

**KANTHAL<sup>®</sup>**

# THERMODYELECTRIC REFRACTORIES

PRODUCT OVERVIEW





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# THERMODIELECTRIC REFRACTORIES

**One of the most widely used methods of supporting electrothermal components (electrical resistance and thermocouples) is the use of thermodielectric refractories.**

They belong to the extensive family of ceramics and are produced using a process similar to that used to manufacture household articles such as vases, plates and decorative objects.

However, for our product range, the best raw materials are chosen in order to meet the following requirements at high temperatures:

## **GOOD MECHANICAL STRENGTH**

To improve mechanical strength we use alumina and refractory presintered clays which, when combined with basic clays, form a dense structure.

## **HIGH ELECTRICAL RESISTANCE**

To improve dielectric properties (high electrical resistance), we use clays with low iron oxide and alkaline content.

## **GOOD THERMAL SHOCK RESISTANCE**

Thermal shock resistance is obtained by achieving the right level of porosity or, in certain cases, by the addition of magnesium oxide.

Thermodielectric refractories with alumina content can be divided into three groups:

### **1) ALUMINOSILICATES**

These are materials with an alumina content of less than 50%. They are used for temperatures up to 1100–1200°C (2010–2190°F). They have good thermal shock resistance.

**Kanthal® material code: A42P**

### **2) ALUMINOUS**

These are materials with an alumina content of more than 50%. They are used for temperatures up to about 1300°C (2370°F). They have fairly good thermal shock resistance and excellent dielectric properties.

**Kanthal® material codes: A60P A50C A73E A80E**

### **3) CORDIERITES**

These are materials with added magnesium oxide. They can be used for temperatures up to 1100°C (2010°F). They have excellent mechanical and thermal shock resistance.

**Kanthal® material code: A38E**

## **SPECIAL FEATURES**

- Good mechanical strength
- High electrical resistance
- Good thermal shock resistance

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# CHOICE OF REFRACTORY MATERIALS

Ceramic supports are usually manufactured with refractory earths containing oxides of silicon, aluminum and magnesium.

For electric furnaces, great care must be taken in choosing the supports due to the reduction in their dielectric properties at high temperatures. The  $Al_2O_3$  content must be at least 40%,  $Fe_2O_3$  less than 1%,  $Na_2O$  and  $K_2O$  as low as possible.

**Kanthal® material A42P – A50C**

Where FeCrAl alloys are used in high temperature furnaces it is necessary to use supports with the lowest possible  $SiO_2$  content in order to prevent reaction between the silicon in the support and the aluminum layer which forms on the surface of the wire. In these cases, the  $Al_2O_3$  content of the support must be greater than 60%.

**Kanthal® material A60P – A73E – A80E**

In lower temperature applications or where excellent resistance to thermal shock is required, it is advisable to use cordieritic materials.

**Kanthal® material A38E**

The Kanthal material codes consist of a letter, a two-digit number and another letter, which show respectively the main ingredient, its percentage and the type of production process.

**A=ALUMINA**

**E=EXTRUSION**

**C=CASTING**

**P=PRESSING**

**Examples:**

A73E Material with 73% alumina content, extruded  
 A60P Material with 60% alumina content, pressed  
 A50C Material with 50% alumina content, cast

## MAIN FEATURES OF KANTHAL THERMODYELECTRIC REFRACTORIES

	<b>A38E</b>	<b>A73/80E</b>	<b>A42P</b>	<b>A60P</b>	<b>A50C</b>
Max. operating temperature	2190°F 1200°C	2370°F 1300°C	2190°F 1200°C	2370°F 1300°C	2370°F 1300°C
H <sub>2</sub> O absorption as % volume	12–18	12–18	12–18	12–18	12–18
Bulk density, (lb/in <sup>3</sup> ) g/cm <sup>3</sup>	0.07 1.9	0.08 2.2	0.07 1.9	0.08 2.2	0.07 1.9
Thermal conductivity, (W/mK 68–1830°F) Kcal/m h°C 20–1000°C	460–585 1.1–1.4	627–836 1.5–2.0	460–627 1.1–1.5	627–836 1.5–2.0	460–627 1.1–1.5
Cold compression strength, (lb/in <sup>2</sup> ) MPa	4267 29.4	5689 39.2	4267 29.4	5689 39.2	4267 29.4
Specific heat capacity, kcal/kg/°C [210–1830°F] kcal/kg/°C 100–1000°C	0.2	0.2	0.2	0.2	0.2
Thermal shock resistance	excellent	good	good	good	good
Thermal expansion coefficient × 10 <sup>-6</sup>	6.5	6.5	6.5	6.5	6.5
Resistivity	400°C (750°F) 600°C (1110°F) 800°C (1470°F) 1000°C (1830°F)		10–100 Mohm cm 1–10 Mohm cm 0.1–1 Mohm cm 10–100 kohm cm		

## AVERAGE CONTENT OF CHEMICAL INGREDIENTS

	A38E	A73E	A80E	A42P	A60P	A50C
SiO <sub>2</sub>	53.2	21	12.4	47.2	30.5	37.8
Al <sub>2</sub> O <sub>3</sub>	38	73	82.2	43	60	53.5
Fe <sub>2</sub> O <sub>3</sub>	0.9	0.6	0.5	0.9	0.9	0.8
MgO	4	0.2	0.2	0.4	0.3	<0.1
TiO	0.5	0.4	0.4	0.4	0.7	0.3
CaO	0.2	<0.1	<0.1	0.4	0.3	<0.1
K <sub>2</sub> O	1.2	<0.1	<0.1	0.3	0.9	3.2
Na <sub>2</sub> O	<0.1	<0.1	<0.1	0.2	0.1	0.1
LiO	<0.1	<0.1	0.3	<0.1	<0.1	<0.1

## HEALTH AND SAFETY

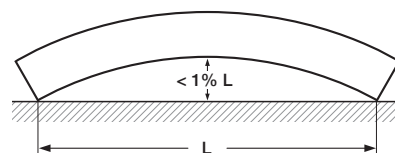
Our ceramic materials do not contain substances dangerous to health, or create them during use. They are produced using inert natural raw materials, and any organic binders used are burned during firing.

During final processing such as cutting or drilling, inert dust may be created. Workers must therefore be provided with suitable protective equipment to prevent inhalation.

## TABLE OF TOLERANCES IN ACCORDANCE WITH DIN 40680

DIMENSIONS				VARIATIONS		
FROM	DA	TO	A	+/-	+0	-0
0		4		0.15	0.3	0.3
4.1		6		0.2	0.4	0.4
6.1		8		0.25	0.5	0.5
8.1		10		0.3	0.6	0.6
10.1		13		0.35	0.7	0.7
13.1		16		0.4	0.8	0.8
16.1		20		0.45	0.9	0.9
20.1		25		0.5	1	1
25.1		30		0.55	1.1	1.1
30.1		35		0.6	1.2	1.2
35.1		40		0.65	1.3	1.3
40.1		45		0.7	1.4	1.4
45.1		50		0.8	1.6	1.6
50.1		55		0.9	1.8	1.8
55.1		60		1	2	2
60.1		65		1.2	2.4	2.4
65.1		80		1.4	2.8	2.8
80.1		90		1.6	3.2	3.2
90.1		100		1.8	3.6	3.6
100.1		110		2	4	4
110.1		125		2.2	4.4	4.4
125.1		140		2.5	5	5
140.1		155		2.8	5.6	5.6
155.1		170		3	6	6
170.1		185		3.4	6.8	6.8
185.1		200		3.8	7.6	7.6
200.1		250		4.2	8.4	8.4
250.1		300		4.6	9.2	9.2
300.1		350		5	10	10
350.1		400		5.5	11	11
400.1		450		6.1	12.2	12.2
450.1		500		6.8	13.6	13.6
500.1		600		7.6	15.2	15.2
600.1		700		8.3	16.6	16.6
700.1		800		9	18	18
800.1		900		9.5	19	19
900.1		1000		10	20	20

All dimensions in mm



Max camber.

# GENERAL INFORMATION

Our products are manufactured using raw materials of the highest quality and do not contain conductive ingredients. However, substances such as alkalis, residual products generated by combustion or processing may be absorbed, reducing the dielectric properties of the final product.

As with all insulating materials, dielectric properties reduce as the temperature rises: at values close to 1000–1100°C (1830–2010°F), leakage currents may affect differential protection systems.

