

MVG40 Threaded Pin Valve Gate

Assembly Overview

IMPORTANT!!

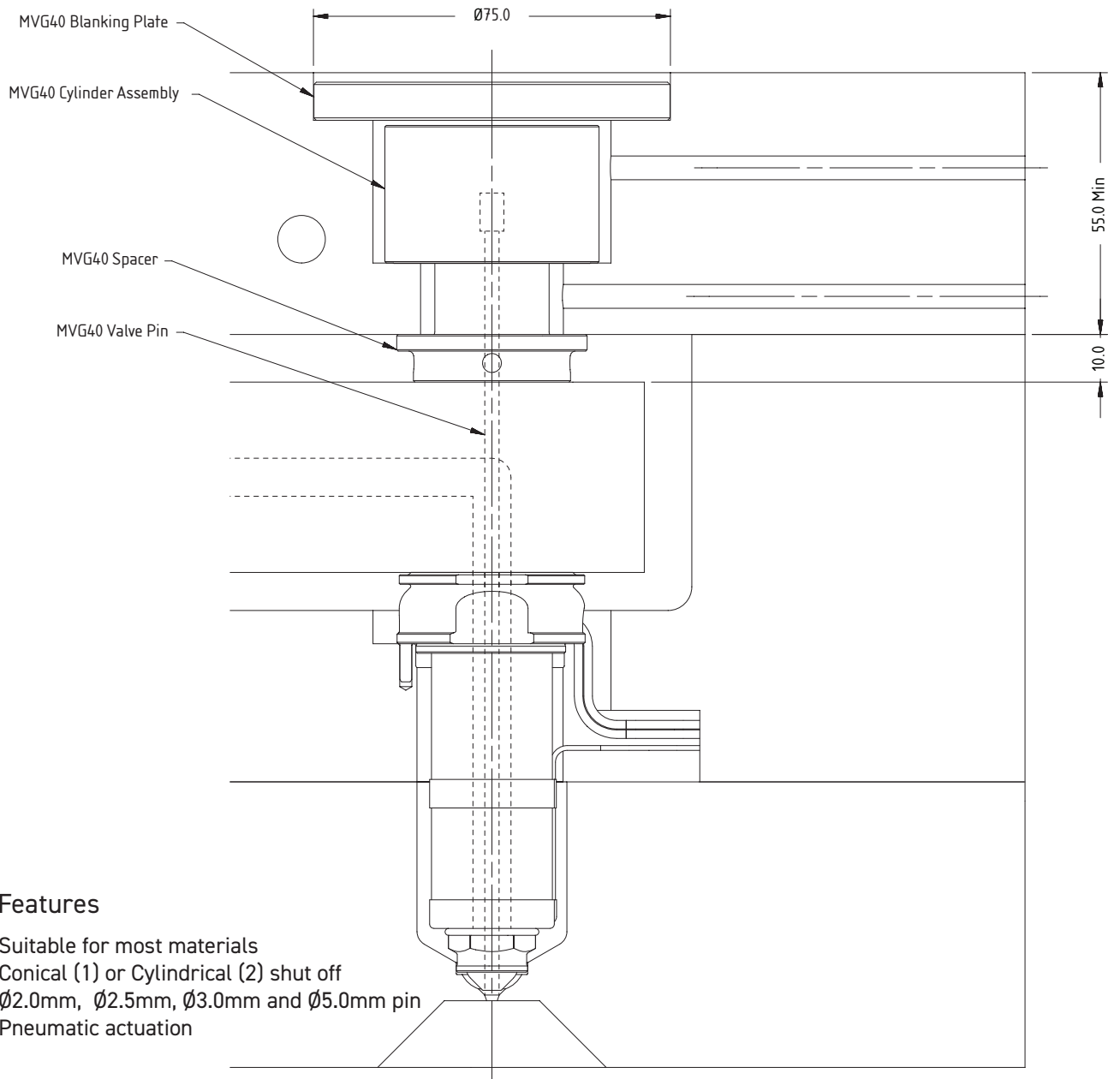
The back plate must be cooled and must not exceed 150°C.

