

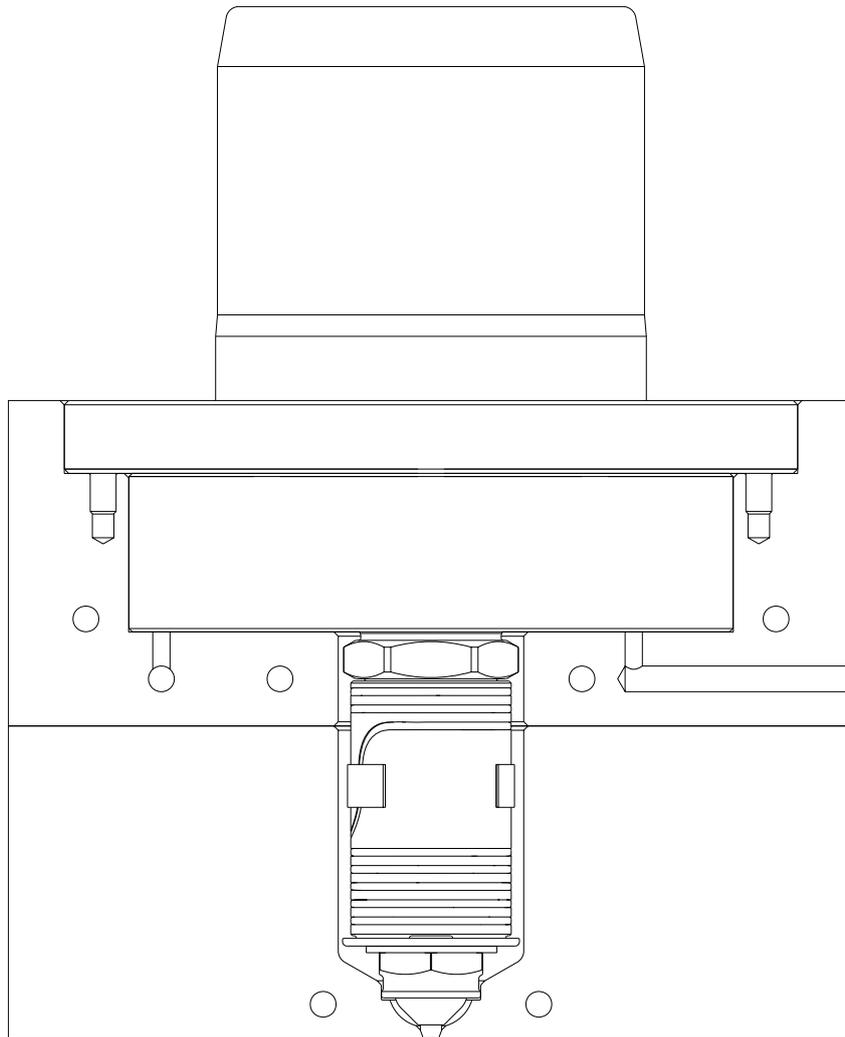
# VeriShot<sup>™</sup> Single Valve Gate System

Patent Pending

## Assembly Overview

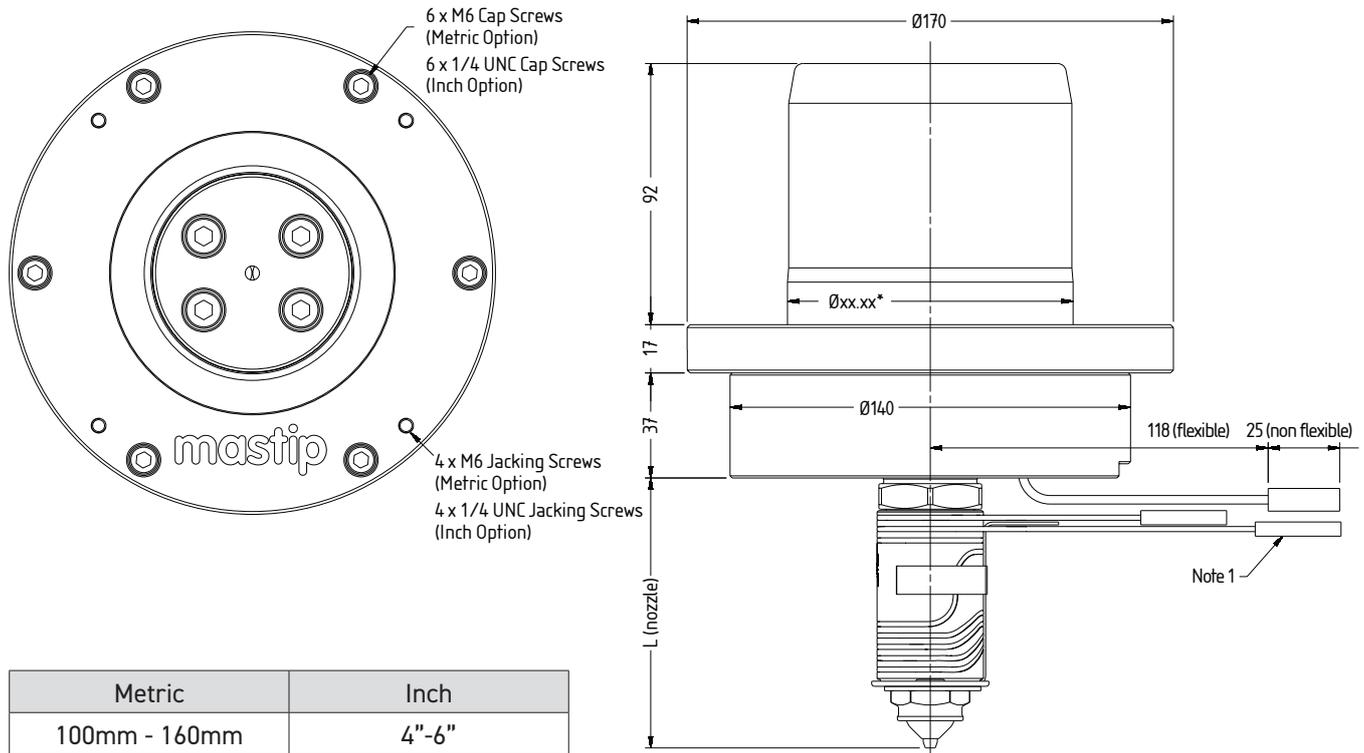
**IMPORTANT!!**

Mould plate cooling is critical for the correct operation of the VeriShot™ single valve gate  
Mould plate 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  
**Recommended air pressure:** 6-8 Bar  
**Maximum air pressure:** 10 Bar

**Key Features**

- Suitable for most materials – temperature control in gate area is critical for gate quality
- Conical (1) or Cylindrical (2) type shut off pin
- Ø2.5mm, Ø3.0mm and Ø5.0mm pin
- Pneumatic actuation
- Metric or inch locating ring option
- Compatible with TX16, TX19 and TX27 FlowLoc™ nozzles. See FlowLoc™ Technical Guide.

