VeriShot™ Single Valve Gate System

Patent Pending
Assembly Overview

**Key Features**

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

**IMPORTANT!!**

Mould plate cooling is critical for the correct operation of the VeriShot™ single valve gate
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
VeriShot™ System

Overall Dimensions

### Nozzle Compatibility

<table>
<thead>
<tr>
<th>Description</th>
<th>FlowLoc™ Nozzle</th>
<th>Tip</th>
<th>Standard Pin Size (D x L)</th>
<th>L (nozzle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VeriShot™ 16</td>
<td>TX16</td>
<td>OV/TV</td>
<td>Ø2.5 x 300</td>
<td>75-250</td>
</tr>
<tr>
<td>VeriShot™ 19</td>
<td>TX19</td>
<td></td>
<td>Ø3.0 x 400</td>
<td>75-300</td>
</tr>
<tr>
<td>VeriShot™ 27</td>
<td>TX27</td>
<td></td>
<td>Ø5.0 x 600</td>
<td>75-450</td>
</tr>
</tbody>
</table>

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

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**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

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**Product Codes**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>91-121-019</td>
<td>VeriShot™ SVG Semi Assembled Metric 19 - Uncut Pin</td>
</tr>
<tr>
<td>91-121-027</td>
<td>VeriShot™ SVG Semi Assembled Metric 27 - Uncut Pin</td>
</tr>
<tr>
<td>91-121-119</td>
<td>VeriShot™ SVG Fully Assembled Metric 19 - Parallel Pin</td>
</tr>
<tr>
<td>91-121-127</td>
<td>VeriShot™ SVG Fully Assembled Metric 27 - Parallel Pin</td>
</tr>
<tr>
<td>91-121-219</td>
<td>VeriShot™ SVG Fully Assembled Metric 19 - Tapered Pin</td>
</tr>
<tr>
<td>91-121-227</td>
<td>VeriShot™ SVG Fully Assembled Metric 27 - Tapered Pin</td>
</tr>
<tr>
<td>91-122-019</td>
<td>VeriShot™ SVG Semi Assembled Inch 19 - Uncut Pin</td>
</tr>
<tr>
<td>91-122-027</td>
<td>VeriShot™ SVG Semi Assembled Inch 27 - Uncut Pin</td>
</tr>
<tr>
<td>91-122-119</td>
<td>VeriShot™ SVG Fully Assembled Inch 19 - Parallel Pin</td>
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<tr>
<td>91-122-127</td>
<td>VeriShot™ SVG Fully Assembled Inch 19 - Parallel Pin</td>
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<tr>
<td>91-122-219</td>
<td>VeriShot™ SVG Fully Assembled Inch 19 - Tapered Pin</td>
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<tr>
<td>91-122-227</td>
<td>VeriShot™ SVG Fully Assembled Inch 27 - Tapered Pin</td>
</tr>
</tbody>
</table>

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**Note**

1. For FlowLoc™ heater, flexible and non-flexible section lengths see the FlowLoc™ technical guide.
2. 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**

<table>
<thead>
<tr>
<th>Ø6mm Air Line</th>
<th>Ø6mm Cooling Channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø6mm</td>
<td>TX19 36mm</td>
</tr>
<tr>
<td>TX27 43mm</td>
<td></td>
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</tbody>
</table>

**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.
VeriShot™ Components

1. Locating Ring
2. Cap Screw M6 (metric option) or ¼ UNC (inch option)
3. Dowel Pin Ø6 x 20
4. Cap Screw M8 x 90
5. Striker Plate
6. Dowel Pin Ø5 x 28
7. Upper Manifold
8. Pin Locking Screw
9. Valve Pin
10. Wear Strip Top
11. O-Ring ID 79 x 3
12. Piston
13. O-Ring ID 100 x 3
14. O-Ring ID 79 x 3
15. O-Ring ID 115 x 3
16. O-Ring ID 5 x 1.5
17. Cylinder
18. Cap Screw M5 x 40
19. O-Ring ID 6 x 1.5
20. VeriShot™ Heater
21. Dowel Pin Ø5 x 28
22. Valve Pin Seal
23. Dowel Pin Ø3 x 12
24. FlowLoc™ Nozzle
25. Lower Manifold
26. Thermocouple
27. Button Cap Screw M4 x 8
28. Dowel Pin Ø6 x 20
29. Wear Strip Bottom
30. Valve Pin Adjustment Packers
31. Upper Manifold
FlowLoc™ Nozzle Components

1. Body
2. FlowLoc™ Heater
3. Thermocouple
4. Thermocouple Clip
5. Heater Cap
6. Circlip
7. Tip
8. Nut
**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:

Valve Pin Length (TX27) = 78.50 + L (nozzle) + 0.1
Valve Pin Length (TX19) = 78.25 + L (nozzle) + 0.1

L (nozzle) - See FlowLoc™ Technical Guide.

