

### BASE METAL THERMOCOUPLES

REFERENCE GUIDE					
CALIB.	† DEGREE °F TEMP RANGE	* GAGE	‡ MV OUTPUT	SUITABLE ATMOSPHERE	COMMON FAILURE CAUSES
J	32 – 600	24	0 TO 42.92	REDUCING	ATTACKED BY AMMONIA, NITROGEN AND HYDROGEN
	600 – 900	20		OR	
	900 – 1100	14		NEUTRAL	
	1100 – 1400	8			
K	32 – 1400	24	0 TO 50.99	OXIDIZING	PREFERENTIAL OXIDATION OF CHROMEL LEG WHICH THEN BECOMES NEGATIVE – SULFUR ATTACK ON ALUMEL LEG CAUSING IMBRITTEMENT
	1400 – 1800	20		OR	
	1800 – 2000	14		NEUTRAL	
	2000 – 2300	8			
E	32 – 700	24	0 TO 66.95	OXIDIZING	PREFERENTIAL OXIDATION OF CHROMEL LEG WHICH THEN BECOMES NEGATIVE
	700 – 1000	20			
	1000 – 1200	14			
	1200 – 1600	8			
T	-300 – 500	20	-5.34 TO 19.10	MILD OXIDIZING OR REDUCING	ATTACKED BY AERATED ALKALINE SOLUTIONS
	500 – 700	14			

† Depending on gage size and calibration selected, the high temperature limits will be reduced by 100°F and up to 300°F if a protection housing is not used.

\* As gage size increases, life increases but sensitivity decreases.

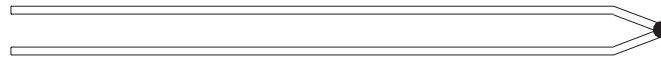
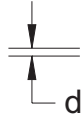
‡ With reference junction temperature at 32°F

To Order (see following page) — Specify

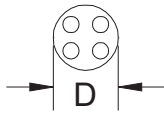
1. Type
2. Calibration
3. Gage Size
4. "L" Length
5. Option if Required
6. For special limits of error add suffix "P" (see page 18)



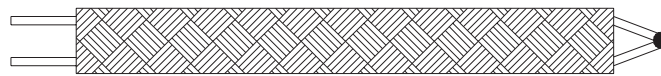
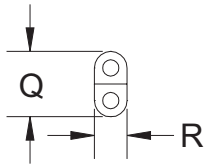
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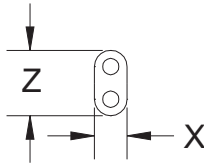
TYPE 170 UNINSULATED



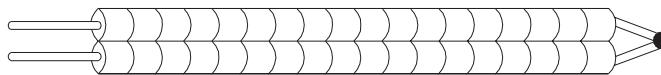
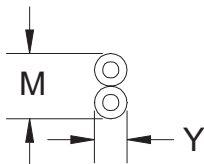
TYPE 171 SINGLE CERAMIC INSULATED,  
OR TYPE 172 DUAL ( 2600°F )



TYPE 173 BRAIDED FIBERGLASS  
( 800°F )



TYPE 174 TEFLON INSULATED  
( -300 TO 400°F )



TYPE 175 FISHSPINE INSULATED

GAUGE	DIMENSIONS							
	d	D	Q	R	Z	X	M	Y
8	.129	1/2	—	—	—	—	17/32	17/64
14	.064	1/4	3/16	7/64	—	—	11/32	11/64
20	.032	3/16	1/8	5/64	1/8	5/64	1/4	1/8
24	.020	3/16	5/64	1/16	7/64	1/16	—	—

— Not Available



### THERMOCOUPLE ELEMENTS — LIMITS OF ERROR

Thermocouples should always be long enough to minimize the effect of heat loss due to conduction along the element and the protection housing. Insufficient insertion causes low readings.

As a general rule, a thermocouple should be inserted a distance equivalent to four times the outside diameter of the protection housing. If the thermocouple must pass through thick walls, insulation and fitting offsets, the length should be increased accordingly. Thermocouple must extend to an area of less than 400°F ambient for termination.

CALI- BRATION	°F TEMP RANGE		± LIMITS OF ERROR	
	FROM	TO	STD.	SPL.
J	32	530	4 °F	2 °F
	530	1400	3/4 %	3/8 %
K	0	530	4 °F	2 °F
	530	2300	3/4 %	3/8 %
E	0	600	3 °F	1.8 °F
	600	1600	1/2 %	3/8 %
T	-300	-75	2 %	1 %
	-75	200	1.5 °F	0.75 °F
	200	700	3/4 %	3/8 %
PS or PR	32	1200	5 °F	3 °F
	1200	2700	1/4 %	1/8 %

See page 16 for reference guide.

