General Description

The MHC-010 series counterbalance valves are load-holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being “accidentally” installed

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Flow</td>
<td>37.5 LPM (10 GPM)</td>
</tr>
<tr>
<td>Maximum Inlet Pressure</td>
<td>350 Bar (5000 PSI)</td>
</tr>
<tr>
<td>Leakage</td>
<td>5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)</td>
</tr>
<tr>
<td>Operating Temp. Range</td>
<td>-40°C to +93.3°C (Nitrile) (-40°F to +200°F)</td>
</tr>
<tr>
<td></td>
<td>-31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)</td>
</tr>
<tr>
<td>Cartridge Material</td>
<td>All parts steel. All operating parts hardened steel.</td>
</tr>
<tr>
<td>Body Material</td>
<td>Steel</td>
</tr>
<tr>
<td>Filtration</td>
<td>ISO Code 16/13, SAE Class 4 or better</td>
</tr>
<tr>
<td>Mounting</td>
<td>No Restrictions</td>
</tr>
<tr>
<td>Cavity</td>
<td>CDD-1010</td>
</tr>
</tbody>
</table>

Performance Curve

Flow vs. Pressure Drop (Through cartridge only)
**Counterbalance Valves**

**Series MHC-010**

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

**Dimensions**

MHC-010-V’S*  MHC-010-S’S*  MHC-010-V’S*  MHC-010-S’S* (3:1)  MHC-010-S’S*

**Series MHC-010 in Body Single In-line**

- **Cylinder and Valve Ports**
  - #10 SAE (Shown) or #8 SAE
  - Shimmed Non-Vented

- **Gauge Port**
  - #4 SAE Optional

- **Pilot Port**
  - #6 SAE

**Technical Data**

Parker Hannifin Corporation
Integrated Hydraulics Division
Lincolnshire, Illinois 60069 USA
Series MHC-010 in Body Double In-line

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

Dimensions

Counterbalance Valves
Series MHC-010

Parker Hannifin Corporation
Integrated Hydraulics Division
Lincolnshire, Illinois 60069 USA
### Counterbalance Valves
#### Series MHC-010

**Ordering Information**

**Code** | **Flow**
--- | ---
010 | 37.5 LPM (10 GPM)

**Code** | **Ratio**
--- | ---
A | Equal Area (1:1)
B | 4:1
F | 7:1 (Standard)
J | 10:1

**Code** | **Type**
--- | ---
S | Standard (non-vented)
V | Vented
S | Standard (adjustable)
N | Shimmed (non-adjustable)

**Code** | **Type**
--- | ---
C | Equal area
D | 69 Bar (1000 PSI) Shim adjustable version only
E | 103.4 Bar (1500 PSI) Shim adjustable version only
F | 137.9 Bar (2000 PSI) Shim adjustable version only
G | 172.4 Bar (2500 PSI) Shim adjustable version only
H | 207 Bar (3000 PSI) Standard version
B | Nitrile
V | Fluorocarbon

**Shipping Weight**

Cartridge Onlyː 0.38 kg (0.88 lbs.)
General Description

Parker MHC-022 series counterbalance valves are load holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being “accidentally” installed

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Flow</td>
<td>93.75 LPM (25 GPM)</td>
</tr>
<tr>
<td>Maximum Inlet Pressure</td>
<td>350 Bar (5000 PSI)</td>
</tr>
<tr>
<td>Leakage</td>
<td>5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)</td>
</tr>
<tr>
<td>Operating Temp. Range (Ambient)</td>
<td>-40°C to +93.3°C (Nitrile) (-40°F to +200°F)</td>
</tr>
<tr>
<td></td>
<td>-31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)</td>
</tr>
<tr>
<td>Cartridge Material</td>
<td>All parts steel. All operating parts hardened steel.</td>
</tr>
<tr>
<td>Body Material</td>
<td>Steel</td>
</tr>
<tr>
<td>Filtration</td>
<td>ISO Code 16/13, SAE Class 4 or better</td>
</tr>
<tr>
<td>Mounting</td>
<td>No Restrictions</td>
</tr>
<tr>
<td>Cavity</td>
<td>CDD-1036</td>
</tr>
</tbody>
</table>

