

# CPH(E) DIRECT OPERATED HOT GAS BYPASS REGULATOR

CPHE Series Direct Acting Take-A-Part Hot Gas Bypass Regulators are designed for use on light commercial systems. They provide precision system capacity and are designed for field service without removing the body flange. When suction pressure decreases below set point, the regulator opens and allows discharge gas to be bypassed.

## FEATURES AND SPECIFICATIONS

- ☆ SAE external equalizer standard
- ☆ Sizes available: 1 thru 6
- ☆ ODF and ODF x ODM connections are available
- ☆ External air connection available for pneumatic compensation (add EAC prefix – example: EAC CPHE)
- ☆ Adjustment Range: 0-80 psig (factory setting 20 psig)
- ☆ UL file number SA5312
- ☆ CSA file number LR44005
- ☆ CRN file number OC0824.9 (see page A)



## ORDERING INFORMATION FOR CPH(E) VALVES

PCN	DESCRIPTION
088025	CPHE 1 SAE EE 3/8 x 5/8 ODF ANG
087274	CPHE 1 SAE EE 3/8 x 5/8 ODF S/T
087774	CPHE 2 SAE EE 1/2 x 5/8 ODF ANG
087887	CPHE 2 SAE EE 1/2 x 5/8 ODF S/T
036903	CPHE 3 SAE EE 7/8 x 1-1/8 ODF ANG
087357	CPHE 3 SAE EE 7/8 ODF/1-1/8 ODM S/T
081348	CPHE 4 SAE EE 7/8 ODF/1-1/8 ODM ANG
044783	CPHE 4 SAE EE 7/8 ODF/1-1/8 ODM S/T
045225	CPHE 5 SAE EE 7/8 ODF/1-1/8 ODM ANG
037802	CPHE 5 SAE EE 7/8 ODF/1-1/8 ODM S/T
028619	CPHE 6 SAE EE 1-1/8X1-1/8 ODM ANG
038219	CPHE 6 SAE EE 1-1/8X1-1/8 ODM S/T

**For conditions other than nominal, divide required capacity by the appropriate multiplier found on page 70.**

## NOMENCLATURE EXAMPLE: CPHE 3 SAE EE 3/8 x 5/8 ODF ANG

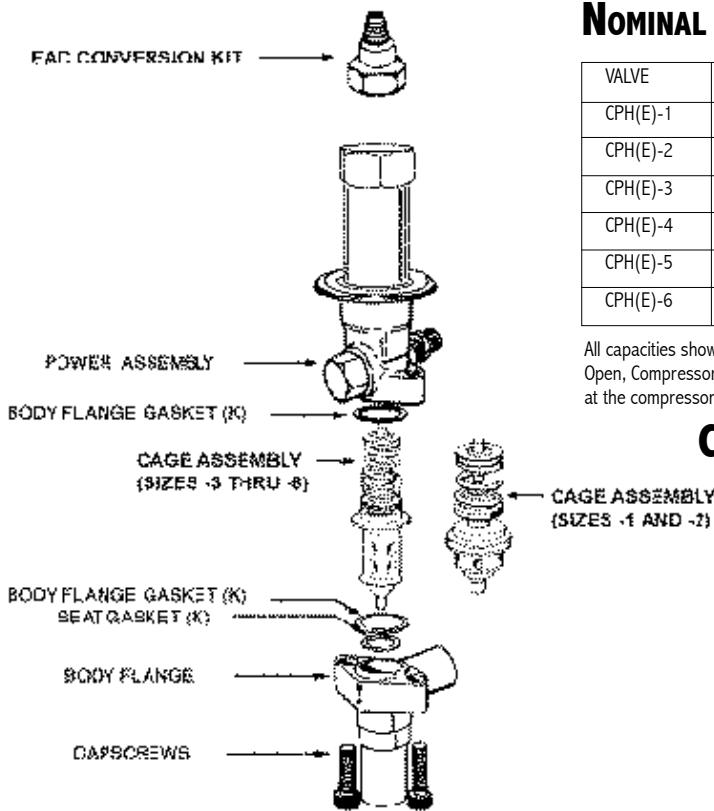
CPH	E	3	SAE EE	3/8	x	5/8	ODF	ANG
Valve Series	External Equalizer (omit on CPHE1 & 2 for internal equalizer)	Size	1/4" SAE male External Equalizer	Inlet Connection Size		Outlet Connection Size	Connection Type	Connection Style

