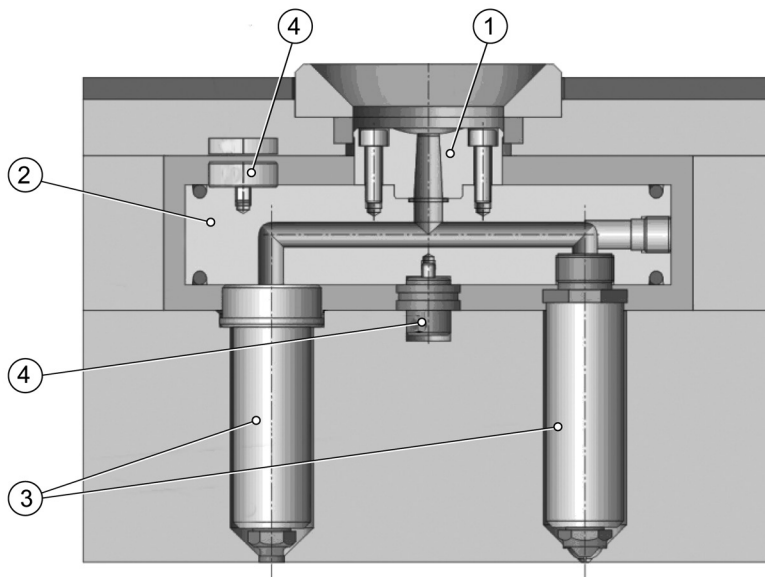




Product Description

2 Product Description

Synventive Hot Runner Systems are temperature-controlled runner systems (230V) installed in injection molds for melt distribution and generally for plastics manufacturing optimization.



Doc003085.png

Synventive Hot Runner Systems generally comprise an:

- (1) Inlet bushing
- (2) Manifold
- (3) Nozzles
- (4) System support elements

NOTICE

These essential parts can be optionally supplemented with meltflow control, connections, hot halves and temperature controllers, depending on type or application.



Product Description

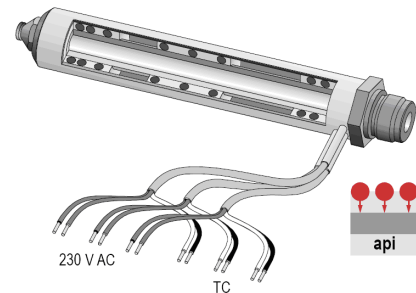
2.1 Nozzle Types

There are three types of Synventive hot runner nozzles which can be heated in two ways.

- Sprue bushings
- Support ring nozzles
- Threaded nozzles

2.1.1 API heating

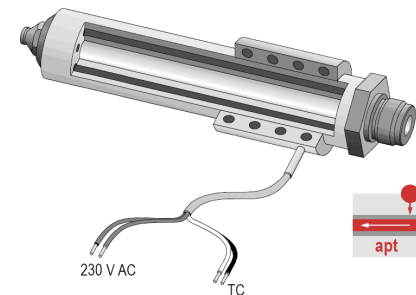
API nozzles are heated from outside through one or more heating zones with the corresponding power distribution. These zones are placed in multiple points along flow path so as to provide an optimum energy amount to the specific sections, thus ensuring a homogeneous temperature profile.



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2.1.2 APT heating

APT nozzles are heated from outside using a single zone. Heat pipes are located parallel to the flow channel; through active energy transfer and distribution from the respective thermal source, these pipes ensure a homogeneous temperature profile along flow path. A heater is usually incorporated, depending on application specifics.

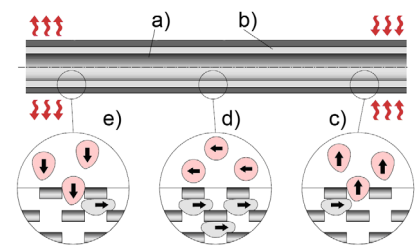


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2.1.2.1 Heat pipe operation

The heat pipe comprises of a vacuum cut out (a) with a capillary structure (b) inside. Heat transfer inside this pipe is ensured by circulation provided by evaporation, vapor expansion, vapor condensation and condensate backflow due to capillary forces.

- c) Energy intake through evaporation
- d) Vapor expansion in the direction of lower pressure
- e) Heat transfer through condensation



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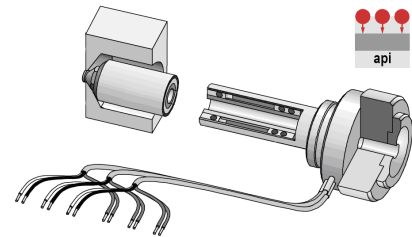


Product Description

2.1.3 Sprue Bushing Nozzles

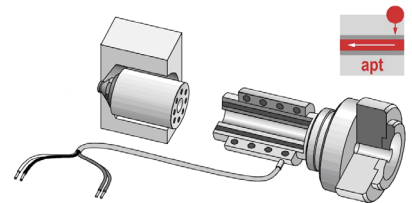
Single nozzles are hot runner nozzles with the inlet bushing directly mounted on the nozzle head. These nozzles are therefore also called heated inlet bushings or heated sprue bushings.

