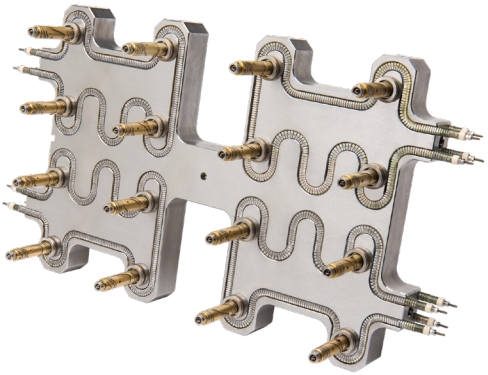
DME®

DME

HOT RUNNER & CONTROL SYSTEMS



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Customer Commitment

Applications Engineering

Is there a hot runner application on your wish list that you don't see here? DME can help. Our design and applications engineering group consists of professional engineers and experienced designers. Once you provide the information necessary for proper application design and analysis, the DME applications engineering team will go to work diligently analyzing, designing and manufacturing a hot runner system that will best suit your needs and requirements.

Technical Service

DME is proud to say that it is an industry model for technical service coverage and response. The DME technical service department covers the entire United States and Canada, with additional service representatives in Europe, Asia and throughout the world. Because DME knows you need assistance starting, operating, and maintaining hot runner systems it has made a great effort to strategically staff a Technical Service Department that is responsible for the success of DME's molding systems.

Field Sales and Customer Service

When you need a knowledgeable person to help you order parts and components, DME has you covered. Our direct field sales force puts a local sales representative in your area. One who understands your business and can offer valuable assistance in helping you select the molding system best suited to your application and your budget. In addition, DME provides a customer service department that has been extensively trained on all of DME's products and systems, making it easier for you to order and have your questions answered. We can provide you price and delivery information on all DME items quickly and accurately.

To take advantage of any or all of these services, or if you have any questions, problems, or ideas please call DME at:

- 800-626-6653 (U.S.)
- 800-387-6600 (Canada)

Part prints or system design prints may be sent in the following ways:

- dme_appl_eng@milacron.com
- 248-544-5707 (U.S.) fax
- 905-677-5280 (Canada) fax

DME offers you a wide range of services from component selection to on-site system installation. Our ever-growing list of services include the ability to:

- Analyze the best system to fit your needs
- Assist in system design
- Perform computerized system analysis and resin qualification before any metal is cut
- Marry your system to the mold base, plates and components required
- Provide quotations for and perform all of the special machining required
- Assemble and wire the system
- Check mechanical fit of all components and perform electrical load testing
- Assist with system start-up and maintenance

All of which gives you ... more time to concentrate on cavities and cores!

Terms and Conditions of Sale

1. **FOB POINT / PRICES:** Products are sold FCA Madison Heights. Any taxes are in addition to the prices and may be invoiced later.
2. **SHIPPING SCHEDULE:** The shipping schedule is our current estimate of delivery dates and we agree to use reasonable efforts to comply with the schedule.
3. **WARRANTY:**
   (a) Any DME trademarked or tradenamed product or part thereof manufactured by or for us 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 to Buyer.

   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 our 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 have a life, under normal usage, inherently shorter than 12 months.

   (c) The conditions of actual production in each end user's plant vary considerably. Therefore, descriptions of the production or performance capabilities of any product or software materials are estimates only and are not warranted.
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:**

   UNDER NO CIRCUMSTANCES SHALL WE OR ANY AFFILIATE OF OURS HAVE ANY LIABILITY WHATSOEVER FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES HOWSOEVER CAUSED OR ARISING (INCLUDING CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE), such as, but not limited to, loss of profit or revenue; loss of use of the product, part thereof; cost of capital; cost of replacement equipment; claims that the warranty failed of its essential purpose 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 before our completion of the order or applicable portion of the order. On receipt of such 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 a cancellation charge. For completed items, the charge will be equal to their established prices. For items not completed, the charge will be equal to our full cost plus a premium in addition to a charge for any packing and storage and less a credit for the balance of the material as scrap.
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:** Each such product shall be deemed to be accepted within seven days after delivery of the product to the Buyer, unless we receive written notification of rejection for cause from Buyer within the seven day period.

   "Returned Goods": No goods are returnable without prior approval, prepaid transportation and an issued RMA number. All items are subject to our inspection before credit will be allowed.
   NO GOODS ARE RETURNABLE LATER THAN THIRTY DAYS AFTER RECEIPT OF MERCHANDISE.
9. **PATENT INDEMNITY:** We shall defend any suit or proceeding brought against Buyer and pay all costs and damages awarded against Buyer provided that:
   (a) The suit or proceeding is based upon a claim that the product or part thereof is an infringement of any claim of a presently existing U.S. patent;

   (b) The claim of infringement is not based, directly or indirectly, upon (i) the manufacture, use, or sale of any product furnished by us which has been modified without our consent; or, (ii) the manufacture, use, or sale of any combination of a product furnished by us with products not furnished by us; or (iii) performance of a patented process using a product furnished by us or production thereby of a patented product; and,

   (c) We are notified promptly and given information and assistance (at our expense) and the authority to defend the suit or proceeding. We shall not be responsible hereunder for any settlement made without our written consent nor shall we be responsible for costs or expenses incurred without our written consent. If our product is adjudicated to be an infringement and its use in the U.S. by Buyer is enjoined, we shall, at our own expense, either:

   (i) procure for Buyer the right to continue using our product;
   (ii) replace it with a noninfringing product;
   (iii) modify it so it becomes noninfringing;
   (iv) remove the product or part thereof and refund Buyer's net book value and transportation costs attributable to it.

   The foregoing states our entire liability with respect to any patent infringement by our products or any parts thereof. To the extent that our product or any part thereof is supplied according to specifications and designs furnished by Buyer, Buyer agrees to indemnify us in the manner and to the extent set forth above insofar as the terms thereof are appropriate.
10. **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.
11. **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 order. All orders are subject to our acceptance and we reserve the right to reject orders as, in our sole judgement, mandated by business conditions. We reserve the right to not proceed with any order until all necessary information is received from Buyer.
12. **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.
13. **ASSIGNMENT:** Neither party may assign this Agreement without the written consent of the other party, except that we may assign this Agreement to a third party that acquires substantially all of our assets or we may assign the flow of funds arising out of this Agreement.
14. **GOVERNING LAW:** This Agreement shall be governed by and construed in accordance with the laws of the State of Michigan.

U.S.A.

TERMS AND CONDITIONS OF SALE: See previous page.

PHONE ORDERS – TOLL FREE: 800-626-6653. DME's Customer Service Dept. operates Monday through Friday from 8 a.m. to 6 p.m. E.S.T. Calls can be made from anywhere in the continental U.S. and Puerto Rico (Puerto Rico: use "137" prefix instead of "1"). Our Customer Service Representatives will be happy to answer your questions on DME products or services, provide on-the-spot feedback on product availability and shipping details, or take any messages you wish relayed to your local DME sales, manufacturing or technical service representatives.

MAIL ORDERS: If you prefer to order by mail, please address your order to:

- DME Company, 29111 Stephenson Highway, Madison Heights, Michigan 48071-2330
  ATTN: Customer Service Dept.

FAX: You may fax your order to:

- DME Customer Service
- 248-544-5113 or 888-808-4363

CHECKS OR MONEY ORDERS: When paying invoices by check or money order, please make payable to DME Company. include remittance copy of invoice and mail to:

- DME Company, Department Lock Box 774867, 4867 Solutions Center, Chicago, IL 60677-4008

WALK-IN ORDERS, PICK-UPS AND RETURNS: If desired, ordered products in stock at your nearest DME Service Center can be picked up rather than shipped. Walk-in orders at Service Center locations can also be processed while you wait. Products being returned for repair or exchange should be processed through Customer Service prior to being returned.

SPECIAL MACHINING SERVICES: Prints for quotation on special machining work can be sent by EDI to dme_cad@dme.net or mailed to the Estimating Department of the DME manufacturing location nearest you. Call our toll-free number if desired to clarify location which serves your area.

Estimating locations are:

- 70 East Hillis Street, Youngwood, Pa 15697, FAX: 724-925-2424
- 117 Fairplains Street, Greenville, MI 48838, Tel. 616-754-4601, FAX: 616-225-3924
- 3275 Deziel Drive, Windsor, Ont N8W 5A5, Tel. 519-948-5001, FAX: 519-948-4652

Please add "DME Company" and "Attn: Estimating Dept." to above addresses when mailing prints. To obtain prices and delivery on special mold base orders or to check status of special work in progress please contact Customer Service.

CANADA

TERMS AND CONDITIONS OF SALE: See previous page.

PHONE ORDERS: Contact our Mississauga, Ontario office at 800-387-6600, FAX: 800-461-9965.

MAIL ORDERS: Send to: DME Company, 6210 Northwest Drive, Mississauga, Ontario L4V 1J6.

CHECK OR MONEY ORDERS: Make payable to *DME Company.* Include remittance copy of invoice and mail to Mississauga address above.

WALK-IN ORDERS, PICK-UPS, RETURNS, AND SPECIAL MACHINING: Contact our Mississauga office.

Hot Runner & Temperature Control Warranty

DME Company
29111 Stephenson Highway, Madison Heights, MI 48071
Tel. 248/398-6000 ▪ FAX 248/544-5113

DME Hot Runner Systems and Temperature Controllers are warranted pursuant to DME Company's standard terms and conditions (see page 5) for the time periods set forth below. The warranty **(i)** *covers items sold and shipped [supplied in accordance with orders placed by the customer with DME on or after JULY 1, 2003],* **(ii)** *applies only to the original DME customer and,* **(iii)** *is not transferable to subsequent owners of the product except as specifically set forth herein (see Transferability below for conditions).*

WARRANTY PERIODS APPLICABLE TO SPECIFIED DME PRODUCTS; COVERAGE STARTS UPON DATE OF SHIPMENT:

Item	Coverage
DME Hot One Hot Halves (plates designed, machined & assembled by DME, **excluding Electrical Parts**)	Plastic leakage, due to manufacturing defect, within hot runner plates covered for Two (2) years; **excluding Gate Detail.**
DME Stellar Hot Runner Hot Halves (plates designed, machined & assembled by DME, **excluding Electrical Parts**)	Plastic leakage, due to manufacturing defect, within hot runner plates covered for Two (2) years; **excluding Gate Detail.**
DME Smart One Valve Gate Hot Halves (plates designed, machined & assembled by DME, **excluding Electrical Parts**)	Plastic leakage, due to manufacturing defect, within hot runner plates covered for One (1) years; **excluding Gate Detail.**
DME Hot One and Stellar & Smart One VG Manifold and Components (neither plates nor assembly supplied by DME, **excluding Electrical Parts**)	One (1) year
DME Electrical Parts (all heaters and thermocouples)	One (1) year
DME Mold Controls and Valve Gate Controls (**excluding Fuses & Triacs, Power Packs & Trolley as appropriate**)	One (1) year - Pumping systems, Valves & Solenoids Two (2) years - Smart Series Mainframes & Modules TSP, TSP Plus & SVG Electronic Controllers

Replacement or repair will be made at the election of DME; implemented at a DME facility and/or by shipment of replacement parts to the customer for installation and/or return of defective parts to DME for repair.

Transferability:

This warranty may be transferred by the original DME Customer to a subsequent owner of the product if all of the following conditions exist: (i) the original DME Customer purchased the product for purposes of re-sale or other immediate transfer and DME was made aware of these purposes at the time of purchase in writing, (ii) within thirty (30) days from the date of invoice, DME is notified in writing of the transfer and provided with the name of the new owner (hereafter "Transferee"), the contact person of the Transferee and the Transferee's address.

Exclusions:

- Normal wear of the system and components including, but not limited to: Nozzle Tips, Nozzle Seal Rings, and Electrical connectors
- Damage to the critical seal-off areas on the manifold, nozzle bodies, or in the mating cavities or cavity inserts caused by improper assembly, operation, disassembly and maintenance
- Wear or damage resulting from corrosion or processing of abrasive/aggressive resins
- Damage due to failure to follow recommended operation and maintenance procedures specified in the DME Hot Runner Manual, Hot Runner Nameplate, Service Bulletins, User Manuals or failure to follow standard industry operation and maintenance procedure
- Damage caused by abuse, neglect, and failure to adhere to DME instructions and operational recommendations
- Damage caused by improper installation, operation and maintenance
- Damage resulting from modifications to the product or component parts, abuse or neglect
- Failure caused by modifications made to the product without the prior written approval of DME
- Damage resulting from operation of products at injection pressures greater than 20,000 psi (1360 bar) on Hot One, Stellar & Smart One VG Systems; unless specifically designed and manufactured for higher pressure applications in agreement with manufacturer
- Damage or failure caused by the product's inability to perform as a component of a system design not supplied by DME
- Operator absence or operator error
- Operator maintenance and training capability
- Electrical interruptions
- Events beyond the control of DME
- Errors or actions by a third party
- Non-compliance with local laws, codes, ordinances or regulations codes or bylaws unless DME is informed of them by our customer at the time of order placement

DME Hot Runner...

DME:
Your essential resource for hot runner solutions

DME
Every step of the way

Whether your application requires best-in-class components or a turnkey hot-half system, DME has a hot runner solution that meets your needs.

DME: An Essential Resource for Hot Runner Productivity

Moldmakers, molders and mold designers worldwide look to DME for essential hot runner solutions — whether that is a single, best-in-class component or a complete, fully functioning hot half system. Offering the industry's broadest range of hot runner products and services as well as an unsurpassed knowledge and expertise, DME is committed to helping customers achieve maximum productivity, reliable operation, and better performance.

System Solutions

DME offers a comprehensive family of hot runner systems built on our modular architecture making custom configuration easy and quick.
Systems include:

- Stellar® Micromolding Systems engineered for tight pitch molding
- The Hot One 250, 375 and 625 series

A wide range of DME nozzles allows versatility in system selection

Stellar Micromolding Nozzles provide application flexibility

...from components and manifolds to turnkey hot halves

Our goal is simple: to be an essential resource for your molding challenges.
Every step of the way.

Specialized Systems

As one of the world's leading hot runner manufacturers, we recognize that some application challenges demand specialized solutions. Offerings include:

- Stellar Manifold and Components
- Stellar Hot Halves
- Hot One Manifold and Components
- Hot One Hot Halves

Knowledge That Gives You an Advantage

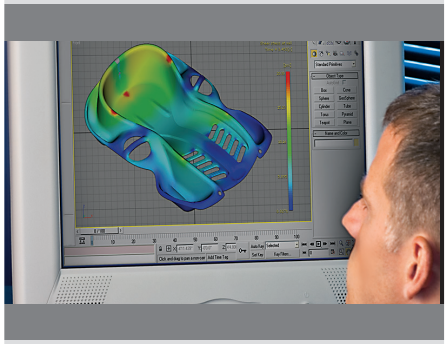
Our team of trained, experienced experts can help you with needs analysis, design, configuration, operation, and all the other services that enable you to focus on your core business.

- Applications engineering
- Moldflow analysis

Service and Support to Keep You Productive

DME provides essential support to keep your hot runner systems in-service. Our dedicated hot runner service center is staffed by trained, experienced technicians who support DME systems, as well as other brands, to provide help when and where you need it, every step of the way.

Stellar & Hot One Systems are custom configured for your application



Moldflow predictive analysis optimizes part design and lowers costs

DME Hot Runner Service Center provides total support for your hot runner system

DME

DME Hot Runner Technology Selection Guide

October, 2019

www.dme.net

Resin Application Key

- Good
- Contact DME Applications Engineering or Technical Service for resin application guidance
- Not recommended for resin application

Polymer Viscosity Key

L – Low M – Medium H – High

The values expressed in grams are for reference only and are determined by using a nominal wall thickness of 1.8mm (.070") and unfilled polypropylene.

Part dimension, wall thickness, length of fill within part, mold conditions and molding parameters must also be considered.

NOTE: If flame retardant is present in the desired resin grade, please contact DME for product suitability or application guidance.

NOZZLE FLOW CAPACITY RECOMMENDATIONS

GENERIC POLYMER NAME (TRADE NAME) [A = AMORPHOUS or C = CRYSTALLINE]

NOTE: THE CHART BELOW SHOWS COMMODITY RESINS IN BLUE TYPE; ALL OTHERS ARE ENGINEERING RESINS.

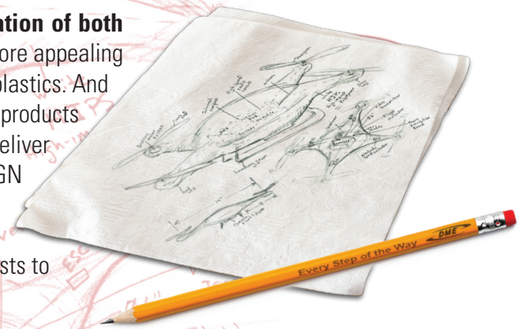
		TIP	Recommended Gate Diameter Range Min (mm)	Max (mm)	Min (inch)	Max (inch)	Flow Capacity (Grams) Viscosity Low MFI >16	Medium MFI 7-16	High MFI .02-7	TPE (Elastomer) [A]	PE (Polyethylene) [C]	PE GF (Polyethylene) [C]	PS (Polystyrene) [C]	PS GF (Polystyrene) [A]	SAN [A]	TPO [C]	PP (Polypropylene) [C]	PP GF (Polypropylene) [C]	PP TF (Polypropylene) [C]	ABS [A]	ABS/PC [A]	PMMA (Acrylic) [A]	POM (Acetal) [C]	PA (Nylon) [C]	PA GF (Nylon) [C]	PA MF GF (Minlon) [C]	PPE [A]	PPO (Noryl) [A]	PPO GF (Noryl) [A]	PBT Polyester [C]	PBT GF Polyester [C]	PET [C]	PC (Polycarbonate) [A]	PC GF (Polycarbonate) [A]	PPS [C]	PSU [A]	PSU GF [A]	LCP [C]	PEI (Ultem) [A]	PEI GF (Ultem) [A]	PEEK [C]	PUR (Urethane) [A]	PVC (Flex Vinyl) [A] *
										L	L	H	M	H	M	L	M	H	M	M	H	H	M	L	H	H	H	H	H	H	H	L	H	H	M	H	H	L	H	H	H	L	M
NOZZLES	Stellar High Performance Heater	Sprue Tip	2.0	2.0	0.080	0.080	20	15	10																																		
		Standard Point Gate Tip	0.7	1.9	0.028	0.075	10	10	10																																		
		Wear Resistane Point Gate Tip	1.3	1.9	0.050	0.075	10	10	10																																		
	Hot One 250 Series Coil Heater	Sprue Tip	2.0	3.1	0.080	0.125	625	475	315																																		
		Standard Point Gate Tip	0.7	2.5	0.028	0.100	200	150	100																																		
	Hot One 250 Series Cast-In Heater	Sprue Tip	2.0	3.1	0.080	0.125	625	475	315																																		
		Wear Resistant Point Tip	0.7	2.5	0.060	0.100	200	150	100																																		
	Hot One 375 Series Coil Heater	Sprue Tip	3.2	4.7	0.125	0.187	1000	750	450																																		
		Standard Point Gate Tip	0.7	3.1	0.028	0.125	310	200	150																																		
	Hot One 375 Series Cast-In Heater	Sprue Tip	3.2	4.7	0.125	0.187	1000	750	450																																		
		Wear Resistant Point Tip	0.7	3.1	0.060	0.125	310	200	150																																		
	Hot One 625 Series Coil Heater	Sprue Tip	4.7	7.9	0.187	0.312	1500	1100	750																																		
		Standard Point Gate Tip	3.2	4.4	0.125	0.175	800	550	400																																		
	Hot One 625 Series Cast-In Heater	Sprue Tip	4.7	7.9	0.187	0.187	1500	1100	750																																		
		Wear Resistant Point Gate Tip	3.2	4.4	0.125	0.175	800	550	400																																		
	Smart 12	Valve Gate Tip	1.20	2.00	0.05	0.08	225	150	75																																		
	Smart 15	Valve Gate Tip	1.20	2.50	0.05	0.10	450	300	220																																		
	Smart 19	Valve Gate Tip	1.50	3.50	0.06	0.14	610	460	280																																		
	Smart 21	Valve Gate Tip	2.00	5.00	0.08	0.20	750	550	325																																		
	Smart 24	Valve Gate Tip	3.00	6.00	0.12	0.24	940	640	375																																		
HOT SPRUE BUSHINGS	Radius Hot Sprue Bushings	S-Series & T-Series	4.1	4.1	0.160	0.160	700	500	300																																		
		E-Series	1.5	1.5	0.060	0.060	300	150	50																																		
		ER-Series & TR-Series	3.2	3.2	0.125	0.125	500	300	200																																		
		High Performance Series	1.6	1.6	0.062	0.062	300	150	50																																		
			3.2	3.2	0.125	0.125	500	300	200																																		
	D-MAX 250 Series High Performance	Sprue Tip	2.0	3.1	0.080	0.125	700	500	350																																		
		Standard Point Gate Tip	1.25	2.5	0.050	0.100	250	175	125																																		
		Wear Resistane Point Gate Tip	1.5	2.5	0.060	0.100	250	175	125																																		
	D-MAX 375 Series High Performance	Sprue Tip	3.2	4.7	0.125	0.187	1100	800	500																																		
		Standard Point Gate Tip	1.25	3.1	0.050	0.125	350	250	200																																		
		Wear Resistant Point Gate Tip	1.5	3.1	0.060	0.125	350	250	200																																		
	D-MAX 625 Series High Performance	Sprue Tip	4.7	7.9	0.187	0.312	1600	1200	850																																		
		Standard Point Gate Tip	3.0	4.4	0.125	0.175	900	650	500																																		
		Wear Resistane Point Gate Tip	3.0	4.4	0.125	0.175	900	650	500																																		

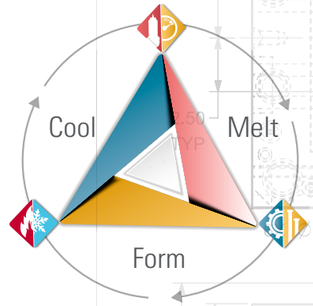
Available only as a DME Designed and Manufactured Manifold & Components or Fully Assembled and Wired Hot Half

Available from the catalog as Components only, or a DME designed and manufactured Manifold and Components or fully assembled and wired Hot Half

Your Design

Molded plastic parts remain one of the key enablers to innovation of both consumer and industrial products. Lighter, stronger, smaller and more appealing products are possible by leveraging the versatility and performance of plastics. And DESIGN is critical to every aspect of the plastic part. Through DESIGN products can be differentiated in terms of their form, fit and function to deliver improved performance through the entire application life-cycle. DESIGN also allows for lower total costs allowing for high-speed, high-volume molding operations due to higher material prices, a need to reduce cycle time, reduce scrap rates, and increase overall productivity and costs to manufacture further improving the total value to the customer.



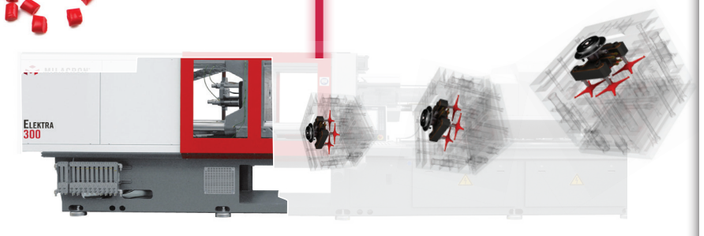


Our Solution

We work alongside you taking a holistic approach that helps ensure all of the project requirements are met wherever in the world they are required. We start by building a detailed understanding of your plastic part design and its intended application in use. Drawing on unrivalled breadth of capabilities we take an integrated approach to meet your needs combining our precis melt delivery systems, engineered components that enable the molding process, and mold cooling technologies that ensure part quality and appearance are achieved at the lowest cost possible. Our goal is to deliver the best possible plastic part at the lowest possible cost.

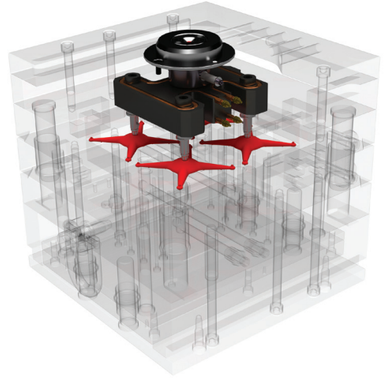
This is DME's MOLD TECHNOLOGY SOLUTION.

Pellet



Injection solutions

MELT

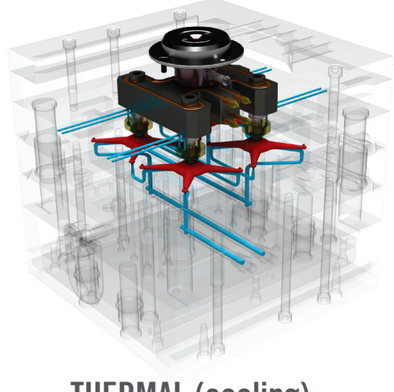


Melt Delivery systems

Form

Engineered Components

COoL



THERMAL (cooling) Management

Part

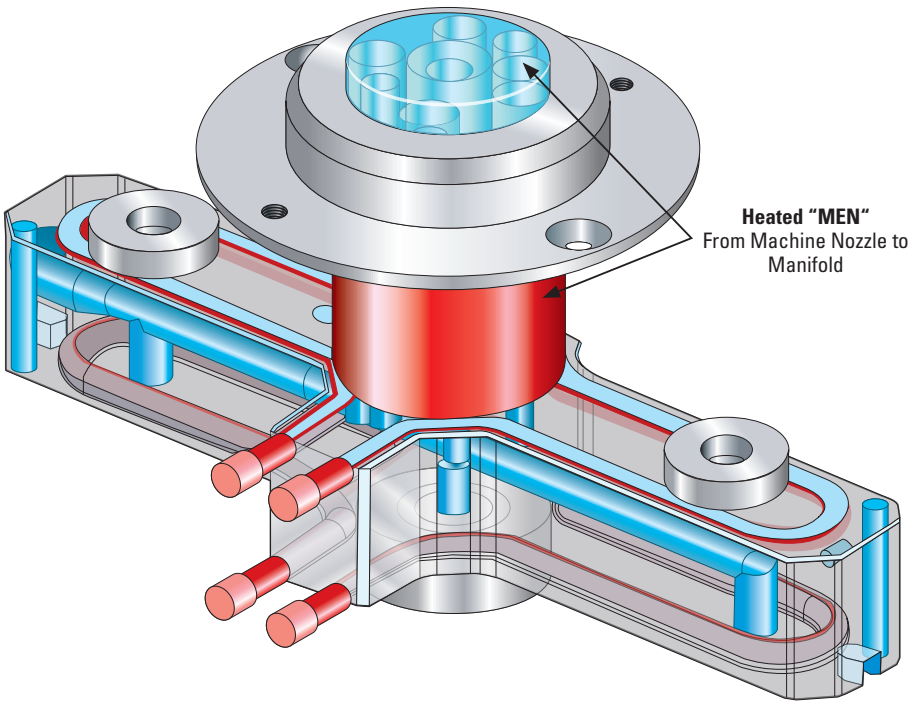
Standard Global Manifold

DME Global Manifolds and Components are standardized worldwide to ensure that even the smallest detail provides operational excellence regardless of where DME hot runner products are used. Whether you're relying on a quick-delivery manifold or an applications-engineered, custom manifold, the DME Global Manifold Standard ensures optimal hot runner performance no matter where in the world it was built.

Key Features of the DME Global Manifold Include:

- Flexible tubular heaters
- Locating rings that fit virtually any injection press platen hole diameters
- Heated Manifold Extension Nozzles available
- High-tolerance, press-fit heaters
- Upper and center Manifold supports constructed of high-strength, low-heat conductive titanium that minimizes heat loss and maintains an even heat profile
- J-type thermocouples are black-and-white, coinciding with the IEC 584-3 International Standard
- Flow channel sizes range from 6mm to 16mm

DME customers are assured that DME Manifold Systems are designed and built with a global standard that ensures efficient molding anywhere in the world. And, since replacement parts are identical worldwide, they are readily available wherever your mold is operating, not just where it was built. All DME nozzles, including, Stellar and the Hot One, perform flawlessly with the DME Global Manifold Standard.



Available in all balanced design layout patterns up to 24 nozzle drops*, including inline, X, Y, H, Double H & Multiple Level Systems.

*Contact DME for Higher Cavitation

MANIFOLD DESIGN, SPECIFICATION & TOLERANCE STANDARDS HARMONIZED FOR GLOBAL PRODUCT OFFERING

AMERICAS – EUROPE – ASIA – AUSTRALIA / NEW ZEALAND – INDIA – AFRICA

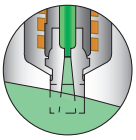
Plastic Materials and Specifications

PLASTIC MATERIAL PROCESS CONDITIONS											
MATERIAL	STANDARD RESIN SYMBOL	PROCESS TEMPERATURE		MOLD TEMPERATURE		HOT RUNNER TEMPERATURE		DENSITY MELTING		SOLID DENSITY	
		[°C]	[°F]	[°C]	[°F]	[°C]	[°F]	[g/cm³]	[lbs/inch³]	[g/cm³]	[lbs/inch³]
Styrene Butadiene	SB	210	410	70	158	230	446	0.93	0.0366	1.02	0.0369
Polyurethane	PUR	220	428	45	113	240	464	0.93	0.0366	1.11	0.0401
Styrene-acrylonitrile	SAN	230	446	80	176	255	491	0.99	0.0358	1.08	0.0390
Polystyrene	PS	210	410	45	113	230	446	0.95	0.0343	1.05	0.0379
Polycarbonate	PC	300	572	80	176	330	626	1.08	0.0390	1.20	0.0434
Polyphenylene Oxide-Styrene	PPO	260	500	80	176	300	572	0.99	0.0358	1.13	0.0408
Polyethylene	PE	200	392	25	77	225	437	0.74	0.0267	0.96	0.0347
Polypropylene	PP	225	437	40	104	245	473	0.73	0.0264	0.91	0.0329
Polyether-etherketone	PEEK	330	626	165	329	370	698	1.13	0.0408	1.37	0.0495
Polyphenylene Sulfide	PPS	300	572	110	230	330	626	1.53	0.0553	1.70	0.0614
Polyebutylene Terephthalate	PBT	265	509	60	140	290	554	1.44	0.0520	1.57	0.0567
Polyamide 6	PA 6	220	428	90	194	250	482	0.98	0.0354	1.14	0.0412
Polyamide 66	PA 66	255	491	90	194	280	536	1.09	0.0394	1.26	0.0455
Thermal Plastic Elastomers	TPE	240	464	35	95	265	509	0.78	0.0282	0.90	0.0325
Polyoxymethylene (Polyacetal)	POM	180	356	100	212	200	392	1.16	0.0419	1.42	0.0513
Polymethyl Methacrylate	PMMA	235	455	70	158	250	482	1.09	0.0394	1.18	0.0426
Acrylonitrile Butadiene Styrene	ABS	225	437	70	158	250	482	0.95	0.0343	1.08	0.0390

NOTE: Temperature and density values shown above are general, and may not apply to your application. Please refer to proper processing data for the resin grade intended for your specific application. Failure to use temperature settings appropriate to the specific resin and resin grade intended for your application may result in poor part quality, or inability to produce acceptable molded parts.

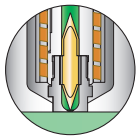
Bushing Selection

HOT SPRUE BUSHING TIP STYLE



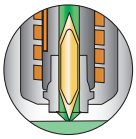
SPRUE GATE TIP STANDARD / EXTENDED

For use where gate vestige is allowed. Provides low resistance to flow with excellent flow rates. Extended style provides additional stock for machining profiles or part contours.



RING GATE TIP STANDARD / EXTENDED

Ideal for low vestige commodity and engineering grade resin applications. The Ring Gate features a sealed tip for efficient shut-off at the part surface. Available with standard or wear resistant needles. Extended style provides additional stock for machining profiles or part contours.



POINT GATE TIP

Suitable for high viscosity resins, engineering plastics and applications requiring optimum gate cosmetics with minimal gate vestige. Available with standard or wear resistant needles.

BUSHING TIP AND PLASTIC MATERIAL COMPATIBILITY

NOZZLE	THERMOPLASTIC RESIN TYPE																								
	AMORPHOUS							SEMI-CRYSTALINE																	
	SB	PUR *	PEI *	SAN *	PS	PC *	PPO *	PE	PP	PEEK	PPS *	PET *	PBT *	PA *	TPE *	POM *	PMMA *	ABS	TPO *	ABS/PC *	PPE/PS *	PSU	LCP
SPRUE GATE TIP STANDARD / EXTENDED	●	●	●	●	■	●	●	■	●	▲	●	●	●	●	●	●	●	●	●	●	●	▲	▲
RING GATE TIP STANDARD / EXTENDED	●	●	●	●	■	●	●	●	●	▲	●	●	●	●	●	●	●	●	●	●	●	▲	▲
POINT GATE TIP	●	●	●	●	■	●	●	■	●	▲	●	●	●	●	●	●	●	●	●	●	●	▲	▲

■ Green – Works well with this resin
● Yellow – Contact DME Engineering for guidance
▲ Red – Not recommended

Hot Runner Quote Request Form

EMAIL TO DMEUS_AE_QUOTE@MILACRON.COM OR FAX

United States: 888-808-4363 • Canada: 800-461-9965 • International: 248-398-7394

Available online

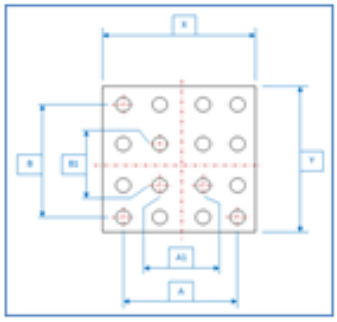
MILACRON	DME / Milacron 29111 Stephenson Highway Madison Heights, MI. 48071-2383	Applications Engineering QUOTE REQUEST FORM Email to: DMEUS_AE_Quote@milacron.com	DME

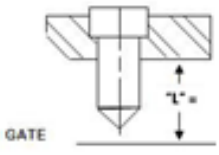
Tech Service Approval, Final Drawings and In-House Due Date Required for Firm Quote - QUOTE TYPE ☐ Preliminary ☐ Firm

Customer's In-House Date Requirement

Date		Sales Rep	
Company		Contact	
Address		Phone	
Address		Fax	
City		E-Mail	
State	Zip	Acct#	End User
Molding Material		Melt Temp	deg.
Manufacturer		Range	(min) (max)
Filler	☐ None ☐ Glass ☐ Other Percent	%	
Flame Retardant	☐ Yes ☐ No Melt Flow Index		
Color Changes	☐ Yes ☐ No	Mold Temp	deg.
New Mold	Retrofit	DME Mold Base to be Quoted	
Mold Base Size		Mold Base Drawings Supplied	
Gating Into	☐ Part ☐ Dimple ☐ Runner		
Gate Style	Stellar/Hot One (Fixed Point/Sprue Tip only) ☐ Sprue ☐ Ext Sprue ☐ Tip/Point ☐ WR ☐ Other	SmartOne Nozzle (Valve Gate only) ☐ VG – Bodiless ☐ VG – Full Body ☐ VG – Full Body Ext	
Number of Drops	Number of Cavities		
Part Name	Part Number	Job #	
Part Drawing Supplied	☐ Yes ☐ No	Sample Supplied	☐ Yes ☐ No
Wall Thickness of Part		CAD Data Supplied	☐ Yes ☐ No
Part Weight	☐ Grams ☐ Ounces	Total Shot Weight	☐ Grams ☐ Ounces
Runner Weight	☐ Grams ☐ Ounces		
Type of Quote Requested	☐ M&C (system) ☐ Hot Half – Plate Steel ☐ #2 (standard) ☐ 420SS		

Drop Spacing	A=	
	A1=	
Drop Spacing	B=	
	B1=	
Plate Width	X=	
Plate Length	Y=	
Molding Elevation	L=	
# of Columns		
# of Rows		





NOTES:

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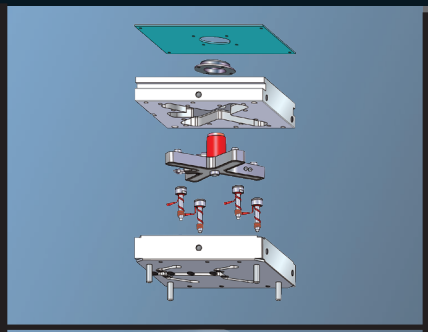
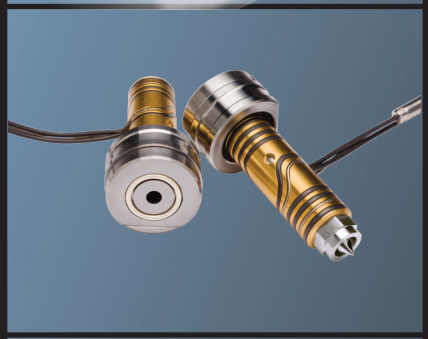
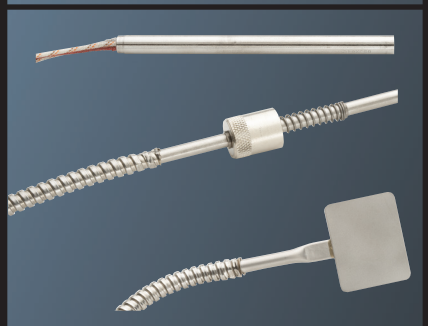
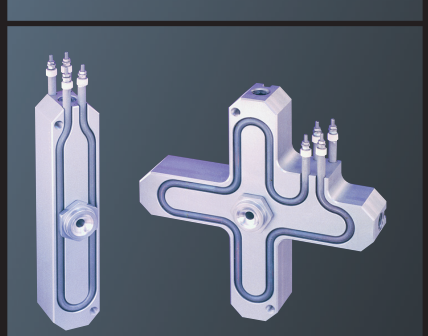


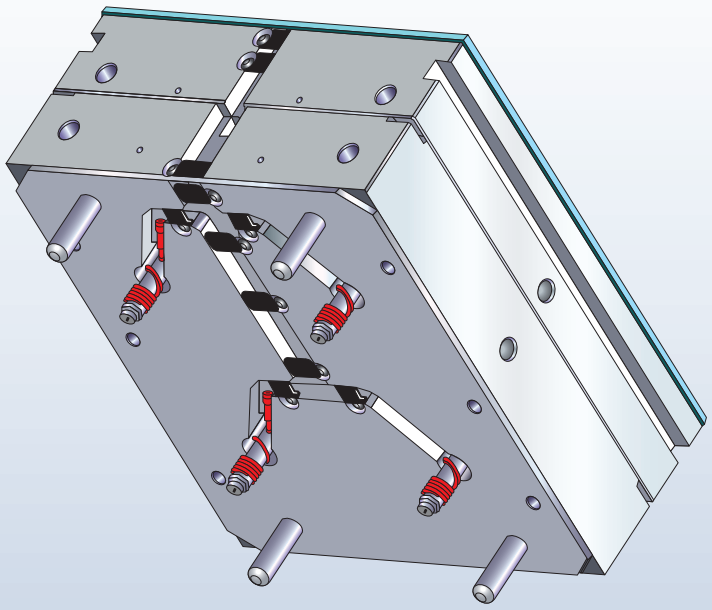






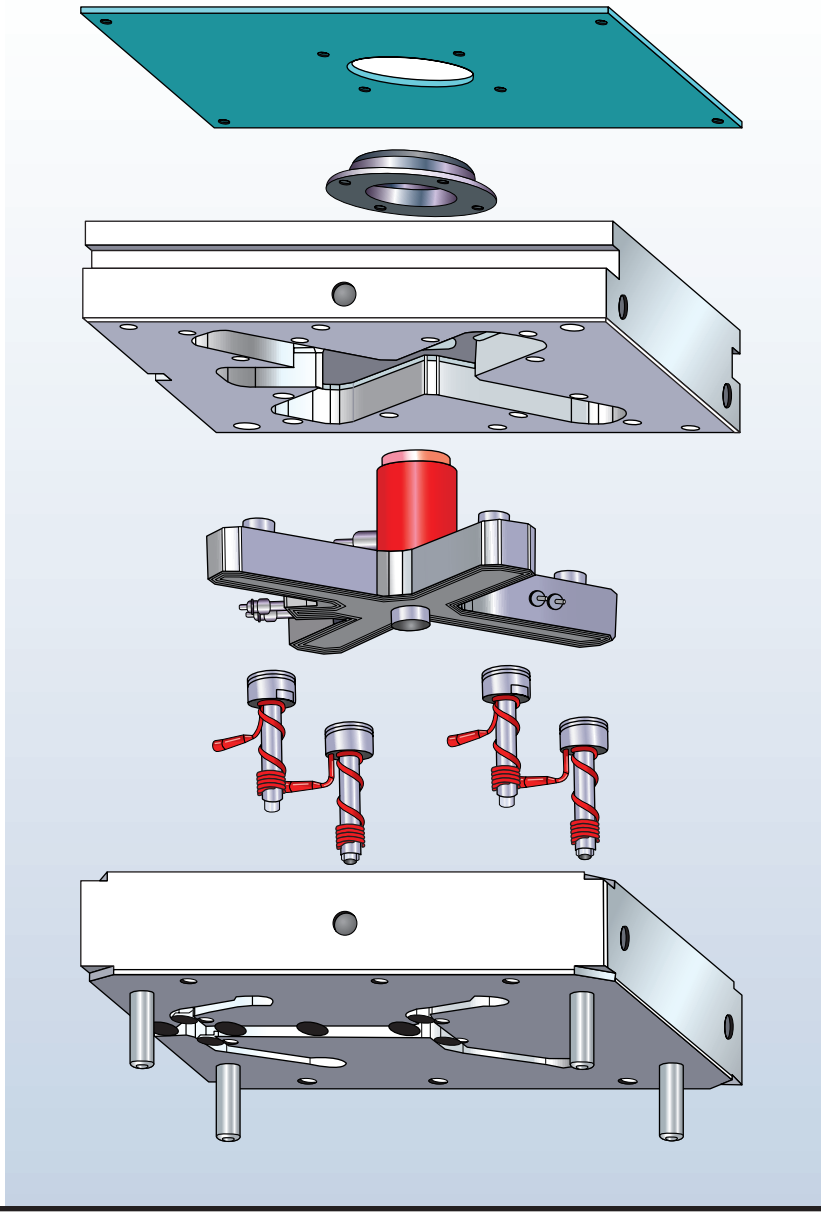
Hot Runner Technology

A LONG-STANDING
INDUSTRY STANDARD
IN USER-FRIENDLINESS
AND AFFORDABILITY



Features and Benefits

Our ongoing customer-driven philosophy has fostered many new and innovative systems and components, allowing you to take advantage of more than seven decades of leadership in injection molding technology. DME's Hot Runner Technology has become an industry standard in technology, user-friendliness, and affordability. Available in two styles – Manifold & Components and as a complete Hot Half System.



Tubular Heated Systems

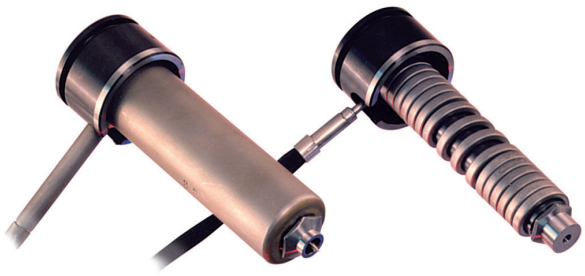
Using exclusive, distributed wattage Tubular Heaters, the DME Hot Runner Systems can process many engineering grade resins. Tubular Heaters reduce the number of zones of heat required, providing the added benefit of lowering your temperature control costs.

DME's Hot Runner Technology has become an industry standard in technology, user-friendliness, and affordability. Available in two styles – Manifold & Components and as a complete Hot Half System.

Each DME nozzle series has its own advantages and characteristics to meet your needs.

Stellar Nozzles

"CIA"/"EHA" Nozzles



Nozzles

The DME Hot One is accompanied by a nozzle offering that allows versatility in system selection to best suit the material and molded part configuration. DME offers different styles of nozzles: The "EHA" series, using square coil heaters and the "CIA" series , using replaceable, slip-on high performance heaters. Each nozzle series has its own characteristics and advantages.

For example, the "EHA" series of nozzles can be used for many applications using commodity resins with low crystallinity. The "CIA" series, with high performance heaters developed exclusively for DME, can be used for all applications, especially engineering grade resins with a high degree of crystallinity.

"EHA"/"CIA" Nozzle Tips

- *Sprue Gate/Extended Sprue Gate* – Used primarily in applications where gate vestige is not a concern. Offers minimal flow resistance and handles most resins very effectively. Extended style provides additional stock for machining of runner profiles or part contours.
- *Point Gate* – Used for applications needing optimum gate cosmetics, this tip can run a wide range of resins. It has two interchangeable needles, standard and wear resistant. The wear resistant needle is especially useful for abrasive or filled material applications.
- *Full Body Point Gate* – Used for low vestige, commodity grade resin applications. The Full Body Point Gate features a sealed tip for efficient shut-off at the parting line.

Ordering Options: Use this information and our design and machining guidelines to build your system, or take advantage of DME Applications Engineering services to help you select the system best suited to your requirements. Then, either order the steel and components to construct your system or let DME do all of the machining, assembly and wiring for you.

SMART ONE

VALVE GATE HOT RUNNER SYSTEM

THE SMART WAY TO FILL

DME®

SMART ONE VALVE GATE

DME® SMART ONE VALVE GATE

DME Hot Runner - SMART ONE

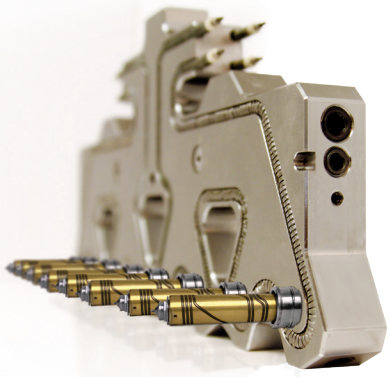
Cost efficient and capable, the DME SMART ONE gives you all you need in a melt delivery system at an economical price.

Why the DME SMART ONE?

- A Global offering from DME, providing a common design platform no matter where your molds are built
- 5 different nozzles size to match your application requirements
- A Valve Gate solution available as a Manifold & Components offering, or as a complete Hot Half, ready to interface with your cavity plate
- Valve gate tip styles include Bodiless, Full Body and Full Body with Extended Sprue
- Available with Pneumatic or Hydraulic cylinders
- Actuation options include individual (sequential) or all open/all close
- Cylinder design allows removal/setting of Valve Pins without system disassembly
- Available for 2- to 32-drops, using a naturally-balanced manifold flow path design
- Easily matched with DME Pneumatic or Hydraulic control systems
- Your choice of temperature control connector options
- Tips, retainers, heaters and thermocouples can be serviced while the system is in the machine for maximum up-time
- Spare thermocouples installed on all manifold zones
- Replacement/spare part availability in North America
- A value offering to provide a competitive edge over other manufacturers
- Ideal for your lower cavitation, less-technical applications
- Designed, Manufactured and Supported by DME North America

Valve Gate

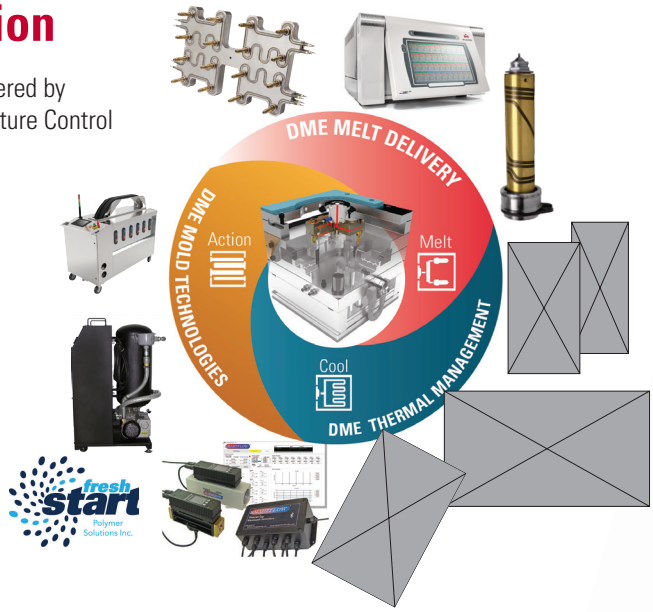
- Good for superior gate cosmetics, sequential part filling and the elimination of trimming and secondary operations
- Available in hydraulic & pneumatic actuation
- For core thermoplastic resins and from small to large parts
- Global manifold platform

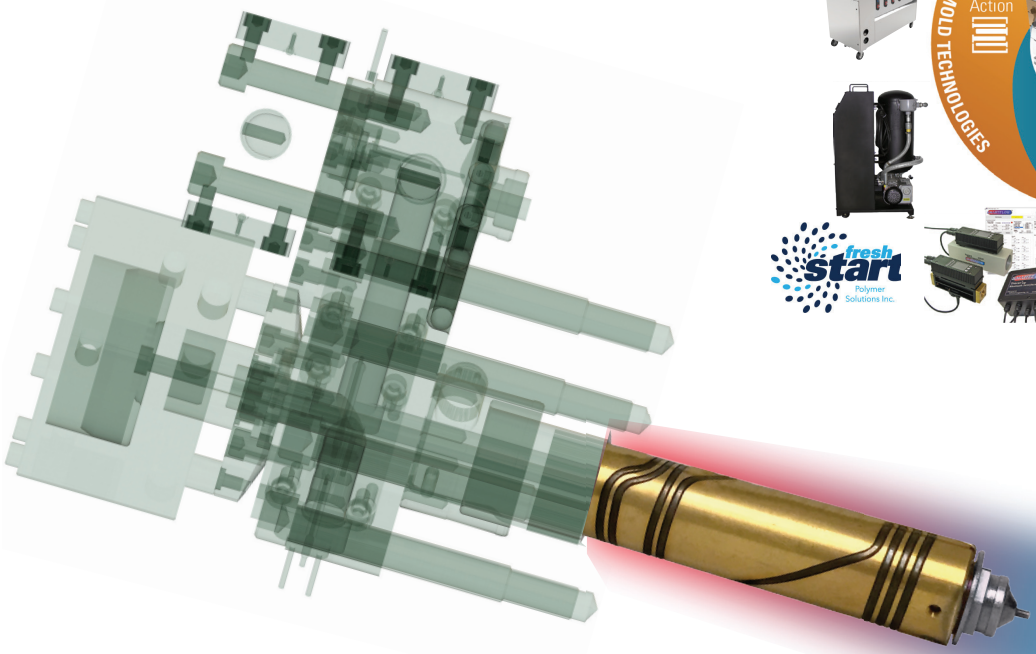


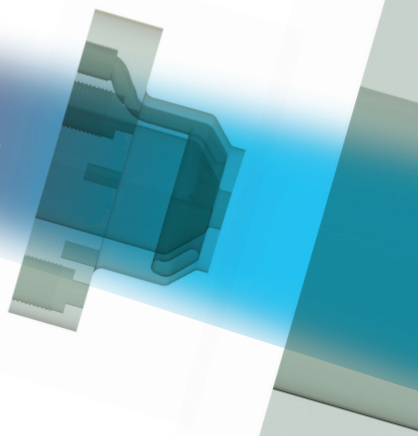
Mold Technologies Package Solution

The **DME SMART ONE** fits right into the complete package solutions offered by DME. Analysis, Hot Runner, Cooling, Mold Bases & Components, Temperature Control and Industrial Supplies.

From start to finish, top to bottom... *it can all be included*.

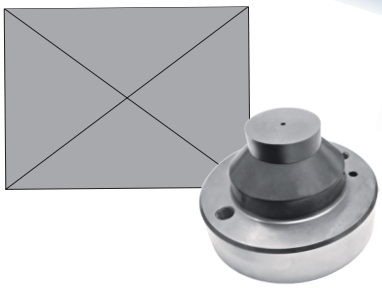






Thermal Management Solutions

Add off-the-shelf Conformal Cooling
Working in perfect combination with the **DME SMART ONE** is DME's Cooled Gate Bushings. These bushings are a thermal management solution that can be designed into your next project.



Lifecycle Value Solution

The **DME SMART ONE** is part of the DME complete lifecycle products and services package. DME understands that you need products and services that support you from the design stage, through development, execution and service through the life of the project.

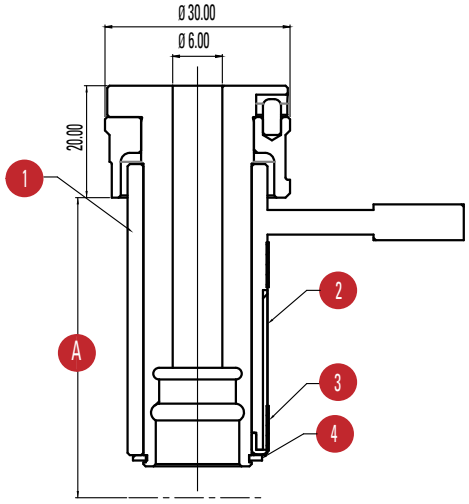
DME HRService

Your Global Partner

Have an tool from overseas?
No problem, **DME SMART ONE** valve gates are built on a common design platform that will fit, no matter where your mold is built.

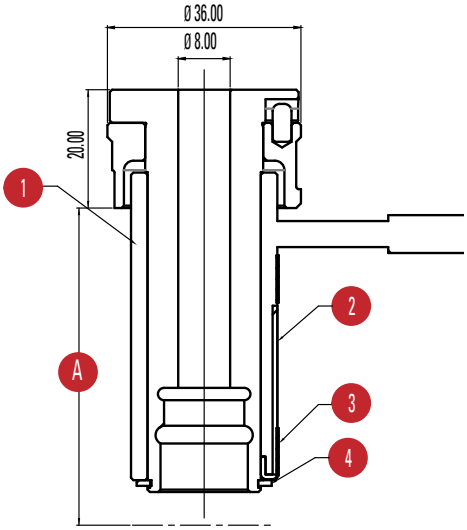
Smart 12 Valve Gate Series Nozzle Sub-Assembly

A	1 NOZZLE HEATER	WATTS	2 TC	3 TC RETAINER 2 PC.	4 SNAP RING (2-PCS)
60	PCPHT12060B	250	PNJTC10150A	SMTCRC22	PSRSN12001A
70	PCPHT12070B	300			
80	PCPHT12080B	350			
90	PCPHT12090B	350			
100	PCPHT12100B	350			
110	PCPHT12110B	350			
120	PCPHT12120B	400			
130	PCPHT12130B	400			



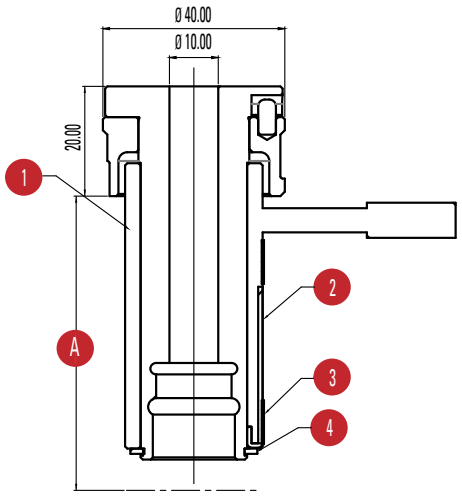
Smart 15 Valve Gate Series Nozzle Sub-Assembly

A	1 NOZZLE HEATER	WATTS	2 TC	3 TC RETAINER 2 PC	4 SNAP RING (2-PCS)
64	PCPHT15063B	300	PNJTC10250A	SMTCRC22	PSRSN15001A
74	PCPHT15073B	350			
84	PCPHT15083B	400			
94	PCPHT15093B	400			
104	PCPHT15103B	400			
114	PCPHT15113B	400			
124	PCPHT15123B	450			
134	PCPHT15133B	450			
144	PCPHT15143B	450			
154	PCPHT15153B	450			



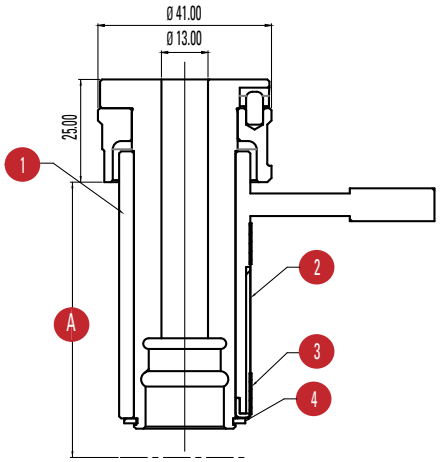
Smart 19 Valve Gate Series Nozzle Sub-Assembly

A	1 NOZZLE HEATER	WATTS	2 TC	3 TC RETAINER 2 PC	4 SNAP RING (2-PCS)
82	PCPHT19077B	400	PNJTC10250A	SMTCRC23	PSRSN19001A
97	PCPHT19087B	450			
112	PCPHT19097B	550			
127	PCPHT19107B	700			
142	PCPHT19117B	800			
157	PCPHT19127B	850			
172	PCPHT19137B	850			
187	PCPHT19147B	900			
202	PCPHT19157B	950			
217	PCPHT19167B	950			
232	PCPHT19177B	1000			
247	PCPHT19187B	1050			
262	PCPHT19197B	1100			



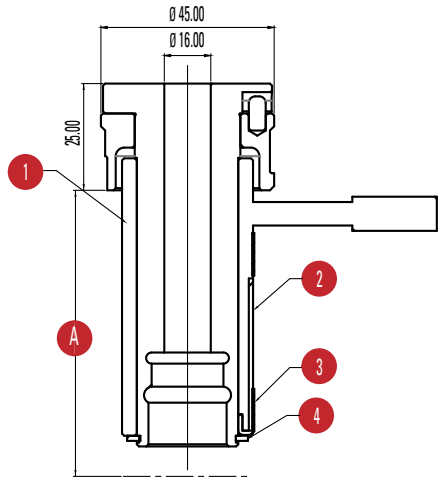
Smart 21 Valve Gate Series Nozzle Sub-Assembly

A	1 NOZZLE HEATER	WATTS	2 TC	3 TC RETAINER 2 PC.	4 SNAP RING (2-PCS)
82	PCPHT21082A	650W	PNJTC10350A	SMTCRC23	PSRSN21001A
97	PCPHT21097A	700W			
112	PCPHT21112A	750W			
127	PCPHT21127A	800W			
142	PCPHT21142A	850W			
157	PCPHT21157A	950W			
172	PCPHT21172A	950W			
187	PCPHT21187A	1000W			
202	PCPHT21202A	1000W			
217	PCPHT21217A	1050W			
232	PCPHT21232A	1050W			
247	PCPHT21247A	1100W			
262	PCPHT21262A	1100W			



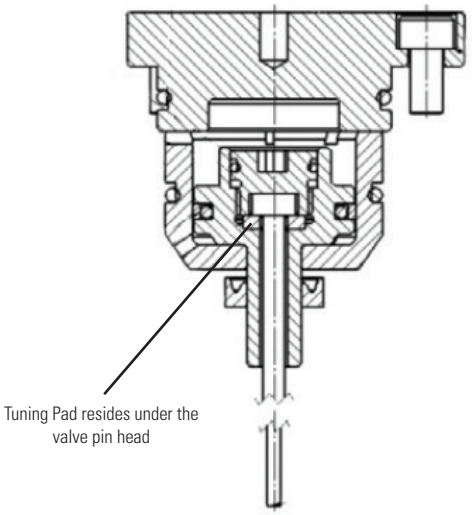
Smart 24 Valve Gate Series Nozzle Sub-Assembly

A	1 NOZZLE HEATER	WATTS	2 TC	3 TC RETAINER 2 PC.	1 SNAP RING (2-PCS)
82	PCPHT24082A	750	PNJTC10350A	SMTCRC23	PSRSN24001B
97	PCPHT24097A	850			
112	PCPHT24112A	950			
127	PCPHT24127A	1000			
142	PCPHT24142A	1000			
157	PCPHT24157A	1050			
172	PCPHT24172A	1050			
187	PCPHT24187A	1100			
202	PCPHT24202A	1100			
217	PCPHT24217A	1150			
232	PCPHT24232A	1150			
247	PCPHT24247A	1200			
262	PCPHT24262A	1200			

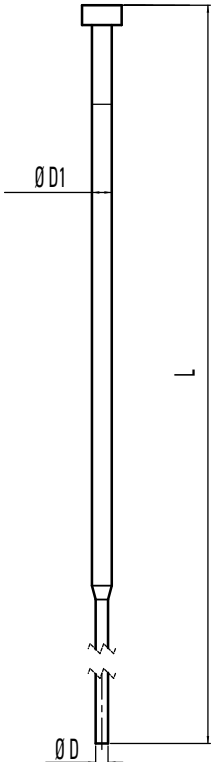


Pneumatic & Hydraulic Cylinders

SERIES	D-DIA. REF.	SEAL KIT #	VALVE PIN TUNING PAD (Ø)
Smart 12			
30 Series-A	42mm	SM30ASK	PTPSC30025A (Ø11.5)
30 Series-B	70mm	SM30BSK	
Smart 15			
40 Series-A	85mm	SM40ASK	PTPSC40025A (Ø12.0)
40 Series-B	80mm	SM40BSK	
Smart 19			
50 Series-A	100mm	SM50ASK	PTPSC50025A (Ø14.0)
50 Series-B	92mm	SM50BSK	
Smart 21			
65 Series-A	110mm	SM65ASK	PTPSC65025A (Ø16.0)
Smart 24			
80 Series-A	128mm	SM80ASK	PTPSC80025A (Ø17.0)

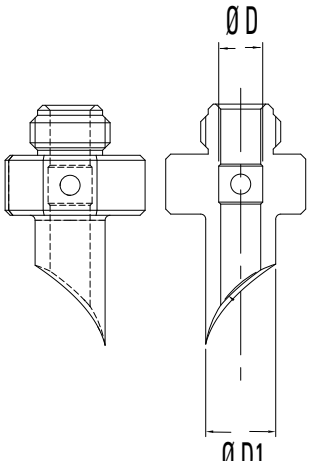


Tuning Pad resides under the valve pin head



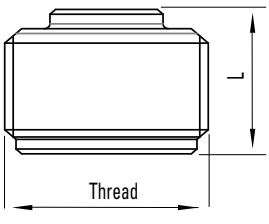
Valve Pin Dimensions

Part Number	Ø D	Ø D1	L (mm)	Tuning Pad
P25VP40210A	2.5	4	210	PTPSC30025A
P25VP40260A			260	
P30VP40230A	3		230	PTPSC40025A
P30VP40280A			280	
P37VP40250A	3.7		250	PTPSC50025A
P37VP40280A			280	
P37VP40330A			330	
P57VP60270A	5.7	6	270	PTPSC65025A
P57VP60320A			320	
P57VP60370A			370	
P57VP60420A			420	
P57VP60450A			450	
P57VP80270A	7.7	8	270	PTPSC80025A
P57VP80320A			320	
P57VP80370A			370	
P57VP80420A			420	
P57VP80450A			450	



Valve Pin Guide Bushings

Systems	Part Number	D Dia.	D1 Dia.
SMART12	PGB121524	4	7
SMART15	PGB151927	4	8
SMART19	PGB191830	4	10
SMART21	PGB212034	6	13
SMART24	PGB242335	8	16
	PGB242336	8	18

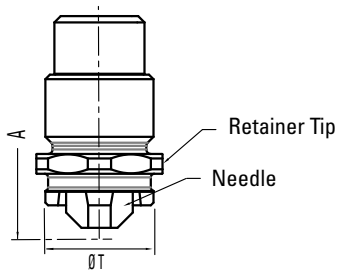


Pin Bushing Screws

Systems	Part Number	Thread	L
SMART12	PPCMF18015A	M18X1.5	15
SMART15	PPCMF22013A	M22X1.5	13
SMART19			
SMART21	PPCMF24015A	M24X2	15
SMART24	PPCMF27015A	M27X2	

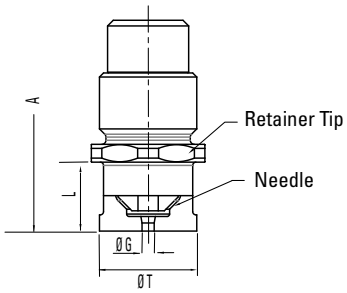
Smart One

Valve Gate (Bodiless)



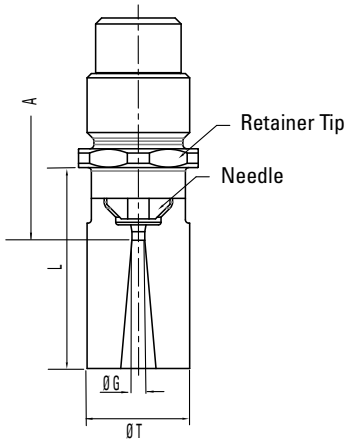
Series	Gate Tip	Needle	Retainer	T Dia.
SMART12	Standard	PAVSN12024A	PRTSN12015A	12
	Wear Resistant	PAVSN12024A-WR		
SMART15	Standard	PAVSN15028A	PRTSN15016A	15
	Wear Resistant	PAVSN15028A-WR		
SMART19	Standard	PAVSN19033A	PRTSN19018A	19
	Wear Resistant	PAVSN19033A-WR		
SMART21	Standard	PAVSN21040A	PRTSN21021A	21
	Wear Resistant	PAVSN21040A-WR		
SMART24	Standard	PAVSN24040A	PRTSN24021A	24
	Wear Resistant	PAVSN24040A-WR		

Valve Gate (Full Body)



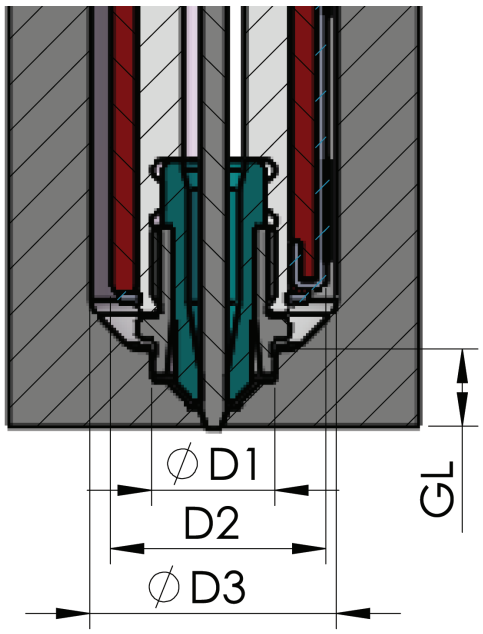
Series	Gate Tip	Needle	Retainer	G Dia.	T Dia.
SMART12	Standard	PAVSN12024B	PRTSN12015VF	1.5	12
	Wear Resistant	PAVSN12024B-WR			
SMART15	Standard	PAVSN15027B	PRTSN15016VFB	2.00	15
	Wear Resistant	PAVSN15027B-WR			
SMART19	Standard	PAVSN19033B	PRTSN19018VFB	3.00	19
	Wear Resistant	PAVSN19033B-WR			
SMART21	Standard	PAVSN21040A	PRTSN21034VF		21
	Wear Resistant	PAVSN21040A-WR			
SMART24	Standard	PAVSN24040B	PRTSN24034VFB	4.00	24
	Wear Resistant	PAVSN24040B-WR			
	Non-needle		PRTSN24037VF	5.00	20

Valve Gate (Full Body Extended)

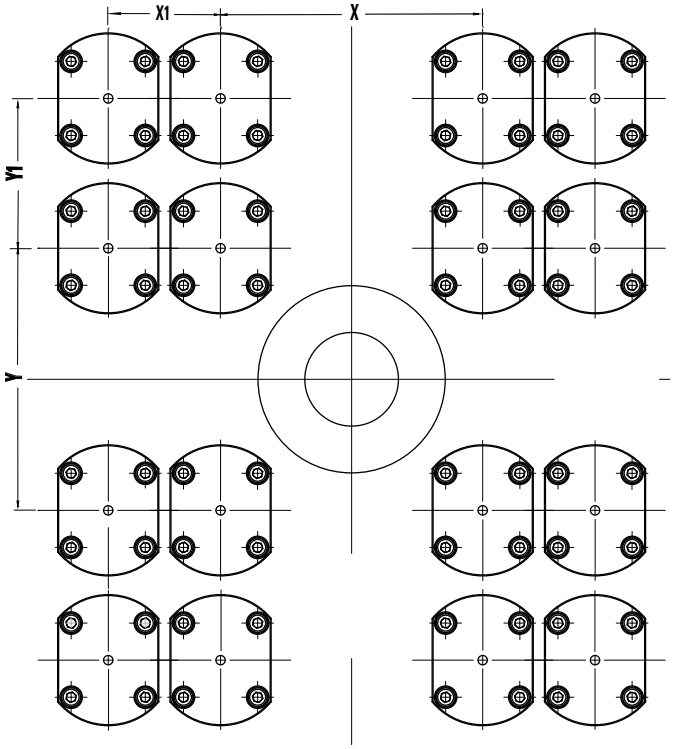


Series	Gate Tip	Needle	Retainer	G Dia.	T Dia.	L
SMART12	Standard	PAVSN12024A	PRTSN12041VF	1.5	12	23.5
	Wear Resistant	PAVSN12024A-WR				
SMART15	Standard	PAVSN15028A	PRTSN15045VF	2.00	15	25.8
	Wear Resistant	PAVSN15028A-WR				
SMART19	Standard	PAVSN19033A	PRTSN19050VF	3.00	19	28.8
	Wear Resistant	PAVSN19033A-WR				
SMART21	Standard	PAVSN21040A	PRTSN21049VF	3.00	21	33.6
	Wear Resistant	PAVSN21040A-WR				
SMART24	Standard	PAVSN24040A	PRTSN24049VF	4.00	24	33.6
	Wear Resistant	PAVSN24040A-WR				

NOZZLE GATE DETAILS

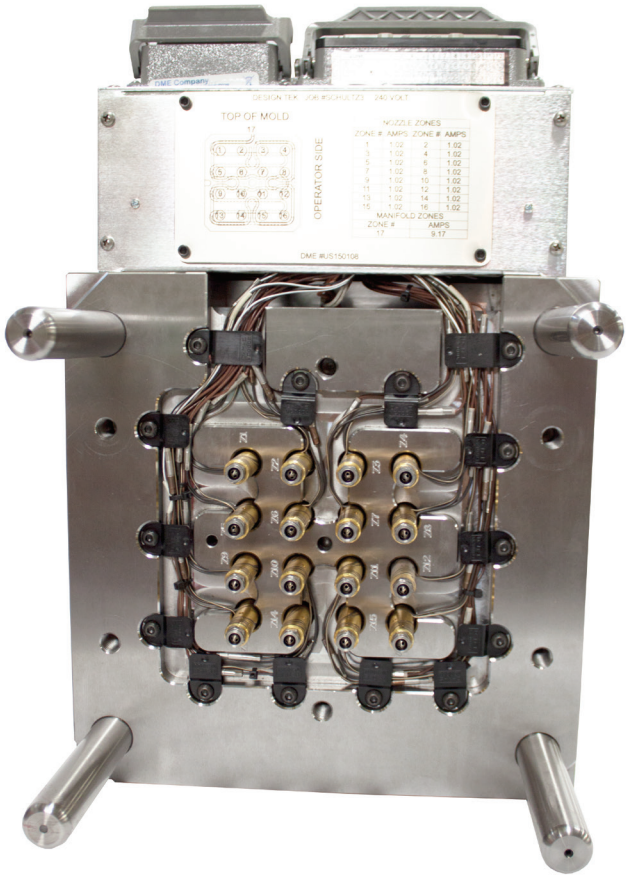


MINIMUM DROP PITCH



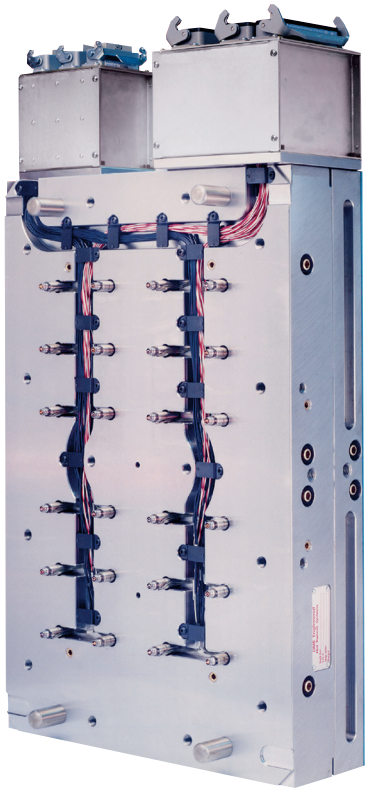
VALVE GATE SERIES	D1	D2	D3	GL	X1 min	Y1 min	X min	Y min
SMART12	Ø12	Ø20	Ø24	8	54	72	90	84
SMART15	Ø15	Ø23	Ø28	10	61	82	98	92
SMART19	Ø19	Ø27	Ø32	12.6	70	94	106	100
SMART21	Ø21	Ø29	Ø35	17.1	86	112	118	112
SMART24	Ø24	Ø32	Ø38	17.1	104	130	130	124

Stellar Micromolding Hot Runner Systems



PROVEN SOLUTIONS FOR PRECISION THERMOPLASTIC MICROMOLDING

Stellar Hot Runner Systems – Benefits



Engineered for the Challenges of Tight Pitch Molding

The DME Stellar™ Hot Runner System brings high performance, exacting precision and flexible, cost-effective modular construction to very small part molding. With as little as 17mm between centers, Stellar is also ideal for high-cavitation molding.

