

NEW INTRODUCTION

ARNO®
WERKZEUGE

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ARNO® SA-Part-off and Grooving system

- Monoblock design
- Double edged inserts
- Active insert clamping
- Special geometries for machine performance and optimum swarf control
- Accurate insert positioning
- Very economical and with easy handling
- Maximum productivity

Reduce manufacturing costs with the new

ARNO® SA-Parting-off system

for radial grooving and parting off



SA-Grooving system

Introduction >>

Monoblock holder "SA" double sided inserts in sizes SA16, SA24 and SA35 with widths of 2 and 3 mm.

Economical solution for radial grooving as well as parting off up to 65 mm diameter.

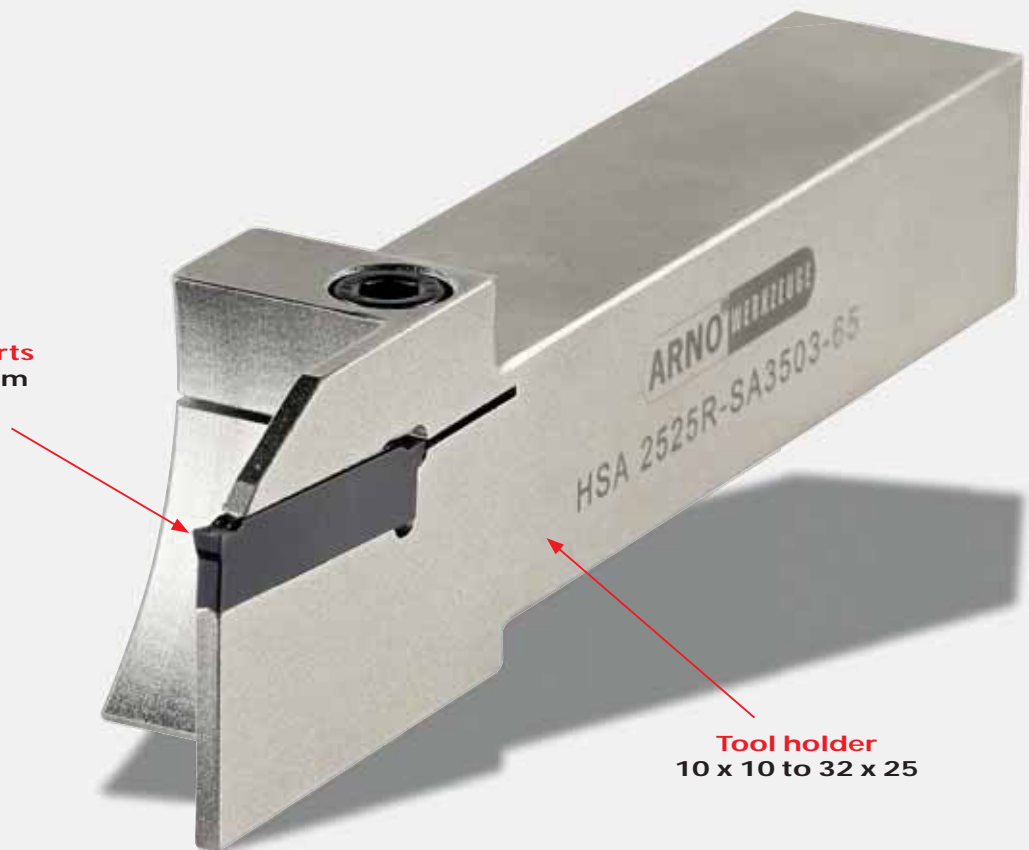
Grooving



Parting-Off



Indexable inserts
EB = 2 and 3 mm



Tool holder
10 x 10 to 32 x 25

Best quality with the latest technology... « The Facts »

