1000-29		P/M CHANGING					

611a. 7 - 81

\* Nominal Capacity based on 40°C (100°F) cond. temp. and discharge temp. of:— R12: 70°C (160°F), R22: 80°C (180°F), R502: 90°C (200°F).

SIZE VALVE BY EFFECTIVE PORT SIZE  
REFER MANUFACTURERS BULLETIN FOR FULL SIZING, CAPACITY AND APPLICATION DATA.



# CAPACITY REGULATING VALVES HOT GAS BYPASS



## Capacity Regulators for all non-corrosive refrigerants



The capacity regulator is a type of relief valve which is operated by a pressure difference between high and low sides. Up to a pre-set pressure, the valve is closed, allowing normal operation of the system. If the pressure begins to drop in the low side, however, the capacity regulator will open, and permit gas to overflow from the pressure side back to the suction side. These regulators cannot operate on a vacuum.

**Adjustment:**

Turn clockwise to open and raise the pressure.

Turn anti-clockwise to throttle and lower the pressure.

R12 — TYPE LR						R22 — Type LRX				Conn.	NOMINAL CAPACITY*				Max. Test Press.
Cat.No.	Model	Range psig	Cat.No.	Model	Range psig	Cat.No.	Model	Range psig	R12		R22				
									kW		Tons	kW	Tons		
117176	LR-10	0-40				117190	LRX-10		3/8" Flare	0.84	0.24	1.3	0.37	1482 kPa 215 psig	
117177	LR-12	0-65				117191	LRX-12		1/2" Flare	1.30	0.37	2.6	0.74		
117178	LR-16	0-65				117192	LRX-16		5/8" Flare	2.60	0.74	3.8	1.09		
117179	LR-19	0-40				117193	LRX-19		3/4" Flare	3.83	1.09	5.2	1.48		
117180	LR-20	0-40	117181	LR-20	22-66	117194	LRX-20	20-65	3/4" Flange	5.20	1.48	8.2	2.34		
117182	LR-22	0-40	117183	LR-22	22-66	117195	LRX-22		7/8" Flange	5.20	1.48	8.2	2.34		
117184	LR-25	0-65	117185	LR-25	0-40	117196	LRX-25		1" Flange	8.20	2.34	13.5	3.85		
117186	LR-32	0-40	117187	LR-32	22-66	117197	LRX-32		1 1/4" Flange	13.50	3.85	21.1	6.00		
117188	LR-40	0-40	117189	LR-40	22-66	117198	LRX-40		1 1/2" Flange	21.10	6.00	33.1	9.40		

\* Nominal Capacity based on -10°C (14°F) evap. Temp. and pressure drop of 14 kPa (2 psig).

For R502 use capacities as for R22

# THERMOSTATIC INJECTION VALVES

## Danfoss Type TEAT Thermostatic Injection Valves FOR R12, R22, R502, R717



TEAT

Type TEAT valves are used to inject refrigerant into the suction line of the refrigeration compressor. In this way the valves reduce the impermissibly high discharge temperatures which can occur when the refrigerant vapour in a refrigeration plant is compressed because of the appearance of superheated suction vapour in the compressor.

Type TEAT valves are used for :-

- Where a compressor runs either with a low suction pressure or with high condensing pressures.
- Where a compressor runs with both low suction pressure and high condensing pressures. This is especially applicable to plants using R22.
- Where a compressor receives strongly superheated suction vapour.
- Where a compressor runs with capacity regulation by hot gas by-pass.
- The regulation of media temperature, e.g. oil temperature in the oil cooler of a screw compressor.

VALVE TYPE			TEMP. RANGE °C	CONN. Flanged (Ins.)	RATED CAPACITY *								Cap. Length	Max. Bulb Temp.	Max. Test Press.			
CAT.NO.	MODEL	CODE NO.			R12		R22		R502		R717							
			kW	Tons	kW	Tons	kW	Tons	kW	Tons								
117169	TEAT 20-2	68G6062	55 to 85	1/2 x 1/2	0.9	0.25	1.5	0.44	1.1	0.31	6.4	1.8	7 m (16.5ft.)	150 °C (300°F)	3140kPa (455 psig) (on outlet side of valve)			
117172		68G6065	90 to 130															
117170	TEAT 20-8	68G6063	55 to 85	1/2 x 1/2	3.5	1.0	6.2	1.8	4.4	1.2	25.6	7.3						
117173		68G6066	90 to 130															
117171	TEAT 20-20	68G6064	55 to 85	1/2 x 1/2	10.0	2.5	15.4	4.4	10.8	3.1	64.0	18.0						
117174		68G6067	90 to 130															
117175	TEAT 85-85	68G6069	36 to 65	3/4 x 3/4	38.4	10.9	66.3	18.8	46.5	13.2	274.0	78.0						
18152	FA15	6 - 0042	Strainer for TEAT 20															
18154	FA20	6 - 0048	Strainer for TEAT 85															

\* Rated Capacity at differential pressure 790 kPa (115psi).

KK. 11. A2. 02



## MANUAL THROTTLE VALVE - TYPE 6F FOR R12, R22, R502, R717

Type 6F is designed for use wherever Manual Regulation of the refrigerant supply is required



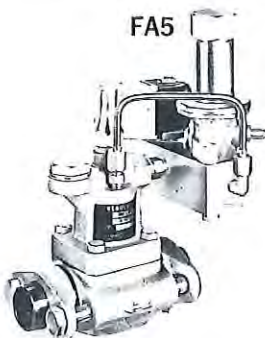
VALVE TYPE			Orifice (mm)	Conn. Weld Flange	Cv Factor Imp. GPM	CAPACITY - TONS							
Cat. No.	Model	Code No.				Pressure Drop across Valve - psi							
						R12		R22		R502		R717	
			15	55	15	55	15	55	15	55	15	55	
117201	6F	6F0010	1	1/2"	0.26	0.83	1.4	1.1	1.9	0.76	1.3	4.6	8.6
117202	6F	6F0030	3	1/2"	1.30	3.10	5.3	4.3	7.3	3.00	5.0	17.9	33.1
117203	6F	6F0060	6	1/2"	2.40	5.60	9.3	7.3	12.9	5.30	9.3	31.4	56.3

KK. 11. A2. 02

# CRANKCASE PRESSURE REGULATING VALVES

ALSO KNOWN AS HOLD BACK VALVES, SUCTION PRESSURE, STARTING, OUTLET OR DOWNSTREAM REGULATORS

## FA5 SERIES CRANKCASE PRESSURE REGULATORS



Alco FA5 series regulators are factory assembled units designed to limit compressor suction pressure and thus prevent motor over load. The integral pilot valve has 1/4" SAE male flare external equalizer pilot connection and is adjustable from 0 to 552 kPa (0-80 psig).

Often used as a hot gas defrost termination pressure regulator, it is tight seating and available with an optional integral pilot solenoid for positive shut off.

**Selection.** FA5 series regulators should normally be selected for the required capacity at the lowest pressure drop across the valve for economical compressor operation.

FA5 regulators should be used on any installation where compressor motor protection is required because of:

1. High starting loads.
2. Surges in suction pressure.
3. High suction pressure caused by hot gas defrost.
4. Prolonged operation at excessive suction pressures.
5. Low voltage and high suction pressure conditions.

The Suction Pressure Regulator cannot be used to limit the Evaporator Pressure.

TYPE		PORT SIZE	CONN. FLANGED FPT	RANGE	NOMINAL CAPACITY *							
CAT. NO.	MODEL				R12		R22		R502		R717	
					kW	Tons	kW	Tons	kW	Tons	kW	Tons
11869	FA5-11	3/8"	3/4"	0 - 552 kPa	1.8	0.5	2.6	0.75	2.0	0.57	5.6	1.6
11870	FA5-12	1/2"	3/4"		4.4	1.25	6.2	1.75	4.9	1.4	14.4	4.1
11871	FA5-13	3/4"	3/4"		7.7	2.2	12.0	3.4	8.8	2.5	26.0	7.4
11872	FA5-14	1"	1"	0 - 80 psig	14.1	4.0	21.8	6.2	15.8	4.5	43.3	12.3
11873	FA5-15	1-1/4"	1-1/4"		21.1	6.0	32.7	9.3	23.9	6.8	66.5	18.9
11874	FA5-16	1-1/2"	1-1/2"		31.7	9.0	48.9	13.9	35.9	10.2	104.0	29.5
11875	FA5-18	2"	2"		59.8	17.0	92.2	26.2	67.9	19.3	144.0	41.0

15.40, Sept. '75 & 11.10.10/76

\* Nominal Capacity based on 38°C (100°F) liquid refrigerant Temp., +4.4°C (40°F) evaporator temp. and a 14 kPa (2 psi) pressure drop across the valve.

AVAILABLE ON REQUEST:

- Integral Pilot Solenoid (for positive shut-off).
- Teflon seat regulators
- Strainers

SOLENOID COIL	
Type AMG 240 V. 50/60 Hz. AC	
CAT. NO.	123253



## CRANKCASE PRESSURE REGULATORS

FOR R12, R22, R502 — TYPE CPL  
 FOR R12, R22, R502, R717 — MAIN VALVE TYPES PM/HSA PLUS:  
 PILOT VALVE TYPE CVMO & TYPE 6F Throttle Valve.



CPL

The crankcase pressure regulator Type CPL is fitted in the suction line ahead of the compressor and is used for

1. Limiting the compressor suction pressure to a maximum.

The purpose is to protect the compressor motor against overload because of excessive suction pressure during start-up after lengthy standstill periods (high temperature in cold store) as well as during and after defrosting periods.

In low-temperature systems, CPL makes it possible to use a smaller motor which during normal operation will work with improved

efficiency since the motor size is better adapted to the load.

At the same time, the increased efficiency results in less heating of the motor. This is of great importance to suction gas-cooled hermetic and semihermetic compressors among others.

2. Maintaining a constant preset differential between the room temperature and the evaporating temperature during cooling.

In this way, drying-up of the room air is avoided. The result is reduced shrinkage of provisions.

VALVE TYPE			CONN. OD SOLDER	RANGE	NOMINAL CAPACITY *						MAX. TEMP.	MAX. TEST PRESS.
CAT. NO.	MODEL	CODE NO.			R12		R22		R502			
					kW	Tons	kW	Tons	kW	Tons		
11830	CPL 12	34N0135	1/2"	0 - 441 kPa	1.4	0.4	2.5	0.7	2.5	0.7	100°C (212°F)	2600 kPa 377 psig 2351 kPa 341 psig
11832	CPL 15	34N0136	5/8"		2.1	0.6	3.9	1.1	3.9	1.1		
11835	CPL 22	34N0138	7/8"		4.9	1.4	8.1	2.3	8.1	2.3		
11837	CPL 28	34N0140	1-1/8"	0 - 64 psig	8.4	2.4	14.1	4.0	14.1	4.0		
11839	CPL 35	34N0141	1-3/8"		13.0	3.7	21.1	6.0	21.1	6.0		

MAIN VALVE TYPE PM/HSA for R12, R22, R502, R717 — REFER EVAPORATOR PRESSURE REGULATING VALVES

PILOT VALVE TYPE CVMO — Range 0 to 690 kPa (0 - 100 psig) Conn. 1/2" weld. Code No. 27B1041

CAT. NO. 11851

THROTTLE VALVE TYPE 6F — REFER PAGE 117-e

KK. 30. A2. 02

\* Nominal Capacity at -10°C (+14°F) evaporator temperature and +25°C (77°F) condensing temperature.

## CRANKCASE PRESSURE REGULATING VALVES

ALSO KNOWN AS HOLD BACK VALVES, SUCTION PRESSURE, STARTING, OUTLET OR DOWNSTREAM REGULATORS



### Crankcase Pressure Regulators

Application as crankcase pressure regulator *only*.

