Actuators and Accessories
for Valve Gate Hot Runner Systems
### Product type

Components and accessories to be added to hot runner systems in order to use them as valve gate systems:

1. **Valve gate nozzle head for single nozzles**
   Nozzle head for single axis valve gate nozzles; inherent part of the nozzle which will always be delivered including the complete nozzle.

2. **Actuator, bolted to the manifold**
   Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

3. **Actuator, in mould plate**
   Actuator for manifold systems mounted in the mould plate. The actuator is cooled by the cooling system of the plate.

4. **Cooling unit for single axis valve gate nozzles**
   Without being directly cooled the available single axis valve gate nozzles can be used up to a mould temperature of 80°C. For higher temperatures the associated cooling unit has to be used.

5. **Needle position control**
   Add-on for hot runner systems with actuators HJC 4018M 02 which shows the end positions and the moving direction of the needles during production.

### Operation principle

<table>
<thead>
<tr>
<th>Nozzle head for single axis valve gate nozzles</th>
<th>Actuator, bolted on manifold</th>
<th>Actuator in mould plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNC CBNS</td>
<td>PNC 4010 01</td>
<td>LCP 4008 02</td>
</tr>
<tr>
<td>PNC GANS</td>
<td>PNC 7518M 01</td>
<td>LCP 8014 01</td>
</tr>
<tr>
<td>PNC GBNS</td>
<td>PNC 7518M 02</td>
<td></td>
</tr>
</tbody>
</table>

### Coolant unit for single axis valve gate nozzles

<table>
<thead>
<tr>
<th>Needle position control</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBCU for CB N ... S</td>
</tr>
<tr>
<td>GACU for GA N ... S</td>
</tr>
<tr>
<td>GBCU for GB N ... S</td>
</tr>
</tbody>
</table>
Nozzle head for single axis valve gate nozzles; inherent part of the nozzle which will always be delivered including the complete nozzle.

### Needle
- **Needle Ø**: Ø3.8 mm
- **Attachment**: anti-rotation
- **Adjustment**: ±1.5 mm via adjustment threads from outside

### Needle operation
- **Operation**: pneumatic
- **Operation pressure**: 6...10 bar
- **Flow rate**: 2.5 l/min
- **Reaction time**: 0.5 s
- **Needle stroke**: 8 mm
- **Closing force**: 792 N (6 bar)
- **Opening force**: 792 N (6 bar)
- **Connections**: M10x1
  - a) Closing
  - b) Opening

### Cooling
Without being directly cooled the nozzle can be used up to a mould temperature of 80°C. For higher temperatures the associated cooling unit has to be used.
Without being directly cooled the single axis valve gate nozzles CB N ... S can be used up to a mould temperature of 80°C. For higher temperatures the cooling unit shown here has to be used.

**Cooling**

- **Medium**: Cooling water
- **Flow rate**: 6 l/min
- **Temperature**: 30...60 °C
- **Connections**: M12x1.5 (max. 3 in a row)
Nozzle head for single axis valve gate nozzles; inherent part of the nozzle which will always be delivered including the complete nozzle.

**Needle**
- Needle Ø: 6 mm
- Attachment: anti-rotation
- Adjustment: ±1.5 mm via adjustment threads from outside

**Needle operation**
- Operation pressure: 6...10 bar
- Flow rate: 6 l/min
- Reaction time: 0.5 s
- Needle stroke: 13 mm
- Closing force: 2081 N (6 bar)
- Opening force: 2081 N (6 bar)
- Connections: M12x1.5

**Cooling**
Without being directly cooled the nozzle can be used up to a mould temperature of 80°C. For higher temperatures the associated cooling unit has to be used.

Illustrations simplified, schematically drawn and not to scale.
Without being directly cooled the single axis valve gate nozzles GA N ... S can be used up to a mould temperature of 80°C. For higher temperatures the cooling unit shown here has to be used.