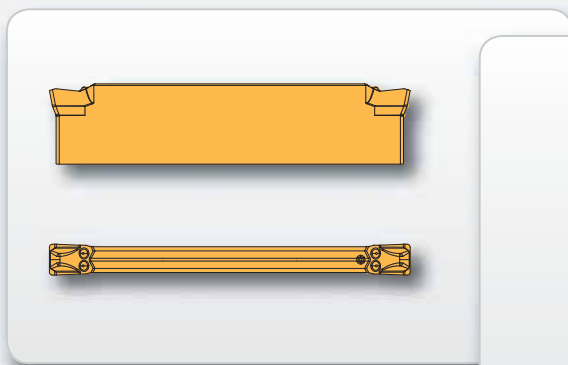
- Monoblock design. ➤ Reliable and user friendly – only one spare part.
- Active insert clamping with fixed stop. ➤ Accurate insert positioning. Pulling out the insert is not possible.
- Double edged inserts. ➤ High productivity.
- Directly pressed inserts with dedicated geometries. ➤ Cost efficient and optimum solution for reliable groove production.

Designation code - **Holder** »



HSA	2020R	—	SA	3503	—	65
H = Holder S = Grooving A = External	Shank size Version: R=Right hand L=Left hand		Insert External grooving	Insert size 35=Insert length 03= EB [mm]		Part-off diameter [mm]

Designation code - **Inserts** »

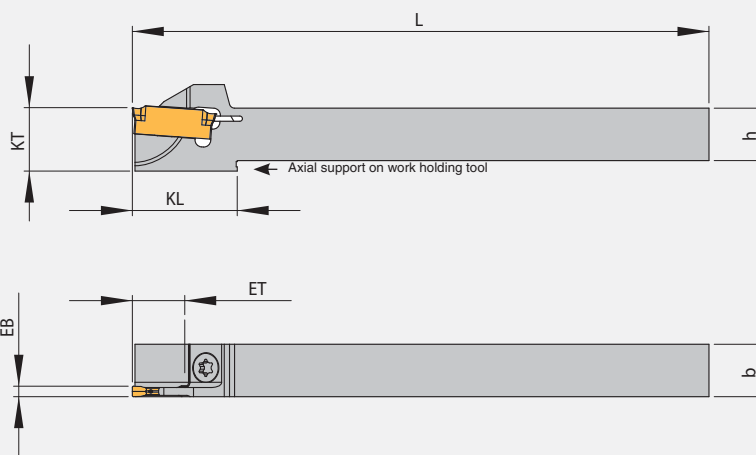
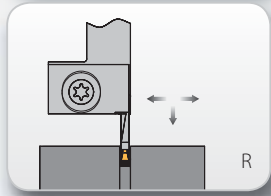
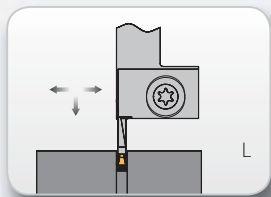


SA35	—	30	03	N	—	T1	AP	5020
SA = External grooving 35 = Insert length		EB = Inserts width [mm] 30 = 3mm	Corner radius R = 0,3	N = Neutral R = Right L = Left		Chipbreaker	ARNO®- Application area	Grade code (ISO)

Information: See page 7 for grade description (AP5020 = PVD coated, AP2220 = CVD coated).

