The configurator for hot runner moulds from Meusburger offers numerous advantages that not only save time but also reduce costs. The complete mould base including hot runner manifold can be customised with just a few clicks and shipped shortly thereafter in just one order.

Product in focus: ‘Hot runner moulds’:
www.meusburger.com/hot-runner-moulds

E 4500 Hot runner manifold: is delivered completely machined and assembled
FH 63 Manifold plate: is delivered including milled recesses for the manifold
With our standardised hot runner moulds, you have the choice between three different manifold series.

**IMT1**
DEFGECTION MANIFOLD WITH 1 NOZZLE
Possible hole pattern (A):
min. 37.5 mm  
max. 206.25 mm

**IMT2**
IN-LINE MANIFOLD WITH 2 NOZZLES
Possible hole pattern (A):
min. 25.0 mm  
max. 206.25 mm

**CMT4**
CROSS MANIFOLD WITH 4 NOZZLES
Possible hole pattern (A):
min. 35.5 mm  
max. 220.5 mm
E 4500 HOT RUNNER MANIFOLD, DESIGN
THE COMPONENTS IN DETAIL

E 4010:  
smartFILL MANIFOLD NOZZLE
» Including E 400 RA / E 400 RC / E 400 RE / E 400 RG nozzle tip
» Heater with 230 V, cable length 2000 mm
» With integrated thermocouple type J, Fe-CuNi, DIN 43710, black+/white-
» Max. injection pressure: 1800 bar

E 4100:  
HOT RUNNER SPRUE BUSH
» With integrated thermocouple type J, Fe-CuNi, DIN 43710, black+/white-
» Heater with 230 V, cable length 2000 mm

E 450001:  
MANIFOLD
» Available in material grades 1.2311 / 1.2316 depending on the plastic used

E 450002:  
PIPE HEATING
» Power: 700 - 2800 W, depending on manifold size

E 450003:  
CENTRING PIECE
» Positions the manifold in the mould centre opposite the sprue bush

E 450004:  
90° BENT THERMOCOUPLE
» Fe-CuNi (type J)
» Thermocouple with kink protection spring
» Connector length 5000 mm

E 450007:  
PROTECTIVE CONDUCTOR
» Connector length 2500 mm

E 450009:  
HEATER CONNECTION, COMPLETE
CONNECTOR CLAMP
» Allows a screwable connection of the electrical supply lines to any pipe heater
» Two clamping options are provided on each connector clamp, so that by attaching a ‘bridge’ the pipe heater can be connected in parallel directly at the heating outlet
CONNECTING CABLE
» 2.5 mm² pure nickel cable, with glass fibre insulation, 4-fold up to 300°C

E 450010:  
SPACER AND SCREW SET
» For the correct position and for screwing in the manifold

E 1300:  
ANTI-ROTATION PROTECTION
» Dowel pin with Ø 6 mm
PRODUCT FEATURES OF THE E 4010 smartFILL MANIFOLD NOZZLE

1. INNOVATIVE HEATING TECHNOLOGY
   » Optimal heat transfer into the plastic used
   » Homogeneous temperature profile on the entire nozzle length through differentiated power distribution
   » Easy and fast change of heater and thermocouple due to intelligent clip lock

2. STREAMLINED MELT CHANNEL WITH HIGH-QUALITY SURFACE
   » Optimal melt exchange since there are no dead spots
   » Low shear stress of the melt
   » Good colour changing qualities

3. DIFFERENT GATE TYPES
   » Flexible adjustment of the nozzle to different applications and materials
   » Easily exchangeable, highly wear-resistant nozzle tips
   » Consistent nozzle lengths (l dimension) for different types of gates

4. TORPEDO FOR OPTIMAL FLOW PROPERTIES
   » The partitioning and re-merging of the melt take place in the hot area of the nozzle
   » Reduces the development of flow lines
   » Improves the optical and mechanical quality of the part
The FH 63 Manifold plate is automatically created by entering the parameters in the configurator. Width and length can be selected by the user, the thickness is generated automatically. Mould sizes from 196 196 - 796 1196 can be selected. The 3D model already has the appropriate recesses for the manifold. Furthermore, three different material grades are available.

