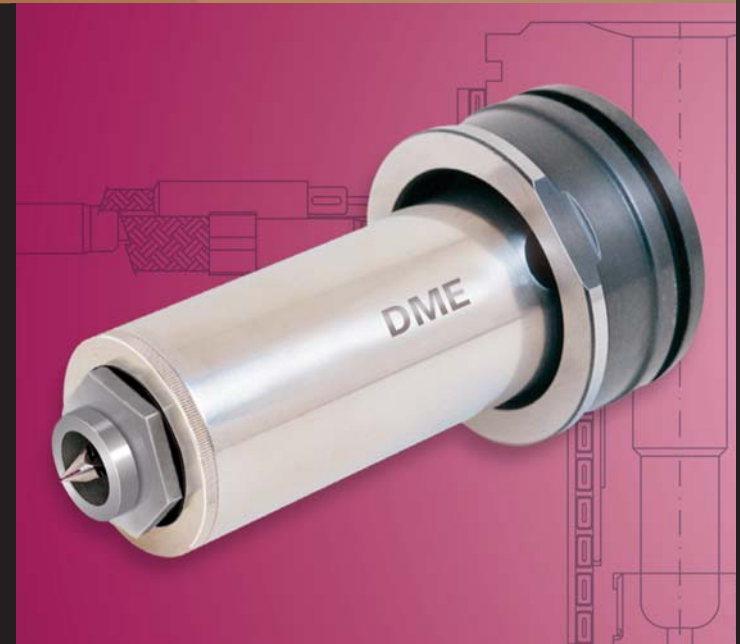


D-MAX High Performance Hot Sprue Bushings

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/cm ³]	[lbs/inch ³]	[g/cm ³]	[lbs/inch ³]
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
Polyvinyl chloride	PVC/FLEX	175	347	35	95	200	392	1.02	0.0405	1.38	0.0499
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
Polybutylene 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

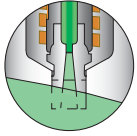
PLASTIC MATERIAL FLOW INDEX

HIGH MFI	MEDIUM MFI		LOW MFI	
SB	ABS		PVC/FLEX	
PS	SAN	PA 6		PC
PE	PPO	PA 66	TPE	PBT
PP	PPS	POM	PEEK	PUR
	PET	PMMA		

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.

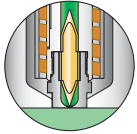
Bushing Selection

HOT SPRUE BUSHING TIP STYLE



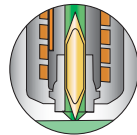
**SPRUE GATE TIP
STANDARD / EXTENDED**

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 * HIGH PERFORMANCE SPRUE BUSHING RECOMMENDED FOR THIS RESIN.

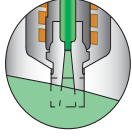

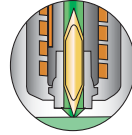
NOZZLE	THERMOPLASTIC RESIN TYPE																							
	AMORPHOUS								SEMI-CRYSTALLINE															
	SB	PUR *	PEI *	PVC/FLEX	SAN *	PS	PC *	PPO *	PE	PP	PEEK	PPS *	PET *	PBT *	PA *	TPE *	POM *	PMMA *	ABS	TPO *	ABS/PC *	PPE/PS *	PSU	LCP
 SPRUE GATE TIP STANDARD / EXTENDED	●	●	●	▲	●	■	●	●	■	●	▲	●	●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

