

Cartridge Heaters in Diameter Listing



240V

PART NO.	HEATER DIA (MM)	LENGTH (MM)	POWER OUTPUT WATTS	INCLUDED THERMOCOUPLE	SHOULDER TYPE
CM-100-2	6.35	25.4	100	No	No
CM-112-2	6.35	38.1	150	No	No
CU-202-2	6.35	50.8	40	No	No
CM-202-2	6.35	50.8	200	No	No
AFC-202-2	6.35	50.8	200	No	No
AFTC-202-2	6.35	50.8	200	Yes "J" Type	No
CU-203-2	6.35	76.2	75	No	No
AFC-213-2	6.35	76.2	150	No	No
AFTC-213-2	6.35	76.2	150	Yes "J" Type	No
CM-203-2	6.35	76.2	300	No	No
AFC-203-2	6.35	76.2	300	No	No
AFTC-203-2	6.35	76.2	300	Yes "J" Type	No
AFC-214-2	6.35	95.25	220	No	No
AFTC-214-2	6.35	95.25	220	Yes "J" Type	No
CU-204-2	6.35	101.6	100	No	No
AFC-204-2	6.35	101.6	375	No	No
AFTC-204-2	6.35	101.6	375	Yes "J" Type	No
CM-204-2	6.35	101.6	375	No	No
AFC-215-2	6.35	120.65	275	No	No
AFTC-215-2	6.35	120.65	275	Yes "J" Type	No
CM-205-2	6.35	127	450	No	No
AFC-205-2	6.35	127	475	No	No
AFTC-205-2	6.35	127	475	Yes "J" Type	No
AFC-216-2	6.35	146.05	350	No	No
AFTC-216-2	6.35	146.05	350	Yes "J" Type	No
CU-206-2	6.35	152.4	150	No	No
TCH0001	9.52	44.45	200	Yes "J" Type	No
CU-302-2	9.52	50.4	75	No	No
TCH0002	9.52	50.8	250	Yes "J" Type	No
CM-302-2	9.52	50.8	250	No	No
TCH0003	9.52	63.5	250	Yes "J" Type	No
CU-303-2	9.52	76.2	100	No	No
TCH0004	9.52	76.2	250	Yes "J" Type	No
CM-303-2	9.52	76.2	350	No	No
TCH0005	9.52	88.9	320	Yes "J" Type	No
CU-304-2	9.52	101.6	150	No	No
TCH0006	9.52	101.6	370	Yes "J" Type	No
CM-304-2	9.52	101.6	500	No	No

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PART NO.	HEATER DIA (MM)	LENGTH (MM)	POWER OUTPUT WATTS	INCLUDED THERMOCOUPLE	SHOULDER TYPE
TCH0007	9.52	114.3	420	Yes "J" Type	No
CU-305-2	9.52	127	185	No	No
HCTC-03-4	9.52	127	320	Yes "J" Type	No
TCH0008	9.52	127	470	Yes "J" Type	No
CM-305-2	9.52	127	550	No	No
HCTC-03-45	9.52	139.7	340	Yes "J" Type	No
TCH0009	9.52	139.7	525	Yes "J" Type	No
CU-306-2	9.52	152.4	225	No	No
HCTC-03-5	9.52	152.4	400	Yes "J" Type	No
TCH0010	9.52	152.4	575	Yes "J" Type	No
CM-306-2	9.52	152.4	600	No	No
HCTC-03-55	9.52	165.1	430	Yes "J" Type	No
TCH0011	9.52	165.1	625	Yes "J" Type	No
HCTC-03-6	9.52	177.8	450	Yes "J" Type	No
TCH0012	9.52	177.8	675	Yes "J" Type	No
AFTC-327-2	9.52	181.61	645	Yes "J" Type	No
HCTC-03-65	9.52	190.5	470	Yes "J" Type	No
TCH0013	9.52	190.5	725	Yes "J" Type	No
CU-308-2	9.52	203.2	300	No	No
HCTC-03-7	9.52	203.2	480	Yes "J" Type	No
TCH0014	9.52	203.2	775	Yes "J" Type	No
AFTC-328-2	9.52	207.01	760	Yes "J" Type	No
HCTC-03-75	9.52	215.9	515	Yes "J" Type	No
HCTC-03-8	9.52	228.6	550	Yes "J" Type	No
AFTC-329-2	9.52	232.41	870	Yes "J" Type	No
HCTC-03-9	9.52	254	650	Yes "J" Type	No
AFTC-3210-2	9.52	257.81	980	Yes "J" Type	No
HCTC-03-10	9.52	279.4	710	Yes "J" Type	No
HCTC-03-11	9.52	304.8	720	Yes "J" Type	No
HCTC-03-12	9.52	330.2	760	Yes "J" Type	No
HCTC-03-13	9.52	355.6	810	Yes "J" Type	No
CU-402-2	12.7	50.8	75	No	No
CM-402-2	12.7	50.8	250	No	No
CU-403-2	12.7	76.2	150	No	No
CM-403-2	12.7	76.2	300	No	No
TCH0015	12.7	88.9	420	Yes "J" Type	No
CU-404-2	12.7	101.6	180	No	No
HCTC-04-4	12.7	101.6	380	Yes "J" Type	No
CM-404-2	12.7	101.6	400	No	No
TCH0016	12.7	101.6	480	Yes "J" Type	No
ECH0103	12.7	101.6	500	No	No
CHS0119	12.7	101.6	500	No	Yes
ECH0119	12.7	101.6	750	No	No
TCH0017	12.7	114.3	550	Yes "J" Type	No

