The new **Polyshot Heated Sprue Bushing** product line was developed to address the precision injection molder’s need to process both engineered and commodity resins. Polyshot’s unique construction features a single heater, with a thermocouple sensing directly at the point of melt/freeze with a hardened tool steel body.

The profile wound single heater is encased in a removable, tapered stainless steel sleeve. All wires are routed through the top clamp plate to shield them from the molding process, which guarantees them long life.
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General Information

The Polyshot bushing length will be shorter at room temperature than when at operating temperature, due to thermal expansion. Heated length will be +.000 to -.010 from stated dimensions. More exact length requirements can easily be achieved by machining material off the contact surface of the collar face.

For a non-standard “A” length to be finished by Polyshot, specify the special “A” length.

For a non-standard “A” length to be modified in the field by the customer, order the Polyshot Bushing with the “blank collar #109” in place of the standard collar.

The heaters in the Polyshot Bushing will operate at 208–240 single phase volts AC only.

Because the Polyshot Bushing controls temperature by sensing directly at the point of melt/freeze, the settings on the controller (Firebox) will be approximately 120 F° cooler than the nozzle on the molding machine.

All dimensions are in inches. Metric Polyshot bushings are available upon request.

All Polyshot Heated Sprue Bushing drawings are available via FAX at no charge. Consult Polyshot for further information.
Available Polyshot Tip Styles

**P, PR-Microbushing .3750” Diameter**
Pinpoint, Pinpoint w/Ring

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This tip style uses a pinpoint gate design to allow the absolute minimum gate vestige possible. In the “P” configuration, the gate well area is machined directly into the mold cavity by the mold maker. In the “PR” configuration, a gate interface cap is threaded on to the end of the bushing, which allows for installation through a .7500” diameter reamed hole in the mold cavity. The “PR” configuration is used where a “ring” witness mark is acceptable. Both configurations feature a field replaceable tip, constructed with a very highly thermally conductive material.

**F, FR-075S-C Series .7500” Diameter**
Full Flow, Full Flow w/Ring

Page 10

This tip style is used where maximum material flow is desired while at the same time keeping the gate vestige to a minimum. The gate vestige height will be approximately 1.5 times the gate diameter. In the “F” configuration, the gate well area is machined directly into the mold cavity by the mold maker. In the “FR” configuration, a gate interface cap is threaded on to the end of the bushing, which allows for installation through a .7500” diameter reamed hole in the mold cavity. The “FR” configuration is used where a “ring” witness mark is acceptable. Both configurations feature a field replaceable tip, constructed with a very highly thermally conductive material.

**Conan-Microbushing .3750” Diameter**
With or Without Ring

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The Conan bushing was specifically designed to mold very small parts, using glass filled LCPs. It is used extensively in the injection molding of high precision electrical connectors. It will run at sub six second cycles with no drooling, stringing or freeze-offs. It is most often used by gating into a runner. The gate vestige height will be approximately 1.5 times the gate diameter.

**G-075S-C Series .7500” Diameter**
General Purpose

Page 15

This tip style uses a thin reverse taper sprue design. It is often used when gating into a runner or parts where the sprue is not of concern. It is very effective with filled resins. The resulting sprue is approximately 3/8” long and weighs less than one half of a gram.
P, PL, PR-100-C Series 1.0000" Diameter
Pinpoint, Pinpoint w/Ring

This tip style uses a pinpoint gate design to allow the absolute minimum gate vestige possible. In the “P” configuration, the gate well area is machined directly into the mold cavity by the mold maker. In the “PR” configuration, a gate interface cap is threaded on to the end of the bushing, which allows for installation through a 1.0000” diameter reamed hole in the mold cavity. The “PR” configuration is used where a “ring” witness mark is acceptable. Both configurations feature a field replaceable tip, constructed with a very highly thermally conductive material.

F, FR-100-C Series 1.0000" Diameter
Full Flow, Full Flow w/Ring

This tip style is used where maximum material flow is desired while at the same time keeping the gate vestige to a minimum. The gate vestige height will be approximately 1.5 times the gate diameter. In the “F” configuration, the gate well area is machined directly into the mold cavity by the mold maker. In the “FR” configuration, a gate interface cap is threaded on to the end of the bushing, which allows for installation through a 1.0000” diameter reamed hole in the mold cavity. The “FR” configuration is used where a “ring” witness mark is acceptable. Both configurations feature a field replaceable tip, constructed with a very highly thermally conductive material.

G-100-C Series 1.0000" Diameter
General Purpose

The Conan bushing was specifically designed to mold very small parts, using glass filled LCPs. It is used extensively in the injection molding of high precision electrical connectors. It will run at sub six second cycles with no drooling, stringing or freeze-offs. It is most often used by gating into a runner. The gate vestige height will be approximately 1.5 times the gate diameter.

F, FR-1.500 Series 1.5000" Diameter
Full Flow, Full Flow w/Ring

This nozzle is used for molding large parts, such as business machine housings, recreational vehicle components, and large automotive parts. It is used for gating into runners and directly into molded parts when the gate vestige is not critical. The gate vestige is approximately 1.5 times the gate diameter.

In the “F” configuration, the mold maker machines the gate well area directly into the mold cavity. In the “FR” configuration, a gate interface cap is pressed on to the end of the bushing, which allows for installation through a 1.5000” diameter reamed hole in the mold cavity. The “FR” configuration is used where a “ring” witness mark is acceptable. The standard main flow channel through the F, FR-1.5000 bushing is .5000” diameter.
The **Polyshot Microbushing** was designed to be installed in small molds such as those used in the **Nissei HM7** injection molding machine and others. Its small size and flow path makes it very well suited to the very small shot sizes used in these applications.

Polyshot P-Microbushing is installed into a gate well detail machined in the “A” half of the mold by the mold maker. This bushing can also be fitted with a PR Gate Interface Cap, to allow installation into a .625” diameter hole machined in the “A” half of the mold. The PR configuration will leave a slight “ring” witness mark if gated directly into the part surface.
To order a Polyshot P, PR-Microbushing Series Heated Sprue Bushing, specify these items:
1. The bushing part number.
2. The molding machine nozzle radius size: (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.

<table>
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<tr>
<th>Gate Ø</th>
<th>Gage Dimension</th>
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</tbody>
</table>
The **Conan Version of the Microbushing** will allow the molding of very small electrical connectors and the like, with materials glass filled LCPs andnylons. It is most often used to gate into a cold runner system, which feeds parts through a sub-gate system.

It can be installed directly into the mold with the mold maker machining the gate well detail into the cavity. It can also be furnished with a Conan R gate interface cap to allow installation into a .625 diameter gate machined into the “A” half of the mold. The Conan R configuration will leave a slight “ring” witness line if gated directly into a molded part surface.

<table>
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<tbody>
<tr>
<td>Conan-Micro-001</td>
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<tr>
<td>Conan-Micro-001</td>
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<tr>
<td>Conan-Micro-001</td>
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</table>
To order a **Polyshot Conan Microbushing Heated Sprue Bushing**, specify these items:

1. The bushing part number.
2. The molding machine nozzle radius size: 
   - (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.

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</table>
The **Polyshot P-075S-C Bushing** is installed into a gate well detail machined in the “A” half of the mold by the mold maker. This bushing can also be fitted with a PR Gate Interface Cap, to allow installation into a .7500" diameter hole machined in the “A” half of the mold. The PR configuration will leave a slight “ring” witness mark if gated directly into the part surface.

<table>
<thead>
<tr>
<th>Model Number</th>
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</tr>
<tr>
<td>P or PR-075S-C-006</td>
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</tbody>
</table>
To order a **Polyshot P, PR-075S-C Series Heated Sprue Bushing**, specify these items:
1. The bushing part number.
2. The molding machine nozzle radius size: (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.

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</table>
The Polyshot F-0755-C Bushing is installed into a gate well detail machined into the “A” half of the mold by the mold maker. This bushing can also be fitted with an FR gate interface cap, to allow installation into a .7500” diameter hole machined into the “A” half of the mold. The FR configuration will leave a slight “ring” witness line if gated directly into the part surface.

<table>
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<tr>
<td>F or FR-075S-C-006</td>
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</table>
To order a **Polyshot F, FR-075S-C Series Heated Sprue Bushing**, specify these items:

1. The bushing part number.
2. The molding machine nozzle radius size: (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.