**Cooling**

<table>
<thead>
<tr>
<th>Medium</th>
<th>Cooling water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>6 l/min</td>
</tr>
<tr>
<td>Temperature</td>
<td>30...60 °C</td>
</tr>
<tr>
<td>Connections</td>
<td>M12x1.5 (max. 3 in a row)</td>
</tr>
</tbody>
</table>

Illustrations simplified, schematically drawn and not to scale.
Nozzle head for single axis valve gate nozzles; inherent part of the nozzle which will always be delivered including the complete nozzle.

### Needle
- **Needle Ø**: Ø8 mm
- **Attachment**: anti-rotation
- **Adjustment**: ±1.5 mm via adjustment threads from outside

### Needle operation
- **Operation**: pneumatic
- **Operation pressure**: 6...10 bar
- **Flow rate**: 10 l/min
- **Reaction time**: 0.5 s
- **Needle stroke**: 14 mm
- **Closing force**: 3579 N (6 bar)
- **Opening force**: 3579 N (6 bar)
- **Connections**: M12x1.5
  - a) Closing
  - b) Opening

### Cooling
Without being directly cooled the nozzle can be used up to a mould temperature of 80°C. For higher temperatures the associated cooling unit has to be used.
Without being directly cooled the single axis valve gate nozzles GB N ... S can be used up to a mould temperature of 80°C. For higher temperatures the cooling unit shown here has to be used.

**Cooling**
- **Medium**: Cooling water
- **Flow rate**: 6 l/min
- **Temperature**: 30...60 °C
- **Connections**: M12x1.5 (max. 3 in a row)
Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

### Needle
- **Needle Ø**: Ø3.8 mm
- **Attachment**: quick coupling

### Needle operation
- **Operation**: pneumatic
- **Operation pressure**: 6...10 bar
- **Flow rate**: 2 l/min
- **Reaction time**: 0.5 s
- **Needle stroke**: 10 mm
- **Closing force**: 754 N (6 bar)
- **Opening force**: 635 N (6 bar)
- **Connections**: M10x1 / M12x1.5
  - a) Closing
  - b) Opening

### Cooling
- **Medium**: Cooling water
- **Flow rate**: 6 l/min
- **Temperature**: 30...60 °C
- **Connections**: M10x1 / M12x1.5
  - max. 3 actuators in a row
  - c) different positions
Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

**Needle**
- **Needle Ø**: Ø6 / Ø8 mm
- **Attachment**: quick coupling, anti-rotation
- **Adjustment**: ±1.5 mm via adjustment threads from outside

**Needle operation**
- **Operation**: pneumatic
- **Operation pressure**: 6...12 bar
- **Flow rate**: 12 l/min
- **Reaction time**: 0.5 s
- **Needle stroke**: 18 mm
- **Closing force**: 2651 N (6 bar)
- **Opening force**: 2401 N (6 bar)
- **Connections**: M12x1.5
  - a) Closing
  - b) Opening

**Cooling**
- **Medium**: Cooling water
- **Flow rate**: 6 l/min
- **Temperature**: 30...60 °C
- **Connections**: M12x1.5
  - max. 3 actuators in a row
  - c) different positions

We recommend to cool the actuator after the end of production for minimum 15 minutes to protect it against overheat due to heat flow from the manifold.
Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

**Needle**
- Needle Ø: Ø6 / Ø8 mm
- Attachment: quick coupling, anti-rotation
- Adjustment: ±1.5 mm via adjustment threads from outside

**Needle operation**
- Operation: pneumatic
- Operation pressure: 6...10 bar
- Flow rate: 20 l/min
- Reaction time: 0.5 s
- Needle stroke: 8 mm
- Closing force: 5474 N (6 bar)
- Opening force: 4824 N (6 bar)
- Connections: M12x1.5
  - a) Closing
  - b) Opening

**Cooling**
- Medium: Cooling water
- Flow rate: 6 l/min
- Temperature: 30...60 °C
- Connections: M12x1.5
  - max. 3 actuators in a row
  - c) different positions

We recommend to cool the actuator after the end of production for minimum 15 minutes to protect it against overheat due to heat flow from the manifold.