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

Maximum Flow Capacity Tables

MAXIMUM BUSHING FLOW CAPACITY

MAXIMUM LOAD WEIGHT IN GRAMS WITH MAXIMUM HOLE DIAMETERS

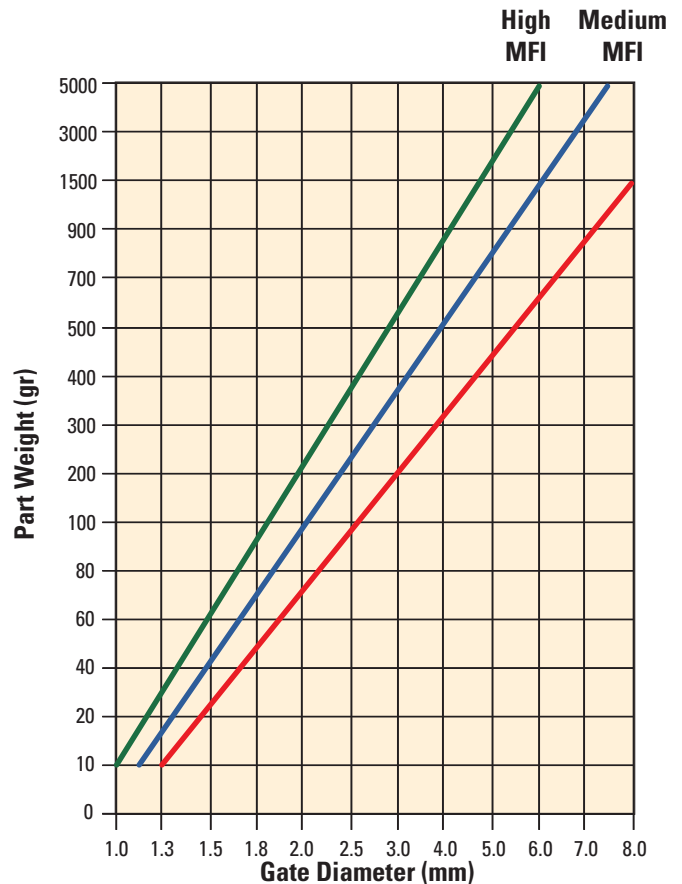
NOZZLE	250 SERIES	375 SERIES	625 SERIES	MFI (Melt Flow Index)
 SPRUE GATE TIP STANDARD / EXTENDED	800	1400	2000	HIGH
	400	700	1000	MEDIUM
	200	300	450	LOW
 RING GATE TIP STANDARD / EXTENDED	210	980	1400	HIGH
	105	490	700	MEDIUM
	52	210	315	LOW
 POINT GATE TIP	210	980	1400	HIGH
	105	490	700	MEDIUM
	52	210	315	LOW

DEFINITION OF MATERIAL INPUT

The optimal gate diameter will vary according to the resin, Melt Flow Index and part weight.

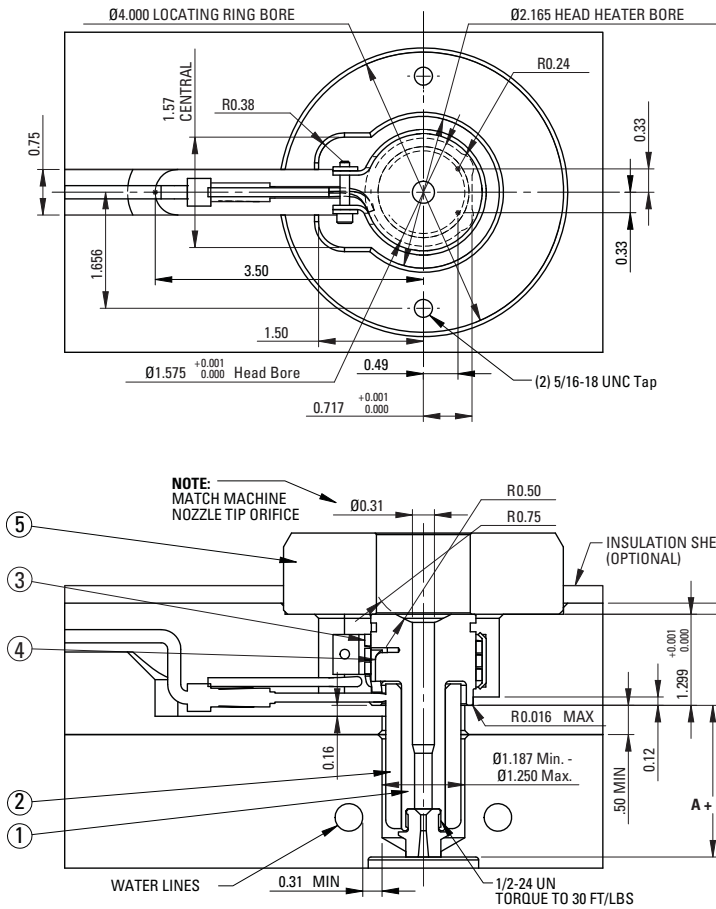
Please refer to the table for guidelines. Other factors to consider when defining gate requirements for a DME D-MAX System are:

