

AIR-COOLED SHROUD SYSTEMS



TEMPCO
www.tempco.com

Air-Cooled Shroud Systems

Improve Efficiencies in Extrusion Processing

Tempco's Air-Cooled Shroud Systems are highly engineered heating and cooling systems that offer an efficient means to heat and cool the barrels of extruders. These systems are self-contained and can be supplied as turnkey ready-to-go, requiring minimum labor and installation cost, and drastically reducing downtime and maintenance upkeep compared to conventional liquid cooling and heating cast-in band heaters.



Tempco shroud systems are designed for durability, ease of installation and trouble-free operating performance

TYPICAL APPLICATIONS

- Heating/cooling of extruder barrels
- Injection molding shrouds

FEATURES & BENEFITS

Durable Construction

- Stainless steel sheet metal, cast aluminum construction

Easy Installation

- Ready-to-go turnkey system
- Allows for minimum labor and installation cost

Trouble-Free Operating Performance

- Reduced downtime and maintenance compared to conventional liquid-cooled cast-in aluminum band heaters

Highly Efficient Design

- Thermally efficient heating and air cooling through innovative shroud design and optimized direction and ducting of air flow
- Tempco Finned Cast-In Heaters with special high efficiency fins
- Low overall mass cross-section for maximizing thermodynamics

Shroud Style Construction	Recommended Heater Types	Barrel Diameter Range		Zone Length Range	
		Min.	Max.	Min.	Max.
 <p>Cool to the Touch™ Dual Layer: Inner Stainless Steel Solid Layer, Outer Stainless Steel Perforated Layer</p>	Tempco Finned Cast Aluminum Heaters, Vented Ceramic Band or Maxiband Heaters	3" 76mm	23" 584mm	5" 127mm	42" 1067mm
 <p>Multi-Versal Single Stainless Steel Solid Layer</p>	Tempco Finned Cast Aluminum Heaters, Vented Ceramic Band or Maxiband Heaters	3" 76mm	23" 584mm	3-3/4" 95mm	42" 1067mm
 <p>Arctic Cast® Single Cast Aluminum Solid Layer</p>	Tempco Finned Cast Aluminum Heaters	4" 102mm	16" 406mm	6-1/2" 165mm	30-1/2" 775mm

DUAL LAYER SHROUD (COOL to the TOUCH)

- **Inner Stainless Steel Solid Layer**
 - Radiation shield that directs the cooling air flow over the heater and holds in heat to reduce energy use
- **Outer Stainless Steel Perforated Layer**
 - Isolates hot surfaces from contact (cool touch) for operator safety

Tempco's **Cool to the Touch** extruder heat/cool systems are custom engineered to provide optimal heating and cooling while providing personnel safety with a cool touch perforated outer layer. These systems are designed with finned cast-in heaters that optimize overall system efficiency.

The reflective inner layer of the shroud decreases the heat-up cycle, reducing energy consumption. The unrestricted blower port directs inlet air to the hottest part of the casting and distributes it evenly over the entire cross section of the zone.



Cool to the Touch with optional dual blowers mounted vertically with knockouts for heater termination(s) and top vertical air outlet

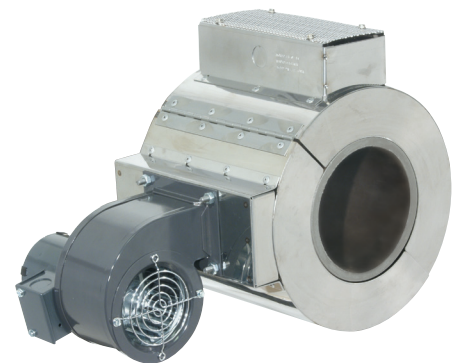
Recommended Heater Types	Barrel Diameter Range		Zone Length Range	
	Min.	Max.	Min.	Max.
Tempco Finned Cast Aluminum Heaters, Vented Ceramic Band or Maxiband Heaters	3" 76mm	23" 584mm	5" 127mm	42" 1067mm

SINGLE LAYER SHROUD (MULTI-VERSAL)

- **Solid Stainless Steel Layer**
 - Radiation shield that directs the cooling air flow over the heater and holds in heat to reduce energy use

Tempco's Multi-Versal extruder heat/cool systems are designed for efficient heating and cooling. A highly adaptable single layer shroud, they are suited for retrofit and/or new applications regardless of the type of barrel band heater being used. These shroud systems can be used with many styles of band heaters. Due to the single layer design, the Multi-Versal shroud system has a low profile OD.

