CO₂ Innovations

Energy conscious products & solutions for supermarkets
PARKER RACE BUSINESS UNIT

PARKER RACE

RACE is part of the Fluid and Climate Control Europe (FCCE) Division that has been created to focus on every process that oversees the control of the fluids. Core competencies of the Division lie in the design, development and manufacturer of an extensive, diverse range of fluid control products, including solenoid valves, pressure regulators and systems.

In the division, RACE BU is focused in offering a wide range of refrigeration and air conditioning components that cover a large number of refrigeration applications. Approximately 7,000 products are grouped into 20 different technological families including: mechanical and electrical expansion valves, solenoid valves, filter driers, liquid indicators, electronic controllers, ball valves, chemicals and lubricants and a range of copper products.

Key markets, where RACE is point of reference, include commercial and industrial refrigeration, air conditioning and smart solutions. The products are supported by a commercial presence throughout the EMEA area, global manufacturing facilities and a strategic logistics center located in Germany serving the entire EMEA region.

We promise high innovation technologies with low energy consumption, responsible engineering and sustainable growth.
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<th>Description</th>
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<td>OBL</td>
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<th>Description</th>
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<tr>
<td>19</td>
<td>CO</td>
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**OTHER COMPONENTS**

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</tbody>
</table>
GC valve and FGB valve can be driven by a PSK3 control, with or without the parallel compression. PSK3 is also able to pilot up to three 3-way valves for the heat reclaim management.

This is only a theoretical scheme so some components could not be shown. All components must be properly pressure rated and protected for safe installation.
TYPICAL CO₂ CIRCUITS

R744 CASCADE SYSTEM SCHEMATIC - LOW PRESSURE SIDE

The SER and SERI valves shown in the scheme can be driven with a PSD4 (Superheat Controller) or, as the CDS valves, through the IB-G Board.

NOTE

This is only a theoretical scheme so some components could not be shown. All components must be properly pressure rated and protected for safe installation.
ELECTRIC VALVES

ELECTRIC PRESSURE REGULATING VALVES

TYPE GC and FGB

The Gas Cooler valve GC and Flash Gas Bypass valve FGB are stepper motor driven pressure regulating valves, designed specifically for transcritical R-744 refrigeration systems. The GC are applicable as gascooler / condenser holdback valves and can also be applied as flash tank pressure regulating valves (flash gas bypass). The flash gas bypass valve capacity range is expanded with the use of the FGB valves in this application. All GC and FGB valves have 2500 steps of movement and synthetic seats to provide great resolution and ensure tight shutoff.

The Sporlan GC and FGB valves can be controlled and driven using the Parker Sporlan PSK3 CO2 Valves Controller and PSD4 Interface Board/Positioner. The PSK3 CO2 Valves Controller optimizes transcritical and subcritical CO2 system COP through the control of the GC & FGB valves. This control system can drive two valves for Gas Cooler and Flash Tank control. The PSD4 Interface Board accepts a 0-10VDC or 4-20mA signal from the PSK3 or other gas cooler/system controller. The PSD4 translates this signal into a suitable stepper motor sequence to position the valve proportionally. The PSS4B Backup Power Module provides reserve power for one full valve closure in the event of a power loss. This serves to isolate the refrigerant charge and minimize CO2 refrigerant loss if system pressure exceeds the system’s pressure relief valve setting.

FEATURES AND BENEFITS

- High resolution actuators with 2500 steps
- 7.25 second full stroke actuation
- Uniquely characterized pin and port combinations to provide excellent full range flow control
- Cartridge valve designs
- Interchangeable bodies with flexible connections
- Replaceable/serviceable screen (GC Series)

MODELS

<table>
<thead>
<tr>
<th>Description</th>
<th>Family</th>
<th>Model</th>
<th>Connection Size</th>
<th>Cable Length</th>
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<tbody>
<tr>
<td>Gas Cooler Valve inlet conditions</td>
<td>GC-10</td>
<td>10</td>
<td>1/2”</td>
<td>LESS CABLE*</td>
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<tr>
<td>Gas Cooler Valve outlet conditions</td>
<td>GC-20</td>
<td>30</td>
<td>3/4”</td>
<td></td>
</tr>
<tr>
<td>Possible values</td>
<td>GC-30</td>
<td>40</td>
<td>1”</td>
<td></td>
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<tr>
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<td>GC-40</td>
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<td>GC-50</td>
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<td>1”</td>
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Cables with length of 10’, 20’, 30’ and 40’ are available as separated options.

FLASH GAS BYPASS VALVE COEFFICIENTS

<table>
<thead>
<tr>
<th>Full stroke flow coefficients</th>
<th>Kv</th>
<th>Cv</th>
<th>us</th>
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<tbody>
<tr>
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<td>0.19</td>
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<tr>
<td>GC-20</td>
<td>0.48</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>GC-30</td>
<td>1.46</td>
<td>1.49</td>
<td></td>
</tr>
<tr>
<td>GC-40</td>
<td>2.80</td>
<td>3.24</td>
<td></td>
</tr>
<tr>
<td>GC-50</td>
<td>4.15</td>
<td>4.80</td>
<td></td>
</tr>
<tr>
<td>FGB-60</td>
<td>7.29</td>
<td>8.63</td>
<td></td>
</tr>
<tr>
<td>FGB-70</td>
<td>11.12</td>
<td>12.86</td>
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ORDERING INSTRUCTIONS

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<th>Cable Length</th>
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<td>1”</td>
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<td>GC-40</td>
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</tr>
<tr>
<td></td>
<td>GC-50</td>
<td>60</td>
<td>1”</td>
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</tr>
<tr>
<td>Example</td>
<td>GC-10</td>
<td>30</td>
<td>1”</td>
<td>LESS CABLE</td>
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GAS COOLER VALVE CAPACITY

Full stroke capacity (capacities in Tons)

<table>
<thead>
<tr>
<th>Gas Cooler Valve inlet conditions</th>
<th>Gas Cooler Valve outlet conditions</th>
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</thead>
<tbody>
<tr>
<td>650psi(g); 51°F</td>
<td>435psi(g); 24°F</td>
</tr>
<tr>
<td>725psi(g); 59°F</td>
<td>561psi(g); 41°F</td>
</tr>
<tr>
<td>1450psi(g); 100°F</td>
<td>561psi(g); 41°F</td>
</tr>
<tr>
<td>GC-10</td>
<td>9.5</td>
</tr>
<tr>
<td>GC-20</td>
<td>21.6</td>
</tr>
<tr>
<td>GC-30</td>
<td>80.2</td>
</tr>
<tr>
<td>GC-40</td>
<td>154</td>
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<tr>
<td>GC-50</td>
<td>226</td>
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</tbody>
</table>