# NOMINAL CAPACITY TABLE IN TONS (kW)

VALVE	R-12	R-134a	R-22	R-407C	R-507/404A	R-502
CPH(E)-1	0.4 (1.4)	0.5 (1.7)	0.7 (2.5)	0.7 (2.5)	0.7 (2.4)	0.6 (2.2)
CPH(E)-2	0.7 (2.3)	0.8 (2.8)	1.2 (4.2)	1.2 (4.2)	1.2 (4.2)	1.0 (3.5)
CPH(E)-3	1.2 (4.2)	1.6 (5.6)	2.3 (8.0)	2.3 (8.0)	2.2 (7.6)	2.0 (6.9)
CPH(E)-4	3.0 (10.4)	3.8 (13.2)	5.5 (19.4)	5.5 (19.4)	5.3 (18.4)	4.8 (16.7)
CPH(E)-5	3.6 (12.5)	4.5 (15.6)	6.7 (23.2)	6.7 (23.2)	6.4 (22.2)	5.8 (20.1)
CPH(E)-6	4.6 (16.0)	5.8 (20.1)	8.5 (29.5)	8.5 (29.5)	8.2 (28.5)	7.4 (25.7)

All capacities shown are based on 40°F Evaporator Temperature, 100°F Condensing Temperature, Valve Full Open, Compressor Discharge Temperature is 50°F higher than Isentropic Compression and 25°F Superheat at the compressor inlet for extended capacity visit [www.emersonclimate.com/canada](http://www.emersonclimate.com/canada).

## CPH(E) REPLACEMENT PARTS AND EXPLODED VIEW



CAGE ASSEMBLY		
VALVE	PART #	PCN
CPH(E)1	X22440-B5B	037043
CPH(E)2	X22440-B8B	037049
CPH(E)3	X11873-B5B	037190
CPH(E)4	X9117-B9B	029429
CPH(E)5	X9166-B10B	070738
CPH(E)6	X9144-B13B	021067

Consists of cage assembly and gaskets.

BODY FLANGE		
ANGLE STYLE	PART #	PCN
3/8 x 5/8 ODF	C501-5	065748
1/2 x 5/8 ODF	C501-7	065861
7/8 ODF x 1-1/8 ODM	10331	029411
7/8 ODF x 1-1/8 ODM	9153	029523
7/8 ODF x 1-1/8 ODM	9151	033290
1-1/8 x 1-1/8 ODM	9149	028030
STRAIGHT-THRU STYLE	PART #	PCN
3/8 x 5/8 ODF	9761-3	027771
1/2 x 5/8 ODF	9761-4	027268
7/8 ODF x 1-1/8 ODM	10332	032988
7/8 ODF x 1-1/8 ODM	9152	027918
7/8 ODF x 1-1/8 ODM	9150	028849
1-1/8 x 1-1/8 ODM	9148	029512

Consists of body flange.

EAC CONVERSION KIT		
KIT	PART #	PCN
EAC CONVERSION	X10227-2	042475

Consists of gasket, 1/4 SAE fitting and seal cap.

POWER ASSEMBLY		
VALVE	PART #	PCN
CPH1, 2, 3	X7118-3	056515
CPH(E)1, 2, 3	X7118-4	026296
CPH(E)4, 5, 6	X7428-2	029055

Consists of power assembly and body flange gasket.

