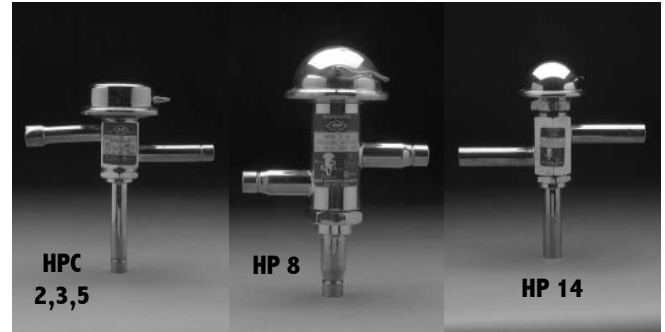


HP/HPC HEADMASTER® HEAD PRESSURE CONTROLS

HeadMaster HP/HPC Series 3-Way Head Pressure Control Valves are controlled by the system discharge pressure. Adequate head pressure is necessary to maintain sufficient pressure drop across expansion device. When ambient air temperature is warm there is no problem maintaining head pressure. However, when ambient temperature falls, there is a corresponding head pressure drop. The HP/HPC is designed specifically to maintain proper air-cooled condenser pressures during periods of low ambient conditions. The HP/HPC eliminates the need for special piping or multiple control valves simplifying piping and reducing installation costs.



FEATURES AND SPECIFICATIONS

- ☆ Accurate head pressure control, at low ambient temperatures
- ☆ ODF or SAE connections available – HP Series
- ☆ 3/8" or 1/2" ODF connections – HPC Series
- ☆ Maximum working pressure: HP5,8 – 500 psig
HP14 – 440 psig
- ☆ Shipping weights: HP5 & HP8 = 2-1/2 lbs
HP14 = 5 lbs
- ☆ UL file number SA5312
- ☆ CSA file number LR44005
- ☆ CRN file number OC0824.9 (see page A)

| PCN | HPC VALVE | CONNECTIONS |
|--------|----------------|---------------------|
| 064188 | HPC 2 T 4 -100 | 1/2 x 1/2 x 1/2 ODF |
| 064190 | HPC 2 T 4 -180 | 1/2 x 1/2 x 1/2 ODF |
| 064192 | HPC 3 T 4 -180 | 1/2 x 1/2 x 1/2 ODF |
| 064177 | HPC 5 T 3 -100 | 3/8 x 3/8 x 3/8 ODF |
| 064179 | HPC 5 T 3 -180 | 3/8 x 3/8 x 3/8 ODF |
| 064175 | HPC 5 T 3 -225 | 3/8 x 3/8 x 3/8 ODF |
| 064180 | HPC 5 T 4 -100 | 1/2 x 1/2 x 1/2 ODF |
| 064183 | HPC 5 T 4 -180 | 1/2 x 1/2 x 1/2 ODF |
| 064187 | HPC 5 T A -180 | 1/2 x 3/8 x 3/8 ODF |