The reflective interior of the shroud decreases the heat-up cycle, reducing energy consumption. The unrestricted blower port directs inlet air to the hottest part of the casting and distributes it evenly over the entire cross section of the zone.



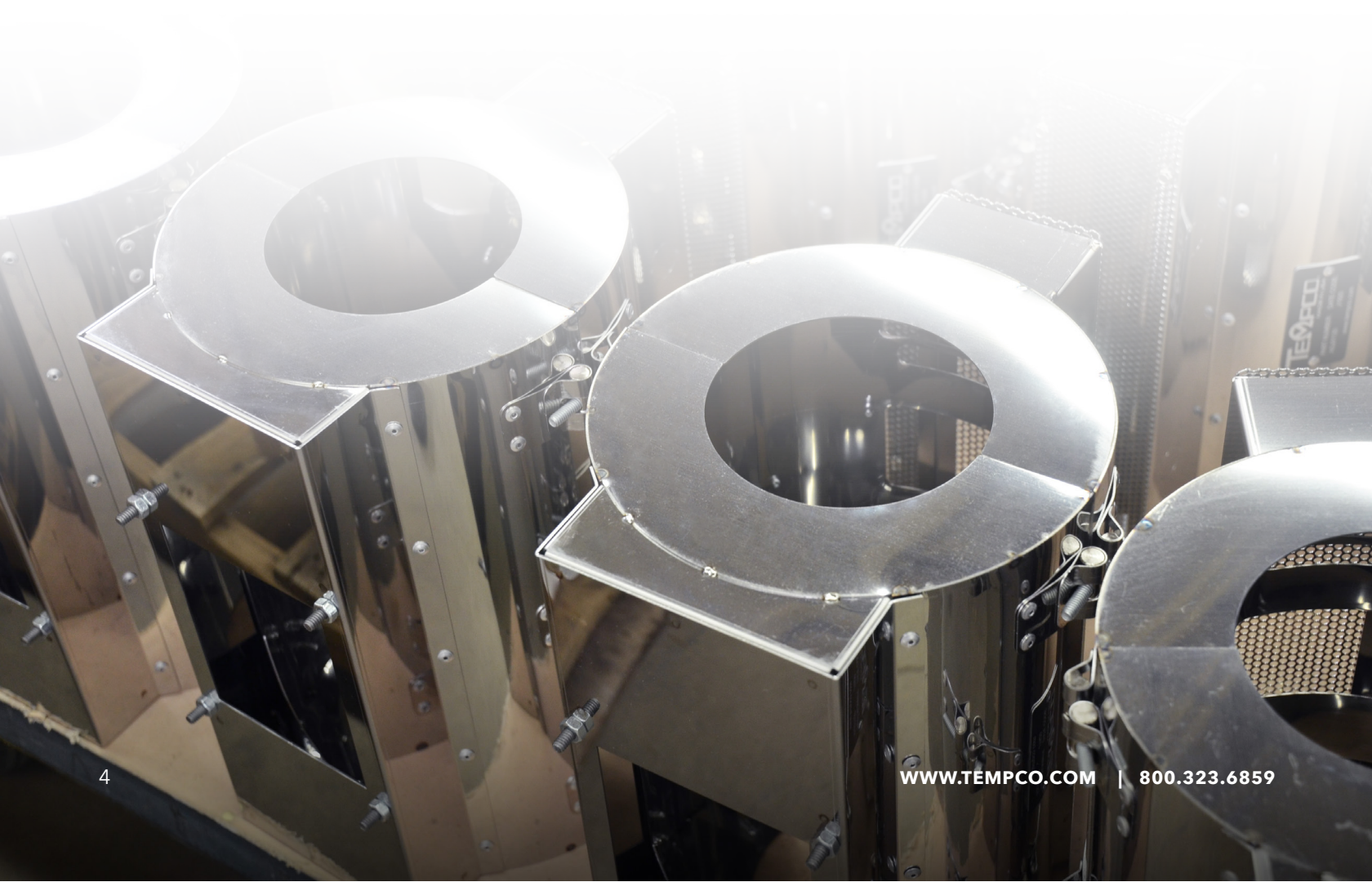
Multi-Versal with horizontally mounted blower & vertical combination terminal box & air outlet