Full stroke flow coefficients

<table>
<thead>
<tr>
<th>Full stroke flow coefficients</th>
<th>Kv</th>
<th>Cv</th>
<th>us</th>
</tr>
</thead>
<tbody>
<tr>
<td>GC-10</td>
<td>0.16</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>GC-20</td>
<td>0.48</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>GC-30</td>
<td>1.46</td>
<td>1.49</td>
<td></td>
</tr>
<tr>
<td>GC-40</td>
<td>2.80</td>
<td>3.24</td>
<td></td>
</tr>
<tr>
<td>GC-50</td>
<td>4.15</td>
<td>4.80</td>
<td></td>
</tr>
<tr>
<td>FGB-60</td>
<td>7.29</td>
<td>8.63</td>
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</tr>
<tr>
<td>FGB-70</td>
<td>11.12</td>
<td>12.86</td>
<td></td>
</tr>
</tbody>
</table>

Please refer to specific selection software.
ELECTRIC VALVES

ELECTRIC EXPANSION VALVES

TYPE SER-AA-HP, SER-A-HP

The SER valves are suitable for use in subcritical and transcritical CO₂ refrigeration systems as electric expansion valves. The –AA and –A models are available with two distinct pressure ratings. The standard SER valves have a maximum rated pressure (MRP) of 1015 psig (70 bar). The high pressure SER-HP version has a 1305 psig (90 bar) MRP. Both the SER and SER-HP models have a maximum operating pressure differential (MOPD) of 580 psid (40 bar). With advanced pin and port geometries and precision machined components, these bi-flow valves provide unmatched resolution under the lightest load conditions. The SER-HP valves utilize the existing SER body design and improves its pressure rating with newly designed copper fittings. The SER-HP has the same robust design, corrosion resistance and mounting flexibility for which the SER valve has become known. The SER and SER-HP valves have a removable M12 style cable that is IP67 rated.

Features and Benefits

- Step motor operated for precise control
- High resolution drive assembly
- High linear force output
- Self lubricating materials used for long life
- Solenoid tight seating
- Corrosion resistant materials used throughout

Ordering Instructions

<table>
<thead>
<tr>
<th>Description</th>
<th>Family</th>
<th>Model</th>
<th>High MRP</th>
<th>Inlet fitting</th>
<th>Outlet fitting</th>
<th>Fitting type</th>
<th>Cable length</th>
<th>Stripped and tinned cable ends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible values</td>
<td>SER</td>
<td>–</td>
<td>AA</td>
<td>–</td>
<td>A</td>
<td>–</td>
<td>HP</td>
<td>3/8&quot;</td>
</tr>
</tbody>
</table>

Cables with length of 10’, 20’, 30’ and 40’ are available as separated options.

Capacity

Full Stroke Capacity (capacities in Tons)

<table>
<thead>
<tr>
<th>Evaporation Temp [°F]</th>
<th>-40°F</th>
<th>-20°F</th>
<th>0°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δp [psid]</td>
<td>100</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>SER-AA</td>
<td>1.24</td>
<td>1.38</td>
<td>1.51</td>
</tr>
<tr>
<td>SER-A</td>
<td>2.67</td>
<td>2.98</td>
<td>3.27</td>
</tr>
</tbody>
</table>

Full stroke capacity (capacities in kW)

<table>
<thead>
<tr>
<th>Evaporation Temp [°C]</th>
<th>-40°C</th>
<th>-30°C</th>
<th>-20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δp [bar]</td>
<td>8</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>SER-AA</td>
<td>4.70</td>
<td>5.25</td>
<td>5.75</td>
</tr>
<tr>
<td>SER-A</td>
<td>10.15</td>
<td>11.35</td>
<td>12.44</td>
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Liquid temperature correction factors

<table>
<thead>
<tr>
<th>°F</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>-18</td>
<td>-12</td>
<td>-7</td>
<td>-1</td>
<td>4</td>
<td>10</td>
<td>16</td>
<td>21</td>
<td>27</td>
</tr>
</tbody>
</table>

| 1.13 | 1.07 | 1.00 | 0.93 | 0.86 | 0.79 | 0.71 | 0.62 | 0.51 |

OVERALL

6.8 [172.7] IN (NORMAL)

MIN FOR CABLE REMOVAL

2.97 [75.4]

2.22 [56.4]
ELECTRIC VALVES

ELECTRIC EXPANSION VALVES

TYPE SER-B, SER-C

The SER are electronically operated step motor flow control valves, intended for the precise control of liquid refrigerant flow. Synchronized signals to the motor provide discrete angular movement, which translate into precise linear positioning of the valve piston. Valve pistons and ports are uniquely characterized, providing extraordinary flow resolution and performance. The SER is easily interfaced with microprocessor based controllers, including Sporlan supplied controllers.

MODEL | SER-B, SER-C
---|---
Motor type | 2 phases, bipolar wet motor
Compatible oil | All common Mineral, Polyester and Alkybenzene oils
Supply voltage | 12 V DC, -5%, +10% measured at the valve leads
Cable type | IP67 Removable Quad-Position
Phase resistance | 100 ohm ± 10%
Stepping current | 120 mA winding
Step rate | 200/s (L/R), up to 400/s (current limited)
Number of steps | 2500
MOPD | 580 psid (40 bar)
MRP | 1015 psig (70 bar)
Max internal leakage | 100 cc/min @ 100 psid (6.9 bar), dry air
Max external leakage | 0.10 oz./yr @ 300 psig (2.8 g/y @ 20 bar)
Operating temp. Range | -50 – 155 °F [-45 – 68 °C]
ATEX marking | II 3 G Ex nA IIC T6 Gc -20°C ≤ Ta ≤ +60°C IP64/67

FEATURES AND BENEFITS
- Step motor operated for precise control
- High resolution drive assembly
- High linear force output
- Self lubricating materials used for long life
- Solenoid tight seating
- Corrosion resistant materials used throughout

ORDERING INSTRUCTIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Family</th>
<th>Model</th>
<th>Inlet fitting</th>
<th>Outlet fitting</th>
<th>Fitting type</th>
<th>Cable length</th>
<th>Stripped and tinned cable ends</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible values</td>
<td>SER</td>
<td>–</td>
<td>B</td>
<td>C</td>
<td>–</td>
<td>1/4”</td>
<td>3/8”</td>
</tr>
<tr>
<td>Example</td>
<td>SER</td>
<td>–</td>
<td>B</td>
<td>–</td>
<td>3/8”</td>
<td>x</td>
<td>3/8”</td>
</tr>
</tbody>
</table>

