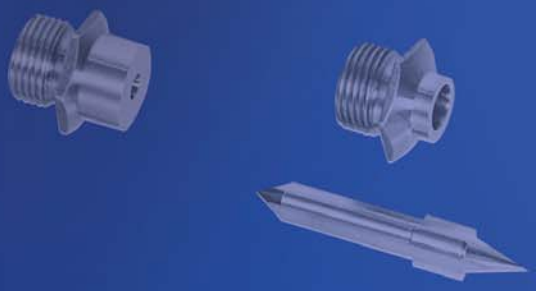
DME Hot One Nozzles

ENABLING VERSATILITY
IN SYSTEM SELECTION



Designing and Machining Guidelines

THE HOT ONE® MANIFOLD SYSTEM DESIGNING AND MACHINING GUIDELINES FOR EXTERNALLY HEATED SYSTEMS

NOZZLE AND GATE SELECTION GUIDELINE

For selection of nozzle and gate diameter it is important to take into consideration the material's flow characteristics, shear rate of resin, molding conditions, fill time requirements, gate vestige, wall thickness and configuration of the part 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 or thin wall applications). See material manufacturer's literature for further information regarding material to be molded.

GATE-MATE® 4 NOZZLE

Used where a small circular gate mark is permissible. Point Gate Tip controls plastics flow, provides uniform heat transfer and improves gate cosmetics.

MAXIMUM SHOT WEIGHT IN GRAMS		
ORIFICE SIZE DIA. / RESIN VISCOSITY	GATE-MATE 4	
	.060	.080
LOW VISCOSITY	170	225
MEDIUM VISCOSITY	90	125
HIGH VISCOSITY	60	95

SPRUE GATE NOZZLE

Used where a small sprue on the part or runner is not objectional. Its unrestricted channel is recommended for molding filled materials, or larger parts requiring maximum flow. Provides extra stock on front face for matching runner profiles and part contours.

MAXIMUM SHOT WEIGHT IN GRAMS						
ORIFICE SIZE DIA. / RESIN VISCOSITY	SERIES 250		SERIES 375		SERIES 625	
	.080	* .125	.125	* .187	.187	* .312
LOW VISCOSITY	500	625	1000	1250	1250	1900
MEDIUM VISCOSITY	375	475	750	1000	1000	1500
HIGH VISCOSITY	250	315	500	750	750	1000

***NOTE:** Standard tips of these diameters can be special ordered.

POINT GATE NOZZLE (FULL BODY)

Used where a small circular gate mark is permissible. Tip controls plastics flow, provides uniform heat transfer and improves gate cosmetics.

MAXIMUM SHOT WEIGHT IN GRAMS						
ORIFICE SIZE DIA. / RESIN VISCOSITY	SERIES 250		SERIES 375		SERIES 625	
	.060	.080	.080	.100	.125	* .156
LOW VISCOSITY	150	200	250	310	600	800
MEDIUM VISCOSITY	100	150	150	200	400	550
HIGH VISCOSITY	50	100	100	150	300	400

***NOTE:** Standard tips of these diameters can be special ordered.

POINT GATE NOZZLE (BODILESS)

Eliminates circular gate marks and provides optimum gate cosmetics.

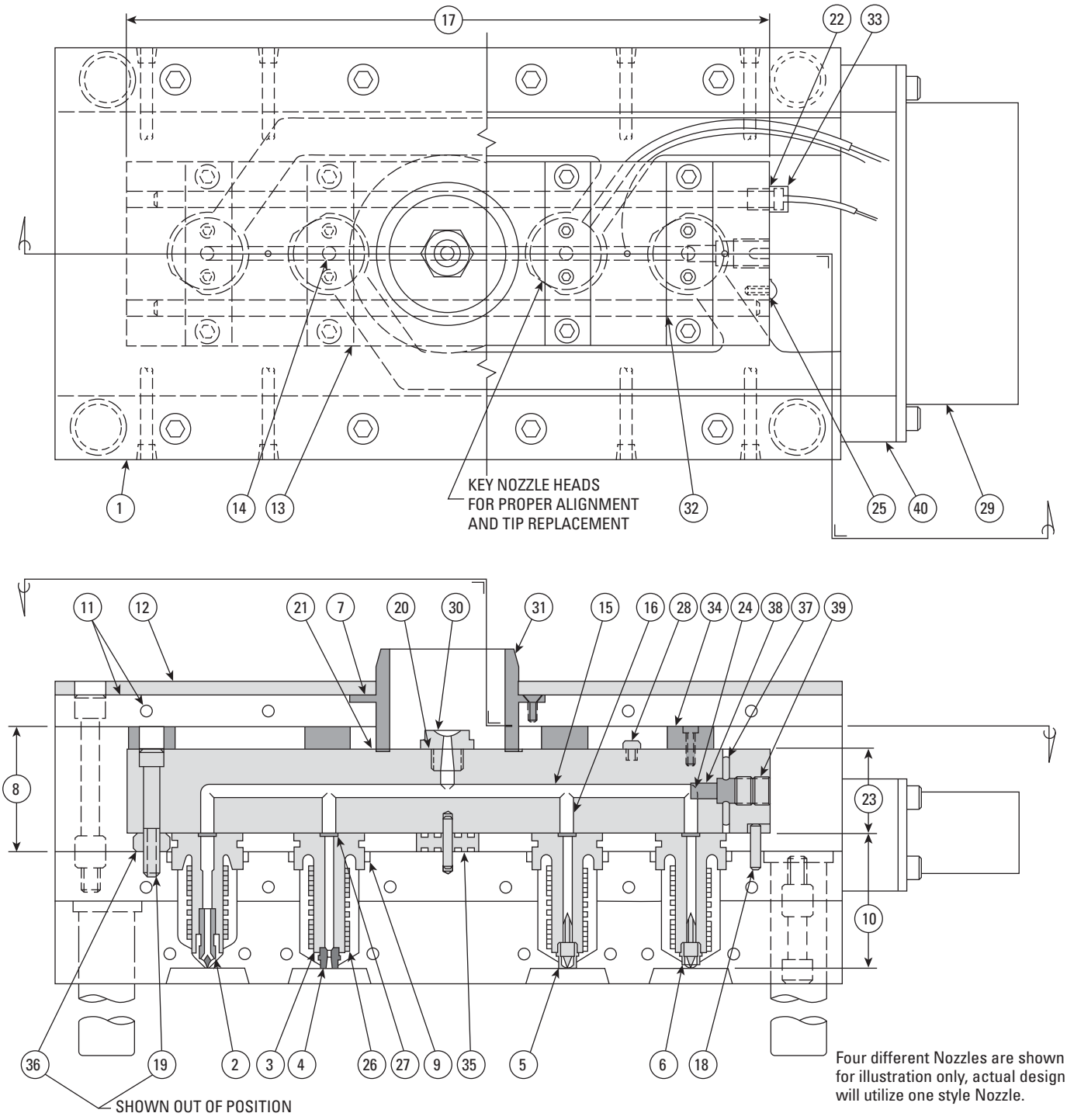
MAXIMUM SHOT WEIGHT IN GRAMS			
ORIFICE SIZE DIA. / RESIN VISCOSITY	SERIES 250	SERIES 375	SERIES 625
	.060	.080	.125
LOW VISCOSITY	150	250	600
MEDIUM VISCOSITY	100	150	400
HIGH VISCOSITY	50	100	300

DESIGNING AND MACHINING STEPS

(Numbers relate to details on next page)

1. MOLD LAYOUT
2. GATE-MATE 4™ NOZZLE
3. NOZZLE SUB-ASSEMBLIES
4. SPRUE GATE TIP
5. POINT GATE TIP (FULL BODY)
6. POINT GATE TIP (BODILESS)
7. LOCATING RING MACHINING IN MANIFOLD HOUSING
8. MANIFOLD HOUSING HEIGHT
9. NOZZLE MACHINING
10. NOZZLE LENGTH PLUS EXPANSION
11. MANIFOLD HOUSING REQUIREMENTS
12. INSULATOR SHEET REQUIREMENTS
13. MANIFOLD SIZE AND TYPE
14. NOZZLE LAYOUT
15. HORIZONTAL FLOW CHANNEL
16. VERTICAL FLOW CHANNEL
17. THERMAL EXPANSION OF MANIFOLD
18. DOWEL PIN FOR MANIFOLD ALIGNMENT
19. MANIFOLD HOLD DOWN CAP SCREW LOCATION
20. NOZZLE SEAT MACHINING
21. LOCATING RING MACHINING IN MANIFOLD
22. HEATER PULLER MACHINING
23. MANIFOLD HEIGHT
24. END PLUG, TAPERED DOWEL PIN AND SET SCREW MACHINING
25. HEATER STOP MACHINING
26. REPLACEMENT NOZZLE HEATERS
27. REPLACEMENT NOZZLE SEALS
28. MANIFOLD THERMOCOUPLES
29. TERMINAL MOUTING BOX
30. NOZZLE SEAT
31. LOCATING RING
32. MANIFOLD HEATER
33. HEATER PULLER
34. RISER PAD
35. CENTER SUPPORT PAD
36. SPACER RING
37. TAPERED DOWEL PIN
38. END PLUG
39. 2 END PLUG SET SCREWS PER END PLUG
40. TERMINAL MOUNTING BOX SPACER - MOLDMAKER TO SUIT

Designing and Machining Guidelines



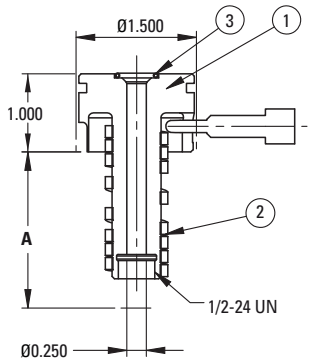
Four different Nozzles are shown for illustration only, actual design will utilize one style Nozzle.

The design guidelines in this document are based upon results obtained using DME's production equipment and are provided as a design aid for use with DME Hot Runner Systems. They are ONLY applicable to the current line of DME components detailed in this document. Due to the wide variety of plastics materials and possible molding applications available, and since DME has no control over the circumstances of any molding operation, DME assumes no liability for any results obtained with this information.

