

TECHNICAL INFORMATION THERMOCOUPLES



1.-APPLICATION

A thermocouple fitted to a magnet unit within a gas control acts as a flame failure safety device. When the tip of thermocouple is heated by the flame it produces an electric force (E.M.F.) Which is used to activate the electromagnetic unit; when the flame is extinguished the current is reduced closing the magnet unit which in turn automatically closes the gas supply.

2.-INSTALLATION INSTRUCTIONS

- The pressure applied to the nut of thermocouple in its connection in the magnet unit must be between 3 and 4,5 Nm.
- The connection must be free of dirt, grease, oil and other elements that may impede the electrical current.
- Tube type thermocouples must not be bent with a radius less than 20mm wire type thermocouples must not be bent with a radius less than 5mm. In both cases friction and contact with edges should be avoided in their installation.

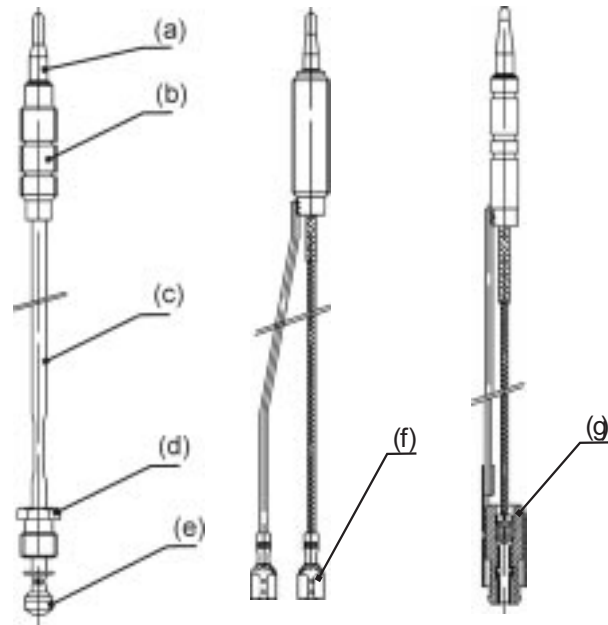
3.-APPROVALS

- At the request of our clients some models of thermocouples are approved in A.G.A. and C.G.A.

4.-MATERIALS / CHARACTERISTICS

5.-DESCRIPTION OF COMPONENTS

Material of head ⁽¹⁾	FeCr NiCr Inconel
Material of conductor	Brass
Material of nut	Brass
Material of tube/wire	Copper
Type of conection to magnetic unit ⁽¹⁾	Nut Coaxial Faston
Lengths	220-1500mm
Maximun temperature (head)	750°C
Maximun temperature (conductor)	250°C
Maximun temperature (rest)	125°C
E.M.F. in circuit open (650°C) ⁽²⁾	≈30 mV
Electrical resistance ⁽³⁾	$8.6+0.22*L$ (mΩ)