- Product geometry
- Polymer type
- Mold and injection machine conditions



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:
 $BE = \text{"A" dimension} \times 0.00000633 \times \text{nozzle set point} - 68^\circ\text{F}$
 (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:
 $BE = 4.134 \times 0.00000633 \times (500 - 68) = 0.011$
 Thus "A" + BE will be 4.145

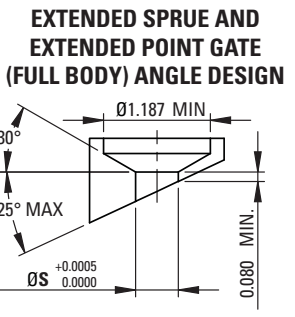
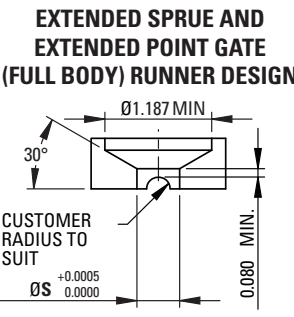
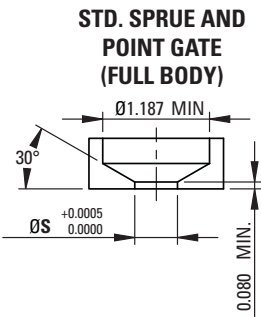
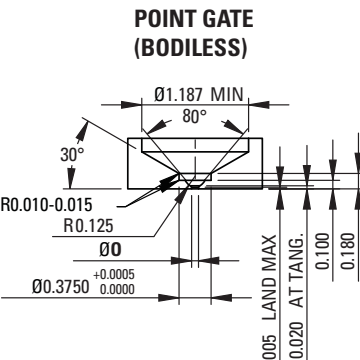
NOTE: The above information is only given as an example; variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

"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

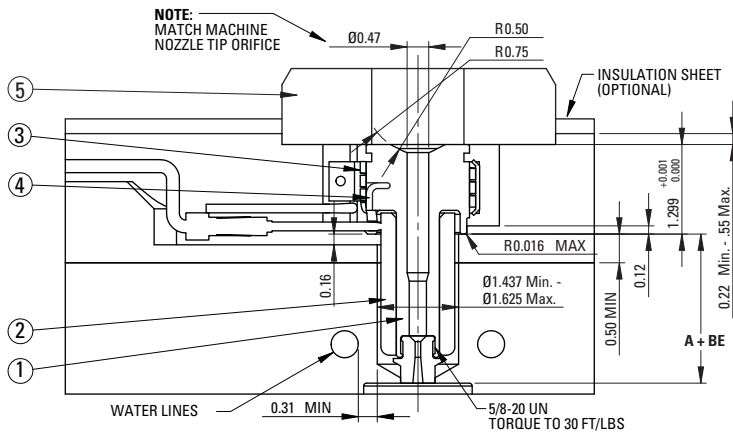
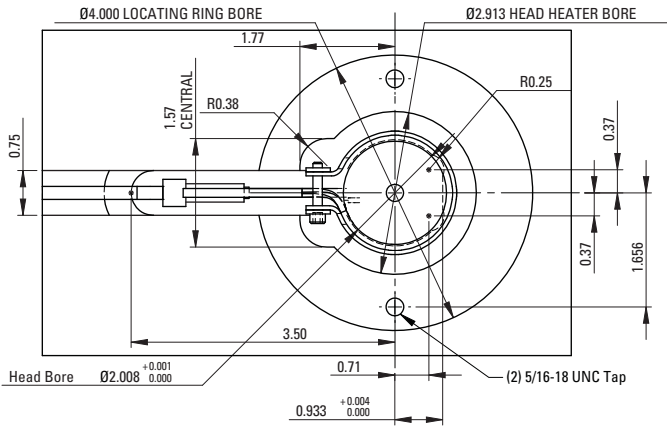
ASSEMBLY	"A" DIMENSION	ASSEMBLY COMPONENTS						LOCATING RING DETAIL #5
		BUSHING BODY DETAIL #1	HIGH PERFORMANCE HEATER DETAIL #2	WATTAGE	HEAD HEATER DETAIL #3	WATTAGE	THERMOCOUPLE DETAIL #4	
DMAX06055	2.165in (55.00mm)	DEP06055	CIH0081S	440	RDP38021	295	DTC38001	PML0252 Includes (2) 5/16-18 UNC x .75" Lg SHCS
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				



NOTE: For Extended Sprue and Extended Point Gate Tips (Runner or Angle design) customer must modify and machine relief, such that average land contact is 0.080 and 0.062 deep into tip.

