

# MVG55 Valve Gate

Assembly Overview

**IMPORTANT!!**

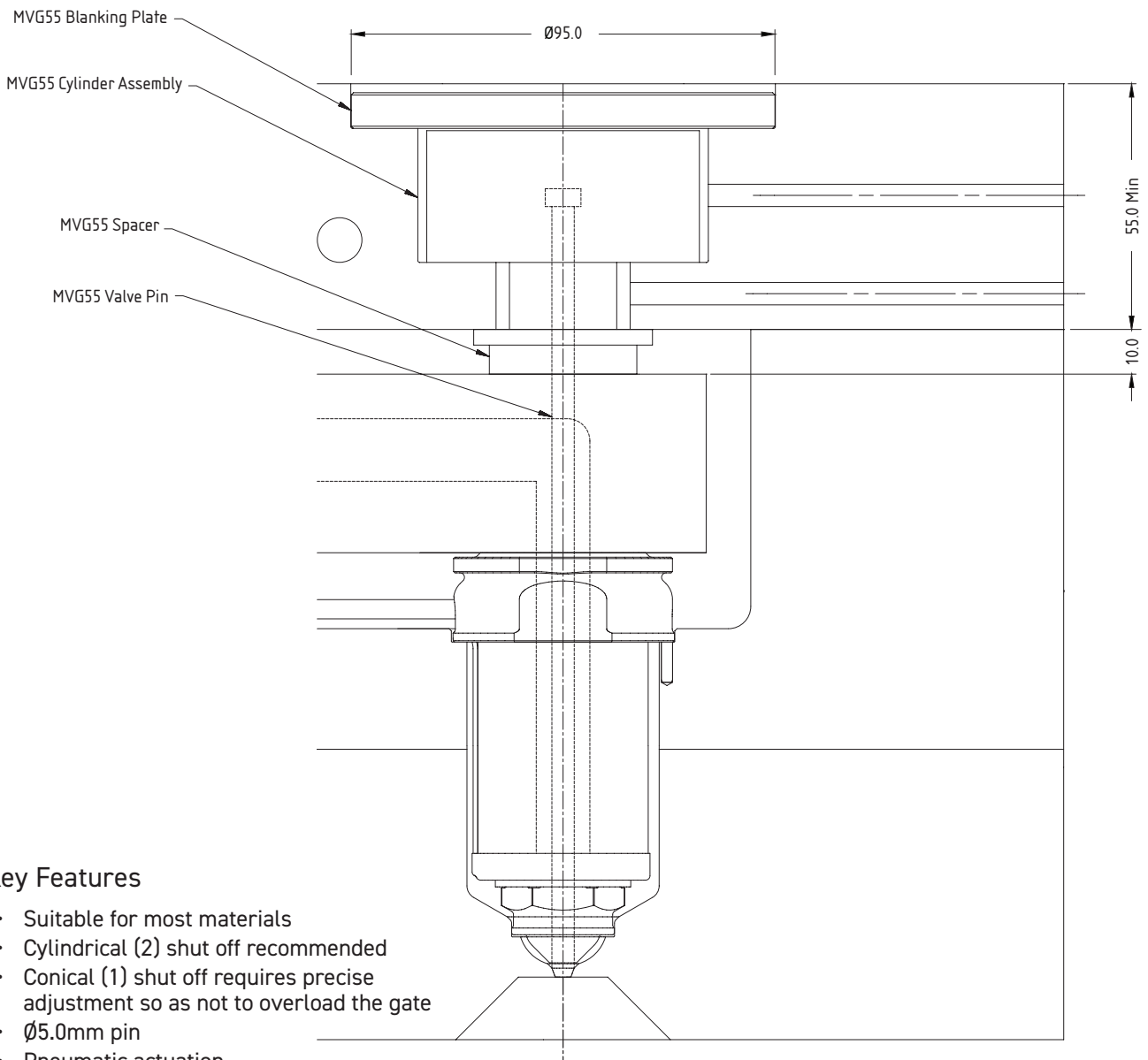
The back plate must be cooled and must not exceed 150°C.

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

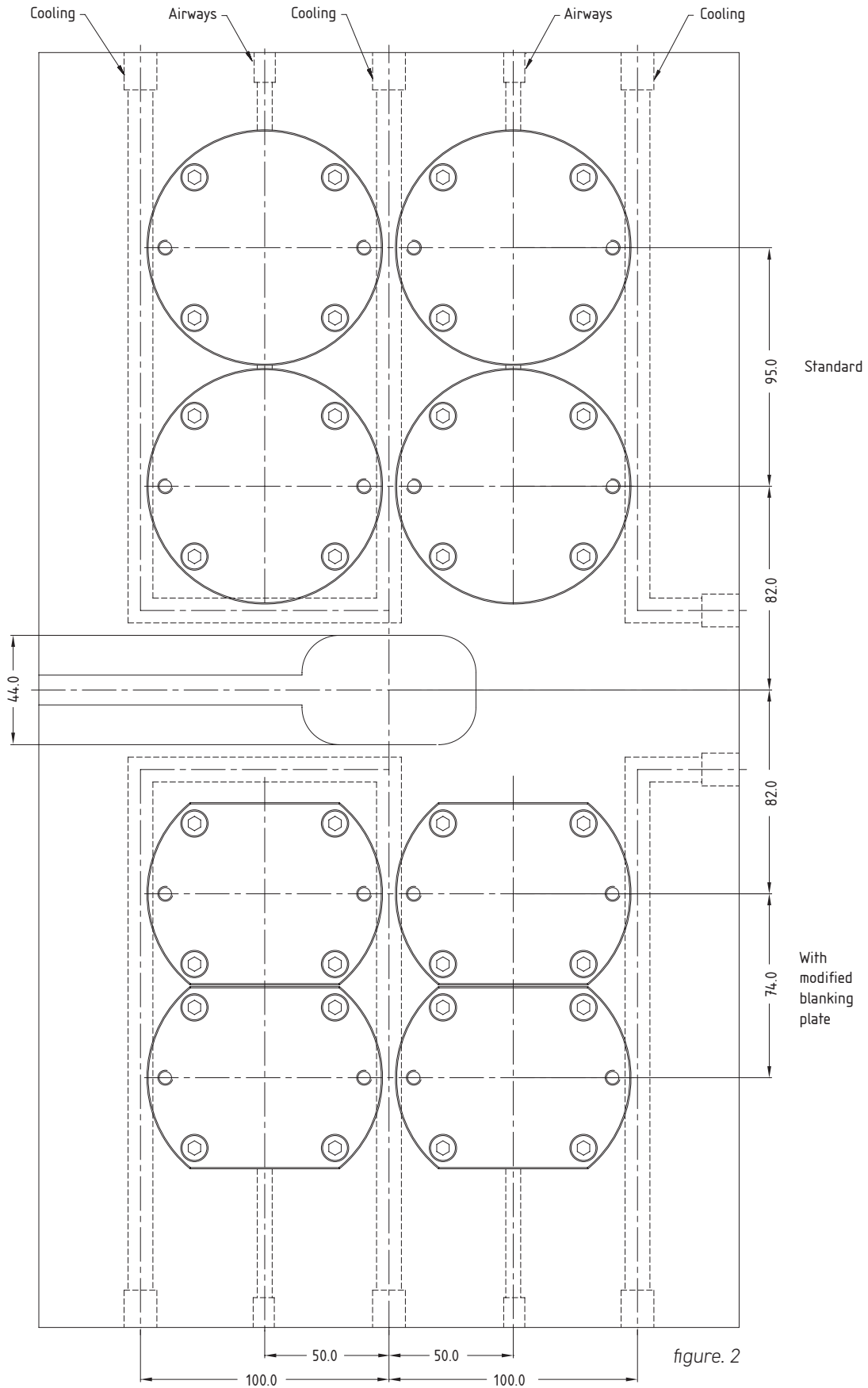


**Key Features**

- Suitable for most materials
- Cylindrical (2) shut off recommended
- Conical (1) shut off requires precise adjustment so as not to overload the gate
- $\text{Ø}5.0\text{mm}$  pin
- Pneumatic actuation

figure. 1

Spacing Layout



## 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

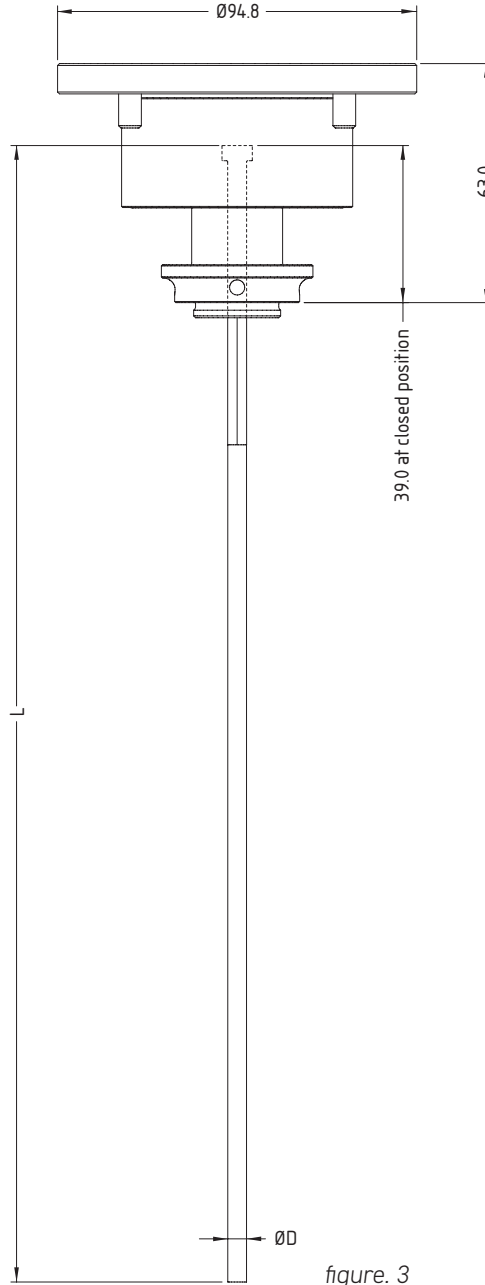


figure. 3

Nozzle Compatibility			
Description	Nozzle	Nozzle Length	Supplied Pin Size
MVG55-P1 Headed Pin	BX27	75 - 450	$\text{Ø}5.0$