In this case, low supply voltages should be used to limit this effect.

## **1) PRODUCT ENQUIRIES**

So that we can offer you the most suitable product for your application, your enquiry should include the following information:

Maximum operating temperature; type of heating element; ambient atmosphere; general operating conditions.

## **2) CUSTOMIZED ITEMS**

If you require items not shown in our catalogue, your enquiry should include a detailed drawing.

## **3) MOULDS**

When it is necessary to build moulds to manufacture customized items, their cost will be charged to the customer but they will remain the industrial property of Kanthal.

Kanthal undertakes to use such moulds exclusively for that customers' products unless otherwise agreed.

Moulds cannot be transferred to the customer and after three years following the last order, Kanthal reserves the right to use or to dispose of them.

## **4) DIMENSIONAL TOLERANCES**

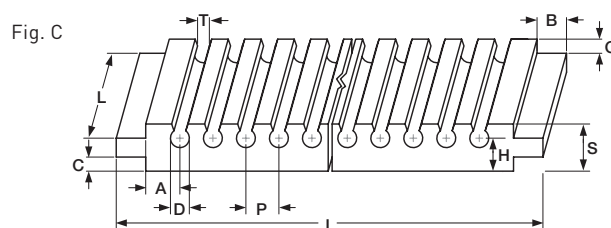
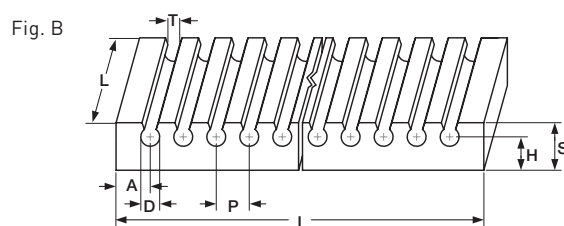
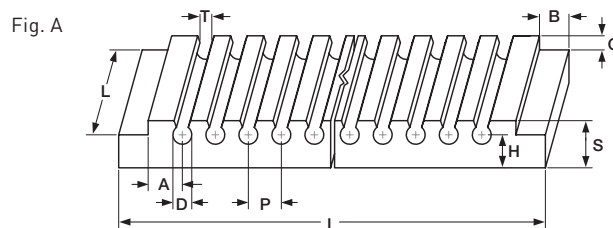
Our standard production is in accordance with the tolerances stated in DIN 40680.

## **5) QUANTITY TOLERANCE**

Quantities supplied are subject to a nominal tolerance of  $\pm 5\%$  and  $\pm 10\%$  for customized articles.

# SUPPORTING PLATES FOR ELECTRIC FURNACES – PIA

The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.



## SUPPORTING PLATES FOR LABORATORY FURNACES

REF.	FIG.	L	I	B	C	A	H	S	D	P	T	NO. CAN.
PIA 03-26-20-14*	C	260	200	19	3.5	6	13.5	22	7	11.6	4.5	14
PIA 03-26-12-10*	B	260	120			8	13.5	22	7	11.6	4.5	10
PIA 03-26-14-12	B	260	140			5	13.5	20	5	9.6	3.5	12
PIA 03-26-8-8	B	260	80			7	13.5	20	5	9.6	3.5	8
PIA 03-26-11-10	B	260	110			13	13.5	20	5	9.6	3.5	10
PIA 03-30-19-8	A	300	190	20	8	14	20.5	30	11	18.3	7	8
PIA 03-30-19-10	B	300	190			12.5	20.5	30	11	18.3	7	10

\* Standard stock

All dimensions in mm



## SUPPORTING PLATES FOR ELECTRIC FURNACES

REF.	FIG.	L	I	B	C	A	H	S	D	P	T	NO. CAN.
PIA 04-50-21-6/17	A	500	210	10	15	30	18	30	17	30	10	6
PIA 04-50-33-12*	A	500	330	15	5	33	23	33	17	22	12	12
PIA 04-38-28-10	A	380	280	15	12	28	21	30	14	22	8	10
PIA 04-38-20-8	A	380	200	15	12	15	21	30	14	20	8	8
PIA 04-60-35-16*	A	600	350	20	8	16	21	30	12	18.5	8	16
PIA 04-60-20-10	A	600	200			15	21	30	12	18.5	8	10
PIA 04-50-35-21	A	500	350	21	5	8	25	30	8	14.6	5.5	21
PIA 04-50-22-15	B	500	220			8	25	30	8	14.6	5.5	15
PIA 04-50-12-06*	B	500	120			15	21	30	12	18.5	8	6
PIA 04-50-20-10*	B	500	200			15	21	30	12	18.5	8	10
PIA 04-50-35-16*	A	500	350	20	8	16	21	30	12	18.5	8	16
PIA 04-50-35-10*	A	500	350	25	12	22	28	40	17	28.4	11	10
PIA 04-50-25-08*	B	500	250			26	28	40	17	28.4	11	8
PIA 04-50-20-06*	B	500	200			29	28	40	17	28.4	11	6
PIA 04-50-35-08	A	500	350	24	10	26	30	45	24	35.7	16	8
PIA 04-50-25-06	B	500	250			36	30	45	24	35.7	16	6
PIA 04-50-35-09	B	500	350			27	30	45	24	35.7	16	9
PIA 04-50-28-08	B	500	280			25	33	50	20	33	14	8
PIA 04-50-21-06	B	500	210			23	33	50	20	33	14	6
PIA 04-50-35-15	A	350	500	25	12	29	28	40	17	28	11	15
PIA 04-60-35-15	A	350	600	25	12	79	28	40	17	28	11	15

\* Standard stock

All dimensions in mm

## SUPPORTING PLATES FOR BOTTOM OF INDUSTRIAL FURNACES

REF.	FIG.	L	I	B	C	A	H	S	D	P	T	NO. CAN.
PIA 05-55-20-12/S	A	200	550	20	27	33	40	67	30	40	20	12
PIA 05-47-20-10/S	A	200	470	20	27	33	40	67	30	40	20	10
PIA 05-39-20-8/S	A	200	390	20	27	33	40	67	30	40	20	8
PIA 05-31-20-6/S	A	200	310	20	27	33	40	67	30	40	20	6
PIA 05-51-20-12/S	B	200	510			33	40	67	30	40	20	12
PIA 05-43-20-10/S	B	200	430			33	40	67	30	40	20	10
PIA 05-35-20-8/S	B	200	350			33	40	67	30	40	20	8
PIA 05-27-20-6/S	B	200	270			33	40	67	30	40	20	6

All dimensions in mm

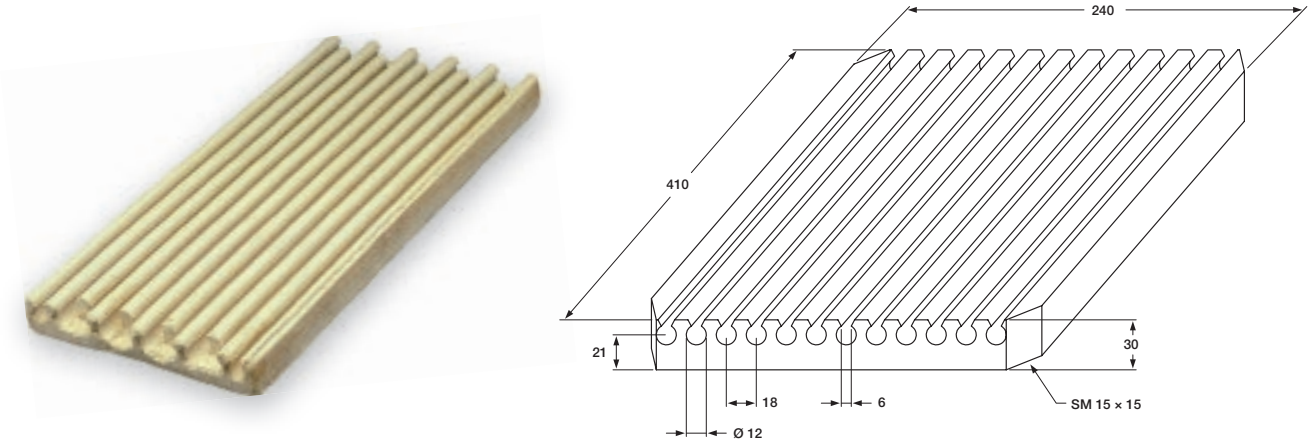
## SUPPORTING PLATES FOR INDUSTRIAL FURNACES

