Check Valves

Screw In Cartridge Valves

Pressures to 350 bar (5000 psi) - Flows to 227 l/min (60 USgpm)
Introduction

For over 70 years, Vickers has provided its customers with quality products and innovative solutions for all their power and motion control needs. The products featured in this catalog represent the very best in screw-in cartridge check valve technology.

Products in this catalog have been fatigue tested for one million cycles at 132% or 10 million cycles at 115% of rated pressure.

Two pressure ratings are shown for all products featured in this catalog. The typical application pressure rating is the maximum recommended operating pressure for the valve in a given system. The fatigue pressure rating is the pressure for the valve to be free for infinite life from metal fatigue.

We are committed to maintaining this position by offering the most comprehensive range of cartridge valves for industrial and mobile equipment.

This catalog gives basic specifications for many of Vickers screw-in cartridge check valves. Its purpose is to provide a quick, convenient reference tool when choosing Vickers cartridge valves or designing a system using these components.

The Vickers range of direct and pilot operated check valves provides the hydraulic circuit designer with a wide selection of cartridge and in-line products.

All cartridges have hardened and ground poppets (other than CVI-10(V)-B models which utilize a chrome steel ball) and sharp-edged ground steel seats. This provides an excellent product that is dirt-tolerant, has reliable seating, and is suitable for fast cycling with long life.

Direct operated check valves

Cartridges fit into industry standard cavities and may be supplied for installation in manifolds, or be provided in standard housings having SAE or BSPP ports suitable for in-line mounting.

A wide selection of cracking pressures is available from 0.21 to 20.7 bar (3 to 300 psi). Thus the opportunity exists to use the valves not only as conventional check but also as low pressure relief valves.

Pilot operated check valves

These valves are used for:

- Position load locking
- As an alternative to counterbalance valves where neither the overrunning loads or release speed are factors in the application.

The POC*-10 and POC*-12 series of pilot-to-open check valves compliment the CBV*-10 and CBV*-12 counterbalance cartridges and are physically interchangeable with them. The POC's provide a low cost alternative to load control when the dynamics of neither overrunning loads nor load release speed are factors to be considered in the design of the hydraulic circuit for the load to be controlled.

The pilot-to-open valves positively lock a load from port 1 to port 2 until pilot pressure applied to port 3 is sufficient to unseat the valve. This then permits flow from port 1 to port 2. The load can also be released through means of an optional screw type override.

The POC*-10 covers flow up to 60 l/min (15 USgpm). The POC*-12 covers flow up to 114 l/min (30 USgpm). With infinite life qualification to a fatigue pressure rating of 310 bar (4500 psi), these POC valves are suitable for use in a broad range of load control applications with typical system operating pressures up to 350 bar (5000 psi). Tailoring of the circuit to gain energy savings while minimizing shock is obtained through the use of several standard cracking pressure ranges from 2.0 bar (30 psi) to 7 bar (100 psi). When anti-cavitation protection is required, the 0.30 bar (5 psi) spring should be used. For those applications where pilot pressure may not always be available, the valve can be ordered with an optional adjustable override.

Single pilot check

Also offered are SPC2-8 and SPC2-10 single pilot check valves with pressures to 240 bar (3500 psi) and flows to 23 l/min (6 gpm). These valves operate similar to the POC1 product but offer an opposite flow path which offers the designer a choice of pilot operated check valve when laying out a custom manifold for ease of design.

Supporting products

Vickers valves are available in a wide range of mounting configurations and porting options to provide flexibility in developing circuits. Housings are available in either aluminum 210 bar (3000 psi) or steel 350 bar (5000 psi) configurations. All are available with a choice of BSPP (ISO-0228/1) or SAE style ports.
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<td>210 (3000)</td>
<td>151 (40)</td>
<td>26</td>
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<td>DPC1–20–P</td>
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<td>210 (3000)</td>
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</table>
CV1-10-B
Check valve

**Description**

The CV1-10-B is a ball type, screw-in cartridge check valve.

**Operation**

This valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2.

**Ratings and specifications**

*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)*

- Typical application pressure (all ports) ............................. 210 bar (3000 psi)
- Cartridge fatigue pressure (infinite life) .............................. 210 bar (3000 psi)
- Rated flow ......................................................... 45 l/min (12 USgpm)
- Free flow cracking pressure @1 l/min (0.25 USgpm) .......... 0.34 bar (5 psi)
- Internal leakage ........... **Port 2 to 1** 5 drops/min. maximum @210 bar (3000 psi)
- Temperature range ........................... -40 to 120°C (~-40°F to 248°F)
- Cavity ......................................................... C-10-2 (See page 40)
- Fluids ......................................................... All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
- Filtration ...................................................... Cleanliness code 18/16/13
- Standard housing materials ......................... Aluminum
- Weight cartridge only ........................................... 0.08 kg (0.17 lb.)
- Seal kit .......................................................... 565803 Buna-N
  566086 Viton®

_Viton is a registered trademark of E.I.DuPont_

**Pressure Drop Curve**

**Cartridge only**
Model Code  CV1–10–B

CV 1 - 10 (V) – B – ** – 5

1 Function
CV1 – Check valve

3 Size
10 – 10 Size

3 Seals
Blank – Buna-N
V – Viton

4 Seating type
B – Ball

5 Port size
O – Cartridge only

<table>
<thead>
<tr>
<th>Code</th>
<th>Port size</th>
<th>Housing number</th>
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<tbody>
<tr>
<td>3B</td>
<td>3/8” BSPP</td>
<td>02–175462</td>
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<td>6T</td>
<td>SAE 6</td>
<td>566151</td>
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<tr>
<td>2G</td>
<td>1/4” BSPP</td>
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<td>3G</td>
<td>3/8” BSPP</td>
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<tr>
<td>8H</td>
<td>SAE 8</td>
<td>876701</td>
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</table>

(See pages 42 & 43 for housing details.)

5 Free flow cracking pressure
5 – 0,34 bar (5 psi) (Anti-cavitation)

Dimensions

mm (inch)

25,4 (1.0) hex

8,0 (0.31)

31,7 (1.25)

0.875”–14 Thd.

2

1

2

1

∅ 15,80 (0.622)

Torque cartridge in housing
47–54 Nm (35–40 lbf ft)
The CV3–8–P is a direct acting, poppet type check valve.

This valve remains closed until the spring bias is reached at port 1. The poppet then lifts off the seat and allows flow from port 1 to port 2.

Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports) 350 bar (5000 psi)

Cartridge fatigue pressure (infinite life) 280 bar (4000 psi)

Rated flow 30 l/min (8 USgpm)

Cracking pressures @ 1.0 l/min (0.25 USgpm) 4 – 0.28 bar (4 psi)

10 – 0.7 bar (10 psi)

25 – 1.7 bar (25 psi)

60 – 4.0 bar (60 psi)

Internal leakage 5 drops/min. maximum @ 350 bar (5000 psi)

Cavity C-8-2 (See page 40)

Standard housing materials Aluminum or steel

Temperature range -40°C to 120°C (-40°F to 248°F)

All general purpose hydraulic fluids such as:

Filtration Cleanliness code 18/16/13

Weight cartridge only 0.05 kg. (0.12 lbs.)

Seal kits 02-165875 Buna-N

02-165877 Viton®

Viton is a registered trademark of E.I.DuPont
Model Code

CV3-8-P

CV 3 - 8 (V) - P - ( )** - ***

1  2  3  4  5  6  7

1 Function
CV3 – Check valve

2 Size
8 – 8 Size

3 Seals
Blank – Buna-N
V – Viton

4 Style
P – Poppet

5 Valve housing material
Omit for cartridge only
A – Aluminum
S – Steel

Port size
O – Cartridge only

<table>
<thead>
<tr>
<th>Code</th>
<th>Port size</th>
<th>Housing number</th>
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<tr>
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<td>Aluminum Fatigue rated</td>
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<td>6T</td>
<td>SAE 6</td>
<td>02–160731</td>
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<tr>
<td>8T</td>
<td>SAE 8</td>
<td>02–160732</td>
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<td>2G</td>
<td>1/4&quot; BSPP</td>
<td>02–160727</td>
</tr>
<tr>
<td>3G</td>
<td>3/8&quot; BSPP</td>
<td>02–160728</td>
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</tbody>
</table>

(See pages 43 & 44 for housing details.)

7 Cracking pressure
004 – 0.28 bar (4 psi)
010 – 0.70 bar (10 psi)
025 – 1.70 bar (25 psi)
060 – 4.00 bar (60 psi)

Dimensions
mm (inch)

Torque cartridge in housing
34–41 Nm (25–30 lbf ft)

Aluminum housings can be used for pressures up to 210 bar (3000 psi)
Steel housings must be used for operating pressures above 210 bar (3000 psi)
**CV1-10-P**

**Check valve**

**Description**

The CV1-10-P is a poppet type, screw-in cartridge check valve.

**Operation**

This valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2.

**Ratings and specifications**

*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)*

- Typical application pressure (all ports) ........... 210 bar (3000 psi)
- Cartridge fatigue pressure (infinite life) ............ 210 bar (3000 psi)
- Rated flow ........................................... 45 l/min (12 USgpm)
- Free flow cracking pressure @1 l/min (0.25 USgpm) .... 5 – 0.34 bar (5 psi)
  15 – 1.03 bar (15 psi)
  30 – 2.07 bar (30 psi)
  65 – 4.48 bar (65 psi)
  100 – 6.90 bar (100 psi)
  300 – 20.7 bar (300 psi)
- Internal leakage ........... **Port 2 to 1** 5 drops / min. maximum @210 bar (3000 psi)
- Temperature range ................................ -40°C to 120°C (-40°F to 248°F)
- Cavity ............................................. C–10–2 (See page 40)
- Fluids .............................................. All general purpose hydraulic fluids such as:
  MIL–H–5606, SAE 10, SAE 20, etc.
- Filtration ............................................ Cleanliness code 18/16/13
- Standard housing materials ......................... Aluminum
- Weight cartridge only ................................ 0.08 kg (0.17 lb.)
- Seal kit ............................................. 565803 Buna–N
  566086 Viton®

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**Pressure Drop Curves**

*Cartridge only*

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**A** – CV1-10-P-O-65  
**B** – CV1-10-P-O-30  
**C** – CV1-10-P-O-5
Model Code CV1-10-P

**CV 1 - 10 (V) – P – ** – **

1. **Function**
   CV1 – Check valve

2. **Size**
   10 – 10 Size

3. **Seals**
   Blank – Buna-N
   V – Viton

4. **Style**
   P – Poppet

5. **Port size**
   O – Cartridge only

### Port size

<table>
<thead>
<tr>
<th>Code</th>
<th>Port size</th>
<th>Housing number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>3/8” BSPP</td>
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</tr>
<tr>
<td>6H</td>
<td>SAE 6</td>
<td>876700</td>
</tr>
<tr>
<td>8H</td>
<td>SAE 8</td>
<td>876701</td>
</tr>
</tbody>
</table>

(See pages 42 & 43 for housing details.)

6. **Free flow cracking pressure**

- 5 – 0.34 bar (5 psi) (Anti-cavitation)
- 15 – 1.03 bar (15 psi)
- 30 – 2.07 bar (30 psi)
- 65 – 4.48 bar (65 psi)
- 100 – 6.90 bar (100 psi)
- 300 – 20.7 bar (300 psi)

### Dimensions

<table>
<thead>
<tr>
<th>mm</th>
<th>inch</th>
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<tr>
<td>25.4 (1.0) hex</td>
<td>8.0 (0.31)</td>
</tr>
<tr>
<td>0.875”–14 Thd.</td>
<td>31.7 (1.25)</td>
</tr>
<tr>
<td>∅ 15.80 (0.622)</td>
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</table>

**Torque cartridge in housing**

47–54 Nm (35–40 lbf ft)
**Description**

The CV3-10-P is a poppet type, screw-in cartridge check valve.

**Operation**

This valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2.

