天康集团

铠装热电偶

Armored Thermocouple

产品应用

Product Application

通常和显示仪表、记录仪表、电子计算机等配套使用。直接测量各种生产过程中的（0~1300）℃范围内液体、蒸汽和气体介质以及固体表面温度。

Usually used in conjunction with display instruments, recording instruments, electronic computers and so on. Direct measurement of various production processes (0~1300)℃ range of liquid, steam and gas media and solid surface temperature.

产品原理

Product Principle

铠装热电偶的电极由两根不同导体材质组成。当测量端与参比端存在温差时，就会产生热电势，工作仪表便显示出热电势所对应的温度值。

The electrodes of the Armored Thermocouple consist of two different conductor materials. When there is a temperature difference between the measuring end and the reference end, a thermoelectric potential is generated and the working instrument displays the temperature value corresponding to the thermoelectric potential.

产品特点

Product Features

- 热响应时间少，减少动态误差；
- 可弯曲安装使用；
- 测量范围大；
- 机械强度高，耐压性能好；
- 接线盒防护等级IP65，IP66。

- Less thermal response time, reducing dynamic errors.
- Bendable mounting for use.
- Large measuring range.
- High mechanical strength, good pressure resistance.
- Junction box protection level IP65, Ip66.

技术参数

Technical Parameters

1、产品执行标准

国际标准IEC60584;

国家标准GB/T18404 、GB/T30429。

1.Executive Standard of the Product

International standard IEC60584.

National standard GB/T18404, GB/T304292.

2、测温范围及允差

2.Temperature measurement range and tolerance

型号 Model	分度号 Graduation	允差等级 Tolerance level			
		I		II	
		允差值 Tolerance value	测温范围（℃） Temperature measurement range	允差值 Tolerance value	测温范围（℃） Temperature measurement range
WRNK	K	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~1000	±0.004|t|	333~1200	±0.0075|t|
WRMK	N	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~1000	±0.004|t|	333~1200	±0.0075|t|
WREK	E	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~800	±0.004|t|	333~900	±0.0075|t|
WRFK	J	-40~+375	±1.5℃	-40~+333	±2.5℃
		375~750	±0.004|t|	333~750	±0.0075|t|
WRCK	T	-40~+125	±0.5℃	-40~+133	±1.0℃
		125~350	±0.004|t|	133~350	±0.0075|t|
WRPK	S	0~+1100	±1.0℃	0~600	±1.5℃
		1100~1600	±[1+0.003(t-1100)]	600~1600	±0.0025|t|
WRQK	R	0~+1100	±1.0℃	0~600	±1.5℃
		1100~1600	±[1+0.003(t-1100)]	600~1600	±0.0025|t|
WRRK	B	/	/	600~1700	±0.0025|t|

3、常温绝缘电阻

铠装热电偶在环境温度为（20±15）℃，相对湿度不大于80%，试验电压为（500±50）V（直流）电极与外套管之间的绝缘电阻≥1000MΩ。即1m长的试样的绝缘电阻为1000MΩ；10m长的试样的绝缘电阻为100MΩ。

3. Room temperature insulation resistance

The insulation resistance of Armored Thermocouple is ≥1000MΩ between the electrode and the outer casing at an ambient temperature of (20±15)°C, a relative humidity of not more than 80%, and a test voltage of (500±50)V (DC). That is, the insulation resistance of a 1m-long specimen is 1000MΩ; and the insulation potential of a 10m-long specimen is 100MΩ.

4、套管材料、外径和最高使用温度

4. Sleeve material, outer diameter and maximum service temperature

分度号 Graduation	套管材料 Sleeve Material	直径（mm） Diameter	推荐最高使用温度（℃） Recommended maximum service temperature
K	0Cr18Ni9Ti	0.25	250
		0.5、1.0	400
		1.5、2.0	600
		3.0、4.0、4.5、5.0、6.0、8.0	800
	GH3030 或 Inconel600	0.25	300
		0.5、1.0	500
		1.5、2.0、3.0	800
		4.0、4.5、5.0	900