CAPSCREWS		
VALVE	PART #	PCN
CPH(E)1, 2	PS286	021057
CPH(E)3, 4	PS259	020829
CPH(E)5, 6	PS370	021064

# EXTENDED HOT GAS BYPASS MULTIPLIER FACTOR TABLES

## R12 TABLE OF MULTIPLIERS – FAHRENHEIT

COND. TEMP. °F	EVAPORATOR TEMPERATURE °F									
	50	40	30	20	10	0	-10	-20	-30	-40
80	0.952	0.927	0.905	0.884	0.862	0.840	0.816	0.793	0.770	0.747
100	1.071	1.000	0.977	0.953	0.928	0.904	0.879	0.854	0.827	0.802
120	1.235	1.205	1.175	1.143	1.110	1.079	1.044	1.012	0.977	0.946
140	1.439	1.399	1.359	1.318	1.277	1.236	1.192	1.151	1.107	1.065

## R22 TABLE OF MULTIPLIERS – FAHRENHEIT

COND. TEMP. °F	EVAPORATOR TEMPERATURE °F									
	50	40	30	20	10	0	-10	-20	-30	-40
80	0.836	0.819	0.804	0.786	0.770	0.752	0.734	0.716	0.696	0.678
100	1.023	1.000	0.981	0.958	0.937	0.913	0.889	0.865	0.841	0.791
120	1.230	1.177	1.153	1.124	1.095	1.066	1.038	1.008	0.976	0.947
140	1.402	1.366	1.335	1.298	1.264	1.227	1.190	1.153	1.113	1.076

## R134a TABLE OF MULTIPLIERS – FAHRENHEIT

COND. TEMP. °F	EVAPORATOR TEMPERATURE °F									
	50	40	30	20	10	0	-10	-20	-30	-40
80	0.810	0.792	0.775	0.756	0.737	0.719	0.699	0.679	0.659	0.639
100	1.027	1.000	0.987	0.956	0.931	0.906	0.880	0.854	0.827	0.800
120	1.231	1.198	1.166	1.132	1.098	1.062	1.026	0.991	0.954	0.917
140	1.440	1.396	1.353	1.307	1.263	1.217	1.170	1.122	1.074	1.026

## R404A/507 TABLE OF MULTIPLIERS – FAHRENHEIT

COND. TEMP. °F	EVAPORATOR TEMPERATURE °F									
	50	40	30	20	10	0	-10	-20	-30	-40
80	0.905	0.872	0.863	0.824	0.816	0.790	0.767	0.728	0.703	0.677
100	1.045	1.000	0.989	0.943	0.929	0.896	0.864	0.813	0.780	0.745
120	1.170	1.111	1.092	1.026	1.010	0.966	0.926	0.856	0.812	0.768
140	1.165	1.073	1.053	0.971	0.949	0.896	0.841	0.754	0.699	0.643