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:
 $BE = \text{"A" dimension} \times 0.00000633 \times \text{nozzle set point} - 68^\circ\text{F}$
 (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:
 $BE = 2.362 \times 0.00000633 \times (500 - 68) = 0.0064$
 Thus "A" + BE will be 2.368

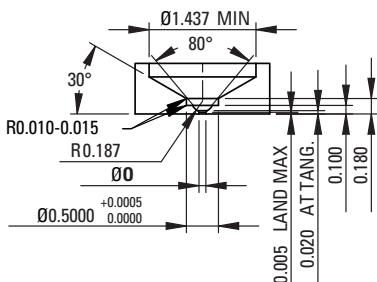
NOTE: The above information is only given as an example; variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.

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

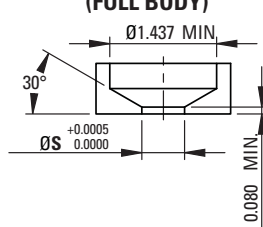
BUSHING AND COMPONENT SPECIFICATIONS

ASSEMBLY	"A" DIMENSION	ASSEMBLY COMPONENTS					LOCATING RING DETAIL #5	
		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	400	DTC38001	PML3751 Includes (2) 5/16-18 UNC x .75" Lg SHCS
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				

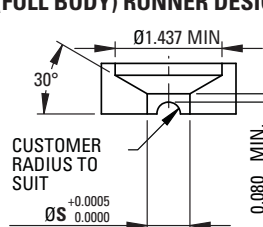
POINT GATE (BODILESS)



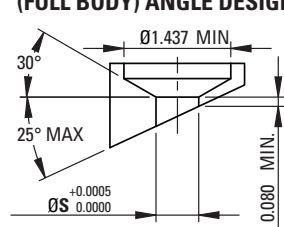
STD. SPRUE AND POINT GATE (FULL BODY)



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



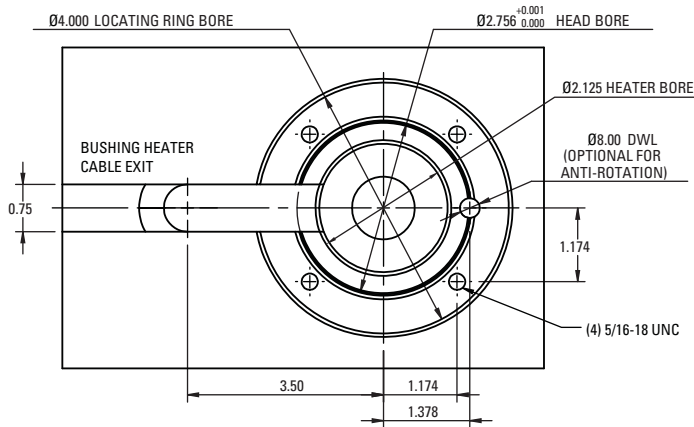
EXTENDED SPRUE AND EXTENDED POINT GATE (FULL BODY) ANGLE DESIGN



NOTE: For Extended Sprue and Extended Point Gate Tips (Runner or Angle design) customer must modify and machine relief, such that average land contact is .080" and .062" deep into tip.

High Performance Hot Sprue Bushing 625 Series

NOTE: Dimensions shown in inches unless specified otherwise.