**Ratings and specifications**

*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)*

Typical application pressure (all ports) ................. 210 bar (3000 psi)
Cartridge fatigue pressure (infinite life) ................. 210 bar (3000 psi)
Rated flow ............................................. 76 l/min (20 USgpm)
Free flow cracking pressure @1 l/min (0.25 USgpm) .... 3 – 0.21 bar (3 psi)
10 – 0.69 bar (10 psi)
20 – 1.38 bar (20 psi)
40 – 2.76 bar (40 psi)
65 – 4.48 bar (65 psi)
100 – 6.90 bar (100 psi)
180 – 12.40 bar (180 psi)
210 – 14.50 bar (210 psi)

Internal leakage ........... Port 2 to 1 5 drops / min. maximum @210 bar (3000 psi)
Temperature range ...................... –40 to 120°C (–40° to 248°F)
Cavity ................................................. C–10–2 (See page 40)
Fluids .............................................. All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.
Filtration ............................................. Cleanliness code 18/16/13
Standard housing materials ......................... Aluminum
Weight cartridge only .................... 0.08 kg (0.17 lb.)
Seal kit ............................................. 565803 Buna–N
566086 Viton®

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**Pressure Drop Curves**

Cartridge only

![Pressure Drop Curves Graph]

A – CV3-10-P-O-210
B – CV3-10-P-O-40
C – CV3-10-P-O-3
## Model Code CV3-10-P

### CV 3 - 10 (V) – P – ** – **

<table>
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<th>Function</th>
<th>Port size</th>
<th>Housing number</th>
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<td><strong>O</strong> – Cartridge only</td>
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</tr>
<tr>
<td><strong>Size</strong></td>
<td><strong>Code</strong></td>
<td><strong>Port size</strong></td>
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<tr>
<td><strong>10</strong> – 10 Size</td>
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</tr>
</tbody>
</table>

| Seals | |
| **Blank** – Buna-N | **V** – Viton |

| Style | |
| **P** – Poppet | |

### Dimensions

<table>
<thead>
<tr>
<th>mm (inch)</th>
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<tbody>
<tr>
<td>8.0 (0.31)</td>
</tr>
<tr>
<td>31.7</td>
</tr>
<tr>
<td>15.80</td>
</tr>
<tr>
<td>25.4</td>
</tr>
<tr>
<td>0.875”–14 Thd</td>
</tr>
</tbody>
</table>

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**Free flow cracking pressure**
- 3 – 0.21 bar (3 psi) (Anti-cavitation)
- 10 – 0.69 bar (10 psi) (Anti-cavitation)
- 20 – 1.38 bar (20 psi)
- 40 – 2.76 bar (40 psi)
- 65 – 4.48 bar (65 psi)
- 100–6.90 bar (100 psi)
- 180–12.4 bar (180 psi)
- 210–14.5 bar (210 psi)

**Housing number**
- Aluminum Light duty
- Aluminum Fatigue rated

(See pages 42 & 43 for housing details.)

**Torque cartridge in housing**
- 47–54 Nm (35–40 lbf ft)
**CV16-10-P**
Check valve

**Description**
The CV16-10-P is a poppet type, screw-in cartridge check valve.

**Operation**
This valve remains closed until the spring bias is reached at port 2 at which time the poppet lifts off the seat and allows flow from port 2 to port 1.

**Ratings and specifications**

*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Typical application pressure (all ports)</td>
<td>350 bar (5000 psi)</td>
</tr>
<tr>
<td>Cartridge fatigue pressure (infinite life)</td>
<td>310 bar (4500 psi)</td>
</tr>
<tr>
<td>Rated flow</td>
<td>76 l/min (20 USgpm)</td>
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<tr>
<td>Free flow cracking pressure @1 l/min (0.25 USgpm)</td>
<td>5 – 0.34 bar (5 psi)</td>
</tr>
<tr>
<td></td>
<td>15 – 1.03 bar (15 psi)</td>
</tr>
<tr>
<td></td>
<td>25 – 1.70 bar (25 psi)</td>
</tr>
<tr>
<td></td>
<td>50 – 3.40 bar (50 psi)</td>
</tr>
<tr>
<td>Internal leakage</td>
<td>Port 2 to 1; 5 drops / min. maximum @210 bar (3000 psi)</td>
</tr>
<tr>
<td>Temperature range</td>
<td>–40 to 120°C (–40° to 248°F)</td>
</tr>
<tr>
<td>Cavity</td>
<td>C–10–2 (See page 40)</td>
</tr>
<tr>
<td>Fluids</td>
<td>All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.</td>
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<tr>
<td>Filtration</td>
<td>Cleanliness code 18/16/13</td>
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<tr>
<td>Standard housing materials</td>
<td>Aluminum or steel</td>
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<tr>
<td>Weight cartridge only</td>
<td>0.08 kg (0.17 lb.)</td>
</tr>
<tr>
<td>Seal kit</td>
<td>565803 Buna–N 566086 Viton®</td>
</tr>
</tbody>
</table>

Viton is a registered trademark of E.I.DuPont

**Pressure Drop Curves**

*Cartridge only*

![Pressure Drop Curves](image)

**Legends**
- **A** – CV16-10-P-O-50
- **B** – CV16-10-P-O-25
- **C** – CV16-10-P-O-15
- **D** – CV16-10-P-O-5
**Model Code** CV16-10-P

---

**Function**
CV16 – Check valve

**Size**
10 – 10 Size

**Seals**
Blank – Buna-N
V – Viton

**Style**
P – Poppet

**Valve housing material**
Omit for cartridge only
A – Aluminum
S – Steel

**Free flow cracking pressure**
- 5 – 0.34 bar (5 psi) (Anti-cavitation)
- 15 – 1.03 bar (15 psi)
- 25 – 1.70 bar (25 psi)
- 50 – 3.40 bar (50 psi)

**Dimensions**

<table>
<thead>
<tr>
<th>Code</th>
<th>Port size</th>
<th>Housing number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>3/8&quot; BSPP</td>
<td>02–175462</td>
</tr>
<tr>
<td>6T</td>
<td>SAE 6</td>
<td>566151</td>
</tr>
<tr>
<td>8T</td>
<td>SAE 8</td>
<td>02–175100</td>
</tr>
<tr>
<td>2G</td>
<td>1/4&quot; BSPP</td>
<td>876702</td>
</tr>
<tr>
<td>3G</td>
<td>3/8&quot; BSPP</td>
<td>876703</td>
</tr>
<tr>
<td>6H</td>
<td>SAE 6</td>
<td>876700</td>
</tr>
<tr>
<td>8H</td>
<td>SAE 8</td>
<td>876701</td>
</tr>
</tbody>
</table>

(See pages 42 – 44 for housing details.)

*WARNING:* The cavity should be machined to the 14.29 (0.562) maximum diameter and 36.00 (1.417) maximum depth (See Cavity, page 40).

**Torque cartridge in housing**
A - 47–54 Nm (35–40 lbf ft)
S - 68–75 Nm (50–55 lbf ft)

---

![Diagram of valve]
CV11-12
Check valve

Description
The CV11-12 is a poppet type, screw-in cartridge check valve.

Operation
This valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2.

Ratings and specifications
*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)*

Typical application pressure (all ports) ......................... 350 bar (5000 psi)
Cartridge fatigue pressure (infinite life) .......................... 350 bar (5000 psi)
Rated flow ....................................................... 114 l/min (30 USgpm)
Free flow cracking pressure @1 l/min (0.25 USgpm) ....... 2.5 – 0.17 bar (2.5 psi)
5.0 – 0.35 bar (5.0 psi)
10 – 0.69 bar (10 psi)
20 – 1.38 bar (20 psi)
40 – 2.76 bar (40 psi)
80 – 5.50 bar (80 psi)
160 – 11.0 bar (160 psi)

Internal leakage ............... Port 2 to 1 5 drops / min. maximum @350 bar (5000 psi)
Hysteresis .................................................. Less than 0.35 bar (5 psi)
Temperature range ...................... –40 to 120°C (~–40° to 248°F)
Cavity ................................................. C–12–2 or C–12–2U (See page 40)
Fluids .............................................. All general purpose hydraulic fluids such as:
MIL–H–5606, SAE 10, SAE 20, etc.
Filtration .................................................. Cleanliness code 18/16/13
Standard housing materials ............... Aluminum or steel
Weight cartridge only ......................... 0.24 kg (0.54 lb.)
Seal kit ............................................. 02–165889 Buna–N
02–165888 Viton®

Viton is a registered trademark of E.I.DuPont

Pressure Drop Curves
Cartridge only

<table>
<thead>
<tr>
<th>Flow in USgpm (105 SUS oil @ 120°F)</th>
<th>Pressure Drop psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>35</td>
<td>14</td>
</tr>
<tr>
<td>40</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow in l/min (21.8 cSt oil @ 49°C)</th>
<th>Pressure Drop bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>20</td>
<td>8</td>
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<td>25</td>
<td>10</td>
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<td>30</td>
<td>12</td>
</tr>
<tr>
<td>35</td>
<td>14</td>
</tr>
<tr>
<td>40</td>
<td>16</td>
</tr>
</tbody>
</table>

A – CV11-12-P-O-80
B – CV11-12-P-O-20
C – CV-11-12-P-O-2.5
## Model Code CV11-12

### Function
- **CV11** Check valve

### Size
- **12** – 12 Size

### Seals
- **Blank** – Buna-N
- **V** – Viton

### Style
- **P** – Poppet

### Valve housing material
- **A** – Aluminum
- **S** – Steel

### Port size
- **O** – Cartridge only

### Housing number

<table>
<thead>
<tr>
<th>Code</th>
<th>Port size</th>
<th>C-12-2U Aluminum Fatigue rated</th>
<th>C-12-2U Aluminum Fatigue rated</th>
<th>C-12-2U Steel Fatigue rated</th>
<th>C-12-2U Steel Fatigue rated</th>
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<tbody>
<tr>
<td>10T</td>
<td>SAE 10</td>
<td>02–160641</td>
<td>02–160640</td>
<td>02–169817</td>
<td>02–169744</td>
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<tr>
<td>12T</td>
<td>SAE 12</td>
<td>02–160645</td>
<td>02–160644</td>
<td>02–169790</td>
<td>02–169782</td>
</tr>
<tr>
<td>4G</td>
<td>1/2” BSPP</td>
<td>02–161116</td>
<td>02–161118</td>
<td>02–172512</td>
<td>02–172062</td>
</tr>
<tr>
<td>6G</td>
<td>3/4” BSPP</td>
<td>02–161115</td>
<td>02–161117</td>
<td>02–162922</td>
<td>02–169665</td>
</tr>
</tbody>
</table>

(See pages 43 & 44 for housing details.)

### Cavity
- **Blank** – Cavity without undercut
- **U** – Cavity with undercut

#### Aluminum housings can be used for pressures up to 210 bar (3000 psi)

Steel housings **must** be used for operating pressures above 210 bar (3000 psi)

### Cracking pressure
- **2.5** – 0.17 bar (2.5 psi)
- **5.0** – 0.35 bar (5.0 psi)
- **10** – 0.69 bar (10.0 psi)
- **20** – 1.38 bar (20.0 psi)
- **40** – 2.75 bar (40.0 psi)
- **80** – 5.50 bar (80.0 psi)
- **160** – 11.0 bar (160 psi)

### Dimensions
- **mm (inch)**

#### Torque cartridge in housing
- **A** – 81–95 Nm (60–70 lbf ft)
- **S** – 102–115 Nm (75–85 lbf ft)

---

[Diagram of CV11-12 Check Valve]
CV1-16-P
Check valve

Description
The CV1-16-P is a poppet type, screw-in cartridge check valve.

Operation
This valve remains closed until the spring bias is reached at port 1 at which time
the poppet lifts off the seat and allows flow from port 1 to port 2.

Ratings and specifications
*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49 °C (120 °F)*
Typical application pressure (all ports) .......................... 210 bar (3000 psi)
Cartridge fatigue pressure (infinite life) ............................ 210 bar (3000 psi)
Rated flow ............................................................... 151 l/min (40 USgpm)
Free flow cracking pressure ................................. @1 l/min (0.25 USgpm)

- 5  – 0.34 bar (5 psi)
- 20 – 1.34 bar (20 psi)
- 30 – 2.07 bar (30 psi)
- 50 – 3.45 bar (50 psi)

Internal leakage .................................................. Port 2 to 1 5 drops / min maximum @210 bar (3000 psi)
Temperature range ............................................. –40 to 120 °C (–40 °F to 248 °F)
Cavity ................................................................. C–16–2 (See page 40)
Fluids ............................................................... All general purpose hydraulic fluids such as:
MIL–H–5606, SAE 10, SAE 20, etc.
Filtration ........................................................... Cleanliness code 18/16/13
Standard housing materials ................................. Aluminum
Weight cartridge only ............................................. 0.26 kg (0.58 lb.)
Seal kit ............................................................... 565810 Buna–N
889609 Viton®

Viton is a registered trademark of E.I.DuPont

Pressure Drop Curves
Cartridge only

<table>
<thead>
<tr>
<th>Flow in l/min (21.8 cSt oil @ 49 °C)</th>
<th>Pressure Drop psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>A</td>
</tr>
<tr>
<td>6</td>
<td>B</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow in USgpm (105 SUS oil @ 120 °F)</th>
<th>Pressure Drop bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

A – CV1-16-P-O-50
B – CV1-16-P-O-20
C – CV1-16-P-O-5
**Model Code**

**CV1-16-P**

**CV1 - 16 (V) - P - *** - **

1 2 3 4 5 6

<table>
<thead>
<tr>
<th>Function</th>
</tr>
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<tbody>
<tr>
<td>CV1 – Check valve</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size</th>
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<tbody>
<tr>
<td>16 – 16 Size</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank – Buna-N</td>
</tr>
<tr>
<td>V – Viton</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>P – Poppet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Port size</th>
</tr>
</thead>
<tbody>
<tr>
<td>O – Cartridge only</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Port size</th>
<th>Housing number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Aluminum Light duty</td>
</tr>
<tr>
<td>6B</td>
<td>3/4” BSPP</td>
<td>02-175463</td>
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<tr>
<td>12T</td>
<td>SAE 12</td>
<td>566149</td>
</tr>
<tr>
<td>4G</td>
<td>1/2” BSPP</td>
<td></td>
</tr>
<tr>
<td>6G</td>
<td>3/4” BSPP</td>
<td></td>
</tr>
<tr>
<td>10H</td>
<td>SAE 10</td>
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<tr>
<td>12H</td>
<td>SAE 12</td>
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</tr>
</tbody>
</table>

(See pages 42 & 43 for housing details.)

