10.1.2 Nozzle 09E-02 Series

**NOTICE**

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

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**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.

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**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.

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**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.
Parts of the Nozzle 09E-02
(1) Threaded nozzle body
(2) Nozzle heater
(2.1) Thermocouple
(Part No. 09NC-T-####-####-0)#
(3) Nozzle component ring version=4
for Brass Heater
(4) Nozzle component ring version=2
(Heater locating ring)
(5) Retaining ring DIN471
(6) Socket set screw DIN914
(7.1) Nozzle Tip Style Complete
(7.1.1) Tip nut
(7.1.2) Tip insert alternatively
nozzle tip assemblies
(7.2.x) Valve gate pin (not shown)

Heater Disassembly Tool Compl. 09E AT09E03
(T1.1) Heater Disassembly Tool 09E Type 01 AT09E0301
(T1.2) Heater Disassembly Tool 09E Type 02 AT09E0302
(T1.3) Heater Disassembly Tool 09E Type 03 AT09E0303
10.1.2.1 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) Lever the bracket of the heating element (2) with a screwdriver and pull the thermocouple (2.1) from its seat.
2) Pull the top of the thermocouple (2.1) from the bracket of the nozzle heater (2).

**NOTICE**
The thermocouple is pressed in.

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.
Syntive 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</td>
</tr>
<tr>
<td>K</td>
<td>Green</td>
</tr>
</tbody>
</table>

1) Push the thermocouple (2.1) under the bracket on the nozzle heater (2).

**NOTICE**
The fixing is needed to secure the position.
A thermocouple (well-fixed in the holder) causes correct measured values.

2) Lever the clamp of the nozzle heater with a screwdriver and fix the thermocouple (2.1) below the clamp at the nozzle heater (2).
10.1.2.2 Disassembly the Nozzle 09E-02

Disassembling the Nozzle Heater

1) Remove the retaining ring (5) from the nozzle tip (7.1).
2) Remove the nozzle component ring - Frontring (3).
3) Unscrew and remove the socket set screw (6) from the nozzle heater locating ring (4).

4) Mount the heater disassembly tool Type 01 (T1.1).

**NOTICE**
The lower edge of the heater removal tool type 01 (T1.1) must be set below the heater locating ring (4).

5) Slide disassembly tool Type 02 (T1.2) along the disassembly tool Type 03 (T1.3).
6) Screw disassembly tool Type 03 (T1.3) onto disassembly tool Type 01 (T1.1).
7) To remove the nozzle heater (2), slide the disassembly tool Type 02 (T1.2) against the disassembly tool Type 03 (T1.3) repeatedly until the nozzle heater (2) is released.

Disassembling the Nozzle Tip and Nozzle Body

**WARNING**

Hot Surfaces Hazard

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

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.

1) Heat the nozzle tip (7.1) using a heat gun to the maximum temperature of 200 °C (392 °F).

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

3) Unscrew the nozzle tip (7.1) from the nozzle body (1) using a ring wrench.

**WARNING**

Hazard of Pressurized Air

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

Use personal protective equipment: Face protection, hearing protection and gloves.

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

**NOTICE**

To dismount the nozzle tip (7.1) from the nozzle, if there is plastic material in the nozzle, the tip (7.1) must be heated-up.

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

Hot Surfaces Hazard

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

5) Cool the nozzle body (1) to approximately 25 °C (77 °F).
6) Unscrew nozzle body (1) from the manifold.

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**Assembling Nozzle 09E-02**

**Parts of the Nozzle 09E-02**

1) Threaded nozzle body
2) Nozzle heater
2.1) Thermocouple  
   (Part No. 09NC-T-####-####-0#)
3) Nozzle component ring version=4  
   (front ring – Part No. 09nc-r-04) for  
   Brass Heater
4) Nozzle component ring version=2  
   (Heater locating ring)
5) Retaining ring DIN471
6) Socket set screw DIN914
7.1) Nozzle Tip Style Complete  
   7.1.1) Tip nut  
   7.1.2) Tip insert alternatively nozzle  
   tip assemblies  
   7.2.x) Valve gate pin (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 (1) to the manifold.

   **NOTICE**
   
   Use torque wrench with wrench insert and the torque specified in the torque table in section 13.
8) Slide heater locating, ring (4), onto the nozzle body (1) up to the surface of the hexagon.

**NOTICE**
The opening of the heater locating ring (4), must be line up with the cable connections (see customer drawing).

9) Bend the heater and thermocouple (ex) leads.

**NOTICE**
Use round-nosed pliers only.

10) Mount the nozzle heater (2) onto the nozzle (1).

**NOTICE**
Take care that cold length of the nozzle heater (2) must be positioned through the opening of the nozzle component ring (4).
Check the correct position and fixation of the thermocouple (TC).

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**Assembling the Nozzle Tip**

See examples of good and incorrect insert installations.

Make sure the insert must not exceed the height of the nozzle tip head.
Incorrect items should not be further processed.
1) Apply spotting ink on the nozzle tip (7.1) bottom surface (SF1).
2) Screw in the nozzle tip (7.1) hand-tight into the nozzle body (1) until seated.
3) Unscrew the nozzle tip (7.1) from the nozzle body (1).

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) Tighten the nozzle tip (7.1) at the nozzle by room temperature.

**NOTICE**

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

8) Place the frontring (3) on the nozzle heater (2).

9) Mount the retaining ring (5) at the nozzle tip (7.1).

10) Move the nozzle component ring (4) and nozzle heater (2) tight to the frontring (3).

11) Fix the nozzle component ring (4) with the socket set screw (6) by a ½ up to ¾ turn.