REF.	FIG.	L	I	B	C	A	H	S	D	P	T	NO. CAN.
PIA 05-55-18-12 *	A	180	550	20	25	36	37	55	28	40	16	12
PIA 05-47-18-10	A	180	470	20	25	36	37	55	28	40	16	10
PIA 05-43-18-09	A	180	430	20	25	36	37	55	28	40	16	9
PIA 05-39-18-08*	A	180	390	20	25	36	37	55	28	40	16	8
PIA 05-31-18-06*	A	180	310	20	25	36	37	55	28	40	16	6
PIA 05-23-18-04	A	180	230	20	25	36	37	55	28	40	16	4
PIA 05-51-18-12	B	180	510			36	37	55	28	40	16	12
PIA 05-43-18-10	B	180	430			36	37	55	28	40	16	10
PIA 05-39-18-09	B	180	390			36	37	55	28	40	16	9
PIA 05-35-18-08	B	180	350			36	37	55	28	40	16	8
PIA 05-27-18-06	B	180	270			36	37	55	28	40	16	6
PIA 05-19-18-04	B	180	190			36	37	55	28	40	16	4
PIA 05-55-20-12*	A	200	550	20	17	31.5	33	50	30	40	20	12
PIA 05-47-20-10*	A	200	470	20	17	31.5	33	50	30	40	20	10
PIA 05-43-20-09	A	200	430	20	17	31.5	33	50	30	40	20	9
PIA 05-39-20-08*	A	200	390	20	17	31.5	33	50	30	40	20	8
PIA 05-31-20-06	A	200	310	20	17	31.5	33	50	30	40	20	6
PIA 05-51-20-12	B	200	510			31.5	33	50	30	40	20	12
PIA 05-43-20-10	B	200	430			31.5	33	50	30	40	20	10
PIA 05-39-20-09	B	200	390			31.5	33	50	30	40	20	9
PIA 05-35-20-08*	B	200	350			31.5	33	50	30	40	20	8
PIA 05-27-20-06	B	200	270			31.5	33	50	30	40	20	6
PIA 05-17-18-03	A	180	170	20	25	25	30	50	30	40	20	3
PIA 05-13-18-03	B	180	130			25	30	50	30	40	20	3
PIA 05-28-50-04	A	500	280	20	35	40	43	65	30	53	20	4
PIA 05-20-50-03	A	500	200	15	45	32	43	65	30	53	20	3
PIA 05-35-20-6/34	A	200	350	17.5	32	35	37	62	34	49	19	6
PIA 05-39-41-10	B	390	410			61	30	45	20	32	10	10
PIA 05-39-41-08	B	390	410			65	35	54	30	40	17	8
PIA 05-23-25-06	A	250	238	19	24	30	32	48	18	28	10	6
PIA 05-35-25-10	A	250	350	19	24	30	32	48	18	28	10	10

\* Standard stock

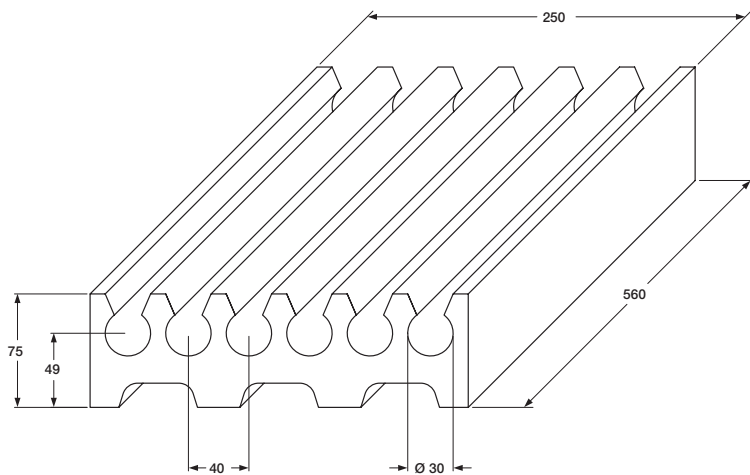
All dimensions in mm

**SUPPORTING PLATES FOR ELECTRIC FURNACES PIA 05-24-41-12**



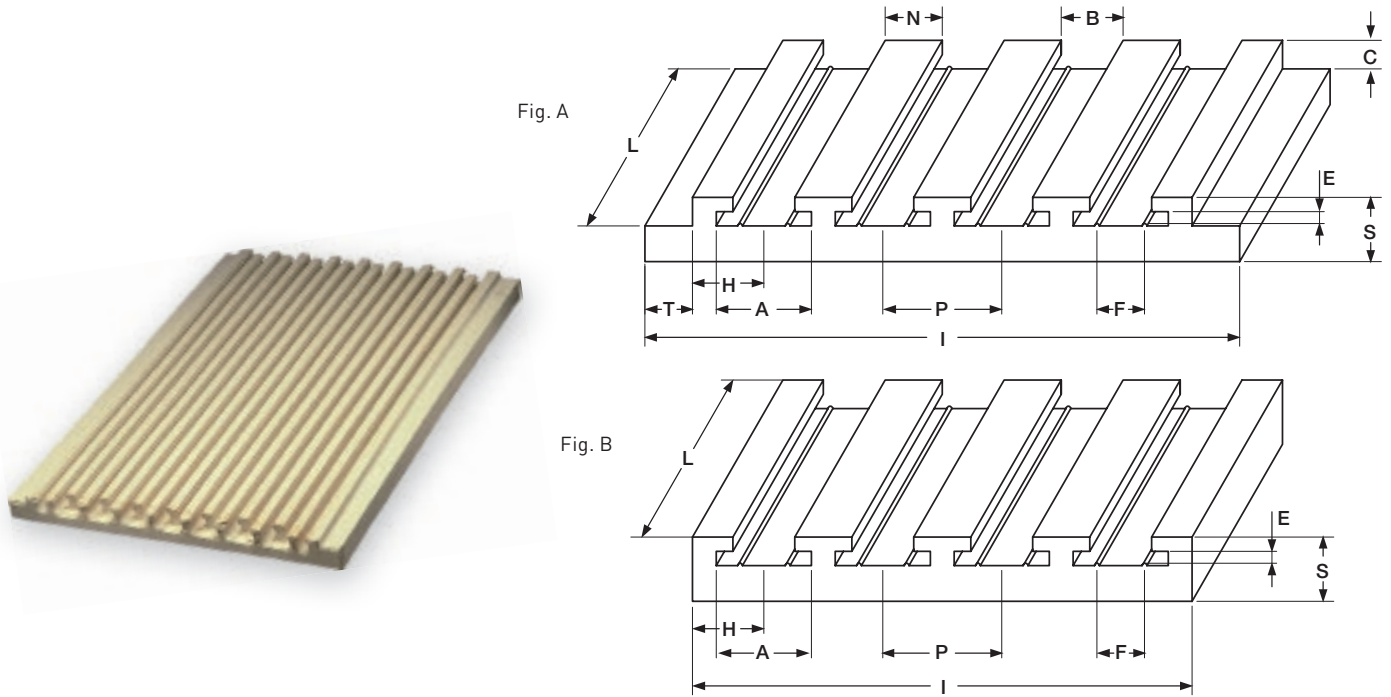
The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.

**SUPPORTING PLATES FOR ELECTRIC FURNACES PIA 05-56-25-6**



The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.

