

ARNO[®]**WERKZEUGE**

We have a passion for precision.

ARNO[®] NEWS 2014

Grooving | Turning | Milling | Drilling

**Product highlights
2014**ARNO[®]-AKB drilling system:**Short hole drill for
performance drilling!**

See more on page 3



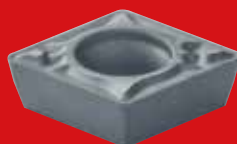
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Inserts with new -ST
geometry and new
AP5440 grade
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Dear customer

As manufacturer of standard and special tools ARNO®-Werkzeuge appreciates very well the challenges you face in your production. This knowledge, as well as the continual customer orientated product development inspire our extensive range of cutting tools and ensure that we always offer a productive solution.

With this brochure we would like to introduce our newest products for drilling, turning, grooving and part-off as well as milling. In addition to an extension of the diameter range and new insert geometries for our drilling systems this flyer also introduces a new range of CERMET inserts for turning and new holders and inserts for the SA-Grooving and parting system, new Clip-Groove® holders and inserts with extended groove depth potential as well as new inserts for the FTA face milling cutters.

We also offer you access to our comprehensive service package. Benefit from our dedicated customer solutions, reliable stock availability, overnight deliveries and competent and local sales engineers. Should you have any questions about our products or our company please feel free to contact us.

Your ARNO team

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MILLING

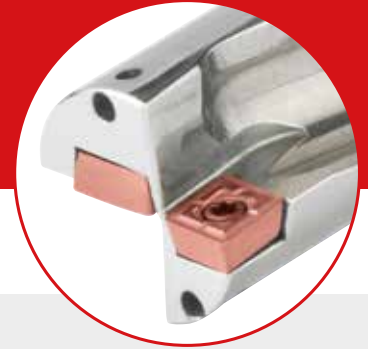
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For further information please ask for our complete catalogue.

AKB Short hole drill

Product expansion



With features such as strong insert cutting edges and corner radius, soft cutting action and high feed rate potential the ARNO® AKB drill offers fantastic productivity prospects. The drill is excellent for interrupted cutting and drilling out chambers. In order to optimize the swarf evacuation of the AKB5 (5 x D drills) the swarf chambers were modified. The AKB drill deflects positively on impact and therefore leaves no retraction marks.

Overview of all news

With the new AKB5 we have added drills with drill depth potential up to 5 x D.

Furthermore we now offer drills up to 55 mm diameter in the AKB2 and AKB3 range.

- AKB2 – Ø 46 – 55 mm
(standard range from Ø 14 – 55 mm)
- AKB3 – Ø 46 – 55 mm
(standard range from Ø 14 – 55 mm)
- New inserts XDMT 15... in geometries -BS,-BM, -BR and -BAL / coated and uncoated
- New AKB5 (5 x D) – Ø 17 – 35 mm

Grade description

Carbide grade coated

AK5020

PVD-Multilayer coating

Main grade for drilling cast materials. Extreme performance due to combination of fine grain substrate and coating. For use with medium cutting speeds under normal to stable machine conditions.

AP5030

PVD-Multilayer coating

A tougher universal grade in the P30 – P35 ISO area. Main application area is steel drilling but also suitable for stainless steel. Can also be used for interrupted cutting

Carbide grade uncoated

AK1010

The main grade for drilling GG cast iron, aluminium, aluminium alloys, copper and copper alloys as well as bronze and brass at medium data and in good machine conditions.

Geometry description

-BS

Low feed rates / swarf control

- Good swarf control at low feed rate
- Excellent hole quality
- High surface finish

-BM

Universal application

- General purpose geometry
- Good swarf control
- Generates low cutting forces and low to medium feed rates

-BR

Strong cutting edge for higher feed rates

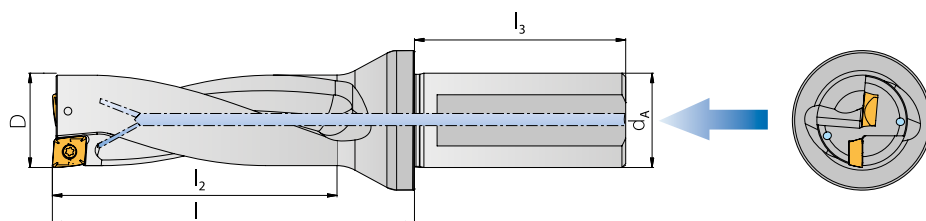
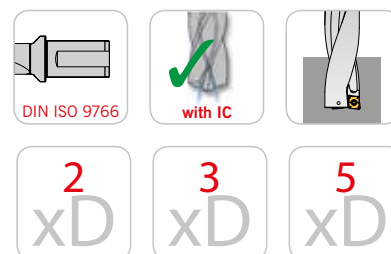
- Strengthened cutting edges for high feed rates
- Absorbs vibrations well
- Reduced noise