Fitment

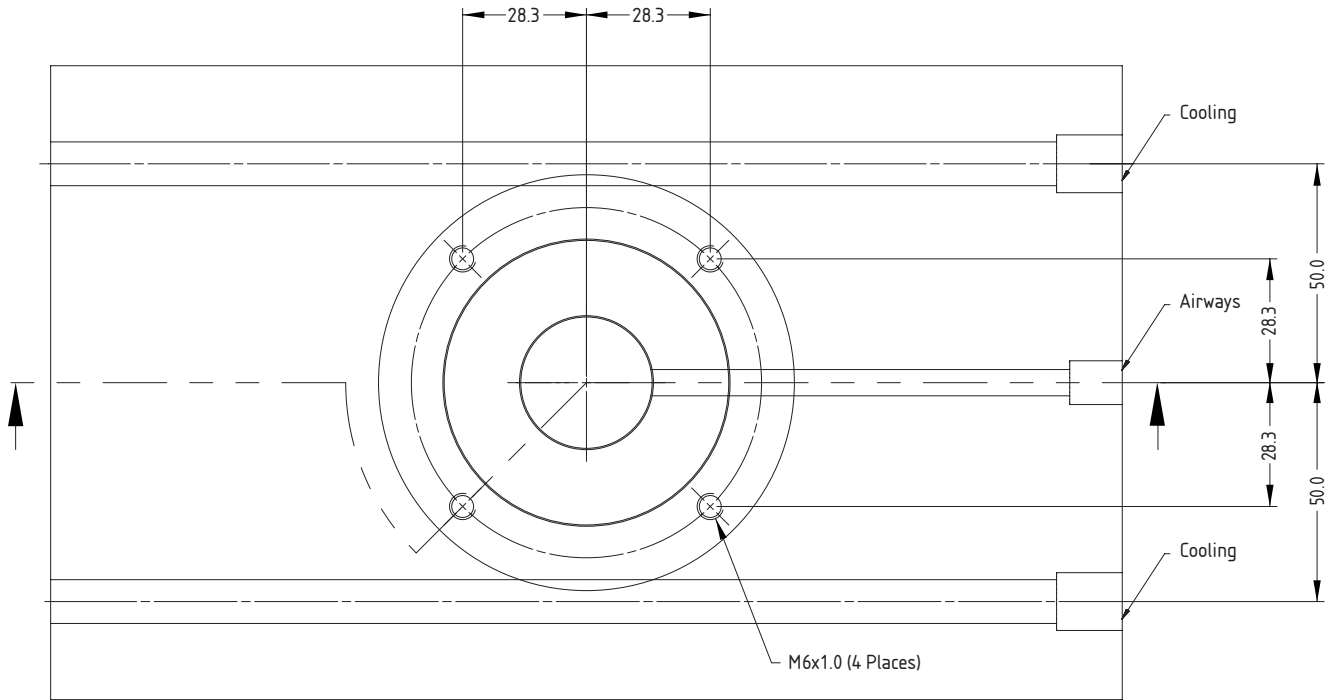


figure. 4

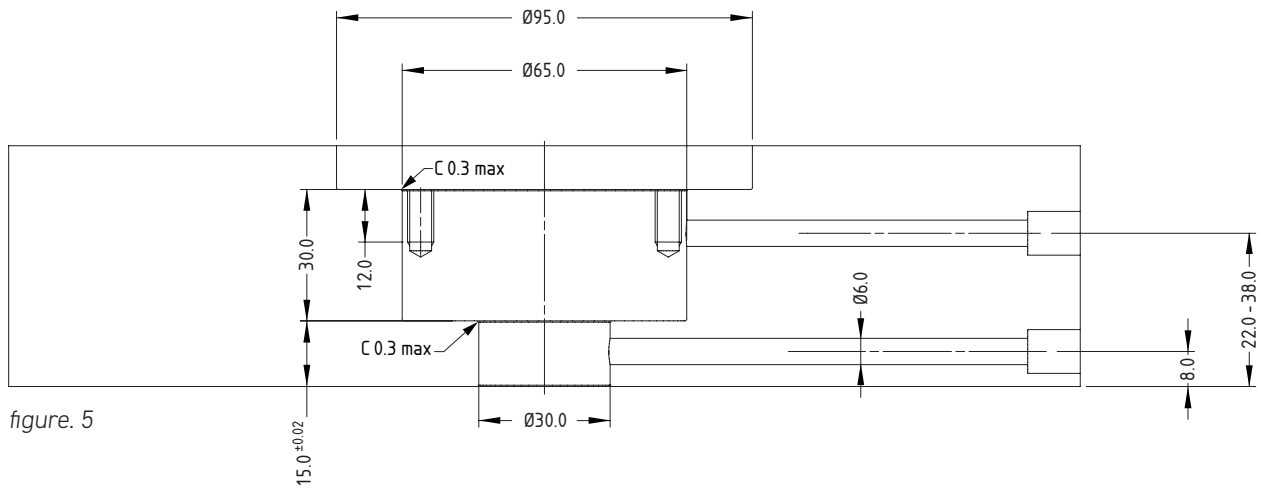


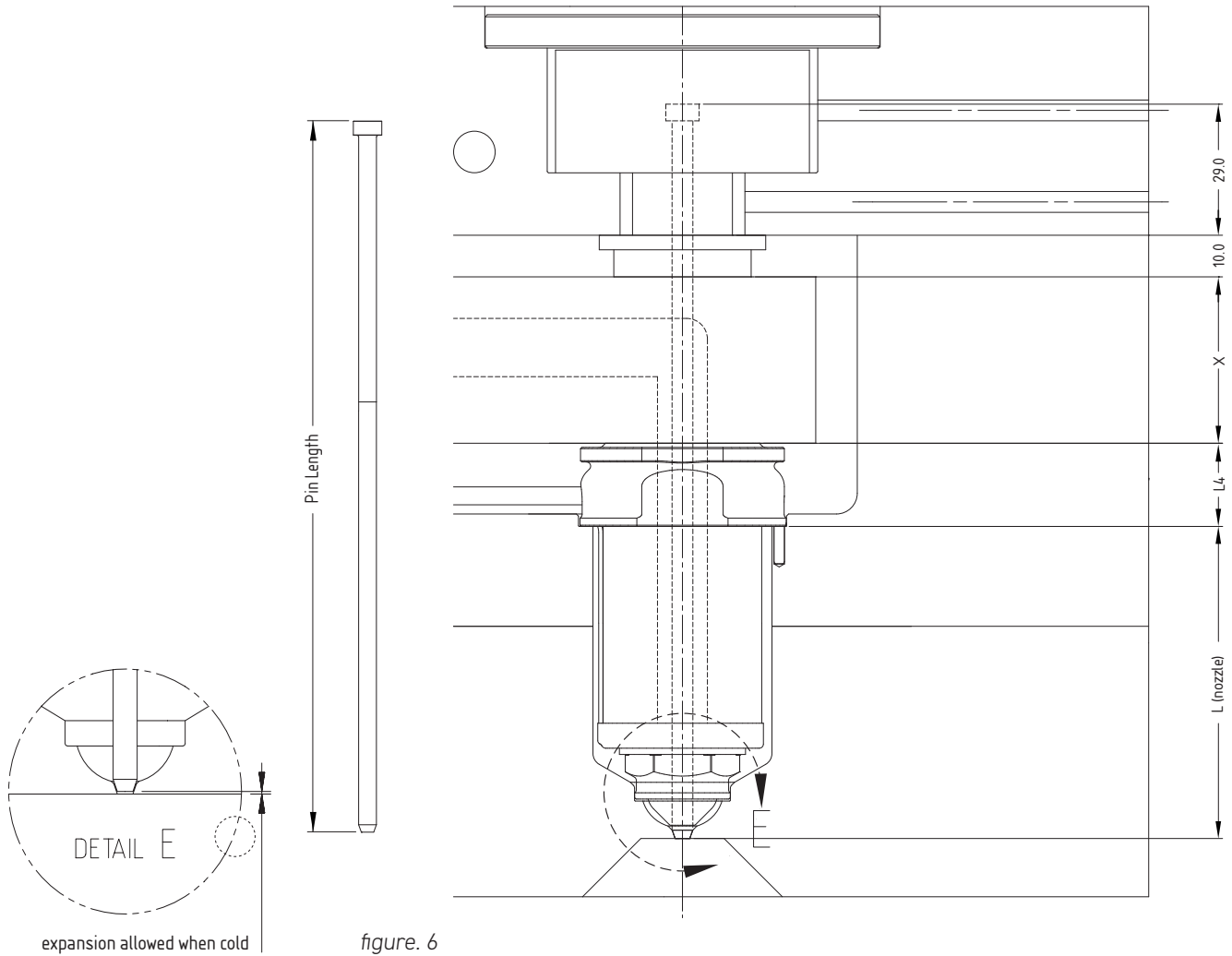
figure. 5

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:

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



Conical and Cylindrical Valve Gate Recommendations

	Conical Valve Gate <sup>1</sup>	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

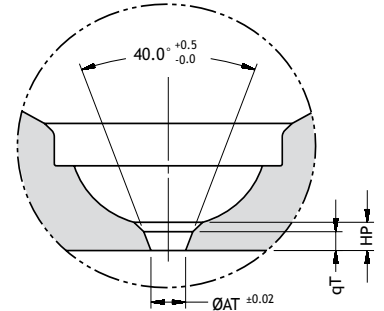
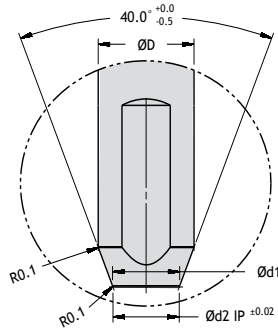
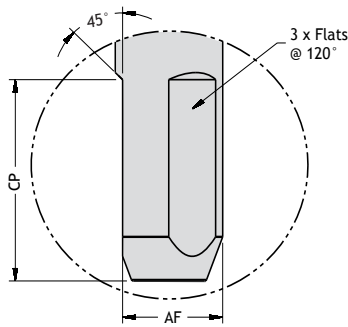
<sup>1</sup> Conical Valve Gates by arrangement with Mastip Engineering and Applications Teams

