NEW Patented Design!

The Integrally Heated Sprue Bushing is uniquely designed for high performance and reliability for direct gating applications, even with the most demanding molding cycles and plastic resins. The product’s advanced heat transfer capability is attributed to its integrally heated design, resulting in a more uniform heat profile.

A replaceable thermocouple is strategically located near the melt flow channel to optimize processing conditions with all thermoplastics.

FEATURES & BENEFITS:

- Distributed watt density... maintains a more uniform heat profile.
- High refractory insulation... provides superior heat transfer.
- Streamlined flow channel... minimizes pressure loss.
- Fully sealed construction... maintains highest product reliability.
- High-grade alloy steel construction... increases durability and longer life.
- Replaceable thermocouple... allows for Type "J" or "K".

Tip Styles & Flow Diagrams

Sprue Tip Extra Stock Sprue Tip

Direct Gating Diagram

Insulating Washer Locating Ring

Wire Channel Power & T/C Bushing Leads

Water Line
Integrally Heated Sprue Bushings

The D-M-E Integrally Heated Sprue Bushing is an exclusive medium volume bushing with the ability to process a wide range of resins. Its streamlined flow channel terminates in a reverse taper gate, providing minimal pressure loss and allowing for rapid gate freeze. The formation of a small gate stub on the part or runner results in a machine hold-time reduction, with no increase in sink marks on the part.

The Sprue Bushing’s superior heat transfer capacity is attributed to its integrally heated design. To optimize processing conditions for all thermoplastics, a replaceable thermocouple is strategically located near the flow channel.

The Integrally Heated Sprue Bushing has a .187” flow diameter, and is offered in two head styles and two gate styles to suit a broad range of applications.

Gating Options for Sprue Bushings

Sprue Gate
Suitable for most applications, the Sprue Gate is provided as standard on the Heated Sprue Bushing. (Please note that this gate style is not intended for machining.) The press fit areas are held to ± .0005”.

Extra Stock Sprue Gate
The Extra Stock Sprue Gate is available for applications requiring machining of the gate area for runner profiles, part contours, or adjustment of the bushing height. The .750” diameter bushing has .500” of extra stock. The press fit areas are held to ± .0005”.

Head Options for Sprue Bushings

.500” Radius*
Provided with a 0.500” radius to mate with 0.500” radius machine nozzles. Reinforced contact area for improved strength and heat transfer.

.750” Radius*
Provided with a 0.750” radius to mate with 0.750” radius machine nozzles. Reinforced contact area for improved strength and heat transfer.

*Other radii are available by special request.

Gating Options Gate Diameters

<table>
<thead>
<tr>
<th>Gating Options</th>
<th>Gate Diameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprue</td>
<td>.080” to .125” max. (2mm to 3.2mm* max.)</td>
</tr>
<tr>
<td>Extra Stock Sprue</td>
<td>.080” to .125” max. (2mm to 3.2mm* max.)</td>
</tr>
</tbody>
</table>

* Re-machine gate diameter, if necessary, for larger shot weights. Maintain gate angle and remove all machine marks.

.750” Series Maximum Shot Weights (0.080” Gate)

<table>
<thead>
<tr>
<th>Gating Options</th>
<th>Resin Viscosity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprue</td>
<td>High</td>
</tr>
<tr>
<td>Extra Stock Sprue</td>
<td>50g</td>
</tr>
</tbody>
</table>

Contact D-M-E when exceeding minimum shot weight.

.750” Series Resin Compatibility

<table>
<thead>
<tr>
<th>Gating Options</th>
<th>Commodity Resin</th>
<th>Engineering Resin</th>
<th>Glass-Filled Resin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprue</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Extra Stock Sprue</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

= Recommended

Reference: High Viscosity = Melt Flow (0.02 – 6); Medium Viscosity = Melt Flow (7 – 15); Low Viscosity = Melt Flow (16 – up). The values expressed in grams are for reference purposes only. Part dimensions, wall thickness, mold condition, and molding parameters must also be considered.
Head Options

.500 Radius Style

.750 Radius Style

Gating Options / Bushing Dimensions

Sprue Gate

Extra Stock Sprue Gate

* Dimensions include extra length.
** This surface cannot be machined, modified or altered.
*** Maximum machining stock; only this area can be machined.

Dimensions are in inches; millimeters are in parentheses. Note: For additional gate dimensions see page 3
## Integrally Heated Sprue Bushings
### .750” SERIES SPECIFICATIONS

