VACUUM THERMOCOUPLES

The Type 4001, 4002 and 4003 Vacuum Thermocouples are all essentially the same, the difference being only in the type of case. They are of the " Contact " type in which the heater wire is in direct metallic contact with a thermo-junction, the whole being mounted in an evacuated glass bulb.

Dimensions.

4001 and 4003	$3\frac{1}{8}$" long × $1\frac{3}{8}$" diameter (8 × 3·5 cms.). Net weight 0·12 lbs. (55 gms.)
4002	4" high × 3" × 3" (10·2 × 7·6 × 7·6 cms.). Net weight 0·38 lbs. (170 gms.)

Sockets.

The 4001 Type Thermocouple requires to be used in a No. 4004-A Valve Socket.

Types available—

Type 4001 is mounted in a tubular metal case, the connections being brought out to 4 pins at one end, the whole plugging into a 4004-A valve socket.

Type 4002 is mounted in a rectangular mahogany box fitted with four terminals on the top.

Type 4003 is almost exactly similar to 4001, except that the four pins are replaced by four soldering tags and two small lugs are fitted at the opposite end of the case for base board mounting.

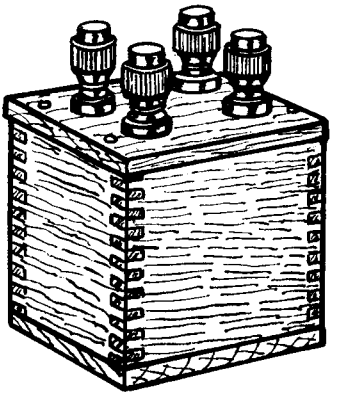
Vacuum Thermo-couples

—Standard Valves—

Each of these three types is available in a number of different ranges denoted by letter suffixes as follows :—

Suffix letter	Resistance (ohms) ± 10% Heater	Couple	Maximum safe heater current (mA.)	Heater current (mA.) required to produce in couple an open circuit voltage of :— 5 millivolts	15 millivolts
A	0·3	3	1,000	400 — 500	750 — 1,000
B	0·6	3	500	180 — 205	360 — 500
C	5	3	75	30 — 37	58 — 75
D	35	12	16	6 — 8	12 — 16
*E	43	30	15	5·5 — 7·5	11 — 15
*F	46·5	12	15	5 — 7·5	10 — 15
G	200	12	15	3 — 6·5	6·5 — 15
H	400	12	7	1·8 — 3·5	4 — 7
J	600	12	5	1·5 — 2	3·5 — 5
K	750	12	5	1·3 — 1·8	3 — 4·2
L	1,000	12	4	1·2 — 1·6	3 — 4
*M	1,120	12	7	1·8 — 3·5	4 — 7
N	46·5	12	15	5 — 7·5	10 — 15
*P	600	45	5	1·5 — 2	3·5 — 5
R	1·3	12	160	67 — 85	130 — 160
S	10	12	35	13 — 17	26 — 35
*U	600	22	5	1·5 — 2	3·5 — 5
AM	90	12	9	3 — 4·5	6 — 9
HJ	550	12	6	1·6 — 2·5	3·6 — 5·8

* *Note.*—To meet special requirements it is sometimes necessary to provide adjusting resistance in either the couple or heater circuit. This resistance is non-inductively wound on a tubular former slipped over the glass bulb, thus forming an integral part of the thermocouple. In the case of the 'E,' 'F' and 'P' codes, the resistance of the couple element is increased in this way in order that they shall meet specific current requirements when used with certain types of galvanometer. The resistance of the heater circuit on the 'M' and 'U' codes is also built up in this way to the stated values.



Type 4002

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Accuracy.

Measurements can be made and repeated to ± 1%.

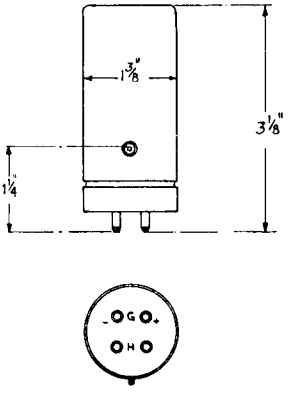
Reactance.

Inductance of heater approximately 5×10^{-8}H.

Capacity of heater approximately 2 $\mu\mu$F.

Heating Time.

In the smaller sizes, the heating time is negligible ; the largest size takes approximately 30 seconds to attain maximum value.



Type 4001

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