Conical Valve Gate

D	d1	d2	AF	CP	AT	qT	HP
5.0	3.5	3.45	4.65	10	3.50	2.0	3.0

Conical Valve Gates by arrangement with Mastip Engineering and Applications Teams

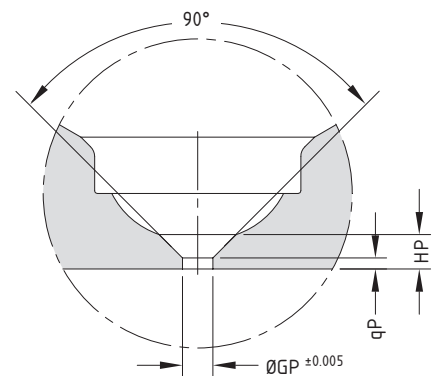
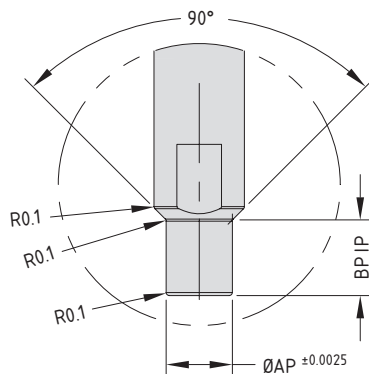
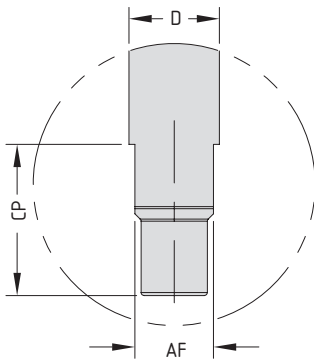
The pin will form a 0.1mm deep dimple on the part.  
Pin and gate to be lapped to ensure clean shutoff.  
Recommended for amorphous polymers.



Cylindrical Valve Gate

Description	D	AP	BP	AF	CP	GP	qP	HP
MVG55-P1 Headed Pin	5.0	3.492	2.5	4.4	8.0	3.505	1.3	3.0

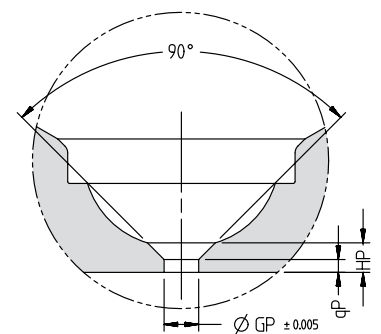
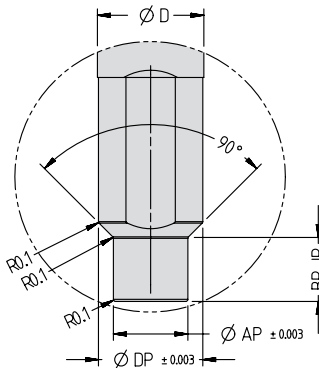
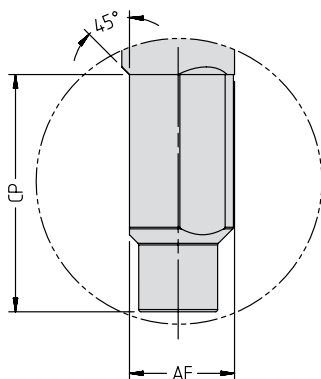
The pin will form a 0.1mm deep dimple on the part.  
Recommended for semi-crystalline and filled polymers.



Guided Cylindrical Valve Gate (GVG5) or YV2 Nut

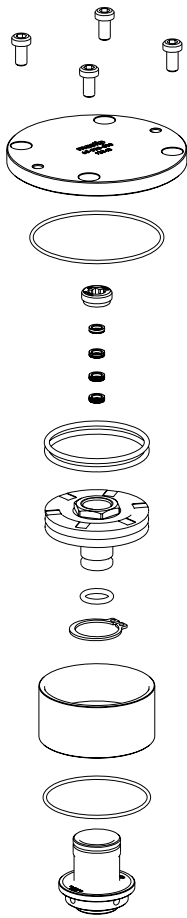
Description	D	AP	BP	AF	CP	DP	GP	qP	HP
MVG55-P1 Headed Pin	5.0	3.492	3.0	4.55	10	4.892	3.505	1.3	3.0

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



As Supplied

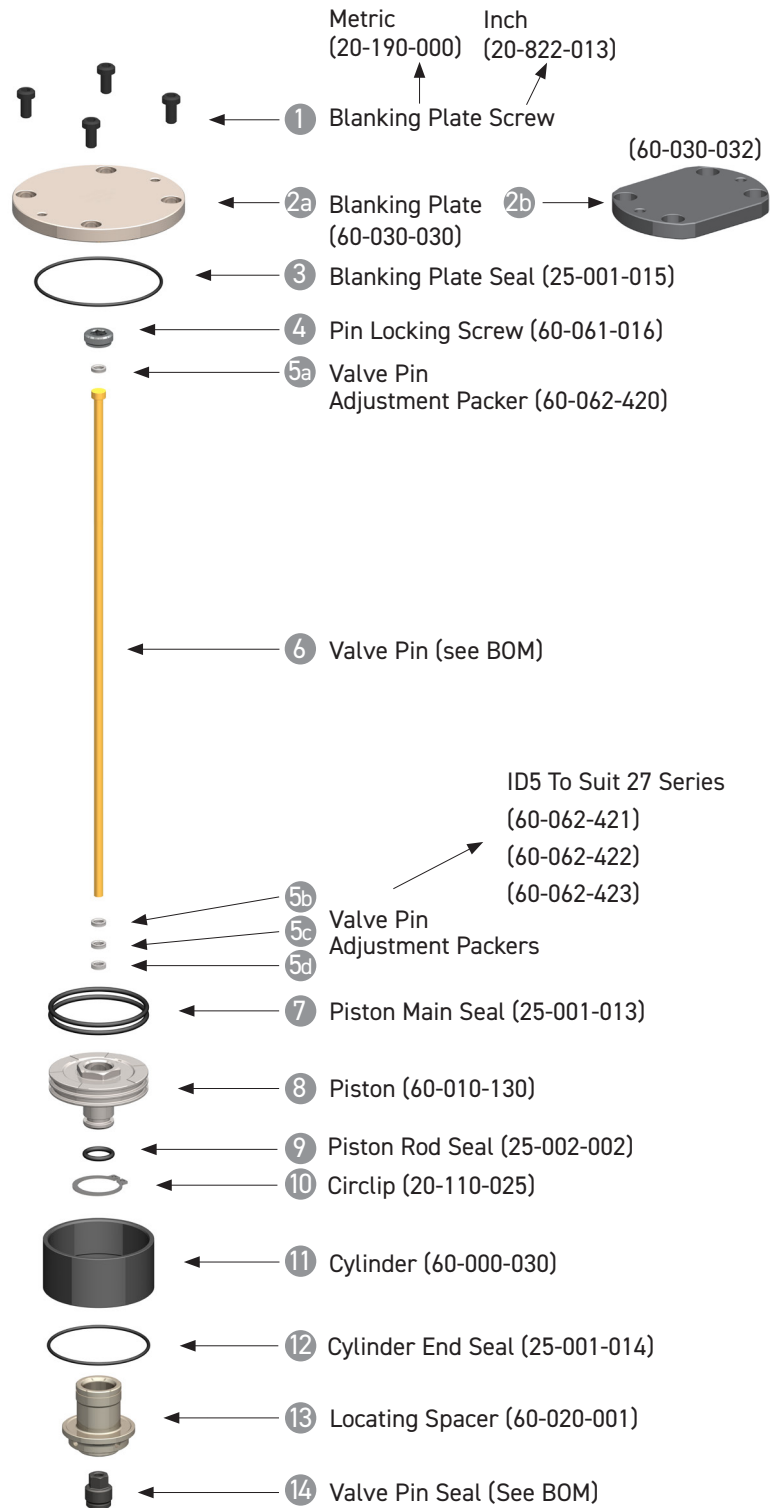
**A** MVG55 CYLINDER ASSEMBLY



**B** MVG55 VALVE PIN + SEAL



Exploded Diagram



Note

1. MVG55 Spares Kit (80-000-102). Includes Seals, Circlip and Grease
2. Piston Hex Socket Tool (60-085-222)
3. Piston Extraction Tool (60-085-015)



## Installation and Pin Adjustment Guide

## PRE INSTALLATION

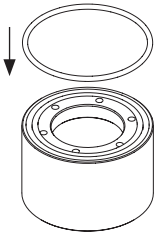
1. Verify the actuator pockets and air circuits are machined in the back plate as shown in figure 5.
2. Ensure there are no sharp edges or burrs in the actuator pockets.
3. Ensure the actuator pocket and air circuits are clean.
4. Cut pins to length and profile end to conical or cylindrical form (refer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

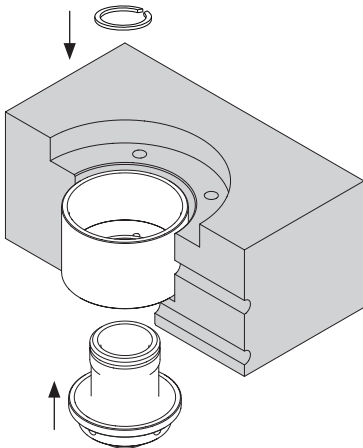
Ensure all components are clean

TWO



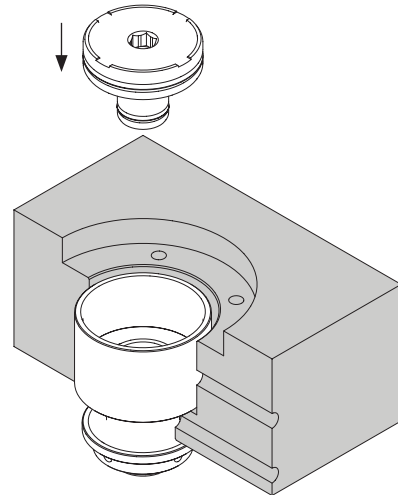
Fit the **Cylinder End Seal 12** to the **Cylinder 11**  
 Apply grease\* to **Cylinder End Seal 12**