Cables with length of 10’, 20’, 30’ and 40’ are available as separated options

CAPACITY

Full Stroke Capacity (capacities in Tons)

<table>
<thead>
<tr>
<th>Evaporation Temp [°F]</th>
<th>-40°F</th>
<th>-20°F</th>
<th>0°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δp [psid]</td>
<td>100</td>
<td>150</td>
<td>200</td>
</tr>
<tr>
<td>SER-B</td>
<td>5.13</td>
<td>5.74</td>
<td>6.29</td>
</tr>
<tr>
<td>SER-C</td>
<td>13.9</td>
<td>15.6</td>
<td>17.0</td>
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</table>

Full stroke capacity (capacities in kW)

<table>
<thead>
<tr>
<th>Evaporation Temp [°C]</th>
<th>-40°C</th>
<th>-30°C</th>
<th>-20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δp [bar]</td>
<td>8</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>SER-B</td>
<td>19.4</td>
<td>21.7</td>
<td>23.8</td>
</tr>
<tr>
<td>SER-C</td>
<td>52.7</td>
<td>59.0</td>
<td>66.6</td>
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Liquid temperature correction factors

<table>
<thead>
<tr>
<th>°C</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
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<tbody>
<tr>
<td>°F</td>
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<td>10</td>
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<td>30</td>
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</tr>
<tr>
<td>-18</td>
<td>-12</td>
<td>-7</td>
<td>-1</td>
<td>4</td>
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</tr>
<tr>
<td>1.13</td>
<td>1.07</td>
<td>1.00</td>
<td>0.93</td>
<td>0.86</td>
<td></td>
</tr>
</tbody>
</table>
The Sporlan SPW line of electric expansion valves uses pulse width modulation (PWM) control to manage refrigerant flow in direct expansion refrigeration systems. The valve’s duty cycle is varied based on measured evaporator superheat. Typical controllers monitor superheat and vary the duty cycle across a 6 seconds period. The SPW valve family offers 8 port sizes to cover a wide range of evaporator loads. The serviceable port and strainer design allows the contractor to service and clean the SPW valve or easily replace the port during a refrigerant retrofit.

**CAPACITY**

<table>
<thead>
<tr>
<th>Description</th>
<th>VALVE</th>
<th>Port size</th>
<th>Inlet fitting</th>
<th>Outlet fitting</th>
<th>Fitting type</th>
<th>COIL</th>
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<tbody>
<tr>
<td>Possible values</td>
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<td>3 x 4</td>
<td>0DF</td>
<td>LESS COIL</td>
<td></td>
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<tr>
<td>Example</td>
<td>SPW</td>
<td>- 1</td>
<td>3 x 4</td>
<td>0DF</td>
<td>LESS COIL</td>
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<table>
<thead>
<tr>
<th>Description</th>
<th>COIL</th>
<th>Connector</th>
<th>Coil voltage</th>
<th>Coil type</th>
<th>Wire gauge</th>
<th>Cable length</th>
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<td>Blank</td>
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<td>Blank</td>
<td>Blank</td>
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<td>Example</td>
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<td>-</td>
<td>E</td>
<td>220-240/50-60</td>
<td>C</td>
<td>A</td>
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<table>
<thead>
<tr>
<th>Full stroke capacity (capacities in kW, pressures in bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporation Temp</td>
</tr>
<tr>
<td>Δp</td>
</tr>
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<td>SPW-0</td>
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**Liquid temperature correction factors**

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<th>20</th>
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<th>40</th>
<th>50</th>
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<tbody>
<tr>
<td>°C</td>
<td>-18</td>
<td>-12</td>
<td>-7</td>
<td>-1</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

| 1.32 | 1.24 | 1.17 | 1.09 | 1.00 | 0.91 |

**FEATURES AND BENEFITS**

- Low Wattage NEMA-4X Coil, IP65 Rated, Class F
- Robust Design, 50 Million+ Cycle Life
- Interchangeable Coil, Port & Strainer
- Tight sealing design
- Solenoid tight sealing
- Operates from 10% to 100% of rated capacity

**ORDERING INSTRUCTIONS**

**CAPACITY**

<table>
<thead>
<tr>
<th>Full Stroke Capacity (capacities in Tons, pressures in psid)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporation Temp</td>
</tr>
<tr>
<td>Δp</td>
</tr>
<tr>
<td>0.12</td>
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<tr>
<td>0.84</td>
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<tr>
<td>1.45</td>
</tr>
<tr>
<td>2.28</td>
</tr>
<tr>
<td>3.83</td>
</tr>
</tbody>
</table>
ELECTRONIC CONTROLLERS

PSK3 CO2 VALVES CONTROLLER

PSK3 is an electronic controller engineered for optimizing the COP of CO2 transcritical refrigeration systems. The controller manages the High Pressure side driving up to 5 valves: GC Parker Sporlan gas cooler valve family, the FGB Parker Sporlan flash gas bypass valve family and up to 3 modulating three way valves for heat recovery.

FEATURES AND BENEFITS
- Best fit for precise driving of Parker-Sporlan valves
- Supports parallel compression
- Dynamic COP control
- Up to 2 heat recovery temperature levels
- Innovative alarms handling method
- Gas cooler bypass
- Communication with third party rack controller by Modbus or DI

INPUT CONTACTS AVAILABLE
- for gas cooler outlet pressure transducer
- for gas cooler inlet and outlet temperature probes
- for flash tank pressure transducer
- for suction line pressure transducer
- for suction line temperature probe
- for two water loop heat exchangers

Pressure transducers and temperature probes are available as options

PSD4BX3XXXVP CO2 VALVE POSITIONER

PSD4BX3XXXVP CO2 Valve positioner drives the Parker-Sporlan GC and FGB valves. By providing either a 0-10V or 4-20mA signal from a system controller as the PSK3 CO2 valves controller, the PSD4BX3XXXVP translates this signal into a suitable stepper motor sequence to position the valve proportionally.

The Backup Power Module PSS4B is available as an option. Upon power loss, the backup module provides reserve power for one full valve closure, to isolate the refrigerant and minimize refrigerant loss due to venting.

PSD4 SUPERHEAT CONTROLLER

PSD4 is the controller for Parker-Sporlan range of SER electric expansion valves that can be used in the low pressure side of the system as superheat controller. The controller can also be used as an analogue positioner for the SER valves and can be matched with the most part of the main controllers available in the market.

The controller has 4 programmable analog inputs (NTC, Pt1000, 0..20mA, 4..20mA, 0..5V) and 3 configurable digital inputs (enable the controller, change parameters set and resynchronise) and 1 configurable digital output (alarm, solenoid valve). Modbus RS-485 and CANbus communication protocols. Available with integrated LCD display or blind version.

