

MVG40 Headed 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

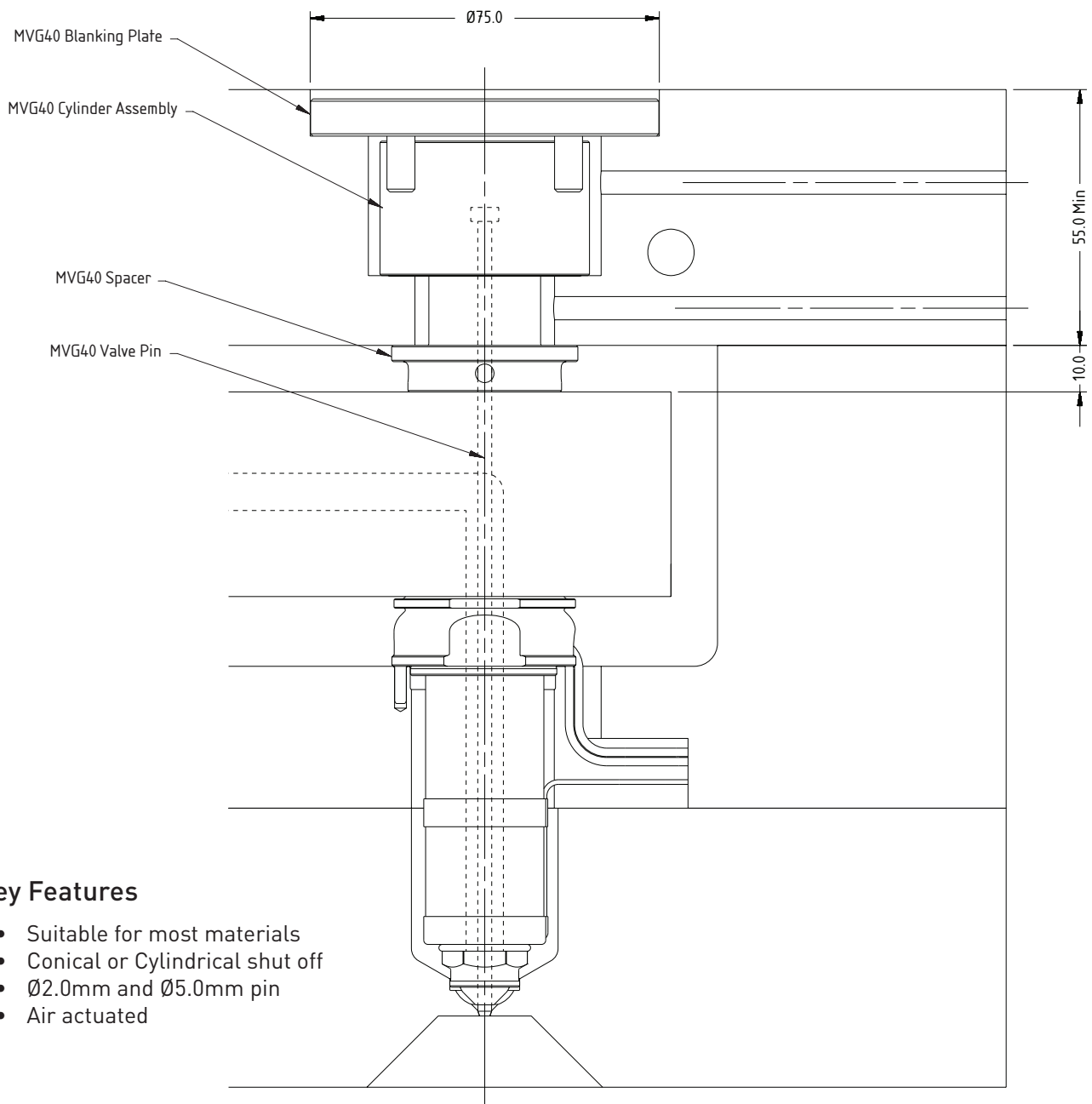
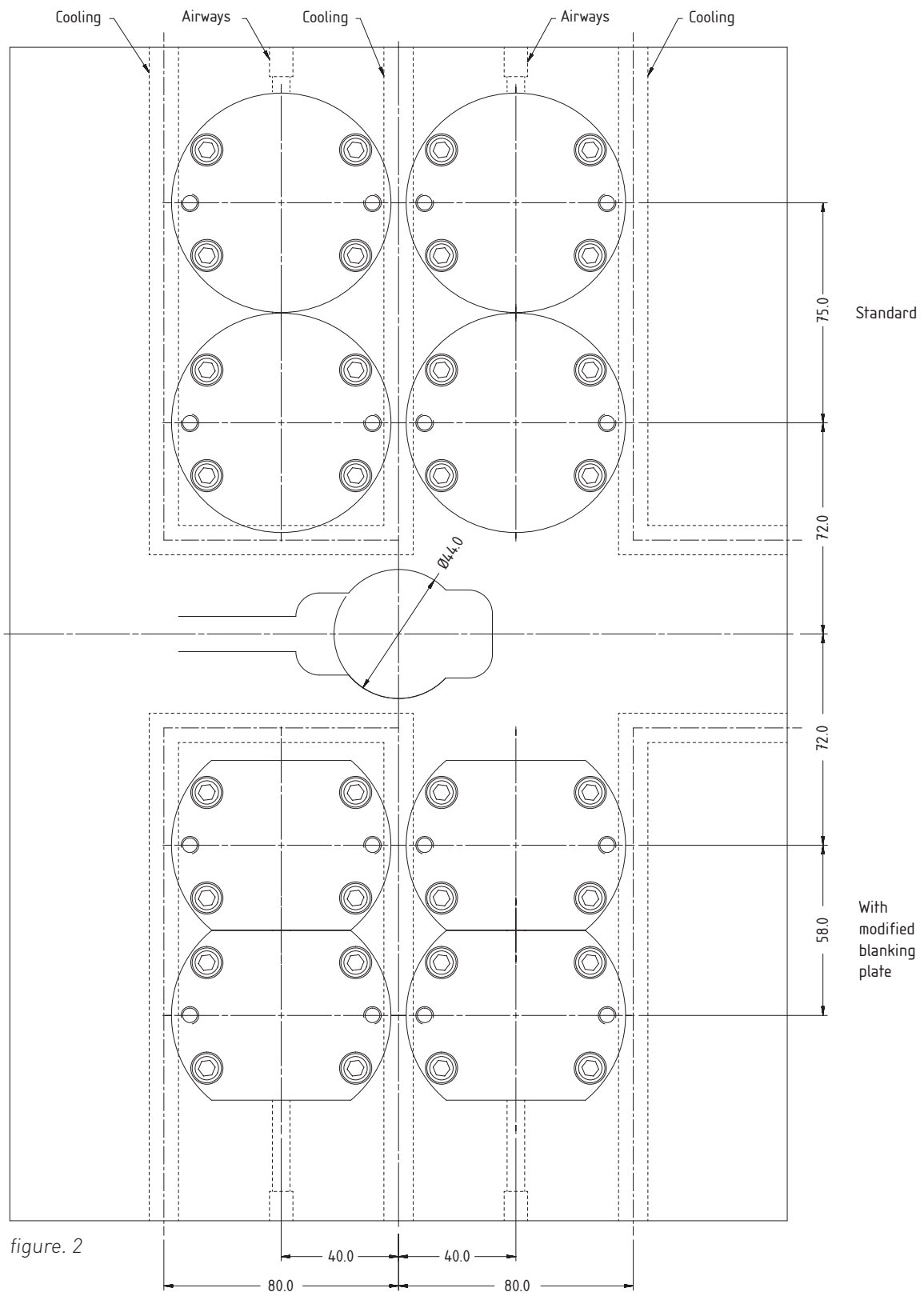