THREE



Fit the **Cylinder 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

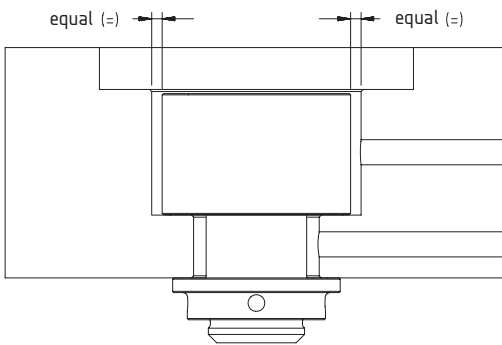
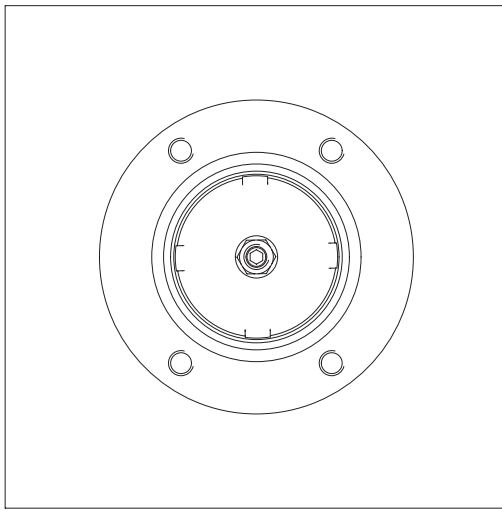


Apply grease\* to the sealing bores of the **Locating Spacer 13** and **Cylinder 11** and to the pre fitted **Piston Seals 7 & 9**  
 Fit **Piston 8** to the **Cylinder 11**

\* Mastip recommends using high temperature silicon grease

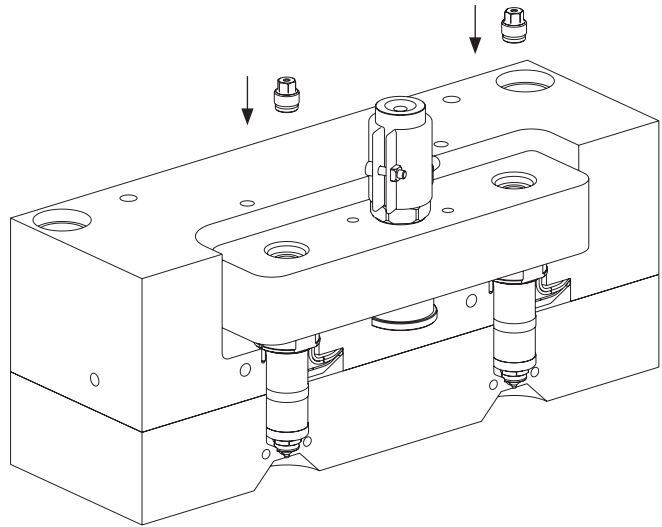
## INSTALLATION CONT.....

FIVE



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

SIX



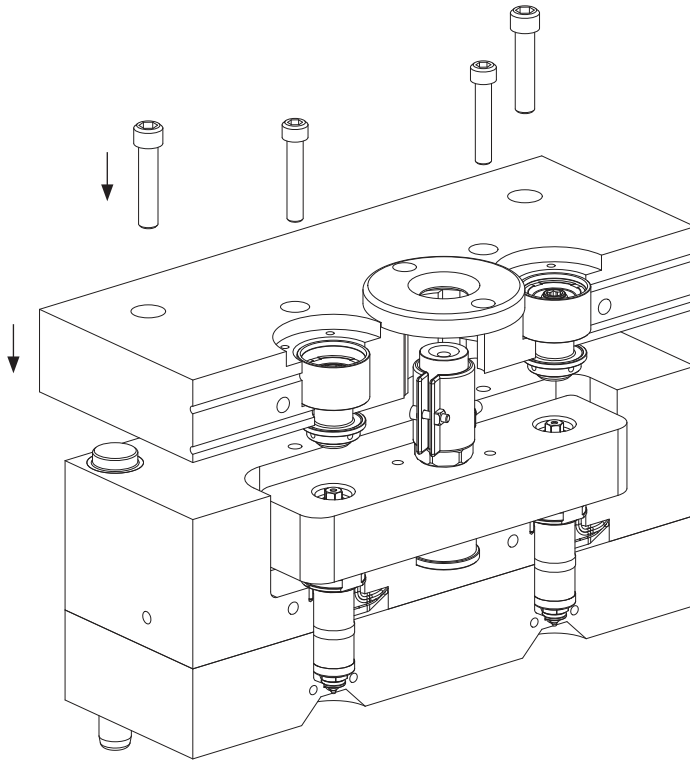
Clean any residual material from the pin seal pocket and thread in the manifold.

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

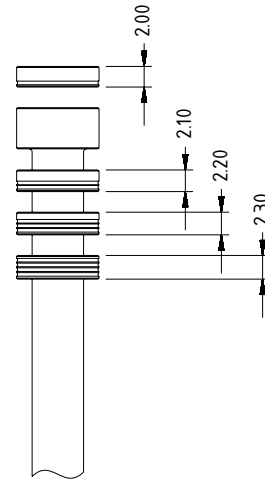
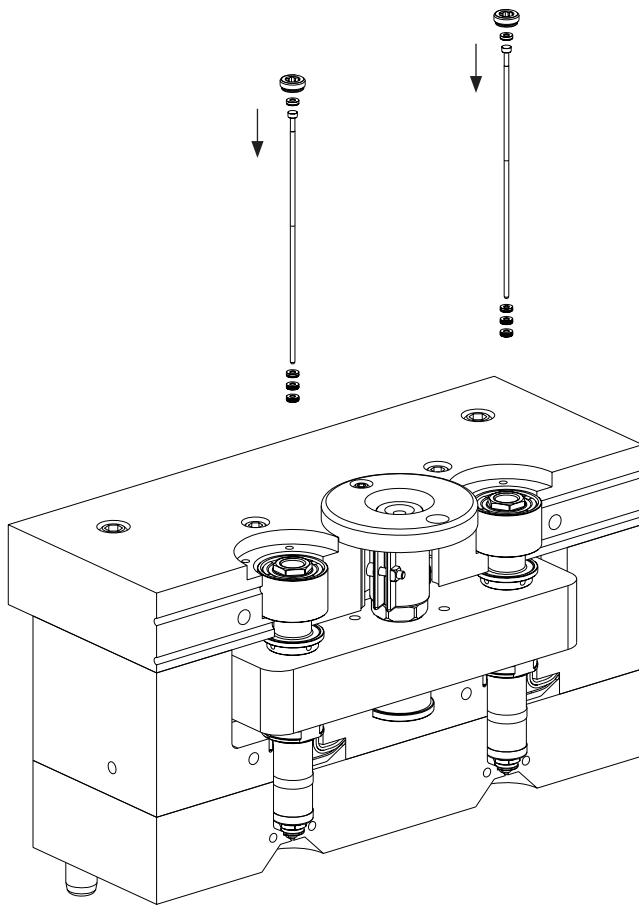


Fit mould backplate to mould and fasten.

**Note:** If backplate location guides start to locate first, then the cylinder assembly should self locate to the manifold. However in some 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

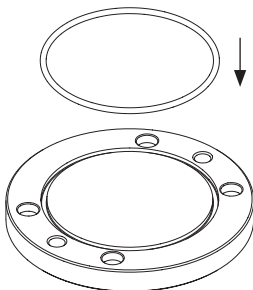
Ensure the correct packer thickness is in the correct position. (Recommend starting with the thinnest packer above the pin head, then adjust to suit if necessary).

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

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

Fit the **Pin Locking Screw** 4 to the **Piston** 9 and tighten to 40Nm.

