

## TABELA DE PREÇOS PARA PUNÇÕES E MATRIZES TIPO GEKA

ØA	B	ØC	Ref. Nº	PREÇO STANDARD (€) <sup>1</sup>			ØD	E	Ref. Nº	PREÇO STANDARD (€) <sup>1</sup>				
20	41	24	1	_,_ €	_,_ €	_,_ €	35	17	1	_,_ €	_,_ €	_,_ €	_,_ €	
							38	22	1A	_,_ €	_,_ €	_,_ €	_,_ €	
26	41	30	2	_,_ €	_,_ €	_,_ €	43	17	2	_,_ €	_,_ €	_,_ €	_,_ €	
27	53	30,5	5/27	_,_ €	_,_ €	_,_ €	50,8	25,5	5	_,_ €	_,_ €	_,_ €	_,_ €	
28	58	31,5	6	_,_ €	_,_ €	_,_ €	46	28,5	6	_,_ €	_,_ €	_,_ €	_,_ €	
31	64	35	8/31	_,_ €	_,_ €	_,_ €	60	32	8	_,_ €	_,_ €	_,_ €	_,_ €	
40	64	43,5	8/40	_,_ €	_,_ €	_,_ €								
26	73	29,5	10/26	_,_ €	_,_ €	_,_ €	73	32	10	_,_ €	_,_ €	_,_ €	_,_ €	
40	73	43,5	10/40	_,_ €	_,_ €	_,_ €								

## PUNÇÕES E MATRIZES DIAMETROS MAIORES ATÉ 100mm

ØA	B	ØC	Ref. Nº	PREÇO STANDARD (€) <sup>1</sup>			ØD	E	Ref. Nº	PREÇO STANDARD (€) <sup>1</sup>			
50	58	54	11	_,_ €	_,_ €	_,_ €	78	28,5	11	_,_ €	_,_ €	_,_ €	_,_ €
50	73	54	11A	_,_ €	_,_ €	_,_ €							
75	58	79	12	_,_ €	_,_ €	_,_ €	100	28,5	12	_,_ €	_,_ €	_,_ €	_,_ €
75	73	79	12A	_,_ €	_,_ €	_,_ €							
100	58	104	13	_,_ €	_,_ €	_,_ €	125	28,5	13	_,_ €	_,_ €	_,_ €	_,_ €
100	73	104	13A	_,_ €	_,_ €	_,_ €							

PARA QUALQUER VARIAÇÃO SEGUNDO AS MEDIDAS ESTABELECIDAS NA TABELA STANDARD, APLICAM-SE OS SEGUINTE PREÇOS ADICIONAIS: <sup>1</sup>

Ref. Punção e Matriz	TAXA PARA PUNÇÃO E MATRIZ APLICÁVEL A MEDIDAS ESPECIAIS			
Até ref. 10/40		_,_ €		_,_ €
Desde ref. Nº11 a Nº15		_,_ €		_,_ €

PODEMOS FABRICAR QUALQUER TIPO DE MEDIDA, FORMA OU TOLERANCIA. FORA DO PROGRAMA DE FABRICAÇÃO STANDARD. PARA FERRAMENTAS ESPECIAIS, CONSULTE-NOS!

**TABELA DE PREÇOS PARA PUNÇÕES E MATRIZES TIPO NITTO,  
KALTENBACH, PEDDINGHAUS**

				PREÇO STANDARD (€) <sup>1</sup>						PREÇO STANDARD (€) <sup>1</sup>			
ØA	B	ØC	Ref. Nº				ØD	E	Ref. Nº				
24	60	30	Nitto	---	---	---	42	17	Nitto	---	---	---	---
26	73,5		KBACH	---	---	---	50,7	25,6	KBACH	---	---	---	---
14,4	50		PDD1	---	---	---	63	32	KBACH	---	---	---	---
27	50	30,5	PDD4	---	---	---	46	28,5	PDD2	---	---	---	---
19	63	35	PDD2	---	---	---	50,8	25,4	PDD3	---	---	---	---
32	63		PDD5	---	---	---	63,5	32	PDD4	---	---	---	---
26,4	73	30,5	PDD3	---	---	---							
39	76		PDD6	---	---	---							

ØA	B	ØC	Ref. Nº	PREÇO STANDARD (€) <sup>1</sup>			ØD	E	Ref. Nº	PREÇO STANDARD (€) <sup>1</sup>			
100	37	104	14	---	---	---	140	31,7	14	---	---	---	---
100	31	104	15	---	---	---							
75	58	79	D12	---	---	---	200	44	15	---	---	---	---
---	---	---	---	---	---	---	100	28,5	D12	---	---	---	---
---	---	---	---	---	---	---							