K	GH3030 或Inconel600	6.0、8.0	1000
N	0Cr18Ni9Ti	0.25	250
		0.5、1.0	400
		1.5、2.0	600
		3.0、4.0、4.5、5.0、6.0、8.0	800
N	GH3030 或Inconel600	0.25	300
		0.5、1.0	500
		1.5、2.0、3.0	800
		4.0、4.5、5.0	900
		6.0、8.0	1000
E	0Cr18Ni9Ti	0.5、1.0	400
		1.5、2.0	500
		3.0、4.0、4.5	600
		5.0、6.0、8.0	700
J	0Cr18Ni9Ti	0.5、1.0	300
		1.5、2.0	400
		3.0、4.0、4.5	500
		5.0、6.0、8.0	600
T	0Cr18Ni9Ti	0.5、1.0	200
		1.5、2.0、3.0、4.0、4.5	250
		5.0、6.0、8.0	300
S	GH3039	2.0、3.0、4.0、4.5	1000
		5.0、6.0、8.0	1100
R	GH3039	2.0、3.0、4.0、4.5	1000
		5.0、6.0、8.0	1100
B	GH3039	2.0、3.0、4.0、4.5、5.0、6.0、8.0	1200

套管材质可根据客户要求特殊定制

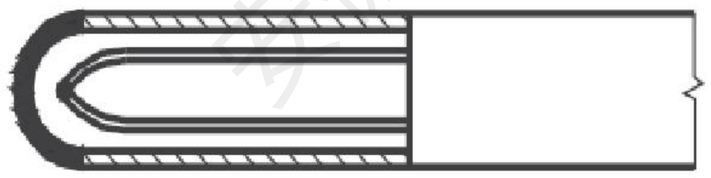
The sleeve material can be specially customized according to customers' requirements.

5、热响应时间

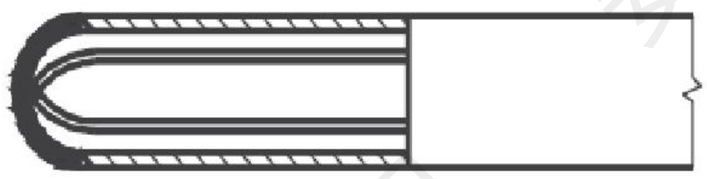
5.Thermal Response Time

热响应时间 t0.5 Thermal Response Time 测量端形式 Measurement end form	铠装热电偶直径 mm Armored thermocouple diameter									
	0.5	1.0	1.5	2.0	3.0	4.0	4.5	5.0	6.0	8.0
露端型 Exposed end type	-	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	1.0
接壳型 Shell type	0.2	0.2	0.3	0.4	0.6	0.8	1.0	1.2	2.0	4.0
绝缘型 Insulation type	0.4	0.6	0.8	1.0	2.0	2.5	3.0	4.0	6.0	8.0