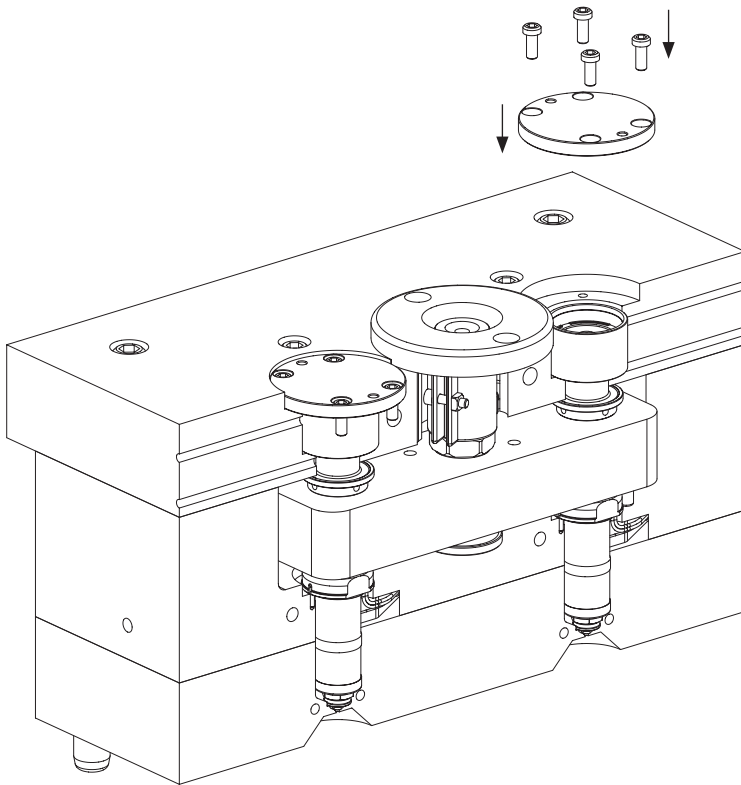
## NINE



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

## INSTALLATION CONT.....

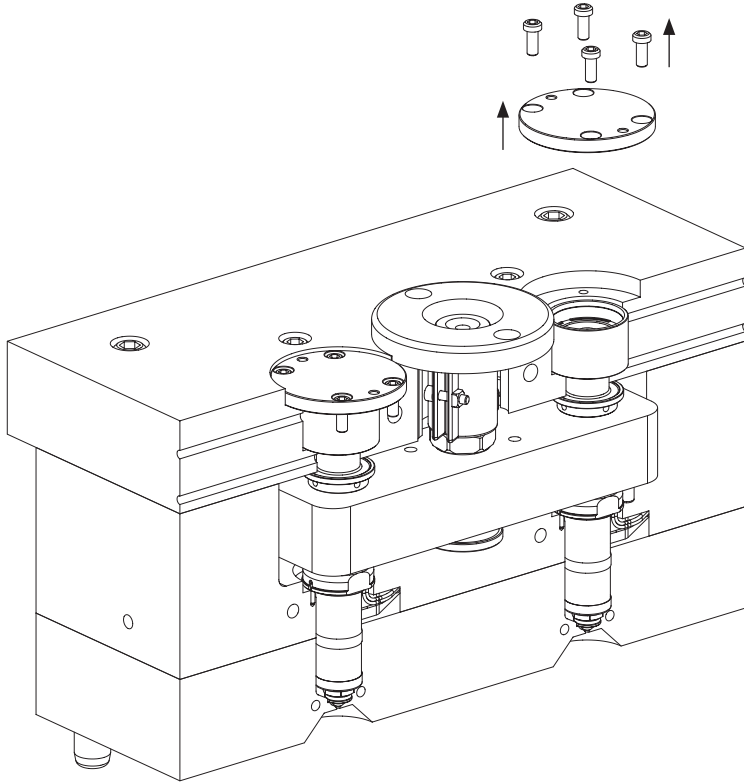
TEN



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

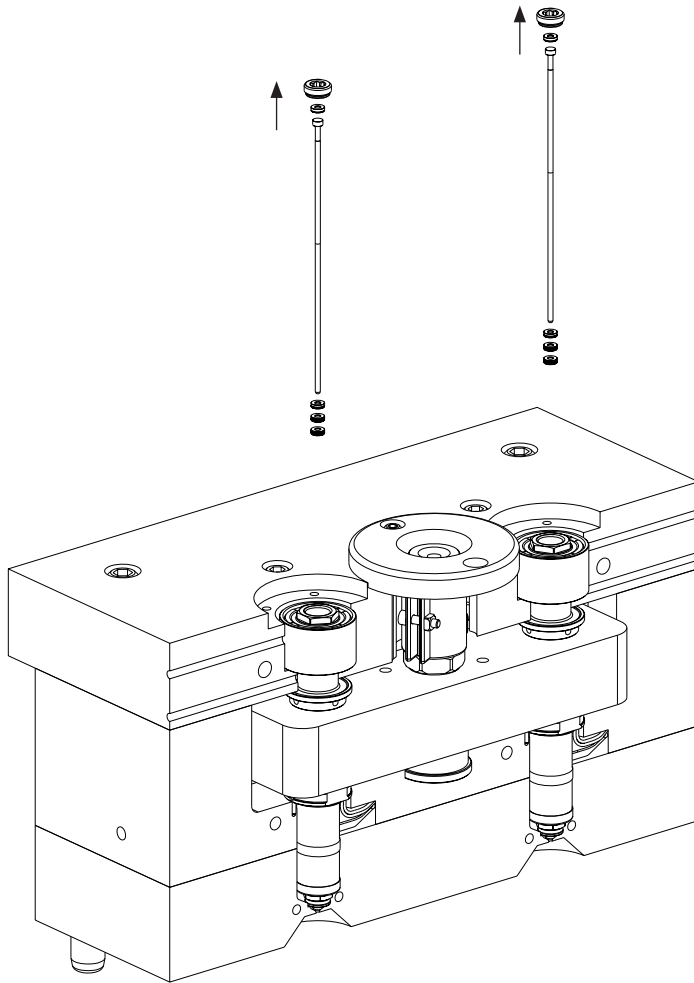
## PIN HEIGHT ADJUSTMENT

ONE

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

## PIN HEIGHT ADJUSTMENT CONT.....

TWO

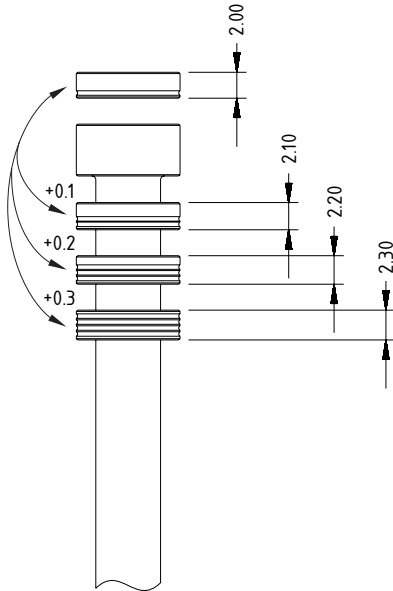


- Remove the **Pin Locking Screw** 4
- Remove the **Valve Pin Adjustment Packer** 5a
- Remove the **Valve Pin** 6
- Remove the remaining **Valve Pin Adjustment Packers** 5b, 5c & 5d

## PIN HEIGHT ADJUSTMENT CONT.....

THREE

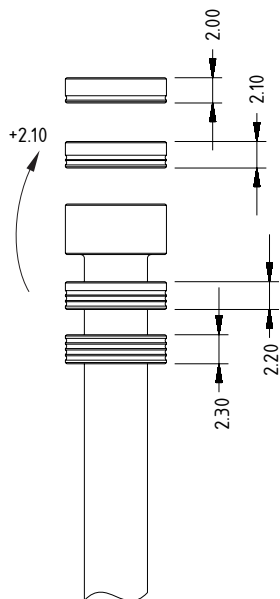
Minor Adjustment

Swap **Valve Pin Adjustment Packers**

5a, 5b, 5c & 5d to achieve small pin adjustments  
(different packer = different height)

FOUR

Major Adjustment

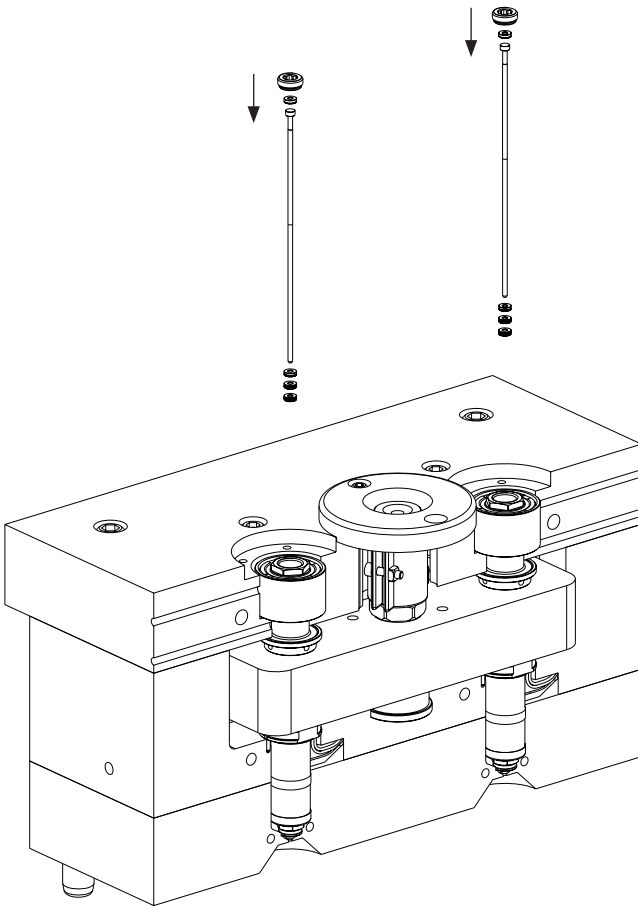
Move one or more **Valve Pin Adjustment**

**Packers** 5a, 5b, 5c & 5d from below the  
pin head to above the pin head to achieve large  
pin adjustment



## PIN HEIGHT ADJUSTMENT CONT.....

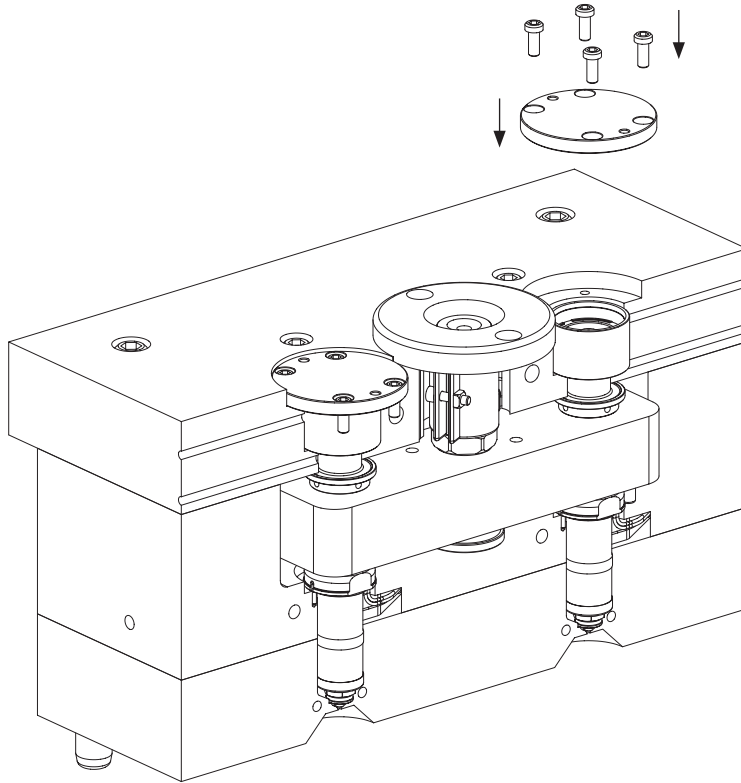
FIVE



Assemble **Valve Pin 6**, (ensure pins 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