SA-Grooving system

Tool holder >> for Sliding Head Auto lathes



Right hand version shown

Tool holder

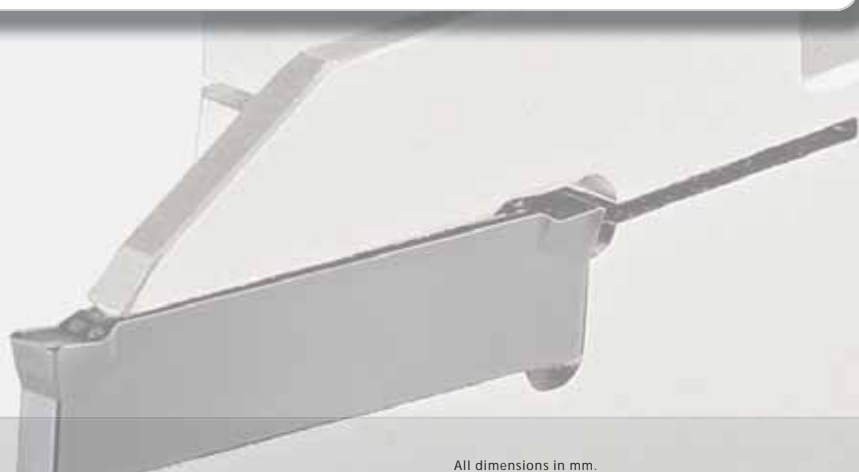
Designation	EB	ET	D _{max.}	D _R	h	b	L	KL	KT	Inserts
HSA 1010L-SA1602-20	2,0	10,0	20	32	10	10	110	20	12	SA16-2002N.....
HSA 1010R-SA1602-20	2,0	10,0	20	32	10	10	110	20	12	SA16-2002N.....
HSA 1212L-SA1602-20	2,0	10,0	20	32	12	12	110	-	-	SA16-2002N.....
HSA 1212R-SA1602-20	2,0	10,0	20	32	12	12	110	-	-	SA16-2002N.....
HSA 1616L-SA1602-20	2,0	10,0	20	32	16	16	110	-	-	SA16-2002N.....
HSA 1616R-SA1602-20	2,0	10,0	20	32	16	16	110	-	-	SA16-2002N.....
HSA 1616L-SA1602-26	2,0	13,0	26	32	16	16	110	-	-	SA16-2002N.....
HSA 1616R-SA1602-26	2,0	13,0	26	32	16	16	110	-	-	SA16-2002N.....
HSA 1616L-SA1603-26	3,0	13,0	26	32	16	16	110	-	-	SA16-3003N.....
HSA 1616R-SA1603-26	3,0	13,0	26	32	16	16	110	-	-	SA16-3003N.....
HSA 1616L-SA2402-32	2,0	16,0	32	32	16	16	110	-	-	SA24-2002N.....
HSA 1616R-SA2402-32	2,0	16,0	32	32	16	16	110	-	-	SA24-2002N.....
HSA 1616L-SA2403-32	3,0	16,0	32	32	16	16	110	-	-	SA24-3003N.....
HSA 1616R-SA2403-32	3,0	16,0	32	32	16	16	110	-	-	SA24-3003N.....

D_{max.} = Maximum diameter in solid

D_R = Maximum diameter for tube material

Spare parts

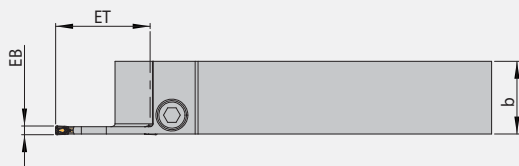
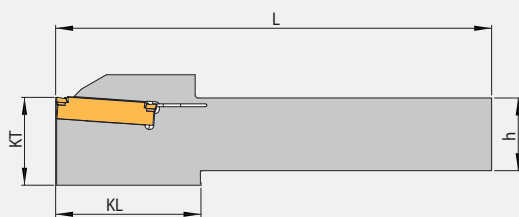
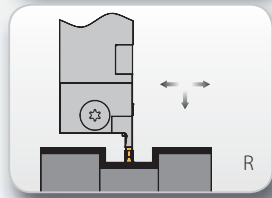
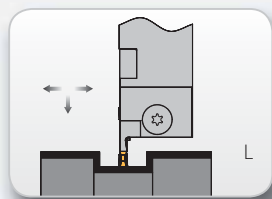
Holder	Screw	Key
HSA 1010...-SA16...	AS0022	KS8000
HSA 1212...-SA16...	AS0022	KS8000
HSA 1616...-SA16...	AS0022	KS8000
HSA 1616...-SA24...	AS0022	KS8000