**PUNÇÕES E MATRIZES DIAMETROS MAIORES ATÉ 100mm**

PARA QUALQUER VARIAÇÃO SEGUNDO AS MEDIDAS ESTABELECIDAS NA TABELA STANDARD, APLICAM-SE OS SEGUINTE PREÇOS ADICIONAIS: <sup>1</sup>

PODEMOS FABRICAR QUALQUER TIPO DE MEDIDA, FORMA OU TOLERANCIA. FORA DO PROGRAMA DE FABRICAÇÃO STANDARD. PARA FERRAMENTAS ESPECIAIS, CONSULTE-NOS!

Ref. Punção e Matriz	TAXA PARA PUNÇÃO E MATRIZ APLICÁVEL A MEDIDAS ESPECIAIS			
Até ref. 10/40		---		---
Desde ref. Nº11 a Nº15		---		---



PUNÇÕES FORMA REDONDA

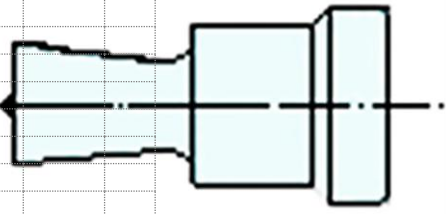
REF. Nº

mm	1	2	5/27	6	8/31	8/40	10/26	10/40	11
3	✓		✓	✓	✓		✓		
3.5	✓		✓	✓	✓		✓		
4	✓		✓	✓	✓		✓		
4.5	✓		✓	✓	✓		✓		
5	✓		✓	✓	✓		✓		
5.5	✓		✓	✓	✓		✓		
6	✓		✓	✓	✓		✓		
6.5	✓		✓	✓	✓		✓		
7	✓		✓	✓	✓		✓		
7.5	✓		✓	✓	✓		✓		
8	✓		✓	✓	✓		✓		
8.5	✓		✓	✓	✓		✓		
9	✓		✓	✓	✓		✓		
9.5	✓		✓	✓	✓		✓		
10	✓		✓	✓	✓		✓		
10.5	✓		✓	✓	✓		✓		
11	✓		✓	✓	✓		✓		
11.5	✓		✓	✓	✓		✓		
12	✓		✓	✓	✓		✓		
12.5	✓		✓	✓	✓		✓		
13	✓		✓	✓	✓		✓		
13.5	✓		✓	✓	✓		✓		
14	✓		✓	✓	✓		✓		
14.5	✓		✓	✓	✓		✓		
15	✓		✓	✓	✓		✓		
15.5	✓		✓	✓	✓		✓		
16	✓		✓	✓	✓		✓		
16.5	✓		✓	✓	✓		✓		
17	✓		✓	✓	✓		✓		
17.5	✓		✓	✓	✓		✓		
18	✓		✓	✓	✓		✓		
18.5	✓		✓	✓	✓		✓		
19	✓		✓	✓	✓		✓		
19.5	✓		✓	✓	✓		✓		
20	✓		✓	✓	✓		✓		
20.5		✓	✓	✓	✓			✓	
21		✓	✓	✓	✓			✓	
21.5		✓	✓	✓	✓			✓	
22		✓	✓	✓	✓			✓	
22.5		✓	✓	✓	✓			✓	
23		✓	✓	✓	✓			✓	
23.5		✓	✓	✓	✓			✓	
24		✓	✓	✓	✓			✓	
24.5		✓	✓	✓	✓			✓	
25		✓	✓	✓	✓			✓	
25.5		✓	✓	✓	✓			✓	
26		✓	✓	✓	✓			✓	
26.5			✓	✓	✓			✓	
27			✓	✓	✓			✓	
27.5				✓	✓			✓	
28				✓	✓			✓	✓
28.5					✓	✓		✓	✓
29					✓	✓		✓	✓
29.5					✓	✓		✓	✓
30					✓	✓		✓	✓
30.5					✓	✓		✓	✓
31					✓	✓		✓	✓
32					✓	✓		✓	✓
33					✓	✓		✓	✓
34					✓	✓		✓	✓
35					✓	✓		✓	✓
36					✓	✓		✓	✓
37					✓	✓		✓	✓
38					✓	✓		✓	✓
39					✓	✓		✓	✓
40					✓	✓		✓	✓