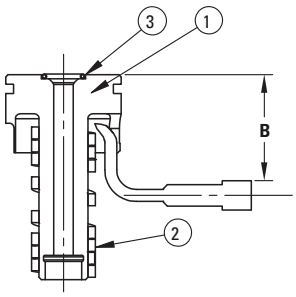
DME Hot Runner System Components are manufactured and sold under one or more of the following U.S. patents: 3,767,340; 3,010,155; 3,023,458; 3,231,938 AND 3,758,248; 4,787,836. FOREIGN PATENTS ISSUED AND PENDING.

250 Series Nozzles (.250 Diameter Flow Channel)

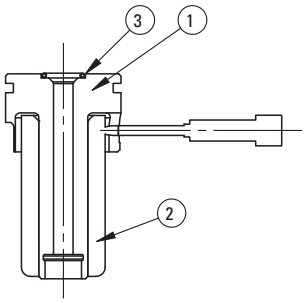
COIL HEATER
REAR LOAD
(SCHXXXX)



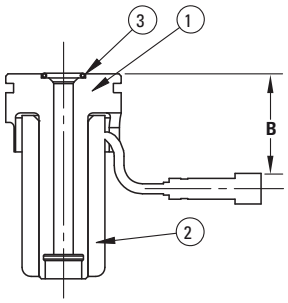
COIL HEATER
FRONT LOAD
(SCH1XXX or SCH2XXX)



HIGH PERFORMANCE HEATER
REAR LOAD
(CIHXXXX-S)



HIGH PERFORMANCE HEATER
FRONT LOAD
(CIH1XXX-S)



250 Series Nozzle Sub-Assembly – Detail #3

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

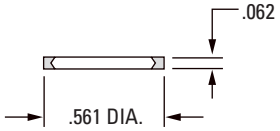
A	B	SUB-ASSEMBLY ITEM NUMBER	1 NOZZLE BODY	2 HEATER	3 SEAL RING
2.000	—	EHA0001	CIB1359	SCH0081	EHR7154
	1.250	EHA1001		SCH1081	
	1.750	EHA2001		SCH2081	
	—	CIA0001S		CIH0081S	
	1.250	CIA1001S		CIH1081S	
2.500	—	EHA0002	CIB1360	SCH0082	
	1.250	EHA1002		SCH1082	
	1.750	EHA2002		SCH2082	
	—	CIA0002S		CIH0082S	
	1.250	CIA1002S		CIH1082S	
3.000	—	EHA0003	CIB1361	SCH0083	
	1.250	EHA1003		SCH1083	
	1.750	EHA2003		SCH2083	
	—	CIA0003S		CIH0083S	
	1.250	CIA1003S		CIH1083S	
3.500	—	EHA0004	CIB1362	SCH0084	
	1.250	EHA1004		SCH1084	
	1.750	EHA2004		SCH2084	
	—	CIA0004S		CIH0084S	
	1.250	CIA1004S		CIH1084S	
4.000	—	EHA0005	CIB1363	SCH0085	
	1.250	EHA1005		SCH1085	
	1.750	EHA2005		SCH2085	
	—	CIA0005S		CIH0085S	
	1.250	CIA1005S		CIH1085S	
5.000	—	EHA0006	CIB1364	SCH0086	
	1.250	EHA1006		SCH1086	
	1.750	EHA2006		SCH2086	
	—	CIA0006S		CIH0086S	
	1.250	CIA1006S		CIH1086S	
6.000	—	EHA0007	CIB1365	SCH0087	
	1.250	EHA1007		SCH1087	
	1.750	EHA2007		SCH2087	
	—	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 – Detail #9

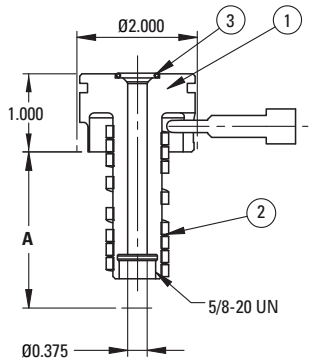
Used between manifold and nozzle to prevent leakage. New seal rings must be installed each time manifold is assembled.



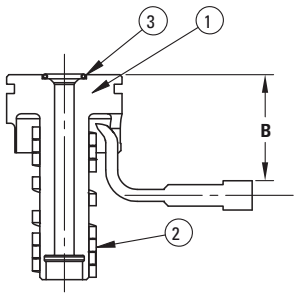
ITEM NUMBER
EHR7154

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

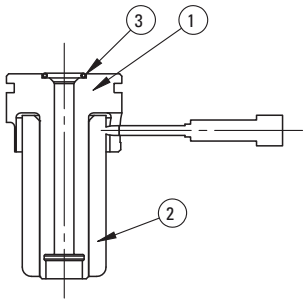
COIL HEATER
REAR LOAD
(SCHXXXX)



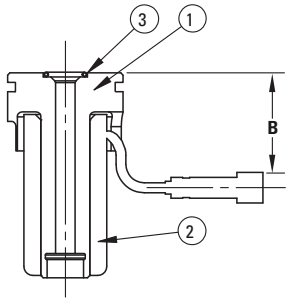
COIL HEATER
FRONT LOAD
(SCH1XXX or SCH2XXX)



HIGH PERFORMANCE HEATER
REAR LOAD
(CIHXXXX-S)



HIGH PERFORMANCE HEATER
FRONT LOAD
(CIH1XXX-S)



375 Series Nozzle Sub-Assembly – Detail #3

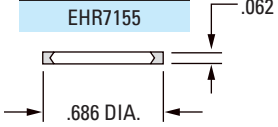
(Add .750 to **A** dimension for extended sprue gate and extended full body point gate tips.)

A	B	SUB-ASSEMBLY ITEM NUMBER	1 NOZZLE BODY	2 HEATER	3 SEAL RING
2.000	—	EHA0008	CIB1366	SCH0088	EHR7155
	1.250	EHA1008		SCH1088	
	1.750	EHA2008		SCH2088	
	—	CIA0008S		CIH0088S	
	1.250	CIA1008S		CIH1088S	
2.500	—	EHA0009	CIB1367	SCH0089	
	1.250	EHA1009		SCH1089	
	1.750	EHA2009		SCH2089	
	—	CIA0009S		CIH0089S	
	1.250	CIA1009S		CIH1089S	
3.000	—	EHA0010	CIB1368	SCH0090	
	1.250	EHA1010		SCH1090	
	1.750	EHA2010		SCH2090	
	—	CIA0010S		CIH0090S	
	1.250	CIA1010S		CIH1090S	
3.500	—	EHA0011	CIB1369	SCH0091	
	1.250	EHA1011		SCH1091	
	1.750	EHA2011		SCH2091	
	—	CIA0011S		CIH0091S	
	1.250	CIA1011S		CIH1091S	
4.000	—	EHA0012	CIB1370	SCH0092	
	1.250	EHA1012		SCH1092	
	1.750	EHA2012		SCH2092	
	—	CIA0012S		CIH0092S	
	1.250	CIA1012S		CIH1092S	
5.000	—	EHA0013	CIB1371	SCH0093	
	1.250	EHA1013		SCH1093	
	1.750	EHA2013		SCH2093	
	—	CIA0013S		CIH0093S	
	1.250	CIA1013S		CIH1093S	
6.000	—	EHA0014	CIB1372	SCH0094	
	1.250	EHA1014		SCH1094	
	1.750	EHA2014		SCH2094	
	—	CIA0014S		CIH0094S	
	1.250	CIA1014S		CIH1094S	
7.000	—	EHA0015	CIB1373	SCH0095	
	1.250	EHA1015		SCH1095	
	1.750	EHA2015		SCH2095	
	—	CIA0015S		CIH0095S	
	1.250	CIA1015S		CIH1095S	

Replacement Seal Rings – Detail #9

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

ITEM NUMBER
EHR7155



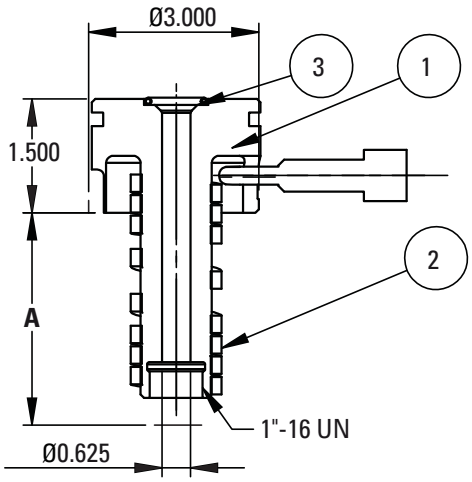
WIRING INFORMATION:
Power leads are tan
Ground leads are green
Thermocouple leads are black and white

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

625 Series Nozzles (.625 Diameter Flow Channel)

625 Series Nozzle Sub-Assembly – Detail #3

COIL HEATER REAR LOAD (SCHXXXX)



COMING SOON **CAST-IN**

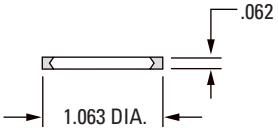
(Add .750 to **A** dimension for extended sprue gate and extended full body point gate tips.)

A	SUB-ASSEMBLY ITEM NUMBER	1 NOZZLE BODY	2 HEATER	3 SEAL RING
4.000	EHA0016	EHB1374	SCH0096	
5.000	EHA0017	EHB1375	SCH0097	
6.000	EHA0018	EHB1376	SCH0098	
7.000	EHA0019	EHB1377	SCH0099	EHR7156
8.000	EHA0020	EHB1378	SCH0100	
9.000	EHA0021	EHB1379	SCH0101	
10.000	EHA0022	EHB1380	SCH0102	

Replacement Seal Rings – Detail #9

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

ITEM NUMBER
EHR7156



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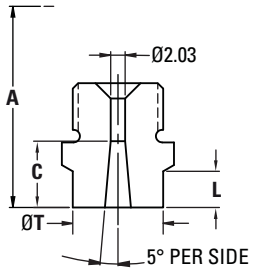
Ground leads are green
Thermocouple leads are black and white

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

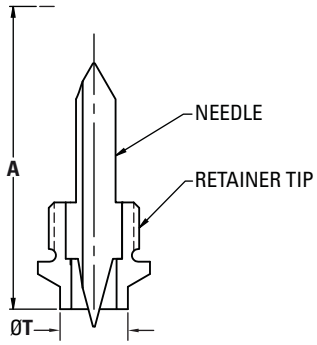
Gate Tip Detail



Sprue Gate/Extended Sprue Gate – Detail #4

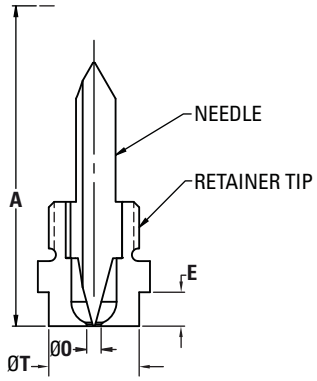
SERIES	GATE TIP	ITEM NUMBER	B DIA.	T DIA.	L	C
250	SPRUE GATE	EHT0010	.080	.500	.250	.375
		EHT0011		.750		
		EHT0012		1.000	.100	1.125
	EXTENDED SPRUE GATE	EHT0013		.500	1.000	
		EHT0014		.750		
		EHT0015		1.000	.850	
375	SPRUE GATE	EHT0016	.125	.500	.250	.375
		EHT0017		.750		
		EHT0018		1.000		
	EXTENDED 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.)