figure. 1

Key Features

- Suitable for most materials
- Conical or Cylindrical shut off
- $\varnothing 2.0\text{mm}$ and $\varnothing 5.0\text{mm}$ pin
- Air actuated

Spacing Layout

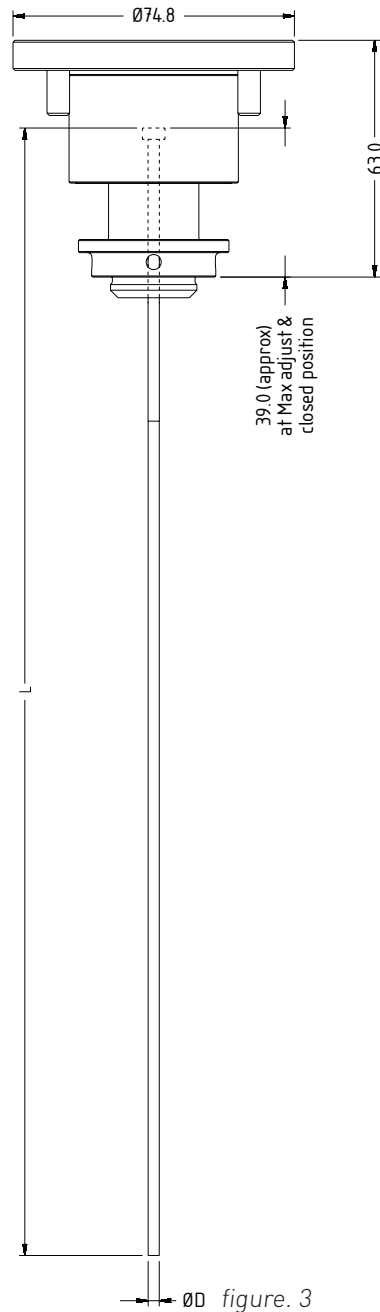


MVG40 Headed Pin Overall Dimensions

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



Nozzle Compatibility

Description	Nozzle	Tip	Nozzle Length	Supplied Pin Size
MVG40-P1 Headed Pin	MX13 / BX13	OV	45 - 145	$\text{Ø}2.0$
MVG40-P1 Headed Pin	MX16 / BX16	OV / TV	45 - 145	$\text{Ø}2.5$
MVG40-P1 Headed Pin	MX19 / BX19	OV / TV	55 - 175	$\text{Ø}3.0$
MVG40-P1 Headed Pin	BX27	OV / TV	75 - 275	$\text{Ø}5.0$