Recommended Heater Types	Barrel Diameter Range		Zone Length Range	
	Min.	Max.	Min.	Max.
Tempco Finned Cast Aluminum Heaters, Vented Ceramic Band or Maxiband Heaters	3" 76mm	23" 584mm	3-3/4" 95mm	42" 1067mm

SHROUD ASSEMBLY FEATURES

for *Cool to the Touch* and Multi-Versal Heat/Cool Systems

- **2 Mounting Styles**
 - Hinge with barrel clamps: designed for ease of installation
 - Two individual halves with barrel clamps (Two-Piece): used where installation space is tight or mounting is difficult
 - Adjustable clamps upon request
- **Internal Support Straps or Support U-Bolt on blower mount half of shroud**
 - Permits shroud to be opened for servicing without removing unit from barrel
- **Anti-Rotate Tabs**
 - Used only with Finned Cast-In Heaters to prevent shroud from radial and axial movement around the barrel
 - Tabs are cast as part of the heater
- **Blower Options**
 - Single or dual Tempco recommended blowers available from 148 CFM up to 1210 CFM at 115V or 230V, or 480V 3-Phase
 - Customer-specified blower
 - Blower not required for heat-only shrouds
- **Blower Location**
 - Horizontal, vertical, or customized options available
 - Blower extension housings available
- **Standard Air Outlet combined with Terminal Box at top**
- **Optional Air Outlet Features**
 - Air outlet shield deflects air flow out of shroud and shields shroud from external solid contamination
 - Air outlet separate from terminal box
 - Alternate radial air outlet locations available
- **Air-Inlet Baffle Optional**
- **Vent Hole(s) Optional**
- **Sensing and Controlling**
 - Existing zone control probe (shroud system can be designed per customer specifications)
 - Tempco supplied zone control probe
 - Tempco customized power control panel designed to complete your thermal loop system