OPTIONS
- Pressure transducer
- Temperature probes
- PSS4B Backup Power Module that provides reserve power for one full valve closure if power supply is lost
- PSKEY10 programming key for quick download of parameters
- PSIF2OTUXI PC Programming kit
- PSV400BR remote LCD programming panel
IB-G is a small electronic circuit board that extends the functionality of an external system controller to drive Step Motor Valves. The IB-G board can manage SER family of electric expansion valves and CDS family of electric pressure regulating valves. The IB-G board can power one or two valves. Two bipolar valves may be used and will operate simultaneously and will open and close by the same number of steps. The controller accepts 4-20mA or 0-10V Analog Input signal from external controller. Enhanced features include LED indicators for power and valve position.

FEATURES AND BENEFITS
- Small dimensions
- 24V power supply
- Easy setup
- Initialization routine
- Valve force close/open
- Visual indicators LED

PARKER SPORLAN CO₂ VALVE SIZER

CO₂ Valve Sizer is used to select the proper GC and FGB valves for both subcritical and transcritical cycles. Many different configurations are available:
- Heat Pump
- Simple cycle (MT)
- Simple cycle and parallel compression
- Booster (MT+LT)
- Booster (MT+LT) and parallel compression

Depending on the configuration it is possible to customize the circuit adding the internal heat exchanger MT, the internal heat exchanger LT or the economizer. Once the system and the specs has been configured the relative P-h diagram and the valve selection come out. The tool gives information about the valve size, the OD% at the specific conditions and about the rated valve’s capacity.

The user can set the International or Imperial units and export the data in xlsx or txt files or print it as pdf file.

The software can be downloaded from the following link: [www.parker.com/Software-Downloads/RAC](http://www.parker.com/Software-Downloads/RAC)
SOLENOID VALVES

TECHNICAL SPECIFICATIONS

TYPE E2-HP and E5-HP Series

The E2-HP Series is direct acting hermetic solenoid valve. The E5-HP Series is hermetic solenoid valve with pilot operated disc construction. These valves may be mounted horizontally, on their side or in a vertical line. The E2-HP and E5-HP series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the E2-HP and E5-HP series can be installed using either low or no silver content brazing alloy. The MKC-1 coil is Class “F” temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.

FEATURES AND BENEFITS

- Compact, Pilot Operated, Disc Construction
- Mount Horizontally, on Side, or in a Vertical Line
- MKC-1 and OMKC-1 Coils, Class F
- Tight closing through use of synthetic seating material.

ORDERING INSTRUCTIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Series</th>
<th>Port size in 1/32&quot;</th>
<th>Connections</th>
<th>Coil size</th>
<th>Connections size in 1/8&quot;</th>
<th>Connection type*</th>
<th>Coil connection</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible values</td>
<td>E</td>
<td>2</td>
<td>S=Solder</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0 = ODF x ODF, 1 = ODF x ODM, 2 = ODM x ODF, 3 = ODM x ODM</td>
<td>S = Spade</td>
</tr>
<tr>
<td>Example</td>
<td>E</td>
<td>2</td>
<td>S</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>E</td>
<td>–</td>
</tr>
</tbody>
</table>

*Standard connections are ODF inlet x ODF outlet on “E” Series valves. Minimum quantities may be required for other connections.

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles. When ordering Body Assembly, specify Valve Type and Connections. When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles. Example: MKC-1 120/50-60.

Voltage and cycles available: 24V/50-60Hz, 120V/50-60Hz, 208-240V/50-60Hz, 120-208-240V/50-60Hz.

For Secondary Coolant CO2 applications, please refer to Bulletin 30-10-10, or contact Parker RACE.

TECHNICAL DATA

<table>
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<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E2</td>
<td>E2S120-HP</td>
<td>4,63</td>
<td>0,55</td>
<td>1,96</td>
<td>0,31</td>
<td>0,29</td>
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<td>0,15</td>
<td>0,075</td>
<td>1.015</td>
<td>450</td>
<td>400</td>
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<tr>
<td>E5</td>
<td>E5S130-HP</td>
<td>4,56</td>
<td>0,53</td>
<td>2,48</td>
<td>0,31</td>
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<td>0,53</td>
<td>0,150</td>
<td>1.015</td>
<td>450</td>
<td>400</td>
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</tbody>
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<thead>
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<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>E2</td>
<td>E2S120-HP</td>
<td>118</td>
<td>14</td>
<td>50</td>
<td>8</td>
<td>7,4</td>
<td>1/4</td>
<td>0,13</td>
<td>1,9</td>
<td>70</td>
<td>31</td>
<td>27,6</td>
</tr>
<tr>
<td>E5</td>
<td>E5S130-HP</td>
<td>116</td>
<td>13</td>
<td>63</td>
<td>8</td>
<td>5,8</td>
<td>3/8</td>
<td>0,46</td>
<td>3,8</td>
<td>70</td>
<td>31</td>
<td>27,6</td>
</tr>
</tbody>
</table>
SOLENOID VALVES

TECHNICAL SPECIFICATIONS

TYPE E6-HP and E8-HP series

The E6-HP and E8-HP Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves may be mounted horizontally, on their side or in a vertical line. They are suitable for suction line service because very low pressure differential, 1 psi, is required for full operation. The Type E6-HP and E8-HP series solenoid valves feature extended solder type connections as standard. One important benefit to the user is that all valves in the E6-HP and E8-HP series can be installed without disassembly using either low or no silver content brazing alloy. The MKC-1 coil is Class “F” temperature rated and is provided as standard, therefore a high temperature coil is not required for discharge service.

FEATURES AND BENEFITS

- Compact, Pilot Operated, Disc Construction
- Mount Horizontally, on Side, or in a Vertical Line
- MKC-1 and OMKC-1 Coils, Class F
- Tight closing through use of synthetic seating material.

ORDERING INSTRUCTIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Series</th>
<th>Port size in 1/32”</th>
<th>Connections</th>
<th>Coil size</th>
<th>Connections size in 1/8”</th>
<th>Connection type*</th>
<th>Coil connection</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible values</td>
<td>E6</td>
<td>ME</td>
<td>6</td>
<td>Solder</td>
<td>1</td>
<td>3</td>
<td>0 = ODF x ODF</td>
<td>S = Spade</td>
</tr>
<tr>
<td>Example</td>
<td>ME</td>
<td>8</td>
<td>S</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>E = DIN 43650A</td>
<td>–</td>
</tr>
</tbody>
</table>

*Standard connections are ODF inlet x ODF outlet on “E” Series valves. Minimum quantities may be required for other connections.

