Parker's Hydraulic Helpers offer design features that optimize key performance parameters and help the circuit designer to build a multitude of circuits, limited only by his/her imagination. These modules are designed to compliment Parker's highly reputable subplate mounted valve product line. When combined with Parker's extensive threaded cartridge line, these modules offer the designer complete flexibility to create circuits quickly to help meet the customer's design and delivery objectives. These modules can also be integrated as part of a complete manifold package built and tested by Parker's Hydraulic Control Systems Team at the Hydraulic Valve Division.

**Designed and shipped with o-ring plates to allow for flipping of sandwich body for maximum functions and options flexibility.**

**Efficiently designed passages for minimal pressure losses.**

**Aluminum and Ductile versions available for 207 Bar (3000 PSI) and 350 Bar (5000 PSI) working pressure applications.**

---

**WARNING**

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This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

---

**Offer of Sale**

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Pressure to Tank Sandwich Module

General Description
Module T-31210 connects 'P' port to 'T' port. It is a Common Cavity C-10-2 with the nose of the cavity connected to the 'P' port. The side of the cavity is connected to the 'T' port.

Features
- Valve bodies are manufactured from ductile or aluminum which allows user to match material to application for best value.
- Uses 'common cavity' cartridges for versatility.
- Shipped with o-ring plate and o-rings.
- If body is flipped, function remains, but operator location is moved to opposite face.

Typical Functions
- P to T Relief
- P to T Proportional Relief
- P to T Solenoid Operated Dump
- P to T Pressure Compensated Bleed-Off
- P to T Non-Compensated Bleed-Off
- P to T Pressure Compensated Bleed-Off
- P to T Proportional Pressure Compensated Bleed-Off

Specifications

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D05</th>
<th>CETOP 5, NG10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminum: 207 Bar (3000 PSI)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ductile: 350 Bar (5000 PSI)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dimensions
Inch equivalents for millimeter dimensions are shown in (* *)
Module T-31509 interrupts the 'P' port of the valve stack. This module can form a 'P' port interrupt function using either needle valves or solenoid valves. It is a Common Cavity C-12-2 with the side of the cavity connected to a inlet. The nose of the cavity is connected to the downstream 'P' port.

Features
- Valve bodies are manufactured from ductile or aluminum which allows user to match material to application for best value.
- Uses 'common cavity' cartridges for versatility.
- Shipped with o-ring plate and o-rings.
- If body is flipped, flow direction is switched and operator location is moved to opposite face.

Typical Functions
- P Port Solenoid Operated Interrupt
- P Port Proportional Meter-in Flow Control
- P Port High Flow Check with body inverted
- Many other unique 'Hydraulic Helper' functions through mixing of various screw-in cartridges and plugs

Specifications

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<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D05</th>
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<tr>
<td>CETOP 5, NG10</td>
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<thead>
<tr>
<th>Maximum Operating Pressure</th>
<th>Aluminum: 207 Bar (3000 PSI)</th>
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</thead>
<tbody>
<tr>
<td>Ductile: 350 Bar (5000 PSI)</td>
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</tr>
</tbody>
</table>

Ordering Information

<table>
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<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>Aluminum</td>
</tr>
<tr>
<td>D</td>
<td>Ductile</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Nitrile</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

Dimensions

Inch equivalents for millimeter dimensions are shown in ("")
A and B Crossover Sandwich Module

General Description
Module T-31211 connects 'A' port to 'B' port and 'B' port to 'A'. This can form a crossover function on one or both ports. It is a Common Cavity C-10-2 with the nose of the cavity connected to a work port. The side of the cavity is connected to the opposing work port.

Features
- Valve bodies are manufactured from ductile or aluminum which allows user to match material to application for best value.
- Uses 'common cavity' cartridges for versatility.
- Can be single or dual function with use of P-10-2 plug.
- Shipped with o-ring plate and o-rings.
- If body is flipped, function remains, but operator location is moved to opposite face and port.

Typical Functions
- A to B Crossover Relief
- A to B Proportional Crossover Relief
- A to B Solenoid Operated Dump
- A to B Pressure Compensated Bleed-Off
- P to T Non-Compensated Bleed-Off
- Many other unique 'Circuit Helper' functions through mixing of various screw-in cartridges and plugs

Specifications

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D05 CETOP 5, NG10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Pressure</td>
<td>Aluminum: 207 Bar (3000 PSI) Ductile: 350 Bar (5000 PSI)</td>
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</table>

Dimensions
Inch equivalents for millimeter dimensions are shown in (**)

Schematic

Upright Orientation Shown

Ordering Information

<table>
<thead>
<tr>
<th>Module</th>
<th>Material</th>
<th>Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-31211</td>
<td>A Aluminum Omit Nitrile</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D Ductile V Fluorocarbon</td>
<td></td>
</tr>
</tbody>
</table>
A and B to Tank Sandwich Module

General Description
Module T-31212 connects 'A' port and 'B' port to the tank port. This is a dual cavity module. It is a Common Cavity C-10-2 with the nose of the cavity connected to a work port. The side of the cavity is connected to the tank port.