# HOT GAS BYPASS REGULATORS EXTENDED CAPACITIES

## CPH(E) FOR R134A IN TONS (FA8 VALVES OBSOLETE REPLACED BY EX VALVE SEE PAGE 98)

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F								
		40°	30°	20°	10°	0°	-10°	-20°	-30°	-40°
1/2	BYPASS REGULATOR	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3
	HOT GAS SOL.	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3
	LIQ. INJ. VALVE	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C
1	BYPASS REGULATOR	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4
	HOT GAS SOL.	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4
	LIQ. INJ. VALVE	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C	LCL1C
2	BYPASS REGULATOR	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5
	HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5
	LIQ. INJ. VALVE	LCL2B	LCL2B	LCL2C	LCL2C	LCL2C	LCL2C	LCL2C	LCL2C	LCL2C
3	BYPASS REGULATOR	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6
	LIQ. INJ. VALVE	LCL2B	LCL2B	LCL2C	LCL2C	LCL2C	LCL2C	LCL2C	LCL2C	LCL2C
4	BYPASS REGULATOR	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M
	LIQ. INJ. VALVE	LCL2B	LCL2B	LCL2C	LCL2C	LCL2C	LCL3C	LCL3C	LCL3C	LCL3C
5	BYPASS REGULATOR	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M
	LIQ. INJ. VALVE	LCL3B	LCL3B	LCL3C	LCL3C	LCL3C	LCL3C	LCL3C	LCL3C	LCL4C
6	BYPASS REGULATOR	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M	FA8-12M
	LIQ. INJ. VALVE	LCL3B	LCL3B	LCL3C	LCL3C	LCL3C	LCL4C	LCL4C	LCL4C	LCL4C
7-1/2	BYPASS REGULATOR	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M
	LIQ. INJ. VALVE	LCL3B	LCL3B	LCL3C	LCL3C	LCL4C	LCL4C	LCL4C	LCL4C	LCL4C
10	BYPASS REGULATOR	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M
	LIQ. INJ. VALVE	LCL4B	LCL4B	LCL4C	LCL4C	LCL6C	LCL6C	LCL6C	LCL6C	LCL6C
12	BYPASS REGULATOR	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M	FA8-13M
	LIQ. INJ. VALVE	LCL6B	LCL6B	LCL6C	LCL6C	LCL6C	LCL6C	LCL6C	LCL6C	LCL6C
15	BYPASS REGULATOR	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M
	LIQ. INJ. VALVE	LCL6B	LCL6B	LCL6C	LCL6C	LCL6C	LCL6C	LCL7C	LCL7C	LCL7C
20	BYPASS REGULATOR	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M	FA8-14M
	LIQ. INJ. VALVE	LCL6B	LCL6B	LCL7C	LCL7C	LCL7C	LCL7C	LCL7C	LCL7C	LCL7C
25	BYPASS REGULATOR	FA8-15M	FA8-15M	FA8-15M	FA8-15M	FA8-15M	FA8-15M	FA8-15M	FA8-15M	FA8-15M
	LIQ. INJ. VALVE	LCL7B	LCL7B	LCL7C	LCL7C	LCL9C	LCL9C	LCL10C	LCL10C	LCL10C
30	BYPASS REGULATOR	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M
	LIQ. INJ. VALVE	LCL9B	LCL9B	LCL10C	LCL10C	LCL10C	LCL10C	LCL11C	LCL12C	LCL12C
35	BYPASS REGULATOR	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M
	LIQ. INJ. VALVE	LCL9B	LCL10B	LCL10C	LCL10C	LCL11C	LCL11C	LCL12C	LCL12C	LCL12C
40	BYPASS REGULATOR	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M
	LIQ. INJ. VALVE	LCL10B	LCL10B	LJL11C	LJL11C	LJL11C	LJL12C	LJL12C	LER13C	LER13C
45	BYPASS REGULATOR	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M	FA8-16M
	LIQ. INJ. VALVE	LJL11B	LJL11B	LJL12C	LJL12C	LJL12C	LJL12C	LER13C	LER13C	LER14C
50	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LJL12B	LJL12B	LJL12C	LJL12C	LER13C	LER13C	LER14C	LER14C	LER14C
55	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LJL12B	LJL12B	LER13C	LER13C	LER13C	LER13C	LER14C	LER14C	LER14C
60	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LJL12B	LER13B	LER13C	LER13C	LER13C	LER14C	LER14C	LER14C	LER14C
65	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LER13B	LER14B	LER14C	LER14C	LER14C	LER14C	LER14C	LER14C	LER15C
70	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LER14B	LER14B	LER14C	LER14C	LER14C	LER14C	LER14C	LER15C	LER15C
75	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LER14B	LER14B	LER14C	LER14C	LER14C	LER15C	LER15C	LER15C	LER16C
80	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LER14B	LER14B	LER14C	LER14C	LER15C	LER15C	LER15C	LER16C	LER16C
85	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LER14B	LER14B	LER15C	LER15C	LER15C	LER15C	LER15C	LER16C	LER16C
90	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LER14B	LER15B	LER15C	LER15C	LER15C	LER15C	LER15C	LER16C	LER16C
95	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LER15B	LER15B	LER15C	LER15C	LER15C	LER16C	LER16C	LER16C	LER16C
100	BYPASS REGULATOR	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M	FA8-18M
	LIQ. INJ. VALVE	LER15B	LER15B	LER15C	LER15C	LER16C	LER16C	LER16C	LER16C	LER16C