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles. When ordering Body Assembly, specify Valve Type and Connections. When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles. Example: MKC-1 120/50-60.

Voltage and cycles available:
24V/50-60Hz, 120V/50-60Hz, 208-240V/50-60Hz, 120-208-240V/50-60Hz.

For Secondary Coolant CO₂ applications, please refer to Bulletin 30-10-10, or contact Parker RACE.

TECHNICAL DATA

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<thead>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E6</td>
<td>E6S130-HP</td>
<td>4.66</td>
<td>0.73</td>
<td>2.59</td>
<td>0.31</td>
<td>0.31</td>
<td>3/8</td>
<td>0.93</td>
<td>0.188</td>
<td>1.015</td>
<td>450</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>E6S140-HP</td>
<td>5.00</td>
<td>0.73</td>
<td>2.59</td>
<td>0.38</td>
<td>0.31</td>
<td>1/2</td>
<td>0.93</td>
<td>0.188</td>
<td>1.015</td>
<td>450</td>
<td>400</td>
</tr>
<tr>
<td>E8</td>
<td>E8S140-HP</td>
<td>5.00</td>
<td>0.73</td>
<td>2.59</td>
<td>0.38</td>
<td>0.31</td>
<td>1/2</td>
<td>0.93</td>
<td>0.250</td>
<td>1.015</td>
<td>450</td>
<td>400</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>E6</td>
<td>E6S130-HP</td>
<td>118</td>
<td>19</td>
<td>66</td>
<td>7.9</td>
<td>7.9</td>
<td>3/8</td>
<td>0.81</td>
<td>4.8</td>
<td>70</td>
<td>31</td>
<td>27.6</td>
</tr>
<tr>
<td></td>
<td>E6S140-HP</td>
<td>127</td>
<td>19</td>
<td>66</td>
<td>9.7</td>
<td>7.9</td>
<td>1/2</td>
<td>0.81</td>
<td>4.8</td>
<td>70</td>
<td>31</td>
<td>27.6</td>
</tr>
<tr>
<td>E8</td>
<td>E8S140-HP</td>
<td>127</td>
<td>19</td>
<td>66</td>
<td>9.7</td>
<td>7.9</td>
<td>1/2</td>
<td>1.02</td>
<td>6.3</td>
<td>70</td>
<td>31</td>
<td>27.6</td>
</tr>
</tbody>
</table>
SOLENOID VALVES

TECHNICAL SPECIFICATIONS

TYPE E10S1-HP series

Type E10S1-HP Series are compact solenoid valves with pilot operated disc construction for refrigeration and air conditioning. These valves may be mounted horizontally, on their side or in a vertical line. They are suitable for suction line service because very low pressure differential, 1 psi, is required for full operation. The Type E10S1-HP Series solenoid valves features extended solder type connections as standard and the MKC-1 coil. One important benefit to the user is that all valves in the E10S1-HP series can be installed without disassembly using either low or no silver content brazing alloy. The MKC-1 and OMKC-1 coils are Class "F" temperature rated and are provided as standard, therefore a high temperature coil is not required for discharge service.

FEATURES AND BENEFITS
- Compact, Pilot Operated, Disc Construction
- Mount Horizontally, on Side, or in a Vertical Line
- MKC-1 and OMKC-1 Coils, Class F
- Tight closing through use of synthetic seating material.

ORDERING INSTRUCTIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Series</th>
<th>Port size in 1/32&quot;*</th>
<th>Connections</th>
<th>Coil size</th>
<th>Connections size in 1/8&quot;*</th>
<th>Connection type*</th>
<th>Coil connection</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible values</td>
<td>E ME</td>
<td>10</td>
<td>S=Solder</td>
<td>1</td>
<td>4</td>
<td>0 = ODF x ODF</td>
<td>S = Spade</td>
<td>HP</td>
</tr>
<tr>
<td>Example</td>
<td>E</td>
<td>10</td>
<td>S</td>
<td>1</td>
<td>4</td>
<td>0 = ODF x ODF</td>
<td>E = DIN 43650A</td>
<td>HP</td>
</tr>
</tbody>
</table>

*Standard connections are ODF inlet x ODF outlet on “E” Series valves. Minimum quantities may be required for other connections.

When ordering complete valves, specify Valve Type, Connections, Voltage and Cycles.
When ordering Body Assembly, specify Valve Type and Connections.
When ordering Coil Assembly ONLY, specify Coil Type, Voltage and Cycles.
Example: MKC-1 120/50-60.

Voltage and cycles available:
24V/50-60Hz, 120V/50-60Hz, 208-240V/50-60Hz, 120-208-240V/50-60Hz.

For Secondary Coolant CO₂ applications, please refer to Bulletin 30-10-10, or contact Parker RACE

TECHNICAL DATA

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<th></th>
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</thead>
<tbody>
<tr>
<td>E10S1-HP</td>
<td>E10S140-HP</td>
<td>5,00</td>
<td>0,86</td>
<td>2,52</td>
<td>0,38</td>
<td>0,39</td>
<td>1/2</td>
<td>2,10</td>
<td>5/16</td>
<td>1.015</td>
<td>450</td>
<td>400</td>
</tr>
<tr>
<td>E10S150-HP</td>
<td>6,49</td>
<td>0,86</td>
<td>2,52</td>
<td>0,50</td>
<td>0,39</td>
<td>5/8</td>
<td>2,10</td>
<td>5/16</td>
<td>1.015</td>
<td>450</td>
<td>400</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>E10S1-HP</td>
<td>E10S140-HP</td>
<td>127</td>
<td>22</td>
<td>64</td>
<td>10,0</td>
<td>10,0</td>
<td>1/2</td>
<td>1,81</td>
<td>7,9</td>
<td>70</td>
<td>31</td>
<td>27,6</td>
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<tr>
<td>E10S150-HP</td>
<td>165</td>
<td>22</td>
<td>64</td>
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### LIQUID CAPACITY SELECTION TABLE

