MVG55 Valve Gate
Assembly Overview

**Key Features**
- Suitable for most materials
- Cylindrical (2) shut off recommended
- Conical (1) shut off requires precise adjustment so as not to overload the gate
- Ø5.0mm pin
- Pneumatic actuation

**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
MVG55 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 MVG55-6 Pin Calculations section to calculate required final pin lengths.

<table>
<thead>
<tr>
<th>Description</th>
<th>Nozzle</th>
<th>Nozzle Length</th>
<th>Supplied Pin Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVG55-P1 Headed Pin</td>
<td>BX27</td>
<td>75 - 275</td>
<td>Ø5.0</td>
</tr>
</tbody>
</table>
Fitment

**Figure 4**

**Figure 5**
**Pin Details**

**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:

\[ \text{Pin Length} = 29.0 + 10.0 + X + L4 + L + 0.05 \]

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**Conical and Cylindrical Valve Gate Recommendations**

<table>
<thead>
<tr>
<th></th>
<th>Conical Valve Gate</th>
<th>Cylindrical Valve Gate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gate Quality</td>
<td>***</td>
<td>***</td>
</tr>
<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>

*Conical Valve Gates by arrangement with Mastip Engineering and Applications Teams*
System Overview

**MVG55 Valve Gate**

**Gate Configuration**

### 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>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>

Conical Valve Gates by arrangement with Mastip Engineering and Applications Teams

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>MVG55-P1 Headed Pin</td>
<td>5.0</td>
<td>3.492</td>
<td>2.5</td>
<td>4.4</td>
<td>8.0</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>
<thead>
<tr>
<th>Description</th>
<th>D</th>
<th>AP</th>
<th>BP</th>
<th>AF</th>
<th>CP</th>
<th>DP</th>
<th>GP</th>
<th>qP</th>
<th>HP</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVG55-P1 Headed Pin</td>
<td>5.0</td>
<td>3.492</td>
<td>3.0</td>
<td>4.55</td>
<td>10</td>
<td>4.892</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.
**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 form (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 in 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 1 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

* Mastip recommends using high temperature silicon grease
Centralise Cylinder Assembly A to the Actuator pocket.

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.
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 case’s 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 5b, 5c & 5d 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 5b above the pin head.
Fit the Pin Locking Screw 4 to the Piston 9 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
Two

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

PIN HEIGHT ADJUSTMENT CONT.....
Pin Height Adjustment

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** ③, (ensure pins are matched to seals), **Valve Pin Adjustment Packers** ⑤, ⑥, ⑦ & ⑧ and the **Pin Locking Screw** ④ and tighten to 40Nm.
Fit Blanking Plate 2a or 2b to the mould backplate and fasten using Blanking Plate Screws 1.
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