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PART NO.	HEATER DIA (MM)	LENGTH (MM)	POWER OUTPUT WATTS	INCLUDED THERMOCOUPLE	SHOULDER TYPE
ECH0104	12.7	114.3	575	No	No
CU-405-2	12.7	127	200	No	No
HCTC-04-5	12.7	127	500	Yes "J" Type	No
ECH0138	12.7	127	500	No	No
CHS0120	12.7	127	575	No	Yes
TCH0018	12.7	127	625	Yes "J" Type	No
ECH0105	12.7	127	650	No	No
ECH0139	12.7	127	750	No	No
CM-405-2	12.7	127	800	No	No
ECH0120	12.7	127	1000	No	No
ECH0148	12.7	139.7	500	No	No
TCH0019	12.7	139.7	700	Yes "J" Type	No
ECH0106	12.7	139.7	725	No	No
CU-406-2	12.7	152.4	300	No	No
HCTC-04-6	12.7	152.4	600	Yes "J" Type	No
CHS0121	12.7	152.4	650	No	Yes
ECH0140	12.7	152.4	750	No	No
TCH0020	12.7	152.4	775	Yes "J" Type	No
ECH0107	12.7	152.4	800	No	No
ECH0121	12.7	152.4	1000	No	No
CM-406-2	12.7	152.4	1000	No	No
TCH0021	12.7	165.1	850	Yes "J" Type	No
ECH0108	12.7	165.1	875	No	No
ECH0141	12.7	177.8	600	No	No
HCTC-04-7	12.7	177.8	700	Yes "J" Type	No
ECH0109	12.7	177.8	950	No	No
TCH0022	12.7	177.8	975	Yes "J" Type	No
ECH0122	12.7	177.8	1000	No	No
ECH0149	12.7	190.5	1000	No	No
ECH0110	12.7	190.5	1025	No	No
CU-408-2	12.7	203.2	400	No	No
CHS0122	12.7	203.2	725	No	Yes
HCTC-04-8	12.7	203.2	820	Yes "J" Type	No
ECH0142	12.7	203.2	1000	No	No
ECH0111	12.7	203.2	1100	No	No
CM-408-2	12.7	203.2	1200	No	No
ECH0123	12.7	203.2	1500	No	No
ECH0124	12.7	203.2	2000	No	No
CHS0123	12.7	215.9	800	No	Yes
ECH0112	12.7	215.9	1175	No	No
CHS0124	12.7	228.6	875	No	Yes
HCTC-04-9	12.7	228.6	920	Yes "J" Type	No
ECH0113	12.7	228.6	1200	No	No