<table>
<thead>
<tr>
<th>Free flow cracking pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 – 0.34 bar (5 psi) (Anti-cavitation)</td>
</tr>
<tr>
<td>20 – 1.34 bar (20 psi)</td>
</tr>
<tr>
<td>30 – 2.07 bar (30 psi)</td>
</tr>
<tr>
<td>50 – 3.45 bar (50 psi)</td>
</tr>
</tbody>
</table>

**Dimensions**

mm (inch)

Torque cartridge in housing
108–122 Nm (80–90 lbf ft)
CV2-20-P
Check valve

Description
The CV2-20-P is a poppet type, screw-in cartridge check valve.

Operation
This valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2.

Ratings and specifications
Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)
Typical application pressure (all ports) ......................... 210 bar (3000 psi)
Cartridge fatigue pressure (infinite life) ....................... 210 bar (3000 psi)
Rated flow .................................................. 227 l/min (60 USgpm)
Free flow cracking pressure @1 l/min (0.25 USgpm) ........... 5 – 0.34 bar (5 psi)
.......................................................... 15 – 1.03 bar (15 psi)
.......................................................... 30 – 2.07 bar (30 psi)
.......................................................... 60 – 4.14 bar (60 psi)
.......................................................... 100 – 6.90 bar (100 psi)
Internal leakage ............... Port 2 to 1 5 drops / min maximum @210 bar (3000 psi)
Temperature range ...................... –40 to 120°C (–40° to 248°F)
Cavity ...................................................... C–20–2 (See page 40)
Fluids ................................................. All general purpose hydraulic fluids such as:
.......................................................... MIL–H–5606, SAE 10, SAE 20, etc.
Filtration .............................................. Cleanliness code 18/16/13
Standard housing materials ......................... Aluminum
Weight cartridge only .................................. 0.49 kg (1.09 lb.)
Seal kit .................................................... 889615 Buna–N
889619 Viton®

Pressure Drop Curves
Cartridge only

Viton is a registered trademark of E.I.DuPont
Model Code CV2-20-P

CV2 - 20 (V) - P - *** - ***

1 Function
CV2 - Check valve

4 Size
20 – 20 Size

3 Seals
Blank – Buna-N
V – Viton

4 Style
P – Poppet

5 Port size
O – Cartridge only

<table>
<thead>
<tr>
<th>Code</th>
<th>Port size</th>
<th>Housing number</th>
</tr>
</thead>
<tbody>
<tr>
<td>8B</td>
<td>1&quot; BSPP</td>
<td>02-175464</td>
</tr>
<tr>
<td>16T</td>
<td>SAE 16</td>
<td>566409</td>
</tr>
<tr>
<td>6G</td>
<td>3/4&quot; BSPP</td>
<td></td>
</tr>
<tr>
<td>8G</td>
<td>1&quot; BSPP</td>
<td>876732</td>
</tr>
<tr>
<td>12H</td>
<td>SAE 12</td>
<td>876734</td>
</tr>
<tr>
<td>16H</td>
<td>SAE 16</td>
<td>876735</td>
</tr>
</tbody>
</table>

(See pages 42 & 43 for housing details.)

6 Free flow cracking pressure
5 – 0.34 bar (5 psi) (Anti-cavitation)
15 – 1.03 bar (15 psi)
30 – 2.07 bar (30 psi)
60 – 4.14 bar (60 psi)
100 – 6.90 bar (100 psi)

Dimensions
mm (inch)

47.6 (1.87) hex
1.625”–12 Thd.
1 14.0 (0.55)
2 57.2 (2.25)
3 36.44 (1.435)

Torque cartridge in housing
128–155 Nm (95–115 lbf ft)
SPC2-8
Single pilot check valve

Description
The SPC2–8 is a poppet type, pilot-to-open, screw-in cartridge type check valve.

Operation
The SPC2–8 allows flow from port 2 to port 3 when the spring bias is overcome. Flow is blocked from port 3 to port 2 until sufficient pilot pressure is applied at port 1.

Ratings and specifications
Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)
Typical application pressure (all ports) 240 bar (3500 psi)
Cartridge fatigue pressure (infinite life) 240 bar (3500 psi)
Rated flow 19 l/min (5 USgpm)
Pilot ratio 3:1
Cracking pressure 15 – 1.0 bar (15 psi)
35 – 2.4 bar (35 psi)
65 – 4.5 bar (65 psi)

Internal leakage. All leakage rates @240 bar (3500 psi).
Port 3 to 2 5 drops / min maximum
Port 2 to 1 Unsealed piston* 140 cc/min maximum, zero leakage with sealed piston.
*Unsealed piston supplied with 15 spring option only.

Temperature range -40 to 120°C (-40°F to 248°F)
Cavity C–8–3 (See page 41)

Fluids All general purpose hydraulic fluids such as:
MIL-H-5606, SAE 10, SAE 20, etc.

Filtration Cleanliness code 18/16/13

Standard housing materials Aluminum or steel
Weight cartridge only 0.07 kg (0.15 lbs.)
Seal kits 02–173326 Buna N
02–173327 Viton®

WARNING: Do not use Single pilot check valves in load holding applications where either overrunning loads are possible; or, load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

Pressure Drop Curves
Cartridge only

A – 65 psi (port 2 to 3)
B – 35 psi (port 2 to 3)
C – 15 psi (port 2 to 3)
D – Port 3 to 2 (piloted open)

Viton is a registered trademark of E.I. DuPont

Flow in l/min (21.8 cSt oil @ 49°C)

Pressure Drop psi

Flow in USgpm (105 SUS oil oil @ 120°F)

Pressure Drop bar
Model Code

SPC2-8

Function
SPC2 – Single pilot check valve

Size
8 – 8 Size

Seals
Blank – Buna-N
V – Viton

Style
P – Poppet

Valve housing material
Omit for cartridge only
A – Aluminum
S – Steel

Port size
O – Cartridge only

Code | Port size | Housing number
--- | --- | ---
 |  | Aluminum Fatigue rated | Steel Fatigue rated
4T | SAE 4 | 02–160741 | 02–160745
6T | SAE 6 | 02–160742 | 02–160744
2G | 1/4” BSPP | 02–160739 | 02–160743
3G | 3/8” BSPP | 02–160740 | 02–160746

(See pages 43 & 44 for housing details.)

Cracking pressure
15 – 1.0 bar (15 psi)
35 – 2.4 bar (35 psi)
65 – 4.5 bar (65 psi)

Dimensions
mm (inch)

22,1 (0.87) hex
0.750”–16 Thd.

8,5 (0.33)

41,4 (1.63)

14,2 (0.559)
15,8 (0.622)

Torque cartridge in housing
34–41 Nm (25–30 lbf ft)
**SPC2-10**

**Single pilot check valve**

---

### Functional Symbol

![Functional Symbol](image)

---

### Sectional View

![Sectional View](image)

---

### Description

The SPC2-10 is a poppet type pilot-to-open check valve, screw in cartridge type.

### Operation

This valve allows flow from Port 2 to Port 3, when the spring bias is overcome. Flow is blocked from Port 3 to Port 2 until sufficient pilot pressure is applied at Port 1.

### Ratings and specifications

*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)*

- **Typical application pressure (all ports)**: 210 bar (3000 psi)
- **Cartridge fatigue pressure (Infinite life)**: 210 bar (3000 psi)
- **Rated flow**: 23 l/min (6 USgpm)
- **Cracking pressure @1 l/min (0.25 USgpm)**: 25 – 1.72 bar (25 psi), 50 – 3.45 bar (50 psi), 100 – 6.90 bar (100 psi)
- **Internal leakage**: Port 3 to 2: 5 drops / min maximum @210 bar (3000 psi)
- **Temperature range**: –40 to 120°C (–40°F to 248°F)
- **Pilot ratio**: 4:1
- **Cavity**: C–10–3 (See page 41)
- **Fluids**: All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.
- **Filtration**: Cleanliness code 18/16/13
- **Standard housing materials**: Aluminum
- **Weight cartridge only**: 0.08 kg (0.18)
- **Seal kit (Check valve)**: 02-153267 Buna–N, 02-173666 Viton®

### Pilot Pressure calculation

Nominal pressure to open valve by remote control

\[
\text{Pilot pressure at port 1} = \frac{\text{Cracking pressure + Pressure at port 3}}{4} + (0.75 \times \text{Pressure at Port 2})
\]

---

### Pressure Drop Curves

**Cartridge only**

![Pressure Drop Curves](image)

---

**WARNING:** Do not use single pilot check valves in load holding applications where either overrunning loads are possible; or, load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

- A – SPC2-10-P-0-100
- B – SPC2-10-P-0-50
- C – SPC2-10-P-0-25
- D – Piloted Open all cartridges

---

*Viton is a registered trademark of E.I. DuPont*
Model Code

SPC2-10

**Function**
SPC2 – Single pilot check valve

**Size**
10 – 10 Size

**Seals**
Blank – Buna-N
V – Viton

**Style**
P – Poppet

**Port size**
O – Cartridge only

<table>
<thead>
<tr>
<th>Code</th>
<th>Port size</th>
<th>Housing number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B</td>
<td>3/8&quot; BSPP</td>
<td>02–173358</td>
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<tr>
<td>6T</td>
<td>SAE 6</td>
<td>566162</td>
</tr>
<tr>
<td>2G</td>
<td>1/4&quot; BSPP</td>
<td></td>
</tr>
<tr>
<td>3G</td>
<td>3/8&quot; BSPP</td>
<td></td>
</tr>
<tr>
<td>6H</td>
<td>SAE 6</td>
<td>876704</td>
</tr>
<tr>
<td>8H</td>
<td>SAE 8</td>
<td>876711</td>
</tr>
</tbody>
</table>

(See pages 42 & 43 for housing details.)

**Free flow cracking pressure**
25 – 1.72 bar (25 psi)
50 – 3.45 bar (50 psi)
100 – 6.90 bar (100 psi)

**Dimensions**
mm (inch)

- 25,4 (1.0) hex
- 0.875”-14 Thd.
- 8,0 (0.32)
- 15,80 (0.623)
- 17,40 (0.684)
- 46,8 (1.84)

Torque cartridge in housing
47–54 Nm (35–40 lbf ft)
**SPC1-10**
**Single pilot check valve**

### Functional Symbol

- **Cyl.**
- **Pilot**
- **Valve**

### Sectional View

- **Cyl.**
- **Valve**
- **Pilot**

### Description
The SPC1-10 is an in-line housing type, pilot-to-open check valve.

### Operation
This valve allows flow from the valve port to the cylinder port when the spring bias is overcome. Flow is blocked from the cylinder port to the valve port until sufficient pilot pressure is applied at the pilot port.

### Ratings and specifications

**Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)**

- **Typical application pressure (all ports)**: 210 bar (3000 psi)
- **Rated flow**: 45 l/min (12 USgpm)
- **Free flow cracking pressure** @ 1 l/min (0.25 USgpm): 1,03 bar (15 psi)
- **Internal leakage cylinder port to valve port**: 5 drops / min maximum @ 210 bar (3000 psi)
- **Temperature range**: –40°C to 120°C (–40°F to 248°F)
- **Pilot ratio**: 4:1
- **Fluids**: All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
- **Filtration**: Cleanliness code 18/16/13
- **Standard housing materials**: Aluminum
- **Weight**: 0.52 kg (1.14 lb.)
- **Seal kit (Check valve)**: 565803 Buna–N, 566086 Viton®
- **Seal kit (Pilot piston)**: 889648 Buna–N, 889649 Viton®

### Pilot Pressure calculation

- **Nominal pressure to open valve by remote control**
- **Pilot pressure at Pilot port**: \( \text{Cracking pressure} + \text{Pressure at Cyl port} + \left(0.75 \times \text{Pressure at Valve port}\right) / 4 \)

**WARNING**: Do not use Single pilot check valves in load holding applications where either overrunning loads are possible; or, load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

### Pressure Drop Curves

- **A** – Port 2-3 Free Flow
- **B** – Port 3-2 Piloted Open

**Viton** is a registered trademark of E.I. DuPont
**Model Code**

**SPC1-10**

---

**SPC1 - 10 (S) (V) - P - **

1 2 3 4 5

**1 Function**
SPC1 – Single pilot check valve

**2 Size**
10 – 10 Size

**3 Piston Seals**
Blank – No seals
S – With seals

**4 Seals**
Blank – Buna-N
V – Viton

**5 Seating type**
P – Poppet

**6 Port size**
3B – 3/8 BSPP (Light duty)
6T – SAE 6 (Light duty)

---

**Dimensions**

<table>
<thead>
<tr>
<th>mm (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15,8 (0.63)</td>
</tr>
</tbody>
</table>

**CV1-10(V)-P-O-15**

<table>
<thead>
<tr>
<th>31,7 (1.25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>34,0 (1.34)</td>
</tr>
</tbody>
</table>

---

**Torque cartridge in housing**

47–54 Nm (35–40 lbf ft)

<table>
<thead>
<tr>
<th>Housing Port Size</th>
<th>All Ports</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B 6T</td>
<td>3/8 BSPP</td>
<td>02-178259</td>
</tr>
<tr>
<td></td>
<td>SAE 6</td>
<td>02-161386</td>
</tr>
</tbody>
</table>

See page 53 for piston numbers
SPC1-16
Single pilot check valve

Description
The SPC1-16 is an in-line housing type, pilot-to-open screw in cartridge type check valve.