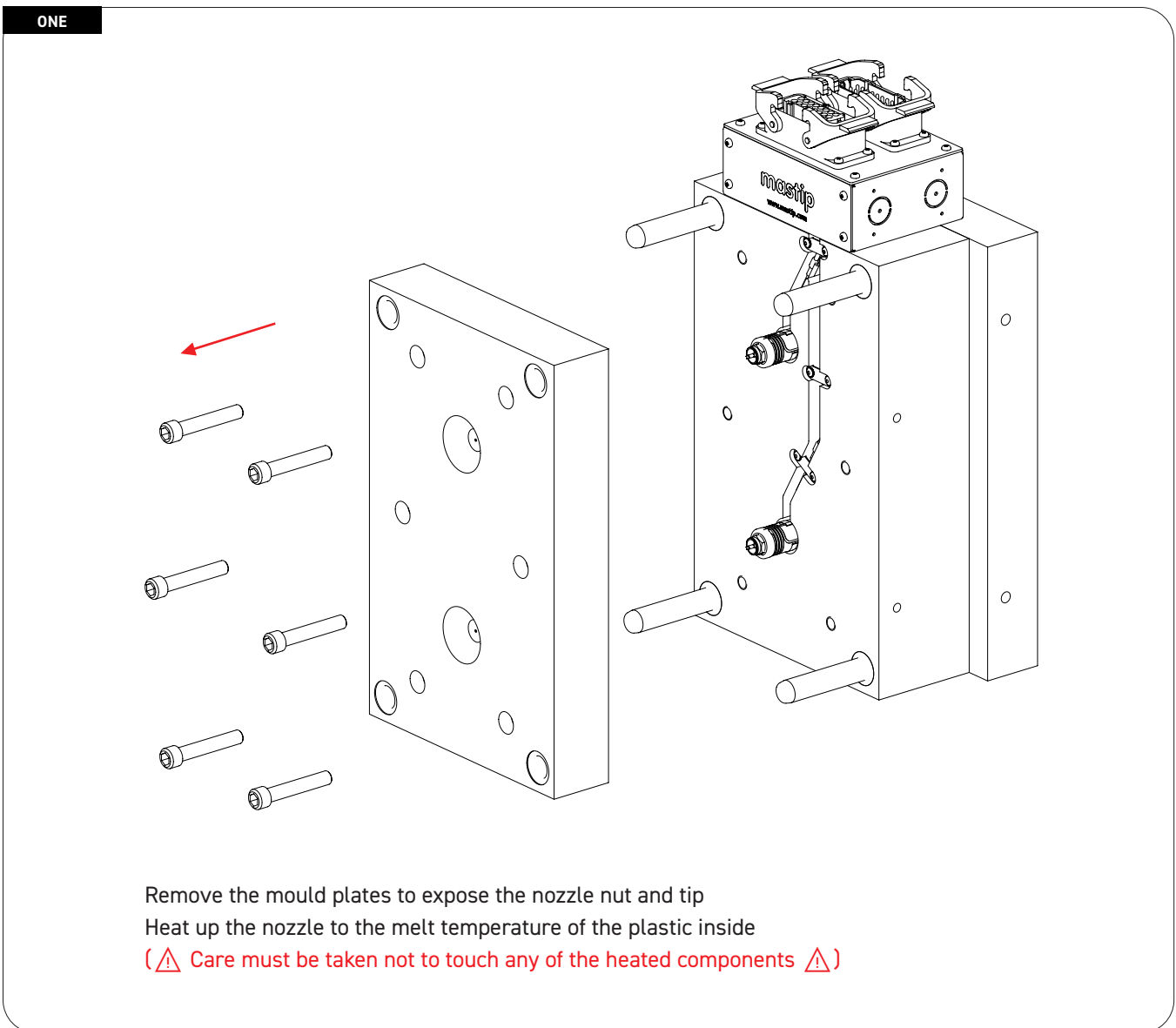


Fit **Blanking Plate 2a** or **2b** to the mould backplate and fasten using **Blanking Plate Screws 1**

## Valve Pin Guide Replacement

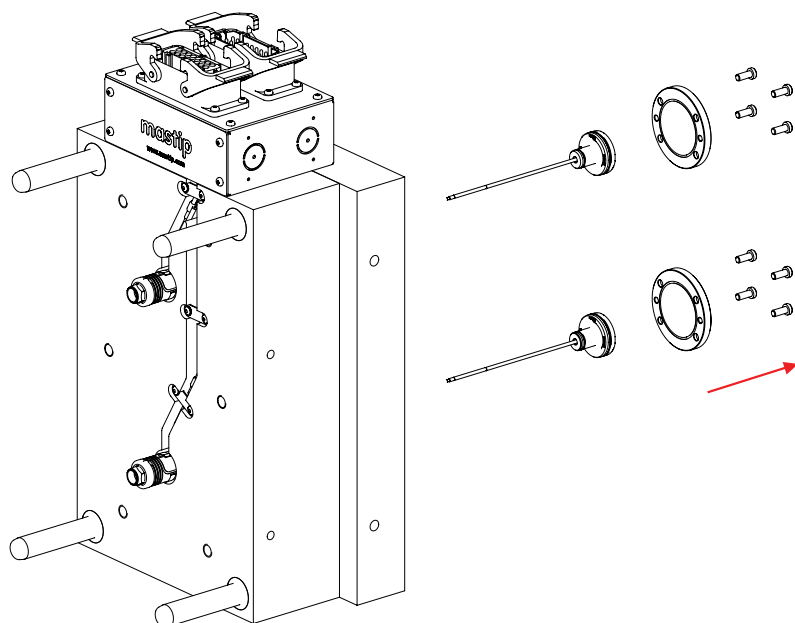
**Caution:** Where possible Mastip recommends removing and assembling the valve pin guide from the front (Nut/Tip) side of the mould.

→ **Guide replacement from the front (cavity side) of the mould**



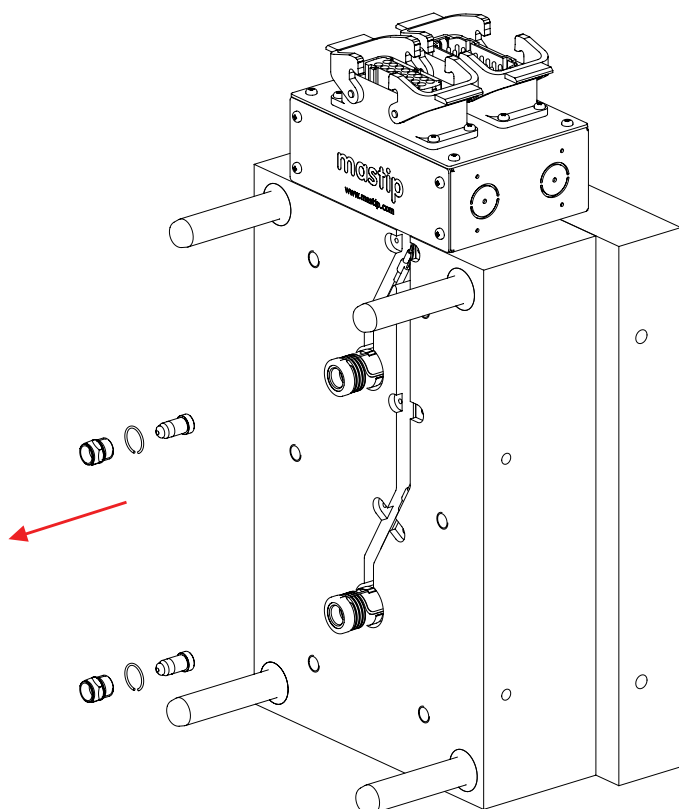
## VALVE PIN GUIDE REPLACEMENT CONT.....

TWO



Remove the valve pin from the system

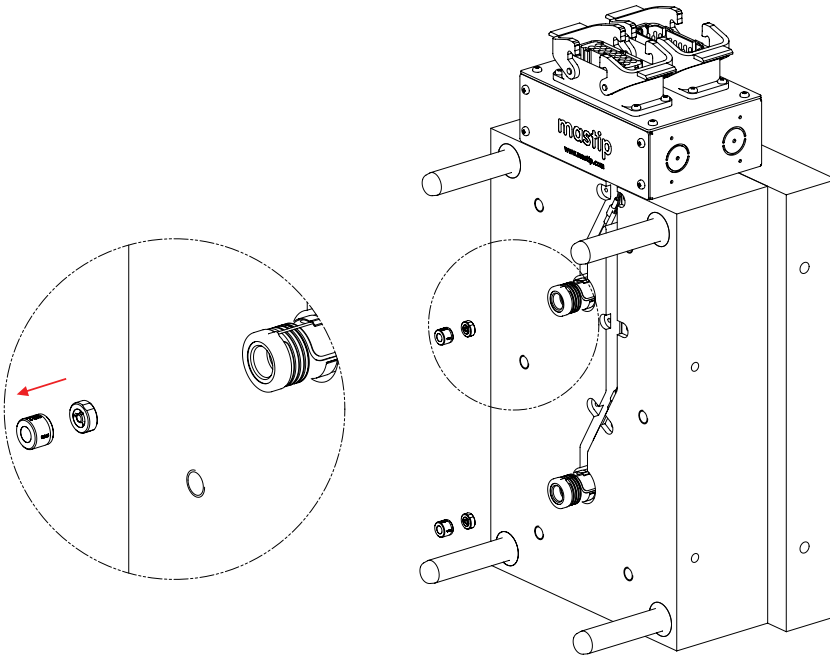
THREE



Allow the manifold and nozzles to cool, then remove the nozzle nut and tip, taking care not to cause any damage to the components