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PART NO.	HEATER DIA (MM)	LENGTH (MM)	POWER OUTPUT WATTS	INCLUDED THERMOCOUPLE	SHOULDER TYPE
CHS0125	12.7	241.3	950	No	Yes
CU-410-2	12.7	254	500	No	No
CHS0126	12.7	254	1025	No	Yes
HCTC-04-10	12.7	254	1030	Yes "J" Type	No
ECH0114	12.7	254	1350	No	No
CHS0130	12.7	254	1350	No	Yes
ECH0125	12.7	254	1500	No	No
CM-410-2	12.7	254	1500	No	No
CHS0127	12.7	266.7	1100	No	Yes
ECH0126	12.7	279.4	1000	No	No
HCTC-04-11	12.7	279.4	1140	Yes "J" Type	No
CHS0128	12.7	279.4	1175	No	Yes
ECH0115	12.7	279.4	1500	No	No
CHS0131	12.7	279.4	1500	No	Yes
CHS0129	12.7	292.1	1200	No	Yes
CU-412-2	12.7	304.8	600	No	No
ECH0128	12.7	304.8	1000	No	No
HCTC-04-12	12.7	304.8	1250	Yes "J" Type	No
ECH0127	12.7	304.8	1500	No	No
ECH0116	12.7	304.8	1650	No	No
CHS0132	12.7	304.8	1650	No	Yes
ECH0144	12.7	304.8	2000	No	No
CM-412-2	12.7	304.8	2000	No	No
HCTC-04-13	12.7	330.2	1350	Yes "J" Type	No
ECH0146	12.7	355.6	1000	No	No
HCTC-04-14	12.7	355.6	1460	Yes "J" Type	No
ECH0145	12.7	355.6	2300	No	No
ECH0129	12.7	381	1500	No	No
HCTC-04-15	12.7	381	1570	Yes "J" Type	No
ECH0117	12.7	381	2050	No	No
CHS0133	12.7	381	2050	No	Yes
CU-416-2	12.7	406.4	800	No	No
HCTC-04-16	12.7	406.4	1680	Yes "J" Type	No
HCTC-04-17	12.7	431.8	1780	Yes "J" Type	No
ECH0147	12.7	457.2	1500	No	No
ECH0130	12.7	457.2	1700	No	No
HCTC-04-18	12.7	457.2	1900	Yes "J" Type	No
ECH0118	12.7	457.2	2500	No	No
CHS0134	12.7	457.2	2500	No	Yes
HCTC-04-19	12.7	482.6	2010	Yes "J" Type	No
HCTC-04-20	12.7	508	2110	Yes "J" Type	No
HCTC-04-21	12.7	533.4	2220	Yes "J" Type	No