### Gate Ø Gage Dimension

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</table>
Polyshot Conan-C Bushings were designed to mold very small electrical connectors molded in glass filled LCPs. The Conan bushing is most often used to gate into a runner system, which feeds parts through a sub-gate system. It is available in .7500" or 1.0000" diameters with or without a machined in runner.

It is installed into a reamed hole machined into the “A” half of the mold. The Conan bushing will leave a slight “ring” witness line if gated directly into the part surface.

To order a Polyshot Conan-C Series Heated Sprue Bushing, specify these items:
1. The bushing part number.
2. The bushing end diameter: .7500" or 1.0000"
3. The molding machine nozzle radius size:
   (1/2" or 3/4")
4. The material to be processed.
5. A general part description.
6. The approximate part weight in grams.
7. If a runner is required, a sketch must be provided.

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Heated &quot;A&quot; Length</th>
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<td>Conan-C-006</td>
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To Avoid Electrical Hazards, We Recommend That The Wires Exit The Mold At The Top When Hung In The Press.
Polyshot G-075S-C Bushings are installed into a .7500" diameter hole machined in the “A” half of the mold. This bushing is also a direct replacement for existing molds that have been constructed with a cold sprue bushing.

This bushing also allows a runner to be machined by Polyshot into the face of the bushing in any configuration, with a maximum radius size of .2500".

To order a Polyshot G-075S-C Series Heated Sprue Bushing, specify these items:

1. The bushing part number.
2. The molding machine nozzle radius size: 
   (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.
6. If a runner is required, a sketch must be provided.
**Polyshot P-100-C Bushings** are installed into a gate well detail machined into the “A” half of the mold by the mold maker. This bushing can also be fitted with a PR gate interface cap, to allow installation into a 1.0000” diameter hole machined into the “A” half of the mold. The PR configuration will leave a slight “ring” witness line if gated directly into the part surface.

To order a **Polyshot P, PR-100-C Series Heated Sprue Bushing**, specify these items:
1. The bushing part number.
2. The molding machine nozzle radius size: (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.

### Model Number | Heated “A” Length
--- | ---
P or PR-100-C-001 | .875
P or PR-100-C-002 | 1.375
P or PR-100-C-003 | 1.875
P or PR-100-C-004 | 2.375
P or PR-100-C-005 | 2.875
P or PR-100-C-006 | 3.375
P or PR-100-C-007 | 3.875
P or PR-100-C-008 | 4.375
P or PR-100-C-009 | 4.875
## P-100 and PL-100 Gate Well Detail

### P-100

![Gate Well Detail Diagram](image)

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### PL-100

![Gate Well Detail Diagram](image)

<table>
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</table>
Polyshot F-100-C Bushings are installed into a gate well detail machined into the “A” half of the mold by the mold maker. This bushing can also be fitted with an FR gate interface cap, to allow installation into a 1.0000" diameter hole machined into the “A” half of the mold. The FR configuration will leave a slight “ring” witness line if gated directly into the part surface.

<table>
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<tr>
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<th>Heated “A” Length</th>
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<tbody>
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<td>F or FR-100-C-002</td>
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<tr>
<td>F or FR-100-C-009</td>
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</table>
F-100 Gate Well Detail

To order a **Polyshot F, FR-100-C Series Heated Sprue Bushing**, specify these items:

1. The bushing part number.
2. The molding machine nozzle radius size: (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.
**Polyshot G-100-C Bushings** are installed into a 1.0000" diameter hole machined into the “A” half of the mold. This bushing is also a direct replacement for existing molds that have been constructed with a cold sprue bushing.

This bushing also allows a runner to be machined into the face of the bushing by Polyshot in any configuration, with a maximum radius size of .2500".

To order a **Polyshot G-100-C Series Heated Sprue Bushing**, specify these items:

1. The bushing part number.
2. The molding machine nozzle radius size:
   - (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.
6. If a runner is required, a sketch must be provided.

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Heated “A” Length</th>
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<tbody>
<tr>
<td>G-100-C-001</td>
<td>.875</td>
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<tr>
<td>G-100-C-002</td>
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<tr>
<td>G-100-C-003</td>
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<td>G-100-C-004</td>
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<td>G-100-C-005</td>
<td>2.875</td>
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<tr>
<td>G-100-C-006</td>
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<tr>
<td>G-100-C-007</td>
<td>3.875</td>
</tr>
<tr>
<td>G-100-C-008</td>
<td>4.375</td>
</tr>
</tbody>
</table>
**Polyshot F, FR-1.5000" Diameter**

**HEATED SPRUE BUSHINGS**

**Polyshot F, FR-1.5000 Bushings** are installed into a 1.5000" diameter hole machined into the "A" half of the mold. This bushing is designed for molding large parts (up to 4 pounds) where the gate vestige is not critical. It is commonly used for gating into runners and the rear of cabinetry, etc.

This bushing also allows a runner or cavity surface to be machined into the face of the bushing. When gating into a runner, the maximum radius size is .7500".

To order a **Polyshot F, FR-1.5000 Series Heated Sprue Bushing**, specify these items:

1. The bushing part number.
2. The molding machine nozzle radius size: (1/2" or 3/4")
3. The material to be processed.
4. A general part description.
5. The approximate part weight in grams.
6. If a runner is required, a sketch must be provided.
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The **Polyshot Multitip System** is designed to allow precision injection molders additional flexibility in the design, manufacture, and operation of their molds. The Multitip module can be used as a stand alone unit or it can be mated to a Polyshot Hot Runner Manifold to create 8, 16, 32, etc. cavity molds.

The Multitip module is a fully self-contained hot runner system consisting of a nozzle or manifold interface, externally heated flow passages, and two styles of field replaceable tips. The use of a fully hardened distribution body allows 2, 3, 4, 6 or 8 tips to be integrated into the system. It is heated by internal cartridge heaters surrounding the entire distribution body. The Multitip operates on one zone of control and is monitored by an independent thermocouple located as close to the gate orifice as possible.

As with all other Polyshot Runnerless Systems, the Multitip was designed to facilitate applications where the ultimate in precision and reliability are required.
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Multitip System Ordering Information

To order a **Polyshot Multitip System**, please specify the following:

1. The tip style desired.
2. Number of tips required
3. “D” Diameter (2.0000” Standard)
4. Specify whether the application is single nozzle or manifold usage.
5. Molding machine nozzle radius, if applicable: (1/2” or 3/4”).
6. Type of resin to be processed.

<table>
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<th>Model Number</th>
<th>Number of Tips</th>
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<td>P-Multi-2</td>
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<tr>
<td>P-Multi-3</td>
<td>3</td>
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<tr>
<td>P-Multi-4</td>
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<td>2.000</td>
</tr>
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<td>P-Multi-6</td>
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<td>2.000</td>
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<td>P-Multi-8</td>
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<table>
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<th>Model Number</th>
<th>Number of Tips</th>
<th>“D” Diameter</th>
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<tbody>
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<td>PL-Multi-2</td>
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<td>PL-Multi-3</td>
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<td>2.000</td>
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<tr>
<td>PL-Multi-6</td>
<td>6</td>
<td>2.000</td>
</tr>
<tr>
<td>PL-Multi-8</td>
<td>8</td>
<td>2.000</td>
</tr>
</tbody>
</table>
The mold design shown above is a typical layout using a single Multitip module. The mold features a standard “A” series style mold base with the mold sandwiched between the top clamp plate and the “A” cavity block.

The “A” cavity block should be constructed of hardened tool steel such as A-2 or S-7 and drawn back to a hardness of 48-50 R.C. This additional heat treat draw affords the additional durability and resistance to cracking that is required for this application. It is also recommended that the top clamp plate be constructed of pre-hardened (P-20) tool steel to maintain dimensional integrity and resistance to deformation.

The Polyshot Firebox single zone temperature control system is available for precise temperature control of molds employing the Multitip System. It features auto tuning P.I.D. circuitry with a burst fire relay, allowing absolute state of the art control over the Multitip System. The Multitip/Firebox combination allows easy one plug connection when mold disconnection is required.
The Multitip System is available in several different patterns. There are five probe layouts available (2–8 probes) with a “D” dimension of 2.0000" standard. Optional “D” dimensions up to 4.2800 diameter are available at an additional cost.