Performance Curve

Flow vs. Pressure Drop (Through cartridge only)

![Performance Curve Graph](image-url)
Counterbalance Valves
Series MHC-022

Dimensions

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

MHC-022-S’S*

MHC-022-S’N*

MHC-022-V’N*

Series MHC-022 in Body, Single In-line
Counterbalance Valves
Series MHC-022

Dimensions

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

Series MHC-022 in Body, Double In-line

- Cylinder Ports 1 & 2
  - #12 SAE (Shown) or #10 SAE
- Valve Ports 1 & 2
  - #12 SAE (Shown) or #10 SAE
- Gauge Port (Optional)
  - #4 SAE
- Gauge Port (Optional)
  - #4 SAE
- 10.3 (.41) Dia. Thru 2 Mtg. Holes
- 67.6 (2.66)
- 60.2 (2.37)
- 44.5 (1.75)
- 88.9 (3.50)
- 44.5 (1.75)
- 67.3 (2.65)
- 28.7 (1.13)
- 22.4 (.88)
- 7.9 (.31)
- 55.4 (2.18)
- 28.7 (1.13)
- 66.5 (2.62)
- 7.9 (.31)
- 76.2 (3.00)
- 39.8 (1.57)
- 60.2 (2.37)
- 60.5 (2.38)
- 60.2 (2.37)
- 68.6 (2.70)
- 155.7 (6.13)
- 68.6 (2.70)
- 213.4 (8.40)

Parker Hannifin Corporation
Integrated Hydraulics Division
Lincolnshire, Illinois 60069 USA
Counterbalance Valves  
Series MHC-022

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Body Type</th>
<th>Ports</th>
<th>Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omit</td>
<td>No Body</td>
<td>Omit</td>
<td>Omit</td>
<td>Omit</td>
</tr>
<tr>
<td>A</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
</tr>
<tr>
<td>D</td>
<td>Dual</td>
<td>Dual</td>
<td>Dual</td>
<td>Dual</td>
</tr>
</tbody>
</table>

Shipping Weight  
Cartridge Only  .44 kg (1.0 lbs.)
Counterbalance Valves
Series MHC-025

General Description
The MHC-025 series counterbalance valves are load-holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation
See Technical Tips.

Features
- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being "accidentally" installed

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Flow</td>
<td>142.5 LPM (38 GPM)</td>
</tr>
<tr>
<td>Maximum Inlet Pressure</td>
<td>350 Bar (5000 PSI)</td>
</tr>
<tr>
<td>Leakage</td>
<td>5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)</td>
</tr>
<tr>
<td>Operating Temp. Range (Ambient)</td>
<td>-40°C to +93.3°C (Nitrile) (-40°F to +200°F)</td>
</tr>
<tr>
<td>-31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)</td>
<td></td>
</tr>
<tr>
<td>Cartridge Material</td>
<td>All parts steel. All operating parts hardened steel.</td>
</tr>
<tr>
<td>Body Material</td>
<td>Steel</td>
</tr>
<tr>
<td>Filtration</td>
<td>ISO Code 16/13, SAE Class 4 or better</td>
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<tr>
<td>Mounting</td>
<td>No Restrictions</td>
</tr>
<tr>
<td>Cavity</td>
<td>CDD-1012</td>
</tr>
</tbody>
</table>

Performance Curve
Flow vs. Pressure Drop (Through cartridge only)

Construction
MHC-025-V*S* Vented Counterbalance Adjustable

Parker Hannifin Corporation
Integrated Hydraulics Division
Lincolnshire, Illinois 60069 USA
Counterbalance Valves
Series MHC-025

Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)
Counterbalance Valves
Series MHC-025

