Manapak valves provide a variety of check, flow control, pressure relief and pressure reducing functions in a compact NFPA D03, D05 and D08 sandwich style valve. The NFPA D03 valve body conforms to the ISO 40 mm (1.57") thickness. These valves are mounted between directional control valves and their mounting surface.

Check Valves

Series CM
- Valve bodies are manufactured from steel which provide extra strength and durability for longer life. Internal hardened steel components also provide longer life.
- Positive shut-off is provided by a fully guided poppet and allows full flow in the unchecked position.
- Parker Manapak CM sandwich style check valves can be used either on the 'P', 'A', 'B', 'T' port or combination.
- Large internal flow paths allow high flow at low pressure drop.

P.O. Check Valves

Series CPOM
- Parker Manapak CPOM sandwich style, pilot operated check valves can be provided in either single or double configurations.
- The pilot operated checks may be positioned in 'A' port or 'B' port; or both 'A' and 'B' ports.
- Valve bodies are manufactured from steel which provide extra strength and durability for longer life. Internal hardened steel components also provide longer life.
- Positive shut-off is provided by a hardened poppet and cage assembly.
- Large internal flow paths allow high flow at low pressure drop.
Flow Control Valves
Series FM
- Parker Manapak style FM flow control valves can be provided in either single or double configurations.
  - The flow controls may be positioned in 'P' port, 'A' port, 'B' port, or both 'A' and 'B' ports.
- Valve bodies are manufactured from steel which provide extra strength and durability for longer life. Internal hardened steel components also provide longer life.
- Two step needles (standard) provide fine adjustment for the first three turns and course adjustment for the last three turns. Fine metering needles are available as an option on D03 and D05 valves.
- Large bypass checks allow high flow at a low pressure drop.
- Reversible (invert 180°) for meter-in or meter-out (D03 & D05 only).

Pressure Reducing Valves
Series PRDM
- PRDM Manapak sandwich valves may be selected to reduce pressure in the 'P' port, 'A' port or 'B' port.
- The direct operated, cushioned piston design results in fast response, low leakage and minimal hysteresis.
- Up to nine pressure adjustment ranges are available with maximum pressure settings.
- Adjustment options include: internal hex screw, hand knob or internal hex with keylock.
- Fluorocarbon seals are standard for multi-fluid compatibility.
- Available gage port connections include SAE and NPT.
Pressure Reducing Valves
Series PRM
- Parker Manapak PRM sandwich style pressure reducing valves can be used to reduce pressure on the 'P' port, the 'A' port, or the 'B' port.
- Three pressure adjustment options available: slotted screw, knob and locking knob.
- Valve bodies are manufactured from steel which provide extra strength and durability for longer life. Internal hardened steel components also provide longer life.

Pressure Relief Valves
Series RM
- Parker Manapak RM sandwich style relief valve is a 'P' port to 'T' port relief.
- Valve bodies are manufactured from steel which provide extra strength and durability for longer life. Internal hardened steel components also provide longer life.
- Three pressure adjustment options available: slotted screw, knob and locking knob.
General Description

Series CM Manapak check valves provide an integral, full flow check valve in the pressure 'P' port, 'A' port, 'B' port, or the tank 'T' port of the directional valve. Reverse flow is blocked. The CM2 and CM3 sizes offer a combination P&T check version.

Features

- Valve bodies are manufactured from steel which provides extra strength and durability for longer life. Internal hardened steel components also provide longer life.
- Positive shut-off is provided by a fully guided poppet and allows full flow in the unchecked position.
- Parker Manapak CM sandwich style check valves can be used either on the 'P', 'A', 'B', 'T' ports, or combinations.
- Large internal flow paths allow high flow at low pressure drop.

