MVG40 Threaded Pin Valve Gate
Assembly Overview

IMPORTANT!

The back plate must be cooled and must not exceed 140°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

Key Features

- Suitable for most materials
- Conical or Cylindrical shut off
- Ø2.0mm and Ø5.0mm pin
- Air actuated
MVG40 Threaded 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

---

**Nozzle Compatibility**

<table>
<thead>
<tr>
<th>Description</th>
<th>Nozzle</th>
<th>Tip</th>
<th>Nozzle Length</th>
<th>Supplied Pin Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVG40-P2 Threaded Pin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MX13</td>
<td>OV</td>
<td>45 - 145</td>
<td>Ø2.0</td>
<td></td>
</tr>
<tr>
<td>BX13</td>
<td>OV</td>
<td>45 - 225</td>
<td>Ø2.0</td>
<td></td>
</tr>
<tr>
<td>MX16</td>
<td>OV / TV</td>
<td>45 - 145</td>
<td>Ø2.5</td>
<td></td>
</tr>
<tr>
<td>BX16</td>
<td>OV / TV</td>
<td>45 - 250</td>
<td>Ø2.5</td>
<td></td>
</tr>
<tr>
<td>MX19</td>
<td>OV / TV</td>
<td>55 - 175</td>
<td>Ø3.0</td>
<td></td>
</tr>
<tr>
<td>BX19</td>
<td>OV / TV</td>
<td>45 - 300</td>
<td>Ø3.0</td>
<td></td>
</tr>
<tr>
<td>BX27</td>
<td>OV / TV</td>
<td>75 - 450</td>
<td>Ø5.0</td>
<td></td>
</tr>
</tbody>
</table>
**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:

\[
\text{Pin Length} = 22.0 + 10.0 + X + L4 + L
\]

![Diagram of pin assembly with annotations]

*Figure 6*
System Overview

MVG40 Threaded Pin Valve Gate

Gate Configuration

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>

Key

<table>
<thead>
<tr>
<th>Key</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>*</td>
<td>Lowest Rating</td>
</tr>
<tr>
<td>***</td>
<td>Highest Rating</td>
</tr>
</tbody>
</table>

Conical Valve Gate

<table>
<thead>
<tr>
<th>Description</th>
<th>D</th>
<th>d1</th>
<th>d2</th>
<th>GT</th>
<th>qT</th>
<th>HT</th>
</tr>
</thead>
<tbody>
<tr>
<td>MVG40-P2 Threaded Pin</td>
<td>2.0</td>
<td>1.3</td>
<td>1.25</td>
<td>1.3</td>
<td>0.8</td>
<td>1.0</td>
</tr>
<tr>
<td>MVG40-P2 Threaded Pin</td>
<td>2.5</td>
<td>1.8</td>
<td>1.75</td>
<td>1.8</td>
<td>1.0</td>
<td>2.0</td>
</tr>
<tr>
<td>MVG40-P2 Threaded Pin</td>
<td>3.0</td>
<td>2.2</td>
<td>2.15</td>
<td>2.2</td>
<td>1.2</td>
<td>2.5</td>
</tr>
<tr>
<td>MVG40-P2 Threaded Pin</td>
<td>5.0</td>
<td>3.5</td>
<td>3.45</td>
<td>3.5</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-P2 Threaded 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-P2 Threaded 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>
</tr>
<tr>
<td>MVG40-P2 Threaded 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-P2 Threaded 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.
Exploded Diagram

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

6 Piston Main Seal

7 Piston

8 Piston Rod Seal

9 Circlip

10 Cylinder

11 Cylinder End Seal

12 Locating Spacer

13 Valve Pin Seal

MVG40 Threaded Pin Valve Gate

System Overview
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 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 11 to the Cylinder 10
Apply grease* to Cylinder End Seal 11

THREE

Fit the Cylinder 10 and Locating Spacer 12 to the mould backplate and retain using the Circlip 9
Ensure Cylinder 10 is compressing Cylinder End Seal 11 to fit Circlip 9 securely in groove on Locating Spacer 12

FOUR

Apply grease* to the sealing bores of the Locating Spacer 12 and Cylinder 10 and to the pre fitted Piston Seals 6 & 8
Fit Piston 7 to the Cylinder 10

Note

* Mastip recommends using high temperature silicon grease
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.
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**

Fit the **Valve Pin** (ensure pins are matched to seals) to **Piston**

To adjust the pin length:

→ Go to step FOUR in the **PIN ADJUSTMENT** section.

or

fit the **Pin Locking Screw** and continue to step NINE.

**NINE**

Fit **Blanking Plate Seal** to **Blanking Plate** or **Blanking Plate**.
INSTALLATION CONT.....

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

ONE
Make sure piston is fully forward and ensure no air is connected to the system.

TWO
Remove Blanking Plate Screws 1 and remove Blanking Plate 2a or 2b from the mould backplate.

THREE
Insert tube spanner into the piston. Insert a 3.0mm hex key into the Pin Locking Screw 4 and remove.

FOUR
Re-insert the hex key to adjust pin to correct position.

a. For adjusting a new installation:
   i. The pin length can be set cold by measuring from the front with a depth micrometer calculating the allowance for expansion.
   → Refer to page MVG40-6 for pin expansion calculation.

b. For adjusting an existing installation:
   i. The nozzle to be adjusted will be heated to the minimum melt temperature of the plastic material.
   ii. While pushing the piston forward from the rear adjust the valve pin forward until the piston just begins to move and then back off 1/8 of a turn.
PIN HEIGHT ADJUSTMENT CONT...

FIVE

Insert and tighten **Pin Locking Screw** ⑤

SIX

Fit **Blanking Plate** ⑥ or ⑦ and fasten with **Blanking Plate Screws** ⑧

SEVEN

Pin adjustment is COMPLETE
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