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

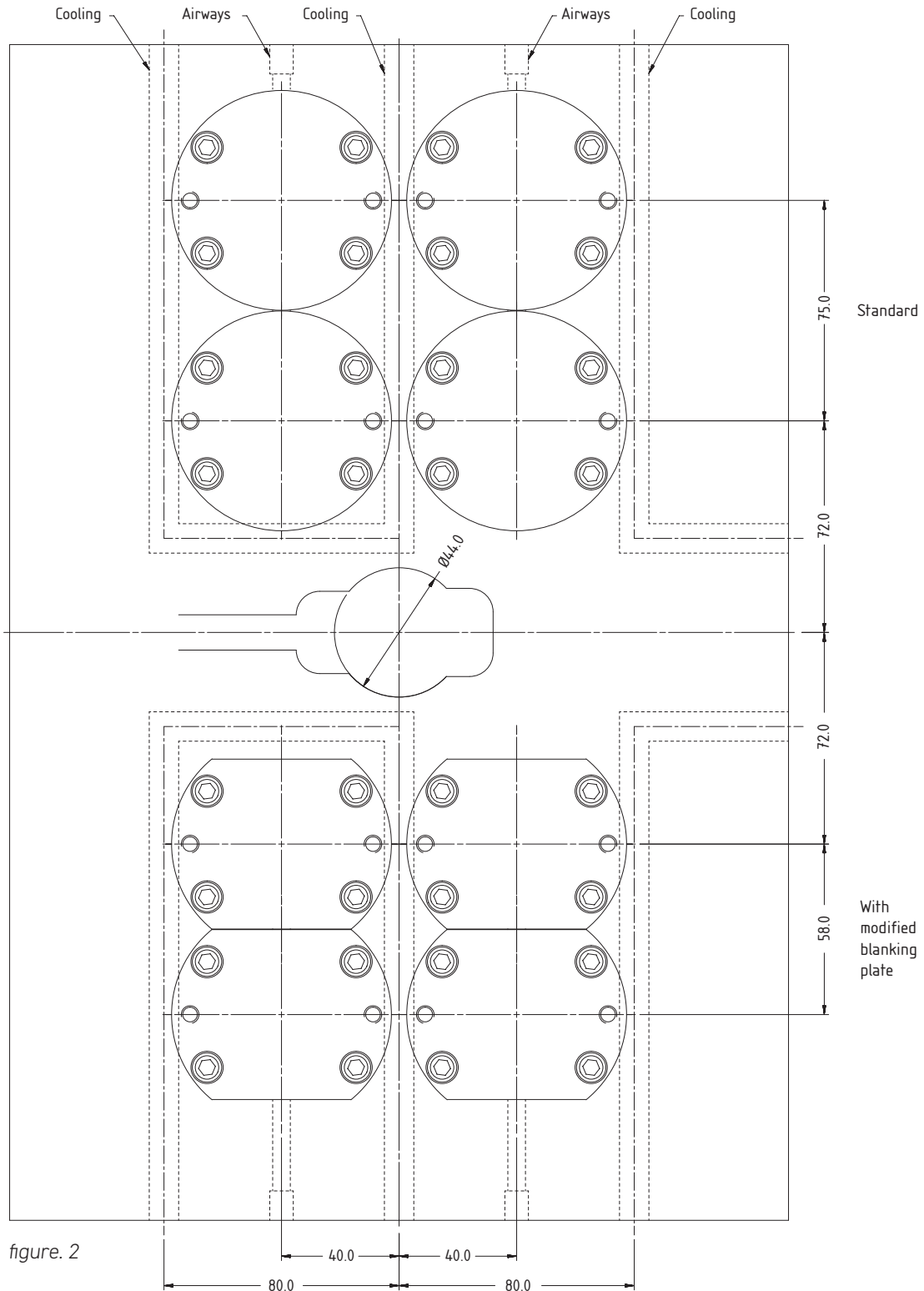


Key Features

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

figure. 1

Spacing Layout



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

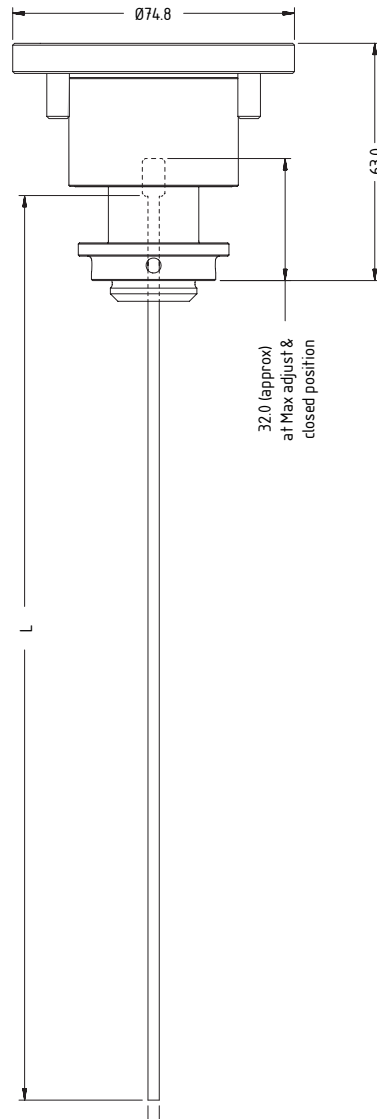


figure. 3

| Nozzle Compatibility | | | |
|-----------------------|-----------|---------------|-------------------|
| Description | Nozzle | Nozzle Length | Supplied Pin Size |
| MVG40-P2 Threaded Pin | MX13/BX13 | 45 - 145 | Ø2.0 |
| | MX16/BX16 | 45 - 145 | Ø2.5 |
| | MX19/BX19 | 45 - 300 | Ø3.0 |
| | BX27 | 75 - 400 | Ø5.0 |