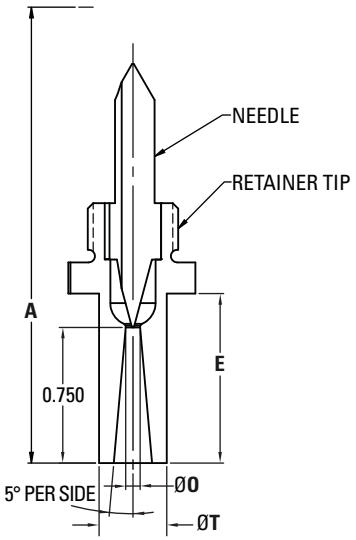
Point Gate (Bodiless) – Detail #6

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) – Detail #5

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



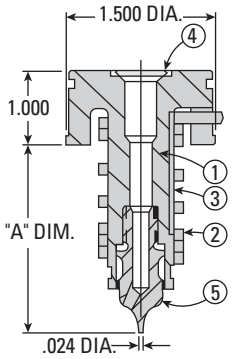
Point Gate (Full Body Extended) – Detail #5

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

Nozzle Assembly/Sub-Assembly Details

Gate-Mate® 4 Nozzle Assembly – Detail #2



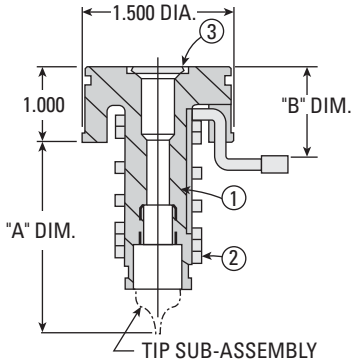
ASSEMBLY INCLUDE:

1 Nozzle Body, 1 Sq. Coil Heater, 1 Thermocouple, 1 O-Ring and 1 Tip.

"A" DIM.	NOZZLE ASSEMBLY NUMBER	1	2	3	4	5
		NOZZLE BODY	SQ. COIL HEATER	T/C	O-RING	TIP
2.000	GMB0050	GMB0060	SCH0060	TCG0060	EHR7155	GMT2*
2.500	GMB0051	GMB0061	SCH0061	TCG0061		
3.000	GMB0052	GMB0062	SCH0062	TCG0062		
3.500	GMB0053	GMB0063	SCH0063	TCG0063		
4.000	GMB0054	GMB0064	SCH0064	TCG0064		
5.000	GMB0055	GMB0065	SCH0065	TCG0065		
6.000	GMB0056	GMB0066	SCH0066	TCG0066		

*GMT2 not recommended for abrasive materials.

Gate-Mate® 4 Nozzle Sub-Assembly With Front Load Heater – Detail #2

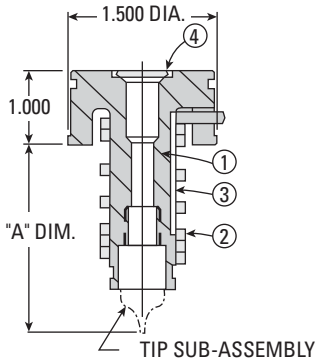


SUB-ASSEMBLY INCLUDE:

1 Nozzle Body, 1 Front Load Sq. Coil Heater with Thermocouple and 1 O-Ring.

"A" DIM.	"B" DIM.	NOZZLE SUB-ASSEMBLY NUMBER	1	2	3
			NOZZLE BODY	SQ. COIL HEATER	O-RING
2.000	1.250	GMB1050	GMB0060	SCH1060	EHR7155
2.500	1.250	GMB1051	GMB0061	SCH1061	
	1.750	GMB2051		SCH2061	
3.000	1.250	GMB1052	GMB0062	SCH1062	
	1.750	GMB2052		SCH2062	
3.500	1.250	GMB1053	GMB0063	SCH1063	
	1.750	GMB2053		SCH2063	
4.000	1.250	GMB1054	GMB0064	SCH1064	
	1.750	GMB2054		SCH2064	
5.000	1.250	GMB1055	GMB0065	SCH1065	
	1.750	GMB2055		SCH2065	
6.000	1.250	GMB1056	GMB0066	SCH1066	
	1.750	GMB2056		SCH2066	

Gate-Mate® 4 Nozzle Sub-Assembly – Detail #2



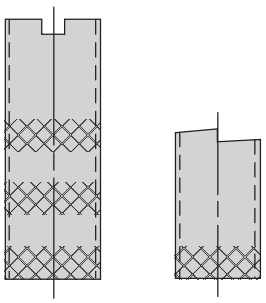
SUB-ASSEMBLY INCLUDE:

1 Nozzle Body, 1 Sq. Coil Heater, 1 Thermocouple and 1 O-Ring.

A DIM.	NOZZLE SUB-ASSEMBLY NUMBER	1	2	3	4
		NOZZLE BODY	SQ. COIL HEATER	T/C	O-RING
2.000	GMB0150	GMB0060	SCH0060	TCG0060	EHR7155
2.500	GMB0151	GMB0061	SCH0061	TCG0061	
3.000	GMB0152	GMB0062	SCH0062	TCG0062	
3.500	GMB0153	GMB0063	SCH0063	TCG0063	
4.000	GMB0154	GMB0064	SCH0064	TCG0064	
5.000	GMB0155	GMB0065	SCH0065	TCG0065	
6.000	GMB0156	GMB0066	SCH0066	TCG0066	

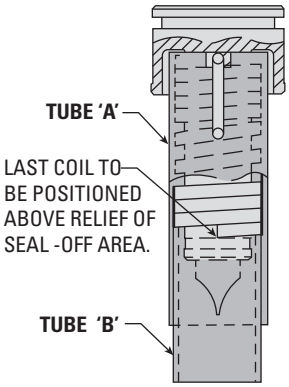
Coil Heater Wrench Detail | Gate Shell Insulator Detail | Gate-Mate Tips Detail

Front Load Square Coil Heater Wrench – Detail #2



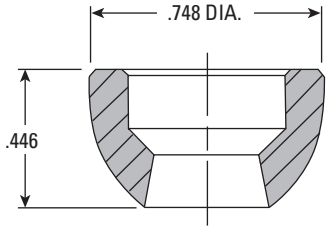
FRONT LOAD SQUARE COIL HEATER WRENCH ASSEMBLY	
ITEM NO.	WRE0007

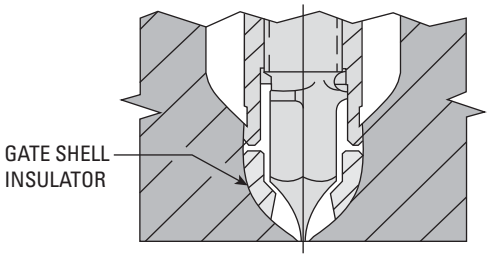
Front Load Square Coil Heater Wrench assembly must be ordered separately from heater.



Gate Shell Insulator – Detail #2

For use with Gate-Mate 4 Nozzles only

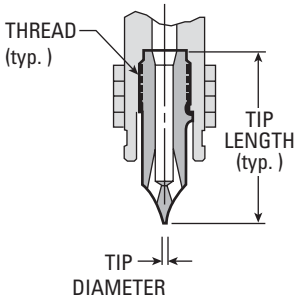




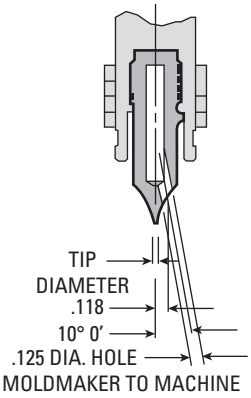
GATE SHELL INSULATOR	
ITEM NO.	GSI0001

Gate-Mate® Tips – Detail #2

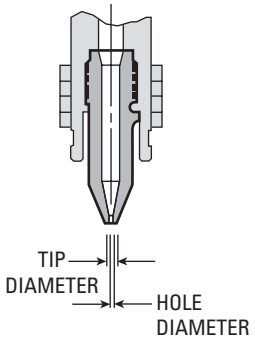
STANDARD WEAR RESISTANT SUPER SHARP



NO HOLE



THRU HOLE



TIP STYLE	ITEM NUMBER	O DIAMETER	TIP LENGTH	TIP DIAMETER	HOLE DIAMETER	THREAD	BODY STYLE
STANDARD	GMT2	.044 MIN.	1.730	.024	N/A	1/2–20	MEDIUM GATE-MATE & GATE-MATE 4
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		

Wear resistant tips are recommended for abrasive materials.
*Contact DME for details to modify thru hole tips for larger "O" diameters.