<table>
<thead>
<tr>
<th>Gate Style</th>
<th>L Dim.</th>
<th>L2 Dim.</th>
<th>.500 Radius Head</th>
<th>.750 Radius Head</th>
<th>Watts</th>
<th>Thermocouple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sprue</td>
<td>2.375”</td>
<td>1.500”</td>
<td>SB031000</td>
<td>SB031001</td>
<td>315</td>
<td>MT020020</td>
</tr>
<tr>
<td></td>
<td>2.875”</td>
<td>2.000”</td>
<td>SB031008</td>
<td>SB031009</td>
<td>370</td>
<td>MT020020</td>
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<tr>
<td></td>
<td>3.375”</td>
<td>2.500”</td>
<td>SB031016</td>
<td>SB031017</td>
<td>425</td>
<td>MT020020</td>
</tr>
<tr>
<td></td>
<td>3.875”</td>
<td>3.000”</td>
<td>SB031024</td>
<td>SB031025</td>
<td>480</td>
<td>MT020020</td>
</tr>
<tr>
<td></td>
<td>4.375”</td>
<td>3.500”</td>
<td>SB031032</td>
<td>SB031033</td>
<td>535</td>
<td>MT020021</td>
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<tr>
<td>Extra Stock Sprue</td>
<td>2.875”</td>
<td>2.000”</td>
<td>SB031004</td>
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<td>SB031036</td>
<td>SB031037</td>
<td>535</td>
<td>MT020021</td>
</tr>
</tbody>
</table>

All specifications are subject to change without notification. Dimensions are in inches; millimeters are in parentheses.

*Standard Lead exit – 60” (1.52m) Teflon wrap - 600 volt leads; right angle lead exit; and 6” (15.2cm) stainless steel, square-lock armored cable.

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### Mold Power-Thermocouple Input Connector

A Single-Zone Power-Thermocouple Input Connector is available for mounting in or on the mold to accept the power-thermocouple cable from the mainframe. The water-resistant connector has an integral retaining latch for a secure cable connection and numbered screw-type terminals for power and thermocouple lead wires.

*Can be mounted on top of mold

### Armored Mold Power-Thermocouple Cables

Single-Zone Mold Power-Thermocouple Cables are constructed of special lead wire for use in high temperature environments, and are available to connect the mainframe to the input connector on the mold. Available in lengths of 10 or 20 feet. Integral retaining latches on the mainframe and mold connections provide secure cable connections. Connector configurations ensure proper insertion of cable.

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For complete information on temperature controls, please see D-M-E Control Systems Catalog.
### Integrally Heated Sprue Bushings

#### .750” SERIES

#### Integrally Heated HSB

### .750” Series Bore & Gate Dimensions

**Insulating Washer Specifications**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Top</th>
<th>Bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>O.D.</td>
<td>.750”</td>
<td>.750”</td>
</tr>
<tr>
<td>I.D.</td>
<td>.750”</td>
<td>.750”</td>
</tr>
<tr>
<td>Thickness</td>
<td>.125</td>
<td>.125</td>
</tr>
</tbody>
</table>

Note: Insulating Washers are not required, but are recommended for high temperature applications.

**Insulating Washer Option**

**Standard Bore**

**Thermal Expansion (Exp.) Formulas**

Exp. in = $L_2$ in. × $6.88 \times 10^{-6} \times (\text{Processing Temp.} – 70^\circ F)$

Exp. mm = $L_2$ mm × $13 \times 10^{-6} \times (\text{Processing Temp.} – 21^\circ C)$

Ref: $10^{-6} = 0.000001$

All specifications are subject to change without notification.

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**Sprue Gate**

**Extra Stock Sprue Gate**

**Bore & Gate Tolerances**

<table>
<thead>
<tr>
<th>Tol. “a” Table</th>
<th>Tol. “b” Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>in: + 0.0005</td>
<td>in: + 0.0010</td>
</tr>
<tr>
<td>mm: + 0.01</td>
<td>mm: + 0.02</td>
</tr>
</tbody>
</table>

Dimensions are inches. Millimeters are in parentheses.
**Integrally Heated Sprue Bushings**

**.750” SERIES**

### Operating & Servicing Instructions
The Integrally Heated Sprue Bushing bodies are identical in design, but differ in length and head style. All Sprue Bushings feature an integrated heater; Type “J” thermocouple; 60” Teflon wrap - 600 volt leads; right angle lead exit; and 6” stainless steel, square-lock armored cable.

### Start-Up/Operating Procedures
If the temperature controller does not utilize “soft start” technology, set the controller to 200°F (93.3°C) in automatic mode or 10% in manual mode. Allow bushing to “soak” for 15 minutes before increasing to processing temperature. This step will allow the unit to dissipate potential moisture and prolong heater life.

### Power Requirements
- 240 Volts AC – 15 amp fuse
- Grounding – Integrally Heated Bushings utilize the direct contact of the bushing, mold plates, and machine platens to establish a path for grounding.

*WARNING*
There must be a ground present between the mold “hot half” and the temperature control system or damage may occur to the bushing, thermocouple and/or temperature control system.

### Locating Ring Dimensions

<table>
<thead>
<tr>
<th>ITEM Number</th>
<th>L.R.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ML010012</td>
<td>3.990” (101.3mm)</td>
</tr>
</tbody>
</table>

For 5/16 - 18 SHCS (2 places)

### Machining Options for Keying
- .75 R min. (19.1mm) - Dowel Pin
- .83 R min.* (21.1mm) - Socket Head Cap Screw

*Centerline for #10 Screw

Dimensions are in inches; millimeters are in parentheses.