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PART NO.	HEATER DIA (MM)	LENGTH (MM)	POWER OUTPUT WATTS	INCLUDED THERMOCOUPLE	SHOULDER TYPE
HCTC-04-22	12.7	558.8	2330	Yes "J" Type	No
HCTC-04-23	12.7	584.2	2400	Yes "J" Type	No
HCTC-04-24	12.7	609.6	2400	Yes "J" Type	No
HCTC-04-25	12.7	635	2400	Yes "J" Type	No
HCTC-04-26	12.7	660.4	2400	Yes "J" Type	No
HCTC-04-27	12.7	685.8	2400	Yes "J" Type	No
HCTC-04-28	12.7	711.2	2400	Yes "J" Type	No
HCTC-04-29	12.7	736.6	2400	Yes "J" Type	No
HCTC-04-30	12.7	762	2400	Yes "J" Type	No
CU-502-2	15.875	50.8	100	No	No
CM-502-2	15.875	50.8	300	No	No
CU-503-2	15.875	76.2	200	No	No
CU-504-2	15.875	101.6	250	No	No
CM-504-2	15.875	101.6	700	No	No
CU-505-2	15.875	127	300	No	No
HCTC-05-5	15.875	127	620	Yes "J" Type	No
CU-506-2	15.875	152.4	375	No	No
HCTC-05-6	15.875	152.4	750	Yes "J" Type	No
CM-506-2	15.875	152.4	1000	No	No
HCTC-05-7	15.875	177.8	880	Yes "J" Type	No
CU-508-2	15.875	203.2	500	No	No
HCTC-05-8	15.875	203.2	1020	Yes "J" Type	No
CM-508-2	15.875	203.2	1200	No	No
HCTC-05-9	15.875	228.6	1160	Yes "J" Type	No
CM-509-2	15.875	228.6	1400	No	No
CU-510-2	15.875	254	650	No	No
HCTC-05-10	15.875	254	1300	Yes "J" Type	No
CM-510-2	15.875	254	1500	No	No
HCTC-05-11	15.875	279.4	1430	Yes "J" Type	No
CU-512-2	15.875	304.8	775	No	No
HCTC-05-12	15.875	304.8	1570	Yes "J" Type	No
HCTC-05-13	15.875	330.2	1700	Yes "J" Type	No
CU-514-2	15.875	355.6	900	No	No
HCTC-05-14	15.875	355.6	1840	Yes "J" Type	No
CM-514-2	15.875	355.6	2000	No	No
HCTC-05-15	15.875	381	1980	Yes "J" Type	No
CU-516-2	15.875	406.4	1050	No	No
HCTC-05-16	15.875	406.4	2110	Yes "J" Type	No
HCTC-05-17	15.875	431.8	2250	Yes "J" Type	No
HCTC-05-18	15.875	457.2	2390	Yes "J" Type	No
HCTC-05-19	15.875	482.6	2520	Yes "J" Type	No

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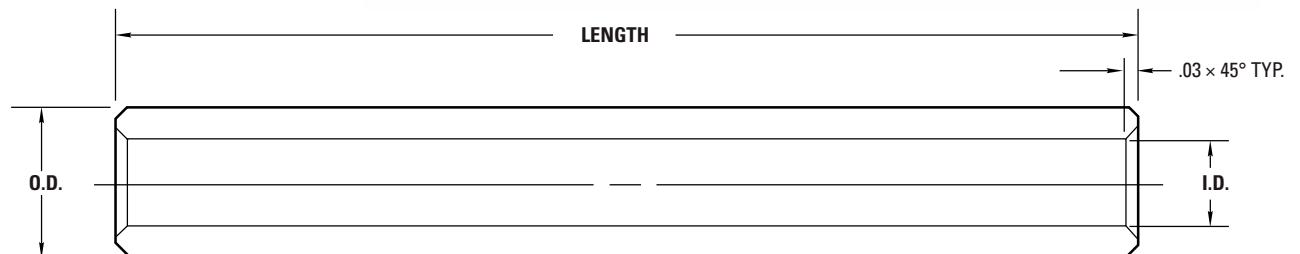
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PART NO.	HEATER DIA (MM)	LENGTH (MM)	POWER OUTPUT WATTS	INCLUDED THERMOCOUPLE	SHOULDER TYPE
HCTC-05-20	15.875	508	2660	Yes "J" Type	No
HCTC-05-21	15.875	533.4	2800	Yes "J" Type	No
HCTC-05-22	15.875	558.8	2930	Yes "J" Type	No
HCTC-05-23	15.875	584.2	3070	Yes "J" Type	No
HCTC-05-24	15.875	609.6	3200	Yes "J" Type	No
HCTC-05-25	15.875	635	3340	Yes "J" Type	No
HCTC-05-26	15.875	660.4	3480	Yes "J" Type	No
HCTC-05-27	15.875	685.8	3620	Yes "J" Type	No
HCTC-05-28	15.875	711.2	3750	Yes "J" Type	No
HCTC-05-29	15.875	736.6	3900	Yes "J" Type	No
HCTC-05-30	15.875	762	4020	Yes "J" Type	No
HCTC-05-31	15.875	787.4	4160	Yes "J" Type	No
HCTC-05-32	15.875	812.8	4300	Yes "J" Type	No
HCTC-05-33	15.875	838.2	4430	Yes "J" Type	No
HCTC-05-34	15.875	863.6	4570	Yes "J" Type	No
HCTC-05-35	15.875	889	4710	Yes "J" Type	No
HCTC-05-36	15.875	914.4	4840	Yes "J" Type	No
HCTC-05-37	15.875	939.8	4980	Yes "J" Type	No
HCTC-05-38	15.875	965.2	5120	Yes "J" Type	No
HCTC-05-39	15.875	990.6	5250	Yes "J" Type	No
HCTC-05-40	15.875	1016	5390	Yes "J" Type	No
HCTC-05-41	15.875	1041.4	5520	Yes "J" Type	No
HCTC-05-42	15.875	1066.8	5520	Yes "J" Type	No
HCTC-05-43	15.875	1092.2	5520	Yes "J" Type	No
HCTC-05-44	15.875	1117.6	5520	Yes "J" Type	No
CM-602-2	19.05	50.8	300	No	No
CU-603-2	19.05	76.2	225	No	No
CU-604-2	19.05	101.6	300	No	No
CM-604-2	19.05	101.6	750	No	No
CU-605-2	19.05	127	375	No	No
CU-606-2	19.05	152.4	450	No	No
CM-606-2	19.05	152.4	1200	No	No
CU-608-2	19.05	203.2	600	No	No
CU-610-2	19.05	254	800	No	No
CM-610-2	19.05	254	1600	No	No
CU-612-2	19.05	304.8	950	No	No
CU-614-2	19.05	355.6	1100	No	No
CM-614-2	19.05	355.6	2200	No	No
CU-616-2	19.05	406.4	1250	No	No