<table>
<thead>
<tr>
<th>Series</th>
<th>TYPE</th>
<th>Tons of refrigeration</th>
<th>kW of refrigeration</th>
<th>Pressure drop *</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without manual lift stem</td>
<td>With manual lift stem</td>
<td></td>
<td>[psi]</td>
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<tr>
<td></td>
<td>Normally closed</td>
<td>Normally closed</td>
<td></td>
<td>1 2 3 4 5 0,07 0,1 0,2 0,3 0,4</td>
</tr>
<tr>
<td>E2-HP</td>
<td>E2S120-HP</td>
<td>-</td>
<td>0,66 0,95 1,16 1,34 1,51 2,3 2,8 3,9 4,8 5,6</td>
<td></td>
</tr>
<tr>
<td>E5-HP</td>
<td>E5S130-HP</td>
<td>-</td>
<td>2,34 3,33 4,09 4,73 5,30 8,1 9,7 13,9 17,0 19,7</td>
<td></td>
</tr>
<tr>
<td>E6-HP</td>
<td>E6S130-HP</td>
<td>ME6S130-HP</td>
<td>4,20 5,90 7,21 8,30 9,26 14,6 17,4 24,4 29,8 34,3</td>
<td></td>
</tr>
<tr>
<td>E8-HP</td>
<td>E8S140-HP</td>
<td>ME8S140-HP</td>
<td>5,38 7,40 9,31 10,75 12,02 18,9 22,7 32,2 39,2 45,5</td>
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</tr>
<tr>
<td>E10S1-HP</td>
<td>E10S140-HP</td>
<td>-</td>
<td>9,11 12,90 15,90 18,40 20,60 32,0 38,6 54,6 67,0 77,0</td>
<td></td>
</tr>
</tbody>
</table>

* Do not use below 1 psi (0.07 bar) pressure drop.

Ratings based on 20°F (-5°C) liquid, -20°F (-30°C) evaporator temperature.

All solenoid valves are tested and rated in accordance with A.R.I. Standard No. 760-2001.

For the selection capacity, MOPD and electrical specifications are required.

---

### CORRECTION FACTOR, LIQUID CAPACITY RATING

<table>
<thead>
<tr>
<th>Liquid temperature</th>
<th>0°F</th>
<th>10°F</th>
<th>20°F</th>
<th>30°F</th>
<th>40°F</th>
<th>-20°C</th>
<th>-15°C</th>
<th>-10°C</th>
<th>0°C</th>
<th>5°F</th>
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<tr>
<td></td>
<td>1,13</td>
<td>1,07</td>
<td>1,00</td>
<td>0,93</td>
<td>0,86</td>
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<td>0,94</td>
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<td>0,86</td>
<td>1,18</td>
<td>1,12</td>
<td>1,06</td>
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<td>0,94</td>
</tr>
</tbody>
</table>

These factors include corrections for liquid refrigerant density and net refrigerating effect and are based on an average evaporator temperature of 40°F (5°C). For each 10°F (10°C) reduction in evaporating temperature, capacities are reduced by approximately 1.5/2%.

For Secondary Coolant CO2 applications, please refer to Bulletin 30-10-10, or contact Parker RACE.

---

### SUCTION CAPACITY SELECTION TABLE

<table>
<thead>
<tr>
<th>Series</th>
<th>TYPE</th>
<th>Tons of refrigeration</th>
<th>Evaporation temperature</th>
<th>kW of refrigeration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Without manual lift stem</td>
<td>With manual lift stem</td>
<td>[°F]</td>
<td>[°C]</td>
</tr>
<tr>
<td></td>
<td>Normally closed</td>
<td>Normally closed</td>
<td>-40°</td>
<td>-30°</td>
</tr>
<tr>
<td>E2-HP</td>
<td>E2S120-HP</td>
<td>-</td>
<td>0,10 0,11 0,12 0,13 0,15</td>
<td>2,3 2,8 3,9 4,8 5,6</td>
</tr>
<tr>
<td>E5-HP</td>
<td>E5S130-HP</td>
<td>-</td>
<td>0,35 0,39 0,43 0,47 0,52</td>
<td>1,23 1,37 1,51 1,65 1,83</td>
</tr>
<tr>
<td>E6-HP</td>
<td>E6S130-HP</td>
<td>ME6S130-HP</td>
<td>0,68 0,75 0,82 0,90 0,98</td>
<td>2,30 2,63 2,86 3,11 3,47</td>
</tr>
<tr>
<td>E8-HP</td>
<td>E8S140-HP</td>
<td>ME8S140-HP</td>
<td>0,82 0,92 1,02 1,14 1,27</td>
<td>2,88 3,23 3,59 4,00 4,46</td>
</tr>
<tr>
<td>E10S1-HP</td>
<td>E10S140-HP</td>
<td>-</td>
<td>1,35 1,52 1,70 1,90 2,12</td>
<td>4,75 5,34 5,98 6,68 7,46</td>
</tr>
</tbody>
</table>

Ratings based on 20°F (-5°C) liquid, 25°F (14°C) superheat, 1 psi (0.07 bar) Δp.

---

### DISCHARGE CAPACITY SELECTION TABLE

<table>
<thead>
<tr>
<th>Series</th>
<th>TYPE</th>
<th>Tons of refrigeration</th>
<th>Pressure drop</th>
<th>kW of refrigeration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>With manual lift stem</td>
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<td></td>
<td>Normally closed</td>
<td>Normally closed</td>
<td>2 5 10 25 50</td>
<td>0,15 0,3 0,7</td>
</tr>
<tr>
<td>E2-HP</td>
<td>E2S120-HP</td>
<td>-</td>
<td>0,21 0,34 0,48 0,77 1,25</td>
<td>0,78 1,11 1,71</td>
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<tr>
<td>E5-HP</td>
<td>E5S130-HP</td>
<td>-</td>
<td>0,75 1,20 1,70 2,72 4,39</td>
<td>2,75 3,91 6,02</td>
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<tr>
<td>E6-HP</td>
<td>E6S130-HP</td>
<td>ME6S130-HP</td>
<td>1,40 2,20 3,09 4,85 7,46</td>
<td>5,11 7,19 10,9</td>
</tr>
<tr>
<td>E8-HP</td>
<td>E8S140-HP</td>
<td>ME8S140-HP</td>
<td>1,81 2,89 4,05 6,41 8,78</td>
<td>6,61 9,36 14,2</td>
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<tr>
<td>E10S1-HP</td>
<td>E10S140-HP</td>
<td>-</td>
<td>2,90 4,63 6,60 10,5 15,5</td>
<td>10,6 15,2 23,4</td>
</tr>
</tbody>
</table>

Ratings based on 20°F (-5°C) condensing, isentropic compression plus 50°F (28°C), -20°F (-30°C) evaporator, 5°F (-15°C) suction gas at the compressor.
BALL VALVES

BALL VALVE WITH INTEGRATED PRESSURE RELIEF

TYPE EBV-PR

For greater system design flexibility and increased productivity, specify the EBV-PR Ball Valve with Integrated Pressure Relief. This compact solution eliminates the check valve and associated brazing involved when piping a ball valve and check valve in parallel to protect a system from over pressurization. EBV-PR allows for positive shut-off in one direction and flow in the other direction whenever pressure differential is present. The integrated pressure relief feature is in one direction only.