Specifications

<table>
<thead>
<tr>
<th></th>
<th>CM2</th>
<th>CM3</th>
<th>CM6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Pattern</td>
<td>NFPA D03, CETOP 3, NG6</td>
<td>NFPA D05, CETOP 5, NG10</td>
<td>NFPA D08, CETOP 8, NG25</td>
</tr>
<tr>
<td>Maximum Pressure</td>
<td>345 Bar (5000 PSI)</td>
<td>345 Bar (5000 PSI)</td>
<td>345 Bar (5000 PSI)</td>
</tr>
<tr>
<td>Maximum Flow</td>
<td>76 LPM (20 GPM)</td>
<td>113 LPM (30 GPM)</td>
<td>340 LPM (90 GPM)</td>
</tr>
<tr>
<td>Cracking Pressure</td>
<td>0.3 Bar (5 PSI), 3 Bar* (45 PSI), 5 Bar* (75 PSI)</td>
<td>0.3 Bar (5 PSI), 3 Bar* (45 PSI), 5 Bar* (75 PSI)</td>
<td>0.3 Bar (5 PSI), 3 Bar* (45 PSI), 5 Bar* (75 PSI)</td>
</tr>
</tbody>
</table>

* Optional

Performance Curves

<table>
<thead>
<tr>
<th></th>
<th>CM2 Reverse Flow Check</th>
<th>CM3 Reverse Flow Check</th>
<th>CM6 Reverse Flow Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure (PSI)</td>
<td>75 PSI</td>
<td>75 PSI</td>
<td>75 PSI</td>
</tr>
<tr>
<td></td>
<td>55 PSI</td>
<td>55 PSI</td>
<td>55 PSI</td>
</tr>
<tr>
<td></td>
<td>5 PSI</td>
<td>5 PSI</td>
<td>5 PSI</td>
</tr>
</tbody>
</table>

VISCOSITY CORRECTION FACTOR

<table>
<thead>
<tr>
<th>Viscosity (SSU)</th>
<th>75 150 200 250 300 350 400</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of ΔP (Approx.)</td>
<td>95 111 119 125 132 137 141</td>
</tr>
</tbody>
</table>

Curves were generated using 100 SSU hydraulic oil. For any other viscosity, pressure drop will change per chart.
Manapak Sandwich Valves
Series CM

**Ordering Information**

**Size "2"**

<table>
<thead>
<tr>
<th>No. of Manapaks</th>
<th>Manapak &amp; Valve Combination</th>
<th>Bolt Kit</th>
<th>Bolt Length mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manapak &amp; D1</td>
<td>BK243</td>
<td>73.2 (2.88)</td>
</tr>
<tr>
<td>2</td>
<td>Manapak &amp; D1</td>
<td>BK225</td>
<td>111.3 (4.38)</td>
</tr>
<tr>
<td>3</td>
<td>Manapak &amp; D1</td>
<td>BK244</td>
<td>152.4 (6.00)</td>
</tr>
<tr>
<td>4</td>
<td>Manapak &amp; D1</td>
<td>BK245</td>
<td>190.5 (7.50)</td>
</tr>
</tbody>
</table>

**Size "3"**

<table>
<thead>
<tr>
<th>No. of Manapaks</th>
<th>Manapak &amp; Valve Combination</th>
<th>D3W-30 D3DW &amp; D31VW*</th>
<th>Bolt Length mm (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Manapak &amp; D3</td>
<td>BK141</td>
<td>88.9 (3.50)</td>
</tr>
<tr>
<td>2</td>
<td>Manapak &amp; D3</td>
<td>BK142</td>
<td>139.7 (5.50)</td>
</tr>
<tr>
<td>3</td>
<td>Manapak &amp; D3</td>
<td>BK143</td>
<td>190.5 (7.50)</td>
</tr>
</tbody>
</table>

Bolt Kits must be ordered separately. *D31VW with internal pilot and internal drain only.

**Size "6"**

<table>
<thead>
<tr>
<th>Manapak &amp; Valve Combination</th>
<th>Bolt Kit</th>
<th>Description</th>
<th>Qty/ Torque IN-LBS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Manapak &amp; D6*VW Valve</td>
<td>BK121</td>
<td>1/2 - 13 x 5.25</td>
<td>6 80</td>
</tr>
<tr>
<td>2 Manapak &amp; D6*VW Valve</td>
<td>BK122</td>
<td>1/2 - 13 x 8.00</td>
<td>6 80</td>
</tr>
<tr>
<td>3 Manapak &amp; D6*VW Valve</td>
<td>BK123</td>
<td>1/2 - 13 x 10.75</td>
<td>6 80</td>
</tr>
<tr>
<td>4 Manapak &amp; D6*VW Valve</td>
<td>BK124</td>
<td>1/2 - 13 x 13.50</td>
<td>6 80</td>
</tr>
</tbody>
</table>

