







10.2 Nozzles (APT)


NOTICE

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

WARNING

	<p>Hot Surfaces Hazard</p> <p>Contact between the skin and hot surfaces could result in burns.</p> <p>Use personal protective equipment, such as gloves, apron, sleeves and face protection, to guard against burns.</p> <p>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.</p> <p>For first aid contact your medical / safety representing.</p>	
	<p>Hazard of Pressurized Air</p> <p>Pressurized air blow can result in hot plastic or foreign bodies entering the eyes, causing vision damage.</p> <p>Following work must be carried out by qualified and experienced persons.</p> <p>Use personal protective equipment: Face protection, hearing protection and gloves.</p>	

NOTICE

	<p>Hazard of Material Damage</p> <p>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.</p>	
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10.2.1 Replacing Nozzle Tips, Inserts and Nozzle Tip Seals (APT)

10.2.1.1 Dismounting of the Nozzle parts

Removing the Nozzle Tip

NOTICE

The Removal of the nozzle tip should be done at room temperature 20 °C (68 °F).

Abb. 1

- 1) Unscrew the nozzle tip with a six point deep socket wrench and the split wrench if applicable.



Hot Surfaces Hazard

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

- 2) If the nozzle tip is frozen, heat the Hot Runner System up to operating temperature and unscrew the nozzle tip.

- 3) Remove the plastic from the seal and from the inside sealing diameter on the nozzle tip.

NOTICE

Do not damage the seal.

Abb.2



Removing the Nozzle Tip Seal

- 1) The nozzle tip has to be removed before removal of the seal.

Abb.3

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- 2) Ensure no plastic has leaked past the seal.
 - 3) Ensure no scratches or dents on the outside diameter of the insert.

NOTICE

Abb.4

Thermal operation of the gate may be adversely affected by any damage or plastic leakage.

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- 4) Gently remove the damaged seal by lifting it out using pliers.

NOTICE

Abb.5

To avoid scratching the insert with pliers, only contact the seal not the insert.

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- 5) If the insert is damaged, ascertain the cause and resolve it.

NOTICE

Abb.6

If this is not possible please contact our Synventive Customer Service or Technical Support.



Removing the Tip Insert

The BeCu (Beryllium Copper) insert should only be removed if it is going to be replaced by a new one.

NOTICE



Hazard of Material Damage

After renewed installation of an insert the optimum heat transfer can not be.

After disassembly of an insert do not install it a second time.

Do not drill deeper as described in the table below (thread depth) otherwise the nozzle can get damaged.

- 1) Counterbore the insert with a drill for depth of 10 mm and tap a thread into it. Determine the drill size from the table below.

Abb.7

- 2) After the insert is tapped, thread in a rod.
- 3) Place the insert removal tool over the rod.

NOTICE

Abb.8

The rod has to be so long that it dominates the insert removal tool.

- 4) Place the insert removal tool over the rod.
- 5) Using a nut, screw the nut against the removal tool to pull out the insert.

Abb.9



10.2.1.2 Installing Nozzle Tips, Inserts and Nozzle Tip Seals (APT)

Installing the Tip Insert

- 1) Clean all plastic from the insert counter bore and from the insert press diameter.
- 2) Measure the insert counter bore diameter and the insert press diameter.

Abb. 10

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- 3) The diameter of the insert must be minimum 0,013 mm (0.0005") – 0,030 mm (0.0012") bigger than the diameter of the insert counter bore.

NOTICE

Abb. 11

This is necessary to ensure proper heat transfer to the insert.

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- 4) The insert must be pressed so that the insert shoulder is flush with the nozzle tip seat +/- 0.005 mm (+/- 0.0002").

NOTICE

Abb. 12

This is achieved by using the insert installation tool with a small arbor press.



Installing the Nozzle Tip Seal

NOTICE

The seal has to be installed into the nozzle tip before the nozzle tip gets installed into the nozzle.

- 1) Make sure the area where the seal seats are smooth and free of plastic. *Abb. 13*

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- 2) Inspect the seal when replacing the nozzle tip.

NOTICE

No plastic should have leaked past the seal, and there should be no scratches or dents on the outside diameter of the insert. Thermal operation of the gate may be adversely affected by any damage or plastic leakage.

Abb. 14

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- 3) Use a special installation tool to install the new seal.

