MVG40 Headed Pin Valve Gate
Assembly Overview

**Key Features**

- Suitable for most materials
- Conical (1) or Cylindrical (2) shut off
- Ø2.0mm, Ø2.5mm, Ø3.0mm and Ø5.0mm pin
- Pneumatic actuation

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**IMPORTANT!!**

The back plate must be cooled and must not exceed 150°C.
The cylinder should be in the closed position at all times except during injection and packing.

**Air quality:** Filtered to 40 μM and lubricated

**Minimum air:** pressure 4 Bar

**Maximum air:** pressure 10 Bar

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**Figure 1**
MVG40 Headed Pin Overall Dimensions

Note: Pins are supplied in standard length and must be cut to required length before installation.
Pins can be supplied finished ready to use by Mastip

→ Refer to page MVG40-6 Pin Calculations section to calculate required final pin lengths

<table>
<thead>
<tr>
<th>Nozzle Compatibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td>MVG40-P1 Headed Pin</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
MVG40 Headed Pin Valve Gate

**Fitment**

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**Figure 4**

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**Figure 5**
Caution: The gap between the gate and the pin in a hot state is critical. If the gap is too large there will be a poor gate vestige and drooling from the nozzle may occur. If the gap is too small, the pin can strike the gate and may decrease the gate life.

To calculate final pin length use the following equation:

<table>
<thead>
<tr>
<th>Pin Length Equation</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVG40-P1 – D2.0</td>
<td>Pin Length = (Y=28.75) + 10.0 + X + L4 + L + 0.05</td>
</tr>
<tr>
<td>MVG40-P1 – D2.5</td>
<td>Pin Length = (Y=29.00) + 10.0 + X + L4 + L + 0.05</td>
</tr>
</tbody>
</table>

Conical and Cylindrical Valve Gate Recommendations

<table>
<thead>
<tr>
<th>Gate Quality</th>
<th>Conical Valve Gate</th>
<th>Cylindrical Valve Gate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin Cooling</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td>Filled Materials</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>Material with Small Moulding Window</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>Ease of Pin Setup</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>Ease of Gate Manufacture</td>
<td>***</td>
<td>**</td>
</tr>
<tr>
<td>Gate Life</td>
<td>***</td>
<td>*</td>
</tr>
</tbody>
</table>

Key:
- * Lowest Rating
- *** Highest Rating
Conical Valve Gate

<table>
<thead>
<tr>
<th>D</th>
<th>d1</th>
<th>d2</th>
<th>AF</th>
<th>CP</th>
<th>AT</th>
<th>qT</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0</td>
<td>1.3</td>
<td>1.25</td>
<td>1.80</td>
<td>8</td>
<td>1.30</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>2.5</td>
<td>1.8</td>
<td>1.75</td>
<td>2.30</td>
<td>8</td>
<td>1.80</td>
<td>1.0</td>
<td>2.0</td>
</tr>
<tr>
<td>3.0</td>
<td>2.2</td>
<td>2.15</td>
<td>2.75</td>
<td>8</td>
<td>2.20</td>
<td>1.2</td>
<td>2.5</td>
</tr>
<tr>
<td>5.0</td>
<td>3.5</td>
<td>3.45</td>
<td>4.65</td>
<td>10</td>
<td>3.50</td>
<td>2.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The pin will form a 0.1mm deep dimple on the part. Pin and gate to be lapped to ensure clean shutoff. Recommended for amorphous polymers.

Cylindrical Valve Gate

<table>
<thead>
<tr>
<th>Description</th>
<th>D</th>
<th>AP</th>
<th>BP</th>
<th>AF</th>
<th>CP</th>
<th>GP</th>
<th>qP</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVG40-P1 Headed Pin</td>
<td>2.0</td>
<td>1.292</td>
<td>2.0</td>
<td>1.6</td>
<td>5</td>
<td>1.305</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>MVG40-P1 Headed Pin</td>
<td>2.5</td>
<td>1.792</td>
<td>2.0</td>
<td>2.1</td>
<td>5</td>
<td>1.805</td>
<td>0.7</td>
<td>2.0</td>
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<tr>
<td>MVG40-P1 Headed Pin</td>
<td>3.0</td>
<td>2.192</td>
<td>2.0</td>
<td>2.6</td>
<td>5</td>
<td>2.205</td>
<td>0.8</td>
<td>2.5</td>
</tr>
<tr>
<td>MVG40-P1 Headed Pin</td>
<td>5.0</td>
<td>3.492</td>
<td>2.5</td>
<td>4.4</td>
<td>8</td>
<td>3.505</td>
<td>1.3</td>
<td>3.0</td>
</tr>
</tbody>
</table>

The pin will form a 0.1mm deep dimple on the part. Recommended for semi-crystalline and filled polymers.