Operation
This valve allows flow from the valve port to the cylinder port when the spring bias is overcome. Flow is blocked from the cylinder port to the valve port until sufficient pilot pressure is applied at the pilot port.

Ratings and specifications
*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49\(^\circ\)C (120\(^\circ\)F)*

**Typical application pressure (all ports)**: 210 bar (3000 psi)

**Rated flow**: 151 l/min (40 USgpm)

**Free flow cracking pressure**: @1 l/min (0.25 USgpm) 1.38 bar (20 psi)

**Internal leakage cylinder port to valve port**: 5 drops/min maximum @ 210 bar (3000 psi)

**Temperature range**: –40 to 120\(^\circ\)C (–40 to 248\(^\circ\)F)

**Pilot ratio**: 4:1

**Fluids**: All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.

**Filtration**: Cleanliness code 18/16/13

**Standard housing materials**: Aluminum

**Weight**: 1.83 kg (4.03 lb.)

**Seal kit (Check valve)**: 565810 Buna–N 889609 Viton®

**Seal kit (Pilot piston)**: 889644 Buna–N 02-173598 Viton®

**Pilot Pressure calculation**
Nominal pressure to open valve by remote control

\[
\text{Pilot pressure at Pilot port} = \frac{\text{Cracking pressure} + \text{Pressure at Cyl port}}{4} + (0.75 \times \text{Pressure at Valve port})
\]

**WARNING**: Do not use Single pilot check valves in load holding applications where either overrunning loads are possible; or, load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

Pressure Drop Curves

**Flow in l/min (21.8 cSt oil @ 49\(^\circ\)C)**

![Graph of Pressure Drop Curves](image)

*Viton is a registered trademark of E.I.DuPont*

A – Port 2-3 Free Flow
B – Port 3-2 Piloted Open
Model Code

SPC1 - 16 (S) (V) - P - ***

1 Function
SPC1 – Single pilot check valve

2 Size
16 – 16 Size

3 Piston Seals
Blank – No seals
S – With seals

4 Seals
Blank – Buna-N
V – Viton

5 Seating type
P – Poppet

6 Port size
6B – 3/4” BSPP (Light duty)
12 – SAE 12 (Light duty)

Dimensions

CV1-16(V)-P-O-20

Cylinder

Dimensions

mm (inch)

Torque cartridge in housing
108–122 Nm (80–90 lbf ft)

Housing
Port Size

<table>
<thead>
<tr>
<th>Port Size</th>
<th>All Ports</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6B</td>
<td>3/4” BSPP</td>
<td>02-178260</td>
</tr>
<tr>
<td>12T</td>
<td>SAE 12</td>
<td>889158</td>
</tr>
</tbody>
</table>

See page 53 for piston numbers

27
SPC1-20
Single pilot check valve

Description
The SPC1-20 is an inline housing type, pilot-to-open check valve.

Operation
This valve allows flow from the valve port to the cylinder port when the spring bias is overcome. Flow is blocked from the cylinder port to the valve port until sufficient pilot pressure is applied at the pilot port.

Ratings and specifications
Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)
Typical application pressure (all ports) .......................... 210 bar (3000 psi)
Rated flow .............................................. 227 l/min (60 USgpm)
Free flow cracking pressure @1 l/min (0.25 USgpm) ............... 1.03 bar (15 psi)
Internal leakage cylinder port to valve port
......................................................... 5 drops / min maximum
@ 210 bar (3000 psi)
Temperature range ........................................ -40 to 120°C (–40°F to 248°F)
Pilot ratio .................................................. 4:1
Fluids ...................................................... All general purpose hydraulic fluids such as:
MIL–H–5606, SAE 10, SAE 20, etc.
Filtration .................................................. Cleanliness code 18/16/13
Standard housing materials ...................................... Aluminum
Weight ................................................... 3.17 kg (6.98 lb.)
Seal kit (Check valve) ..................................... 889615 Buna–N
889619 Viton®
Seal kit (Pilot piston) ..................................... 889656 Buna–N
02-173599 Viton®

Pilot Pressure calculation
Nominal pressure to open valve by remote control
Pilot pressure at Pilot port =
Cracking pressure + Pressure at Cyl port
+ (0.75 x Pressure at Valve port)

Pressure Drop Curves

WARNING: Do not use Single pilot check valves in load holding applications where either overrunning loads are possible; or, load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

A – Port 2-3 Free Flow
B – Port 3-2 Piloted Open
Model Code

SPC1 - 20 (S) (V) - P - ***

1 Function
SPC1—Single pilot check valve

3 Piston Seals
Blank—No seals
S—With seals

5 Seating type
P—Poppet

6 Port size
8B—1” BSPP (Light duty)
16T—SAE 16 (Light duty)
20T—SAE 20 (Light duty)

Dimensions
mm (inch)

CV2-20(V)-P-O-15

63.5 (2.50)
31.8 (1.25)

Cylinder

Housing
Port Size

Port Size

All Ports

Part Number

8B 1” BSPP
889161
02-178261
16T SAE 16
116,3 (4.58)
114,3 (4.50)
101,6 (4.00)
57,1 (2.25)

111,1 (4.38)

31,8 (1.25)
12,7 (0.5)

Valve

13,5 (0.53) 2 plcs.

152,4 (6.00)

Pilot

116,3 (4.6)

31,8 (1.25)

114,3 (4.50)
101,6 (4.00)
57,1 (2.25)

6,3 (0.24)

73,0 (2.88)

63,5 (2.50)

See page 53 for piston numbers

Torque cartridge in housing
128–155 Nm (95–115 lbf ft)
POC1-10
Pilot operated check valve

Description
The POC1-10 is a pilot-to-open, screw-in cartridge type check valve.

Operation
The POC1-10 will positively lock a load from port 1 to port 2, but will release the load by applying pressure to the pilot port (port 3). The load can also be released by adjusting the optional override.

Ratings and specifications
Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)
Typical application pressure (all ports) .......................... 350 bar (5000 psi)
Cartridge fatigue pressure (infinite life) .......................... 310 bar (4500 psi)
Rated flow ......................................................... 57 l/min (15 USgpm)
Pilot ratio ......................................................... 3:1
Internal leakage ................. Port 1 to 2 Less than 5 drops / min maximum
......................................................... @ 350 bar (5000 psi).
Free flow cracking Pressure @ 1.0 l/min (0.25 USgpm) .......... 0.3 bar (5 psi);
......................................................... 2.0 bar (30 psi); 5.1 bar (75 psi); 6.9 bar (100 psi)
Hysteresis ......................................................... less than 3 bar (45 psi)
Temperature range ......................... −40 to 120°C (−40 to 248°F)
Cavity ......................................................... C−10−3S (see page 41)
Fluids ......................................................... All general purpose hydraulic fluids such as:
......................................................... MIL−H−5606, SAE 10, SAE 20, etc.
Filtration ......................................................... Cleanliness code 18/16/13
Standard housing materials ......................... Aluminum or steel
Weight cartridge w/out override ......................... 0.10 kg (0.23 lb.)
......................................................... cartridge w/override ......................... 0.17 kg (0.36 lb.)
Seal kit ......................................................... 889650 Buna-N
......................................................... 889652 Viton®

Pressure Drop Curves
Cartridge only

WARNING: Do not use Pilot-to-Open check valves in load holding applications where either overrunning loads are possible; or, load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

A – 100 psi
B – 75 psi
C – 30 psi
D – 5 psi
E – Full pilot

3:1 Ratio
Pilot pressure, nominal at Port 3 = \[
\frac{(\text{Crack Pressure} + \text{Port 1 Pressure} - \text{Port 2 Pressure})}{3} + \text{Port 2 Pressure}
\]
**Model Code**

**POC1-10**

- **Function**
  - POC1–Pilot operated check valve

- **Valve size**
  - 10 – Size 10

- **Seals**
  - Blank – Buna-N
  - V – Viton

- **Override option**
  - F – None
  - S – Adjustable override

- **Cartridge/valve housing**
  - O – Cartridge only
  - I – Inline body
  - N – Close coupled – nipple mounting
  - G – Gasket mounted – single
  - D – Dual P.O. check – line mounted
  - P – Dual P.O. check – gasket mounted

- **Valve housing material**
  - A – Aluminum
  - S – Steel

- **Housing type/port sizes**

<table>
<thead>
<tr>
<th>Housing Type/Port Sizes</th>
<th>Cont’d</th>
</tr>
</thead>
<tbody>
<tr>
<td>N – Nipple mounted</td>
<td></td>
</tr>
<tr>
<td>6T – SAE 6</td>
<td></td>
</tr>
<tr>
<td>3G – 3/8” BSPP</td>
<td></td>
</tr>
<tr>
<td>G – Gasket mounted (single)</td>
<td></td>
</tr>
<tr>
<td>6T – SAE 6</td>
<td></td>
</tr>
<tr>
<td>3G – 3/8” BSPP</td>
<td></td>
</tr>
<tr>
<td>D – Dual line mounted</td>
<td></td>
</tr>
<tr>
<td>6T – SAE 6</td>
<td></td>
</tr>
<tr>
<td>8T – SAE 8</td>
<td></td>
</tr>
<tr>
<td>10T – SAE 10</td>
<td></td>
</tr>
<tr>
<td>2G – 1/4” BSPP</td>
<td></td>
</tr>
<tr>
<td>3G – 3/8” BSPP</td>
<td></td>
</tr>
<tr>
<td>4G – 1/2” BSPP</td>
<td></td>
</tr>
</tbody>
</table>

- **Override option**
  - F – None
  - S – Adjustable override

- **Housing type/port sizes (cont’d)**

<table>
<thead>
<tr>
<th>Housing Type/Port Sizes</th>
<th>Cont’d</th>
</tr>
</thead>
<tbody>
<tr>
<td>H – SAE 6</td>
<td></td>
</tr>
<tr>
<td>G – 3/8” BSPP</td>
<td></td>
</tr>
<tr>
<td>D – Dual P.O. check – line mounted</td>
<td></td>
</tr>
<tr>
<td>P – Dual P.O. check – gasket mounted</td>
<td></td>
</tr>
</tbody>
</table>

- **Housing type/port sizes**

<table>
<thead>
<tr>
<th>Housing Type/Port Sizes</th>
<th>Cont’d</th>
</tr>
</thead>
<tbody>
<tr>
<td>I – Inline Mounted</td>
<td></td>
</tr>
<tr>
<td>Aluminum fatigue rated</td>
<td></td>
</tr>
<tr>
<td>6H – SAE 6</td>
<td></td>
</tr>
<tr>
<td>8H – SAE 8</td>
<td></td>
</tr>
<tr>
<td>2G – 1/4” BSPP</td>
<td></td>
</tr>
<tr>
<td>3G – 3/8” BSPP</td>
<td></td>
</tr>
</tbody>
</table>

- **Free flow cracking pressure**

<table>
<thead>
<tr>
<th>Pressure</th>
<th>psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>005</td>
<td>0.3</td>
</tr>
<tr>
<td>030</td>
<td>2.0</td>
</tr>
<tr>
<td>075</td>
<td>5.1</td>
</tr>
<tr>
<td>100</td>
<td>6.9</td>
</tr>
</tbody>
</table>

- **Dimensions**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>mm (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.4 (1.0) hex</td>
<td></td>
</tr>
<tr>
<td>0.875”-14 Thd.</td>
<td></td>
</tr>
</tbody>
</table>

- **Torque cartridge in housing**

<table>
<thead>
<tr>
<th>Torque Cartridge</th>
<th>Nm</th>
<th>Ibf ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>47–54</td>
<td>35–40</td>
</tr>
<tr>
<td>S</td>
<td>68–75</td>
<td>50–55</td>
</tr>
</tbody>
</table>

31
POC1-12
Pilot operated check valve

Description
The POC1-12 is a pilot-to-open, screw-in cartridge type check valve.

Operation
The POC1-12 will positively lock a load from port 1 to port 2, but will release the load by applying pressure to the pilot port (port 3). The load can also be released by adjusting the optional override.