Demand the Best – Demand DME

DME has been a leader in mold technologies for seven decades. Nobody beats DME for quality products, quality service and quick delivery. Like all DME products, Stellar Hot Runner Systems come with your satisfaction 100% guaranteed.

Get the Modular Advantage

Stellar is based on new DME hot runner system architecture to deliver tremendous flexibility. Seven different "A" dimensions, two interchangeable tip options, and a choice of manifold styles enable DME to easily configure a Stellar solution that matches your application.

For a Wide Range of Applications

Stellar is perfect for today's rapidly expanding array of micromolding projects. Stellar was designed to perform in a broad spectrum of applications – including electrical, electronic, medical, and cosmetic packaging. And, Stellar was designed to process demanding engineering resins without property degradation.

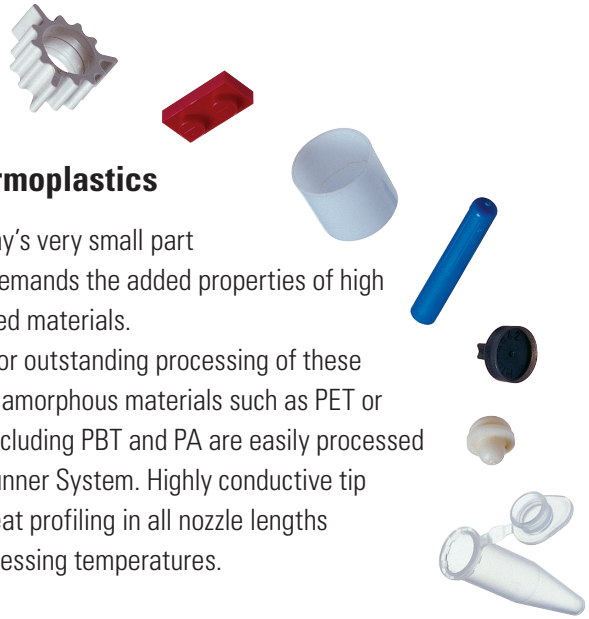
Stellar Hot Runner Systems – Benefits

CUSTOMER DESIGN CRITERIA FORMS

CDC

To provide your Stellar® application specifications, visit www.dme.net/cdc

Excellent Results with Engineering Thermoplastics



The complexity of today's very small part molding applications demands the added properties of high performance engineered materials.
Stellar was designed for outstanding processing of these materials. Challenging amorphous materials such as PET or crystalline materials including PBT and PA are easily processed with the Stellar Hot Runner System. Highly conductive tip designs and precise heat profiling in all nozzle lengths ensure consistent processing temperatures.

Modularity Increases Application Flexibility

The Stellar Hot Runner System from DME is built on a standardized architecture of modular components. Key features include:

- Seven different "A" dimensions from
- 65-145mm are available for compression style nozzles
- Two interchangeable tip styles – Point Gate and Sprue Gate
- High Performance Nozzle Heater with embedded thermocouple
- Two tip material choices, standard and high performance

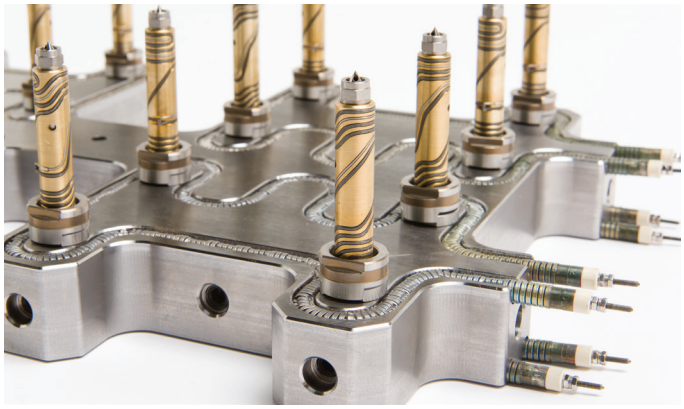
Stellar Hot Runner Systems Benefits

High Process Temperature Capability with Precision Heat Profiling

Today's engineered materials challenge hot runner systems with high processing temperatures – often with very narrow operating windows. Stellar hot runner nozzles utilize reliable profiled mini-tubular heaters to ensure optimal heat distribution. In addition, Stellar nozzles are engineered with low conductivity heads and high conductivity tips for consistent thermal performance.

Easy Serviceability – Right in the Machine

Productivity is especially critical when micromolding thousands of parts per hour. Every Stellar Hot Runner System can be rapidly serviced for maximum uptime. Nozzle tips, retainers, mini-tubular heaters and thermocouples are all front-loaded and easily replaced with the mold in the press.



Increase Productivity and Reduce Molding Costs With Stellar-Infused Quick-Change Systems

Now the production efficiencies of hot runner molding can be further enhanced when combined with a Master Unit Die (MUD) Quick-Change Frame. An unlimited number of different parts can be produced with this industry-leading combination of hot runners within a quick-change system because only the MUD Companion Insert Mold is swapped out. The MUD Frame/Hot Runner System remains in the mold.

Combining DME Hot Runners with MUD Quick-Change Systems provides many advantages to virtually any injection molding operation, including:

- Enables molders to use the same DME Hot Runner System with many different cavity and core configurations with MUD Companion Insert Molds
- Quickens production changeovers, often in as little as five minutes
- Provides cost justification for the Hot Runner System and/or the MUD Quick-Change System for multiple tooling projects
- Simplifies design with the use of the MUD Quick-Change Straps

Contact your DME representative or call us today to find out more about how the combination of a DME Hot Runner System and the MUD Quick-Change System will not only substantially increase your production efficiency but significantly reduce your molding costs. Many companies incorporate the DME hot runner/quick-change combo into their Lean initiatives.

Gating Style Selection

Gating Style Selection

Fig. 1 Standard Point Gate Tip Sub-Assembly, SXG5110

- For use with unfilled resins up to 290°C (550°F)

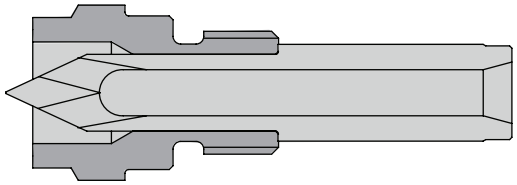


Fig. 2 High Performance Point Gate Tip Sub-Assembly, SXG5020

- For use with unfilled and filled resins up to 330°C (625°F)

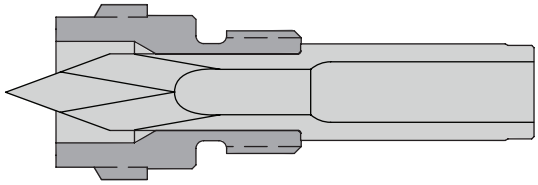


Fig. 3 Sprue Gate Tip, SXT7040 - T=10mm

- For use with unfilled and filled resins up to 330°C (625°F)

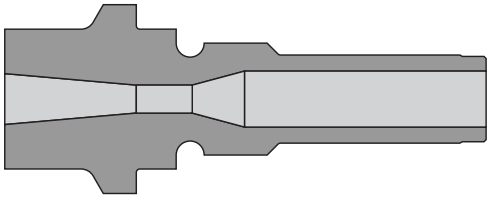


Fig. 4 Sprue Gate Tip, SXT7140 - T=.750

- For use with unfilled and filled resins up to 330°C (625°F)

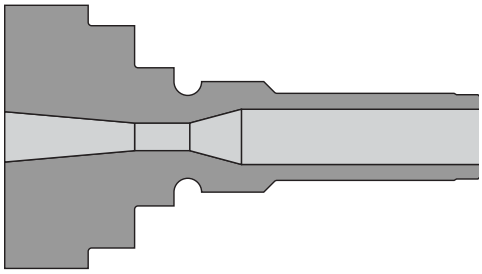


Table 1: Gating Style Item Numbers

TIP SUB-ASSEMBLY ITEM NUMBER	DESCRIPTION	TIP ITEM NUMBER	TIP CTE (10-6/degC)	RETAINER ITEM NUMBER	GATING STYLE	APPLICABLE STELLAR SYSTEM
SXG5110	Standard Point Gate Tip Sub-Assembly	SXT4010	17.5	SXF5100	Point Gate	Standard
SXG5020	High Performance Point Gate Tip Sub-Assembly	SXT5010	4.5	SXF5000	Point Gate	High Performance
N/A	Sprue Gate Tip	SXT7040	12.8	N/A	Sprue Gate	All
N/A	Sprue Gate Tip	SXT7140	12.8	N/A	Sprue Gate	All

NOTE: All units are in mm.

Gate Details for use with Hardened Steel (50HRC min.)

Fig. 6 Gate Details for Standard Point Gate, High Performance Point Gate Tips (SXG5110 & SXG5020) For gating onto a flat surface or into a recess* ("dimple")

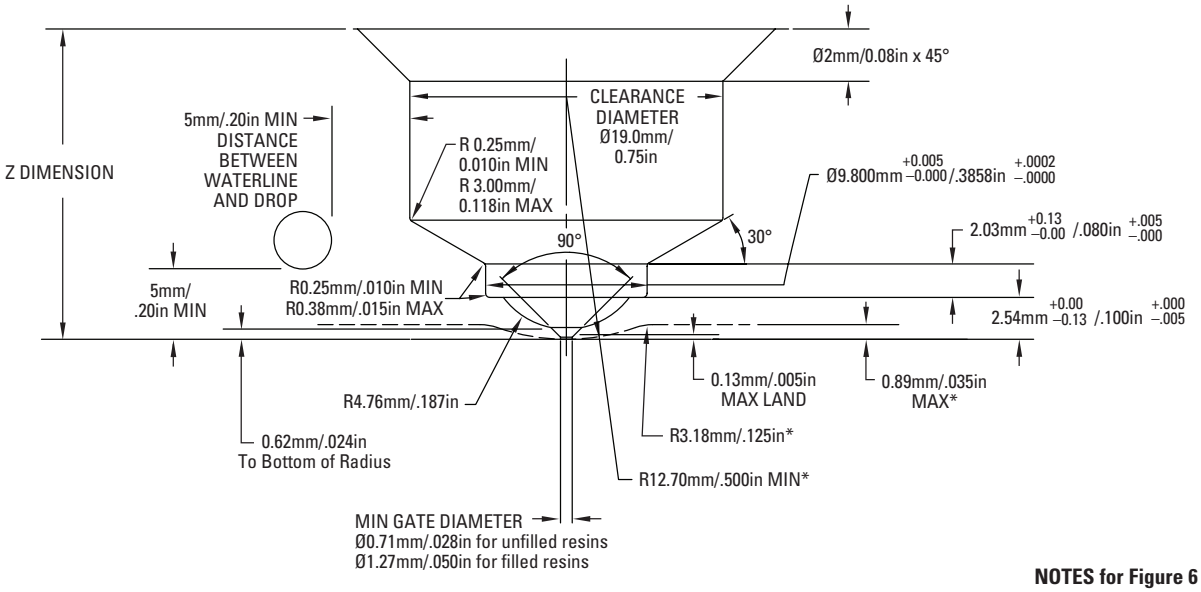
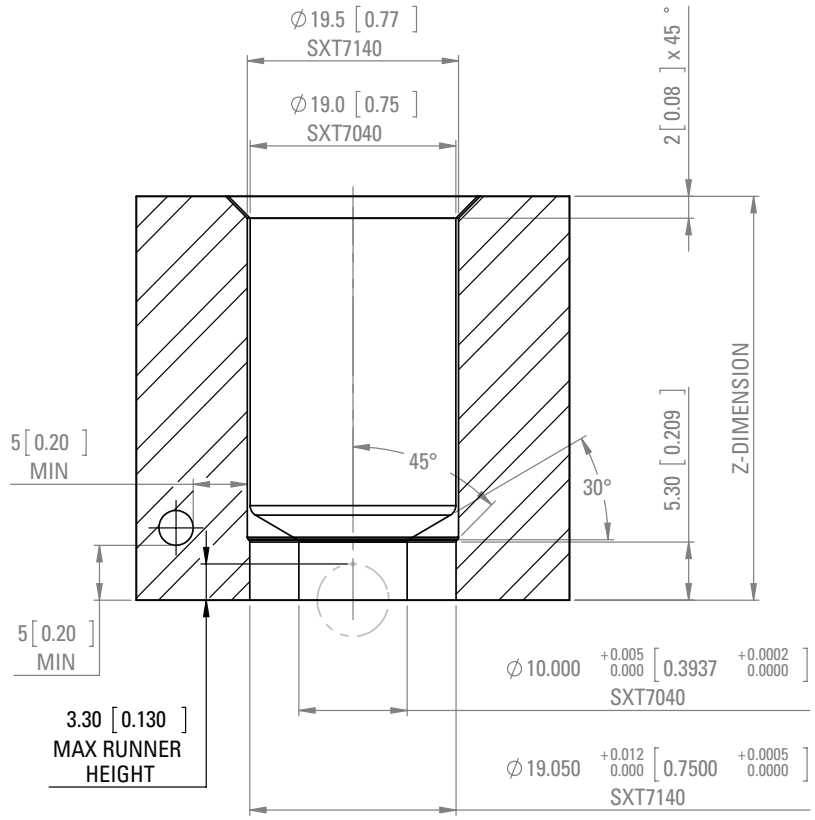


Fig. 7 Gate Details for Sprue Gate Tips, SXT7040 & SXT7140



NOTES for Figure 6 & 7:

1. If gate detail does not properly fit the application, contact DME for assistance about gate detail options.
2. Position gate detail within ±0.013mm/.0005in from nominal.
3. The gate diameter can be opened by the customer to suit the application. (The land must be re-machined to the maximum dimension after increasing the gate diameter.)
4. Water lines are required in "A" plate for proper gate cooling.
5. Position water lines as close as possible but not closer than the minimum distance shown to provide a safe steel condition.
6. For faster color changes, remove ("decone") the resin from the front of each point gate tip prior to changing colors.
7. The minimum "Z" dimension is 13.00 and the maximum "Z" dimension is 115 for point gate and sprue gate tips.

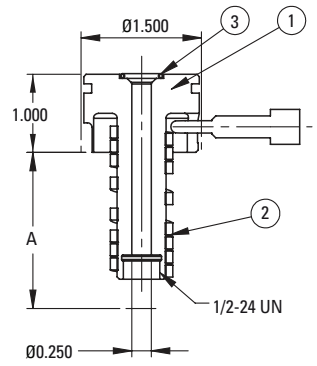
Hot One Nozzles

ENABLING VERSATILITY

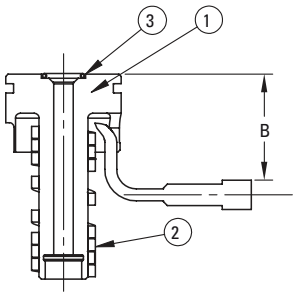
IN SYSTEM SELECTION

250 Series Nozzles (.250 Diameter Flow Channel)

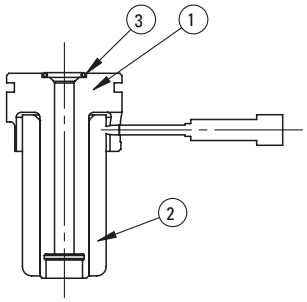
SQUARE COIL HEATER
REAR LOAD
(SCH0XXX)



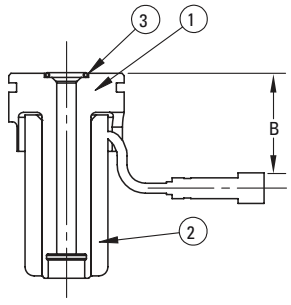
SQUARE COIL HEATER
FRONT LOAD
(SCH1XXX)



HIGH PERFORMANCE HEATER
REAR LOAD
(CIH0XXX-S)



HIGH PERFORMANCE HEATER
FRONT LOAD
(CIH1XXX-S)



250 Series Nozzle Sub-Assembly

(Add .750 to **A** dimension for extended sprue gate and extended full body point gate tips.)

A	B	SUB-ASSEMBLY ITEM NUMBER	1 NOZZLE BODY	2 HEATER	3 SEAL RING
2.000	—	EHA0001	CIB1359	SCH0081	EHR7154
	1.250	EHA1001		SCH1081	
	—	CIA0001S		CIH0081S	
	1.250	CIA1001S		CIH1081S	
2.500	—	EHA0002	CIB1360	SCH0082	
	1.250	EHA1002		SCH1082	
	—	CIA0002S		CIH0082S	
	1.250	CIA1002S		CIH1082S	
3.000	—	EHA0003	CIB1361	SCH0083	
	1.250	EHA1003		SCH1083	
	—	CIA0003S		CIH0083S	
	1.250	CIA1003S		CIH1083S	
3.500	—	EHA0004	CIB1362	SCH0084	
	1.250	EHA1004		SCH1084	
	—	CIA0004S		CIH0084S	
	1.250	CIA1004S		CIH1084S	
4.000	—	EHA0005	CIB1363	SCH0085	
	1.250	EHA1005		SCH1085	
	—	CIA0005S		CIH0085S	
	1.250	CIA1005S		CIH1085S	
5.000	—	EHA0006	CIB1364	SCH0086	
	1.250	EHA1006		SCH1086	
	—	CIA0006S		CIH0086S	
	1.250	CIA1006S		CIH1086S	
6.000	—	EHA0007	CIB1365	SCH0087	
	1.250	EHA1007		SCH1087	
	—	CIA0007S		CIH0087S	
	1.250	CIA1007S		CIH1087S	

WIRING INFORMATION:

Power leads are tan

Ground leads are green

Thermocouple leads are black and white

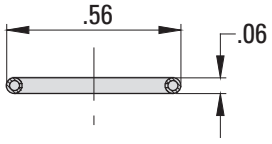
White is negative (-) and constantan (non-magnetic)

Black is positive (+) and iron (magnetic)

Replacement Seal Rings

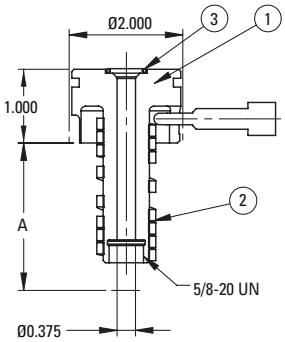
Used between manifold and nozzle to prevent leakage. New seal rings must be installed each time manifold is assembled.

ITEM NUMBER
EHR7154

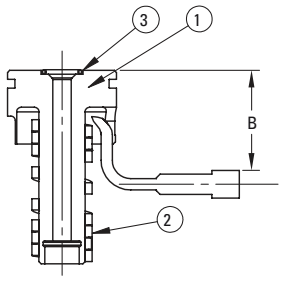


375 Series High Performance Nozzles (.375 Diameter Flow Channel)

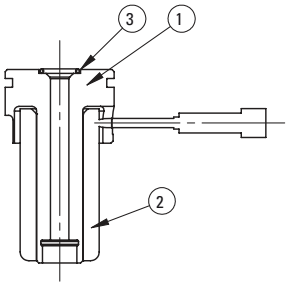
SQUARE COIL HEATER
REAR LOAD
(SCH0XXX)



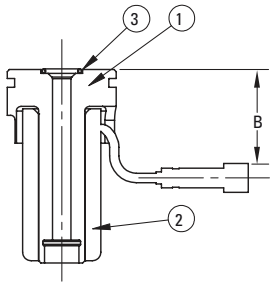
SQUARE COIL HEATER
FRONT LOAD
(SCH1XXX)



HIGH PERFORMANCE HEATER
REAR LOAD
(CIH0XXX-S)



HIGH PERFORMANCE HEATER
FRONT LOAD
(CIH1XXX-S)



375 Series Nozzle Sub-Assembly

(Add .750 to **A** dimension for extended sprue gate and extended full body point gate tips.)

A	B	SUB-ASSEMBLY ITEM NUMBER	1 NOZZLE BODY	2 HEATER	3 SEAL RING
2.000	—	EHA0008	CIB1366	SCH0088	EHR7155
	1.250	EHA1008		SCH1088	
	—	CIA0008S		CIH0088S	
	1.250	CIA1008S		CIH1088S	
2.500	—	EHA0009	CIB1367	SCH0089	
	1.250	EHA1009		SCH1089	
	—	CIA0009S		CIH0089S	
	1.250	CIA1009S		CIH1089S	
3.000	—	EHA0010	CIB1368	SCH0090	
	1.250	EHA1010		SCH1090	
	—	CIA0010S		CIH0090S	
	1.250	CIA1010S		CIH1090S	
3.500	—	EHA0011	CIB1369	SCH0091	
	1.250	EHA1011		SCH1091	
	—	CIA0011S		CIH0091S	
	1.250	CIA1011S		CIH1091S	
4.000	—	EHA0012	CIB1370	SCH0092	
	1.250	EHA1012		SCH1092	
	—	CIA0012S		CIH0092S	
	1.250	CIA1012S		CIH1092S	
5.000	—	EHA0013	CIB1371	SCH0093	
	1.250	EHA1013		SCH1093	
	—	CIA0013S		CIH0093S	
	1.250	CIA1013S		CIH1093S	
6.000	—	EHA0014	CIB1372	SCH0094	
	1.250	EHA1014		SCH1094	
	—	CIA0014S		CIH0094S	
	1.250	CIA1014S		CIH1094S	
7.000	—	EHA0015	CIB1373	SCH0095	
	1.250	EHA1015		SCH1095	
	—	CIA0015S		CIH0095S	
	1.250	CIA1015S		CIH1095S	

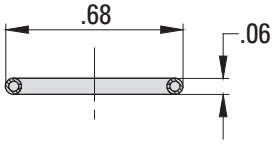
WIRING INFORMATION:
Power leads are tan
Ground leads are green
Thermocouple leads are black and white

- White is negative (-) and constantan (non-magnetic)
- Black is positive (+) and iron (magnetic)

Replacement Seal Rings

Used between manifold and nozzle to prevent leakage. New seal rings must be installed each time manifold is assembled.

ITEM NUMBER
EHR7155

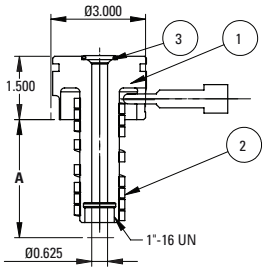


625 Series Nozzles (.625 Diameter Flow Channel)

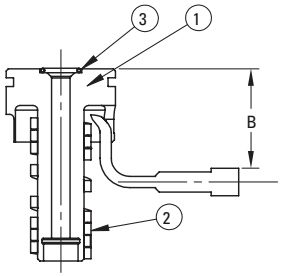
625 Series Nozzle Sub-Assembly

(Add .750 to A dimension for extended sprue gate and extended full body point gate tips.)

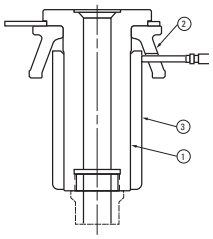
Square Coil Heater
Rear Load
(SCH0XXX)



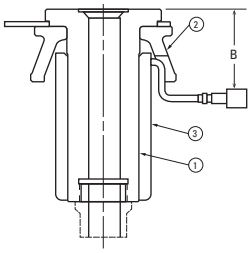
Square Coil Heater
Front Load
(SCH1XXX)



High Performance Heater
Rear Load
(CIH0XXX-S)



High Performance Heater
Front Load
(CIH1XXX-S)



A	B	SUB-ASSEMBLY ITEM NUMBER	1 NOZZLE BODY	2 HEATER	3 SEAL RING
3.000	—	CIA0023S	CIB1381	CIH0104S	EHR7156
	1.75	CIA1023S		CIH1104S	
4.000	—	EHA0016	EHB0074	SCH0096	
	1.75	EHA1016		SCH1096	
	—	CIA0016S	CIB1374	CIH0096S	
	1.75	CIA1016S		CIH1096S	
5.000	—	EHA0017	EHB0075	SCH0097	
	1.75	EHA1017		SCH1097	
	—	CIA0017S	CIB1375	CIH0097S	
	1.75	CIA1017S		CIH1097S	
6.000	—	EHA0018	EHB0076	SCH0098	
	1.75	EHA1018		SCH1098	
	—	CIA0018S	CIB1376	CIH0098S	
	1.75	CIA1018S		CIH1098S	
7.000	—	EHA0019	EHB0077	SCH0099	
	1.75	EHA1019		SCH1099	
	—	CIA0019S	CIB1377	CIH0099S	
	1.75	CIA1019S		CIH1099S	
8.000	—	EHA0020	EHB0078	SCH0100	
	1.75	EHA1020		SCH1100	
	—	CIA0020S	CIB1378	CIH0101S	
	1.75	CIA1020S		CIH1101S	
9.000	—	EHA0021	EHB0079	SCH0101	
	1.75	EHA1021		SCH1101	
	—	CIA0021S	CIB1379	CIH0102S	
	1.75	CIA1021S		CIH1102S	
10.000	—	EHA0022	EHB0080	SCH0102	
	1.75	EHA1022		SCH1102	
	—	CIA0022S	CIB1380	CIH0103S	
	1.75	CIA1022S		CIH1103S	

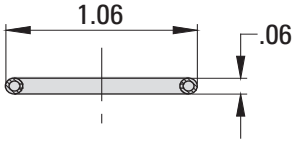
WIRING INFORMATION:
Power leads are tan
Ground leads are green
Thermocouple leads are black and white

- White is negative (-) and constantan (non-magnetic)
- Black is positive (+) and iron (magnetic)

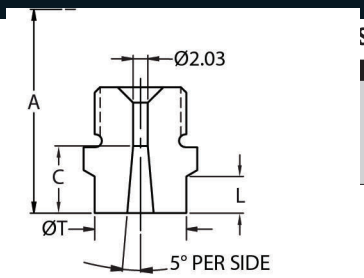
Replacement Seal Rings

Used between manifold and nozzle to prevent leakage. New seal rings must be installed each time manifold is assembled.

ITEM NUMBER
EHR7156



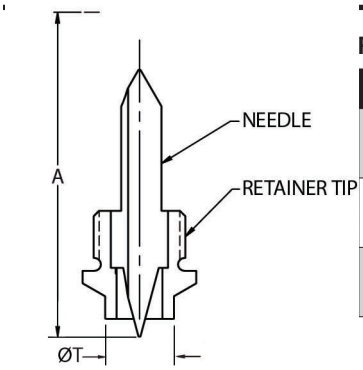
Gate Tip Detail



Sprue Gate/Extended Sprue Gate

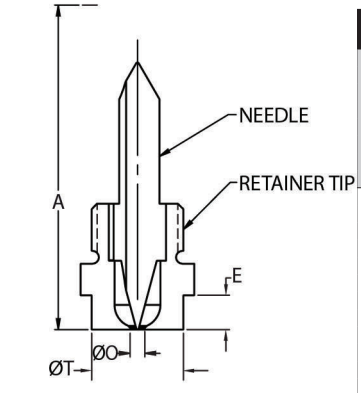
SERIES	GATE TIP	ITEM NUMBER	B DIA.	T DIA.	L	C
250	SPRUE GATE	EHT0010	.080	.500	.250	.375
		EHT0011		.750		
		EHT0012		1.000	.100	1.125
	EXTENDED SPRUE GATE	EHT0013		.500	1.000	
		EHT0014		.750		
		EHT0015		1.000	.850	
375	SPRUE GATE	EHT0016	.125	.500	.250	.375
		EHT0017		.750		
		EHT0018		1.000		
	EXTENDED SPRUE GATE	EHT0019		.500	1.000	1.125
		EHT0020		.750		
		EHT0021		1.000		
625	SPRUE GATE	EHT0022	.187	1.000	.250	.500
	EXTENDED SPRUE GATE	EHT0023			1.000	1.250

(Add .750 to **A** dimension for extended sprue gate tips.)



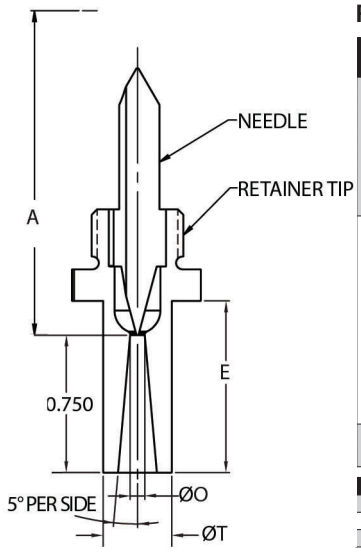
Point Gate (Bodiless)

SERIES	GATE TIP	ITEM NUMBER	T DIA.	INCLUDES	
				NEEDLE	RETAINER TIP
250	STANDARD	EHT0005	.375	EHN0015	EHT0024
		EHT1314			EHT0324
	WEAR RESISTANT	EHT1308		EHN0401	EHT0324
		EHT1313			EHT1324
375	STANDARD	EHT0039	.500	EHN0016	EHT0025
		EHT1312			EHT0325
	WEAR RESISTANT	EHT1303		EHN0400	EHT1325
		EHT1309			EHT0325
625	STANDARD	EHT1306	.625	EHN0019	EHT1354
		EHT1311			EHT0326
	WEAR RESISTANT	EHT1307		EHN0402	EHT0326
		EHT1310			EHT1354



Point Gate (Full Body)

SERIES	TYPE	ITEM NUMBER	T DIA.	O DIA.	E	INCLUDES	
						NEEDLE	RETAINER TIP
250	STANDARD	EHT2001	.375	.060	.187	EHN0015	EHT0026
		EHT2002		.080			EHT0027
		EHT2003	.500	.060			EHT0028
		EHT2004		.080			EHT0029
	WEAR RESISTANT	EHT2005	.375	.060		EHN0401	EHT1326
		EHT2006		.080			EHT1327
		EHT2007	.500	.060			EHT1328
		EHT2008		.080			EHT1329
375	STANDARD	EHT2009	.500	.080	.230	EHN0016	EHT0030
		EHT2010		.100			EHT0031
		EHT2011	.750	.080			EHT0032
		EHT2012		.100			EHT0033
		EHT2013	1.000	.080			EHT0034
		EHT2014		.100			EHT0035
	WEAR RESISTANT	EHT2015	.500	.080		EHN0400	EHT1330
		EHT2016		.100			EHT1331
		EHT2017	.750	.080			EHT1332
		EHT2018		.100			EHT1333
		EHT2019	1.000	.080			EHT1334
		EHT2020		.100			EHT1335
625	STANDARD	EHT2021	1.000	.125	.250	EHN0019	EHT0036
	WEAR RESISTANT	EHT2022				EHN0402	EHT1336



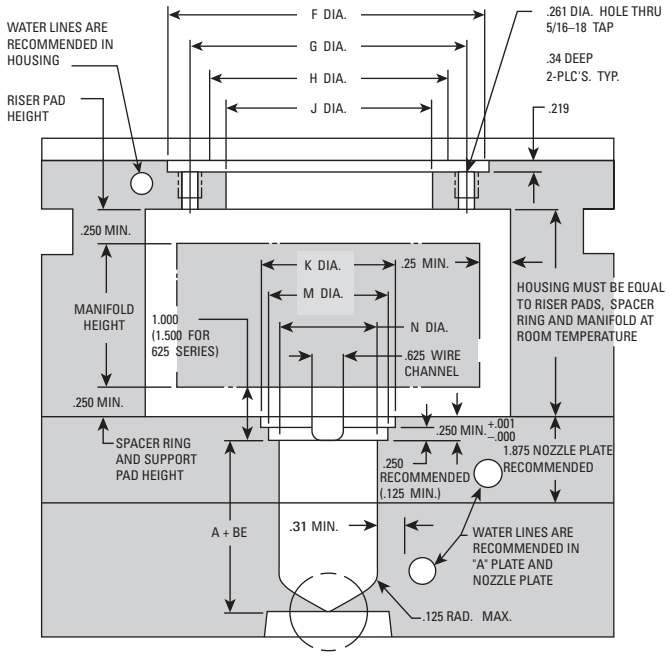
Point Gate (Full Body Extended)

SERIES	TYPE	ITEM NUMBER	T DIA.	O DIA.	E	INCLUDES	
						NEEDLE	RETAINER TIP
250	STANDARD	EHT2301	.375	.060	.938	EHN0015	EHT2326
		EHT2302		.080			EHT2327
		EHT2303	.500	.060			EHT2328
		EHT2304		.080			EHT2329
	WEAR RESISTANT	EHT2305	.375	.060		EHN0401	EHT2326
		EHT2306		.080			EHT2327
		EHT2307	.500	.060			EHT2328
		EHT2308		.080			EHT2329
375	STANDARD	EHT2309	.500	.080	.980	EHN0016	EHT2330
		EHT2310		.100			EHT2331
		EHT2311	.750	.080			EHT2332
		EHT2312		.100			EHT2333
		EHT2313	1.000	.080			EHT2334
		EHT2314		.100			EHT2335
	WEAR RESISTANT	EHT2315	.500	.080		EHN0400	EHT2330
		EHT2316		.100			EHT2331
		EHT2317	.750	.080			EHT2332
		EHT2318		.100			EHT2333
		EHT2319	1.000	.080			EHT2334
		EHT2320		.100			EHT2335
625	STANDARD	EHT2321	1.000	.125	1.000	EHN0019	EHT2336
	WEAR RESISTANT	EHT2322				EHN0402	

SERIES	THREAD TYPE
250	1/2-24 UN
375	5/8-20 UN
625	1"-16 UN

Housing, Nozzle Plate and Gate Machining Dimensions Detail

Manifold Housing, Nozzle Plate, "A" Plate and Gate Machining Dimensions



LOCATING RING

ITEM NUMBER	F DIA.	G DIA.	H DIA.	J DIA.
EHL0252	4.000	3.312	3.000	2.500
EHL0253	5.500	4.625	4.000	3.750
EHL0254	4.000	3.312	3.000	2.500
EHL0255	5.500	4.625	4.000	3.750

Manifold housing and insulator sheet are to be same width and length as mold base. Height of manifold housing to vary with stackup of manifold, riser pads and spacer rings.

NOZZLES

SERIES	K DIA.	+.001 –.000 M DIA.	N DIA. MIN for SQ. COIL	N DIA. MIN for HIGH PERFORMANCE
250	1.56	1.501	1.062	1.187
375	2.06	2.001	1.250	1.437
625	3.06	3.001	1.875	2.125

NOTE: The expansion factor must be taken into consideration prior to machining for, and installing, nozzle. This expansion factor (BE) must then be added to the nominal "A" dimension.

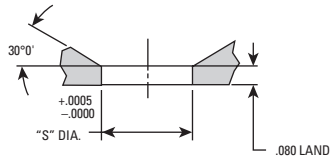
Formula for determining this expansion factor is as follows:

BE = "A" dimension x .00000633 x nozzle setpoint temp – 68°(assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE: Given a 3 inch "A" dimension, with a nozzle setpoint temp. of 500°:
BE = 3 x .0000063 x (500-68) = .008… thus A + BE = 3.008.

The above information is only given as an example. Variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

SPRUE AND POINT GATE (FULL BODY) MACHINING DIMENSIONS

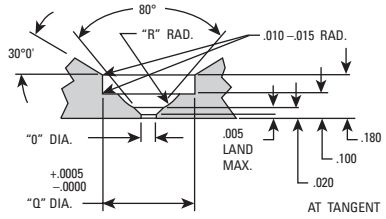


NOTE: Extended sprue length will add .750 to land.

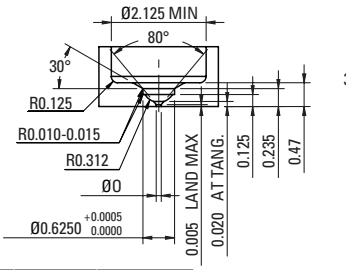
SERIES	T DIA.	S DIA.
250 AND 375	*.375	*.3755
	.500	.5005
	.750	.7505
	1.000	1.0005
625	1.000	1.0005

*250 Point Gate (Full Body) only.

250 & 375 SERIES POINT GATE (BODILESS) MACHINING DIMENSIONS



625 SERIES POINT GATE (BODILESS) MACHINING DIMENSIONS

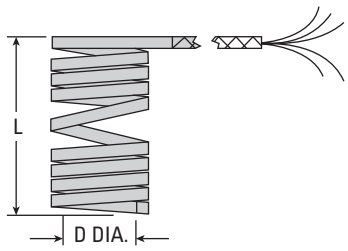


SERIES NOZZLE	O DIA. UNFILLED RESIN	O DIA. FILLED RESIN	Q DIA.	R RAD.
250	.028 MIN.	.060 MIN.	.3750	.125
375	.028 MIN.	.060 MIN.	.5000	.187
625	.080 MIN.	.100 MIN.	.6250	.312

NOTE: The "O" diameter can be opened by the customer to suit the application. Also the land must be remachined to .005 max. after increasing the gate diameter.

Replacement Nozzle Heater Detail

Replacement Square Coil Nozzle Heater



250, 375 AND 625 NOZZLE HEATER 240 VAC, T/C TYPE "J", 36" LONG

WIRING INFORMATION:

Power leads are black

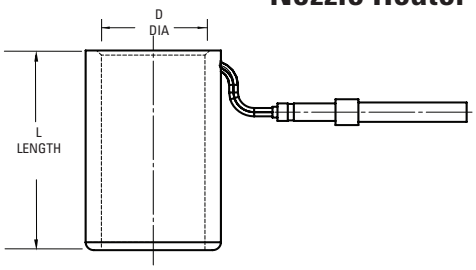
Ground lead is green

Thermocouple leads are black and white

– White is negative (–) and constantan (non-magnetic)

– Black is positive (+) and iron (magnetic)

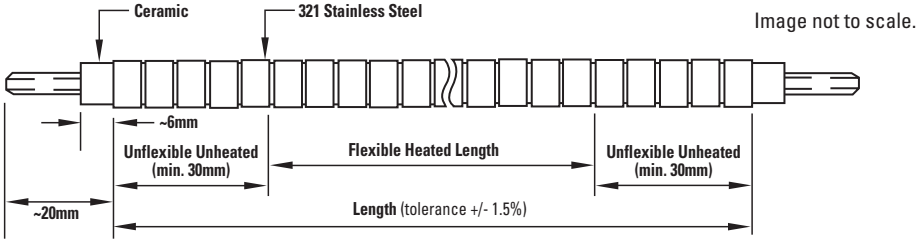
Replacement High Performance Nozzle Heater



SERIES	ITEM NUMBER	D DIA. NOMINAL NOZZLE	L DIM.	WATTS	USED WITH NOZZLE SUB-ASSEMBLY
250	SCH0081	.625	2.000	300	EHA0001
	SHC1081				EHA1001
	SCH0082		2.500	350	EHA0002
	SCH1082				EHA1002
	SCH0083		3.000	400	EHA0003
	SCH1083				EHA1003
	SCH0084		3.500	425	EHA0004
	SCH1084				EHA1004
	SCH0085		4.000	500	EHA0005
	SCH1085				EHA1005
	SCH0086		5.000	500	EHA0006
	SCH1086				EHA1006
	SCH0087		6.000	550	EHA0007
	SCH1087				EHA1007
375	SCH0088	.875	2.125	400	EHA0008
	SCH1088				EHA1008
	SCH0089		2.625	450	EHA0009
	SCH1089				EHA1009
	SCH0090		3.125	550	EHA0010
	SCH1090				EHA1010
	SCH0091		3.625	700	EHA0011
	SCH1091				EHA1011
	SCH0092		4.125	800	EHA0012
	SCH1092				EHA1012
	SCH0093		5.125	900	EHA0013
	SCH1093				EHA1013
	SCH0094		6.125	1000	EHA0014
	SCH1094				EHA1014
	SCH0095		7.125	1100	EHA0015
	SCH1095				EHA1015
625	SCH0096	1.500	4.000	1000	EHA0016
	SCH1096				EHA1016
	SCH0097		5.000	1030	EHA0017
	SCH1097				EHA1017
	SCH0098		6.000	1100	EHA0018
	SCH1098				EHA1017
	SCH0099		7.000	1000	EHA0019
	SCH1099				EHA1019
	SCH0100		8.000	1200	EHA0020
	SCH1100				EHA1020
	SCH0101		9.000	1200	EHA0021
	SCH1101				EHA1021
	SCH0102		10.000	1200	EHA0022
	SCH1102				EHA1022

SERIES	ITEM NUMBER	D DIA. NOMINAL NOZZLE	L DIM.	WATTS	USED WITH NOZZLE SUB-ASSEMBLY
250	CIH0081S	.625	2.000	300	CIA0001S
	CIH1081S				CIA1001S
	CIH0082S		2.500	350	CIA0002S
	CIH1082S				CIA1002S
	CIH0083S		3.000	400	CIA0003S
	CIH1083S				CIA1003S
	CIH0084S		3.500	425	CIA0004S
	CIH1084S				CIA1004S
	CIH0085S		4.000	425	CIA0005S
	CIH1085S				CIA1005S
	CIH0086S		5.000	500	CIA0006S
	CIH1086S				CIA1006S
	CIH0087S		6.000	550	CIA0007S
	CIH1087S				CIA1007S
375	CIH0088S	.875	2.125	400	CIA0008S
	CIH1088S				CIA1008S
	CIH0089S		2.625	450	CIA0009S
	CIH1089S				CIA1009S
	CIH0090S		3.125	550	CIA0010S
	CIH1090S				CIA1010S
	CIH0091S		3.625	700	CIA0011S
	CIH1091S				CIA1011S
	CIH0092S		4.124	800	CIA0012S
	CIH1092S				CIA1012S
	CIH0093S		5.125	900	CIA0013S
	CIH1093S				CIA1013S
	CIH0094S		6.125	1000	CIA0014S
	CIH1094S				CIA1014S
	CIH0095S		7.125	1100	CIA0015S
	CIH1095S				CIA1015S
625	CIH0104S	1.500	3.038	847	CIA0023S
	CIH1104S				CIA1023S
	CIH0096S		4.038	1000	CIA0016S
	CIH1096S				CIA1016S
	CIH0097S		5.038	1030	CIA0017S
	CIH1097S				CIA1017S
	CIH0098S		6.038	1100	CIA0018S
	CIH1098S				CIA1018S
	CIH0099S		7.038	1000	CIA0019S
	CIH1099S				CIA1019S
	CIH0101S		8.038	1200	CIA0020S
	CIH1101S				CIA1020S
	CIH0102S		9.038	1200	CIA0021S
	CIH1102S				CIA1021S
	CIH0103S		10.038	1200	CIA0022S
	CIH1103S				CIA1022S

Standard Global Manifold Replacement Heaters



DME Manifold Flexible Replacement Heaters

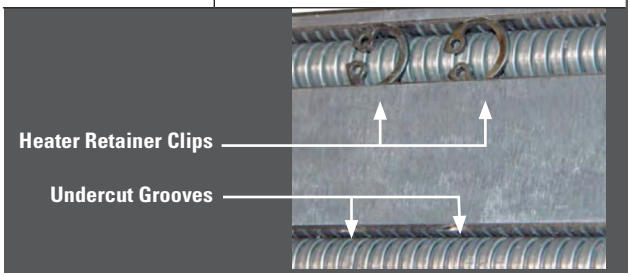
8.0mm diameter. Operating voltage 230 Volt. Threaded pins on both ends.

HIGH-WATT FLEXIBLE TUBULAR HEATERS		
ITEM NO.	LENGTH (mm)	WATTAGE
HFH8030	300	605
HFH8035	350	615
HFH8040	400	730
HFH8045	450	835
HFH8050	500	940
HFH8055	550	1050
HFH8060	600	1155
HFH8065	650	1265
HFH8070	700	1370
HFH8075	750	1480
HFH8080	800	1585
HFH8085	850	1690
HFH8090	900	1800
HFH8095	950	1910
HFH8100	1000	2015
HFH8105	1050	2125
HFH8110	1100	2230
HFH8115	1150	2335
HFH8120	1200	2445
HFH8125	1250	2555
HFH8130	1300	2655
HFH8135	1350	2765
HFH8140	1400	2870
HFH8145	1450	2980
HFH8150	1500	3090

LOW-WATT FLEXIBLE TUBULAR HEATERS		
ITEM NO.	LENGTH (mm)	WATTAGE
HFL8040	400	310
HFL8045	450	330
HFL8050	500	375
HFL8055	550	420
HFL8060	600	460
HFL8065	650	505
HFL8070	700	545
HFL8075	750	590
HFL8080	800	635
HFL8085	850	675
HFL8090	900	720
HFL8095	950	760
HFL8100	1000	805
HFL8105	1050	850
HFL8110	1100	890
HFL8115	1150	930
HFL8120	1200	975
HFL8125	1250	1020
HFL8130	1300	1060
HFL8135	1350	1105
HFL8140	1400	1150
HFL8145	1450	1190
HFL8150	1500	1235

NOTE: Low-watt 230V heaters are non-stock items - 4 week lead time.

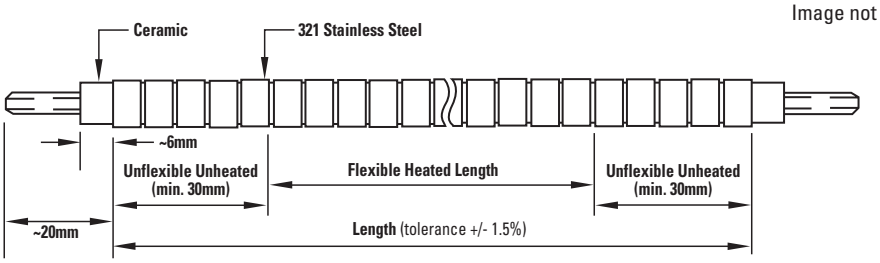
OPTIONAL ITEM	
RR-472-13000-100	Manifold Heater Retainer Clips



Replacing a DME Manifold Flexible Tubular Heater may also require the replacement of retaining rings that hold the heater in place. After installing the manifold heater, insert a retaining ring into each of the existing undercut grooves in the manifold. Use a brass hammer to lightly tap a small piece of brass and each retaining ring to secure the manifold heater.

Standard Global Manifold Replacement Heaters

Image not to scale.



DME Manifold Flexible Replacement Heaters

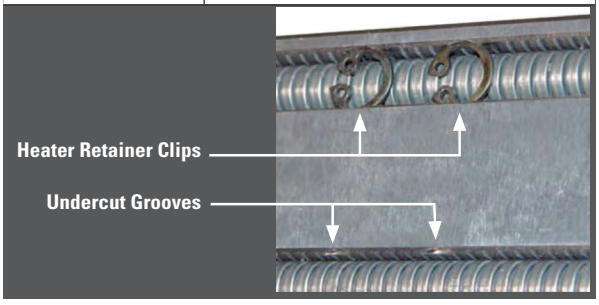
8.5mm diameter. Operating voltage 230 Volt. Threaded pins on both ends.

HIGH-WATT FLEXIBLE TUBULAR HEATERS		
ITEM NO.	LENGTH (mm)	WATTAGE
HFH850300	300	650
HFH850350	350	750
HFH850400	400	900
HFH850450	450	1050
HFH850500	500	1150
HFH850550	550	1300
HFH850600	600	1450
HFH850650	650	1600
HFH850700	700	1750
HFH850750	750	1900
HFH850800	800	2050
HFH850850	850	2200
HFH850900	900	2350
HFH850950	950	2500
HFH851000	1000	2650
HFH851050	1050	2800
HFH851100	1100	2930
HFH851150	1150	3060
HFH851200	1200	3190
HFH851250	1250	3320
HFH851300	1300	3450
HFH851350	1350	3580
HFH851400	1400	3710
HFH851450	1450	3840
HFH851500	1500	3970

LOW-WATT FLEXIBLE TUBULAR HEATERS		
ITEM NO.	LENGTH (mm)	WATTAGE
HFL850500	500	700
HFL850550	550	780
HFL850600	600	860
HFL850650	650	950
HFL850700	700	1000
HFL850750	750	1100
HFL850800	800	1190
HFL850850	850	1250
HFL850900	900	1350
HFL850950	950	1430
HFL851000	1000	1500
HFL851050	1050	1590
HFL851100	1100	1650
HFL851150	1150	1750
HFL851200	1200	1830
HFL851250	1250	1900
HFL851300	1300	1990
HFL851350	1350	2070
HFL851400	1400	2150
HFL851450	1450	2230
HFL851500	1500	2300

Replacing a DME Manifold Flexible Tubular Heater may also require the replacement of retaining rings that hold the heater in place. After installing the manifold heater, insert a retaining ring into each of the existing undercut grooves in the manifold. Use a brass hammer to lightly tap a small piece of brass and each retaining ring to secure the manifold heater.

OPTIONAL ITEM	
RR-472-13000-100	Manifold Heater Retainer Clips



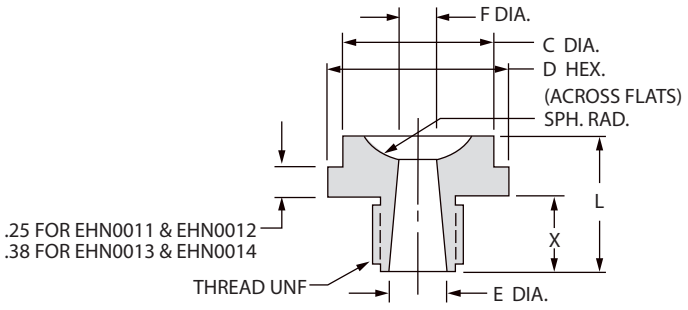
Replacement Parts Detail

Terminal Mounting Box

For information on terminal mounting boxes, mold power and thermocouple connectors, see the DME Control Systems Catalog.

Nozzle Seat

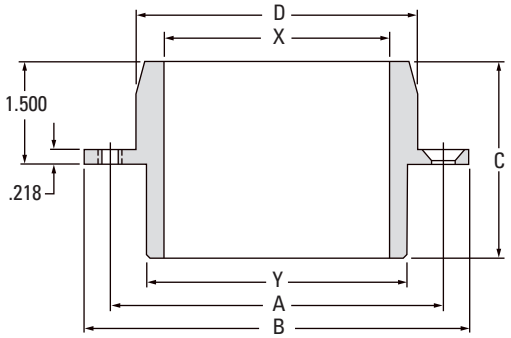
Replaceable interface between manifold and machine nozzle.



ITEM NUMBER	SPH. RAD.	X	L	C DIM.	D HEX.	E DIA.	F DIA.	THREAD
EHN0011	.500	.62	1.250	1.250	1.50	.363	.312	¾–16
EHN0012	.750							
EHN0013	.500	.75	1.750	1.500	1.88	.457	.375	1–12
EHN0014	.750							

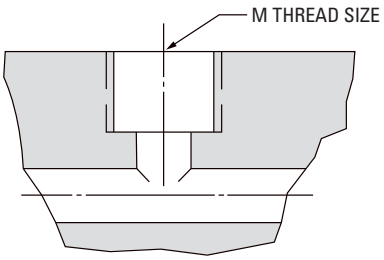
Locating Ring

INCLUDES (2) 5/16 – 18 × 1/2" LG. FLAT HEAD CAP SCREWS



ITEM NUMBER	D DIA.	X DIA.	Y DIA.	A DIM.	B DIA.	C DIM.
EHL0252	2.990	2.000	2.500	3.312	3.990	2.875
EHL0253	3.990	3.250	3.750	4.625	5.495	2.875
EHL0254	2.990	2.000	2.500	3.312	3.990	4.500
EHL0255	3.990	3.250	3.750	4.625	5.495	4.500

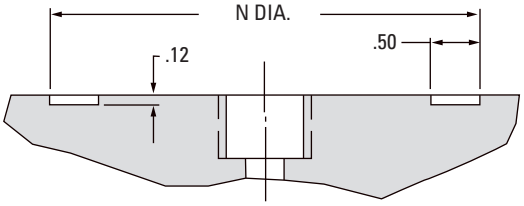
Nozzle Seat Machining



ITEM NUMBER	M THREAD SIZE
EHN0011	.687 DIA. HOLE × .56 DEEP
EHN0012	¾–16 UNF TAP × .50 DEEP
EHN0013	.922 DIA. HOLE × .69 DEEP
EHN0014	1–12 UNF TAP × .62 DEEP

Locating Ring Machining

Relief in top of manifold for locating ring.

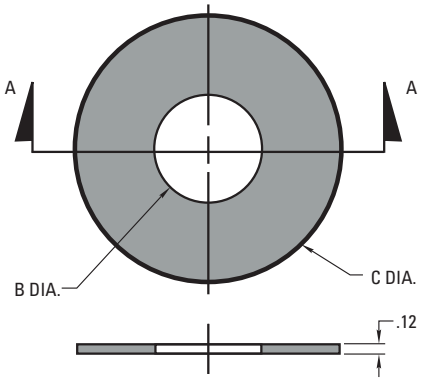


ITEM NUMBER	N DIA. +.005 −.000
EHL0252	2.505
EHL0253	3.755
EHL0254	2.505
EHL0255	3.755

Drool Rings

Used in conjunction with nozzle seat and locating ring to prevent nozzle purging and drooling from entering manifold area.

ITEM NUMBER	B DIA.	C DIA.
EHL1001	1.38	2.19
EHL1002	1.62	
EHL1003	1.38	3.44
EHL1004	1.62	



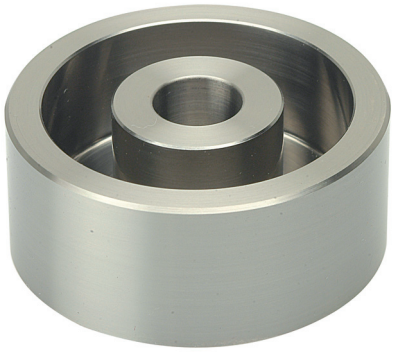
See application information on the preceding page for appropriate use of nozzle seats, drool rings and locating rings.

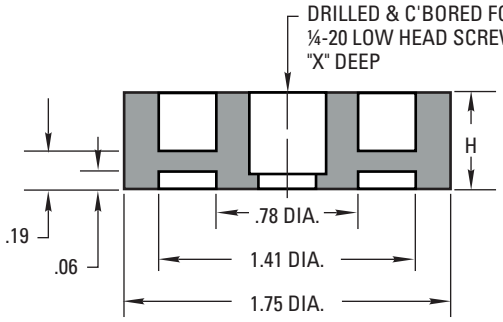
Components for Externally Heated Manifold Systems

Used primarily with tubular heated manifolds, these components are made from a non-magnetic material with low thermal conductivity. They provide the higher efficiency and performance required for tubular manifold applications.

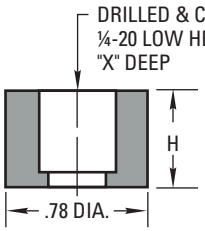
Riser Pads

Supports manifold opposite nozzles and prevents heat loss.





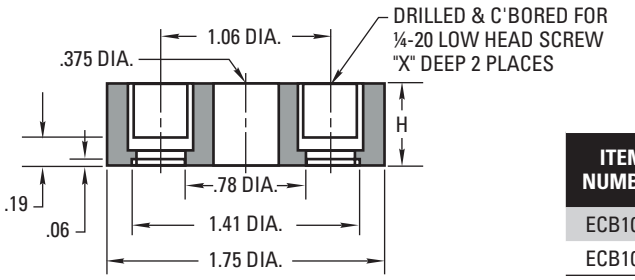
ITEM NUMBER	H	X
ERP1001	.500	.405
ERP1002	.750	.655



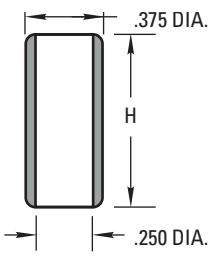
ITEM NUMBER	H	X
ERP1011	.500	.405
ERP1012	.750	.655

Center Support Pads and Tubular Dowels

Supports manifold center spacing, while minimizing heat transfer from manifold.



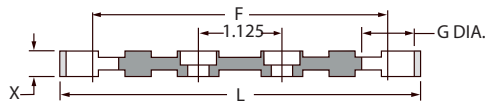
ITEM NUMBER	H	X
ECB1001	.500	.405
ECB1002	.750	.655



ITEM NUMBER	L LENGTH
3834TD	.750
38114TD	1.250

Riser Pad

Supports manifold opposite nozzles. Prevents heat loss and maintains spacing between manifold and clamping plate.

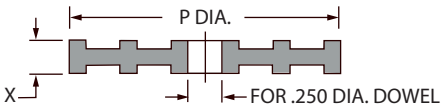


INCLUDES (2) #10–24 LOW HEAD CAP SCREWS

ITEM NUMBER	X DIM. +.010 −.000	L DIM.	F DIM.	G DIA.	USED WITH
ERP0163	.250	4.000	3.250	.625	GATE-MATE 4, 250 SERIES AND 375 SERIES
ERP0167	.375				
ERP0164	.750				
ERP0165	.250	5.000	4.000	.781	625 SERIES
ERP0168	.375				
ERP0166	.750				

Center Support Pad

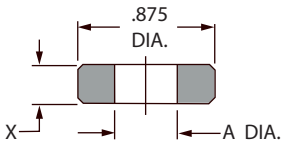
Aligns and supports manifold center while minimizing heat transfer from manifold.



ITEM NUMBER	X DIM. +.010 −.000	P DIA.
ECB0161	.250	2.500
ECB0162	.750	2.500
ECB0163	.250	1.500
ECB0164	.750	1.500

Spacer Ring

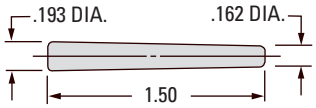
Maintains spacing between manifold and nozzle plate.



ITEM NUMBER	X DIM. +.010 −.000	A DIA.	USED WITH
ESR0157	.250	.406	GATE-MATE 4, 250 SERIES AND 375 SERIES
ESR0158	.750		
ESR0159	.250	.531	625 SERIES
ESR0160	.750		

Tapered Dowel Pin

Aligns and prevents end plug from rotating. Tapered dowel pin must conform to ANSI B18.8.2-1978 standard.

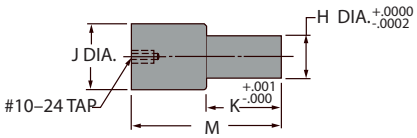


ITEM NUMBER
EDP0001

End Plug

Used to plug horizontal flow channels.

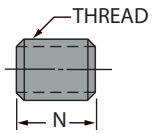
Material : P–20



SERIES	ITEM NUMBER	H DIA.	J DIA.	K DIM.	M DIM.
GATE-MATE 4	EEP0002	.5615	.800	.750	1.500
250	EEP0001	.4365	.675	.750	1.500
375	EEP0002	.5615	.800	.750	1.500
625	EEP0003	.6875	.894	1.125	1.875

End Plug Set Screw

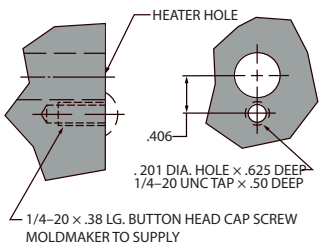
Used to secure end plug into manifold (2 required). End plug set screw must conform to the following standards. ANSI B1.1. ANSI B18.3 and ASTM F912.



SERIES	ITEM NUMBER	THREAD	N DIM.
GATE-MATE 4	SSS7878	⅞–14 UNF-3A	.875
250	SSS3434	¾–16 UNF-3A	.750
375	SSS7878	⅞–14 UNF-3A	.875
625	SSS11	1–12 UNF-3A	1.000

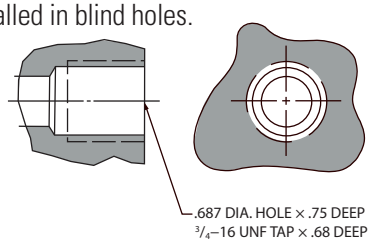
Heater Stop Machining

Used for ECH-Series cartridge heaters.



Heater Puller Machining

Used for CHS-Series cartridge heaters recommended for heaters installed in blind holes.

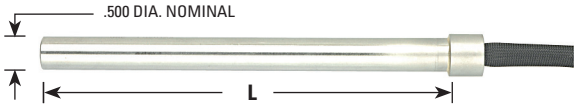


Cartridge Heaters & Thermocouples

240 VAC, 36" Leads with 6" of Lead Protection

Cartridge Heater – Power Leads are multi-colored

Shoulder Style Cartridge Heater



Although these heaters do not employ integral thermocouples, they're designed and constructed to run at higher molding temperatures and provide longer life than conventional heaters.

Cartridge Heaters

Can be installed through hole or installed using retainer plate construction.

Shoulder Style Cartridge Heaters

These heaters are used in conjunction with heater pullers to insure easy removal of blind or through hole installations.

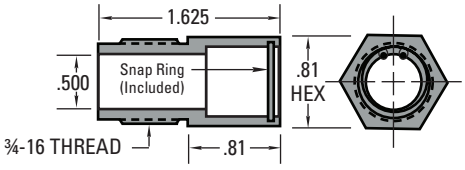
Shoulder Style Cartridge Heaters

ITEM NUMBER	L IN INCHES	WATTS	WATTS PER LIN. IN.
CHS0119	4.0	500	125
CHS0120	4.5	575	128
CHS0121	5.0	650	130
CHS0122	5.5	725	132
CHS0123	6.0	800	133
CHS0124	6.5	875	135
CHS0125	7.0	950	136
CHS0126	7.5	1025	137
CHS0127	8.0	1100	138
CHS0128	8.5	1175	138
CHS0129	9.0	1200	133
CHS0130	10.0	1350	135
CHS0131	11.0	1500	136
CHS0132	12.0	1650	137
CHS0133	15.0	2050	137
CHS0134	18.0	2500	139

Heater puller to be ordered separately.

Heater Puller (with Snap Ring)

Provides trouble-free removal of Shoulder Style Cartridge Heater.



PULLER WITH RING

ITEM NUMBER
EHP0250

REPLACEMENT SNAP RINGS

ITEM NUMBER*
EHP0001

*Pkg. of 25

Manifold Thermocouples

Installed in manifold to maintain precise temperature control.

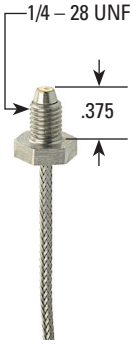
Flat Washer Type

Utilized in limited space applications.

ITEM NUMBER
ETC0168

Threaded Type

Installed between heat source and flow channel for more precise control.



ITEM NUMBER
ETC0251

Cartridge Heaters

	.500 DIAMETER NOMINAL			
	ITEM NUMBER	LENGTH L	WATTS	WATTS PER LIN. IN.
	ECH0103	4.0	500	125
	ECH0119	4.0	750	188
	ECH0104	4.5	575	128
*	ECH0138	5.0	500	100
	ECH0105	5.0	650	130
*	ECH0139	5.0	750	150
	ECH0120	5.0	1000	200
*	ECH0148	5.5	500	91
	ECH0106	5.5	725	132
*	ECH0140	6.0	750	125
	ECH0107	6.0	800	133
	ECH0121	6.0	1000	167
	ECH0108	6.5	875	135
*	ECH0141	7.0	600	86
	ECH0109	7.0	950	136
	ECH0122	7.0	1000	143
*	ECH0149	7.5	1000	133
	ECH0110	7.5	1025	137
*	ECH0142	8.0	1000	125
	ECH0111	8.0	1100	138
	ECH0123	8.0	1500	188
	ECH0124	8.0	2000	250
	ECH0112	8.5	1175	138
	ECH0113	9.0	1200	133
	ECH0114	10.0	1350	135
	ECH0125	10.0	1500	150
	ECH0126	11.0	1000	91
	ECH0115	11.0	1500	136
	ECH0128	12.0	1000	83
	ECH0127	12.0	1500	125
	ECH0116	12.0	1650	137
*	ECH0144	12.0	2000	167
*	ECH0146	14.0	1000	71
*	ECH0145	14.0	2300	164
	ECH0129	15.0	1500	100
	ECH0117	15.0	2050	137
*	ECH0147	18.0	1500	83
	ECH0130	18.0	1700	94
	ECH0118	18.0	2500	139

NOTE: Sizes preceded by an * are the newest additions.

See the Hot One Design and Machining Guidelines at the end of this Hot One Nozzles section for manifold size recommendation and installation drawings.

Cartridge Heaters

DME Standard Cartridge heaters employ a swaged construction using the finest resistance wire and insulation available for optimum heating performance, long life and maximum dependability. These heaters are furnished with 10" long flexible lead wires, ready for fast installation. Thermocouple cartridge heaters are also available.

NOTE: Lead wires can withstand temperatures up to 450°F. If temperatures will exceed this amount, leads must be insulated.

DIA.	LENGTH (INCHES)	VOLTS	WATTS	ITEM NUMBER
1/4	2	120	40	CU2021
	2	240	40	CU2022
	3	120	75	CU2031
	3	240	75	CU2032
	4	120	100	CU2041
	4	240	100	CU2042
	6	120	150	CU2061
	6	240	150	CU2062
3/8	2	120	75	CU3021
	2	240	75	CU3022
	3	120	100	CU3031
	3	240	100	CU3032
	4	120	150	CU3041
	4	240	150	CU3042
	5	120	185	CU3051
	5	240	185	CU3052
	6	120	225	CU3061
	6	240	225	CU3062
	8	120	300	CU3081
	8	240	300	CU3082
1/2	2	120	75	CU4021
	2	240	75	CU4022
	3	120	150	CU4031
	3	240	150	CU4032
	4	120	180	CU4041
	4	240	180	CU4042
	5	120	200	CU4051
	5	240	200	CU4052
	6	120	300	CU4061
	6	240	300	CU4062
	8	120	400	CU4081
	8	240	400	CU4082
	10	120	500	CU4101
	10	240	500	CU4102
	12	120	600	CU4121
	12	240	600	CU4122
	16	120	800	CU4161
	16	240	800	CU4162

DIA.	LENGTH (INCHES)	VOLTS	WATTS	ITEM NUMBER
5/8	2	120	100	CU5021
	2	240	100	CU5022
	3	240	200	CU5032
	4	240	250	CU5042
	5	120	300	CU5051
	5	240	300	CU5052
	6	120	375	CU5061
	6	240	375	CU5062
	8	120	500	CU5081
	8	240	500	CU5082
	10	120	650	CU5101
	10	240	650	CU5102
	12	120	775	CU5121
	12	240	775	CU5122
	14	240	900	CU5142
	16	240	1050	CU5162
3/4	3	240	225	CU6032
	4	120	300	CU6041
	4	240	300	CU6042
	5	120	375	CU6051
	5	240	375	CU6052
	6	120	450	CU6061
	6	240	450	CU6062
	8	120	600	CU6081
	8	240	600	CU6082
	10	120	800	CU6101
	10	240	800	CU6102
	12	120	950	CU6121
	12	240	950	CU6122
	14	240	1100	CU6142
	16	240	1250	CU6162

NOTE: Special heaters are available on special order.