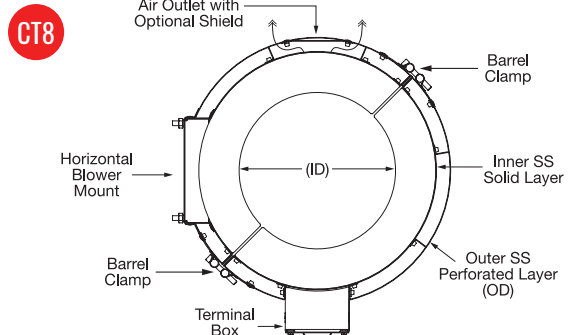
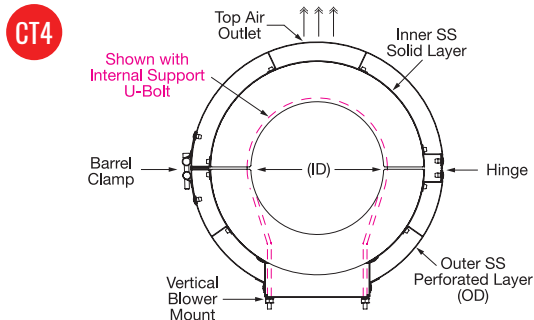
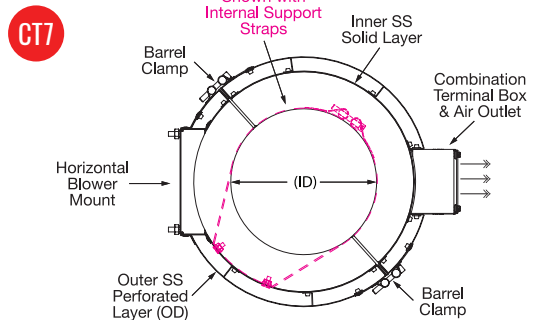
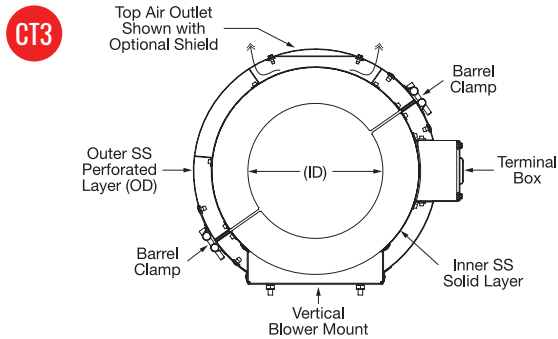
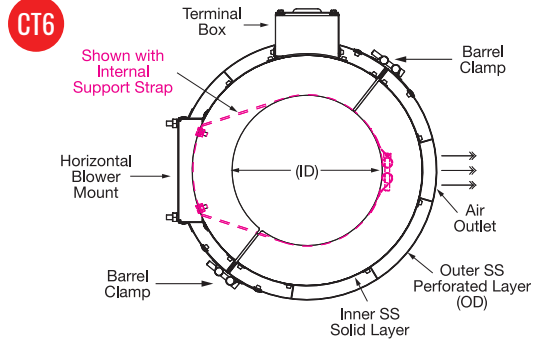
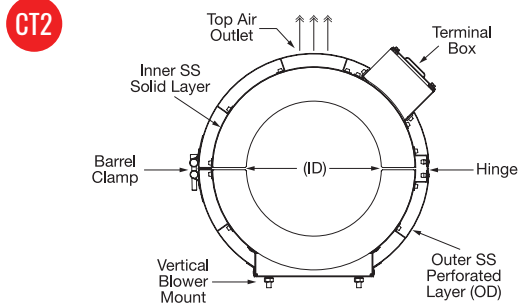
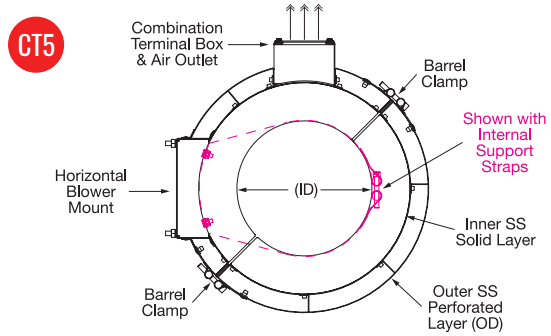
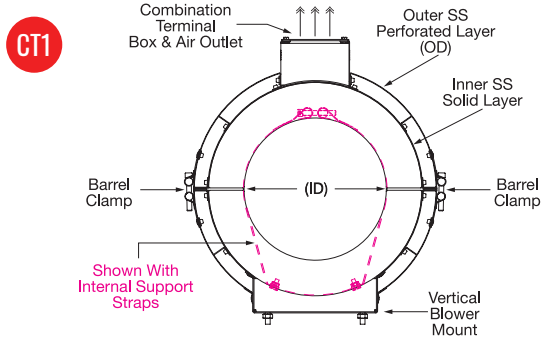


COOL to the TOUCH REFERENCE SHROUD DRAWINGS

The following drawings are for shroud designs that Tempco has previously engineered and manufactured. Each shroud system is custom engineered to fit customer requirements.