Ratings and specifications
Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports) .............. 350 bar (5000 psi)
Cartridge fatigue pressure (infinite life) .............. 310 bar (4500 psi)
Rated flow ............................................ 114 l/min (30 USgpm)
Pilot ratio .................................................. 3:1
Internal leakage .................................... Port 1 to 2 5 drops / min maximum @ 350 bar (5000 psi).
Free flow cracking pressure @ 1.0 l/min (0.25 USgpm) .................. 0.3 bar (5 psi); 2.0 bar (30 psi); 5.1 bar (75 psi); 6.9 bar (100 psi)
Hysteresis ................................................. less than 3 bar (45 psi)
Temperature range ................................. –40 to 120°C (~–40°F to 248°F)
Cavity .................................................... C–12–3S (see page 41)
Fluids ....................................................... All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.
Filtration ................................................... Cleanliness code 18/16/13
Standard housing materials ......................... Aluminum or steel
Weight cartridge w/out override ...................... 0.26 kg (0.58 lb.)
cartridge w/override .................................. 0.34 kg (0.74 lb.)
Seal kits ..................................................... 02-180095 Buna-N 02-165887 Viton®

Viton is a registered trademark of E.I. DuPont

Pressure Drop Curves
Cartridge only

WARNING: Do not use Pilot-to-Open check valves in load holding applications where either overrunning loads are possible; or, load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

A – 100 psi
B – 75 psi
C – 30 psi
D – 5 psi
E – Full pilot

3:1 Ratio
Pilot pressure, nominal at Port 3 = \[ \frac{\text{Crack Pressure} + \text{Port 1 Pressure} - \text{Port 2 Pressure}}{3} + \text{Port 2 Pressure} \]
POC1 – 12 (V) – * – *** – ***

Function
POC1 – Pilot operated check valve

Valve size
12 – Size 12

Seals
Blank – Buna-N
V – Viton

Override option
F – None
S – Adjustable override

Cartridge/valve housing
O – Cartridge only
I – Inline body
B – SAE Code 61 4-bolt pad
N – Close coupled-nipple mounting
G – Gasket mounted–single
D – Dual counterbalance-line mounted
P – Dual counterbalance-gasket mounted

Valve housing material
A – Aluminum
S – Steel

Aluminum housings can be used for pressures up to 210 bar (3000 psi)

Steel housings must be used for operating pressures above 210 bar (3000 psi)

Housing type/port sizes
I – Inline Mounted
Fatigue Rated
10T – SAE 10
12T – SAE 12
4G – 1/2” BSPP
6G – 3/4” BSPP

B – 4-Bolt Pad
6T – 3/4” SAE Code 61

N – Nipple Mounted
8T – SAE 8
4G – 1/2” BSPP

P – Dual Gasket Mounted
8T – SAE 8
4G – 1/2” BSPP

(See page 49 – 51 for housing details)

Free flow cracking pressure
005 – 0.3 bar (5 psi) (anti-cavitation)
030 – 2.0 bar (30 psi)
075 – 5.1 bar (75 psi)
100 – 6.9 bar (100 psi)

Dimensions
mm (inch)

Torque cartridge in housing
A – 81–95 Nm (60–70 lbf ft)
S – 102–115 Nm (75–85 lbf ft)

31.7 (1.25) hex
1.062”–12 Thd.

18.9 (0.75)

57.9 (2.28)

22.17 (0.873)
23.75 (0.935)

47.7 (1.87)

4.0 (0.15) hex
DPC1-10
Double pilot check valve

**Description**
The DPC1-10 is an inline housing type, double pilot operated check valve.

**Operation**
This valve allows flow from the V ports to the C ports, while blocking flow from the C ports to the V ports. Flow will be allowed from the C ports to the V ports when pressure is applied at the opposite V port.

**Ratings and specifications**
*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49° C (120° F)*
- **Typical application pressure (all ports)**: 210 bar (3000 psi)
- **Rated flow**: 45 l/min (12 USgpm)
- **Free flow cracking pressure @1 l/min (0.25 USgpm)**: 1.03 bar (15 psi)
- **Internal leakage cylinder port to valve port @ 210 bar (3000 psi)**: 5 drops / min maximum
- **Temperature range**: –40 to 120° C (~–40° to 248° F)
- **Pilot ratio**: 4:1
- **Fluids**: All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.
- **Filtration**: Cleanliness code 18/16/13
- **Standard housing materials**: Aluminum
- **Weight**: 1,83 kg (4.03 lb.)
- **Seal kit (Check valve)**: 889615 Buna–N
  889619 Viton®
- **Seal kit (Pilot piston)**: 889656 Buna–N
  02-173599 Viton®

**Pilot Pressure calculation**
Nominal pressure to open valve by remote control

\[
\text{Pilot pressure at Pilot port} = \text{Cracking pressure} + \frac{\text{Pressure at Cyl port}}{4} + (0.75 \times \text{Pressure at Valve port})
\]

Viton is a registered trademark of E.I. DuPont

**Pressure Drop Curves**

---

**Flow in l/min (21.8 cSt oil @ 49° C)**

<table>
<thead>
<tr>
<th>Flow in l/min</th>
<th>Pressure Drop psi</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>40</td>
<td>16</td>
</tr>
</tbody>
</table>

**Flow in USgpm (105 SUS oil @ 120° F)**

<table>
<thead>
<tr>
<th>Flow in USgpm</th>
<th>Pressure Drop bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>

A – Port 2-3 Free Flow
B – Port 3-2 Piloted Open
Model Code

DPC1-10

DPC1 - 10 (S) (V) - P - **

1 Function
DPC1 – Double pilot check valve

2 Size
10 – 10 Size

3 Pilot piston seals
Blank – No seals
S – With seals

4 Seals
Blank – Buna-N
V – Viton

5 Style
P – Poppet

6 Port size
3B – 3/8” BSPP (Light duty)
6T – SAE 6 (Light duty)

Dimensions
mm (inch)

Torque cartridge in housing
47–54 Nm (35–40 lbf ft)

<table>
<thead>
<tr>
<th>Housing Port Size</th>
<th>All Ports</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>6T SAE 6</td>
<td>02-161393</td>
<td></td>
</tr>
<tr>
<td>3B 3/8” BSPP</td>
<td>02-171120</td>
<td></td>
</tr>
</tbody>
</table>

See page 53 for piston number
DPC1-16
Double pilot check valve

**Description**
The DPC1-16 is an inline housing type, double pilot operated check valve.

**Operation**
This valve allows flow from the V ports to the C ports, while blocking flow from the C ports to the V ports. Flow will be allowed from the C ports to the V ports when pressure is applied at the opposite V port.

**Ratings and specifications**
*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical application pressure</td>
<td>210 bar (3000 psi)</td>
</tr>
<tr>
<td>Rated flow</td>
<td>151 l/min (40 USgpm)</td>
</tr>
<tr>
<td>Free flow cracking pressure</td>
<td>@1 l/min (0.25 USgpm)</td>
</tr>
<tr>
<td>Internal leakage cylinder port</td>
<td>5 drops / min maximum</td>
</tr>
<tr>
<td>at 210 bar (3000 psi)</td>
<td></td>
</tr>
<tr>
<td>Temperature range</td>
<td>−40°C to 120°C (~−40°F to 248°F)</td>
</tr>
<tr>
<td>Pilot ratio</td>
<td>4:1</td>
</tr>
<tr>
<td>Fluids</td>
<td>All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.</td>
</tr>
<tr>
<td>Filtration</td>
<td>Cleanliness code 18/16/13</td>
</tr>
<tr>
<td>Standard housing materials</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Weight</td>
<td>2.61 kg (5.75 lb.)</td>
</tr>
<tr>
<td>Seal kit (Check valve–2 req’d)</td>
<td>565810 Buna–N</td>
</tr>
<tr>
<td></td>
<td>889609 Viton®</td>
</tr>
<tr>
<td>Seal kit (Pilot piston)</td>
<td>889644 Buna–N</td>
</tr>
<tr>
<td></td>
<td>02-173598 Viton®</td>
</tr>
</tbody>
</table>

**Pilot Pressure calculation**
Nominal pressure to open valves

- Pilot pressure at V1 for flow from C2 to V2 =
  \[
  \frac{\text{Cracking pressure} + \text{Pressure at C2}}{4} + (0.75 \times \text{Pressure at V2})
  \]

- Pilot pressure at V2 for flow from C1 to V1 =
  \[
  \frac{\text{Cracking pressure} + \text{Pressure at C1}}{4} + (0.75 \times \text{Pressure at V1})
  \]

Viton is a registered trademark of E.I.DuPont

**Pressure Drop Curves**

A – Port 2-3 Free Flow
B – Port 3-2 Piloted Open
### Model Code

**DPC1-16**

#### Function

**DPC1** – Double pilot check valve

#### Size

**16** – 16 Size

#### Pilot piston seals

- **Blank** – No seal
- **S** – With seal

#### Port size

- **12T** – SAE 12 (Light duty)
- **6B** – 3/4” BSPP (Light duty)

#### Seals

- **Blank** – Buna-N
- **V** – Viton

#### Seating type

- **P** – Poppet

### Dimensions

**mm (inch)**

<table>
<thead>
<tr>
<th>Port Size</th>
<th>All Ports</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>12T</td>
<td>SAE 12</td>
<td>889155</td>
</tr>
<tr>
<td>6B</td>
<td>3/4” BSPP</td>
<td>02-175414</td>
</tr>
</tbody>
</table>

See page 53 for piston number

---

**Torque cartridge in housing**

108–122 Nm (80–90 lbf ft)

---

**CV1-16(V)-P-O-20** (2 Req’d)

- 204,0 (8.03)
- 13,0 (0.51)
- 50,8 (2.00)
- 52,8 (2.07)
- 25,4 (1.00)

---

**Dimensions**

- 178,0 (7.00)
- 89,0 (3.50)
- 25,4 (1.00)
- 254 (1.00)
- 101,6 (4.00)
- 92,1 (3.63)
- 4,8 (0.19)
- 57,1 (2.25)
- 10,3 (0.41) 2 plcs.
DPC1-20
Double pilot check valve

Description
The DPC1-20 is an inline housing type, double pilot operated check valve.

Operation
This valve allows flow from the V ports to the C ports, while blocking flow from the C ports to the V ports. Flow will be allowed from the C ports to the V ports when pressure is applied at the opposite V port.

Ratings and specifications
*Performance data is typical with fluid at 21.8 cSt (105 SUS) and 49°C (120°F)*
Typical application pressure (all ports) ........................................ 210 bar (3000 psi)
Rated flow ................................................................. 227 l/min (60 USgpm)
Free flow cracking pressure @1 l/min (0.25 USgpm) ............... 1.03 bar (15 psi)
Internal leakage cylinder port to valve port .......................... 5 drops / min maximum @ 210 bar (3000 psi)
Temperature range ...................................................... –40 to 120°C (–40° to 248°F)
Pilot ratio ................................................................. 4:1
Fluids ................................................................. All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
Filtration .................................................................. Cleanliness code 18/16/13
Standard housing materials ........................................ Aluminum
Weight ................................................................. 4.45 kg (9.80 lb.)
Seal kit (Check valve–2 req’d) ........................................ 889615 Buna–N
Seal kit (Pilot piston) .................................................. 889656 Buna–N
02-173599 Viton®

Pilot Pressure calculation
Nominal pressure to open valves
Pilot pressure at V1 for flow from C2 to V2 =
Cracking pressure + Pressure at C2
\[ \frac{4}{4} + (0.75 \times \text{Pressure at V2}) \]
Pilot pressure at V2 for flow from C1 to V1 =
Cracking pressure + Pressure at C1
\[ \frac{4}{4} + (0.75 \times \text{Pressure at V1}) \]

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Pressure Drop Curves

A – Port 2-3 Free Flow
B – Port 3-2 Piloted Open
Model Code

DPC1-20

DPC1 - 20 (S) (V) - P - ***

1 Function
DPC1 – Double pilot check valve

2 Size
20 – 20 Size

3 Pilot piston seals
Blank – No seal
S – With seal

4 Seals
Blank – Buna-N
V – Viton

5 Seating type
P – Poppet

6 Port size
20T – SAE 20 (Light duty)
8B – 1” BSPP (Light duty)

Dimensions
mm (inch)

CV2-20(V)-P-O-15 (2 Req’d)

248,0 (9.76)

12,7 (0.50)

63,5 (2.50)

65,5 (2.57)

31,8 (1.25)

222,3 (8.75)

111,2 (4.37)

31,8 (1.25)

114,3 (4.50)

101,6 (4.00)

73,0 (2.87)

73,0 (2.87)

13,5 (0.53) 2 pcs.

Torque cartridge in housing
128–155 Nm (95–115 lbf ft)

<table>
<thead>
<tr>
<th>Housing Port Size</th>
<th>All Ports</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>20T</td>
<td>SAE 20</td>
<td>889159</td>
</tr>
<tr>
<td>8B</td>
<td>1” BSPP</td>
<td>02-175415</td>
</tr>
</tbody>
</table>

See page 53 for piston number
C-**-2(U) Cavity Dimensions

**Dimensions**

**mm (inch)**

Cavity bores can be machined accurately in aluminum or steel. The necessary UNF, or UN threads may be machined using standard small tools, possibly already in your machine shop or from a local tool supplier. For in-depth advice on the machining of cavities, consult your Vickers sales specialist.

Either you, our customer, or Vickers can design and manufacture customized manifolds or housings dedicated to individual applications. We call the resulting valve packages Modular Circuit Designs (MCDs).

Cartridges selected for your application can be accommodated in one or more MCDs, according to your requirements.

---

### WARNING:

For CV16–10, the cavity should be machined to the 14.29 (0.562) maximum diameter and 36.00 (1.417) maximum depth.

These diameters 0.051 mm (.002 inch) unless otherwise specified.

These diameters 0.025 mm (.001 inch) unless otherwise specified.