## Overall Dimensions



## Nozzle Compatibility

Description	FlowLoc™ Nozzle	Standard Pin Size (D x L)	L (nozzle)
VeriShot™ 16	TX16	Ø2.5 x 350	250
VeriShot™ 19	TX19	Ø3.0 x 400	300
VeriShot™ 27	TX27	Ø5.0 x 600	450

→ Refer to page VSTG-7 Pin Details section to calculate required pin length

## Product Codes

Part Number	Description
91-121-019	VeriShot™ SVG Semi Assembled Metric 19 - Uncut Pin
91-121-027	VeriShot™ SVG Semi Assembled Metric 27 - Uncut Pin
91-121-119	VeriShot™ SVG Fully Assembled Metric 19 - Parallel Pin
91-121-127	VeriShot™ SVG Fully Assembled Metric 27 - Parallel Pin
91-121-219	VeriShot™ SVG Fully Assembled Metric 19 - Tapered Pin
91-121-227	VeriShot™ SVG Fully Assembled Metric 27 - Tapered Pin
91-122-019	VeriShot™ SVG Semi Assembled Inch 19 - Uncut Pin
91-122-027	VeriShot™ SVG Semi Assembled Inch 27 - Uncut Pin
91-122-119	VeriShot™ SVG Fully Assembled Inch 19 - Parallel Pin
91-122-127	VeriShot™ SVG Fully Assembled Inch 27 - Parallel Pin
91-122-219	VeriShot™ SVG Fully Assembled Inch 19 - Tapered Pin
91-122-227	VeriShot™ SVG Fully Assembled Inch 27 - Tapered Pin

VeriShot™ is available in two configurations:

## 1. Fully assembled:

- Valve pin cut to length and profiled by Mastip
- FlowLoc™ Nozzle fastened to VeriShot™ manifold
- System tested to check air actuation
- Ready to be installed into mould
- Nozzle code must be specified when placing order. See FlowLoc™ Technical Guide

## 2. Semi assembled:

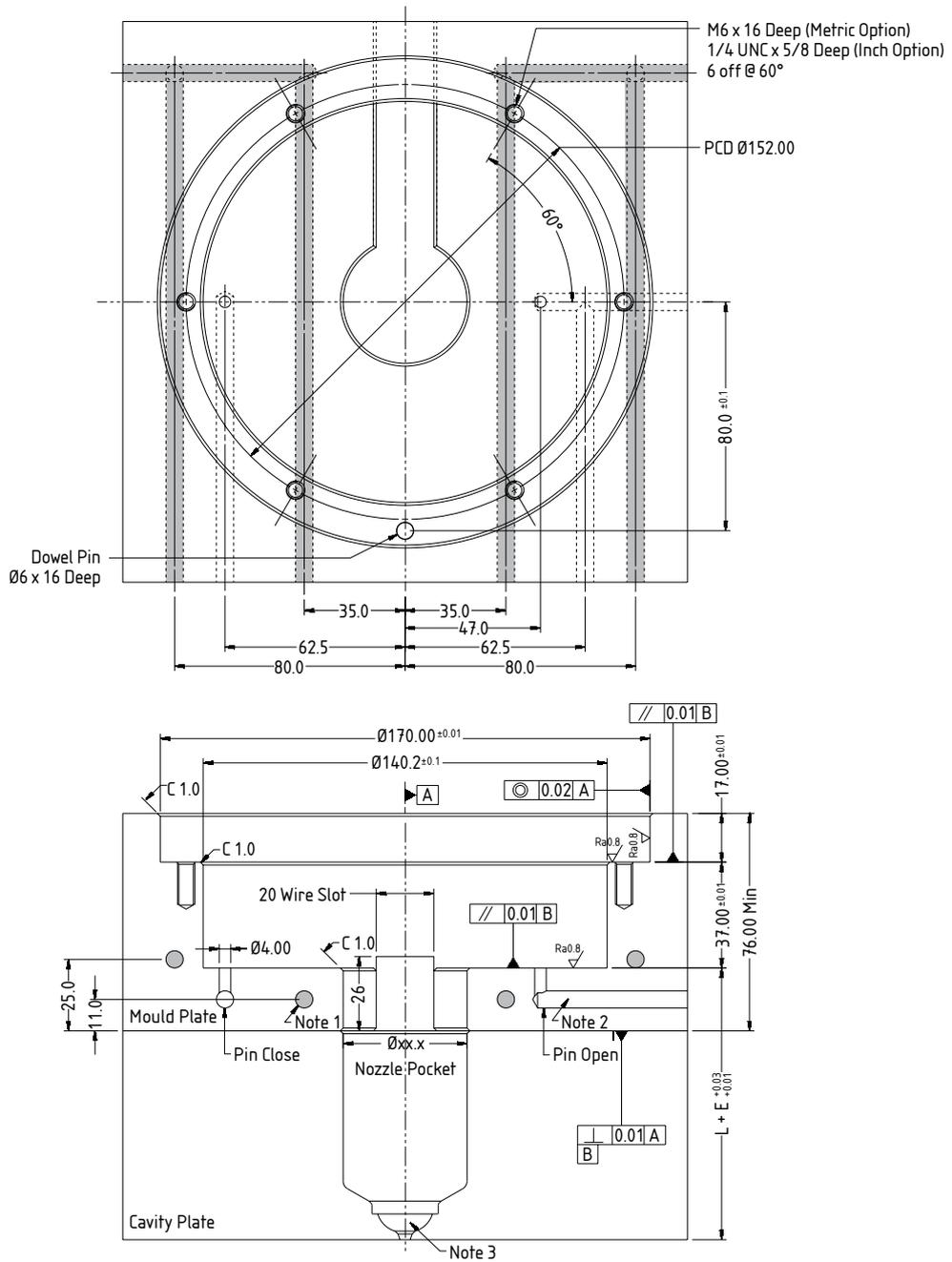
- Valve Pin to be cut to length and profiled by customer
- FlowLoc™ Nozzle fastened to VeriShot™ manifold
- O-rings and wear strips to be fitted to piston and greased with supplied silicone lubricant
- Remaining parts to be fitted to Semi-Assembled unit
- See technical guide to complete assembly
- Nozzle code must be specified when placing order. See FlowLoc™ Technical Guide

## Note

- For FlowLoc™ heater, flexible and non-flexible section lengths see the FlowLoc™ technical guide.
- Multiple diameter locator ring sizes now come as standard to suit your requirements

Mould Pocket

$$E = L \times 0.0000125 \times (\text{nozzle temp. } ^\circ\text{C} - \text{mould temp. } ^\circ\text{C})$$



Key	
○	∅6mm Air Line
●	∅6mm Cooling Channel

∅xx.x	
TX16	∅31mm
TX19	∅36mm
TX27	∅43mm

Note

1. Mould plate cooling is critical for the correct operation of the VeriShot™ Single Valve Gate. Cooling channels enable heat to be drawn away from the unit maintaining the integrity of the seals.
2. Airlines can be routed to the cavity plate (lower plate) to simplify drilled channels. Cooling channels can then be placed on one level at 11mm.
3. See FlowLoc™ technical guide for the gate details dependant on nut style selection.