Features
- Valve bodies are manufactured from ductile or aluminum which allows user to match material to application for best value.
- Uses 'common cavity' cartridges for versatility.
- Can be single or dual function with use of P-10-2 plug.
- Shipped with o-ring plate and o-rings.
- If body is flipped, function remains, but operator location is moved to opposite face and port.

Typical Functions
- A and B to Tank Relief
- A and B to Tank Proportional Relief
- A and B Anti-Cavitation Checks
- A Relief and B Anti-Cavitation Check
- B Relief and A Anti-Cavitation Check
- A and B Solenoid Dump to Tank (float condition)
- A and B Proportional Bleed-Off to Tank

Specifications

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D05 CETOP 5, NG10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Pressure</td>
<td></td>
</tr>
<tr>
<td>Aluminum: 207 Bar (3000 PSI)</td>
<td></td>
</tr>
<tr>
<td>Ductile: 350 Bar (5000 PSI)</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions
Inch equivalents for millimeter dimensions are shown in (**)

Schematic
Upright Orientation Shown
Caution: Both tanks are not connected to each other and drain independently.

Ordering Information

<table>
<thead>
<tr>
<th>Module</th>
<th>Material</th>
<th>Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code</td>
<td>Description</td>
<td>Code</td>
</tr>
<tr>
<td>A</td>
<td>Aluminum</td>
<td>Omit</td>
</tr>
<tr>
<td>D</td>
<td>Ductile</td>
<td>V</td>
</tr>
</tbody>
</table>

Bul HY14-2552.indd, dd
Alternate A and B to Tank Sandwich Module

General Description
Module T-31213 connects 'A' port and 'B' port to the tank port. This is a dual cavity module. It is a Common Cavity C-10-2 with the nose of the cavity connected to the tank port. The side of the cavity is connected to the 'A' or 'B' port.

Features
- Valve bodies are manufactured from ductile or aluminum which allows user to match material to application for best value.
- Uses 'common cavity' cartridges for versatility.
- Can be single or dual function with use of P-10-2 plug.
- Shipped with o-ring plate and o-rings.
- If body is flipped, function remains, but operator location is moved to opposite face and port.

Typical Functions
- A and B to Tank Relief (RDH103)
- A and B to Tank Proportional Relief
- A and B Anti-Cavitation Checks
- A Relief and B Anti-Cavitation Check
- B Relief and A Anti-Cavitation Check
- A and B Solenoid Dump to Tank (float condition)
- A and B Proportional Bleed-Off to Tank

Specifications

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D05 CETOP 5, NG10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Pressure</td>
<td>Aluminum: 207 Bar (3000 PSI) Ductile: 350 Bar (5000 PSI)</td>
</tr>
</tbody>
</table>

Dimensions
Inch equivalents for millimeter dimensions are shown in (**)

Schematic
Upright Orientation Shown

Ordering Information

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>T-3123</td>
<td>Module</td>
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<tr>
<td>A</td>
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<tr>
<td>D</td>
<td>Ductile</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
<tr>
<td>Omit</td>
<td>Nitrile</td>
</tr>
</tbody>
</table>

Bul HY14-2552.indd, dd
Dual Counterbalance Sandwich Module

General Description
Module T-31267 provides for counterbalance on both the 'A' and 'B' ports. This is a dual cavity module and it uses the MHC-010 cavity. The nose of the cartridge is the Auxiliary Pilot, the second step is the Actuator Port and the third step is the Valve Port. These modules can also be used with the ventable MHC cartridge for high tank line applications.

Features
- Valve bodies are manufactured from ductile or aluminum which allows user to match material to application for best value.
- Uses 'common cavity' cartridges for versatility.
- Can be single function with use of #2811080 plug.
- Shipped with o-rings.
- This body is not intended to be flipped.

Typical Functions
- A and B to Tank Relief
- A and B to Tank Proportional Relief
- A and B Anti-Cavitation Checks
- A Relief and B Anti-Cavitation Check
- B Relief and A Anti-Cavitation Check
- A and B Solenoid Dump to Tank (float condition)
- A and B Proportional Bleed-Off to Tank

Specifications

<table>
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<tr>
<th>Mounting Pattern</th>
<th>NFPA D03 CETOP 3, NG6</th>
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<tbody>
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</table>

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

Ordering Information

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Aluminum</td>
<td>Omit</td>
<td>Nitrile</td>
</tr>
<tr>
<td>D</td>
<td>Ductile</td>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>
Module T-31268 provides for counterbalance on both the 'A' and 'B' ports. This is a dual cavity module and it uses the MHC-022 cavity. The nose of the cartridge is the Auxiliary Pilot, the second step is the Actuator Port and the third step is the Valve Port. These modules can also be used with the ventable MHC cartridge for high tank line applications.