High Watt Density Cartridge Heaters

Fit Tolerances

The cavity or hole, into which a cartridge heater is inserted, should be reamed* to the nominal diameter of the heater. DME cartridge heater diameters are actually .002 to .007 undersize. High Watt Density Cartridge Heaters are .004 undersize, held to a tolerance of ±.002. This sizing is maintained for easy installation and for best heat transfer. However, if close hole tolerances are not maintained, operating life of the heater may be drastically reduced. Also make sure that the heated area of the cartridge does not extend beyond the hole.

Spacing of Heaters

As a general rule it is not recommended to space heaters in a mold, die or platen any closer to each other than the diameter of the heater.

Contamination

Contamination consists of any foreign matter such as plastics, oil, grease, dirt or water entering through the terminal end or the end opposite the terminal. Care must be taken to protect the heater or these contaminants will shorten the effective heater life.

Proper Care and Maintenance

1. Heaters should be stored in a dry area, especially during periods of excess humidity.
2. Protect leads from abuse, abrasion, fatigue, etc.
3. Maintain temperature controllers and accessories in good working condition to avoid an overheating condition.
4. Transferring heaters from one die or platen to another is not recommended.

DME High Watt Density Cartridge Heaters employ swaged construction for maximum heat transfer and high watt density for more demanding applications. Recommended for use when high temperatures are required (up to 1500°F) or where heaters will be subjected to vibration. Furnished with 10" long flexible lead wires. Special heaters are available on special order. Thermocouple cartridge heaters are also available.

DIA.	LENGTH (INCHES)	VOLTS	WATTS	ITEM NUMBER
1/4	1	120	100	CM1001
	1	240	100	CM1002
	1 1/2	120	150	CM1121
	1 1/2	240	150	CM1122
	2	120	200	CM2021
	2	240	200	CM2022
	3	120	300	CM2031
	3	240	300	CM2032
	4	240	375	CM2042
	5	240	450	CM2052
3/8	2	240	250	CM3022
	3	240	350	CM3032
	4	240	500	CM3042
	5	240	550	CM3052
	6	240	600	CM3062
1/2	2	240	250	CM4022
	3	240	300	CM4032
	4	240	400	CM4042
	5	240	800	CM4052
	6	240	1000	CM4062
	8	240	1200	CM4082
	10	240	1500	CM4102
	12	240	2000	CM4122
5/8	2	240	300	CM5022
	4	240	700	CM5042
	6	240	1000	CM5062
	8	240	1200	CM5082
	9	240	1400	CM5092
	10	240	1500	CM5102
	14	240	2000	CM5142
3/4	2	240	300	CM6022
	4	240	750	CM6042
	6	240	1200	CM6062
	10	240	1600	CM6102
	14	240	2200	CM6142

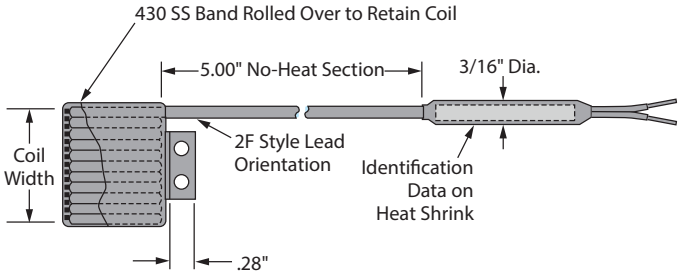
*See DME Equipment and Supplies Catalog for DME machine reamers and DME straight shank long drills.

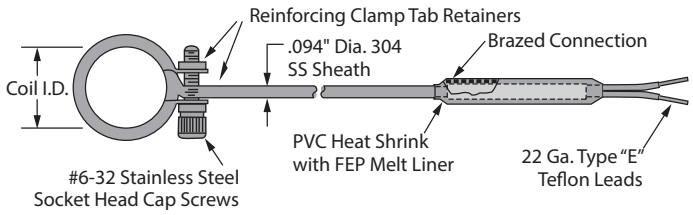
NOTE: Lead wires can withstand temperatures up to 450°F. If temperatures will exceed this amount, leads must be insulated.

Nozzle Heaters for Injection Molds

Features

- Square coil design for improved heat transfer
- High watt density on nozzle … up to 106 watts/in^2
- Heat is conducted from entire heater circumference … 360˚ heat
- Unheated tail section reduces temperature at adapter
- Moisture-resistant seal
- Low profile
- 1200°F maximum operating temperature
- Available for same-day shipping





Nozzle Heaters (240 VAC)

WATTS	COIL I.D.	COIL O.D.	COIL WIDTH	LEAD LENGTH	THERMO-COUPLE	ITEM NUMBER
125	.750	.980	1.0"	36"	NO	SCH0103
125	.750	.980	1.0"	72"	NO	SCH0104
250	.750	.980	1.0"	36"	NO	SCH0105
250	.750	.980	1.0"	72"	NO	SCH0106
125	.750	.980	1.0"	36"	YES*	SCH0107
250	.750	.980	1.0"	36"	YES*	SCH0108
125	.875	1.10	1.0"	36"	NO	SCH0109
250	.875	1.10	1.0"	36"	NO	SCH0110

*A thermocouple is externally spotwelded to the sheath.

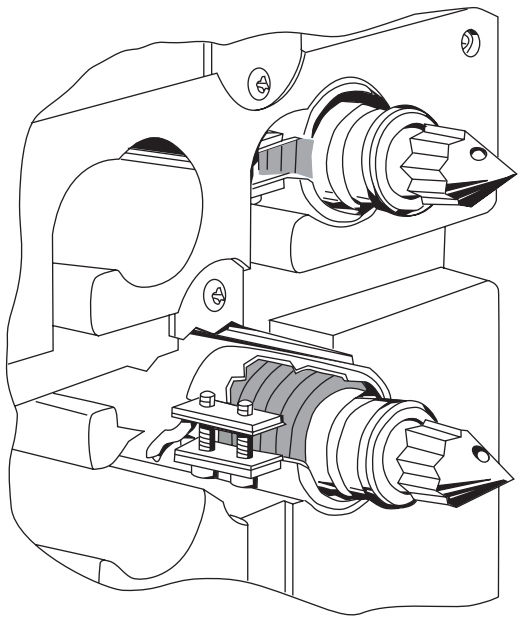
This nozzle heater features a five-inch long unheated tail section, and the adapter is provided with a moisture-resistant seal. These two design advantages practically eliminate failures in the adapter area due to overheating and moisture contamination.

As with all DME heaters, these new nozzle heaters are designed to give long life even when operated at 1200°F. These are very low profile heaters to facilitate easy installation in the tight environment of multiple gate molds.

All units have a resistance tolerance of ±5% to provide consistent operation and reduced adjustment time when it is necessary to replace a heater or bushing.

A stainless steel clamping band is installed on all units.

All units are stock coiled per the dimensions listed below. All units have Teflon® covered power leads and fiberglass thermocouple leads as indicated.



This installation illustrates DME's square coil design fit over a nozzle. This heater was designed to fit any industry nozzle as a replacement for runnerless molding.

High Watt Density Thermocouple Cartridge Heaters

DME High Watt Density Thermocouple Cartridge Heaters employ swaged construction for maximum heat transfer and high watt density for more demanding applications. Recommended for use when high temperatures are required (up to 1500°F) or where heaters will be subjected to vibration.

Fit Tolerances

The cavity or hole into which a cartridge heater is inserted should be reamed* to the nominal diameter of the heater. DME cartridge heater diameters are actually .002 to .007 undersize. High Watt Density Cartridge Heaters are .003 undersize, held to a tolerance of ±.002. This sizing is maintained for easy installation and for best heat transfer. However, if close hole tolerances are not maintained, operating life of the heater may be drastically reduced. Also make sure that the heated area of the cartridge does not extend beyond the hole.

Contamination

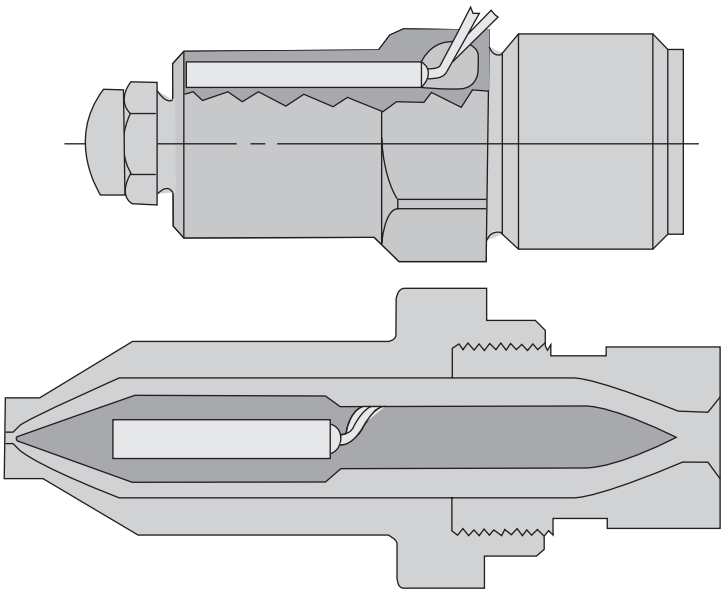
Contamination consists of any foreign matter such as plastics, oil, grease, dirt or water entering through the terminal end or the end opposite the terminal. Care must be taken to protect the heater or these contaminants will shorten the effective heater life.

Proper Care and Maintenance

1. Heaters should be stored in a dry area, especially during periods of excess humidity.
2. Protect leads from abuse, abrasion, fatigue, etc.
3. Maintain temperature controllers and accessories in good working condition to avoid an overheating condition.
4. Transferring heaters from one die or platen to another is not recommended.

*See DME Equipment and Supplies Catalog for DME machine reamers and DME straight shank long drills.

These diagrams show typical installations of a thermocouple replacement cartridge heater.



High Watt Density Thermocouple Cartridge Heaters
(240 VAC, Type J Thermocouple, 36" Long Leads)

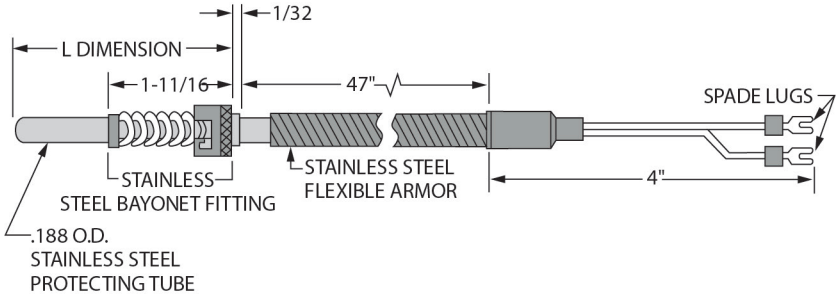
DIAMETER	LENGTHS IN	LENGTHS CM	VOLTS	WATTS	ITEM NUMBER
3/8" (9.42mm)	1 3/4	4.445	240	200	TCH0001
	2	5.08	240	250	TCH0002
	2 1/2	6.35	240	250	TCH0003
	3	7.52	240	250	TCH0004
	3 1/2	8.39	240	320	TCH0005
	4	10.15	240	370	TCH0006
	4 1/2	11.43	240	420	TCH0007
	5	12.70	240	470	TCH0008
	5 1/2	13.97	240	525	TCH0009
	6	15.24	240	575	TCH0010
	6 1/2	16.51	240	625	TCH0011
	7	17.78	240	675	TCH0012
	7 1/2	19.05	240	725	TCH0013
	8	20.32	240	775	TCH0014
1/2" (12.50mm)	3 1/2	8.89	240	420	TCH0015
	4	10.16	240	480	TCH0016
	4 1/2	11.43	240	550	TCH0017
	5	12.70	240	625	TCH0018
	5 1/2	13.97	240	700	TCH0019
	6	15.24	240	775	TCH0020
	6 1/2	16.51	240	850	TCH0021
	7 1/2	19.05	240	975	TCH0022

Thermocouples

DME Bayonet Thermocouples are made of 20 gauge stranded glass-insulated wires. The grounded hot junction is in the end of a .188 O.D. stainless steel protecting tube for fast response and long life. Tube features a round tip and is fitted with a stainless steel spring loaded bayonet fitting. Lead wires are protected by rugged .188 I.D. flexible armor (lead wire calibration is ANSI Type J Iron/Constantan). Armor cable is 47" long; spade lugs are attached at the end of the lead wires for easy connection to terminal strip or plug.

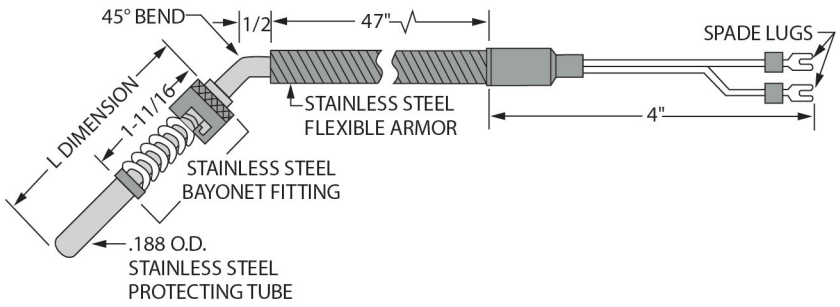
DME Adjustable Bayonet Type Thermocouples fit hole depths up to $10^1/_2$" and will conform to any angle.

DME Spade Type Thermocouples are used between band heaters and machine nozzles in applications where space will not permit bayonet-type thermocouples. The stainless steel spade is only .025 thick and can be easily contoured to fit various diameters.



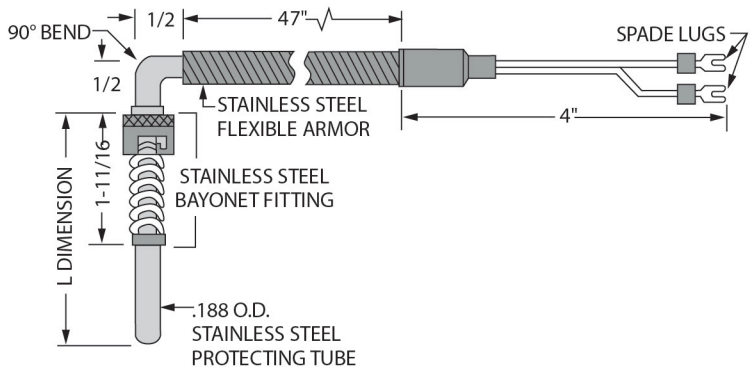
Straight Type

ITEM NUMBER	L
TC2500	$2^1/_2$
TC3500	$3^1/_2$
TC6000	6"



45° Angle Type

ITEM NUMBER	L
TC2545	$2^1/_2$
TC3545	$3^1/_2$

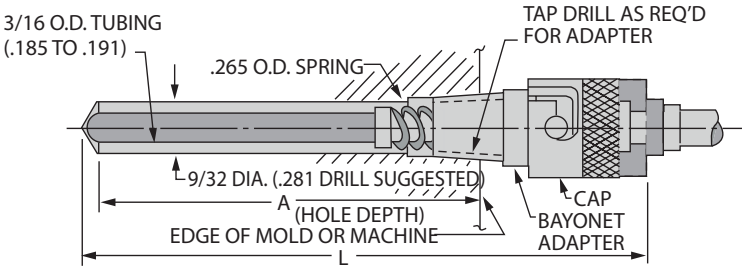


90° Angle Type

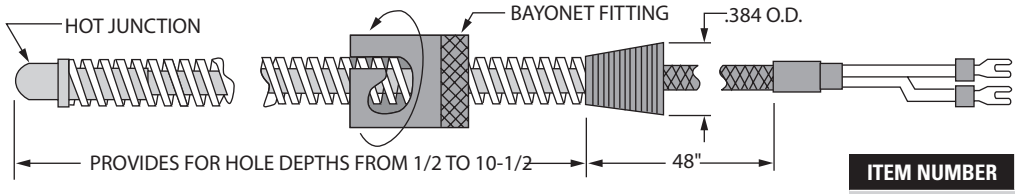
ITEM NUMBER	L
TC2590	$2^1/_2$
TC3590	$3^1/_2$
TC6090	6"

Hole Depth Chart

L THERMOCOUPLE LENGTH	A HOLE DEPTH FOR ADAPTER LENGTH	
	7/8	1 3/8
2 1/2	1" TO 1 3/8	1/2 TO 7/8
3 1/2	2" TO 2 3/8	1 1/2 TO 1 7/8
6"	4 1/2 TO 4 7/8	4" TO 4 3/8
10 1/2 ADJ.	1/2 TO 10 1/2	1/2 TO 10"



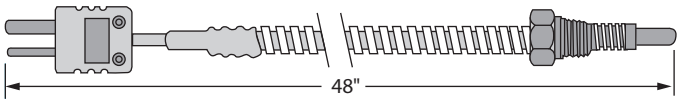
Adjustable Thermocouple



ITEM NUMBER
TC8000

By turning the adjustable bayonet fitting along the spring, the DME Adjustable Thermocouple can be set for the desired immersion length, from 1/2" to 10 1/2". Spring will conform to any angle. Hot junction of ANSI Type J I/C calibrated leads is inside round tip. Flexible metal braid is 48" long with 2 1/2" of lead wires at the end and spade lugs for ease of connection.

Threaded Type Thermocouple

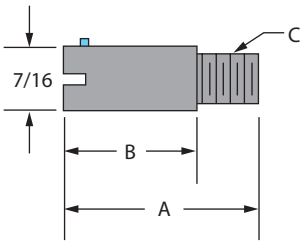


ITEM NUMBER
TCT4

Threaded type thermocouple is spring loaded and supplied with cable and mini plug.

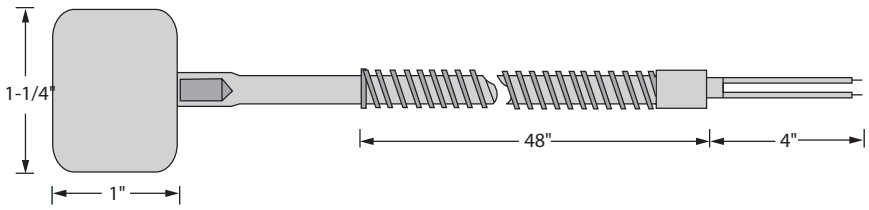
Bayonet Adapters

The stainless steel bayonet adapters accommodate the spring loaded bayonet fitting on the thermocouple, to bottom the hot junction where temperature sensing is desired. Adapter requires tapped hole for mounting.



ITEM NUMBER	A	B	C
BA1007	7/8	.465	1/8-27 NPT
BA1013	1 3/8	.934	1/8-27 NPT
BA4007	7/8	.465	3/8-24 NF
BA4013	1 3/8	.934	3/8-24 NF

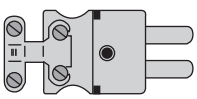
Spade Type Thermocouple



Used between band heaters and machine nozzles in applications where space will not permit bayonet type thermocouples. Stainless steel spade measures 1" x 1 1/4 x .025 thick and can be easily contoured to fit various diameters. Thermocouple is Type J I/C. Flexible stainless steel armor cable is 48" long with 4" of lead wires at the end.

ITEM NUMBER
TC9000

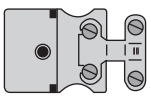
Plug (with Cable Clamp)



ITEM NUMBER
PL10

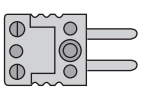
ROUND PINS
AND
SOCKETS
(3/16 & 1/8)

Jack (with Cable Clamp)



ITEM NUMBER
PL20

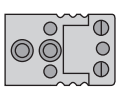
Mini Plug



ITEM NUMBER
M2MJ

FLAT PINS
AND
SOCKETS

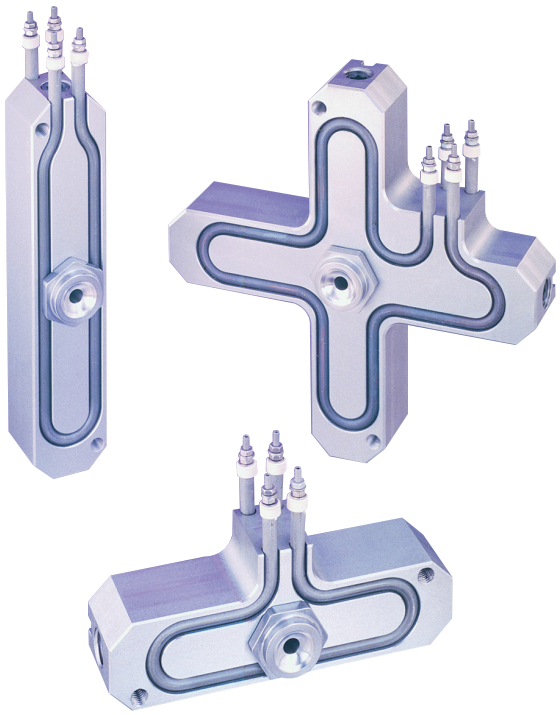
Mini Jack



ITEM NUMBER
M2FJ

DME Meteor®
Hot Runner Systems

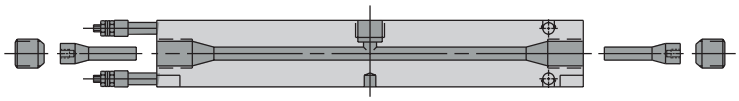
CUSTOM-CONFIGURED,
ECONOMICAL SOLUTIONS
FOR QUICK DELIVERY



The Meteor Package

Each Meteor manifold kit includes the following standard items:

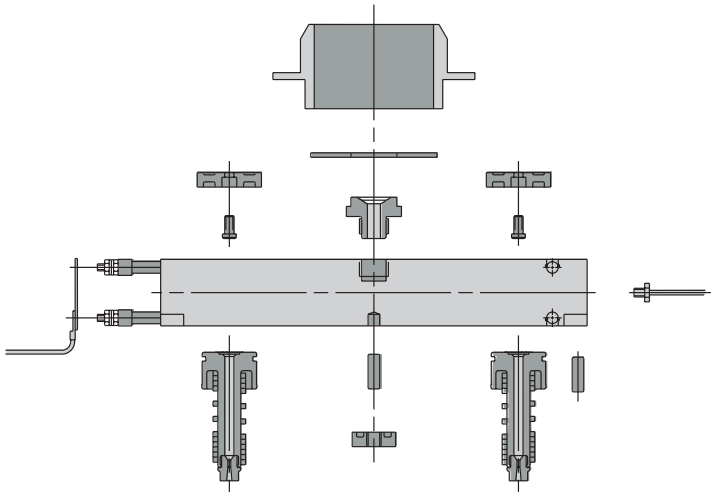
- Manifold with pre-machined horizontal flow channel
- Pre-installed, replaceable tubular heaters
- End plugs
- End plug set screws



Ancillary Components

A variety of ancillary components available include:

- Locating rings
- Drool rings
- Nozzle seats
- Riser pads and cap screws
- Center support pads and dowel pins
- Thermocouples



Nozzle Options

All nozzles have a selection of tip styles to suit material flow and gate cosmetic requirements.

METEOR SYSTEM	EHA AND CIA	
	250 SERIES	375 SERIES
METEOR 1	X	X
METEOR 2	X	X

Application Notes

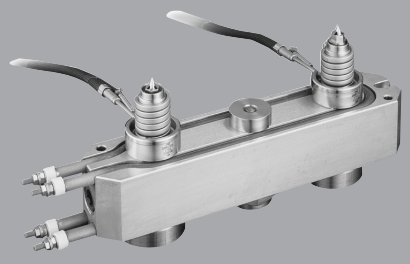
- 250 Series nozzles to be used with manifold kits MEM0100K thru MEM0200K, MCM0100K thru MCM0200K and MXM0100K thru MXM0200K. 375 Series nozzles to be used with all other manifold kits.
- All manifolds with suffix of 100K, 150K and 200K have a 9mm diameter flow channel; all other manifolds have a 12mm diameter flow channel.
- CIA High Performance nozzles are recommended for materials that process above 260°C/500°F.
- For filled or abrasive materials, wear-resistant tips are recommended.
- Meteor manifolds are not recommended for use with PVC material.
- Contact DME for assistance.

More Solutions. More Choices.

Meteor®
Hot Runner Systems

Meteor 1 manifold

Meteor manifolds are supplied with replaceable, press-fit tubular heaters.



Meteor 2 manifold and components

The Meteor® Manifold System provides a versatile yet economical solution for many hot runner mold designs. Two-drop (in-line) and four-drop (X-style) manifolds are available in sizes to suit a variety of applications. Pre-engineered with accurately machined flow channels, nozzle ports can be freely located anywhere within each manifold's flow channel limits. Meteor manifolds are supplied with replaceable, press-fit tubular heaters which are stocked for quick delivery. A full complement of ancillary components are also available to complete the system design and construction.

Advantages

- Two levels of quick-delivery hot runner systems
- In-line and X-style manifolds for 2- and 4-drop applications
- Suitable for engineered and commodity resins
- Cost-effective
- Satisfaction 100% guaranteed

Choose the Meteor System that's right for you

DME offers two quick-delivery hot runner systems with varying levels of customization – you pick the one that fits your needs.

Meteor 1

- Standardized manifolds with machined horizontal flow channel
- Customer machines vertical flow channel locations and end plugs for maximum configuration flexibility
- Customer can easily order a Meteor 1 manifold kit and select nozzles, supports, nozzle seat, locating ring, thermocouples and other necessary items

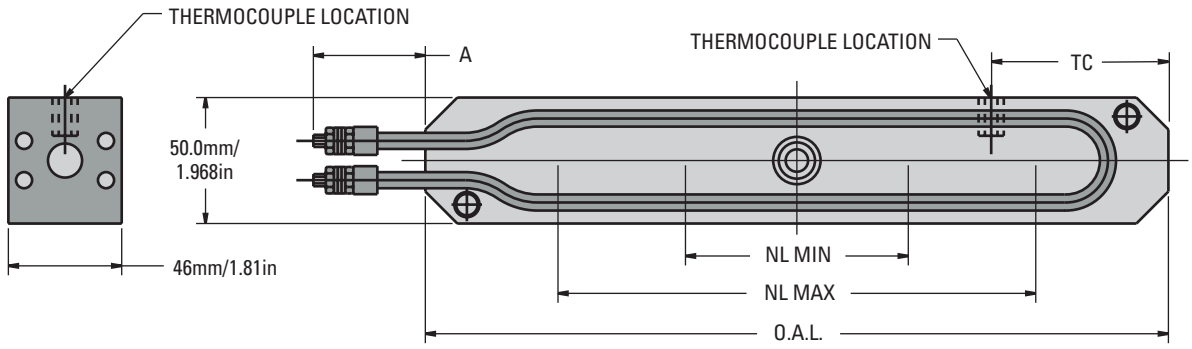
Meteor 2

- Manifold and components system, integrated with a Meteor 1 manifold kit
- Customer specifies nozzles, supports, nozzle seat, locating ring, thermocouples, etc.
- DME performs vertical flow channel and end plug machining

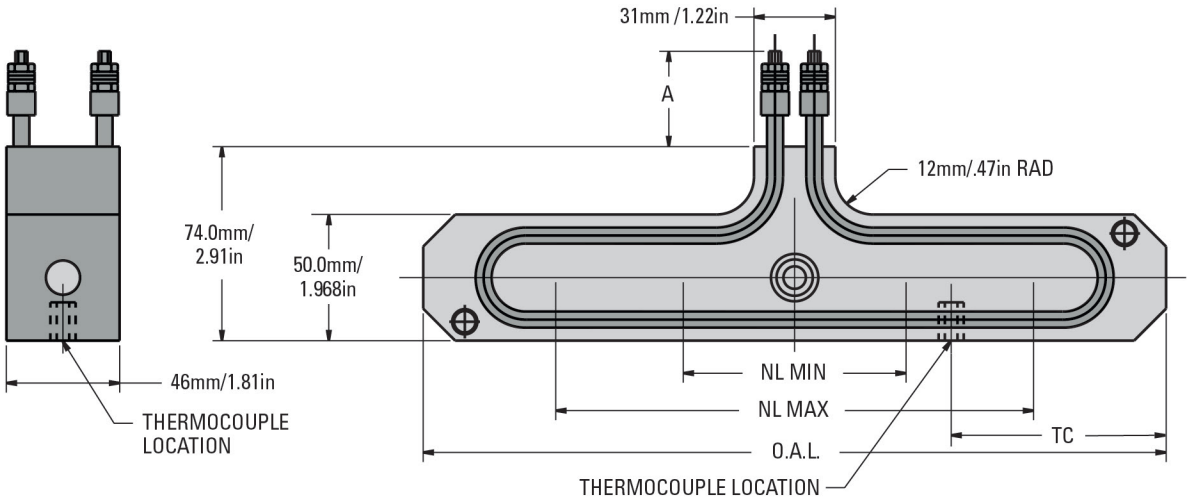
Meteor 1 In-Line and X-Style Manifolds

Meteor 1

Meteor 1 In-Line End Exit



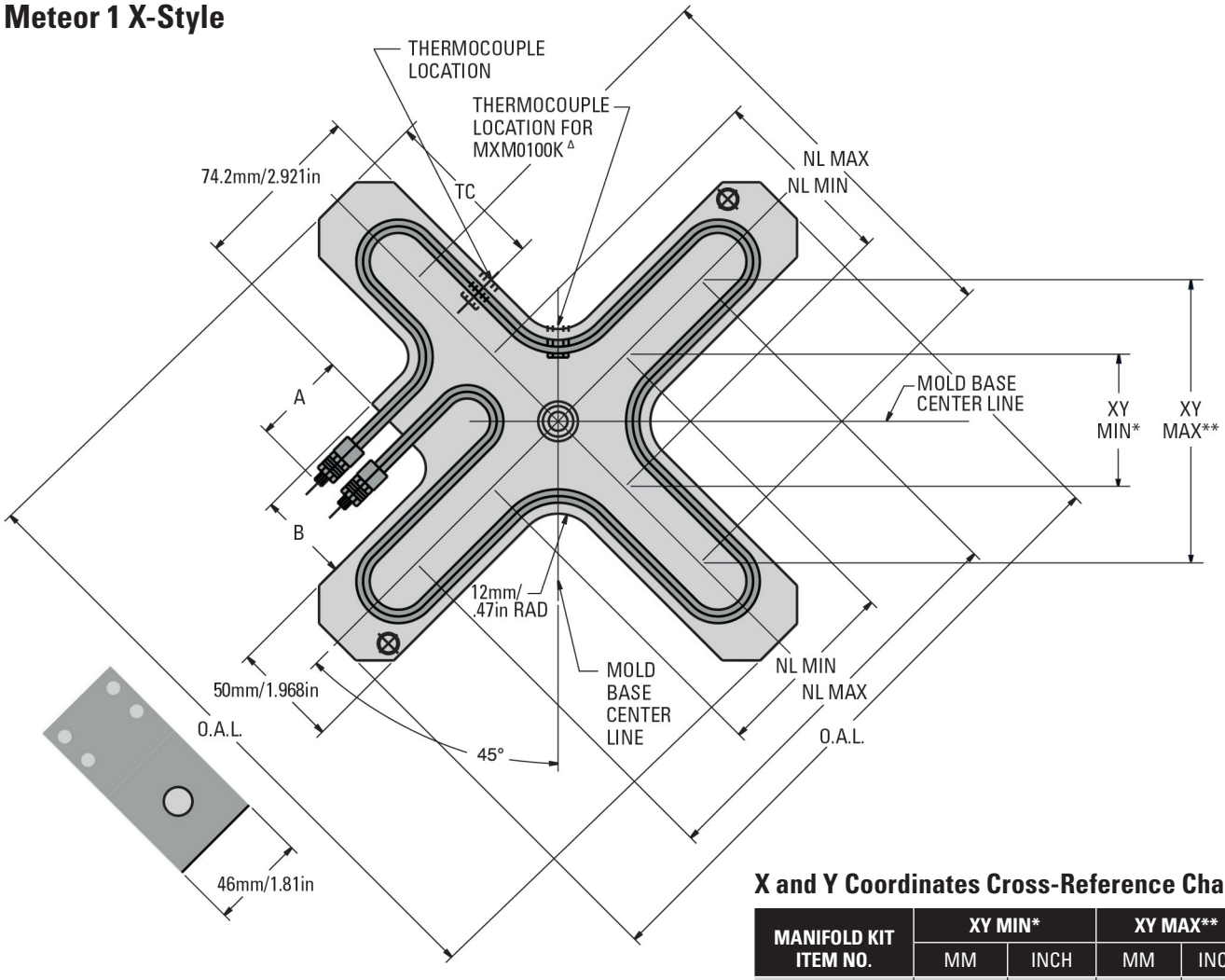
Meteor 1 In-Line Center Exit



MANIFOLD TYPE	MANIFOLD KIT ITEM NO.	NL MIN.		NL MAX.		O.A.L.		A		B		TC	
		MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH
IN-LINE END EXIT	MEM0100K	55	2.165	100	3.937	195	7.677	44.5	1.75	—	—	60	2.362
	MEM0150K	100	3.937	150	5.906	245	9.646	44.5	1.75	—	—		
	MEM0200K	150	5.906	200	7.874	295	11.614	44.5	1.75	—	—		
	MEM0300K	200	7.874	300	11.811	395	15.551	44.5	1.75	—	—	72.5	2.362
	MEM0400K	300	11.811	400	15.748	495	19.488	50.8	2.00	—	—		
	MEM0500K	400	15.748	500	19.685	595	23.425	50.8	2.00	—	—		
IN-LINE CENTER EXIT	MCM0100K	55	2.165	100	3.937	195	7.677	44.5	1.75	—	—	60	2.362
	MCM0150K	100	3.937	150	5.906	245	9.646	44.5	1.75	—	—		
	MCM0200K	150	5.906	200	7.874	295	11.614	44.5	1.75	—	—		
	MCM0300K	200	7.874	300	11.811	395	15.551	44.5	1.75	—	—	72.5	2.854
	MCM0400K	300	11.811	400	15.748	495	19.488	50.8	2.00	—	—		
	MCM0500K	400	15.748	500	19.685	595	23.425	50.8	2.00	—	—		
X-STYLE	MXM0100K	55	2.165	100	3.937	195	7.677	44.5	1.75	56.8	2.236	SEE X-STYLE	
	MXM0150K	100	3.937	150	5.906	245	9.646	44.5	1.75	51.3	2.020	60	2.362
	MXM0200K	150	5.906	200	7.874	295	11.614	50.8	2.00	51.3	2.020		
	MXCM0300K	200	7.874	300	11.811	395	15.551	50.8	2.00	51.3	2.020	72.5	2.854

Meteor 1 In-Line and X-Style Manifolds

Meteor 1 X-Style



X and Y Coordinates Cross-Reference Chart

MANIFOLD KIT ITEM NO.	XY MIN*		XY MAX**	
	MM	INCH	MM	INCH
MXM0100K	38.90	1.531	70.71	2.783
MXM0150K	70.71	2.783	106.07	4.176
MXM0200K	106.07	4.176	141.42	5.568
MXM0300K	141.42	5.568	212.13	8.352

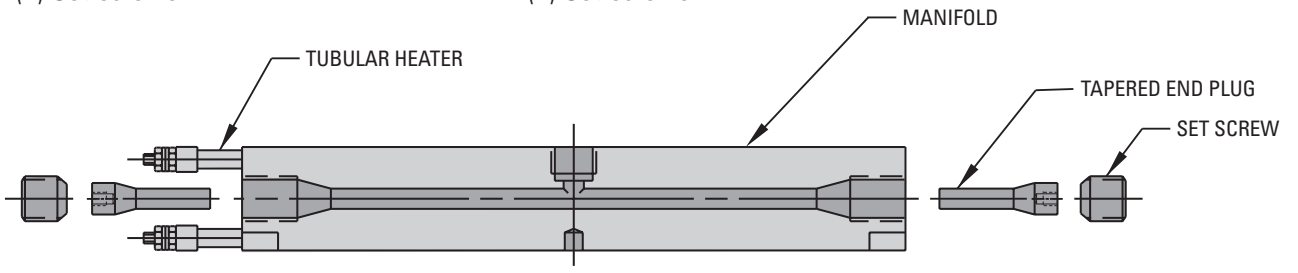
Meteor 1 Manifold Kit Includes:

In-Line System:

(1) Manifold (center or end heater exit)
(2) Tubular heaters (installed)
(2) Tapered end plugs
(2) Set screws

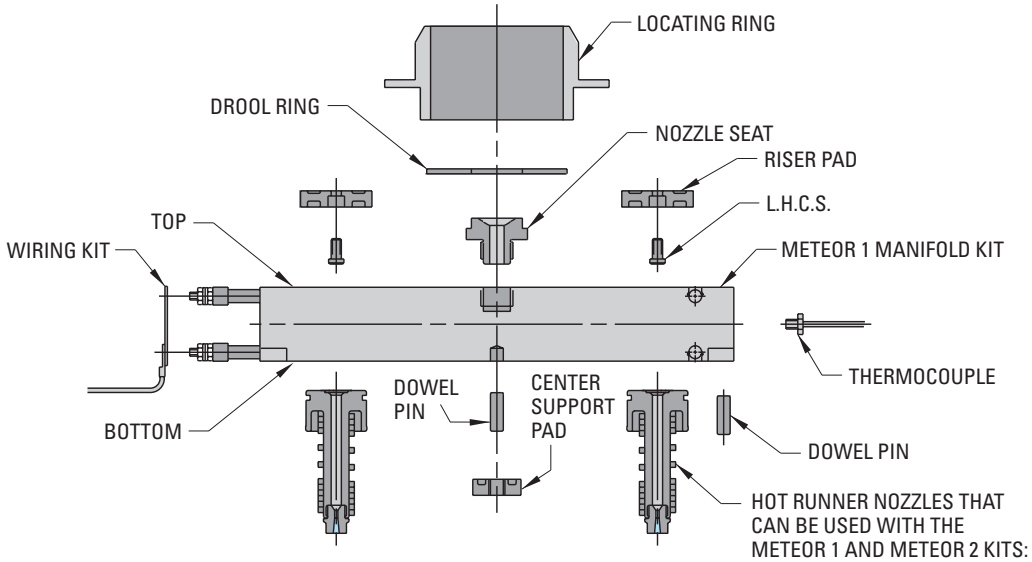
X-Style System:

(1) Manifold
(2) Tubular heaters (installed)
(4) Tapered end plugs
(4) Set screws



Meteor 1 & 2 Ancillary Component Options

Meteor 2



MANIFOLD TYPE	METEOR 1 MANIFOLD KIT ITEM NO.	METEOR 2 MANIFOLD KIT PLUS ITEM NO.	DESIGN CRITERIA		
			NOZZLE OPTIONS	**V** VERTICAL FLOW CHANNEL DIA. MM	INCH
IN-LINE END EXIT	MEM0100K	MEM0100KP	250, EHA & CIA SERIES	9	.354
	MEM0150K	MEM0150KP			
	MEM0200K	MEM0200KP			
	MEM0300K	MEM0300KP	375, EHA & CIA SERIES	12	.472
	MEM0400K	MEM0400KP			
	MEM0500K	MEM0500KP			
IN-LINE CENTER EXIT	MCM0100K	MCM0100KP	250, EHA & CIA SERIES	9	.354
	MCM0150K	MCM0150KP			
	MCM0200K	MCM0200KP			
	MCM0300K	MCM0300KP	375, EHA & CIA SERIES	12	.472
	MCM0400K	MCM0400KP			
	MCM0500K	MCM0500KP			
X-STYLE	MXM0100K	MXM0100KP	250, EHA & CIA SERIES	9	.354
	MXM0150K	MXM0150KP			
	MXM0200K	MXM0200KP			
	MXM0300K	MXM0300KP	375, EHA & CIA SERIES	12	.472

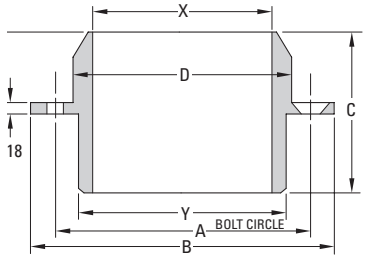
Meteor 1 Manifold Kit includes manifold, tubular heaters installed, two end plugs, and two set screws. The customer machines the vertical flow channel locations and end plugs for maximum configuration flexibility.

Meteor 2 Manifold Kit Plus includes the machining of the vertical flow channels and the installation of the end plugs and set screws by DME.
The customer provides DME with the gate locations on a Meteor 2 Criteria Form.

MANIFOLD TYPE	METEOR 1 MANIFOLD KIT ITEM NO.	METEOR 2 MANIFOLD KIT PLUS ITEM NO.	ANCILLARY COMPONENT OPTIONS								
			THERMO-COUPLE ITEM NO.	LOCATING RING ITEM NO.	DROOL RING ITEM NO.	NOZZLE SEAT ITEM NO.	RISER PADS ITEM NO.	CTR. SUPPORT PADS ITEM NO.	DOWEL PINS ITEM NO.	1/4-20 X .50 LG. L.H.C.S. ITEM NO.	WIRING KIT ITEM NO.
IN-LINE END EXIT	MEM0100K	MEM0100KP	ETC0252	EHL0253 EHL0255 (1 REQ'D.)	EHL1003	MNS0009	ERP1001 ERP1002 ERP1011 ERP1012 (2 OF SAME REQ'D.)	ECB0468 ECB0469 ECB0503 (1 REQ'D.)	DP820 DP828 DP832 (2 OF SAME REQ'D.)	1412LH (2 REQ'D.)	MWK1001
	MEM0150K	MEM0150KP									
	MEM0200K	MEM0200KP									
	MEM0300K	MEM0300KP				MNS0012					
	MEM0400K	MEM0400KP									
	MEM0500K	MEM0500KP	ETC0252 (2 REQ'D.)								MWK1002
IN-LINE CENTER EXIT	MCM0100K	MCM0100KP	ETC0252	EHL0253 EHL0255 (1 REQ'D.)	EHL1003	MNS0009	ERP1001 ERP1002 ERP1011 ERP1012 (2 OF SAME REQ'D.)	ECB0468 ECB0469 ECB0503 (1 REQ'D.)	DP820 DP828 DP832 (2 OF SAME REQ'D.)	1412LH (2 REQ'D.)	MWK1001
	MCM0150K	MCM0150KP									
	MCM0200K	MCM0200KP									
	MCM0300K	MCM0300KP				MNS0012					
	MCM0400K	MCM0400KP									
	MCM0500K	MCM0500KP	ETC0252 (2 REQ'D.)								MWK1002
X-STYLE	MXM0100K	MXM0100KP	ETC0252	EHL0253 EHL0255 (1 REQ'D.)	EHL1003	MNS0009	ERP1001 ERP1002 ERP1011 ERP1012 (4 OF SAME REQ'D.)	ECB0468 ECB0469 ECB0503 (1 REQ'D.)	DP820 DP828 DP832 (2 OF SAME REQ'D.)	1412LH (2 REQ'D.)	MWK1001
	MXM0150K	MXM0150KP									
	MXM0200K	MXM0200KP	ETC0252 (2 REQ'D.)								MWK1002
	MXM0300K	MXM0300KP				MNS0012					

Meteor 1 & 2 Ancillary Component Options

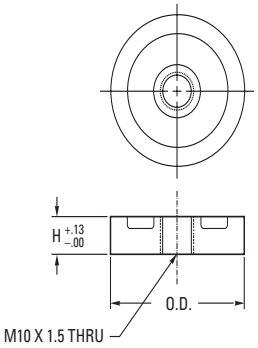
Locating Rings



ITEM NO.	Ø D	Ø X	Ø Y	A	Ø B	C
EHL0253	101 MM 3.990 IN	82.5 MM 3.250 IN	95 MM 3.750 IN	117 MM 4.625 IN	139.5 MM 5.495 IN	73 MM 2.875 IN
EHL0255	101 MM 3.990 IN	82.5 MM 3.250 IN	95 MM 3.750 IN	117 MM 4.625 IN	139.5 MM 5.495 IN	114 MM 24.500 IN

Includes (2) 1/2 inch long, 5/16 Flat Head Cap Screws.

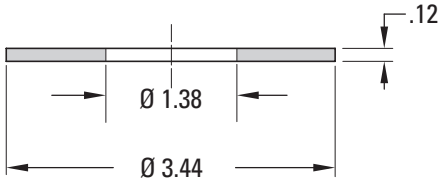
Center Support Pads



ITEM NO.	O.D.		H	
	MM	IN	MM	IN
ECB0468	30	1.181	20	.787
ECB0469	30	1.181	10	.394
ECB0503	40	1.575	10	.394

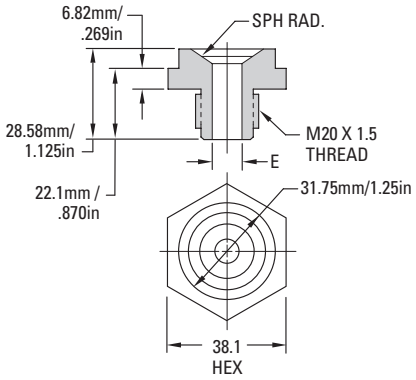
NOTES:
1. The M10 X 1.5 tapped hole is used to screw the center support pad to a plate for machining the pad to the correct height.
2. An 8mm dia. dowel pin is required for assembly.

Drool Ring



ITEM NO.
EHL1003

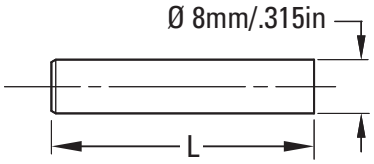
Machine Nozzle Seats



ITEM NO.	E FLOW CHANNEL		SPHERICAL RADIUS
	MM	IN	
MNS0009	9 MM	.354 IN	1/2 + 3/4 IN
MNS1009	9 MM	.354 IN	15.5 MM
MNS0012	12 MM	.472 IN	1/2 + 3/4 IN
MNS1012	12 MM	.472 IN	15.5 MM

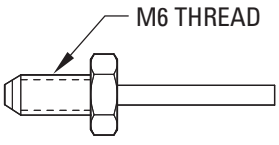
NOTE: Machine nozzle tip orifice to be matched properly with nozzle seat flow channel.

Dowel Pins



ITEM NO.	L	
	MM	IN
DP820	20	.787
DP828	28	1.102
DP832	32	1.260

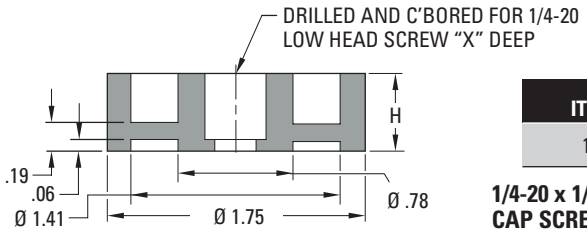
Manifold Thermocouple



ITEM NO.
ETC0252

Meteor 1 & 2 Ancillary Component Options

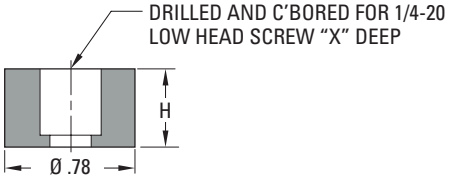
Riser Pads and Screws



ITEM NO.	H		X	
	MM	IN	MM	IN
ERP1001	12.7	.500	10	.405
ERP1002	19	.750	16.6	.655

ITEM NO.
1412LH

1/4-20 x 1/2 lg. LOW HEAD CAP SCREW (L.H.C.S.)

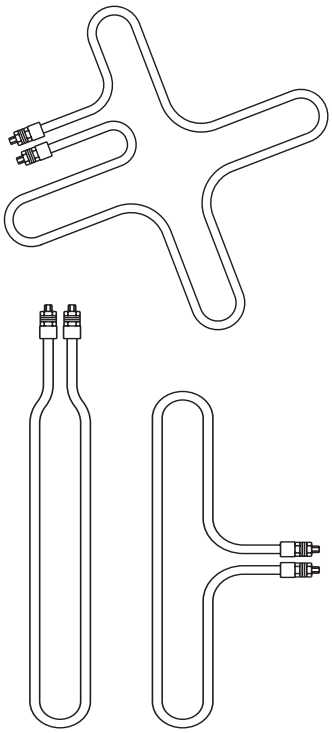


ITEM NO.	H		X	
	MM	IN	MM	IN
ERP1011	12.7	.500	10	.405
ERP1012	19	.750	16.6	.655

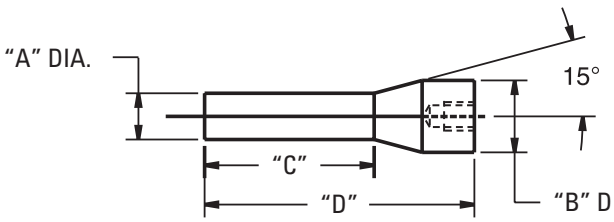
NOTE: For maximum support, use riser pads ERP1001 or ERP1002 whenever possible. Only use riser pads ERP1011 or ERP1012 when there are space constraints.

Meteor Spare Parts

MANIFOLD TYPE	MANIFOLD KIT ITEM NO.	TUBULAR HEATER		END PLUG ITEM NO.	SET SCREW ITEM NO.
		ITEM NO.	WATTAGE		
IN-LINE END EXIT	MEM0100K	MEH0100	600	MTP0009	MSS0001
	MEM150K	MEH0150	750		
	MEM0200K	MEH0200	900		
	MEM0300K	MEH0300	1225	MPT0012	
	MEM0400K	MEH0400	1550		
	MEM0500K	MEH0500	1850		
IN-LINE CENTER EXIT	MCM0100K	MCH0100	600	MTP0009	
	MCM0150K	MCH0150	750		
	MCM0200K	MCH0200	900		
	MCM0300K	MCH0300	1225	MTP0012	
	MCM0400K	MCH0400	1550		
	MCM0500K	MCH0500	1850		
X-STYLE	MXM0100K	MXH0100	575	MPT0009	
	MXM0150K	MXH0150	1350		
	MXM0200K	MXH0200	1675		
	MXM0300K	MXH0300	2150	MPT0012	

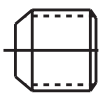


End Plugs



ITEM NO.	A		B		C		D	
	MM	IN	MM	IN	MM	IN	MM	IN
MTP0009	9	.354	14	.551	33	1.299	52.5	2.067
MTP0012	12	.472	16	.630	60	2.362	77.5	3.051

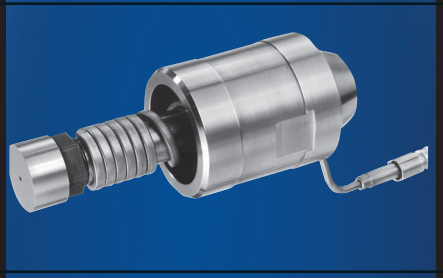
Set Screw



- Thread: M20 x 2.5
- Thickness: 20MM (.787IN)
- Hex flat: 10MM (.394IN)

DME Hot Sprue Bushings

Table of Contents



D-MAX High Performance Hot Sprue Bushings

HIGH-PERFORMANCE CAPABILITY WITH ENGINEERED AND COMMODITY-GRADE RESINS

Plastic Materials and Specifications

- Large number of bushing and tip combinations
- Three flow channel sizes
- Lengths up to 190mm
- High performance capability
- Standard and wear-resistant tips
- Precise thermal control

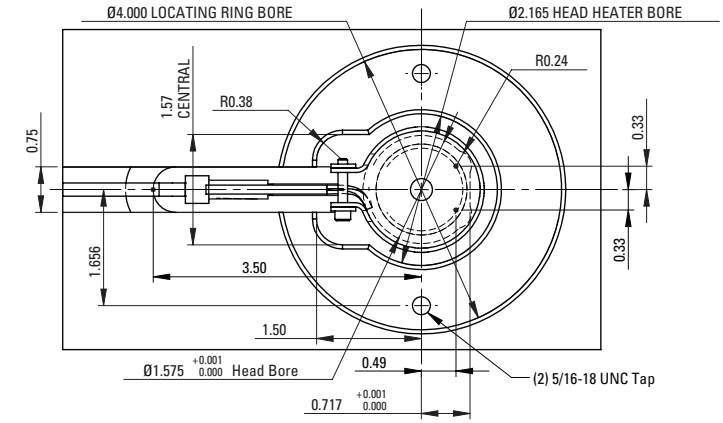
PLASTIC MATERIAL PROCESS CONDITIONS

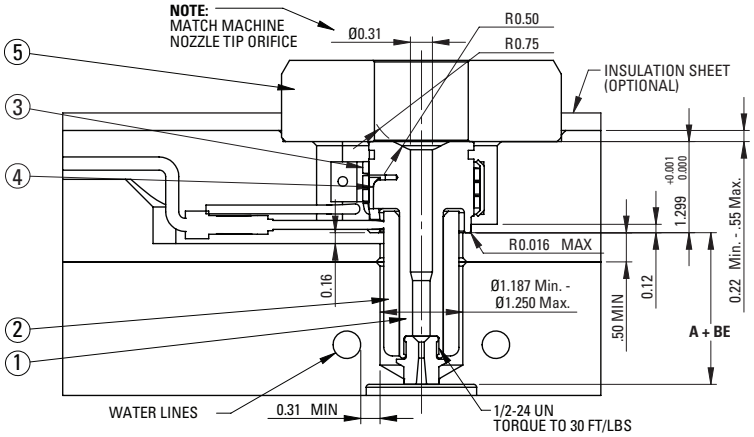
MATERIAL	STANDARD RESIN SYMBOL	PROCESS TEMPERATURE		MOLD TEMPERATURE		HOT RUNNER TEMPERATURE		DENSITY MELTING		SOLID DENSITY	
		[°C]	[°F]	[°C]	[°F]	[°C]	[°F]	[g/cm³]	[lbs/inch³]	[g/cm³]	[lbs/inch³]
Styrene Butadiene	SB	210	410	70	158	230	446	0.93	0.0366	1.02	0.0369
Polyurethane	PUR	220	428	45	113	240	464	0.93	0.0366	1.11	0.0401
Styrene-acrylonitrile	SAN	230	446	80	176	255	491	0.99	0.0358	1.08	0.0390
Polystyrene	PS	210	410	45	113	230	446	0.95	0.0343	1.05	0.0379
Polycarbonate	PC	300	572	80	176	330	626	1.08	0.0390	1.20	0.0434
Polyphenylene Oxide-Styrene	PPO	260	500	80	176	300	572	0.99	0.0358	1.13	0.0408
Polyethylene	PE	200	392	25	77	225	437	0.74	0.0267	0.96	0.0347
Polypropylene	PP	225	437	40	104	245	473	0.73	0.0264	0.91	0.0329
Polyether-etherketone	PEEK	330	626	165	329	370	698	1.13	0.0408	1.37	0.0495
Polyphenylene Sulfide	PPS	300	572	110	230	330	626	1.53	0.0553	1.70	0.0614
Polyebutylene Terephthalate	PBT	265	509	60	140	290	554	1.44	0.0520	1.57	0.0567
Polyamide 6	PA 6	220	428	90	194	250	482	0.98	0.0354	1.14	0.0412
Polyamide 66	PA 66	255	491	90	194	280	536	1.09	0.0394	1.26	0.0455
Thermal Plastic Elastomers	TPE	240	464	35	95	265	509	0.78	0.0282	0.90	0.0325
Polyoxymethylene (Polyacetal)	POM	180	356	100	212	200	392	1.16	0.0419	1.42	0.0513
Polymethyl Methacrylate	PMMA	235	455	70	158	250	482	1.09	0.0394	1.18	0.0426
Acrylonitrile Butadiene Styrene	ABS	225	437	70	158	250	482	0.95	0.0343	1.08	0.0390

NOTE: Temperature and density values shown above are general, and may not apply to your application. Please refer to proper processing data for the resin grade intended for your specific application. Failure to use temperature settings appropriate to the specific resin and resin grade intended for your application may result in poor part quality, or inability to produce acceptable molded parts.

High Performance Hot Sprue Bushing 250 Series

NOTE: Dimensions shown in inches unless specified otherwise.





For selection of gate diameter it is important to take into consideration the material flow characteristics, share rate of resin, molding conditions, fill time requirements, gate vestige, wall thickness and configuration of parts to be molded. Situations requiring high injection velocities must be considered when selecting small gate diameters. High injection rates may require larger gates due to shear heat build up (e.g. high weight thin wall applications). See material manufacturer's literature for further information regarding material to be molded.

To compensate for nozzle's growth when heat is applied, the linear expansion of the nozzle (BE) at a given temperature must be added to the nominal "A" dimension. The formula below shows how to figure boring depth (dimension "A" + BE). The tip of the nozzle will now be flush with the cavity line at processing temperature.

Formula for determining this expansion factor is as follows:
BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE: Given a 4.134 inch "A" dimension, with a set point of 500°F:
BE = 4.134 x 0.00000633 x (500 - 68) = 0.011
Thus "A" + BE will be 4.145

NOTE: The above information is only given as an example; variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

"O" DIA.		"S" DIA.
UNFILLED RESIN	FILLED RESIN	
0.028 Min.	0.062 Min.	*0.3750
		0.5005
		0.7505
		1.0005

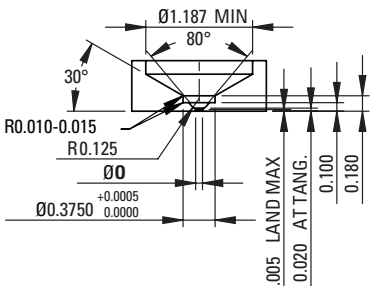
* Point Gate (Full Body) only.

BUSHING AND COMPONENT SPECIFICATIONS

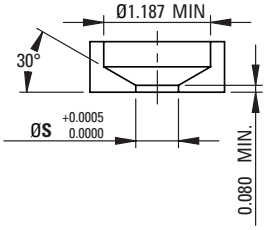
ASSEMBLY	"A" DIMENSION	ASSEMBLY COMPONENTS					
		BUSHING BODY DETAIL #1	HIGH PERFORMANCE HEATER DETAIL #2	WATTAGE	HEAD HEATER DETAIL #3	WATTAGE	THERMOCOUPLE DETAIL #4
DMAX06055	2.165in (55.00mm)	DEP06055	CIH0081S	440	RDP38021	500	DTC38001
DMAX06067	2.657in (67.50mm)	DEP06067	CIH0082S	350			
DMAX06080	3.150in (80.00mm)	DEP06080	CIH0083S	400			
DMAX06092	3.642in (92.50mm)	DEP06092	CIH0084S	565			
DMAX06105	4.134in (105.00mm)	DEP06105	CIH0085S	500			
DMAX06130	5.118in (130.00mm)	DEP06130	CIH0086S	500			
DMAX06155	6.102in (155.00mm)	DEP06155	CIH0087S	550			

** Locating rings must be ordered separately.*

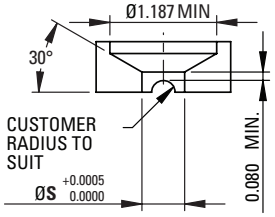
POINT GATE (BODILESS)



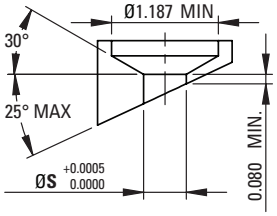
STD. SPRUE AND POINT GATE (FULL BODY)



EXTENDED SPRUE AND EXTENDED POINT GATE (FULL BODY) RUNNER DESIGN

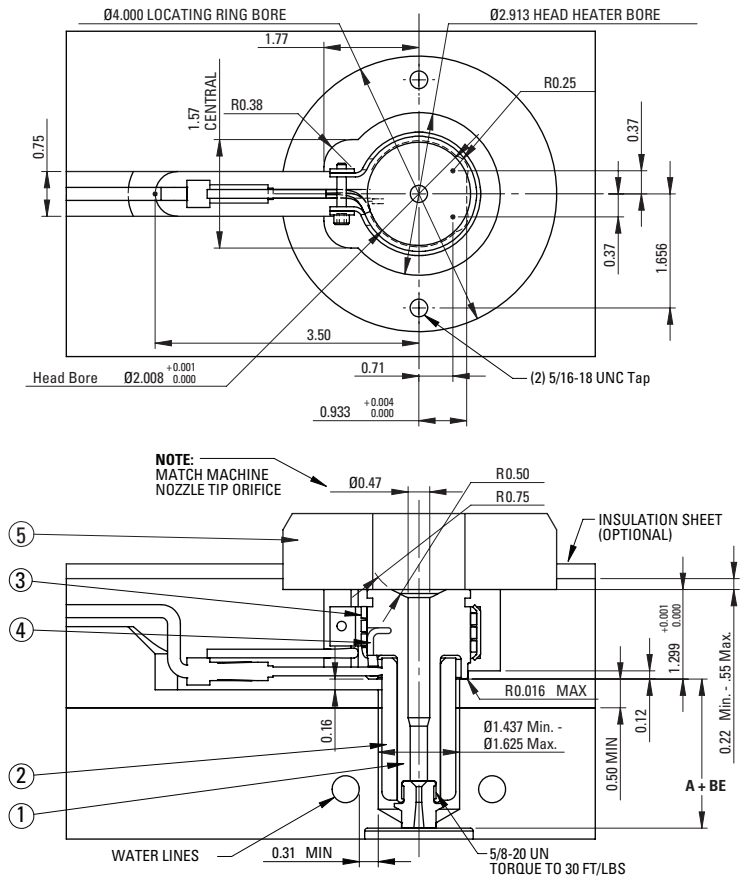


EXTENDED SPRUE AND EXTENDED POINT GATE (FULL BODY) ANGLE DESIGN



High Performance Hot Sprue Bushing 375 Series

NOTE: Dimensions shown in inches unless specified otherwise.



For selection of gate diameter it is important to take into consideration the material flow characteristics, share rate of resin, molding conditions, fill time requirements, gate vestige, wall thickness and configuration of parts to be molded. Situations requiring high injection velocities must be considered when selecting small gate diameters. High injection rates may require larger gates due to shear heat build up (e.g. high weight thin wall applications). See material manufacturer's literature for further information regarding material to be molded.

To compensate for nozzle's growth when heat is applied, the linear expansion of the nozzle (BE) at a given temperature must be added to the nominal "A" dimension. The formula below shows how to figure boring depth (dimension "A" + BE). The tip of the nozzle will now be flush with the cavity line at processing temperature.

Formula for determining this expansion factor is as follows:
BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE: Given a 2.362 inch "A" dimension, with a set point of 500°F:
BE = 2.362 x 0.00000633 x (500 - 68) = 0.0064
Thus "A" + BE will be 2.368

NOTE: The above information is only given as an example; variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

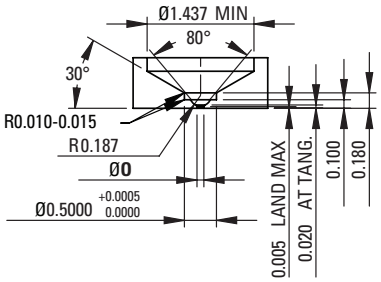
"O" DIA.		"S" DIA.
UNFILLED RESIN	FILLED RESIN	
0.028 Min.	0.062 Min.	0.5005
		0.7505
		1.0005

BUSHING AND COMPONENT SPECIFICATIONS

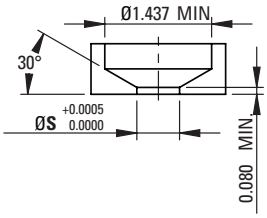
ASSEMBLY	"A" DIMENSION	ASSEMBLY COMPONENTS					
		BUSHING BODY DETAIL #1	HIGH PERFORMANCE HEATER DETAIL #2	WATTAGE	HEAD HEATER DETAIL #3	WATTAGE	THERMOCOUPLE DETAIL #4
DMAX10060	2.362in (60.00mm)	DEP10060	CIH0088S	400	RDP50021	750	DTC38001
DMAX10072	2.854in (72.50mm)	DEP10072	CIH0089S	450			
DMAX10085	3.346in (85.00mm)	DEP10085	CIH0090S	550			
DMAX10097	3.839in (97.50mm)	DEP10097	CIH0091S	700			
DMAX10110	4.331in (110.00mm)	DEP10110	CIH0092S	800			
DMAX10135	5.315in (135.00mm)	DEP10135	CIH0093S	900			
DMAX10160	6.299in (160.00mm)	DEP10160	CIH0094S	1000			
DMAX10185	7.283in (185.00mm)	DEP10185	CIH0095S	1100			

** Locating rings must be ordered separately.*

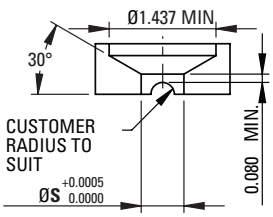
POINT GATE (BODILESS)



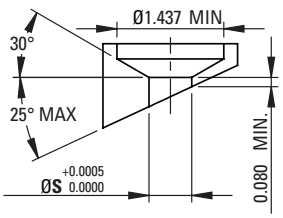
STD. SPRUE AND POINT GATE (FULL BODY)



EXTENDED SPRUE AND EXTENDED POINT GATE (FULL BODY) RUNNER DESIGN

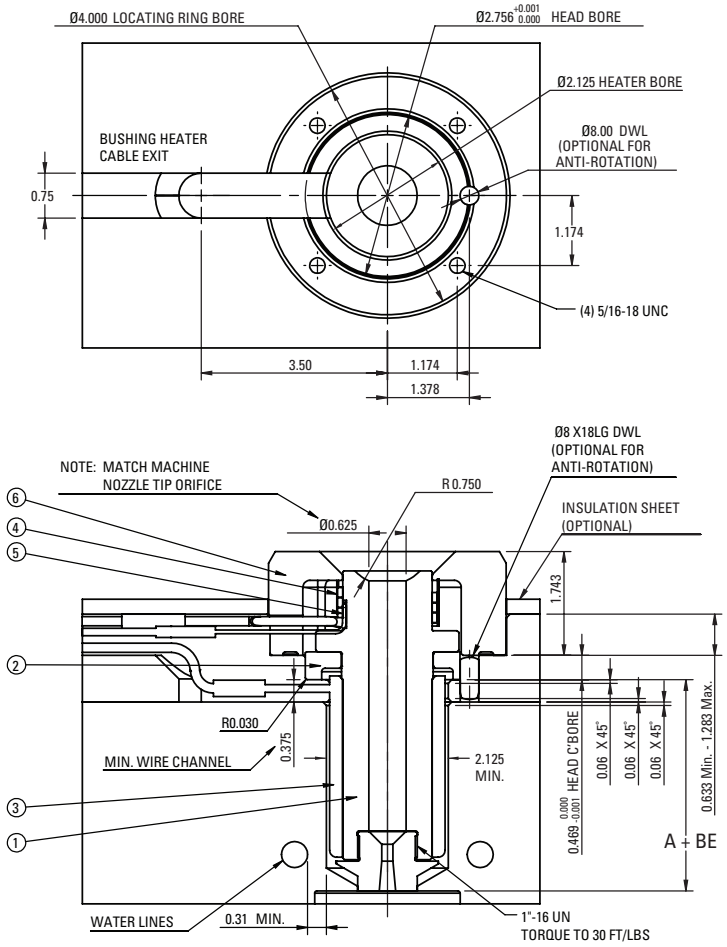


EXTENDED SPRUE AND EXTENDED POINT GATE (FULL BODY) ANGLE DESIGN



High Performance Hot Sprue Bushing 625 Series

NOTE: Dimensions shown in inches unless specified otherwise.



For selection of gate diameter it is important to take into consideration the material flow characteristics, shear rate of resin, molding conditions, fill time requirements, gate vestige, wall thickness and configuration of parts to be molded. Situations requiring high injection velocities must be considered when selecting small gate diameters. High injection rates may require larger gates due to shear heat build up (e.g. high weight thin wall applications). See material manufacturer's literature for further information regarding material to be molded.

To compensate for nozzle's growth when heat is applied, the linear expansion of the nozzle (BE) at a given temperature must be added to the nominal "A" dimension. The formula below shows how to figure boring depth (dimension "A" + BE). The tip of the nozzle will now be flush with the cavity line at processing temperature.