-BAL

For drilling aluminium

- Good swarf control
- High resistance to build up edge

2 × D / 3 × D / 5 × D

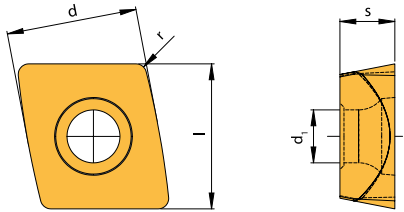


Designation	D	l	l ₂	l ₃	d _A	Insert	News
AKB2-4600R40-15	46	127	92	70	40	XDMT 15...	New diameter AKB2: Ø 46 – 55 mm
AKB2-4700R40-15	47	129	94	70	40	XDMT 15...	
AKB2-4800R40-15	48	131	96	70	40	XDMT 15...	
AKB2-4900R40-15	49	133	98	70	40	XDMT 15...	
AKB2-5000R40-15	50	135	100	70	40	XDMT 15...	
AKB2-5100R40-15	51	137	102	70	40	XDMT 15...	
AKB2-5200R40-15	52	139	104	70	40	XDMT 15...	
AKB2-5300R40-15	53	141	106	70	40	XDMT 15...	
AKB2-5400R40-15	54	143	108	70	40	XDMT 15...	
AKB2-5500R40-15	55	145	110	70	40	XDMT 15...	
AKB3-4600R40-15	46	243	138	70	40	XDMT 15...	New diameter AKB3: Ø 46 – 55 mm
AKB3-4700R40-15	47	246	141	70	40	XDMT 15...	
AKB3-4800R40-15	48	249	144	70	40	XDMT 15...	
AKB3-4900R40-15	49	252	147	70	40	XDMT 15...	
AKB3-5000R40-15	50	255	150	70	40	XDMT 15...	
AKB3-5100R40-15	51	258	153	70	40	XDMT 15...	
AKB3-5200R40-15	52	261	156	70	40	XDMT 15...	
AKB3-5300R40-15	53	264	159	70	40	XDMT 15...	
AKB3-5400R40-15	54	267	162	70	40	XDMT 15...	
AKB3-5500R40-15	55	270	165	70	40	XDMT 15...	
AKB5-1700R20-05	17	103	85	44	20	XDMT 05...	New AKB5 (5 x D): Ø 17 – 35 mm
AKB5-1800R25-05	18	108	90	56	25	XDMT 05...	
AKB5-1900R25-06	19	113	95	56	25	XDMT 06...	
AKB5-2000R25-06	20	118	100	56	25	XDMT 06...	
AKB5-2100R25-06	21	123	105	56	25	XDMT 06...	
AKB5-2200R25-06	22	128	110	56	25	XDMT 06...	
AKB5-2300R25-07	23	136	115	56	25	XDMT 07...	
AKB5-2400R25-07	24	141	120	56	25	XDMT 07...	
AKB5-2500R25-07	25	146	125	56	25	XDMT 07...	
AKB5-2600R32-07	26	153	130	60	32	XDMT 07...	
AKB5-2700R32-07	27	158	135	60	32	XDMT 07...	
AKB5-2800R32-07	28	163	140	60	32	XDMT 07...	
AKB5-2900R32-09	29	173	145	60	32	XDMT 09...	
AKB5-3000R32-09	30	178	150	60	32	XDMT 09...	
AKB5-3100R32-09	31	183	155	60	32	XDMT 09...	
AKB5-3200R32-09	32	188	160	60	32	XDMT 09...	
AKB5-3300R32-09	33	193	165	60	32	XDMT 09...	
AKB5-3400R32-09	34	198	170	60	32	XDMT 09...	
AKB5-3500R32-09	35	203	175	60	32	XDMT 09...	

Inserts for larger diameters

AKB

XDMT



Designation	l	d	s	d ₁	r	coated		uncoated
						AK5020	AP5030	AK1010
XDMT 156012EN-BS	17.32	15.70	6.0	6.5	1.2	●	●	
XDMT 156012EN-BM	17.32	15.70	6.0	6.5	1.2	●	●	
XDMT 156012EN-BR	17.32	15.70	6.0	6.5	1.2	●	●	
XDMT 156012EN-BAL	17.32	15.70	6.0	6.5	1.2			●

	P	M	K	N	S	H
● Main application		●				
○ Secondary application			○		○	

Screws and Screwdrivers

Insert	Screw	Torque max.	Key
XDMT 15...	SS 4115	5.5 Nm	T5125

For more information about the AKB drills please see our ARNO® catalogue „Drilling tools and indexable inserts for drilling“ chapter 3