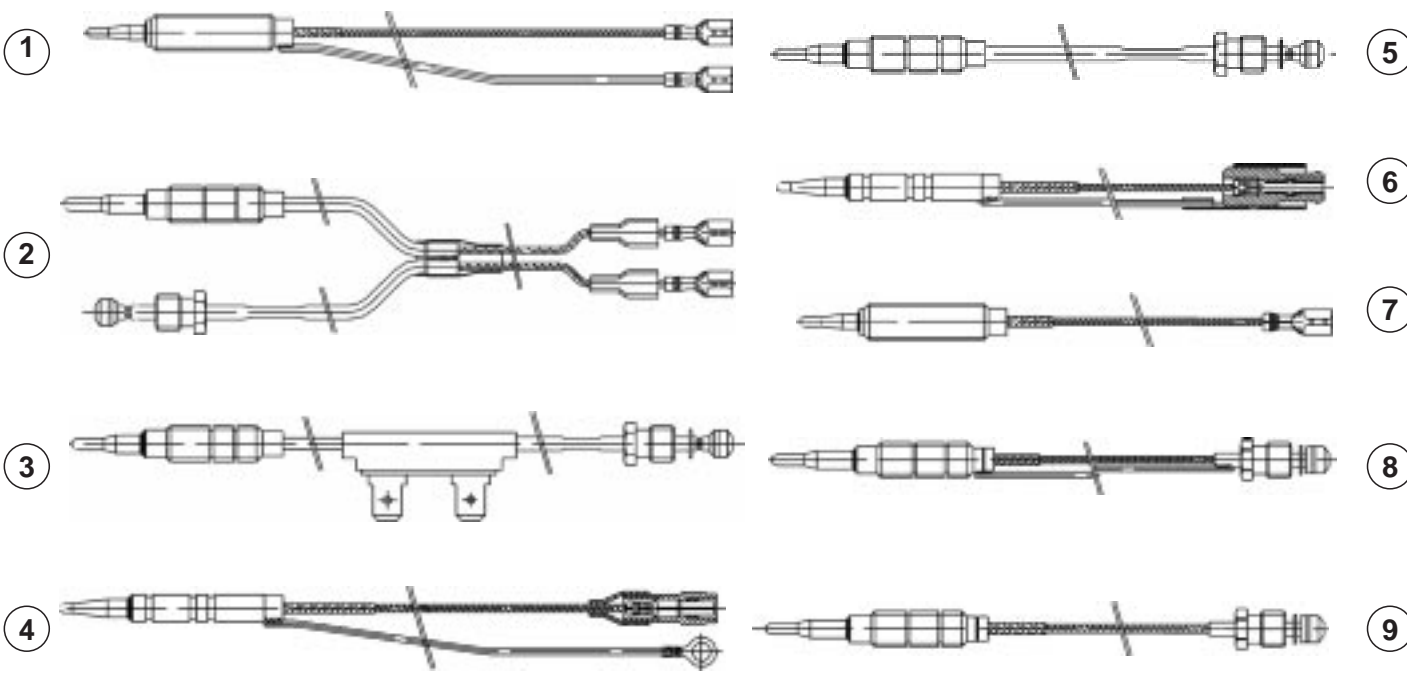
- (a) Head/Tip
- (b) Conductor
- (c) Tube
- (d) Nut
- (e) Contact
- (f) Terminal Faston
- (g) Connector Coaxial