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**TX19 FlowLoc™ Nozzle**

**TX27 FlowLoc™ Nozzle**
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.

### Taper Valve Gate

<table>
<thead>
<tr>
<th>Description</th>
<th>D</th>
<th>d1</th>
<th>d2</th>
<th>AF</th>
<th>CP</th>
<th>AT</th>
<th>qT</th>
<th>HT</th>
</tr>
</thead>
<tbody>
<tr>
<td>VeriShot™ 3.0 x 250</td>
<td>3.0</td>
<td>2.2</td>
<td>2.15</td>
<td>2.75</td>
<td>8</td>
<td>2.2</td>
<td>1.2</td>
<td>2.5</td>
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<tr>
<td>VeriShot™ 5.0 x 350</td>
<td>5.0</td>
<td>3.5</td>
<td>3.45</td>
<td>4.65</td>
<td>10</td>
<td>3.5</td>
<td>2.0</td>
<td>3.0</td>
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</table>

### Parallel 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>VeriShot™ 3.0 x 250</td>
<td>3.0</td>
<td>2.192</td>
<td>2.0</td>
<td>2.75</td>
<td>8</td>
<td>2.205</td>
<td>0.8</td>
<td>2.5</td>
</tr>
<tr>
<td>VeriShot™ 5.0 x 350</td>
<td>5.0</td>
<td>3.492</td>
<td>2.5</td>
<td>4.65</td>
<td>10</td>
<td>3.505</td>
<td>1.3</td>
<td>3.0</td>
</tr>
</tbody>
</table>
**System Overview**

**VeriShot™ System**

**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:

- X19 – 180 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:

- 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

VeriShot™ System

System Overview

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 Ø3 × 12 28 for the correct positioning.

SIX

Fit the Valve Pin Adjustment Packers 9a, 9b and 9c 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 15. Fit the remaining Valve Pin Adjustment Packer 9d above the pin head. Secure the Piston 15 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 × 3 12 to the top of the Piston 15. Fit O-Ring ID 100 × 3 14 and Wear Strip Bottom 15 to the base of the Piston 15. Fit O-Ring ID 79 × 3 16 to the internal groove in the Piston 15.

EIGHT

Apply a generous amount of supplied silicone grease on all O-Rings and the Wear Strips. Insert the Piston 15 into the Cylinder 20. Apply gentle pressure to the Piston 13 to compress the seals so the Piston 15 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 22.

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 25 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 25. 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.....

FITTEEN

Fit O-Ring ID 115 x 3 15 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 Ø6 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**


**SEVENTEEN**

Bend the FlowLoc™ Heater [2] wiring down to enter the wiring slot in the mould plate. Align the slot in the Locating Ring [1] with the Dowel Pin Ø6 x 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 ¼ UNC (inch option) [2].
Bend the wiring up to fit into the wiring channel in the mould plate.
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.

Remove the Upper Manifold 7 using the M10 tapped hole.

Place the supplied Locking Screw Removal Jig A into position and tightened with the supplied M8 Cap Screws 3. This is to prevent the Piston 13 from turning when undoing the Pin Locking Screw 8 and potentially damaging the VeriShot™ Heater 24 wires.

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....

Minor Adjustment

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

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.

### FlowLoc™ 27 Series Nozzle

<table>
<thead>
<tr>
<th>Thickness (mm)</th>
<th>Serial Number</th>
<th>Drawing Reference</th>
</tr>
</thead>
<tbody>
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<td>2.00</td>
<td>60-062-420</td>
<td>1</td>
</tr>
<tr>
<td>2.10</td>
<td>60-062-421</td>
<td>2</td>
</tr>
<tr>
<td>2.20</td>
<td>60-062-422</td>
<td>3</td>
</tr>
<tr>
<td>2.30</td>
<td>60-062-423</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FlowLoc™ 19 Series Nozzle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness (mm)</td>
</tr>
<tr>
<td>2.25</td>
</tr>
<tr>
<td>2.35</td>
</tr>
<tr>
<td>2.45</td>
</tr>
<tr>
<td>2.55</td>
</tr>
</tbody>
</table>
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 7 x1 on top of the Valve Pin 10 and tighten the Pin Locking Screw 8 to 40Nm.

**EIGHT**

Remove the M8 Cap Screws 8 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 to 30Nm torque.
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