Recommendations 2xD

ISO	Material	Toughness (N/mm ²)	Geometry	Grade	Cutting speed V _c (m/min)	Feed rate f (mm/U)			
						14.0–18.0 mm	18.5–29.0 mm	29.5–36.0 mm	37.0–55.0 mm
P	Carbon steel	440	BS	AP5030*	150–220–250	0.04–0.08–0.12	0.04–0.08–0.12	0.04–0.08–0.13	0.05–0.10–0.15
		670	BM	AP5030*	150–220–250	0.08–0.13–0.24	0.04–0.13–0.24	0.08–0.14–0.26	0.09–0.16–0.29
		880	BM	AP5030*	125–170–230	0.06–0.11–0.18	0.06–0.11–0.18	0.06–0.12–0.19	0.07–0.13–0.22
		980	BM	AP5030*	125–170–230	0.08–0.13–0.22	0.08–0.14–0.24	0.08–0.14–0.23	0.09–0.16–0.26
		1050	BM	AP5030*	100–130–170	0.06–0.11–0.17	0.06–0.12–0.18	0.06–0.12–0.18	0.07–0.13–0.20
	Low alloyed steel	640	BS	AP5030*	150–180–220	0.05–0.08–0.14	0.05–0.08–0.14	0.05–0.08–0.16	0.06–0.09–0.17
		970	BM	AP5030*	125–150–200	0.06–0.11–0.17	0.06–0.11–0.17	0.06–0.12–0.18	0.07–0.13–0.20
		1050	BM	AP5030*	100–140–170	0.06–0.11–0.17	0.06–0.11–0.17	0.06–0.12–0.18	0.07–0.13–0.20
	High alloyed steel	1230	BM	AP5030*	80–120–150	0.06–0.11–0.17	0.06–0.11–0.17	0.06–0.12–0.18	0.07–0.13–0.20
		700	BM	AP5030*	100–150–200	0.08–0.13–0.24	0.08–0.13–0.24	0.08–0.14–0.26	0.09–0.16–0.29
M	Stainless Steel	1140	BM	AP5030*	80–120–160	0.06–0.11–0.18	0.06–0.11–0.18	0.06–0.12–0.19	0.07–0.13–0.22
		700	BS/BM	AP5030*	100–150–200	0.06–0.11–0.18	0.06–0.11–0.18	0.06–0.12–0.19	0.07–0.13–0.22
		840	BS/BM	AP5030*	90–120–150	0.06–0.11–0.18	0.06–0.11–0.18	0.06–0.12–0.19	0.07–0.13–0.22
		640	BS/BM	AP5030*	100–150–200	0.04–0.08–0.18	0.06–0.11–0.18	0.06–0.12–0.19	0.07–0.13–0.22
K	Cast iron (GG)	810	BS/BM	AP5030*	80–120–150	0.04–0.08–0.18	0.06–0.11–0.18	0.06–0.12–0.19	0.07–0.13–0.22
		640	BR	AK5020	120–160–200	0.09–0.20–0.32	0.10–0.22–0.36	0.11–0.24–0.39	0.12–0.26–0.44
		910	BR	AK5020	120–160–200	0.09–0.20–0.32	0.10–0.22–0.36	0.11–0.24–0.39	0.12–0.26–0.44
N	Aluminium alloy	560	BR	AK5020	90–120–250	0.09–0.20–0.32	0.10–0.22–0.36	0.11–0.24–0.39	0.12–0.26–0.44
		880	BR	AK5020	90–120–150	0.09–0.20–0.32	0.10–0.22–0.36	0.11–0.24–0.39	0.12–0.26–0.44
S	Heat resistant alloy	-	BAL	AK1010	200–260–320	0.06–0.11–0.17	0.06–0.11–0.17	0.06–0.12–0.18	0.07–0.13–0.20
		-	BAL	AK1010	180–230–280	0.06–0.11–0.17	0.06–0.11–0.17	0.06–0.12–0.18	0.07–0.13–0.20