#### Type A7A10

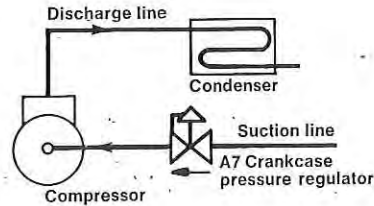
28-42mm  
1-1/8"-1-5/8" ODS  
connections



- Pilot operated for close control at desired set point.
- Low pressure drop, 10 kPa (1½ psi) at rated capacity, allows maximum compressor efficiency, saves energy.
- V-port allows precise regulation at greatly reduced capacities without need to reset.
- Inlet pressure remains constant within 10 kPa (1½ psi) of set point regardless of load fluctuations.
- Disc piston, sensitive to small pressure changes.
- Teflon seat for tight shut-off:
- Long-life diaphragms. No bellows to fail.
- Lightweight and compact for easy handling.
- Sweat-in-place without disassembly for fast installation.
- In-line disassembly for fast service.
- Gauge connection for 1/8" NPT "Schrader" fitting or equivalent for convenient access to upstream system pressure.

An A7 valve used as a crankcase pressure regulator closes as the outlet pressure rises, thereby avoiding compressor motor and condenser overloads during pull-down, post defrost or peak load periods. They can also be used to limit the overloading effect of any evaporator on a system.

Range: -34 to 620 kPa (10" to 90 psig)



*all changed*

VALVE TYPE		PORT SIZE		CONNECTION SIZE		NOMINAL CAPACITY *						PRESS. RANGE
CAT. NO.	MODEL	mm	ins.	mm	ins.	R12		R22		R502		
						kW	Tons	kW	Tons	kW	Tons	
11883	A7A10	28	1-1/8	28	1-1/8	19.3	5.5	27.1	7.7	21.1	6.0	-34 to 620 kPa  (10" to 90 psig)
11884				35	1-3/8							
11885				42	1-5/8							
11886		35	1-3/8	35	1-3/8	21.1	6.0	29.9	8.5	23.2	6.6	
11887	42			1-5/8								
11888	A720	42	1-5/8	42	1-5/8	34.8	9.9	48.9	13.9	38.3	10.9	
11889		54	2-1/8	54	2-1/8	52.4	14.9	73.5	20.9	57.3	16.3	
11890				66	2-5/8							

611-a.7-81

\* Nominal Capacity based on +5°C (+40°F) evap. Temp. and 14 kPa (2 psi) pressure drop across regulator.

SIZE VALVE BY EFFECTIVE PORT SIZE

REFER MANUFACTURERS BULLETIN FOR FULL SIZING, CAPACITY AND APPLICATION DATA

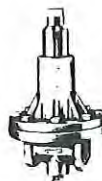
# CRANKCASE PRESSURE REGULATING VALVES

ALSO KNOWN AS HOLD BACK VALVES, SUCTION PRESSURE, STARTING, OUTLET OR DOWNSTREAM REGULATORS



## SMALL OUTLET PRESSURE REGULATORS — TYPE A2BO (For Ammonia, R12, R22, R502)

1



A2BO

**Function:** Controls Outlet Pressure.  
**Operation:** Regulate at preset outlet pressure. Field adjustable. Open on dropping pressure.  
**Typical Applications:** Gas pressure reducer — Liquid or oil pressure reducer.

### SPECIFICATIONS

**Body Material:** Cast Semi-Steel.  
**Seat Material:** Lapped metal to metal.  
**Diaphragm Material:** Stainless Steel preformed.  
**Maximum Fluid Temperature:** 105°C (220°F).  
**Minimum Fluid Temperature:** -45°C (-50°F).  
**Design Pressure (SWP):** 2069 kPa (300 psig.).

Regulator Type Range "V"		Flange Size and Style		Flow Coefficient	
Cat. No.	Model	Std.	Also Avail.	Kv	Cv
118176	A2BO1	1/2" SW	3/8"	0.09	0.1
118177	A2BO1-ST*		1/2"		
118178	A2BO2	1/2" SW	3/4"	0.17	0.2
118179	A2BO2-ST*		FPT		
118180	A2BO4	3/4" SW	or	0.43	0.5
118181	A2BO4-ST*		SW		

\* Suffix 'ST': = Regulator complete with Strainer.

## ADAPTOMODE®

### CRANKCASE PRESSURE REGULATORS

FOR AMMONIA, R12, R22, R502 and OTHER REFRIGERANTS and OIL



Type A4AO

The Adaptomode-Pressure Regulators use a unique modular construction which allows addition of adaptors and modules to provide virtually any control function for refrigeration application. The design uses internal flow paths and allows direct mounting of modular pilots, thus eliminating most external pilot piping.

These Regulators are pilot operated for precise control of pressure and are suitable for use with most refrigerants, oil and other approved fluids with similar pressure, temperature and corrosion characteristics. The design pressure (SWP) is 2069 kPa (300 psig). The regulators can be easily removed for service. Strainers can be supplied to close couple to the inlet of the regulators.

Standard Range "V" : -68 kPa to 827 kPa (20" Hg. to 120 psig.)

Regulator Type		Port Size		Connections SW Flange		Strainer to suit Type RSF - Add.		Nominal Capacity*							
CAT. NO.	Model	mm.	ins.	Std.	Also Avail.	Cat. No.	Size	R12		R22		R502		R717	
								kW	Tons	kW	Tons	kW	Tons	kW	Tons
118185	A4AO	20	¾	¾"	1", 1¼"	121800	25mm	10.6	3.0	16.2	4.6	13.0	3.7	39	11
118186	A4AO	25	1	1"	¾", 1¼"	121800	25mm	14.8	4.2	22.5	6.4	18.3	5.2	53	15
118187	A4AO	32	1¼	1¼"	1½"	121802	32mm	25.7	7.3	38.7	11.0	32.0	9.1	92	26
118188	A4AO	40	1-5/8	1½"	2"	121803	50mm	49.2	14.0	73.9	21.0	59.8	17.0	172	49
118189	A4AO	50	2	2"	1½"	121803	50mm	73.9	21.0	113.0	32.0	91.5	26.0	257	73
118190	A4AO	65	2½	2½"	—	121804	65mm	102.0	29.0	158.0	45.0	127.0	36.0	352	100
118191	A4AO	75	3	3"	—	121805	75mm	148.0	42.0	225.0	64.0	183.0	52.0	528	150
118192	A4AO	100	4	4"	—	121806	100mm	200.5	57.0	302.5	86.0	246.2	70.0	703	200
121100	Standard 230 Volt 50Hz Coil to suit Pilots (Manuf. Part No. 30 - 0041 - 06)														

\* Nominal Capacity based on 14 kPa (2psi) Pressure Drop across regulator and —  
 R12, R22, R502 : 4°C (40°F) Evap. Temp. R717 : -7°C (20°F) Evap. Temp.

VARIATIONS ARE AVAILABLE ON REQUEST : —

- A4AOS — Outlet Regulator with Shut-off feature
  - A4AOE — Outlet Regulator with remote sensing connection
  - A4AOM, P or T — Compensated Outlet Regulator, Motorised, Pneumatic or Temperature Operated.
- If Strainer required quote additional Cat. No. and add suffix "ST" to Valve Type.  
 Optional Range "D" 517kPa to 1434kPa (75 psig to 280 psig)

### FAST SERVICE

AS REAL SPECIALISTS IN REFRIGERATION, AIR CONDITIONING AND HEATING, WE STOCK THOUSANDS OF DIFFERENT PARTS, TOOLS AND SUPPLIES. WE BELIEVE THIS IS ONE OF THE MOST COMPLETE ASSORTMENT IN THE INDUSTRY. THIS LARGE INVENTORY, PLUS AN EXPERIENCED ORGANIZATION AND A MODERN STREAMLINED ORDER SYSTEM, ALWAYS ASSURES YOU OF FAST BUT CAREFUL SERVICE. WE DESPATCH OVER 90% OF ALL ORDERS ON THE DAY THEY ARE RECEIVED.

# CRANKCASE PRESSURE REGULATING VALVES

ALSO KNOWN AS HOLD BACK VALVES, SUCTION PRESSURE, STARTING, OUTLET OR DOWNSTREAM REGULATORS

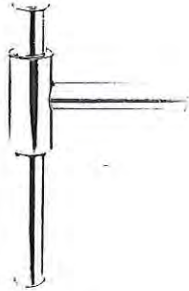
## CRANKCASE PRESSURE REGULATORS

Crankcase pressure regulators are generally used to prevent compressor motor overload. By throttling the suction gas flow during high load conditions, the compressor motor is permitted to remain within current draw limitations. They also serve many other applications.



**SINGER**  
CONTROLS DIVISION

### MODELS 237A 237B 237C



MODEL 237A  
LONG



MODEL 237B  
SHORT



MODEL 237C

VALVE TYPE			Connections Size & Type	Operating Adjustment Range		Opening Point Setting kPa (psig)	Bellows Rating kPa (psig)			
CAT. NO.	Model	Device No.		kPa	(psig)					
<b>MODEL 237A OUTLET PRESSURE REGULATOR – 3/4" ORIFICE</b>										
118101	237AW	237-105	1/2" Male Flare	-34 to  517	(10" to  75)	69 (10)	2930  (425)			
118102	237AW	237-098	5/8" " "			103(15)				
118103	237AW	237-113	5/8" " "			69				
118104	237AW	237-099	5/8"ODF Short			(10)				
118105	237AWL	237-130	1/2"ODF Long			276(40)				
118106	237AWL	237-102	5/8" " "			69(10)				
118107	237AWL	237-108	5/8" " "			138(20)				
118108	237AWL	237-103	7/8" " "			69(10)				
118109	237AWL	237-139	7/8" " "			414(60)				
118110	237AWL	237-104	1-1/8" " "			-				
118111	237AWL	237-107	5/8" " "	0 to 1207	(0 to 175)	-				
118112	237AWL	237-111	7/8" " "	-34 to 517	(10" to 75)	-				
118113	237AWL	237-114	1-1/8" " "	<b>MODEL 237B OUTLET PRESSURE REGULATOR – 1-1/4" ORIFICE</b>						
118114	237AWL	237-190	7/8" " "	0 to 276	(0 to 40)	-	2069(300)			
118115	237AWL	237-109	7/8" " "	69 to 310	(10 to 45)	-	1241 (180)			
118116	237B	237-362	7/8"ODF Short	138 to 690	(20 to 100)	345 (50)				
118117	237BL	237-301	7/8" ODF Long	69 to 310	(10 to 45)	-				
118118	237BL	237-372	1-1/8" " "	69 to 310	(10 to 45)	-				
118119	237BL	237-378	1-1/8" " "	69 to 310	(10 to 45)	-				
118120	237BL	237-375	1-1/8" " "	69 to 310	(10 to 45)	-				
118121	237BL	237-376	1-3/8" " "	0 to 276	(0 to 40)	124(18)	2069 (300)			
118122	237BL	237-373	1-3/8" " "	276	40)	-	2930 (425)			
118123	237BL	237-379*	1-1/8" " "	0 to 690	(0 to 100)	414(60)				
118124	237BL	237-380*	1-3/8" " "	345 to 1241	(50 to 180)	-				
118125	237BCL	237-348	1-1/8" " "	0 to 276	(0 to 40)	-	3206 (465)			
118126	237BCL	237-359	1-3/8" " "	69 to 276	(10 to 40)	-				
118127	237BVL	237-325	1-1/8" " "	103 to 1276	(15 to 185)	793(115)				
118128	237BVL	237-317	1-1/8" " "	172 to 1620	(25 to 235)	1207(175)				
118129	237BVL	237-316	1-3/8" " "	<b>MODEL 237C OUTLET PRESSURE REGULATOR – HIGH CAPACITY BUTTERFLY</b>						
118130	237BVL	237-351	1-1/8" " "	* with 3/8" male flare gauge connection (with Dill valve) on inlet connecting spud						
Flange Connection Kit (1 per Valve )										
Cat. No.	Kit No.	Size	118131	237CW	237-701	1-1/8", 1-3/8" &	69 to 276	(10 to 40)	-	3206 (465)
118135	179-519	1-1/8 ODF.S	118132	237CW	237-702	1-5/8" OD Refer	0 to 896	(0 to 130)	-	
118136	169-921	1-3/8 ODF.S	118133	237CW	237-703	Flange Conn.	103 to 1276	(15 to 185)	793(115)	
118137	179-067	1-5/8 ODF.S	118134	237CW	237-704	Kit Chart	172 to 1620	(25 to 235)	1207(175)	

FOR CAPACITY DATA REFER TECH. PAGE 119-h

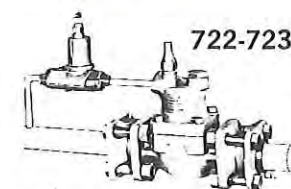
# EVAPORATOR PRESSURE REGULATING VALVES

ALSO KNOWN AS CONSTANT PRESS. VALVE, BACK PRESS., UPSTREAM, INLET PRESS., SUCTION LINE REGULATOR

The Alco Series EPRV Evaporator Pressure Regulating Valves accurately maintain predetermined evaporator pressure regardless of sudden load or suction line changes. These valves can be successfully used on any refrigeration system fed by thermostatic expansion valves, high side or low side floats whenever a constant or minimum evaporator pressure or temperature is desired.