Fitment

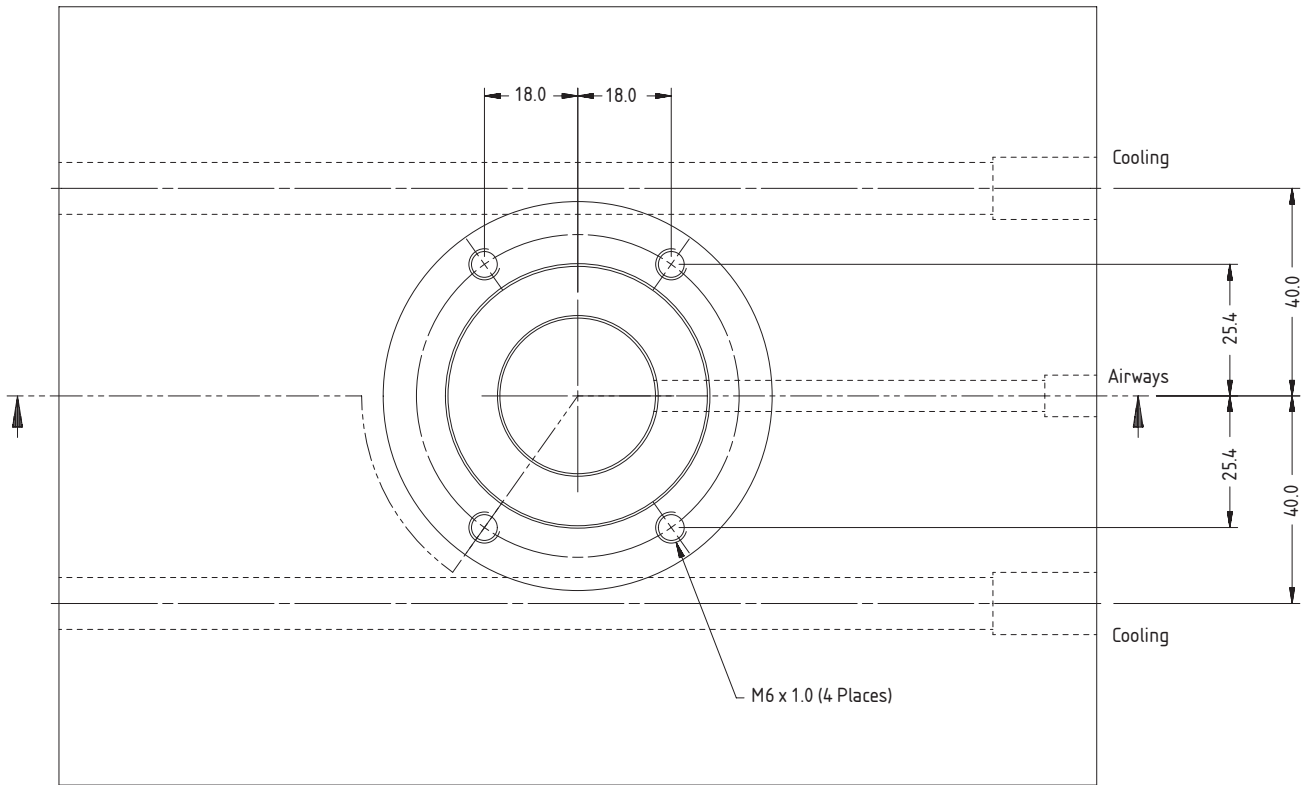


figure. 4

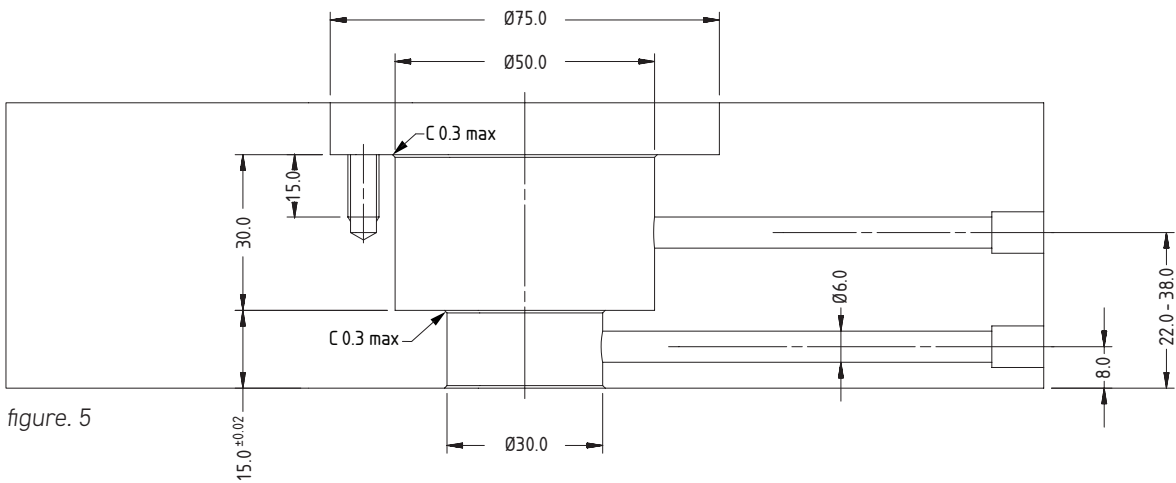


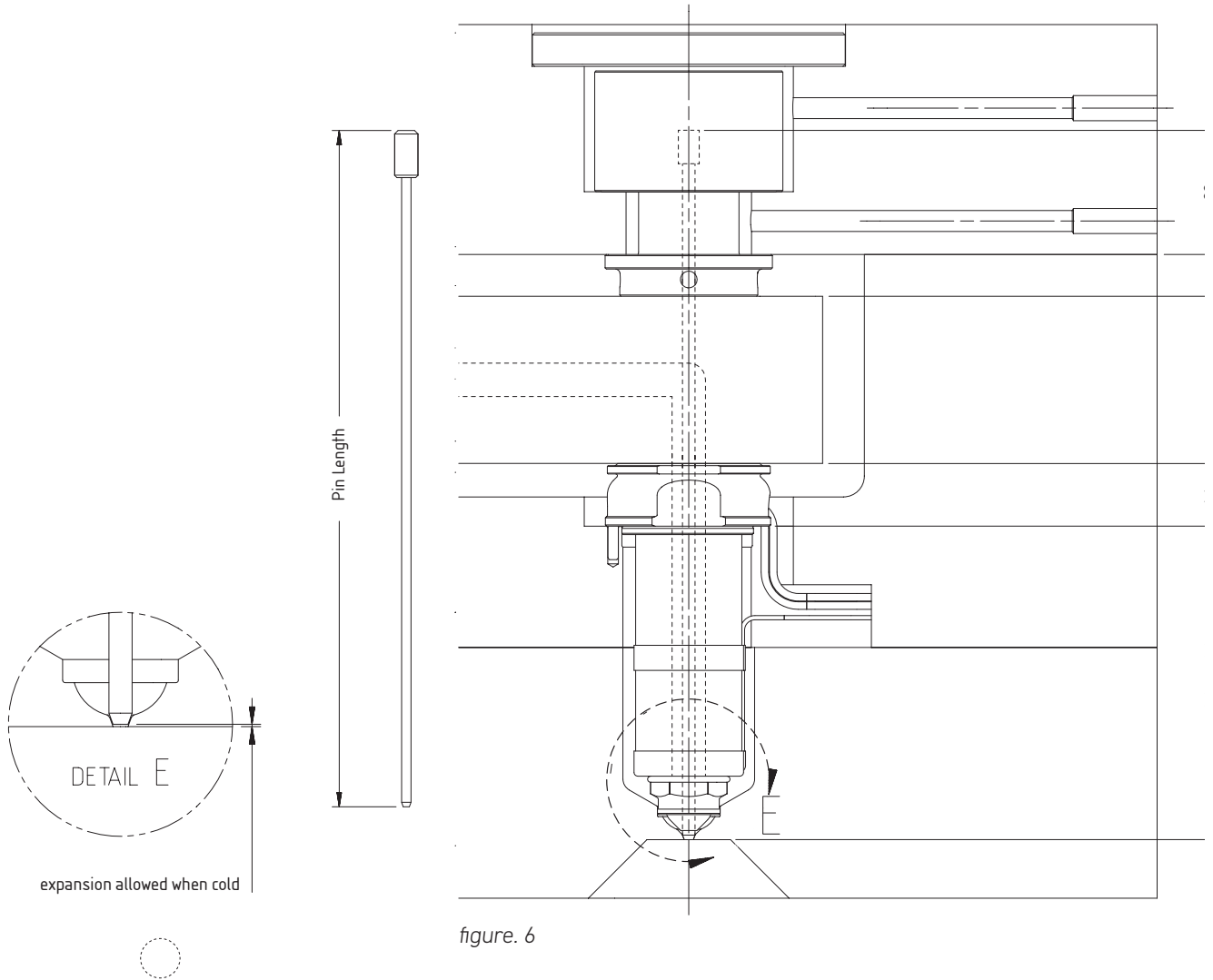
figure. 5

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:

$$\text{Pin Length} = 22.0 + 10.0 + X + L_4 + L$$



Conical and Cylindrical Valve Gate Recommendations

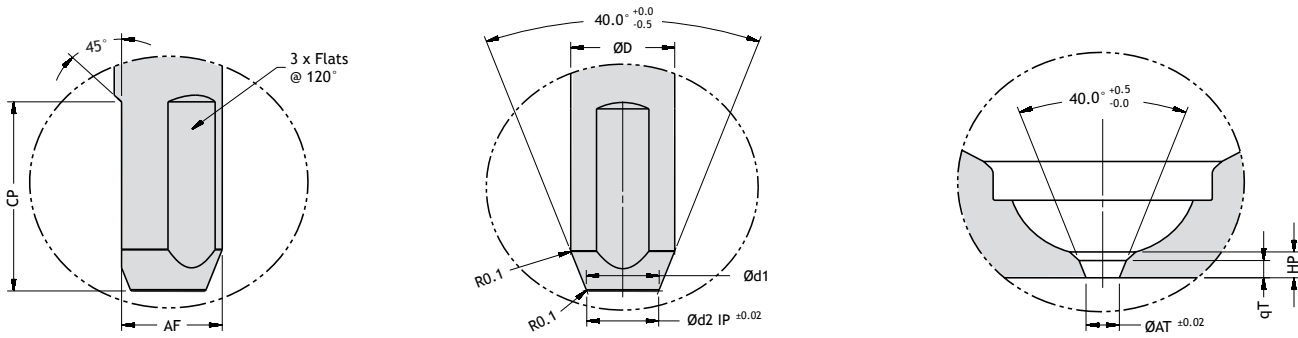
| | Conical Valve Gate | Cylindrical Valve Gate |
|-------------------------------------|--------------------|------------------------|
| Gate Quality | *** | *** |
| Pin Cooling | *** | * |
| Filled Materials | * | *** |
| Material with Small Moulding Window | * | *** |
| Ease of Pin Setup | * | *** |