MATRIZES FORMA REDONDA

REF. Nº

mm	1	1A	2	5	6	8	10	11
3.2	✓	✓		✓	✓	✓		
3.7	✓	✓		✓	✓	✓		
4.2	✓	✓		✓	✓	✓		
4.7	✓	✓		✓	✓	✓		
5.2	✓	✓		✓	✓	✓		
5.7	✓	✓		✓	✓	✓		
6.2	✓	✓		✓	✓	✓		
6.7	✓	✓		✓	✓	✓		
7.2	✓	✓		✓	✓	✓		
7.7	✓	✓		✓	✓	✓		
8.2	✓	✓		✓	✓	✓		
8.7	✓	✓		✓	✓	✓		
9.2	✓	✓		✓	✓	✓		
9.7	✓	✓		✓	✓	✓		
10.2	✓	✓		✓	✓	✓		
10.7	✓	✓		✓	✓	✓		
11.2	✓	✓		✓	✓	✓		
11.7	✓	✓		✓	✓	✓		
12.2	✓	✓		✓	✓	✓		
12.7	✓	✓		✓	✓	✓		
13.2	✓	✓		✓	✓	✓		
13.7	✓	✓		✓	✓	✓		
14.2	✓	✓		✓	✓	✓		
14.7	✓	✓		✓	✓	✓		
15.2	✓	✓		✓	✓	✓		
15.7	✓	✓		✓	✓	✓		
16.2	✓	✓		✓	✓	✓		
16.7	✓	✓		✓	✓	✓		
17.2	✓	✓		✓	✓	✓		
17.7	✓	✓		✓	✓	✓		
18.2	✓	✓		✓	✓	✓		
18.7	✓	✓		✓	✓	✓		
19.2	✓	✓		✓	✓	✓		
19.7	✓	✓		✓	✓	✓		
20.2	✓	✓		✓	✓	✓		
20.7	✓	✓		✓	✓	✓	✓	
21.2			✓	✓	✓	✓	✓	
21.7			✓	✓	✓	✓	✓	
22.2			✓	✓	✓	✓	✓	
22.7			✓	✓	✓	✓	✓	
23.2			✓	✓	✓	✓	✓	
23.7			✓	✓	✓	✓	✓	
24.2			✓	✓	✓	✓	✓	
24.7			✓	✓	✓	✓	✓	
25.2			✓	✓	✓	✓	✓	
25.7			✓	✓	✓	✓	✓	
26.2			✓	✓	✓	✓	✓	
26.7			✓	✓	✓	✓	✓	
27.2				✓	✓	✓	✓	
27.7				✓	✓	✓	✓	
28.2				✓	✓	✓	✓	
28.7					✓	✓	✓	✓
29.2						✓	✓	✓
29.7						✓	✓	✓
30.2						✓	✓	✓
30.7						✓	✓	✓
31.2						✓	✓	✓
32.7						✓	✓	✓
33.7						✓	✓	✓
34.7						✓	✓	✓
35.7						✓	✓	✓
36.7						✓	✓	✓
37.7						✓	✓	✓
38.7						✓	✓	✓
39.7						✓	✓	✓
40.7						✓	✓	✓



**LISTA**  
MEDIDAS DE PUNÇÕES E  
MATRIZES STANDARD

MAQUINAS  
GEKA, DURMA, IMS,  
BLECKE, MUBEA  
SUNRISE E OUTRAS

PUNÇÕES FORMA REDONDA

REF. Nº			
mm	11	12	13
41	✓		
42	✓		
43	✓		
44	✓		
45	✓		
46	✓		
48	✓		
50	✓		
52		✓	
54		✓	
56		✓	
58		✓	
60		✓	
62		✓	
64		✓	
66		✓	
68		✓	
70		✓	
72		✓	
74		✓	
76			✓
78			✓
80			✓
82			✓
84			✓
86			✓
88			✓
90			✓
92			✓
94			✓
96			✓
98			✓
100			✓