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

Series MHC-025 in Body, Double In-line
### Ordering Information

**Counterbalance Valves Series MHC-025**

#### Counterbalance Cartridge Valve

- **Code**: MHC
- **Nominal Flow Rating**: 025 (142.5 LPM (38 GPM))
- **Pilot Ratio**: Adjustable (S: Standard, V: Vented)
- **Holding Pressure**: Adjustable (S: Standard, E: 103.4 Bar (1500 PSI), H: 210 Bar (3000 PSI), J: 241 Bar (3500 PSI), K: 350 Bar (5000 PSI))
- **Body Type**: Omit (Omit), No Body (No Body), Single (A), Dual (D)
- **Ports**: Omit (00), SAE-12 (54)
- **Seals**: Standard (S), Vented (V)

#### Shipping Weight
- Cartridge Only: .64 kg (1.4 lbs.)

---

**Parker Hannifin Corporation**

Integrated Hydraulics Division
Lincolnshire, Illinois 60069 USA
General Description
The MHC-050 series counterbalance valves are load-holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation
See Technical Tips.

Features
- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent option available for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being “accidentally” installed

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Flow</td>
<td>300 LPM (80 GPM)</td>
</tr>
<tr>
<td>Maximum Inlet</td>
<td>350 Bar (5000 PSI)</td>
</tr>
<tr>
<td>Pressure</td>
<td></td>
</tr>
<tr>
<td>Leakage</td>
<td>5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)</td>
</tr>
<tr>
<td>Operating Temp.</td>
<td>-40°C to +93.3°C (Nitrite) (-40°F to +200°F)</td>
</tr>
<tr>
<td>Range (Ambient)</td>
<td>-31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)</td>
</tr>
<tr>
<td>Cartridge Material</td>
<td>All parts steel. All operating parts hardened steel.</td>
</tr>
<tr>
<td>Body Material</td>
<td>Steel</td>
</tr>
<tr>
<td>Filtration</td>
<td>ISO Code 16/13, SAE Class 4 or better</td>
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<tr>
<td>Mounting</td>
<td>No Restrictions</td>
</tr>
<tr>
<td>Cavity</td>
<td>CDD-1013</td>
</tr>
</tbody>
</table>

Performance Curve
Flow vs. Pressure Drop (Through cartridge only)
Counterbalance Valves
Series MHC-050

Dimensions

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

Series MHC-050 in Body, Single In-line
Counterbalance Valves
Series MHC-050

Series MHC-050 in Body, Double In-line

Dimensions

*Inch equivalents for millimeter dimensions are shown in (**)
### Ordering Information

#### Counterbalance Valves

**Series MHC-050**

**Code** | **Flow**  
---------------|-----------
MHC-050 | 300 LPM (80 GPM)

**Code** | **Ratio**  
---------------|-----------
B | 4:1
J | 10:1
S | 50:1

**Code** | **Type**  
---------------|-----------
S | Standard (non-vented)
V | Vented

**Code** | **Type**  
---------------|-----------
S | Standard (adjustable)

**Code** | **Description**  
---------------|-----------
Omit | No Body
A | Single
D | Double

**Code** | **Type**  
---------------|-----------
E | 103.4 Bar (1500 PSI)
H | 210 Bar (3000 PSI) Standard version
J | 241 Bar (3500 PSI)
K | 350 Bar (5000 PSI)

**Shipping Weight**  
Cartridge Only 1.54 kg (3.2 lbs.)
General Description

The MHC-120 series counterbalance valves are load-holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

See Technical Tips.

Features

- Conical Poppet design provides longer metering stroke
- Hardened seat provides reliable load holding
- External vent style for high back pressure applications
- Tamper resistant cap for added safety and security
- Various pilot ratios available for application flexibility
- Unique cavity prevents other valves from being “accidentally” installed