* Second choice: AP5020

Recommendations 3xD

ISO	Material	Toughness (N/mm ²)	Geometry	Grade	Cutting speed V _c (m/min)	Feed rate f (mm/U)			
						14.0–18.0 mm	18.5–29.0 mm	29.5–36.0 mm	37.0–55.0 mm
P	Carbon steel	440	BS	AP5030*	150–220–250	0.04–0.07–0.10	0.04–0.07–0.10	0.04–0.08–0.11	0.05–0.09–0.12
		670	BM	AP5030*	150–220–250	0.08–0.12–0.20	0.08–0.12–0.20	0.08–0.13–0.22	0.09–0.14–0.24
		880	BM	AP5030*	125–170–230	0.06–0.10–0.15	0.06–0.10–0.15	0.06–0.11–0.16	0.07–0.12–0.18
		980	BM	AP5030*	125–170–230	0.08–0.12–0.18	0.08–0.12–0.18	0.08–0.13–0.19	0.09–0.14–0.22
		1050	BM	AP5030*	100–130–170	0.06–0.10–0.14	0.06–0.10–0.14	0.06–0.11–0.15	0.07–0.12–0.17
	Low alloyed steel	640	BS	AP5030*	150–180–220	0.05–0.07–0.12	0.05–0.07–0.12	0.05–0.08–0.13	0.06–0.08–0.15
		970	BM	AP5030*	125–150–200	0.06–0.10–0.14	0.06–0.10–0.14	0.06–0.11–0.15	0.07–0.12–0.17
		1050	BM	AP5030*	100–140–170	0.06–0.10–0.14	0.06–0.10–0.14	0.06–0.11–0.15	0.07–0.12–0.17
	High alloyed steel	1230	BM	AP5030*	80–120–150	0.06–0.10–0.14	0.06–0.10–0.14	0.06–0.11–0.15	0.07–0.12–0.17
		700	BM	AP5030*	100–150–200	0.08–0.12–0.20	0.08–0.12–0.20	0.08–0.13–0.22	0.09–0.14–0.24
M	Stainless Steel	1140	BM	AP5030*	80–120–160	0.06–0.10–0.15	0.06–0.10–0.15	0.06–0.11–0.16	0.07–0.12–0.18
		700	BS/BM	AP5030*	100–150–200	0.06–0.10–0.15	0.06–0.10–0.15	0.06–0.11–0.16	0.07–0.12–0.18
		840	BS/BM	AP5030*	90–120–150	0.06–0.10–0.15	0.06–0.10–0.15	0.06–0.11–0.16	0.07–0.12–0.18
		640	BS/BM	AP5030*	100–150–200	0.04–0.10–0.15	0.06–0.10–0.15	0.06–0.11–0.16	0.07–0.12–0.18
K	Cast iron (GG)	810	BS/BM	AP5030*	80–120–150	0.04–0.10–0.15	0.06–0.10–0.15	0.06–0.11–0.16	0.07–0.12–0.18
		640	BR	AK5020	120–160–200	0.09–0.18–0.27	0.10–0.20–0.30	0.11–0.22–0.32	0.12–0.24–0.36
		910	BR	AK5020	120–160–200	0.09–0.18–0.27	0.10–0.20–0.30	0.11–0.22–0.32	0.12–0.24–0.36
N	Aluminium alloy	560	BR	AK5020	90–120–250	0.09–0.18–0.27	0.10–0.20–0.30	0.11–0.22–0.32	0.12–0.24–0.36
		880	BR	AK5020	90–120–150	0.09–0.18–0.27	0.10–0.20–0.30	0.11–0.22–0.32	0.12–0.24–0.36
S	Heat resistant alloy	-	BAL	AK1010	200–260–320	0.06–0.11–0.17	0.06–0.11–0.17	0.06–0.12–0.18	0.07–0.13–0.20
		-	BAL	AK1010	180–230–280	0.06–0.11–0.17	0.06–0.11–0.17	0.06–0.12–0.18	0.07–0.13–0.20

* Second choice: AP5020

Recommendations 5xD

ISO	Material	Toughness (N/mm ²)	Geometry	Grade	Cutting speed V _c (m/min)	Feed rate f (mm/U)	
						1.0–29.0mm	30.0–36.0mm
P	Carbon steel	440	–	–	–	–	–
		670	–	–	–	–	–
		880	BM	AP5030*	125–170–230	0.09–0.11	0.09–0.12
		980	BM	AP5030*	125–170–230	0.10–0.14	0.11–0.15
	1050	BM	AP5030*	100–130–170	0.09–0.11	0.09–0.12	
	Low alloyed steel	640	–	–	–	–	–
		970	BM	AP5030*	125–150–200	0.09–0.11	0.09–0.12
		1050	BM	AP5030*	100–140–170	0.09–0.11	0.09–0.12
		1230	BM	AP5030*	80–120–150	0.09–0.11	0.09–0.12
	High alloyed steel	700	–	–	–	–	–
1140		BM	AP5030*	80–120–160	0.09–0.11	0.09–0.12	
K	Cast iron (GG)	640	BR	AK5020	120–160–200	0.17–0.23	0.18–0.25
		910	BR	AK5020	120–160–200	0.17–0.23	0.18–0.25
	Nodular cast iron (GGG)	560	BR	AK5020	90–120–250	0.17–0.23	0.18–0.25
		880	BR	AK5020	90–120–150	0.17–0.23	0.18–0.25
N	Aluminium alloy	–	BAL	AK1010	200–260–320	0.10–0.15	0.11–0.16
	Copper alloy	–	BAL	AK1010	180–230–280	0.10–0.15	0.11–0.16

* Second choice: AP5020

The recommended cutting data are only approximate values.
It may be necessary to adjust them to each individual machining application.

For more information about the AKB drills please see our ARNO® catalogue „Drilling tools and indexable inserts for drilling“ chapter 3

SHARK-Drill²

New inserts



Product development of the already well established SHARK-Drill² system.

The new -ST geometry and AP5440 grade is ideal for drilling steel.