## SUPPORTING PLATES FOR FURNACES WITH RESISTANCE WIRE OR RIBBON

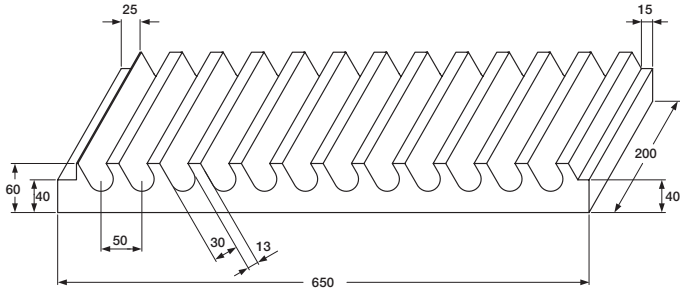


REF.	FIG.	I	L	A	E	P	B	F	N	H	T	C	S	NO. CAN.
PIA 06-25-21-4	A	250	210	40	5	50	30	-	20	30	20	12	23	4
PIA 06-21-25-4	B	210	250	40	15	50	30	20	20	30	-	-	40	4
PIA 06-38-25-6	A	380	250	40	15	50	30	20	20	30	35	20	40	6
PIA 06-38-25-4	A	380	250	60	14	72	18	30	24	44	36	20	40	4
PIA 06-49-20-4	A	490	200	90	25	108	68	46	40	60	23	43	70	4
PIA 06-28-50-2	A	280	500	90	25	110	60	45	50	65	20	40	70	2
PIA 06-25-50-2	B	250	500	90	25	110	60	45	50	70	-	40	70	2

All dimensions in mm

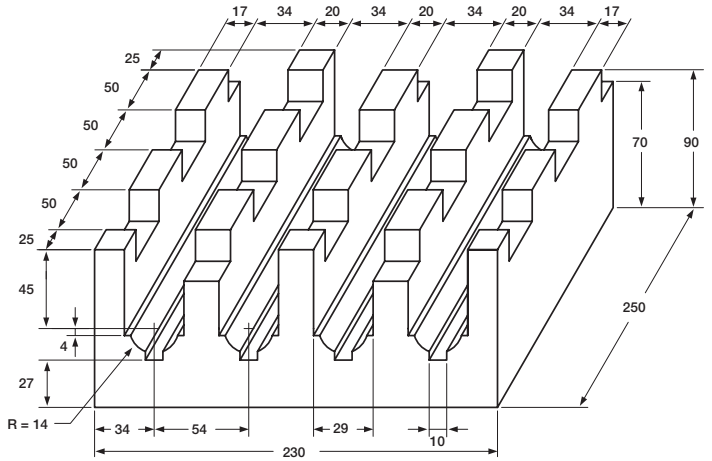
The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.

**SUPPORTING PLATES FOR ELECTRIC FURNACES**  
**PIA 07-20-60-12**



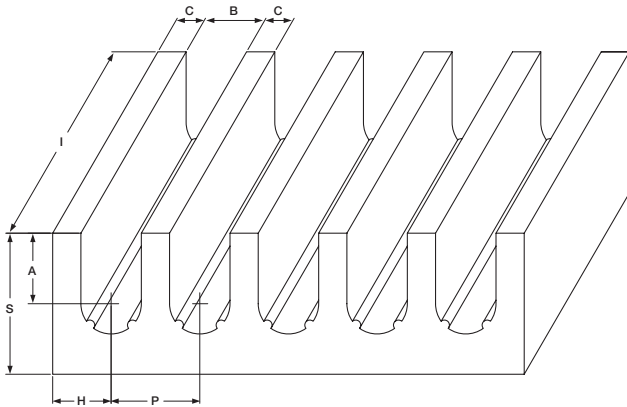
The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.

**SUPPORTING PLATES FOR ELECTRIC FURNACES**  
**PIA 07-23-25-4**



The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.

**SUPPORTING PLATES FOR ELECTRIC FURNACES WITH OPEN GROOVES**

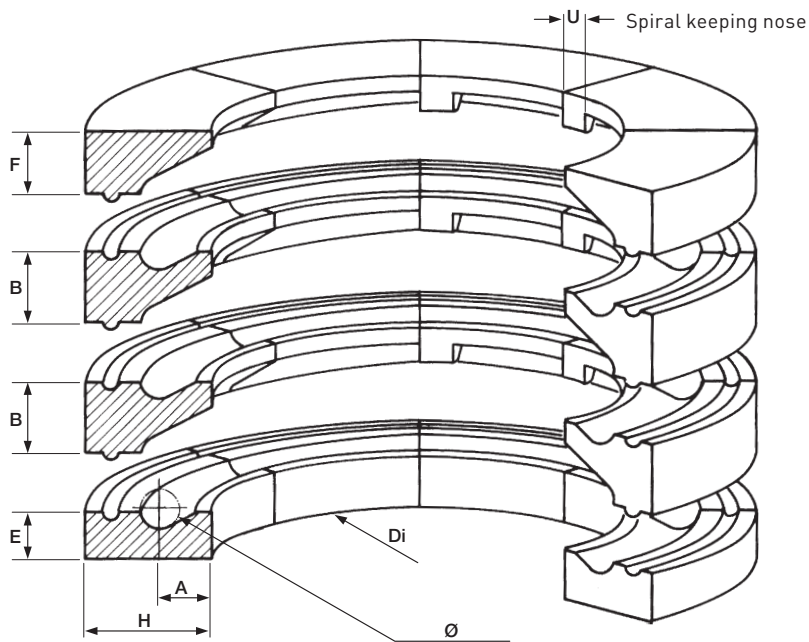


REF.	L	I	S	A	B	P	C	H	T
PIA 07-25-19-4	190	250	70	35	30	44	15	30	4
PIA 07-25-22-4	220	250	76	39	34	50	18	35	4
PIA 07-25-32-6	320	250	76	39	34	50	16	35	6

All dimensions in mm

The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.

# HEATING ELEMENT SUPPORTS FOR WELL KILNS



REF.	D	H	E	B	F	Ø	A	N	U
SET 08-25-3.5-1	250	50	25	35	30	22	15	6	18
SET 08-35-3.8-1	350	52	25	38	30	22	15	8	18
SET 08-45-5-1*	450	70	40	50	40	30	25	10	25
SET 08-60-5-1*	600	70	40	50	40	30	25	12	25
SET 08-80-5-1*	800	70	40	50	40	30	25	12	25
SET 08-100-5-1*	1000	80	40	50	40	30	25	15	25
SET 08-130-6-1	1300	90	45	60	50	35	30	20	25
SET 08-170-6-1	1700	90	45	60	50	35	30	25	25
SET 07-20-5-1**	-	-	40	50	40	30	25	-	25

\* Standard stock

\*\* Straight element to couple with 08-45, 08-60, 08-80 to build oval kilns.

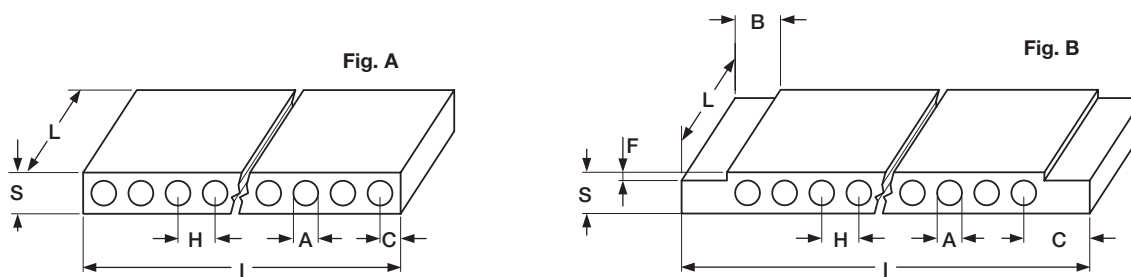
All dimensions in mm

Ø Max spiral diameter.

N No. sectors per turn.

The element heads and intermediate can be manufactured with or without keeping nose (08-130 & 08-170 only with nose).

## SUPPORTING PLATES FOR ELECTRIC FURNACES



## SUPPORTING PLATES WITH CLOSED GROOVES

REF.	FIG.	I	L	S	H	A	B	C	D	E	F	MAT.	NO. CAN.
PIA 09-26-12-10	A	120	260	22	11.6	7		8				A50C	10
PIA 09-26-20-14*	B	200	260	22	11.6	7	20	25			4	A50C	14

\*Standard stock

All dimensions in mm

# HOOKS

Fig. A

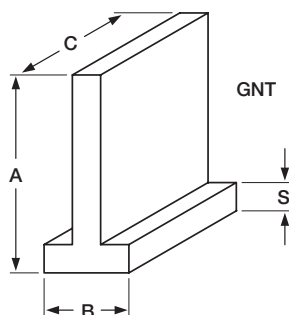


Fig. C

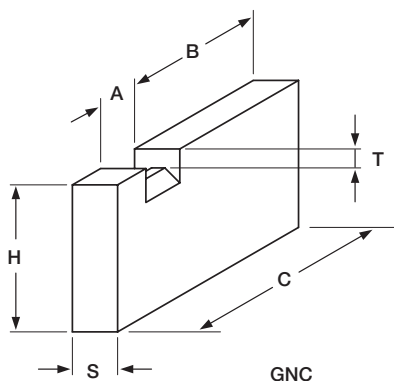


Fig. B

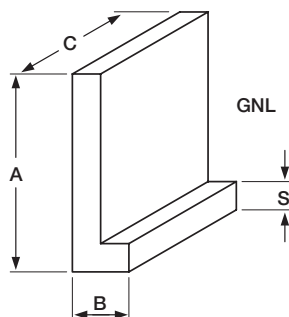
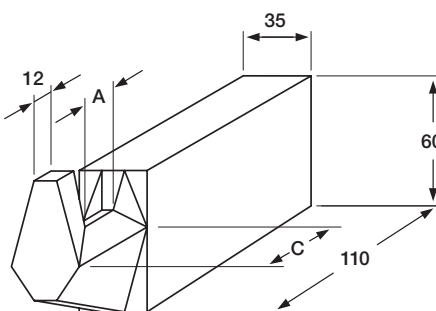