测量端形式 Measurement end form

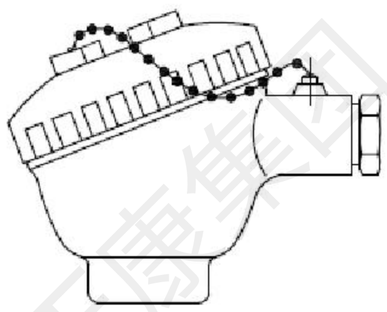


接壳型
Shell type

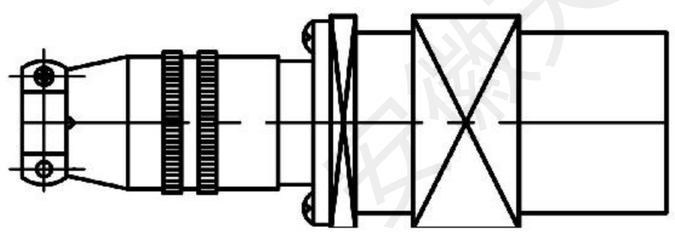


绝缘型
Insulation type

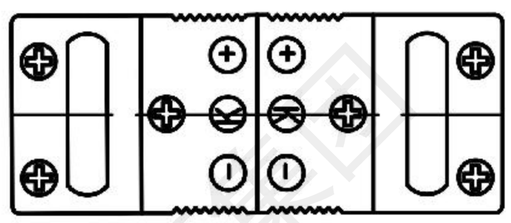
接线盒形式 Terminal box form



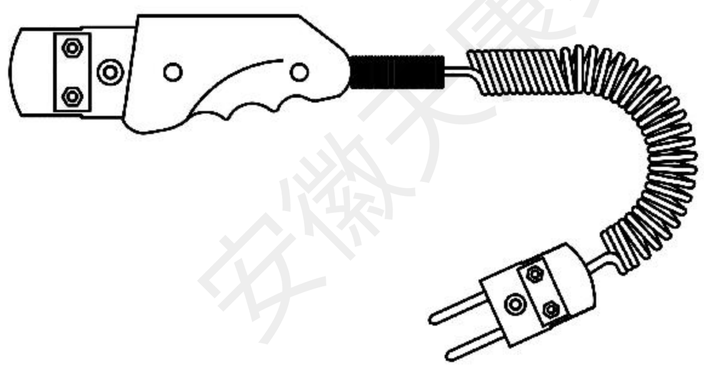
防水式
Waterproof



圆接插式
Round plug-in type



接插式
Plug-in type

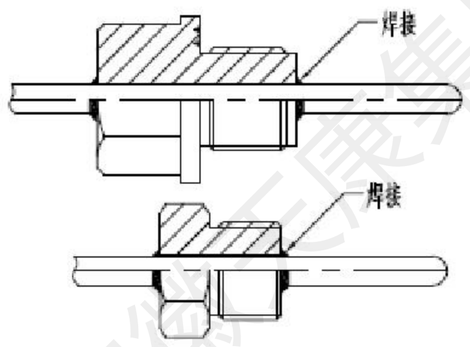
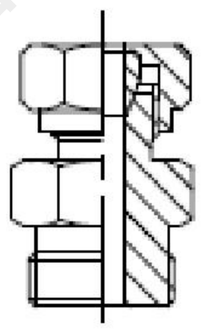
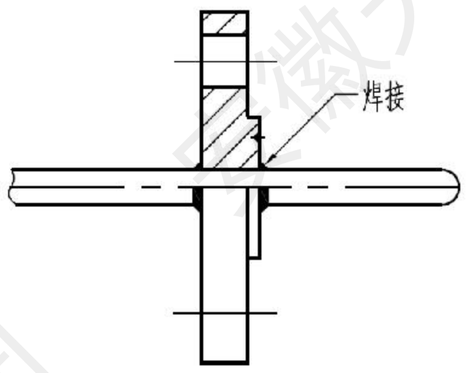
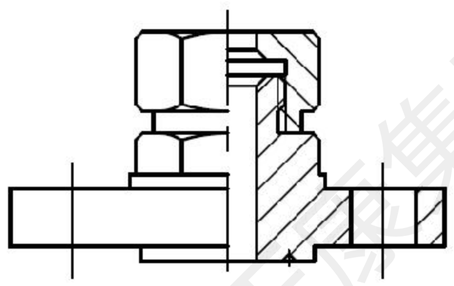