Fitment

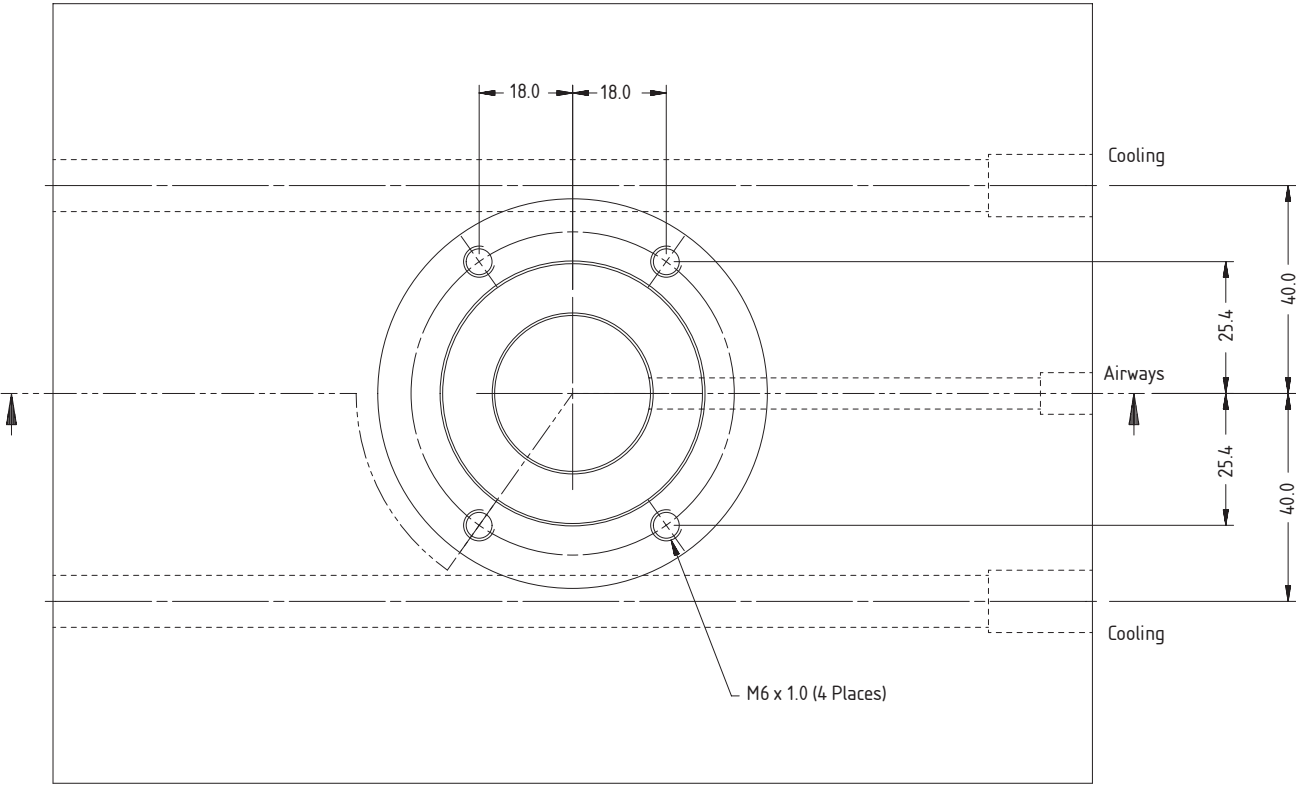


figure. 4

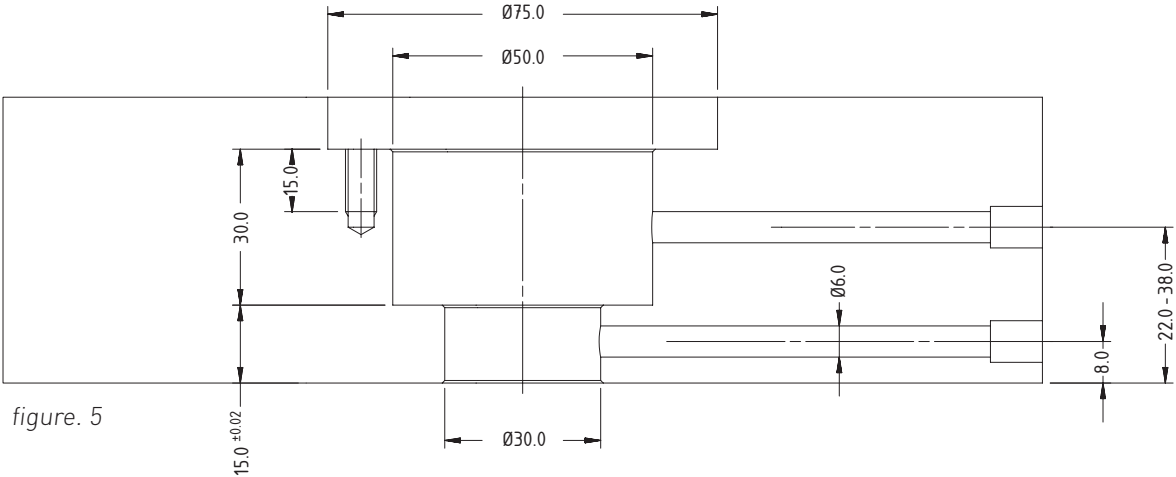


figure. 5

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:

$$\begin{array}{l} \text{MVG40-P1 - D2.0} \\ \text{MVG40-P1 - D2.5} \\ \text{MVG40-P1 - D3.0} \end{array} \left. \vphantom{\begin{array}{l} \text{MVG40-P1 - D2.0} \\ \text{MVG40-P1 - D2.5} \\ \text{MVG40-P1 - D3.0} \end{array}} \right\} \text{Pin Length} = (Y=28.75) + 10.0 + X + L_4 + L + 0.05$$

$$\text{MVG40-P1 - D5.0} \left. \vphantom{\text{MVG40-P1 - D5.0}} \right\} \text{Pin Length} = (Y=29.00) + 10.0 + X + L_4 + L + 0.05$$

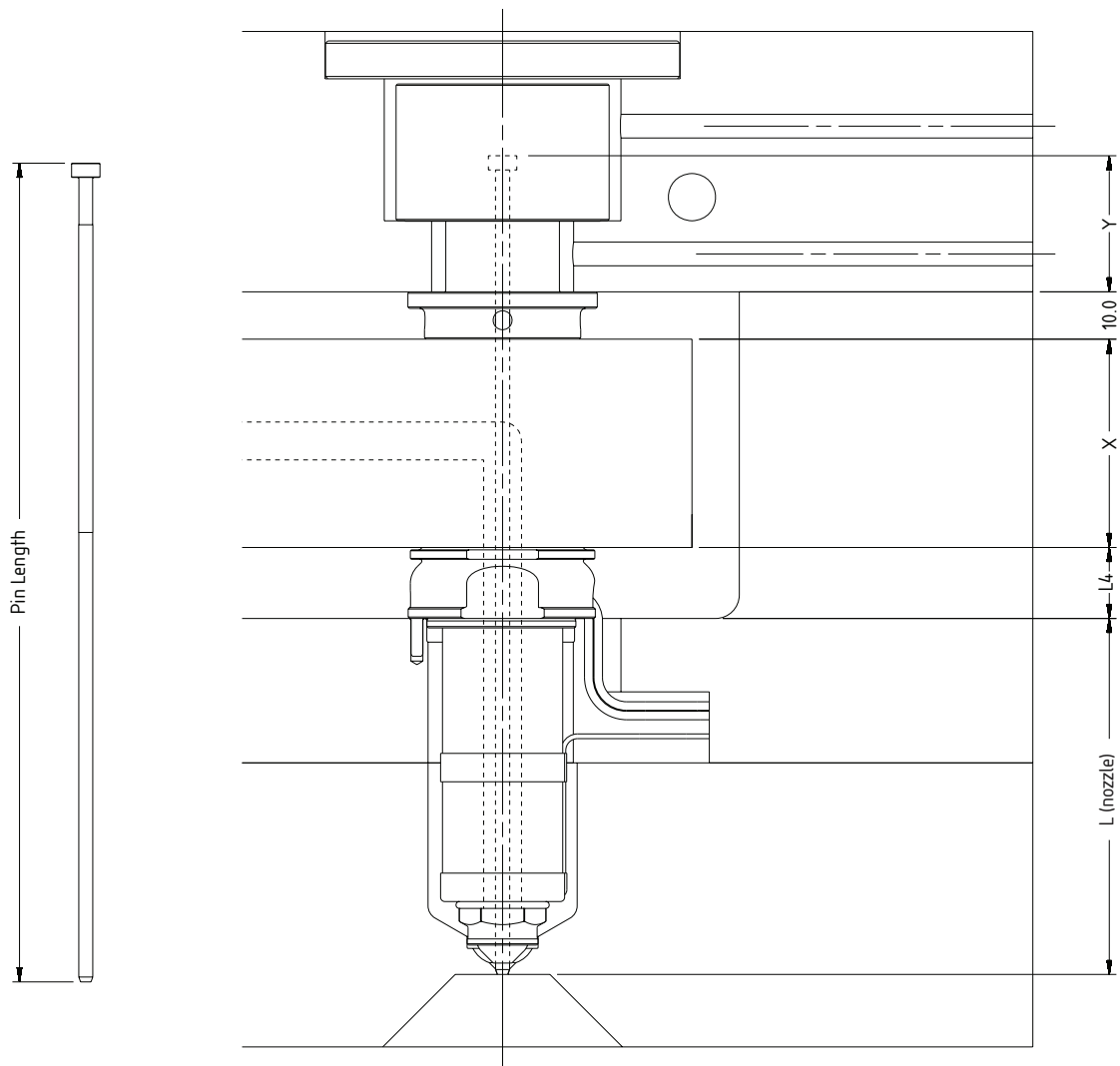
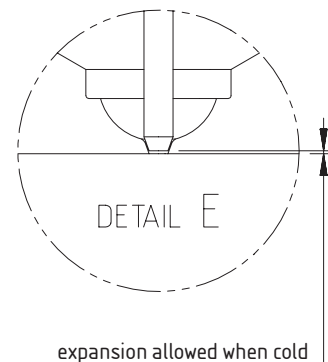