AR
HSA 252

SA-Grooving system

Tool holder >> Monoblock



Right hand version shown

Tool holder

Designation	EB	ET	D _{max.}	D _R	h	b	L	KL	KT	Inserts
HSA 1616L-SA2402-44	2,0	22,0	44	61	16	16	125	40	20	SA24-2002N.....
HSA 1616R-SA2402-44	2,0	22,0	44	61	16	16	125	40	20	SA24-2002N.....
HSA 1616L-SA2403-44	3,0	22,0	44	61	16	16	125	40	20	SA24-3003N.....
HSA 1616R-SA2403-44	3,0	22,0	44	61	16	16	125	40	20	SA24-3003N.....
HSA 2020L-SA2402-44	2,0	22,0	44	61	20	20	125	40	20	SA24-2002N.....
HSA 2020R-SA2402-44	2,0	22,0	44	61	20	20	125	40	20	SA24-2002N.....
HSA 2020L-SA2403-44	3,0	22,0	44	61	20	20	125	40	20	SA24-3003N.....
HSA 2020R-SA2403-44	3,0	22,0	44	61	20	20	125	40	20	SA24-3003N.....
HSA 2020L-SA3502-52	2,0	26,0	52	68	20	20	150	44	30	SA35-2002N.....
HSA 2020R-SA3502-52	2,0	26,0	52	68	20	20	150	44	30	SA35-2002N.....
HSA 2020L-SA3503-52	3,0	26,0	52	68	20	20	150	44	30	SA35-3003N.....
HSA 2020R-SA3503-52	3,0	26,0	52	68	20	20	150	44	30	SA35-3003N.....
HSA 2020L-SA3502-65	2,0	32,5	65	80	20	20	150	50	30	SA35-2002N.....
HSA 2020R-SA3502-65	2,0	32,5	65	80	20	20	150	50	30	SA35-2002N.....
HSA 2020L-SA3503-65	3,0	32,5	65	80	20	20	150	50	30	SA35-3003N.....
HSA 2020R-SA3503-65	3,0	32,5	65	80	20	20	150	50	30	SA35-3003N.....
HSA 2525L-SA2402-44	2,0	22,0	44	61	25	25	150	40	25	SA24-2002N.....
HSA 2525R-SA2402-44	2,0	22,0	44	61	25	25	150	40	25	SA24-2002N.....
HSA 2525L-SA2403-44	3,0	22,0	44	61	25	25	150	40	25	SA24-3003N.....
HSA 2525R-SA2403-44	3,0	22,0	44	61	25	25	150	40	25	SA24-3003N.....
HSA 2525L-SA3502-52	2,0	26,0	52	68	25	25	150	44	30	SA35-2002N.....
HSA 2525R-SA3502-52	2,0	26,0	52	68	25	25	150	44	30	SA35-2002N.....
HSA 2525L-SA3503-52	3,0	26,0	52	68	25	25	150	44	30	SA35-3003N.....
HSA 2525R-SA3503-52	3,0	26,0	52	68	25	25	150	44	30	SA35-3003N.....
HSA 2525L-SA3502-65	2,0	32,5	65	80	25	25	150	50	30	SA35-2002N.....
HSA 2525R-SA3502-65	2,0	32,5	65	80	25	25	150	50	30	SA35-2002N.....
HSA 2525L-SA3503-65	3,0	32,5	65	80	25	25	150	50	30	SA35-3003N.....
HSA 2525R-SA3503-65	3,0	32,5	65	80	25	25	150	50	30	SA35-3003N.....
HSA 3225L-SA2403-44	3,0	22,0	44	61	32	25	170	40	32	SA24-3003N.....
HSA 3225R-SA2403-44	3,0	22,0	44	61	32	25	170	40	32	SA24-3003N.....
HSA 3225L-SA3503-65	3,0	32,5	65	80	32	25	170	50	32	SA35-3003N.....
HSA 3225R-SA3503-65	3,0	32,5	65	80	32	25	170	50	32	SA35-3003N.....