| Ease of Gate Manufacture | *** | ** |
| Gate Life | *** | * |

| Key | Value |
|-----|----------------|
| * | Lowest Rating |
| *** | Highest Rating |

Conical Valve Gate

| D | d1 | d2 | AF | CP | AT | qT | HP |
|-----|-----|------|------|----|------|-----|-----|
| 2.0 | 1.3 | 1.25 | 1.80 | 8 | 1.30 | 0.8 | 1.0 |
| 2.5 | 1.8 | 1.75 | 2.30 | 8 | 1.80 | 1.0 | 2.0 |
| 3.0 | 2.2 | 2.15 | 2.75 | 8 | 2.20 | 1.2 | 2.5 |
| 5.0 | 3.5 | 3.45 | 4.65 | 10 | 3.50 | 2.0 | 3.0 |

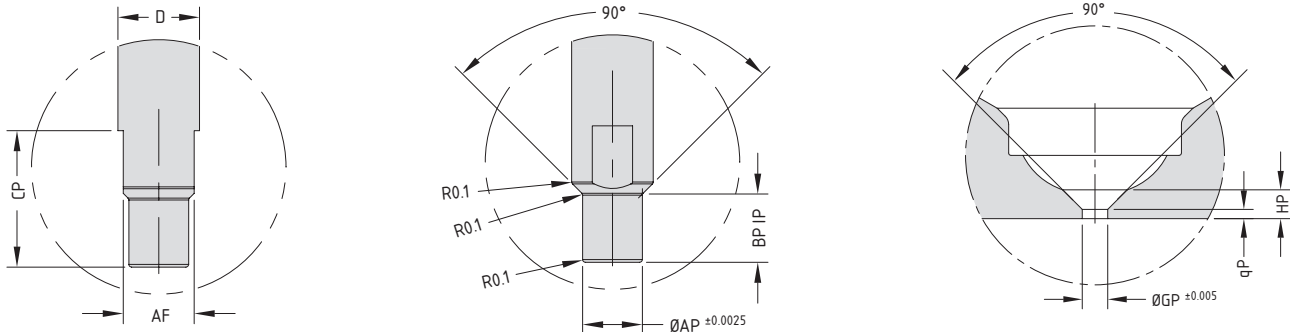
The pin will form a 0.1mm deep dimple on the part.
 Pin and gate to be lapped to ensure clean shutoff.
 Recommended for amorphous polymers.