figure. 6



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

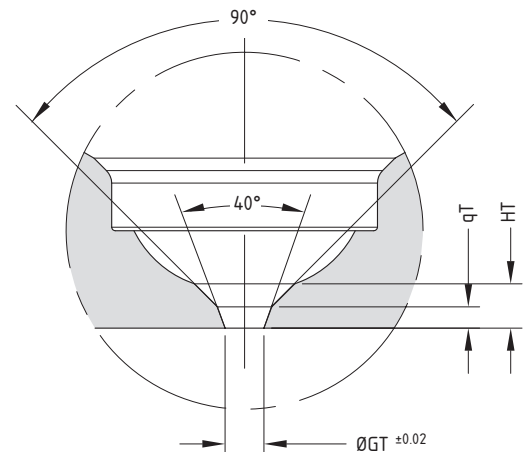
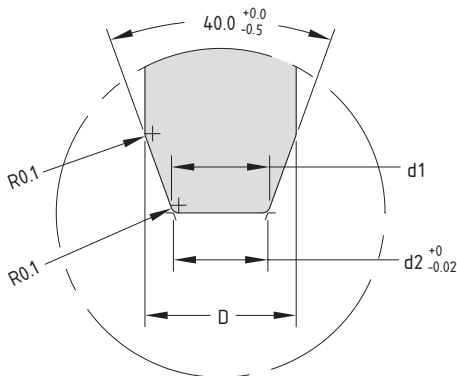
Conical Valve Gate

Description	D	d1	d2	GT	qT	HT
MVG40-P1 Headed Pin	2.0	1.3	1.25	1.3	0.8	1.0
MVG40-P1 Headed Pin	2.5	1.8	1.75	1.8	1.0	2.0
MVG40-P1 Headed Pin	3.0	2.2	2.15	2.2	1.2	2.5
MVG40-P1 Headed Pin	5.0	3.5	3.45	3.5	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.

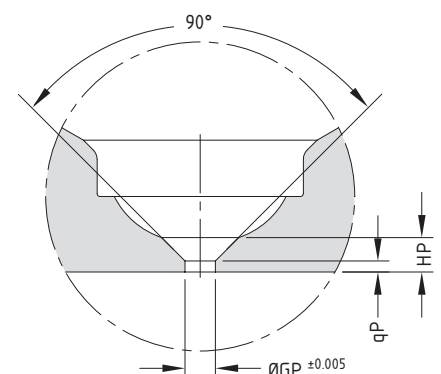
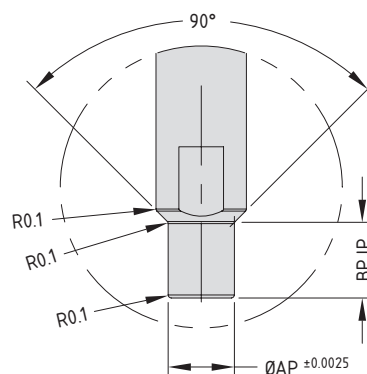
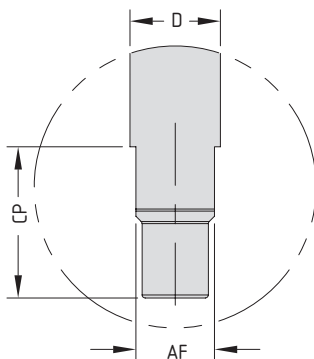


Cylindrical Valve Gate

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

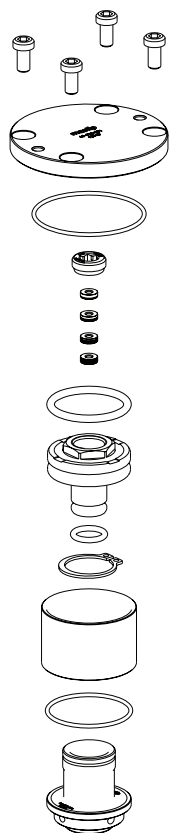
The pin will form a 0.1mm deep dimple on the part.

Recommended for semi-crystalline and filled polymers.