The EPRV Series is compact in design, requires little headroom, puts minimum weight on pipe lines, and is easily dismantled without removing body from the line. All have manual opening stems, are supplied with 1/4" FPT gauge port, and can be easily converted to an external pilot connection. One turn of pilot stem equals approx. 27 kPa (4 psi) change in system pressure.

The Alco Series 722 and 723 regulators must be used with a pilot valve. The type of pilot valve used determines the function and operating characteristics of the main regulator. Valves are supplied with 1/4" FPT pilot connection. Used with a 724 remote pressure pilot they perform as an evaporator pressure regulating valve. An EAC724 pilot may be used for pneumatic compensation. If a 935 temperature pilot is used, the valve functions as an evaporator pressure regulator except that it modulates in response to temperature changes at the remote bulb of the temperature pilot.



EPRV SERIES WITH INTEGRAL PILOT												
VALVE TYPE		PORT SIZE	CONN. FPT	NOMINAL CAPACITY*								
CAT. NO.	MODEL			R12		R22		R502		R717		
				kW	Tons	kW	Tons	kW	Tons	kW	Tons	
119251	EPRV - 11	3/8"	3/4"	1.8	0.5	2.6	0.75	2.0	0.57	5.6	1.6	
119252	EPRV - 12	1/2"	3/4"	4.4	1.25	6.2	1.75	4.9	1.4	14.4	4.1	
119253	EPRV - 13	3/4"	3/4"	7.7	2.2	12.0	3.4	8.8	2.5	26.0	7.4	
119254	EPRV - 14	1"	1"	14.1	4.0	21.8	6.2	15.8	4.5	43.3	12.3	
119255	EPRV - 15	1-1/4"	1-1/4"	21.1	6.0	32.7	9.3	23.9	6.8	66.5	18.9	
119256	EPRV - 16	1-1/2"	1-1/2"	31.7	9.0	48.9	13.9	35.9	10.2	104.0	29.5	
119257	EPRV - 18	2"	2"	59.8	17.0	92.1	26.2	67.9	19.3	144.0	41.0	

722 SERIES WITH REMOTE PILOT												
CAT. NO.	MODEL	PORT SIZE	CONN. FPT	Capacities	PILOT VALVES							
					CAT. NO.	MODEL	Type	RANGE				
119261	722 - 11	3/8"	3/4"	same as EPRV Valves	119273	724 - 1	Press.	14 to 758kPa (2 to 110psig)				
119262	722 - 12	1/2"	3/4"		119274	724 - 2						
119263	722 - 13	3/4"	3/4"		119275	724 - 3						
119264	722 - 14	1"	1"			935-8-B	Temp.	-37 to -36°C (-35 to -15°F)				
119265	722 - 15	1-1/4"	1-1/4"			935-1-B		-26 to -12°C (-15 to +10°F)				
119266	722 - 16	1-1/2"	1-1/2"			935-2-B	R22	-12 to -1°C (+10 to +30°F)				
119267	722 - 18	2"	2"			935-3-B	R502)	-1 to +10°C (+30 to +50°F)				
					FA6 - 3	R717	-1 to +10°C (+30 to +50°F)					

SOLENOID FOR SHUT-OFF - Refer Alco Solenoids

\*Nominal Capacity based on 38°C(100°F) liquid refrigerant temp., 4.4°C(40°F) evap. temp., 14kPa (2psi) P.D.

15.40. 9/75 & 11.10. 10/76

### AVAILABLE ON REQUEST

Larger Valve sizes - EPRV and 723 Valve sizes 110, 112, 116, 120 and 124 (2 1/2" to 6").

External Strainers for all Valves.

Type EAC724 Pilot for pneumatic compensation.

Type MPR Remote Motorized Pilot - Electrically compensated.

Type FA1 Dual Evaporator Pressure Regulator - two pressure settings controlled by solenoid.

Type FA3 Evaporator Pressure Regulator with Suction Stop Pressure control or tight close combination.

Type EAC - Pneumatically Compensated - Automatic pressure reset from pneumatic controller.

Type MEPR - Electrically Compensated - Automatic pressure reset from potentiometer thermostat.

Type FA6 - Temperature Compensated - Self-contained automatic reset from remote bulb temperature.

Type FA7 - Temperature Compensated with pressure override for low limit or freeze-up protection.

# 119-a EVAPORATOR PRESSURE REGULATING VALVES

ALSO KNOWN AS CONSTANT PRESS. VALVE, BACK PRESS., UPSTREAM, INLET PRESS., SUCTION LINE REGULATOR



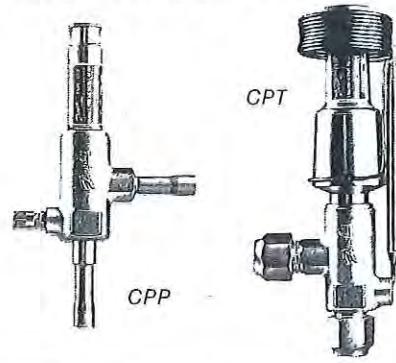
**Evaporating pressure regulators.  
For fluorinated refrigerants  
Type CPP and Type CPT**

**TYPE CPP — PRESSURE TYPE** — is fitted in the suction line after the evaporator and is used for :—

- Maintaining a constant evaporating pressure.
- Protection against too low an evaporating pressure.
- The Regulator has modulating control.

**TYPE CPT — TEMPERATURE TYPE** — is fitted in the suction line after the evaporator and is designed to maintain the temperature of a cooled medium (air or liquid) constant.

The regulator can be used with one or several evaporators.



TYPE CPP CONSTANT PRESSURE VALVE												
VALVE TYPE			CONN.	OPERAT. RANGE	MAX. TEMP.	MAX. TEST PRESS.	NOMINAL CAPACITY *					
CAT. NO.	MODEL	CODE NO.					R12		R22		R502	
							kW	Tons	kW	Tons	kW	Tons
119201	CPP 12	34N0051	1/2" M.F.I.	0 to 586 kPa (0 to 85 psig)	100°C (212°F)	2600 kPa (377psig)	1.4	0.4	2.4	0.7	2.4	0.7
119202	CPP 15	34N0052	5/8" M.F.I.				2.2	0.6	3.9	1.1	3.9	1.1
119203	CPP 22	34N0058	7/8" ODS			5.0	1.4	8.1	2.3	8.2	2.3	
119204	CPP 28	34N0060	1-1/8" ODS			8.5	2.4	14.0	4.0	14.0	4.0	
119205	CPP 35	34N0061	1-3/8" ODS			13.0	3.7	21.0	6.0	21.0	6.0	
TYPE CPT THERMOSTATIC REGULATOR VALVE												
119206	CPT 12	34N1005	1/2" ODS	-40°C to +25°C (-40°F to +77°F)	100°C (212°F)	2600 kPa (377psig)	SAME AS CPP VALVE ABOVE					
119207	CPT 15	34N1006	5/8" ODS									
119208	CPT 22	34N1008	7/8" ODS									
119209	CPT 28	34N1010	1-1/8" ODS									
119210	CPT 35	34N1011	1-3/8" ODS			2351 kPa (34.1psig)						

\* Regulator Capacity at -10°C (+14°F) evap. temp., +25°C (+77°F) cond. temp.

KK.30. A2. 02



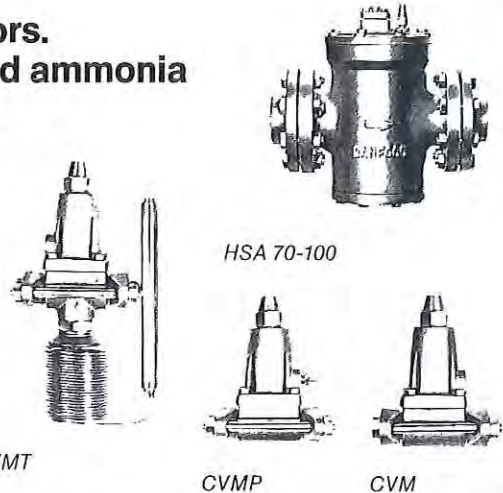
**Evaporating pressure regulators.  
For fluorinated refrigerants and ammonia  
Type HSA + CVM pilot valves**

These pilot controlled regulators are used for the regulation of evaporator pressure or temperature of the cooled medium.

Combinations of the main valve and a pilot provide :—

- HSA + CVM** = a constant pressure regulator with manual reference setting.
- HSA + CVMP** = a constant pressure regulator with pneumatic reference setting.
- HSA + CVMT** = a constant temperature with thermostatic reference setting.

This combination of main valve and separate pilot valve results in a high degree of flexibility as regards application and installation.



VALVE TYPE			CONN. WELD FLANGE	RANGE kPa/°C (psig/°F)	MAX. TEMP.	MAX. TEST PRESS	NOMINAL CAPACITY *							
CAT.NO.	MODEL	CODE NO.					R12		R22		R502		R717	
							kW	Tons	kW	Tons	kW	Tons	kW	Tons
11922	HSA70	26G0008	3"	See Pilot Valves	140°C (284°F)	2758 kPa (400 psig)	110	31	160	46	130	37	425	120
11923	HSA100	26G0010	4"				190	55	280	80	230	64	740	210

### PILOT VALVES

11935	CVM	27B1001	1/2"	0 to 690 (0 to 100)	140°C (284°F)	2758 kPa (400 psig)	Constant Pressure Regulator with Manual reference setting.							
11936	CVMP	27B1007	1/2"	0 to 690 (0 to 100)	140°C (284°F)	2758 kPa (400 psig)	Constant Pressure with Pneumatic reference setting.							
11946	CVMT	27B1034	1/2"	-25° to +20° (-13° to +68°)	140°C (284°F)	2758 kPa (400 psig)	Constant Temperature with Thermostatic reference setting							
11947	CVMT	27B1031	1/2"	-50° to -10° (-58° to +14°)	140°C (284°F)	2758 kPa (400 psig)								

### SOLENOIDS

12251	EVR3	32F2033	1/4" Fl.		-40° to +105°	4600 kPa	For Fluorinated Refrigerants (R12, R22, R502)							
12276	EVRA3	32F3103	1/4" Fl.		-40° to +105°	5000 kPa	For Fluorinated Refrigerants & Ammonia (R12, R22, R502, R717)							
12267	Coil	18Z6702	—	240V 50HzAC		Replacement Solenoid Coil with Terminal Box								

KK.30/40/50. A2. 02

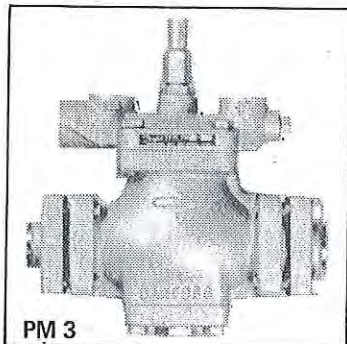
\* Regulator Capacity at -10°C (+14°F) evap. temp., +25°C (+77°F) cond. temp. and pressure drop across valve 14 kPa (2psi)

# EVAPORATOR PRESSURE REGULATING VALVES

ALSO KNOWN AS CONSTANT PRESS. VALVE, BACK PRESS., UPSTREAM, INLET PRESS., SUCTION LINE REGULATOR



Evaporating pressure regulators.  
For fluorinated refrigerants and ammonia  
Type PM + CVP/CVPP and Type PM + CVT

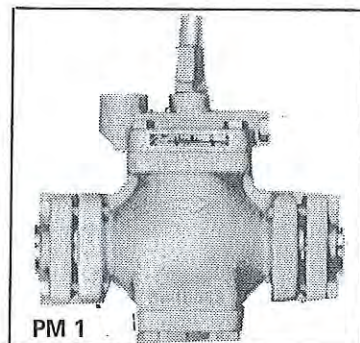


PM 3

Type PM + CVP/CVPP/CVT is used for the regulation of pressure and temperature in refrigeration, freezing and air conditioning plants using fluorinated refrigerants and ammonia. The PM is a servo-operated regulator with screwed-on pilot valves.

