4.3 Installation of HR Systems with Support Ring Nozzles (APT)

**WARNING**

**Heavy Weight Hazard**

Transport and lifting equipment should be operated only by trained personnel.

Operate lifting and transport equipment slowly and carefully to avoid uncontrolled swinging of the manifold.

Lifting and transport equipment for lifting Hot Runner Systems shall be approved and properly rated taking into account the weight and size of the manifold.

When unpacking the Hot Runner System, there is a risk of injury due to falling parts and sharp edges. Maintain a minimum distance of 1 m from the Hot Runner System.

Use personal protective equipment, such as head gear, safety shoes and work 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.

Move the Hot Runner System only up or down at room temperature 20 °C (68 °F).

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

Depending on system complexity, some Synventive Hot Runners will include special assembly notes and instructions, which will be included on the system general assembly drawing.

The following pages use numbers for the individual parts of the Hot Runner System based on the figure on this page.

![Parts of the Hot Runner System with Support Ring Nozzles](Doc003019.png)

- (1) Thrust pad
- (2) Nozzle tip
- (3) Center locator
- (4) Positioning dowel
- (5) Cavity plate *
- (6) Clamping plate *
- (7) Spacer plate *

* Not included in delivery
4.3.1 Support Ring Nozzle Installation

1) Clean the nozzle cutout and remove metal chips if necessary.
2) Confirm that the nozzle cutouts match the hot runner general assembly drawing.

**NOTICE**

The nozzle should have contact only on the sealing diameter of the nozzle tips and the face and diameter of the support ring.

The nozzle assembly should not make any other contact with the mold.

3) Confirm the diameter and depth of the support ring counterbores and positioning dowel (4) holes.

4) Confirm that positioning dowel locations match the hot runner and the customer drawing.

**NOTICE**

These positioning dowels (4) locate the manifold and control the direction of thermal expansion.
5) Carefully slide the nozzles into the nozzle cutouts in the tool. Each nozzle is numbered.

**NOTICE**

Check the general assembly drawing for the correct location of each nozzle.

**NOTICE**

Pay careful attention not to pinch the heater and thermocouple wires. These wires will exit through the slot in the cavity plate under the support ring.

6) Once all nozzles have been installed measure the height that the face of each nozzle protrudes from the cavity plate using a depth gauge.

**NOTICE**

All nozzles should be within 0.1 mm (.004") of each other.

7) Install the positioning dowels (4) into the cavity plate (5).

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**WARNING**

Heavy Weight Hazard

8) Without the nozzle sealing rings in place, and using the lift holes provided, carefully lower the manifold onto the nozzles and dowels.
9) Measure the distance between the face of the thrust pads (1) and the top of the spacer plate (7).

10) Confirm with the general assembly drawing that there is the correct amount of cold gap or preload.

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![Doc003112.png](Doc003112.png)

**WARNING**

Heavy Weight Hazard

11) Carefully lift the manifold off the dowels and nozzles.

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![Doc003113.png](Doc003113.png)

12) Check to see if there are any loose heaters or thermocouples that need to be installed onto the hot runner system.

**NOTICE**

If a heater or thermocouple needs to be installed, label the end of the wires with the correct zone number.

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![Doc003114.png](Doc003114.png)

13) Insert the new sealing rings in the seal ring groove on each nozzle face.

**NOTICE**

Verify that the sealing rings always stand slightly proud above the nozzle head contact face upon first insertion.
14) Using lift holes provided on the manifold, carefully lower the hot runner system into the mold.

**NOTICE**
Pay special attention to any wiring underneath or on the side of the hot runner manifold so no wires are pinched or crushed during installation.

Be careful not to dislodge the seal rings.

**NOTICE**
It is often helpful, using non flammable tape, to tape any loose wires to the manifold prior to dropping the hot runner into the mold.

15) Install the clamping plate (6).

**NOTICE**
Be careful not to pinch or trap any wires or other components.
4.3.2 For non pre-wired Systems

**DANGER**

**Danger to Life by Electric Shock**

Serious personal injury or death can result from electrical contact.

Power supply should only be connected by properly trained and qualified personnel.

Verify that all power source connections are properly grounded (proceed as described in section 5.2).

For first aid contact your medical / safety representing.

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1) Run all the wiring through wire slots in the cavity plate out to the location of the wiring box.

**NOTICE**

Allow enough wire length for a service loop, which will allow the connectors to be removed from the terminal box without removing the wiring.

2) Re-label the wires before cutting to length.

3) If wire lengths are excessive, trim wires to proper length.

4) It may be necessary to re-label the zone numbers if the original numbers are on the length of wire being removed.

5) Connect wires to power and thermocouple connectors.

**NOTICE**

The manner in which they connect is dependent on the electrical connectors being used.

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4.3.3 For pre-wired Systems

**DANGER**

This terminal box contains components with electrical potential, if it is connected to voltage.

Do not open this housing.

**NOTICE**

Removal of the Synventive label external and internal will void the warranty.