As Supplied

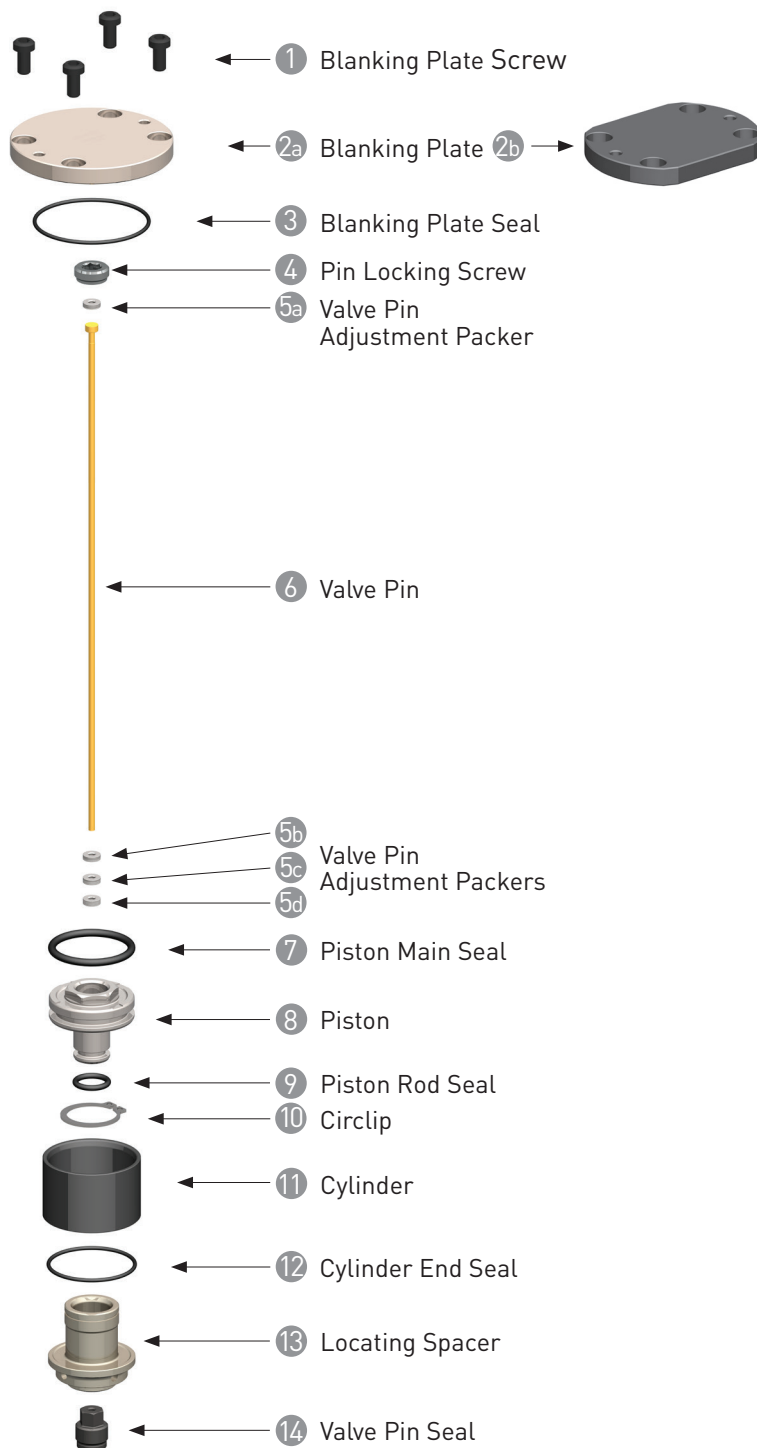
A MVG40 CYLINDER ASSEMBLY



B MVG40 VALVE PIN + SEAL



Exploded Diagram



Installation and Pin Adjustment Guide

PRE INSTALLATION

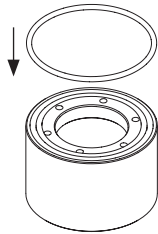
1. Verify the actuator pockets and air circuits are machined in the back plate as shown in figure 5.
 2. Ensure there are no sharp edges or burrs in the actuator pockets.
 3. Ensure the actuator pocket and air circuits are clean.
 4. Cut pins to length and profile end to conical or cylindrical (refer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

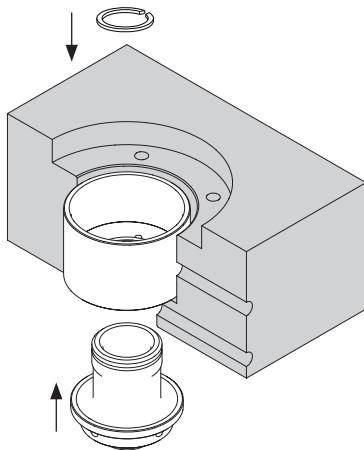
Ensure all components are clean

TWO



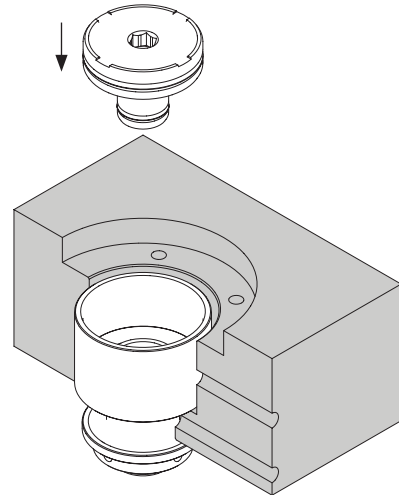
Fit the **Cylinder End Seal 12** to the **Cylinder 11**
Apply grease* to **Cylinder End Seal 12**

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



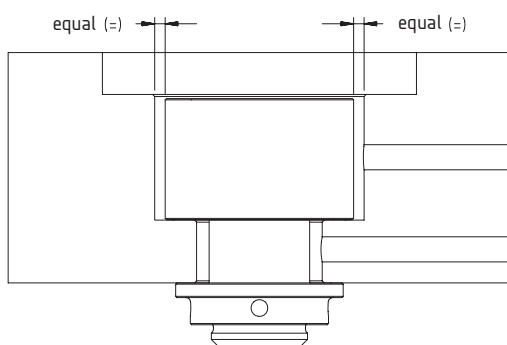
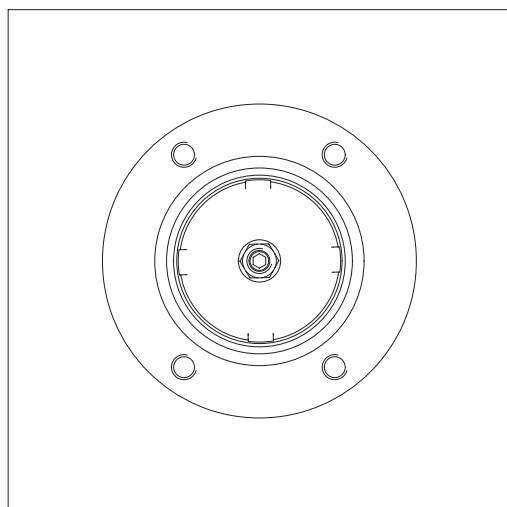
Apply grease* to the sealing bores of the **Locating Spacer 13** and **Cylinder 11** and to the pre fitted **Piston Seals 7 & 9**.
Fit **Piston 8** to the **Cylinder 11**.