Formula for determining this expansion factor is as follows:
BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE: Given a 3.543in "A" dimension, with a set point of 500°F and mold temperature 68°F:
BE = 3.543 x 0.00000633 x (500 - 68) = .010
Thus "A" + BE will be 3.553

NOTE: The above information is only given as an example; variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

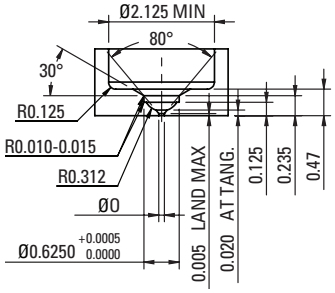
"O" DIA.		"S" DIA.
UNFILLED RESIN	FILLED RESIN	
0.080 Min.	0.100 Min.	1.0005

BUSHING AND COMPONENT SPECIFICATIONS

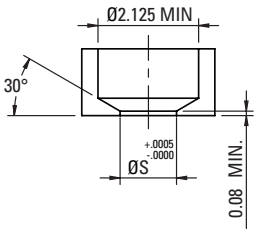
ASSEMBLY	"A" DIMENSION	ASSEMBLY COMPONENTS						
		BUSHING BODY DETAIL #1	BUSHING HEAD DETAIL #2	CAST-IN HEATER DETAIL #3	WATTAGE	HEAD HEATER DETAIL #4	WATTAGE	THERMOCOUPLE DETAIL #5
DMAX16090	3.543in (90.00mm)	DEP16090	DBP16001	CIH0104-S	847	RDP38021	500	DTC62501
DMAX16115	4.528in (115.00mm)	DEP16115		CIH0096-S	1000			
DMAX16140	5.512in (140.00mm)	DEP16140		CIH0097-S	1030			
DMAX16165	6.496in (165.00mm)	DEP16165		CIH0098-S	1100			
DMAX16190	7.480in (190.00mm)	DEP16190		CIH0099-S	1000			
DMAX16215	8.465in (215.00mm)	DEP16215		CIH0101-S	1200			
DMAX16240	9.449in (240.00mm)	DEP16240		CIH0102-S	1200			
DMAX16265	10.433in (265.00mm)	DEP16265		CIH0103-S	1200			

** Locating rings must be ordered separately.*

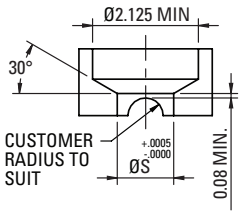
POINT GATE (BODILESS)



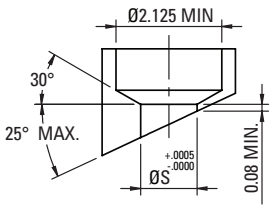
STD. SPRUE AND POINT GATE (FULL BODY)



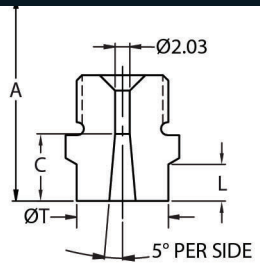
EXTENDED SPRUE RUNNER DESIGN



EXTENDED SPRUE AND ANGLE DESIGN



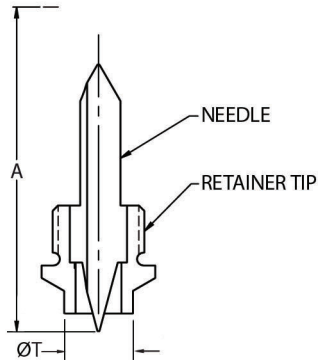
Gate Tip Detail



Sprue Gate/Extended Sprue Gate

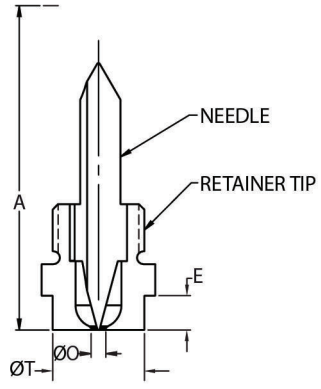
SERIES	GATE TIP	ITEM NUMBER	B DIA.	T DIA.	L	C
250	SPRUE GATE	EHT0010	.080	.500	.250	.375
		EHT0011		.750		
		EHT0012		1.000	.100	1.125
	EXTENDED SPRUE GATE	EHT0013		.500	1.000	
		EHT0014		.750		
		EHT0015		1.000	.850	
375	SPRUE GATE	EHT0016	.125	.500	.250	.375
		EHT0017		.750		
		EHT0018		1.000		
	EXTENDED SPRUE GATE	EHT0019		.500	1.000	1.125
		EHT0020		.750		
		EHT0021		1.000		
625	SPRUE GATE	EHT0022	.187	1.000	.250	.500
	EXTENDED SPRUE GATE	EHT0023			1.000	1.250

(Add .750 to **A** dimension for extended sprue gate tips.)



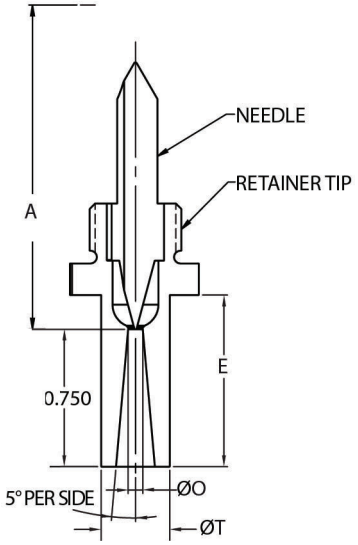
Point Gate (Bodiless)

SERIES	GATE TIP	ITEM NUMBER	T DIA.	INCLUDES	
				NEEDLE	RETAINER TIP
250	STANDARD	EHT0005	.375	EHN0015	EHT0024
		EHT1314			EHT0324
	WEAR RESISTANT	EHT1308		EHN0401	EHT0324
		EHT1313			EHT1324
375	STANDARD	EHT0039	.500	EHN0016	EHT0025
		EHT1312			EHT0325
	WEAR RESISTANT	EHT1303		EHN0400	EHT0325
		EHT1309			EHT1325
625	STANDARD	EHT1306	.625	EHN0019	EHT1354
		EHT1311			EHT0326
	WEAR RESISTANT	EHT1307		EHN0402	EHT0326
		EHT1310			EHT1354



Point Gate (Full Body)

SERIES	TYPE	ITEM NUMBER	T DIA.	O DIA.	E	INCLUDES	
						NEEDLE	RETAINER TIP
250	STANDARD	EHT2001	.375	.060	.187	EHN0015	EHT0026
		EHT2002		.080			EHT0027
		EHT2003	.500	.060			EHT0028
		EHT2004		.080			EHT0029
	WEAR RESISTANT	EHT2005	.375	.060		EHN0401	EHT1326
		EHT2006		.080			EHT1327
		EHT2007	.500	.060			EHT1328
		EHT2008		.080			EHT1329
375	STANDARD	EHT2009	.500	.080	.230	EHN0016	EHT0030
		EHT2010		.100			EHT0031
		EHT2011	.750	.080			EHT0032
		EHT2012		.100			EHT0033
		EHT2013	1.000	.080			EHT0034
		EHT2014		.100			EHT0035
	WEAR RESISTANT	EHT2015	.500	.080		EHN0400	EHT1330
		EHT2016		.100			EHT1331
		EHT2017	.750	.080			EHT1332
		EHT2018		.100			EHT1333
		EHT2019	1.000	.080			EHT1334
		EHT2020		.100			EHT1335
625	STANDARD	EHT2021	1.000	.125	.250	EHN0019	EHT0036
	WEAR RESISTANT	EHT2022				EHN0402	EHT1336



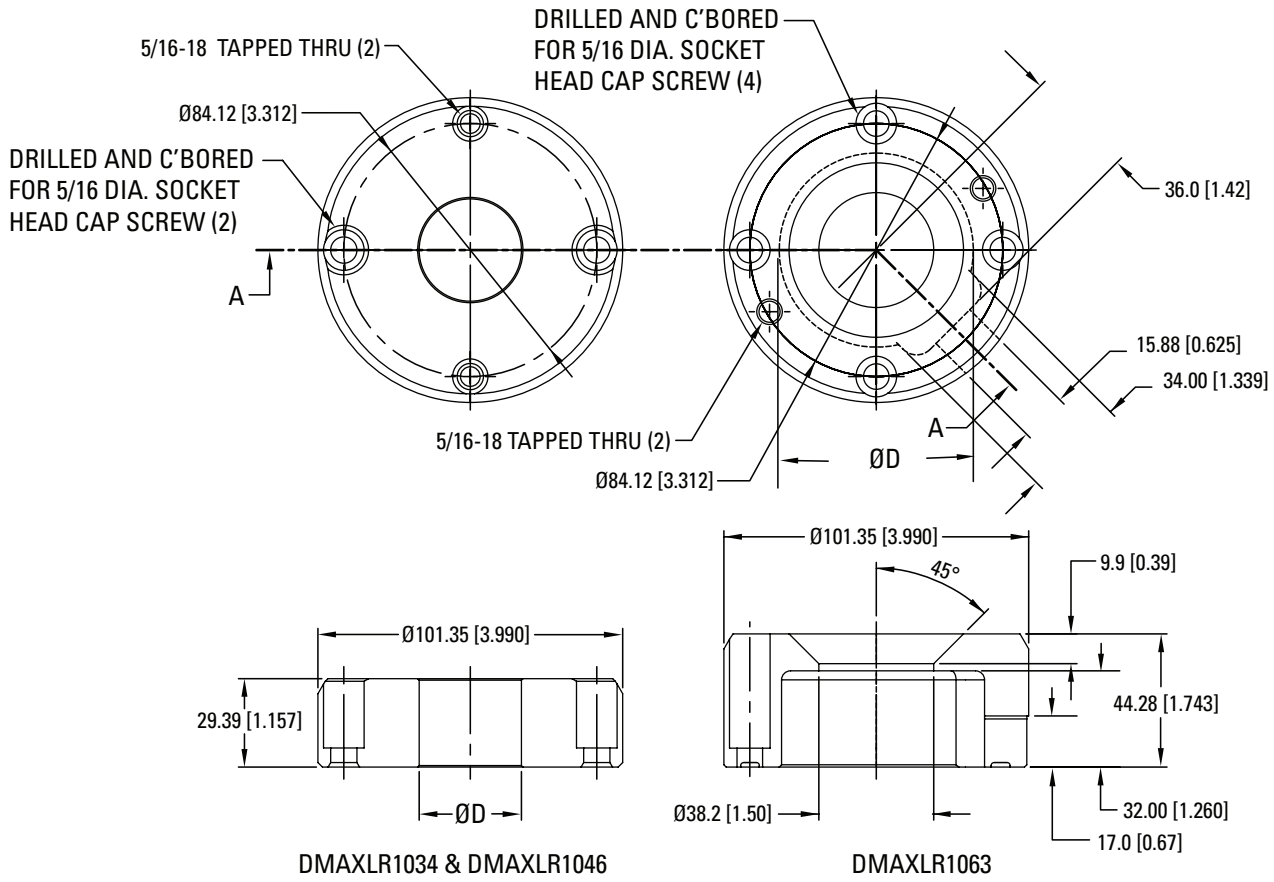
Point Gate (Full Body Extended)

SERIES	TYPE	ITEM NUMBER	T DIA.	O DIA.	E	INCLUDES	
						NEEDLE	RETAINER TIP
250	STANDARD	EHT2301	.375	.060	.938	EHN0015	EHT2326
		EHT2302		.080			EHT2327
		EHT2303	.500	.060			EHT2328
		EHT2304		.080			EHT2329
	WEAR RESISTANT	EHT2305	.375	.060		EHN0401	EHT2326
		EHT2306		.080			EHT2327
		EHT2307	.500	.060			EHT2328
		EHT2308		.080			EHT2329
375	STANDARD	EHT2309	.500	.080	.980	EHN0016	EHT2330
		EHT2310		.100			EHT2331
		EHT2311	.750	.080			EHT2332
		EHT2312		.100			EHT2333
		EHT2313	1.000	.080			EHT2334
		EHT2314		.100			EHT2335
	WEAR RESISTANT	EHT2315	.500	.080		EHN0400	EHT2330
		EHT2316		.100			EHT2331
		EHT2317	.750	.080			EHT2332
		EHT2318		.100			EHT2333
		EHT2319	1.000	.080			EHT2334
		EHT2320		.100			EHT2335
625	STANDARD	EHT2321	1.000	.125	1.000	EHN0019	EHT2336
	WEAR RESISTANT	EHT2322				EHN0402	

SERIES	THREAD TYPE
250	1/2-24 UN
375	5/8-20 UN
625	1"-16 UN

250, 375 & 625 Series Locating Rings

250, 375 & 625 Series Locating Rings



SECTION A-A

ITEM NUMBER	Ø D
DMAXLR1034	34.00 (1.34")
DMAXLR1046	46.00 (1.81")
DMAXLR1063	63.00 (2.48")

NOTE: Dimensions shown in millimeters, inches in parentheses

DME Gate-Mate®
Hot Sprue Bushings

IDEAL FOR DIRECT
PART GATING,
SINGLE-CAVITY MOLDS

Gate-Mate® Applications and Benefits

DME Gate-Mate® Hot Sprue Bushings

The DME Gate-Mate® Hot Sprue Bushing is designed for direct part gating in single-cavity molds, eliminating the conventional cold sprue. The unique design of the bushing provides minimal gate vestige, without the objectionable witness lines so commonly found on direct gated parts.

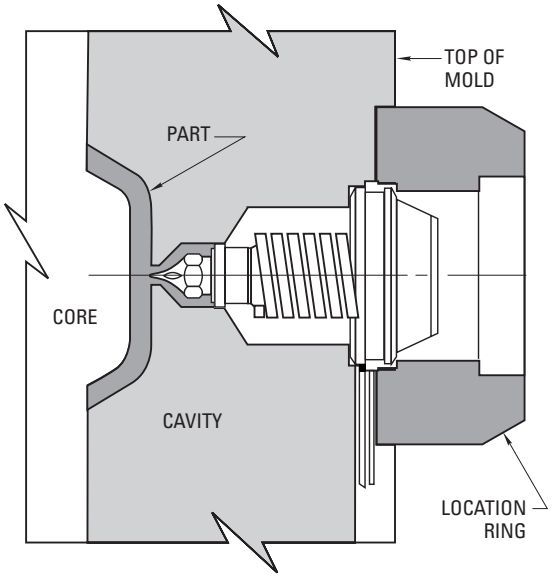
The bushing transfers molten plastics from the machine nozzle to the mold cavity via a direct channel in the body. The plated copper alloy tip provides an improved temperature profile in the gate area.

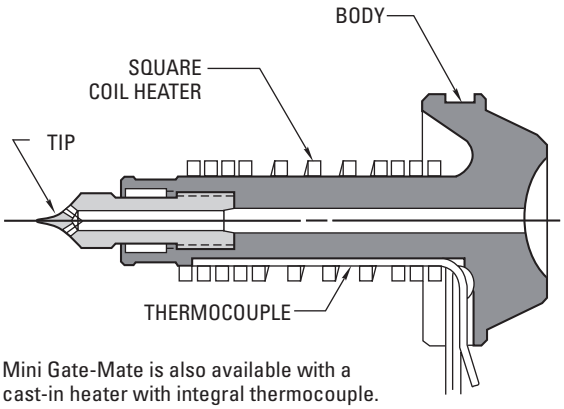
The DME Gate-Mate® Hot Sprue Bushing utilizes an advanced design square coil heater and independent thermocouple, strategically located for precise temperature control. The bushing is available in three sizes to suit a variety of applications.

See the DME Control Systems Catalog for Smart Series® Single Zone Temperature Controllers.

Mini and Jumbo Style Gate-Mate Bushings Shown

Typical Applications





NOTE: Mini Gate-Mate is also available with a cast-in heater with integral thermocouple.

Benefits

- Eliminates sprues, reduces cycle time, improves part quality, increases production
- Provides optimum gate cosmetics
- Plated copper alloy tip improves temperature profile in gate area
- Self insulating material layer surrounds tip for better tip control and part cooling
- Square coil heater and independent thermocouple provide precise temperature control
- Optional cast in heater available for Mini Gate-Mate bushing

Advantages

- Direct part gating eliminating a cold sprue to trim and no witness lines on the molded part
- Minimal gate vestige resulting in better part appearance
- Faster start-ups providing positive temperature control of gate area
- Reduced cycle times because the bushing allows cooling channels to be placed closer to the gate area
- Cooler cavities with no direct contact between bushing tip and cavity
- Improved part quality with a shorter injection path and elimination of sprue, meaning no regrind
- Increased production with faster cycles and no sprue trimming
- Easy installation and operation, and available in three standard sizes suitable for most applications
- Positive temperature control with J-Type thermocouple and DME Smart-Series® (and G-Series) controllers

Mini Gate-Mate®

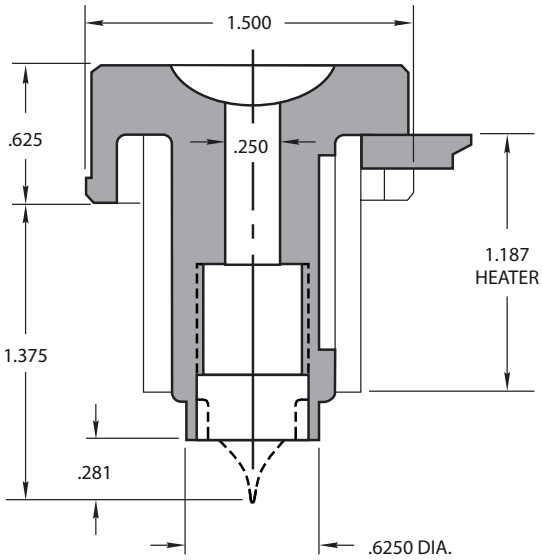
Radius Type

Flat Type

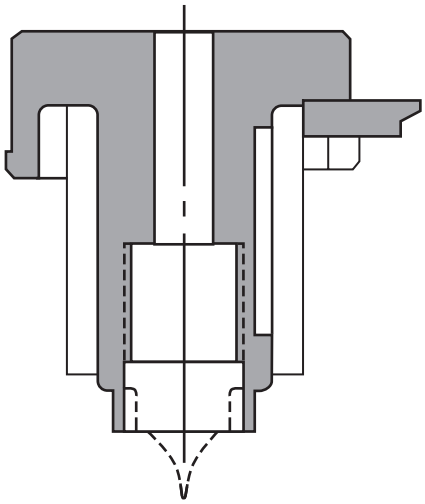
The Mini Gate-Mate Bushings are ideal for fast cycling single cavity molds. The compact design permits shorter overall stack-up of the "A" side mold plates. The Mini Gate-Mate Bushings are provided with either a square coil heater or a cast-in heater. Thermocouple placement provides better heater control, and the overall body design improves thermal insulation. Square coil heater, thermocouple and tip are all replaceable.

Sub-assemblies include square coil heater and thermocouple or cast-in heater with integral thermocouple. Tip to be ordered separately.

½" SPH. Radius Type Bushing



Flat Type Bushing

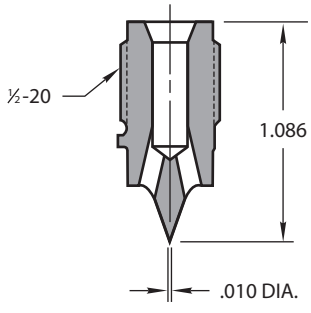


Dimensions same as radius type bushing

½ SPH. RADIUS BUSHING SUB-ASSEMBLY	
ITEM NUMBER	HEATER TYPE
GMB0116	SQUARE COIL
GMB0111	CAST-IN

FLAT BUSHING SUB-ASSEMBLY	
ITEM NUMBER	HEATER TYPE
GMB0117	SQUARE COIL
GMB0112	CAST-IN

Mini Gate-Mate® Tips

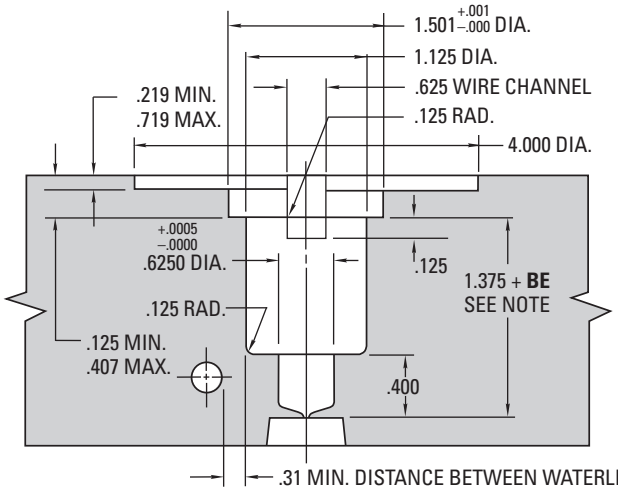


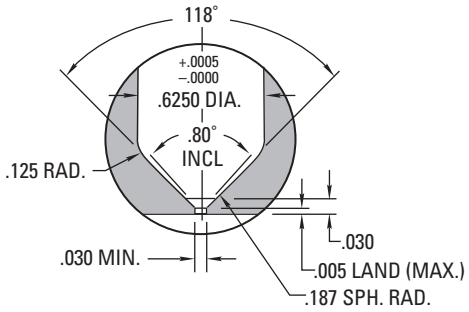
ITEM NUMBER	TIP STYLE
GMT0100	STANDARD
GMT4101	WEAR RESISTANT

Contact for DME for tip recommendations and assistance with your application.

Mini Gate-Mate® Machining Dimensions

Machining Dimensions for Bushings





NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

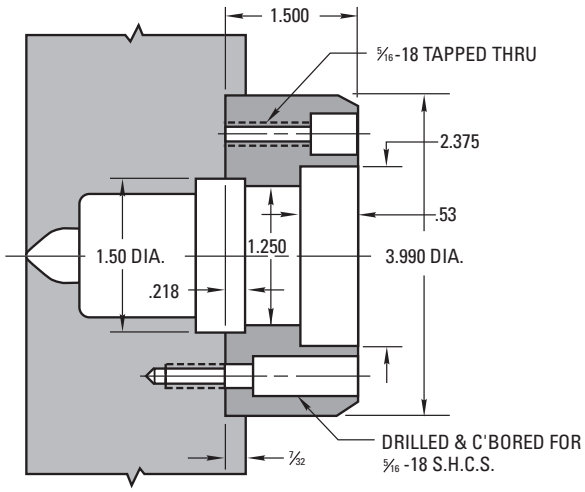
BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F: BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.
Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances,
it may be necessary to obtain an empirical factor.

Replacement Parts

SUB-ASSEMBLY REFERENCE	BODY TYPE	HEATER TYPE (240 VAC, 250 WATT)	THERMOCOUPLE (36" LEADS)	NOZZLE BODY ONLY
GMB0111	½ RADIUS	(CAST IN) CIH0100	N/A (INTEGRAL TO HEATER)	GMB0103
GMB0112	FLAT			GMB0104
GMB0116	½ RADIUS	(SQUARE COIL) SCH0004	TCG0100	GMB0103
GMB0117	FLAT			GMB0104

Mini Gate-Mate Bushing Locating Ring



ITEM NUMBER
6548

NOTES:
1. Two (2) 5/16-18 S.H.C.S. are included with Locating Ring
2. Two (2) Drilled and C'bored holes for 5/16-18 S.H.C.S. are on a 1.656 circle radius in Locating Ring
3. C'bore depth in Top Clamp Plate and C'bore depth in Locating Ring can be altered to suit application

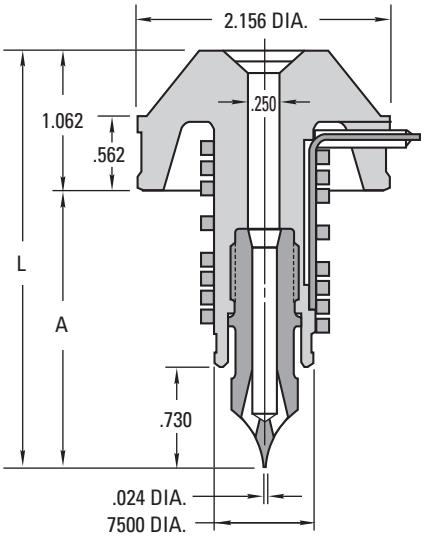
Medium Gate-Mate®

The Medium Gate-Mate Bushing is designed for direct part gating in single cavity molds, eliminating the conventional cold sprue. The unique design of the bushing provides minimal gate vestige, without the objectionable witness lines so commonly found on direct gated parts.

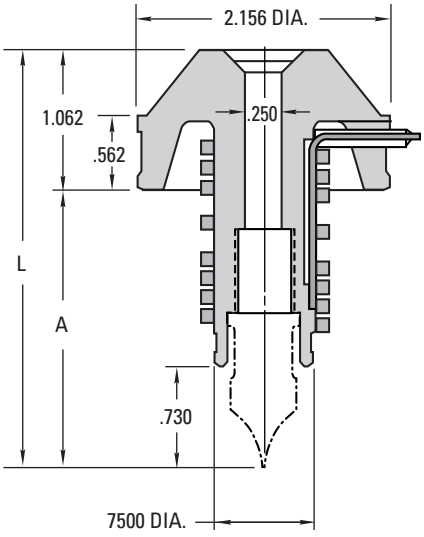
The bushing transfers molten plastics from the machine nozzle to the mold cavity via a direct channel in the body. The bushing, in conjunction with the recommended tip and gate configuration, controls gate vestige height.

The Medium Gate-Mate Bushing utilizes an advanced design square coil heater and an independent thermocouple, strategically located for precise temperature control.

Bushing Assembly



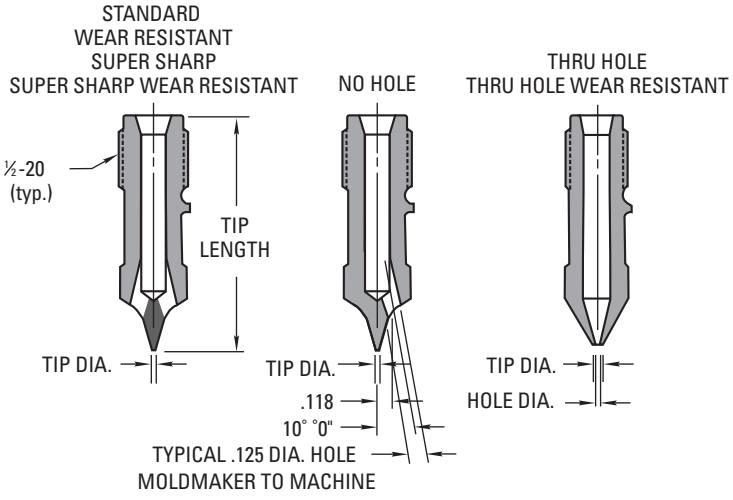
Bushing Sub-Assembly



BUSHING ASSEMBLY (INCLUDES GMT2 TIP)			
ITEM NUMBER	A	L	DUAL SPH. RAD.
GMB5232	2.375	3.437	1/2 & 3/4
GMB5332	3.375	4.437	

BUSHING SUB-ASSEMBLY (ORDER TIP SEPARATELY)			
ITEM NUMBER	A	L	DUAL SPH. RAD.
GMB0020	2.375	3.437	½ & ¾
GMB0030	3.375	4.437	

Medium Gate-Mate® Tips



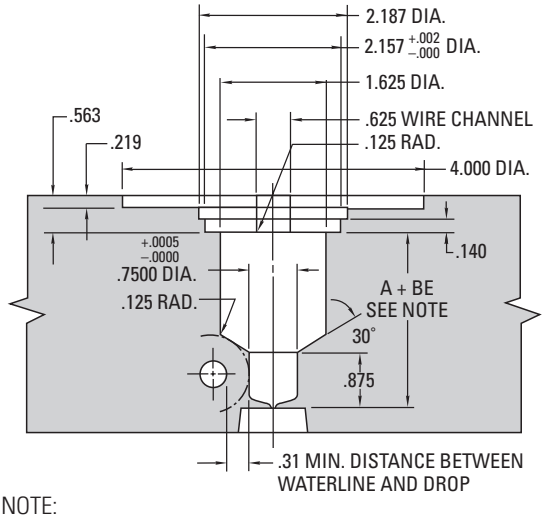
*Contact DME for details to modify thru-hole tips for larger "O" diameters.

TIP STYLE	TIP ITEM NUMBER	O DIA.	TIP LENGTH	TIP DIA.	HOLE DIA.
STANDARD	GMT2	.044 MIN.	1.730	.024	N/A
WEAR RESISTANT	GMT0400	.055 MIN.			
SUPER SHARP	GMT0301	.030 MIN.		.010	
SUPER SHARP WEAR RESISTANT	GMT0401	.055 MIN.			
THRU HOLE	GMT0302*	.030 MIN. .050 MAX	1.690	.090	.050
THRU HOLE WEAR RESISTANT	GMT0402*	.055 MIN.			
NO HOLE	GMT0303	.044 MIN.	1.730	.024	N/A

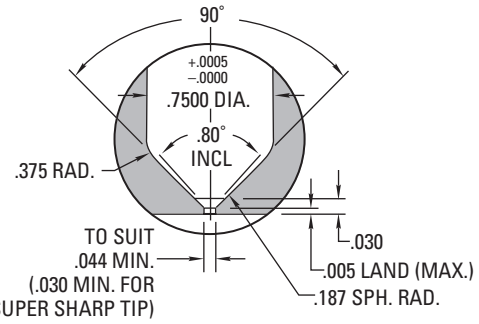
NOTES:
1. Thru-hole tip is designed .040 shorter in length to be a direct replacement for the standard tip; use a .030 to .060 diameter gate
2. A .030 minimum diameter gate is recommended when using the super sharp tip
3. Contact DME for tip recommendations and assistance with your application

Medium Gate-Mate® Machining Dimensions

Machining Dimensions for Bushings



Improved tip insulation, elimination of material degradation in threaded area of tip, and faster color changes can be achieved through use of a Gate Shell Insulator.



NOTE:
The expansion factor must be taken into consideration prior to machining for, and installing bushing. This factor (BE) must then be added to the nominal A dimension. Formula for determining this expansion is as follows: BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a 2.375 inch A dimension, with a Bushing Set Point temp. of 500°F:
BE = 2.375 × .0000063 × (500 – 68) = .006 thus A + BE will be 2.381.

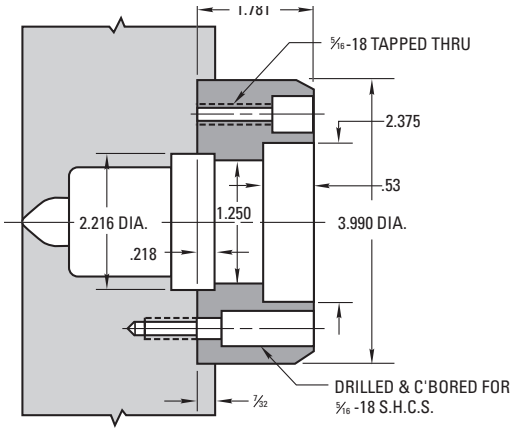
Please note that the above information is given as an example. Variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

ITEM NUMBER REFERENCE		A
BUSHING ASSEMBLY	BUSHING SUB-ASSEMBLY	
GMB5232	GMB0020	2.375
GMB5332	GMB0030	3.375

Replacement Parts

ITEM NUMBER REFERENCE		SQUARE COIL HEATERS (240 VAC)			THERMOCOUPLE (TYPE J, 36" LEADS)	
BUSHING ASSEMBLY	BUSHING SUB-ASSEMBLY	ITEM NUMBER	WATTS	LENGTH	ITEM NUMBER	LENGTH
GMB5232	GMB0020	SCH3142	315	1.70	TC9600	1.35
GMB5332	GMB0030	SCH3242	315	2.70	TC9700	2.35

Medium Gate-Mate Locating Ring



ITEM NUMBER
6545

NOTES:
1. Two (2) ⅝-18 S.H.C.S. are included with Locating Ring
2. Two (2) Drilled and C'bored holes for ⅝-18 S.H.C.S. are on a 1.656 circle radius in Locating Ring
3. C'bore depth in Top Clamp Plate and C'bore depth in Locating Ring can be altered to suit application

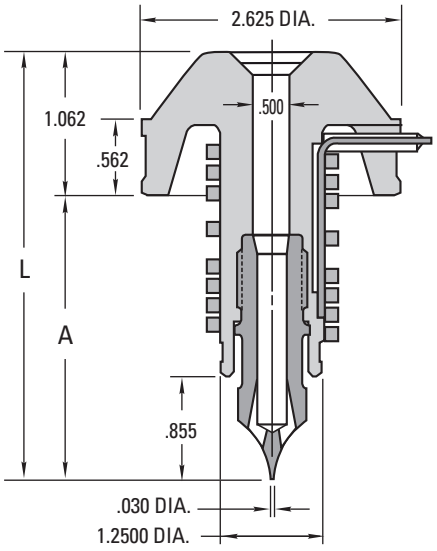
Jumbo Gate-Mate®

The Jumbo Gate-Mate Bushing is designed for direct part gating in single cavity molds, eliminating the conventional cold sprue. The unique design of the bushing provides minimal gate vestige, without the objectionable witness lines so commonly found on direct gated parts.

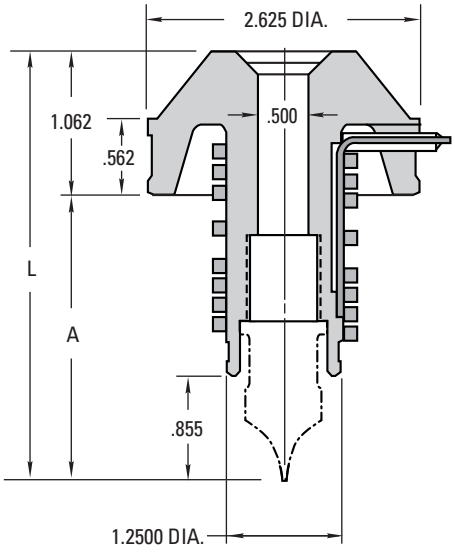
The bushing transfers molten plastics from the machine nozzle to the mold cavity via a direct channel in the body. The bushing, in conjunction with the recommended tip and gate configuration, controls gate vestige height.

The Jumbo Gate-Mate Bushing utilizes an advanced design square coil heater and an independent thermocouple, strategically located for precise temperature control.

Bushing Assembly



Bushing Sub-Assembly

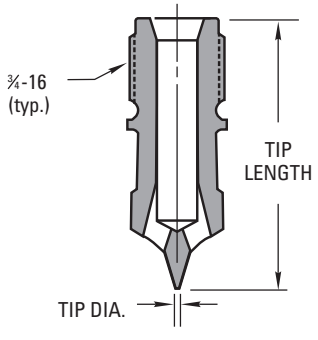


BUSHING ASSEMBLY (INCLUDES GMT0004 TIP)			
ITEM NUMBER	A	L	SPH. RAD.
GMB0008	2.500	3.562	1/2 & 3/4
GMB0009	3.500	4.562	

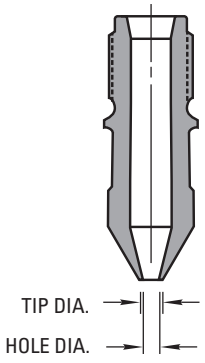
BUSHING SUB-ASSEMBLY (ORDER TIP SEPARATELY)			
ITEM NUMBER	A	L	SPH. RAD.
GMB0113	2.500	3.562	1/2 & 3/4
GMB0114	3.500	4.562	

Jumbo Gate-Mate® Tips

STANDARD
WEAR RESISTANT



THRU HOLE
THRU HOLE WEAR RESISTANT



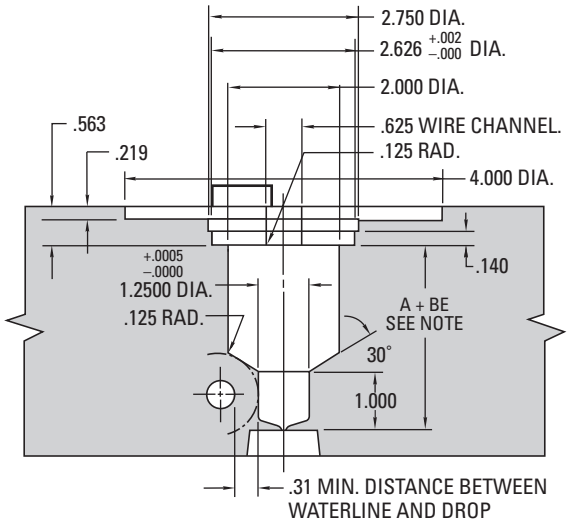
TIP STYLE	ITEM NUMBER	TIP LENGTH	TIP DIA.	HOLE DIA.
STANDARD	GMT0004	1.855	.030	N/A
WEAR RESISTANT	GMT0406			
THRU HOLE	GMT0007	1.815	.140	.100
THRU HOLE WEAR RESISTANT	GMT0407			

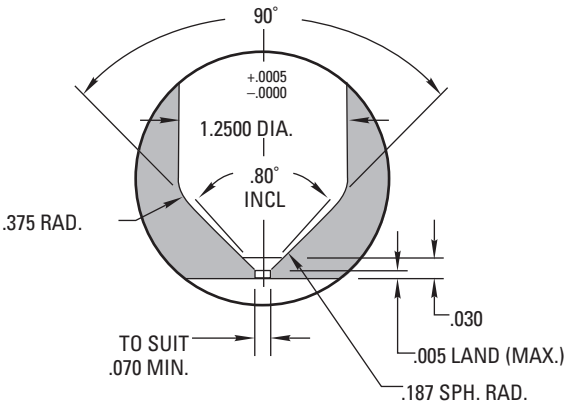
NOTES:

1. Thru-hole tip designed .040 shorter in length to be a direct replacement for the standard tip; use a .080 to .125 diameter gate
2. Contact DME for tip recommendations and assistance with your application

Jumbo Gate-Mate® Machining Dimensions

Machining Dimensions for Bushings





ITEM NUMBER REFERENCE		A
BUSHING ASSEMBLY	BUSHING SUB-ASSEMBLY	
GMB0008	GMB0113	2.500
GMB0009	GMB0114	3.500

NOTE:
The expansion factor must be taken into consideration prior to machining for, and installing bushing. This factor (BE) must then be added to the nominal A dimension. Formula for determining this expansion is as follows: BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a 2.500 inch A dimension, with a Bushing Set Point temp. of 500°F: BE = 2.500 × .0000063 × (500 – 68) = .007 thus A + BE will be 2.507.

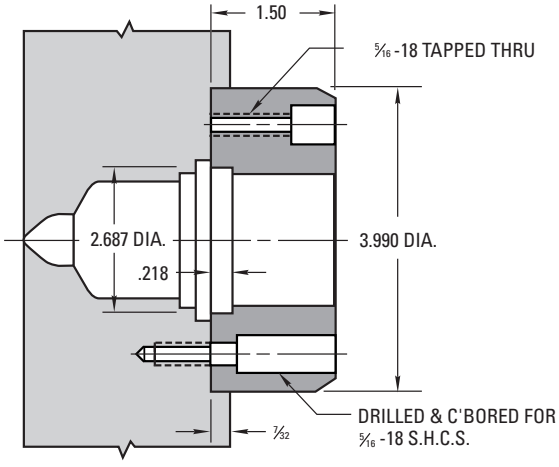
Please note that this information is given as an example. Variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

Replacement Parts

Improved tip insulation, elimination of material degradation in threaded area of tip, and faster color changes can be achieved through use of a Gate Shell Insulator.

ITEM NUMBER REFERENCE		SQUARE COIL HEATERS (240 VAC)			THERMOCOUPLE (TYPE J, 36" LEADS)	
BUSHING ASSEMBLY	BUSHING SUB-ASSEMBLY	ITEM NUMBER	WATTS	LENGTH	ITEM NUMBER	LENGTH
GMB0008	GMB0113	SCH0002	600	1.70	TC0002	1.18
GMB0009	GMB0114	SCH0001	800	2.70	TC0001	2.18

Jumbo Gate-Mate Locating Ring



ITEM NUMBER
GMB0007

NOTES:
1. Two (2) 5/16 -18 S.H.C.S. are included with Locating Ring
2. Two (2) Drilled and C'bored holes for 5/16 -18 S.H.C.S. are on a 1.656 Circle radius in Locating Ring
3. C'bore depth in Top Clamp Plate and C'bore depth in locating ring can be altered to suit application

DME Straight-Shot™ Hot Sprue Bushings

REDUCE CYCLE TIMES

AND SAVE MATERIAL COSTS

High-Performance Series Straight-Shot™

High-Performance Straight-Shot bushings are available as S-type

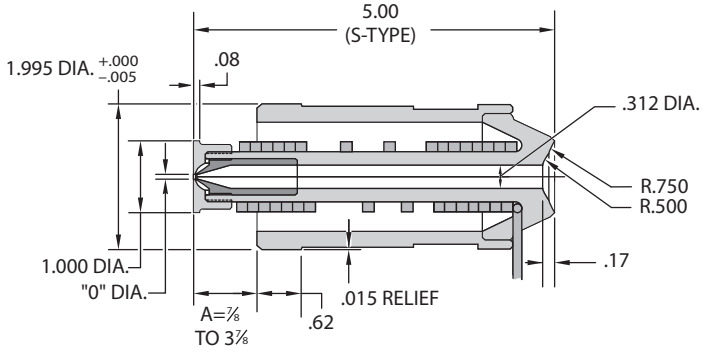
NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

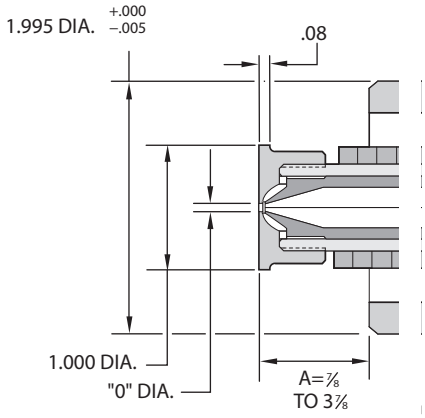
BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F:
BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.
Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

"S" Type (Standard Tip Configuration)

- .062 or .125 DIA. Tips with .08 Land area
- Seven shoulder lengths from ⅞ to 3⅞
- .500 And .750 Spherical radius for machine nozzle
- Replaces conventional cold sprue bushings to reduce cycle time and save material costs
- Efficiently processes commodity or engineering grade resins
- Provides low vestige gate cosmetics (.062 or .125 Gate diameters available)
- High-watt density heater with distributed wattage to help prevent tip freeze-offs





BUSHING ASSEMBLY			REPLACEMENT PARTS						
O DIA.	SHOULDER LENGTH A	BUSHING ASSEMBLY ITEM NUMBER	SHOULDER BUSHING ITEM NUMBER	TIP ITEM NUMBER	RETAINER ITEM NUMBER	BODY ITEM NUMBER	SPACER ITEM NUMBER	HEATER ITEM NUMBER	THERMOCOUPLE ITEM NUMBER
.062	⅞	HPS0607S2	HPS1007	HPT0001	HPT0601	HPS0001	HPT1001	HPS2001	HPS3001
	1⅜	HPS0613S2	HPS1013						
	1⅞	HPS0617S2	HPS1017						
	2⅜	HPS0623S2	HPS1023						
	2⅞	HPS0627S2	HPS1027						
	3⅜	HPS0633S2	HPS1033						
	3⅞	HPS0637S2	HPS1037						
.125	⅞	HPS1207S2	HPS1007	HPT0002	HPT1201	HPS0001	HPT1001	HPS2001	HPS3001
	1⅜	HPS1213S2	HPS1013						
	1⅞	HPS1217S2	HPS1017						
	2⅜	HPS1223S2	HPS1023						
	2⅞	HPS1227S2	HPS1027						
	3⅜	HPS1233S2	HPS1033						
	3⅞	HPS1237S2	HPS1037						

NOTE: High-Performance Series Straight-Shot Hot Sprue Bushings heater has voltage of 240 VAC, 700 watts. Thermocouple is "J" type.

High-Performance Series Straight-Shot™

High-Performance Straight-Shot Bushings are available as E-type

"E" Type (Extended Tip Configuration)

- Replaces conventional cold sprue bushings to reduce cycle time and save material costs
- Efficiently processes commodity or engineering grade resins
- High-watt density heater with distributed wattage to help prevent tip freeze-offs
- .062 or .125 DIA. Tips with 0.49 Land area for machining of molded part details
- Seven shoulder lengths from 7/8 to 3 7/8
- 500 and .750 Spherical radius for machine nozzle

Always machine runner or part contour to the .277 maximum depth at centerline of gate. However, do not weaken the bushing face by exceeding this maximum dimension (Figures 1 and 2). Always machine part contour to the .277 maximum depth at edge of retainer, with 15° maximum angle. Machine a 3° minimum taper to the gate diameter. This will result in a small sprue on the part being molded (Figure 3). Machine a 3° minimum taper to the gate for a reverse taper sprue on the part being molded (Figure 4). Retainer material is H-13 steel 46-52 HRC.

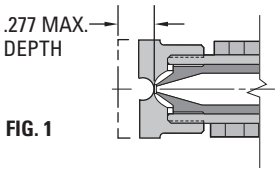


FIG. 1

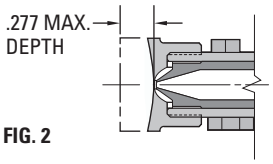


FIG. 2

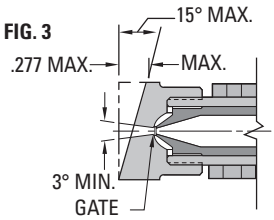


FIG. 3

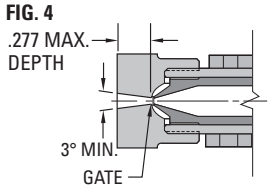
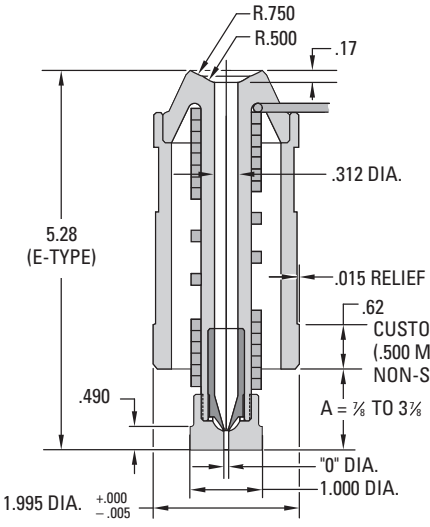


FIG. 4



E-TYPE (EXTENDED TIP CONFIGURATION)

NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

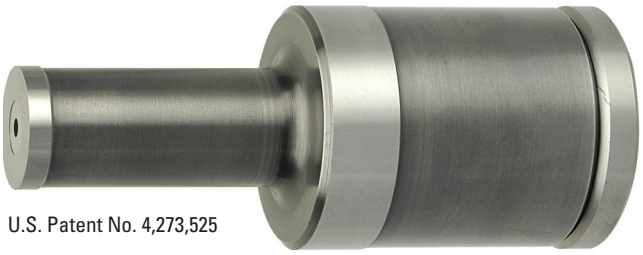
EXAMPLE:
Given a setpoint of 500°F:
BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.

Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

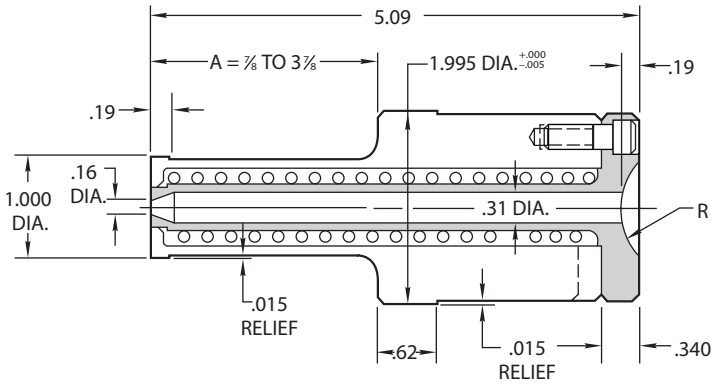
O DIA.	SHOULDER LENGTH A	BUSHING ASSEMBLY ITEM NUMBER	SHOULDER BUSHING ITEM NUMBER	TIP ITEM NUMBER	RETAINER ITEM NUMBER	BODY ITEM NUMBER	SPACER ITEM NUMBER	HEATER ITEM NUMBER	THERMOCOUPLE ITEM NUMBER
.062	⅞	HPS0607E2	HPS2007	HPT0001	HPT0602	HPS0001	HPT1001	HPS2001	HPS3001
	1⅜	HPS0613E2	HPS2013						
	1⅞	HPS0617E2	HPS2017						
	2⅜	HPS0623E2	HPS2023						
	2⅞	HPS0627E2	HPS2027						
	3⅜	HPS0633E2	HPS2033						
	3⅞	HPS0637E2	HPS2037						
.125	⅞	HPS1207E2	HPS2007	HPT0002	HPT1202	HPS0001	HPT1001	HPS2001	HPS3001
	1⅜	HPS1213E2	HPS2013						
	1⅞	HPS1217E2	HPS2017						
	2⅜	HPS1223E2	HPS2023						
	2⅞	HPS1227E2	HPS2027						
	3⅜	HPS1233E2	HPS2033						
	3⅞	HPS1237E2	HPS2037						

NOTE: High-Performance Series Straight-Shot Hot Sprue Bushings heater has voltage of 240 VAC, 700 watts. Thermocouple is "J" type.

S-Series Straight-Shot™



U.S. Patent No. 4,273,525



NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

BE = "A" dimension x 0.00000633 x nozzle set point - 68ºF (assuming the mold is at 68ºF during operation). If mold temperature is different, substitute 68ºF with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F:

BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.
Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

Larger Shots – Extended Heater Life

DME developed Straight-Shot Hot Sprue Bushings to eliminate sprues, permit larger shots and faster fills, and greatly extend heater life.

The bushings feature an unrestricted "straight-shot" channel to feed the part or runner. Material in the channel is heated by a special helical tubular heater which surrounds the melt stream. This heater distributes heat uniformly throughout the bushing and is virtually impervious to moisture, gases and plastics contamination.

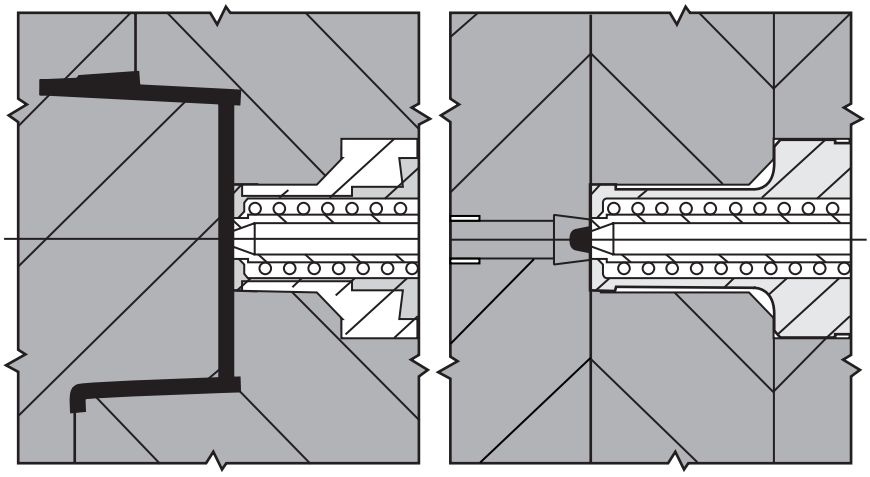
The helical tubular heater (120 or 240 volt) is thermocouple equipped so temperature can be closely controlled using a DME single-zone Closed Loop Temperature Controller.

The standard S-Series Straight-Shot is designed for direct part gating or for feeding half-round or trapezoidal runners. It is supplied with a .16 diameter gate and no gate land. Available in seven standard shoulder lengths with either a ½" or ¾" spherical radius and 120 or 240 volt heater. The S-Series Straight-Shot can be retrofitted to almost any mold that uses a conventional sprue bushing.

NOTE: 5° heater lead is standard. For 90° lead, add "90" to end of item number (e.g., SSBT4507S190).

R	WITH 120 VOLT HEATER ITEM NUMBER	SHOULDER LENGTH A	WITH 240 VOLT HEATER ITEM NUMBER
½	SSBT4507S1	⅞	SSBT4507S2
	SSBT4513S1	1⅜	SSBT4513S2
	SSBT4517S1	1⅞	SSBT4517S2
	SSBT4523S1	2⅜	SSBT4523S2
	SSBT4527S1	2⅞	SSBT4527S2
	SSBT4533S1	3⅜	SSBT4533S2
	SSBT4537S1	3⅞	SSBT4537S2
¾	SSBT6507S1	⅞	SSBT6507S2
	SSBT6513S1	1⅜	SSBT6513S2
	SSBT6517S1	1⅞	SSBT6517S2
	SSBT6523S1	2⅜	SSBT6523S2
	SSBT6527S1	2⅞	SSBT6527S2
	SSBT6533S1	3⅜	SSBT6533S2
	SSBT6537S1	3⅞	SSBT6537S2

Typical Applications

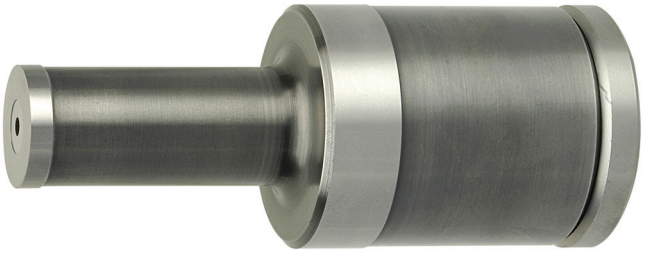


DIRECT PART GATING

FEEDING A TRAPEZOIDAL RUNNER

E-Series Straight-Shot™

DME standard E-Series Straight-Shot Hot Sprue Bushings (Long and Short Styles) provide a .25 inch extra stock allowance on the front face to permit machining of runner profiles or part contours into that face. They are supplied with a .06 diameter gate and a .25 inch gate land. The gate diameter can be enlarged to suit the particular molding application.

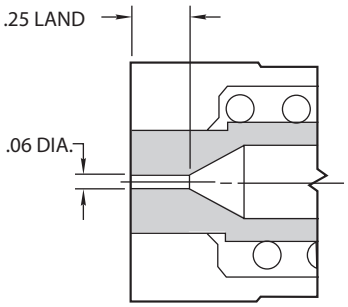


Long Style

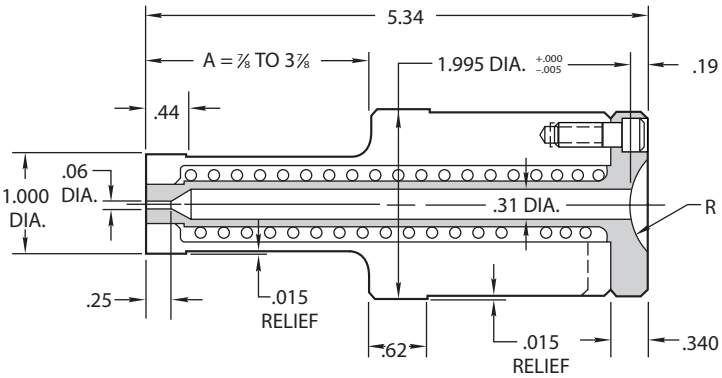
See DME Control Systems Catalog for temperature controllers.

E-Series (Long Style)

NOTE:
Must always be altered as shown in Figures 1 thru 6 (see next page).



ENLARGED VIEW AS SUPPLIED



NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F:

BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.

Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

The DME standard E-Series Straight-Shot (Long Style) is available in seven standard shoulder lengths with either a ½" or ¾" spherical radius and 120 or 240 volt heater. The E-Series Straight-Shot (Long Style) can be retrofitted to suit the particular molding application.

NOTE: 5° heater lead is standard. For 90° lead, add "90" to end of item number (e.g., SSBT4507E190).

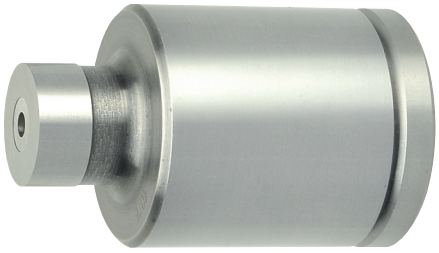
E-Series Straight-Shot (Long Style) Hot Sprue Bushings

R	WITH 120 VOLT HEATER ITEM NUMBER	SHOULDER LENGTH A	WITH 240 VOLT HEATER ITEM NUMBER
½	SSBT4507E1	⅞	SSBT4507E2
	SSBT4513E1	1⅜	SSBT4513E2
	SSBT4517E1	1⅞	SSBT4517E2
	SSBT4523E1	2⅜	SSBT4523E2
	SSBT4527E1	2⅞	SSBT4527E2
	SSBT4533E1	3⅜	SSBT4533E2
	SSBT4537E1	3⅞	SSBT4537E2
¾	SSBT6507E1	⅞	SSBT6507E2
	SSBT6513E1	1⅜	SSBT6513E2
	SSBT6517E1	1⅞	SSBT6517E2
	SSBT6523E1	2⅜	SSBT6523E2
	SSBT6527E1	2⅞	SSBT6527E2
	SSBT6533E1	3⅜	SSBT6533E2
	SSBT6537E1	3⅞	SSBT6537E2

E-Series Straight-Shot™

The DME standard E-Series Straight-Shot (Short Style) is intended to suit the requirements of smaller injection molding machines and is supplied with a 7/8" A dimension. The A dimension can be altered to suit the particular molding application.

NOTE: 5° heater lead is standard. For 90° lead, add "90" to end of item number (e.g., SSBT4407E290).



Short Style

See the DME Control Systems Catalog for temperature controllers.

E-Series Straight-Shot Hot Sprue Bushings (Short Style)

WITH 240 VOLT HEATER ITEM NUMBER	R	A DIMENSION
SSBT4407E2	1/2	7/8
SSBT0407E2	NONE	

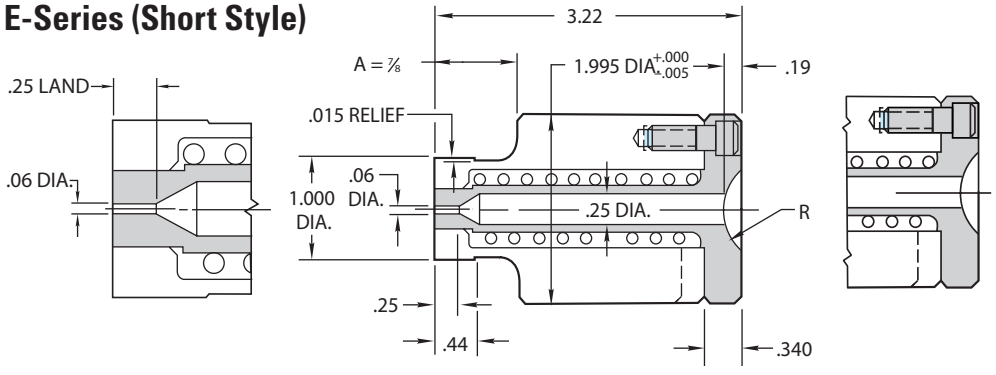
NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F:
BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.

Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

E-Series (Short Style)



ENLARGED VIEW AS SUPPLIED **SSBT4407E2** **SSBT0407E2**

NOTE: Must always be altered as shown in Figures 1 thru 6 (see below).

Design Guidelines for Altering E-Series Straight-Shot Hot Sprue Bushings (Long and Short Styles)

Always remove the .25 extra stock allowance and alter the A dimension to suit whenever gating into a flat part surface. Minimum stock removal of .25 provides an approximate .06 gate diameter (Figure 1).

Maximum stock removal of .268 provides an approximate .08 gate diameter (Figure 2). Maximum stock removal of .268 is recommended for gate diameters larger than .08 (Figures 3 and 4).

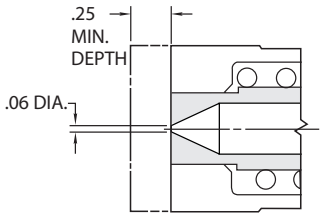


FIG. 1

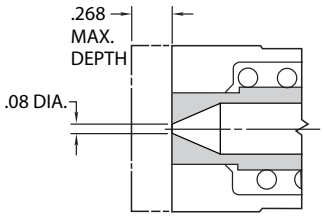


FIG. 2

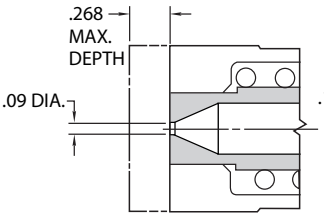


FIG. 3

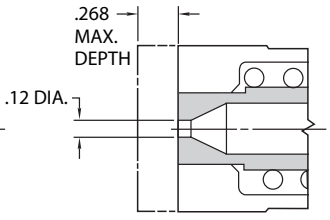


FIG. 4

Always machine runner profile or part contour to the .268 maximum depth at centerline of gate (Figures 5 and 6). However, do not weaken the bushing face by exceeding this maximum dimension.

* Resultant gate diameter may be enlarged to suit the particular molding application.

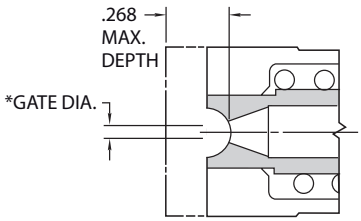


FIG. 5

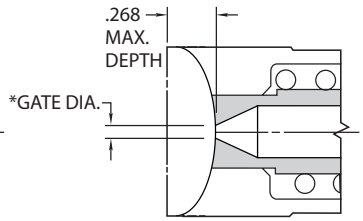
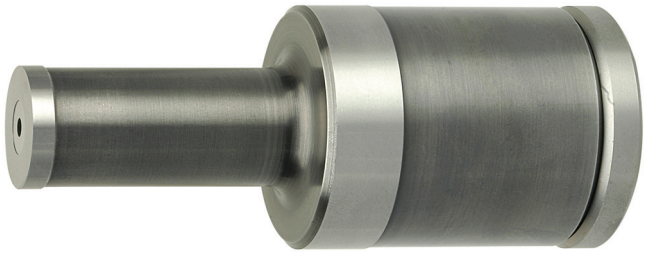


FIG. 6

ER-Series Straight-Shot™

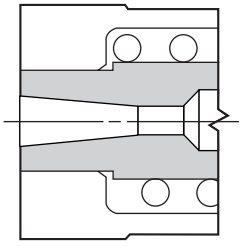
The DME standard ER-Series Straight-Shot Hot Sprue Bushings (Long and Short Styles), like the standard E-Series, are supplied with a .25 inch extra stock allowance on the front face to permit machining of runner profiles or part contours into that face. These bushings feature a "reverse taper" design that originates from under the heat source, providing easier start-ups.

The ER-Series design can also be used when a reverse taper will benefit a particular application. These bushings are supplied with a .12 diameter orifice and a .50 long reverse taper. The orifice may be enlarged and the taper increased to suit.

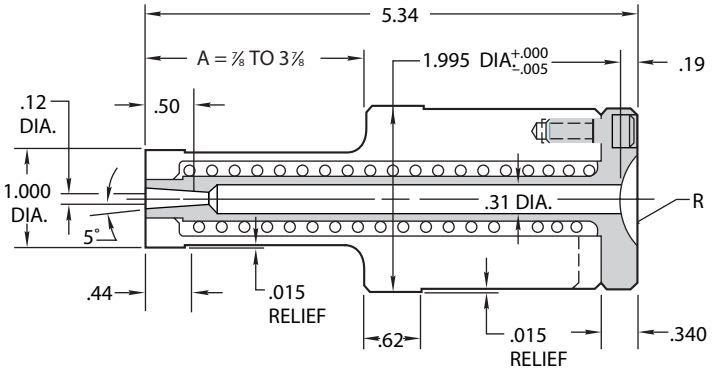


(Long Style)

ER-Series (Long Style)



ENLARGED VIEW AS SUPPLIED



NOTE: For minimum projection on runner/part, alter the bushing face (See figures 1 thru 3 on next page).

NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F:

BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.

Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

ER-Series Straight-Shot (Long Style) Hot Sprue Bushings

R	WITH 120 VOLT HEATER ITEM NUMBER	SHOULDER LENGTH A	WITH 240 VOLT HEATER ITEM NUMBER
½	SSBT4507ER1	⅞	SSBT4507ER2
	SSBT4513ER1	1⅜	SSBT4513ER2
	SSBT4517ER1	1⅞	SSBT4517ER2
	SSBT4523ER1	2⅜	SSBT4523ER2
	SSBT4527ER1	2⅞	SSBT4527ER2
	SSBT4533ER1	3⅜	SSBT4533ER2
	SSBT4537ER1	3⅞	SSBT4537ER2
¾	SSBT6507ER1	⅞	SSBT6507ER2
	SSBT6513ER1	1⅜	SSBT6513ER2
	SSBT6517ER1	1⅞	SSBT6517ER2
	SSBT6523ER1	2⅜	SSBT6523ER2
	SSBT6527ER1	2⅞	SSBT6527ER2
	SSBT6533ER1	3⅜	SSBT6533ER2
	SSBT6537ER1	3⅞	SSBT6537ER2

The DME standard ER-Series Straight-Shot (Long Style) is available in seven standard shoulder lengths with either a ½" or ¾" spherical radius and 120 or 240 volt heater. The ER-Series Straight-Shot (Long Style) can be retrofitted to suit the particular molding application.

NOTE: 5° heater lead is standard. For 90° lead, add "90" to end of item number (e.g., SSBT4507ER190).

ER-Series Straight-Shot™

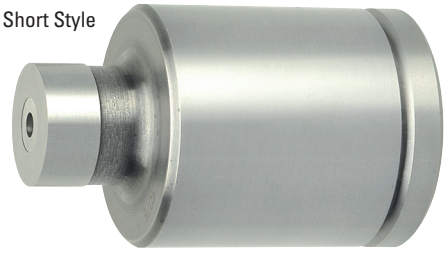
The DME standard ER-Series Straight-Shot (Short Style) is intended to suit the requirements of smaller injection molding machines and is supplies with a 7/8" A dimension. The A dimension can be altered to suit the particular molding application.

NOTE: 5° heater lead is standard. For 90° lead, add "90" to end of item number (e.g., SSBT4407ER290).

NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is, as follows: BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F: BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379. Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

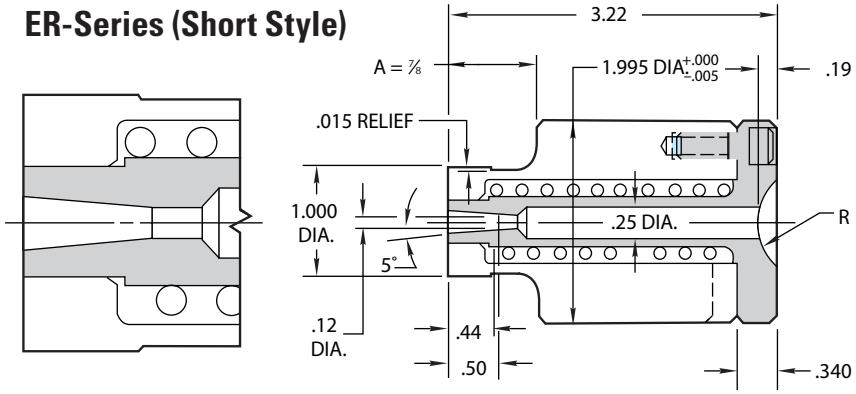
Short Style



ER-Series Straight-Shot Hot Sprue Bushings (Short Style)

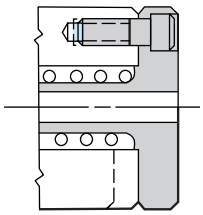
WITH 240 VOLT HEATER ITEM NUMBER	R	A DIMENSION
SSBT4407ER2	½	7/8
SSBT0407ER2	NONE	

ER-Series (Short Style)



ENLARGED VIEW AS SUPPLIED

SSBT4407ER2



SSBT0407ER2

NOTE:
For minimum projection on runner/part, alter the bushing face (See figures 1 through 3 below).

Design Guidelines for Altering ER-Series Straight-Shot Hot Sprue Bushings (Long and Short Styles)

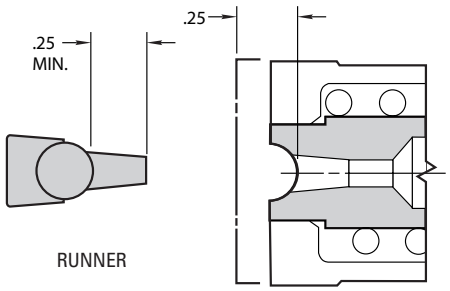


FIG. 1

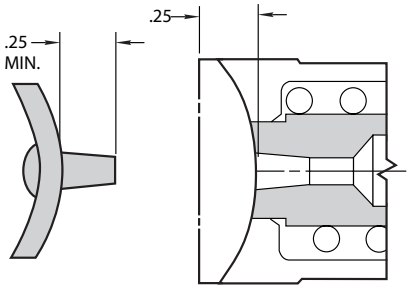


FIG. 2

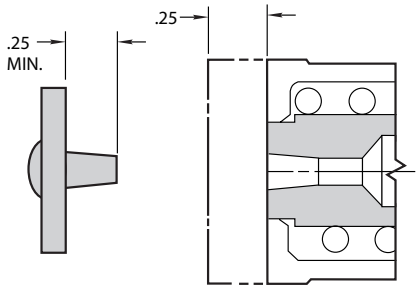


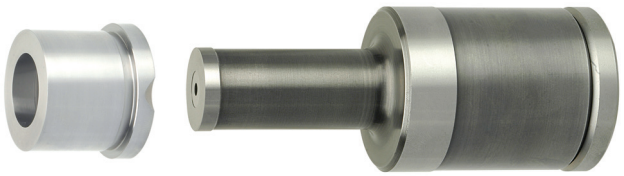
FIG. 3

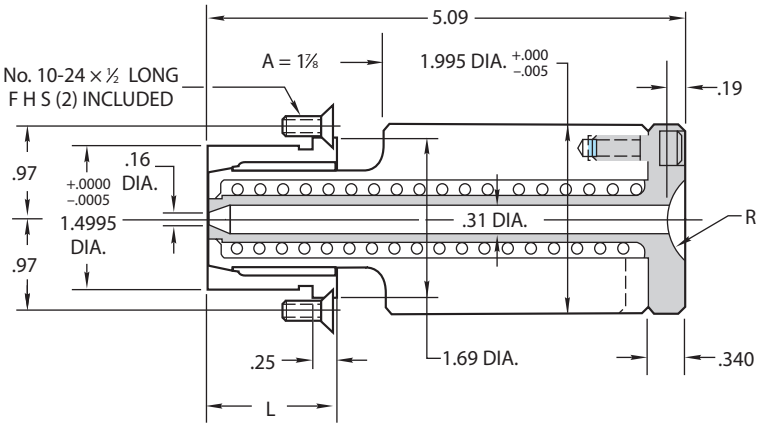
For minimum projection on runner/part, machine the runner profile or part contour .25 inch deep into the bushing face at the centerline of the orifice (See Figures 1 and 2). When gating into a flat surface, remove the .25 inch extra stock allowance on the bushing face (See Figure 3). However, do not weaken the bushing face by exceeding the .25 inch dimension. The A dimension can be altered by removing stock from the front face of the 2.00 diameter bushing shoulder.

T-Series Straight-Shot™

The DME standard "T" Series Straight-Shot improves the performance of three-plate molds by virtually eliminating the sprue from the runner system. It is available with either ½" or ¾" spherical radius, 120 or 240 volt heater and a ⅞" or 1⅜" long stripper plate bushing to suit the application.

NOTE: 5° heater lead is standard. For 90° lead, add "90" to end of item number (e.g., SSBT4517T10790).





NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

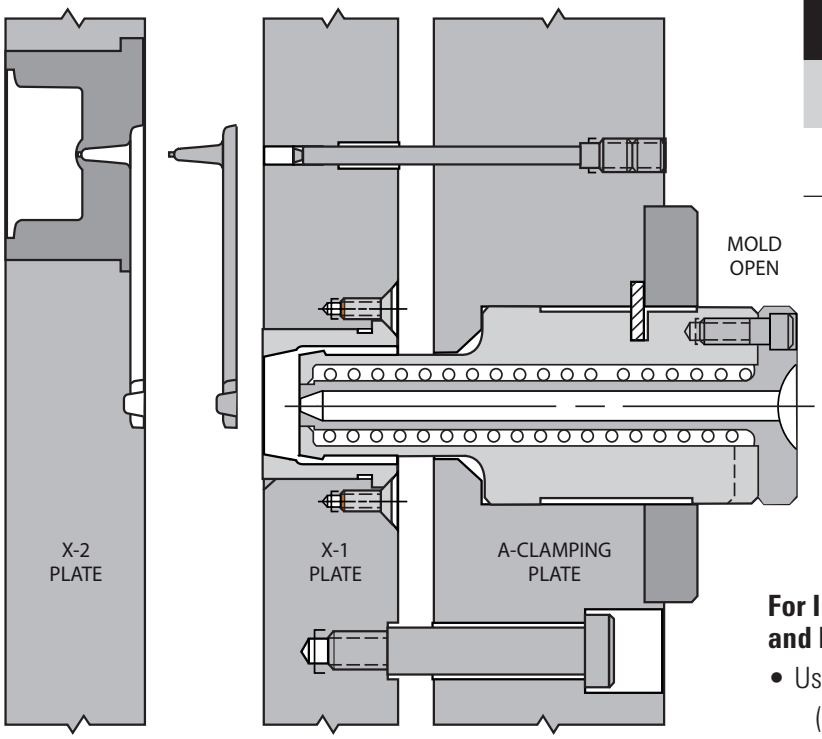
BE = "A" dimension x 0.00000633 x nozzle set point - 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F:

BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.

Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

Typical Application



T-Series Straight-Shot Hot Sprue Bushings

R	WITH 120 VOLT HEATER ITEM NUMBER	L	WITH 240 VOLT HEATER ITEM NUMBER
½	SSBT4517T107	⅞	SSBT4517T207
	SSBT4517T113	1⅜	SSBT4517T213
¾	SSBT6517T107	⅞	SSBT6517T207
	SSBT6517T113	1⅜	SSBT6517T213

Replacement Stripper Bushings

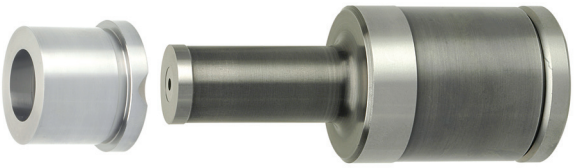
ITEM NUMBER*	L
SSSB07	⅞
SSSB13	1⅜

*Includes mounting screws.

For Improved Performance and Increased Productivity:

- Use DME standard T-Series (3-Plate) Mold Bases (See DME Mold Bases and Plates Catalog)

TR-Series Straight-Shot™



NOTE:
The expansion factor must be taken into consideration prior to machining for and installation of the bushing. This factor (BE) must then be added to the A dimension. The formula for determining this expansion factor is as follows:

BE = "A" dimension x 0.00000633 x nozzle set point - 68ºF (assuming the mold is at 68ºF during operation). If mold temperature is different, substitute 68ºF with actual mold temperature.

EXAMPLE:
Given a setpoint of 500°F:

BE = 1.375 × .0000063 × (500 – 68) = .004 thus 1.375 + .004 = 1.379.

Please note that the above information is given as an example. Variations may occur based on mold configuration and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

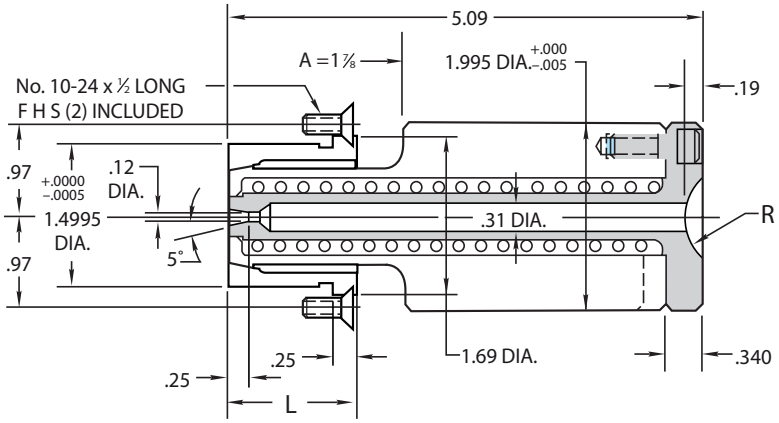
The DME standard TR-Series Straight-Shot Hot Sprue Bushing, like the standard T-Series, improves the performance of three-plate runner molds by minimizing the length of protrusion on the runner system. This bushing features a "reverse taper" design that originates from under the heat source, providing easier start-ups.

The TR-Series design can also be used when a reverse taper will benefit a particular application. The bushing is supplied with a .12 diameter orifice and a .25 long reverse taper. The orifice may be enlarged and the taper increased to suit. The bushing is available with either ½" or ¾" spherical radius, 120 or 240 volt heater and a ⅞" or 1⅜" long stripper-plate bushing to suit the application.

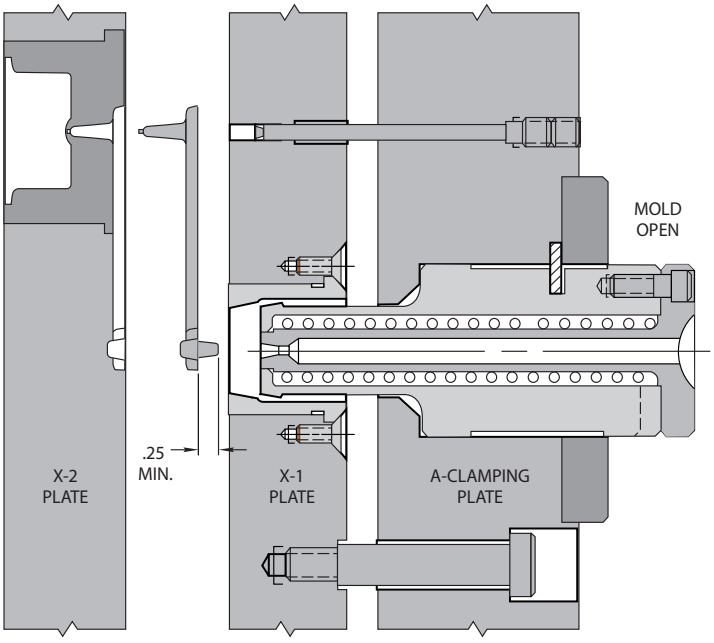
TR-Series Straight-Shot Hot Sprue Bushings

R	WITH 120 VOLT HEATER ITEM NUMBER	L	WITH 240 VOLT HEATER ITEM NUMBER
½	SSBT4517TR107	⅞	SSBT4517TR207
	SSBT4517TR113	1⅜	SSBT4517TR213
¾	SSBT6517TR107	⅞	SSBT6517TR207
	SSBT6517TR113	1⅜	SSBT6517TR213

NOTE:
5° heater lead is standard. For 90° lead, add "90" to end of item number (e.g., SSBT4517TR10790).



Typical Application



Important:
To prevent "pushback" of the hot sprue bushing due to injection pressure – and assure a positive tapered seal with the stripper plate bushing – secure the hot sprue bushing to the A-Clamping Plate. A dowel or flat key installed under the locating ring (shown) or clamping-type locating ring may be used.

For Improved Performance and Increased Productivity:

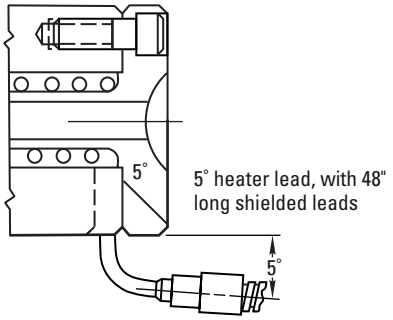
- Use DME standard T-Series (3-Plate) Mold Bases (see DME Mold Bases and Plates Catalog)

Straight-Shot™ Bushings Replacement Parts

Replacement Heaters for Straight-Shot Hot Sprue Bushings Standard

ITEM NUMBER*	VOLTS	WATTS	L	BUSHING SERIES
SSTC31	120	300	4⅝	S, E & ER (Long Style), T & TR
SSTC32	240	300	4⅝	S, E & ER (Long Style), T & TR
SSTC42	240	250	2½	E & ER (Short Style)

* Includes installation wrench.

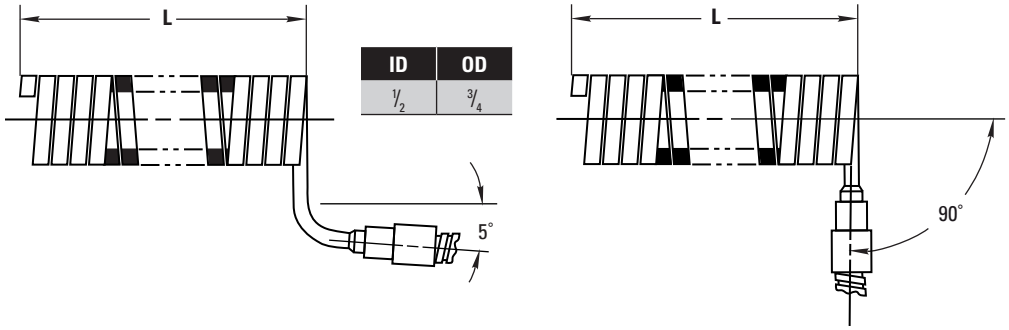


Straight-Shot Heater Installation and Removal Wrench

(Included with heaters above).

ITEM NUMBER	USED WITH
WR0875	SSTC31 & 32 Series
WR0874	SSTC42 Series

Available On Request:
Heaters with 90° exit leads. Add "90" to item number.
Example: SSTC3190



Replacement Parts for Discontinued Hot Sprue Bushings (HBT6630 through 6636), Temperature Controllers (PFC5) and Control Modules (FC5)

Cartridge Heaters

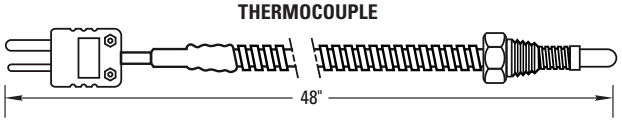
DIA.	LENGTH	WATTS	VOLTS	ITEM NUMBER
¼	2½	240	200	HBC2022*
¼	3¾	240	300	HBC2032**

* Used with Hot Sprue Bushings 5 3⁄16 long; heater supplied with leads 48" long.

** Used with Hot Sprue Bushings 6 3⁄16 long; heater supplied with leads 46" long.

Thermocouple Cartridge Heaters

DIA.	LENGTH	VOLTS	WATTS	ITEM NUMBER
¼	2½	240	200	HBTC2022*
¼	3¾	240	300	HBTC2032**



Threaded type thermocouple is spring loaded and supplied with cable and mini plug.

ITEM NUMBER
TCT4

ITEM NUMBER	AMPS
ABC5	5
13X5	5

Replacement Fuses for Temperature Control Modules (FC5) and Temperature Controllers (PFC5)

See the DME Control Systems Catalog for new controllers.

Integrally Heated Sprue Bushings .750" SERIES

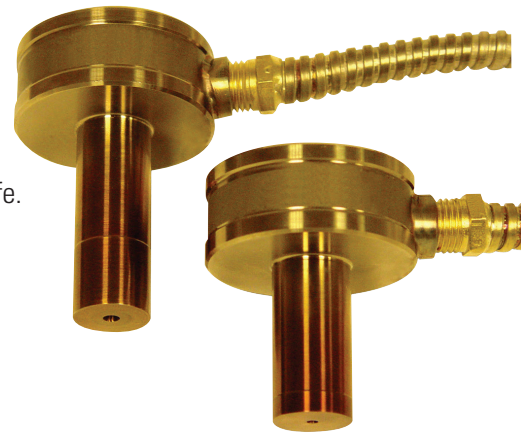
The **Integrally Heated Sprue Bushing** is uniquely designed for high performance and reliability for direct gating applications, even with the most demanding molding cycles and plastic resins.

The product's advanced heat transfer capability is attributed to its integrally heated design, resulting in a more uniform heat profile. Maximum heat 600ºF.

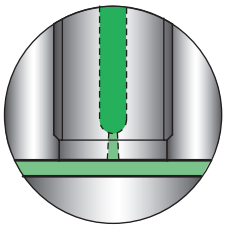
A replaceable thermocouple is strategically located near the melt flow channel to optimize processing conditions with all thermoplastics.

Features and Benefits:

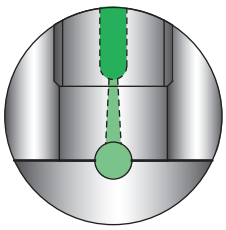
- **Distributed watt density –** maintains a more uniform heat profile.
- **High refractory insulation –** provides superior heat transfer.
- **Streamlined flow channel –** minimizes pressure loss.
- **Fully sealed construction –** maintains highest product reliability.
- **High-grade alloy steel construction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



Tip Styles and Flow Diagrams



Sprue Tip

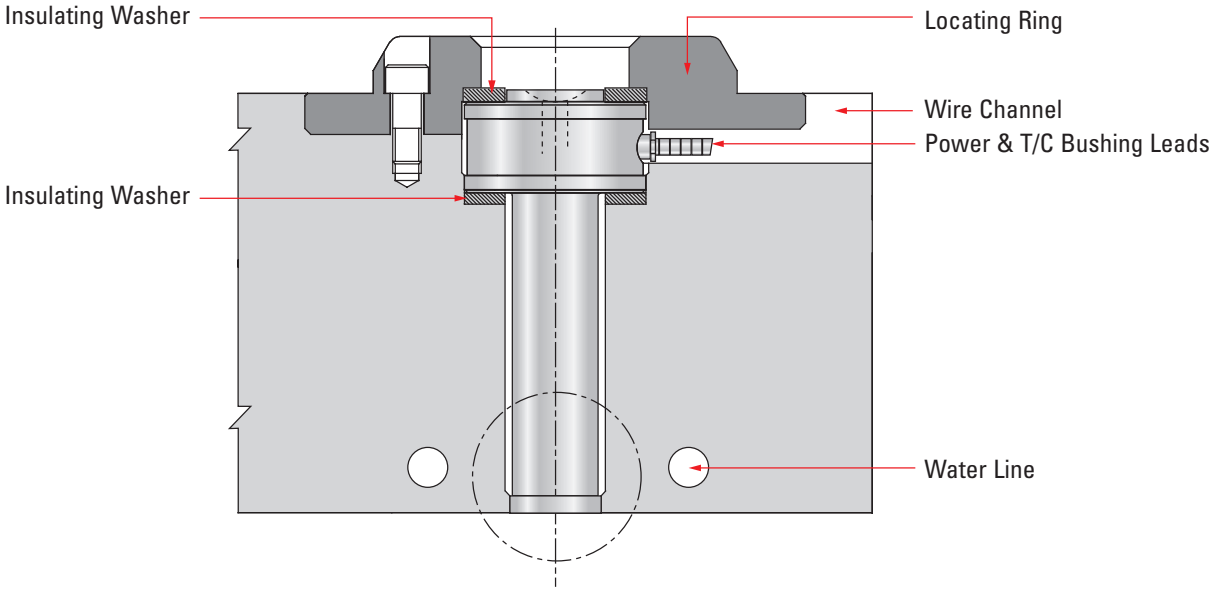


Extra Stock Sprue Tip

Maximum heat 600ºF

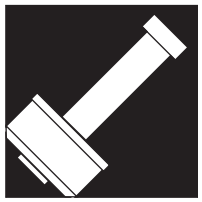
Recommended for Commodity Resins Only

Direct Gating Diagram



Integrally Heated Sprue Bushings .750" SERIES USER GUIDE

Integrally Heated Sprue Bushings



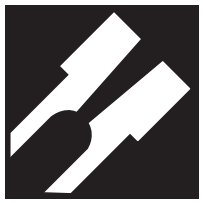
The DME Integrally Heated Sprue Bushing is an exclusive medium volume bushing with the ability to process a wide range of resins. Its streamlined flow channel terminates in a reverse taper gate, providing minimal pressure loss and allowing for rapid gate freeze. The formation of a small gate stub on 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
Sprue	.080" to .125"* max. (2mm to 3.2mm* max.)
Extra Stock Sprue	.080" to .125"* max. (2mm to 3.2mm* max.)

* 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)

Gating Options	Resin Viscosity		
	High	Medium	Low
Sprue	50g	150g	300g
Extra Stock Sprue	50g	150g	300g

Contact DME when exceeding minimum shot weight and process heat temperature at 600ºF.

.750" Series Resin Compatibility

Gating Options	Commodity Resin
Sprue	⚡
Extra Stock Sprue	⚡

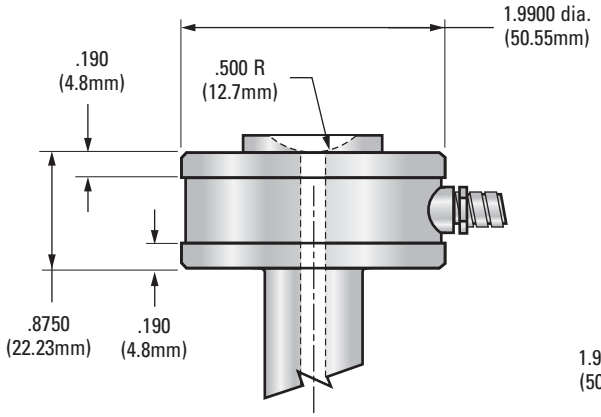
⚡ = Recommended

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.

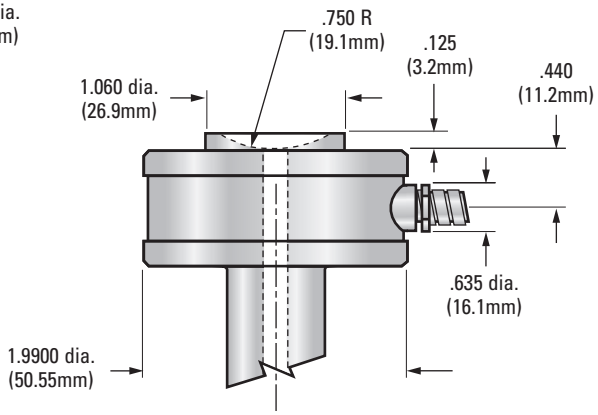
Integrally Heated Sprue Bushings .750" SERIES

Head Options

.500 Radius Style

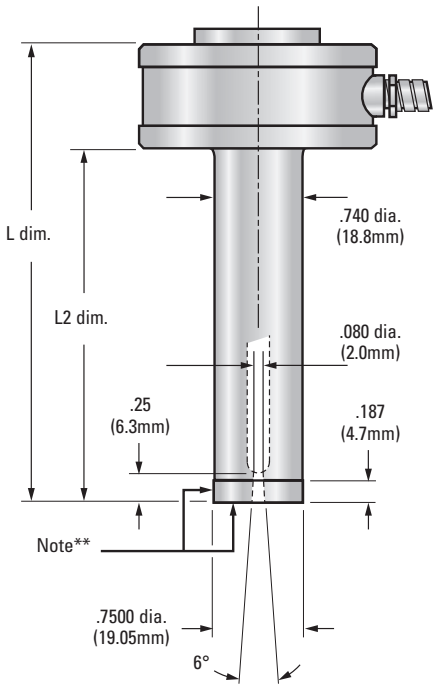


.750 Radius Style

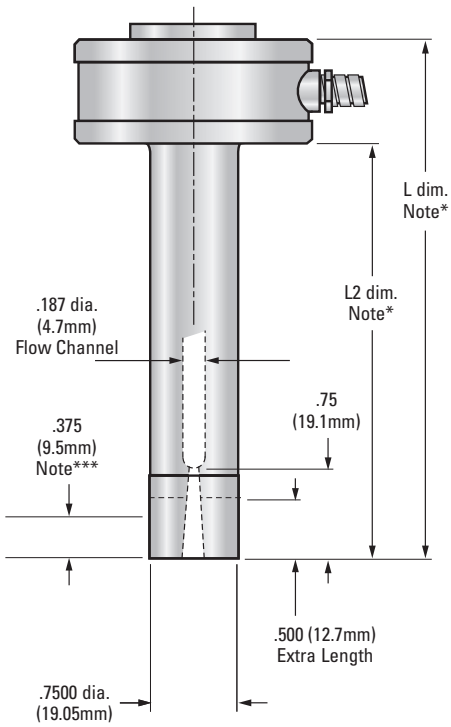


Gating Options / Bushing Dimensions

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 82

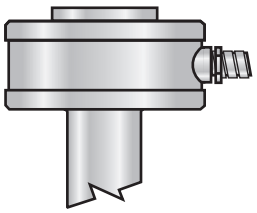
Integrally Heated Sprue Bushings .750" SERIES SPECIFICATIONS

Gate Style	L Dim.		L2 Dim.		.500 Radius Head	.750 Radius Head	Watts	Thermocouple
Sprue 	2.375"	(60.3)	1.500"	(38.1)	SB031000	SB031001	315	MT020020
	2.875"	(73.0)	2.000"	(50.8)	SB031008	SB031009	370	MT020020
	3.375"	(85.7)	2.500"	(63.5)	SB031016	SB031017	425	MT020020
	3.875"	(98.4)	3.000"	(76.2)	SB031024	SB031025	480	MT020020
	4.375"	(111.1)	3.500"	(88.9)	SB031032	SB031033	535	MT020021

Gate Style	L Dim.		L2 Dim.		.500 Radius Head	.750 Radius Head	Watts	Thermocouple
Extra Stock Sprue 	2.875"	(73.0)	2.000"	(50.8)	SB031004	SB031005	315	MT020020
	3.375"	(85.7)	2.500"	(63.5)	SB031012	SB031013	370	MT020020
	3.875"	(98.4)	3.000"	(76.2)	SB031020	SB031021	425	MT020020
	4.375"	(111.1)	3.500"	(88.9)	SB031028	SB031029	480	MT020020
	4.875"	(123.8)	4.000"	(101.6)	SB031036	SB031037	535	MT020021

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

Right (Standard)*



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

ITEM NUMBER
CKPTIC1

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.

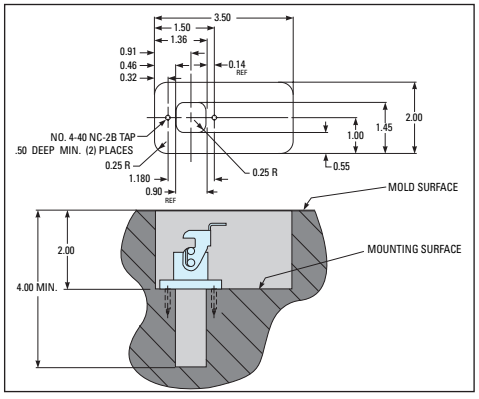
*Can be mounted on top of mold

ITEM NUMBER
MPTC10
MPTC20

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.

Recommended Mold Pocket Layout For Mold Power-Thermocouple Input Connector (CKPTIC1)



For complete information on temperature controls, please see DME Control Systems Catalog.

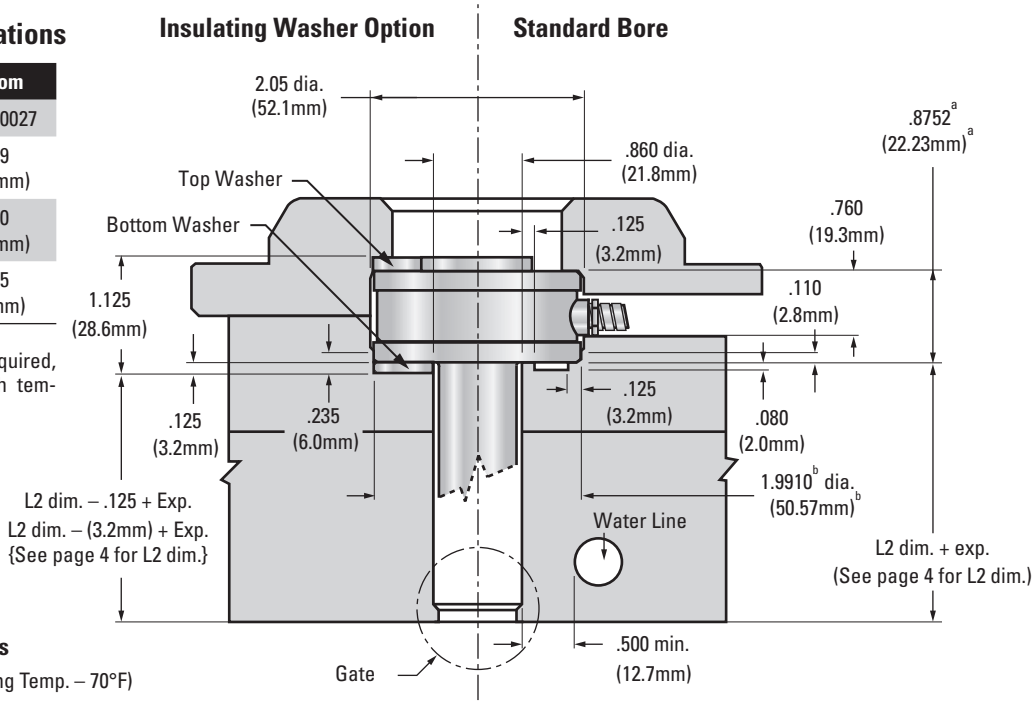
Integrally Heated Sprue Bushings .750" SERIES

.750" Series Bore & Gate Dimensions

Insulating Washer Specifications

	Top	Bottom
Item Number	MAX10015	MAX10027
O.D.	1.99 (50.5mm)	1.99 (50.5mm)
I.D.	1.07 (27.2mm)	.810 (20.6mm)
Thickness	.125 (3.2mm)	.125 (3.2mm)

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



Thermal Expansion (Exp.) Formulas

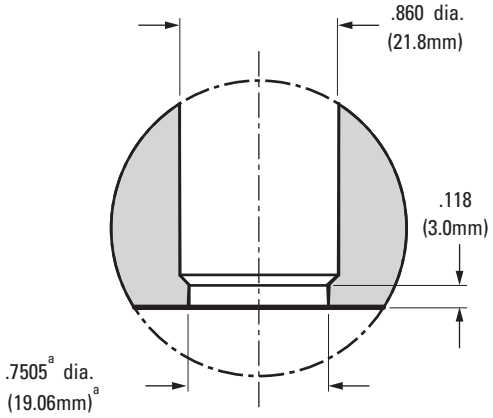
Exp. in = L2 in. × 6.88×10^{-6} × (Processing Temp. – 70°F)

Exp. mm = L2 mm × 13×10^{-6} × (Processing Temp. – 21°C)

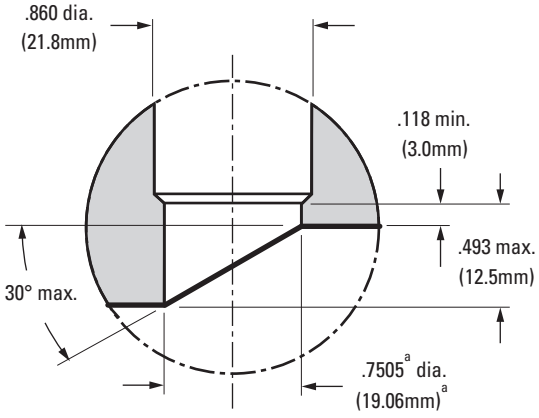
Ref: $10^{-6} = 0.000001$

All specifications are subject to change without notification.

Sprue Gate



Extra Stock Sprue Gate



Bore & Gate Tolerances

Tol. "a" Table	
in:	+ 0.0005 – 0
mm:	+ 0.01 – 0

Tol. "b" Table	
in:	+ 0.0010 – 0
mm:	+ 0.02 – 0

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" wrapped - 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.

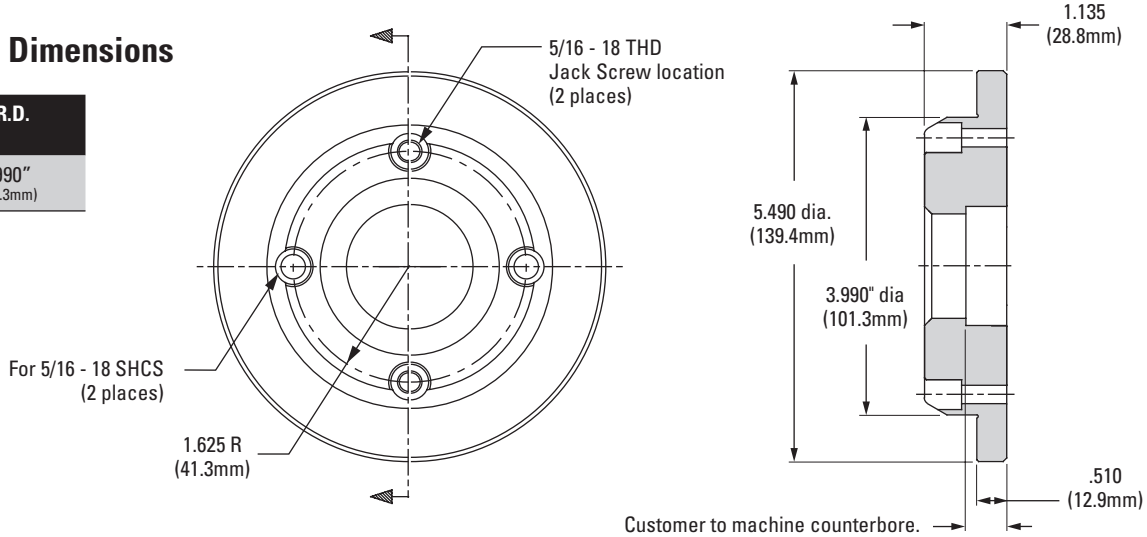
WARNING

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.

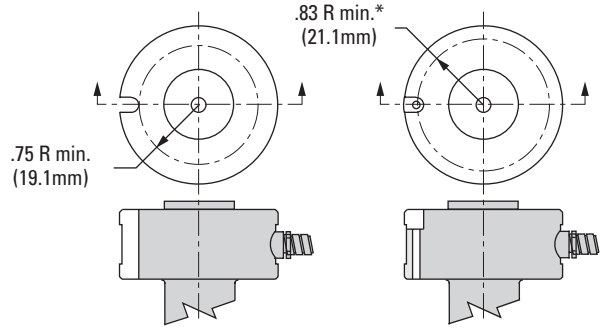
Maximum heat 600ºF

Locating Ring Dimensions

ITEM NUMBER	L.R.D.
ML010012	3.990" (101.3mm)



Machining Options for Keying

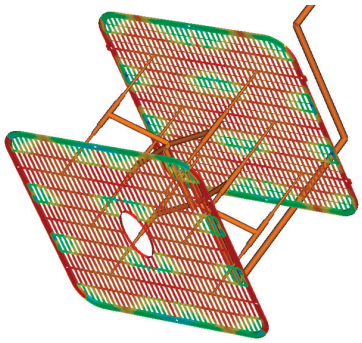


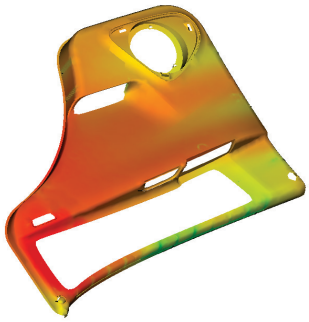
*Centerline for #10 Screw

Dimensions are in inches; millimeters are in parentheses.

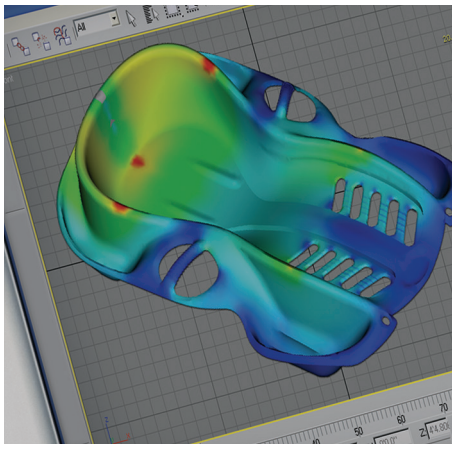
DME Hot Runner Services

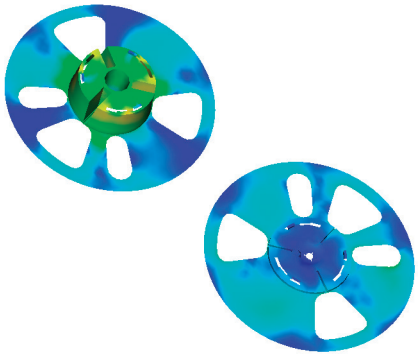
TOTAL SUPPORT FOR YOUR
HOT RUNNER SYSTEMS

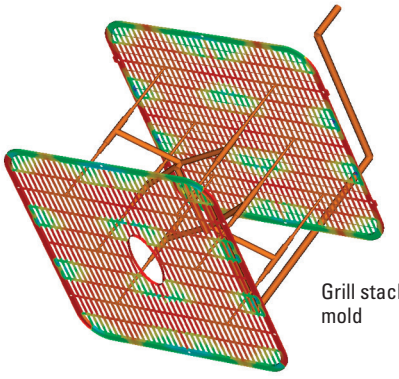




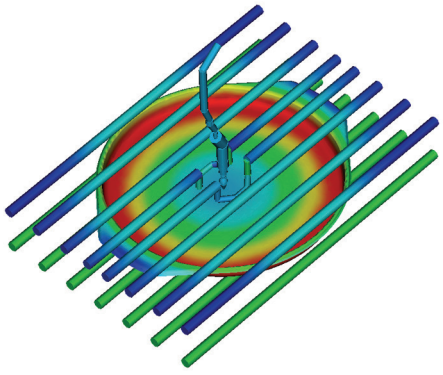
Moldflow Services — Optimize Part and Mold Design







Grill stack mold



Comprehensive Analysis and Modeling

With today's shrinking time-to-market window, development speed is essential. As part of its commitment to the molding industry, DME is now offering Moldflow™ analysis to help optimize part and mold design – especially for hot runner molds. DME is the first mold technologies supplier to earn Moldflow's silver certification in this advanced technology.

A Competitive Advantage

Predictive analysis, utilizing Moldflow software, yields tremendous benefits, including:

- Optimize part design
- Reduce time-to-market
- Save cost and time on mold tryouts
- Lower development and production costs
- Provide a framework to establish reputable processes
- Improve product quality
- Decrease cycle times

What is Moldflow?

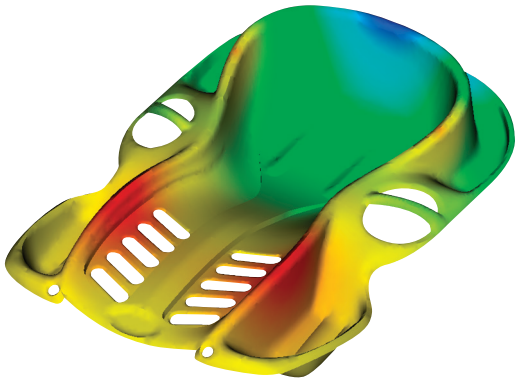
DME uses Moldflow Plastics Insight™ (MPI) software which is an integrated suite of analysis tools that utilize CAD files and apply advanced Finite Element Analysis (FEA) techniques to quickly and easily enable a virtual "what if" design environment before initiating mold construction. MPI provides in-depth part/mold design and process parameter optimization. This is in contrast to Moldflow Plastics Advisor™ (MPA) which is primarily useful for parts with low to medium complexity, conceptual designs, and quick part design validation. DME is a certified, licensed provider of Moldflow analysis services.

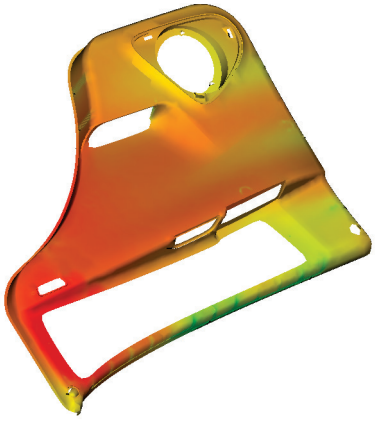
Mold Fill Analysis

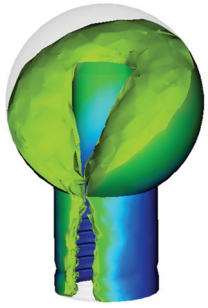
The Mold Fill module uses predictive technology to simulate the filling process. Key analyses include:

- Optimize the number, size, and location of gates
- Balance the runner system design
- Reduce material stress levels
- Predict weld line locations
- Validate pressure and temperature distribution within the mold
- Optimize processing conditions – including melt temperature, injection rate, and cavity pressure

Moldflow Services — Optimize Part and Mold Design







Mold Pack Analysis

Building on the results of a Mold Fill analysis, the Mold Pack module optimizes the packing phase to ensure a uniform packing condition. As an indication of part warpage, volumetric shrinkage is evaluated and the pack pressure profile is optimized. The result is minimized warpage with an improved surface appearance.

Mold Cool Analysis

The Cool Analysis module assesses an existing cooling layout to determine potential molding problems. Steel types, cooling channel sizes, bubblers, baffles, coolant temperatures, and flow rates are all evaluated. Using this analysis, the Mold Cool module recommends practical tooling design changes to ensure uniform cooling. Mold Cool takes into account:

- Number, location, depth, and pitch of cooling channels
- Steel types
- Cooling circuit layouts
- Coolant temperatures and flow rates
- Cycle times

Warp Analysis

Using the results from the Fill and Cool analyses, the Warp Analysis module enables prediction of plastic part shrinkage and warpage. Warp Analysis diagnoses the cause(s) of warping and recommends the appropriate solution, such as gate location changes, design parameter changes, and reduction of wall thickness variations.

MPI 3D

MPI 3D addresses a class of problems previously unsolvable using traditional Finite Element Analysis techniques. In thick-walled parts, molten plastic can flow in all directions. Using a proven methodology based on a solid tetrahedral, finite element volume mesh, MPI 3D enables true, three-dimensional simulations on thick-walled parts.

Where Do I Start?

Contact your DME representative for more information regarding Moldflow Services. The DME Applications Engineering Department is available to provide a customized Moldflow analysis and assist you in maximizing the results of your next application.

Mold Filling/Mold Cooling Analysis Quote Request Form

THIS FORM IS REQUIRED FOR ALL ANALYSIS WORK FOR EACH PART

NOTE: Changes made after this form is received require written confirmation

Fax completed form to 248-544-5707 or
email dme_appl_eng@milacron.com

MILACRON®

CUSTOMER REQUEST FOR DATA
Mold Filling / Mold Cooling Analysis

DME Every step of the way

(THIS FORM IS REQUIRED FOR ALL ANALYSIS WORK FOR EACH PART)
NOTE: CHANGES MADE AFTER THIS FORM IS RECEIVED REQUIRE WRITTEN CONFIRMATION

AE002.1 Rev: 11/5/14

Fax completed form to: 248-544-5707 or email: dme_appl_eng@milacron.com

Customer:	Date:
	P.O. #:
Phone:	Job #:
Fax:	Project Engineer:
Resin Supplier:	Contact:
Phone:	
Mold Maker:	Contact:
Phone:	
Manifold Supplier:	Contact:
Phone:	

PART INFORMATION	RESIN INFORMATION
Part Name:	Resin Type:
Part Number:	Resin Grade:
Nominal Wall:	Melt Index:
Part Weight:	Max Flow length:
Gate Type:	Min Temp. Max. Temp.
PROTOTYPE ☐ PRODUCTION ☐	**NOTES:**
Mold Material: ☐P20 ☐ Aluminum ☐Other	☒ **RESIN CHANGES REQUIRE WRITTEN APPROVAL**
	☒ **IN THE EVENT ABOVE MATERIAL IS NOT IN THE DATABASE, A MATERIAL AS CLOSE AS POSSIBLE WITH BE SUBSTITUTED**

PROCESSING INFORMATION	MACHINE INFORMATION
Injection Time:	Flow Rate Capability (in^3/sec):
Cycle Time:	Clamp Force (Press Size):
Mold Temperature:	Injection Pressure:
Melt Temperature:	Number of Cavities:
Cooling Water Temp:	Is there a water manifold?
Cooling Time:	

MOLDFILLING OBJECTIVE	MOLDCOOLING OBJECTIVE
Balance Filling Pattern ☐	Optimize Cycle Time ☐
Determine Optimal Gating ☐	Optimize Cooling Time ☐
Minimize Wall Thickness ☐	Reduce Warpage ☐
Evaluate Knit Lines ☐	Evaluate Existing Mold ☐

TIME SCHEDULE	
Molding Trial Date:	Molding Facility:
Manifold Locations due by:	Manifold/Drop Information due by:
Cold Runner Information due by:	Water Line Information due by:

COMMENTS:

This form was filled out by
Please sign and date: _____

DME Company ■ 29111 Stephenson Highway ■ Madison Heights ■ MI ■ 48071
Phone 248-398-6000 ■ www.milacron.com

DME Service Centers

Ensuring the Productivity of every Hot Runner System

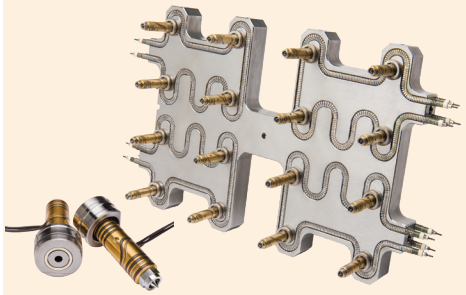
Full-Service Hot Runner Support

Mold technology leader DME - known for servicing its customers every step of the way - provides total support for your hot runner systems. No matter what brand of hot runner, DME will repair, reconfigure or even totally rebuild it to ensure maximum performance of your system.

A Dedicated Center for Hot Runner Systems

Our Service Center, located in Madison Heights, Mich., is exclusively dedicated to supporting your hot runner systems. Staffed by a team of industry experts whose sole focus is hot runner systems, we aim to provide optimal repair and troubleshooting to maintain and get your system operating at maximum efficiency. This group has over three decades of experience installing, assembling, and repairing hot runner systems. And, our dedicated staff will get your system back into your facility quickly and cost-effectively. Please contact us for other service center locations.

Hot Runner Services Overview



The DME family of hot runner products and services offers a comprehensive array of solutions for a wide range of applications.

Unrivaled Support When and Where You Need It
Since the 1970s, DME has developed and marketed a full spectrum of hot runner systems and components. From Moldflow analysis to turnkey hot half systems and everything in between, the DME family of hot runner products and services offers a comprehensive array of solutions for a wide range of applications. Whether your need is for standard, off-the-shelf components, customer engineered manifolds, or fully assembled systems ready for bolt-on installation, DME has a proven solution to match your application.

Moldflow Services
As the first mold technologies supplier to earn Moldflow's silver certification, DME is highly adept at applying Finite Element Analysis (FEA) techniques to help optimize part and mold design. Whether you need Mold Fill, Mold Pack, Mold Cool or Warp analyses, DME can assist you in maximizing the results of your next application.

Applications Engineering and Technical Service
Our dedicated and experienced team of mold designers, technicians and applications engineers assists DME customers with product selection, system design, performance analysis and technical advice. DME technical service representatives are globally located for complete coverage and quick availability no matter where your hot runner production takes place. Technical experts employed worldwide are available for start-ups, personnel training or system service.

Comprehensive Hot Runner and Aftermarket Service
Staffed by a team whose sole focus is hot runner systems, the DME Hot Runner Service Center offers a single source for hot runner system optimization and maintenance. Our services include expedited repairs, system cleaning, system rebuilds, re-configuration and refurbishment for virtually any type of hot runner system.

DME Service Centers

A Wide Range of Services

We recognize the value of your time - that's why we've developed a comprehensive suite of hot runner services to provide a single source for maintenance and optimization of your system.

Key capabilities and services include:

- System evaluations
- Repairs - systems and components
- System cleaning and rewiring of all hot runner systems - including complete bake-out
- Total system rebuild/reburbishment
- Re-configuration
- Operating training
- All machining capabilities
- Processing support

Cost-Effective Reconfiguration

When your process needs change, without a significant tooling change, we can adapt your hot runner to the new process. Whether it's a material switch, or a part design change, DME can help reconfigure your existing system.

Training Maximizes Productivity, Speeds Set-Up

The DME Hot Runner Service Center and technicians can provide comprehensive operator training from start-up to production processing. Our hands-on programs help your operators get up-to-speed, or stay current on hot runner technology.

Preventative Maintenance (PM)

It is important to protect and update your hot runner system to ensure it is running at the highest efficiency. The PM Program is designed to provide life cycle management of your systems and enhance equipment reliability by:

- Replacing worn components before they fail
- Maximizes system performance
- Reduces cost of replacement
- Ensures peak part quality
- Decreases system downtime
- Protects your investment

The PM Program can be set up either by system cycles or by scheduled PM

Rebuilds Ensure Performance

After tens of thousands of cycles you may have noticed your system just doesn't perform the way it used to. Or maybe you've run high-temperature engineered materials and the tolerances just aren't as tight. Key benefits of system rebuilds include:

- Cost savings of at least 40% as compared to new systems
- Extended life for your tool
- Maximizing system uptime and performance

Whether you need a total system rebuild, or a simple cleaning and inspection DME can help. System rebuilds can be performed on any brand of hot runner system and typically include:

- Complete bake-out cleaning
- Check and replace heaters and thermocouples
- Inspect and correct wiring
- Replace seals, bushings and other wear items
- Clean or replace nozzle components
- Check and validate all dimensions before re-assembling the system

Repairs Get You Back Up Quickly

Time is money. When a critical tool is out of commission, productivity is lost and production schedules can be threatened. We understand this at DME. That's why our team of hot runner technical specialists are always available to get you back in service.

Whether you're experiencing leaks, heating issues, flow problems, or would simply like a system bake-out, we'll repair your system quickly and cost-effectively.

Standard turnaround for repairs on systems from 1-12 drops (depending on parts availability for non-DME systems) is 5 working days or less. If your system has over 12 drops, contact us for an estimated turnaround time. And, we offer emergency 24-hour service.

Mold Tryouts

Our Technical specialists can also support your mold tryouts to optimize hot runner performance.

DME Obsolete Replacement Parts

REPLACEMENT PARTS FOR OBSOLETE
HOT RUNNER SYSTEMS & NOZZLES

Mini Gate-Mate® Nozzles

NOZZLE SUB-ASSEMBLY (ORDER TIP SEPARATELY)		INCLUDES				
		1	2		3	4
ITEM NUMBER	HEATER TYPE	NOZZLE BODY	HEATER	WATTS	THERMO-COUPLE	SEAL RING
GMB0110	CAST-IN	GMB0105	CIH0100	250	N/A (INTEGRAL)	EHR7155
GMB0118	SQUARE COIL	GMB0105	SCH0004	250	TCG0100	

1/2 SPH. RADIUS BUSHING SUB-ASSEMBLY	
ITEM NUMBER	HEATER TYPE
GMB0116	SQUARE COIL
GMB0111	CAST-IN

FLAT BUSHING SUB-ASSEMBLY	
ITEM NUMBER	HEATER TYPE
GMB0117	SQUARE COIL
GMB0112	CAST-IN

Mini Gate-Mate® Tips

Contact DME for tip recommendations and assistance with your application.

ITEM NUMBER	TIP STYLE
GMT0100	STANDARD
GMT4101	WEAR RESISTANT

Mini Gate-Mate Bushing Locating Ring

ITEM NUMBER
6548

Gate-Mate® 4 Nozzles and Tips

A	NOZZLE ASSEMBLY (INCLUDES GMT2 TIP)	NOZZLE SUB ASSEMBLY (TIP ORDERED SEPARATELY)	INCLUDES				
			1	2		3	4
			NOZZLE BODY	SQUARE COIL HEATER	WATTS	THERMO-COUPLE	SEAL RING
2.000	GMB0050	GMB0150	GMB0060	SCH0060	250	TCG0060	EHR7155
2.500	GMB0051	GMB0151	GMB0061	SCH0061	300	TCG0061	
3.000	GMB0052	GMB0152	GMB0062	SCH0062	350	TCG0062	
3.500	GMB0053	GMB0153	GMB0063	SCH0063	400	TCG0063	
4.000	GMB0054	GMB0154	GMB0064	SCH0064	425	TCG0064	
5.000	GMB0055	GMB0155	GMB0065	SCH0065	500	TCG0065	
6.000	GMB0056	GMB0156	GMB0066	SCH0066	500	TCG0066	

NOTES:
1. Items 1 thru 4 are available separately for replacement purposes
2. Items 2 is 240 VAC, 36" leads, 34" fiberglass lead protection
3. Item 3 is type J, with 36" leads, 34" fiberglass lead protection
4. Item 4 (for replacement) is sold in packs of 4 only

INCLUDES			
1	2		3
NOZZLE BODY	FRONT LOAD HEATER	WATTS	SEAL RING
GMB0060	SCH1060	250	EHR7155
GMB0061	SCH1061 SCH2061	300	
GMB0062	SCH1062 SCH2062	350	
GMB0063	SCH1063 SCH2063	400	
GMB0064	SCH1064 SCH2064	425	
GMB0065	SCH1065 SCH2065	500	
GMB0066	SCH1066 SCH2066	500	

NOTES:
1. Items 1, 2 and 3 are available separately for replacement purposes
2. Item 2 is 240 VAC, type J thermocouple, 36" leads, 34" Teflon lead protection
3. Item 3 (for replacement) is sold in packs of 4 only

Replacement Seal Rings

ITEM NUMBER
EHR7155

Gate-Mate® 4 Tips

TIP STYLE	TIP ITEM NUMBER	O DIA.	TIP LENGTH	TIP DIA.	HOLE DIA.
STANDARD	GMT2	.044 MIN.	1.730	.024	N/A
WEAR RESISTANT	GMT0400	.055 MIN.			
SUPER SHARP	GMT0301	.030 MIN.		.010	
SUPER SHARP WEAR RESISTANT	GMT0401	.055 MIN.			
THRU HOLE	GMT0302*	.030 MIN. .050 MAX	1.690	.090	.050
THRU HOLE WEAR RESISTANT	GMT0402*	.055 MIN.			
NO HOLE	GMT0303	.044 MIN.	1.730	.024	N/A

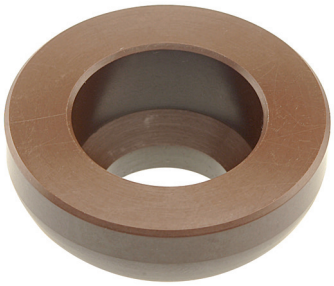
NOTES:
1. Thru hole tip is designed .040 shorter in length to be a direct replacement for the standard tip; use a .030 to .060 diameter gate
2. A .030 minimum diameter gate is recommended when using the super sharp tip
3. Contact DME for tip recommendations and assistance with your application

*Contact DME for details to modify thru hole tips for larger "O" diameters

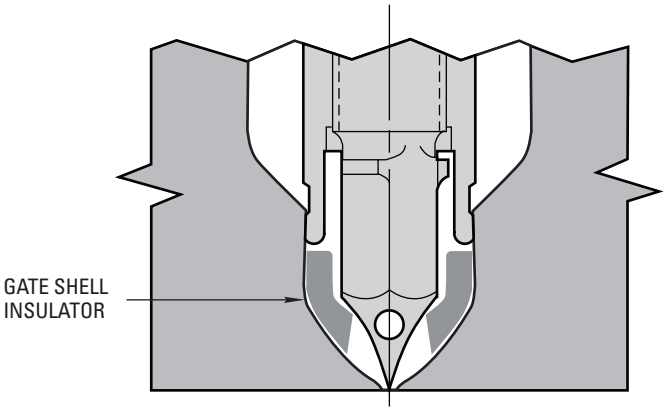
Gate Shell Insulators

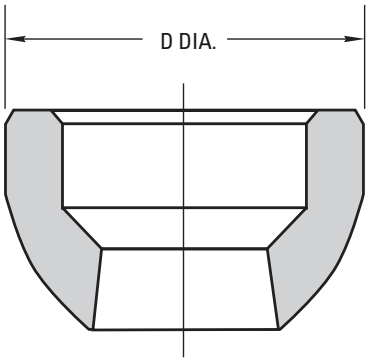
Gate Shell Insulators

- Improves insulation in the tip area
- Provides seal-off to eliminate material degradation in threaded area of tip
- Minimizes material in gate area to allow for faster color changes
- Withstands temperatures up to 550° F



Typical Application





FOR BUSHING OR NOZZLE STYLE	FOR TIP STYLE	ITEM NUMBER
Gate-Mate 4 Nozzle	Standard, Super Sharp, No Hole	GSI0001
	Thru Hole	GSI0002
Jumbo Gate-Mate Bushing or Nozzle	Standard	GSI0003
	Thru Hole	GSI0004
Medium Gate-Mate Bushing	Standard, Super Sharp, No Hole	GSI0005
	Thru Hole	GSI0006

D DIA.	ITEM NUMBER
.748	GSI0001
	GSI0002
1.248	GSI0003
	GSI0004
.748	GSI0005
	GSI0006

APPLICATION NOTES:

1. Use only with bushings, nozzles and tip styles shown in the reference chart above
2. Gate machining must be done according to DME specifications
3. Nozzle tip cannot be altered in any way for the Gate Shell Insulator to perform properly
4. If dissimilar resins are to be processed in the same mold, it is recommended that their processing temperatures be within a similar range
5. For best results, the outer surface of the tip should be free from all resin before the Gate Shell Insulator is installed or used

Components for Micro Cool One® Split Plate/Solid Block Designs

Thermocouple (T/C) Distributor Tube Heaters (240 VAC, T/C Type J, 34" Leads)

Distributed wattage heater design for more uniform temperature control. Sealed, flexible teflon covered leads to prevent lead damage and improve moisture resistance.

DIA (AMPS)*	ITEM NUMBER	OVERALL LENGTH	HEATED LENGTH	WATTS
.375 (10 AMP)	HCTC034	5.000	4.000	320
	HCTC0345	5.500	4.500	340
	HCTC035	6.000	5.000	400
	HCTC0355	6.500	5.500	430
	HCTC036	7.000	6.000	450
	HCTC0365	7.500	6.500	470
	HCTC037	8.000	7.000	480

DIA (AMPS)*	ITEM NUMBER	OVERALL LENGTH	HEATED LENGTH	WATTS
.375 (10 AMP)	HCTC0375	8.500	7.500	515
	HCTC038	9.000	8.000	550
	HCTC039	10.000	9.000	650
	HCTC0310	11.000	10.000	710
	HCTC0311	12.000	11.000	720
	HCTC0312	13.000	12.000	760
	HCTC0313	14.000	13.000	810

*(AMPS) = Amperage requirement for temp. control module.

Distributor Tubes

MATERIAL: AISI 4140 STEEL
HARDNESS: 28-35 HRC

ITEM NUMBER	LENGTH
HT050312	11.82
HT050316	15.76

End Cap

MATERIAL: AISI 4140 STEEL

ITEM NUMBER
EC1105

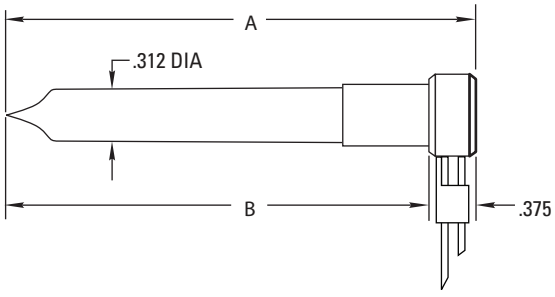
Components for Micro Cool One® Solid Block Designs

Auto-fixed® "Integral Heater" Micro Probes (240 VAC, T/C Type J, 48" Leads)

MATERIAL: AISI D-2 STEEL
HARDNESS: 50-55 HRC

ITEM NUMBER*	A	B	WATTS
AFIP331090	3.095	2.720	110
AFIP336090	3.595	3.220	130
AFIP341090	4.095	3.720	150
AFIP346090	4.595	4.220	170

NOTE: Probes are special order only



Replacement Thermocouple

ITEM NUMBER	LEAD LENGTH
TC9900	48"

Register Ring

MATERIAL: AISI H-13 STEEL
HARDNESS: 48-52 HRC
I.D. = .313
O.D.= 1.000

ITEM NUMBER*
RAF3062

*Package of 10.

The Cool One – Heated Nozzle Locator Replacement Parts

Heated Nozzle Locator Assemblies

HNL462 and HNL662 assemblies include:

- HNC46 or HNC66 core, respectively
- SSTC6290 heater
- HNS67 spacer

R	ITEM NUMBER
½	HNL462
	HNL472
¾	HNL662
	HNL672

HNL472 and HNL672 assemblies include:

- HNC47 or HNC67 core, respectively
- SSTC7290 heater
- HNS67 spacer

Cores

R	ITEM NUMBER
½	HNC46
	HNC47
¾	HNC66
	HNC67

CORE

Thermocouple Heaters

(240 VAC, 250 WATTS T/C type J 36" leads)

ITEM NUMBER	USED WITH CORES
SSTC6290	HNC46 & 66
SSTC7290	HNC47 & 67

HEATER

Spacer

ITEM NUMBER
HNS67

SPACER

ITEM NUMBER	R
NL6702	½
NL6703	¾

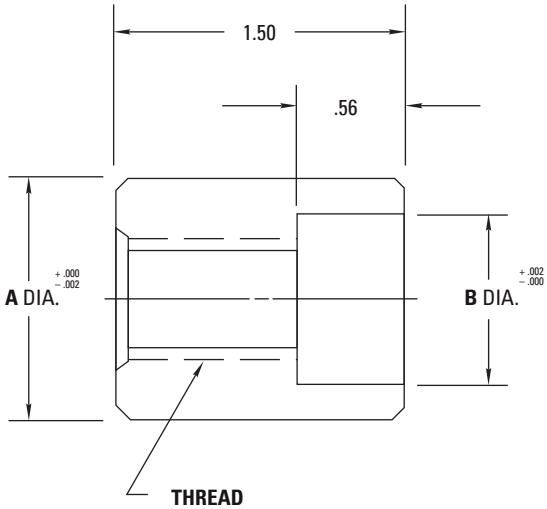
The Cool One – End Caps and Distributor Tubes

End Caps (for use with solid distributor block designs)

MATERIAL: AISI 4140 STEEL

End caps provide concentricity between distributor tube and distributor bore. Thread accommodates heater stop or lead wire protector.

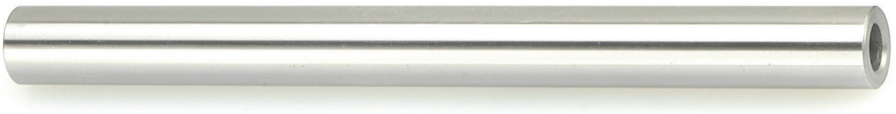
END CAPS FOR SPLIT PLATE DESIGNS: Moldmaker to supply to suit.

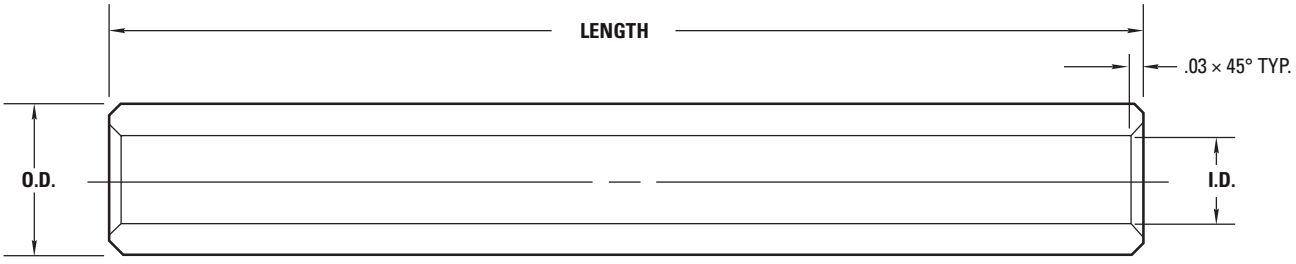


ITEM NUMBER	DIA. A	DIA. B	THREAD	USED WITH DIST. BORE/TUBE
EC1207	1.249	0.875	5/8"- 11	1.25 DIA./.87 O.D.
EC2015	1.999	1.625	3/4"- 10	2.00 DIA./1.62 O.D.

Distributor Tubes

MATERIAL: AISI P-20 STEEL
HARDNESS: 28-35 HRC





USED WITH 1.25 DIAMETER DISTRIBUTOR BORE/CHANNEL	
LENGTH	I.D. = .50 O.D. = .87 ITEM NUMBER
6"	HT07046
10"	HT070410
16"	HT070416
20"	HT070420
24"	HT070424
29"	HT070429
34"	HT070434

USED WITH 2.00 DIAMETER DISTRIBUTOR BORE/CHANNEL	
LENGTH	I.D. = .62 O.D. = 1.62 ITEM NUMBER
10"	HT150510
18"	HT150518
24"	HT150524
29"	HT150529
34"	HT150534
40"	HT150540
46"	HT150546

NOTES:

Stainless Steel Distributor Tubes available on special order for molding highly corrosive plastics materials.

The Cool One – Thermocouple Distributor Tube Heaters

Thermocouple (T/C) Distributor Tube Heaters

(240 VAC, T/C type J, 34" leads)

DIA. (AMPS)*	ITEM NUMBER	LENGTH	WATTS
.500 (10 AMP)	HCTC044	4"	380
	HCTC045	5"	500
	HCTC046	6"	600
	HCTC047	7"	700
	HCTC048	8"	820
	HCTC049	9"	920
	HCTC0410	10"	1030
	HCTC0411	11"	1140
	HCTC0412	12"	1250
	HCTC0413	13"	1350
	HCTC0414	14"	1460
	HCTC0415	15"	1570
	HCTC0416	16"	1680
	HCTC0417	17"	1780
	HCTC0418	18"	1900
	HCTC0419	19"	2010
	HCTC0420	20"	2110
	HCTC0421	21"	2220
	HCTC0422	22"	2330
	HCTC0423	23"	2400
	HCTC0424	24"	2400
	HCTC0425	25"	2400
	HCTC0426	26"	2400
	HCTC0427	27"	2400
	HCTC0428	28"	2400
	HCTC0429	29"	2400
	HCTC0430	30"	2400
.625 (10 AMP)	HCTC055	5"	620
	HCTC056	6"	750
	HCTC057	7"	880
	HCTC058	8"	1020
	HCTC059	9"	1160
	HCTC0510	10"	1300

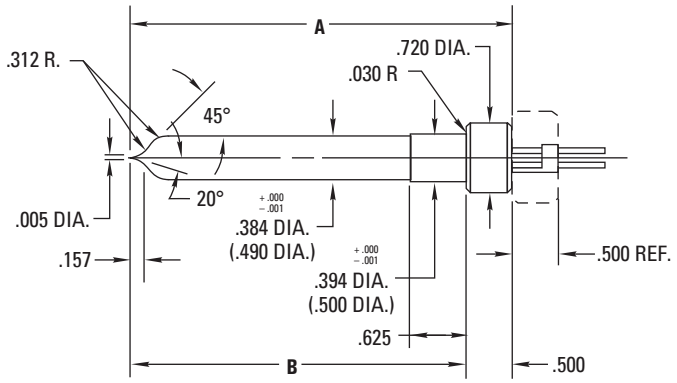
DIA. (AMPS)*	ITEM NUMBER	LENGTH	WATTS
.625 (10 AMP)	HCTC0511	11"	1430
	HCTC0512	12"	1570
	HCTC0513	13"	1700
	HCTC0514	14"	1840
	HCTC0515	15"	1980
	HCTC0516	16"	2110
	HCTC0517	17"	2250
	HCTC0518	18"	2390
.625 (15 AMP)	HCTC0519	19"	2520
	HCTC0520	20"	2660
	HCTC0521	21"	2800
	HCTC0522	22"	2930
	HCTC0523	23"	3070
	HCTC0524	24"	3200
	HCTC0525	25"	3340
	HCTC0526	26"	3480
.625 (30 AMP)	HCTC0527	27"	3620
	HCTC0528	28"	3750
	HCTC0529	29"	3900
	HCTC0530	30"	4020
	HCTC0531	31"	4160
	HCTC0532	32"	4300
	HCTC0534	34"	4570
	HCTC0535	35"	4710
	HCTC0536	36"	4840
	HCTC0537	37"	4980
	HCTC0538	38"	5120
	HCTC0539	39"	5250
	HCTC0540	40"	5390
	HCTC0541	41"	5520
	HCTC0542	42"	5520
	HCTC0543	43"	5520
	HCTC0544	44"	5520

*(AMPS) Amperage requirement for temperature control module.

NOTE: Heaters should be at least 2" shorter than distributor tube length in mold design.

Auto-Fixed™ "Integral Heater" Probes (240 VAC, T/C Type J Grounded, 48" Leads)

MATERIAL: AISI D-2 STEEL **HARDNESS: 50-55 HRC**



Important: Dimensions shown in parentheses apply to larger probes AFIP5372 thru 622 only. Tolerances shown also apply to dimensions in parentheses.

ITEM NUMBER**		AFIP4 SERIES PROBES .394 (10 mm) DIAMETER		
STRAIGHT EXIT LEADS	90° EXIT LEADS	A DIM.	B DIM.	WATTS
AFIP4322	AFIP432290	3.220	2.720	135
AFIP4372	AFIP437290	3.720	3.220	160
AFIP4422	AFIP442290	4.220	3.720	185
AFIP4472	AFIP447290	4.720	4.220	210

**Includes probe, integral heater, thermocouple, adjustment ring and hold down nut.

AVAILABLE WITH STRAIGHT OR 90° EXIT HEATER LEADS

NOTE: Probes are special order only

These probes feature a swaged in heating element which is an integral part of the probe. A separate replaceable thermocouple is installed in each probe as supplied. The integral heater design provides highly efficient heat transfer, uniform heat distribution and is guaranteed for one year.

ITEM NUMBER**		AFIP5 SERIES PROBES .500 (12.9 mm) DIAMETER		
STRAIGHT EXIT LEADS	90° EXIT LEADS	A DIM.	B DIM.	WATTS
AFIP5372	AFIP537290	3.720	3.220	200
AFIP5422	AFIP542290	4.220	3.720	230
AFIP5472	AFIP547290	4.720	4.220	265
AFIP5522	AFIP552290	5.220	4.720	295
AFIP5572	AFIP557290	5.720	5.220	325
AFIP5622	AFIP562290	6.220	5.720	360

Replacement Thermocouples

(ALL PROBES)

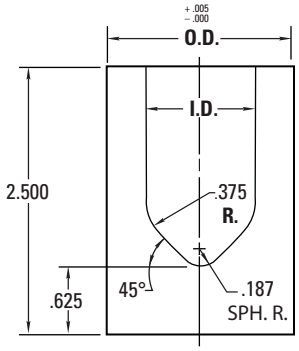
ITEM NUMBER	LEAD LENGTH
TC9900	48"

Gate Inserts

MATERIAL: AISI S-7 STEEL (pre-hardened)

HARDNESS: 30-34 HRC

Hardness can be increased to a higher value by heat treatment, if desired.

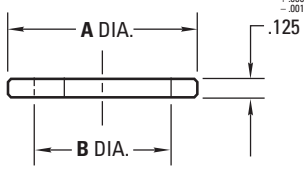


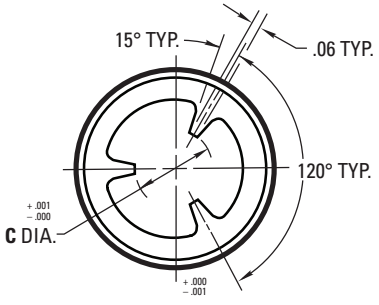
ITEM NUMBER	O.D.	I.D.	USED WITH
AFGI04N	1.625	.875	AFIP4 SERIES
AFGI10N	1.750	1.000	AFIP5 SERIES

Register Rings

MATERIAL: AISI H-13 STEEL

HARDNESS: 48-52 HRC

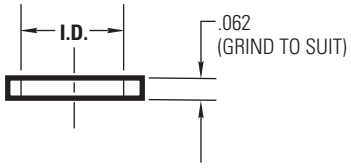




ITEM NUMBER	A DIM.	B DIM.	C DIM.	USED WITH
AFRR04N	1.062	.865	.387	AFIP4 SERIES
AFRR05N	1.187	.937	.493	AFIP5 SERIES

Adjustment Rings

(Packaged with all probes)



ITEM NUMBER†	I.D.	USED WITH
RAF4062	.469	AFIP4 SERIES
RAF5062	.565	AFIP5 SERIES

†Bag of 5 rings.

Hold-Down Nut

(Packaged with all probes)

THICKNESS = .500
THREAD = 1"- 8
HEX FLAT = 9/16

ITEM NUMBER
AFN100

Hold-Down Nut Wrench*

ITEM NUMBER
WR916

*Required for straight exit leads only.

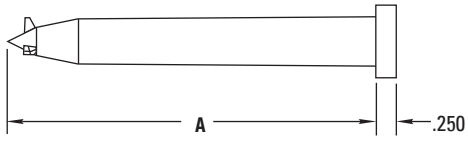
The Cool One – Probes and Probe Heaters

Auto-Fixed™ Probes (3" to 6" long)

MATERIAL: AISI D-2 STEEL
HARDNESS: 50-55 HRC

LENGTH A	ITEM NUMBER **
2.893	AFP310
3.625	AFP410
4.625	AFP510
5.609	AFP610

**Includes probe, stop sleeve and hold down nut only.



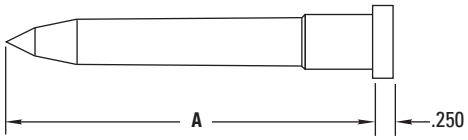
These finned style Auto-Fixed probes employ a precision engineered tip configuration that automatically "fixes" the relationship between probe tip and gate, centering the probe and limiting tip protrusion into the gate. Thermocouple heaters are guaranteed for one year as detailed under the heater chart below. Gate inserts (shown on next page), pre-machined for use with these probes, can save valuable machining time and help assure optimum probe performance.