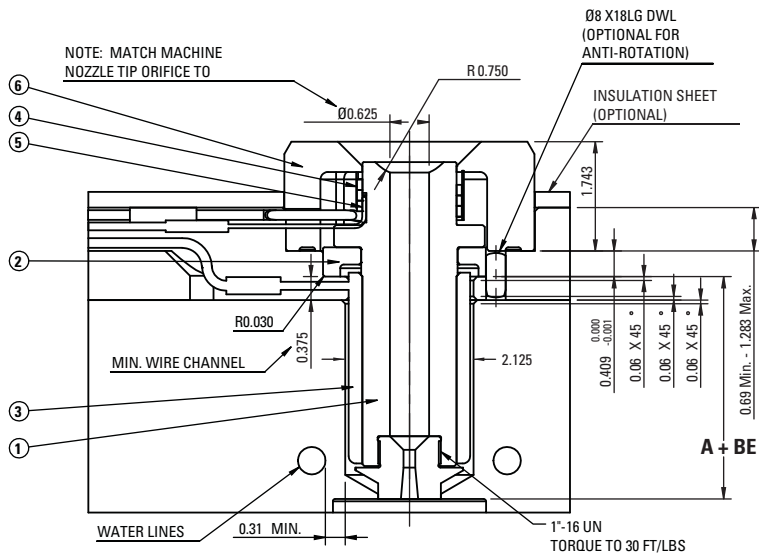
For selection of gate diameter it is important to take into consideration the material flow characteristics, share rate of resin, molding conditions, fill time requirements, gate vestige, wall thickness and configuration of parts to be molded. Situations requiring high injection velocities must be considered 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:
 $BE = \text{"A" dimension} \times 0.00000633 \times \text{nozzle set point} - 68^\circ\text{F}$
 (assuming the mold is at 68°F during operation). If mold temperature is different, substitute 68°F with actual mold temperature.

EXAMPLE: Given a 90mm "A" dimension, with a set point of 500°F and mold temperature 68°F:
 $BE = 3.543 \times 0.00000633 \times (500 - 68) = .010$
 Thus "A" + BE will be 3.553

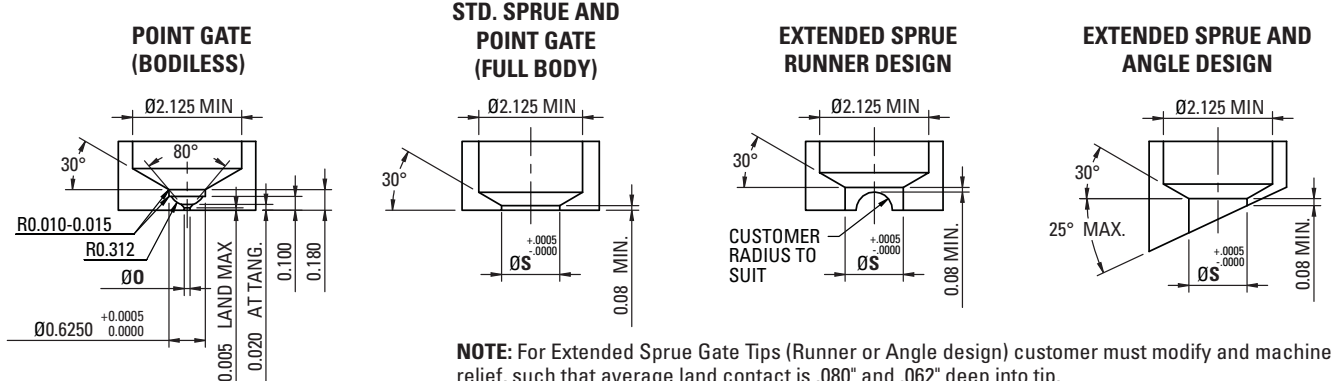
NOTE: The above information is only given as an example; variations may occur based on mold configurations and cooling factor. In some instances, it may be necessary to obtain an empirical factor.



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

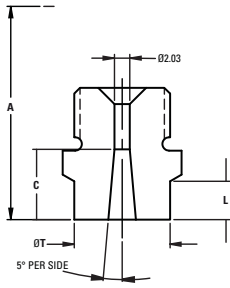
BUSHING AND COMPONENT SPECIFICATIONS

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	LOCATING RING DETAIL #6
DMAX14090	3.543in (90.00mm)	DEP14090	DBP16001	CIH0104S	847	RCP38021	260	DTC62501	PML6251
DMAX14115	4.528in (115.00mm)	DEP14115		CIH0096S	1000				
DMAX14140	5.512in (140.00mm)	DEP14140		CIH0097S	1030				
DMAX14165	6.496in (165.00mm)	DEP14165		CIH0098S	1100				
DMAX14190	7.480in (190.00mm)	DEP14190		CIH0099S	1000				
DMAX16215	8.465in (215.00mm)	DEP16215		CIH0101S	1200				
DMAX16240	9.449in (240.00mm)	DEP16240		CIH0102S	1200				
DMAX16265	10.433in (265.00mm)	DEP16265	CIH0103S	1200					



NOTE: For Extended Sprue Gate Tips (Runner or Angle design) customer must modify and machine relief, such that average land contact is .080" and .062" deep into tip.