VeriShot™ Components

Metric (MANSHS6X20) ← Cap Screw M6 (metric option) or ¼ UNC (inch option)  
 Inch (20-702-019) ←

ID5 To Suit 27 Series  
 (60-062-420)  
 (60-062-421)  
 (60-062-422)  
 (60-062-423)

ID3 To Suit 16/19 Series  
 (60-062-222)  
 (60-062-223)  
 (60-062-224)  
 (60-062-225)

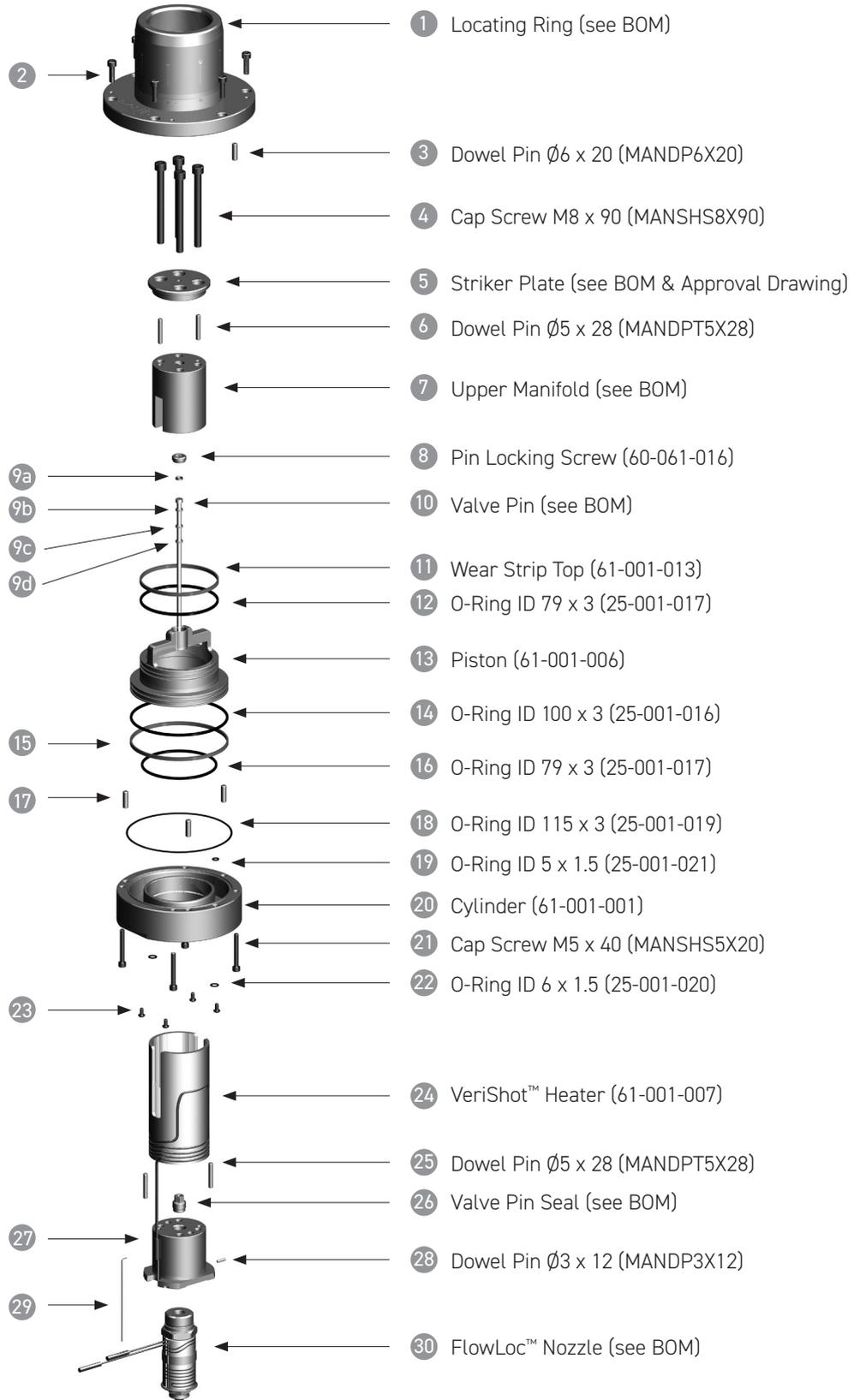
Valve Pin Adjustment Packers

(61-001-012) Wear Strip Bottom  
 (MANDP6X20) Dowel Pin Ø6 x 20

(MANGB4X8) Button Cap Screw M4 x 8

(see BOM) Lower Manifold

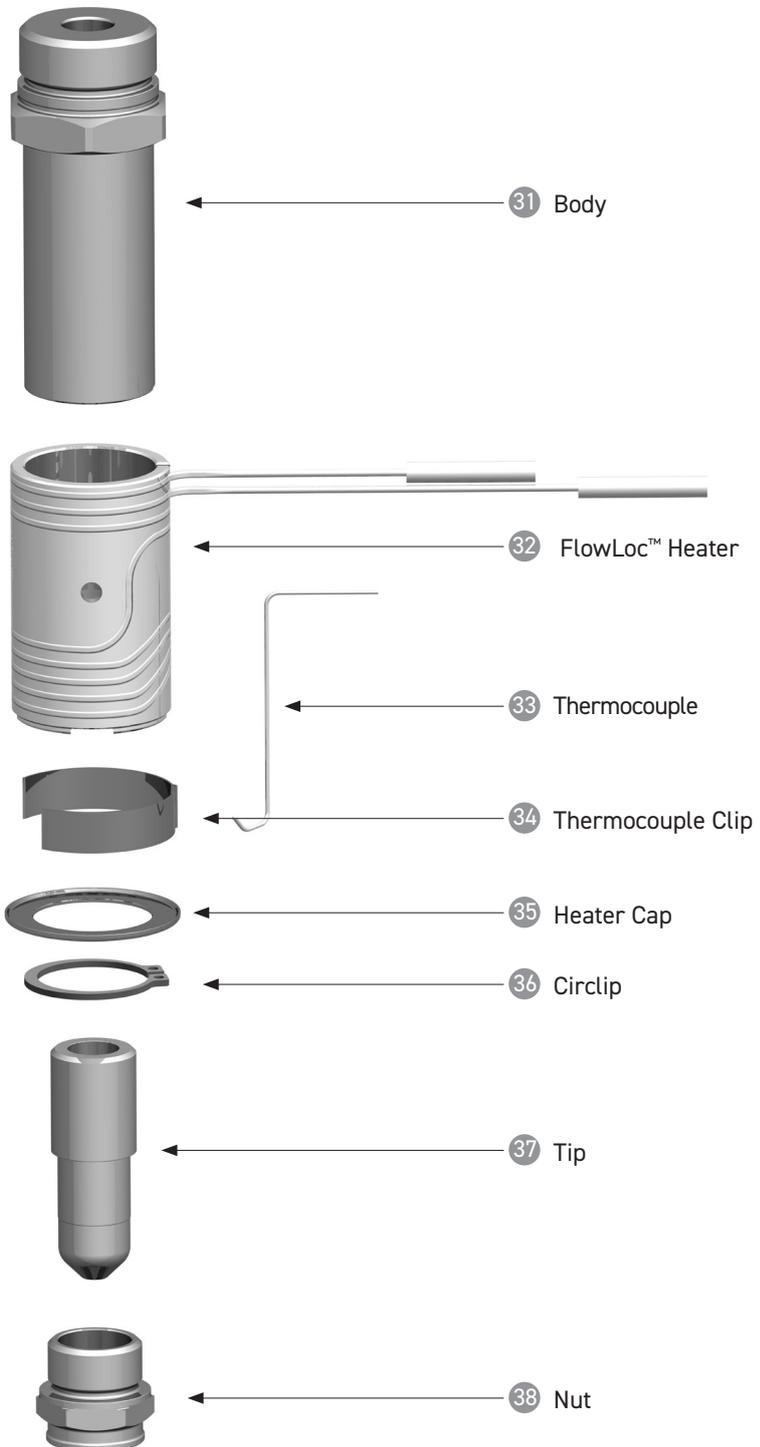
(39-810-150) Thermocouple



Note

1. Verishot spares kit (80-020-100). Includes seals, wear ring strips and grease.
2. Value pin removal Jig Kit (80-020-110)