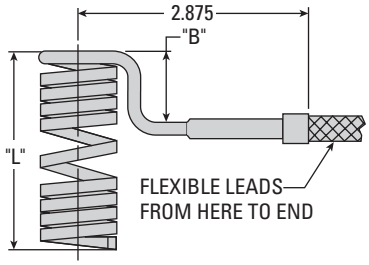
Gate-Mate® 4 Options Detail

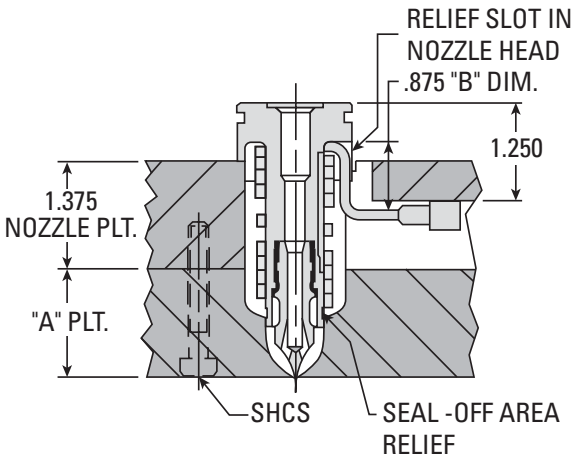
Gate-Mate® 4 Options – Detail #2

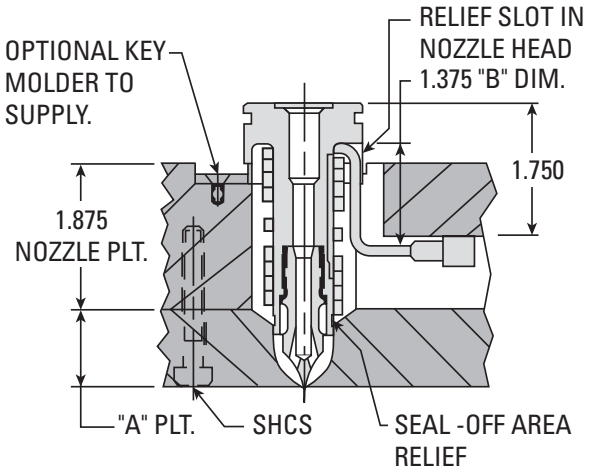
FRONT LOAD SQUARE COIL HEATER 240 VAC, T/C TYPE "J", 36" LONG

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)







ITEM NUMBER	USED WITH NOZZLE SUB-ASSY.	B DIM.	L DIM.	WATTS
SCH1060	GMB1050	.875	1.594	250
SCH1061	GMB1051	.875	2.094	300
SCH2061	GMB2051	1.375		
SCH1062	GMB1052	.875	2.594	350
SCH2062	GMB2052	1.375		
SCH1063	GMB1053	.875	3.094	400
SCH2063	GMB2053	1.375		
SCH1064	GMB1054	.875	3.594	425
SCH2064	GMB2054	1.375		
SCH1065	GMB1055	.875	4.594	500
SCH2065	GMB2055	1.375		
SCH1066	GMB1056	.875	5.594	500
SCH2066	GMB2056	1.375		

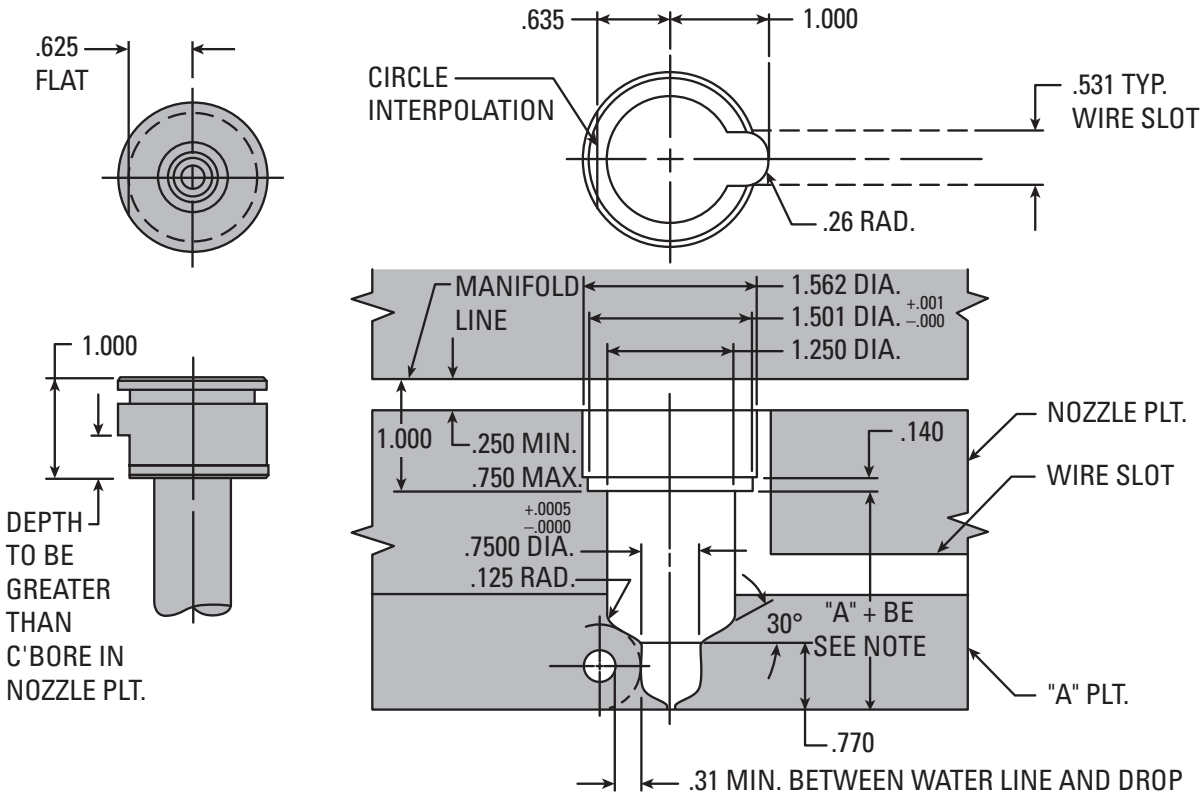
NOTE: The expansion factor must be taken into consideration prior to machining for and installing nozzles. This factor (BE) must then be added to the nominal "A" dimension.

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 2.500 inch 'A' dimension with a nozzle setpoint temp. of 500°:
BE = 2.500 × .00000633 × (500–68) = .0068… thus 'A' + BE will be 2.5068.

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.

Gate-Mate® 4 Options Detail

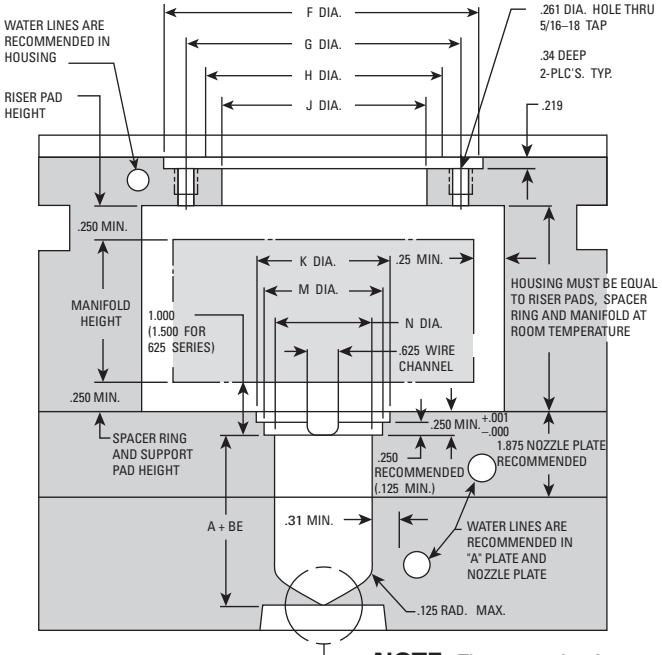


RECOMMENDATIONS AND GUIDELINES

1. The nozzle head must be held in such a manner to keep it from rotating upon installation of the Front Load Square Coil Heater. This may be done by making a key for the head to match the flat on the nozzle's head or by circle interpolation.
2. Nozzle plate must be designed so that the heads of the socket head cap screws are exposed when the mold is split on the parting line.
3. After the nozzle has been located and positioned in the nozzle plate with manifold secured in place and 'A' plate removed, the heater can be installed on the nozzle body as follows:
   a. Place heater within Tube 'A' so that the bending exit lead lies within the slot of the tube.
   b. Insert Tube 'B' with angle out within Tube 'A' so that the angle of the tube mates with the last coil of the heater.
   c. Rotate Tube 'A' counterclockwise while at the same time rotating Tube 'B' clockwise. This action will spring open the coils enough to slide the heater onto the shaft of the nozzle body.
   d. Slide the heater onto the nozzle body shaft aligning the heater exit lead within the relief slot in the nozzle's head.
   e. Position heater so that the end of the last coil is above the relief of the seal-off area (see figure above).
4. Place wire straps over wire channel to secure heater and thermocouple wires before assembling 'A' plate to the nozzle plate.

Housing, Nozzle Plate and Gate Machining Dimensions Detail

Manifold Housing, Nozzle Plate, "A" Plate and Gate Machining Dimensions – Detail #7 thru #12



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. (MAX.) SQ. COIL OR CAST-IN	N DIA. (MIN.) SQ. COIL OR CAST-IN
GATE-MATE 4	1.56	1.501	1.250	1.125
250	1.56	1.501	1.250	1.187
375	2.06	2.001	1.625	1.437
625	3.06	3.001	2.125	1.875

The Cast-in Heater is not available for the Gate-Mate 4 and 625 series nozzles. See the Gate-Mate Nozzles section for Gate-Mate 4 nozzles with front load heaters.

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.

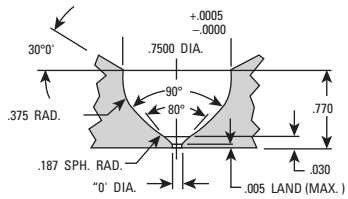
Formula for determining this expansion factor is as follows:

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.

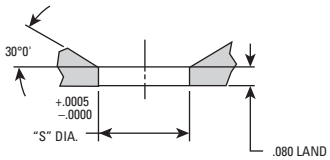
GATE-MATE 4 MACHINING DIMENSIONS



TIP STYLE	TIP ITEM NUMBER	0 DIA.
STANDARD	GMT2	.044 MIN.
WEAR RESISTANT	GMT0400	.055 MIN.
SUPER SHARP	GMT0301	.030 MIN.
SUPER SHARP WEAR RESISTANT	GMT0401	.055 MIN.
THRU HOLE	GMT0302*	.030 MIN.– .050 MAX.
THRU HOLE WEAR RESISTANT	GMT0402*	.055 MIN.
NO HOLE	GMT0303	.044 MIN.