**Features**
- Valve bodies are manufactured from ductile or aluminum which allows user to match material to application for best value.
- Uses 'common cavity' cartridges for versatility.
- Can be single function with use of #2811081 plug.
- Shipped with o-ring plate and o-rings.
- This body is not intended to be flipped.

**Typical Functions**
- A and B Dual Counterbalance Non-Vented
- A and B Dual Counterbalance Vented

**Specifications**

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D05 CETOP 5, NG10</th>
</tr>
</thead>
</table>
| Maximum Operating Pressure | Aluminum: 207 Bar (3000 PSI)  
Ductile: 350 Bar (5000 PSI) |

**Dimensions**

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

---

**Ordering Information**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
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</tr>
<tr>
<td>D</td>
<td>Ductile</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit</td>
<td>Nitrile</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>
Proportional Reducing Sandwich Module

General Description
Module T-31486 proportionally reduces pressure on the 'P' port of the valve stack. It uses an ERV and a logic element to perform the function. It is a reducing function only and has limited relieving capability.

Features
- Valve body available in aluminum for 207 Bar (3000 PSI) applications.
- Shipped complete with logic element, proportional relief and o-rings.
- This body is not intended to be flipped.

Typical Functions
- Used to electronically reduce the 'P' port pressure in a valve stack.
- Convenient alternative to remote controlling a reducing valve through the vent port using a pneumatic or hydraulic relief signal.
- Clean choice for clamping applications where variable pressures are required.

Specifications

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D03 CETOP 3, NG6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Input Pressure</td>
<td>Aluminum: 207 Bar (3000 PSI)</td>
</tr>
<tr>
<td>Nominal Flow</td>
<td>56.8 LPM (15 GPM)</td>
</tr>
<tr>
<td>Output Pressure</td>
<td>10.4 Bar (150 PSI) Minimum</td>
</tr>
<tr>
<td>Max. Control Current</td>
<td>1.9 amp</td>
</tr>
<tr>
<td>Dither Frequency</td>
<td>100 – 400 Hz (200 Hz preferred)</td>
</tr>
<tr>
<td>Recommended Driver Module</td>
<td>PCD-00-400</td>
</tr>
</tbody>
</table>

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

Ordering Information

Schematic
Proportional Reducing Sandwich Module

General Description

Module T-30916 proportionally reduces pressure on the 'P' port of the valve stack. It uses an ERV and a logic element to perform the function. It is a reducing function only and has limited relieving capability.

Features

- Valve body available in aluminum for 207 Bar (3000 PSI) maximum applications.
- Shipped complete with logic element, proportional relief and o-rings.
- This body is not intended to be flipped.

Typical Functions

- Used to electronically reduce the 'P' port pressure in a valve stack.
- Convenient alternative to remote controlling a reducing valve through the vent port using a pneumatic or hydraulic relief signal.
- Clean choice for clamping applications where variable pressures are required.

Specifications

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D05 CETOP 5, NG10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Input Pressure</td>
<td>Aluminum: 207 Bar (3000 PSI)</td>
</tr>
<tr>
<td>Nominal Flow</td>
<td>113.6 LPM (30 GPM)</td>
</tr>
<tr>
<td>Output Pressure</td>
<td>10.4 Bar (150 PSI) Minimum</td>
</tr>
<tr>
<td>Max. Control Current</td>
<td>207 Bar (3000 PSI) Maximum</td>
</tr>
<tr>
<td></td>
<td>1.9 amp</td>
</tr>
<tr>
<td>Dither Frequency</td>
<td>100 – 400 Hz (200 Hz preferred)</td>
</tr>
<tr>
<td>Recommended Driver Module</td>
<td>PCD-00-400</td>
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</tbody>
</table>

Dimensions

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

Ordering Information

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<td>Seals</td>
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<td>D</td>
<td>DIN</td>
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Specifications

<table>
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<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Omit</td>
<td>Nitrile</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

Dimensions

Inch equivalents for millimeter dimensions are shown in ("")
**P or T Port Dual Speed Sandwich Module**

General Description

Module T-30971 is a dual flow module that allows the user to electronically select two discrete and independent flows on the 'P' port or the 'T' port of the valve stack. It provides either meter-in or meter-out control. The module consists of standard C-10-2 cartridges such as NV101 needle valves along with a DSH121 solenoid valve.