## VALVE PIN GUIDE REPLACEMENT CONT.....

FOUR



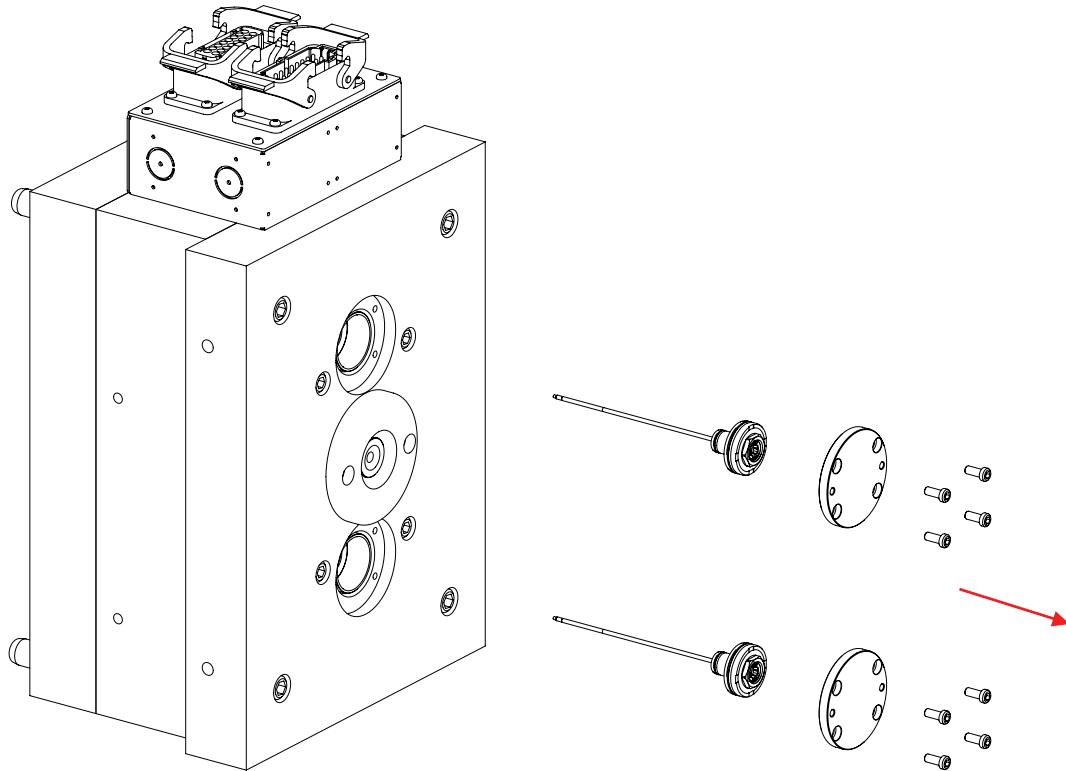
Using a hook carefully remove the packer and valve pin guide from the nozzle taking care not to cause any damage

Reassemble in the reverse order

→ Guide replacement from the back (platen side) of the mould

## REMOVAL

ONE



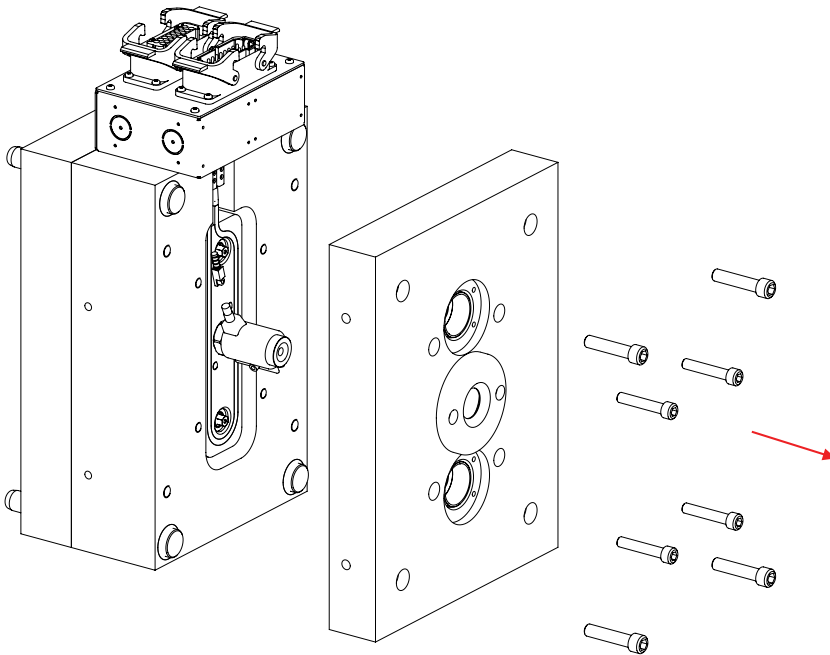
Heat up the manifold and nozzles to the melt temperature of the plastic inside

( ⚠ Care must be taken not to touch any of the heated components ⚠ )

Remove the valve pins from the system

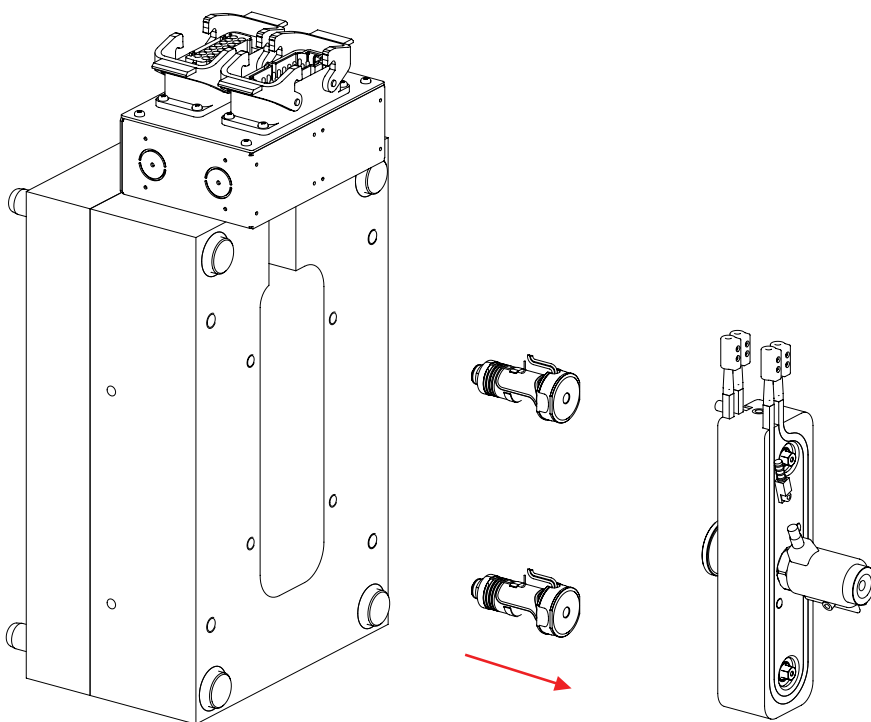
## VALVE PIN GUIDE REPLACEMENT CONT.....

TWO



Allow the manifold and nozzles to cool, then remove the mould back plate

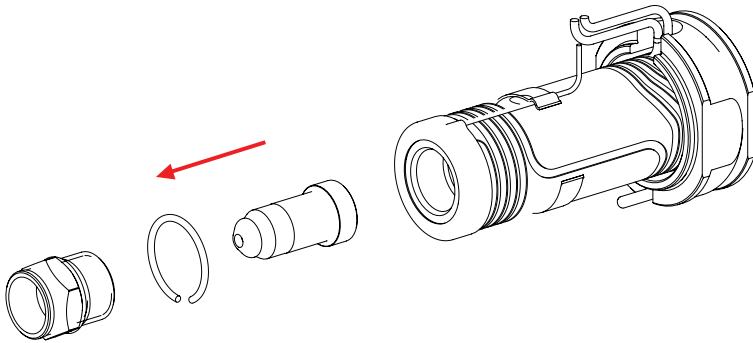
THREE



Remove the manifold and nozzles from the mould

## VALVE PIN GUIDE REPLACEMENT CONT.....

FOUR

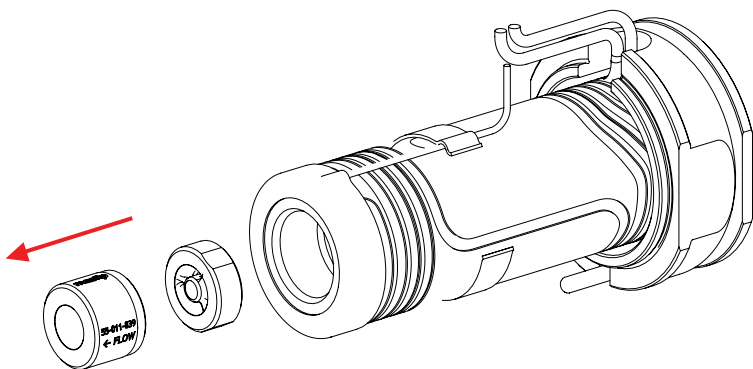


Secure the nozzle and heat up the nozzle to the melt temperature of the plastic inside

( ⚠ Care must be taken not to touch any of the heated components ⚠ )

Remove the nozzle nut and tip, taking care not to cause any damage to the components

FIVE



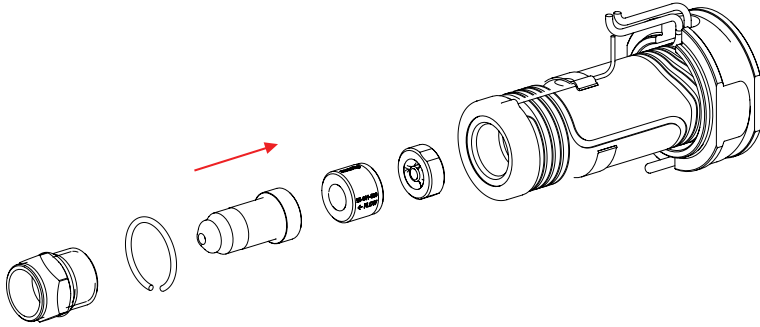
Using a hook carefully remove the packer and valve pin guide from the nozzle, taking care not to cause any damage

Alternatively, a soft punch (e.g. copper) may be inserted from the head of the nozzle to push the guide out