FlowLoc™ Nozzle Components



## Valve Pin Length

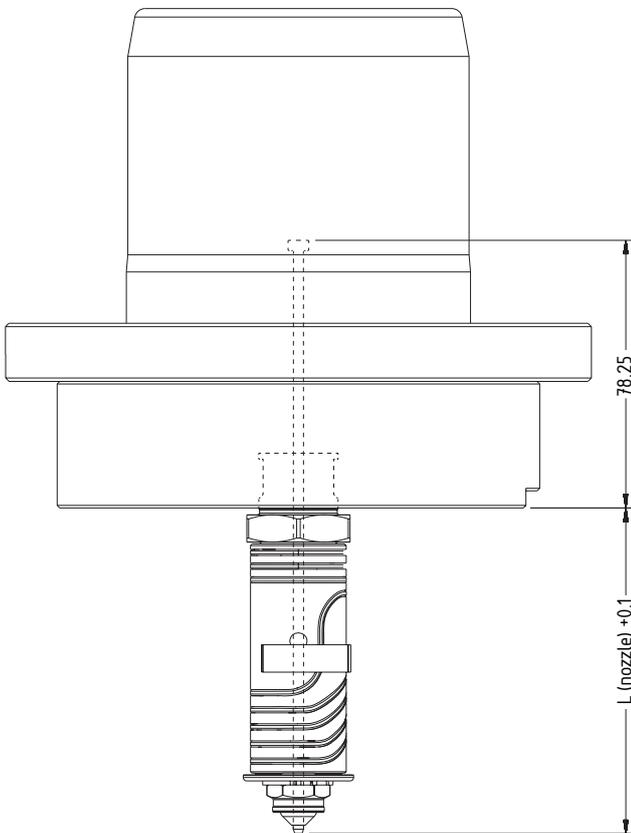
Caution: The length of the valve pin is critical to achieve a quality gate vestige. Use the calculation below if you are responsible for cutting to length and profiling. If ordering a fully assembled unit Mastip will supply the valve pin cut to length and profiled.

To calculate final pin length use the following equation:

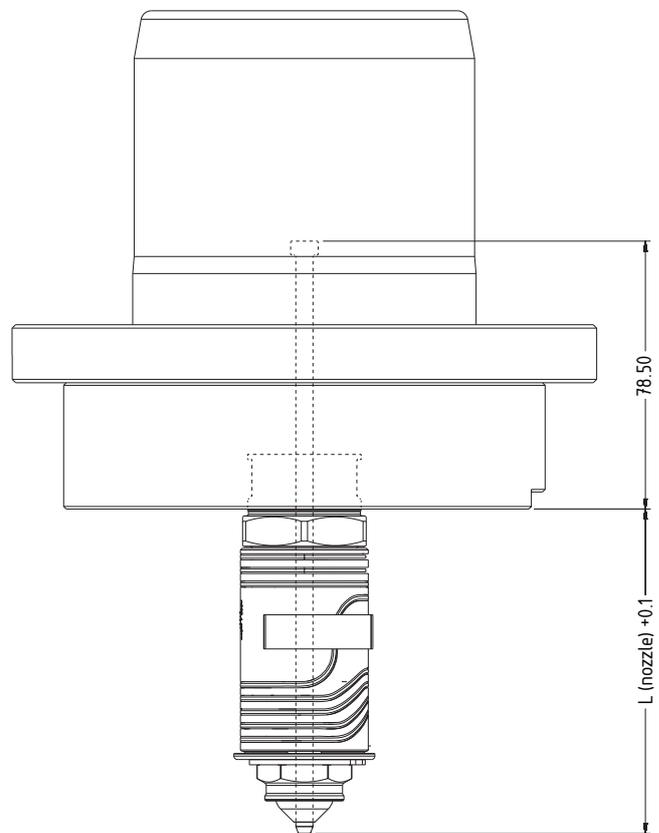
$$\text{Valve Pin Length (TX27)} = 78.50 + L (\text{nozzle}) + 0.1$$

$$\text{Valve Pin Length (TX16/TX19)} = 78.25 + L (\text{nozzle}) + 0.1$$

L (nozzle) - See FlowLoc™ Technical Guide.



TX16/TX19 FlowLoc™ Nozzle



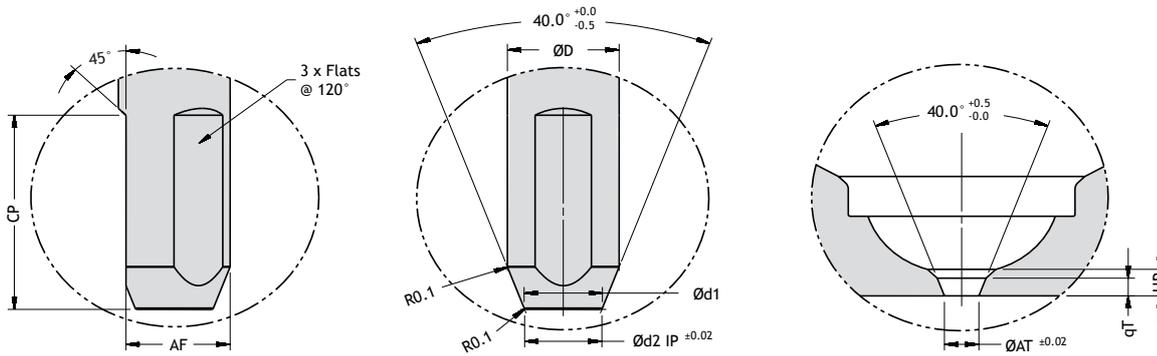
TX27 FlowLoc™ Nozzle

Conical Valve Gate

The pin end is shaped to prevent damage to the leading edge and subsequent flashing around the gate.  
 The pin will form a 0.1mm deep recess on the part.