For design and application information, see the Synventive Hot Runner Guide.
Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

### Needle
<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle Ø</td>
<td>Ø3.8 mm</td>
</tr>
<tr>
<td>Attachment</td>
<td>quick coupling, anti-rotation</td>
</tr>
<tr>
<td>Adjustment</td>
<td>±1 mm</td>
</tr>
<tr>
<td></td>
<td>via adjustment threads from outside</td>
</tr>
</tbody>
</table>

### Needle operation
<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>hydraulic</td>
</tr>
<tr>
<td>Operation pressure</td>
<td>40...60 bar</td>
</tr>
<tr>
<td>Flow rate</td>
<td>1.5 l/min</td>
</tr>
<tr>
<td>Reaction time</td>
<td>0.2 s</td>
</tr>
<tr>
<td>Needle stroke</td>
<td>8 mm</td>
</tr>
<tr>
<td>Closing force</td>
<td>1964 N (40 bar)</td>
</tr>
<tr>
<td>Opening force</td>
<td>1512 N (40 bar)</td>
</tr>
<tr>
<td>Connections</td>
<td>M10x1</td>
</tr>
<tr>
<td></td>
<td>a) Closing</td>
</tr>
<tr>
<td></td>
<td>b) Opening</td>
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### Cooling
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<td>Connections</td>
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</tr>
<tr>
<td></td>
<td>max. 3 actuators in a row</td>
</tr>
<tr>
<td></td>
<td>c) different positions</td>
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We recommend to cool the actuator after the end of production for minimum 15 minutes to protect it against overheat due to heat flow from the manifold.
Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

**Needle**
- Needle Ø: Ø6 / Ø8 mm
- Attachment: quick coupling, anti-rotation
- Adjustment: ±1.5 mm via adjustment threads from outside

**Needle operation**
- Operation: hydraulic
- Operation pressure: 40...60 bar
- Flow rate: 3 l/min
- Reaction time: 0.5 s
- Needle stroke: 18 mm
- Closing force: 5027 N (40 bar)
- Opening force: 3365 N (40 bar)
- Connections: M12x1.5
  - a) Closing
  - b) Opening

**Cooling**
- Medium: Cooling water
- Flow rate: 6 l/min
- Temperature: 30...60 °C
- Connections: M12x1.5
  - max. 3 actuators in a row
  - c) different positions

We recommend to cool the actuator after the end of production for minimum 15 minutes to protect it against overheat due to heat flow from the manifold.
Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

The actuator is meant to be used together with the needle position control.

**Needle**
- Needle Ø: Ø6 / Ø8 mm
- Attachment: quick coupling, anti-rotation, via adjustment threads from outside

**Needle operation**
- Operation: hydraulic
- Operation pressure: 40...60 bar
- Flow rate: 3 l/min
- Reaction time: 0.5 s
- Needle stroke: 18 mm
- Closing force: 5027 N (40 bar)
- Opening force: 3365 N (40 bar)
- Connections: M12x1.5
  - a) Closing
  - b) Opening

**Cooling**
- Medium: Cooling water
- Flow rate: 6 l/min
- Temperature: 30...60 °C
- Connections: M12x1.5
  - max. 3 actuators in a row
  - c) different positions

We recommend to cool the actuator after the end of production for minimum 15 minutes to protect it against overheat due to heat flow from the manifold.
Actuator for manifold systems bolted to the manifold. There is a cooling plate between the actuator and the manifold in order to cool the actuator and to thermally separate it from the hot manifold surface.

This actuator has position sensors mounted to it because it is usually used with the online melt pressure control Dynamic Feed.