⁽¹⁾ According to model

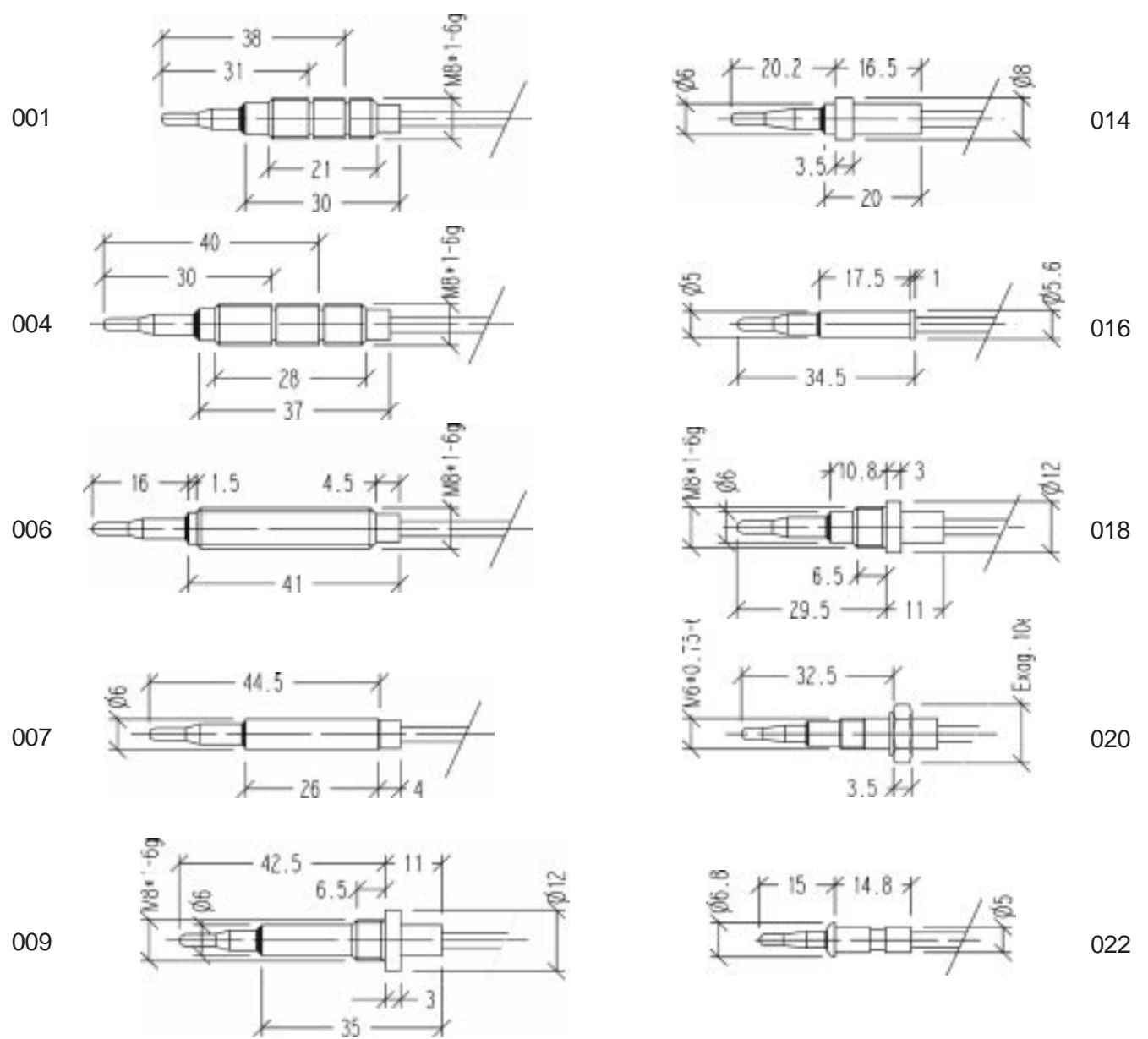
⁽²⁾ Other temperatures : see graph

⁽³⁾ Guide values (L= length total in cm)