**Unit Weight:**
- CM2 0.8 kg (1.7 lbs.)
- CM3 1.8 kg (3.9 lbs.)
- CM6 7.7 kg (17 lbs.)

**Schematics**

- **AA Option**
- **AAF Option**
- **BB Option**
- **BBF Option**
- **DD Option**
- **DDF Option**
- **PP Option**
- **TT Option**
- **PT Option**
Inch equivalents for millimeter dimensions are shown in ("")

Note: Transfer the locating pin to the hole on the opposite side of the valve body for 'T' port option. (Invert body 180°)
Manapak Sandwich Valves

Surface Patterns

Catalog HY14-2502/US

Manapak Sandwich Valves
Series CM2

Bottom Views

Top Views

B

TT

PP/PT

DD

DDF

BB

BBF

AA

AAAF
Manapak Sandwich Valves
Series CM3

Dimensions

Inch equivalents for millimeter dimensions are shown in ("")

Top View

Face View

Bottom View

SHOWN WITHOUT O-RING PLATE
Surface Patterns

Series CM3

Bottom Views

Top Views

TT

PP/PT

DD

DDF

AA

AAF

BB

BBF
Inch equivalents for millimeter dimensions are shown in ("").

**Top View**

**Face View**

**Bottom View**
**CAUTION:**

Manapak Installation

Prior to installation of Manapaks, please review flow paths. Due to the reversibility of the DO3 size, incorrect installation will alter the hydraulic circuit. Care must be taken during installation to insure that the Manapak is installed in compliance with the hydraulic schematic. Please consult with your Parker representative with any questions that may arise.

<table>
<thead>
<tr>
<th>D1V</th>
<th>Locating Pin</th>
<th>Operator &quot;A&quot;</th>
<th>Operator &quot;B&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pressure Ratings**

Unless otherwise specified, all Parker Manapaks have continuous duty pressure rating as shown in this catalog.

**Special Requirements**

Consult your Parker representative for factory recommendations on such situations as:

- Installations that will operate at pressures higher than published catalog ratings.
- Use of hydraulic fluids which do not meet our recommended specifications.
- Operations where fluid temperature will exceed 121°C (250°F).

**Recommended Mounting Surface**

Surface must be flat within .0004 inch T.I.R. and smooth with 32 micro-inch.

**System Cleanliness**

Any hydraulic system that includes Parker valves should be carefully protected against dirt and fluid contamination. Life of the valves, as well as of all other components, will be greatly lengthened. Operation will be smoother and more precise. Maintenance and repairs will be reduced. Lost production because of low pressure and flow will be minimized. Fluid contamination should be maintained to less than 500 particles larger than 10 micrometers per milliliter of fluid (SAE class 4 or better/ISO Code 16/13).

**Hydraulic Fluids**

Parker recommends using top-quality hydraulic fluids having a viscosity range of 32 to 54 cSt (150 to 250 SSU) at 38°C (100°F). The absolute viscosity range should be 16 to 220 cSt (80 to 1000 SSU). Fluids should have highest anti-wear characteristics and be treated to avoid rust and oxidation.

**Seals**

When used with water-glycol, water/oil emulsions, and high-grade petroleum base hydraulic fluids, Parker standard nitrile seals are suitable.

When using phosphate ester fluids or their blends, specify Parker optional seals made of fluorocarbon. Synthetic fire-resistant fluids require special seal materials which your Parker representative can recommend.

**Torque Specifications**

The recommended torque valves are for the bolts which mount the valve to the manifold or subplate are as follows:

<table>
<thead>
<tr>
<th>Size</th>
<th>Torque Valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5.7 N.m. (50 in.-lbs.)</td>
</tr>
<tr>
<td>3</td>
<td>16.3 N.m. (12 ft.-lbs.)</td>
</tr>
<tr>
<td>6</td>
<td>108.5 N.m. (80 ft.-lbs.)</td>
</tr>
</tbody>
</table>
Mounting Patterns

Mounting Surface for Directional Control Valve Manifold M’TD. (NFPA, D03); CETOP 3 & NG 6

Mounting Surface for Directional Control Valve (NFPA, D05); CETOP 5 & NG 10
Mounting Patterns

Mounting Surface for Directional Control Valve (NFPA, D08); CETOP 8 & NG 25