手柄式
Handle type

带补偿导线式
Compensating conductor type

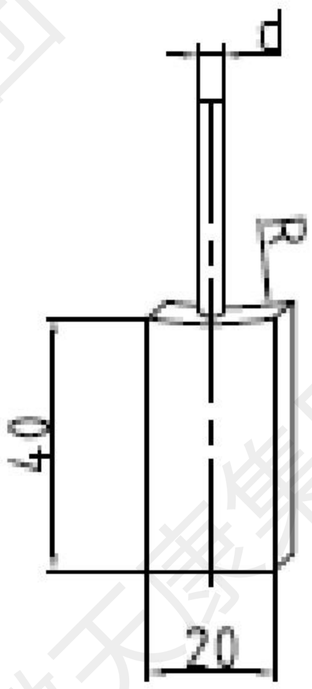
6、安装固定装置

6. Installation of fixed devices

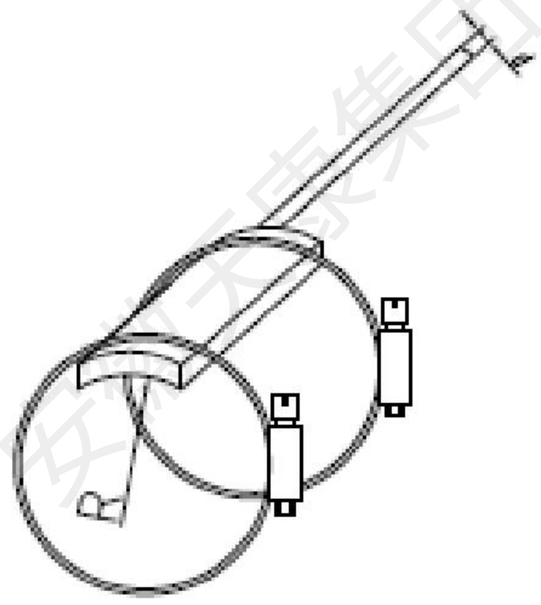
名称 Name	2：固定螺纹 Fixed thread	3：活动卡套螺纹 Adjustable ferrule thread	4：固定法兰 Fixed flange	5：活动卡套法兰 Adjustable ferrule flange
外形 Shape				

7、附加安装形式

7. Additional installation form



注：选型时应注明弧度R值（即管壁或炉壁直径），接触块式（代号M）。
NOTE: Specify radian R-value (i.e., pipe wall or furnace opening diameter) and contact block type (code M) when selecting a model.



抱箍式（代号G）
Hoop type (code G)

型号命名方法
Model Naming Method

W	温度仪表 Temperature Instruments
R	热电偶 Thermocouples

感温元件材料 Temperature sensing element material

N	K 镍铬-镍硅 Nickel-chromium-nickel-silicon
E	E 镍铬-铜铬 Nickel-chromium-copper-chromium
M	N 镍铬硅-镍硅 Nickel-chromium-silicon-nickel-silicon
F	J 铁-铜镍 Iron-copper-nickel
C	T 铜-铜镍 Copper-copper-nickel
P	S 铂铑10-铂 Platinum-rhodium 10-platinum
Q	R 铂铑13-铂 Platinum-rhodium 13-platinum
R	B 铂铑30-铂铑6 Platinum-rhodium 30-platinum-rhodium 6

K	铠装 Armored

偶丝对数 Coupling wire pairs

无 None	单支 Single branch
2	双支 Double branch

安装固定形式 Fixed installation

1	无固定装置 No fixed installation
2	固定螺纹 Fixed thread
3	活动卡套螺纹 Adjustable ferrule thread
4	固定法兰 Fixed flange
5	活动卡套法兰 Adjustable ferrule flange

接线盒形式 Terminal box type

3	防水式 Waterproof
6	圆接插式 Round plug-in type
7	扁接插式 Flat plug-in type
8	手柄式 Handle type
9	补偿导线式 Compensating conductor type
0	感温元件 Sensing element

保护管直径 Protective tube diameter

2:Φ2，3:Φ3，4:Φ4，5:Φ5，6:Φ6，8:Φ8

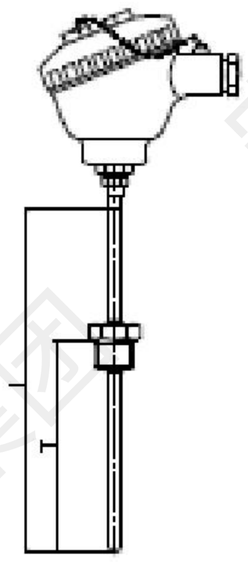
附加装置形式 Additional device form

M	接触块式 Contact block type
G	抱箍式 Hoop Type

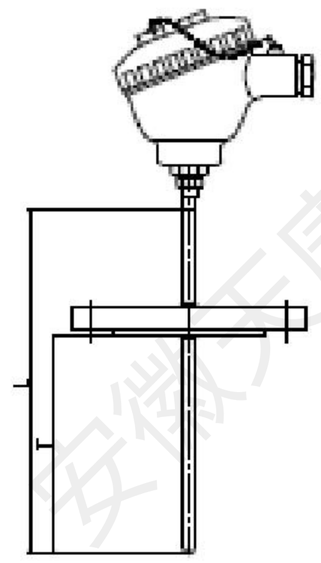
W	R	N	K	2	-	2	3	6	M	典型型号示例 Typical Model Example