Fig. D



CODE	REF.	FIG.	A	B	C	H	S	T	MAT.
GNT	015-25-15-2 T*	A	150	60	250	-	20	-	
GNL	015-25-15-2 L	B	150	60	250	-	20	-	
GNT	015-20-17-3.5 T	A	175	75	200	-	35	-	
GNL	015-20-17-3.5 T	B	175	55	200	-	35	-	
GNC	016-143	C	18	110	143	60	15	12	A60P
GNC	016-150	C	25	110	150	60	15	12	A60P
GNC	016-157	C	32	110	157	60	15	12	A60P
GNC	016-175	C	45	110	175	60	24	12	
GNC	016-165	D	27	-	55	-	-	-	
GNC	016-180	D	42	-	70	-	-	-	

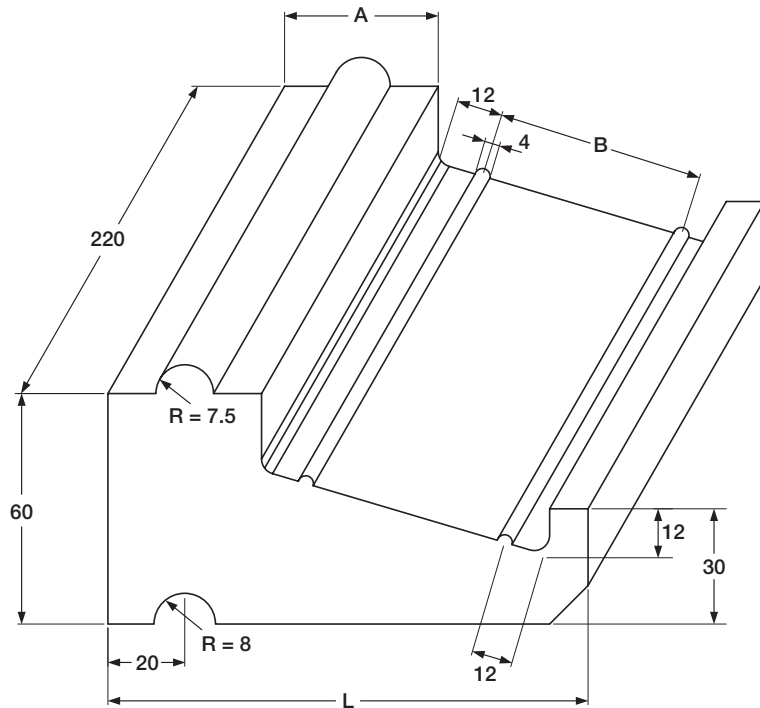
\* Standard stock

All dimensions in mm

The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.



# RESISTANCE SUPPORTING HOOKS

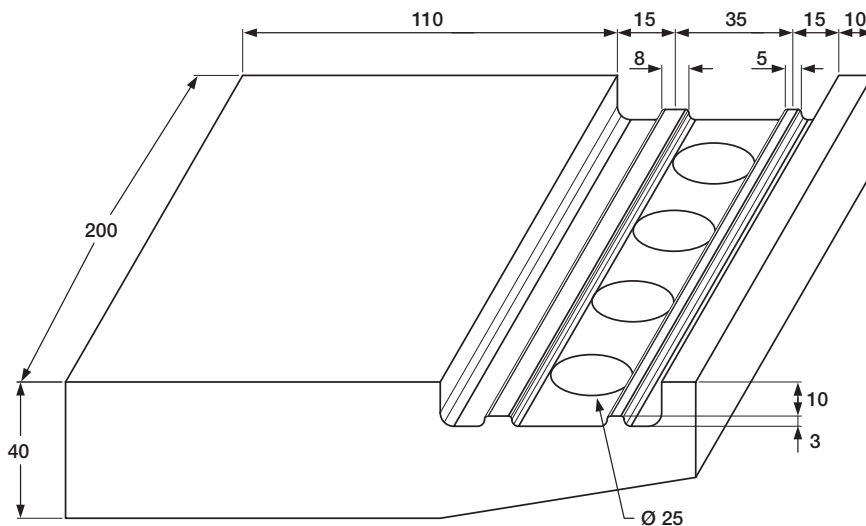


CODE	REF.	L	A	B
GNC	016-65	110	40	39
GNC	016-85	125	40	54
GNC	016-85-6	145	60	54

The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.

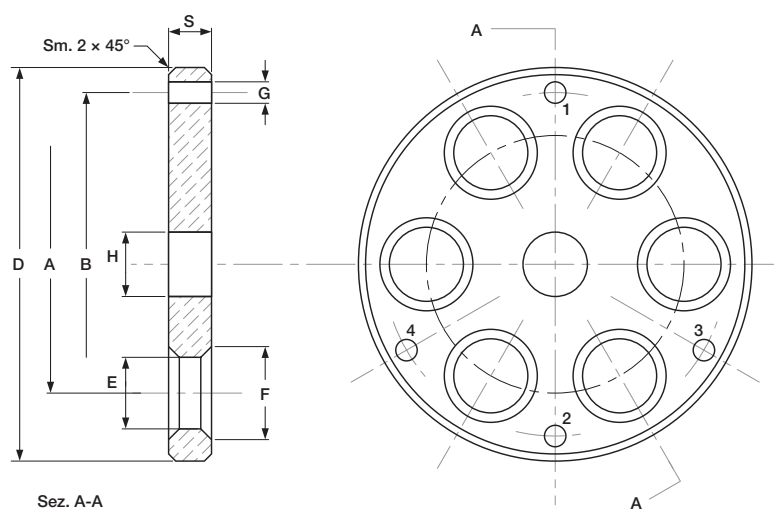
All dimensions in mm

## RESISTANCE SUPPORTING HOOKS GNC 016-200



The choice between the A42P material and the A60P material is determined by the wire alloy and by the working temperature.

# CERAMIC SUPPORTS FOR ELECTRIC ELEMENTS IN RADIANT TUBES

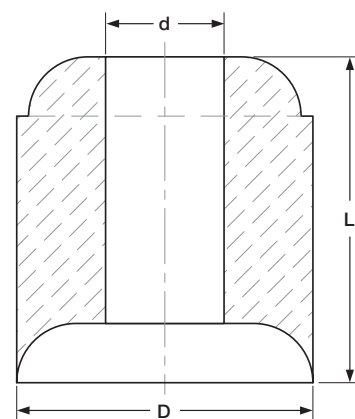


CODE	REF.	E	NO. E	F	G	POS. G	B	A	D	S	H	MAT.
DCR	018-96*	19	6	23	7	1-2	75	55	96	13	10	A60P
DCR	018-113*	22	6	28	6	1-2	84	68	113	12	20	A60P
DCR	018-145*	33	6	41	5	1-3-4	126	89	145	14	16	A60P