ORDERING INFORMATION FOR HP/HPC VALVES

| PCN | HP VALVE | CONNECTIONS |
|--------|---------------|---------------------------|
| 046094 | HP 5 F 3-110 | 3/8 x 3/8 x 3/8 SAE |
| 046093 | HP 5 F 3-185 | 3/8 x 3/8 x 3/8 SAE |
| 055130 | HP 5 F 4-110 | 1/2 x 1/2 x 1/2 SAE |
| 046091 | HP 5 F 4-185 | 1/2 x 1/2 x 1/2 SAE |
| 046090 | HP 5 T 3-110 | 3/8 x 3/8 x 3/8 ODF |
| 046088 | HP 5 T 3-185 | 3/8 x 3/8 x 3/8 ODF |
| 054173 | HP 5 T 3-215 | 3/8 x 3/8 x 3/8 ODF |
| 046087 | HP 5 T 4-110 | 1/2 x 1/2 x 1/2 ODF |
| 046086 | HP 5 T 4-185 | 1/2 x 1/2 x 1/2 ODF |
| 062240 | HP 5 T 4-215 | 1/2 x 1/2 x 1/2 ODF |
| 052979 | HP 8 F 4-110 | 1/2 x 1/2 x 1/2 SAE |
| 053200 | HP 8 F 4-185 | 1/2 x 1/2 x 1/2 SAE |
| 046209 | HP 8 T 4-110 | 1/2 x 1/2 x 1/2 ODF |
| 046208 | HP 8 T 4-185 | 1/2 x 1/2 x 1/2 ODF |
| 062027 | HP 8 T 4-225 | 1/2 x 1/2 x 1/2 ODF |
| 033862 | HP 8 T 5-110 | 5/8 x 5/8 x 5/8 ODF |
| 032407 | HP 8 T 5-185 | 5/8 x 5/8 x 5/8 ODF |
| 034246 | HP 8 T 5-175 | 5/8 x 5/8 x 5/8 ODF |
| 046535 | HP 8 T 5-215 | 5/8 x 5/8 x 5/8 ODF |
| 046389 | HP 8 T 5-225 | 5/8 x 5/8 x 5/8 ODF |
| 046207 | HP 8 T 7-110 | 7/8 x 7/8 x 7/8 ODF |
| 054023 | HP 8 T 7-125 | 7/8 x 7/8 x 7/8 ODF |
| 046206 | HP 8 T 7-185 | 7/8 x 7/8 x 7/8 ODF |
| 046498 | HP 8 T 7-215 | 7/8 x 7/8 x 7/8 ODF |
| 046632 | HP 8 T 7-205 | 7/8 x 7/8 x 7/8 ODF |
| 032210 | HP 14 T 7-120 | 7/8 x 7/8 x 7/8 ODF |
| 024935 | HP 14 T 7-175 | 7/8 x 7/8 x 7/8 ODF |
| 043405 | HP 14 T 7-215 | 7/8 x 7/8 x 7/8 ODF |
| 024405 | HP 14 T 9-120 | 1-1/8 x 1-1/8 x 1-1/8 ODF |
| 045927 | HP 14 T 9-125 | 1-1/8 x 1-1/8 x 1-1/8 ODF |
| 029805 | HP 14 T 9-175 | 1-1/8 x 1-1/8 x 1-1/8 ODF |
| 043406 | HP 14 T 9-215 | 1-1/8 x 1-1/8 x 1-1/8 ODF |
| 024380 | HP 14 T11-120 | 1-3/8 x 1-3/8 x 1-3/8 ODF |
| 024601 | HP 14 T11-175 | 1-3/8 x 1-3/8 x 1-3/8 ODF |
| 043407 | HP 14 T11-215 | 1-3/8 x 1-3/8 x 1-3/8 ODF |

The installation of a check valve is recommended in the condensate line between the condenser outlet and receiver inlet to prevent refrigerant migration, please refer to page 39.

| SERVICE REFERENCE CODE | | CHARGE TYPE | | |
|------------------------|----------|--|------------|--------------|
| | | A | B | C |
| | | TO BE USED WITH REFRIGERANT TYPE | | |
| | | R-134a | R-22/R407C | R-404A/R-507 |
| VALVE TYPE | | SYSTEM CONDENSING PRESSURE SET POINT* (PSIG) | | |
| | HP5, HP8 | 110 | 185 | 215 |
| | HP14 | 120 | 175 | 215 |

* For Corresponding Condensing Temperature, see P-T Chart.

| HP | 8 | T | 4 | 180 | 1/2 | x | 1/2 | x | 1/2 | ODF |
|------------------------|------|--|------------------------------|--|------------------------|---|--------------------------|---|---------------------------|-----------------|
| Valve Series HP or HPC | Size | Connection Style T = ODF F = SAE | Connection Size (in 1/8") | Condensing Pressure Set Point (for corresponding Condensing Temp. see P-T Chart) | Bypass Connection Size | | Receiver Connection Size | | Condenser Connection Size | Connection Type |

HEAD PRESSURE CONTROL

HP/HPC SIZING SELECTION

Consideration must be given to the system design requirements, such as: equivalent line length (vertical lift or unusual pressure drop), equipment location, etc., to determine if the minimum control range meets design requirements. There are numerous alternatives involving head pressure control applications worth considering. For engineering assistance, consult your Emerson Climate Technologies Flow Controls District Sales Manager.