D	d1	d2	AF	CP	AT	qT	HP
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

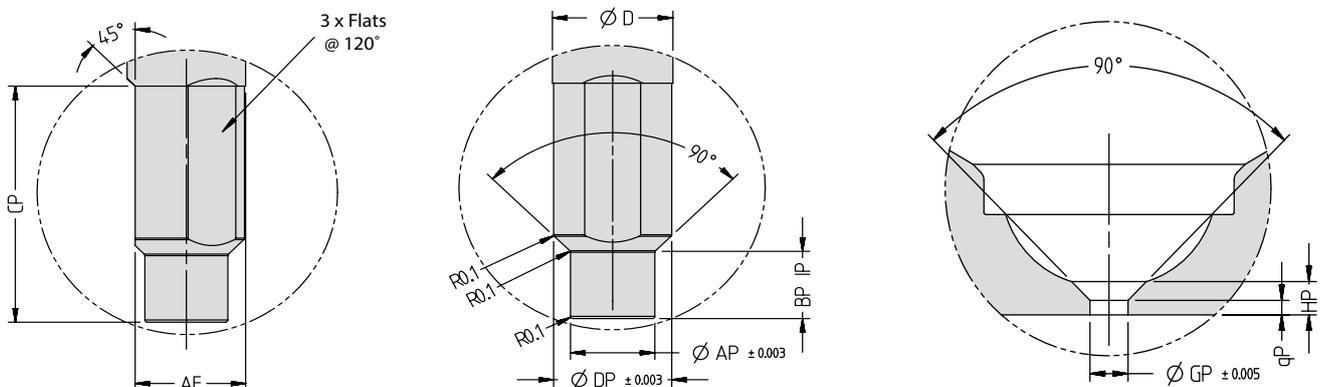
The pin will form a 0.1mm deep dimple on the part.  
 Pin and gate to be lapped to ensure clean shutoff.  
 Recommended for amorphous polymers.



Cylindrical Valve Gate

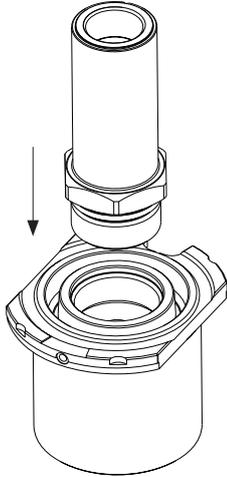
D	AP	BP	CP	DP	AF	GP	qP	HP
2.5	1.792	2.0	8	2.392	2.20	1.805	0.7	2.0
3.0	2.192	2.0	8	2.892	2.65	2.205	0.8	2.5
5.0	3.492	2.5	10	4.892	4.55	3.505	1.3	3.0

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



## Installation

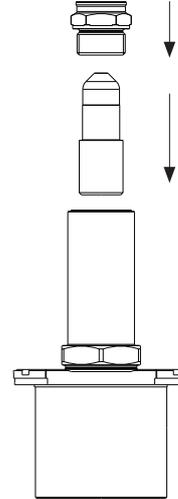
ONE



Secure **Lower Manifold 27** using the flats on a vice. Apply a small amount of the supplied heat resistant nickel grease on the thread of the **Body 31**. Tighten the Flowloc™ Nozzle to the relevant torque setting according to the nozzle series. See table:

- X16 – 140 Nm
- X19 – 140 Nm
- X27 – 220 Nm

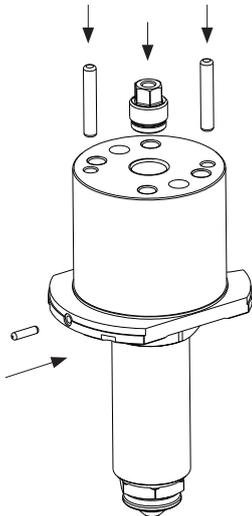
TWO



Insert the **Tip 37** into the **Body 31**. Apply a small amount of the supplied heat resistant nickel grease on the tread of the **Nut 38** and place over the **Tip 37**. Tighten the **Nut 38** to the relevant torque setting according to the nozzle series:

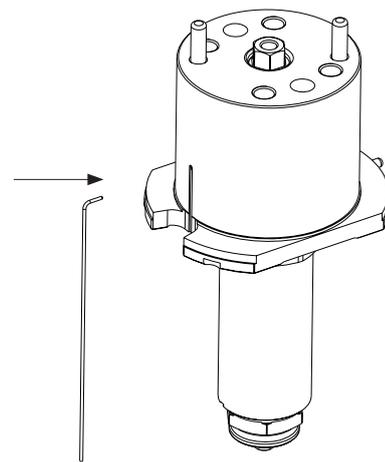
- X16 – 20 Nm
- X19 – 25 Nm
- X27 – 30 Nm

THREE



Fit 2 x **Dowel Pin Ø5 x 28 25** and **Dowel Pin Ø3 x 12 28** to the **Lower Manifold 27**. Clean any residual material from the valve pin seal pocket in the **Lower Manifold 27**. Apply a small amount of the supplied heat resistant nickel grease to the thread of the **Valve Pin Seal 26** and screw into the **Lower Manifold 27**. Tighten to 20Nm torque.

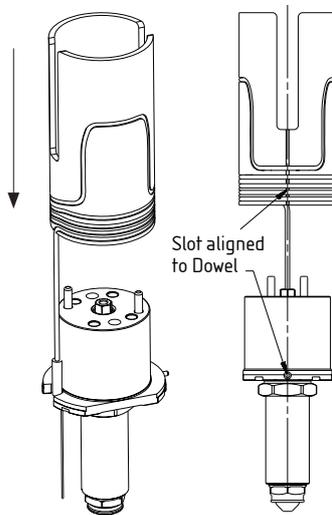
FOUR



Insert the **Thermocouple 29** into the hole in the **Lower Manifold 27**. Ensure the **Thermocouple 29** is pushed to the bottom of the hole and then bend downwards into the slot.

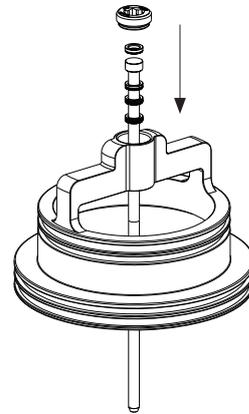
## INSTALLATION CONT.....

FIVE



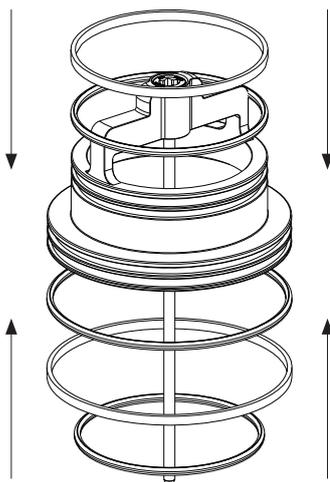
Fit the VeriShot™ Heater 24 to the Lower Manifold 27 securing the Thermocouple 29. Ensure the slot in the VeriShot™ Heater 24 is aligned with the Dowel Pin  $\varnothing 3 \times 12$  28 for the correct positioning.