Auto-Fixed™ Finless Probes (3" to 6" long)

MATERIAL: AISI D-2 STEEL
HARDNESS: 50-55 HRC

LENGTH A	ITEM NUMBER **
2.893	AFPN310
3.625	AFPN410
4.625	AFPN510
5.609	AFPN610

**Includes probe, stop sleeve and hold down nut only.



These finless style Auto-Fixed probes are available in the same sizes as the finned probes above and also in lengths up to 10". An optional register ring is available to provide added stability at the probe tip if desired. As with the finned probes, thermocouple heaters are guaranteed for one year and pre-machined gate inserts are available.

NOTE: Due to minimum distance requirements specified, the AFPO310 and AFPN310 probes cannot be used in a Cool One system. They may, however, be used in an insulated runner system.

Thermocouple (T/C) Probe Heaters†

(.250 diameter, 240 VAC, T/C type J grounded, 34" leads)

ITEM NUMBER	FOR PROBE	WATTS	LENGTH
AFTC2132	AFP(N)310	150	3.00
AFTC2142	AFP(N)410	220	3.75
AFTC2152	AFP(N)510	275	4.75
AFTC2162	AFP(N)610	350	5.75

Non-Thermocouple Probe Heaters

(.250 diameter, 240 VAC, 34" leads)

ITEM NUMBER	FOR PROBE	WATTS	LENGTH
AFC2132	AFP(N)310	150	3.00
AFC2142	AFP(N)410	220	3.75
AFC2152	AFP(N)510	275	4.75
AFC2162	AFP(N)610	350	5.75

†Thermocouple (T/C) Probe Heaters are guaranteed for one year from date of shipment.

Accessories/Replacement Parts for 3" to 6" Long Auto-fixed Probes

See design and machining guidelines at the end of this Internally Heated Hot Runner Systems section.

Hold-Down Nut

(Packaged with all probes)

Thickness = .50
Thread = 1"-8
Hex Flat = 9/16

ITEM NUMBER
AFN100

Stop Sleeve

(Packaged with all probes)

Length = 1.375
Thread = 3/8"-24
Dia. = .375

ITEM NUMBER
AFSS38

Register Ring

(For Finless Probes Only)

AISI H-13 STEEL
48-52 HRC
I.D. = .562
O.D. = 1.375
Thickness = .125

ITEM NUMBER
AFRR10N

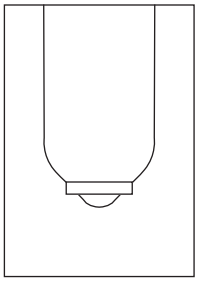
Gate Inserts

MATERIAL: AISI S-7 STEEL (pre-hardened)
HARDNESS: 30-34 HRC

Hardness can be increased to a higher value by heat treatment, if desired.

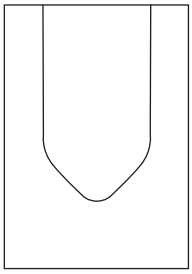
I.D. = 1.000 O.D. = 1.750 Height = 2.500

ITEM NUMBER	FOR PROBE
AFGI10	AFP310 thru 610
AFGI10N	AFPN310 thru 610



AFGI10

Gate inserts are supplied premachined. See design and machining guidelines at the end of this Internally Heated Hot Runner Systems section.



AFGI10N

Adjustment Rings

For simplified counterbore depth adjustment (No change from previous rings).

I.D. = .687 O.D. = .868

ITEM NUMBER*	THICKNESS
RAF002	.002
RAF003	.003
RAF005	.005
RAF007	.007
RAF032	.032
RAF062	.062
RAF125	.125

*Package of 10.

Replacement Thermocouple (T/C) And Non T/C Heaters

FOR DISCONTINUED AUTO-FIXED PROBES AFP300, 400, 500, 600
(.250 diameter, 240 VAC, T/C type J grounded, 36" leads)

While the original Auto-Fixed probes (AFP300, 400, 500, 600) have been replaced with the AFP310 thru 610 series, replacement heaters for these previous probes are still available as detailed here.

T/C HEATERS ITEM NUMBER	NON T/C HEATERS ITEM NUMBER	FOR PROBE	WATTS	LENGTH
AFTC2022	AFC2022	AFP300	200	2"
AFTC2032	AFC2032	AFP400	300	3"
AFTC2042	AFC2042	AFP500	375	4"
AFTC2052	AFC2052	AFP600	475	5"

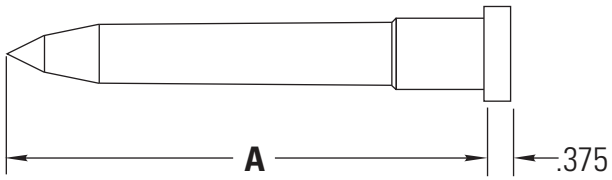
Auto-Fixed™ Finless Probes (7" to 10" long)

MATERIAL: AISI D-2 STEEL
HARDNESS: 50-55 HRC

These longer probes are ideal for larger molds or gating into deeper cavity configurations. The optional register ring shown below may be used to provide added stability at the probe tip if desired. Thermocouple heaters are guaranteed for one year as detailed under the heater chart below.

LENGTH A	ITEM NUMBER**
7.000	AFPN720
8.000	AFPN820
9.000	AFPN920
10.000	AFPN1020

**Includes probe, stop sleeve and hold down nut only.



Hold-Down Nut

(Packaged with all probes)

Thickness = .50
Thread = 1¼"-12
Hex Flat = 5/8

ITEM NUMBER
AFN125

Stop Sleeve

(Packaged with all probes)

Length = 1.375
Thread = 1/2"-20
Dia. = .500

ITEM NUMBER
AFSS12

Register Ring

AISI H-13 STEEL
48-52 HRC
I.D. = .693
O.D. = 1.500

ITEM NUMBER
AFRR20N

Thermocouple (T/C) Probe Heaters†

(.375 diameter, 240 VAC, T/C type J grounded, 46" leads)

ITEM NUMBER	FOR PROBE	WATTS	LENGTH
AFTC3272	AFPN720	645	7.15
AFTC3282	AFPN820	760	8.15
AFTC3292	AFPN920	870	9.15
AFTC32102	AFPN1020	980	10.15

†Thermocouple (T/C) Probe Heaters are guaranteed for one year from date of shipment.

Gate Insert

MATERIAL: AISI S-7 STEEL (pre-hardened)
HARDNESS: 30-34 HRC

Hardness can be increased to a higher value by heat treatment, if desired.

I.D. = 1.125 O.D. = 2000 Height = 2.500

ITEM NUMBER
AFGI20N

Adjustment Rings

Moldmaker to supply to suit (.990 O.D., .820 I.D.)

Modular Components Deliver High-Performance Solutions

Today's increasingly feature-packed plastic products benefit tremendously from the right hot runner solution. Increasing resin costs and the complexity of engineered materials only compound this challenge. From hot sprue bushings to turnkey hot halves, DME offers a wide range of solutions to almost any molding application.

Get the modular advantage with DME hot runner systems

DME's newest family of hot runner systems are built on an architecture of modular components so we can quickly custom configure a system that is ideal for your application. With the tremendous time pressures on moldmakers today, our modular architecture enables industry-leading delivery times. This modular approach shortens delivery, improves cost-effectiveness and optimizes performance. DME's Meteor and Stellar hot runner systems offer standardized products, custom-configured to each application in only a few days.

Our dedicated team of application engineers works to understand the critical variables of your molding equation.

Here are a few areas in which our global capabilities make hot runner solutions more efficient and more economical.

Micromolding solutions

As plastic parts get smaller and more complex, micromolding solutions become more challenging. DME Stellar Hot Runner Systems were designed for the demands of very small part molding with engineered or commodity materials. The Stellar hot runner system is available for applications with center-to-center dimensions as close as 17mm.

Application engineered solutions

As an industry leader in hot runner systems, DME is able to offer our customers a comprehensive resource for hot runner solutions. Our dedicated team of application engineers works to understand the critical variables of your molding equation and engineer a hot runner system solution that is optimal for your project.

Powerful custom manufacturing capabilities

For more complex, custom and even high cavitation applications, DME offers extensive manufacturing capabilities enabling complete, custom solutions. For example, turnkey hot half systems — fully assembled, wired, and electrically tested — are ready to drop in with no machining and minimal installation demands.

DME®

DME

CONTROL SYSTEMS

Table of Contents

Smart Series® TSP™ Temperature Control System Series

POWERFUL, FLEXIBLE
AND AFFORDABLE

TSP Features and Benefits

The TSP™ Temperature Control System optimizes injection molding performance of any hot runner system with the advanced features of a touch screen unit but within a minimal footprint.

Benefits

TSP USER-FRIENDLY PERFORMANCE

- Intuitive, leading edge touch screen display with adjustable viewing angle
- Automatically employed diagnostics to ensure optimal hardware configuration and performance
- Advanced micro controller technology
- Continuous ground fault and current measurement

- PLUG-AND-PLAY SYSTEM ARCHITECTURE
  - Patented "all-in-one" control card designed for reliability
  - Modular 6-zone cards; 15 amps per zone
  - Field calibration mode
  - Universal power supply

- OPTIMIZES PERFORMANCE FOR ALL HOT RUNNER SYSTEMS
  - Unique low voltage soft-start feature maximizes heater life
  - Uniform startup feature reduces scrap and energy usage
  - Proprietary adaptive auto-tuning control algorithm
  - Phase angle or burst firing modes (time proportional, zero-crossing)
  -
- ROBUST, HIGH-QUALITY DESIGN
  - Compact solid metal enclosure with heavy-duty industrial connectors
  - Mold and controller protection features
  - On-board heater and thermocouple fuses
  - Portable stand available

OPTIONAL 7" DISPLAY WITH ADVANCED FEATURE SET NOW AVAILABLE!

IMPORTANT NOTICE: TSP Controllers are not designed to control all zones as manifold zones. Doing so will cause the main circuit breaker to trip.

TSP Specifications

Certification available

Specifications

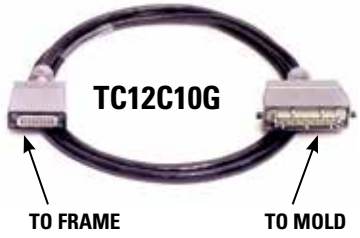
TSP™ TEMPERATURE CONTROL SYSTEM SPECIFICATIONS	
User Interface	Full-color LCD touch screen on all HMI models
Display Size	5.7" QVGA
Calibration Accuracy	0.5˚C / 1˚F
Control Accuracy	+/- 0.5˚C / 1˚F
Power Response Time	8.3 ms at 60 Hz
Control Algorithm	Adaptive PID ² with auto-tuning
Degree (F or C)	Software selectable
Thermocouple	J- or K-Type, software selectable
Operating Range	0 - 472˚C or 32 - 882˚F
Output Voltage	Maximum 264 VAC
Supply Voltage	200/240 Delta or 380/440V 3Ø Star
Supply Breaker	40A 3-phase breaker for 6- and 12-zone control units 63A 3-phase breaker for 18- to 48-zone control units
Frequency	50 - 60 Hz automatic switching
Ambient Temperature Range	5 - 45˚C (41 - 113˚F)
Humidity Range	Up to 95% non-condensing
Ground Fault Detection	40mA per zone
Power Control	Phase angle or burst firing modes (time proportional, zero-crossing)
Overload Protection	Semi-conductor fuses on both heater legs
Control Modes	Closed loop (auto), open loop (manual), standby, boost mode and slave mode
Alarm Output	Closing contact relay, max. 5A, 230V
T/C and Power Connector	HAN 24e or 3
LED Indicators	Fault, Scan
Soft-Start with Auto-Tune	Unique low voltage method for heater safety
Input Protection	Plug-in nano fuses on both TC legs
Port (optional)	USB

ITEM NUMBER	SLOTS	# OF ZONES	AVAILABILITY
ITS-06-15	1	6	Special order; contact DME
ITS-12-15	2	12	In stock
ITS-18-15	3	18	Special order; contact DME
ITS-24-15	4	24	In stock
ITS-30-15	5	30	Special order; contact DME
ITS-36-15	6	36	Special order; contact DME
ITS-42-15	7	42	Special order; contact DME
ITS-48-15	8	48	In stock

TSP Component Ordering Information

Mold Power Cables (15 AMP Max)

ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	NUMBER OF ZONES (MAX.)	FROM 15 AMP FRAME (S)	TO POWER INPUT CONNECTOR
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG		FOR CONNECTIONS	
MPC12C10G	MPC12C20G	MPC12C30G	12	12 ZONE	PIC12G



Thermocouple Cables (for 15 or 30 AMP Mainframes)

ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	NUMBER OF ZONES (MAX.)	FROM 15 AMP FRAME (S)	TO THERMOCOUPLE CONNECTOR
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG		FOR CONNECTIONS	
TC12C10G	TC12C20G	TC12C30G	12	12 ZONE	MTC12G

ZONES	CONTROLLER	CABLES	TERMINAL MOUNTING BOX
12 ZONES OF CONTROL (15 AMP)	 ITS-12-15	+ MPC12C10G (1 each) + TC12C10G	PTC12TBTS  (1 each)
24 ZONES OF CONTROL (15 AMP)	 ITS-24-15	+ MPC12C10G (2 each) + TC12C10G	PTC12TBTS  (2 each)
48 ZONES OF CONTROL (15 AMP)	 ITS-48-15	+ MPC12C10G (4 each) + TC12C10G	PTC12TBTS  (4 each)

ITEM
ITSTROLLEY

Module Replacement Fuses

(sold in packs of 5)

ITEM NUMBER	DESCRIPTION	AMPS
RPM0123	POWER FUSE	15
RPM0124	TC FUSE	.062

RPM0124

TSP Plus Temperature Control System

Everything you loved about the original TSP controller with new enhanced features for optimal control.

- Automatic Leak detection
- Enhanced 7” Color Touch screen
- Storage : up to 100 Tools
- Full IO function card with 4 input + 4 output for communication
- Optional Thermocouple to monitor steel temperature and alarm if cooling is off
- Accuracy 0.01 ºF
- Ability to control Small Mass / High Watt density nozzles
- Field selectable PID (parameters) to optimize control process
- APS technology (Adaptive Process System)
- SPI communication Protocol via RS232/RS485 included

ITEM NUMBER	SLOTS	# OF ZONES
ITSP-12-15	2	12
ITSP-24-15	4	24
ITSP-48-15	8	48

Custom zone configurations available upon request

ITEM NUMBER	DESCRIPTION
ITSCGR-A	PCB replacement card, 6 zones @ 15 AMP

See reverse side for accessories

SMART SERIES USER-FRIENDLY PERFORMANCE

- Intuitive, leading edge touch screen display with adjustable viewing angle
- Automatically employed diagnostics to ensure optimal hardware configuration and performance
- Advanced micro controller technology
- Continuous ground fault and current measurement

PLUG-AND-PLAY SYSTEM ARCHITECTURE

- Patented “all-in-one” control card designed for reliability
- Modular 6-zone cards; 15 amps per zone
- Field calibration mode
- Universal power supply

OPTIMIZES PERFORMANCE FOR ALL HOT RUNNER SYSTEMS

- Unique low voltage soft-start feature maximizes heater life
- Uniform startup feature reduces scrap and energy usage
- Proprietary adaptive auto-tuning control algorithm
- Phase angle or burst firing modes (time proportional, zero-crossing)

ROBUST, HIGH-QUALITY DESIGN

- Compact solid metal enclosure with heavy-duty industrial connectors
- Mold and controller protection features
- On-board heater and thermocouple fuses
- Portable stand available

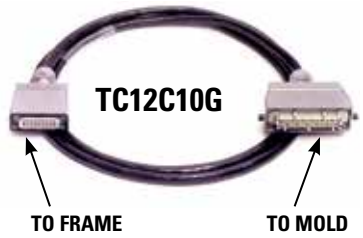
IMPORTANT NOTICE: Smart Series Controllers are not designed to control all zones as manifold zones. Doing so will cause the main circuit breaker to trip.

CE Certification available

TSP Plus Component Ordering Information

Mold Power Cables (15 AMP Max)

ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	NUMBER OF ZONES (MAX.)	FROM 15 AMP FRAME (S)	TO POWER INPUT CONNECTOR
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG		FOR CONNECTIONS	
MPC12C10G	MPC12C20G	MPC12C30G	12	12 ZONE	PIC12G



Thermocouple Cables (for 15 or 30 AMP Mainframes)

ITEM NUMBER	ITEM NUMBER	ITEM NUMBER	NUMBER OF ZONES (MAX.)	FROM 15 AMP FRAME (S)	TO THERMOCOUPLE CONNECTOR
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG		FOR CONNECTIONS	
TC12C10G	TC12C20G	TC12C30G	12	12 ZONE	MTC12G

ZONES	CONTROLLER	CABLES	TERMINAL MOUNTING BOX
12 ZONES OF CONTROL (15 AMP)	 ITSP-12-15	+ MPC12C10G (1 each) + TC12C10G	+ PTC12TBTS  (1 each)
24 ZONES OF CONTROL (15 AMP)	 ITSP-24-15	+ MPC12C10G (2 each) + TC12C10G	+ PTC12TBTS  (2 each)
48 ZONES OF CONTROL (15 AMP)	 ITSP-48-15	+ MPC12C10G (4 each) + TC12C10G	+ PTC12TBTS  (4 each)

ITEM
ITSPTROLLEY

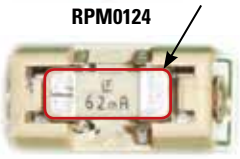
ITEM
ITSPALRMLT

Module Replacement Fuses

(sold in packs of 5)

ITEM NUMBER	DESCRIPTION	AMPS
RPM0123	POWER FUSE	15
RPM0124	TC FUSE	.062

RPM0124



Smart Series®

ROHS/WEEE-COMPLIANT

TEMPERATURE CONTROLS

FOR HOT RUNNER SYSTEMS

RoHS/WEEE Compliant
Advanced Temperature Control for Hot Runner Systems

Capability/RoHS and WEEE Compliant

DME offers 2-, 5-, 8-, and 12-zone standard mainframes for 15A operation and 1-, 2-, 3-, and 5-zone standard mainframes for 30A operation. Components listed in this catalog satisfy all international compliances. This includes RoHS (Restriction of Hazardous Substances) that prohibits or restricts the use of six potentially harmful materials in electronic equipment, and WEEE (Waste Electrical and Electronic Equipment) that requires equipment made after August 2005 to be taken back and recycled by the manufacturer, rather than just "thrown away."

Two-Year Warranty

All DME temperature controllers are now covered by a two-year warranty, excluding fuses and triacs.

Electrical Noise Immunity

To enhance immunity from electrical noise, power and thermocouple wire are harnessed in separate wire ways within the body of the frame. Additional noise immunity is provided through the use of shielded thermocouple wires.

The DME Smart Series® is the result of intensive and dedicated research with a goal of designing today's most versatile and reliable line of temperature controllers. DME achieved this goal by not only incorporating the latest technology, but by also making certain that each controller is easy to install and above all…easy to operate.

Heavy Duty Welded Construction

With years of experience behind its design, the Smart Series line is built to last under the most rigorous conditions. The mainframe's welded 16 gauge steel construction ensures long life and peak performance. Cooling fans in the frame are strategically located to increase air ventilation, maintain cooler running conditions, and promote control module reliability.

CE COMPLIANT! DME Mainframes and Modules comply with Electromagnetic compatibility and low voltage directives

SSM1512

Control Modules

SSM (15 and 30 AMP): The SSM module provides accurate temperature control, including Smart Start® heater dry out circuitry, thermocouple fault displays and auto/manual modes of operation. The SSM features automatic or manual bumpless transfer which, in the event of a thermocouple fault, provides switch over to manual mode at the proper power setting to continue molding until the fault can be corrected. This module can also trigger remote standby heat (idle), boost, off, and alarm functions when used with the TAS module.

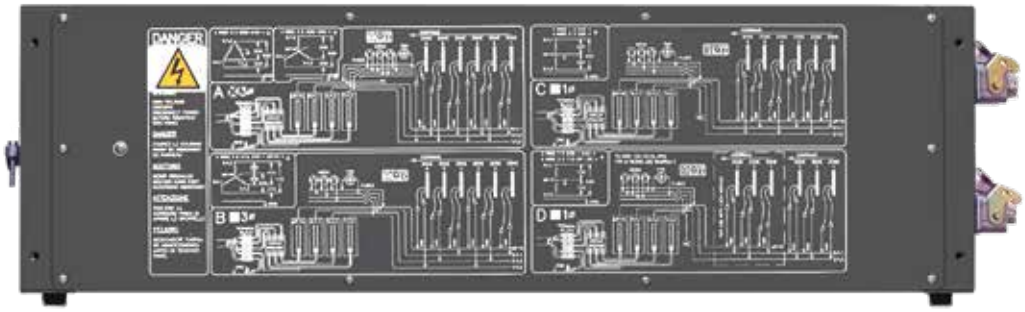
DSS (15 and 30 AMP): For those who require independent dual displays for process and setpoint temperatures, the DSS is the ideal choice. The DSS module also features automatic or manual bumpless transfer. This module is also fully compatible with the TAS module for standby heat and alarm functions.

Accessory Modules

TAS: The TAS module provides over/under visual and audible alarms, boost, and standby heat control with control modules as stated above. The TAS module can accommodate up to 63 zones of control. Alarm is activated at ± 30° F. See pages 143-144 for details.

NOTE: The TAS accessory module requires the use of "MFC" style communications mainframes. Non-communications frames may be upgraded on-site with installable kits.

DSS1512



Simplified Power Hook-Up

Concern for user convenience didn't stop with improved operation features. DME went one step beyond to ensure that the power hook-up procedure goes smoothly as well. For this reason, detailed schematics for various hook-ups are provided directly on all mainframe back panels. If it is ever necessary to change the configuration, these diagrams will help ensure safe and proper connections. All wiring diagrams can be referenced at the end of this section.

SSH Controller (10 AMP)

The SSH is a stand-alone single zone controller ideal for use with hot sprue bushings or machine nozzles.

SSH1022

Smart Series® Temperature Control Systems

1. Mainframe
2. Circuit Breaker/Disconnect
3. Mold Power Cable
4. Thermocouple Cable
5. Mold Power Input Connector
6. Insulated Crimp Connector
7. Thermocouple Connector
8. Terminal Mounting Boxes
9. Mainframe Blank Panels
10. Module Replacement Fuses
11. Control Modules

Typical System Configurations

SSM1512
DSS1512

5 Zones of Control (15 AMP)

X5

MFP5G

MPC5C10G

TC5C10G

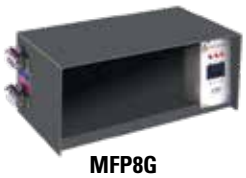
PTC5TBTS

MFS512G

SSM1512
DSS1512

8 Zones of Control (15 AMP)

X8



MFP8G

MPC8C10G

TC8C10G

PTC8TBTS

MFS512G

SSM1512
DSS1512

12 Zones of Control (15 AMP)

X12

MFP12G

MPC12C10G

TC12C10G

PTC12TBTS

MFS512G

SSM3012
DSS3012

2 or 3 Zones of High Power Control (30 AMP)

X2 or 3X

MFHP2G
MFHP3G

MPCH23C10G

TC5C10G

MTC5G

PICH23G

PTCH23TBG

MFS512G

SSM3012
DSS3012

5 Zones of High Power Control (30 AMP)

X5

MFHP5G

MPCH5C10G

TC5C10G

MTC5G

PICH5G

PTCH5TBG

MFS512G

RoHS/WEEE Compliant
Smart Series® Single Zone Temperature Controller

SSH1022/21 (10 AMP)

- **Compact**
- **Easy-to-use**
- **Includes new, improved and unique features**
- **Provides microprocessor- based PID control**
- **More accurate than analog or variac controllers**
- **Built-in thermocouple diagnostics**
- **Ideal for use with a hot sprue bushing or a machine nozzle**

Key Features

- **Large Digital Display**
  - For easier readability of temperature, % power and faults
- **Setpoint Pushwheel**
  - For setting desired setpoint temperature
  - Allows adjustment of setpoint before turning power on
- **AUTO % Power Display**
  - Shows % power output while in AUTO mode
  - Indicates average % power requirement on thermocouple failure
  - A diagnostic tool for solving problems

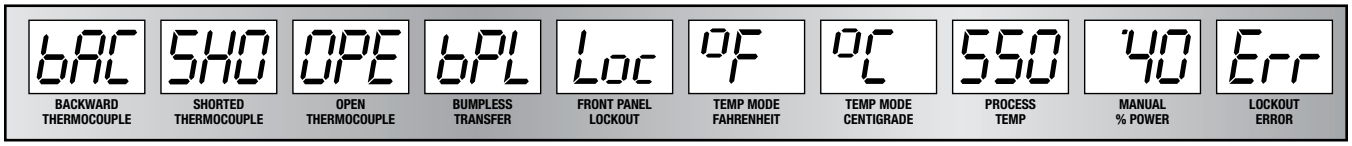
Switchable Options

- **Shorted Thermocouple Sensitivity Adjustment**
  - Operation can be tailored to fast or slow reaction times
  - Sensitivity can be adjusted with internal switches
  - Very useful for zones with long startup times
- **Switchable °C/°F Operation**
  - Scale indicated at startup
- **K Type Thermocouple Support**
- **Cut Feature**
  - Gain cut feature for small nozzles and heaters with ungrounded internal thermocouples

Operational Refinements

- **Improved SmartStart®**
  - A more gradual temperature rise leads to a more effective heater dry out period, thereby extending heater life
  - SmartStart® now available as an option in manual mode
- **SelectiveCycle®**
  - A very high speed power output approach
  - Enables accurate temperature control and longer heater life
- **Bumpless Transfer**
  - When a thermocouple failure occurs, operation is automatically continued with a learned % power
  - Unique software accurately assigns percent power setting
- **Third Fuse**
  - Allows for display of low temperature alarm when the load fuses are blown

Front Panel Digital LED Indicators



RoHS/WEEE Compliant
Smart Series® Single Zone Temperature Controller

SSH1022/21 (10 AMP)

Controller includes 19-foot power cord, mating mold power and thermocouple connector (CKPTM1) and two spare fuses (ABC10). Additional cables and/or connectors must be ordered separately. See Page 121 for detailed information on cables and connectors.
Warranty: Two year (excluding triac and fuses).

CONTROLLER ITEM NUMBER	VOLTS (VAC)
SSH1022	240
SSH1021	120

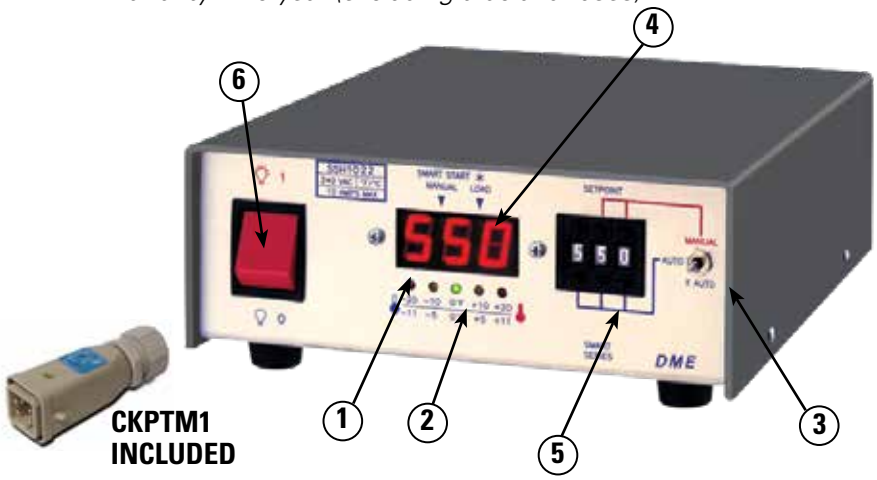
CABLE* ITEM NUMBER	LENGTH (FEET)
MPTC10	10
MPTC20	20

See page 119

MOLD POWER AND THERMOCOUPLE CONNECTOR* ITEM NUMBER
CKPTIC1

See page 119

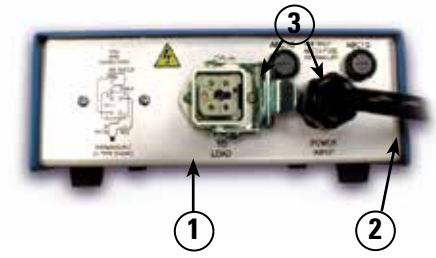
*** ITEMS ORDERED SEPARATELY**



Front Panel Controls and Indicators

1. **Process Temperature Display:**
   Shows process temperature, thermocouple faults and other operational modes. Displays % power when switch (3) is pressed down.
2. **Temperature Deviation Lights:**
   Indicates deviation from setpoint. Outer lights blink at more than ±40°F (22°C) from setpoint.
3. **Auto / Manual / % Auto Power Switch:**
   Selects AUTO or MANUAL control mode. Shows % power when pressed into "% AUTO" position.
4. **LED Mode Indicators:**
   Left LED illuminates during manual mode. Right LED illuminates when power is supplied to heater. Right LED blinks during SmartStart®.
5. **Setpoint Pushwheel:**
   Three digit switch programs setpoint in AUTO mode. Right two digits program % power in MANUAL mode.
6. **Power On/Off Switch:**
   Controls AC power to module.

Rear Panel



1. **Mold Power and Thermocouple Output Connector:**
   CKPTIC1 connects to the heater and thermocouple. Mating connector CKPTM1 is supplied with controller.
2. **Power Input Cord:**
   Nineteen foot cord supplies power to controller. Plug supplied with SSH1021 (120 VAC) units. No plug supplied with SSH1022.
3. **Load Fuse Receptacles:**
   Provides safe and easy replacement of load fuses.

RoHS/WEEE Compliant
Smart Series® Single and 2-Zone Mainframes (10 AMP max.)

MFP1G
MFP1G1

A: AC2024F (Power to Mainframe); AC1512F supplied with MFP1G1

B: CKPTM1 (Connector to heater)

This single-zone controller is ideal for use with Straight-Shot and Gate-Mate hot sprue bushings.

MFPR2G

A: AC2024F (Power to Mainframe)

B: CKPTM1 (Connector to heater)

Single zone, horizontal 10 amp controllers (SSH1022/21) also available. See page 116

DIMENSIONS
(all frames)
7"W x 9"H x 10"D
(9"H dimension does not include connectors or handle)

Single and Two-Zone 10 AMP Mainframes

The DME Portable 10 AMP Mainframes are designed for use with 10 or 15 AMP* Smart Series or G-Series Temperature Control Modules. Mainframe is supplied with power input and power-thermocouple output connectors. Circuit breaker provides safety for operation. Control modules and cables are to be ordered separately.

NOTE: Maximum safe operating amperage is 10 AMPS per zone when using 15 AMP modules. If application will draw more than 10 AMPS per zone, use 15 AMP Mainframe (MFFPR2G).

*User must install ABC10 (10 AMP) fuses in the 15 AMP control modules to protect the mainframe.

Single and Two-Zone 10 AMP Mainframes (50-60 Hz, single phase)

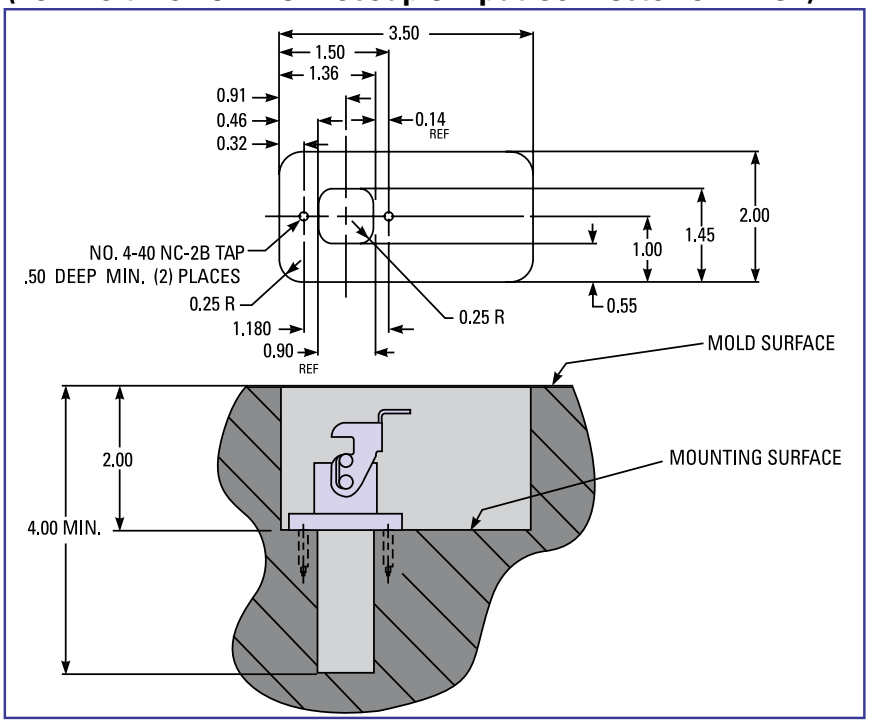
ZONES	ITEM NUMBERS **	VOLTS	WATTS PER ZONE	CONNECTORS SUPPLIED
1	MFP1G1	120	1200	(1) AC1512F (POWER IN) (1) CKPTM1 (POWER-T/C OUT)
1	MFP1G	240	2400	(1) AC2024F (POWER IN) (1) CKPTM1 (POWER-T/C OUT)
2	MFPR2G	240	2400	(1) AC2024F (POWER IN) (1) CKPTM1 (POWER-T/C OUT)

**Includes frame and connectors listed. Modules and cables ordered separately.

NOTE: Replacement power connectors in frame are also available on special order.

Recommended Mold Pocket Layout

(For Mold Power-Thermocouple Input Connector CKPTIC1)



RoHS/WEEE Compliant: Smart Series® Single and 2-Zone Mainframe Accessories (10 AMP)

For Use With MFP1G, MFP1G1, MFPR2G, SSH1022 and SSH1021

Mold Power-Thermocouple Input Connector

ITEM NUMBER
CKPTIC1

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. Water resistant, the 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 for use with hot sprue bushings.

Armored Mold Power-Thermocouple Cables

ITEM NUMBER
MPTC10
MPTC20

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 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.

Replacement Connector Kits (for Controller & Cables)

MALE POWER – T/C CONNECTORS:

- CKPTM1 is on MPTC10/20 Cables; Mates with Frame or CKPTF1L only
- CKPTM1L Mates With CKPTF1 only

FEMALE POWER – T/C CONNECTORS:

- CKPTF1 is on MPTC10/20 Cables; Mates with Mold or CKPTM1L only
- CKPTF1L Mates with CKPTM1 only

Power Input Connectors For Mainframe

AC1512F

CKPTM1

CKPTF1

PTC210

AC2024F

CKPTM1L

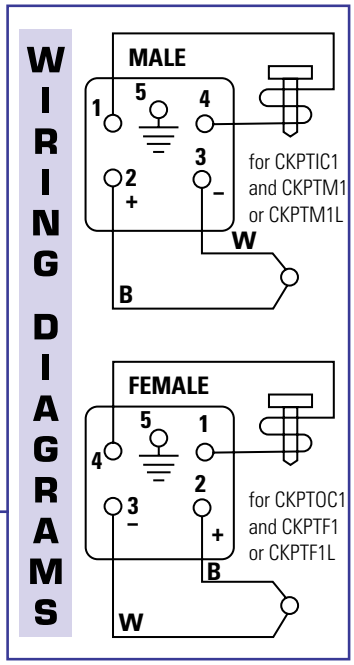
CKPTF1L

ITEM NUMBER	VOLTS
AC1512F	120
AC2024F	240

ITEM NUMBER
CKPTM1
CKPTM1L

ITEM NUMBER
CKPTF1
CKPTF1L

ITEM NUMBER
PTC210



Power-Thermocouple Output Connector (for Mainframe Bulkhead)

ITEM NUMBER
CKPTOC1

ITEM NUMBER
PTC210TBGTS

Terminal Mounting Boxes – Prewired (10 AMP) 5 Pin

Terminal Mounting Boxes provide the easiest and most economical method of mounting power and thermocouple connectors on the mold. Constructed of plated heavy gauge steel, each box is precut and drilled for quick mounting of the box to the mold (2-zone, prewired terminal mounting box with terminal strip shown with cover plate removed).

Smart Series® 2-Zone Mainframes (15 AMP) and Accessories

MFFPR2G

Two-Zone 15 AMP Mainframes

Provides 15 AMP (3600 watts) per zone. For use with Smart Series or G-Series modules. Supplied with built-in cooling fan, power input, power output and thermocouple input connectors. Control modules and cables are ordered separately.

TWO-ZONE 15 AMP MAINFRAME (240 VAC, 50-60 Hz, SINGLE PHASE)

ITEM NUMBER	WATTS PER ZONE	CONNECTORS SUPPLIED
MFFPR2G	3500	(1) AC1240F (POWER IN) (1) AC1524M (POWER OUT) (2) M2MJ (T/C IN)

Includes frame and connectors listed. Modules and cables ordered separately.

NOTE: Replacement parts in frame are also available by special order. See pages 146-147.

ITEM NUMBERS	DESCRIPTION
AC1240F*	Female 240 VAC twist-lock power input connector (mates with male frame power input)
AC1524M*	Male 240 VAC power output connector (mates with female frame power outputs)
M2MJ*	Thermocouple mini-plug (mates with frame jack strip connector)
PTC2TBGTS	2 zone, pre-wired terminal mounting box with terminal strip (mounts to mold; mates with PTC0110 or PTC0129 cables)

* Included with MFFPR2G

FRAME DIMENSIONS:
7"W x 9"H x 10"D
(9"H dimension does not include connectors or handle)

ITEM NUMBER
PTC0110
PTC0120

For use with MFFPR2G only

Armored Mold Power – Thermocouple Cables (15 AMP)

Single-Zone Mold Power-Thermocouple Cable is constructed of special lead wire for use in high temperature environments. This cable connects the mainframe to the connector on the mold. Available in lengths of 10 or 20 feet. Retaining latches on the mold connector provide secure cable connections.

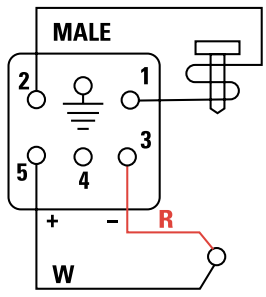
ITEM NUMBER
PTC2TBGTS

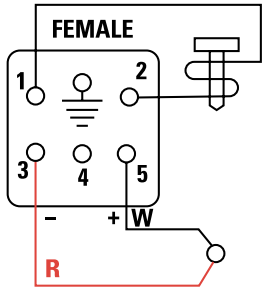
For use with MFFPR2G only

Terminal Mounting Boxes – Prewired (15 AMP)

Terminal Mounting Boxes provide the easiest and most economical method of mounting power and thermocouple connectors on the mold. Constructed of plated heavy gauge steel, each box is precut and drilled for quick mounting of the box to the mold (2-zone, prewired terminal mounting box with terminal strip shown with cover plate removed).

WIRING DIAGRAMS





NOTE: 6-pin connectors and pins are available as a special order only. These are crimp contacts. (See pages 148-149 for mounting dimensions.)

Smart Series® Single Zone High Power Mainframes (30 AMP Max.)

MFHP1G

The DME Portable Single-Zone High Power Mainframe is designed for use with 30 AMP Smart Series or G-Series temperature control modules. Mainframe is supplied with built-in cooling fan, power input, power output, and thermocouple input connectors. Circuit breaker provides safety for the operator. Control modules and cable are ordered separately.

Single Zone 30 AMP Mainframes (240 VAC, 50-60 Hz, Single Phase)

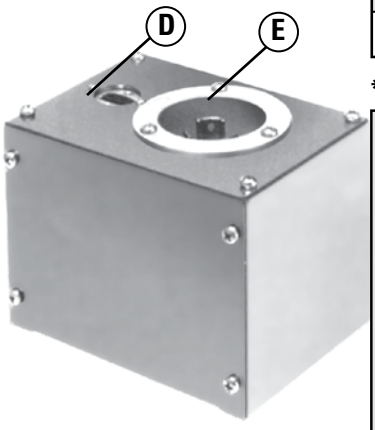
ITEM NUMBER	WATTS (OUTPUT)	CONNECTORS SUPPLIED
MFHP1G	7200	(1) AC1240F (POWER IN) (1) AC1240M (POWER OUT) (1) M2MJ (T / C IN)

Replacement Connectors and Accessories

ITEM NUMBER	DESCRIPTION
MPCH110	10 ft. mold power cable (240 VAC) (1 AC1240F twist-lock connector on mold end; 1 AC1240M twist-lock connector on frame end)
MPCH120	20 ft. mold power cable (240 VAC) (same connectors as MPCH110)
AC1240MI	1-Zone twist-lock mold power input connector (mounts in mold or terminal mounting box; accepts AC1240F twist-lock connector on MPCH110 or MPCH1 20 cable)
TC110	10 ft. thermocouple cable (1 M2MJ mini-plug each end)
TC120	20 ft. thermocouple cable (1 M2MJ mini-plug each end)
AC1240F*	240 VAC twist-lock power input connector (mates with frame power input)
AC1240M*	240 VAC twist-lock power output connector (mates with frame power output)
M2MJ*	thermocouple mini-plug (mates with frame or jack strip connector)
PTCH1TBG	terminal mounting box (mounts to mold; accepts 1 AC1240MI and 1 TCS1)
TCS1	jack strip connector

*Included with MFHP1G mainframe

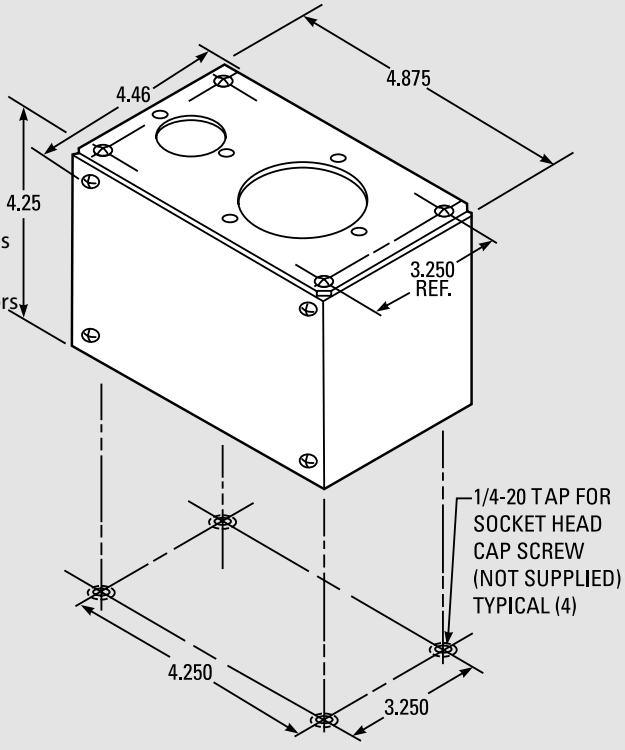
FRAME DIMENSIONS:
7"W x 9"H x 10"D
(9"H dimension does not include connectors or handle)



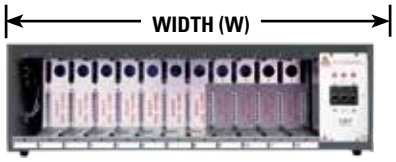
TERMINAL MOUNTING BOX PTCH1TBG
(Connectors shown are ordered separately)
D: TCS1
E: AC1240MI

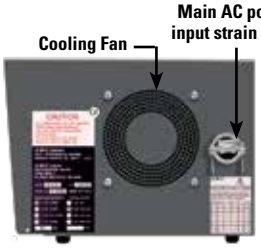
TERMINAL MOUNTING BOX PTCH1TBG

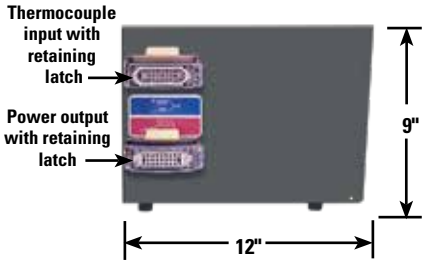
NOTE: Overall dimensions shown include allowances for hardware (assembly screws) but not connectors.



Smart Series® Mainframes (15 AMP)







WORLDWIDE WIRING CAPABILITIES

Unless otherwise specified, all Smart Series Mainframes will be supplied to accept 240 VAC, 3 phase, 4-wire, 50-60 Hz input power. Wiring diagram (included on the access cover) illustrates the variety of other voltage, phase and load balancing arrangements possible, such as: (380-415V, 3 phase, 5-wire, 50-60 Hz), (208-240V, single phase, 3-wire, 50-60 Hz) and (110-120V, single phase, 3-wire, 50-60 Hz).

These wiring adjustments can be performed in the field to suit the requirements of the application. If specified at the time of original order, DME will supply the Mainframe required.

ITEM NUMBER	W*
MFP5G	14 3/16
MFP8G	20 3/16
MFP12G	28 3/16

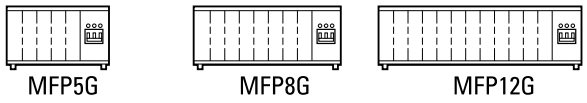
* Dimension does not include connectors

NOTE: Combination frames to accommodate both 15 and 30 AMP modules (with or without communications) are available by special order.

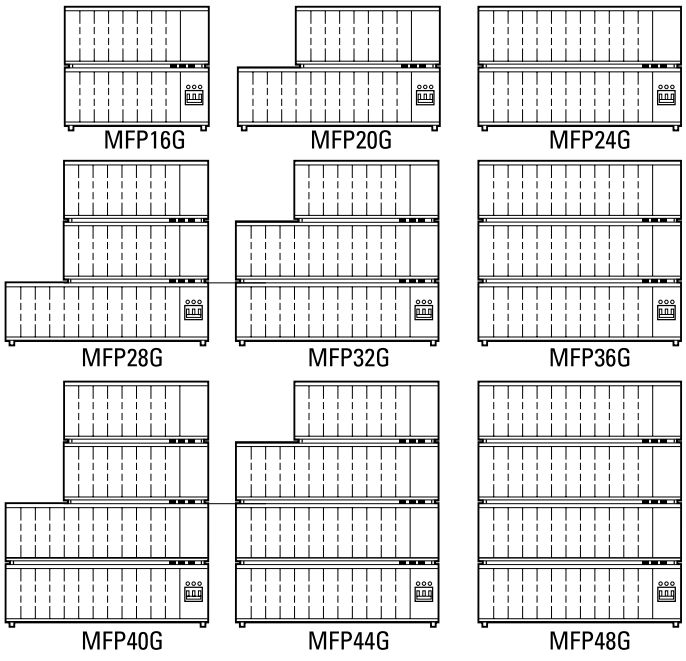
Smart Series® Mainframe (15 AMP Max.) Configurations

The 12 configurations illustrated below provide a wide selection of zone capacities to suit most control applications. The 5-, 8- and 12-zone frames (MFP5, 8, and 12G) use individual frame sections. The 16 thru 48 zone frames use 2, 3, or 4 frame sections rigidly fastened together into one prewired integral unit which requires only one main AC power input connection. The Current Voltage monitor option will be factory installed when ordered at same time as Mainframe. Control modules, cables, mold connectors and other accessories are ordered separately (see table on next page).

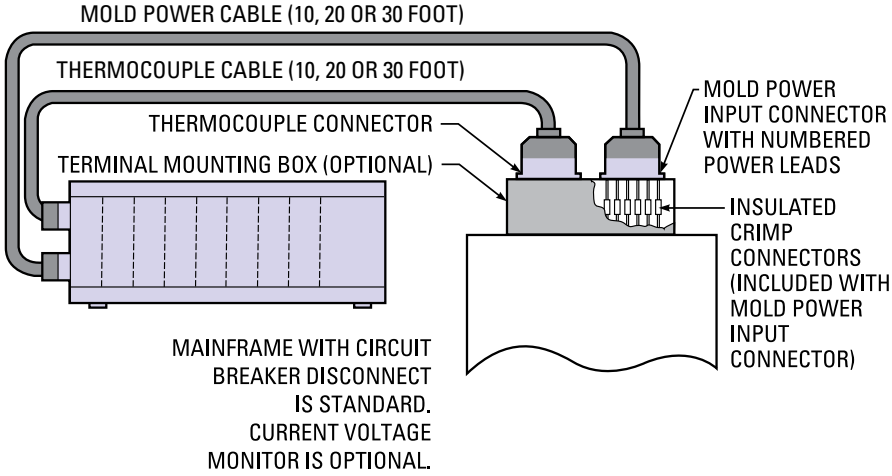
MAINFRAMES (Supplied with 50 AMP, 3-phase circuit breaker)



STACK FRAMES (Supplied with 70 AMP, 3-phase circuit breaker)



- Each frame section (MFP5G, MFP8G, and MFP12G) has its own cooling fan.
- Multi-section frame heights are multiples of 9" height shown (e.g. MFP32G is 27" high).
- Main AC input shown will always be in bottom frame section. For higher power requirements, individual power inputs and circuit breakers can be factory installed in each section of a stack frame on a special order basis.



Smart Series® Mainframes (15 AMP)

SMART SERIES MAINFRAMES Optional Current Voltage Monitor is Factory Installed in CV-Style Frames					CABLES AND MOLD CONNECTORS REQUIRED (Not included with Mainframes and Must be Ordered Separately)							
ZONES	"MFP" TYPE FOR TEMP. AND POWER CONTROL	"MFP" TYPE WITH CURRENT VOLTAGE MONITOR	"MFCP" TYPE FOR TEMP. CONTROL AND COMMUNICATIONS	"MFCP" TYPE WITH CURRENT VOLTAGE MONITOR	MOLD POWER CABLES C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)		THERMOCOUPLE CABLES C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)		MOLD POWER INPUT CONNECTORS (INCL. CRIMP CONNECTORS)		THERMOCOUPLE CONNECTORS	
	ITEM NUMBER	ITEM NUMBER (CV-STYLE)	ITEM NUMBER	ITEM NUMBER (CV-STYLE)	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
5	MFP5G	MFP5GCV	MFCP5G	MFCP5GCV	1	MPC5C10G, C20G or C30G	1	TC5C10G, C20G or C30G	1	PIC5G	1	MTC5G
8	MFP8G	MFP8GCV	MFCP8G	MFCP8GCV	1	MPC8C10G, C20G or C30G	1	TC8C10G, C20G or C30G	1	PIC8G	1	MTC8G
12	MFP12G	MFP12GCV	MFCP12G	MFCP12GCV	1	MPC12C10G, C20G or C30G	1	TC12C10G, C20G or C30G	1	PIC12G	1	MTC12G
16	MFP16G	MFP16GCV	MFCP16G	MFCP16GCV	2	MPC8C10G, C20G or C30G	2	TC8C10G, C20G or C30G	2	PIC8G	2	MTC8G
20	MFP20G	MFP20GCV	MFCP20G	MFCP20GCV	1 and 1	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	1 and 1	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	1 and 1	PIC8G and PIC12G	1 and 1	MTC8G and MTC12G
24	MFP24G	MFP24GCV	MFCP24G	MFCP24GCV	2	MPC12C10G, C20G or C30G	2	TC12C10G, C20G or C30G	2	PIC12G	2	MTC12G
28	MFP28G	MFP28GCV	MFCP28G	MFCP28GCV	2 and 1	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	2 and 1	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	2 and 1	PIC8G and PIC12G	2 and 1	MTC8G and MTC12G
32	MFP32G	MFP32GCV	MFCP32G	MFCP32GCV	1 and 2	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	1 and 2	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	1 and 2	PIC8G and PIC12G	1 and 2	MTC8G and MTC12G
36	MFP36G	MFP36GCV	MFCP36G	MFCP36GCV	3	MPC12C10G, C20G or C30G	3	TC12C10G, C20G or C30G	3	PIC12G	3	MTC12G
40	MFP40G	MFP40GCV	MFCP40G	MFCP40GCV	2 and 2	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	2 and 2	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	2 and 2	PIC8G and PIC12G	2 and 2	MTC8G and MTC12G
44	MFP44G	MFP44GCV	MFCP44G	MFCP44GCV	1 and 3	MPC8C10G, C20G or C30G and MPC12C10G, C20G or C30G	1 and 3	TC8C10G, C20G or C30G and TC12C10G, C20G or C30G	1 and 3	PIC8G and PIC12G	1 and 3	MTC8G and MTC12G
48	MFP48G	MFP48GCV	MFCP48G	MFCP48GCV	4	MPC12C10G, C20G or C30G	4	TC12C10G, C20G or C30G	4	PIC12G	4	MTC12G

NOTE: For details on cables and connectors, see pages 130-132.

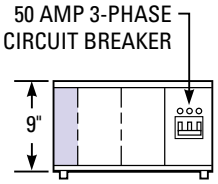
Terminal Mounting Boxes

ZONES	ORDER ITEMS A and B or C					
	(A) FOR POWER INPUT CONNECTORS		(B) FOR THERMOCOUPLE CABLES CONNECTORS		(C) COMBINATION POWER & TC	
	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
5	1	PIC512TBG	1	MTC5TBG	1	PTC5TBG
8	1	PIC512TBG	1	MTC8TBG	1	PTC8TBG
12	1	PIC512TBG	1	MTC12TBG	1	PTC12TBG
16	2	PIC512TBG	2	MTC8TBG	2	PTC8TBG
20	2	PIC512TBG	1 and 1	MTC8TBG and MTC12TBG	1 and 1	PTC8TBG and PTC12TBG
24	2	PIC512TBG	2	MTC12TBG	2	PTC12TBG
28	3	PIC512TBG	2 and 1	MTC8TBG and MTC12TBG	2 and 1	PTC8TBG and PTC12TBG

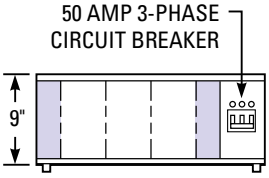
ZONES	ORDER ITEMS A and B or C					
	(A) FOR POWER INPUT CONNECTORS		(B) FOR THERMOCOUPLE CABLES CONNECTORS		(C) COMBINATION POWER & TC	
	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
32	3	PIC512TBG	1 and 2	MTC8TBG and MTC12TBG	1 and 2	PTC8TBG and PTC12TBG
36	3	PIC512TBG	3	MTC12TBG	3	PTC12TBG
40	4	PIC512TBG	2 and 2	MTC8TBG and MTC12TBG	2 and 2	PTC8TBG and PTC12TBG
44	4	PIC512TBG	1 and 3	MTC8TBG and MTC12TBG	1 and 3	PTC8TBG and PTC12TBG
48	4	PIC512TBG	4	MTC12TBG	4	PTC12TBG

NOTES: Combination terminal mounting boxes are available with connectors prewired to terminal strips. See page 135 for details. See page 136 for dimensional details. For below flush mounting of connectors, see mold pocket layouts on pages 133-134. See page 125 for current voltage monitor.

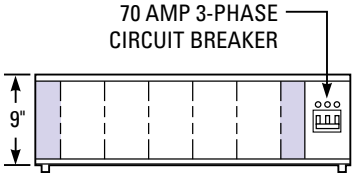
Smart Series® High Power Mainframes (30 AMP)



MFHP2G
(14 3/16" WIDE)



MFHP3G
(20 3/16" WIDE)

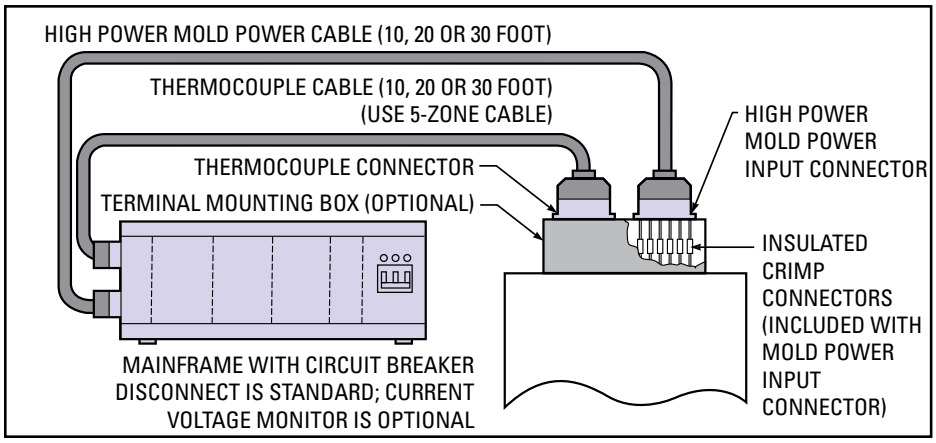


MFHP5G
(28 3/16" WIDE)

DIMENSIONS ABOVE DO NOT INCLUDE CONNECTORS
all frames are 12" deep

NOTE: Blank panels cover unused zones in frames (shaded panels above). For communications (MFCHP) type frames, these zones may be used for communication modules.

NOTE: Combination frames to accommodate both 15 and 30 AMP modules (with or without communications) are available by special order.



The 3 configurations illustrated at left provide 2, 3 or 5-zones of 30 AMP control for higher wattage heater applications. The Current Voltage monitor option will be factory installed when ordered at the same time as Mainframe. Control modules, cables, mold connectors and other accessories are ordered separately.

SMART SERIES HIGH POWER MAINFRAMES
Optional Current Voltage Monitor is Factory Installed in CV-Style Frames

ZONES	"MFHP" TYPE FOR TEMP. CONTROL	"MFHP" TYPE WITH CURRENT VOLTAGE MONITOR	"MFCHP" TYPE FOR TEMP. CONTROL AND COMMUNICATIONS	"MFCHP" TYPE WITH CURRENT VOLTAGE MONITOR
	ITEM NUMBER	ITEM NUMBER (CV-STYLE)	ITEM NUMBER	ITEM NUMBER (CV-STYLE)
2	MFHP2G	MFHP2GCV	MFCHP2G	MFCHP2GCV
3	MFHP3G	MFHP3GCV	MFCHP3G	MFCHP3GCV
5	MFHP5G	MFHP5GCV	MFCHP5G	MFCHP5GCV

CABLES AND MOLD CONNECTORS REQUIRED
(Not included with Mainframes and Must be Ordered Separately)

ZONES	MOLD POWER CABLES C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)		THERMOCOUPLE CABLES C10=10 FT. C20=20 FT. C30=30 FT. (SELECT LENGTH DESIRED)		MOLD POWER INPUT CONNECTORS (INCL. CRIMP CONNECTORS)		THERMOCOUPLE CONNECTORS	
	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
2	1	MPCH23C10G, C20G or C30G	1	TC5C10G, C20G or C30G	1	PICH23G	1	MTC5G
3	1	MPCH23C10G, C20G or C30G	1	TC5C10G, C20G or C30G	1	PICH23G	1	MTC8G
5	1	MPCH5C10G, C20G or C30G	1	TC5C10G, C20G or C30G	1	PICH5G	1	MTC12G

NOTE: For details on cables and connectors, see pages 130-132.

Terminal Mounting Boxes

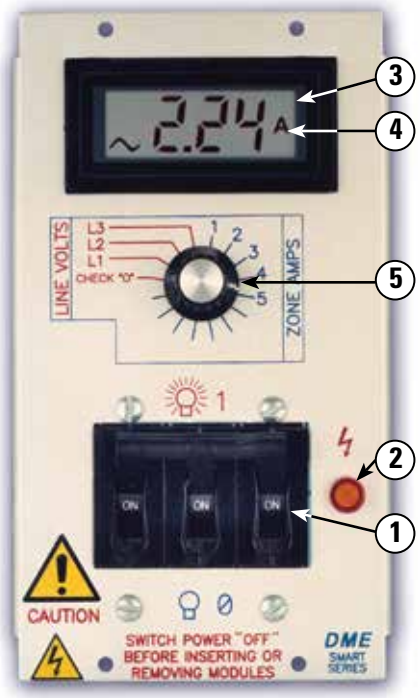
ZONES	ORDER ITEMS A and B or C					
	(A) FOR POWER INPUT CONNECTORS		(B) FOR THERMOCOUPLE CABLES CONNECTORS		(C) COMBINATION POWER & TC	
	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER	QTY.	ITEM NUMBER
2	1	PICH23TBG	1	MTC5TBG	1	PTCH23TBG
3	1	PICH23TBG	1	MTC5TBG	1	PTCH23TBG
4	1	PICH5TBG	1	MTC5TBG	1	PTCH5TBG

NOTE: See page 135-136 for dimensional details. For below-flush mounting of connectors, see mold pocket layouts on pages 133-134.

Smart Series® Digital Current/Voltage Monitor

Streamlined Design For Improved Performance

The new Current/Voltage Monitor is simple to operate and features a large easy-to-read digital display. Ease of operation has been enhanced by streamlining the unit and eliminating unnecessary switches and controls. When setting the selector switch to the desired zone number, the 'AMPS' function is selected. The meter will then display the amount of current being delivered by the selected module. Input voltage to the system can be measured by rotating the selector switch to one of the three 'line voltage' positions. This will set the meter in the 'voltage' function and display the voltage of the selected phase.



Current Supply To Each Zone

To monitor the current supply to each zone, simply set the rotary selector switch to the desired module zone number. The "AMPS" function is then automatically selected and is indicated by the letter 'A' just to the right of the numbers in the display window. The meter displays the current being delivered to the heater load in amperes.

Input Voltage From Each Phase

Set the rotary selector to the desired phase voltage position. This automatically selects the 'volts' function which is indicated when the letter 'V' appears to the right of the numbers in the display window. The meter will display the line voltage of the selected phase.

1. **CIRCUIT BREAKER/DISCONNECT** – Applies or removes power to all modules in the frame.
2. **POWER ON LIGHT (amber)** – Illuminates when CIRCUIT BREAKER is in the ON position.
3. **AMPS/VOLTS METER** – Digital multi-scale meter provides accurate readings of zone current (AMPS) or input voltage (VOLTS).
4. **AMPS/VOLTS INDICATOR** – Appears automatically when either AMPS or VOLTS is selected.
5. **SELECTOR SWITCH** – Multi-position switch automatically selects zone current or phase line voltage to be monitored. For systems with more than 12-zones, additional meter and selector switch panels are supplied.

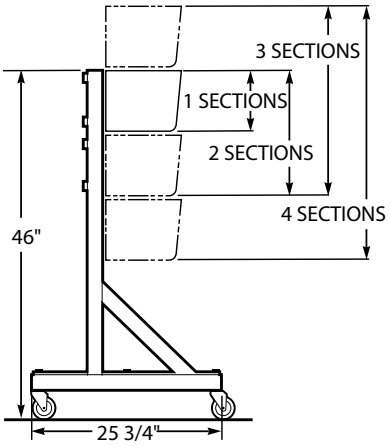
Specifications

Voltmeter Range	190 to 290 VAC (for 240 volt systems) 90 to 145 VAC (for 120 volt systems)
Voltmeter Accuracy	± 3% of reading, 50 to 60 Hz
Maximum Voltmeter Input	400 VAC
Input Voltage	240/120 VAC, 50 to 60 Hz
Ammeter Range	0 to 2; 0 to 30; 0 to 40 Amperes
Ammeter Accuracy	± 2% @ 0 to 100% Duty Cycle, 50-60 Hz
Maximum Ammeter Input	30 Amperes

NOTE: The Digital Current/Voltage Monitor is a factory installed option which replaces the standard circuit breaker/disconnect, and is supplied when "CV-style" mainframes are ordered.

See pages 123 and 124 for appropriate mainframe item numbers.

Smart Series® Accessories

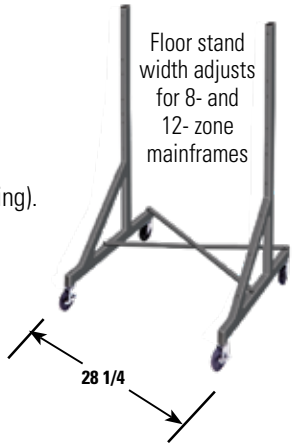


Universal Floor Stand

The Universal Floor Stand will accommodate all 15 or 30 amp Mainframes from one to four sections high. Stand is made from heavy gauge steel and includes locking casters (400 lb. rating). All assembly and Mainframe mounting hardware is included. Heavy duty floor stand available for larger systems (1000 lb. rating).

ITEM NUMBER	RATING
MFS512G	400 LBS
MFS512GHD*	1000 LBS

* HD stand not shown.
Floor stand comes with plates for 5-zone frame mounting on 8-zone "x" pattern



Step-Down Transformer Kits (from 480 VAC to 240 VAC)

Transformer Kits are pre-wired and include enclosed transformer (480 VAC input, 240 VAC output) with adjustable transformer voltage taps, one 10-foot cable for AC power-in (no connector), one 6-foot cable for mainframe (AC input), one safety switch, two extra fuses, floor stand (MFS512G) and all mounting brackets and hardware required. Shipped with instructions for easy assembly.

Single section frames mount to front or rear of stand.

ITEM NUMBER	RATING
TK61AG	6 KVA
TK91AG*	9 KVA
TK151AG*	15 KVA
TK301AG**	30 KVA

Also Available:

1. Transformer only
2. Transformer and cables only
3. Transformers with other voltage or current capacities
4. Isolation Transformers

Contact DME for details and prices.

Mainframe not included.
Adapter plates for narrower frames available by special order.
* Comes with plates for mounting 8-zone on 12-zone "x" pattern
** Supplied with MFS512GHD for this transformer size or larger and transformers mounted flat.

NOTE: Power capacity needed depends on total load of system (i.e. number of zones and heater load per zone).

Mainframe Blank Panels

Used. to cover unused zones in mainframes. Push-pull fasteners included in panel. **MFBP10G** covers one 15 AMP zone; **MFBP30G** covers one 30 AMP zone (or two 15 AMP zones).

ITEM NUMBER
MFBP10G
MFBP30G

Module Replacement Fuses

(sold in packages of 5)

ITEM NUMBER	AMPS
ABC1	1
ABC15	15
ABC10	10
13X10	10
13X15	15
RPM0123	15
RPM0124	.062

Insulated Crimp Connectors

For connection of mold power input connector leads to heater leads. (195°F / 90°C maximum temperature)

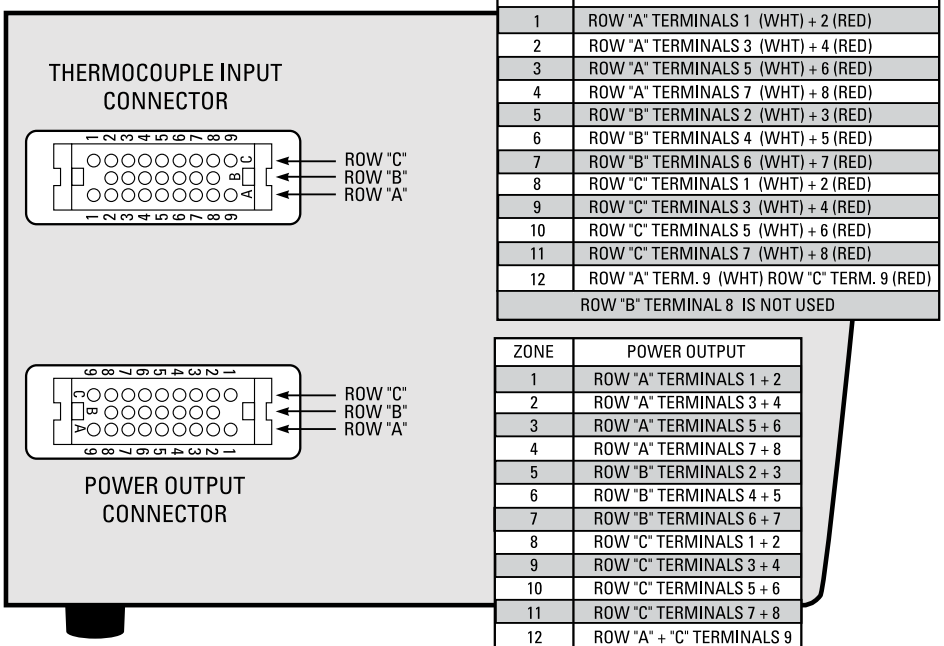
ITEM NUMBER	AMPS	RATING
HWCC1 (Bag of 30)	10-15	16-22 RED
HWCC3 (Bag of 30)	10-15	14-16 BLUE
HWCC2 (Bag of 20)	15-30	10-12 YELLOW

NOTE: Initial supply is provided with mold power input connectors.