NOTE: The "O" diameter can be opened by the customer to suit the application. Also the land must be remachined to .055 max. after increasing the gate diameter.
*Contact DME for details to modify thru hole tips for larger "O" diameters.

SPRUE AND POINT GATE (FULL BODY) MACHINING DIMENSIONS

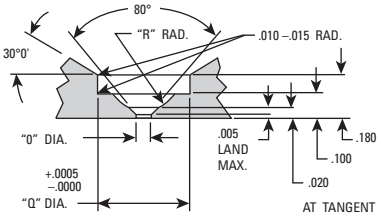


NOTE: Extended sprue length will add .750 to land.

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.

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	.125 MIN.	.125 MIN.	.6250	.312

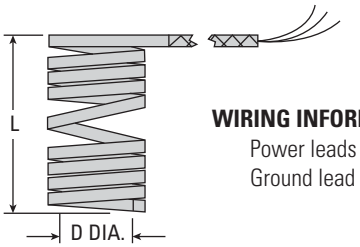
NOTE: The "O" diameter can be opened by the customer to suit the application. Also the land must be remachined to .005 max. after increasing the gate diameter.

For Mini Gate-Mate and Jumbo Gate-Mate machining details, visit www.dme.net/gate-mate

Replacement Square Coil Nozzle Heater Detail

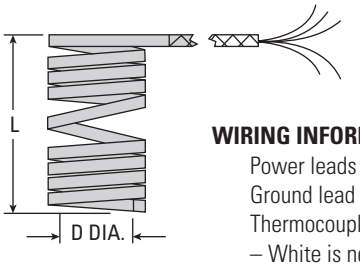
Replacement Square Coil Nozzle Heater – Detail #26

GATE-MATE® 4 NOZZLE HEATER
240 VAC, 36" LEADS



WIRING INFORMATION:
Power leads are black
Ground lead is green

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



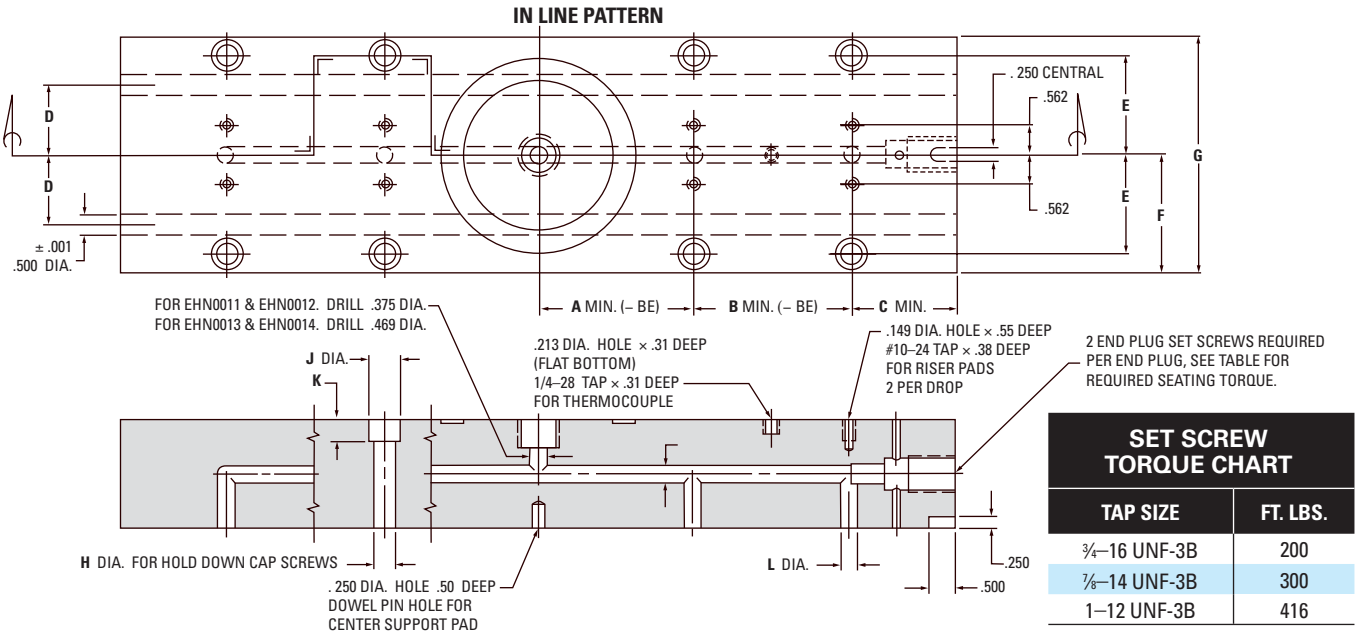
WIRING INFORMATION:
Power leads are black
Ground lead is green
Thermocouple leads are black and white
– White is negative (–) and constantan (non-magnetic)
– Black is positive (+) and iron (magnetic)

SERIES	ITEM NUMBER	D DIA. NOMINAL NOZZLE	L DIM.	WATTS	USED WITH NOZZLE SUB-ASSEMBLY
GATE-MATE 4	SCH0060	.750	1.437	250	GMB0050
					GMB0150
	SCH0061		1.937	300	GMB0051
					GMB0151
	SCH0062		2.437	350	GMB0052
					GMB0152
	SCH0063		2.937	400	GMB0053
					GMB0153
	SCH0064		3.437	425	GMB0054
					GMB0154
	SCH0065		4.437	500	GMB0055
					GMB0155
	SCH0066		5.437	500	GMB0056
					GMB0156
250	SCH0081	.625	2.000	300	EHA0001
	SCH0082		2.500	350	EHA0002
	SCH0083		3.000	400	EHA0003
	SCH0084		3.500	425	EHA0004
	SCH0085		4.000	500	EHA0005
	SCH0086		5.000	500	EHA0006
	SCH0087		6.000	550	EHA0007
375	SCH0088	.875	2.125	400	EHA0008
	SCH0089		2.625	450	EHA0009
	SCH0090		3.125	550	EHA0010
	SCH0091		3.625	700	EHA0011
	SCH0092		4.125	800	EHA0012
	SCH0093		5.125	900	EHA0013
	SCH0094		6.125	1000	EHA0014
	SCH0095		7.125	1100	EHA0015
625	SCH0096	1.500	4.000	1000	EHA0016
	SCH0097		5.000	1030	EHA0017
	SCH0098		6.000	1100	EHA0018
	SCH0099		7.000	1000	EHA0019
	SCH0100		8.000	1200	EHA0020
	SCH0101		9.000	1200	EHA0021
	SCH0102		10.000	1200	EHA0022

Manifold Design and Machining Dimensions Details

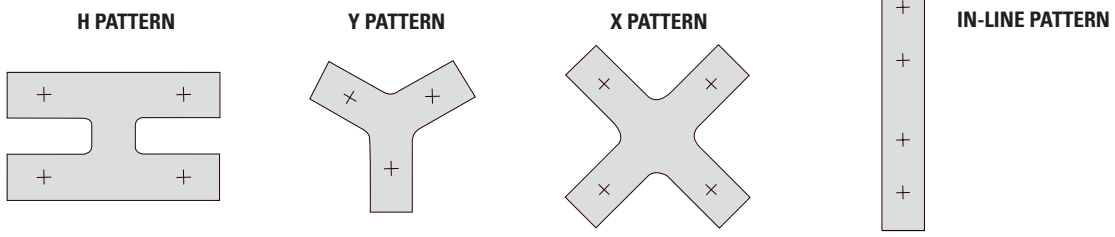
Manifold Design and Machining Dimensions – Details #13 thru #19

MATERIAL: DME #3 STEEL



SET SCREW TORQUE CHART	
TAP SIZE	**FT. LBS.**
¾–16 UNF-3B	200
⅞–14 UNF-3B	300
1–12 UNF-3B	416

MANIFOLD CONFIGURATION IS DETERMINED BY PLACEMENT OF NOZZLES IN MOLD



DIMENSIONS	GATE-MATE 4	250 SERIES	375 SERIES	625 SERIES
A*	2.000	2.000	2.250	2.750
B*	1.500	1.500	2.000	3.000
C	3.250	3.000	3.250	3.875
D	1.000	1.000	1.000	1.125
E	1.625	1.625	1.625	2.000
F	2.000	2.000	2.000	2.500
G	4.000	4.000	4.000	5.000
H DIA. **	.406	.406	.406	.531
J C'BORE	.594	.594	.594	.781
K	.380	.380	.380	.500
L DIA.	.500	.375	.500	.625

*Allowance must be made for the thermocouple placement between the nozzle seat and the first riser pad or between two riser pads.
**All hold down cap screws to be hardened and evenly torqued to 45–55 ft. lbs. Diameters shown are for .015 maximum expansion. For expansion greater than .15, modify to suit.

MANIFOLD WATT DENSITY	
APPROXIMATE MELT TEMPERATURE OF MATERIAL TO BE MOLDED	**WATT DENSITY PER CUBIC INCH OF MANIFOLD**
350° – 400° F	32
400° – 450° F	34
450° – 500° F	36
500° – 550° F	38
550° – 600° F	40
600° – 650° F	42
650° – 700° F	44
700° – 750° F	46

NOTE: The expansion factor must be taken into consideration prior to machining for, and installing, manifold. This expansion factor (BE) must then be subtracted from the nominal "A" and "B" dimension, if "B" is required.

Formula for determining this expansion factor is as follows:
BE = "A" or "B" dimension × .0000063 × manifold setpoint temp. – 68°F (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

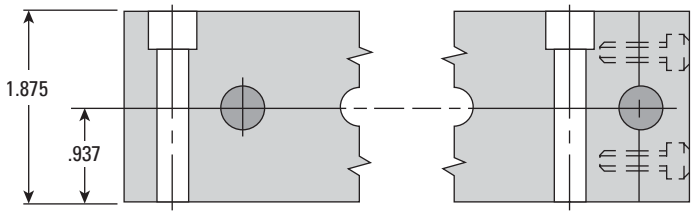
EXAMPLE: Given a 4 inch "A" dimension, with a manifold setpoint temp. of 500°F:
BE = [4 × .0000063 × (500–68)] = .011 thus A – BE = 3.989

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.