Distributor Tubes and WATLUBE™

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"	HT-07-04-6
10"	HT-07-04-10
16"	HT-07-04-16
20"	HT-07-04-20
24"	HT-07-04-24
29"	HT-07-04-29
34"	HT-07-04-34

USED WITH 2.00 DIAMETER DISTRIBUTOR BORE/CHANNEL	
LENGTH	I.D. = .62 O.D. = 1.62
	ITEM NUMBER
10"	HT-15-05-10
18"	HT-15-05-18
24"	HT-15-05-24
29"	HT-15-05-29
34"	HT-15-05-34
40"	HT-15-05-40
46"	HT-15-05-46

NOTES:

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

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

WATLUBE™

WATLUBE™ is an electrically non-conductive lubricant acting as a barrier against high-temperature oxidation, thus making heater removal easier. In addition, it aids in the transfer of heat from the Cartridge Heater to the block. However, do not use it as a substitute for proper hole fit. WATLUBE™ is packaged in 118 ml / 4 oz bottle and available from stock.

ITEM NUMBER	UNIT
WATLUBE	118 ML BOTTLE



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.

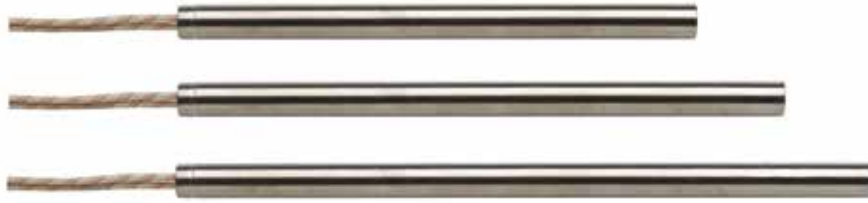
NOTE: Lead wires can withstand temperatures up to 232°C. If temperatures will exceed this amount, leads must be insulated.