Smart Series® Mainframe Connector Wiring

Standard Mainframe Connector Wiring

SIDE OF MAINFRAME



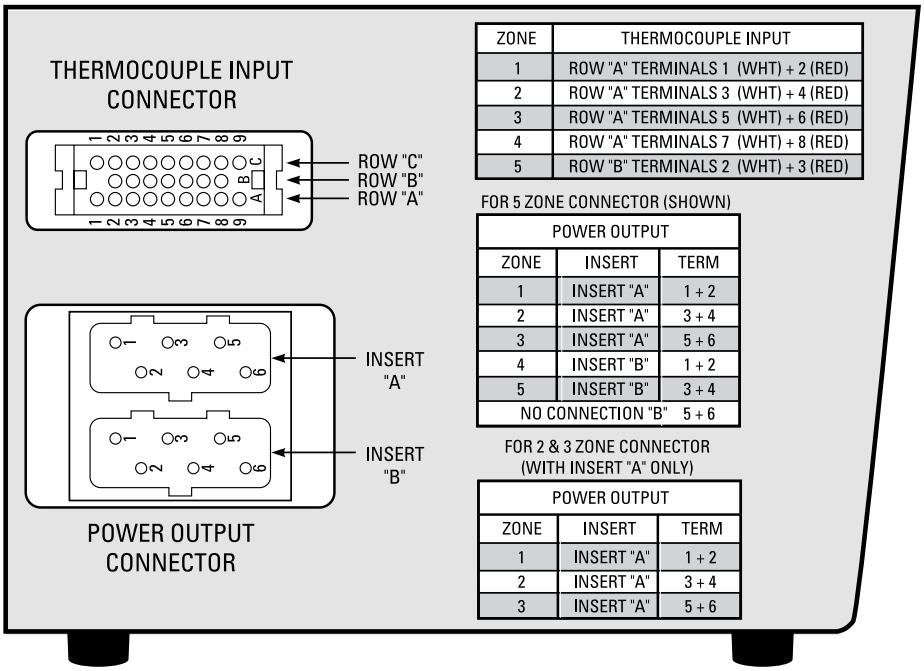
ZONE	THERMOCOUPLE INPUT
1	ROW "A" TERMINALS 1 (WHT) + 2 (RED)
2	ROW "A" TERMINALS 3 (WHT) + 4 (RED)
3	ROW "A" TERMINALS 5 (WHT) + 6 (RED)
4	ROW "A" TERMINALS 7 (WHT) + 8 (RED)
5	ROW "B" TERMINALS 2 (WHT) + 3 (RED)
6	ROW "B" TERMINALS 4 (WHT) + 5 (RED)
7	ROW "B" TERMINALS 6 (WHT) + 7 (RED)
8	ROW "C" TERMINALS 1 (WHT) + 2 (RED)
9	ROW "C" TERMINALS 3 (WHT) + 4 (RED)
10	ROW "C" TERMINALS 5 (WHT) + 6 (RED)
11	ROW "C" TERMINALS 7 (WHT) + 8 (RED)
12	ROW "A" TERM. 9 (WHT) ROW "C" TERM. 9 (RED)
ROW "B" TERMINAL 8 IS NOT USED	

ZONE	POWER OUTPUT
1	ROW "A" TERMINALS 1 + 2
2	ROW "A" TERMINALS 3 + 4
3	ROW "A" TERMINALS 5 + 6
4	ROW "A" TERMINALS 7 + 8
5	ROW "B" TERMINALS 2 + 3
6	ROW "B" TERMINALS 4 + 5
7	ROW "B" TERMINALS 6 + 7
8	ROW "C" TERMINALS 1 + 2
9	ROW "C" TERMINALS 3 + 4
10	ROW "C" TERMINALS 5 + 6
11	ROW "C" TERMINALS 7 + 8
12	ROW "A" + "C" TERMINALS 9
ROW "B" TERMINAL 8 IS NOT USED	

NOTE: **1.** Mating cable connectors are wired the same as frame connectors shown.
2. Wires in frames are color coded for reference when rewiring of frame connectors is necessary (see owner's manual).
3. All grounds must be connected to ensure operator safety.

High Power Mainframe Connector Wiring

SIDE OF MAINFRAME



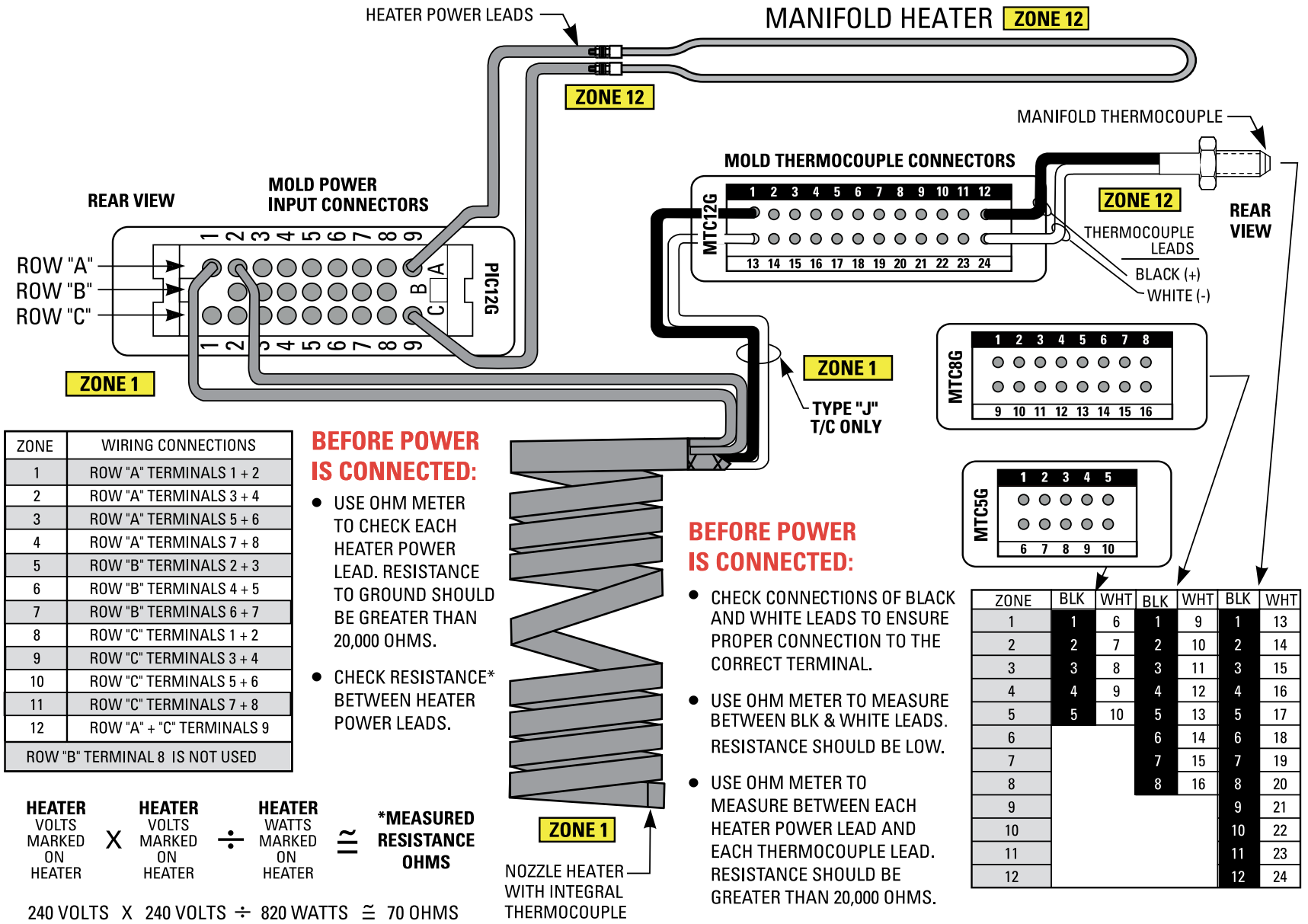
ZONE	THERMOCOUPLE INPUT
1	ROW "A" TERMINALS 1 (WHT) + 2 (RED)
2	ROW "A" TERMINALS 3 (WHT) + 4 (RED)
3	ROW "A" TERMINALS 5 (WHT) + 6 (RED)
4	ROW "A" TERMINALS 7 (WHT) + 8 (RED)
5	ROW "B" TERMINALS 2 (WHT) + 3 (RED)

FOR 5 ZONE CONNECTOR (SHOWN)

POWER OUTPUT		
ZONE	INSERT	TERM
1	INSERT "A"	1 + 2
2	INSERT "A"	3 + 4
3	INSERT "A"	5 + 6
4	INSERT "B"	1 + 2
5	INSERT "B"	3 + 4
NO CONNECTION "B"		5 + 6

FOR 2 & 3 ZONE CONNECTOR (WITH INSERT "A" ONLY)

POWER OUTPUT		
ZONE	INSERT	TERM
1	INSERT "A"	1 + 2
2	INSERT "A"	3 + 4
3	INSERT "A"	5 + 6



ZONE	WIRING CONNECTIONS
1	ROW "A" TERMINALS 1 + 2
2	ROW "A" TERMINALS 3 + 4
3	ROW "A" TERMINALS 5 + 6
4	ROW "A" TERMINALS 7 + 8
5	ROW "B" TERMINALS 2 + 3
6	ROW "B" TERMINALS 4 + 5
7	ROW "B" TERMINALS 6 + 7
8	ROW "C" TERMINALS 1 + 2
9	ROW "C" TERMINALS 3 + 4
10	ROW "C" TERMINALS 5 + 6
11	ROW "C" TERMINALS 7 + 8
12	ROW "A" + "C" TERMINALS 9
ROW "B" TERMINAL 8 IS NOT USED	

BEFORE POWER IS CONNECTED:

- USE OHM METER TO CHECK EACH HEATER POWER LEAD. RESISTANCE TO GROUND SHOULD BE GREATER THAN 20,000 OHMS.
- CHECK RESISTANCE* BETWEEN HEATER POWER LEADS.

HEATER VOLTS MARKED ON HEATER X **HEATER** VOLTS MARKED ON HEATER ÷ **HEATER** WATTS MARKED ON HEATER ≅ ***MEASURED RESISTANCE OHMS**

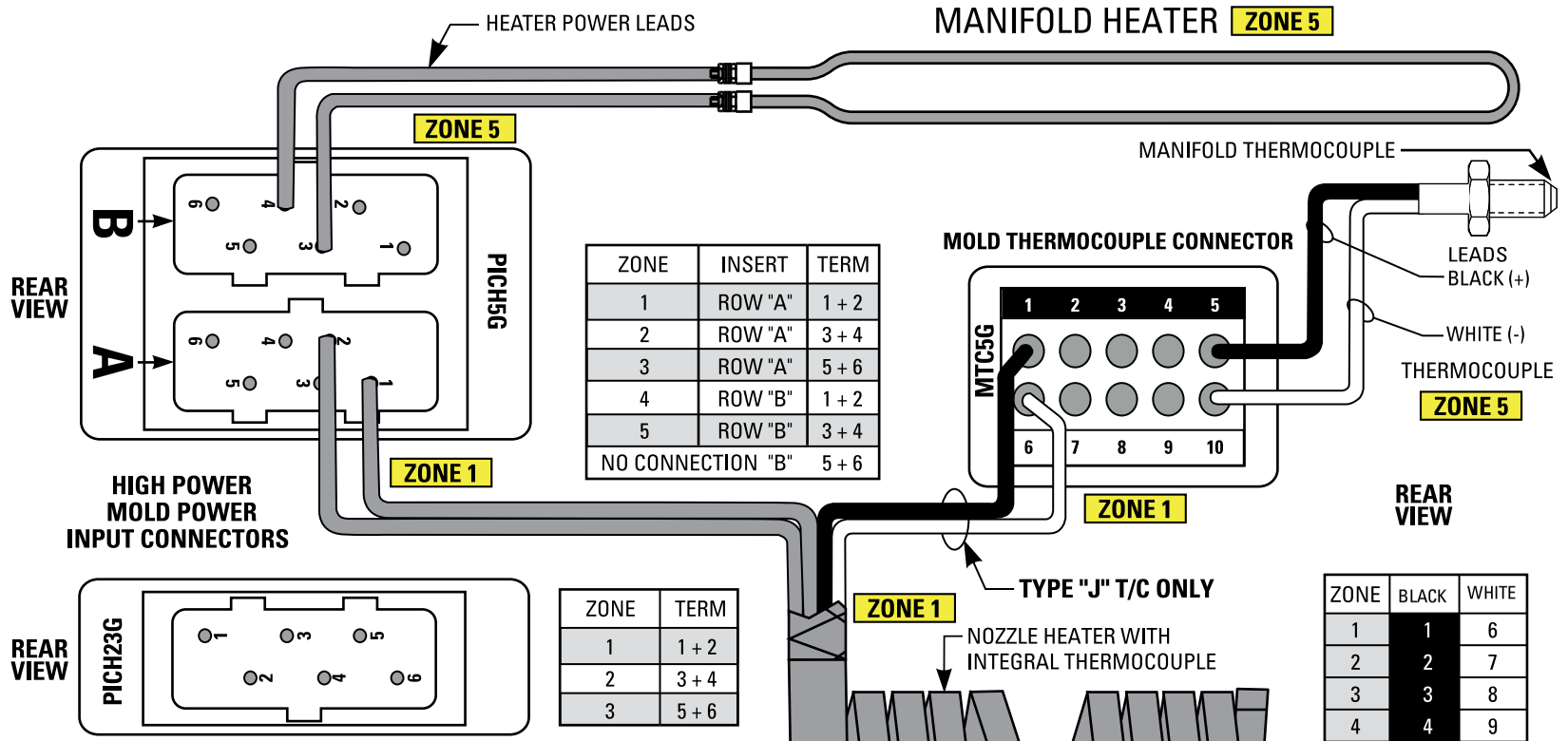
240 VOLTS X 240 VOLTS ÷ 820 WATTS ≅ 70 OHMS

BEFORE POWER IS CONNECTED:

- CHECK CONNECTIONS OF BLACK AND WHITE LEADS TO ENSURE PROPER CONNECTION TO THE CORRECT TERMINAL.
- USE OHM METER TO MEASURE BETWEEN BLK & WHITE LEADS. RESISTANCE SHOULD BE LOW.
- USE OHM METER TO MEASURE BETWEEN EACH HEATER POWER LEAD AND EACH THERMOCOUPLE LEAD. RESISTANCE SHOULD BE GREATER THAN 20,000 OHMS.

ZONE	BLK	WHT	BLK	WHT	BLK	WHT
1	1	6	1	9	1	13
2	2	7	2	10	2	14
3	3	8	3	11	3	15
4	4	9	4	12	4	16
5	5	10	5	13	5	17
6			6	14	6	18
7			7	15	7	19
8			8	16	8	20
9					9	21
10					10	22
11					11	23
12					12	24

NOTES: All grounds must be connected to mold to ensure operator safety.
All crimp connections can be eliminated by using terminal mounting box with terminal strip. See page 135.



ZONE	INSERT	TERM
1	ROW "A"	1 + 2
2	ROW "A"	3 + 4
3	ROW "A"	5 + 6
4	ROW "B"	1 + 2
5	ROW "B"	3 + 4
NO CONNECTION	"B"	5 + 6

ZONE	TERM
1	1 + 2
2	3 + 4
3	5 + 6

ZONE	BLACK	WHITE
1	1	6
2	2	7
3	3	8
4	4	9
5	5	10

BEFORE POWER IS CONNECTED:

- USE OHM METER TO CHECK EACH HEATER POWER LEAD. RESISTANCE TO GROUND SHOULD BE GREATER THAN 20,000 OHMS.
- CHECK RESISTANCE* BETWEEN HEATER POWER LEADS.

HEATER VOLTS MARKED ON HEATER X **HEATER** VOLTS MARKED ON HEATER ÷ **HEATER** WATTS MARKED ON HEATER ≅ ***MEASURED RESISTANCE OHMS**

240 VOLTS X 240 VOLTS ÷ 820 WATTS ≅ 70 OHMS

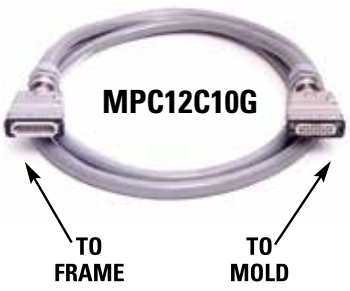
BEFORE POWER IS CONNECTED:

- CHECK CONNECTIONS OF BLACK AND WHITE LEADS TO ENSURE PROPER CONNECTION TO THE CORRECT TERMINAL.
- USE OHM METER TO MEASURE BETWEENF BLACK AND WHITE LEADS . RESISTANCE SHOULD BE LOW.
- USE OHM METER TO MEASURE BETWEEN EACH HEATER POWER LEAD AND EACH THERMOCOUPLE LEAD. RESISTANCE SHOULD BE GREATER THAN 20,000 OHMS.

NOTES: All grounds must be connected to mold to ensure operator safety.
All crimp connections may be eliminated. Simply remove 6" leads form PIC connectors and wire directly.

U.S. 800-626-6653 ▪ Canada 800-387-6600 ▪ dme@milacron.com ▪ www.dme.net

Mold Power and Thermocouple Cables



Mold Power Cables are used to connect the Mainframe to the Power Input Connector on the mold. Available in lengths of 10, 20 or 30 feet. Integral retaining latches on both the frame and mold connectors provide secure cable connections. Connector configurations ensure proper insertion of cable. Cables are wired for 5, 8 or 12 zones (15 AMP) and 3 or 5 zones (30 AMP) for use with the appropriate Smart Series Mainframes and Mold Power Input Connectors.

Universal Mold Power Cable (15 AMP)

The MPC12C10G, 20G or 30G Mold Power Cable also serves as a universal cable for connecting any 15 AMP Smart Series Mainframe to any 15 AMP Mold Power Input Connector. The maximum number of zones will be determined by the connector in the mold.

Mold Power Cables (15 AMP Max)

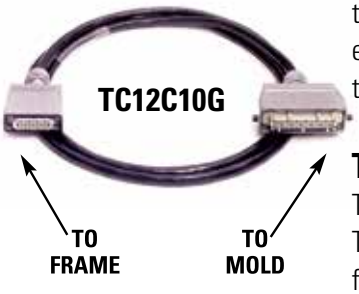
10 FOOT LONG	20 FOOT LONG	30 FOOT LONG	NUMBER OF ZONES (MAX.)	FOR CONNECTIONS	
ITEM NUMBER	ITEM NUMBER	ITEM NUMBER		FROM 15 AMP FRAME (S)	TO POWER INPUT CONNECTOR
MPC5C10G	MPC5C20G	MPC5C30G	5	5, 8, 12 ZONE	PIC5G
MPC8C10G	MPC8C20G	MPC8C30G	8	8, 12 ZONE	PIC8G
MPC12C10G	MPC12C20G	MPC12C30G	12	12 ZONE	PIC12G

Mold Power Cables (30 AMP Max)

10 FOOT LONG	20 FOOT LONG	NUMBER OF ZONES (MAX.)	FOR CONNECTIONS	
ITEM NUMBER	ITEM NUMBER		FROM 30 AMP FRAME (S)	TO POWER INPUT CONNECTOR
MPCH23C10G	MPCH23C20G	3	2-3 ZONE	PICH23G
MPCH5C10G	MPCH5C20G	5	5 ZONE	PICH5G

SPECIAL CABLES

Virtually any type of Conversion or Special Cable configuration can be provided by special order



Thermocouple Cables are used to connect the Mainframe to the Thermocouple Connector on the mold, and are available in lengths of 10, 20 of 30 feet. Integral retaining latches on both the frame and mold connectors provide secure cable connections. Connector configurations ensure proper insertion of cable. Cables available are wired for 5, 8 or 12 zones for use with the appropriate Smart Series Mainframes and Thermocouple Connectors.

Thermocouple Cables (for use with 15 or 30 AMP Mainframes)

These Thermocouple Cables serve as cables for connecting dissimilar Mainframes and Thermocouple Connectors. For example. the TC8C10G could be used to connect a 12-zone frame to an 8-zone MTC8G connector. The maximum number of zones will be determined by the connector in the mold.

Thermocouple Cables

10 FOOT LONG	20 FOOT LONG	30 FOOT LONG	NUMBER OF ZONES (MAX.)	FOR CONNECTIONS	
ITEM NUMBER	ITEM NUMBER	ITEM NUMBER		FROM 15 AMP FRAME (S)	TO THERMOCOUPLE CONNECTOR
TC5C10G	TC5C20G	TC5C30G	5	5, 8, 12 ZONE	MTC5G
TC8C10G	TC8C20G	TC8C30G	8	8, 12 ZONE	MTC8G
TC12C10G	TC12C20G	TC12C30G	12	12 ZONE	MTC12G

* Used with all 30 AMP Mainframes.

RoHS/WEEE Compliant: Mold Power Input Connectors

For 15 AMP Applications

PIC5G

PIC8G

PIC12G

For 30 AMP Applications

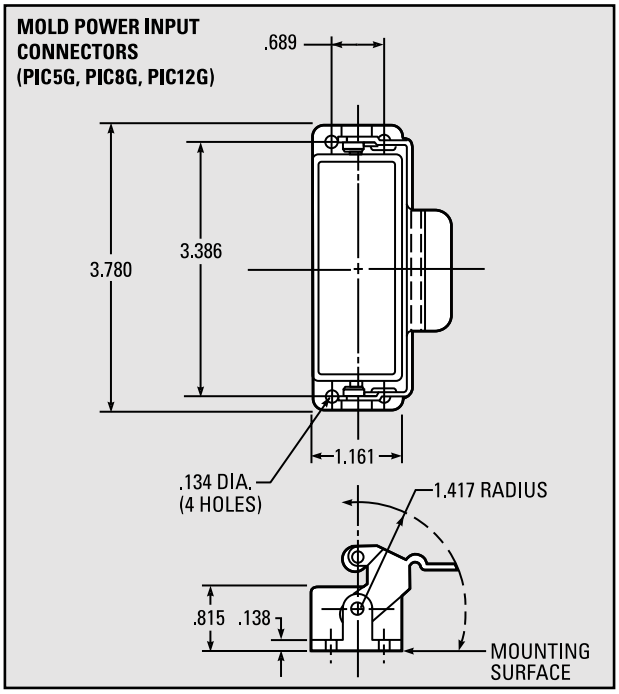
PICH23G

PICH5G

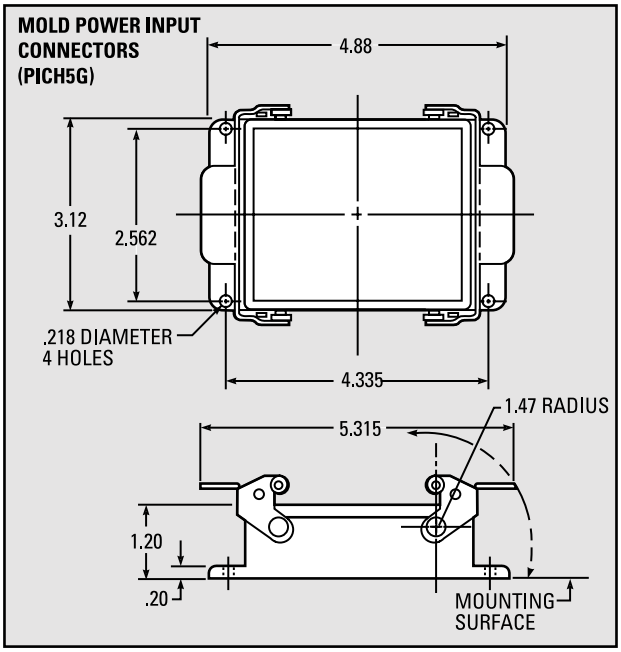
NOTES:
Connector PICH23G is dimensionally identical to thermocouple connector MTC8G. See next page.

For PICH23G and PICH5G, direct wiring without crimp connectors is possible by removing 6" leads.

Mold Power Input Connectors are mounted on the mold to accept power cable(s) from the Mainframe. They are supplied with six inches of numbered leads and a ground wire. All three 15 AMP connectors are the same physical size and use 14-gauge wire. Only the number of active pins change. The 30 AMP connectors are supplied with 10-gauge leads and are attached to screw terminals. Each is equipped with an integral retaining latch to provide a secure cable connection. Connector configuration ensures proper insertion of cable. Splicing of 6" leads to heater power leads is easily accomplished with the Insulated Crimp Connectors supplied.



NOTE: Dimensions shown may vary slightly.



NOTE: Ground wire must be connected to mold to ensure operator safety.

Mold Power Input Connectors

ITEM NUMBER	NUMBER OF ZONES (MAX.)	AMPS (MAX.) PER ZONE
PIC5G	5	15
PIC8G	8	15
PIC12G	12	15
PICH23G	3	30
PICH5G	5	30

NOTE: Replacement parts and extraction tools can be found on page 146

Insulated Crimp Connectors

ITEM NUMBER	AMPS	FOR WIRE GAUGE
HWCC1 30 PCS.	10-15	16-22
HWCC3 30 PCS.	15	14-16
HWCC2 20 PCS.	30	10-12

NOTE: Initial supply is provided with mold power input connectors. Also, see page 126.

RoHS/WEEE Compliant: Mold Thermocouple Connectors

MTC5G

MTC8G

MTC12G

TPC0001

Thermocouple Connectors are mounted on the mold to use with thermocouple cable(s) from the Mainframe. Screw type terminals for use with iron(+) and constantan(-) thermocouple leads are numbered and coded on the side and bottom of each connector. All three connectors are equipped with integral retaining latches to provide a secure cable connection. Connector configuration ensures proper insertion of cable. Pins are made of copper alloy and are silver plated. Experience has proven that iron and constantan are not required.

ITEM NUMBER	NUMBER OF PINS	DIMENSION	
		M2	H
MTC5G	10	3.268	3.662
MTC8G	16	4.055	4.449
MTC12G	24	5.118	5.512
TPC0001	48	5.827	6.496

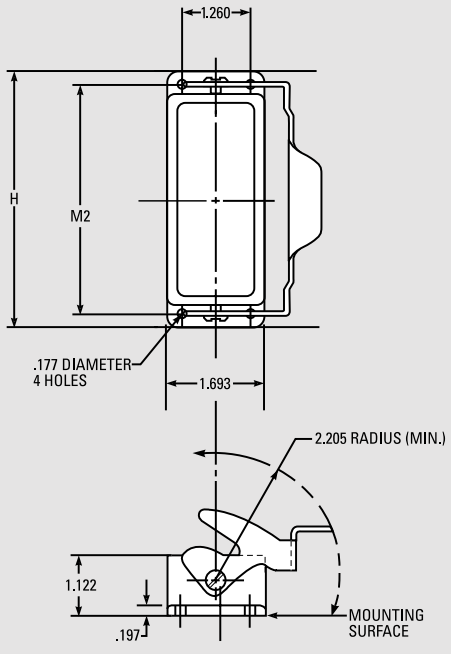
NOTE: MOLD POWER INPUT CONNECTOR PICH23G IS DIMENSIONALLY IDENTICAL TO MTC8G

Connectors

ITEM NUMBER	NUMBER OF ZONES (MAX.)
MTC5G*	5
MTC8G	8
MTC12G	12
TPC0001	12

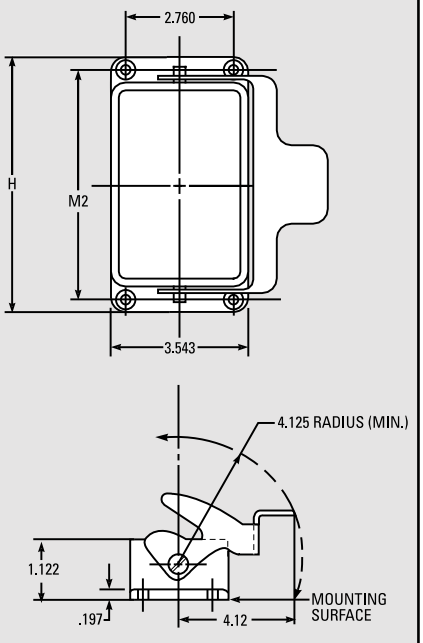
* Use with 2, 3 and 5-zone, 30 AMP mainframes

MOLD THERMOCOUPLE CONNECTOR
MTC5G
MTC8G
MTC12G



NOTE: DIMENSIONS SHOWN ARE FOR THE MTC5G, MTC8G AND MTC12G CONNECTORS

MOLD POWER AND THERMOCOUPLE CONNECTOR TPC0001

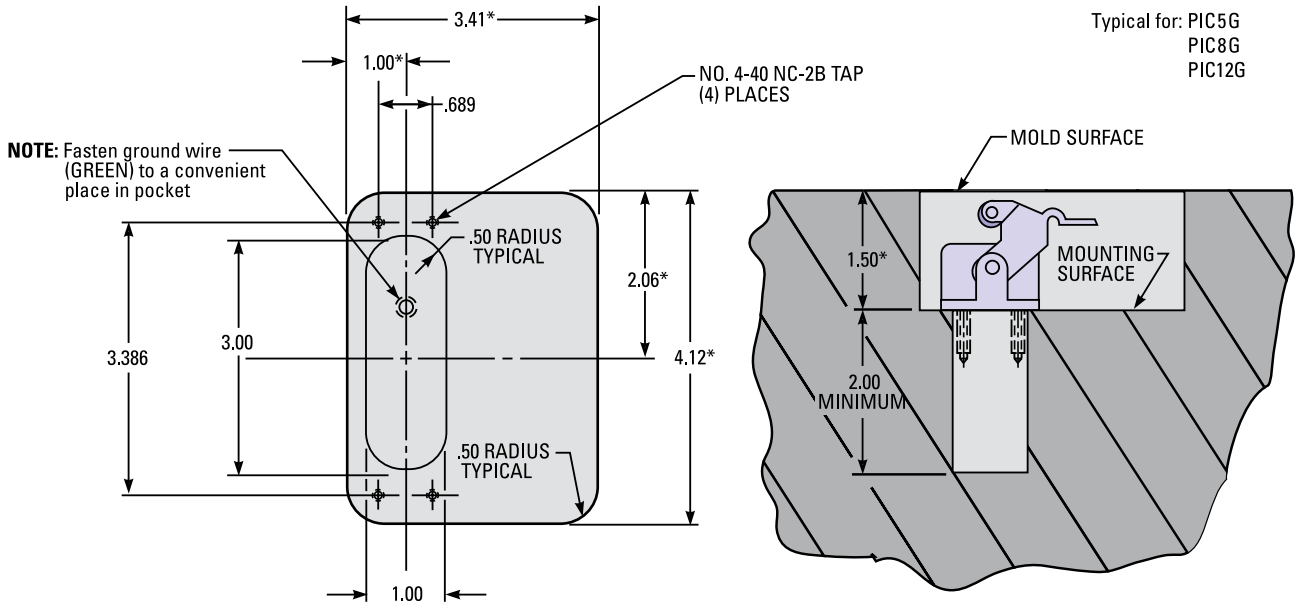


Mold Connector Pocket Layouts

NOTE: Drawing depicts below-flush mounting. Disregard dimensions marked with * for surface mounting.

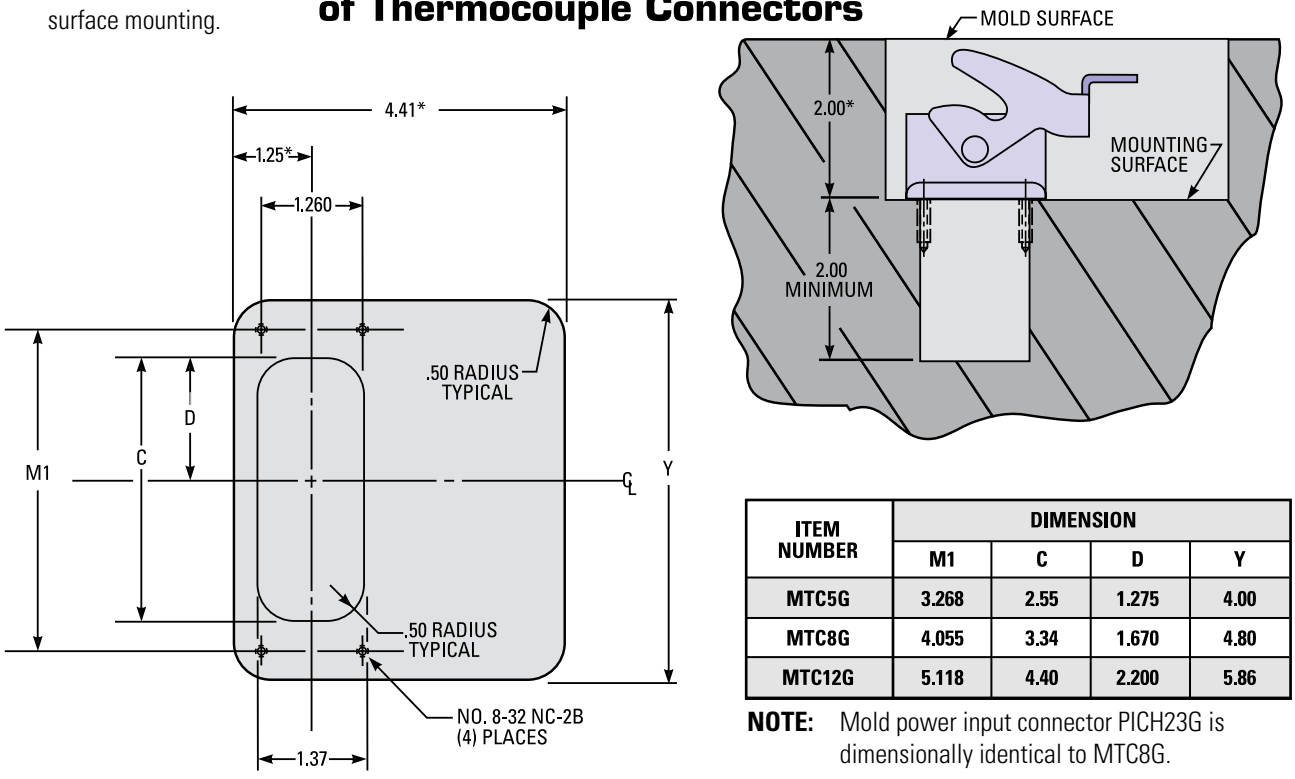
Where space or mold handling and storage requirements do not permit the use of Terminal Mounting Boxes, the connectors can be below-flush or surface mounted. See drawings below and next page for dimensions.

Below-Flush and Surface Mounting of Mold Power Input Connectors (15 AMP)



NOTE: Disregard dimensions marked with * for surface mounting.

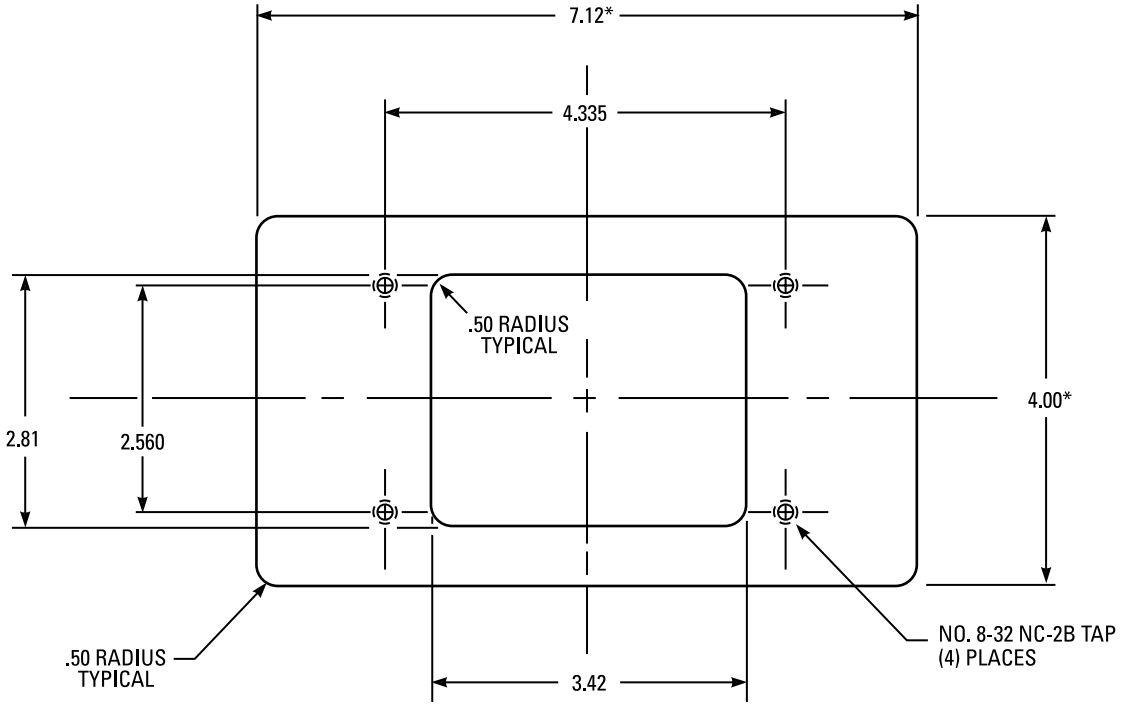
Below-Flush and Surface Mounting of Thermocouple Connectors



ITEM NUMBER	DIMENSION			
	M1	C	D	Y
MTC5G	3.268	2.55	1.275	4.00
MTC8G	4.055	3.34	1.670	4.80
MTC12G	5.118	4.40	2.200	5.86

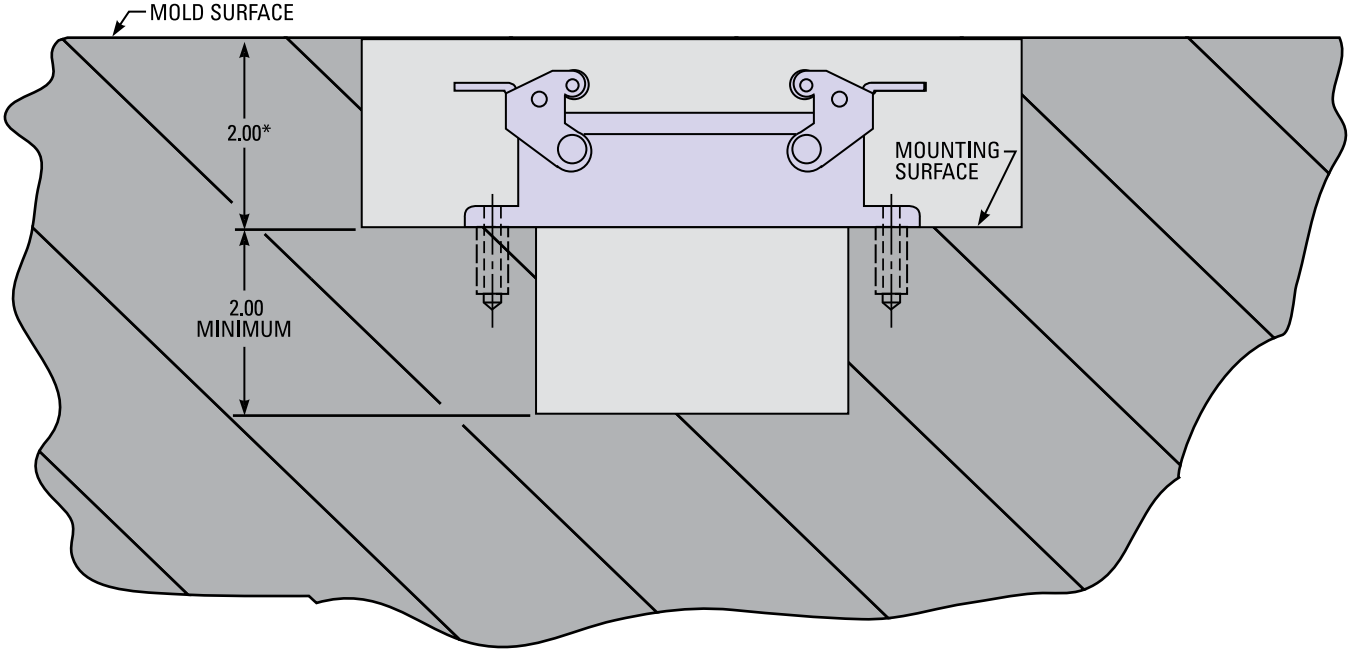
NOTE: Mold power input connector PICH23G is dimensionally identical to MTC8G.

Below-Flush and Surface Mounting of Mold Power Input Connectors (30 AMP)



For PICH5G

NOTE: Drawing depicts below-surface mounting. Disregard dimensions marked with * for surface *mounting*.



For PICH23G

(Use pocket dimensions shown on pages 131-132 as detailed for thermocouple connector MTC8G.)

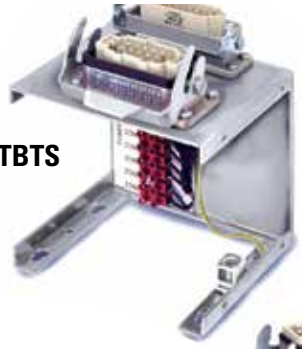
Pre-wired Combination Terminal Mounting Boxes

Includes terminal strip for ease of wiring, all necessary connectors installed, and power connector pre-wired to a terminal strip. All units shown without covers.

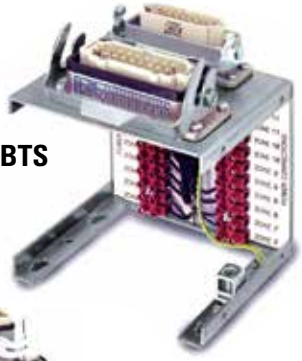
PTC5TBGTS

PTC8TBGTS

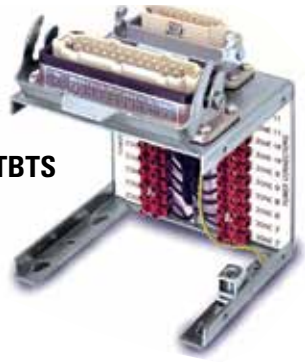
PTC12TBGTS



PTC5TBTS



PTC8TBTS



PTC12TBTS

PTC210TBGTS

PTC2TBGTS is not to be used with SSH1022, SSH1021, MFP1G, MFP1G1, MFP2G, MFPR2G controls & mainframes

Combination Terminal Mounting Boxes – with Terminal Strip

ITEM NUMBER	X	Y	H	M1	M2	ACCEPTS
PTC210TBGTS*	2.75	4.88	4.25	1.500	4.250	MPTC10/MPTC20
PTC2TBGTS*	2.75	4.88	4.25	1.500	4.250	PTC0110/PTC0120
PTC5TBGTS**	2.75	8.66	4.25	1.500	8.031	MPC5C(10 or 20)G/TC5C(10 or 20)G
PTC8TBGTS**	2.75	9.47	4.25	1.500	8.843	MPC8C(10 or 20)G/TC8C(10 or 20)G
PTC12TBGTS**	2.75	10.53	4.25	1.500	9.906	MPC12C(10 or 20)G/TC12C(10 or 20)G
PTC24TBGTS**	4.18	10.53	4.10	3.25	9.91	(2) MPC12C(10 or 20)G / (2) TC12C(10 or 20)G
PTC36TBGTS**	4.18	16.50	4.10	3.25	15.88	(3) MPC12C(10 or 20)G / (3) TC12C(10 or 20)G,
PTC5TBTS**	5.00	6.13	5.12	2.625	5.000	MPC5C(10 or 20)G/TC5C(10 or 20)G
PTC8TBTS**	5.00	6.13	5.12	2.625	5.000	MPC8C(10 or 20)G/TC8C(10 or 20)G
PTC12TBTS**	5.00	6.13	5.12	2.625	5.000	MPC12C(10 or 20)G/TC12C(10 or 20)G

** Comes with all necessary connectors installed and power connector pre-wired to a terminal strip.
* Power and thermocouple connectors are pre-wired.

Terminal Mounting Boxes

PTC8TBG

PTC5TBG

PTC0012

PIC512TBG

PTC210

Terminal Mounting Boxes provide the easiest and most economical method of mounting power and thermocouple connectors on the mold. Constructed of plated heavy gauge steel, each box is precut and drilled for quick mounting of the connector to the box, and box to the mold. Connector mounting hardware is supplied. Connectors are ordered separately.

Terminal Mounting Boxes for Mold Power Input Connectors

ITEM NUMBER	X†	Y	H†	M1	M2	ACCEPTS
PIC512TBG	2.75	4.875	4.25	1.500	4.250	PIC5, 8 or 12G
PICH23TBG	2.75	5.614	4.25	1.500	4.990	PICH23G
PICH5TBG	4.46	6.676	4.25	3.250	6.052	PICH5G

Terminal Mounting Boxes for Thermocouple Connectors

ITEM NUMBER	X†	Y	H†	M1	M2	ACCEPTS
MTC5TBG	2.75	4.875	4.25	1.500	4.250	MTC5G
MTC8TBG	2.75	5.614	4.25	1.500	4.990	MTC8G
MTC12TBG	2.75	6.676	4.25	1.500	6.052	MTC12G

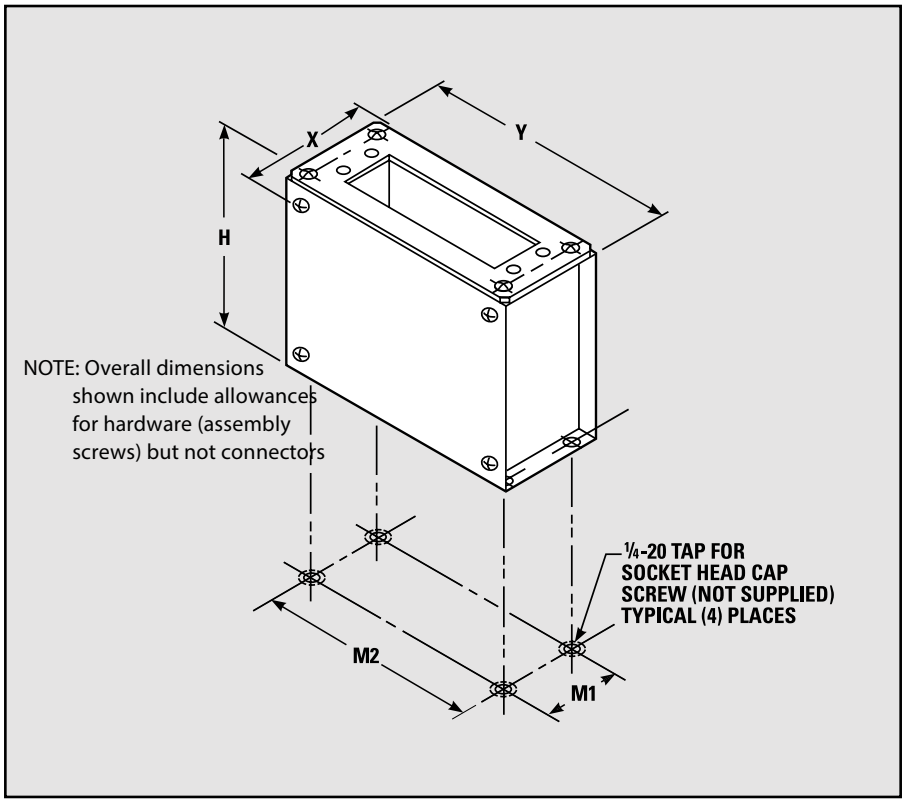
Combination Terminal Mounting Boxes

ITEM NUMBER	X†	Y	H†	M1	M2	ACCEPTS
PTC210	2.75	4.88	4.25	1.500	4.250	(2) CKPTIC1
PTC5TBG	2.75	8.66	4.25	1.500	8.031	PIC5G, MTC5G
PTC8TBG	2.75	9.47	4.25	1.500	8.843	PIC8G, MTC8G
PTC12TBG	2.75	10.53	4.25	1.500	9.906	PIC12G, MTC12G
PTCH1TBG**	4.46	4.88	4.25	3.250	4.250	AC1240MI, TCS1
PTCH23TBG	2.75	10.53	4.25	1.500	9.906	PICH23G, MTC5G
PTCH5TBG	4.46	11.06	4.25	3.250	10.431	PICH5G, MTC5G
PTC0012	4.46	7.66	4.25	3.350	7.160	TPC0001

† Overall dimensions shown include allowances for hardware (assembly screws) but not connectors (example: For Item Number PTC0012 the "X" dimension is 4.29 not including screw heads)

* Used with 2-zone, 15 AMP mainframe MFFPR2G ** Used with 1-zone, 30 AMP mainframe MFHP1G

Terminal Mounting Boxes



RoHS/WEEE Compliant: Microprocessor-Based Temperature Control Modules with Digital Display and Setpoint Pushwheel

COMPATIBLE WITH TAS0512 ALARM AND SYSTEM CONTROL FUNCTIONS. SEE PAGES 143-144.

NOTE: SSM3012 is twice as wide as above and has circuit breaker instead of power on/off switch.

SSM1512/11 (15 AMP) & SSM3012 (30 AMP)

The SSM1512 is the second generation of the popular SSM15G. This version maintains simplicity of operation with simultaneous display of setpoint and temperature. Other new, improved, and unique features include:

Key Features

- **Large Digital Display**
  - For easier readability of temperature, % power and faults
- **Setpoint Pushwheel**
  - For setting desired setpoint temperature
  - Allows adjustment of setpoint before turning power on
- **Auto % Power Display**
  - Shows % power output while in AUTO mode
  - Indicates average % power requirement on thermocouple failure
  - Serves as a diagnostic tool for solving hot runner system problems

Operational Refinements

- **Improved SmartStart®**
  - A more gradual temperature rise leads to a more effective heater dry-out period, thereby extending heater life
  - SmartStart® now available in MANUAL mode (optional)
- **SelectiveCycle®**
  - A very high speed power output approach
  - Enables accurate temperature control and longer heater life
- **Bumpless Transfer**
  - When a thermocouple failure occurs, operation is automatically continued with a learned % power
  - Unique software accurately assigns percent power setting
- **Third Fuse**
  - Allows for alarm output when the load fuses are blown
  - Protects module from application of excessive voltage
- **Anti-Arcing Feature**
  - Protects circuit board from damage when module is either inserted or removed under power

Switchable Options

- **Boost, Idle and Power Off Features**
  - Provides system-wide adjustment of temperatures
  - Enables alarm audio/visual output and remote alarms
  - Requires TAS0512 module and communications mainframe (See pages 148-149 for more information on these capabilities)
- **Unique AutoBoost Option**
  - Instantaneously opens frozen gates on startup
  - TAS module or mainframe communications are not required
- **Lights Out Feature**
  - After stabilizing at setpoint, display turns off; when a fault occurs, display is turned on and flashes
  - For easier detection of faults
- **Shorted Thermocouple Sensitivity Adjustment**
  - Operation can be tailored to fast or slow reaction times
  - Sensitivity can be adjusted with internal switches
  - Very useful for manifold zones with long startup times
- **Switchable °C/°F Operation**
  - Scale indicated at startup
- **K Type Thermocouple Support**
- **Cut Feature**
  - Gain cut feature for small nozzles and heaters with ungrounded internal thermocouples

RoHS/WEEE Compliant: Microprocessor-Based Temperature Control Modules with Digital Display and Setpoint Pushwheel

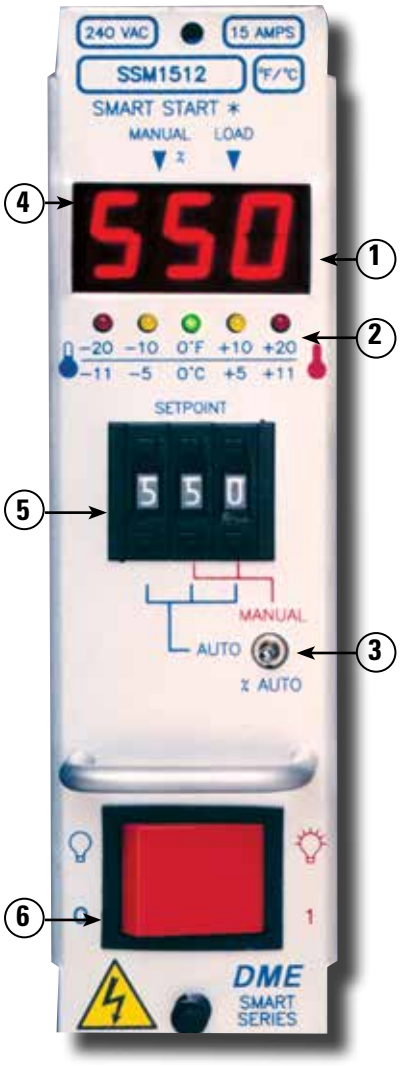
Warranty:
Two years
(excluding triac and fuses)

Fuse Requirements (15 AMP only)
(2) ABC15 fuses (Bussman only)
(2) spare fuses included with module

SSM1512/11 (15 AMP) & SSM3012 (30 AMP)

MODULE ITEM NUMBER	VOLTAGE (VAC)	AMPS	WATTS
SSM1512	240	15	3600
SSM1511	120	15	1800
SSM3012	240	30	7200

NOTE: Standard (240 VAC) modules are compatible with mainframes wired for either 240 VAC three phase (standard) or 240 VAC single phase.



Front Panel Controls and Indicators

1. Process Temperature Display
Indicates process temperature, thermocouple faults and other operational modes. Displays % power when switch (3) is in "% Auto" position.

2. Temperature Deviation Lights
Indicates deviation from setpoint. Outer lights blink when temperature is more than ±40°F (22°C) from setpoint.

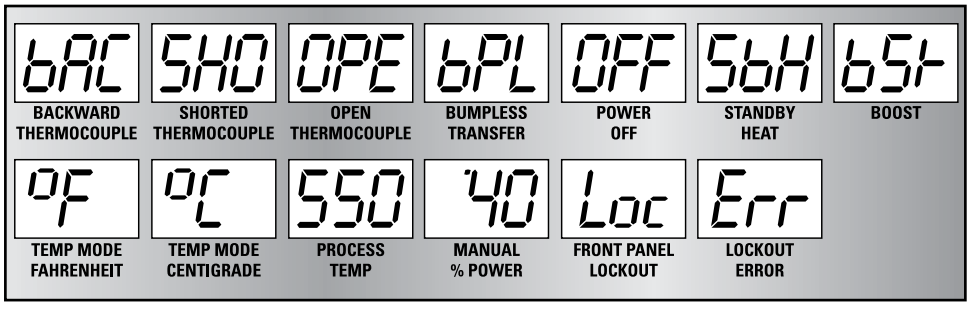
3. Auto/Manual/Auto % Power Switch
Selects AUTO or MANUAL control mode. Shows % power when pressed into "% AUTO" position.

4. LED Mode Indicators
Left LED illuminates during MANUAL mode.
Right LED illuminates when power is supplied to heater.
Right LED blinks on and off during SmartStart®.

5. Setpoint Pushwheel
Three-digit switch programs setpoint in AUTO mode. Right two digits program % power in MANUAL mode.

6. Power On/Off Switch
Controls AC power to module.

Front Panel Digital LED Indicators



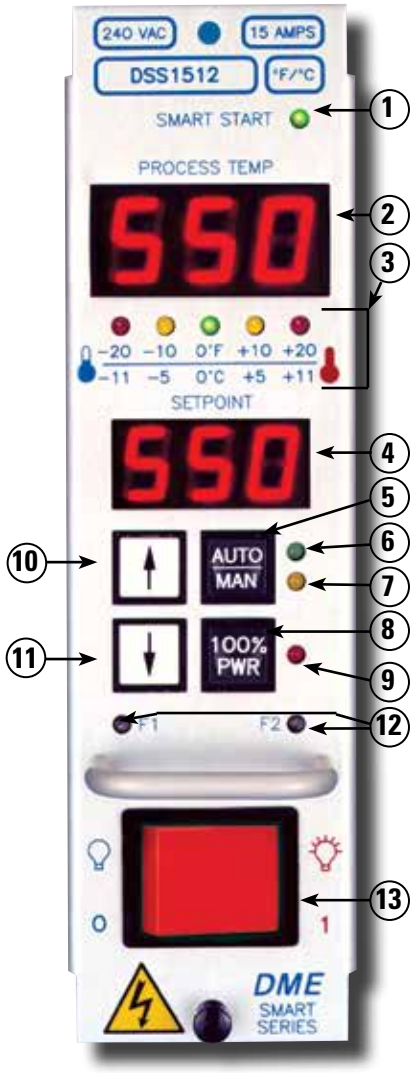
RoHS/WEEE Compliant: Microprocessor-Based Temperature Control Modules with Dual Digital Display

COMPATIBLE WITH TAS MODULE ALARM AND STANDBY HEAT FUNCTIONS. SEE PAGES 143-144.

DSS1512/11 (15 AMP) & DSS3012 (30 AMP)

The DSS15 Smart Series Module has dual digital displays providing readouts of both process and setpoint temperatures at a glance. Closed-loop, fuzzy logic PID control, and auto-tuning of PID parameters provide precise control even under the most adverse processing conditions.

In the event of a thermocouple failure, the DSS can automatically invoke bumpless transfer to a percent power mode based on the last valid percentage learned before the thermocouple failure. If desired, manual bumpless transfer may be selected, in which case a thermocouple fault will turn off power to the heater until the manual percent power mode is activated by the operator.



A unique feature of the DSS is a 100% power option. For a switch-selectable, interval of 15 or 30 seconds, full power can be immediately delivered to the heater to rapidly break through frozen gates to achieve quicker start-ups. The 100% power mode can be disengaged at any time by simply pressing any front panel button.

Indicator lights provide quick reference for module control modes, temperature deviation and blown fuses. The process temperature display also provides quick diagnostics of thermocouple faults, using the following abbreviated codes:

Shi = Shorted Thermocouple
oPi = Open Thermocouple
bci = Reversed Thermocouple

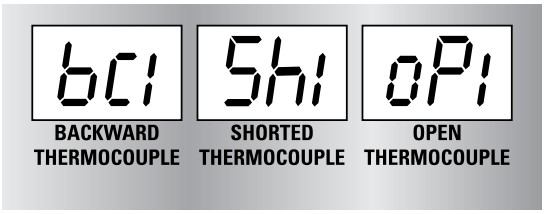
The DSS module also includes a Smart Start® mode to safely bake out damaging internal heater moisture at system start-up and to prolong heater life. Fast or slow load modes may also be selected
to protect smaller heaters or compensate for "slow" loads such as externally heated manifolds. An accurate, durable and full-featured module, the DSS is fully compatible with all Smart Series or G-Series® 15 AMP mainframes.

Front Panel Controls and Indicators

1. **Smart Start Light**
   Indicates Smart Start is on.
2. **Process Temperature Display**
   Indicates process temperature and thermocouple faults as described above.
3. **Temperature Deviation Lights**
   Indicates deviation from setpoint. Outer lights blink at more than ±30°F from setpoint.
4. **Setpoint Display**
   Indicates setpoint temperature or percent power, depending on controller mode.
5. **Auto/Manual Switch**
   Selects auto or manual control mode.
6. **Auto Light**
   Indicates auto mode.
7. **Manual Light**
   Indicates manual mode.
8. **100% Power Switch**
   Indicates 100% power output for selectable interval of 15 or 30 seconds.
9. **100% Power Light**
   Indicates 100% power mode.
10. **Up Arrow**
    Increases desired setpoint value.
11. **Down Arrow**
    Decreases desired setpoint value.
12. **F1/F2 Lights**
    Illuminate when fuse is blown.
13. **Power On/Off Switch**

NOTE: DSS3012 is twice as wide as above; has circuit breaker instead of F1/F2 lights and power on/off switch.

Front Panel Digital LED Indicators



Microprocessor-Based Temperature Control Modules with Dual Digital Display

DSS1512/11 (15 AMP) & DSS3012 (30 AMP)

Performance Specifications

Auto and Manual Control Modes:	Time proportioning/Selective Cycle®
Temperature Range:	Ambient to 999°F (537°C)
Control Accuracy:	±1°F (0.5°C) dependent on the total thermal system
Temperature Stability:	± 0.5% of full scale over the ambient range of 32 to 120°F (0 to 50°C)
Calibration Accuracy:	Better than 0.2% of full scale
Power Response Time:	0.538 seconds.
Manual Control:	Adjustable from 0-100%, maintains output power to within 1% of set point.
Smart Start®:	Linear voltage ramping.
Maximum Smart Start Duration:	5 minutes
Smart Start Override Temperature:	256°F (124°C)
100% Power:	Applies 100% power to the output. Software selectable inhibit or S = 15, L = 30 seconds.
Operational Mode Priority:	· Smart Start® precedes auto mode. · Thermocouple (T/C) break, reversed or shortened T/C overrides Smart Start and auto modes. · Manual control overrides auto mode, T/C breaks, reversed or shortened thermocouples. · Output is inhibited during all fault conditions

Input Specifications

Thermocouple Sensor:	Type J, grounded or ungrounded.
External T/C Residence:	Less than 0.1°F/Ω.
T/C Isolation:	Isolated by control circuit power supply
Cold Junction Compensation:	Automatic, better than 0.03°F/F (0.015°C/°C).
T/C Break, Reversed & Shorted Protection:	Automatically inhibits power to heater unless bumpless transfer is invoked.
Input Impedance:	5.6 Megohms
Input Amplifier Stability:	Greater than 0.02°F/°F (0.01°C/°C).
Common Mode Rejection Ratio:	Greater than 120dB.
Power Supply Rejection:	Greater than 110dB.

Output Specifications

Voltage Power Capability:	15 AMP: 240 nominal, single phase, 120 VAC available, 15 amperes, 3600 watts @ 240 VAC (1800 watts @ 120 VAC). 30 AMP: 30 amperes, 7200 watts @ 240 VAC
Output Drive:	Internal solid state triac, triggered by zero AC crossing pulses.
Overload Protection:	15 AMP: Fuses are provided on both sides of AC line. 30 AMP: Fast acting circuit breaker.
Transient Protection:	dv/dt and transient pulse suppression included.
Power Line Isolation:	Optically and transformer isolated from AC lines. Isolation voltage is greater than 2500 volts.

Controls and Indicators

Auto/Manual Selection:	Push-button switch with LED indicators adjacent to switch.
Setpoint Adjustment:	Push-button up & down arrow keys.
100% Power Selection:	Push-button switch with LED indicator adjacent.
Power On/Off:	16 AMP rocker switch (15 AMP) or 30 AMP circuit breaker (30 amp). Both are UL, CSA, VDE *approved.*
Setpoint Display:	Three 0.4", seven segment digit display.
Process Display:	Three 0.56", seven segment digit display. Also displays alarm codes and flashing "100" for 100° power operation.
100% Power Indication:	Red LED adjacent to 100% power key flashes. Process display flashes "100."
Auto Indication:	Illuminates green LED adjacent to Auto/Man key.
Manual Indication:	Illuminates yellow LED adjacent to Auto/Man key.
Smart Start Indication:	Illuminates green LED above the process display.
Shorted T/C Indication:	Flashes "Shi" in process display.
Opened T/C Indication:	Flashes "oPi" in process display.
Reversed T/C Indication:	Flashes "bci" in process display.
Temperature Deviation Indicators:	Five separate LEDs: ±20°F/11°C = Red ±10°F/5°C = Yellow 0° = Green.
Blown Fuse Indicators:	2 neon indicators (15 AMP only)

Electrical Power Specifications

Input Voltage:	240/120 VAC + 10% -15%
Frequency:	50/60 Hz
DC Power Supplies:	Internally generated, regulated and compensated
Module Power Usage:	Less than 6 watts, excluding load.
Dimensions:	15 AMP: 2"W x 7"H x 7 ½"D (5.08 x 17.78 x 19.05 cm) 30 AMP: 4"W x 7"H x 7 ½"D (10.06 x 17.78 x 19.05 cm)

NOTE: Standard (240 VAC) modules are compatible with mainframes wired for either 240 VAC three phase (standard) or 240 VAC single phase.

FOR °C OPERATION: Switch to °C on front panel.

FUSE REQUIREMENTS (15 AMP ONLY): (2) ABC15 Fuses (Bussman only)

NOTE: (2) spare fuses included with module.

WARRANTY: Two years (excluding triac and fuses)

Smart Series Microprocessor-Based Temperature Control Modules

(240 VAC, standard)

ITEM NUMBER	AMPS	WATTS
DSS1512	15	3600
DSS3012	30	7200

(120 VAC, optional)

ITEM NUMBER	AMPS	WATTS
DSS1511	15	1800

RoHS/WEEE Compliant: Microprocessor-Based Temperature Control Modules with Color Touch Screen Display

TSM-15-12

The TSM15 Smart Series Module has a color touch screen digital display providing readouts for Actual Temperature, Current Mode, Percentage Power and Current Reading. Closed-loop, fuzzy logic PID control, and auto-tuning of PID parameters provide precise control even under the most adverse processing conditions.

In the event of a thermocouple failure, the TSM can automatically invoke bumpless transfer to a percent power mode based on the last valid percentage learned before the thermocouple failure. If desired, manual bumpless transfer may be selected, in which case a thermocouple fault will turn off power to the heater until the manual percent power mode is activated by the operator.

The TSM boost level option limits boosting of the temperature by 75°C or 135°F to limit the degradation of material.

The TSM module also includes a Smart Start® mode to safely bake out damaging internal heater moisture at system start-up and to prolong heater life. Fast or slow load modes may also be selected to protect smaller heaters or compensate for "slow" loads such as externally heated manifolds. An accurate, durable and full-featured module, the TSM is fully compatible with all Smart Series or G-Series® 15 AMP mainframes.

Leak Detection capabilities (reference TSM1512 User Manual)

TSM15 SmartSeries® Controller with Default Settings (Factory Settings)

Zone temperature	260°C or 500°F
Standby level	100°C or 180°F
Boost level	75°C or 135°F
Over temperature range	10°C or 18°F
Under temperature range	
Ramp	On
Auto-Manual	On
Extended alarms for Manual, Standby and Boost	Off

When reconfiguring your controller for a new tool or environment, this chapter of the manual shows how to alter controller default settings to your preferred values and afterward to save them.

Should anything seem wrong with your new settings then it is possible to restore the default settings at any time.

1. **Actual temperature (and scale)**
2. **Current mode shows set-point**
3. **Percentage power applied**
4. **Current reading**

Front Panel Controls and Indicators

Individual Card Diagnostics

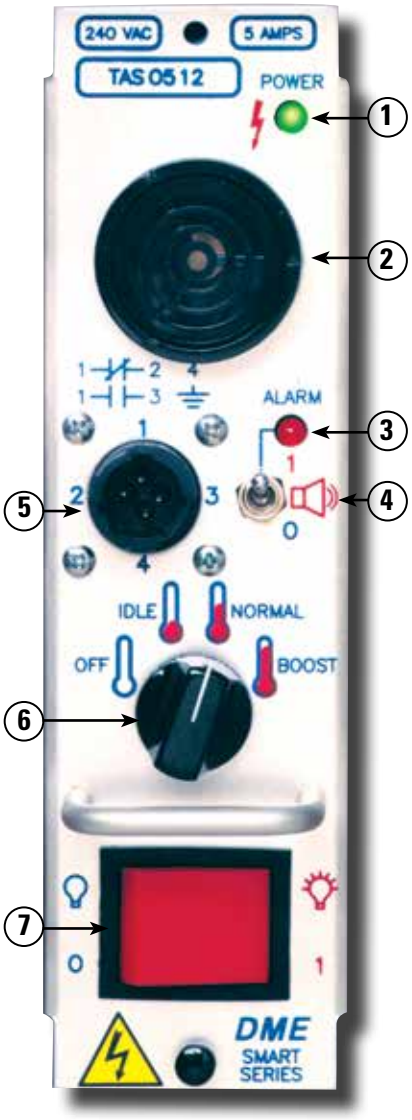
The control system has several features which provide a diagnosis of faults in the control system, the tool heaters and thermocouple sensors.

If a zone temperature is seen to deviate from the actual setting beyond the alarm limits then the display will change to White text in Red box and generate a remote alarm.

The following is a list of alarm conditions that may be detected and which will also activate the output contacts.

ERROR MESSAGE	CAUSE	ACTION
ERR!	Little or no temperature rise has been detected in that zone. When the console starts to apply power it expects to see an equivalent heat rise at the thermocouple. If the thermocouple has been trapped and pinched elsewhere in the tool or cable then it cannot sense the full heat rise that occurs at the tip. If left uncorrected, there is a danger that the zone could overheat and damage the tip. Instead the circuit maintains the output at whatever level it reached when the monitor circuit detected the fault.	Check thermocouple wiring; it may be reversed. Heater wiring may be faulty or element may be open circuit.
FUSE	The output fuse for that zone has failed. Please note: A fuse can only fail due to a fault external to the controller. Identify and rectify the fault before replacing the fuse. Note: The fuse detection circuit requires a continuous low level current through a high impedance bleed resistor to maintain the alarm condition. As a result the load circuit is still connected to the main's voltage supply and it is not safe to attempt to repair or replace the fuse without first isolating the circuit. If the fuse in question is mounted on a control card then it is safe to unplug the board in order to isolate the circuit and replace the fuse on the card.	Replace the fuse with one of the same rating and type; i.e. High Rupture Current load fuse. The blown fuse is located on the control card.
GND	The system has detected an ground fault.	Check your heater wiring for a low impedance path to the ground.
LINE	No mains supply synchronization pulses being received. The 3-phase supply is used in a cross-over detection circuit to generate timing pulses for accurate phase control and firing the triac. If the phase detection fails on one or two phases then there is no pulse to use to measure phase angle and the LINE error message is generated. Meanwhile, all circuits on the healthy phases will continue to work normally.	There is a phase detection circuit on each TMS15-Series card and a common phase detection circuit on all other controller types. Although a fault in such circuits may cause the LINE error message, such fault is very rarely seen. The most common error is either the absence of one phase or, if a plug has been re-wired incorrectly, a swapped phase and neutral. If a LINE error message occurs then switch off and isolate the controller then check supply wiring for presence of all three phases.
REV	The card has detected an abnormal input at the T/C termination that indicates a shorted or reversed thermocouple.	If the REV alarm persists, switch off the controller and investigate the offending zone.
T/C	An open circuit thermocouple has been detected and no auto-response has been selected in the T/C Open Error column of the Setup page.	For immediate recovery, change to open loop control. Make a note of the above action so that when the controller is free you can check to see whether the input fuse on the control card has ruptured. If the fuse is good then you may need to check the wiring for faults or even replace the thermocouple.

Temperature Alarm/System Control Modules



TAS0512/11 Temperature Alarm Function

- Provides alarm for over or under temperature, or diagnostic error
- Provides visual and audible indications of an alarm
- The audible alarm (2) can be turned on or off with switch (4)
- Relay contacts (5) are provided to allow hook-up of remote equipment such as a light, a conveyor or a machine function
- Relay contacts are unaffected by the position switch (4)
- An infinite number of zones of control can be monitored as long as they are contained within the same communications-style mainframe as the TAS module

System Control Functions

Up to 63 zones can be controlled remotely at one time. These zones must be contained within the same communications-style mainframe as the TAS module.