Vertical Blower Mounts

Horizontal Blower Mounts

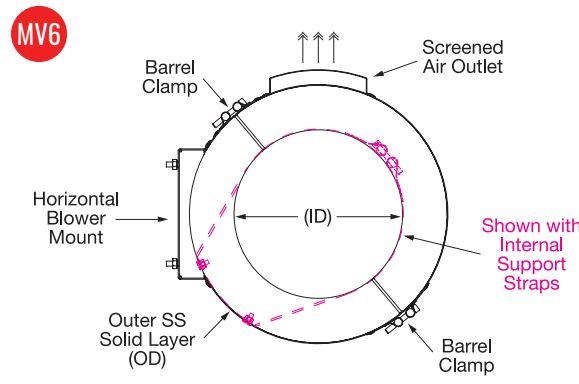
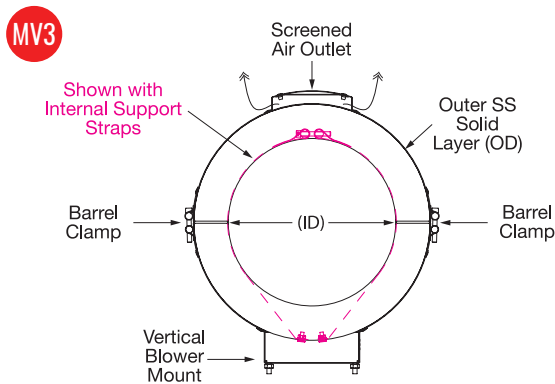
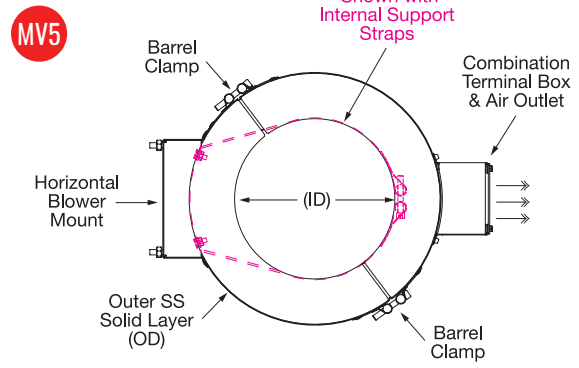
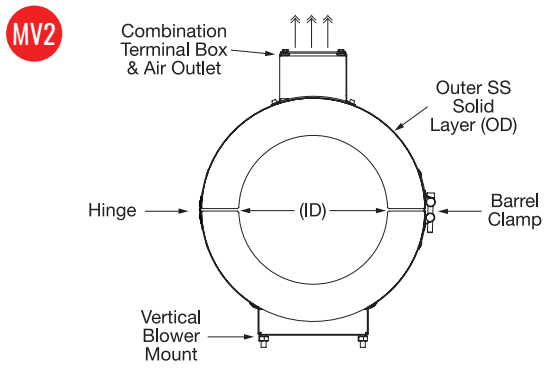
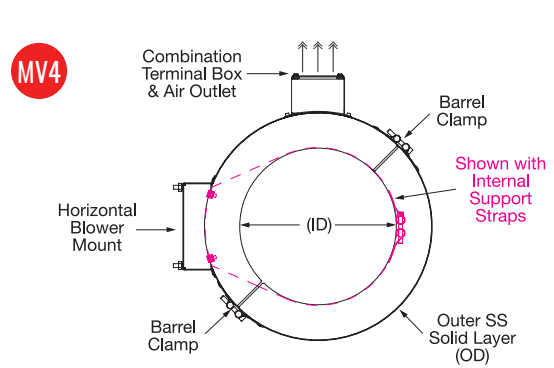
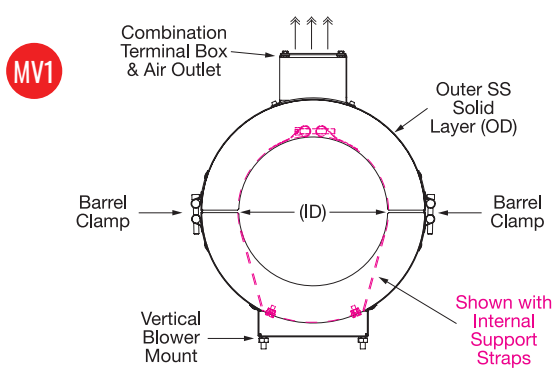


MULTI-VERSAL REFERENCE SHROUD DRAWINGS

The following drawings are for shroud designs that Tempco has previously engineered and manufactured. Each shroud system is custom engineered to fit customer requirements.

Vertical Blower Mounts

Horizontal Blower Mounts



ARCTIC CAST EXTRUDER HEAT/COOL SYSTEM

Recommended Heater Types	Barrel Diameter Range		Zone Length Range	
	Min.	Max.	Min.	Max.
Tempco Finned Cast Aluminum Heaters	4" 102mm	16" 406mm	6-1/2" 165mm	30-1/2" 775mm



Arctic Cast with vertical mount option

This rugged shroud design is recommended for installations where the shroud system could be exposed to physical damage, such as instances where the extruder barrel is low to the ground. It is suited to work with Tempco's specially designed finned cast-in aluminum heaters and cannot be used on any existing finned cast-in heaters.

The Arctic Cast shroud features a vented 1/4" thick cast aluminum layer for durability. The cast-in heaters are designed with a large fin surface area to maximize cooling efficiency. The blower port directs inlet air to the hottest part of the heater, distributing it evenly over the entire cross section of the zone.