SIX



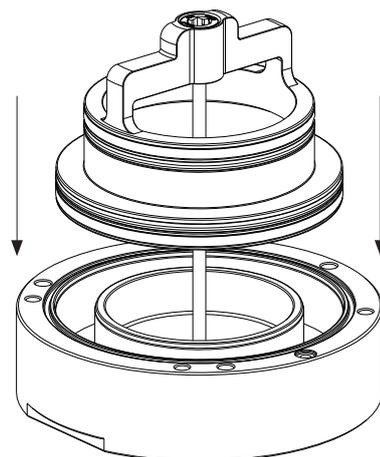
Fit the Valve Pin Adjustment Packers 9b, 9c and 9d onto the Valve Pin 10. Ensure the correct packer thickness is in the correct position. (Recommend starting with the thinnest packer above the pin head, then adjust to suit if necessary). Fit the Valve Pin 10 to Piston 13. Fit the remaining Valve Pin Adjustment Packer 9a above the pin head. Secure the Piston 13 in a vice holding across flats. Screw the Pin Locking Screw 8 into the Piston 13 and tighten to 40Nm torque. Ensure the Valve Pin 10 is able to float to align with the Valve Pin Seal 26.

SEVEN



Fit Wear Strip Top 11 and O-Ring ID 79 x 3 12 to the top of the Piston 13. Fit O-Ring ID 100 x 3 14 and Wear Strip Bottom 15 to the base of the Piston 13. Fit O-Ring ID 79 x 3 16 to the internal groove in the Piston 13.

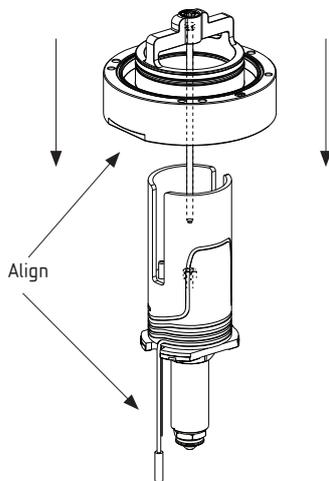
EIGHT



Apply a generous amount of supplied silicone grease on all O-Rings and the Wear Strips. Insert the Piston 13 into the Cylinder 20. Apply gentle pressure to the Piston 13 to compress the seals so the Piston 13 slides into the Cylinder 20. Ensure the Piston 13 is pushed fully forward.

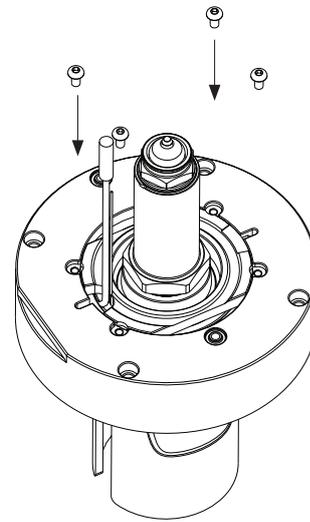
## INSTALLATION CONT.....

NINE



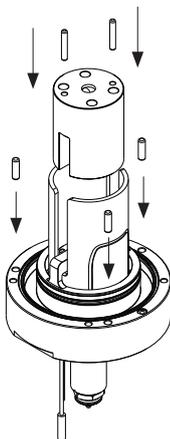
Place the **Cylinder (20)** and **Piston (13)** assembly over the **VeriShot™ Heater (24)**. Ensure the **Valve Pin (10)** enters the **Valve Pin Seal (26)**. Fit the **Cylinder (20)** to the **Lower Manifold (27)** shoulder. Ensure the flat on **Cylinder (20)** is aligned with **VeriShot™ Heater (24)** wiring. The **Piston (13)** may need to be rotated to slot into the **VeriShot™ Heater (24)**.

TEN



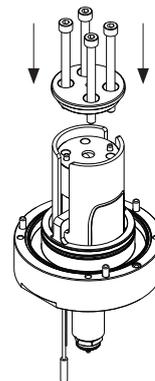
Retain the **Cylinder (20)** to the **Lower Manifold (27)** shoulder with the 4x **Button Cap Screws M4 x 8 (23)**.

ELEVEN



Fit the **Upper Manifold (7)** into the **VeriShot™ Heater (24)** and slide down locating it with the 2x **Dowel Pin Ø5 x 28 (25)** installed in the **Lower Manifold (27)**. Ensure mating surfaces are clean between the **Lower Manifold (27)** and **Upper Manifold (7)**. Fit 2x **Dowel Pin Ø5 x 28 (6)** to the upper surface of the **Upper Manifold (7)**. Fit 3x **Dowel Pin Ø6 x 20 (17)** to the **Cylinder (20)**.

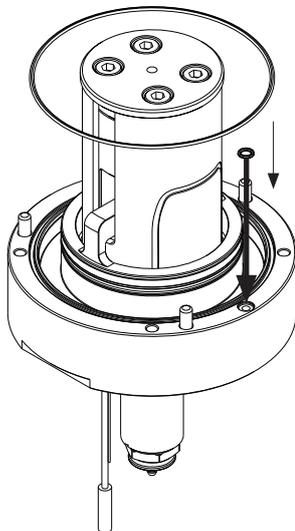
TWELVE



Fit and locate the **Striker Plate (5)** with the required radius machined to the **Upper Manifold (7)** with the use of the 2x **Dowel Pin Ø5 x 28 (6)**. The **VeriShot™ Heater (24)** must fit into the groove in the **Striker Plate (5)**. Ensure mating surfaces are clean between the **Upper Manifold (7)** and the **Striker Plate (5)**. Apply a small amount of the supplied heat resistant nickel grease to the thread of the 4x **Cap Screw M8 x 90 (4)** and install. Tighten to 30Nm torque.

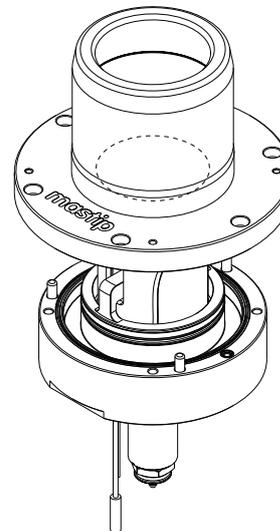
## INSTALLATION CONT.....

THIRTEEN



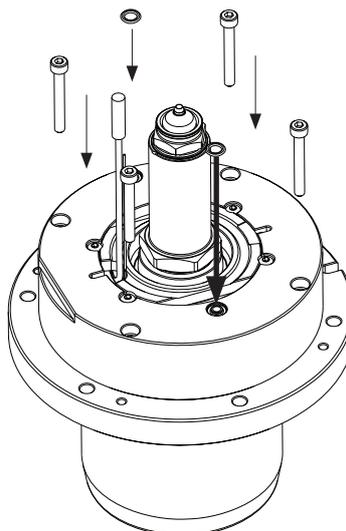
Fit O-Ring ID 115 x 3 **18** and O-Ring ID 5 x 1.5 **19** to the Cylinder **20**.

FOURTEEN



Fit the Locating Ring **1** over the VeriShot™ Heater **24**. Ensure the air way in the Locating Ring **1** is aligned with the O-Ring ID 5 x 1.5 **19** in the Cylinder **20**. Press and locate the Locating Ring **1** onto the Cylinder **20** with the 3x Dowel Pin  $\varnothing 6$  x 20 **17**.