NORMAL / IDLE

- Rotary switch (6) provides remote control of DSS1502/01, DSS1512/11, CSS1502/01, SSM1502/01, and SSM1512/11
- Control modules can all be commanded to respond from NORMAL to IDLE (Standby Heat)
- In IDLE, the modules will adjust to a setting of 93°C (200°F)
  Exceptions: SSM1502/01 and SSM1512/11 adjust to a setting of 100°C (212°F)
- Moving the rotary switch back to NORMAL restores all modules to their established setpoints
- The user can select IDLE for temporary lowering of all zones to prevent material degradation
- This feature can be used to keep heaters warm enough to prevent absorption of moisture

BOOST / OFF

- The SSM1502/01 and SSM1512/11 can be placed into BOOST and OFF
- BOOST will raise the setpoint of the module by 10, 20, or 30%
- OFF shuts off power to the heater but allows the user to monitor cool down of the hot runner system
- Each SSM1502/01 and SSM1512/11 can be individually programmed to respond to OFF, IDLE and BOOST commands
- The user can quickly drive all nozzle zones into BOOST to open frozen gates

Front Panel Controls and Indicators

1. **Power On Indicator:** LED illuminates when power is applied to the module.
2. **Audible Alarm:** Emits a loud audible alarm when the alarm switch (4) is placed in the "1" position (ON) and an alarm condition is sent by a compatible control module.
3. **Alarm Indicator:** LED illuminates when an alarm condition is sent by a compatible module.
4. **Audio Alarm On/Off Switch:** Turns the audio alarm (2) on or off.
5. **Alarm Relay Connector** Provides relay contacts for use with remote equipment. Mating connector is supplied.
6. **System Control Switch:** Activates the OFF, IDLE and BOOST mode in all compatible modules.
7. **Power On/Off Switch:** Controls AC power to the module.

Temperature Alarm/System Control Modules

ITEM NUMBER	VOLTS
TAS0512	240 VAC
TAS0511	120 VAC

NOTE: Standard (240 VAC) modules are compatible with mainframes wired for either 240 VAC three-phase (standard) or 240 VAC single-phase. Use TAS0511 for 120 VAC operation.

FUSE REQUIREMENTS: (2) ABC1 fuses. NOTE: (2) spare fuses included with module.

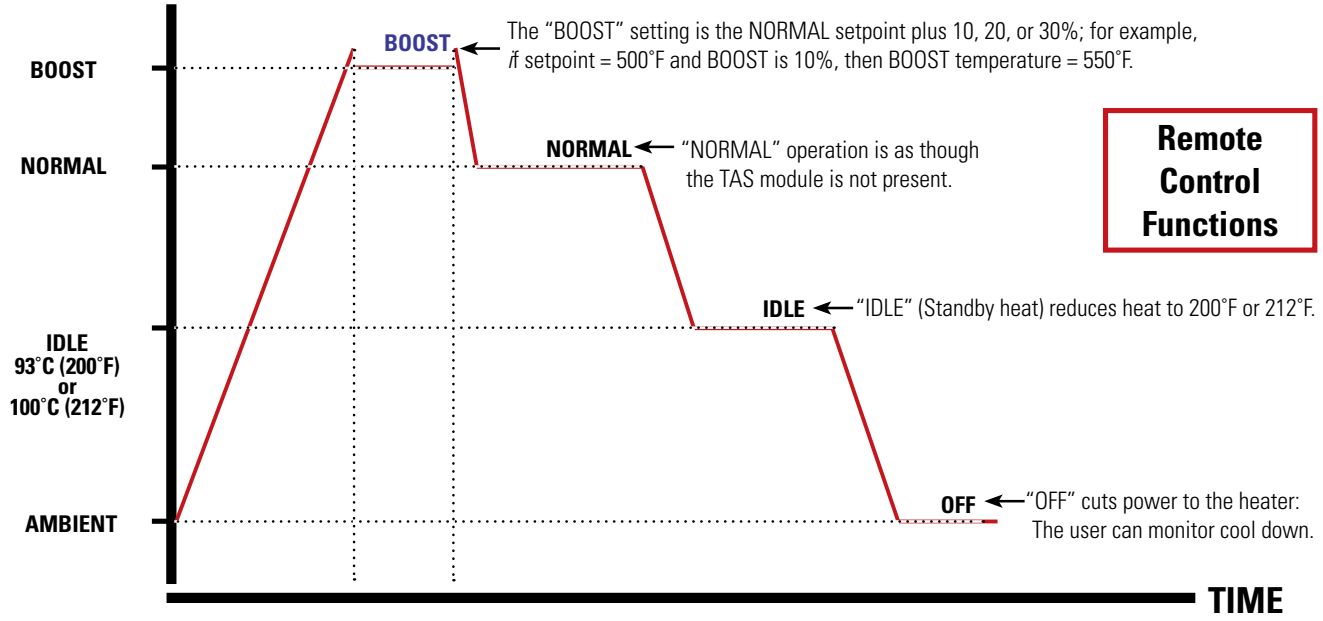
WARRANTY: Two years (excluding fuses).

TAS Module Compatibility

NOTE:
TAS module is not compatible with older CSS15G/30G or DSS15G/30G modules.

MODULE	FUNCTIONS			
	ALARM	IDLE	BOOST	OFF
SSM1502/01/12/11	✓	✓	✓	✓
SSM3002/12	✓	✓	✓	✓
DSS1502/01/12/11	✓	✓		
DSS3002/12	✓	✓		
TSM1512	✓	✓	✓	✓

MODULE	FUNCTIONS			
	ALARM	IDLE	BOOST	OFF
CSS1502/01	✓	✓		
CSS3002	✓	✓		
SSM15G	✓			
SSM15G1	✓			
SSM30G	✓			

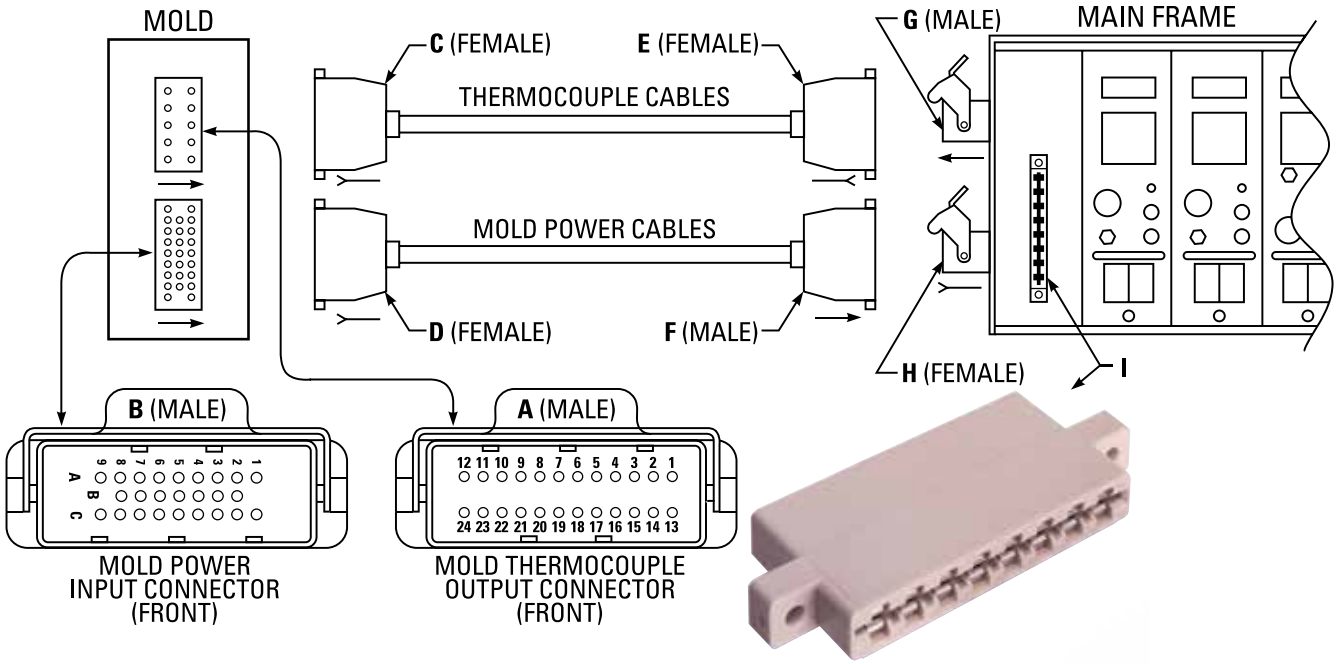


Remote Control Functions

Upgrade Kits For Converting to Communications Mainframes

ITEM NUMBER	MAIN FRAME
CIK4	4-ZONE
CIK5	5-ZONE
CIK7	7-ZONE
CIK8	8-ZONE
CIK11	11-ZONE
CIK12	12-ZONE
CIK16	16-ZONE
CIK20	20-ZONE
CIK24	24-ZONE

ITEM NUMBER	MAIN FRAME
CIK28	28-ZONE
CIK32	32-ZONE
CIK36	36-ZONE
CIK40	40-ZONE
CIK44	44-ZONE
CIK48	48-ZONE
CIK2HP	2-ZONE HIGH POWER
CIK3HP	3-ZONE HIGH POWER
CIK5HP	5-ZONE HIGH POWER



NOTE: For upper inside communications connectors, see previous page.

Connectors / Connector Kits (5-48 zone, 15 Amp; 2-5 zone, 30 Amp)

REFERENCE LETTER	DESCRIPTION	ITEM NUMBER
A	Mold Thermocouple Output Connector	see page 132
B	Mold Power Input Connector	see page 131
C	Mold End Kit for 5-Zone Thermocouple Cable (10, 15 or 30 AMP)	CKTF15G
	Mold End Kit for 8-Zone Thermocouple Cable (10, 15 or 30 AMP)	CKTF18G
	Mold End Kit for 12-Zone Thermocouple Cable (10, 15 or 30 AMP)	CKTF112G
D	Mold End Kit for all 10 or 15 AMP Power Cables	CKPF112BG
	Mold End Kit for all 2 or 3-Zone 30 AMP Power Cables	CKPF13CG
	Mold End Kit for all 5-Zone 30 AMP Power Cables	CKPF15CG
E	Frame End Kit for all Thermocouple Cables (10, 15 or 30 AMP)	CKTF112AG
F	Frame End Kit for all 10 or 15 AMP Power Cables	CKPM112BG
	Frame End Kit for 2 or 3-Zone 30 AMP Power Cables	CKPM13CG
	Frame End Kit for all 5-Zone 30 AMP Power Cables	CKPM15CG
G	Thermocouple Input Kit for all Mainframes (10, 15 or 30 AMP)	CKTM212AG
H	Power Output Kit for all 10 or 15 AMP Power Cables	CKPF212BG
	Power Output for all 2 or 3-Zone 30 AMP Power Cables	CKPF32CG
	Power Output Kit for all 5-Zone 30 AMP Power Cables	CKPF25CG
I	Edge Card Connector Kit for all Mainframe PC Boards (10, 15 or 30 AMP)	CKF312G

Replacement Parts and Service Items for DME Smart Series® Temperature Control Systems

Mainframe, Cable Components, and Service Tools*

CBD10M	10 AMP 2 POLE, CIRCUIT BREAKER USED IN MFP1G AND MFP1G1	
CBD20M	20 AMP 2 POLE, CIRCUIT BREAKER USED IN MFR2G	
CBD30M	30 AMP 2 POLE, CIRCUIT BREAKER USED IN MFFPR2G AND MFHP1G	
CBD50	50 AMP 3 POLE, CIRCUIT BREAKER USED IN 5 THROUGH 12 ZONE MAINFRAMES	
CBD70	70 AMP 3 POLE, CIRCUIT BREAKER USED IN 16 THROUGH 48 ZONE & HIGH POWER MAINFRAMES	
PIN0114	14 GAUGE MALE PIN FOR "B"& "F" POWER CONNECTORS (PACKAGE OF 30)	SEE PREVIOUS PAGE
PIN0214	14 GAUGE FEMALE SOCKET FOR "D"& "H" POWER CONNECTORS (PACKAGE OF 30)	SEE PREVIOUS PAGE
PIN0120	20 GAUGE MALE PIN FOR "G" THERMOCOUPLE CONNECTOR (PACKAGE OF 30)	SEE PREVIOUS PAGE
PIN0220	20 GAUGE FEMALE PIN FOR "E" THERMOCOUPLE CONNECTOR (PACKAGE OF 30)	SEE PREVIOUS PAGE
WHT1919	CRIMP TOOL FOR ALL PIN-XXXX LISTED ABOVE	
RPM0048	EXTRACTION TOOL FOR ALL PIN-TYPE CONNECTOR PINS	
RPM0038	NEON INDICATORS USED ON 240 VAC MAINFRAME CIRCUIT BREAKER PANELS	
RPM0044	CARD GUIDES FOR ALL MAINFRAMES	
RPM0046	PINS FOR WHITE EDGE CARD CONNECTORS "I" (PACKAGE OF 20)	
RPM0059	PANEL MOUNT BASE & LATCH FOR 5-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0060	PANEL MOUNT BASE & LATCH FOR 8-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0061	PANEL MOUNT BASE & LATCH FOR 12-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0062	MALE INSERT FOR 5 ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0063	MALE INSERT FOR 8-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0064	MALE INSERT FOR 12-ZONE THERMOCOUPLE MOLD CONNECTION "A"	SEE PREVIOUS PAGE
RPM0065	FEMALE INSERT FOR 5-ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0066	FEMALE INSERT FOR 8-ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0067	FEMALE INSERT FOR 12-ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0068	HOOD FOR 5 ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0069	HOOD FOR 8 ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0070	HOOD FOR 12 ZONE THERMOCOUPLE CABLE CONNECTOR "C"	SEE PREVIOUS PAGE
RPM0071	HOOD FOR 5, 8 & 12 POWER & THERMOCOUPLE CABLE CONNECTIONS "D","E" & "F"	SEE PREVIOUS PAGE
RPM0072	MALE INSERT FOR "B", "F" & "G" (15 AMP CONNECTOR RATING IS EXCLUSIVE TO DME)	SEE PREVIOUS PAGE
RPM0073	FEMALE INSERT FOR "D", "E" & "H" (15 AMP CONNECTOR RATING IS EXCLUSIVE TO DME)	SEE PREVIOUS PAGE

***(Reference page 134-147 for Letter Designations)**

All Smart Series Modules

ABC1	1 AMP 250 VAC FUSE
ABC3	3 AMP 250 VAC FUSE - NOTE: THESE LOWER POWER FUSES ARE RECOMMENDED FOR NOZZLES
ABC5	5 AMP 250 VAC FUSE - NOTE: THESE LOWER POWER FUSES ARE RECOMMENDED FOR NOZZLES
ABC10	10 AMP 250 VAC FUSE - NOTE: REQUIRED FOR 15 AMP MODULES USED IN 10 AMP FRAMES
ABC15	15 AMP 250 VAC FUSE
RPM0123	15 AMP 250 VAC FUSE - ULTRAFAST
RPM0124	.062 AMP TC FUSE FOR TSM MODULES ONLY
NYL0001	"NYLATCH" MODULE RETENTION PLUNGER AND GROMMET (10/PKG) - NOTE: AT THE BOTTOM OF EACH MODULE
RPM0008	POWER ROCKER SWITCH FOR ALL MODULES EXCEPT DSS AND CSS1524
RPM0009	TRANSFORMER TYPE DST416 FOR ALL MODULES EXCEPT DSS & TAS
RPM0027	ALUMINUM HANDLE FOR 15 AMP MODULES
RPM0039	30 AMP 2 POLE, CIRCUIT BREAKER FOR MODULES
RPM0023	TRIAC - TYPE Q6040P 40 AMP 600 VOLT FOR USE ON ALL MODULES
RPM0054	TRIAC - TYPE BTA40800B 40 AMP 800 VOLT FOR USE ON ALL MODULES EXCEPT CSS
RPM0050	2200 OHM FLAME PROOF FUSIBLE LINK RESISTOR USED IN THERMOCOUPLE CIRCUIT (10/PK) USED ON ALL MODULES
RPM0088	A/D CONVERTER FOR SSM15G, SSM15G1, SSM30G, SSH1001, SSH-1002 AND ALL CSS MODULES

Replacement Parts and Service Items for DME Smart Series® Temperature Control Systems

CSS15G, CSS30G, CSS1502, CSS3002

CSS0001	MICROPROCESSOR FOR CSS15G
CSS0002	MICROPROCESSOR FOR CSS1502
RPM0011	TRIAC DRIVER U14
RPM0012	OPTOCOUPLER U9 & U11
RPM0013	OPERATIONAL AMPLIFIER U8 & U13
RPM0014	OPERATIONAL AMPLIFIER U3

DSS15G, DSS30G, DSS1502, DSS3002

DSS0001	MICROPROCESSOR FOR DSS15G, DSS15G1 & DSS30G
DSS0002	MICROPROCESSOR FOR DSS1501, DSS1502 & DSS3002
RPM0020	TRANSFORMER
RPM0022	TRIAC DRIVER Q1
RPM0024	POWER ROCKER SWITCH
RPM0086	315 MA TIME LAG FUSE F3 (USED IN DSS1501, 1502, & 3002 MODULES ONLY); CHECK YOUR MODULE!
RPM0089	200 MA TIME LAG FUSE F3 (USED IN DSS1501, 1502, & 3002 MODULES ONLY); CHECK YOUR MODULE!

SSM15G, SSM30G, SSH1002, ESH1012

RPM0010	TRIAC DRIVER U5
RPM0012	OPTOCOUPLER U6 & U7
RPM0013	OPERATIONAL AMPLIFIER U2
RPM0014	OPERATIONAL AMPLIFIER U8
RPM0015	SETPOINT POTENTIOMETER (FRONT PANEL)

SSM1501, SSM1502, SSM3002, SSH1011, SSH1012, ESH1012

SSM0002	MICROPROCESSOR
RPM0010	TRIAC DRIVER U5
RPM0014	OPERATIONAL AMPLIFIER U3 & U8
RPM0053	PUSHWHEEL ASSEMBLY, WITH CABLE
RPM0055	AUTO/MANUAL/AUTO% SWITCH FOR FRONT PANEL (SSM ONLY) (FRONT PANEL)
RPM0056	AUTO/MANUAL/AUTO% SWITCH FOR FRONT PANEL (SSH & ESH) (FRONT PANEL)
RPM0087	250 MA TIME LAG FUSE F3; CHECK YOUR MODULE!
RPM0090	160 MA TIME LAG FUSE F3; CHECK YOUR MODULE!

TAS0501, TAS0502, TAS0511, TAS0512

RPM0025	BEEPER
RPM0026	TRANSFORMER
RPM0028	SWITCH STANDBY HEAT (TAS0501, TAS0502, ONLY) & ALARM (ALL UNITS) (FRONT PANEL)
RPM0057	ROTARY SWITCH FOR OFF, STANDBY HEAT, NORMAL, BOOST (TAS0511, TAS0512, ONLY)
RPM0058	KNOB FOR RPM0057
RPM0029	RECEPTACLE CONNECTOR FOR FRONT PANEL
RPM0030	MATING CONNECTOR (PLUG) FOR RPM0029
RPM0031	PINS FOR RPM0030
RPM0032	SOCKETS FOR RPM0029
RPM0033	RELAY #1 - ALARM OUTPUT CONNECTOR
RPM0034	RELAY #2 - BEEPER CONTACTS

Input Power Wiring Diagrams (Option A)

The diagrams on pages 148 through 150 are printed on the back panels of the mainframes. For your convenience, they are depicted here along with additional information.

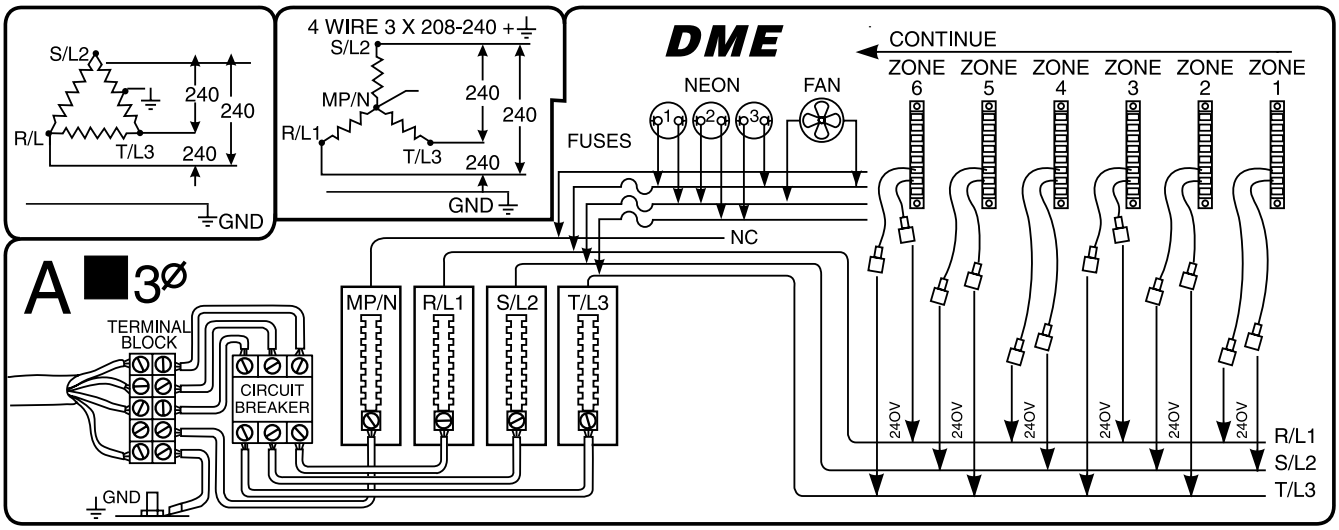
For information on input wiring for 30 AMP mainframes, contact DME.

Standard input wiring for mainframes, unless specified otherwise at time of order, is 240 VAC, three- phase, 4-wire, 50/60 Hz. (OPTION A). If it becomes necessary to change to another configuration, refer to the appropriate diagram and information on the following pages:

NOTE: For mold power and thermocouple connector wiring information, see pages 128-129.

OPTION A (Standard)

208 – 240 VAC, Three-Phase, 4-Wire Delta or "Y" Power Distribution System



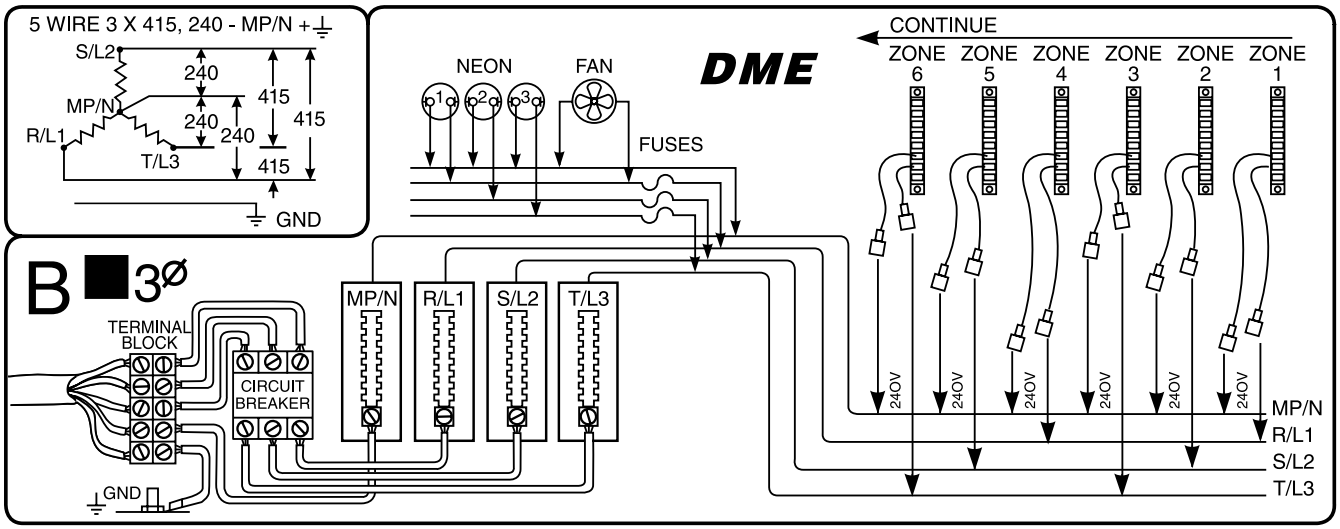
As shown above, each module is powered from one of the three phases. Zone (1), for example, is powered from Phase 1, which is supplied by R/L1 and S/L2. Zone (2) is powered by Phase 2, which is supplied by S/L2 and T/L3. Zone (3) is powered by Phase 3, which is supplied by R/L1 and T/L3.

NOTE: At this point, the sequence repeats itself. For example, Zone (4) is connected the same as Zone (1) to R/L1 and S/L2 and Zone (5) is connected the same as Zone (2) to S/L2 and T/L3 and Zone (6) is connected the same as Zone (3) to R/L1 and T/L3. Zone (7) is then connected to the same phase as Zone (1) and (4), etc. This method of connection assures the greatest likelihood of line balance.

Input Power Wiring Diagrams (Option B)

OPTION B

380 – 415 VAC, Three-Phase, 5-Wire
"Y" Power Distribution System



CAUTION NOTE: The voltages from line-to-line in this system are 380 to 415 volts. Severe damage to module and mainframe could result if this type of AC input system is connected to a mainframe wired as OPTION A. This type of power distribution is not found or is very uncommon in the United States but is the most common system found in many other countries worldwide.

WARNING: If export of this system is intended, make sure that wiring is reconfigured for the country where it is to be used.

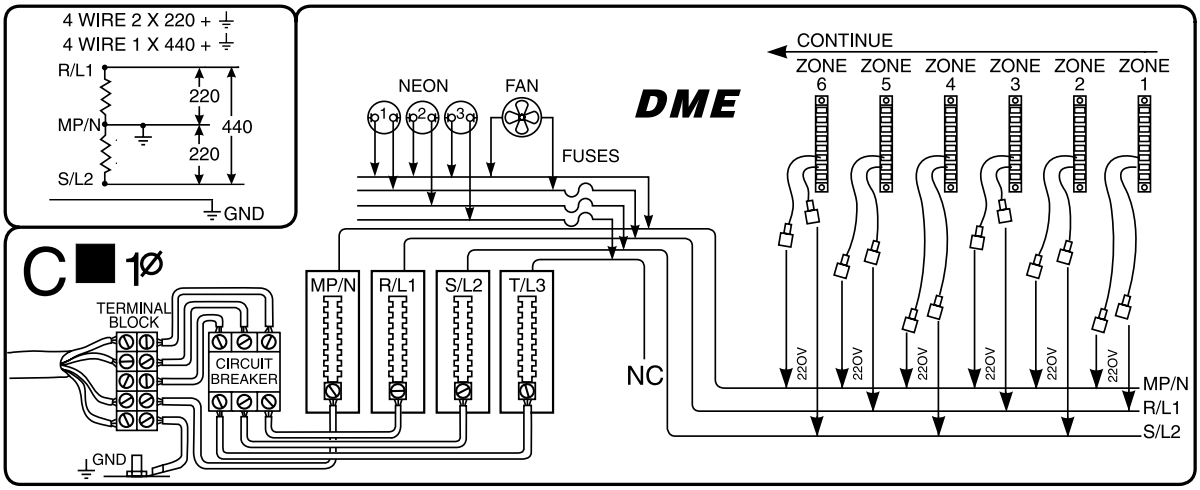
Please note that the 380-415 Volt Power Distribution System is the same as the "Y" connection shown in OPTION A except for the voltage levels and the use of the MP/N to develop the 240 volt from the 380-415 volt system. Notice that all modules have one line connected to MP/N and the other side connected to one of the three phase lines.

Example: Zone (1) is connected to Phase 1, which is supplied by R/L1 and MP/N.
Zone (2) is connected to Phase 2, which is supplied by S/L2 and MP/N.
Zone (3) is connected to Phase 3, which is supplied by T/L3 and MP/N.
Zone (4) starts the sequence over again. It is connected to Phase 1 R/L1 and MP/N, etc.

Input Power Wiring Diagrams (Options C and D)

Example: Zone (1) is connected to MP/N and R/L1. Zone (2) is connected to MP/N and S/L2, etc.
Zone (3) starts the sequence over again. It is connected to MP/N and R/L2, same as zone (1).

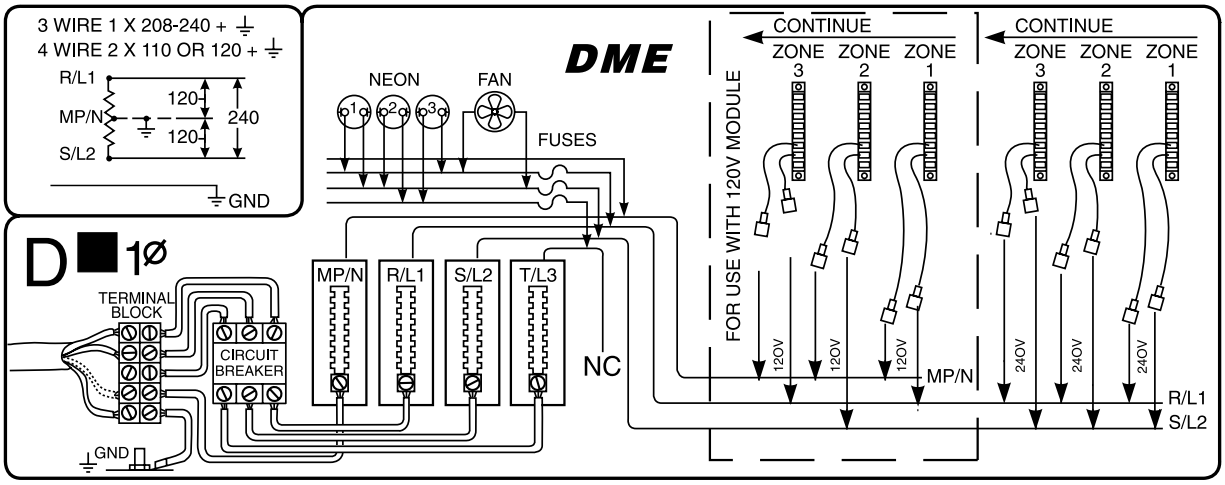
OPTION C — 240 VAC, Two-Phase, 4-Wire



The 240 volt single-phase connection only uses two power lines plus ground.

CAUTION: Only power conductors should be connected through the circuit breaker. Never make ground connections through a circuit breaker. Notice that the output of the circuit breaker is connected to terminal strips R/L1 and S/L2. Also notice that ground is common with MP/N in this system. All zones in this system have to be connected to MP/N and either R/L1 or S/L2. Line balance is achieved by alternating between R/L1 *and S/L2.*

OPTION D — 208 – 240 VAC, Single-Phase, 3-Wire or 120 VAC, Two-Phase, 4-Wire



Above diagram depicts two different wiring configurations. One is 208-240 volt, single-phase, 3-wire. Note that lines R/L1 and S/L2 are connected through the circuit breaker to the appropriate terminal strips. All zones will be connected between R/L1 and S/L2. MP/N is common with ground and is not connected through the circuit breaker.

In the 120 volt connection (zone connections shown within the dashed-line area), the 120 volts is developed between R/L1 and MP/N and S/L2 and MP/N. Again, ground and MP/N are not connected through the circuit breaker. Each zone in this system will be connected to MP/N and either R/L1 or S/L2. Line balance is achieved by alternating between R/L1 and S/L2.

Alternate Cable Configuration

Mold-Masters to DME Smart Series Conversion Cables

Combination Mold Power and Thermocouple Conversion Cables allow ease of conversion between Mold-Masters and DME systems

- Mold Power and Thermocouple combined in a single cable
- Conversion for 12 zones
- Cables available in standard lengths of 10′ and 20′ (custom lengths are available)

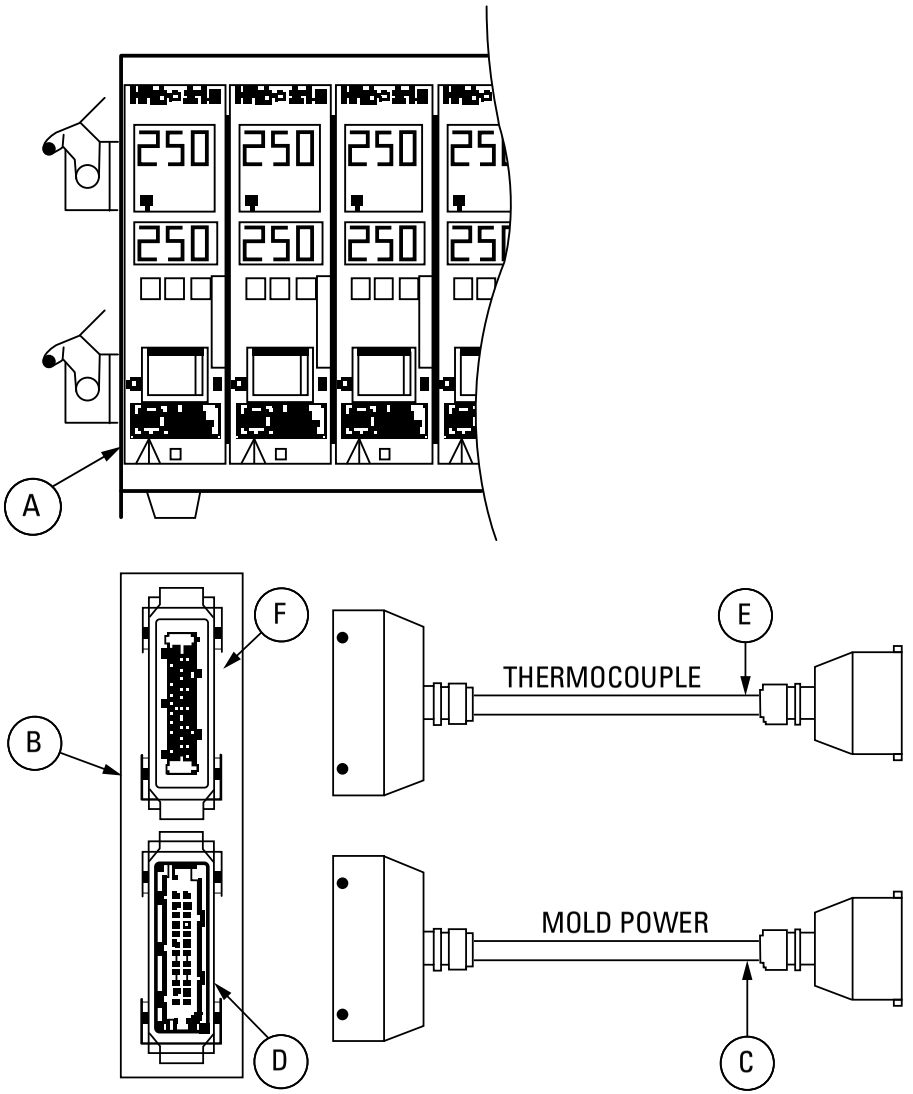
Item Number	Mold Power Zones	Thermocouple Zones	Cable Length	Mainframe Connector	Mold Connector	Splits
PITC1210YFE	12	12	10′	DME "G" Series	HBE48 (Mold Master MPlug.12)	5 (Frame End)
PITC1220YFE			20′			
PITC1210YME			10′	HBE48 (Mold Master MPlug.12)	DME "G" Series	5 (Mold End)
PITC1220YME			20′			

Works with the following connectors:

PIC12G

MTC12G

MPlug.12



5-ZONES OF CONTROL		
B	PTCO5TB	5-ZONE TERMINAL MOUNTING BOX
C	MPCO5C10 OR 20G	5-ZONE MOLD POWER CABLE; 10' OR 20' O.A.L.
D	PICO5	5-ZONE MOLD POWER INPUT CONNECTOR
E	TCO5C10 OR 20G	5-ZONE THERMOCOUPLE CABLE; 10' OR 20' O.A.L.
F	MTCO5	5-ZONE MOLD THERMOCOUPLE CONNECTOR

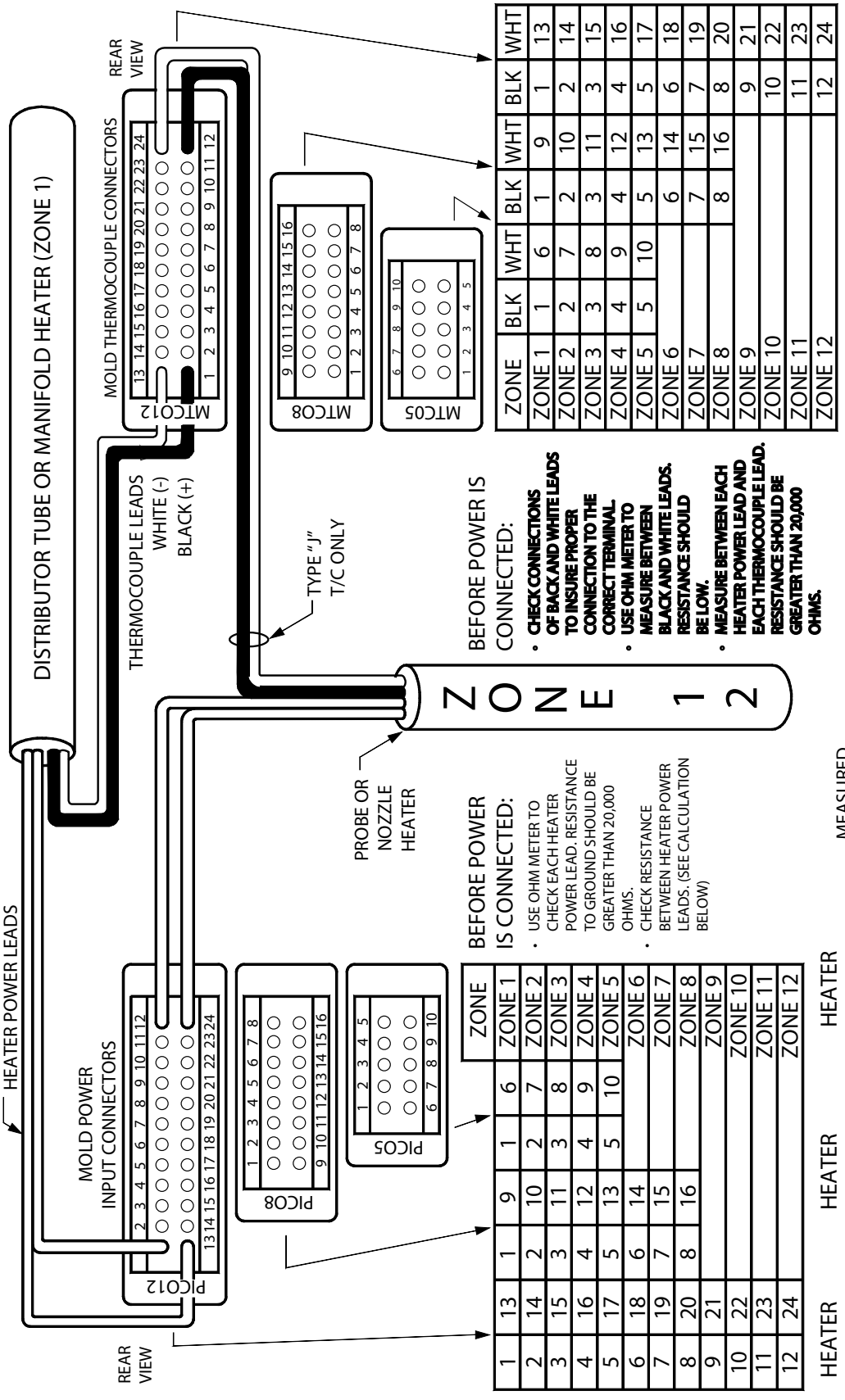
8-ZONES OF CONTROL		
B	PTCO8TB	8-ZONE TERMINAL MOUNTING BOX
C	MPCO8C10 OR 20G	8-ZONE MOLD POWER CABLE; 10' OR 20' O.A.L.
D	PICO8	8-ZONE MOLD POWER INPUT CONNECTOR
E	TCO8C10 OR 20G	8-ZONE THERMOCOUPLE CABLE; 10' OR 20' O.A.L.
F	MTCO8	8-ZONE MOLD THERMOCOUPLE CONNECTOR

12-ZONES OF CONTROL		
B	PTCO12TB	12-ZONE TERMINAL MOUNTING BOX
C	MPCO12C10 OR 20G	12-ZONE MOLD POWER CABLE; 10' OR 20' O.A.L.
D	PICO12	12-ZONE MOLD POWER INPUT CONNECTOR
E	TCO12C10 OR 20G	12-ZONE THERMOCOUPLE CABLE; 10' OR 20' O.A.L.
F	MTCO12	12-ZONE MOLD THERMOCOUPLE CONNECTOR

Husky is a trademark of
Husky Injection Molding Systems

Alternate Cable Configuration

TYPICAL MOLD CONNECTOR WIRING DIAGRAM (REVISION "A")

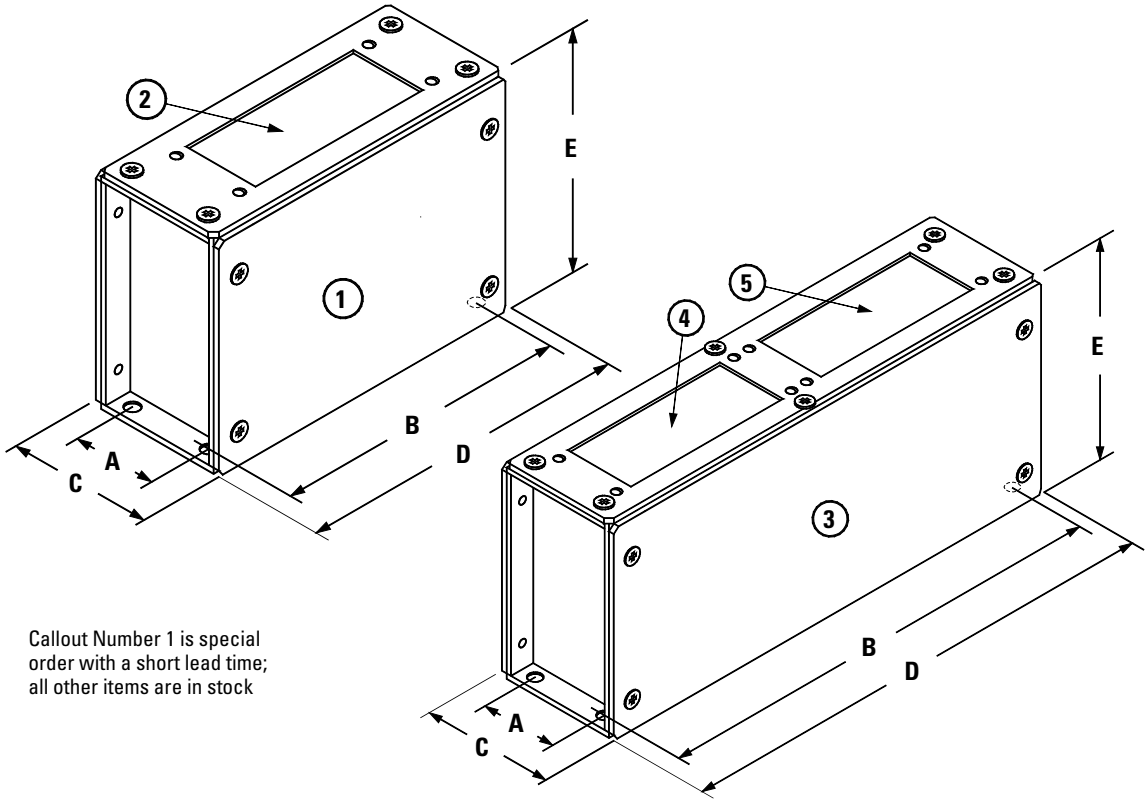


ZONE	BLK	WHT	BLK	WHT	BLK	WHT
ZONE 1	1	6	1	9	1	13
ZONE 2	2	7	2	10	2	14
ZONE 3	3	8	3	11	3	15
ZONE 4	4	9	4	12	4	16
ZONE 5	5	10	5	13	5	17
ZONE 6			6	14	6	18
ZONE 7			7	15	7	19
ZONE 8			8	16	8	20
ZONE 9					9	21
ZONE 10					10	22
ZONE 11					11	23
ZONE 12					12	24

1	13	1	9	1	6	ZONE 1
2	14	2	10	2	7	ZONE 2
3	15	3	11	3	8	ZONE 3
4	16	4	12	4	9	ZONE 4
5	17	5	13	5	10	ZONE 5
6	18	6	14			ZONE 6
7	19	7	15			ZONE 7
8	20	8	16			ZONE 8
9	21					ZONE 9
10	22					ZONE 10
11	23					ZONE 11
12	24					ZONE 12

Terminal Box Detail & Mold Connectors

EUROPEAN CONFIGURATION



Callout Number 1 is special order with a short lead time; all other items are in stock

CALLOUT NUMBER	ITEM NUMBER TERMINAL BOX	CALLOUT NUMBER	ITEM NUMBER MOLD CONNECTOR	DIMENSIONS									
				A		B		C		D		E	
1	PTO5TB	2	PICO5	1.50"	38mm	4.25"	108mm	2.44"	62mm	4.88"	124mm	4.10"	104mm
1	PTO5TB	2	MTCO5	1.50"	38mm	4.25"	108mm	2.44"	62mm	4.88"	124mm	4.10"	104mm
1	PTO8TB	2	PICO8	1.50"	38mm	4.99"	127mm	2.44"	62mm	5.61"	142mm	4.10"	104mm
1	PTO8TB	2	MTCO8	1.50"	38mm	4.99"	127mm	2.44"	62mm	5.61"	142mm	4.10"	104mm
1	PTO12TB	2	PICO12	1.50"	38mm	6.05"	154mm	2.44"	62mm	6.68"	170mm	4.10"	104mm
1	PTO12TB	2	MTCO12	1.50"	38mm	6.05"	154mm	2.44"	62mm	6.68"	170mm	4.10"	104mm
3	PTCO5TB	4	PICO5	1.50"	38mm	8.84"	225mm	2.44"	62mm	9.47"	241mm	4.10"	104mm
		5	MTCO5	1.50"	38mm	8.84"	225mm	2.44"	62mm	9.47"	241mm	4.10"	104mm
3	PTCO8TB	4	PICO8	1.50"	38mm	9.91"	252mm	2.44"	62mm	10.53"	267mm	4.10"	104mm
		5	MTCO8	1.50"	38mm	9.91"	252mm	2.44"	62mm	10.53"	267mm	4.10"	104mm
3	PTCO12TB	4	PICO12	1.50"	38mm	12.17"	309mm	2.44"	62mm	12.79"	325mm	4.10"	104mm
		5	MTCO12	1.50"	38mm	12.17"	309mm	2.44"	62mm	12.79"	325mm	4.10"	104mm

NOTE: ALLOW AN ADDITIONAL 0.25" (10mm) IN HEIGHT AND WIDTH FOR SCREW HEAD CLEARANCE

DME Mainframe Stand Accessory – Cable Storage Basket

FSCB0001 CABLE BASKET

(Includes (1) 14"- and (4) 6"- long zip ties)

- Compatible with DME Smart Series
- Durable molded plastic construction
- Keep all your cables and connectors safely off the floor

Smart Series 8-zone stand

Smart Series 12-zone stand

Note: Product color may differ from what is shown.

INSTALLATION GUIDE

Step 1

Position Basket on bottom of the DME Mainframe Floor Stand.
Decide if you will attach the basket to the right or left Mainframe Upright Post.

Step 2

Secure Basket to Mainframe Floor Stand with Supplied Cable Ties.

Attach Longer Cable Tie to Side Post

Attach Shorter Cable Ties to Corners

Valve Gate Controls

ENERGY EFFICIENT, RELIABLE AND COMPACT HYDRAULIC AND PNEUMATIC CONTROLS

DME Pneumatic Sequential Valve Gate Controller

The SVG controller provides the user with full control over valve gate flow sequence, critical when molding complex or large parts. All SVG controllers feature the *NEW* APS (Adaptive Process System) technology providing faster processing and response speed.

BENEFITS

- The sequential valve gate technology is integrated in a precise valve gate control unit with all available features or stand alone unit
- SVGP systems are air cooled & energy efficient
- Designed to easily connect to any valve gate system
- Precise filling control with performance graphs displaying time and position, with up to 4 steps per cycle
- (2) digital and analog triggers for 2-shot applications

SVGP

CONFIGURATION

- Program valve actuation by time or injection screw position
- Pin position feedback for gate open /close confirmation
- Automatic and manual mode for individual gate control
- Absolute and incremental timer selections
- Single or dual acting solenoid valves for gate activation, valve banks re-locatable
- Calibrate analog signals for position, pressure and volumetric settings
- Reconfigure pin position feedback inputs for 12 additional sequences
- 500 or 1000 Watt 24VDC power supply - Standard 220V single phase (185-245V range) or Optional 480V three phase

ITEM NUMBER	DESCRIPTION	INCLUDES
SVGP2	2 ZONE PNEUMATIC	SVG12 HMI, 1-2 SOLENOID VALVE BANK
SVGP4	4 ZONE PNEUMATIC	SVG12 HMI, 1-4 SOLENOID VALVE BANK
SVGP6	6 ZONE PNEUMATIC	SVG12 HMI, 1-6 SOLENOID VALVE BANK
SVGP8	8 ZONE PNEUMATIC	SVG12 HMI, 1-8 SOLENOID VALVE BANK
SVGP12	12 ZONE PNEUMATIC	SVG12 HMI, 2-6 SOLENOID VALVE BANKS
SVGPC2	2 ZONE COMPACT PNEUMATIC	SVG12C HMI, 1-2 SOLENOID VALVE BANK
SVGPC4	4 ZONE COMPACT PNEUMATIC	SVG12C HMI, 1-4 SOLENOID VALVE BANK
SVGPC6	6 ZONE COMPACT PNEUMATIC	SVG12C HMI, 1-6 SOLENOID VALVE BANK
SVGPC8	8 ZONE COMPACT PNEUMATIC	SVG12C HMI, 1-8 SOLENOID VALVE BANK
SVGPC12	12 ZONE COMPACT PNEUMATIC	SVG12C HMI, 2-6 SOLENOID VALVE BANKS

SVGPC

If you do not see the number of controlled zones required in the table above please contact us.

Optional Accessories

ITEM NUMBER	DESCRIPTION
ITSPTROLLEY	STAND
PNEUPP	PNEUMATIC POWER PACK 500 PSI

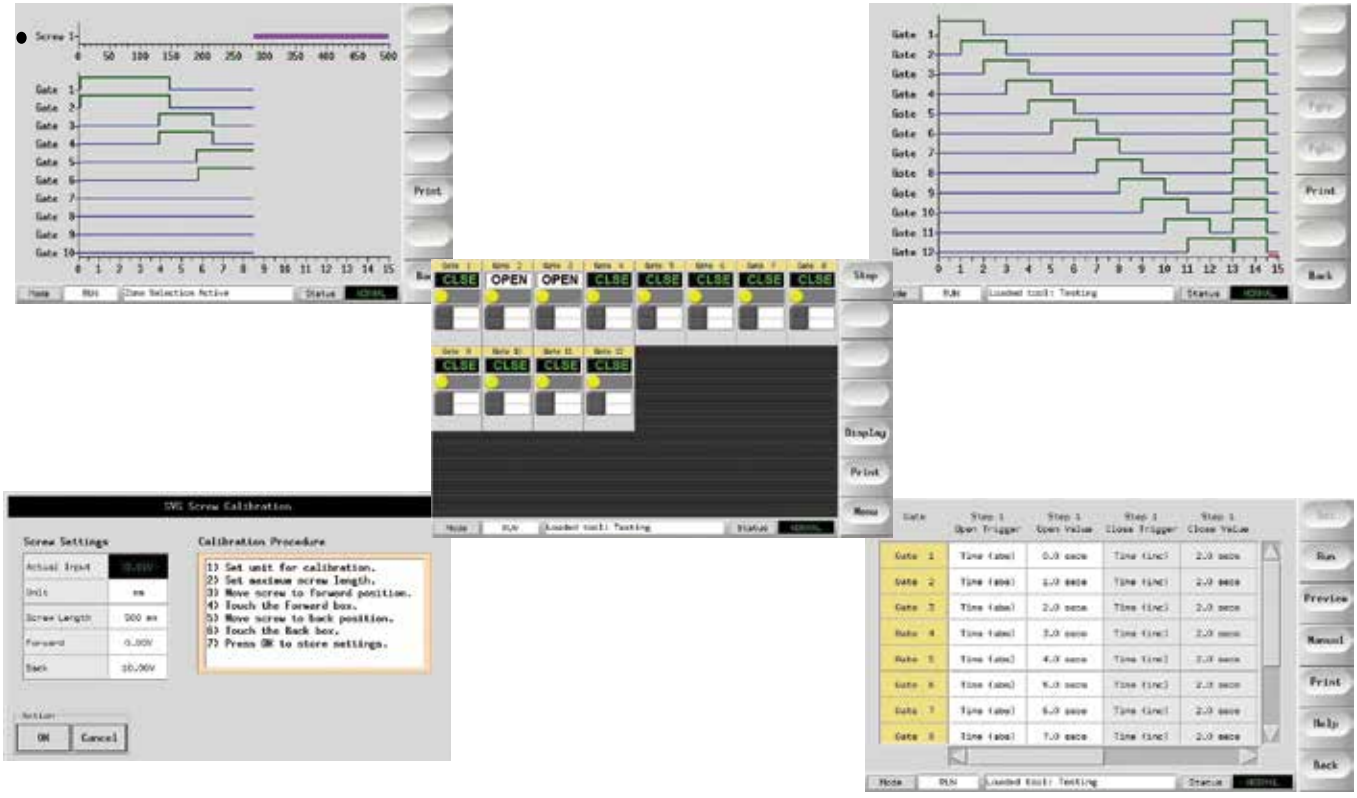
Stand

Pneumatic Power pack

DME Pneumatic Sequential Valve Gate Controller

KEY TECHNICAL FEATURES AT A GLANCE

- Digital outputs – fused at 2 amps
- Digital inputs - pin position back/forward
- Integrated 24 VDC power supply to drive valve gate solenoids
- 7" color touch screen on standalone controller
- Controls single or dual coil solenoid valves
- Real time valve status graph
- Configurable Easy View status page
- *NEW* SVG Power pack combines hot runner control, SVG, hydraulic power pack and solenoid valve bank all in one package



PROGRAMMABLE TRIGGERS & ALARMS

- Digital input – sequence start trigger
- Digital input triggers – programmable sequence triggers
- (2) Analog inputs 0-10 volts
- Analog input 4-20ma
- Remote enable signal – from IMM
- Fault relay output (dry contact) – to IMM
- Dry contact or 24VDC input triggering

Controller includes 15ft (4.8m) solenoid power cord

DME Hydraulic Sequential Valve Gate Controller

The SVG controller provides the user with full control over valve gate flow sequence, critical when molding complex or large parts. All SVG controllers feature the *NEW* APS (Adaptive Process System) technology providing faster processing and response speed.

BENEFITS

- The sequential valve gate technology is integrated in a precise valve gate control unit with all available features or stand alone unit
- SVGH6 systems - air cooled & energy efficient
  SVGH1200 & 1600 systems - built-in water cooling circuit for the hydraulic power pack
- Designed to easily connect to any valve gate system
- Precise filling control with performance graphs displaying time and position, with up to 4 steps per cycle
- (2) digital and analog triggers for 2-shot applications

3L-1200 PSI / 3L-1600 PSI
Power pack

CONFIGURATION

- Program valve actuation by time or injection screw position
- Pin position feedback for gate open /close confirmation
- Automatic and manual mode for individual gate control
- Absolute and incremental timer selections
- Single or dual acting solenoid valves for gate activation, valve banks relocatable
- Calibrate analog signals for position, pressure and volumetric settings
- Configure up to 4 cards to control as many as 48 single acting valve gates
- Reconfigure pin position feedback inputs for 12 additional sequences
- 500 or 1000 Watt 24VDC power supply - Standard 220V single phase (185-245V range) or Optional 480V three phase
- Available as standalone controller or semi-integrated into the TSP or TSP Plus temperature controller

3L-600 PSI Power pack

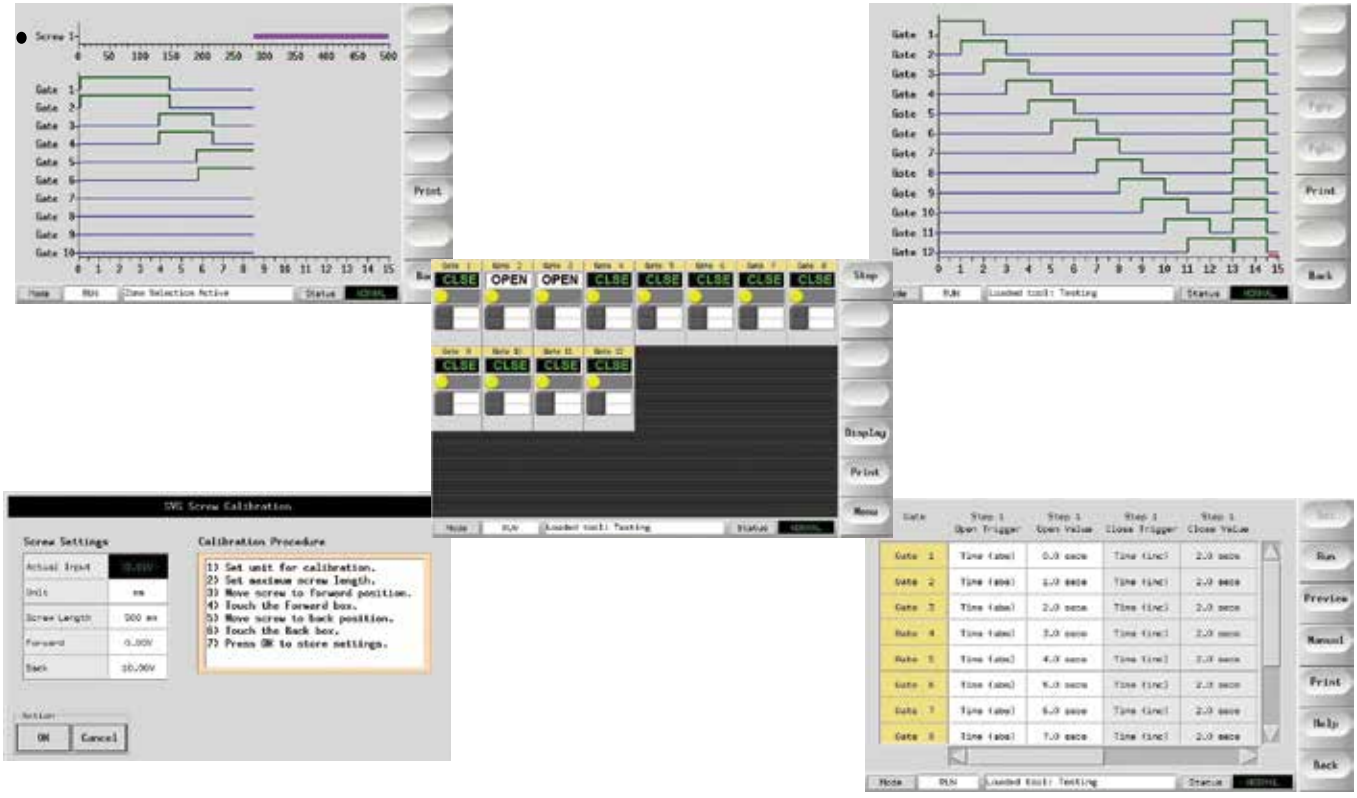
ITEM NUMBER	DESCRIPTION	POWER PACK PSI	CONSISTS OF
SVGH62	2 ZONE HYDRAULIC	3L-600 PSI	SVG12 HMI, POWER PACK, 1-2 SOLENOID VALVE BANK, STAND
SVGH64	4 ZONE HYDRAULIC		SVG12 HMI, POWER PACK, 1-4 SOLENOID VALVE BANK, STAND
SVGH66	6 ZONE HYDRAULIC		SVG12 HMI, POWER PACK, 1-6 SOLENOID VALVE BANK, STAND
SVGH68	8 ZONE HYDRAULIC		SVG12 HMI, POWER PACK,1-8 SOLENOID VALVE BANK, STAND
SVGH122	2 ZONE HYDRAULIC	3L-1200 PSI	SVG12 HMI, POWER PACK, 1-2 SOLENOID VALVE BANK, STAND
SVGH124	4 ZONE HYDRAULIC		SVG12 HMI, POWER PACK, 1-4 SOLENOID VALVE BANK, STAND
SVGH126	6 ZONE HYDRAULIC		SVG12 HMI, POWER PACK, 1-6 SOLENOID VALVE BANK, STAND
SVGH128	8 ZONE HYDRAULIC		SVG12 HMI, POWER PACK,1-8 SOLENOID VALVE BANK, STAND
SVGH1212	12 ZONE HYDRAULIC		SVG12 HMI, POWER PACK, 2-6 SOLENOID VALVE BANKS, STAND
SVGH162	2 ZONE HYDRAULIC	3L-1600 PSI	SVG12 HMI, POWER PACK, 1-2 SOLENOID VALVE BANK, STAND
SVGH164	4 ZONE HYDRAULIC		SVG12 HMI, POWER PACK, 1-4 SOLENOID VALVE BANK, STAND
SVGH166	6 ZONE HYDRAULIC		SVG12 HMI, POWER PACK, 1-6 SOLENOID VALVE BANK, STAND
SVGH168	8 ZONE HYDRAULIC		SVG12 HMI, POWER PACK,1-8 SOLENOID VALVE BANK, STAND
SVGH1612	12 ZONE HYDRAULIC		SVG12 HMI, POWER PACK, 2-6 SOLENOID VALVE BANKS, STAND
SVGH1616	16 ZONE HYDRAULIC		SVG24 HMI, POWER PACK, 2-8 SOLENOID VALVE BANKS, STAND
SVGH1624	24 ZONE HYDRAULIC		SVG24 HMI, POWER PACK, 3-8 SOLENOID VALVE BANKS, STAND

If you do not see the number of controlled zones required in the table above please contact us.

DME Sequential Valve Gate Controller

KEY TECHNICAL FEATURES AT A GLANCE

- Digital outputs – fused at 2 amps
- Digital inputs - pin position back/forward
- Integrated 24 VDC power supply to drive valve gate solenoids
- 7" color touch screen on standalone controller
- Controls single or dual coil solenoid valves
- Real time valve status graph
- Configurable Easy View status page
- *NEW* SVG Power pack combines hot runner control, SVG, hydraulic power pack and solenoid valve bank all in one package



PROGRAMMABLE TRIGGERS & ALARMS

- Digital input – sequence start trigger
- Digital input triggers – programmable sequence triggers
- (2) Analog inputs 0-10 volts
- Analog input 4-20ma
- Remote enable signal – from IMM
- Fault relay output (dry contact) – to IMM
- Dry contact or 24VDC input triggering

Controller includes 15ft (4.8m) solenoid power cord

VCAP Air Valve Assemblies and 4-Zone Timer

VCAP multi-station air valve assemblies

The VCAP series offers 4-station (0400), 6-station (0600), 8-station (0800), 10-station (1000), and 12-station (1200) valve assemblies. The single-solenoid valves are spring returned and designed to run from 24 VDC +/- 10%. The air supply (maximum rated pressure 145 PSI) can be lubricated or non-lubricated – dry air is preferred but the valve is designed to tolerate some moisture.

Quick connects are provided on all air outputs to accept standard 1/4" tubing. The de-energized outputs, used for closing valve gates, feature check valves to ensure that unused valves do not leak air.

ITEM NUMBER	DESCRIPTION
VCAP0400	4-STATION AIR VALVE ASSEMBLY
VCAP0600	6-STATION AIR VALVE ASSEMBLY
VCAP0800	8-STATION AIR VALVE ASSEMBLY
VCAP1000	10-STATION AIR VALVE ASSEMBLY
VCAP1200	12-STATION AIR VALVE ASSEMBLY

Note: Each valve assembly includes a valve cable.

Compact 4-zone pneumatic or hydraulic control unit

The VCTB4000 Valve Gate Controller is designed to provide timer-based control of up to four 24 volt DC valves used to actuate pneumatic valve gate cylinders as well as some hydraulic valves, and features a user-friendly auto-reset feature. Its compact size makes it extremely portable and requires minimal space. A single DB025 cable connects the controller to up to four remotely located valves, minimizing wiring and air connections.

ITEM NUMBER	DESCRIPTION
VCTB4000	4-ZONE PNEUMATIC HYDRAULIC CONTROLLER
VCPT0100	100-FT. LENGTH OF PNEUMATIC TUBING

Note: Trigger signal cable included with controller.

Highly accurate DME solid state timers feature resolution to 1/100 of a second, far exceeding the industry standard of 1/10 of a second.

DME Single Zone Timer

DME Single Zone Timer: TCM03024D

Versatile for virtually any type of operation that requires a timer, including single-zone valve gate systems, core pulls, and air sweeps.

- Unit plugs directly into DME Smart Series Mainframes
- Test button (green light indicates power out)
- Yellow light indicates trigger signal being applied or timer in operation
- Trigger signal has two available sources – dry set of contacts or 24 VDC input
- Trigger input signal can be ganged to operate more than one timer when multiple units are used (24 VDC input only)
- Input signal and output power can be used from timer front panel connectors or DME mainframe cables
- Thermocouple cable serves as trigger signal; power cable serves as 24 VDC power supply to any 24 VDC solenoid valve

Shown next to a SSM1512 Temperature Controller in a Standard 2-Zone Smart Series Mainframe.

DME Single Zone Timers (TCM03024D) are highly accurate, solid state timers that feature resolution to 1/100 of second, far exceeding the industry standard of 1/10 of a second.

Customer Power Requirement Worksheet – Option A Delta 3-Phase Power 240 VAC

It is the customer's responsibility to make sure his Hot Runner Mold Application will not exceed the power limitations of the DME Hot Runner Control System Main Circuit Breaker. Even though each slot may be rated at 15 amps, all slots CANNOT necessarily deliver full power from all zones simultaneously.

PHASE A POWER		PHASE B POWER		PHASE C POWER	
ZONE #	WATTAGE	ZONE #	WATTAGE	ZONE #	WATTAGE
1		2		3	
4		5		6	
7		8		9	
10		11		12	
13		14		15	
16		17		18	
19		20		21	
22		23		24	
25		26		27	
28		29		30	
31		32		33	
34		35		36	
37		38		39	
40		41		42	
43		44		45	
46		47		48	
49		50		51	
52		53		54	
55		56		57	
58		59		60	
TOTAL PHASE A WATTS		TOTAL PHASE B WATTS		TOTAL PHASE C WATTS	

Record Product Breaker Size Phase Wattage Not To Exceed		Record Product Breaker Size Phase Wattage Not To Exceed		Record Product Breaker Size Phase Wattage Not To Exceed	

Breaker Wattage Size Table – For Delta 240 VAC 3-Phase Power

BREAKER RATING AMPS	MAXIMUM PHASE WATTS EACH PHASE A,B,C CANNOT EXCEED THIS VALUE	MAXIMUM PHASE AMPS EACH PHASE A,B,C CANNOT EXCEED THIS VALUE
10 AMP	1,386 WATTS	5.77 AMPS
20 AMP	2,771 WATTS	11.55 AMPS
30 AMP	4,157 WATTS	17.32 AMPS
40 AMP	5,542 WATTS	23.09 AMPS
50 AMP	6,928 WATTS	28.87 AMPS
63 AMP	8,729 WATTS	36.27 AMPS
70 AMP	9,699 WATTS	40.41 AMPS
100 AMP	13,856 WATTS	57.74 AMPS

For 3 Phase Delta Power: TOTAL WATTS = SquareRoot (3) x VoltsAC x AMPS
MAXIMUM PHASE WATTS = TOTAL WATTS / 3

Temperature Control Warranty, Repairs & Returns

DME Temperature Controllers are warranted pursuant to DME Company's standard terms and conditions (see page 5) for the time periods set forth below. The warranty (i) *covers items sold and shipped [supplied in accordance with orders placed by the customer with DME on or after JULY 1, 2003],* (ii) *applies only to the original DME customer and,* (iii) *is not transferable to subsequent owners of the product except as specifically set forth herein (see Transferability below for conditions).*

WARRANTY PERIODS APPLICABLE TO SPECIFIED DME PRODUCTS; COVERAGE STARTS UPON DATE OF SHIPMENT:

Item	Coverage
DME Mold Controls and Valve Gate Controls (**excluding Fuses & Triacs, Power Packs & Trolley as appropriate**)	One (1) year - Pumping systems, Valves & Solenoids Two (2) years - Smart Series Mainframes & Modules TSP, TSP Plus & SVG Electronic Controllers

Replacement or repair will be made at the election of DME; implemented at a DME facility and/or by shipment of replacement parts to the customer for installation and/or return of defective parts to DME for repair.

Transferability:

This warranty may be transferred by the original DME Customer to a subsequent owner of the product if all of the following conditions exist: (i) the original DME Customer purchased the product for purposes of re-sale or other immediate transfer and DME was made aware of these purposes at the time of purchase in writing, (ii) within thirty (30) days from the date of invoice, DME is notified in writing of the transfer and provided with the name of the new owner (hereafter "Transferee"), the contact person of the Transferee and the Transferee's address.

TECHNICAL SUPPORT: RETURNING ITEMS TO DME

Return for Repair

U.S. Customers:

TSP, TSP Plus, TSP-SVG Systems and TSM modules needing repair or calibration:

Please call 800-626-6653 for a Repair SR#. Please make sure the SR# is on the outside of the box to expedite the repair.

DME Company
29111 Stephenson Highway
Madison Heights, MI 48071
Attention Repairs

All other temperature controls needing repairs send to:

DME Repairs
1419 State Route 45 South
Austinburg, OH 44101

Canadian Customers:

DME Company
6210 Northwest Dr.
Mississauga, ONT L4V1J6
Attention Repairs

Call 800-387-6600 if you need additional help.

Please enclose contact information and a description of what problems you have been experiencing with the product. This procedure includes items still under warranty, however fuses and triacs are not covered.

Return for Credit

Call DME USA at 800-626-6653 or DME Canada at 800-387-6600 toll free