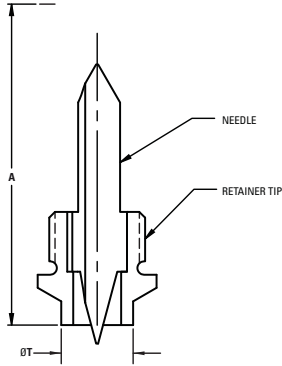
Gate Tip Detail



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			
	EXTENDED SPRUE GATE	EHT0013		.500	1.000	.850	1.125
		EHT0014		.750			
		EHT0015		1.000			
375	SPRUE GATE	EHT0016	.125	.500	.250	.375	
		EHT0017		.750			
		EHT0018		1.000			
	EXTENDED SPRUE GATE	EHT0019		.500	1.000	.850	1.125
		EHT0020		.750			
		EHT0021		1.000			
625	SPRUE GATE	EHT0022	.187	1.000	.250	.500	
	EXTENDED SPRUE GATE	EHT0023		1.000	1.000	1.250	

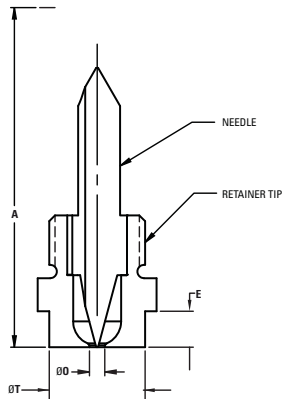
(Add .750 to A dimension for extended sprue gate tips.)



Point Gate (Bodiless)

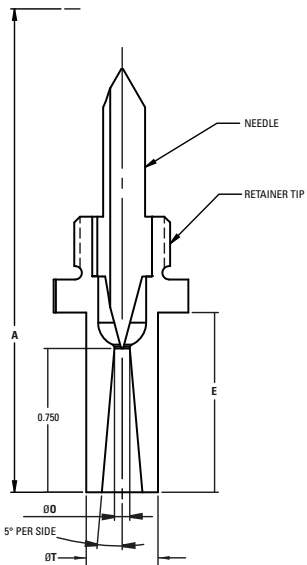
SERIES	GATE TIP	ITEM NUMBER	T DIA.	INCLUDES	
				NEEDLE	RETAINER TIP
250	STANDARD	EHT0005	.375	EHN0015	EHT0024
		EHT1314			EHT0324
	WEAR RESISTANT	EHT1308			EHT0324
		EHT1313			EHT1324
375	STANDARD	EHT0039	.500	EHN0016	EHT0025
		EHT1312			EHT0325
		EHT1303			EHT0325
	WEAR RESISTANT	EHT1309			EHT1325
		EHT1306			EHT1354
		EHT1311			EHT0326
625	STANDARD	EHT1307	.625	EHN0019	EHT0326
		EHT1310			EHT0326
	WEAR RESISTANT	EHT1307			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		.060			EHT0028
		EHT2004		.080			EHT0029
		EHT2005		.060			EHT1326
	WEAR RESISTANT	EHT2006	.375	.080		EHT1327	
		EHT2007	.500	.060		EHT1328	
		EHT2008	.500	.080		EHT1329	
		EHT2009	.500	.080		EHT0030	
		EHT2010	.500	.100		EHT0031	
375	STANDARD	EHT2011	.750	.080	.230	EHN0016	EHT0032
		EHT2012		.100			EHT0033
		EHT2013		.080			EHT0034
		EHT2014		1.000			EHT0035
		EHT2015		.500			.080
	WEAR RESISTANT	EHT2016	.500	.100		EHT1331	
		EHT2017	.750	.080		EHT1332	
		EHT2018	.750	.100		EHT1333	
		EHT2019	1.000	.080		EHT1334	
		EHT2020	1.000	.100		EHT1335	
625	STANDARD	EHT2021	1.000	.125	.250	EHN0019	EHT0036
	WEAR RESISTANT	EHT2022				EHN0402	EHT1336

Point Gate (Full Body Extended)