D_{max.} = Maximum diameter in solid

D_R = Maximum diameter for tube material

Spare parts

Holder

Screw

HSA 1616... to 3225...-SA24... D_{min.} 44

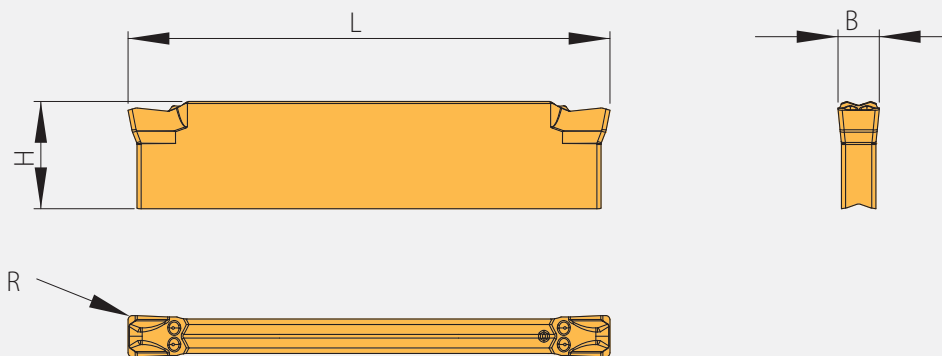
DIN 913 - M5x16 - 12,9

HSA 2020... to 3225...-SA35... D_{min.} 52 and 65

DIN 913 - M6x20 - 12,9

SA-Grooving system

Indexable inserts >>



Version SA16...

Designation	B ± 0,04	L	R	H	Grade	
					PVD-coated	CVD-coated
					AP5020	AP2220
SA16-2002N-F1	2,0	16	0,2	5,5	●	●
SA16-2002N-T1	2,0	16	0,2	5,5	●	●
SA16-3003N-T1	3,0	16	0,3	5,5	●	●
SA16-3003N-M1	3,0	16	0,3	5,5	●	●
				P	●	●
				M	○	○
				K	○	●
				N	○	○
				S	○	○
				N	○	○

Version SA24...

Designation	B ± 0,04	L	R	H	Grade	
					PVD-coated	CVD-coated
					AP5020	AP2220
SA24-2002N-F1	2,0	24	0,2	5,5	●	●
SA24-2002N-T1	2,0	24	0,2	5,5	●	●
SA24-3003N-T1	3,0	24	0,3	5,5	●	●
SA24-3003N-M1	3,0	24	0,3	5,5	●	●
				P	●	●
				M	○	○
				K	○	●
				N	○	○
				S	○	○
				N	○	○

Version SA35...

Designation	B ± 0,04	L	R	H	Grade	
					PVD-coated	CVD-coated
					AP5020	AP2220
SA35-2002N-F1	2,0	35	0,2	7,5	●	●
SA35-2002N-T1	2,0	35	0,2	7,5	●	●
SA35-3003N-T1	3,0	35	0,3	7,5	●	●
SA35-3003N-M1	3,0	35	0,3	7,5	●	●
				P	●	●
				M	○	○
				K	○	●
				N	○	○
				S	○	○
				N	○	○

● Main application

○ Secondary application

SA-Grooving system

Chipbreakers >>

F1



Very soft cutting geometry

For low to medium strength materials with low built-up edge tendency

T1



Very good swarf control and formation

Universal geometry for steel and stainless steel machining, also for thin-walled components.

M1



Geometry with small negative chamfer

- for medium to high strength materials
- suitable for all steels (stainless and cast)
- first choice where cutting conditions are solid

Grade description

AP5020 >>

PVD coated carbide grade

Fine-grain carbide + TiAlN

A universal grade for low to medium cutting speed. Main application areas are steel and stainless steel, but also suitable for part-off and grooving of high temperature alloys and non ferrous materials.