PUNÇÕES FORMA OVAL-COLISA

REF. Nº												
mm	1	2	5/27	6	8/31	8/40	10/26	10/40	11	12	13	
7X10	✓		✓	✓	✓		✓					
7X15	✓		✓	✓	✓		✓					
7X20	✓		✓	✓	✓		✓					
9X13	✓		✓	✓	✓		✓					
9X19	✓		✓	✓	✓		✓					
9X25		✓	✓	✓	✓		✓					
11X17	✓		✓	✓	✓		✓					
11X23		✓	✓	✓	✓		✓					
13X18	✓		✓	✓	✓		✓					
13X22		✓	✓	✓	✓		✓					
13X27			✓	✓	✓		✓					
13X31				✓	✓		✓		✓			
15X20	✓		✓	✓	✓		✓					
15X24		✓	✓	✓	✓		✓					
15X27			✓	✓	✓		✓					
15X31				✓	✓	✓	✓		✓			
17X22		✓	✓	✓	✓		✓					
17X26		✓	✓	✓	✓		✓					
17X31				✓	✓		✓		✓			
17X40				✓	✓		✓		✓			
19X26			✓	✓	✓		✓		✓			
19X31				✓	✓		✓		✓			
19X40					✓		✓		✓			
21X27			✓	✓	✓		✓					
21X31				✓	✓		✓		✓			
21X40					✓		✓		✓			
25X45									✓			
25X50									✓			
27X63										✓		
27X75										✓		
30X87											✓	
30X100											✓	

MATRIZES FORMA REDONDA

REF. Nº			
mm	11	12	13
41,5	✓		
42,5	✓		
43,5	✓		
44,5	✓		
45,5	✓		
46,5	✓		
48,5	✓		
50,5	✓		
52,5		✓	
54,5		✓	
56,5		✓	
58,5		✓	
60,5		✓	
62,5		✓	
64,5		✓	
66,5		✓	
68,5		✓	
70,5		✓	
72,5		✓	
74,5		✓	
76,5			✓
78,5			✓
80,5			✓
82,5			✓
84,5			✓
86,5			✓
88,5			✓
90,5			✓
92,5			✓
94,5			✓
96,5			✓
98,5			✓
100,5			✓

MATRIZES FORMA OVAL-COLISA

REF. Nº												
mm	1	2	5	6	8	10	11	12	13			
7.7X10.7	✓		✓	✓	✓	✓						
7.7X15.7	✓		✓	✓	✓	✓						
7.7X20.7	✓		✓	✓	✓	✓						
9.7X13.7	✓		✓	✓	✓	✓						
9.7X19.7	✓		✓	✓	✓	✓						
9.7X25.7		✓	✓	✓	✓	✓						
11.7X17.7	✓		✓	✓	✓	✓						
11.7X23.7		✓	✓	✓	✓	✓						
13.7X18.7	✓		✓	✓	✓	✓						
13.7X22.7		✓	✓	✓	✓	✓						
13.7X27.7			✓	✓	✓	✓						
13.7X31.7				✓	✓	✓	✓					
15.7X20.7	✓		✓	✓	✓	✓						
15.7X24.7		✓	✓	✓	✓	✓						
15.7X27.7			✓	✓	✓	✓						
15.7X31.7				✓	✓	✓	✓					
17.7X22.7		✓	✓	✓	✓	✓						
17.7X26.7		✓	✓	✓	✓	✓						
17.7X31.7				✓	✓	✓	✓					
17.7X40.7				✓	✓	✓	✓					
19.7X26.7			✓	✓	✓	✓						
19.7X31.7				✓	✓	✓	✓					
19.7X40.7				✓	✓	✓	✓					
21.7X27.7			✓	✓	✓	✓						
21.7X31.7				✓	✓	✓	✓					
21.7X40.7				✓	✓	✓	✓					
25.5X45.5							✓					
25.5X50.5							✓					
27.5X63.5								✓				
27.5X75.5								✓				
30.5X87.5									✓			
30.5X100.5									✓			

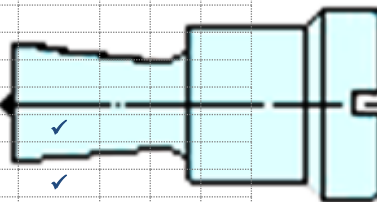
LISTA DE MEDIDAS

DE  
PUNÇÕES E MATRIZES

STANDARD

MAQUINAS

GEKA, DURMA, IMS, BLECKEN, MUBEA, SUNRISE E OUTRAS.