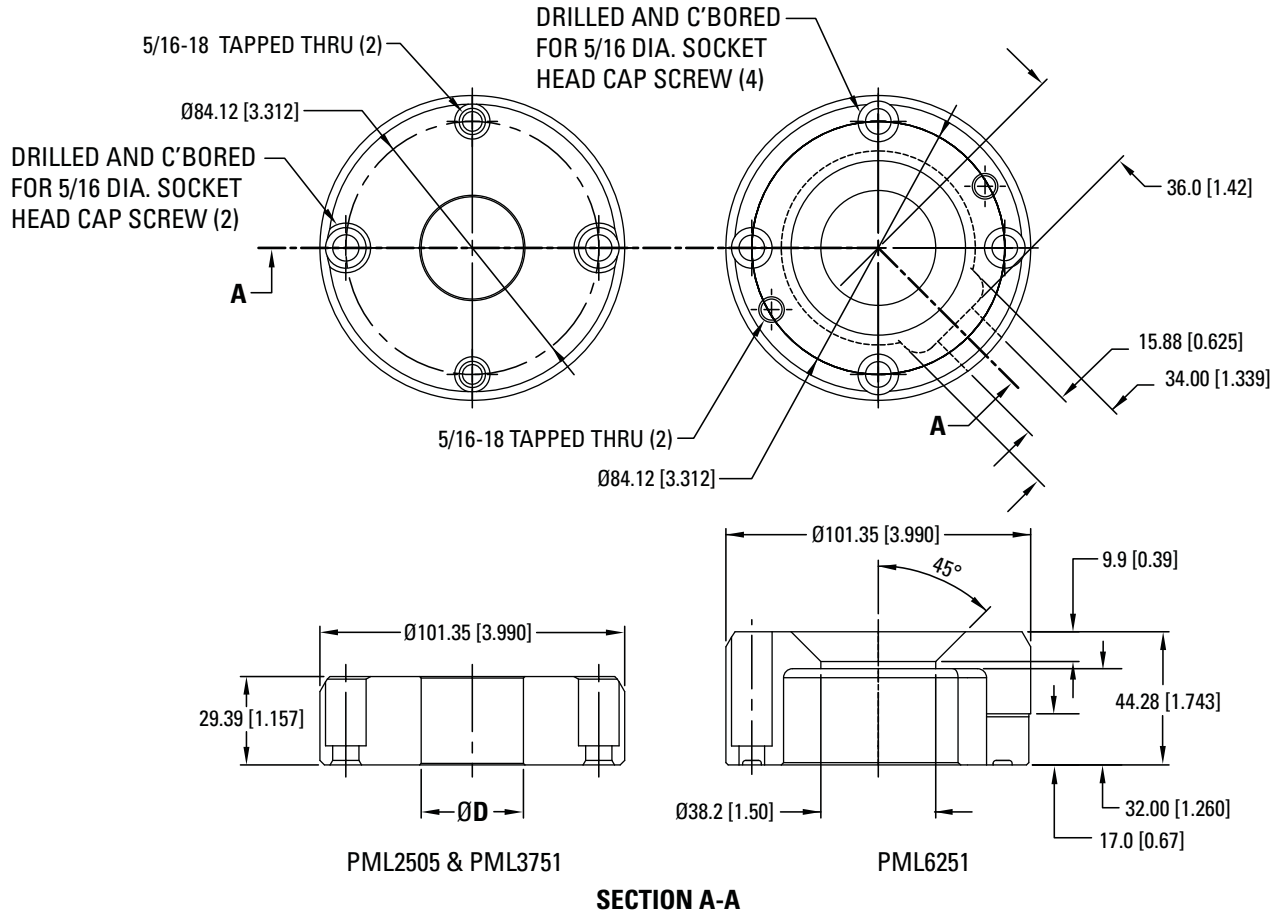


SERIES	TYPE	ITEM NUMBER	T DIA.	O DIA.	E	INCLUDES		
						NEEDLE	RETAINER TIP	
250	STANDARD	EHT2301	.375	.060	.938	EHN0015	EHT2326	
		EHT2302		.080			EHT2327	
		EHT2303		.060			EHT2328	
		EHT2304		.500			.080	EHT2329
		EHT2305		.375			.060	EHT2326
	WEAR RESISTANT	EHT2306	.500	.080		EHT2327		
		EHT2307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

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

250, 375 & 625 High Performance Locating Rings

250, 375 & 625 High Performance Locating Rings



ITEM NUMBER	Ø D
PML2505	34.00 (1.34")
PML3751	46.00 (1.81")
PML6251	63.00 (2.48")

NOTE: Dimensions shown in millimeters, inches in parentheses