\* Standard stock

All dimensions in mm

# STEATITE BEADS

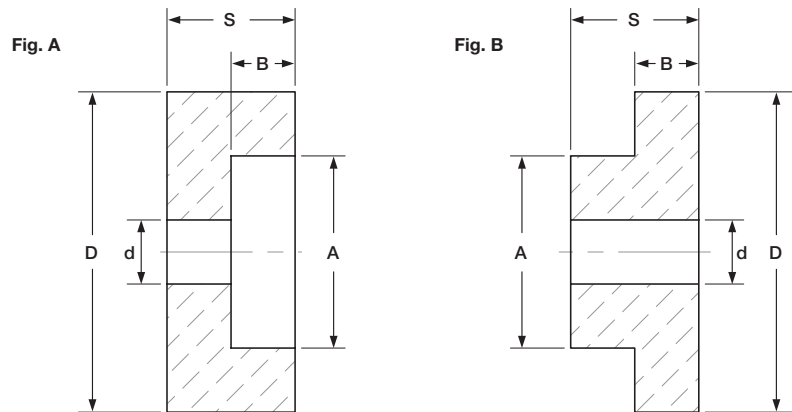


CODE	REF.	D	D	L	NO. x KG
PRL	023-00*	3.3	1	4.2	17000
PRL	023-01*	4.3	1.5	5.5	6250
PRL	023-02*	5.3	2	6	4000
PRL	023-02 B*	5.3	2.5	6	4350
PRL	023-03*	6.3	2.5	6.7	2650
PRL	023-03 B*	6.3	3	6.7	3050
PRL	023-04*	7.3	3	7.5	1750
PRL	023-04 B*	7.3	3.5	7.5	1900
PRL	023-05*	8.3	4	9	1200
PRL	023-05 B*	8.3	5	9	1400
PRL	023-06*	9.3	4.5	10	980
PRL	023-06 B*	9.3	5.5	10	1000
PRL	023-07*	10.3	5	11	700
PRL	023-08*	11.3	5.5	11.8	500
PRL	023-08 B*	11.3	6.5	11.8	550
PRL	023-09*	12.3	6	12.8	430
PRL	023-10*	13.3	6.5	13.3	350
PRL	023-10 B*	13.3	8	13.3	370
PRL	023-12*	19	10.7	19	130

\* Standard stock

All dimensions in mm

# INSULATORS AND PLUGS

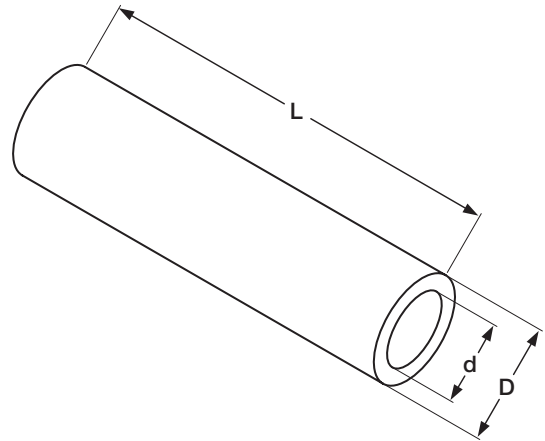


CODE	REF.	FIG.	D	D	A	B	S	MAT.
ISM	025-16.5-5 M*	B	15.5	5	10	1.5	6	Steatite
ISF	025-16.5-5 F*	A	15.5	5	11	1.8	5	Steatite
ISM	025-22-6.5 M*	B	22.5	6.5	11.5	4	10.5	Steatite
ISF	025-22-6.5 F*	A	22.5	6.5	12.3	4.3	8	Steatite
ISM	025-30-8 M*	B	30	8.5	16	7.5	15	Steatite
ISF	025-30-8 F*	A	30	8.5	18	8.5	15	Steatite
ISM	025-36-11.5 M*	B	36	11.5	22	11	20	Steatite
ISF	025-36-11.5 F*	A	36	11.5	23.5	10	18	Steatite
TAP	025-23-7*	B	23	7	13	15	20	A38E
TAP	025-45-13	B	45	13	26	18	30	A42P
TAP	025-60-15	B	60	15	30	18	40	A42P

\* Standard stock

All dimensions in mm

# TUBES WITH ONE HOLE



REF.	D	D
TUS	6	3
TUS	6	4
TUS	7	4
TUS	7	5
TUS	8	4
TUS	8	5
TUS	8	6
TUS	9	6
TUS	10	5
TUS*	10	6
TUS	10	7.5
TUS	11	7
TUS	11	8
TUS*	12	8
TUS	13	7
TUS	14	10
TUS	15	10
TUS*	15	11
TUS	16	12

REF.	D	D
TUS	17	12
TUS	20	12
TUS	20	14
TUS*	25	15
TUS	25	20
TUS	30	16
TUS*	30	20
TUS	35	15
TUS	35	25
TUS	40	20
TUS	40	28
TUS*	40	30
TUS	45	25
TUS	45	35
TUS	50	30
TUS	50	36
TUS*	50	40
TUS	60	40
TUS*	60	50

Other dimensions on request.

For temp. max 1100°C: A38E

For temp. max 1300°C: A80E for lengths < 500  
A73E for lengths > 500

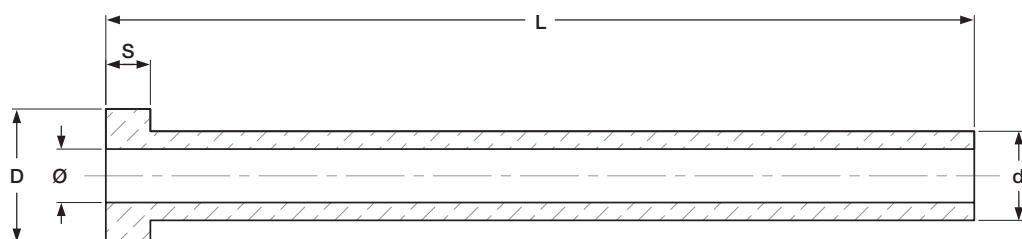
Dimensional tolerances according DIN 40680 norms  
 D < 10 l max 200  
 D = 10 < 19 l max 800  
 D > 20 < 50 l max 1000  
 D > 50 l max 800

Only  
 25×15 30×20 35×25  
 40×30 50×40 60×50  
 l max 3000

\* Standard stock

All dimensions in mm

# TUBES WITH FLANGE



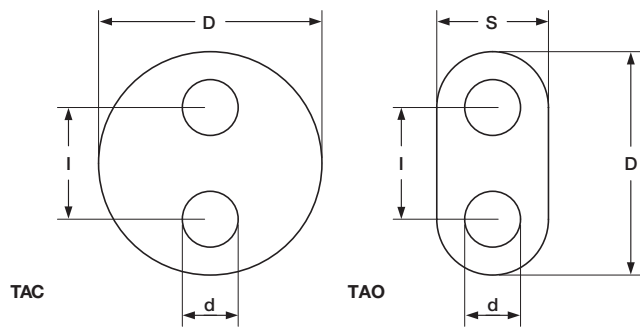
REF.	D	D	Ø	S	L STOCK
TUT-20-10	20	10	6	6	max 200
TUT-25-15*	25	15	9	10	100-150-200-300
TUT-30-20*	30	20	12	15	100-150-200-300
TUT-35-25*	35	25	15	20	150-200-300
TUT-40-30*	40	30	15	20	200-250-300
TUT-45-35*	45	35	20	20	150-200-300
TUT-50-40*	50	40	25	30	300

\* Standard stock

All dimensions in mm

Usually manufactured in material A38E.

# CYLINDRICAL AND OVAL TUBES WITH TWO HOLES



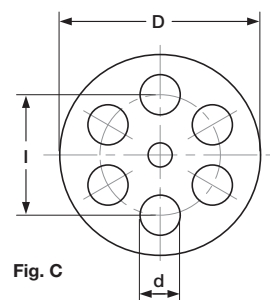
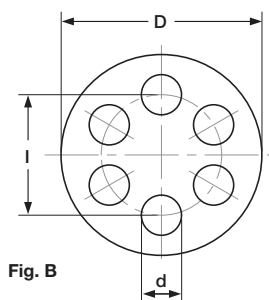
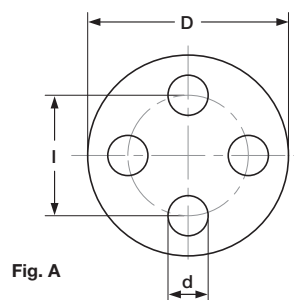
REF.	D	S	D	l
TAC*	6	-	2	2.8
TAC	6.5	-	2	3.2
TAC	7	-	2.5	3.2
TAC	7.5	-	2	3.6
TAC	7.5	-	2.5	3.6
TAC	8	-	2.2	3.6
TAC*	8	-	3	3.6
TAC	8.5	-	3	4.1
TAC	9	-	3	4.1
TAC*	10	-	3	4.1
TAC*	12	-	4	5.4
TAC	12	-	4.5	5.4
TAC	14	-	4	5.4
TAC	14	-	5	7.3
TAC	16	-	5	7.3
TAO*	12	7	4	5.5
TAO	15	9	4.5	7
TAO	15	9	5	7

\* Standard stock

All dimensions in mm

Standard length 25-50-100.  
Usually manufactured in material A38E.