Some commonly ordered optional “D” dimensions are 2.5000", 3.0000", 3.5000" and 4.0000". Optional Multitip configurations are usually delivered in 4–5 weeks.

Polyshot Corporation maintains in house testing facilities including a Multitip test mold and injection molding cell. This testing equipment is available to prove out customer supplied resins for use in the Multitip System.
The Multitip System can be easily integrated into a Polyshot Manifold System. This compatibility allows the molder to use the maximum number of cavities in as small an area as possible. One benefit of the Multitip system is the reduced number of zones of control required to operate the system. For example, a 64 probe (eight P-Multi-8 modules) system can operate on as few as 10 zones of control.

All Multitip manifold applications require detailed drawings to be provided for each application. The layouts shown above are examples of some of the different possible configurations in which the Multitip Modules can be arrayed on a Polyshot Manifold system. All Multitip modules used in the applications shown above constitute fully balanced material flow systems. This feature allows each molded part to fill at the same rate of pressure and speed, which results in excellent shot to shot repeatability, and improved molded part quality.

The Polyshot Multitip Manifold System is available as a pre-engineered fully assembled system ready to install into the mold. It is also available in a complete hot half system, including the Multitip system, top clamp and manifold support plates, locating ring, waterline circuit and all necessary mounting holes, etc.
The Multitip System is furnished with pinpoint style probes in two different lengths. The standard length probe is the “P” Series and the extended length probe is the “PL” Series, for applications requiring additional reach. All probes are threaded into the Multitip body and can be easily replaced in the field by the customer.

To calculate the diameters required for cavity machining, refer to the “Diameter Calculations” chart above. This allows the customer to specify either the standard 2.0000” “D” diameter or any other diameter required, up to 4.2800”.

All Multitip modules feature an integrated support pillar. This pillar fully supports the mold cavity, and safely transfers the clamp and machine nozzle force through the mold base assembly.

All dimensions that seal off the Multitip interface areas require precise machining. The seat surfaces and bearing diameters of the module should be machined within the tolerances specified.
System Gate Well Information

MULTITIP SYSTEMS

Part Number
P-100 Standard
“P” Series Gate
Well Dimensions

Part Number
PL-100 Long
Reach “PL”
Series Gate
Well Dimensions

<table>
<thead>
<tr>
<th>Gate Ø</th>
<th>Gage Dimension</th>
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<tbody>
<tr>
<td>.0270</td>
<td>.2178</td>
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<td>.0280</td>
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<td>.0410</td>
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<tr>
<td>.0420</td>
<td>.2103</td>
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</table>
The correct installation of water lines is critical to achieving the maximum performance of the Multitip system. The layouts shown above incorporate water lines running between the molded part and the seal surfaces of the Multitip. These designs remove the maximum amount of heat from the mold cavity, allowing the cleanest gate and shortest cycle time.

Under no circumstances should “water jacket” style cooling be the only method used to cool the cavity block which houses the multitip.
The **Polyshot Manifold System** is a complete pre-engineered runnerless molding package. It is shipped fully assembled and tested ready to bolt on to the mold. It is also available as a “manifold only” unit for mold makers who prefer to construct their own hot half plates.

The Polyshot Manifold is heated with replaceable flexible tubular heaters that are formed to the manifold grooves without the aid of special tools or fixtures. They can be replaced in the field by the customer if so required. Each nozzle is heated and controlled by its own heater and thermocouple. The thermocouple is positioned very close to the end of the nozzle for the ultimate in gate temperature control and shot to shot consistency.

Manifold flow balancing is achieved through the use of layered manifold construction (8 drops or greater) and in house vacuum brazing technology. This proprietary technology allows flow channels to be created with large sweeping arcs with gradually changing diameters. This process also allows the use of hardened tool steel for the manifold which assures long life with filled resins.
General Information

**Nozzle Alignment**: Polyshot Runnerless Molding Systems are designed to accommodate stress free thermal expansion. The center of the manifold is fixed in the mold by the nozzle interface engaged into the top clamp plate, and a dowel pin which fits into the manifold support plate. The nozzles are staged firmly into the manifold support plate at two points. The first point is the nozzle head, which fits into the manifold support plate. The second is the end diameter, which fits into the back of the cavity block. As the manifold heats up and expands, it is allowed to slide across the top of the nozzle seats. As it expands, a secondary dowel pin engaging both the manifold and the manifold support plates control the final manifold position. When fully heated, the feed holes in the manifold are correctly aligned with the feed holes in the nozzles.

**Nozzle Sealing**: Sealing of the nozzles to the manifold is accomplished through both mechanical and thermal means. The mechanical seal is accomplished by bolting each nozzle to the manifold using two socket head cap screws. The thermal seal takes place as the system heats up. The thermal expansion across the nozzle and manifold thickness allows a predetermined amount of preload to occur on the nozzle seat. The combination of these two sealing methods produces a reliable, trouble free seal.

**Flow Channels**: Polyshot flow channels allow a smooth material path from the molding machine nozzle to the gates, while remaining free of hold up areas. The construction of a Polyshot manifold features the use of specially designed turn plugs that allow the flow path to change both direction and diameter. Turn plugs are positioned in the manifold and machined while in place, then removed and polished by hand to achieve the necessary surface finish. They are then reinstalled into the manifold and are retained with back up screws.
**General Information**

**Thermal Expansion Drawing**

**Thermal Expansion:** The drawing above shows the process of thermal expansion as the hot runner system heats up. All of the expansion calculations are taken into consideration by Polyshot’s engineers during the design of the system, thereby relieving the customer of that concern.

**Electrical Requirements:** All Polyshot systems operate at 208 to 240 VAC. All nozzles draw a maximum of 2 amps, and the maximum draw of any single zone of a manifold is 15 amps. The total amp draw is determined by the number of nozzles required and the size of the manifold.
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050M, MS75, and Thinshot Manifold

MANIFOLD CONFIGURATIONS

[Diagrams of manifold configurations]
050M, MS75, and Thinshot Manifold

**2 NOZZLE SINGLE BAR**

View of Manifold Plate from Drop Side of Mold

- **3/8-16 Caps (6)**
- **Ø 2.000 Minimum**
- **250 Minimum**
- **1.3750**
- **2.0000**
- **1.250 Deep Anti-Rotation Holes (2)**

**Refer to Nozzle Selection Section For Details**
050M, MS75, and Thinshot Manifold

2 NOZZLE SINGLE BAR

View of Manifold Plate from Machine Nozzle Side

System Master Worksheet for 2 Nozzle Single Bar Manifold

Please Fax The Following Information To Polyshot:

Company: ____________________________ Contact: ____________________________
Telephone: __________________________ Fax: ____________________________
Part Name: __________________________ Number of Cavities: ____________
Resin Type: __________________________ Flame Retardant: Yes ☐ No ☐
Glass: Yes ☐ No ☐ Percent: _______ Other: _________ Percent: _______
Wall Thickness At Gate: ______________ Part Weight: ___________________
Gating Into: Part ☐ Runner ☐
Maximum Allowable Gate Vestige Above Part: ___________________________
Maximum Allowable Gate Recess Into Part: ___________________________
Manifold “X” Dimension: __________________
Nozzle Part Number: ___________________
050M, MS75, and Thinshot Manifold

4 NOZZLE “H” STYLE

View of Manifold Plate from Drop Side of Mold

Refer to Nozzle Selection Section For Details
System Master Worksheet for 4 Nozzle Single Bar Manifold

Please Fax The Following Information To Polyshot:

Company: __________________________  Contact: __________________________
Telephone: _________________________  Fax: __________________________
Part Name: _________________________  Number of Cavities: ________________
Resin Type: _________________________  Flame Retardant: Yes □ No □
Glass: Yes □ No □  Percent: _______  Other: _________  Percent: _______
Wall Thickness At Gate: ______________  Part Weight: ____________________
Gating Into: Part □  Runner □
Maximum Allowable Gate Vestige Above Part: __________________________
Maximum Allowable Gate Recess Into Part: __________________________
Manifold “X” Dimension: ____________  Manifold “Y” Dimension: __________
Nozzle Part Number: ________________
050M, MS75, and Thinshot Manifold

4 NOZZLE “X” STYLE

View of Manifold Plate from Drop Side of Mold
(X and Y Dimension to Be Equal)

3/8-16 Caps (12)