SINGLE LAYER SHROUD

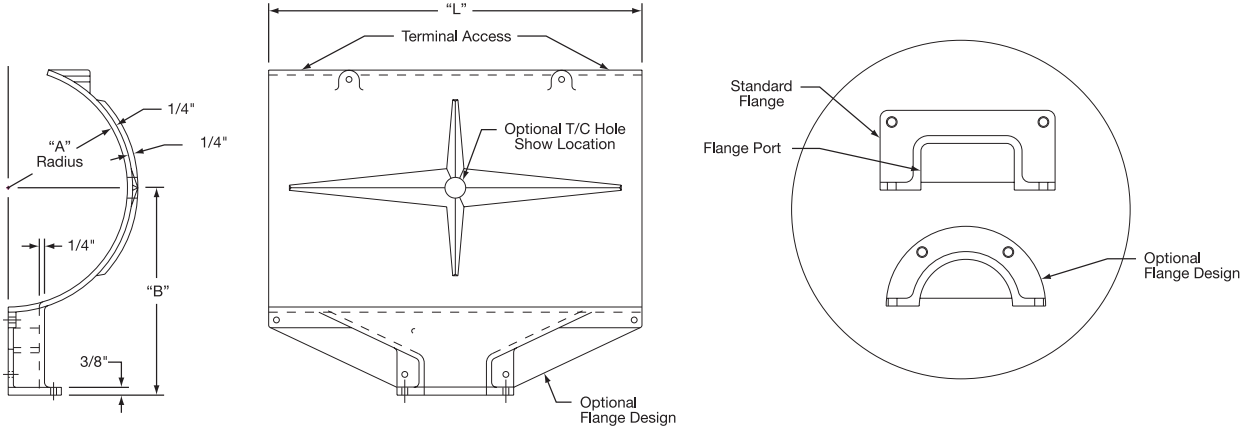
- **Vented 1/4" thick Cast Aluminum layer**
 - Directs the cooling air flow over the heater

SHROUD ASSEMBLY FEATURES

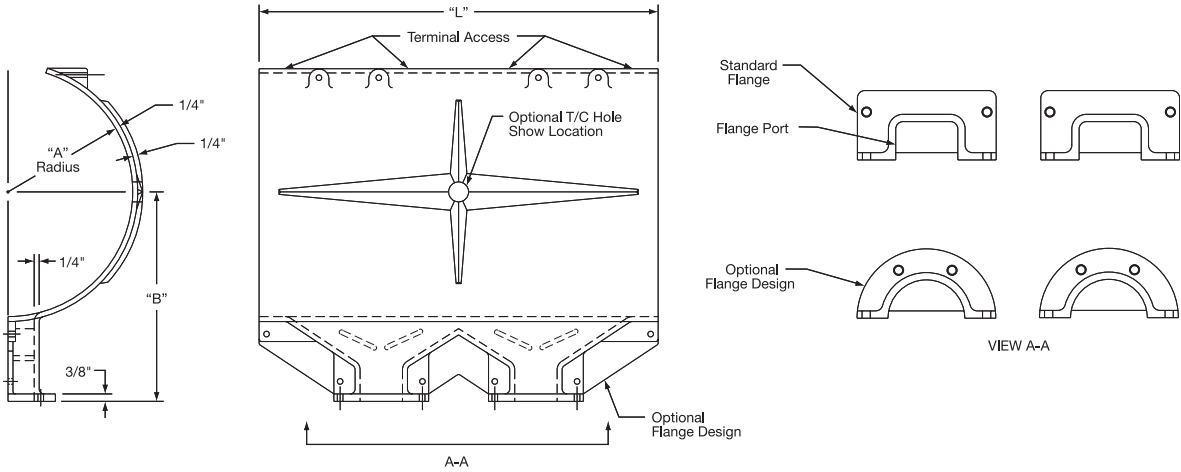
- **Two Individual Halves bolted together (Two-Piece) and clamped around finned cast heater**
- **Blower Options**
 - Single or dual Tempco recommended blowers available from 148 CFM up to 1210 CFM at 115V or 230V, or 480V 3-Phase
 - Customer-specified blower
- **Blower Location**
 - Vertical Orientation (at the bottom of the shroud)
 - Custom location achieved only by rotating entire shroud system
- **Standard top Air Outlet**
 - Custom location achieved only by rotating entire shroud system
- **Shroud Air-Inlet Baffle with built-in air deflector**
 - Breaks up incoming airflow, distributing it across the cast-in heater(s)
- **Sensing and Controlling**
 - Existing zone control probe (shroud system can be designed per customer specifications)
 - Tempco supplied zone control probe
 - Tempco customized power control panel designed to complete your thermal loop system