Grade description

AP5440

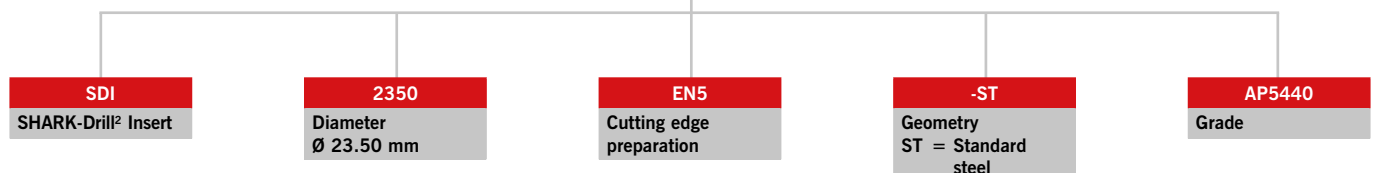
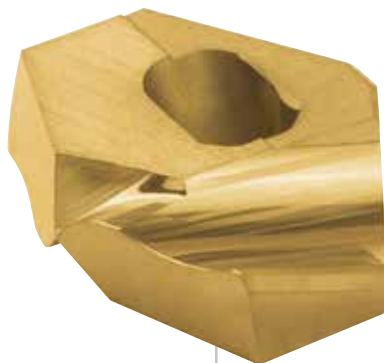
PVD coated carbide grade.

First choice for steel drilling, also suitable for stainless steel.

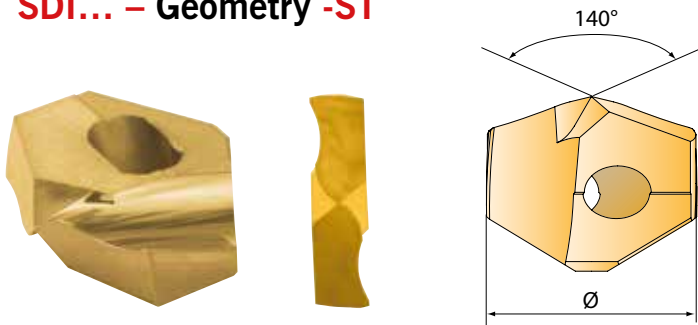
Geometry description

-ST

Universal geometry for steel machining and with limitations also stainless steel. The geometry offers enhanced centring and improved chip breaking.



SDI... – Geometry -ST



Designation	Diameter			AP5440	coated
	(mm)	(decimal)	(Inch)		
SDI1300EN5-ST	13.0	0.5118"		●	
SDI1310EN5-ST	13.1	0.5157"		●	
SDI1320EN5-ST	13.2	0.5197"		●	
SDI1400EN5-ST	14.0	0.5512"		●	
SDI1429EN5-ST	14.29	0.5626"	9/16	●	
SDI1450EN5-ST	14.5	0.5709"		●	
SDI1500EN5-ST	15.0	0.5906"		●	
SDI1508EN5-ST	15.08	0.5937"	19/32	●	
SDI1510EN5-ST	15.1	0.5944"		●	
SDI1530EN5-ST	15.3	0.6024"		●	
SDI1550EN5-ST	15.5	0.6102"		●	
SDI1580EN5-ST	15.8	0.6220"		●	
SDI1587EN5-ST	15.87	0.6248"	5/8	●	
SDI1600EN5-ST	16.0	0.6299"		●	
SDI1609EN5-ST	16.09	0.6335"		●	
SDI1610EN5-ST	16.1	0.6339"		●	
SDI1650EN5-ST	16.5	0.6496"		●	
SDI1700EN5-ST	17.0	0.6693"		●	
SDI1707EN5-ST	17.07	0.6720"	43/64	●	
SDI1710EN5-ST	17.1	0.6732"		●	
SDI1750EN5-ST	17.5	0.6890"		●	
SDI1786EN5-ST	17.86	0.7031"	21/64	●	
SDI1800EN5-ST	18.0	0.7087"		●	
SDI1810EN5-ST	18.1	0.7126"		●	
SDI1850EN5-ST	18.5	0.7283"		●	
SDI1880EN5-ST	18.8	0.7402"		●	
SDI1900EN5-ST	19.0	0.7480"		●	
SDI1910EN5-ST	19.1	0.7520"		●	
SDI1950EN5-ST	19.5	0.7677"		●	
SDI1980EN5-ST	19.8	0.7795"		●	
SDI2000EN5-ST	20.0	0.7874"		●	
SDI2010EN5-ST	20.1	0.7913"		●	
SDI2024EN5-ST	20.24	0.7969"	51/64	●	

Designation	Diameter			AP5440	coated
	(mm)	(decimal)	(Inch)		
SDI2050EN5-ST	20.5	0.8071"		●	
SDI2100EN5-ST	21.0	0.8268"		●	
SDI2150EN5-ST	21.5	0.8465"		●	
SDI2200EN5-ST	22.0	0.8661"		●	
SDI2210EN5-ST	22.1	0.8701"		●	
SDI2250EN5-ST	22.5	0.8858"		●	
SDI2300EN5-ST	23.0	0.9055"		●	
SDI2350EN5-ST	23.5	0.9252"		●	
SDI2400EN5-ST	24.0	0.9449"		●	
SDI2410EN5-ST	24.1	0.9488"		●	
SDI2450EN5-ST	24.5	0.9646"		●	
SDI2500EN5-ST	25.0	0.9843"	63/64	●	
SDI2600EN5-ST	26.0	1.0236"		●	
SDI2650EN5-ST	26.5	1.0433"		●	
SDI2700EN5-ST	27.0	1.0630"	1 1/16	●	
SDI2750EN5-ST	27.5	1.0827"		●	
SDI2800EN5-ST	28.0	1.1024"		●	
SDI2900EN5-ST	29.0	1.1417"		●	
SDI3000EN5-ST	30.0	1.1811"		●	
SDI3100EN5-ST	31.0	1.2205"		●	
SDI3150EN5-ST	31.5	1.2402"		●	
SDI3200EN5-ST	32.0	1.2598"		●	