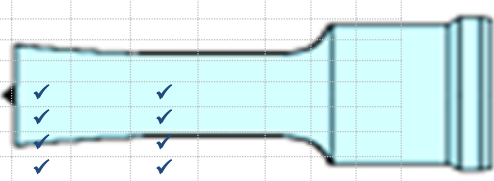


## PUNÇÕES FORMA REDONDA LONGOS

80mm

REF. Nº

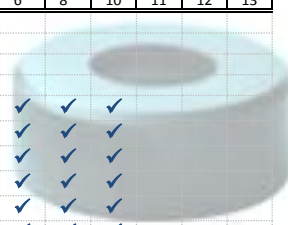
mm	1	2	5/27	6	8/31	8/40	10/26	10/40	11	12	13
8	✓		✓	✓	✓		✓				
9	✓		✓	✓	✓		✓				
10	✓		✓	✓	✓		✓				
11	✓		✓	✓	✓		✓				
12	✓		✓	✓	✓		✓				
13	✓		✓	✓	✓		✓				
14	✓		✓	✓	✓		✓				
15	✓		✓	✓	✓		✓				
16			✓	✓	✓			✓			
17		✓	✓	✓	✓			✓			
18		✓	✓	✓	✓			✓			
19		✓	✓	✓	✓			✓			
20			✓	✓	✓			✓	✓		
21				✓	✓			✓	✓		
22					✓	✓		✓	✓		
24						✓		✓	✓		
26						✓		✓	✓		
28						✓		✓	✓		



## MATRIZES FORMA REDONDA

REF. Nº

mm	1	2	5	6	8	10	11	12	13
8.7	✓		✓	✓	✓	✓			
9.7	✓		✓	✓	✓	✓			
10.7	✓		✓	✓	✓	✓			
11.7	✓		✓	✓	✓	✓			
12.7	✓		✓	✓	✓	✓			
13.7	✓		✓	✓	✓	✓			
14.7	✓		✓	✓	✓	✓			
15.7	✓		✓	✓	✓	✓			
16.7		✓	✓	✓	✓	✓			
17.7		✓	✓	✓	✓	✓			
18.7		✓	✓	✓	✓	✓			
19.7		✓	✓	✓	✓	✓			
20.7			✓	✓	✓	✓	✓		
21.7			✓	✓	✓	✓	✓		
22.7			✓	✓	✓	✓	✓		
24.7				✓	✓	✓	✓		
26.7					✓	✓	✓		
28.7					✓	✓	✓		

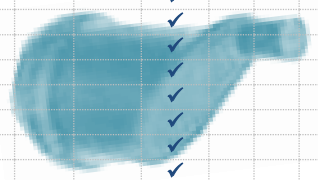


## LISTA DE MEDIDAS DE PUNÇÕES E MATRIZES STANDARD PARA MAQUINAS GEKA, DURMA, IMS, BLECKEN, MUBEA E SUNRISE

## PUNÇÕES EXCENTRICOS FORMA REDONDA

REF. Nº

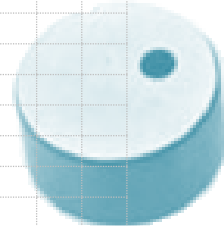
mm	1	5/27	6	8/31	10/40
5	✓	✓	✓	✓	✓
6	✓	✓	✓	✓	✓
7	✓	✓	✓	✓	✓
8	✓	✓	✓	✓	✓
9	✓	✓	✓	✓	✓
10	✓	✓	✓	✓	✓
11	✓	✓	✓	✓	✓
12	✓	✓	✓	✓	✓
13	✓	✓	✓	✓	✓
14	✓	✓	✓	✓	✓
15		✓	✓	✓	✓



## MATRIZES EXCENTRICOS FORMA REDONDA

REF. Nº

mm	1	5	6	8	10
5.7	✓	✓	✓	✓	✓
6.7	✓	✓	✓	✓	✓
7.7	✓	✓	✓	✓	✓
8.7	✓	✓	✓	✓	✓
9.7	✓	✓	✓	✓	✓
10.7	✓	✓	✓	✓	✓
11.7	✓	✓	✓	✓	✓
12.7	✓	✓	✓	✓	✓
13.7	✓	✓	✓	✓	✓
14.7	✓	✓	✓	✓	✓
15.7	✓	✓	✓	✓	✓