Cylindrical Valve Gate

| Description | D | AP | BP | AF | CP | GP | qP | HP |
|-----------------------|-----|-------|-----|-----|----|-------|-----|-----|
| MVG40-P2 Threaded Pin | 2.0 | 1.292 | 2.0 | 1.6 | 5 | 1.305 | 0.5 | 1.0 |
| MVG40-P2 Threaded Pin | 2.5 | 1.792 | 2.0 | 2.1 | 5 | 1.805 | 0.7 | 2.0 |
| MVG40-P2 Threaded Pin | 3.0 | 2.192 | 2.0 | 2.6 | 5 | 2.205 | 0.8 | 2.5 |
| MVG40-P2 Threaded Pin | 5.0 | 3.492 | 2.5 | 4.4 | 8 | 3.505 | 1.3 | 3.0 |

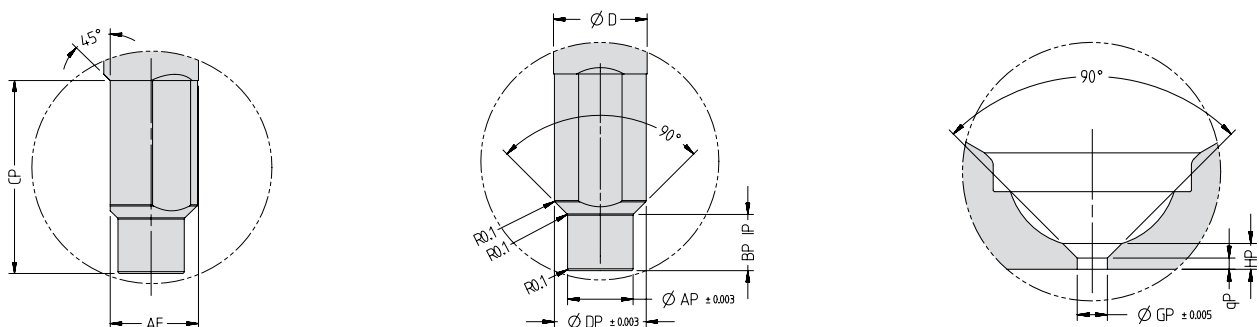
The pin will form a 0.1mm deep dimple on the part.
 Recommended for semi-crystalline and filled polymers.



Guided Cylindrical Valve Gate (GVG5) or YV2 Nut

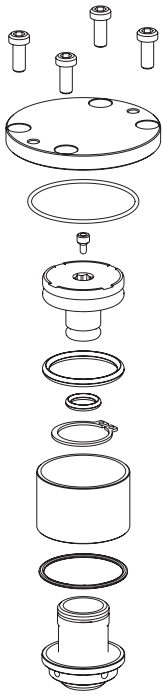
| Description | D | AP | BP | AF | CP | DP | GP | qP | HP |
|-----------------------|-----|-------|-----|------|----|-------|-------|-----|-----|
| MVG40-P2 Threaded Pin | 2.0 | 1.292 | 2.0 | 1.70 | 8 | 1.892 | 1.305 | 0.5 | 1.0 |
| MVG40-P2 Threaded Pin | 2.5 | 1.792 | 2.2 | 2.20 | 8 | 2.392 | 1.805 | 0.7 | 2.0 |
| MVG40-P2 Threaded Pin | 3.0 | 2.192 | 2.5 | 2.65 | 8 | 2.892 | 2.205 | 0.8 | 2.5 |
| MVG40-P2 Threaded Pin | 5.0 | 3.492 | 3.0 | 4.55 | 10 | 4.892 | 3.505 | 1.3 | 3.0 |