- Main application
- Secondary application

P	●
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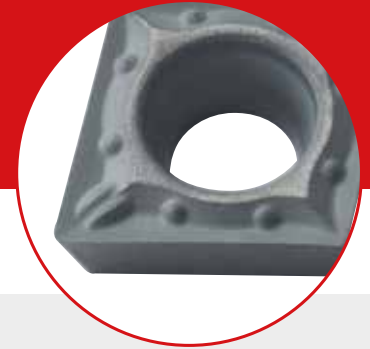
For more information about the SHARK-Drill² please see our ARNO® catalogue „Drilling tools and indexable inserts for drilling“ chapter 2

ISO	Material	Tensile strength	Cutting speed	Dia-range 12-15 mm	Dia-range 15-18 mm	Dia-range 18-22 mm	Dia-range 22-27 mm	Dia-range 27-32 mm	
		(N/mm ²)							(m/min)
P	Unalloyed steel and cast steel e. G. 9SMn28; 9SMnPb28; 10SPb20	bis 500	125	0.15-0.29	0.21-0.36	0.28-0.42	0.35-0.53	0.37-0.56	
		500-850	105	0.13-0.25	0.21-0.36	0.28-0.42	0.35-0.53	0.37-0.56	
	Structural steel e. G. St33; St37-2; St44-2; St52; St60	350-500	95	0.13-0.25	0.21-0.36	0.26-0.39	0.30-0.45	0.32-0.48	
		500-850	75	0.11-0.21	0.20-0.34	0.21-0.32	0.26-0.39	0.29-0.44	
	None- and low alloy steel as well as carbon steel and case hardened steel e. G. C15; C22; 20Mn5; Ck45	850-1200	70	0.09-0.17	0.17-0.29	0.20-0.30	0.22-0.33	0.26-0.39	
		bis 450	120	0.13-0.25	0.20-0.34	0.26-0.39	0.32-0.48	0.34-0.51	
		450-750	95	0.11-0.21	0.17-0.29	0.21-0.32	0.31-0.47	0.33-0.50	
		750-900	85	0.11-0.21	0.17-0.29	0.21-0.32	0.31-0.47	0.33-0.50	
	Alloys steel e. G. 42CrMo4; 16MnCr5; 36CrNiMo4 14NiCrMo13-4; Ck75; Ck101; 17CrNiMo8. 35CrMo4; 41Cr4; 50MnSi4	900-1100	70	0.09-0.17	0.15-0.26	0.20-0.30	0.26-0.39	0.29-0.44	
		bis 600	100	0.13-0.25	0.17-0.29	0.21-0.32	0.31-0.47	0.34-0.51	
		600-800	90	0.11-0.21	0.17-0.29	0.21-0.32	0.31-0.47	0.34-0.51	
		800-950	85	0.11-0.21	0.15-0.26	0.21-0.32	0.31-0.47	0.34-0.51	
950-110		75	0.09-0.17	0.13-0.22	0.20-0.30	0.26-0.39	0.29-0.44		
High alloys steel e. G. 41CrAlMo7; 36CrNiMo4; 32NiCrMo14-5	1100-1250	65	0.07-0.13	0.13-0.22	0.20-0.30	0.26-0.39	0.29-0.44		
	600-1000	60	0.11-0.21	0.15-0.26	0.20-0.30	0.21-0.32	0.24-0.36		
	1000-1200	55	0.09-0.17	0.11-0.19	0.20-0.30	0.21-0.32	0.24-0.36		
Tool steel e. G. C75W; 102Cr6; 105WCr6; X153CrMoV12	1200-1350	50	0.07-0.13	0.09-0.15	0.17-0.26	0.20-0.30	0.23-0.35		
	500-700	65	0.09-0.17	0.13-0.22	0.17-0.26	0.21-0.32	0.24-0.36		
M	Stainless steel and cast steel	austenitic and austenitic/ferritic chilled	450-610	65	0.09-0.14	0.16-0.21	0.19-0.24	0.24-0.26	0.27-0.30
		pearlitic. ferritic	610-930	50	0.09-0.14	0.14-0.18	0.16-0.20	0.20-0.22	0.23-0.25
K	Cast iron e. G. GG25; GG40	pearlitic. ferritic	500-700	-	-	-	-	-	
		pearlitic. martensitic	700-850	-	-	-	-	-	
			800-1100	-	-	-	-	-	
K	Cast iron with nodular graphite e. G. GGG50	ferritic	550	-	-	-	-	-	
		pearlitic	800	-	-	-	-	-	
K	Malleable cast iron e. G. GTS70	ferritic	450	-	-	-	-	-	
		pearlitic	750	-	-	-	-	-	
N	Aluminium alloys. long chipping e. G. AlMgSiPb; AlCuMg1; AlMgSi1	not heat treatable	200	-	-	-	-	-	
		heat treatable. heat-treated	350	-	-	-	-	-	
	Casted aluminium alloys e. G. G-ALSi10Mg; G-ALSi12	≤ 12 % Si. hardened	250	-	-	-	-	-	
		≤ 12 % Si. heat treatable. hardened	300	-	-	-	-	-	
		≤ 12 % Si. not heat treatable	450	-	-	-	-	-	
	Copper and copper alloys (brass / bronze)	Lead alloys. Pb > 1 %	400	-	-	-	-	-	
Brass. bronze		300	-	-	-	-	-		
Aluminium bronze		500	-	-	-	-	-		
Copper and electrolyte copper		200	-	-	-	-	-		
Non-ferrous materials	Duroplastics	-	-	-	-	-	-		
	Re- inforced plastics	-	-	-	-	-	-		
	Hard rubber	-	-	-	-	-	-		
S	High temperature resistant alloys e. G. Inconel. Hasteloy. Nimonic. Waspaloy. Monel	Fe-alloyed annealed	700	-	-	-	-	-	
		heat - treated	950	-	-	-	-	-	
		Ni- or annealed	800	-	-	-	-	-	
		Co based casting	1100	-	-	-	-	-	
	heat - treated	1200	-	-	-	-	-		
Titanium alloys / Titan e. G. Ti99.5; Ti Al6V4; TiCu2	Pure titan	500-700	-	-	-	-	-		
H	Hardened steel	hardened and tempered	55 HRC	-	-	-	-	-	
		hardened and tempered	60 HRC	-	-	-	-	-	
	Hard cast iron	casting	41 HRC	-	-	-	-	-	
Hardened cast iron	hardened and tempered	55 HRC	-	-	-	-	-		