Refer to Nozzle Selection Section For Details

Mold Junction Control Box

Manifold

Manifold Plate

Top Clamp Plate

Ø 2.000 Minimum

1.3750

2.0000

1.250 Deep Anti-Rotation Holes (2)

.250 Minimum

.250 Minimum

1.250 Deep Anti-Rotation Holes (2)
050M, MS75, and Thinshot Manifold

4 NOZZLE “X” STYLE

**View of Manifold Plate from Machine Nozzle Side**

![Diagram of Manifold Plate]

**System Master Worksheet for 4 Nozzle “X” Style Manifold**

Please Fax the Following Information to Polyshot:

- **Company:**
- **Contact:**
- **Telephone:**
- **Fax:**
- **Part Name:**
- **Number of Cavities:**
- **Resin Type:**
- **Flame Retardant:** Yes ☐ No ☐
- **Glass:** Yes ☐ No ☐
- **Percent:**
- **Other:**
- **Percent:**
- **Wall Thickness At Gate:**
- **Part Weight:**
- **Gating Into:** Part ☐ Runner ☐
- **Maximum Allowable Gate Vestige Above Part:**
- **Maximum Allowable Gate Recess Into Part:**
- **Manifold “X” Dimension:**
- **Manifold “Y” Dimension:**
- **Nozzle Part Number:**
050M, MS75, and Thinshot Manifold

4 NOZZLE IN A ROW

Mold Junction
Control Box

Manifold Plate

Top Clamp Plate

Manifold

View of Manifold Plate from Drop Side of Mold

3/8-16 Caps (10)

Ø 2.000

.250 Minimum

1.3750

2.0000

1.250 Deep
Anti-Rotation
Holes (2)

Refer to
Nozzle Selection
Section For Details

.250 Minimum

Manifold Plate

X1

X1

X

X

050M, MS75, and Thinshot Manifold

4 NOZZLE IN A ROW

Mold Junction
Control Box

Manifold Plate

Top Clamp Plate

Manifold

View of Manifold Plate from Drop Side of Mold

3/8-16 Caps (10)

Ø 2.000

.250 Minimum

1.3750

2.0000

1.250 Deep
Anti-Rotation
Holes (2)

Refer to
Nozzle Selection
Section For Details

.250 Minimum

Manifold Plate

X1

X1

X

X

050M, MS75, and Thinshot Manifold

4 NOZZLE IN A ROW

Mold Junction
Control Box

Manifold Plate

Top Clamp Plate

Manifold

View of Manifold Plate from Drop Side of Mold

3/8-16 Caps (10)

Ø 2.000

.250 Minimum

1.3750

2.0000

1.250 Deep
Anti-Rotation
Holes (2)

Refer to
Nozzle Selection
Section For Details

.250 Minimum

Manifold Plate

X1

X1

X

X

050M, MS75, and Thinshot Manifold

4 NOZZLE IN A ROW

Mold Junction
Control Box

Manifold Plate

Top Clamp Plate

Manifold

View of Manifold Plate from Drop Side of Mold

3/8-16 Caps (10)

Ø 2.000

.250 Minimum

1.3750

2.0000

1.250 Deep
Anti-Rotation
Holes (2)

Refer to
Nozzle Selection
Section For Details

.250 Minimum

Manifold Plate

X1

X1

X

X

050M, MS75, and Thinshot Manifold

4 NOZZLE IN A ROW

Mold Junction
Control Box

Manifold Plate

Top Clamp Plate

Manifold

View of Manifold Plate from Drop Side of Mold

3/8-16 Caps (10)

Ø 2.000

.250 Minimum

1.3750

2.0000

1.250 Deep
Anti-Rotation
Holes (2)

Refer to
Nozzle Selection
Section For Details

.250 Minimum

Manifold Plate

X1

X1

X

X
050M, MS75, and Thinshot Manifold

4 NOZZLE IN A ROW

View of Manifold Plate from Machine Nozzle Side

System Master Worksheet for 4 Nozzle In A Row Manifold

Please Fax The Following Information To Polyshot:

Company: ____________________________ Contact: ____________________________
Telephone: __________________________ Fax: ____________________________
Part Name: __________________________ Number of Cavities: _________________
Resin Type: __________________________ Flame Retardant: Yes ☐ No ☐
Glass: Yes ☐ No ☐ Percent: ________ Other: __________ Percent: ________
Wall Thickness At Gate: _____________ Part Weight: _______________________
Gating Into: Part ☐ Runner ☐
Maximum Allowable Gate Vestige Above Part: _____________________________
Maximum Allowable Gate Recess Into Part: _______________________________
Manifold “X” Dimension: ______________ Manifold “X1” Dimension: ___________
Nozzle Part Number: __________________
050M, MS75, and Thinshot Manifold

6 NOZZLE IN A ROW

View of Manifold Plate from Drop Side of Mold

Refer to Nozzle Selection Section For Details

X1

Mold Junction Control Box

Manifold

Manifold Plate

Top Clamp Plate

3/8-16 Caps (12)

ø 2.000

Minimum

1.3750

2.5000

1.250 Deep Anti-Rotation Holes (2)

.250 Minimum
050M, MS75, and Thinshot Manifold

6 NOZZLE IN A ROW

View of Manifold Plate from Machine Nozzle Side

System Master Worksheet for 6 Nozzle In A Row Manifold

Please Fax the Following Information to Polyshot:

Company: ____________________________  Contact: ____________________________
Telephone: __________________________  Fax: __________________________
Part Name: __________________________  Number of Cavities: _______________
Resin Type: __________________________  Flame Retardant: Yes □ No □
Glass: Yes □ No □  Percent: ________  Other: ________  Percent: ________
Wall Thickness At Gate: _______________  Part Weight: _______________________
Gating Into: Part □ Runner □
Maximum Allowable Gate Vestige Above Part: ________________________________
Maximum Allowable Gate Recess Into Part: _________________________________
Manifold “X” Dimension: ____________  Manifold “X1” Dimension: __________
Manifold “X2” Dimension: ____________  Nozzle Part Number: _______________
**050M, MS75, and Thinshot Manifold**

**8 NOZZLE PLATE**

- **Mold Junction Control Box**
- **Manifold**
- **These Dimensions Must Be Equal**
- **Top Clamp Plate**
- **Manifold Plate**

**View of Manifold Plate from Drop Side of Mold**

- **3/8-16 Caps (12)**
- **ø 2.000 Minimum**
- **1.3750**
- **2.0000**
- **1.250 Deep Anti-Rotation Holes (2)**

Refer to Nozzle Selection Section For Details
050M, MS75, and Thinshot Manifold
8 Nozzle Plate

System Master Worksheet for 8 Nozzle Plate Manifold
Please Fax The Following Information To Polyshot:

Company: __________________________  Contact: __________________________
Telephone: _________________________  Fax: __________________________
Part Name: __________________________ Number of Cavities: ______________
Resin Type: __________________________ Flame Retardant: Yes ☐ No ☐
Glass: Yes ☐ No ☐  Percent: ________ Other: ________ Percent: ________
Wall Thickness At Gate: _______________ Part Weight: ___________________
Gating Into: Part ☐ Runner ☐
Maximum Allowable Gate Vestige Above Part: __________________________
Maximum Allowable Gate Recess Into Part: __________________________
Manifold “X” Dimension: _____________ Manifold “X1” Dimension: _____________
Manifold “Y” Dimension: _____________ Nozzle Part Number: _____________
050M, MS75, and Thinshot Manifold

8 NOZZLE IN A ROW

View of Manifold Plate from Drop Side of Mold

- Mold Junction Control Box
- Manifold Plate
- Top Clamp Plate
- 3/8-16 Caps (12)
- 2.000 Minimum
- 2.5000
- 1.250 Deep Anti-Rotation Holes (2)
- Refer to Nozzle Selection Section For Details

Manifold Plate

X

X1

X2

X3

X

X1

X2

X3

Refer to Nozzle Selection Section For Details
050M, MS75, and Thinshot Manifold

8 NOZZLE IN A ROW

View of Manifold Plate from Machine Nozzle Side

System Master Worksheet for 8 Nozzle In A Row Manifold

Please Fax The Following Information To Polyshot:

Company: ___________________________ Contact: ___________________________
Telephone: __________________________ Fax: _______________________________
Part Name: __________________________ Number of Cavities: ________________
Resin Type: __________________________ Flame Retardant: Yes □ No □
Glass: Yes □ No □ Percent: _________ Other: ______________ Percent: _________
Wall Thickness At Gate: _____________ Part Weight: _______________________
Gating Into: Part □ Runner □
Maximum Allowable Gate Vestige Above Part: ______________________________
Maximum Allowable Gate Recess Into Part: _________________________________
Manifold “X” Dimension: ___________ Manifold “X1” Dimension: __________
Manifold “X2” Dimension: ___________ Manifold “X3” Dimension: __________
Nozzle Part Number: ________________
050M, MS75, and Thinshot Manifold

12 NOZZLE IN A ROW

View of Manifold Plate from Drop Side of Mold

- Mold Junction
- Control Box
- Manifold Plate
- Top Clamp Plate

Dimensions:
- ø 2.000 Minimum
- .250 Minimum
- 3/8-16 Caps (12)
- 3.0000
- 1.250 Deep Anti-Rotation Holes (2)

Refer to Nozzle Selection Section For Details
050M, MS75, and Thinshot Manifold

12 NOZZLE IN A ROW

**View of Manifold Plate from Machine Nozzle Side**

System Master Worksheet for 12 Nozzle In A Row Manifold

*Please Fax The Following Information To Polyshot:*

- **Company:** __________________________  **Contact:** __________________________
- **Telephone:** __________________________  **Fax:** __________________________
- **Part Name:** __________________________  **Number of Cavities:** ______________
- **Resin Type:** __________________________  **Flame Retardant:** Yes □ No □
- **Glass:** Yes □ No □  **Percent:** ________  **Other:** ________  **Percent:** ________
- **Wall Thickness At Gate:** ______________  **Part Weight:** __________________________
- **Gating Into:** Part □ Runner □
- **Maximum Allowable Gate Vestige Above Part:** __________________________
- **Maximum Allowable Gate Recess Into Part:** __________________________
- **Manifold “X” Dimension:** ____________  **Manifold “X1” Dimension:** ____________
- **Manifold “X2” Dimension:** ____________  **Manifold “X3” Dimension:** ____________
- **Manifold “X4” Dimension:** ____________  **Manifold “X5” Dimension:** ____________
- **Nozzle Part Number:** __________________________
These Dimensions Must Be Equal

Refer to Nozzle Selection Section For Details

3/8-16 Caps (16)
System Master Worksheet for 16 Nozzle In A Row Manifold
Please Fax The Following Information To Polyshot:

Company: ___________________________ Contact: ___________________________
Telephone: __________________________ Fax: ___________________________
Part Name: __________________________ Number of Cavities: ________________
Resin Type: __________________________ Flame Retardant: Yes☑ No ☐
Glass: Yes ☐ No ☐ Percent:________ Other:________ Percent:________
Wall Thickness At Gate:______________ Part Weight:_____________________
Gating Into: Part ☐ Runner ☐
Maximum Allowable Gate Vestige Above Part:__________________________
Maximum Allowable Gate Recess Into Part:_____________________________
Manifold “X”Dimension:_____________ Manifold “X1”Dimension:___________
Manifold “Y”Dimension:_____________ Manifold “Y1”Dimension:___________
Nozzle Part Number:_________________
050M, MS75, and Thinshot Manifold

32 NOZZLE PLATE

These Dimensions Must Be Equal

Mold Junction Control Box

Manifold

Manifold Plate

Top Clamp Plate

View of Manifold Plate from Drop Side of Mold

3/8-16 Caps (24)

ø 2.000 Minimum

1.3750

2.0000

1.250 Deep Anti-Rotation Holes (2)

250 Minimum

Refer to Nozzle Selection Section For Details
System Master Worksheet for 32 Nozzle In A Row Manifold
Please Fax The Following Information To Polyshot:

Company: ____________________  Contact: ____________________
Telephone: ____________________ Fax: ____________________
Part Name: ____________________ Number of Cavities: ____________
Resin Type: ____________________ Flame Retardant: Yes □ No □
Glass: Yes □ No □  Percent: ________  Other: ________ Percent: ________
Wall Thickness At Gate: ____________ Part Weight: ____________
Gating Into: Part □ Runner □
Maximum Allowable Gate Vestige Above Part: ____________________
Maximum Allowable Gate Recess Into Part: ____________________
Manifold “X” Dimension: ____________ Manifold “X1” Dimension: ____________
Manifold “Y” Dimension: ____________ Manifold “Y1” Dimension: ____________
Manifold “Y2” Dimension: ____________ Manifold “Y3” Dimension: ____________
Nozzle Part Number: ____________
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## SELECTION & MATERIAL COMPATIBILITY

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<th>PR</th>
<th>F</th>
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**Key:**
- = Most Suitable
- = Suitable With Caution
= Not Recommended

1 = This gate design may cause stringing if insufficient gate cooling is used with these materials.

2 = The pinpoint gate nozzle should be used with caution in glass/mineral filled applications.

A hardened tip insert is required. Please consult Polyshot.

Dimensions listed represent the starting gate diameter.

**Note:** This chart should be used as a guide only.

GF-Glass filled materials will wear out components quicker than non filled materials. In some applications, it may be necessary to heat treat the manifold to a higher than normal hardness.

Flame retardant materials tend to have shorter than normal residence times. The result can be less than satisfactory in molding small parts in some applications.
This tip style uses the field proven ‘reverse taper’ design. It affords maximum control over difficult to process resins, while leaving a very small sprue that is approximately .50 inches long. Sprue weight is .5 grams.

This tip style uses a pinpoint gate design to allow the absolute minimum gate vestige possible. The gate and gate well are installed directly into the mold by the mold maker. The P-050M features a field replaceable tip which is constructed of a highly thermally conductive material. It is also available with a wear resistant tip insert.

This tip style uses a pinpoint gate design, except that it features a long tip reach.

This tip style is used when gate vestige is not critical, usually feeding a runner. It is designed to process filled engineering resins, such as glass filled LCPs, etc. The gate vestige will be approximately 1.5 times the gate diameter.

This tip style uses the Conan design, except that it features a long tip reach.
**MS75 Nozzle Selection**

1,550" CENTER TO CENTER DISTANCE

---

**G-MS75 General Purpose**

This tip style uses the field proven ‘reverse taper’ design. It affords maximum control over difficult to process resins, while leaving a very small sprue that is approximately .50 inches long. Sprue weight is .5 grams.

---

**P-MS75-Pinpoint**

This tip style uses a pinpoint gate design to allow the absolute minimum gate vestige possible. The gate and gate well are installed directly into the mold by the mold maker. The P-MS75 features a field replaceable tip which is constructed of a highly thermally conductive material. It is also available with a wear resistant tip insert.

---

**Conan-MS75**

This tip style is used when gate vestige is not critical, usually feeding a runner. It is designed to process filled engineering resins, such as glass filled LCPs, etc. The gate vestige will be approximately 1.5 times the gate diameter.
Custom Nozzle Selection

**VALVE GATE AND EDGE GATE STYLES**

**PPL-Thishot Pinpoint**
This tip style uses a pinpoint gate design to allow the absolute minimum gate vestige possible. The gate and gate well are installed directly into the mold by the mold maker. The P-050M features a field replaceable tip which is constructed of a highly thermally conductive material. It is also available with a wear resistant tip insert.

**VGR-MS75 Valve Gate with Ring**
This tip uses the pneumatic or hydraulic valve gate system, and is used when no gate vestige is allowed. It is suitable for use with filled and unfilled engineering and commodity resins.

**VG-MS75 Valve Gate**
This tip uses the pneumatic or hydraulic valve gate system, and is used when no gate vestige is allowed. It is suitable for use with filled and unfilled engineering and commodity resins.

**E-150 Edge Gate**
These nozzles are used when it is necessary to gate into the side wall of a molded part, and is available in 2, 4, and 8 cavity configurations. The gate vestige left on the surface of the part will resemble that of a sub-gated part.
050M Nozzle Selection
1.175" CENTER TO CENTER DISTANCE
Nozzle Selection G-050M, General Purpose

1.175" CENTER TO CENTER DISTANCE

Plate Machining Detail

- .006 In Cold State
- ø 1.1250
- .6250
- .250 Minimum Diameter Flow
- .250 Minimum
- ø .5000
- .24 R.188 Maximum Allowable Diameter Flow

ø .250
- ø 1.1250
- .5000
- ø .92 Heater Clearance
- .5000
- "L" Dimension
- 30° Typical
- .6250

Manifold Systems Revised 5/10/2006

Revised 5/10/2006
G-050M General Purpose Nozzle styles are commonly used when the formation of a small sprue is acceptable. They are often used when processing filled materials. Because the entire flow path of the nozzle is constructed of hardened tool steel, it is highly resistant to wear. They are also used when it is necessary to gate into a cold runner system. The end of the nozzle is designed to accommodate the machining of a .188 radius through it. The flow channel size through the G-050M nozzle is .2500” diameter.