# CPH(E) FOR R404A & R507 IN TONS (FA8 VALVES OBSOLETE REPLACED BY EX VALVE SEE PAGE 98)

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F							
		30°	20°	10°	0°	-10°	-20°	-30°	-40°
1/2	BYPASS REGULATOR	CPHE-2	CPHE-2	CPHE-1	CPHE-1	CPHE-1	CPHE-1	CPHE-1	CPHE-1
	HOT GAS SOL.	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C
1	BYPASS REGULATOR	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-2	CPHE-2
	HOT GAS SOL.	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C
2	BYPASS REGULATOR	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4
	HOT GAS SOL.	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL2C	LCL2C	LCL2C
3	BYPASS REGULATOR	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4
	HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL3C	LCL3C	LCL3C
4	BYPASS REGULATOR	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6
	LIQ. INJ. VALVE	LCL2A	LCL3A	LCL3B	LCL3B	LCL3B	LCL3C	LCL3C	LCL3C
5	BYPASS REGULATOR	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3B	LCL3B	LCL3B	LCL5C	LCL4C	LCL4C
6	BYPASS REGULATOR	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6
	HOT GAS SOL.	240RA8	240RA8	240RA8	240RA8	240RA8	240RA8	240RA8	240RA8
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3B	LCL4B	LCL4B	LCL4C	LCL4C	LCL4C
7	BYPASS REGULATOR	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL4A	LCL4A	LCL4B	LCL4B	LCL4B	LCL4C	LCL4C	LCL6C
8	BYPASS REGULATOR	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL4A	LCL4A	LCL4B	LCL4B	LCL4B	LCL6C	LCL6C	LCL6C
9	BYPASS REGULATOR	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL4A	LCL4A	LCL4B	LCL6B	LCL6B	LCL6C	LCL6C	LCL6C
10	BYPASS REGULATOR	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL6A	LCL6A	LCL6B	LCL6B	LCL6B	LCL6C	LCL6C	LCL6C
12	BYPASS REGULATOR	FA8-13H	FA8-13H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL6A	LCL6A	LCL6B	LCL6B	LCL6B	LCL6C	LCL7C	LCL7C
14	BYPASS REGULATOR	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H
	LIQ. INJ. VALVE	LCL6A	LCL6A	LCL6B	LCL6B	LCL7B	LCL7C	LCL7C	LCL7C
16	BYPASS REGULATOR	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H
	LIQ. INJ. VALVE	LCL6A	LCL6A	LCL7B	LCL7B	LCL7B	LCL7C	LCL7C	LCL7C
20	BYPASS REGULATOR	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H
	LIQ. INJ. VALVE	LCL7A	LCL7A	LCL7B	LCL7B	LCL7B	LCL7C	LCL9C	LCL9C
25	BYPASS REGULATOR	FA8-14H	FA8-14H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H
	LIQ. INJ. VALVE	LCL7A	LCL9A	LCL9B	LCL9B	LCL9B	LCL10C	LCL10C	LCL10C
30	BYPASS REGULATOR	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H
	LIQ. INJ. VALVE	LCL9A	LCL9A	LCL10B	LCL10B	LCL10B	LJL11C	LJL11C	LJL11C
35	BYPASS REGULATOR	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H
	LIQ. INJ. VALVE	LCL10A	LCL10A	LJL11B	LJL11B	LJL11B	LJL11C	LJL11C	LJL11C
40	BYPASS REGULATOR	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LJL11A	LJL11A	LJL11B	LJL11B	LJL11B	LJL12C	LJL12C	LJL12C
45	BYPASS REGULATOR	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LJL11A	LJL11A	LJL12B	LJL12B	LJL12B	LER13C	LER13C	LER13C
50	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LJL12A	LJL12A	LJL12B	LJL12B	LJL12B	LER13C	LER13C	LER13C
55	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LJL12A	LJL12A	LER13B	LER13B	LER13B	LER14C	LER14C	LER14C
60	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LER13A	LER13A	LER13B	LER13B	LER14B	LER14C	LER14C	LER14C
65	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LER13A	LER13A	LER13B	LER14B	LER14B	LER14C	LER14C	LER15C
70	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LER13A	LER14A	LER14B	LER14B	LER14B	LER14C	LER15C	LER15C
75	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LER14A	LER14A	LER14B	LER14B	LER15B	LER15C	LER15C	LER15C
80	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LER14A	LER14A	LER15B	LER15B	LER15B	LER15C	LER15C	LER15C
85	BYPASS REGULATOR	FA8-18H	FA8-18H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LER15A	LER15A	LER15B	LER15B	LER15B	LER15C	LER16C	LER16C
90	BYPASS REGULATOR	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LER15A	LER15A	LER15B	LER15B	LER15B	LER16C	LER16C	LER16C
95	BYPASS REGULATOR	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H
	LIQ. INJ. VALVE	LER15A	LER15A	LER15B	LER15B	LER16B	LER16C	LER16C	LER16C
100	BYPASS REGULATOR	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H
	LIQ. INJ. VALVE	LER15A	LER15A	LER16B	LER16B	LER16B	LER16C	LER16C	LER16C