<table>
<thead>
<tr>
<th>Cavity (mm inch)</th>
<th>A</th>
<th>Spotface</th>
<th>B +0.051 0 +0.002 0</th>
<th>C +0.051 0 +0.002 0</th>
<th>D Thread</th>
<th>E Full Thread</th>
<th>F</th>
<th>G +0.0254 0 0.001</th>
<th>J</th>
<th>P</th>
<th>R Max. Dia.</th>
<th>X Max. Dia.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-8-2</td>
<td>30.16 (1.188)</td>
<td>20.65 (0.813)</td>
<td>17.47 (0.688)</td>
<td>.750”–16</td>
<td>12.70 (0.500)</td>
<td>2.54/2.92 (0.100/0.115)</td>
<td>19.05 (0.750)</td>
<td>12.72 (0.501)</td>
<td>30.17 (1.188)</td>
<td>14.68 (0.578)</td>
<td>8.74 (0.344)</td>
<td>11.11 (0.438)</td>
</tr>
<tr>
<td>C-10-2</td>
<td>30.16 (1.188)</td>
<td>24.00 (0.945)</td>
<td>20.62 (0.812)</td>
<td>.875”–14</td>
<td>15.88 (0.625)</td>
<td>2.54/2.92 (0.100/0.115)</td>
<td>23.81 (0.937)</td>
<td>15.90 (0.626)</td>
<td>33.32 (1.312)</td>
<td>18.23 (0.718)</td>
<td>11.11 (0.437)</td>
<td>14.29 (0.562)</td>
</tr>
<tr>
<td>C-12-2 (U)</td>
<td>38.10 (1.500)</td>
<td>29.15 (1.148)</td>
<td>24.76 (0.975)</td>
<td>1.062”–12</td>
<td>22.22 (0.875)</td>
<td>3.30/3.68 (0.130/0.145)</td>
<td>34.92 (1.375)</td>
<td>23.82 (0.938)</td>
<td>46.35 (1.825)</td>
<td>27.94 (1.100)</td>
<td>12.70 (0.500)</td>
<td>22.22 (0.875)</td>
</tr>
<tr>
<td>C-16-2</td>
<td>44.45 (1.750)</td>
<td>35.58 (1.401)</td>
<td>31.34 (1.234)</td>
<td>1.312”–12</td>
<td>22.22 (0.875)</td>
<td>3.30/3.68 (0.130/0.145)</td>
<td>34.14 (1.344)</td>
<td>28.62 (1.127)</td>
<td>46.84 (1.844)</td>
<td>24.60 (0.968)</td>
<td>19.05 (0.750)</td>
<td>19.05 (0.750)</td>
</tr>
<tr>
<td>C-20-2</td>
<td>57.66 (2.270)</td>
<td>43.59 (1.716)</td>
<td>39.12 (1.540)</td>
<td>1.625”–12</td>
<td>20.64 (0.812)</td>
<td>3.35/3.73 (0.132/0.147)</td>
<td>44.15 (1.750)</td>
<td>36.55 (1.439)</td>
<td>58.72 (2.312)</td>
<td>30.96 (1.218)</td>
<td>25.40 (1.000)</td>
<td>30.16 (1.186)</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Cavity (mm inch)</th>
<th>W</th>
<th>Y</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-12–2U (only)</td>
<td>30.83 (1.214)</td>
<td>12.70 (0.500)</td>
<td>34.29 (1.350)</td>
</tr>
</tbody>
</table>
C-**-3(S) Cavity Dimensions

### Dimensions

**Cavity Dimensions**

**C-8-3**

- **A Spotface**: 30.16 (1.188) mm
- **B +0.051 / -0.002**: 20.65 (0.813) mm
- **C +0.051 / -0.002**: 17.47 (0.688) mm
- **D Thread**: 0.750-16
- **E Full Thread**: 12.70 (0.500) mm
- **F**: 2.54/2.92 (0.100/0.115) mm
- **G**: 18.24 (0.718) mm
- **H ± 0.0254 / ± 0.001**: 15.90 (0.626) mm

**C-10-3**

- **A Spotface**: 30.16 (1.188) mm
- **B +0.051 / -0.002**: 24.00 (0.945) mm
- **C +0.051 / -0.002**: 20.62 (0.812) mm
- **D Thread**: 0.875-14
- **E Full Thread**: 15.88 (0.625) mm
- **F**: 2.54/2.92 (0.100/0.115) mm
- **G**: 21.59 (0.850) mm
- **H ± 0.0254 / ± 0.001**: 17.50 (0.689) mm

**C-10-3S**

- **A Spotface**: 30.16 (1.188) mm
- **B +0.051 / -0.002**: 24.00 (0.945) mm
- **C +0.051 / -0.002**: 20.62 (0.812) mm
- **D Thread**: 0.875-14
- **E Full Thread**: 14.29 (0.562) mm
- **F**: 2.54/2.92 (0.100/0.115) mm
- **G**: 16.51 (0.650) mm
- **H ± 0.0254 / ± 0.001**: 19.08 (0.751) mm

**C-12-3**

- **A Spotface**: 38.10 (1.500) mm
- **B +0.051 / -0.002**: 29.15 (1.148) mm
- **C +0.051 / -0.002**: 24.76 (0.975) mm
- **D Thread**: 1.062-12
- **E Full Thread**: 22.22 (0.875) mm
- **F**: 3.30/3.68 (0.130/0.145) mm
- **G**: 34.92 (1.375) mm
- **H ± 0.0254 / ± 0.001**: 23.82 (0.938) mm

**C-12-3S**

- **A Spotface**: 38.10 (1.500) mm
- **B +0.051 / -0.002**: 29.15 (1.148) mm
- **C +0.051 / -0.002**: 24.76 (0.975) mm
- **D Thread**: 1.062-12
- **E Full Thread**: 22.22 (0.875) mm
- **F**: 3.30/3.68 (0.130/0.145) mm
- **G**: 25.40 (1.000) mm
- **H ± 0.0254 / ± 0.001**: 23.82 (0.938) mm

**C-16-3**

- **A Spotface**: 44.45 (1.750) mm
- **B +0.051 / -0.002**: 35.58 (1.401) mm
- **C +0.051 / -0.002**: 31.34 (1.234) mm
- **D Thread**: 1.312-12
- **E Full Thread**: 22.22 (0.875) mm
- **F**: 3.30/3.68 (0.130/0.145) mm
- **G**: 34.14 (1.344) mm
- **H ± 0.0254 / ± 0.001**: 28.62 (1.127) mm

**C-16-3S**

- **A Spotface**: 44.45 (1.750) mm
- **B +0.051 / -0.002**: 35.58 (1.401) mm
- **C +0.051 / -0.002**: 31.34 (1.234) mm
- **D Thread**: 1.312-12
- **E Full Thread**: 17.46 (0.687) mm
- **F**: 3.30/3.68 (0.130/0.145) mm
- **G**: 20.62 (0.812) mm
- **H ± 0.0254 / ± 0.001**: 28.62 (1.127) mm

**C-20-3**

- **A Spotface**: 57.66 (2.270) mm
- **B +0.051 / -0.002**: 43.59 (1.716) mm
- **C +0.051 / -0.002**: 39.12 (1.540) mm
- **D Thread**: 1.625-12
- **E Full Thread**: 20.64 (0.812) mm
- **F**: 3.35/3.73 (0.132/0.147) mm
- **G**: 44.45 (1.750) mm
- **H ± 0.0254 / ± 0.001**: 36.55 (1.439) mm

**C-20-3S**

- **A Spotface**: 57.66 (2.270) mm
- **B +0.051 / -0.002**: 43.59 (1.716) mm
- **C +0.051 / -0.002**: 39.12 (1.540) mm
- **D Thread**: 1.625-12
- **E Full Thread**: 20.64 (0.812) mm
- **F**: 3.35/3.73 (0.132/0.147) mm
- **G**: 23.82 (0.938) mm
- **H ± 0.0254 / ± 0.001**: 36.55 (1.439) mm

### Notes

- **These diameters**: 0.051 mm (.002 inch) **B** unless otherwise specified.
- **These diameters**: 0.025 mm (.001 inch) **A** unless otherwise specified.
C-**-2/C-**-3 Aluminum Housings (Light Duty)

<table>
<thead>
<tr>
<th>Housing</th>
<th>Ports 1 &amp; 2</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-10-2</td>
<td>3/8&quot; BSPP</td>
<td>02-175462</td>
</tr>
<tr>
<td></td>
<td>SAE 6</td>
<td>566151</td>
</tr>
<tr>
<td>C-16-2</td>
<td>3/4&quot; BSPP</td>
<td>02-175463</td>
</tr>
<tr>
<td></td>
<td>SAE 12</td>
<td>566149</td>
</tr>
<tr>
<td>C-20-2</td>
<td>1&quot; BSPP</td>
<td>02-175464</td>
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<tr>
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<td>SAE 16</td>
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<table>
<thead>
<tr>
<th>Housing</th>
<th>Ports 1, 2 &amp; 3</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-10-3</td>
<td>3/8&quot; BSPP</td>
<td>02–173358</td>
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<tr>
<td></td>
<td>SAE 6</td>
<td>566162</td>
</tr>
</tbody>
</table>

Note: BSPP porting is designated by "B" in the model code.
SAE porting is designated "T" in the model code.

<table>
<thead>
<tr>
<th>Cavity (mm (inch))</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>Mass kg (lb.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-10-2</td>
<td>50.8 (2.00)</td>
<td>19.0 (0.75)</td>
<td>50.8 (2.00)</td>
<td>31.7 (1.25)</td>
<td>15.9 (0.62)</td>
<td>19.0 (0.75)</td>
<td>7.1 (0.28)</td>
<td>3.1 (0.12)</td>
<td>12.7 (0.50)</td>
<td>0.1 (0.35)</td>
</tr>
<tr>
<td>C-16-2</td>
<td>76.2 (3.00)</td>
<td>28.5 (1.12)</td>
<td>76.2 (3.00)</td>
<td>47.6 (1.87)</td>
<td>23.8 (0.94)</td>
<td>25.4 (1.00)</td>
<td>8.6 (0.34)</td>
<td>4.0 (0.16)</td>
<td>19.0 (0.75)</td>
<td>0.5 (1.21)</td>
</tr>
<tr>
<td>C-20-2</td>
<td>88.9 (3.50)</td>
<td>34.3 (1.35)</td>
<td>88.9 (3.50)</td>
<td>68.5 (2.70)</td>
<td>34.3 (1.35)</td>
<td>36.8 (1.45)</td>
<td>8.6 (0.34)</td>
<td>4.0 (0.16)</td>
<td>21.6 (0.85)</td>
<td>0.8 (1.90)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cavity (mm (inch))</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Mass kg (lb.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-10-3</td>
<td>63.5 (2.50)</td>
<td>31.7 (1.25)</td>
<td>66.6 (2.62)</td>
<td>31.7 (1.25)</td>
<td>15.8 (0.62)</td>
<td>3.1 (0.12)</td>
<td>19.0 (0.75)</td>
<td>34.9 (1.37)</td>
<td>7.1 (0.28)</td>
<td>12.7 (0.50)</td>
<td>0.3 (0.64)</td>
</tr>
</tbody>
</table>
### C-**-2(U) / C-**-3 Aluminum Housings (Fatigue Rated)

<table>
<thead>
<tr>
<th>Housing</th>
<th>Ports 1 &amp; 2</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-8-2</td>
<td>1/4” BSPP</td>
<td>02–160727</td>
</tr>
<tr>
<td></td>
<td>3/8” BSPP</td>
<td>02–160728</td>
</tr>
<tr>
<td></td>
<td>SAE 4</td>
<td>02–160730</td>
</tr>
<tr>
<td></td>
<td>SAE 6</td>
<td>02–160731</td>
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<tr>
<td></td>
<td>SAE 8</td>
<td>02–160732</td>
</tr>
<tr>
<td>C-10-2</td>
<td>1/4” BSPP</td>
<td>876702</td>
</tr>
<tr>
<td></td>
<td>3/8” BSPP</td>
<td>876703</td>
</tr>
<tr>
<td></td>
<td>SAE 6</td>
<td>876700</td>
</tr>
<tr>
<td></td>
<td>SAE 8</td>
<td>876701</td>
</tr>
<tr>
<td>C-12-2U</td>
<td>1/2” BSPP</td>
<td>02–161116</td>
</tr>
<tr>
<td></td>
<td>3/4” BSPP</td>
<td>02–161115</td>
</tr>
<tr>
<td></td>
<td>SAE 10</td>
<td>02–160641</td>
</tr>
<tr>
<td></td>
<td>SAE 12</td>
<td>02–160645</td>
</tr>
<tr>
<td>C-12-2</td>
<td>1/2” BSPP</td>
<td>02–161118</td>
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<tr>
<td></td>
<td>3/4” BSPP</td>
<td>02–161117</td>
</tr>
<tr>
<td></td>
<td>SAE 10</td>
<td>02–160640</td>
</tr>
<tr>
<td></td>
<td>SAE 12</td>
<td>02–160644</td>
</tr>
<tr>
<td>C-16-2</td>
<td>1/2” BSPP</td>
<td>876716</td>
</tr>
<tr>
<td></td>
<td>3/4” BSPP</td>
<td>876718</td>
</tr>
<tr>
<td></td>
<td>SAE 10</td>
<td>876717</td>
</tr>
<tr>
<td></td>
<td>SAE 12</td>
<td>566113</td>
</tr>
<tr>
<td>C-20-2</td>
<td>3/4” BSPP</td>
<td>876732</td>
</tr>
<tr>
<td></td>
<td>1” BSPP</td>
<td>876734</td>
</tr>
<tr>
<td></td>
<td>SAE 12</td>
<td>876733</td>
</tr>
<tr>
<td></td>
<td>SAE 16</td>
<td>876735</td>
</tr>
</tbody>
</table>

Note: BSPP porting is designated by "G" in the model code SAE porting is designated by either "H" or "T" in the model code.