Features

- Valve bodies are aluminum for 207 Bar (3000 PSI) maximum applications.
- Uses 'common cavity' cartridges for versatility.
- Shipped with control valves, o-ring plate and o-rings.
- If body is flipped, function changes from 'P' to 'T' port. Operator location remains on same face.

Typical Functions

- Used to allow the user to electronically select two discrete flow settings.
- Can be used for meter-in on 'P' port or meter-out on 'T' port.

Specifications

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D03 CETOP 3, NG6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Operating Pressure</td>
<td>Aluminum: 207 Bar (3000 PSI)</td>
</tr>
<tr>
<td>Nominal Flow</td>
<td>56.8 LPM (15 GPM)</td>
</tr>
<tr>
<td>Voltage</td>
<td>120 VAC or 24 VDC</td>
</tr>
</tbody>
</table>

Note: When used in 'T' port, caution must be used not to exceed tank port pressures of other components in the stack.

Dimensions

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

Ordering Information

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2</td>
<td>P Port</td>
</tr>
<tr>
<td>T2</td>
<td>T Port</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D024</td>
<td>24 VDC (0.88 A)</td>
</tr>
<tr>
<td>A120</td>
<td>120 VAC (0.192 A)</td>
</tr>
</tbody>
</table>
Module T-30717 is a dual pressure reducer that allows the user to electronically select two discrete and independent pressures on the 'P' port of the valve stack. It uses two PR102* reducing valves along with a DSL103 solenoid valve. This module does not have relieving capability.

Features
- Valve body available in aluminum for 207 Bar (3000 PSI) maximum applications.
- Uses 'common cavity' cartridges for versatility.
- Shipped with control valves and o-rings.
- This body is not intended to be flipped.

Typical Functions
- Used where two discrete pressures are needed and can be electrically selected to reduce the 'P' port pressure in a valve stack.

Specifications

<table>
<thead>
<tr>
<th>Mounting Pattern</th>
<th>NFPA D03 CETOP 3, NG6</th>
</tr>
</thead>
</table>
| Maximum Input Pressure    | Aluminum: 207 Bar (3000 PSI)  
                          | Steel: 350 Bar (5000 PSI) |
| Nominal Flow              | 30.3 LPM (8 GPM)       |
| Output Pressure           | 10.4 Bar (150 PSI) Minimum  
                          | 207 Bar (3000 PSI) Maximum |
| Voltage                   | 120 VAC or 24 VDC      |

Dimensions

Inch equivalents for millimeter dimensions are shown in (*)
Schematic Example
Counterbalance Sandwich Valves

NFPA D03, CETOP 3, NG6

DUAL COUNTERBALANCE, CROSS PILOTED
BODY USED: T-31267
VALVE USED IN BOTH SIDES: MHC-010-5***

A PORT COUNTERBALANCE, PILOT FROM B
BODY USED: T-31267
VALVE USED IN A SIDE, MHC-010-5***
VALVE USED IN B SIDE: 2B11080(CAVITY PLUG)

B PORT COUNTERBALANCE, PILOT FROM A
BODY USED: T-31267
VALVE USED IN A SIDE, 2B11080
VALVE USED IN B SIDE: MHC-010-5***

DUAL VENTED COUNTERBALANCE, CROSS PILOTED
BODY USED: T-31267
VALVE USED IN BOTH SIDES: MHC-010-V***

A PORT VENTED COUNTERBALANCE, PILOT FROM B
BODY USED: T-31267
VALVE USED IN A SIDE, MHC-010-V***
VALVE USED IN B SIDE: 2B11080

B PORT VENTED COUNTERBALANCE, PILOT FROM A
BODY USED: T-31267
VALVE USED IN A SIDE, 2B11080
VALVE USED IN B SIDE: MHC-010-V***
Schematic Example

Counterbalance Sandwich Valves

NFPA D05, CETOP 5, NG10

DUAL COUNTERBALANCE, CROSS PILOTED
BODY USED:
T-31268
VALVE USED IN BOTH SIDES:
MHC-022-S+++
NFPA D05, CETOP 5, NG10

Note: Parker's C10-2 cavity is compatible with Parker Sterling's CAV04-2 cavity so additional functions can also be created such as high pressure, low leakage reliefs.
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Schematic Example

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**Dump Sandwich Valves**

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For the latest hydraulic valve information
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To locate your nearest hydraulic valve distributor
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For North America, Europe and the rest of the world regional offices, see Parker Hydraulics International Sales Offices at the back of this catalog.

Parker Hydraulic Valve wants to keep you informed. Listed below are connection opportunities for you to resource additional information or speak directly with the industry's most knowledgeable hydraulic valve professionals.

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