Guided Cylindrical Valve Gate (GVG5) or YV2 Nut

<table>
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<th>DP</th>
<th>GP</th>
<th>qP</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVG40-P1 Headed Pin</td>
<td>2.0</td>
<td>1.292</td>
<td>2.0</td>
<td>1.70</td>
<td>8</td>
<td>1.892</td>
<td>1.305</td>
<td>0.5</td>
<td>1.0</td>
</tr>
<tr>
<td>MVG40-P1 Headed Pin</td>
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<td>1.792</td>
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The pin will form a 0.1mm deep dimple on the part. Recommended for semi-crystalline and filled polymers.
MVG40 Headed Pin Valve Gate

Exploded Diagram

As Supplied

A MVG40 CYLINDER ASSEMBLY

B MVG40 VALVE PIN + SEAL

Exploded Diagram

1 Blanking Plate Screw
2 Blanking Plate
3 Blanking Plate Seal
4 Pin Locking Screw
5 Valve Pin Adjustment Packer
6 Valve Pin
5a Valve Pin Adjustment Packers
7 Piston Main Seal
8 Piston
9 Piston Rod Seal
10 Circlip
11 Cylinder
12 Cylinder End Seal
13 Locating Spacer
14 Valve Pin Seal
Installation and Pin Adjustment Guide

PRE INSTALLATION
1. Verify the actuator pockets and air circuits are machined in the back plate as shown in figure 5.
2. Ensure there are no sharp edges or burrs in the actuator pockets.
3. Ensure the actuator pocket and air circuits are clean.
4. Cut pins to length and profile end to conical or cylindrical (refer nozzle approval drawing)
5. Assemble the fixed half of the mould including hot runner nozzles and manifold excluding backplate.
   → Refer to the Technical Specifications section of the Technical Guide
   Pin and seal are a matched set and must remain paired.

INSTALLATION

ONE
Ensure all components are clean

TWO
Fit the Cylinder End Seal 12 to the Cylinder 11
Apply grease* to Cylinder End Seal 12

THREE
Fit the Cylinder 11 and Locating Spacer 13 to the mould backplate and retain using the Circlip 10
Ensure Cylinder 11 is compressing Cylinder End Seal 12 to fit Circlip 10 securely in groove on Locating Spacer 13

FOUR
Apply grease* to the sealing bores of the Locating Spacer 13 and Cylinder 11 and to the pre fitted Piston Seals 7 & 9
Fit Piston 8 to the Cylinder 11

Note
* Mastip recommends using high temperature silicon grease
INSTALLATION CONT.....

Clean any residual material from the pin seal pocket and thread in the manifold.

Apply heat resistant nickel based anti-seize to the thread of the new pin seal and screw into the manifold and tighten to 20Nm.

Ensure pins slide smoothly through the pin seal after tightening.

Centralise Cylinder Assembly to the Actuator pocket.
SEVEN

Fit mould backplate to mould and fasten.

**Note:** If backplate location guides start to locate first, then the cylinder assembly should self locate to the manifold. However in some cases it may be necessary to move the cylinder assemblies in the actuator pocket to locate them with the manifold.
INSTALLATION CONT.....

EIGHT

Insert the Valve Pin Adjustment Packers \(a\), \(b\) & \(c\) onto the Valve Pin \(6\)
Ensure the correct packer thickness is in the correct position. (Recommend starting with the thinnest packer above the pin head, then adjust to suit if necessary).
Fit the Valve Pin \(6\) to Piston \(8\)
Fit the remaining Valve Pin Adjustment Packer \(a\) above pin head
Fit the Pin Locking Screw \(4\) to the Piston \(8\) and tighten to 40Nm

NINE

Fit Blanking Plate Seal \(3\) to Blanking Plate \(2a\) or \(2b\)
INSTALLATION CONT.....

Fit Blanking Plate 2 or 2b to the mould backplate and fasten using Blanking Plate Screws 1.
PIN HEIGHT ADJUSTMENT

ONE

Remove Blanking Plate 2 or 2b
PIN HEIGHT ADJUSTMENT CONT.....

TWO

Remove the Pin Locking Screw
Remove the Valve Pin Adjustment Packer
Remove the Valve Pin
Remove the remaining Valve Pin Adjustment Packers

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PIN HEIGHT ADJUSTMENT CONT.....

THREE

Minor Adjustment

Swap Valve Pin Adjustment Packers \(5a, 5b, 5c\) & \(5d\) to achieve small pin adjustments (different packer = different height)

FOUR

Major Adjustment

Move one or more Valve Pin Adjustment Packers \(5a, 5b, 5c\) & \(5d\) from below the pin head to above the pin head to achieve large pin adjustment
Assemble Valve Pin (ensure pin are matched to seals), Valve Pin Adjustment Packers, & and the Pin Locking Screw and tighten to 40Nm

PIN HEIGHT ADJUSTMENT CONT.....
PIN HEIGHT ADJUSTMENT CONT.....

Fit Blanking Plate 2 or 3 to the mould backplate and fasten using Blanking Plate Screws 1.
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