- Material heat-treated for stress relief
- Milled recess for manifold
- Integrated recesses for marking chips
- Integrated temperature regulation
- Thickness precisely ground

Plastic marking chips can be used for identifying the temperature regulation components.
A COMPLETE HOT RUNNER MOULD IN JUST A FEW CLICKS
The configurator for hot runner moulds is the optimal tool for all designers. With just a few clicks, you get the complete mould base including the hot runner manifold in the usual high quality. Of course, the 3D data is available for download as usual. The advantages are plain to see. The designer can concentrate on other matters during the mould design and thus saves valuable time and costs.

YOUR BENEFITS AT A GLANCE:
- Easy and fast configuration of the hot runner mould
- High flexibility through individually adjustable nozzle positions
- Live display of the manifold and 3D data immediately available
- Transparent costs due to immediate price display
- Short lead times of the configured components
The configurator for hot runner moulds can be easily opened via the ‘FH’ button in the web shop.

In the first step, the number of nozzles and the manifold type are determined.
In the next step, the plastic to be processed and the shot weight of the component are entered. Depending on the version, the material for the manifold can be selected.

The position of the manifold in the manifold plate can be defined by entering the X and Y coordinates of the feed point or by entering the nozzle distance and the angle.

The next step is to enter the various parameters such as the radius of the sprue bush (R), the thickness of the clamping plate (S) and the nozzle protrusion length (T).

The thickness of the manifold plate (S) and the nozzle length (l) are automatically calculated on the basis of these inputs.
Now the nozzle tip is selected.

For the correct gate type, the information from the PDF can be used (from page 16).

The next step is to select the desired mould size.

The dynamic display of the mould size optimally shows the manifold plate relative to the manifold. In case of doubt, the next larger or smaller mould size can be selected.
Finally, you get to the familiar mould bases wizard where you can select the material of the manifold plate and the rest of the plates and components required to complete your mould base.

In this step, the temperature regulation system can be configured.

The cooling connectors, sealing plugs, and possible recesses for the E 2030 Marking chips can now be selected.

NOTE:
An automatically generated standard temperature regulation system is only possible if the angle (W) entered in step 3 is 0°, 90°, 180° or 270°.
The CAD data is transferred via CADClick. 3D data for all common CAD systems can be generated.

For special solutions please get in touch with your contact person at Meusburger.
GUIDING ELEMENTS
The guiding elements are automatically selected in the appropriate diameters and lengths and are shown in the correct position in the 3D model.

ELECTRICAL COMPONENTS
Suitable electrical components can be directly ordered from the shop. 3D data is also available here. This enables the designer to integrate all components in the design and to keep an eye on the dimensions.

profiTEMP+ HOT RUNNER CONTROLLER
With both innovative technology and space-saving design, the profiTEMP+ Hot runner controller from PSG is sure to impress. In addition to new intelligent functions like Smart Power Limitation (SPL) and MoldCheck, the tried and trusted features are further developed in the new hot runner controller. Due to the clearly designed 7” multi-touch screen, easy and intuitive operation is guaranteed.

DELIVERY
The hot runner manifold is completely assembled and tested. The mould base for the hot runner mould is not pre-assembled, as in its standard version. This offers the advantage of saving valuable time by not having to take it apart. The components are then available much faster for subsequent machining.
### 4 DIFFERENT NOZZLE TIPS FOR THE RIGHT GATE TYPE