Manifold Height Recommendations Detail

Manifold Height Recommendations (Cartridge Heated Manifolds Only) – Detail #23

GATE-MATE 4, 250 SERIES AND 375 SERIES

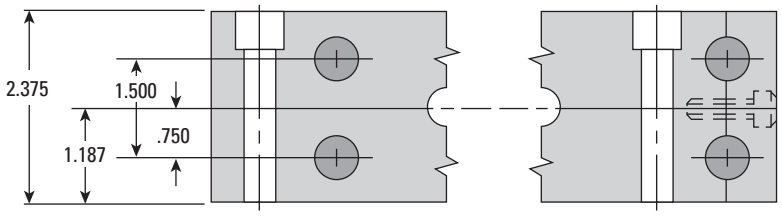


SOLID MANIFOLD WITH SINGLE LEVEL HEATER

MANIFOLD WITH HEATER RETAINER PLATES AND SINGLE LEVEL HEATER

GATE-MATE 4, 250 SERIES, 375 SERIES AND 625 SERIES

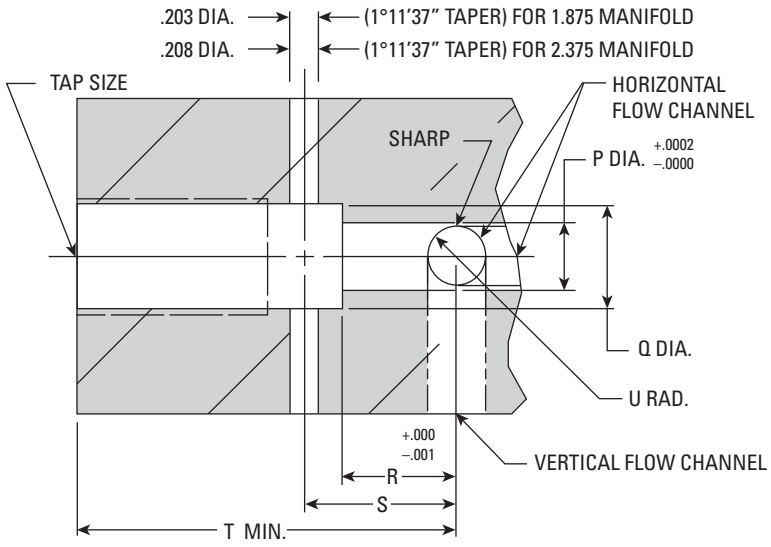
When more watt density is required



SOLID MANIFOLD WITH DUAL LEVEL HEATERS

MANIFOLD WITH HEATER RETAINER PLATES AND DUAL LEVEL HEATERS

End Plug Machining (Cartridge Heated Manifolds Only)– Detail #24



DIMENSION	GATE-MATE 4	250 SERIES	375 SERIES	625 SERIES
P DIA.	.5615	.4365	.5615	.6875
Q DIA.	.812	.687	.812	.922
R	.750	.750	.750	1.125
S	1.000	1.000	1.000	1.375
T	3.250	3.000	3.250	3.875
U RAD.	.250	.187	.250	.312
TAP SIZE	7/8-14 UNF-3B	3/4-16 UNF-3B	7/8-14 UNF-3B	1-12 UNF-3B
TAP DEPTH	1.875	1.625	1.875	2.125

Application Information

Use of Locating Ring and Nozzle Seat

The design shown in Figure 1 is used with cartridge heated manifolds only. The manifold is counterbored for the locating ring as shown.

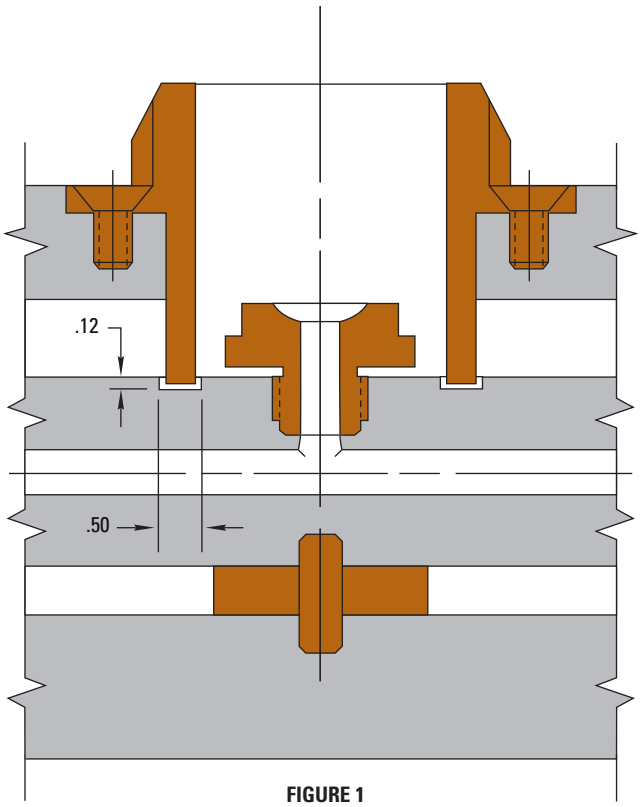


FIGURE 1

Use of Locating Ring, Drool Ring and Nozzle Seat

The design shown in Figure 2 can be used with cartridge heated manifolds, if desired, to eliminate the need to counterbore the manifold.

For tubular heated manifolds, the design shown in Figure 2 must be used. Counterbore the locating ring as shown for the drool ring.

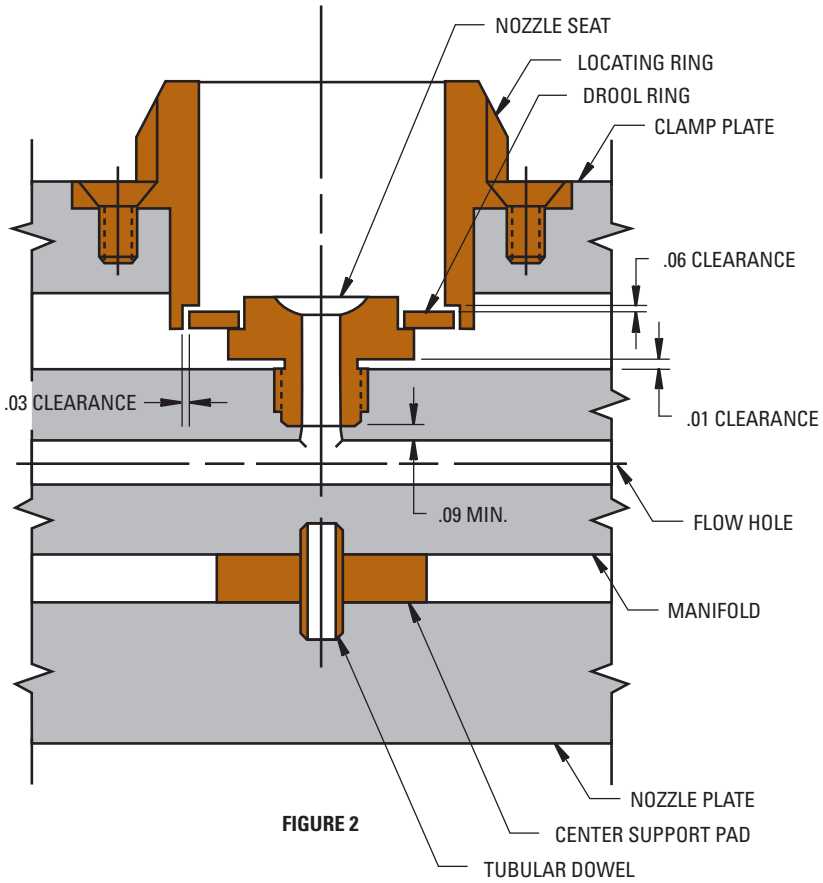


FIGURE 2

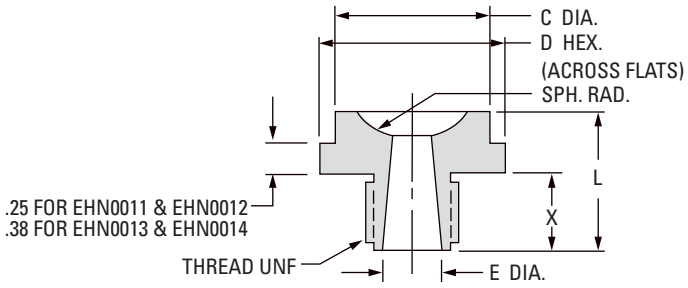
Replacement Parts Detail

Terminal Mounting Box – Detail #29

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

Nozzle Seat – Detail #30

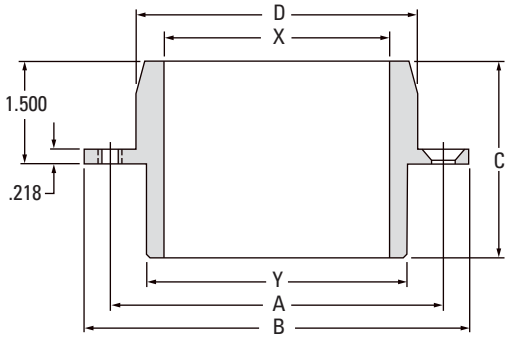
Replaceable interface between manifold and machine nozzle.



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

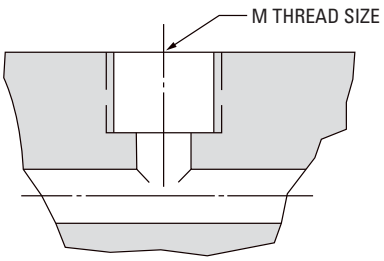
Locating Ring – Detail #31

INCLUDES (2) 5/16 – 18 × ½" LG. FLAT HEAD CAP SCREW



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

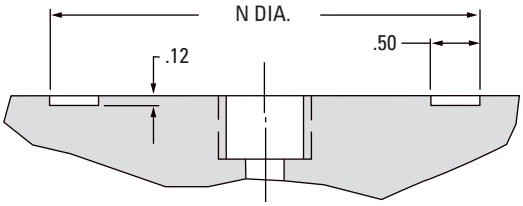
Nozzle Seat Machining – Detail #20



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 – Detail #21

Relief in top of manifold for locating ring.