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



As Supplied

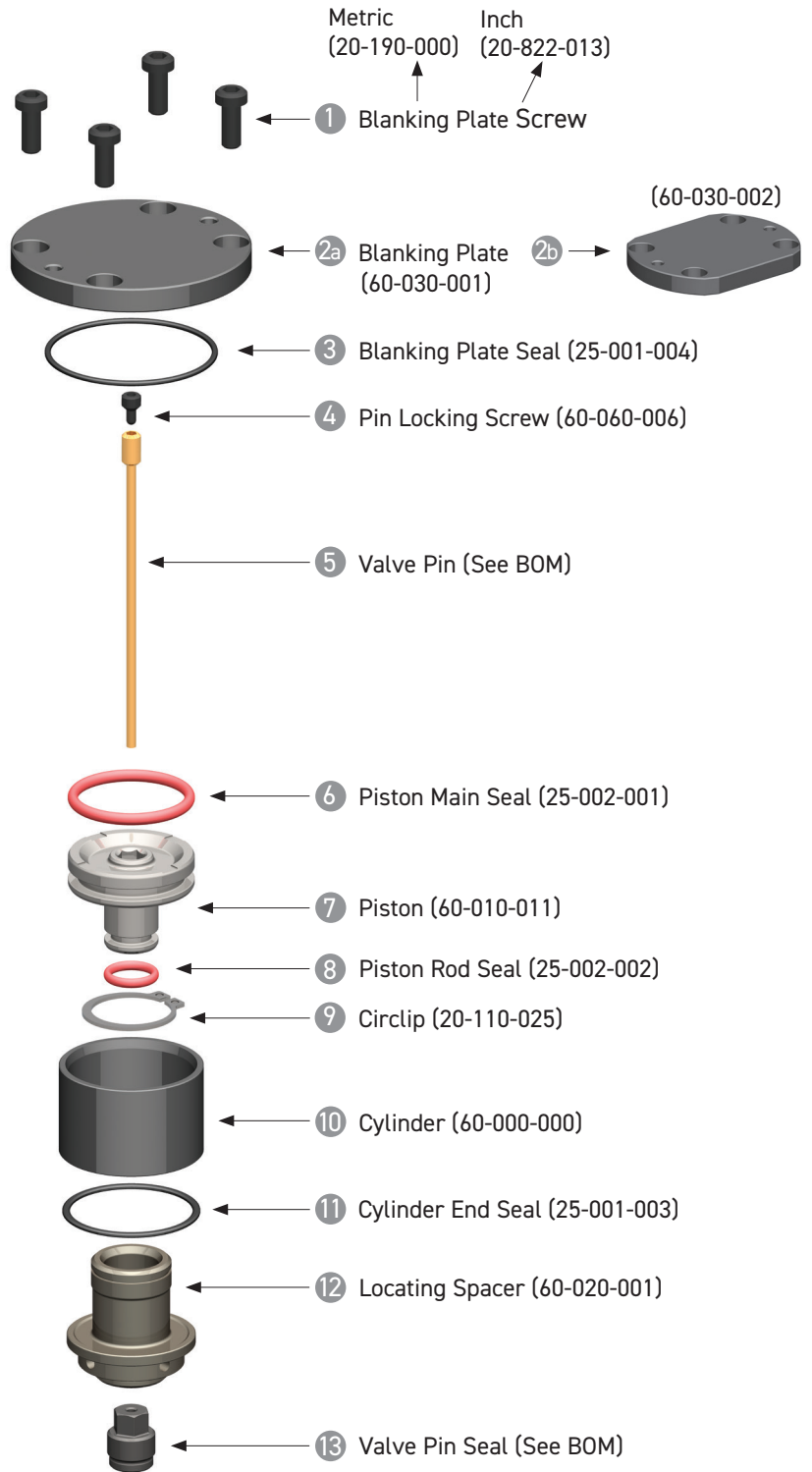
A MVG40 CYLINDER ASSEMBLY



B MVG40 VALVE PIN + SEAL



Exploded Diagram



Note

1. MVG40 Spares Kit (80-000-100). Includes Seals, Circlip and Grease
2. Pin Adjustment Kit (60-090-000)

Installation and Pin Adjustment Guide

PRE INSTALLATION

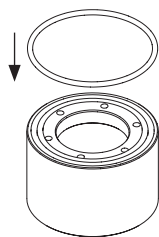
1. Verify the actuator pockets and air circuits are machined in the back plate as shown in figure 5.
 2. Ensure there are no sharp edges or burrs in the actuator pockets.
 3. Ensure the actuator pocket and air circuits are clean.
 4. Cut pins to length and profile end to conical or cylindrical form (refer 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

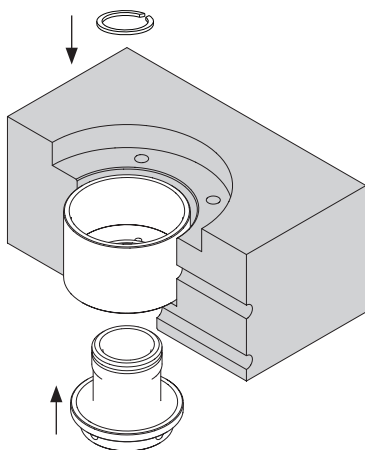
Ensure all components are clean

TWO



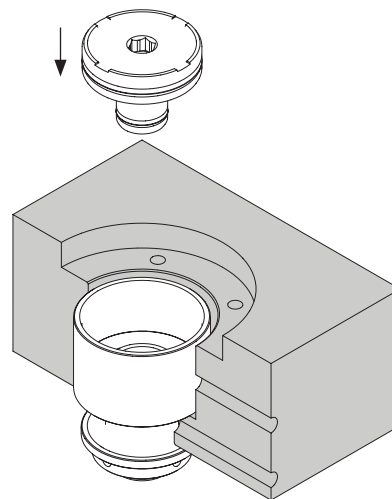
Fit the **Cylinder End Seal 11** to the **Cylinder 10**
Apply grease* to **Cylinder End Seal 11**

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



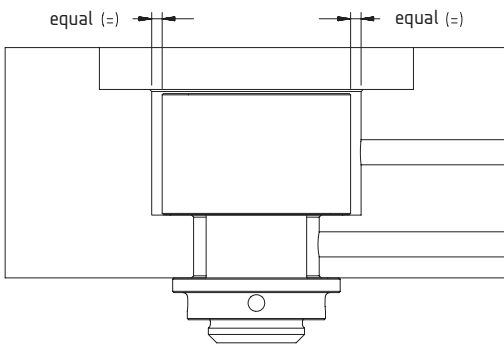
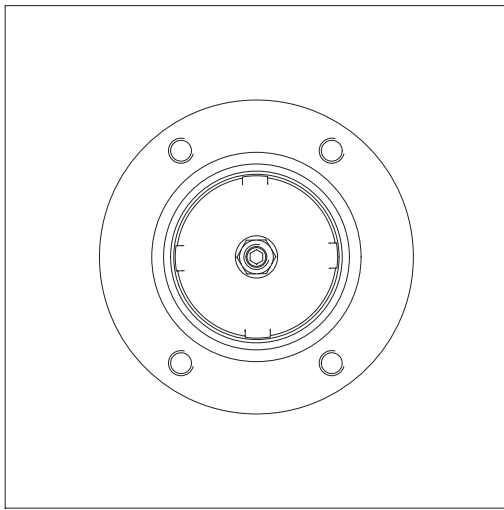
Apply grease* to the sealing bores of the **Locating Spacer 12** and **Cylinder 10** and to the pre fitted **Piston Seals 6 & 8**
Fit **Piston 7** to the **Cylinder 10**

Note

* Mastip recommends using high temperature silicon grease

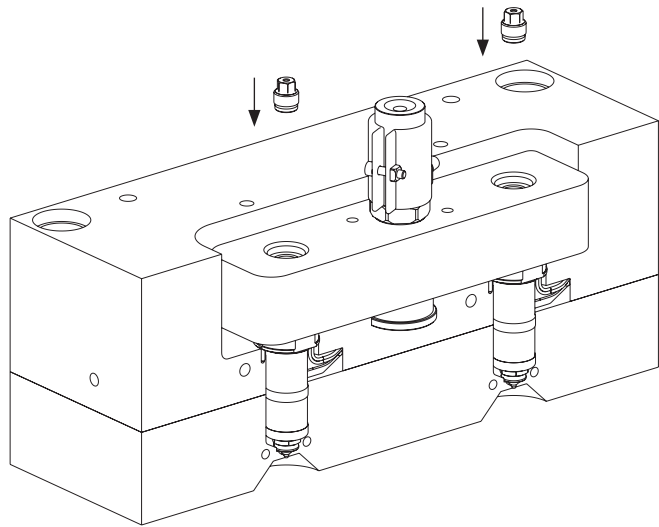
INSTALLATION CONT.....

FIVE



Centralise **Cylinder Assembly A**
to the Actuator pocket.