### FLEXIBILITY FOR MANY APPLICATIONS

Dependent on the application required, the PM regulator may be fitted in suction lines, pressure lines, liquid lines, return lines (liquid/vapour), condensate lines and by-pass lines.



PM 1

- PM 1 — Regulator for one screwed-on pilot valve. In addition, an external pilot valve can be used. The main valve function is determined exclusively by the selected pilot valve.
- PM 3 — Regulator for up to three screwed-on pilot valves. In addition, an external pilot valve can be used. The main valve function is determined exclusively by the selected pilot valves.



CVP  
Constant  
pressure  
regulator



CVPP  
Differential  
pressure  
regulator

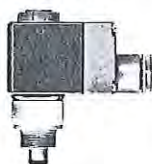
MAIN VALVE TYPE			WELD FLANGE SETS			RATED SUCTION VAPOUR CAPACITY *							
CAT. NO.	MODEL	CODE NO.	CAT. NO.	SIZE	CODE NO.	R12		R22		R502		R717	
				INCH		kW	Tons	kW	Tons	kW	Tons	kW	Tons
119451	PM1 - 20	27F1001	119461	3/4"	27N1220	9.4	2.6	14	4.6	12	4.0	37	11
119452	PM1 - 25	27F1006		1"	27N1225	16.0	4.6	25	8.3	20	6.6	65	21
119453	PM1 - 32	27F1011	119462	1 1/2"	27N2332	26.0	7.3	39	13.0	31	10.0	100	33
			119463	1 1/2"	27N2340								
119454	PM1 - 40	27F1016	119464	1 1/2"	27N2440	45.0	15.0	67	22.0	55	18.0	180	60
			119465	2"	27N2450								
119455	PM3 - 20	27F1031	119461	3/4"	27N1220	9.4	2.6	14	4.6	12	4.0	37	11
119456	PM3 - 25	27F1032		1"	27N1225	16.0	4.6	25	8.3	20	6.6	65	21
119457	PM3 - 32	27F1033	119462	1 1/2"	27N2332	26.0	7.3	39	13.0	31	10.0	100	33
			119463	1 1/2"	27N2340								
119458	PM3 - 40	27F1034	119464	1 1/2"	27N2440	45.0	15.0	67	22.0	55	18.0	180	60
			119465	2"	27N2450								
119459	PM3 - 50	27F1035	119466	2"	27N2550	69.0	23.0	100	33.0	85	28.0	270	90
			119467	2 1/2"	27N2565								
119460	PM3 - 65	27F1036	119468	3"	27N2680	110.0	36.0	170	56.0	140	46.0	450	150

\* Rated Capacity at -10°C(+14°F) evap. temp., +32°C(+90°F) cond. temp. and a pressure drop across the valve of 14 kPa (2psi).

KK. 30. A2. 02



CVT  
Temperature  
regulator



EVM  
Solenoid  
valve

PILOT VALVES	Type Description	Cat. No.	Code No.	RANGE kPa (psig) °C (°F)
	CVP Pressure Controlled	119470	27B1100	0 to 700 (0 to 100)
		119471	27B1101	-37 to 200 (11" to 28)
	CVPP* Differential Pressure Controlled	119472	27B1102	0 to 700 (0 to 100)
	CVT** Temperature Controlled	119473	27B1110	-40° to 0° (-40 to 32°)
		119474	27B1111	-10° to 25° (14° to 77°)
	EVM Solenoid Valve Coil	119469	27B1122	240V 50 Hz.
			18Z6700	AC

ACCESSORIES	Description	Cat. No	Code No.
	Pressure Gauge Connection		Weld 27B2035 Flare 27B2041
	External Pilot Connector †		27F1045
	Blanking Plug for PM3		27F1046

- † Includ. damping orifice, Code No. 27B2042
- \* The CVPP is used on the low pressure side of the refrigeration plant. On the high pressure side the external pilot connector + a CVMP Pilot Valve is used.
- \*\* Type CVT has adsorption charge. 5 m cap. tube.



# EVAPORATOR PRESSURE REGULATING VALVES

ALSO KNOWN AS CONSTANT PRESS. VALVE, BACK PRESS., UPSTREAM, INLET PRESS., SUCTION LINE REGULATOR

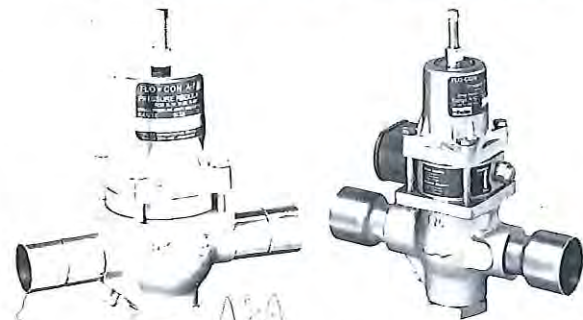
## Inlet Pressure Regulators

Applications as Liquid Drain Regulator, Discharge Gas or Evaporator Pressure Regulator.



### Maximum performance and efficiency

- Pilot operated for close control at desired set point.
- Low pressure drop. 10 kPa (1½ psi) at rated capacity allows maximum compressor efficiency, saves energy.
- V-port allows precise regulation at greatly reduced capacities without need to reset.
- Disc piston, sensitive to small pressure changes.
- Teflon seat for tight shut-off.
- Long life diaphragms. No bellows to fail.
- Available with pilot electric shut-off, pilot electric wide opening and differential pressure regulation.



Type A7A

Type A7A1S

with pilot solenoid

### REGULATOR VARIATIONS AVAILABLE ON APPLICATION

- **ELECTRIC SHUT-OFF — 'S' Feature** — Regulating when energised — closed when de-energised.  
Types A7AS — A7A1S — A72S
- **ELECTRIC WIDE OPENING — 'B' Feature** — Wide open when energised — regulating when de-energised.  
Types A7AB — A7A1B — A72B

### DIFFERENTIAL PRESSURE REGULATORS — Range 0 to 620 kPa (0 to 90 psig)

Opens on a rise in pressure difference — Closes when pressure difference is below set point. May be used in place of an A9 Hot Gas By-pass Regulator for Condenser Pressure Control in applications where the receiver pressure is allowed to "float" up and down with condensing temperature.

- **DIFFERENTIAL REGULATOR — 'L' Feature** — Maintains a set pressure difference between inlet and outlet.  
Types A7AL — A7A1L — A72L
- **ELECTRIC WIDE OPENING — 'BL' Feature** — Wide open when energised — regulating pressure differential when de-energised. Types A7A1BL — A72BL

### EVAPORATOR (INLET) PRESSURE REGULATOR CAPACITIES

TYPE	PORT SIZE		CONN. SIZE		NOMINAL CAPACITY *						RANGE kPa (psig)
	mm	ins.	mm	ins.	R12		R22		R502		
					kW	Tons	kW	Tons	kW	Tons	
A7A or A7AS or A7AB	Red. 15	Red. 5/8	15	5/8	3.2	0.9	4.6	1.3	3.5	1.0	-34 to 2758 (10" to 400)
			22	7/8							
	15	5/8	15	5/8	6.7	1.9	9.5	2.7	7.4	2.1	
			22	7/8							
			28	1-1/8							
			22	7/8							
22	7/8	22	7/8	2.7	9.5	13.7	3.9	10.5	3.0		
		28	1-1/8								
A7A1 or A7A1S or A7A1B	22	7/8	28	1-1/8	13.7	3.8	19.0	5.4	14.8	4.2	
			35	1-3/8							
	28	1-1/8	42	1-5/8	19.3	5.5	27.1	7.7	21.1	6.0	
			28	1-1/8							
			35	1-3/8							
			42	1-5/8							
35	1-3/8	35	1-3/8	21.1	6.0	29.9	8.5	23.2	6.6		
		42	1-5/8								
		42	1-5/8								
		54	2-1/8								
A72 or A72S or A72B	42	1-5/8	54	2-1/8	34.8	9.9	48.9	13.9	32.3	10.9	
			66	2-5/8							
	54	2-1/8	54	2-1/8	52.4	14.9	73.5	20.9	57.3	16.3	
			66	2-5/8							

\* Nominal Capacity based on 5°C (40°F) evap. temp. and 14 kPa (2psi) press. drop across regulator. 611-a. 7-81

### ADDITIONAL FEATURES

- Dual spring for smooth response from -34 kPa to 2760 kPa (10" to 400 psig). Inlet Regulator only.
- One valve handles both high side and low side pressure control, reduces inventory.
- Manual opening allows bypass of regulator for quick, simple start-ups.
- Inlet pressure remains constant within 10 kPa (1½ psi) of set point regardless of load fluctuations.
- Manual bypass feature opens regulator for quick pumpdown and ease in setting TX valve superheat during start-up.
- Gauge connection for 1/8" NPT "Schrader" fitting or equivalent for convenient access to upstream system pressure.

REFER MANUFACTURERS BULLETIN FOR FULL SIZING, CAPACITY AND APPLICATION DATA

### CATALOGUE ORDERING NUMBERS

PORT SIZE		CONN. SIZE		Inlet Pressure Regulator			Inlet Pressure Regulator with Pilot Electric Shut-off			Inlet Pressure Regulator with Electric Wide Opening			Differential Pressure Regulator			Differential Pressure Regulator with Electric Wide Opening	
mm	ins	mm	ins	A7A	A7A1	A72	A7AS	A7A1S	A72S	A7AB	A7A1B	A72B	A7AL	A7A1L	A72L	A7A1BL	A72BL
				Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.
Red. 15	Red. 5/8	15	5/8	119600	—	—	119625	—	—	119650	—	—	119675	—	—	—	—
		22	7/8	119601	—	—	119626	—	—	119651	—	—	119676	—	—	—	—
		28	1-1/8	119602	—	—	119627	—	—	119652	—	—	119677	—	—	—	—
15	5/8	15	5/8	119603	—	—	119628	—	—	119653	—	—	119678	—	—	—	—
		22	7/8	119604	—	—	119629	—	—	119654	—	—	119679	—	—	—	—
		28	1-1/8	119605	—	—	119630	—	—	119655	—	—	119680	—	—	—	—
22	7/8	22	7/8	119606	—	—	119631	—	—	119656	—	—	119681	—	—	—	—
		28	1-1/8	119607	—	—	119632	—	—	119657	—	—	119682	—	—	—	—
22	7/8	28	1-1/8	—	119608	—	—	119633	—	—	119658	—	—	119683	—	—	119700
		35	1-3/8	—	119609	—	—	119634	—	—	119659	—	—	119684	—	—	119701
		42	1-5/8	—	119610	—	—	119635	—	—	119660	—	—	119685	—	—	119702
		28	1-1/8	—	119611	—	—	119636	—	—	119661	—	—	119686	—	—	119703
28	1-1/8	35	1-3/8	—	119612	—	—	119637	—	—	119662	—	—	119687	—	—	119704
		42	1-5/8	—	119613	—	—	119638	—	—	119663	—	—	119688	—	—	119705
		35	1-3/8	—	119614	—	—	119639	—	—	119664	—	—	119689	—	—	119706
35	1-3/8	42	1-5/8	—	119615	—	—	119640	—	—	119665	—	—	119690	—	—	119707
		42	1-5/8	—	—	119616	—	—	119641	—	—	119666	—	—	119691	—	119708
		54	2-1/8	—	—	119617	—	—	119642	—	—	119667	—	—	119692	—	119709
42	1-5/8	66	2-5/8	—	—	119618	—	—	119643	—	—	119668	—	—	119693	—	119710
		54	2-1/8	—	—	119619	—	—	119644	—	—	119669	—	—	119694	—	119711
		66	2-5/8	—	—	119620	—	—	119645	—	—	119670	—	—	119695	—	119712
SOLENOID COIL, PART NO. 83-1000-29 240V. 50Hz.							119394	119394	119394	119394	119394	119394	—	—	—	119394	119394

# EVAPORATOR PRESSURE REGULATING VALVES

ALSO KNOWN AS CONSTANT PRESS. VALVE, BACK PRESS., UPSTREAM, INLET PRESS., SUCTION LINE REGULATOR

PILOT & SMALL REGULATORS



**Parker**  
Refrigerating  
Specialties Company

DESCRIPTION

The A2 Type Pressure Regulators are compact, direct diaphragm operated for use with refrigerant liquid or vapour. Suitable for use with Ammonia, R12, R22, R502 and certain other refrigerants, oil and other approved fluids with similar pressure, temperature and corrosion characteristics. The Regulators are for use where a small inlet pressure regulator is required.