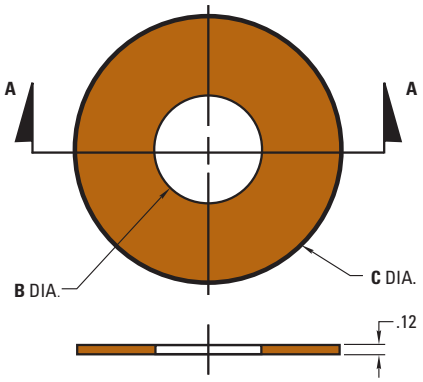


ITEM NUMBER	N DIA. +.005 –.000
EHL0252	2.505
EHL0253	3.755
EHL0254	2.505
EHL0255	3.755

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.

Manifold 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 – Detail #32

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

Shoulder Style Cartridge Heaters – Detail #32

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

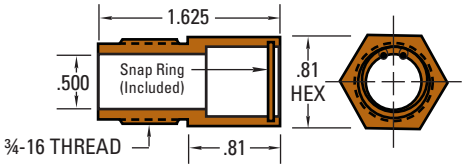
Shoulder Style Cartridge Heaters

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) – Detail #33

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 – Detail #28

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

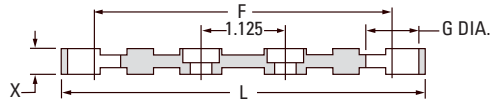
NOTE: Sizes preceded by an * are the newest additions.

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

Parts Detail

Riser Pad – Detail #34

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

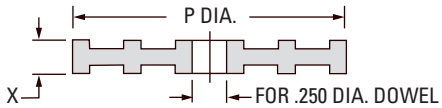


INCLUDES (2) #10–24 LOW HEAD CAP SCREWS

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 – Detail #35

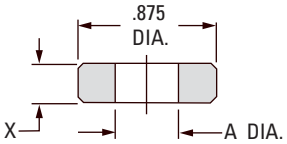
Aligns and supports manifold center while minimizing heat transfer from manifold.



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 – Detail #36

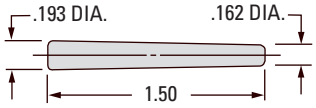
Maintains spacing between manifold and nozzle plate.



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 – Detail #37

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

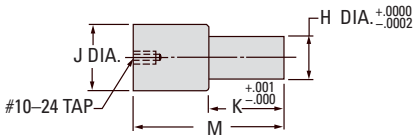


ITEM NUMBER
EDP0001

End Plug – Detail #38

Used to plug horizontal flow channels.

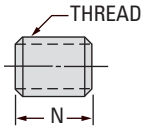
Material : P–20



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 – Detail #39

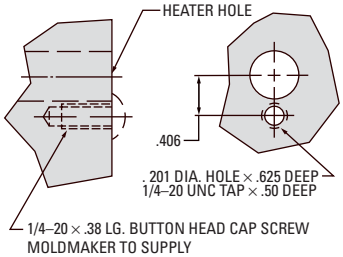
Used to secure end plug into manifold (2 required). End plug set screw must conform to the following standards. ANSI B1.1. ANSI B18.3 and ASTM F912.



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

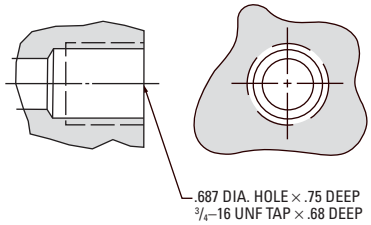
Heater Stop Machining – Detail #25

Used for ECH-Series cartridge heaters.



Heater Puller Machining – Detail #22

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

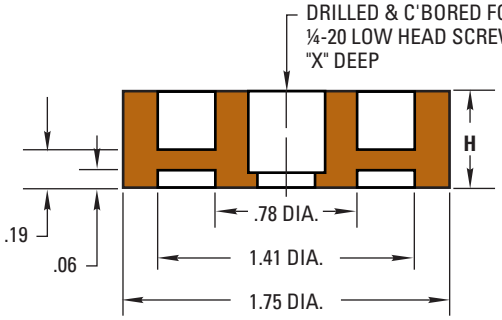


Components for Externally Heated Manifold Systems

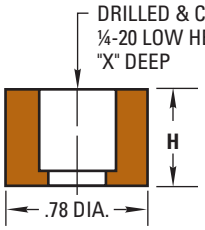
Used primarily with tubular heated manifolds, these components are made from a non-magnetic material with low thermal conductivity. They provide the higher efficiency and performance required for tubular manifold applications.

Riser Pads – Detail #34

Supports manifold opposite nozzles and prevents heat loss.



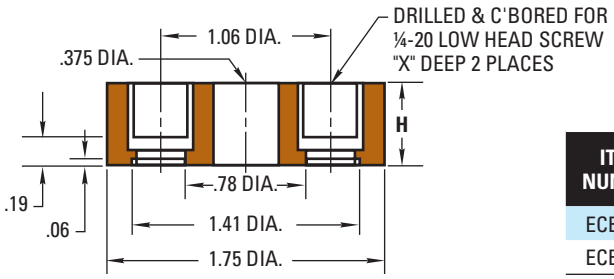
ITEM NUMBER	H	X
ERP1001	.500	.405
ERP1002	.750	.655



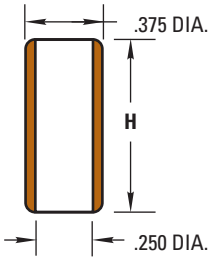
ITEM NUMBER	H	X
ERP1011	.500	.405
ERP1012	.750	.655

Center Support Pads and Tubular Dowels – Detail #35

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

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

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

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

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

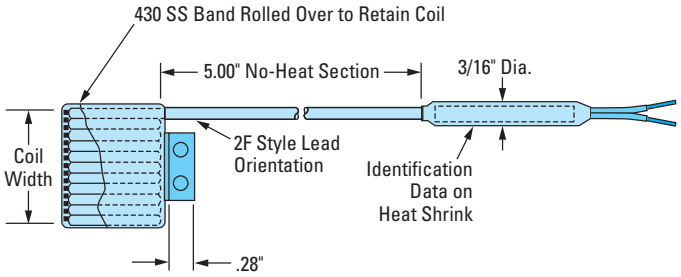
This nozzle heater features a five-inch long unheated tail section, and the adapter is provided with a moisture-resistant seal. These two design advantages practically eliminate failures in the adapter area due to overheating and moisture contamination.

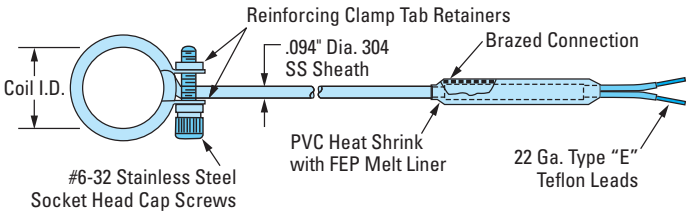
As with all DME heaters, these new nozzle heaters are designed to give long life even when operated at 1200°F. These are very low profile heaters to facilitate easy installation in the tight environment of multiple gate molds.

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.

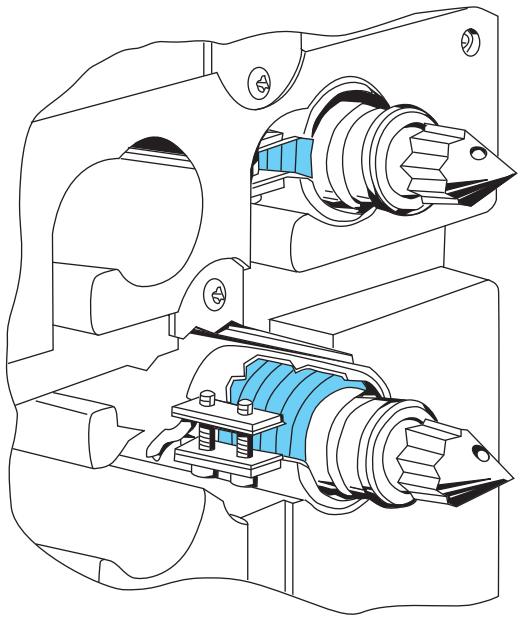




Nozzle Heaters (240 VAC)

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 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.

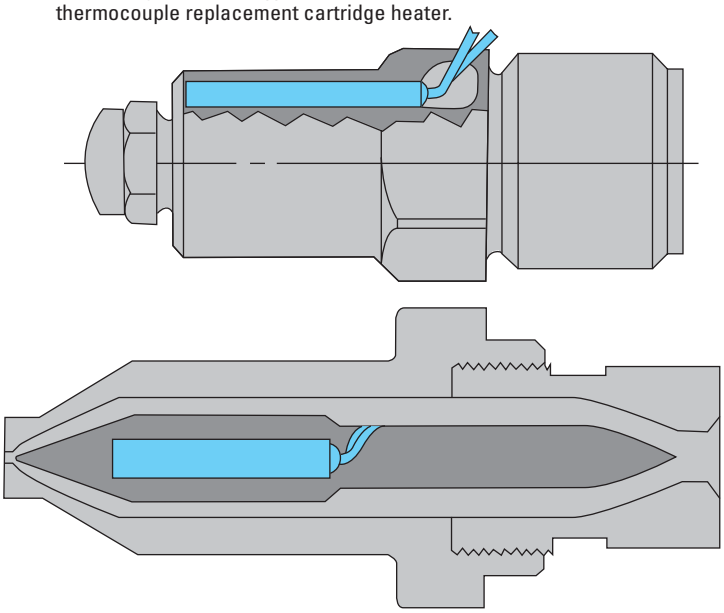
Contamination

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.

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

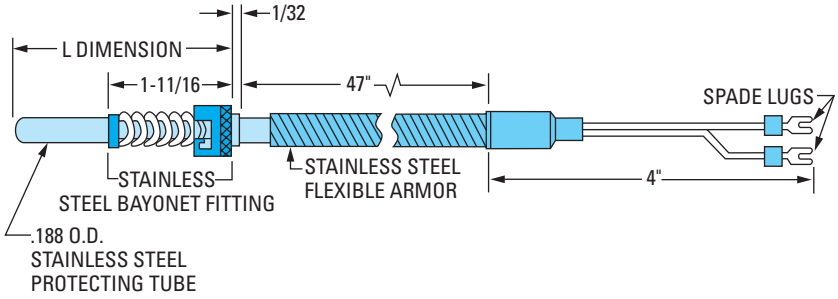
*See DME Equipment and Supplies Catalog for DME machine reamers and DME straight shank long drills.

