### 10.1 Threaded Nozzles

#### 10.1.1 Nozzle 06E Series

**NOTICE**

Always tighten the screws to the torque specified in the respective table in section 13.

| WARNING |
|-----------------|-----------------|
| **Hot Surfaces Hazard** |
| Contact between the skin and hot surfaces could result in burns. |
| Use personal protective equipment, such as gloves, apron, sleeves and face protection, to guard against burns. |
| When servicing or handling the hot runner system outside the manifold plates or the injection molding machine, care must be taken to heed the hot surface exposure warnings. |
| For first aid contact your medical / safety representing. |

| **Hazard of Pressurized Air** |
| Pressurized air blow can result in hot plastic or foreign bodies entering the eyes, causing vision damage. |
| Use personal protective equipment: Face protection, hearing protection and gloves. |
| For first aid contact your medical / safety representing. |

**NOTICE**

| **Hazard of Material Damage** |
| Without consulting Synventive it is not permitted to do modifications to the hot runner system e.g. geometrical changes to the nozzle tip, except the part shape adjustment in the area of material allowance. |
In this section the nozzle parts are identified with the numbers indicated in the following figure.

**Parts of the Nozzle Nozzle 06E**

1. Nozzle body
2. Component Ring Version 01
3. Heating Element
4. Component Ring Version 02
5. Nozzle circlip
6. Tip
7. Wear Insert (Not shown)

![Doc006483.png](Doc006483.png)

In this section the Stripping and Mounting Tool parts are identified with the numbers indicated in the following figure.

**Parts of the Heater Stripping and Mounting Tool AT06E01**

(T1.1) Stop bolt ATCYL0104
(T1.2) Guide ATCYL0102
(T1.3) Slide hammer ATCYL0101
(T1.4) Adapter AT06E0101
(T1.5) Socket head cap screw M4

![Doc003038.png](Doc003038.png)
10.1.1.1 Dismounting and Mounting Thermocouple

**Dismounting Thermocouple**

**NOTICE**
For dismounting of the thermocouple from the nozzle heater, the nozzle heater must be dismantled from the nozzle.

1) Lift the thermocouple (3.1) at the retainer clip (a) out of the heating element (3) slot and pull it off the heating element.

**NOTICE**
The thermocouple (3.1) is clamped at the top of the heater element (3).
Mounting Thermocouple

**NOTICE**
For mounting of the thermocouple to the nozzle heater, the nozzle heater must be dismantled from the nozzle.

**Color coding of Thermocouples**

**NOTICE**
Take notice of the production and color identification of thermocouple cables.

Synventive uses J and K type thermocouples. Their color coding is given in the following table.

<table>
<thead>
<tr>
<th>Type</th>
<th>International standard IEC 584-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>Black + Black - White</td>
</tr>
<tr>
<td>K</td>
<td>Green + Green - White</td>
</tr>
</tbody>
</table>

1) Slide the thermocouple (3.1) in leadership of the heating element (3) until it stops.
2) Increase the pressure until the top of the thermocouple (3.1) completely is clamped in to the final position.
3) Check the position of the thermocouple (3.1).

4) Press the retainer clip (a) into the slot at the heating element (3).
10.1.1.2 Disassembly the Nozzle 06E

Disassembling the Nozzle Tip

1) Remove the circlip (5) from the nozzle tip (6).

2) Remove the component ring version 02(4).

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**WARNING**

Hot Surfaces Hazard

Following works must be carried out by qualified persons.

Use personal protective equipment, such as gloves, apron, sleeves and face protection, to guard against burns.

Contact between the skin and the hot nozzle could result in burns.

**NOTICE**

To dismount the nozzle tip from the nozzle, if there is plastic material in the nozzle, the tip must be heated-up.

Never use an acetylene or welding torch, as severe nozzle damage can occur from over-heating.

3) Heat the nozzle tip (2) using a heat gun to the maximum temperature of 200 °C (392 °F).

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**WARNING**

Hot Surfaces Hazard

The nozzle is still hot.

**NOTICE**

Unscrewing the nozzle tip may cause the nozzle to start rotating together with the nozzle tip, which could result in leakage at the base of the nozzle.

4) Hold the nozzle body (1) firmly using an engineer’s wrench at the hexagonal shape.

5) Unscrew the nozzle tip (6) from the nozzle body (1) using an engineer’s wrench.
H O T  
R U N N E R  
T E C H N O L O G Y

Hot Runner System Installation Guide

Service and Maintenance / Nozzle 06E Series

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**WARNING**

Hazard of Pressurized Air

Pressurized air blow can result in hot plastic parts or foreign bodies entering the eyes, causing vision damage.