SPECIFICATIONS

Body Material: Cast Semi-steel.  
Seat Material: Lapped metal to metal.  
Diaphragm Material: Stainless Steel pre-formed.  
Maximum Fluid Temperature: 105°C (220°F).  
Minimum Fluid Temperature: -45°C (-50°F).  
Design Pressure (SWP): 2069 kPa (300 psig).

TYPES

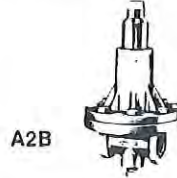
- A2B2/A2B — Small Inlet Pressure Regulators or Pilots.
- A2A — Small Inlet Pressure Regulator.
- A2BK — Reseating Relief Regulator.
- A2BP — Pneumatic or Differential Regulator.
- A2BT/A2AT — Temperature Operated Regulator.

Suction Line Capacities - kW (Tons) at Evap. Temp. - R717

Type	-40°C (-40°F)	-29°C (-20°F)	-18°C (0°F)	-7°C (20°F)	4.4°C (40°F)
A2B	1.4(0.4)	1.8(0.5)	2.1(0.6)	2.5(0.7)	3.2(0.9)
A2A	—	5.3(1.5)	1.3(1.8)	7.4(2.1)	9.5(2.7)

Based on 30°C (86°F) liquid and 14 kPa (2 psi) press. drop.

Cat. No.	Type	Flange Sizes & Styles		
		Std.	Also Avail.	
119730	A2B2	1/2" SW		3/8"
119731	A2B2-ST*	1/2" SW		
119732	A2B	1/2" SW		1/2"
119733	A2B-ST*	1/2" SW		
119734	A2A	3/4" SW		3/4"
119735	A2A-ST*	3/4" SW		
119736	A2BK	1/2" SW		FPT
119737	A2BK-ST*	1/2" SW		
119738	A2BP	1/2" SW		or
119739	A2BP-ST*	1/2" SW		
119740	A2BT	1/2" SW		SW
119741	A2BT-ST*	1/2" SW		
119742	A2AT	3/4" SW		
119743	A2AT-ST*	3/4" SW		



A2B



A2BT

\* Regulator complete with Strainer.

## A4 SERIES PRESSURE REGULATORS (Ammonia, R12, R22, R502)

The A4 Series Adaptomode Pressure Regulators use a unique modular construction which allows addition of adaptors and modules to provide virtually any control function for refrigeration application.

Design Pressure 2069 kPa (300 psig)

## ADAPTOMODE®



NOMINAL SUCTION CAPACITIES* A4 REGULATORS										Flow Coefficient	
PORT SIZE		R12		R22		R502		R717		Kv	Cv
mm	ins.	kW	Tons	kW	Tons	kW	Tons	kW	Tons		
20	3/4	10.6	3.0	16.2	4.6	13.0	3.7	38.7	11	6.2	7.2
25	1	14.8	4.2	22.5	6.4	18.3	5.2	52.8	15	8.6	10.0
32	1-1/4	25.7	7.3	38.7	11.0	32.0	9.1	91.4	26	15.0	17.5
40	1-5/8	49.2	14.0	73.9	21.0	59.8	17.0	172.0	49	28.6	33.4
50	2	73.9	21.0	113.0	32.0	91.4	26.0	257.0	73	42.4	49.5
65	2-1/2	102.0	29.0	158.0	45.0	127.0	36.0	352.0	100	60.0	70.0
75	3	148.0	42.0	225.0	64.0	183.0	52.0	528.0	150	86.0	100.0
100	4	201.0	57.0	302.0	86.0	246.0	70.0	703.0	200	116	135
125	5	302.0	86.0	457.0	130.0	387.0	110.0	1055.0	300	175	205
150	6	457.0	130.0	703.0	200.0	563.0	160.0	1653.0	470	270	315
200	8	914.0	260.0	1407.0	400.0	1125.0	320.0	3236.0	920	535	625

\* Nominal Capacities — R12, R22, R502 : 4.4°C (40°F) Evap. Temp. and 14kPa (2psi) pressure drop.  
: -7°C (20°F) Evap. Temp. and 14kPa (2psi) pressure drop.  
: R717

## A4 REGULATOR CAPACITIES — AMMONIA & OIL

HOT GAS DEFROST RELIEF CAPACITIES					
Nom. Relief Regulator sizes to be used with Refrig. Loads in Tons					
Port Size*		Evaporator Temperature			
mm	ins.	-7°C (20°F)	-18°C (0°F)	-29°C (-20°F)	-40°C (-40°F)
20	3/4	23	19	15	11
25	1	31	26	21	16
32	1-1/4	55	46	37	28
40	1-5/8	100	87	70	52
50	2	160	130	100	78
65	2-1/2	220	180	140	110
75	3	310	260	210	160

Nominal capacities are based on normal defrost times and defrost pressure of 483kPa (70psig). Defrost time will depend on amounts of liquid, frost and mass of evaporator as well as piping arrangement and connection locations. Next size larger regulator will shorten defrost time; next size smaller will lengthen time.

TONS HOT GAS BY-PASS. Typical : Compressor suction loading			
Port Size		Inlet Pressure	
		207 kPa (30psig)	1034 kPa (150psig)
mm		Outlet Pressure Range	
		0 to -51 kPa (0 to 15" Hg.)	310 to -51 kPa (45 psig to 15" Hg.)
20	3/4	34	110
25	1	47	150
32	1-1/4	82	270
40	1-5/8	160	510
50	2	230	760
65	2-1/2	330	1100
75	3	470	1500

Based on near saturated inlet gas and 1034kPa (150psig) ratings for 30°C (86°F) condensing, 207kPa (30psig) ratings for -7°C (20°F) condensing. Correction not needed for other gas or liquid temps.

LIQUID CAPACITIES					
Typical Application : A4AL as pump relief regulator					
PORT SIZE		For 4.4°C(40°F) liquid and press. drops listed			
		69kPa (10psi) P.D.		138kPa (20psi) P.D.	
mm	ins.	lb/min.	US. gpm	lb/min.	US. gpm
20	3/4	140	29	210	42
25	1	200	41	290	58
32	1-1/4	350	71	500	100
40	1-5/8	700	140	960	190
50	2	990	200	1400	290
65	2-1/2	1400	290	2000	400
75	3	2000	410	2900	580

Correction factors for temperatures between -40° and 30°C (-40° and 86°F) are negligible.

US GPM OIL CAPACITIES					
Typical : Screw compressor oil feed control					
Port Size		For 29.4° to 49°C (85° to 120°F) Oil (300 SSU viscosity) and press. drops listed			
		Pressure Drops : kPa (psi)			
mm	ins.	34kPa (5psi)	69kPa (10psi)	345kPa (50psi)	
20	3/4	17	24	54	
25	1	24	33	74	
32	1-1/4	41	58	130	
40	1-5/8	79	110	250	
50	2	120	160	370	
65	2-1/2	170	230	520	
75	3	240	330	750	

Based on no foaming of oil through regulator.

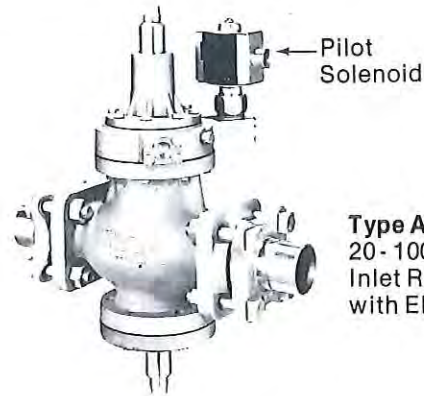
Refer Page 119-e for A4A Regulator Types, Sizes and Ordering Catalogue Nos.

Refer also to Page 119-f for A4A "Regulator Application Guide".

# EVAPORATOR PRESSURE REGULATING VALVES

ALSO KNOWN AS CONSTANT PRESS. VALVE, BACK PRESS., UPSTREAM, INLET PRESS., SUCTION LINE REGULATOR

Refrigerating  
Specialties Company



**Type A4AS**  
20- 100 mm, 3/4" - 4"  
Inlet Regulator  
with Electric Shut-Off

AVAILABLE SIZES – TYPES – ORDERING CATALOGUE NOS.

PORT SIZE		Connections SW Flange		A4A	A4AS	A4AB	A4ABS	A4AD	A4AK	A4AL	Strainer to suit Add Cat. No. below Type RSF	
mm	ins.	Std.	Also Avail	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Size(mm)	Cat. No.
20	3/4	3/4	1, 1 1/4	119750	119760	119770	119780	119790	119800	119810	25	121801
25	1	1	3/4, 1 1/4	119751	119761	119771	119781	119791	119801	119811	25	121801
32	1-1/4	1-1/4	1 1/2	119752	119762	119772	119782	119792	119802	119812	32	121802
40	1-5/8	1-1/2	2	119753	119763	119773	119783	119793	119803	119813	50	121803
50	2	2	1 1/2	119754	119764	119774	119784	119794	119804	119814	50	121803
65	2-1/2	2-1/2	—	119755	119765	119775	119785	119795	119805	119815	65	121804
75	3	3	—	119756	119766	119776	119786	119796	119806	119816	75	121805
100	4	4	—	119757	119767	119777	119787	119797	119807	119817	100	121806

CONTINUED

PORT SIZE		Connections SW Flange		A4AR	A4AT	A4AT-LLR	A4AM	A4AP	Strainer to suit Add Cat.No. below Type RSF		LPD Feature* Add Cat. No. below
mm	ins.	Std.	Also Avail	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Cat. No.	Size(mm)	Cat. No.	Cat. No. 119738- 119748
20	3/4	3/4	1, 1 1/4	119820	119830	119840	119850	119860	25	121801	
25	1	1	3/4, 1 1/4	119821	119831	119841	119851	119861	25	121801	
32	1-1/4	1-1/4	1 1/2	119822	119832	119842	119852	119862	32	121802	
40	1-5/8	1-1/2	2	119823	119833	119843	119853	119863	50	121803	
50	2	2	1 1/2	119824	119834	119844	119854	119864	50	121803	
65	2-1/2	2-1/2	—	119825	119835	119845	119855	119865	65	121804	
75	3	3	—	119826	119836	119846	119856	119866	75	121805	
100	4	4	—	119827	119837	119847	119857	119867	100	121806	

A4W SERIES (COMPACT BIG ONES) PRESSURE REGULATORS

PORT SIZE		Connection Welds directly in the line	A4W	A4WS	A4WB	Strainer to suit Add Cat. No. below Type RSW		LPD Feature* Add Cat. No. below
mm	ins.		Cat. No.	Cat. No.	Cat. No.	Size(mm)	Cat. No.	
125	5	5"	119870	119873	119876	125	121807	CAT. NO.
150	6	6"	119871	119874	119877	150	121808	119738-
200	8	8"	119872	119875	119878	200	121809	119738-

240 V 50 Hz Standard-230 Volt 50 Hz. Coil to suit Pilots (Manuf. Part No. 30 - 0041 - 06 49-2015-24 201525	CAT. NO. 121100
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\* LPD Feature: The Low Pressure Drop (LPD) Package, when added to any of the standard Type A4 family of regulators will allow operation with 3.4 kPa (1/2psi) pressure drop which can frequently result in considerable power savings, especially below -18°C (0°F).