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<th>Model Number</th>
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<td>G-050M-005</td>
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### Nozzle Selection

**P, PL-050M, Pinpoint**

**1.175" CENTER TO CENTER DISTANCE**

#### Plate Machining Detail

- **.5000**
- **.925**
- **Gate Ø To Suit**
- **.500**
- **Gate Ø To Suit**
- **.3250**
- **.1875**
- **Heater Clearance**

#### Gate Ø | Gage Dimension
---|---
.0270 | .2178
.0280 | .2173
.0290 | .2168
.0300 | .2163
.0310 | .2158
.0320 | .2153
.0330 | .2148
.0340 | .2143
.0350 | .2138
.0360 | .2133
.0370 | .2128
.0380 | .2123
.0390 | .2118
.0400 | .2113
.0410 | .2108
.0420 | .2103
Nozzle Selection P, PL-050M, Pinpoint

1.175" CENTER TO CENTER DISTANCE

050M Pinpoint Nozzle styles afford the absolute minimum gate vestige possible. They are used when it is necessary to gate directly into the part being molded. The pinpoint nozzle features a field replaceable tip that can be easily changed by the customer if necessary. It performs well when processing unfilled resins. Hardened tip inserts are available as an option when it is necessary to mold filled resins.

When using the P-Series nozzle, all necessary tip clearances are machined into the mold cavity by the customer. This method allows only a small pinpoint mark to be left on the part after molding.

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Nozzle Selection Conan, Conan L-050M

1.175" CENTER TO CENTER DISTANCE

Conan L-050M

.006 In
Cold State

ø 1.1250
ø .250
Diameter Flow

.6250

"L"
Dimension

ø .3250

R.197

ø .500

Gate ø To Suit

.40 30° Typical

.70

Gate ø To Suit

R.197

ø .500

ø .5000

ø 1.1250

ø .925
Heater Clearance

Plate Machining Detail

CONAN L-050M
The **Conan, ConanL (long version) 050M Nozzle** styles are used when processing difficult to mold engineering resins, such as glass filled LCPs, etc.. The Conan nozzle features a field replaceable tip that can be easily changed by the customer if necessary.

When using a Conan nozzle, the customer machines all necessary tip clearances into the mold cavity. The Conan nozzle is used primarily for gating into runners and parts where the gate vestige is not critical. The vestige height will be approximately 1.5 times the gate diameter. The flow channel size through the Conan-050M nozzle is .2500” in diameter.

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This page is intentionally blank.
Nozzle Selection  G-MS75, General Purpose

1.550" CENTER TO CENTER DISTANCE

Plate Machining Detail

ø 1.5000
ø 1.188 Heater Clearance
ø 0.7500
**Nozzle Selection**  
**G-MS75, General Purpose**  
1.550" CENTER TO CENTER DISTANCE

---

**General Purpose Nozzle** styles are commonly used when the formation of a small sprue is acceptable. They are often used when processing filled materials. Because the entire flow path of the nozzle is constructed of hardened tool steel, it is highly resistant to wear. They are also used when it is necessary to gate into a cold runner system. The end of the nozzle is designed to accommodate the machining of a .188 radius through it. The major flow diameter through the G-075M is .2500", with .3750" optional.

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Nozzle Selection P-MS75

1.550" CENTER TO CENTER DISTANCE

Plate Machining Detail

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Pinpoint Nozzle styles afford the absolute minimum gate vestige possible. They are used when it is necessary to gate directly into the part being molded. The pinpoint nozzle features a field replaceable tip that can be easily changed by the customer if necessary. It performs well when processing unfilled resins. Hardened tip inserts are available as an option when it is necessary to mold filled resins.

When using the P-Series nozzle, all necessary tip clearances are machined into the mold cavity by the customer. This method allows only a small pinpoint mark to be left on the part after molding.

The Pinpoint Nozzle is also available with a PR-Series gate interface cap. The gate interface cap has all necessary tip clearances, etc., already machined into itself. The use of a PR-Series interface cap will leave a slight 'ring' witness mark on the molded part in addition to the pinpoint gate vestige. The major flow diameter through the P, PL, or PR-075M is .2500", with .3750" optional.
Nozzle Selection Conan - MS75

1.550" CENTER TO CENTER DISTANCE

Plate Machining Detail
The Conan, Conan L (Long Reach) Nozzle styles are used when processing difficult to mold engineering resins, such as glass filled LCPs, etc. The Conan nozzle features a field replaceable tip that can be easily changed by the customer if necessary.

When using a Conan nozzle, the customer machines all necessary tip clearances into the mold cavity. The Conan nozzle is used primarily for gating into runners and parts where the gate vestige is not critical. The vestige height will be approximately 1.5 times the gate diameter. The major flow diameter through the Conan, Conan L-075M is .2500" with .3750" optional.
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Application P, Thinshot, Pinpoint

.710 x 1.810" MIN. CENTER TO CENTER DISTANCE

The thinshot nozzle is used when a very close center to center distance is required. It is available with P and PL (long) style pinpoint probes.

Thinshot pinpoint nozzle styles afford the absolute minimum gate vestige possible. They are used when it is necessary to gate directly into the part being molded. The pinpoint nozzle features a field replaceable tip that can be easily changed by the customer if necessary. It performs well when processing unfilled resins. Hardened tip inserts are available as an option when it is necessary to mold filled resins.
Nozzle Selection P, Thinshot, Pinpoint

.710 x 1.810" MIN. CENTER TO CENTER DISTANCE

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Valve Gate VG-MS75

2.000" CENTER TO CENTER DISTANCE
Nozzle Selection VG-MS75 Valve Gate

2.000" CENTER TO CENTER DISTANCE

See Gate Well Detail

Plate Machining Detail

Valve Pin Diameter To Suit

ø 1.5000
ø 1.1875
ø 1.5000
ø 0.5630
ø 0.7500
The Polyshot Valve Gate System is used when gate vestige is most critical, or a larger amount of resin must be delivered to the cavity. The gate vestige left on the surface of the part will resemble an ejector pin mark. The VG-MS75 is suitable to process both filled and unfilled engineered and commodity resins.

The VG-MS75 features a cylinder/piston arrangement that is pneumatically or hydraulically activated by customer supplied air or oil pressure. This unique cylinder arrangement allows molders the benefits of high pin force, close centerline locations, and no oil. At 110 psi, air input pressure, the VG-MS75 will achieve 228 pounds of pin force.

Air is fed to and from the cylinder assembly through drilled holes in the top clamp plate, which interfaces the cylinder. This cylinder has internal mating holes, which carry the air to and from the piston.

This allows the entire system to be free of any air hoses, etc., internal to the mold. The major flow diameter through the VG-MS75 is .3750".
The Polyshot Pneumatic Valve Gate Sequencer features an easy to use touch panel operator interface. Graphical representations and instructions are printed directly on the Sequencer cabinet, assisting the operator with all connections and timer settings. It is manufactured by Polyshot Corporation in the USA.

A rugged, sealed aluminum enclosure houses the internal valves and circuitry protecting it from the molding environment.

Large 3/8 NPT connections allow excellent air volume to and from the valve gate. Key Features:

- Easy to understand touch pad entry panel with operating instructions printed directly on the side of the unit.
- Large 3/8” NPT ports for air supply, exhaust, piston forward and piston back. All ports are clearly labeled.
- Illuminated on/off front mounted power switch.
- Rear mounted fuse with fuse type/size printed on the controller.
- Air supply pressure gauge.
- Housing is constructed of an extruded aluminum with aluminum end panels.
- Cycle Start connection receptacle with printed circuit schematic on rear of unit.