6) Clean the nozzle tip using pressurized air to remove as much residual plastic as possible.

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Disassembling the Nozzle Heater

**WARNING**

Hot Surfaces Hazard

Contact between the skin and the hot nozzle could result in burns.

1) Cool the nozzle body to approximately 25 °C (77 °F).
2) Move the adapter of the dismantling tool (T1.4) over the heater.
3) Fix the heater with 2 socket head cap screws M4 (T1.5).
4) Screw the guide (T1.2) together with the stop bolt (T1.1) and the slide hammer (T1.3) into the adapter (T1.4).
5) To remove the nozzle heater, slide the hammer (T1.3) against the stop bolt (T1.1) repeatedly until the nozzle heater is released.

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Disassembling the Nozzle Body

**WARNING**

Hot Surfaces Hazard

Contact between the skin and the hot nozzle could result in burns.

1) Ensure that the nozzle body (1) is cooled to approximately 25 °C (77 °F).
2) Unscrew nozzle body from the manifold.
10.1.1.3 Assembling the Nozzle 06E

**WARNING**

**Hot Surfaces Hazard**

Contact between the skin and the hot nozzle could result in burns.

Use personal protective equipment: Gloves resistant to high temperatures, apron, sleeves, to guard against burns.

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**Nozzle 06E**

1. Nozzle body
2. Component Ring Version 01
3. Heating Element
4. Component Ring Version 02
5. Nozzle circlip
6. Tip
7. Wear Insert (Not shown)
Assembling the Nozzle Body

1) Apply spotting ink on the nozzle body (1) bottom surface (SF1).
2) Screw in the nozzle body (1) hand-tight into the manifold thread until seated.
3) Unscrew the nozzle body (1) from the manifold.

4) Check the matching between the manifold bottom surfaces (SF2) and the nozzle body (1) surface (SF1).

   **NOTICE**
   
   The manifold must bear on all surfaces uniformly and flatly, in particular on the nozzle head contact face.
   
   In case of any uncertainty, clean the surfaces with a cleaning cloth. If the next ink test is still unsatisfactory, please - contact Synventive Customer Service or Technical Support.

5) With a positive ink test clean the surfaces and proceed to the next step.

6) Lubricate the thread (not the face) of the nozzle body with high-temperature assembly paste (antiseize compound).

   **NOTICE**
   
   This is an important measure to prevent thread corrosion due to aggressive gases, which could be released during plastics processing.

7) Tighten nozzle body to manifold.

   **NOTICE**
   
   Use torque wrench with wrench insert and the torque specified in the respective table in section 13.
Assembling the Nozzle Heater to the Nozzle

1) Add component ring (2) (when used)

**NOTICE**
This component ring version 01 is an option (depend of the nozzle length). The high can be between 1 mm until 20 mm.

2) Mount heater top on top to nozzle body carefully with soft-head hammer and adapter (T1.4).

**NOTICE**
The adapter has to be turned in the pictured position.

3) Control the position of the heater.

**NOTICE**
To ensure the temperature control of the nozzle tip, the heater must be flush with the nozzle body.
Assembling the Nozzle Tip

1) Apply spotting ink on the nozzle tip bottom surface (SF1).
2) Screw in the nozzle tip hand-tight into the nozzle body until seated.
3) Unscrew the nozzle tip from the nozzle body.

4) Check the matching between the nozzle body surface (SF2) and the nozzle tip surface (SF1).

**NOTICE**
The nozzle must bear uniformly on the outer surfaces uniformly and flatly, in particular on the nozzle tip contact face.

**NOTICE**
In case of any uncertainty, clean the surfaces with a cleaning cloth. If the next ink test is still unsatisfactory - please contact Synventive Customer Service or Technical Support.

5) With a positive ink test, clean the surfaces and proceed to the next step.

6) Lubricate the thread (not the face) of the nozzle tip body with high-temperature assembly paste (antiseize compound).

**NOTICE**
This is an important measure to prevent thread corrosion due to aggressive gases, which could be released during plastics processing.

7) Screw in the nozzle tip into the nozzle body hand-tight.
8) Tighten the nozzle tip to nozzle at room temperature.

**NOTICE**
Use torque wrench with wrench insert and the torque specified in the respective table in section 13.

9) Place the component ring version 02 (4) on the nozzle heating (3).

10) Mount the circlip (5) at the nozzle tip (6).