






Page		SC Pentagon SRL
58	General	Tel/fax: 0236/412.088
59	Technical Information	Depozite: Galati, Constanta, Tulcea si Braila
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60		Tungsten carbide engraving cutters
62		HSS engraving cutters
64		Tungsten carbide cutters, spiral flute type

Engraving cutters are available in the following tungsten carbide grade:

K 10 F

Micro grain carbide for machining all materials, for machining steel, cast steel, non-ferrous metals and plastics.

Extra long life!

Engraving cutters of High Speed Steel (HSS) are available in the following special HSS-qualities

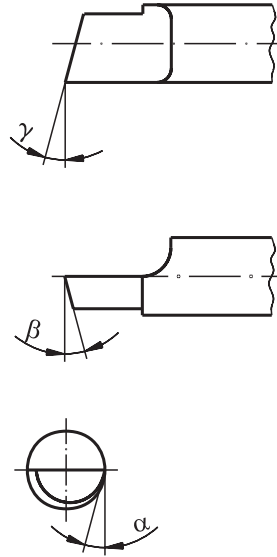
HSS-50

for machining high-tensile and high-grade carbide materials and heat resistant qualities.

HSS-60

applications similar to HSS-50, but with extended life. Performance is improved when used in conjunction with a high quality cutting oil.

We supply our engraving cutters semi-finished with rough-ground profile (+0,1 mm) or finish ground to your specification.



Engraving Cutters – Recommendation for various applications

For optimal results the cutting and lead angles have to suit the material to be machined. The values in the tables are recommendations.

Recommended cutting and lead angles

Material to be machined

- Cast iron, cast steel
- Brass, aluminium
- Plastics, reinforced and non-reinforced
- Light metals, copper, gold, silver

Tungsten Carbide			HSS		
$\sphericalangle \alpha$	$\sphericalangle \beta$	$\sphericalangle \gamma$	$\sphericalangle \alpha$	$\sphericalangle \beta$	$\sphericalangle \gamma$
25°	15°	5°	25°	15°	5°
30°	15°	5°	30°	15°	5°
35°	15°	5°	35°	15°	5°
30°	15°	5°	30°	15°	5°

Recommended cutting speeds in m/min

Material

- Cast iron, cast steel
- Steel up to 900 N/mm²
- Steel above 900 N/mm²
- Brass, aluminium
- Plastics, reinforced and non-reinforced

Tungsten Carbide	HSS	
K 10 F	HSS-50	HSS-60
60-100	50-70	50-70
120-160	40-70	40-70
50-70	–	25-40
200-400	200-250	200-250
200-600	200-300	200-300

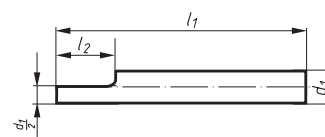
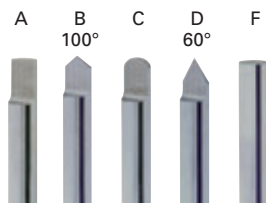
Recommended feed rates f_z in mm

Material

- Cast iron, cast steel
- Steel up to 900 N/mm²
- Steel above 900 N/mm²
- Brass, aluminium
- Plastics, reinforced and non-reinforced

0,04-0,1
0,05-0,08
0,04-0,08
0,08-0,15
0,05-0,20

60 Engraving cutters of solid carbide



Engraving cutters

Description	d ₁ mm	l ₁ mm	l ₂ mm	Available profiles in K10F					
				A	B	C	D	E	F
HGA 02.040	2	40	6	■	○	○	○	○	○
HGA 03.040	3	40	6	■	■	○	■	○	■
HGA 03.060	3	60	6	○	○	○	○	○	○
HGA 03.100	3	100	6	○	○	○	○	○	○
HGA 03.110	3,17	110	15	○	○	○	○	○	○
HGA 04.040	4	40	6	■	○	○	■	○	■
HGA 04.060	4	60	6	■	■	○	■	○	■
HGA 04.100	4	100	6	○	○	○	■	○	■
HGA 04.160	4,36	160	15	○	○	○	○	○	○
HGA 05.050	5	50	8	■	○	○	○	○	○
HGA 05.100	5	100	8	■	○	○	○	○	○
HGA 06.070	6	70	8	■	■	■	■	○	■

Packing unit: 1 pc.