Note

* Mastip recommends using high temperature silicon grease

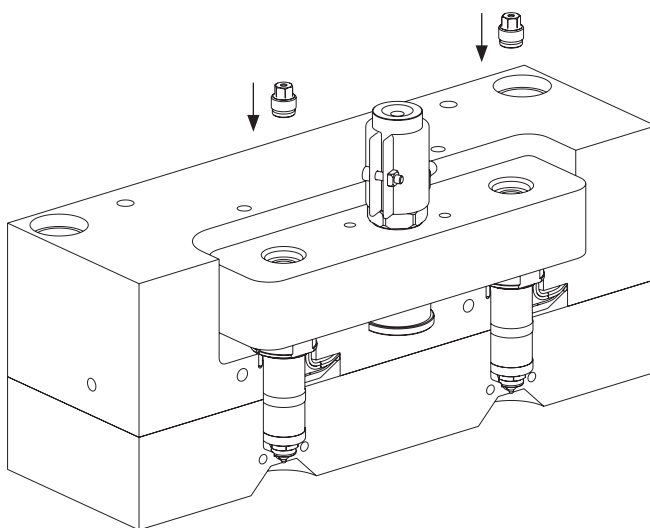
INSTALLATION CONT.....

FIVE



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

SIX



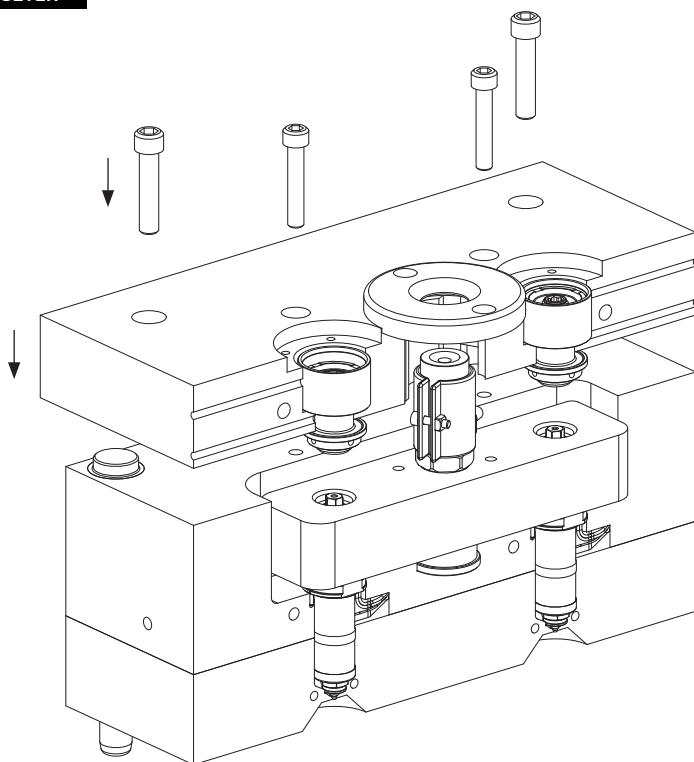
Clean any residual material from the pin seal pocket and thread in the manifold.

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

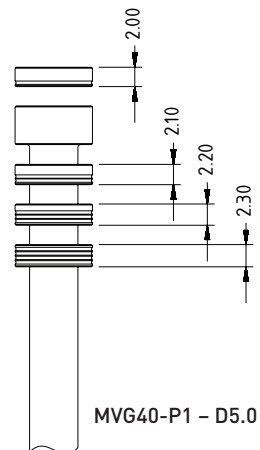
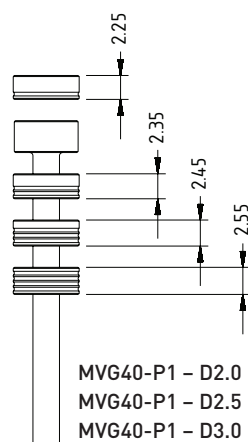
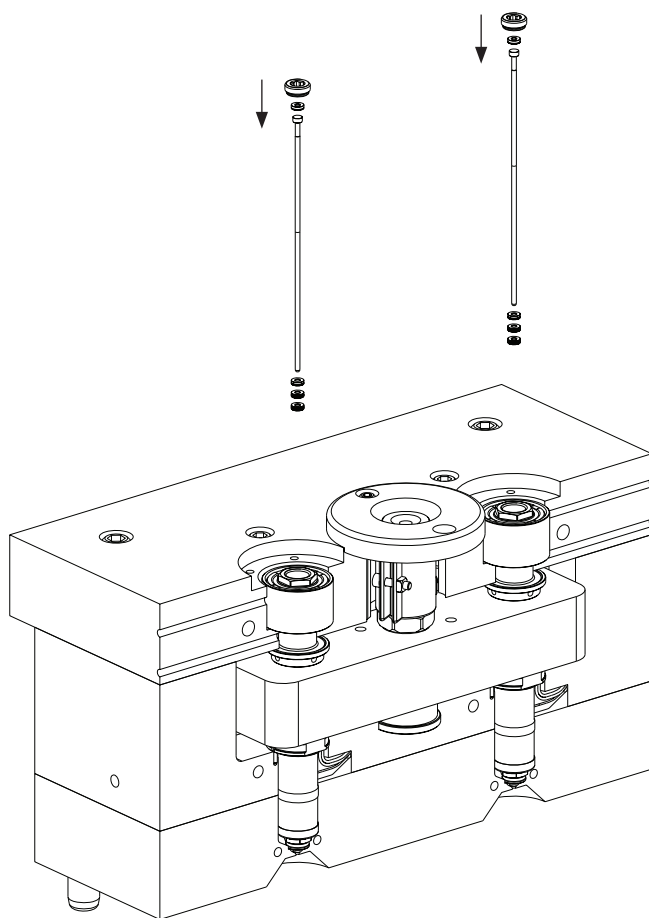


Fit mould backplate to mould and fasten.

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



Insert the **Valve Pin Adjustment Packers**

5b, 5c & 5d onto the **Valve Pin** 6

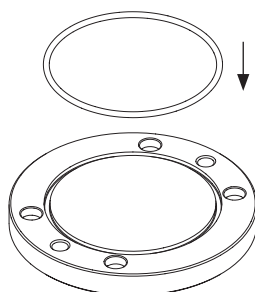
Ensure the correct packer thickness is in the correct position. (Recommend starting with the thinnest packer above the pin head, then adjust to suit if necessary).