SELECTION OF ARCTIC CAST SHROUD DESIGN STYLES

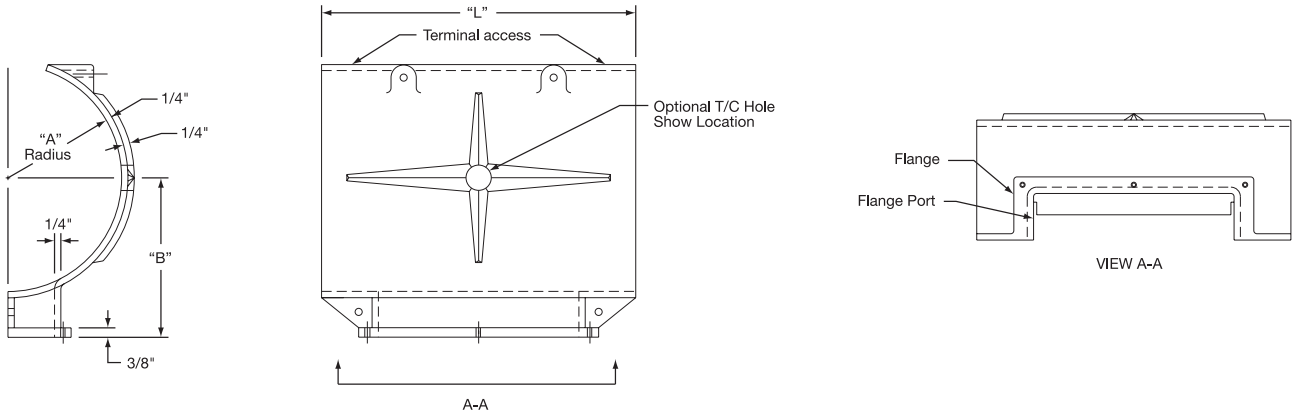
A



B



C



FORCED-AIR BLOWERS FOR AIR-COOLED HEATING SYSTEMS

A variety of sizes and styles of forced-air centrifugal blowers are used on Tempco's air-cooled extrusion systems. Tempco Forced-Air Blowers are available in a large range of CFM ratings (146 -1200 CFM) to fit any new or existing application. All blowers include air inlet guards for your safety.



Standard Single Phase Centrifugal Blowers

Tempco standard blowers feature corrosion protected sheet metal housings and impeller wheels. The quiet operation and quick response coupled with high volume unrestricted output results in a field-proven efficient cooling means for extrusion processes. Standard blowers are readily available for single phase 115V or 230V and represent the shortest delivery times.



Low-Profile Single Phase Centrifugal Blowers

Tempco low-profile 115/230V single phase blowers offer a narrower footprint than the standard blowers. The motor is integrated with the impeller so that the motor housing protrudes only slightly from the blower housing. Low-profile blowers are made of die-cast aluminum and galvanized sheet steel and are perfect for applications where space is a concern.



Universal Three-Phase Centrifugal Blowers

Tempco high-end blowers use heavy duty construction for a long service life. They are available with universal three-phase motors for 50/60 HZ operation on voltages from 202 up to 530V. They meet Cenelec standards and are IP41 or IP54 rated with class B or F insulation systems. These low noise, continuous duty rated blowers operate efficiently under higher static pressure loads than our standard blowers. Optional attachments are available for transferring high temperature air up to 200-300° C and inlet filters for dusty environments.

EXTENSIONS FOR FORCED-AIR BLOWERS

Blower extensions are available for applications where space restrictions do not allow the blower to be mounted directly to the shroud assembly.

Horizontal Blower Extension allows blower to be mounted perpendicular to the shroud. A baffle inside the blower extension smoothly guides air flow into the shroud.



Vertical Blower Extension allows blower to be vertically offset at a distance below the shroud as specified by the customer. Especially useful in retrofit applications.