### Pneumatic Sequencer

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Required</td>
<td>120VAC Single Phase</td>
</tr>
<tr>
<td>Line Pressure</td>
<td>120PSI</td>
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<tr>
<td>Line Size</td>
<td>3/8&quot;NPT</td>
</tr>
<tr>
<td>Dimensions</td>
<td>6&quot; High x 6.6&quot; Wide x 10&quot; Long</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>12 Lbs.</td>
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</table>
Edge Gate E-150

2.500" CENTER TO CENTER DISTANCE
Nozzle Selection E-150 Edge Gate

2.500" CENTER TO CENTER DISTANCE

Contact Polyshot For Gate Machining Detail

2 Cavity Configuration

4 Cavity Configuration

8 Cavity Configuration
Application E-150 Edge Gate

2.500" CENTER TO CENTER DISTANCE

E-150 Edge Gate Nozzles are used when it is necessary to gate into the side wall of a molded part, and are available in 2, 4, and 8 cavity configurations. The gate vestige left on the surface of the part will resemble that of a sub-gated part.

The E-150 nozzle is suitable for processing unfilled commodity resins only. When specifying an E-150 nozzle, please consult Polyshot for specific technical information relative to your application.
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Micromolding System HM7 Quick Change
Micromolding System HM7 Quick Change

**System Specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Part O.A.L.</td>
<td>1.25&quot;</td>
</tr>
<tr>
<td>Distance Between Gates</td>
<td>.75&quot;</td>
</tr>
<tr>
<td>Max. Open Stroke</td>
<td>1.50&quot;</td>
</tr>
<tr>
<td>Max. ET Stroke</td>
<td>1.13&quot;</td>
</tr>
<tr>
<td>Max. No. of Probes</td>
<td>8</td>
</tr>
<tr>
<td>No. of Zones of Control</td>
<td>1</td>
</tr>
</tbody>
</table>

**END VIEW OF SYSTEM WITH MOLD CAVITIES SHOWN**

- **“B” HALF**
- **“A” HALF**

Dimensions:
- **Max. Part O.A.L.**: 1.25"
- **Distance Between Gates**: .75"
- **Max. Open Stroke**: 1.50"
- **Max. ET Stroke**: 1.13"
- **Max. No. of Probes**: 8
- **No. of Zones of Control**: 1
The Polyshot Micromolding System allows injection molders who have small molding machines (like the Nissei HM7, etc.) to capture the full potential of the machine by the elimination of runners. This results in the use of the full potential of clamp pressure and injection capacity of the machine.

The Polyshot Micromolding System consists of a two-part bolt-in quick change “unit style” system which is installed onto the plates of the molding machine. The construction of the system is hardened and ground stainless steel.

The fixed (“A”) half of the system houses a Polyshot Multitip hot runner system, cooling circuitry with cavity insert face seals, insert alignment guide pins. Threaded holes allow a interchangeable mold cavity insert (customer provided) to be face mounted to it.

The movable (“B”) half of the system accepts a slide-in interchangeable mold cavity insert (customer provided). This portion of the system also includes cooling circuitry with cavity insert face seals that automatically seal upon cavity insertion. The design allows the use of stripper plate, ejector pin retainer plate to also fully seat upon cavity insertion.

As noted above, both the “A” and “B” halves of the system include predetermined locations for water to enter and exit the mold cavity inserts. There are two in and two out circuits for each half. This completely eliminates the need to connect any external water lines to the mold inserts.

The included Multitip System features hardened tool steel construction, (8) pinpoint gates and operates on one zone of control.
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Firebox Single Zone Controller Systems

The Firebox Temperature Controller is designed to interface with the Polyshot Heated Sprue Bushing, Multitip System, and the Bank System. The Firebox is designed to stand up to the rigorous environment of the injection molding room floor. It is a closed loop unit with provision for manual or “Open Loop” control.

The 3601 Firebox features an Auto-Tuning PID function that precisely matches the controllers electronic algorithms to the runnerless molding system it is connected to. This is accomplished by engaging the Auto-Tune function through the operator interface, which launches an electronic tuning cycle between the controller and the system its controlling. Upon completion of this cycle, the Firebox rewrites its PID algorithms to precisely match the runnerless molding system it is controlling. When coupled with the controllers burst fire relay system, the control of processing temperature is excellent.
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**Firebox Single Zone Controller Features**

**Faceplate Component Protection Handle**

**High Gloss Powder Coat Finish**

**“Sonalert” Diagnostic Alarm**

**Extruded Aluminum Enclosure**

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**Technical Specifications**

- **Controller Type:** Closed loop, automatic compensation with manual open loop proportional selector, single zone.
- **Thermocouple Required:** Type J, constant grounded or ungrounded.
- **Control Range:** 32° to 1382° F, 0° to 750° C.
- **Control Accuracy:** +/- 0.1% of range.
- **Alarms:** User defined above and below set point, open or reversed thermocouple.
- **Power Output:** 240 VAC 15 amps maximum.
- **Power Control:** Solid state relay with zero crossing director.
- **Load Fuse:** ABC type, 15 amps.
- **Control Fuse:** ABC type, 2 amps.
- **Power Requirements:** 208 - 240 VAC, Single Phase.
- **Alarm Type:** “Sonalert” 80 DB.
- **Dimensions:** 6.50” wide x 4.25” high x 8.25” deep
- **Shipping Weight:** 6 lbs., 2.7kg.

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**220 Volt Controller Part # 3601F**

Revised 5/10/2006 Polyshot Hot Runner Systems
**Upper Display:** LED display indicating process temperature as measured by Type J Thermocouple.

**Lower Display:** LED display indicating set point during Auto mode, and the percent power during Manual mode.

**Load:** LED indicates when the Zone is energized.

**ALM:** LED indicates when the alarm is active.

**MAN:** LED lit when the controller is in Manual mode.

**Mode Key:** Steps the control through Alarm Low, Alarm High, and Auto-tuning options.

**Up Key:** Increases the set point. Also used in alarm setting and auto-tuning procedures.

**Down Key:** Decreases the set point. Also used in alarm setting and auto-tuning procedures.

**Auto/Manual Key:** Clears the alarm when pressed once. Toggles between Auto and Manual mode.

**Circuit Breaker:** To activate the Firebox, the rocker switch must be pushed to the “on” position. This switch should be “off” whenever the unit is being plugged in or unplugged from a 208-240 volt single phase outlet.

**Thermocouple Failure Protection:** If the process was stable when the thermocouple failed, the controller will transfer from auto to manual mode. The process will automatically continue at the power level experienced in the two minutes prior to the power failure, providing that the power level was less than 75%, and a power change of less than 5% occurred. This will allow the system to continue functioning until a thermocouple repair can be made. The percentage of power will be displayed in the lower display. If process is not stable or the power level is greater than 75%, the output is disabled.

**Alarms:** User defined temperatures that are the extremes on either side of the set point at which the process can operate.

**Alarm Low:** Represents the low process alarm. The alarm sounds when the process temperature strays too far below the set point.

**Alarm High:** Represents the high process alarm. The alarm sounds when the process temperature strays too far above the set point.

**Auto-Tune:** Provides automatic tuning of the PID parameters to fit the characteristics of your particular thermal system. Successful completion of the auto-tune procedure requires the process to cross the set point four times within eighty minutes after auto-tune has started. Typical auto-tune procedures last five to ten minutes. During auto-tune, the lower display alternately displays the set point temperature and the prompt “At.” When auto-tune is complete, the lower display will continuously show the set point temperature. Any change in set point while in auto-tune reinitiates the auto-tune procedure. Auto-tuning should be repeated after making any changes in the molding process.