### Cavity Dimensions (mm / inch)

<table>
<thead>
<tr>
<th>Cavity</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>Mass (kg/lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-8-2</td>
<td>50.8</td>
<td>19.0</td>
<td>51.0</td>
<td>38.1</td>
<td>19.0</td>
<td>3.4</td>
<td>15.5</td>
<td>7.1</td>
<td>12.7</td>
<td>N/A</td>
<td>0.2 (0.46)</td>
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<tr>
<td>C-10-2</td>
<td>63.5</td>
<td>25.4</td>
<td>63.5</td>
<td>50.8</td>
<td>25.4</td>
<td>9.5</td>
<td>20.8</td>
<td>7.1</td>
<td>19.0</td>
<td>N/A</td>
<td>0.4 (1.00)</td>
</tr>
<tr>
<td>C-12-2(U)</td>
<td>88.9</td>
<td>44.5</td>
<td>88.9</td>
<td>50.8</td>
<td>25.4</td>
<td>12.7</td>
<td>28.7</td>
<td>63.5</td>
<td>63.5</td>
<td>N/A</td>
<td>0.8 (1.96)</td>
</tr>
<tr>
<td>C-16-2</td>
<td>88.9</td>
<td>34.9</td>
<td>88.9</td>
<td>63.5</td>
<td>31.7</td>
<td>10.3</td>
<td>28.4</td>
<td>8.7</td>
<td>25.4</td>
<td>N/A</td>
<td>1.2 (2.75)</td>
</tr>
<tr>
<td>C-20-2</td>
<td>101.6</td>
<td>38.1</td>
<td>101.6</td>
<td>82.5</td>
<td>41.3</td>
<td>10.3</td>
<td>36.0</td>
<td>8.7</td>
<td>25.4</td>
<td>N/A</td>
<td>1.8 (4.00)</td>
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<td>31.8</td>
<td>66.6</td>
<td>38.1</td>
<td>19.0</td>
<td>3.4</td>
<td>15.5</td>
<td>29.8</td>
<td>7.1</td>
<td>13.0</td>
<td>0.4 (0.83)</td>
</tr>
<tr>
<td>C-10-3</td>
<td>76.2</td>
<td>38.1</td>
<td>76.2</td>
<td>50.8</td>
<td>25.4</td>
<td>9.5</td>
<td>20.8</td>
<td>36.6</td>
<td>7.1</td>
<td>19.0</td>
<td>0.7 (1.65)</td>
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</tbody>
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### Housings

<table>
<thead>
<tr>
<th>Housing</th>
<th>Ports 1, 2 &amp; 3</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-8-3</td>
<td>1/4” BSPP</td>
<td>02–160739</td>
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<td>3/8” BSPP</td>
<td>02–160740</td>
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<tr>
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<td>SAE 4</td>
<td>02–160741</td>
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<td>SAE 6</td>
<td>02–160742</td>
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<td>C-10-3</td>
<td>1/4” BSPP</td>
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<td>3/8” BSPP</td>
<td>876714</td>
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<td>SAE 6</td>
<td>876704</td>
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<td></td>
<td>SAE 8</td>
<td>876711</td>
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</table>
C-**-2(U) / C-**-3 Steel Housings

<table>
<thead>
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<th>Housing</th>
<th>Ports 1 &amp; 2</th>
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</tr>
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<tbody>
<tr>
<td>C-8-2</td>
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<td>3/8&quot; BSPP</td>
<td>02-160734</td>
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<td>SAE 4</td>
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<td>SAE 6</td>
<td>02-160737</td>
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<td>SAE 8</td>
<td>02-160738</td>
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<td>02-175102</td>
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<td></td>
<td>3/8&quot; BSPP</td>
<td>02-175103</td>
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<td>SAE 6</td>
<td>02-175100</td>
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<td></td>
<td>SAE 8</td>
<td>02-175101</td>
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<td>C-12-2U</td>
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<td>02-172512</td>
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<td>3/4&quot; BSPP</td>
<td>02-169822</td>
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<td></td>
<td>SAE 10</td>
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<td>C-12-2</td>
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<td>02-172062</td>
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<td>3/4&quot; BSPP</td>
<td>02-169665</td>
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<td>SAE 10</td>
<td>02-169744</td>
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<td></td>
<td>SAE 12</td>
<td>02-169782</td>
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Note: BSPP porting is designated "G" in the model code
      SAE porting is designated by "T" in the model code

C-8-3

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<tr>
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<th>Ports 1, 2 &amp; 3</th>
<th>Part Number</th>
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<td>3/8&quot; BSPP</td>
<td>02-160746</td>
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<td>02-160744</td>
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Note: BSPP porting is designated "G" in the model code
      SAE porting is designated by "T" in the model code

Cavity mm (inch) | A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | Mass kg (lb.) |
<table>
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<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C-8-2</td>
<td>50.8 (2.00)</td>
<td>19.0 (0.75)</td>
<td>50.8 (2.00)</td>
<td>38.1 (1.50)</td>
<td>19.0 (0.75)</td>
<td>15.5 (0.61)</td>
<td>38.1 (1.50)</td>
<td>3.3 (0.13)</td>
<td>43.9 (1.73)</td>
<td>7.1 (0.28)</td>
<td>0.5 (0.19)</td>
</tr>
<tr>
<td>C-10-2</td>
<td>63.5 (2.50)</td>
<td>25.4 (1.00)</td>
<td>63.5 (2.50)</td>
<td>44.4 (1.75)</td>
<td>22.2 (0.87)</td>
<td>19.0 (0.75)</td>
<td>50.8 (2.00)</td>
<td>9.5 (0.37)</td>
<td>44.4 (1.75)</td>
<td>7.1 (0.28)</td>
<td>0.3 (0.83)</td>
</tr>
<tr>
<td>C-12-2(U)</td>
<td>88.9 (3.50)</td>
<td>28.5 (1.12)</td>
<td>88.9 (3.50)</td>
<td>50.8 (2.00)</td>
<td>25.4 (1.00)</td>
<td>28.7 (1.13)</td>
<td>76.2 (3.00)</td>
<td>12.7 (0.50)</td>
<td>63.5 (2.50)</td>
<td>10.3 (0.40)</td>
<td>1.9 (0.28)</td>
</tr>
</tbody>
</table>

NOTE:
8 series utilizes slot in place of mounting hole

Cavity mm (inch) | A    | B    | C    | D    | E    | F    | G    | H    | I    | J    | K    | Mass kg (lb.) |
<table>
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<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>C-8-3</td>
<td>63.5 (2.50)</td>
<td>31.8 (1.25)</td>
<td>66.0 (2.75)</td>
<td>38.1 (1.50)</td>
<td>19.0 (0.75)</td>
<td>15.5 (0.61)</td>
<td>53.0 (2.12)</td>
<td>3.3 (0.13)</td>
<td>56.6 (2.33)</td>
<td>7.1 (0.28)</td>
<td>29.8 (1.17)</td>
<td>0.9 (2.15)</td>
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</table>
## POC1-10 Housings

### I - Inline – Steel

#### Dimensions

<table>
<thead>
<tr>
<th>Port Size</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>6T</td>
<td>SAE 6</td>
<td>SAE 6</td>
<td>SAE 6</td>
</tr>
<tr>
<td>8T</td>
<td>SAE 8</td>
<td>SAE 8</td>
<td>SAE 6</td>
</tr>
<tr>
<td>10T</td>
<td>SAE 10</td>
<td>SAE 10</td>
<td>SAE 6</td>
</tr>
<tr>
<td>3G</td>
<td>3/8&quot; BSPP</td>
<td>3/8&quot; BSPP</td>
<td>1/4&quot; BSPP</td>
</tr>
<tr>
<td>4G</td>
<td>1/2&quot; BSPP</td>
<td>1/2&quot; BSPP</td>
<td>1/4&quot; BSPP</td>
</tr>
</tbody>
</table>

Refer to page 52 for housing part numbers

### I - Inline – Aluminum fatigue rated

#### Dimensions

<table>
<thead>
<tr>
<th>Port Size</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>6T</td>
<td>SAE 6</td>
<td>SAE 6</td>
<td>SAE 6</td>
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<tr>
<td>8T</td>
<td>SAE 8</td>
<td>SAE 8</td>
<td>SAE 6</td>
</tr>
<tr>
<td>10T</td>
<td>SAE 10</td>
<td>SAE 10</td>
<td>SAE 6</td>
</tr>
<tr>
<td>3G</td>
<td>1/4&quot; BSPP</td>
<td>1/4&quot; BSPP</td>
<td>1/4&quot; BSPP</td>
</tr>
<tr>
<td>4G</td>
<td>3/8&quot; BSPP</td>
<td>3/8&quot; BSPP</td>
<td>1/4&quot; BSPP</td>
</tr>
</tbody>
</table>

Refer to page 52 for housing part numbers
POC1-10 Housings

I - Inline – Aluminum Light Duty
Dimensions
mm (inch)

Refer to page 52 for housing part numbers

Port Size | C1 | C2 | V1 | V2
--- | --- | --- | --- | ---
6T | SAE 8 | SAE 6 | 3G | 3/8" BSPP

N - Close Coupled Nipple Mounted
Aluminum & Steel

Refer to page 52 for housing part numbers

Port Size | C1 | C2 | V1 | V2
--- | --- | --- | --- | ---
6T | SAE 8 | SAE 6 | 3G | 3/8" BSPP
POC1-10 Housings

G - Gasket Mounted - Single
Aluminum & Steel

Dimensions

mm (inch)

<table>
<thead>
<tr>
<th>Port</th>
<th>Aluminum</th>
<th>Steel</th>
<th>C1</th>
<th>C2, V1, V2</th>
</tr>
</thead>
<tbody>
<tr>
<td>6H</td>
<td>6T</td>
<td>⊙ 12.7</td>
<td>SAE 6</td>
<td></td>
</tr>
<tr>
<td>3G</td>
<td>3G</td>
<td>(0.500)</td>
<td>3/8&quot; BSPP</td>
<td></td>
</tr>
</tbody>
</table>

Refer to page 52 for housing part numbers

D - Dual Line Mounted
Aluminum & Steel

Refer to page 52 for housing part numbers

Port size

<table>
<thead>
<tr>
<th>Aluminum</th>
<th>Steel</th>
<th>C1, C2, V1, V2</th>
</tr>
</thead>
<tbody>
<tr>
<td>6H</td>
<td>6T</td>
<td>SAE 6</td>
</tr>
<tr>
<td>8H</td>
<td>8T</td>
<td>SAE 8</td>
</tr>
<tr>
<td>10H</td>
<td>10T</td>
<td>SAE 10</td>
</tr>
<tr>
<td>2G</td>
<td>2G</td>
<td>1/4&quot; BSPP</td>
</tr>
<tr>
<td>3G</td>
<td>3G</td>
<td>3/8&quot; BSPP</td>
</tr>
<tr>
<td>4G</td>
<td>4G</td>
<td>1/2&quot; BSPP</td>
</tr>
</tbody>
</table>

Cartridge cavity

7,8 (0.31) dia. thru 12,7 (0.5)
dia c’bore x 6,35 (0.25) 2 plcs.

Cartridge cavity

∅ 8,6 (0.34) thru 2 plcs.

∅ 12,7 (0.500)
POC1-10 Housings

P - Dual Gasket Mounted
Aluminum & Steel

Dimensions
mm (inch)

F Type

C1

C2

V1

V2

S Type

C1

C2

V1

V2

Refer to page 52 for housing part numbers
POC1-12 Housings

I - Inline Mounted
Aluminum & Steel
(Fatigue Rated)

Dimensions
mm (inch)

<table>
<thead>
<tr>
<th>Port Size</th>
<th>Cylinder Port (1)</th>
<th>Valve Port (2)</th>
<th>Pilot Port (3)</th>
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</thead>
<tbody>
<tr>
<td>10T</td>
<td>SAE 10</td>
<td></td>
<td>SAE 6</td>
</tr>
<tr>
<td>12T</td>
<td>SAE 12</td>
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<td>BSPP</td>
</tr>
<tr>
<td>4G</td>
<td>1/2&quot; BSPP</td>
<td></td>
<td>3/8&quot;</td>
</tr>
<tr>
<td>6G</td>
<td>3/4&quot; BSPP</td>
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</table>

B - 3/4" SAE 4-Bolt Pad Mounting
Aluminum & Steel

Refer to page 52 for housing part numbers

Port Size | C1 | Pilot Port |
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<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>6T</td>
<td>3/4&quot; SAE 4 bolt Code 61</td>
<td>SAE 6</td>
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</table>

Cartridge cavity
POC1-12 Housings

N - Close Coupled Nipple Mounted
Aluminum & Steel

Dimensions
mm (inch)

<table>
<thead>
<tr>
<th>Port</th>
<th>Size</th>
<th>C1</th>
<th>C2</th>
<th>V1</th>
<th>V2</th>
</tr>
</thead>
<tbody>
<tr>
<td>8T</td>
<td>1/2 BSPP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4G</td>
<td>1/2 BSPP</td>
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</tbody>
</table>

G - Gasket Mounted – Single
Aluminum & Steel

Refer to page 52 for housing part numbers
POC1-12 Housings

D - Dual Line Mounted – Aluminum & Steel

Dimensions

mm (inch)