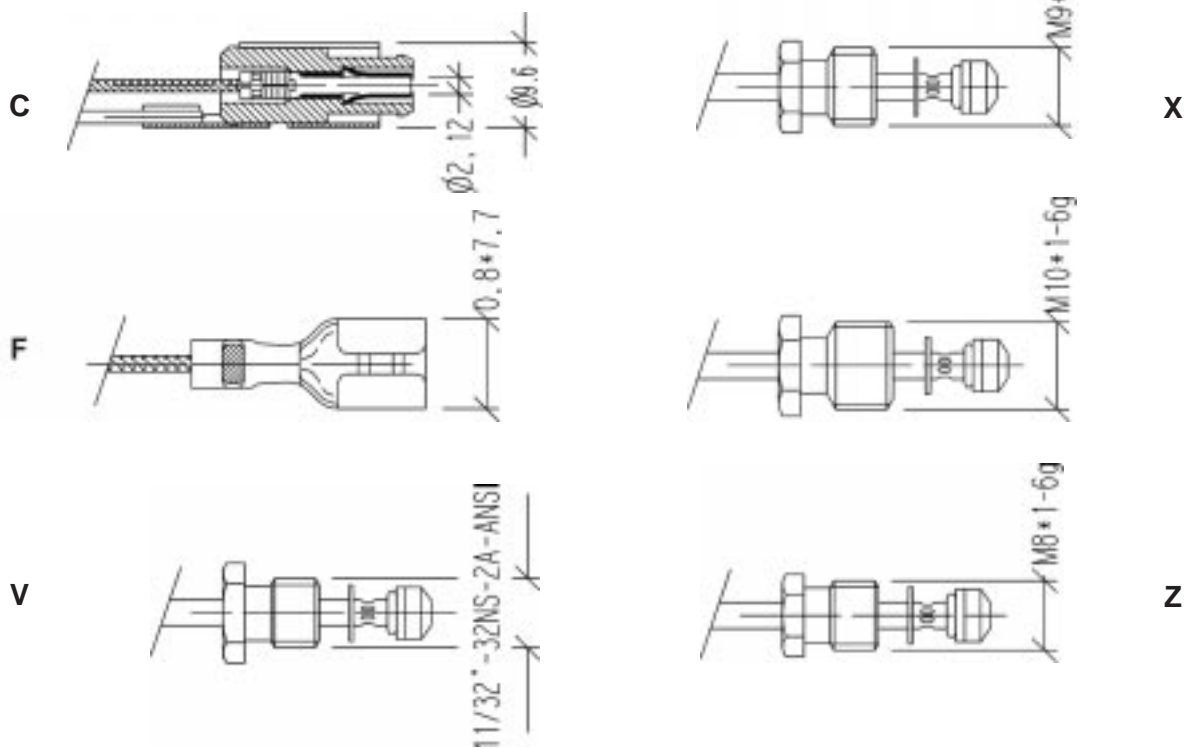
6.-BASIC TYPES OF THERMOCOUPLES



7.- DIMENSIONS OF VARIOUS TYPES OF HEADS



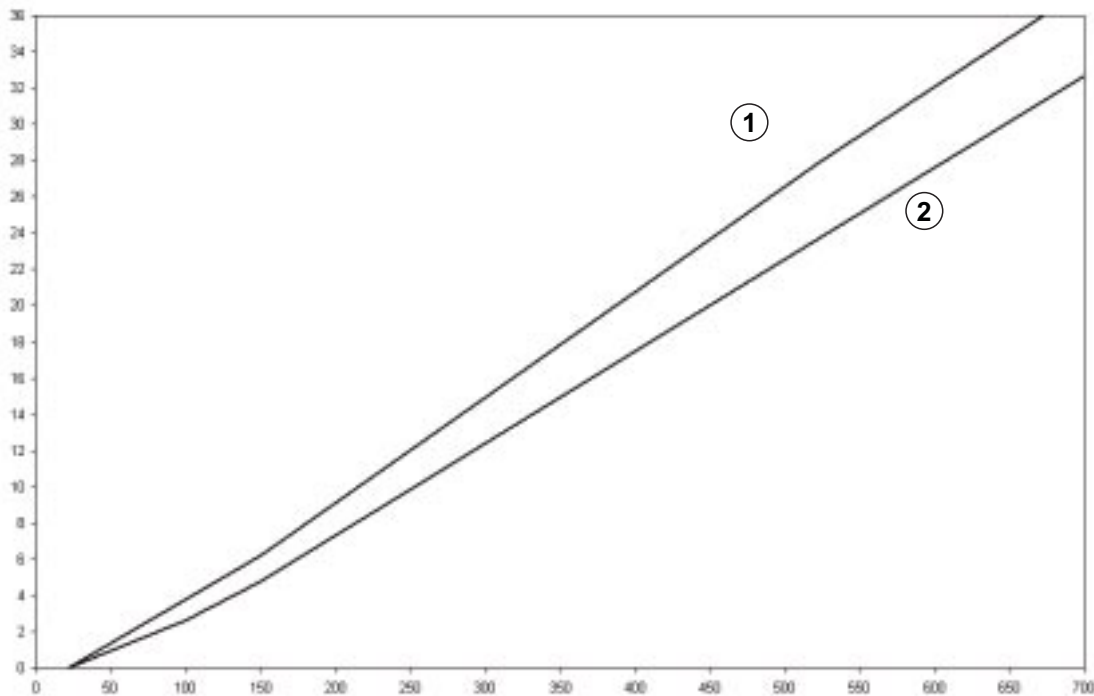
8.-MAGNET UNIT JUNCTIONS



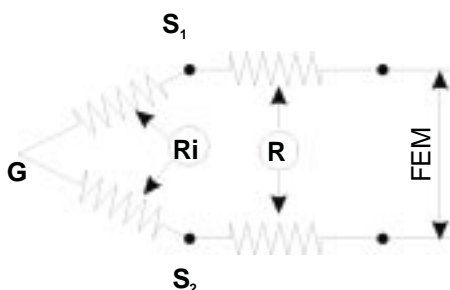
9.-GENERAL GRAPH OF THERMOCOUPLES IN OPEN CIRCUIT

STD. CRVE E.M.F. S/TEMPÉRATURE (°C)

mV.



NOTE: Values taken in space (without load)

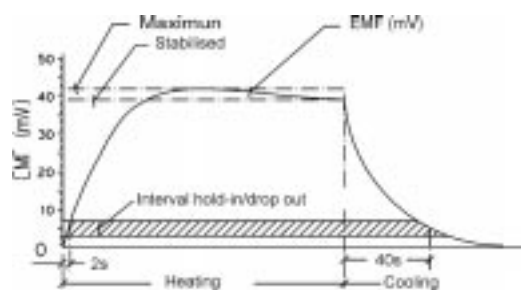
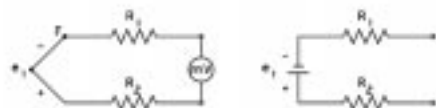
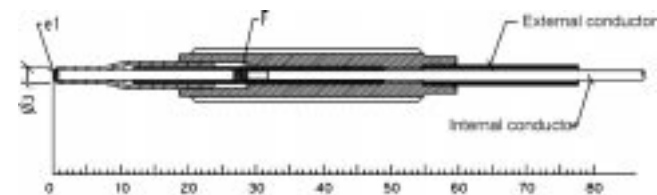


- G** Hot junction
- S₁** Ext. solder / welding
- S₂** Int. solder / welding
- R_i** Int. resistance
- R** Resistance

°C

10.-THERMOCOUPLE RESPONSE (WITH AND WITHOUT FLAME)

10.1 NORMAL ACTION THERMOCOUPLES



e1=primary édrq
 e2=secondary édrq
 F=flame édrq
 R1=R2=Resistance

10.2 FAST ACTION THERMOCOUPLES