The recommended cutting data are only approximate values.
It may be necessary to adjust them to each individual machining application.

CERMET inserts

Portfolio expanded



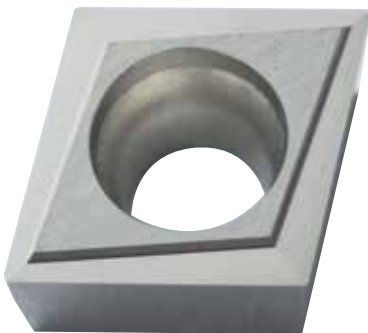
New CERMET grade for

finishing to medium machining of steel and stainless steel.

Both the ground and the sintered inserts are applied where build up edge is a problem. Even after prolonged effective cutting time the AP6010 maintains its low cutting forces. The big advantage of CERMET inserts is their temperature resistance (up to 1800°). While finishing the insert tool life is extended, part tolerances kept tight and surface finish remains excellent.

Advantage

- Especially good surface finish
- Holds tight tolerances
- Higher cutting speeds improves productivity
- Dry machining possible



Grade description

AP6010

Uncoated

Fine grain (average grain size 0.6 µm) CERMET. Grade for machining alloy and none alloy steel, stainless steel and cast steel. Excellent tool life when finishing and medium machining. Suitable for high speed machining. This CERMET has high chemical stability (comparable with carbide). This grade has low tendency for build up edge and excellent wear resistance. AP6010 excels at high cutting speed providing very good surface finish and high accuracy.

For more information about the inserts please see our ARNO® catalogue „Turning and threading“ chapter 3

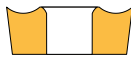
Sintered version

-PM1

Newly developed positive geometry for finishing and medium machining. This geometry is mostly suitable for steel and stainless steel. The double positive cutting edge ensures high reliability and excellent swarf evacuation. The wave shaped geometry offers excellent swarf control, even at high feed rates.

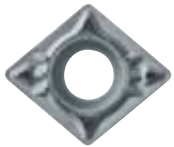


Finishing and medium machining
single sided

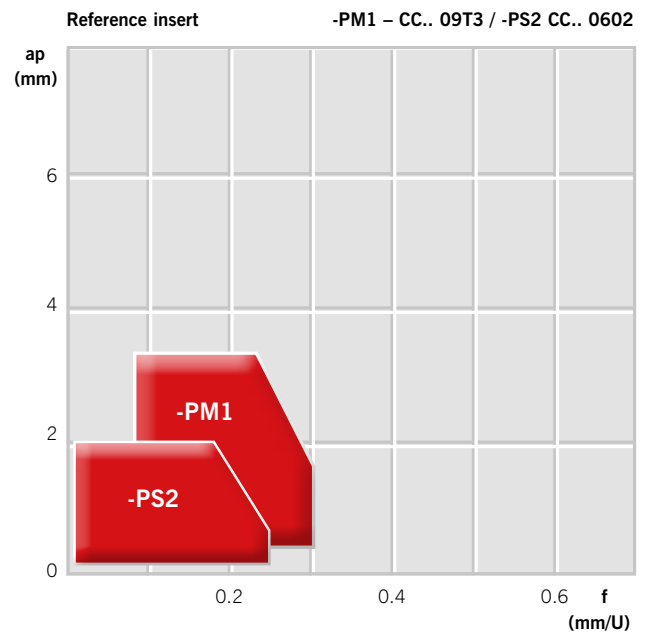
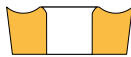