NOTE: Be sure the HP valve is not required to operate at conditions exceeding the maximum working pressure.

NOTE: Not recommended for systems utilizing patented subcooling coils in conjunction with low head pressure systems or on systems where the condensate line bypasses the receiver in order to maintain subcooling effect in the liquid line.

TABLE 1 – NOMINAL CAPACITY TABLE IN TONS AND kW

| REFRIGERANT | VALVE | PRESSURE DROP – psi (kPa) | | | | | | | | | |
|--------------------------|-------|---------------------------|------|--------|------|--------|------|--------|-------|--------|-------|
| | | 1 (7) | | 2 (14) | | 3 (21) | | 4 (28) | | 5 (35) | |
| | | TONS | kW | TONS | kW | TONS | kW | TONS | kW | TONS | kW |
| R-134a | HPC-2 | 1.0 | 3.5 | 1.4 | 4.9 | 1.8 | 6.2 | 2.0 | 6.9 | 2.3 | 8.0 |
| | HPC-3 | 1.7 | 5.9 | 2.4 | 8.3 | 3.0 | 10.4 | 3.5 | 12.1 | 3.9 | 13.5 |
| | HPC-5 | 2.2 | 7.8 | 3.2 | 11.0 | 3.9 | 13.5 | 4.5 | 15.5 | 5.0 | 17.4 |
| | HP-5 | 2.0 | 6.9 | 2.9 | 10.1 | 3.6 | 12.5 | 4.1 | 14.2 | 4.6 | 16.0 |
| | HP-8 | 5.5 | 19.1 | 7.8 | 27.1 | 9.6 | 33.3 | 11.0 | 38.2 | 12.4 | 43.0 |
| | HP-14 | 14.0 | 48.6 | 19.8 | 68.7 | 24.2 | 84.0 | 28.3 | 98.2 | 31.7 | 110.0 |
| R-22/ R-407C | HPC-2 | 1.1 | 3.8 | 1.6 | 5.6 | 1.9 | 6.6 | 2.2 | 7.6 | 2.5 | 8.7 |
| | HPC-3 | 1.9 | 6.5 | 2.7 | 9.2 | 3.3 | 11.3 | 3.8 | 13.0 | 4.2 | 14.5 |
| | HPC-5 | 2.4 | 8.4 | 3.4 | 11.9 | 4.2 | 14.6 | 4.9 | 16.9 | 5.4 | 18.8 |
| | HP-5 | 2.2 | 7.6 | 3.2 | 11.1 | 3.9 | 13.5 | 4.5 | 15.6 | 5.0 | 17.4 |
| | HP-8 | 6.0 | 20.8 | 8.5 | 29.5 | 10.5 | 36.4 | 12.0 | 41.6 | 13.5 | 46.8 |
| | HP-14 | 14.7 | 51.0 | 20.8 | 72.2 | 25.6 | 88.8 | 29.7 | 103.1 | 33.8 | 117.3 |
| R-404A/ R-507 | HPC-2 | 0.7 | 2.4 | 1.0 | 3.5 | 1.3 | 4.5 | 1.5 | 5.2 | 1.7 | 5.9 |
| | HPC-3 | 1.3 | 4.3 | 1.8 | 6.1 | 2.2 | 7.5 | 2.5 | 8.7 | 2.8 | 9.7 |
| | HPC-5 | 1.6 | 5.6 | 2.3 | 7.9 | 2.8 | 9.8 | 3.3 | 11.3 | 3.6 | 12.6 |
| | HP-5 | 1.5 | 5.2 | 2.1 | 7.3 | 2.6 | 9.0 | 3.0 | 10.4 | 3.3 | 11.5 |
| | HP-8 | 3.9 | 13.5 | 5.5 | 19.1 | 6.7 | 23.2 | 7.8 | 27.1 | 8.7 | 30.2 |
| | HP-14 | 10.1 | 35.0 | 14.3 | 49.6 | 17.6 | 61.1 | 20.5 | 71.1 | 23.0 | 79.8 |
| R-12 | HPC-2 | 0.9 | 3.0 | 1.2 | 4.3 | 1.5 | 5.2 | 1.7 | 6.0 | 1.9 | 6.7 |
| | HPC-3 | 1.5 | 5.3 | 2.1 | 7.5 | 2.6 | 9.2 | 3.0 | 10.6 | 3.4 | 11.9 |
| | HPC-5 | 1.8 | 6.4 | 2.5 | 9.0 | 3.1 | 11.0 | 3.6 | 12.7 | 4.0 | 14.2 |
| | HP-5 | 1.7 | 6.0 | 2.4 | 8.5 | 3.0 | 10.6 | 3.4 | 12.0 | 3.8 | 13.5 |
| | HP-8 | 4.6 | 16.3 | 6.5 | 23.0 | 8.0 | 28.3 | 9.2 | 32.6 | 10.3 | 36.5 |
| | HP-14 | 11.7 | 41.4 | 16.5 | 58.4 | 20.2 | 71.5 | 23.6 | 83.5 | 26.4 | 93.5 |
| R-502 | HPC-2 | 0.7 | 2.6 | 1.0 | 3.7 | 1.3 | 4.5 | 1.5 | 5.2 | 1.6 | 5.8 |
| | HPC-3 | 1.3 | 4.6 | 1.8 | 6.5 | 2.3 | 8.0 | 2.6 | 9.2 | 2.9 | 10.3 |
| | HPC-5 | 1.6 | 5.7 | 2.3 | 8.0 | 2.8 | 9.8 | 3.2 | 11.3 | 3.6 | 12.7 |
| | HP-5 | 1.5 | 5.3 | 2.1 | 7.4 | 2.6 | 9.2 | 3.0 | 10.6 | 3.3 | 11.7 |
| | HP-8 | 3.9 | 13.8 | 5.5 | 19.5 | 6.7 | 23.7 | 7.8 | 27.6 | 8.7 | 30.8 |
| | HP-14 | 10.1 | 35.8 | 14.3 | 50.6 | 17.6 | 62.3 | 20.5 | 72.6 | 23.0 | 81.4 |