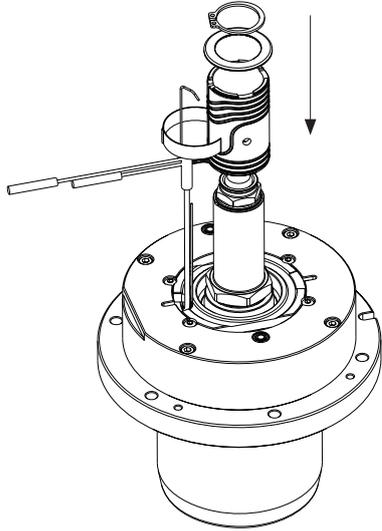
FIFTEEN



Fasten the Locating Ring **1** and the Cylinder **20** together by using the 4x Cap Screw M5 x 40 **21**. Fit the 2x O-Ring ID 6 x 1.5 **22** to the Cylinder **20**. Place silicon grease on the O-Rings to prevent them falling out.

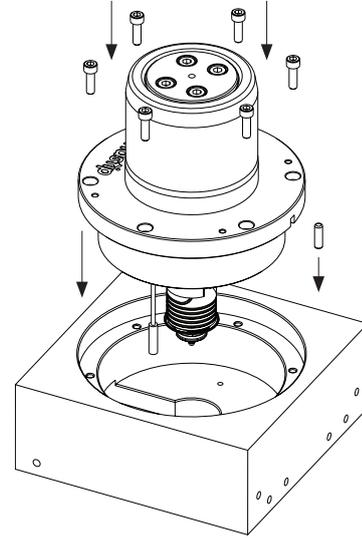
## INSTALLATION CONT.....

SIXTEEN



Fit the FlowLoc™ Heater 32 to the Body 31 and orientate the wiring to suit the VeriShot™ Heater 24 wiring direction. Insert the Thermocouple 33 into the hole in the Body 31. Ensure the Thermocouple 33 is pushed to the bottom of the hole and then bend downwards against the FlowLoc™ Heater 32. Retain the Thermocouple 33 with the Thermocouple Clip 34. Secure the Thermocouple 33 by positioning the Heater Cap 35 onto the step of the Body 31. Fit the Circlip 36 to retain the Heater Cap 35. Align the Thermocouple 33 wire.

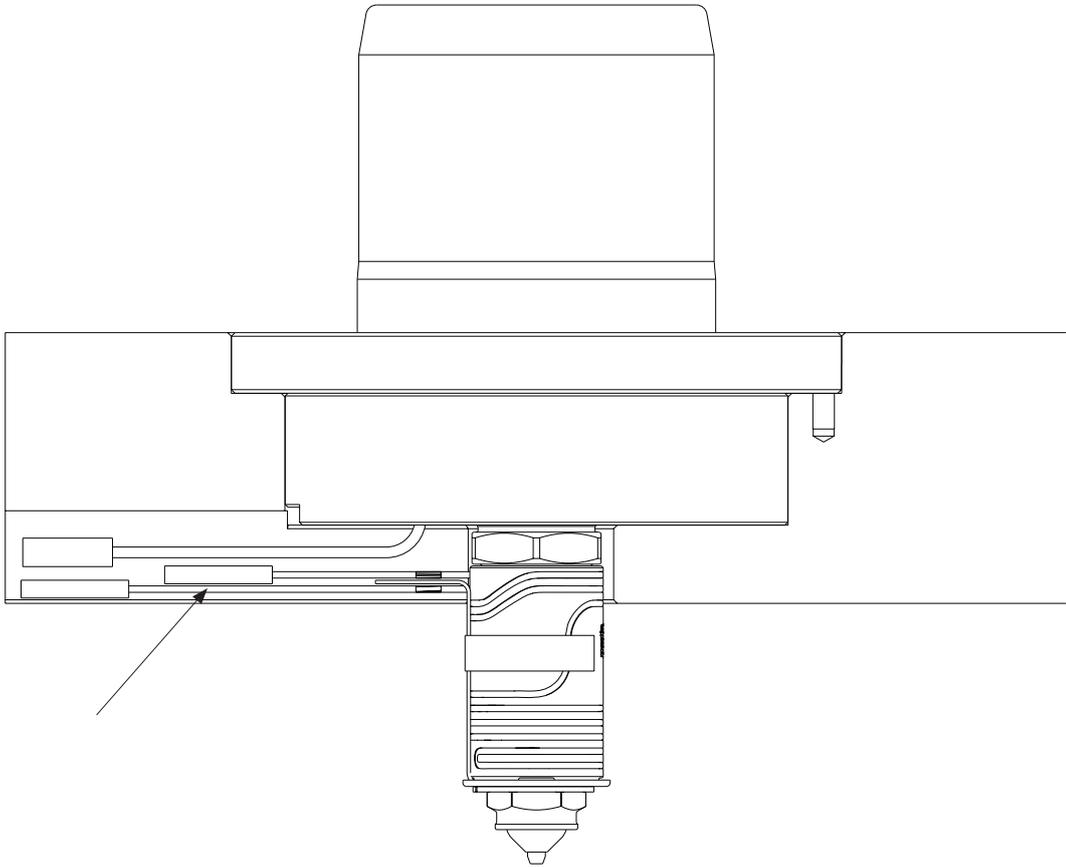
SEVENTEEN



Bend the FlowLoc™ Heater 32 wiring down to enter the wiring slot in the mould plate. Align the slot in the Locating Ring 1 with the Dowel Pin  $\varnothing 6 \times 20$  3 and fit the assembled VeriShot™ System into the mould plate. Secure the assembled VeriShot™ System with 6x Cap Screws M6 (metric option) or 6 x Cap Screws 1/4 UNC (inch option) 2.

## INSTALLATION CONT.....

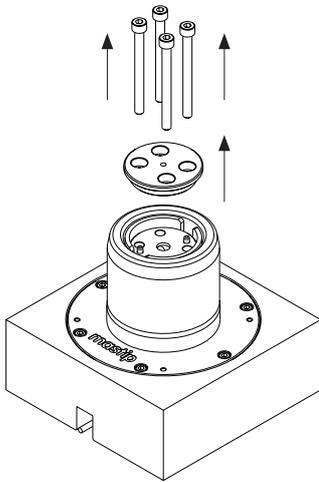
EIGHTEEN



Bend the wiring up to fit into the wiring channel in the mould plate.

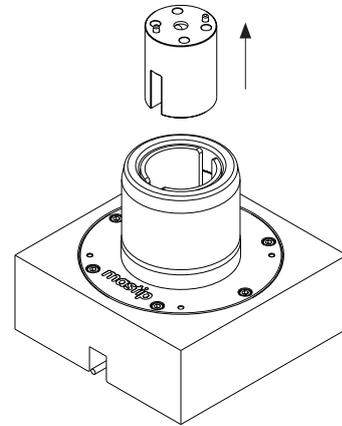
## Valve Pin Height Adjustment

ONE



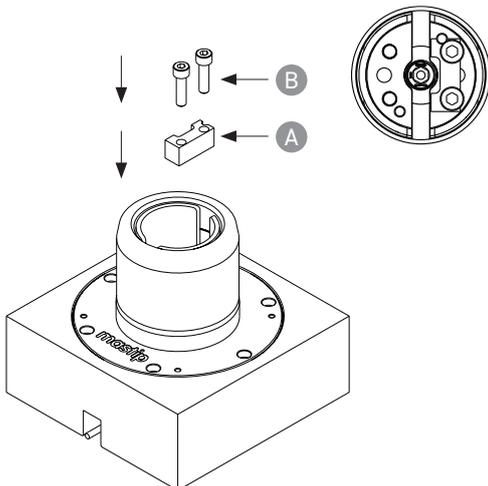
If polymer has been processed through the VeriShot™ single valve gate heat up both the VeriShot™ Heater 24 and the FlowLoc™ Heater 32 to a suitable temperature to soften the polymer in the flow channels. Remove the Striker Plate 5 using the M6 tapped hole.