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Features</th>
</tr>
</thead>
</table>
| E 400 RA | Nozzle tip, smartFILL ring gate, plunging | » For direct gating or gating through cold runner  
» Suitable for all thermoplastics with a medium to narrow processing window, including filler material and reinforcing fillers  
» Highly wear-resistant, interchangeable torpedo and nozzle head |
| E 400 RC | Nozzle tip, smartFILL ring gate, plunging with calotte | » Sprue scrap remains recessed 1 mm in the calotte  
» For direct gating or gating through cold runner  
» Suitable for all thermoplastics with a medium to narrow processing window, including filler material and reinforcing fillers  
» Highly wear-resistant, interchangeable torpedo and nozzle head |
| E 400 RE | Nozzle tip, smartFILL ring gate, plunging with extension | » With extension on nozzle head  
» Gating to free-form surfaces  
» Adjustment to the product’s geometry  
» Sprue scrap with scrap cone  
» Suitable for all thermoplastics with a medium to narrow processing window, including filler material and reinforcing fillers  
» Highly wear-resistant, interchangeable torpedo and nozzle head |
| E 400 RG | Nozzle tip, smartFILL ring gate | » Good thermal separation from the mould by plastic isolation  
» For direct gating or gating through cold runner  
» Suitable for all thermoplastics with a medium to narrow processing window, including filler material and reinforcing fillers  
» Highly wear-resistant, interchangeable torpedo and nozzle head |

All of the subsequent data is general recommendations based on our calculations and many years of experience. We do not guarantee the accuracy of the information, as our products are only one part of the production process. For unclear or difficult cases, please contact us.
# SELECTING THE CORRECT GATE TYPE

## GATE TYPES

| Material | PE | PP | PET (1) | PBT (1) | PPO (4) | PA6 | PA6.6 (1) | POM-Co | POM-H | PMMA | ABS | SAN | PS (SB) | PC | PES | PEI | SMA | PC/ABS | PC/PBT | PP-EPDM | TPE-S | TPE-U | TPE-O |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| semi crystalline | + + + + + + + | + + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + |
| amorphous | + + + + + + + | + + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + |
| blend | + + + + + + + | + + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + |
| elastomers | + + + + + + + | + + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + | ++ + + + + + + |

### Material suitability:
- ++ well suited
- + suitable
- - not suitable

### Material additives:
- A without additives
- B glass fibre
- C flame retardant

- (1) Recommended minimum gate diameter = 1.2mm
- (4) No Noryl GTX
- (5) Insulating cap recommended

## SHOT WEIGHT PER NOZZLE [G]

<table>
<thead>
<tr>
<th>Gate types</th>
<th>low viscosity ( \eta (T=300,\text{s}^{-1}) &lt; 60,\text{Pa},\text{s} )</th>
<th>medium viscosity ( \eta (T=300,\text{s}^{-1}) = (60-150),\text{Pa},\text{s} )</th>
<th>high viscosity ( \eta (T=300,\text{s}^{-1}) &gt; 150,\text{Pa},\text{s} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE, PP, PS, TPE-O</td>
<td>min. [g]</td>
<td>max. [g]</td>
<td>min. [g]</td>
</tr>
<tr>
<td>E 400 RA</td>
<td>3</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>E 400 RC</td>
<td>3</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>E 400 RE</td>
<td>3</td>
<td>70</td>
<td>3</td>
</tr>
<tr>
<td>E 400 RG</td>
<td>3</td>
<td>70</td>
<td>3</td>
</tr>
</tbody>
</table>

The maximum shot weight is reduced by about 20% for reinforced and filled plastics with more than 20% filler content.
**THERMOPLASTICS GROUPS**