天康集团

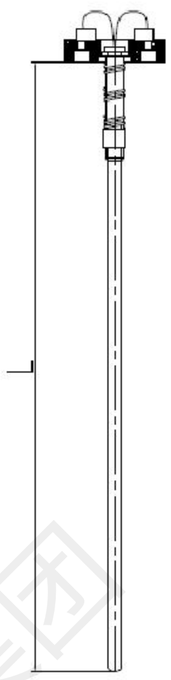
结构示意图
Structure diagram



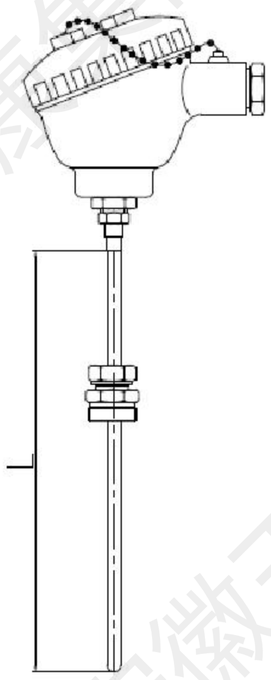
WRNK-235（固定螺纹 Fixed thread）



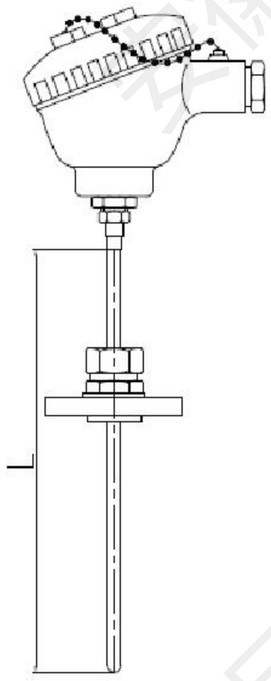
WRNK-435（固定法兰 Fixed flange）



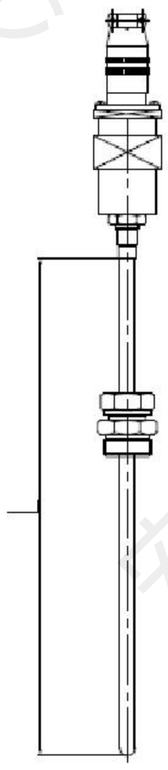
WRNK-010



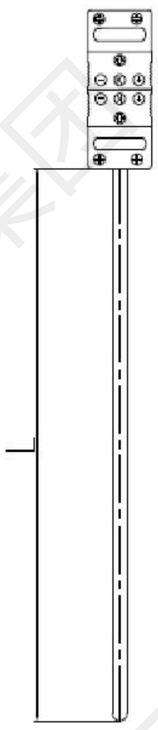
WRNK-335（活动卡套螺纹）
Adjustable ferrule thread



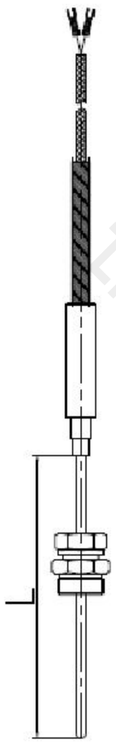
WRNK-535（活动卡套法兰）
Adjustable ferrule flange