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.

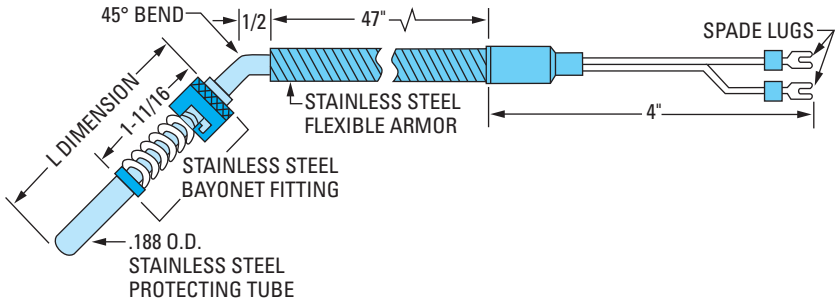
DME Adjustable Bayonet Type Thermocouples fit hole depths up to $10^1/_2$" and will conform to any angle.

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.



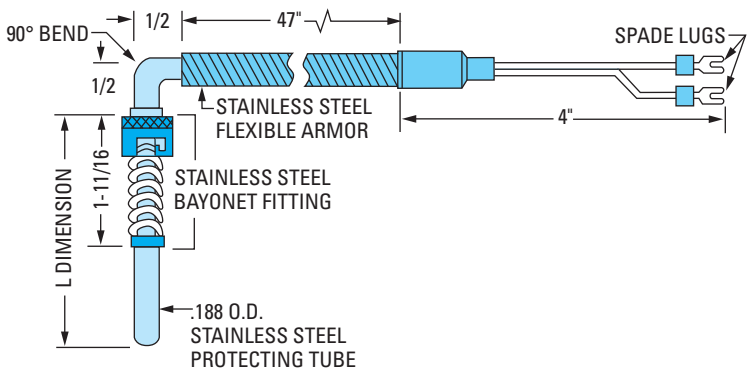
Straight Type

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



45° Angle Type

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



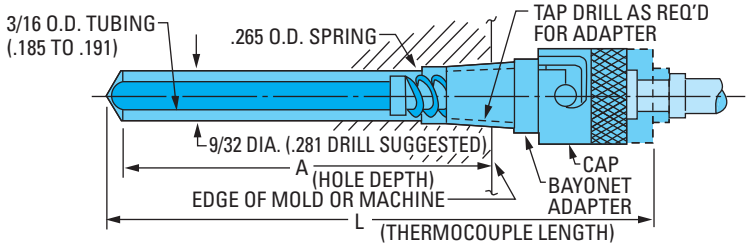
90° Angle Type

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

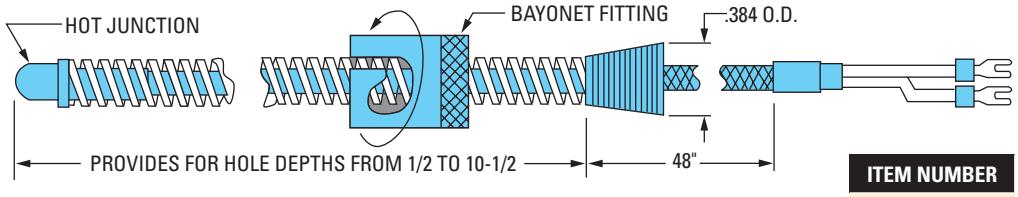
Thermocouples and Accessories

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"



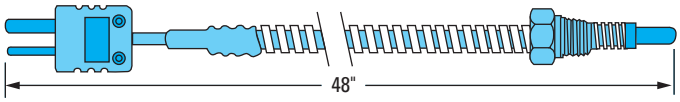
Adjustable Thermocouple



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

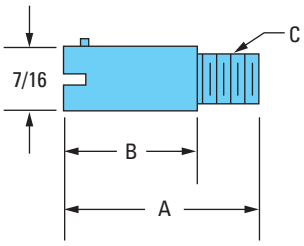


ITEM NUMBER
TCT4

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

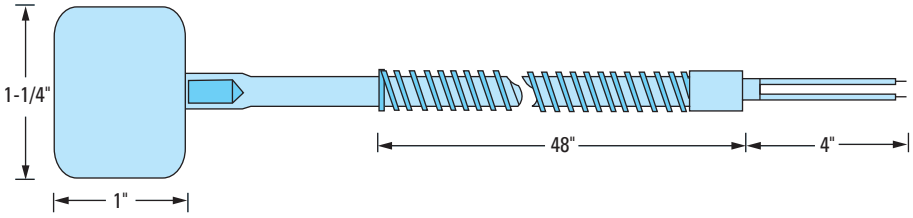
Bayonet Adapters

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

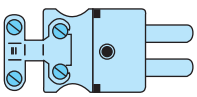
Spade Type Thermocouple



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

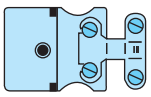
Plug (with Cable Clamp)



ITEM NUMBER
PL10

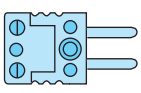
ROUND PINS AND SOCKETS (3/16 & 1/8)

Jack (with Cable Clamp)



ITEM NUMBER
PL20

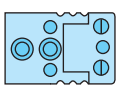
Mini Plug



ITEM NUMBER
M2MJ

FLAT PINS AND SOCKETS

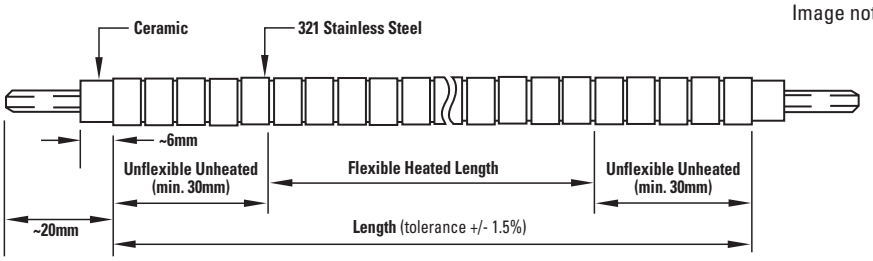
Mini Jack



ITEM NUMBER
M2FJ

Standard Global Manifold Replacement Heaters

Image not to scale.



DME Manifold Flexible Replacement Heaters

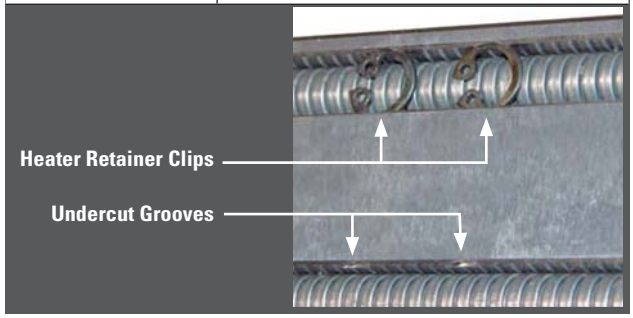
8.5mm diameter. Operating voltage 230 Volt. M2.5x0.45 threaded pins on both ends.

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

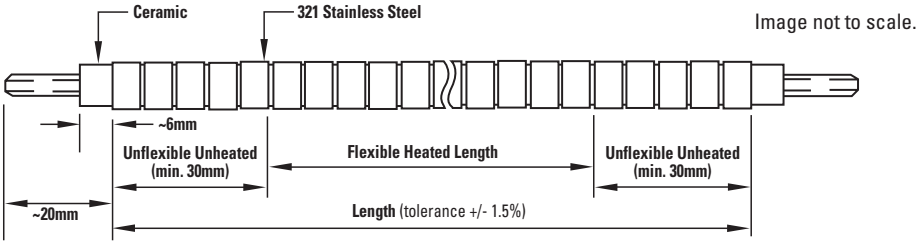
LOW-WATT FLEXIBLE TUBULAR HEATERS		
ITEM NO.	LENGTH (mm)	WATTAGE
HFL850500	500	700
HFL850550	550	780
HFL850600	600	860
HFL850650	650	950
HFL850700	700	1000
HFL850750	750	1100
HFL850800	800	1190
HFL850850	850	1250
HFL850900	900	1350
HFL850950	950	1430
HFL851000	1000	1500
HFL851050	1050	1590
HFL851100	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	
RR47213000100	Manifold Heater Retainer Clips



Standard Global Manifold Replacement Heaters



DME Manifold Flexible Replacement Heaters

8.0mm diameter. Operating voltage 240 Volt. M4x0.45 threaded pins on both ends.

HIGH-WATT FLEXIBLE TUBULAR HEATERS		
ITEM NO.	LENGTH (mm)	WATTAGE
HFH8030	300	660
HFH8035	350	675
HFH8040	400	795
HFH8045	450	910
HFH8050	500	1025
HFH8055	550	1145
HFH8060	600	1260
HFH8065	650	1380
HFH8070	700	1495
HFH8075	750	1615
HFH8080	800	1730
HFH8085	850	1845
HFH8090	900	1960
HFH8095	950	2080
HFH8100	1000	2195
HFH8105	1050	2316
HFH8110	1100	2430
HFH8115	1150	2545
HFH8120	1200	2665
HFH8125	1250	2780
HFH8130	1300	2895
HFH8135	1350	3015
HFH8140	1400	3130
HFH8145	1450	3245
HFH8150	1500	3365

LOW-WATT FLEXIBLE TUBULAR HEATERS		
ITEM NO.	LENGTH (mm)	WATTAGE
HFL8040	400	339
HFL8045	450	364
HFL8050	500	410
HFL8055	550	458
HFL8060	600	504
HFL8065	650	552
HFL8070	700	598
HFL8075	750	646
HFL8080	800	692
HFL8085	850	738
HFL8090	900	784
HFL8095	950	832
HFL8100	1000	878
HFL8105	1050	926
HFL8110	1100	972
HFL8115	1150	1018
HFL8120	1200	1066
HFL8125	1250	1112
HFL8130	1300	1158
HFL8135	1350	1206
HFL8140	1400	1252
HFL8145	1450	1298
HFL8150	1500	1346

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	
RR47213000100	Manifold Heater Retainer Clips