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Flow</td>
<td>675 LPM (180 GPM)</td>
</tr>
<tr>
<td>Maximum Inlet Pressure</td>
<td>350 Bar (5000 PSI)</td>
</tr>
<tr>
<td>Leakage</td>
<td>5 drops/min (.33 cc/min.) @ 207 Bar (3000 PSI)</td>
</tr>
<tr>
<td>Operating Temp. Range (Ambient)</td>
<td>-40°C to +93.3°C (Nitrile)</td>
</tr>
<tr>
<td></td>
<td>-31.7°C to +121.1°C (Fluorocarbon)</td>
</tr>
<tr>
<td>Cartridge Material</td>
<td>All parts steel. All operating parts hardened steel.</td>
</tr>
<tr>
<td>Filtration</td>
<td>ISO Code 16/13, SAE Class 4 or better</td>
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<tr>
<td>Mounting</td>
<td>No Restrictions</td>
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<tr>
<td>Cavity</td>
<td>CDD-1014</td>
</tr>
</tbody>
</table>
Dimensions

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

![Diagram of MHC-120 Valve]

Ordering Information

- **MHC**
  - Counterbalance Cartridge Valve
- **120**
  - Nominal Flow Rating
- **V**
  - Vent Setting
- **J**
  - Pilot Ratio
- **S**
  - Adjustment Style
- **H**
  - Holding Pressure
  - Ports
  - Seals

<table>
<thead>
<tr>
<th>Code</th>
<th>Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>675 LPM (180 GPM)</td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Ratio</th>
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</thead>
<tbody>
<tr>
<td>J</td>
<td>10:1</td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>Vented</td>
</tr>
<tr>
<td>S</td>
<td>Standard (adjustable)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Nitrile</td>
</tr>
<tr>
<td>V</td>
<td>Fluorocarbon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>210 Bar (3000 PSI) Standard version</td>
</tr>
</tbody>
</table>

Shipping Weight

- Cartridge Only: 3.18 kg (7.0 lbs.)

Technical Information

Parker Hannifin Corporation
Integrated Hydraulics Division
Lincolnshire, Illinois 60069 USA
General Description

CB101 series counterbalance valves are load holding valves with a pilot assist. They can control moving loads, prevent loads from running ahead of the pump, lock loads in any position without drift, and provide static overload relief and thermal expansion relief with open center directional control valves.

Operation

See Technical Tips.

Features

- Sealed spool type design for improved stability and accuracy as well as low leakage
- Low leakage poppet-type check valve for reliable load holding
- All external parts have yellow zinc dichromate finish. This coating enables them to withstand a 200 hour salt spray test
- Parker cartridge design for ease of installation and maintenance
- Compact size for reduced space requirements

Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Flow</td>
<td>45 LPM (12 GPM)</td>
</tr>
<tr>
<td>Maximum Inlet Pressure</td>
<td>380 Bar (5500 PSI) - Steel</td>
</tr>
<tr>
<td></td>
<td>210 Bar (3000 PSI) - Aluminum</td>
</tr>
<tr>
<td>Maximum Setting Pressure</td>
<td>345 Bar (5000 PSI) - Steel</td>
</tr>
<tr>
<td></td>
<td>210 Bar (3000 PSI) - Aluminum</td>
</tr>
<tr>
<td>Min. Operating Pressure</td>
<td>20.7 Bar (300 PSI)</td>
</tr>
<tr>
<td>Reseating Pressure</td>
<td>80% of crack pressure (Valve returns to non-relieving mode)</td>
</tr>
<tr>
<td>Operating Temp. Range (Ambient)</td>
<td>-40°C to +93.3°C (Nitrile) (-40°F to +200°F)</td>
</tr>
<tr>
<td></td>
<td>-31.7°C to +121.1°C (Fluorocarbon) (-25°F to +250°F)</td>
</tr>
<tr>
<td>Cartridge Material</td>
<td>All parts steel. All operating parts hardened steel.</td>
</tr>
<tr>
<td>Body Material</td>
<td>Steel or Aluminum</td>
</tr>
<tr>
<td>Filtration</td>
<td>ISO Code 16/13, SAE Class 4 or better</td>
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<tr>
<td>Mounting</td>
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<tr>
<td>Cavity</td>
<td>Common Cavity No. C10-3</td>
</tr>
</tbody>
</table>
Counterbalance Valves
Series CB101

Dimensions

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