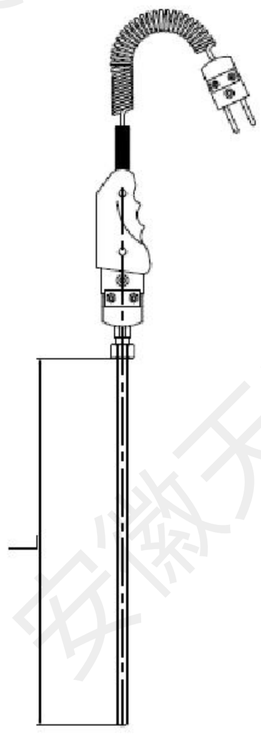
WRNK-365



WRNK-275

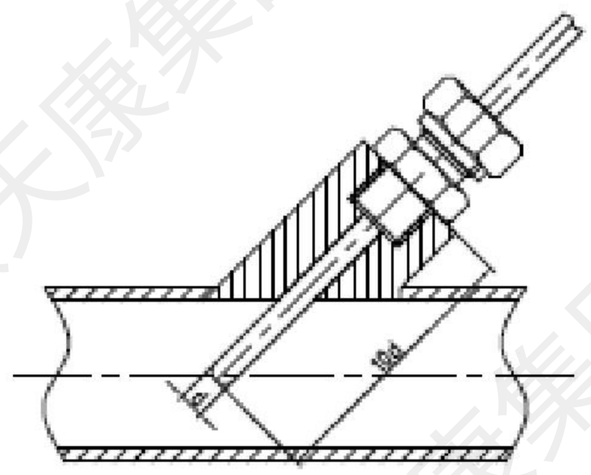


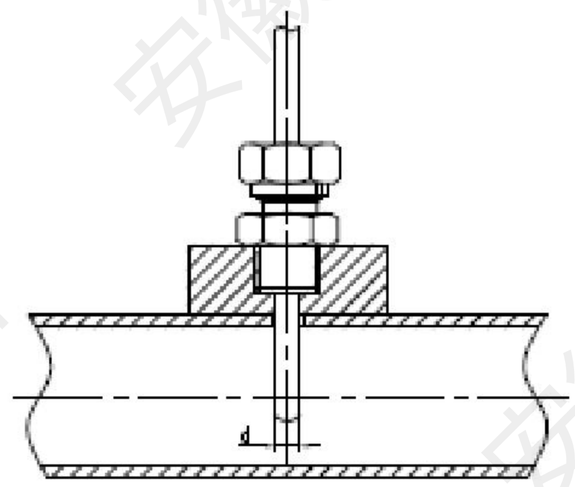
WRNK-295

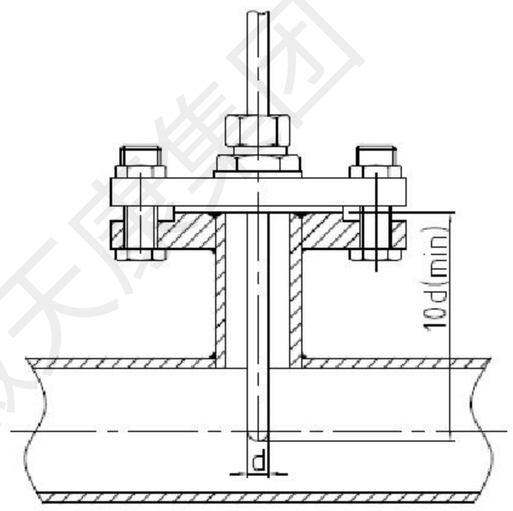


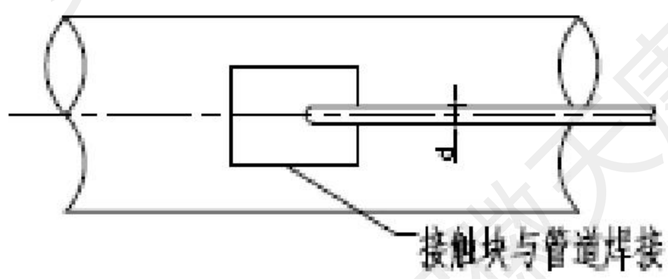
WRNK-185

安装形式
Installation form

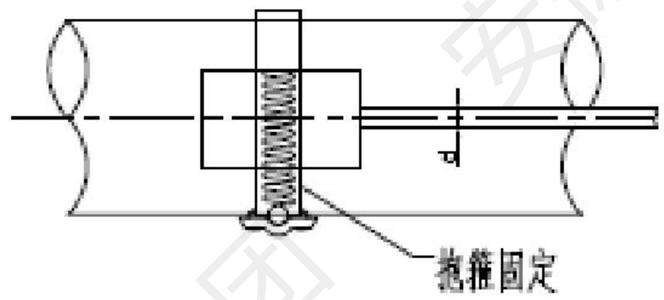








Welding of contact block to pipe



Hoop fixing

选型须知
Selection Instructions

型号；
分度号；
精度等级；
安装固定形式；
保护管材质；
长度或插入深度。

例：铠装热电偶，K型，I级，固定卡套螺纹，保护管GH3030，长度450mm，插入深度300mm，WRNK-236，L*I=450*300，I级，保护管GH3030。

Model.
Graduation number.
Accuracy level.
Installation and fixation form.
Protective tube material.
Length or insertion depth.
Example: Armored thermocouple, K-type, Class I, fixed ferrule thread, protective tube GH3030, length 450mm, insertion depth300mm, WRNK-236, L*I=450*300, Class I, protective tube GH3030.