# TUBES WITH MULTIPLE HOLES



REF.	FIG.	D	D	I	NO.D
TMF	A	8	2	4.25	4
TMF	A	8.5	1.5	4.8	4
TMF	A	8.5	2	4.8	4
TMF	A	8.5	2.5	4.8	4
TMF	A	9.5	2.8	5.2	4
TMF	A	10	3	5.4	4
TMF	A	12	3	6.5	4
TMF	A	12	3.5	6.8	4
TMF	A	13	4	7.15	4
TMF	A	14	4	7.7	4
TMF	A	14	4.5	8	4
TMF	A	16	4	9.3	4
TMF	A	16	4.5	9.3	4
TMF	A	16	5	9.3	4
TMF	A	17	5	10.2	4

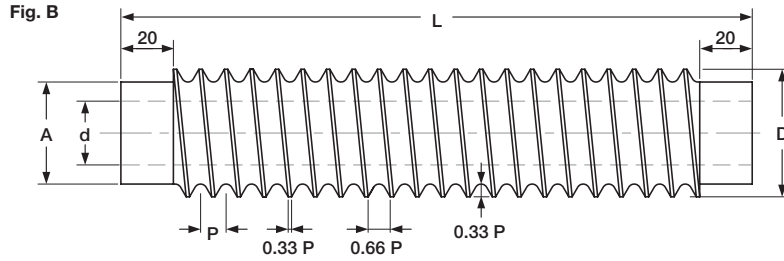
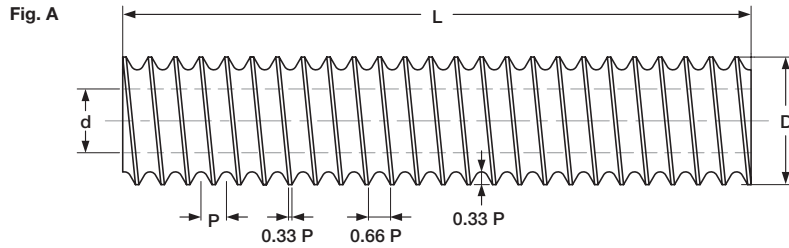
REF.	FIG.	D	D	I	NO.D
TMF	B	8	1.6	5.1	6
TMF	B	10	2.2	6.5	6
TMF	B	14	3.5	9	6
TMF	B	15	3.5	9.5	6
TMF	C	11.5	2.7	8	7
TMF	C	12.4	2.7	8	7
TMF	C	13	3	8.5	7
TMF	C	14.5	2	9	7
TMF	C	16	4	10	7
TMF	C	18	4.5	11.5	7

All dimensions in mm

Standard length 25-50-100.  
Usually manufactured in material A38E.



# THREADED CANDLES

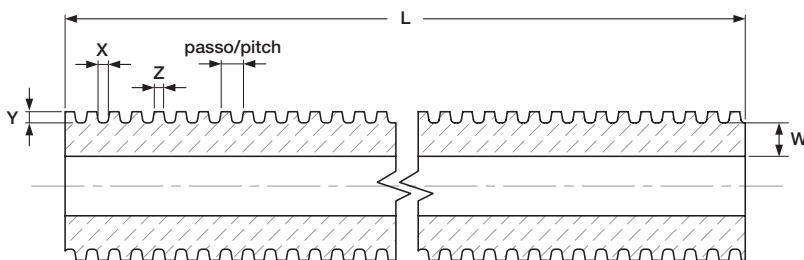


REF.	FIG.	D	D	P	L MAX	NO. P	A	B
CND	A	20	9	1.5-2-3-4-5	300	1	-	-
CND	A	30	16	1.5-2-3-4-5-6.5	300	1	-	-
CND	A	40	24	1.5-2-3-4-5-6.5	500	1	-	-
CND	A	50	32	1.5-2-3-4-5-6.5	500	1	-	-
CND	A	60	40	3-4-5-6.5	500	1	-	-
CNT	B	20	9	5	300	1	20	20
CNT	B	30	16	5	300	1	25	20
CNT	B	30	16	6.5	300	1	25	20
CNT	B	40	24	5	300	1	32	20
CNT	B	40	24	6.5	300	1	32	20
CNT	B	30	16	5	300	2	25	20
CNT	B	30	16	6.5	300	2	25	20
CNT	B	40	24	5	300	2	32	20
CNT	B	40	24	6.5	300	2	32	20

All dimensions in mm

Other dimensions on request.  
Usually manufactured in material A39E.

## NOT STANDARD THREADED CANDLES



$$Y_{\max} = X \times 1.2$$

$$X_{\min} = 2.5$$

$$Z > X \times 0.8 \text{ (min. 2.5)}$$

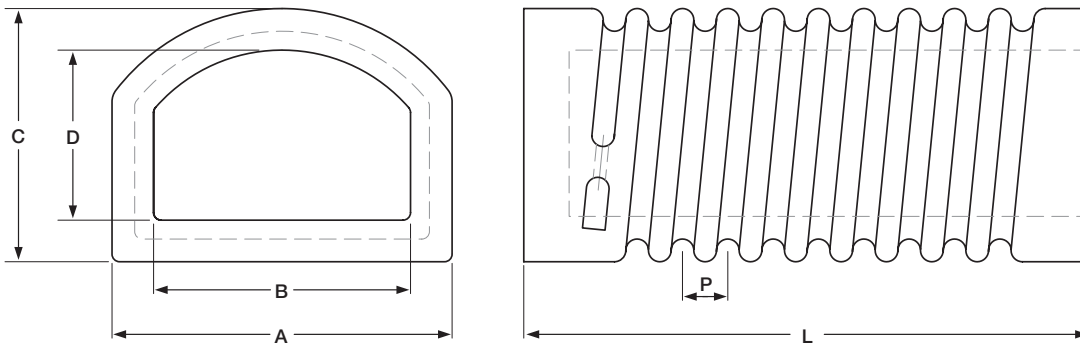
$$W > 8$$

For length up to 500 mm (19.7 in)  
Pitches from 1.5 to 30 mm (0.059 to 1.18 in)  
Also with double spiral

For length > 500 mm (19.7 in)  
Pitches 3 - 4 - 5 - 6.5 - 8.5 - 9.5 - 10.7  
- 11.5 - 15.5

# MUFFLES

## MUFFLES 034

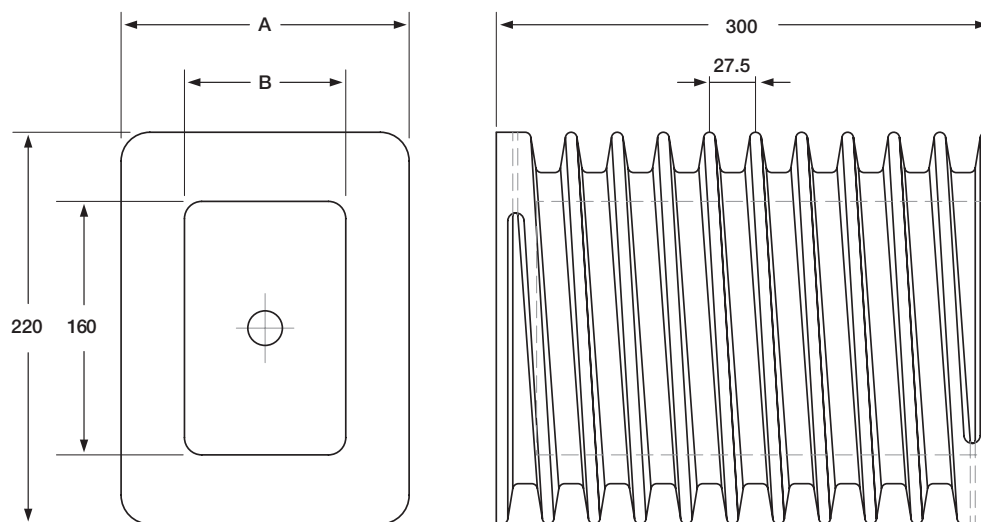


REF.	A	B	C	D	L	P
MUFO 230-180-115	190	170	125	105	240	13

All dimensions in mm

Material A50C only.