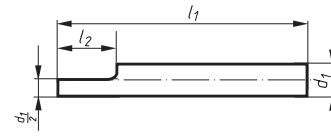
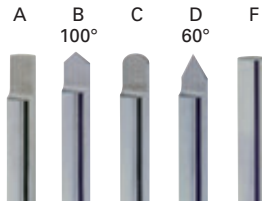
Ordering example: HGA 06.070 Profil D, K10F

d¹/₂ as per your request

l₂ does not apply to profile F

Tolerance of semi-finished cutting edge +0,1, finish ground on request

Please specify width of cutting edge for profile E



Engraving cutters

Description	d ₁ mm	l ₁ mm	l ₂ mm	Available profiles in K10F					
				A	B	C	D	E	F
HGA 06.100	6	100	8	■	○	○	■	○	○
HGA 06.160	6,35	160	15	○	○	○	○	○	○
HGA 08.080	8	80	12	■	○	■	■	○	○
HGA 08.100	8	100	12	■	○	○	○	○	○
HGA 08.150	8	150	12	○	○	○	○	○	○
HGA 10.080	10	80	14	■	○	○	○	○	○
HGA 10.100	10	100	14	■	○	○	○	○	○
HGA 10.150	10	150	14	○	○	○	○	○	○
HGA 12.080	12	80	16	■	○	○	○	○	○
HGA 12.100	12	100	16	■	○	○	○	○	○
HGA 12.150	12	150	16	○	○	○	○	○	○

Packing unit: 1 pc.

Ordering example: HGA 06.100 Profil D, K10F

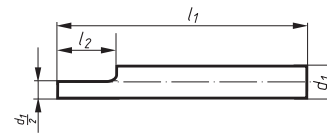
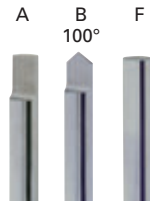
d 1/2 as per your request

l₂ does not apply to profile F

Tolerance of semi-finished cutting edge +0,1, finish ground on request

Please specify width of cutting edge for profile E

62 Engraving cutters of HSS



Engraving cutters

Description	d ₁ mm	l ₁ mm	l ₂ mm	Available profiles in HSS-50			Available profiles in HSS-60		
				A	B	F	A	B	F
SGA 02.040	2,5	40	6	■	○	○	○	○	○
SGA 03.040	3	40	6	■	○	○	■	○	○
SGA 04.060	4	60	10	■	○	■	■	○	■
SGA 04.100	4	100	10	○	○	○	○	○	○
SGA 05.060	5	60	10	○	○	○	○	○	○
SGA 06.080	6	80	14	■	■	■	■	○	■
SGA 06.100	6	100	14	○	○	○	■	○	○
SGA 06.160	6	160	14	○	■	■	○	○	○
SGA 08.090	8	90	16	○	○	○	■	○	■

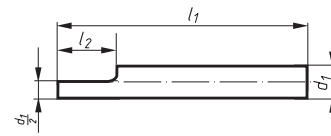
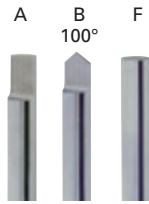
Packing unit: 5 pcs. per type

Ordering example: SGA 06.080 Profil A, HSS 50

d^{1/2} as per your request

l₂ does not apply to profile F

Tolerance of semi-finished cutting edge + 0,1 mm, finish ground on request.



Engraving cutters

Description	d ₁ mm	l ₁ mm	l ₂ mm	Available profiles in HSS-50			Available profiles in HSS-60		
				A	B	F	A	B	F
SGA 08.125	8	125	16	■	○	■	○	○	○
SGA 10.125	10	125	18	■	○	■	○	○	○
SGA 10.160	10	160	18	■	○	○	○	○	○
SGA 12.125	12	125	18	■	○	○	○	○	○
SGA 12.140	12	140	18	○	○	○	○	○	○
SGA 12.160	12	160	18	○	○	○	○	○	○
SGA 14.140	14	140	20	○	○	○	○	○	○
SGA 16.160	16	160	20	○	○	○	○	○	○
SGA 20.200	20	200	20	○	○	○	○	○	○

Packing units: up to d₁ 10 mm = 10 pc. per type, from d₁ 12 mm = 5 pc. per type

Ordering example: SGA 10.125 Profil A, HSS 50

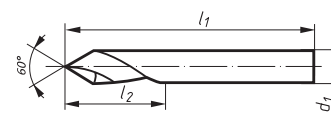
d¹/₂ as per your request

l₂ does not apply to profile F

Tolerance of semi-finished cutting edge + 0,1 mm, finish ground on request.

64 Engraving cutters of solid carbide

Engraving cutters of solid carbide, spiral fluted for engraving of non-ferrous metals and plastics with minimum generation of burr



Description	d ₁ mm	l ₁ mm	l ₂ mm	Engraving cutters
HGS 03.040	3	40	15	■
HGS 04.040	4	40	20	■
HGS 06.050	6	50	22	■

Relief-grinding 25° Packing unit: 1 pc.

Ordering example: HGS 03.040

Quality K 10 F = micro grain tungsten carbide

Other dimensions available on request



We are pleased to help you

With your assistance, our product specialists will develop a range of tools to solve your particular problem.