SIX



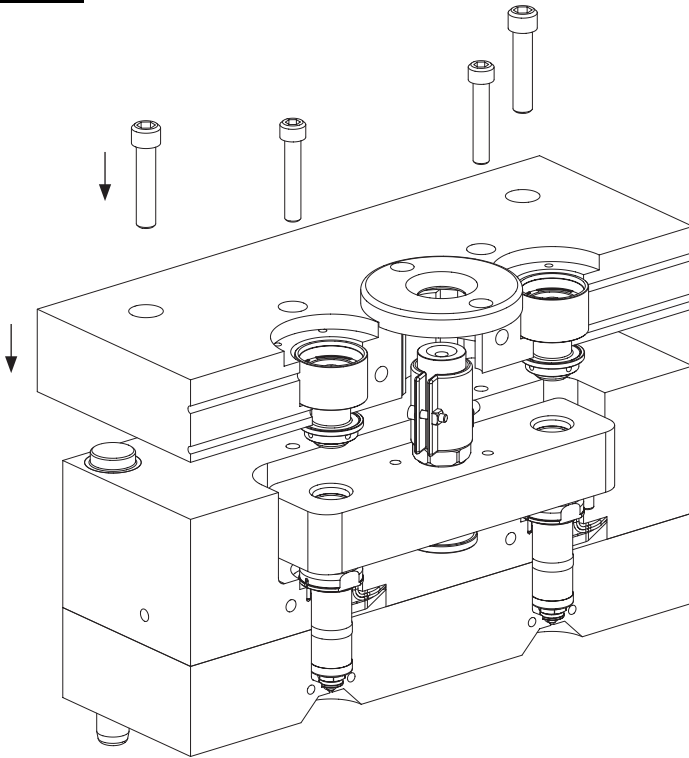
Clean any residual material from the pin seal pocket and thread in the manifold.

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.

INSTALLATION CONT.....

SEVEN

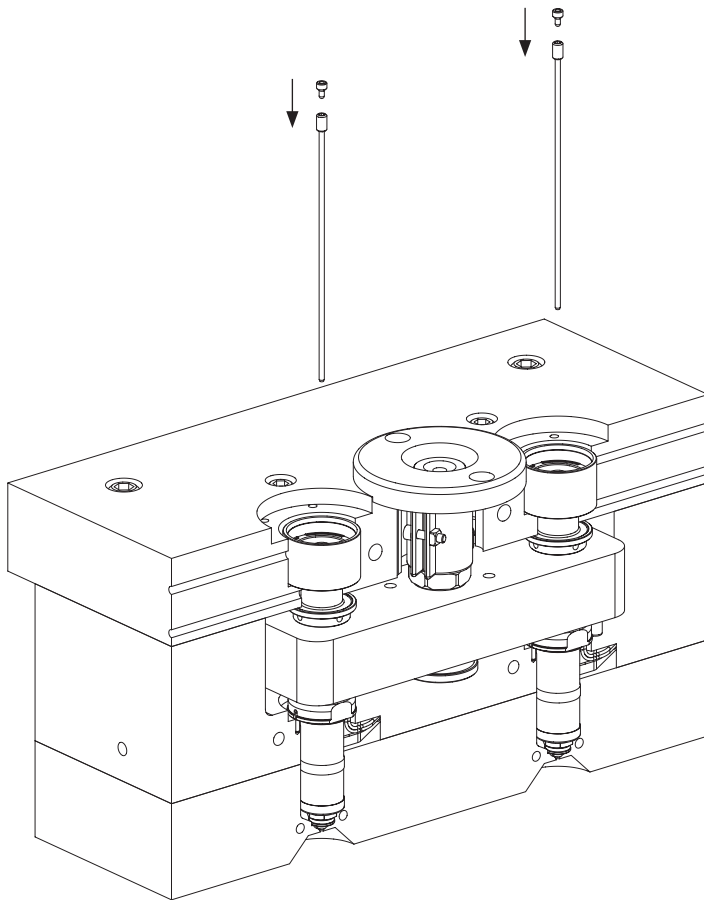


Fit mould backplate to mould and fasten.

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



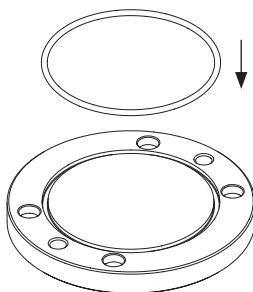
Fit the **Valve Pin** ⑤ (ensure pins are matched to seals) to **Piston** ⑦

To adjust the pin length:
→ Go to step FOUR in the **PIN ADJUSTMENT** section.

or

fit the **Pin Locking Screw** ④ and continue to step NINE.

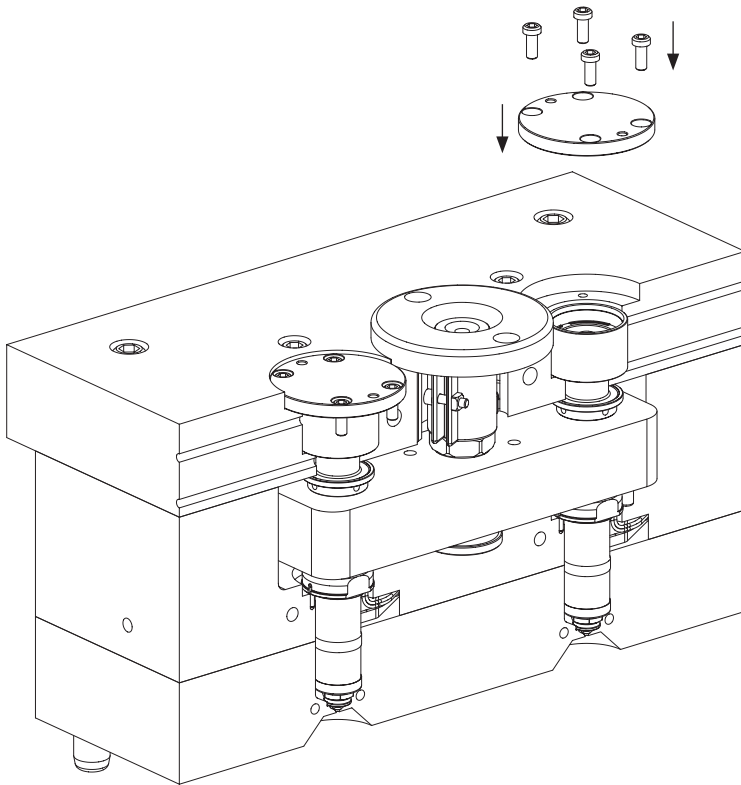
NINE



Fit **Blanking Plate Seal** ③ to **Blanking Plate** ②a or ②b

INSTALLATION CONT.....