## ASSEMBLY

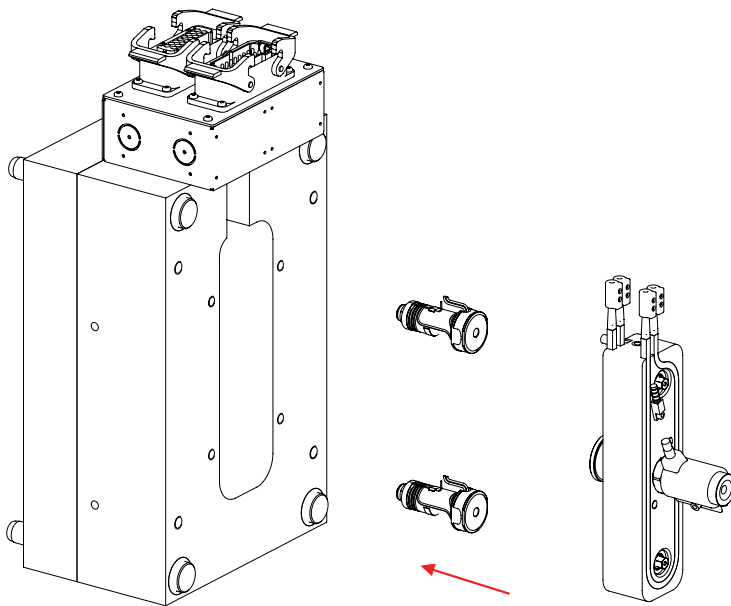
ONE



Ensure the nozzle nut and tip pocket is clean and free of any plastic or debris

Assembly the nozzle tip packer, valve pin guide and tip into the nozzle, ensuring they are in the correct orientation. Fit the nut and torque it to the recommended torque settings

TWO

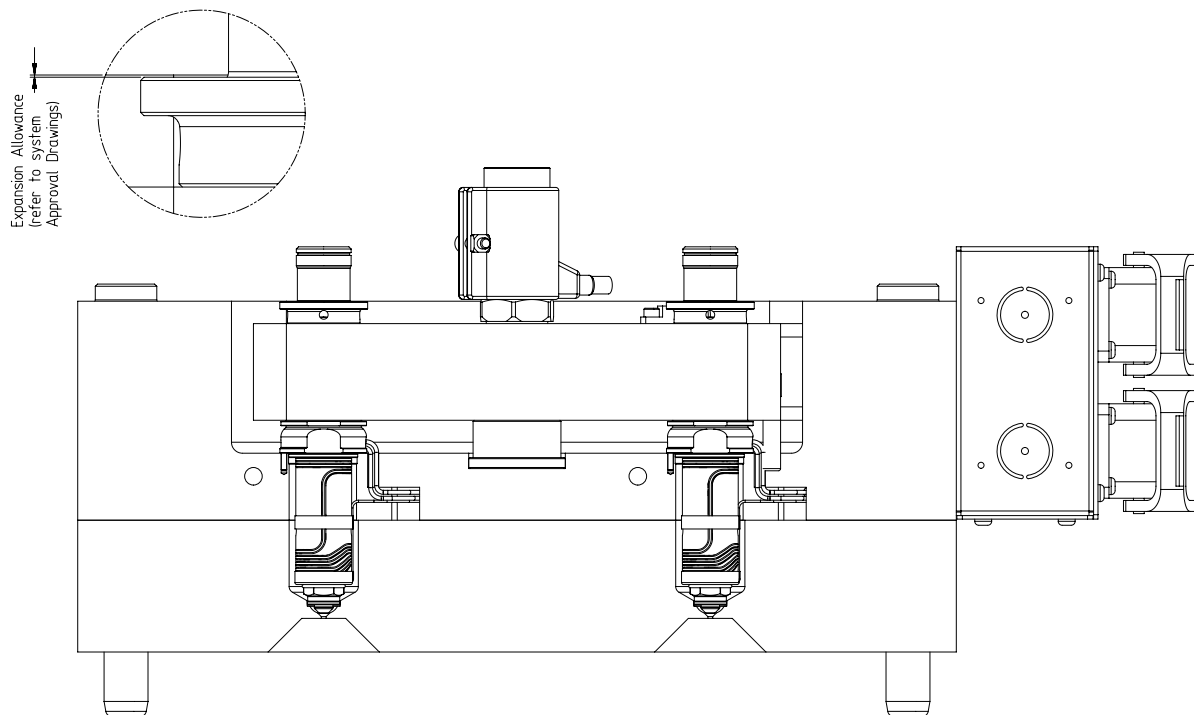


Ensure the nozzle seating faces are clean and free of debris, and fit the nozzle to the mould

Ensure the manifold and nozzle mating faces are clean and free of debris and fit the manifold to the mould

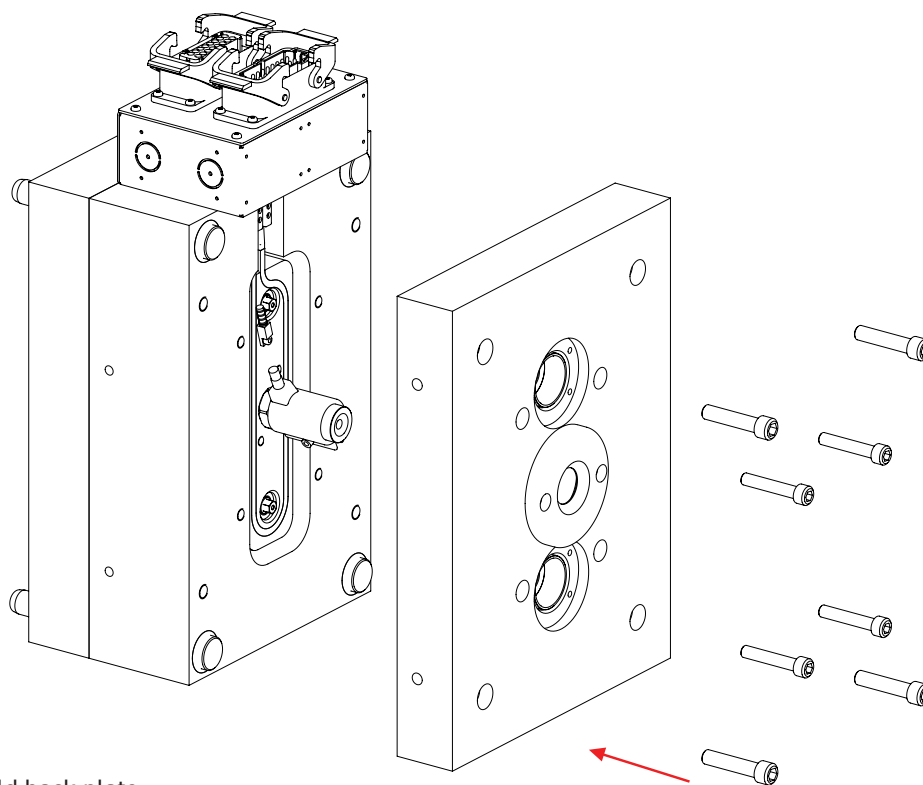
ASSEMBLY CONT.....

THREE



Measure all manifold and mould fitting heights to ensure correct expansion allowance is maintained

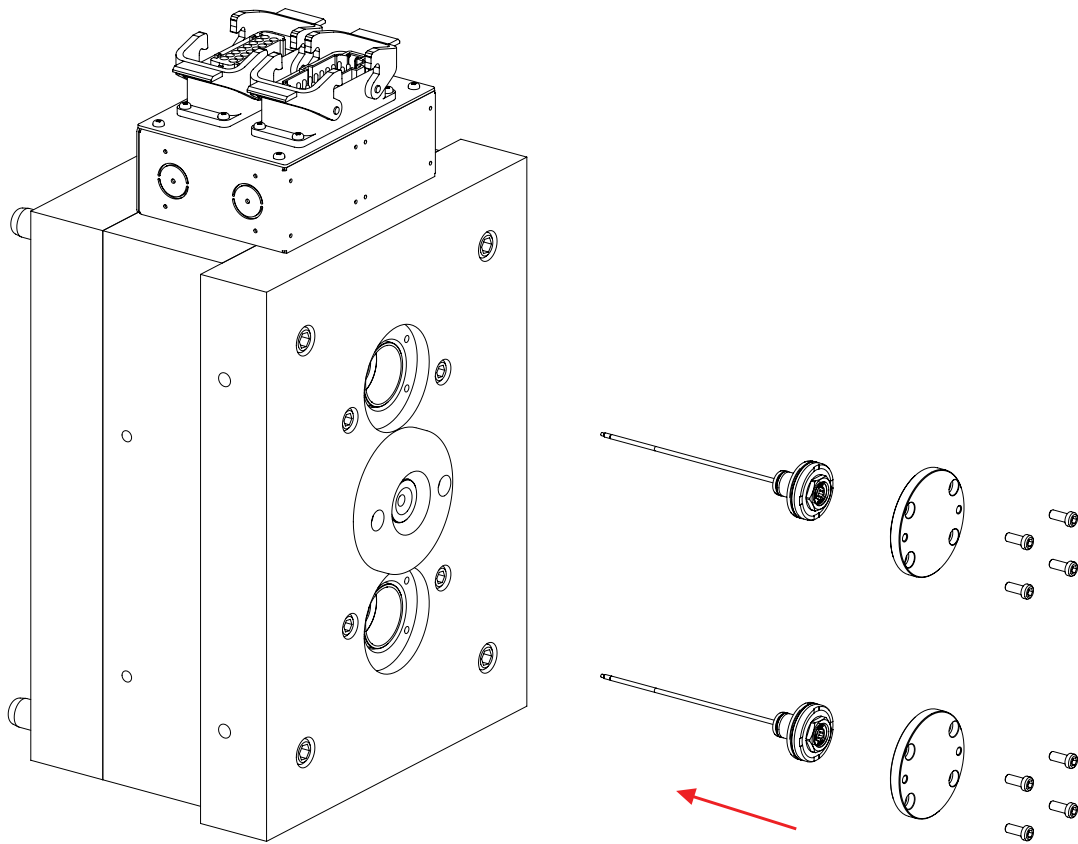
FOUR



Fit the mould back plate

## ASSEMBLY CONT.....

FIVE



Heat up the manifold and nozzles to the melt temperature of the plastic inside to ensure correct thermal expansion has taken place

( ⚠ Care must be taken not to touch any of the heated components ⚠ )

Fit the valve pins and components



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