DIA.	LENGTH (INCHES)	VOLTS	WATTS	ITEM NUMBER
1/4	2	240	40	CU-202-2
	3	240	75	CU-203-2
	4	240	100	CU-204-2
	6	240	150	CU-206-2
3/8	2	240	75	CU-302-2
	3	240	100	CU-303-2
	4	240	150	CU-304-2
	5	240	185	CU-305-2
	6	240	225	CU-306-2
	8	240	300	CU-308-2
1/2	2	240	75	CU-402-2
	3	240	150	CU-403-2
	4	240	180	CU-404-2
	5	240	200	CU-405-2
	6	240	300	CU-406-2
	8	240	400	CU-408-2
	10	240	500	CU-410-2
	12	240	600	CU-412-2
5/8	2	240	100	CU-502-2
	3	240	200	CU-503-2
	4	240	250	CU-504-2
	5	240	300	CU-505-2
	6	240	375	CU-506-2
	8	240	500	CU-508-2
	10	240	650	CU-510-2
	12	240	775	CU-512-2
	14	240	900	CU-514-2
	16	240	1050	CU-516-2
3/4	3	240	225	CU-603-2
	4	240	300	CU-604-2
	5	240	375	CU-605-2
	6	240	450	CU-606-2
	8	240	600	CU-608-2
	10	240	800	CU-610-2
	12	240	950	CU-612-2
	14	240	1100	CU-614-2
16	240	1250	CU-616-2	

NOTE: Special heaters are available on special order.

120V Heaters also available

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 .05mm to .18mm undersize. High Watt Density Cartridge Heaters are .1mm undersize, held to a tolerance of $\pm .05$ mm. 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 mould, 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 815°C) 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	240	100	CM-100-2
	1 1/2	240	150	CM-112-2
	2	240	200	CM-202-2
	3	240	300	CM-203-2
	4	240	375	CM-204-2
3/8	5	240	450	CM-205-2
	2	240	250	CM-302-2
	3	240	350	CM-303-2
	4	240	500	CM-304-2
	5	240	550	CM-305-2
1/2	6	240	600	CM-306-2
	2	240	250	CM-402-2
	3	240	300	CM-403-2
	4	240	400	CM-404-2
	5	240	800	CM-405-2
	6	240	1000	CM-406-2
	8	240	1200	CM-408-2
	10	240	1500	CM-410-2
5/8	12	240	2000	CM-412-2
	2	240	300	CM-502-2
	4	240	700	CM-504-2
	6	240	1000	CM-506-2
	8	240	1200	CM-508-2
	9	240	1400	CM-509-2
3/4	10	240	1500	CM-510-2
	14	240	2000	CM-514-2
	2	240	300	CM-602-2
	4	240	750	CM-604-2
	6	240	1200	CM-606-2
	10	240	1600	CM-610-2
	14	240	2200	CM-614-2

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

NOTE: Lead wires can withstand temperatures up to 232°C. If temperatures will exceed this amount, leads must be insulated.

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

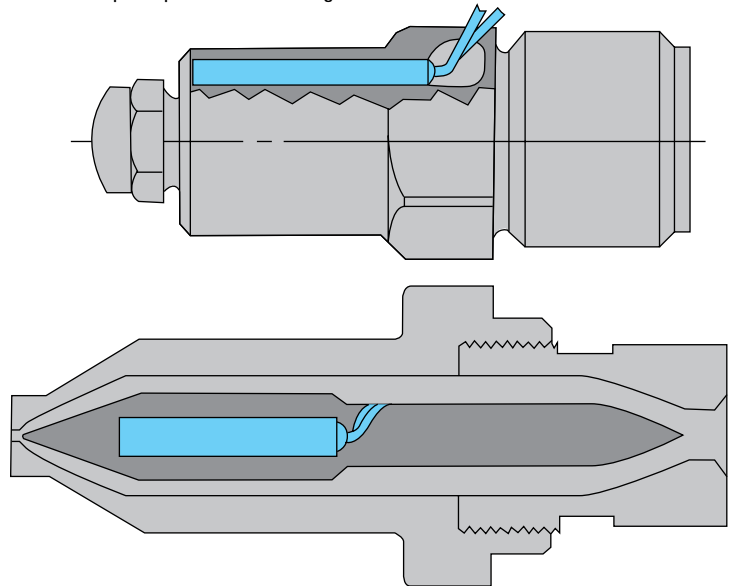
Contamination consists of any foreign matter such as plastics, oil, grease, dirt or water entering through the terminal end or the end opposite the terminal. Care must be taken to protect the heater or these contaminants will shorten the effective heater life.

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		VOLTS	WATTS	ITEM NUMBER
	IN	cm			
3/8" (9.52mm)	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" (12.70mm)	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