## MUFFLES 034-300

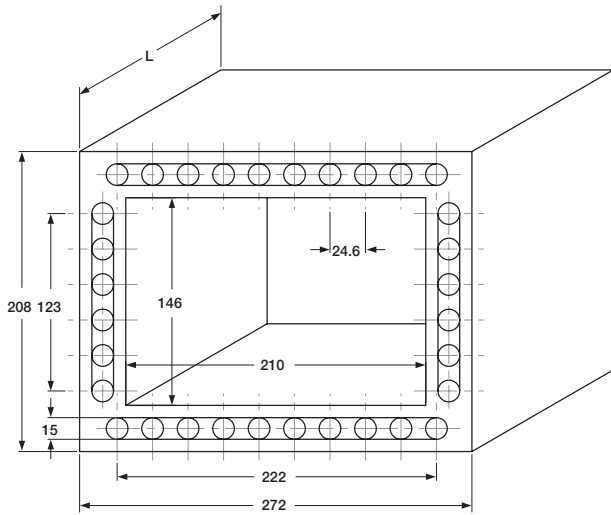


REF.	A	B
MUFO 300-170-220	170	110
MUFO 300-270-220	270	210

All dimensions in mm

Material A50C only.

**MUFFLES 034-27**



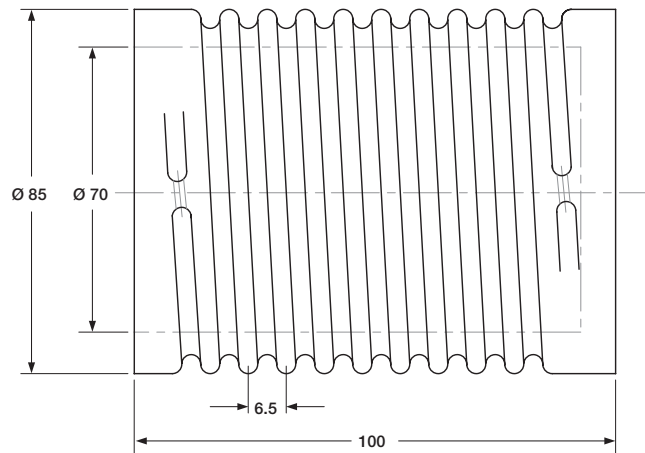
REF.	L
MUFO-27-28-32	280
MUFO-27-32-32	320

Stock standard

All dimensions in mm

Material A50C only.

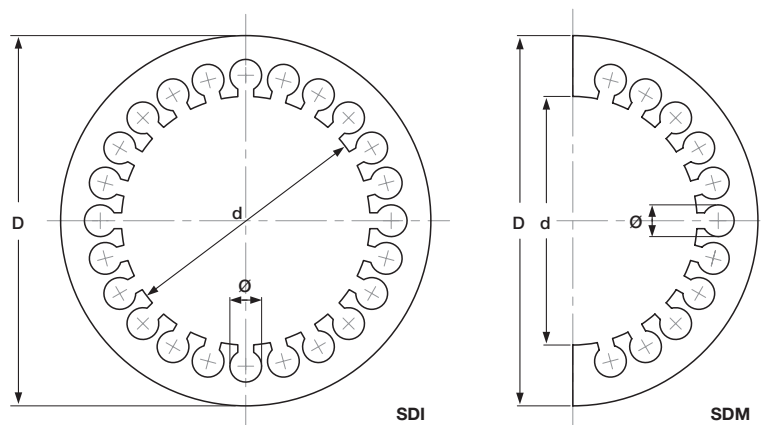
**MUFFLES 035**



MUFO-80-100-65

Material A50C only.

# CANDLES AND HALF CANDLES SAIDH WITH INTERNAL GROOVES

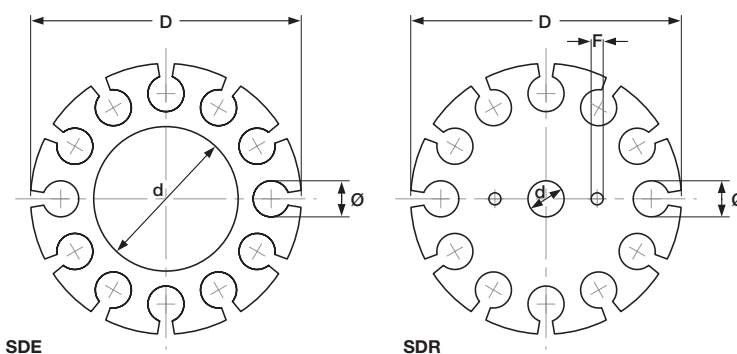


REF.	D	D	ø	NO. ø	MAT.	L
SDI	45	20	6	8	A80E	100-200-300
SDI	55	30	5	10	A80E	100-200-300
SDI	63	38	5	16	A80E	100-200-300
SDI	65	30	9	10	A80E	100-200-300
SDI	83	55	5	16	A80E	100-200-300
SDI	105	70	7	16	A80E	100-200-300
SDI	140	90	9	17	A50C	only/solo 200
SDI	210	150	15	24	A50C	only/solo 300
SDI	290	210	20	24	A50C	only/solo 200
SDI	450	350	20	36	A50C	only/solo 350
SDM	55	30	5	8	A80E	100-200-300
SDM	63	40	5.5	8	A80E	100-200-300

All dimensions in mm

Other lengths on request.

# CANDLES SAIDH WITH EXTERNAL GROOVES

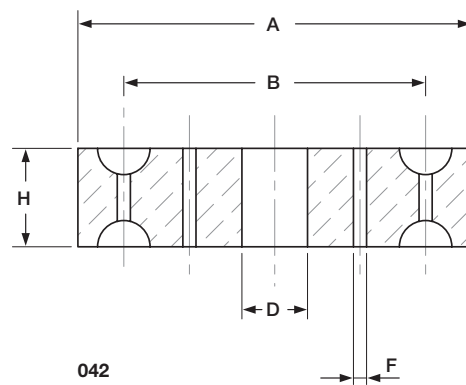
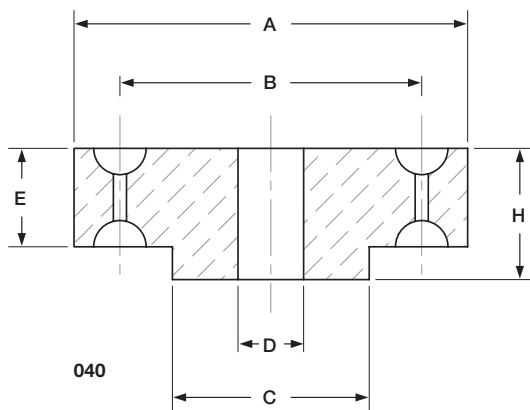


REF.	D	D	ø	NO. ø	F	L MAX
SDE	20	4	4	6	-	300
SDE	27	5	4	6	-	300
SDE	30	7	5	8	-	300
SDE	30	7	6.5	6	-	300
SDE	35	7	6	8	-	300
SDE	36	7	7	8	-	300
SDE	37	12	6	8	-	300
SDE	40	16	6	10	-	300
SDE	43	8	8	8	-	300
SDE	47	15	8	8	-	300
SDE	50	20	6.5	12	-	300
SDE	57	15	9	8	-	300
SDE	60	25	7	12	-	300
SDE	60	20	11	6	-	300
SDE	75	40	7	16	-	300
SDE	80	35	11	10	-	300
SDR	27	4	4	6	2	50-100
SDR	37	6	6	8	3	50-100
SDR	47	8	8	8	3	50-100
SDR	57	8	9	8	3	50-100
SDR	57	8	7	12	3	50-100
SDR	67	11	10	10	4	50-100
SDR	77	12	10	12	4	50-100

All dimensions in mm

Material A38E only.

# PLUGS FOR SAIDH ELEMENTS



REF.	A	B	C	D	E	F	H
TAP040-20-8	20	15	-	4	6	-	8
TAP040-30-11	30	21	6	3	7	-	11
TAP040-35-15	35	25	11	5	10	-	13
TAP040-40-15	40	29	11	6	10	-	15
TAP040-47-15	47	33	13	5	10	-	15
TAP040-50-15	50	38	18	6	10	-	15
TAP040-60-15	60	44	23	6	10	-	15
TAP040-70-16	70	58	34	8	15	-	22
TAP040-75-16	75	60	37	8	15	-	16
TAP042-37-12	37	26	-	6	-	3	12
TAP042-57-15	57	45	-	8	-	3	15
TAP042-67-15	67	50	-	12	-	4	15
TAP042-77-15	77	60	-	12	-	4	15

All dimensions in mm

Material A42P only.