FEATURES AND BENEFITS

- All EBV-PR ball valves may be installed in any position.
- Protects system from pressure spikes when servicing equipment.
- Stainless steel stop plate ensures fully open to fully closed with a 1/4 turn.
- Full size ports for unrestricted flow on most sizes, 3/8” (10 mm) through 1-1/8” (28 mm).
- Dual Teflon seals surround the polished, brass ball to prevent leakage. Stem seal and stem washer provide the primary stem seal. Bottom load stem for safety.
- Maximum Rating Pressure (MRP) of 1.015 psig (70 bar)
- Operating temperature range: -40°F to +225°F (-40°C to +107°C)

ORDERING INSTRUCTIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Family</th>
<th>Series</th>
<th>Fitting size</th>
<th>Fitting configuration</th>
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</thead>
<tbody>
<tr>
<td>Possible values</td>
<td>EBV-PR</td>
<td>1 = full port</td>
<td>XX (ODF conn. in eighths of an inch)</td>
<td>S = ODF x ODF</td>
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<td>Example</td>
<td>EBV-PR</td>
<td>1</td>
<td>03</td>
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DIMENSIONS AND TECHNICAL DATA

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<tbody>
<tr>
<td>EBV-PR-1030</td>
<td>3/8’</td>
<td>6,5</td>
<td>0,3</td>
<td>0,50</td>
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<td>3,1</td>
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<tr>
<td>EBV-PR-1040</td>
<td>1/2’</td>
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<td>0,50</td>
<td>1,6</td>
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<tr>
<td>EBV-PR-1050</td>
<td>5/8’</td>
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<td>0,50</td>
<td>1,6</td>
<td>3,1</td>
</tr>
<tr>
<td>EBV-PR-1060</td>
<td>3/4”</td>
<td>7,3</td>
<td>0,6</td>
<td>0,75</td>
<td>1,8</td>
<td>3,6</td>
</tr>
<tr>
<td>EBV-PR-1070</td>
<td>7/8”</td>
<td>7,3</td>
<td>0,8</td>
<td>0,75</td>
<td>1,8</td>
<td>3,6</td>
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<tr>
<td>EBV-PR-1090</td>
<td>1-1/8”</td>
<td>8,5</td>
<td>0,9</td>
<td>1,00</td>
<td>2,1</td>
<td>4,1</td>
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<table>
<thead>
<tr>
<th>Connection (ODF)</th>
<th>A Overall length [mm]</th>
<th>B Socket depth [mm]</th>
<th>C Port size [mm]</th>
<th>D [mm]</th>
<th>E Overall height [mm]</th>
<th>Kv</th>
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<tr>
<td>EBV-PR-10MM</td>
<td>10 mm</td>
<td>165</td>
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<td>12,7</td>
<td>40</td>
<td>78</td>
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<tr>
<td>EBV-PR-12MM</td>
<td>12 mm</td>
<td>165</td>
<td>10</td>
<td>12,7</td>
<td>40</td>
<td>78</td>
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<tr>
<td>EBV-PR-16MM</td>
<td>16 mm</td>
<td>165</td>
<td>13</td>
<td>12,7</td>
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<td>78</td>
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<tr>
<td>EBV-PR-18MM</td>
<td>18 mm</td>
<td>184</td>
<td>16</td>
<td>19,1</td>
<td>45</td>
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<tr>
<td>EBV-PR-22MM</td>
<td>22 mm</td>
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<td>19</td>
<td>19,1</td>
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<tr>
<td>EBV-PR-28MM</td>
<td>28 mm</td>
<td>216</td>
<td>24</td>
<td>25,6</td>
<td>54</td>
<td>104</td>
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</table>
BALL VALVES

BI-FLOW CO₂ BALL VALVE

TYPE OBL

OBL valves have a maximum working pressure of 70 bar and are available in a range of metric sizes from 6 to 35 mm and imperial sizes from 1/4” to 1-3/8”.

A small hole in one sealing face of the ball prevents refrigerant being locked within the ball when closed. It also allows the ball to exert a greater force against the teflon ball seal when closed, giving greater close-off safety.

Valves from 15mm (5/8”) have K65 connections.

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Metric Reference</th>
<th>Description</th>
<th>OD [mm]</th>
<th>Bore diameter [mm]</th>
<th>L [mm]</th>
<th>C [mm]</th>
<th>H [mm]</th>
<th>Kv [m³/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL6mm</td>
<td>BV CO₂ 70bar 6mm</td>
<td>6</td>
<td>10</td>
<td>126</td>
<td>13</td>
<td>51</td>
<td>1.6</td>
</tr>
<tr>
<td>OBL8mm</td>
<td>BV CO₂ 70bar 8mm</td>
<td>8</td>
<td>10</td>
<td>132</td>
<td>13</td>
<td>51</td>
<td>4.2</td>
</tr>
<tr>
<td>OBL10mm</td>
<td>BV CO₂ 70bar 10mm</td>
<td>10</td>
<td>10</td>
<td>132</td>
<td>13</td>
<td>51</td>
<td>5.3</td>
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<tr>
<td>OBL12mm</td>
<td>BV CO₂ 70bar 12mm</td>
<td>12</td>
<td>10</td>
<td>140</td>
<td>13</td>
<td>51</td>
<td>6.6</td>
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<tr>
<td>OBL15mm</td>
<td>BV CO₂ 70bar 15mm</td>
<td>15</td>
<td>16</td>
<td>146</td>
<td>18.5</td>
<td>64</td>
<td>13</td>
</tr>
<tr>
<td>OBL16mm</td>
<td>BV CO₂ 70bar 16mm &amp; 5/8”</td>
<td>16</td>
<td>16</td>
<td>146</td>
<td>18.5</td>
<td>64</td>
<td>13</td>
</tr>
<tr>
<td>OBL18mm</td>
<td>BV CO₂ 70bar 18mm</td>
<td>18</td>
<td>16</td>
<td>146</td>
<td>18.5</td>
<td>64</td>
<td>17</td>
</tr>
<tr>
<td>OBL22mm</td>
<td>BV CO₂ 70bar 22mm</td>
<td>22</td>
<td>20</td>
<td>185</td>
<td>21</td>
<td>74</td>
<td>26</td>
</tr>
<tr>
<td>OBL28mm</td>
<td>BV CO₂ 70bar 28mm</td>
<td>28</td>
<td>25</td>
<td>205</td>
<td>26</td>
<td>80</td>
<td>41</td>
</tr>
<tr>
<td>OBL35mm</td>
<td>BV CO₂ 70bar 35mm &amp; 1-3/8”</td>
<td>35</td>
<td>32</td>
<td>208</td>
<td>32</td>
<td>95</td>
<td>86</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Inches Reference</th>
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</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
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<td>OBL2</td>
</tr>
<tr>
<td>OBL3</td>
</tr>
<tr>
<td>OBL4</td>
</tr>
<tr>
<td>OBL5</td>
</tr>
<tr>
<td>OBL6</td>
</tr>
<tr>
<td>OBL7</td>
</tr>
<tr>
<td>OBL9</td>
</tr>
<tr>
<td>OBL11</td>
</tr>
</tbody>
</table>
BALL VALVES

BI-FLOW CO₂ BALL VALVE

TYPE 0BH

Parker Bi-Flow CO₂ Ball valves are available for application on transcritical circuit and for high pressure side.