**Temperature Units:** The Firebox is capable of measuring temperature in both Celsius and Fahrenheit. The default setting is Fahrenheit. To change the setting to Celsius, contact Polyshot for further information.
Single Nozzle Valve Gate System
Single Nozzle Valve Gate System

**SECTION VIEW**

- Nozzle Interface Radius Made to Match the Press Nozzle Radius
- Polyshot to Provide Locating Ring
- ø 3.990
- 3.88 REF
- 1.375 Top Clamp Plate Minimum Thickness

**GATE WELL**

- ø 3.88 REF
- ø 1.188 +.0005 -.0000
- ø .563 +.002 - .0000
- 120°
- R .005 Max
- ø .0938 Gage Ball
- Gate Diameter
- R .282 Spherical
- R .7500 -.002 Nozzle Seal
- .050 to Tangency of Sphr R .282
- .015 Land

**PLAN VIEW**

- Single Nozzle Valve Gate Unit Operates On Two (2) Zones of Control. Power and T/C Connectors Can Be Chosen Based On Your Available Controller.
- Requires Two (2) Air Lines In the Top Clamp Plate To Operate the Valve Pin

- A Length 2.375" to 5.875" Longer Lengths Available Upon Request

- See Gate Well Detail View

Revised 5/10/2006
The Polyshot Single Nozzle Valve Gate System is designed for applications where zero vestige and cosmetic part surfaces are essential. This system is suitable for processing both filled and unfilled engineering resins. The Single Nozzle Valve Gate system, which incorporates a cylindrical valve pin shutoff design, leaves a minimal gate vestige on the part surface that resembles an ejector pin mark. This unique design is also beneficial to the moldmaker and processor as it eliminates the need to fit a tapered shutoff pin.

The Polyshot Single Nozzle Valve Gate System consists of a five-component, in-line, stacked assembly. This system uses the same proven valve gate technology found in our MS75VG Manifold Systems.

This system is designed to fit into existing molds or into your new mold applications. Nozzle lengths are made custom to your application. All components are made from hardened tool steel. Installation of the Polyshot Single Nozzle Valve Gate only requires two air lines to be machined into the top clamp plate for operation of the opening and closing of the valve gate. The Polyshot Pneumatic Valve Gate Sequencer is available to control the timing of the valve gate. Refer to catalog page 84 for further information on the Polyshot Pneumatic Valve Gate Sequencer.

This system operates on two zones of control, which can be controlled with two of Polyshot’s 3601F Firebox Single Zone Controllers. Refer to the Temperature Controller section of the catalog for more information on the 3601F Firebox Controllers.
Sales and Ordering Information

**Terms:** Net 30 Days with approved credit. Deposits may be required on special or custom orders. C.O.D. orders accepted. Visa and MasterCard orders accepted.

**Freight:** F.O.B. Henrietta, New York, unless other arrangements have been made prior to shipment. Past due accounts will be charged monthly the current maximum percentage allowed by law.

Telephone orders will be accepted Monday through Friday, 8:00 A.M. to 5:00 P.M. EST.

Fax system is on line 24 hours a day. The fax number is 585-292-5015.

**Terms and Conditions of Sale**

1. **Prices:** Prices are F.O.B. point of origin. Any taxes due are in addition to the prices, and may be invoiced at a later date.

2. **Shipping Schedule:** The shipping schedule is our current estimate of delivery dates. We agree to use reasonable efforts to comply with the schedule. Buyer’s acceptance of delivery of our products from the carrier shall constitute a waiver of any claim for delay.

3. **Warranty:** (a) Any product or part thereof which, under normal operating conditions in the plant of the Buyer thereof proves defective in material or workmanship as determined by our inspection, within 12 months from the date of shipment, will be replaced or repaired free of charge. This warranty is contingent upon the following conditions: that we promptly receive notice of the defect, that Buyer establish that the product has been properly installed, maintained, and operated within the limits of related and normal usage as specified by us, and that, upon request, Buyer will return to us at our expense the defective product or part thereof.

   (b) The terms of this warranty do not in any way extend to any product or part thereof which has a life, under normal usage, inherently shorter than 12 months, or to equipment, tooling, or machinery which was not manufactured by us, in which event we shall use reasonable efforts to pass on to Buyer the manufacturer’s warranty.

   (c) The conditions of actual production in each end user’s plant vary considerably. Therefore, description of the production or performance capabilities of any product are estimates only, and are not warranted.

   (d) Any service or parts provided by us which are outside the scope of the warranties shall be charged to Buyer at our applicable time and material rate and terms and conditions in effect at the time such service or parts are provided.

4. **Exclusions of Warranties:** The warranties to repair or replace defective products or parts as set forth in paragraph 3, and any additional warranty expressly stated to be a warranty and set forth in writing as part of these terms herein are in lieu of all other warranties, express or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose.

5. **Limitation of Remedies and Liabilities:** The Buyer agrees that our liability and Buyer’s sole and exclusive remedy pursuant to any claim of any kind, including but not limited to, a claim in contract, negligence, or strict liability, against us or any of our affiliates, shall be:

   (a) The repair or replacement at our option of defective products or parts thereof, or

   (b) A refund of the price which can be allocated to the defective product or part thereof. Claims of any kind include, but are not limited to, those for any loss or damage arising out of, connected with, or resulting from this Agreement, or from the performance or breach of the terms hereof, or from the design, manufacture, sale, delivery, resale, installation, technical direction of installation, inspection, repair, operation or use of any product or part thereof covered by this Agreement. If, however, any warranty as expressly set forth in writing in accordance with Paragraph 4 above as part of these terms in addition to those set forth in Paragraph 4 above, our liability and the liability of any of our affiliates under such additional warranty shall terminate one year from the date of shipment by us.
Under no circumstances shall we or any affiliate of ours have any liability whatsoever for incidental or consequential damages, such as, but not limited to, loss of profit or revenue; loss of use of the product, part thereof, or software materials; cost of capital; cost of replacement equipment; or claims resulting from contracts between Buyer, its customers, and/or suppliers. Unless expressly provided for herein, in no event shall we or any affiliate of ours assume responsibility or liability for (a) penalties, penalty clauses or liquidated damages clauses of any description, (b) certifications or (c) indemnification of Buyer or others for costs, damages, or expenses arising out of or related to the product or part thereof.

6. Cancellation: Unless otherwise agreed, Buyer may cancel all or any part of the order by written notice received by us no later than 120 days before our completion of that part of the order. On receipt of such cancellation notice, all work on the order or part thereof canceled will be stopped as promptly as is reasonably possible. Buyer will then be invoiced for and will pay to us as liquidated damages a cancellation charge. For completed items, the charge will be equal to 120% of our full cost as determined by us in accordance with our standard accounting practices, plus a charge for any packing and storage, less a credit for the balance of the material as scrap. The full cost includes burden and overhead costs incurred by us or by any of our affiliates.

7. Payment Terms: Payment is due in accordance with any applicable progress, advance, or other agreed upon payment schedule, or, if no such schedule has been agreed to, upon Acceptance as specified in Paragraph 8, but in no event later than 30 days from the date of invoice. No cash discount is provided. If in our judgment, Buyer’s financial condition changes, we may stop work until financial arrangements satisfactory to us are made.

8. Acceptance of Product: Before accepting any product covered by Buyer’s order, Buyer shall have a final opportunity to inspect it immediately after delivery, installation, or any scheduled demonstration of the product by us, whichever is later. Each such product shall be deemed to be accepted 14 days thereafter, unless we receive written notification of rejection for cause from Buyer within the 14 days.

9. Risk of Loss: Possession and risk of loss of each item of equipment shall pass to Buyer upon our delivery of such items to Buyer’s designated carrier, cosigned to Buyer as Buyer may direct.

10. Title: Title of each item of equipment passes to Buyer when it has been delivered to Buyer’s designated carrier at our place of business in Henrietta, New York.

11. Force Majeure: We shall not be liable for any delay in performance or nonperformance which is due to war, fire, flood, acts of God, acts of third parties, acts of governmental authority or any agency or commission thereof, accident, breakdown of equipment, differences with employees or similar or dissimilar causes beyond our reasonable control, including but not limited to, those interfering with production, supply, or transportation of products, raw materials or components, or our ability to obtain, on terms we deem reasonable, material, labor, equipment, or transportation.

12. Acceptance of Orders: Buyer agrees that all orders, including any arising from our Proposal, shall include these terms and conditions only, notwithstanding any different or additional terms that may be embodied in Buyer’s standard purchase order or other form of order. All orders are subject to acceptance by us in writing.

13. Merger Clause: This Agreement entirely supersedes any prior oral representations, correspondence, proposal, quotation, or agreement. This writing constitutes the final and total expression of such agreement between the parties, and it is a complete and exclusive statement of the terms of that agreement.

14. Assignment: Neither party may assign this Agreement without the written consent of the other party.

15. Governing Law: This Agreement shall be governed by and construed in accordance with the laws of the State of New York.

16. Jurisdiction of Disputes: The courts of the State of New York shall have sole and exclusive jurisdiction over any dispute(s) arising under this Agreement or with respect to product delivered pursuant to it.