### Needle
- **Needle Ø**: Ø6 / Ø8 mm
- **Attachment**: quick coupling, anti-rotation
- **Adjustment**: ±1.5 mm via adjustment threads from outside

### Needle operation
- **Operation**: hydraulic
- **Operation pressure**: 120 bar
- **Flow rate**: 20 mm
- **Needle stroke**: 14100 N (120 bar)
- **Closing force**: 14100 N (120 bar)
- **Opening force**: M12x1.5
- **Connections**: a) Closing, b) Opening

### Cooling
- **Medium**: Cooling water
- **Flow rate**: 6 l/min
- **Temperature**: 30...60 °C
- **Connections**: M12x1.5
  - max. 3 actuators in a row
  - c) different positions

We recommend to cool the actuator after the end of production for 60 minutes at 30 °C to protect it against overheating due to heat flow from the manifold.

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For design and application information, see the Synventive Hot Runner Guide.
Actuator for manifold systems mounted in the back plate. The actuator is cooled by the cooling system in the plate.

**Needle**
- **Needle Ø**: Ø3.8 mm
- **Attachment**: head inside piston
- **Adjustment**: washers above and below needle head

**Needle operation**
- **Operation**: pneumatic
- **Operation pressure**: max. 6 bar
- **Flow rate**: 1.5 l/min
- **Reaction time**: 0.5 s
- **Needle stroke**: 8 mm
- **Closing force**: 754 N (6 bar)
- **Opening force**: 686 N (6 bar)
- **Connections**: Ø 4 mm
  - a) Closing
  - b) Opening

**Cooling**
- **Temperature**: max. 60 °C
Actuator for manifold systems mounted in the back plate. The actuator is cooled by the cooling system in the plate.

**Needle**
- Needle Ø: Ø6 mm
- Attachment: head inside piston
- Adjustment: washers above and below needle head

**Needle operation**
- Operation: pneumatic
- Operation pressure: max. 6 bar
- Flow rate: 10 l/min
- Reaction time: 0.5 s
- Needle stroke: 14 mm
- Closing force: 3016 N (6 bar)
- Opening force: 2788 N (6 bar)
- Connections: Ø 5 mm
  - a) Closing
  - b) Opening

**Cooling**
- Temperature: max. 60 °C
Actuator for manifold systems mounted in the back plate. The actuator is cooled by the cooling system in the plate.

**Needle**
- Needle Ø: Ø3.8 mm
- Attachment: head inside piston
- Adjustment: washers above and below needle head

**Needle operation**
- Operation: hydraulic
- Operation pressure: max. 40 bar
- Flow rate: 1.5 l/min
- Reaction time: 0.2 s
- Needle stroke: 8 mm
- Closing force: 1964 N (40 bar)
- Opening force: 1512 N (40 bar)
- Connections: Ø 5 mm
  - a) Closing
  - b) Opening

**Cooling**
- Temperature: max. 60 °C
Add-on for hot runner systems with actuators HCY 4018M 02 which shows the end positions and the moving direction of the needles during production.

1. Flow sensor RVM/U4/1S
Flow sensors are placed outside of the hot runner system on each hydraulic line to the actuators.

2. Connection box XP0601-01
All signal lines from the flow sensors are connected to the connection box. In total 6 actuators can be connected to one connection box.

3. Display module XP0602-01
All signals are conveyed by a connection cable to the display module where the end position and the moving direction of the needle are indicated by signal lamps.

4. Connection cable C30-275

5. Signal lamps

**End position**
- Green ➔ open
- Red ➔ closed

**Moving direction**
- Green, short glow ➔ needle is opening
- Green, permanent glow ➔ failure during opening
- Red, short glow ➔ needle is closing
- Red, permanent glow ➔ failure during closing
<table>
<thead>
<tr>
<th>Country</th>
<th>Phone Numbers</th>
<th>Email Addresses</th>
</tr>
</thead>
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<td>+61 3 9886 3475</td>
<td><a href="mailto:diepro@optusnet.com.au">diepro@optusnet.com.au</a></td>
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