Fit the **Valve Pin** 6 to **Piston** 8

Fit the remaining **Valve Pin Adjustment Packer** 5a above pin head

Fit the **Pin Locking Screw** 4 to the **Piston** 8 and tighten to 40Nm

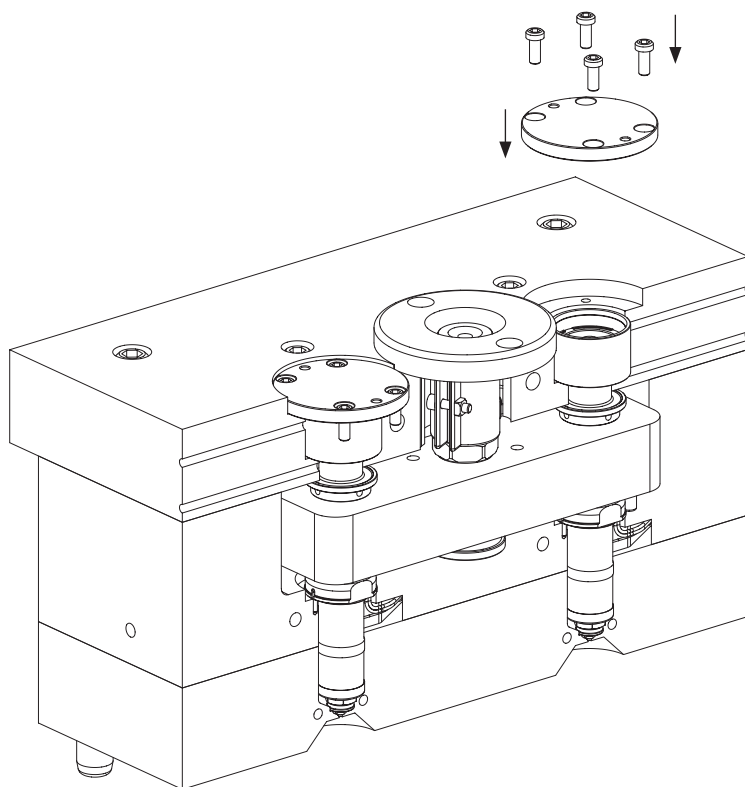
NINE



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

INSTALLATION CONT.....

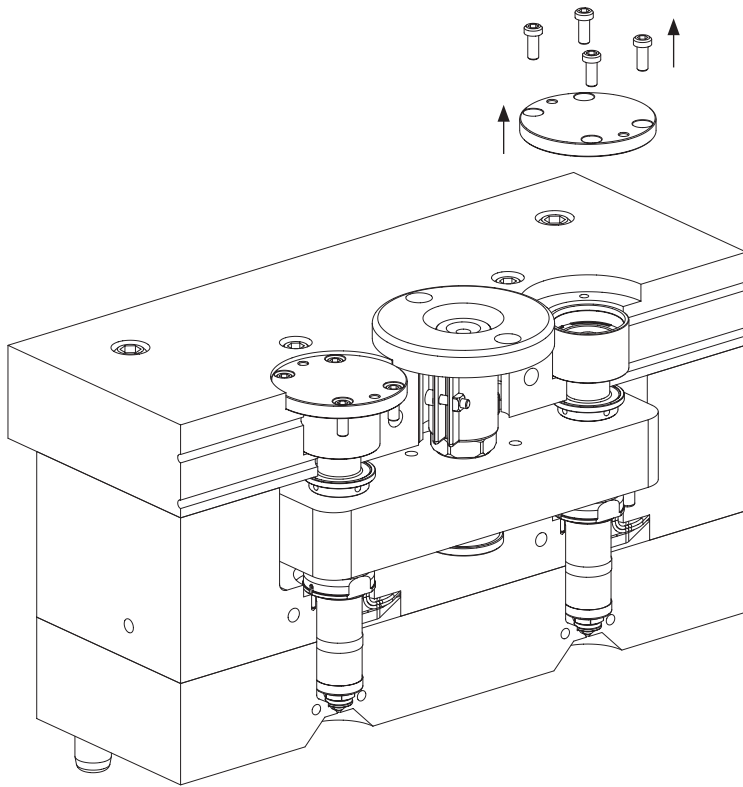
TEN



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

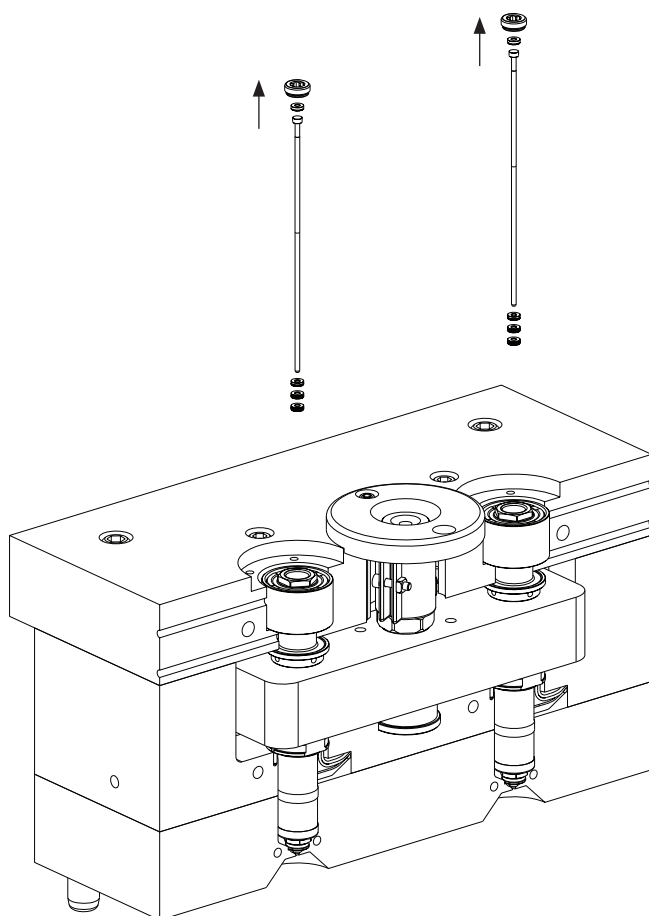
PIN HEIGHT ADJUSTMENT

ONE

Remove **Blanking Plate** 2a or 2b

PIN HEIGHT ADJUSTMENT CONT.....