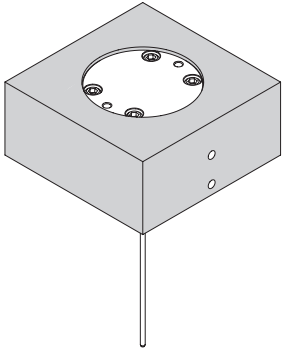
TEN



Fit **Blanking Plate 2a** or **2b** to the mould backplate and fasten using **Blanking Plate Screws 1**

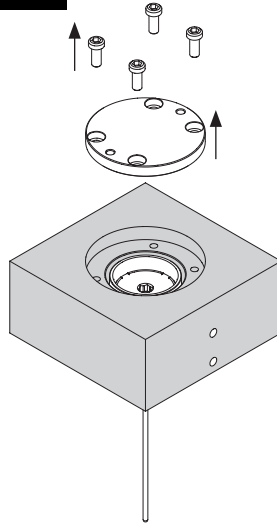
PIN HEIGHT ADJUSTMENT

ONE



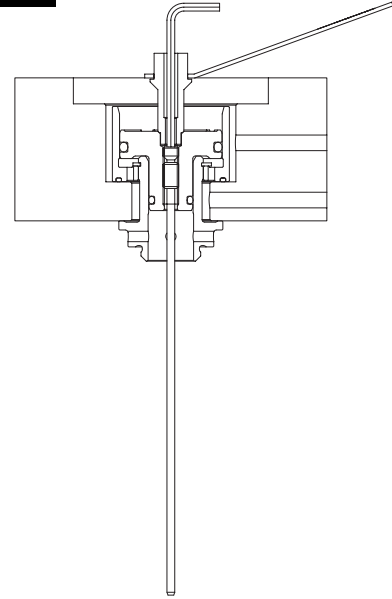
Make sure piston is fully forward and ensure no air is connected to the system

TWO



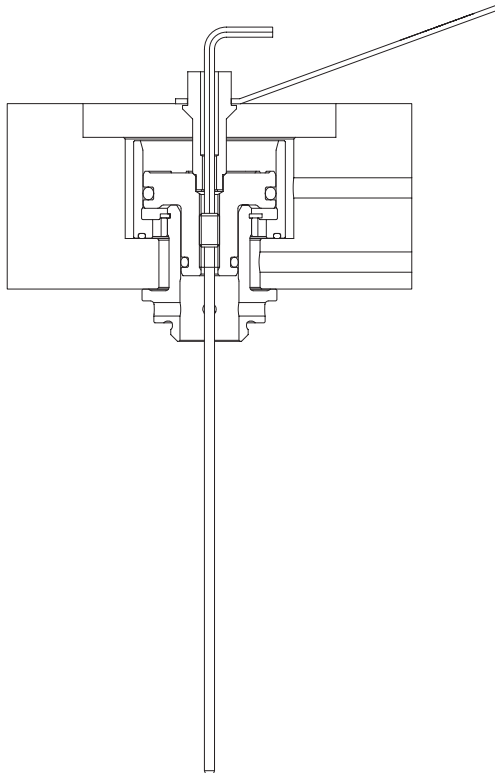
Remove **Blanking Plate Screws 1** and remove **Blanking Plate 2a** or **2b** from the mould backplate

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.

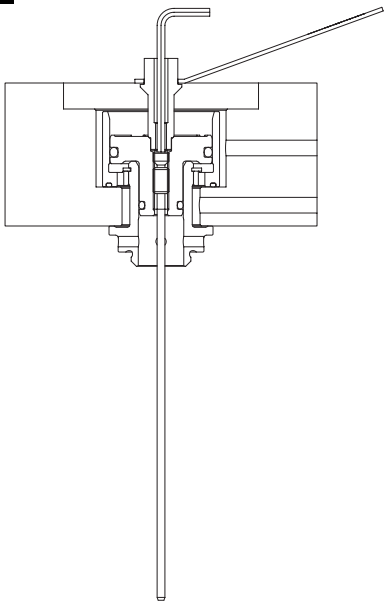
→ Refer to page MVG40-6 for pin expansion calculation

b. For adjusting an existing installation:

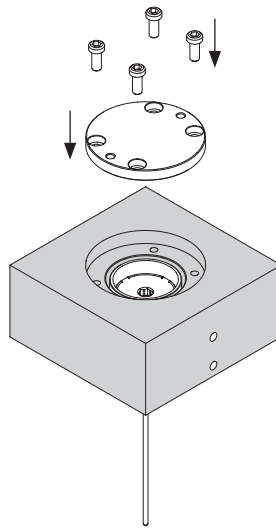
- i. The nozzle to be adjusted will be heated to the minimum melt temperature of the plastic material
- ii. While pushing the piston forward from the rear adjust the valve pin forward until the piston just begins to move and then back off 1/8 of a turn.

PIN HEIGHT ADJUSTMENT CONT...

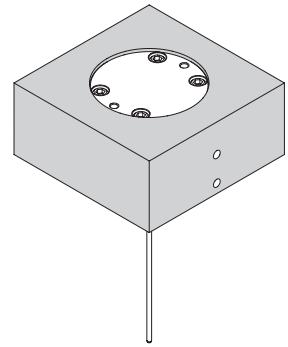
FIVE

Insert and tighten **Pin Locking Screw 4**

SIX

Fit **Blanking Plate 2a** or **2b**
and fasten with **Blanking Plate Screws 1**

SEVEN



Pin adjustment is COMPLETE



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