OBH valves have a maximum working pressure of 120 bar and are available in a range of metric sizes from 6 to 54 mm and imperial sizes from 1/4” to 2-1/8”.

A small hole in one sealing face of the ball prevents refrigerant being locked within the ball when closed. It also allows the ball to exert a greater force against the teflon ball seal when closed, giving greater close-off safety.

Valves from 15mm (5/8”) have K65 connections.

### TECHNICAL DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>OD [mm]</th>
<th>Bore diameter [mm]</th>
<th>L [mm]</th>
<th>C [mm]</th>
<th>H [mm]</th>
<th>Kv [m³/h]</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBH6mm</td>
<td>6</td>
<td>10</td>
<td>126</td>
<td>13</td>
<td>51</td>
<td>1,6</td>
</tr>
<tr>
<td>OBH8mm</td>
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<td>10</td>
<td>132</td>
<td>13</td>
<td>51</td>
<td>4,2</td>
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<tr>
<td>OBH10mm</td>
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<td>10</td>
<td>132</td>
<td>13</td>
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<td>5,3</td>
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<td>OBH12mm</td>
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</tr>
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<td>OBH5</td>
<td>16</td>
<td>16</td>
<td>146</td>
<td>18,5</td>
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</tr>
<tr>
<td>OBH18mm</td>
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<td>16</td>
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<td>64</td>
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</tr>
<tr>
<td>OBH22mm</td>
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<td>185</td>
<td>21</td>
<td>74</td>
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<tr>
<td>OBH28mm</td>
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<td>25</td>
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<td>OBH11</td>
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<td>32</td>
<td>208</td>
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<td>OBH42mm</td>
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<td>OBH17</td>
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<td>50</td>
<td>273</td>
<td>48,5</td>
<td>134</td>
<td>208</td>
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</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>OD [mm]</th>
<th>Bore diameter [mm]</th>
<th>L [mm]</th>
<th>C [mm]</th>
<th>H [mm]</th>
<th>Kv [m³/h]</th>
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</thead>
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<td>1,6</td>
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<td>5,3</td>
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<tr>
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<td>1/2”</td>
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<tr>
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<td>OBH7</td>
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<td>OBH11</td>
<td>1 3/8”</td>
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<td>208</td>
<td>32</td>
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<td>OBH13</td>
<td>1 5/8”</td>
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<td>242</td>
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<td>OBH17</td>
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<td>50</td>
<td>273</td>
<td>48,5</td>
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<td>208</td>
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</table>
FILTER–DRIERS

FILTER–DRIERS FOR CO₂ APPLICATIONS

TYPE CO series

The CO Series product has been designed to withstand the extreme pressure of transcritical carbon dioxide (R-744) systems while providing complete system protection in a compact design. A unique combination of moisture, acid, and solid debris removal extends the life, reliability, and capacity of these systems that operate under extreme conditions. Combining ideal capability in a compact size, the CO Series enables system optimization while maximizing protection and cost effectiveness. Other fitting sizes are available upon request. Please contact your Sales Engineer for assistance.

FEATURES AND BENEFITS
- Desiccants optimized for use with R744
- Maximum Rated Pressure (MRP) of 2250 psi (155 bar)
- Burst Pressure Rating 6750 psi (465 bar)
- Solid copper connections for fast, easy system connection

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Model</th>
<th>CONNECTIONS ODF solder</th>
<th>R744 FLOW CAPACITY</th>
<th>A OVERALL LENGTH</th>
<th>B SOCKET DEPTH</th>
<th>C SHELL DIAMETER</th>
<th>DROPS OF R744 WATER CAPACITY @140°F (60°C)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>[inches]</td>
<td>[Tons]</td>
<td>[kW]</td>
<td>[inches]</td>
<td>[mm]</td>
<td>[inches]</td>
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<td>278</td>
<td>0,50</td>
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</table>
OTHER COMPONENTS

ELECTRIC PRESSURE REGULATING VALVES TYPE CDS SERIES

The CDS family represents a line of electronically controlled step motor valves, designed to contribute minimal pressure drop to the system. In addition to their traditional application as Electric Evaporator Pressure Regulators, CDS valves can also be applied as Heat Reclaim, Head Pressure Control or Liquid Line Differential valves. CDS valves can be used to replace a variety of mechanical and solenoid valves throughout typical refrigeration systems, where low pressure drop and precise refrigerant flow control are desired.

Maximum rated pressure of 47 or 48 bar in according with the model.

FILTER-DIERS CATCH-ALL® SERIES

The Catch-All® filter-drier removes moisture from the refrigerant by absorbing and retaining it deep within the desiccant granules. Large filtering area of the filter-drier core permits it to collect a large amount of dirt without plug up. Refrigerant flow capacity from 7 up to 163kW at ΔP=0.07bar -5°C liquid temperature and -30°C evaporator temperature.

In according with model and size, Catch-All® are available as sealed type or with replaceable core type.

Maximum rated pressure up to 44.8 bar in according with the model.

SIGHT-GLASSES AND MOISTURE INDICATORS TYPE SEE-ALL® SERIES

See-All® Moisture and Liquid Indicator combines the two functions of moisture and liquid indication into a single economical product. It takes the guess work out of servicing refrigeration and air conditioning equipment. The See-All® assists the technician in determining the state of the circulating refrigerant at a particular location and if a safe moisture level exists in the system. Reliable and accurately calibrated colour change points, replaceable indicator element and unnecessary disassembly for installation are the three bigger benefits on use of See-All®.

Maximum rated pressure of 44.8 barg.
WARNING – USER RESPONSIBILITY

Failure or improper selection or improper use of the products described herein or related items can cause death, personal injury and property damage.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

For safety information see the Safety Guide at www.parker.com/safety or call 1-800-CParker.