All capacities shown are based on 40°F Evaporator Temperature and 100°F liquid.

TABLE 2 – MULTIPLIER FACTORS FOR CAPACITIES AT CONDITIONS OTHER THAN NOMINAL RATINGS

| LIQUID TEMP. °F | EVAPORATOR TEMPERATURE °F | | | | | | | | | | | | | | |
|--------------------|---------------------------|------|------|------|------|--------------------|------|------|------|------|---------------------------|------|------|------|------|
| | R-134a/R-12 | | | | | R-22/R-407C | | | | | R-404A/R-507/R-502 | | | | |
| | 40° | 20° | 0° | -20° | -40° | 40° | 20° | 0° | -20° | -40° | 40° | 20° | 0° | -20° | -40° |
| 120° | 0.87 | 0.82 | 0.78 | 0.71 | 0.69 | 0.89 | 0.86 | 0.84 | 0.82 | 0.78 | 0.84 | 0.79 | 0.74 | 0.69 | 0.63 |
| 100° | 1.00 | 0.96 | 0.91 | 0.86 | 0.82 | 1.00 | 0.98 | 0.95 | 0.93 | 0.89 | 1.00 | 0.96 | 0.90 | 0.85 | 0.79 |
| 80° | 1.13 | 1.08 | 1.04 | 0.99 | 0.95 | 1.12 | 1.09 | 1.06 | 1.03 | 1.00 | 1.14 | 1.09 | 1.04 | 0.99 | 0.93 |
| 60° | 1.27 | 1.22 | 1.17 | 1.12 | 1.07 | 1.22 | 1.20 | 1.17 | 1.14 | 1.10 | 1.32 | 1.27 | 1.21 | 1.16 | 1.09 |
| 40° | – | 1.34 | 1.29 | 1.24 | 1.19 | – | 1.30 | 1.27 | 1.24 | 1.21 | – | 1.42 | 1.37 | 1.31 | 1.26 |
| 20° | – | – | 1.42 | 1.38 | 1.32 | – | – | 1.39 | 1.35 | 1.32 | – | – | 1.51 | 1.46 | 1.41 |