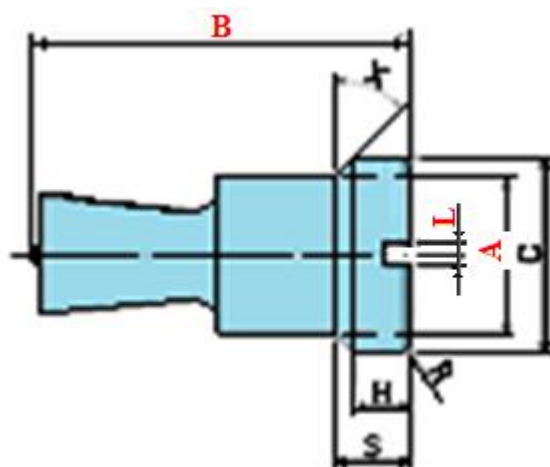
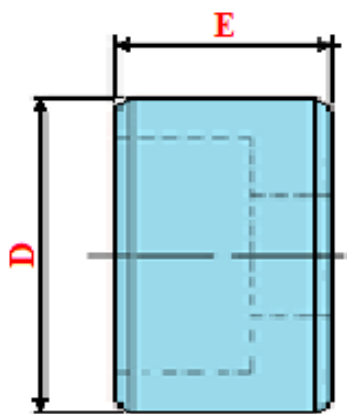


## MEDIDAS IMPORTANTES PARA IDENTIFICAÇÃO DO PUNÇÃO E MATRIZ

**PUNÇÃO:** A, B

NO CASO DE PUNÇÕES OVAIS, QUADRADOS, RETANGULARES, ETC. A MEDIDA L É IMPORTANTE POR CAUSA DO POSICIONAMENTO.

**MATRIZ:** D, E



Exemplo:

FORMA	Ø A	B	Ø C	L	Ø D	E	Ref. N°	Maquina	Punções/Matriz	Qt.
	31	64					8/31	GEKA	Punção Ø14,5	
					60	32	8	GEKA	Matriz Ø14,5	
OVAL	27	53	30,5	3			5/27	PEDIKAT360	Punção 14x26	
OVAL	27	53	30,5	3			5/27	PEDIKAT360	Punção 13x27	

(Não se deve furar chapa com espessura superior a 2/3 Ø do punção)



Qual é a diferença entre punção e matriz que se deve levar em conta.

Para que o furo seja limpo e não fique rebarba, para uma mais longa durabilidade do punção e matriz.

As matrizes são feitas geralmente com a folga de 0,2mm, 0,7mm e 1,2mm.

Diverge consoante a espessura do material a furar e o diâmetro do furo.

MEDIDA DO PUNÇÃO	ATÉ Ø5 mm	DE Ø 5mm ATÉ Ø 22mm	DE Ø 22mm ATÉ Ø 39,5mm	MAIS DE Ø 39,5mm
FOLGA NA MATRIZ	0,2mm	0,7mm	1,2mm	0,2mm
ESPESSURA DO MATERIAL	ATÉ 4mm	DE 4mm ATÉ 9mm	DE 9mm ATÉ 14mm	ATÉ 4mm

EXEMPLO:

Para um furo Ø25mm

ESPESSURA DO MATERIAL	ATÉ 4mm	DE 4mm ATÉ 9mm	DE 9mm ATÉ 14mm	DE 19mm ATÉ 24mm
PUNÇÃO	Ø25mm	Ø25mm	Ø25mm	Ø25mm
FOLGA NA MATRIZ	0,2mm	0,7mm	1,2mm	2,2mm
ØDO FURO NA MATRIZ	25,2mm	25,7mm	26,2mm	27,2mm

CALCULO A FAZER PARA SABER AS TONELADAS NECESSARIAS PARA O PUNCIONAMENTO

$$\text{TON} = P \times E \times D$$

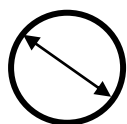
TON = Toneladas necessárias para efetuar o puncionado

P = Perímetro do furo a realizar

E = Espessura do material a furar

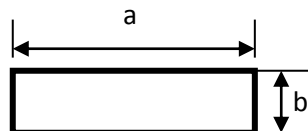
D = Dureza do material em Kg/mm<sup>2</sup>

Perímetros de furos mais usados

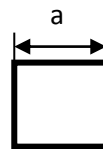


$$P = \pi \times \text{Ø}$$

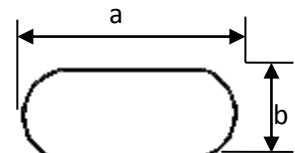
$$\pi = 3,1416$$



$$P = 2 \times a + 2 \times b$$



$$P = 4 \times a$$



$$P = (\pi \times b) + 2 \times (a - b)$$

(D) DUREZA DE MATERIAL EN Kg/mm<sup>2</sup>

COBRE 22Kg/mm<sup>2</sup>

FERRO 45Kg/mm<sup>2</sup>

INOX 85Kg/mm<sup>2</sup>

Caso a maquina não tenha tonelagem suficiente deve-se utilizar punções com corte inclinado