# CPH(E) FOR R407C IN TONS (FA8 VALVES OBSOLETE REPLACED BY EX VALVE SEE PAGE 98)

TOTAL TONS BYPASSED	COMPONENT TYPE	EVAPORATOR TEMPERATURE °F								
		40°	30°	20°	10°	0°	-10°	-20°	-30°	-40°
1/2	BYPASS REGULATOR	CPHE-1	CPHE-1	CPHE-1	CPHE-1	CPHE-1	CPHE-1	CPHE-1	CPHE-1	CPHE-1
	HOT GAS SOL.	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2	100RB2
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C
1	BYPASS REGULATOR	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-3	CPHE-2
	HOT GAS SOL.	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3	200RB3
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C
2	BYPASS REGULATOR	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4
	HOT GAS SOL.	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4	200RB4
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1C	LCL1C	LCL1C	LCL1C
3	BYPASS REGULATOR	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4	CPHE-4
	HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5
	LIQ. INJ. VALVE	LCL1A	LCL1A	LCL1B	LCL1B	LCL1B	LCL1C	LCL2C	LCL2C	LCL2C
4	BYPASS REGULATOR	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-5	CPHE-4	CPHE-4	CPHE-4
	HOT GAS SOL.	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5	200RB5
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL2C	LCL3C	LCL3C	LCL3C
5	BYPASS REGULATOR	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-5	CPHE-5	CPHE-5	CPHE-5
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL2C	LCL2C	LCL2C	LCL2C
6	BYPASS REGULATOR	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-5
	HOT GAS SOL.	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6	200RB6
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL2B	LCL2B	LCL3C	LCL3C	LCL3C	LCL3C
7	BYPASS REGULATOR	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6	CPHE-6
	HOT GAS SOL.	240RA8	240RA8	240RA8	240RA8	240RA8	240RA8	240RA8	240RA8	240RA8
	LIQ. INJ. VALVE	LCL2A	LCL2A	LCL2B	LCL3B	LCL3B	LCL3C	LCL3C	LCL3C	LCL3C
8	BYPASS REGULATOR	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3B	LCL3B	LCL3B	LCL3C	LCL3C	LCL3C	LCL3C
9	BYPASS REGULATOR	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3B	LCL3B	LCL3B	LCL3C	LCL3C	LCL3C	LCL3C
10	BYPASS REGULATOR	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3B	LCL3B	LCL3B	LCL3C	LCL3C	LCL3C	LCL4C
12	BYPASS REGULATOR	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL3A	LCL3A	LCL3B	LCL3B	LCL3B	LCL4C	LCL4C	LCL4C	LCL4C
14	BYPASS REGULATOR	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-12H	FA8-12H	FA8-12H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL4A	LCL4A	LCL4B	LCL4B	LCL4B	LCL4C	LCL4C	LCL4C	LCL6C