TWO



Remove the **Pin Locking Screw** ④

Remove the **Valve Pin Adjustment Packer** ⑤a

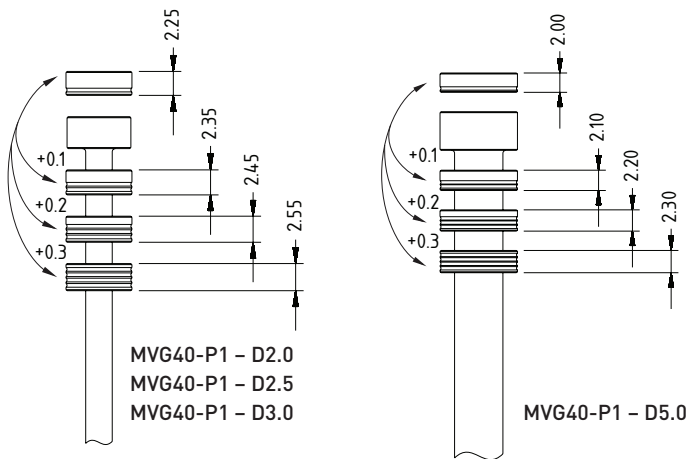
Remove the **Valve Pin** ⑥

Remove the remaining **Valve Pin Adjustment Packers** ⑤b, ⑤c & ⑤d

PIN HEIGHT ADJUSTMENT CONT.....

THREE

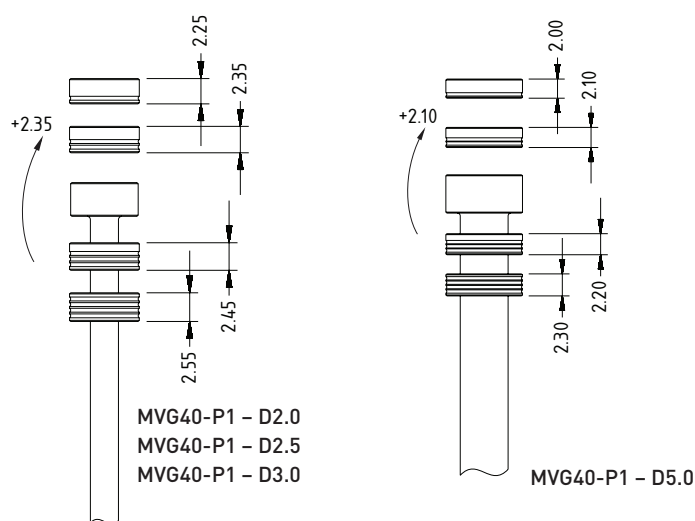
Minor Adjustment



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

FOUR

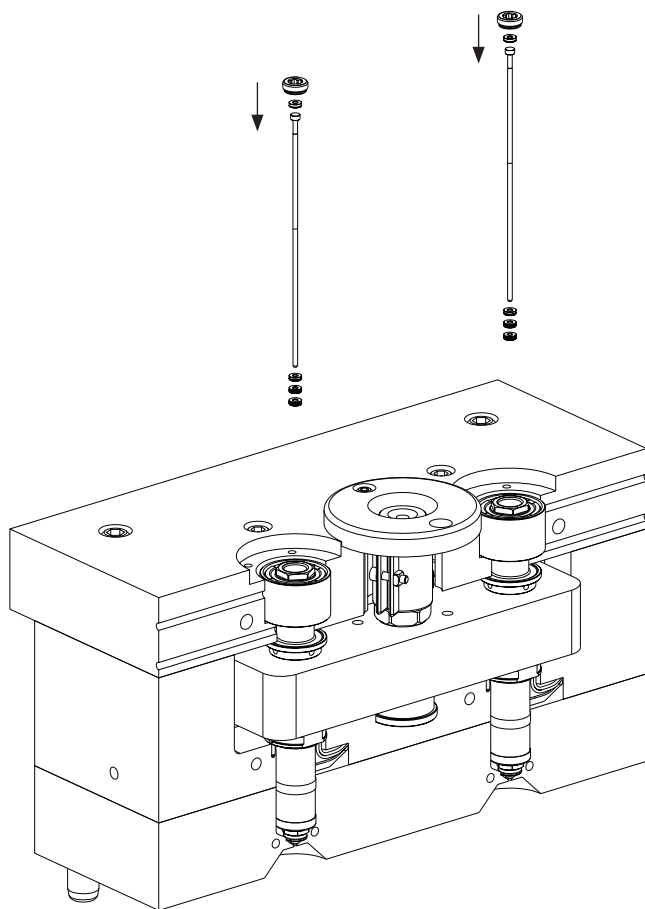
Major Adjustment



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

PIN HEIGHT ADJUSTMENT CONT.....

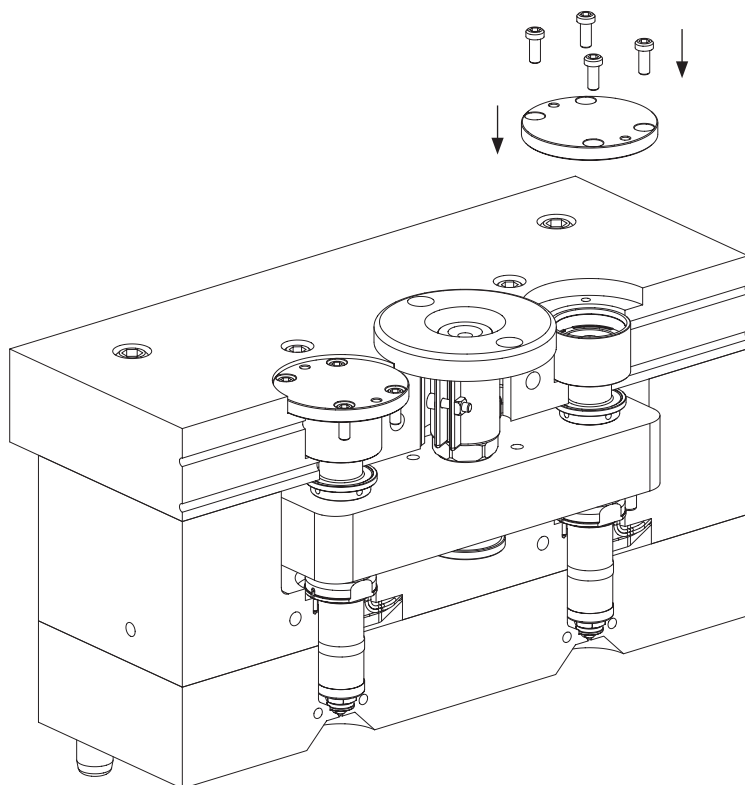
FIVE



Assemble **Valve Pin 6** (ensure pin are matched to seals), **Valve Pin Adjustment Packers 5a**, **5b**, **5c** & **5d** and the **Pin Locking Screw 4** and tighten to 40Nm

PIN HEIGHT ADJUSTMENT CONT.....

SIX



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



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