NOTICE

This tool is available when a new seal is factory installed or when ordering a complete new insert.

Abb. 15

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- 4) You must first place the new seal over the installation tool so the groove on the seal fits over the ribbing on the tool.

Abb. 16

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- 5) Set the bushing vertically in a light arbor press and slide down to seat the seal on the insert shoulder.
 - 6) Remove the tool and verify seal is seated properly.

Abb. 17



Installing the Nozzle Tip

NOTICE**Hazard of Material Damage**

While spotting ink the nozzle tip the seal has not yet to be installed into the nozzle tip also do not use high-temperature assembly paste.

The seal and the high-temperature assembly paste have to be applied after the spotting ink of the nozzle tip.

Before installing the nozzle tip ensure the seal is installed into the nozzle tip.

- 1) Using spotting paste, check if the nozzle tip properly bears on the insert press diameter.

NOTICE

Proceed as described in 3) and 4).

Abb. 18

Note the nozzle tip seal has not yet to be installed into the nozzle tip.

Do not use high-temperature assembly paste.

- 2) Install the seal (see "Installing the Nozzle Tip Seal").

Abb. 19 Insert the seal

- 3) Screw the nozzle tip into the nozzle as follows.

NOTICE

Use high-temperature assembly paste for the thread.

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



- 4) Screw the nozzle tip into the nozzle with a six point deep socket wrench and the split wrench.

NOTICE

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

Abb.20 Screw the nozzle tip into the nozzle

10.2.1.3 Nozzle Tip Insert Removal (SR16)

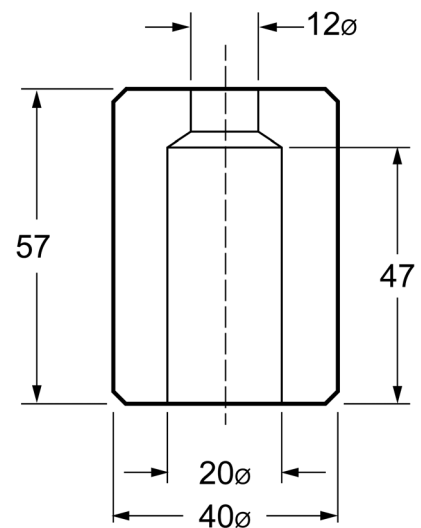
Example of SR16 nozzle tip insert removal.

NOTICE

The conductive BeCu insert should only be removed if it is to be replaced by a new insert. Reinstallation of the same insert may affect the heat transfer from the steel body to the BeCu insert.

- 1) Using an $\varnothing 8.9$ mm drill, machine into the center of the insert for a depth of 15 mm.
- 2) Add a thread into the borehole, using a M10 tap.
- 3) After the insert is tapped, thread in an M10 rod (a).
- 4) Place the insert removal tool over the M10 rod.

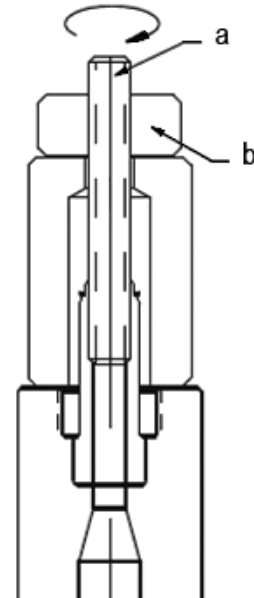
Insert removal tool - Doc003272



Doc003272.png



- 5) Using a M10 nut (b), thread the nut against the removal tool to pull out the insert.



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NOTICE**Hazard of Material Damage**

Do not exceed thread depth of nozzle tip insert or damage to the nozzle will occur.

Table 8: Thread depth

Thread depth			
Nozzle Style	Recommended drill diameter	Depth	Tap
SR-16	8.9 mm (0,35")	15 mm (0,59")	M10
SR-20	8.9 mm (0,35")	15 mm (0,59")	M10
SR-24	11.1 mm (0,44")	15 mm (0,59")	M12
Thread depth for D-2 Inserts			
SR-16	8.9 mm (0,35")	15 mm (0,59")	M10
SR-20	10.2 mm (0,4")	20 mm (0,79")	M12 x 1.75
SR-24	14 mm (0,55")	20 mm (0,79")	M16 x 2