<table>
<thead>
<tr>
<th>Group 1</th>
<th>PP</th>
<th>Polypropylene</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PA</td>
<td>Polyamide</td>
</tr>
<tr>
<td></td>
<td>TPE-S</td>
<td>Styrene-based thermoplastic elastomer</td>
</tr>
<tr>
<td></td>
<td>TPE-O (TPO)</td>
<td>Olefin-based thermoplastic elastomers</td>
</tr>
<tr>
<td>Group 2</td>
<td>PBT</td>
<td>Polybutylene terephthalate</td>
</tr>
<tr>
<td></td>
<td>PET</td>
<td>Polytethylene terephthalate</td>
</tr>
<tr>
<td></td>
<td>PES</td>
<td>Polytethersulfone</td>
</tr>
<tr>
<td>Group 3</td>
<td>PSU</td>
<td>Polysulfone</td>
</tr>
<tr>
<td></td>
<td>ABS</td>
<td>Acrylonitrile butadiene styrene copolymer</td>
</tr>
<tr>
<td></td>
<td>PS</td>
<td>Polystyrene</td>
</tr>
<tr>
<td></td>
<td>PE</td>
<td>Polyethylene</td>
</tr>
<tr>
<td></td>
<td>PP/EPDM</td>
<td>Polypropylene-ethylene propylene diene blend</td>
</tr>
<tr>
<td></td>
<td>SEBS</td>
<td>Styrene-ethylene/butylene-styrene blend</td>
</tr>
<tr>
<td>Group 4</td>
<td>PC</td>
<td>Polycarbonate</td>
</tr>
<tr>
<td></td>
<td>PC/PBT</td>
<td>Polycarbonate/polybutylene terephthalate blend</td>
</tr>
<tr>
<td></td>
<td>PC/ABS</td>
<td>Polycarbonate/acrylonitrile butadiene styrene blend</td>
</tr>
<tr>
<td></td>
<td>SMA</td>
<td>Styrene maleic acid anhydride</td>
</tr>
<tr>
<td></td>
<td>TPE-U (TPU)</td>
<td>Urethane-based thermoplastic elastomers</td>
</tr>
<tr>
<td></td>
<td>PMMA</td>
<td>Polymethyl methacrylate</td>
</tr>
<tr>
<td></td>
<td>PEI</td>
<td>Polytetherimide</td>
</tr>
<tr>
<td></td>
<td>SAN</td>
<td>Styrene acrylonitrile</td>
</tr>
<tr>
<td></td>
<td>ASA</td>
<td>Acrylic-styrene-acrylonitrile</td>
</tr>
<tr>
<td></td>
<td>PPS</td>
<td>Polyphenylene sulphide</td>
</tr>
<tr>
<td></td>
<td>PPO</td>
<td>Polyphenylene oxide</td>
</tr>
<tr>
<td>Group 5</td>
<td>POM-C</td>
<td>Polyoxyethylene copolymer</td>
</tr>
<tr>
<td>Group 6</td>
<td>POM-H</td>
<td>Polyoxyethylene homopolymer</td>
</tr>
<tr>
<td></td>
<td>TPE-U (TPU)</td>
<td>Urethane-based thermoplastic elastomers</td>
</tr>
<tr>
<td></td>
<td>PVC-soft</td>
<td>Polyvinyl chloride, soft</td>
</tr>
</tbody>
</table>

**GATE DIAMETER: E 4010/27...**

- Example for 50g PC, E 400 RA Nozzle tip
- Result: Ø2.20 mm
- Selected for direct gating 2.0 mm (standard)
- Selected for gating through cold runner 3.0 mm (standard)
DETERMINING THE GATE DIAMETER:

The vestige quality is influenced by many factors such as: gate diameter, wall thickness, plastic type, volume flow, part weight, temperature regulation / cooling in the gate area. Gate diameters that are too small cause an inadmissibly high shear, high loss of pressure and high frictional heating. If the gate diameters selected are too large, this results in inadmissibly high and poor-quality vestige.

RULE:

DIRECT GATING:

» Gate selection according to the graphic, taking the plastic type into consideration

GATING THROUGH COLD RUNNER:

» Gate diameter as large as possible (about 0.5 mm to 1 mm larger; take into consideration stringing and drooling)

The information on the dimensioning of the gate diameter includes only general recommendations, which are based on our calculations and extensive experience. We do not guarantee the accuracy of the information, as our products are only one part of a complex production process. For unclear or difficult cases, please contact us.
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