NOTES

Refer Page 119-d for A2 Series Selection and Capacities + A4 Series Capacities.  
Refer Page 119-f for Refrigerating Specialties Co. "Regulator Application Guide".

# PRESSURE REGULATING VALVES



**Parker**  
Refrigerating  
Specialties Company

## Regulator Application Guide

1

The A4 Family of Regulators includes valves which control inlet, outlet or differential pressure. Each regulator is available with an assortment of additional variations which enable one regulator to perform several functions. The

most common arrangements are listed in this Guide. The A4A Adaptomode® Series is available 20 - 100 mm (¾"-4") ports; the A4W Series is available 125 - 200 mm (5" - 8") ports.

Type Suffix	Type	Function	Operation	Typical Applications
	A4A	Control inlet pressure.	Regulate at preset inlet pressure. Can be field adjusted. Opens on a rising inlet pressure.	1. Evaporator pressure control. 2. Condenser pressure control. 3. Any inlet pressure control.
S	A4AS	Control inlet pressure or shut off regulator.	Regulating when electrically energized; closed when not energized.	1. Close for temperature control. 2. Close for defrosting.
B	A4AB	Control inlet pressure or wide open regulator.	Regulating when not electrically energized; wide open when energized.	1. Wide open for maximum cooling. 2. Regulating for defrost. 3. Regulating for temp. control.
BS	A4ABS	Control inlet pressure. Shut off or wide open regulator.	Can be electrically closed or opened.	1. Regulating for temp. control. 2. Wide open for max. cooling. 3. Close for defrosting.
D	A4AD	Dual pressure control.	Regulate at lower pressure when electrically energized; at higher pressure when not energized.	1. Higher pressure for defrost. 2. Higher pressure for temperature control. 3. Internal pressure relief.
K	A4AK	Reseating relief regulator.	Opens wide above set point. Repeatedly reseats after operation.	1. Defrost relief. 2. Non-atmospheric relief. 3. High to low relief.
O	A4AO	Control outlet pressure.	Regulate at preset outlet pressure. Can be field adjusted. Opens on a drop in outlet pressure.	1. Crankcase pressure regulation. 2. Hot gas bypass; booster loading. 3. Condenser pressure control.
L	A4AL	Control pressure difference across regulator.	Regulate pressure difference at or below a pre-set amount.	1. Liquid pump relief regulator. 2. Reduce liquid or vapour line pressure.
M	A4AM	Motor changes pressure set point.	Potentiometer thermostat re-adjusts set-point to match evaporator temp. to a varying load.	1. Precise control of process cooling. 2. Liquid chillers. 3. For load change compensation.
P	A4AP	Air pressure changes set-point. (1:1 ratio). Also available A4A3P for 3:1 ratio.	Pneumatic thermostat readjusts set-point to match evaporator temp. to a varying load.	1. Precise control of process cooling. 2. Liquid chillers. 3. For load change compensation.
T	A4AT	Temperature bulb controls regulator set point.	Increase in temperature opens regulator; decrease in temperature closes regulator.	1. Process cooling systems. 2. Liquid chillers. 3. Systems with load change.
Opt. LLR	for A4AT	Limit the low pressure	Extreme 'hunting' is prevented and evaporator pressure cannot go below this setting regardless of abnormal warming of the thermal bulb.	1. Process cooling systems. 2. Liquid chillers. 3. Systems with load change.
E	A4AE A4AOE etc.	Control at external pressure.	Same as standard regulator except controlled pressure is sensed away from regulator.	1. Low Pressure Drop (A4AE). 2. Hot gas bypass (A4AOE).
R	A4AR	Main regulator is controlled by separate pilots. (See p.8, Cat. CC - 10 - available on application.	Main regulator modulates, closes or opens in response to pilots.	1. Simple inventory of regulator & pilots. 2. Convenient placement of pilots. 3. Unusual pilots or circuits.
Z	A4AZ	Not a complete regulator. Body Assembly to which modules can be added.	Can be built into most of the A4A Variation regulators. Has a Modudapter® adaptor.	Versatile unit for inventory along with Modules on page 3, Cat. CC - 10 - available on application.

The possible combinations of A4 Regulator variations is quite numerous. The Electric Shut-off "S", Wide-opening "B" and Dual "D" variations are used frequently in combination with the Compensated "M", "P", and "T" Regulators, Outlet "O" or

Differential "L" Regulators, or with themselves. Also any type of regulator is available with the main regulator A4AR separated from its pilot control valves. See page 8, Cat. CC - 10 - available on application.

Refer Pages 119-d and 119-e for details of Regulators mentioned in above "Guide".

# 119-g

## EVAPORATOR PRESSURE REGULATING VALVES

ALSO KNOWN AS CONSTANT PRESS. VALVE, BACK PRESS., UPSTREAM, INLET PRESS., SUCTION LINE REGULATOR

### MODEL 235 EVAPORATOR PRESSURE REGULATING VALVE

Capacity — R12 & R502 — ½ TON, R22 — ¾ TON.  
 Application — Operation of two or more evaporators at different temperatures with a single condensing unit.  
 — Beverage coolers and various commercial applications to control the evaporator coil in the water chilling section.

Available with a visual means of accurately setting operating pressure without using a gauge.

### MODEL 238 EVAPORATOR PRESSURE REGULATING VALVE

Capacity — R12 — 1 TON.  
 Application — Water chilling units.  
 Air coils where frosting is not desired.  
 Close regulation of humidity.

Non-visual adjustment by means of a slotted adjusting stem, sealed by plastic cap.

### MODEL 239 INLET PRESSURE REGULATING VALVE

Capacities — Refer following Tech. Pages.  
 Application — Higher capacity evaporator pressure regulators.  
 — High side pressure relief valve.  
 — High side pressure control device on air cooled refrigeration system condensers.

Model 239A — Bellows type ¾" orifice valve that operates in response to valve inlet pressure.  
 When adjusted for a certain opening point, the valve remains closed until inlet pressure builds up to the set point.

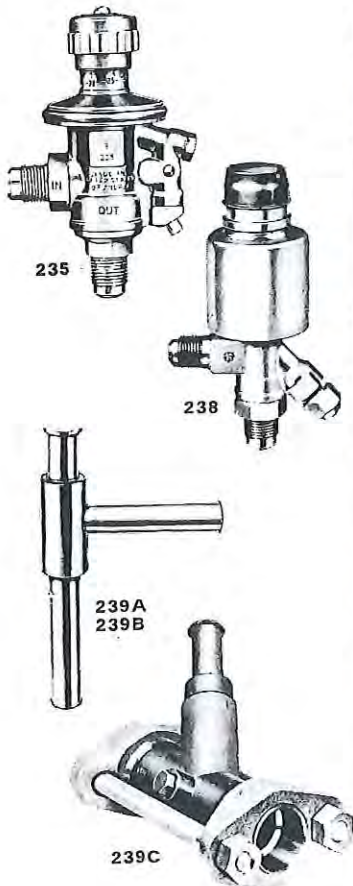
Model 239B — Similar to the 239A except for a 1¼" orifice.

Model 239C — Features a large refrigerant capacity in a relatively small valve body. It has a non-chattering, modulating butterfly type valve operator.



**SINGER**  
CONTROLS DIVISION

MODELS 235 — 238 — 239A — 239B — 239C



VALVE TYPE			Connections Size & Type	Operating Adjustment Range		Opening Point Setting kPa (psig)	Bellows Rating kPa (psig)	
CAT. NO.	Model	Device No.		kPa	(psig)			
<b>MODEL 235 &amp; 238 EVAPORATOR PRESSURE REGULATOR</b>								
119176	235SG	40375	½" M.F.I.	0 - 276	(0 - 40)	Marked on collar below Adjust. knob		
119177	235SG	40376	5/8" M.F.I.					
119178	235HG	50634	½" M.F.I.	138 - 403	(20 - 70)			
119179	238	238-005	½" M.F.I.	0 - 276	(0 - 40)			
<b>MODEL 239A INLET PRESSURE REGULATOR — ¾" ORIFICE</b>								
119180	239AWL	239-137	5/8" ODS	172 - 1965	(25 - 285)	—	2930  (425)	
119181	239AWL	239-508	7/8" ODS					
119182	239AWL	239-133	7/8" ODS	138 - 552	(20 - 80)	—		
119183	239AWL	239-136	7/8" ODS					
119184	239AWL	239-147	1-1/8" ODS					
119185	239AWL	239-158	7/8" ODS	103 - 1069	(15 - 155)	—		
119186	239AWL	239-139	7/8" ODS	620 - 2413	(90 - 350)	1724 (250)		
<b>MODEL 239B INLET PRESSURE REGULATOR — 1¼" ORIFICE</b>								
119187	239BL	239-301	1-3/8" ODS	414 - 1586	(60 - 230)	—	2069	
119188	239BL	239-301*	1-3/8" ODS					
119189	239BL	239-307	1-3/8" ODS	35 - 414	(5 - 60)	—		
119190	239BL	239-309	1-1/8" ODS	414 - 1586	(60 - 230)	—	(300)	
119191	239BL	239-317	1-1/8" ODS					
119192	239BL	239-315	1-3/8" ODS	207 - 517	(30 - 75)	—	2930 (425)	
* With ¼" SAE male flare gauge connection (with Dill valve) on inlet spud								
<b>MODEL 239C INLET PRESSURE REGULATOR — HIGH CAPACITY BUTTERFLY</b>								
Flange Connection Kit (1 per Valve)								
Cat. No.	Kit No.	Size						
118135	179-519	1-1/8 ODF.S	119193	239C	239-701*	103 - 620	(15 - 90)	2069
118136	169-921	1-3/8 ODF.S	119194	239C	239-702*	483 - 1379	(70 - 200)	(300)
118137	179-067	1-5/8 ODF.S	119195	239C	239-703*	758 - 2000	(110 - 290)	2930 (425)
			119196	239C	239-704*	1034 - 2517	(150 - 365)	
* With ¼" SAE male flare gauge connection (with Dill valve) on inlet spud								

FOR CAPACITY DATA REFER TECH. PAGE 119-e

# CAPACITY RATING TABLES 'AP' TYPE 237, 239 VALVES



**SINGER**  
CONTROLS DIVISION

## CAPACITY CHARTS

Model 237 and 239 valve capacity ratings are shown in the following tables. Valves are rated for (1) high pressure gas, (2) refrigerant liquid, and (3) low pressure (suction) gas. The rating conditions are shown below each chart. At the various pressure drops the valve capacities listed are at maximum stroke .100". In selecting valves for any application it is suggested that valves be sized for the system maximum capacity requirement, with some safety factor included. Selecting a valve to provide the maximum capacity required at 2/3 or 3/4 of total valve rated capacity is generally recommended.