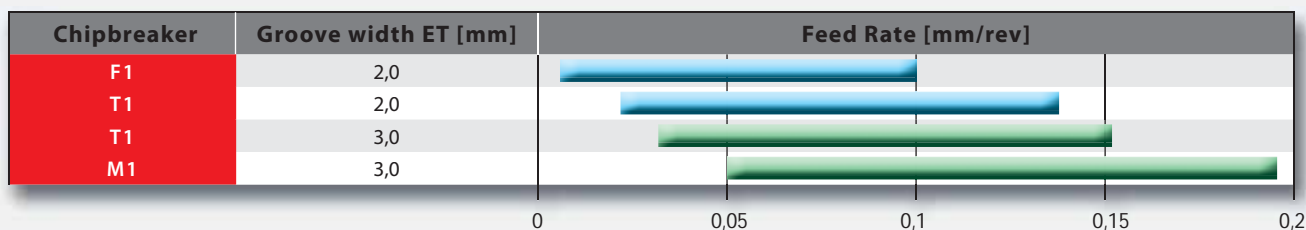
AP2220 >>

CVD coated carbide grade

Fine-grain carbide + multilayer carbide

Grade with excellent combination of wear resistance and cutting edge stability. Main application area is alloy steel and cast materials. But under stable conditions also suitable for stainless steel at medium to high cutting speeds

Application recommendations >>



SA-Grooving system

Recommended Cutting data >>

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ISO	Material	VDI 3323 Group	Brinell hardness HB	Cutting speed v_c [m/min]			
				AP5020	AP2220		
P	Unalloyed steel and cast steel	< 0,15% C hardened and tempered	1	125	120-220	130-250	
		0,15 - 0,45 % C hardened and tempered	2	150 - 250	80-150	110-180	
		> 0,45 % C hardened and tempered	3	300	60-140	70-150	
	Low alloyed steel and cast steel	annealed	6	180	80-170	120-190	
			7/8	250 - 300	60-130	110-150	
			9	350	60-120	70-130	
		hardened and tempered	10	200	80-140	90-140	
			11	350	50-120	70-130	
			12	200	60-170	110-200	
	High alloyed steel, high alloyed tool steel and cast steel	ferritic, annealed	12	200	60-170	110-200	
		martensitic, hardened and tempered	13	325	50-100	60-130	
	M	Stainless steel	ferritic, martensitic annealed	14	200	60-180	100-200
			austenitisch, chilled	14	180	50-150	80-170
Duplex, chilled			14	230	50-100	60-120	
artensitisch/austenitisch, chilled			14	330	50-90	120-150	
K	Cast iron	pearlitic/ferritic	15	180		100-160	
		pearlitic/martensitic	16	260		130-200	
	Cast iron with nodular graphite	ferritic	17	160		100-160	
pearlitic		18	-		120-220		
N	Malleable cast iron	ferritic	19	130		90-180	
		pearlitic	20	230			
N	Aluminium alloys. long chipping	not heat treatable	21	60	100-500		
		heat treatable, heat treated	22	100	100-300		
	Casted aluminium alloys	≤ 12% Si, heat treated	23	80	100-500		
		≤ 12% Si, heat treatable, heat treated	24	90	100-300		
		≤ 12% Si, not heat treatable	25	130	100-200		
	Copper and copper alloys, (Brass / Bronze)	Lead alloys, Pb > 1%	26	-	100-500		
		Brass, Bronze	27	-	100-500		
		Aluminium bronze	28	90	100-300		
		Copper and elektrolyte copper	29	100	100-300		
	Non ferrous materials	Duroplaste	29	100	80-180		
Re-inforced plastics		29	-	60-150			
Hard rubber		30	-	100-220			
S	High temperature resistant alloys	Fe-alloyed, annealed	31	200	20-50		
		Fe-alloyed, heat treated	21	280	20-40		
		Ni- oder Co-alloyed, annealed	33	250	15-25		
		Ni- oder Co-alloyed 30-58 HRC, casting	34	-	10-20		
		Ni- oder Co-alloyed 1500-2200 Nmm ² , heat treated	35	-	10-20		
Titanium alloys Alpha- and Beta-alloys	Pure titan	36	R _m 440	50-120			
	heat treated	37	R _m 1050	30-50			
H	Hardened steel	hardened and tempered	36	55 HRC			
		hardened and tempered	39	60 HRC			
	Hard cast iron	casting	40	400			
	Hardened cast iron	hardened and tempered	40	55 HRCX			

The data given is only approximate values. It can be necessary to adjust this data to the individual machining operation.

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