TWO



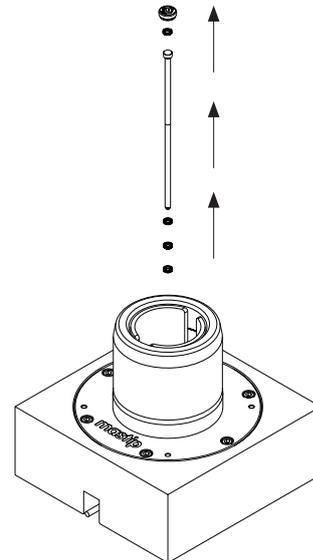
Remove the Upper Manifold 7 using the M10 tapped hole.

THREE



Place the supplied Locking Screw Removal Jig A into position and tightened with the supplied M8 Cap Screws B. This is to prevent the Piston 13 from turning when undoing the Pin Locking Screw 8 and potentially damaging the VeriShot™ Heater 24 wires.

FOUR

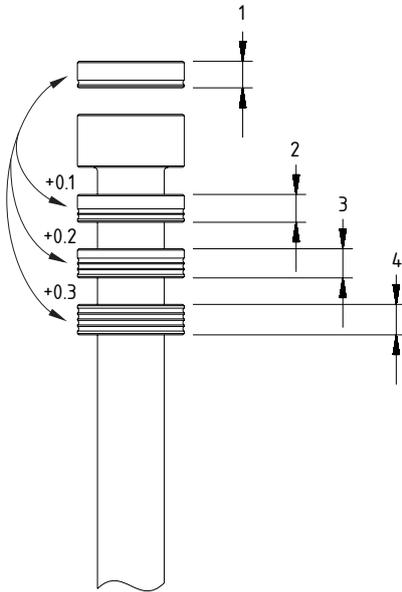


Remove the Pin Locking Screw 8. Remove the Valve Pin Adjustment Packer 9a. Remove the Valve Pin 10. Remove the remaining Valve Pin Adjustment Packers 9b, 9c and 9d.

VALVE PIN HEIGHT ADJUSTMENT CONT....

FIVE

Minor Adjustment

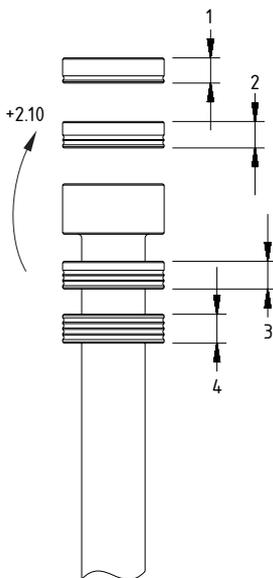


Swap **Valve Pin Adjustment Packers** to achieve small pin adjustments (different packer = different height).

FlowLoc™ 27 Series Nozzle		Drawing Reference	FlowLoc™ 16/19 Series Nozzle	
Thickness (mm)	Serial Number		Thickness (mm)	Serial Number
2.00	60-062-420	1	2.25	60-062-222
2.10	60-062-421	2	2.35	60-062-223
2.20	60-062-422	3	2.45	60-062-224
2.30	60-062-423	4	2.55	60-062-225

SIX

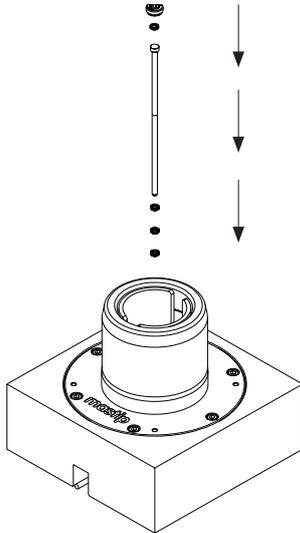
Major Adjustment



Move one or more **Valve Pin Adjustment Packers** from below the pin head to above the pin head to achieve large pin adjustment.

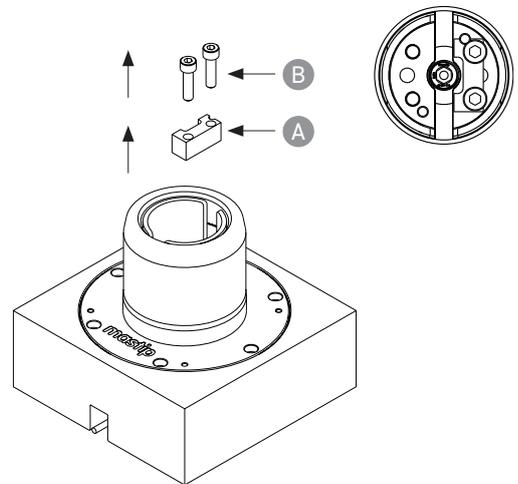
## VALVE PIN HEIGHT ADJUSTMENT CONT...

SEVEN



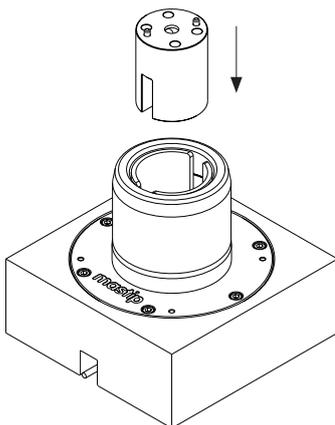
Assemble the **Valve Pin Adjustment Packers** 9 x3 to suit pin height adjustment onto the **Valve Pin** 10 . Insert the **Valve Pin** 10 assembly into the **Piston** 13 . Ensure the **Valve Pin** 10 is matched to the **Valve Pin Seal** 26 . Add the remaining **Valve Pin Adjustment Packer** 9 x1 on top of the **Valve Pin** 10 and tighten the **Pin Locking Screw** 8 to 40Nm.

EIGHT



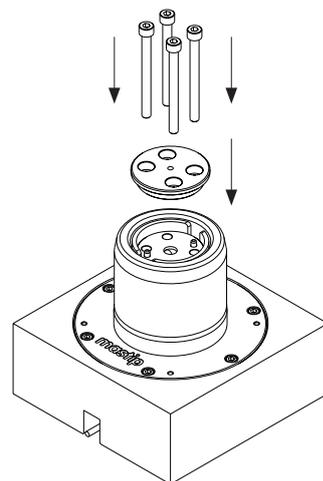
Remove the **M8 Cap Screws** B and **Locking Screw Removal Jig** A.

NINE



Fit the **Upper Manifold** 7 . Ensure mating surfaces are clean between the **Upper Manifold** 7 and **Lower Manifold** 27 .

TEN



Fit the **Striker Plate** 5 and tighten the **Cap Screws M8 x 90** 4 to 30Nm torque.



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