Sprue Bushing, API type



Doc003089.png

Sprue Bushing, APT type

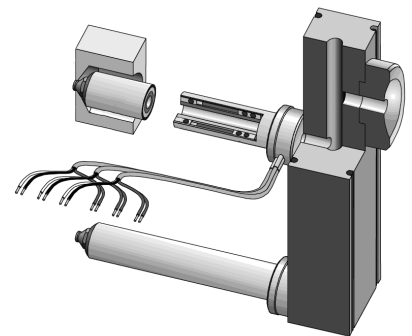


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2.1.4 Support Ring Nozzles

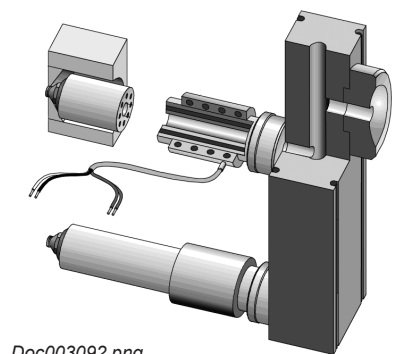
Support ring nozzles are hot runner nozzles mounted to manifolds by pressing the face of the nozzle head to the bottom surface of the manifold, the connection being such that during heating, the expanding manifold can “slide” on the nozzle heads.

Support ring nozzles, API type



Doc003091.png

Support ring fit nozzles, APT type



Doc003092.png

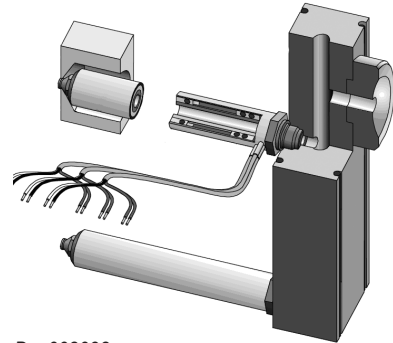


Product Description

2.1.5 Threaded Nozzles

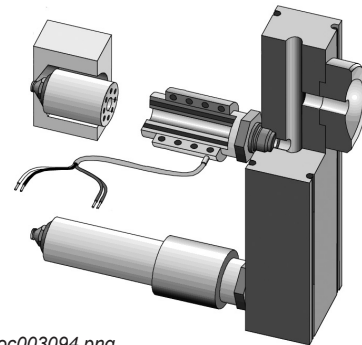
Threaded nozzles are hot runner nozzles screwed into the manifold.

Threaded nozzles , API type



Doc003093.png

Threaded nozzles , APT type – Doc003094.png



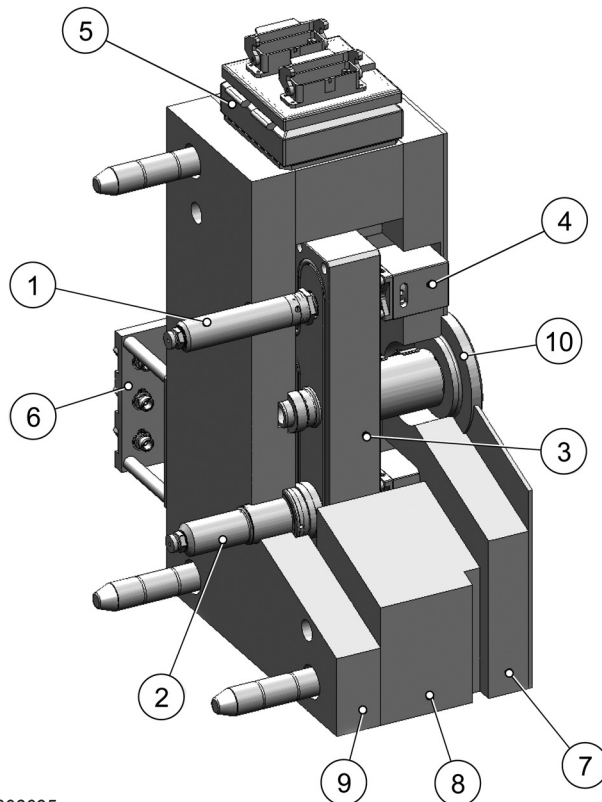
Doc003094.png



Product Description

2.2 Hot Half

Synventive can also supply Hot Runner Systems as a complete hot half. Hot half is a preliminary stage for the fixed mold half and, as such, is supplied inclusive of the respective plates. The plates are fitted with cables and, if applicable, hose connections (hydraulics and pneumatics, if applicable), fully mounted and ready for assembly. Hot halves are designed and built to the customer's mold specifications.



Doc003095.png

Components

- (1) Threaded nozzle
- (2) Support ring nozzle
- (3) Manifold
- (4) Valve gate actuator
- (5) Connection box (electricity)
- (6) Hose connections
- (7) Clamping plate
- (8) Spacer plate
- (9) Cavity plate
- (10) Inlet bushing