16	BYPASS REGULATOR	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-12H	FA8-12H
	LIQ. INJ. VALVE	LCL4A	LCL4A	LCL4B	LCL4B	LCL4B	LCL4C	LCL4C	LCL6C	LCL6C
20	BYPASS REGULATOR	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H
	LIQ. INJ. VALVE	LCL4A	LCL4A	LCL4B	LCL4B	LCL4B	LCL6C	LCL6C	LCL6C	LCL6C
25	BYPASS REGULATOR	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H	FA8-13H
	LIQ. INJ. VALVE	LCL6A	LCL6A	LCL6B	LCL6B	LCL6B	LCL6C	LCL7C	LCL7C	LCL7C
30	BYPASS REGULATOR	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-13H	FA8-13H	FA8-13H	FA8-13H
	LIQ. INJ. VALVE	LCL6A	LCL6A	LCL6B	LCL7B	LCL7B	LCL7C	LCL7C	LCL7C	LCL7C
35	BYPASS REGULATOR	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H
	LIQ. INJ. VALVE	LCL7A	LCL7A	LCL7B	LCL7B	LCL7B	LCL7C	LCL7C	LCL9C	LCL9C
40	BYPASS REGULATOR	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H	FA8-14H
	LIQ. INJ. VALVE	LCL7A	LCL7A	LCL7B	LCL7B	LCL9B	LCL9C	LCL9C	LCL10C	LCL10C
45	BYPASS REGULATOR	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-14H	FA8-14H	FA8-14H
	LIQ. INJ. VALVE	LCL9A	LCL9A	LCL9B	LCL9B	LCL9B	LCL9C	LCL9C	LCL10C	LCL11C
50	BYPASS REGULATOR	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LCL9A	LCL9A	LCL9B	LCL9B	LCL10B	LCL10C	LCL11C	LCL11C	LCL11C
55	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LCL9A	LCL9A	LCL9B	LCL10B	LCL10B	LJL11C	LJL11C	LJL11C	LJL12C
60	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-15H	FA8-15H	FA8-15H	FA8-15H
	LIQ. INJ. VALVE	LCL9A	LCL10A	LCL10B	LJL11B	LJL11B	LJL11C	LJL11C	LJL12C	LJL12C
65	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-15H
	LIQ. INJ. VALVE	LCL10A	LCL10A	LCL10B	LJL11B	LJL11B	LJL11C	LJL12C	LJL12C	LER13C
70	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LCL10A	LCL11A	LJL11B	LJL11B	LJL12B	LJL12C	LJL12C	LJL12C	LER13C
75	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LJL11A	LJL11A	LJL11B	LJL12B	LJL12B	LJL12C	LJL12C	LJL13C	LER13C
80	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LJL11A	LJL11A	LJL12B	LJL12B	LJL12B	LER12C	LER13C	LER13C	LER14C
85	BYPASS REGULATOR	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LJL12A	LJL12A	LJL12B	LJL12B	LER13B	LER13C	LER13C	LER13C	LER14C
90	BYPASS REGULATOR	FA8-18H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LJL12A	LJL12A	LJL12B	LJL12B	LER13B	LER13C	LER13C	LER14C	LER14C
95	BYPASS REGULATOR	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-16H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LJL12A	LJL12A	LJL12B	LER13B	LER13B	LER13C	LER14C	LER14C	LER14C
100	BYPASS REGULATOR	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-18H	FA8-16H	FA8-16H	FA8-16H	FA8-16H
	LIQ. INJ. VALVE	LJL12A	LJL12A	LJL12B	LER13B	LER13B	LER13C	LER14C	LER14C	LER15C