## VALVE DIFFERENTIAL

Controls Division pressure regulating valves are either diaphragm or bellows type. System pressure operates the valve mechanism directly, not by means of a pilot mechanism. Therefore, all four models in this series are "differential" type valves, as a pressure differential exists (during operation) between valve opening point and valve operating point. All valves are adjustable and setting the valve for any application actually involves setting the valve's opening point. The operating pressure of inlet pressure regulating valves is above the opening point as the valves stroke open on inlet pressure increase.

The operating pressure of outlet pressure regulating valves is below the opening point as the valves stroke open on outlet pressure decreases.

## EFFECT OF SYSTEM PRESSURES

Controls Division Models 237 and 239 pressure regulating valves employ two types of bellows as the flexible element:

1. A brass bellows (Models 237B, 239B).
2. A beryllium copper bellows, silver soldered to the valve body. (Models 237A, 239A, 237C & 239C).

A more than adequate safety factor is allowed in maximum bellows pressure for normal system operation. However, warning tags or labels on all valves should be observed and care taken to avoid system pressures above the bellows design maximum. System pressure above this maximum will shorten bellows life considerably.

HIGH PRESSURE LIQUID REFRIGERANT CAPACITY (A, B and C Size Valves - Model 239 only)						
PRESSURE DROP ACROSS VALVE (PSI)	TONS OF REFRIGERATION					
	239A		239B		239C	
	R-12	R-22	R-12	R-22	R-12	R-22
1	6.80	9.20	11.60	15.60	30	38.6
2	8.60	11.60	16.40	22.10	42	54.5
4	10.70	14.40	23.50	31.80	60	77.1
9	14.30	19.30	35.20	47.70	90	115.5
16	17.20	23.20	47.00	63.60	120	154.0
25	19.90	26.80	58.00	78.30	150	192.5

Capacities are based on 37.8°C (100°F) condensing temperature and 4.4°C (40°F) evaporator temperature.

NOTE : For R502 Capacities, multiply R12 Capacity (above) by .875  
For R500 Capacities, multiply R12 Capacity (above) by 1.15

HIGH PRESSURE (DISCHARGE) GAS CAPACITY (A, B and C Size Valves - 237 and 239)						
PRESSURE DROP ACROSS VALVE (PSI)	TONS OF REFRIGERATION					
	237A and 239A		237B and 239B		237C and 239C	
	R12	R22	R12	R22	R12	R22
2	2.30	3.50	4.50	7.15	11.65	17.75
4	2.85	4.40	6.60	10.20	16.50	25.00
9	3.55	5.80	9.90	15.40	24.80	37.95
16	4.70	6.95	13.20	20.65	34.00	50.20
25	5.60	8.65	16.50	25.60	41.20	62.70
36	6.70	10.35	20.00	30.80	49.50	75.00
50	11.50	17.60	22.70	35.70	58.30	88.80
75	14.10	21.60	27.90	43.80	71.50	108.50
100	16.20	24.80	32.10	50.30	82.50	125.00
125	18.10	27.80	35.90	56.50	92.00	140.00
150	19.80	30.40	39.50	61.80	101.00	153.50
175	21.50	32.90	42.60	66.80	109.00	165.50
200	23.00	35.20	45.50	71.50	116.50	177.30
250	25.80	39.50	52.00	80.00	130.00	
300		43.20		87.70	143.00	
350		46.70		94.80		
400		51.30		101.00		

Capacities given are for 37.8°C (100°F) saturated gas entering the valve and -6.7°C (20°F) evaporating temperature. Capacities are correct within 5% for saturated gas temperature between 26.7°C (80°F) and 71.1°C (160°F) at valve inlet, and for evaporator temperatures between 4.4°C (40°F) and -17.8°C (0°F).

NOTE : For R502 Capacities, multiply R12 Capacity (above) by 1.18  
For R500 Capacities, multiply R12 Capacity (above) by 1.22

LOW PRESSURE (SUCTION) GAS CAPACITY (A, B, and C Size Valves - 237 and 239 only)							
Evap. Press. and Temperature	Pressure Drop Across Valve (PSI)	TONS OF REFRIGERATION					
		237A and 239A		237B and 239B		237C and 239C	
		R-12	R-22	R-12	R-22	R-12	R-22
69 PSIG R-22 37 PSIG R-12 40°F	½	.78	1.14	1.46	2.10	3.78	5.55
	1	1.09	1.59	2.07	3.01	5.34	7.85
	2	1.50	2.20	3.00	4.32	7.55	11.10
	5	2.40	3.49	4.80	6.88	11.95	17.60
	10	3.39	4.94	6.60	9.55	16.85	24.80
43.3 PSIG R-22 21. PSIG R-12 20°F	½	.61	.94	1.23	1.79	3.08	4.56
	1	.87	1.31	1.73	2.53	4.35	6.45
	2	1.21	1.82	2.43	3.60	6.16	9.14
	5	1.96	2.92	3.86	5.78	9.73	14.40
	10	2.76	4.12	5.40	8.02	13.77	20.40
24.1 PSIG R-22 9.2 PSIG R-12 0°F	½	.46	.72	.925	1.44	2.40	3.60
	1	.66	1.04	1.35	2.08	3.40	5.10
	2	.94	1.47	1.89	2.93	4.80	7.20
	5	1.55	2.37	3.10	4.75	7.60	10.60
	10	2.17	3.34	4.27	6.53	10.71	16.08
10.3 PSIG R-22 0.6 PSIG R-12 -20°F	½	.32	.54	.73	1.13	1.86	2.84
	1	.48	.79	1.02	1.65	2.63	4.02
	2	.70	1.12	1.43	2.26	3.72	5.66
	5	1.16	1.85	2.27	3.60	5.88	8.96
	10	1.63	2.60	3.22	5.14	8.30	12.65

NOTE : For R502 Capacities, multiply R12 Capacity (above) by 1.18  
For R500 Capacities, multiply R12 Capacity (above) by 1.22

ABOVE VALVE CAPACITIES REFER TO THE FOLLOWING :

CRANKCASE PRESS. REG. VALVES - PAGE 118-c & EVAPORATOR PRESS. REG. VALVES - PAGE 119-e



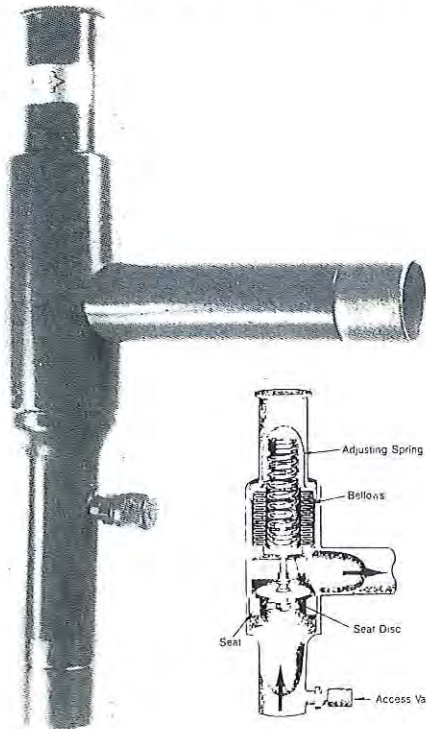
# SMALL CAPACITY Pressure Regulators

IPR/OPR Product Line

FOR R12 — R22 — R502

## EVAPORATOR PRESSURE REGULATING VALVES

ALSO KNOWN AS CONSTANT PRESS. VALVE, BACK PRESS., UPSTREAM, INLET PRESS., SUCTION LINE REGULATOR



The Alco Series IPR Evaporator Pressure Regulator is a Direct Acting Pressure Regulator which is designed to maintain a pre-determined minimum evaporator pressure regardless of load or suction line changes.

They are used on such applications as water chilling units, air coils where frost is not wanted, and systems where close humidity control is required. They can be used on multiple evaporator systems on one or more evaporators to maintain pressures higher than the common suction line.

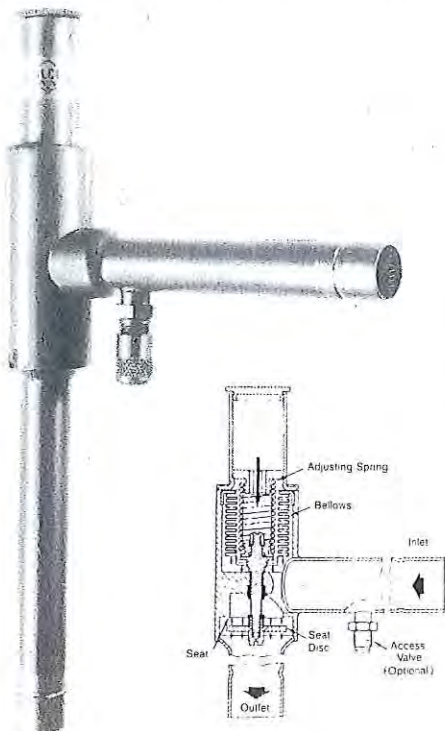
CAT. NO.	MODEL	OPERATING RANGE		CONNECTIONS ODF SOLDER INS.
		kPa	PSI	
	IPR - 6	0/345, 207/690	0/50, 30/100	5/8, 7/8, 1-1/8
	IPR - 10	0/345, 207/690	0/50, 30/100	7/8, 1-1/8, 1-3/8

MODEL	NOMINAL CAPACITY — kW & TONS *					
	R12		R22		R502	
	kW	TONS	kW	TONS	kW	TONS
IPR - 6	2.8	0.8	3.8	1.1	3.2	0.93
IPR - 10	5.9	1.7	7.9	2.3	6.6	1.91

\* Nominal Capacity based on evap. temp. -1°C (+30°F) and P.D. of 14 kPa (2 psi).

## CRANKCASE PRESSURE REGULATING VALVES

ALSO KNOWN AS HOLD BACK VALVES, SUCTION PRESSURE, STARTING, OUTLET OR DOWNSTREAM REGULATORS



The Alco Series OPR Crankcase Pressure Regulator is designed to limit the crankcase pressure to a maximum pre-determined pressure to prevent overloading of the compressor motor.

The OPR is used in the suction line between the compressor and the evaporator and must be installed downstream of any other controls or accessories.

CAT. NO.	MODEL	OPERATING RANGE		CONNECTIONS ODF SOLDER INS.
		kPa	PSI	
	OPR - 6	0 / 414	0 / 60	5/8, 7/8, 1-1/8
	OPR - 10	0 / 414	0 / 60	7/8, 1-1/8, 1-3/8

MODEL	NOMINAL CAPACITY — kW & TONS *					
	R12		R22		R502	
	kW	TONS	kW	TONS	kW	TONS
OPR - 6	0.6	1.72	6.6	1.92	4.6	1.33
OPR - 10	12.2	3.54	13.7	3.94	9.5	2.74

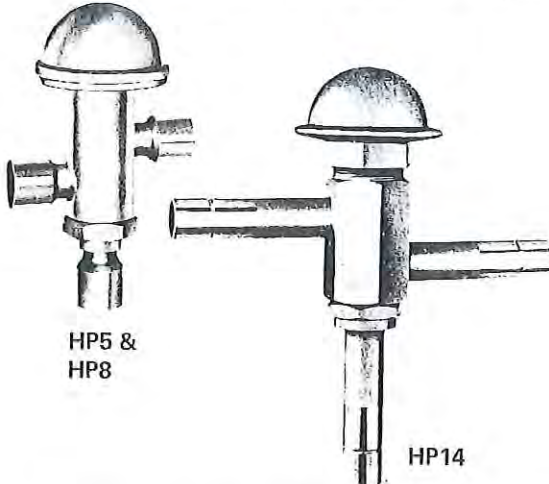
\* Nominal Capacity based on 38°C (100°F) condensing temperature, 5.6°C (10°F) superheat, 414kPa (60 psi) setting, 69 kPa (10 psig) suction pressure and 14 kPa (2 psi) pressure drop.

# CONDENSING PRESSURE REGULATORS HEAD - WINTER - DISCHARGE PRESSURE CONTROLS FOR AIR COOLED CONDENSERS



## HeadMaster HEAD PRESSURE CONTROL SERIES HP5, HP8 & HP14

DEVELOPED SPECIFICALLY TO MAINTAIN PROPER AIR COOLED CONDENSER PRESSURES DURING PERIODS OF LOW OUT-DOOR AMBIENT CONDITIONS.