<table>
<thead>
<tr>
<th>V1</th>
<th>V2</th>
</tr>
</thead>
<tbody>
<tr>
<td>50.8 (2.00)</td>
<td>25.4 (1.00)</td>
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Port Size

<table>
<thead>
<tr>
<th>C1, C2, V1, V2</th>
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<tbody>
<tr>
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<tr>
<td>12T SAE 12</td>
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<td>4G 1/2&quot; BSPP</td>
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</table>

C1, C2, V1, V2

Refer to page 52 for housing part numbers

P - Dual Gasket Mounted

Aluminum & Steel

Dimensions

mm (inch)

<table>
<thead>
<tr>
<th>V1</th>
<th>V2</th>
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<tbody>
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<td>29.8 (1.18)</td>
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Port Size

<table>
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<th>C2, V1, V2</th>
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<td>4G</td>
<td>(0.625)</td>
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Refer to page 52 for housing part numbers

Cartridge cavity
## POC1-10/12 Valve Housings

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<th>Port Size</th>
<th>Size 10 (A) Aluminum Light Duty</th>
<th>Size 10 (A) Aluminum NFPA Fatigue Rated</th>
<th>Size 10 (S) Steel NFPA Fatigue Rated</th>
<th>Size 12 (A) Aluminum Fatigue Rated</th>
<th>Size 12 Steel NFPA Fatigue Rated</th>
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</thead>
<tbody>
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<td>876706</td>
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<td>6H (SAE 6)</td>
<td>876712</td>
<td></td>
<td></td>
<td>02–171961</td>
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<td>8H (SAE 8)</td>
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<td>02–163322</td>
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<td>10T (SAE 10)</td>
<td>02–163323</td>
<td>02–178268</td>
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<td>02–160996</td>
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<td>12T (SAE 12)</td>
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<td>02–160997</td>
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<td>02–160997</td>
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<td>3G (3/8&quot; BSPP)</td>
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<td>02–163313</td>
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<td>02–178270</td>
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<td>02–160994</td>
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<tr>
<td>6G (3/4&quot; BSPP)</td>
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<td>02–160995</td>
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<td>02–160824</td>
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Approximate Weight for POC*-10/12 Valve Housings

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<tr>
<th>Housing</th>
<th>Aluminum – Standard, kg (lbs)</th>
<th>Aluminum – Light duty, kg (lbs)</th>
<th>Steel, kg (lbs)</th>
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<tr>
<td></td>
<td>Size 10</td>
<td>Size 12</td>
<td>Size 10</td>
</tr>
<tr>
<td>I</td>
<td>0.75 (1.65)</td>
<td>0.82 (1.80)</td>
<td>1.08 (2.40)</td>
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<tr>
<td>B</td>
<td>–</td>
<td>0.86 (1.90)</td>
<td>–</td>
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<tr>
<td>N</td>
<td>0.49 (1.10)</td>
<td>0.91 (2.00)</td>
<td>1.49 (3.30)</td>
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<tr>
<td>G</td>
<td>0.67 (1.85)</td>
<td>0.73 (1.60)</td>
<td>2.49 (5.50)</td>
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<tr>
<td>D</td>
<td>0.79 (1.75)</td>
<td>1.11 (2.45)</td>
<td>2.38 (5.25)</td>
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<tr>
<td>P</td>
<td>0.72 (1.60)</td>
<td>2.0 (4.40)</td>
<td>2.17 (4.80)</td>
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</table>

Spare Parts

The only parts available are cartridges and seal kits. Seal kits include external seals and back-up rings.

<table>
<thead>
<tr>
<th>Model</th>
<th>Check Valve</th>
<th>Qty</th>
<th>Pilot Piston</th>
<th>Qty</th>
<th>Check Valve Seal Kits</th>
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<tbody>
<tr>
<td>SPC1–10–P</td>
<td>CV1–10(V)–P–0–15</td>
<td>1</td>
<td>566417</td>
<td>1</td>
<td>Buna-N: 565803</td>
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<tr>
<td>SPC1–16–P</td>
<td>CV1–16(V)–P–0–20</td>
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<td>889052</td>
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<td>Buna-N: 565810</td>
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<tr>
<td>SPC1–20–P</td>
<td>CV2–20(V)–P–0–15</td>
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<td>DPC1–10–P</td>
<td>CV1–10(V)–P–0–15</td>
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<td>02–166313</td>
<td>1</td>
<td>889615</td>
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<td>DPC1–16–P</td>
<td>CV1–16(V)–P–0–20</td>
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<tr>
<td>DPC1–20–P</td>
<td>CV1–20(V)–P–0–15</td>
<td>2</td>
<td>566433</td>
<td>1</td>
<td>889615</td>
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</table>

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Seal Kits

Cartridge seal kits, comprising external seals and back-up rings are available for servicing these units. Please refer to the individual model pages for the appropriate seal kits.

Pilot Pistons

<table>
<thead>
<tr>
<th>Size</th>
<th>Acting</th>
<th>A (in)</th>
<th>B (in)</th>
<th>C (in)</th>
<th>Req’d housing bore</th>
<th>Pilot Piston Part Number</th>
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</thead>
<tbody>
<tr>
<td>8</td>
<td>Single</td>
<td>15.1 (0.60)</td>
<td>34.1 (1.34)</td>
<td>8.3 (0.33)</td>
<td>12.73 (0.500)</td>
<td>Buna: 02–178662</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td>53.2 (2.10)</td>
<td>8.3 (0.33)</td>
<td>12.75 (0.502)</td>
<td>02–178669</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Single</td>
<td>19.1 (0.75)</td>
<td>41.3 (1.63)</td>
<td>13.5 (0.53)</td>
<td>15.88 (0.625)</td>
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<tr>
<td></td>
<td>Double</td>
<td>57.2 (2.25)</td>
<td>10.3 (0.41)</td>
<td>15.90 (0.626)</td>
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<tr>
<td>12</td>
<td>Single</td>
<td>17.5 (0.69)</td>
<td>44.5 (1.75)</td>
<td>14.3 (0.56)</td>
<td>23.80 (0.937)</td>
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<td></td>
<td>Double</td>
<td>71.4 (2.81)</td>
<td>14.3 (0.56)</td>
<td>23.85 (0.939)</td>
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<tr>
<td>16</td>
<td>Single</td>
<td>31.8 (1.25)</td>
<td>63.5 (2.50)</td>
<td>12.7 (0.50)</td>
<td>28.58 (1.125)</td>
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<tr>
<td></td>
<td>Double</td>
<td>95.3 (3.75)</td>
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<td>28.60 (1.126)</td>
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<tr>
<td>20</td>
<td>Single</td>
<td>38.1 (1.50)</td>
<td>77.8 (3.06)</td>
<td>19.1 (0.75)</td>
<td>36.50 (1.437)</td>
<td>Buna: 566430</td>
</tr>
<tr>
<td></td>
<td>Double</td>
<td>117.5 (4.63)</td>
<td>19.1 (0.75)</td>
<td>36.53 (1.438)</td>
<td>566433</td>
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</table>
Form Tools

Roughing Tools

Roughers are basically step drills which leave .030” per cutting diameter and .015” above all radii for the finishing reamer, with an additional .015” depth in the cavity bottom as clearance.

The roughing tool is necessary to prepare the cavity for the finishing reamer, which has not been designed for the primary forming or bottom cutting.

We offer two types of roughers, one for aluminum and one for steel. The aluminum rougher is manufactured with a 4 facet point and polished flutes. The steel rougher is supplied with a standard drill point. Both types will work in either material, however, longevity of an aluminum tool will be sacrificed when used continually in steel.

<table>
<thead>
<tr>
<th>Cavity</th>
<th>Material</th>
<th>Model Code</th>
<th>Assembly Number</th>
<th>Cavity</th>
<th>Material</th>
<th>Model Code</th>
<th>Assembly Number</th>
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<tbody>
<tr>
<td>2-Way</td>
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<td>3-Way</td>
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<tr>
<td>C-8-2</td>
<td>Aluminum/Steel</td>
<td>RT1-8-2-AS-8028</td>
<td>02–16558</td>
<td>C-8-3</td>
<td>Aluminum/Steel</td>
<td>RT1-8-3-AS-8291</td>
<td>02-162384</td>
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<tr>
<td>C-10-2</td>
<td>Aluminum</td>
<td>RT-10-2-A-8030</td>
<td>889509</td>
<td>C-10-3</td>
<td>Aluminum</td>
<td>RT-10-3-A-8038</td>
<td>889511</td>
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<tr>
<td>C-10-2</td>
<td>Steel</td>
<td>RT-10-2-S-8035</td>
<td>889510</td>
<td>C-10-3</td>
<td>Steel</td>
<td>RT-10-3-S-8043</td>
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<td>Aluminum/Steel</td>
<td>RT-12-2-AS-8213</td>
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<td>C-12-3</td>
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<td>Aluminum/Steel</td>
<td>RT-12-3S-AS-8220</td>
<td>02-113178</td>
</tr>
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</table>

Finishing Tools

These finishing tools have been designed as precision reamers for finishing operations only. They are not intended for primary forming or bottom cutting operations. Vickers recommends that a finishing tool only be used in a properly roughed hole. Failure to conform to this practice will produce unsatisfactory size and finishes and possibly break the tool.

<table>
<thead>
<tr>
<th>Cavity</th>
<th>Material</th>
<th>Model Code</th>
<th>Assembly Number</th>
<th>Cavity</th>
<th>Material</th>
<th>Model Code</th>
<th>Assembly Number</th>
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<tbody>
<tr>
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<td>3-Way</td>
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<td>C-8-2</td>
<td>Aluminum/Steel</td>
<td>FT-1-8-2-AS-8070</td>
<td>02-112933</td>
<td>C-8-3</td>
<td>Aluminum/Steel</td>
<td>FT-8-3-AS-8295</td>
<td>02-171292</td>
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<td>C-10-2</td>
<td>Aluminum/Steel</td>
<td>FT-10-2-AS-8048</td>
<td>566235</td>
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<td>C-12-2</td>
<td>Aluminum/Steel</td>
<td>FT-12-2-AS-8214</td>
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<td>Aluminum/Steel</td>
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Finishing Form Tools Speed & Feed for Aluminum 6061-T6 (T651)

This information is recommended as a good starting point. Speeds and/or feeds may be increased or decreased depending on actual machining conditions.

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<tr>
<th>Tool Size</th>
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<th>RPM</th>
<th>IPM</th>
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Fluid Cleanliness

The recommended cleanliness code for the valves in this publication is 18/16/13.

Proper fluid condition is essential for long and satisfactory life of hydraulic components and systems. Hydraulic fluid must have the correct balance of cleanliness, materials, and additives for protection against wear of components, elevated viscosity, and inclusion of air.

Essential information on the correct methods for treating hydraulic fluid is included in Vickers publication 561 “Vickers Guide to Systemic Contamination Control” available from your local Vickers distributor or by contacting Vickers, Incorporated. Recommendations on filtration and the selection of products to control fluid condition are included in 561.
<table>
<thead>
<tr>
<th>MODEL</th>
<th>DESCRIPTION</th>
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<td>CV1-16-P</td>
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<td>CV2-20-P</td>
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<td>CV3-8-P</td>
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<td>CV11-12-P</td>
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<td>Pilot-to-Open Check Valve</td>
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<td>Single Pilot Check Valve Cartridge Type</td>
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<td>SPC2-10-P</td>
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<td>C-**-2</td>
<td>Aluminum Housings (Light Duty)</td>
<td>42</td>
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<tr>
<td>C-**-2(U)</td>
<td>Aluminum Housings (Fatigue Rated)</td>
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<tr>
<td>C-**-2(U)</td>
<td>Cavity Dimensions</td>
<td>40</td>
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<td>C-**-3</td>
<td>Steel Housings (Fatigue Rated)</td>
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<td>Cavity Dimensions</td>
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<td>Aluminum Housings (Light Duty)</td>
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<td>C-**-3(S)</td>
<td>Aluminum Housings (Fatigue Rated)</td>
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</tr>
<tr>
<td>C-**-3(S)</td>
<td>Cavity Dimensions</td>
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<tr>
<td>Form Tools</td>
<td>Roughing</td>
<td>54</td>
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<tr>
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<td>Finishing</td>
<td>54</td>
</tr>
<tr>
<td>Housing Part Numbers &amp; Weights</td>
<td>POC*-10 / 12</td>
<td>52</td>
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<td>I - Inline Steel &amp; I - Inline Aluminum - NFPA Fatigue Rated</td>
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<td>I - Inline Aluminum - Light Duty &amp;</td>
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<tr>
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<td>N - Close Coupled Nipple Mounting</td>
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<td></td>
<td>G - Gasket Mounted - Single</td>
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</tr>
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<td>D - Dual Line Mounted</td>
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<td>P - Dual Gasket Mounted</td>
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<td>POC1-12 Housing Dimensions</td>
<td>I - Inline &amp; B - 3/4&quot; SAE 4-Bolt Pad Mounting</td>
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<td>N - Close Coupled Nipple Mounting &amp;</td>
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<td>G - Gasket Mounted - Single</td>
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<td>D - Dual Line Mounted</td>
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<td>P - Dual Gasket Mounted</td>
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<tr>
<td>Spare Parts</td>
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