The application of air cooled condensers for year round operation or during periods of low ambient, requires some means of control to maintain adequate condensing temperatures to ensure proper system operation. It is essential that proper liquid refrigerant pressure be controlled to:

1. Maintain liquid subcooling and prevent liquid line flash gas.
2. Provide adequate pressure at the inlet side of the Thermo valve to obtain sufficient pressure drop across the valve port.

The HeadMaster control is a three-way modulating valve which eliminates the need for special piping or multiple control valves. As a single unit it simplifies piping and reduces the installation costs.

Metering discharge gas into the liquid produces a higher pressure at the condenser outlet, thus reducing the flow and allowing a level of condensed liquid to rise in the condenser. This flooding of the condenser with liquid reduces the available condenser surface. The result is to increase the operating temperature difference and produce a consistent condensing temperature.

R12		CONN. ODF	R22, R502	
CAT. NO.	TYPE		CAT. NO.	TYPE
12097	HP5T3-A	3/8"	12099	HP5T3-B
12098	HP5T4-A	1/2"	120100	HP5T4-B
120101	HP8T4-A	1/2"	120107	HP8T4-B
120102	HP8T5-A	5/8"	120108	HP8T5-B
120103	HP8T7-A	7/8"	120109	HP8T7-B
120104	HP14T7-A	7/8"	120110	HP14T7-B
120105	HP14T9-A	1-1/8"	120111	HP14T9-B
120106	HP14T11-A	1-3/8"	120112	HP14T11-B

VALVE SERIES	REFRIG.	NOMINAL CAPACITY — TONS *				
		PRESSURE DROP — PSI				
		1	2	3	4	5
HP5 HP8 HP14	R12	1.7	2.4	3.0	3.4	3.8
		4.6	6.5	8.0	9.2	10.3
		11.7	16.5	20.2	23.6	26.4
HP5 HP8 HP14	R22	2.2	3.2	3.9	4.5	5.0
		6.0	8.5	10.5	12.0	13.5
		14.7	20.8	25.6	29.7	33.8
HP5 HP8 HP14	R502	1.5	2.1	2.6	3.0	3.3
		3.9	5.5	6.7	7.8	8.7
		10.1	14.3	17.6	20.5	23.0

\* Nominal Capacity based on 38°C (100°F) liquid temperature and 5°C (40°F) evaporator temperature.

15.71 Sept. 1980



## Condensing-Pressure Regulators for Air-Cooled Condensers. Types CPR + CPC

The regulator system CPR + CPC is used to maintain a constant and sufficiently high condensing pressure in air-cooled condensers at low ambient temperatures. The CPC regulator regulates the flow depending on the inlet pressure and closes when the pressure falls below the pressure setting. If the pressure falls below the setting of the CPR regulator, its degree of opening is reduced correspondingly. Consequently, the condenser is partially filled with liquid so that the effective condensing surface is reduced. Hence the condensing pressure required is restored. To determine the liquid charge in the system, it is necessary to consider the partial filling of the condenser during winter operation. Since the real regulating job during winter operation is to keep the receiver pressure at a suitably high value, Type CPR is combined with a regulator Type CPC 12 which is installed in the bypass line. The degree of opening of Type CPC is determined exclusively by the receiver pressure and the setting.

CAT. NO.	TYPE & SIZE	CODE NO.	CONN. ODS	RANGE	MAX. PERM. TEMP.	MAX. TEST PRESS.	NOMINAL MAX. LIQUID CAPACITY *					
							R12		R22		R502	
							TONS	kW	TONS	kW	TONS	kW
12084	CPR 12	34N0115	1/2"	71-250 PSIG	100°C (212°F)	377 PSIG	2.4	8.4	3.1	10.9	2.1	7.4
12085	CPR 15	34N0116	5/8"				4.0	14.1	5.0	17.6	3.7	13.0
12086	CPR 22	34N0118	7/8"				8.0	28.2	10.3	36.2	7.3	25.7
12087	CPR 28	34N0120	1-1/8"				13.3	46.8	17.0	59.8	11.7	41.2
12088	CPR 35	34N0121	1-3/8"				21.0	73.9	26.3	92.5	18.3	64.4
12089	CPC 12	34N0181	1/2"	0-185 PSIG	100°C (212°F)	377 PSIG	With pressure gauge connection.					

\*Nominal Capacity indicated at -10°C(+14°F) evaporating temperature and +30°C(+86°F) condensing temperature.

KK.30.A2.02





Refrigerating  
Specialties Company

**SOLENOID VALVES**

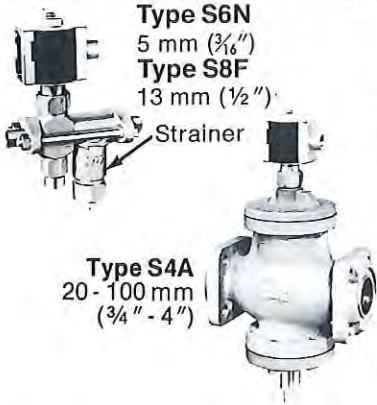
FOR AMMONIA

ALSO SUITABLE FOR R12 - R22 - R502

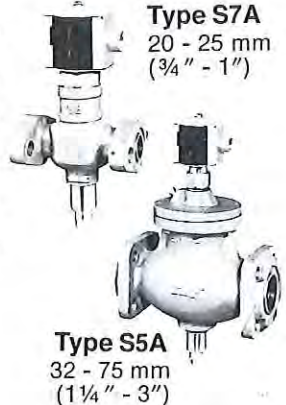
**APPLICATION & SELECTION GUIDE**

Refrigerant Application	Refrigerant Temperature Range	VALVE MOST RECOMMENDED—Listed by Port Size													
		5 mm 3/16"	13 mm 1/2"	20 mm 3/4"	25 mm 1"	32 mm 1 1/4"	40 mm 1 5/8"	50 mm 2"	65 mm 2 1/2"	75 mm 3"	100 mm 4"	125 mm 5"	150 mm 6"	200 mm 8"	
LIQUID	Conventional warm high pressure	S6N	S8F	S7A	S7A	S5A	S5A	S5A	S5A	S5A	S4A	S4W	S4W	S4W	
	Above -50°C (-60°F)	S6N	S8F	S4A	S4A	S4A	S4A	S4A	S4A	S4A	S4A	S4W	S4W	S4W	
SUCTION	Above -30°C (-25°F)	S6N	S8F	S7A	S7A	S5A	S5A	S5A	S5A	S5A	S4A	S4W	S4W	S4W	
	Above -50°C (-60°F) Normally open	Use larger size →				CK-2	CK-2	CK-2	CK-2	CK-2	CK-2	CK-2	CK-2	CK-2	—
	Above -50°C (-60°F) Normally closed	Use larger size →						S9A	S9A	S9A	S9A	S9W	S9W	S9W	S9W
HOT GAS DEFROST	Below 105°C (220°F)	S6N	S8F	S4A	S4A	S4A	S4A	S4A	S4A	S4A	S4A	S4W	S4W	S4W	
HOT GAS BYPASS Compressor Unloading	Below 105°C (220°F)	S6N	S8F	S7A	S7A	S4A	S4A	S4AE	S4AE	S4AE	—	—	—	—	

Recommendations assume no highly viscous oil, dirt, moisture or foreign substance in refrigerant; also no abnormal shock impact below -30° C (-25° F).



- FEATURES**
- S6N** : Direct operated - Electrically held open - No minimum pressure drop - Compact - Heavy duty.
  - S8F** : Pilot operated - All purpose solenoid - Low or high temperatures - Low pressure drop.
  - S4A** : Pilot operated - Positive spring closing - Excellent for hot gas or low temperature liquid.
  - S7A** : Pilot operated - Electrically held open - No minimum pressure drop - Excellent for medium temperature liquid or suction.
  - S5A** : Pilot operated - Low pressure drop - Excellent for medium temperature liquid or suction - Not for hot gas.
  - S4W** : Pilot operated - Positive spring closing - Excellent for hot gas or low temperature liquid - Compact and lightweight - Welds directly into the line



**GENERAL SPECIFICATIONS**

- Maximum opening pressure differential : 1896 kPa (275 psi)
- Maximum fluid temperature : 105°C (220°F)
- Design pressure : 2069 kPa (300 psig)
- Metal seats lapped for low bubble tolerance
- Manual opening stem - With or without strainers

VALVE		PORT SIZE		CONNECTIONS		STRAINER		FLOW COEFF.		Min. P.D. to wide open		Min. Fluid Temp.	
CAT. NO.	TYPE	mm	ins.	Std.	Also Avail.	CAT. NO.	Size mm	kV	Cv	kPa	psi	°C	
121810	S6N	5	3/16	1/2	3/4	Strainer only		0.5	0.6	0	0	-50	
121811	S6N-ST*	5	3/16	1/2	3/4	for Port Sizes up to 13mm Type NTFF		0.5	0.6	0	0	-50	
121812	S8F	13	1/2	1/2	3/4	121800	13	2.3	2.7	7	1	-50	
121813	S8F-ST*	13	1/2	1/2	3/4	121800	13	2.3	2.7	7	1	-50	
For Strainer to suit Add Cat. No. →						TYPE RSF							
121814	S4A	20	3/4	3/4	1, 1 1/4	121801	25	6.2	7.2	14	2	-50	
121815	S7A	20	3/4	3/4	1, 1 1/4			6.8	8.0	0	0	0	-30
121816	S4A	25	1	1	3/4, 1 1/4			8.6	10.0	14	2	2	-50
121817	S7A	25	1	1	3/4, 1 1/4	121802	32	8.6	10.0	0	0	-30	
121818	S4A	32	1 1/4	1 1/4	1 1/2			15.0	17.5	14	2	2	-50
121819	S5A	32	1 1/4	1 1/4	1 1/2	121803	50	16.3	19.0	7	1	-30	
121820	S4A	40	1-5/8	1 1/2	2			28.6	33.4	14	2	2	-50
121821	S5A	40	1-5/8	1 1/2	2			31.7	37.0	7	1	1	-30
121822	S4A	50	2	2	1 1/2	121804	65	42.4	49.5	14	2	-50	
121823	S5A	50	2	2	1 1/2			43.7	51.0	7	1	1	-30
121824	S4A	65	2 1/2	2 1/2	—	121805	75	59.9	70.0	14	2	-50	
121825	S5A	65	2 1/2	2 1/2	—			70.2	82.0	7	1	1	-30
121826	S4A	75	3	3	—	121806	100	86.0	100.0	14	2	-50	
121827	S5A	75	3	3	—			98.0	115.0	7	1	1	-30
121828	S4A	100	4	4	—			139.0	162.0	14	2	-50	
Welds Directly in the line						Type RSW							
121830	S4W	125	5	5	—	121807	125	193.0	225.0	14	2	-50	
121831	S4W	150	6	6	—	121808	150	304.0	355.0	14	2	-50	
121832	S4W	200	8	8	—	121809	200	621.0	725.0	14	2	-50	

SPECIFICATIONS	
Seat Material	
S6N (5)	Teflon
S4A (20-32)	
S5A (32)	
S8F (13)	Synthetic
S7A (20-25)	
S4A (40-100)	Metal
S5A (40-75)	
S4W (125-200)	

Body Material	
S6N, S8F	Steel
All Others	Semi-Steel

ELECTRICAL SOLENOID COILS	
CAT. NO.	Volts/Freq.
121100	230/50
12199	115/50
12197	32/50
12198	24/50
12196	230-6*/50
*Coil for 6V Pilot Light only	
Coil Insulation	
Moulded Waterproof Class B	

\* Suffix "ST" denotes valve complete with strainer

FULL RANGE OF SPARE/REPLACEMENT PARTS AVAILABLE CAPACITIES - Refer Tech. Page 121-C