-PS2

Geometry for finishing steel, cast steel and stainless steel. Mini chip breaker for controlled chip breaking. Sharp cutting edge.



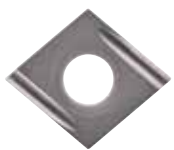
Finishing machining
single sided



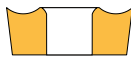
Ground version

-U

Main application is steel machining. Good chip control at low feed rates and different cutting depths. Low cutting forces.

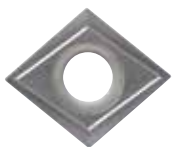


Finishing and medium machining
single sided

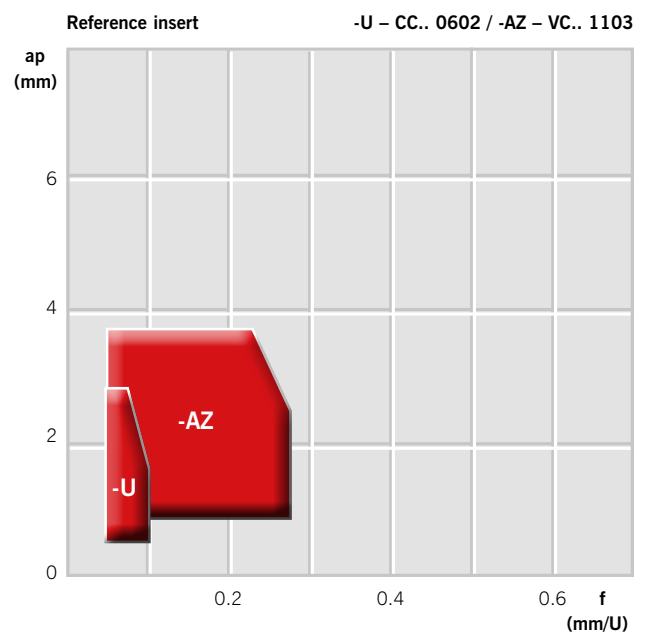


-AZ

Positive geometry for finishing and medium machining of steel, cast steel and stainless steel. Ground circumferential chip breaker.



Finishing and medium machining
single sided



Information

CERMET is a combination of ceramic and metallic materials, with cobalt binding it together. In comparison with carbide, CERMET is more wear resistant and with less tendency to stick to other materials. However CERMET is less thermal shock resistant and more brittle. ARNO® grade AP6010 provides the high wear resistance and can be used with coolant.

CERMET is typically used for finishing stainless steel, cast materials, steel with low carbon contents and ferritic steel.

Recommendations for using CERMET inserts:

- Use low feed rate and reduced depth of cut
- Only use coolant by small chip cross section
- Best results in un-interrupted cutting conditions
- Use continuous cutting depth
- Select feed rate within 0.1 – 0.25 mm / revolution
- Change the insert when relief angle wear is around 0.3 mm

Advantages of CERMET

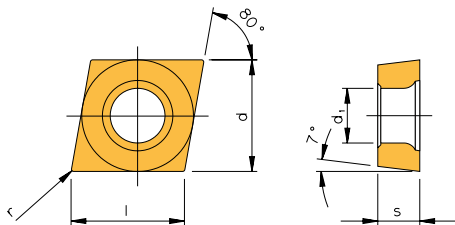
- + High quality surface finish
- + Close tolerances can be kept
- + Long tool life can be achieved
- + Dry machining possible
- + Chip control also with small chips
- + Low susceptibility to diffusion
- + High surface quality (no need for grinding)
- + Reduced component temperature
- + High cutting speed can lead to shorter machine time
- + Reduced tool changing costs
- + Good repeatability
- + Excellent chip breaking also at very low chip cross section
- + Due to the low friction, CERMETS are suitable for lower cutting speed applications such as internal machining as well as higher speed finishing operations
- + Small chips securely generated and securely removed from cutting area
- + Increased tip hardness lends itself to vibration free machining

Disadvantages of CERMET

- Not recommended for machining none ferrous materials such as aluminium and bronze, heat resistant alloys, titanium and hardened steel. The limit of hardness for CERMET is around 52-54 Hrc, generally the edge condition will not do any higher hardness.
- The component should be well clamped, clean, burr, crust and weld free
- Heavy interrupted cut as well as poorly clamped components does not suit CERMET

Sintered version

CCMT



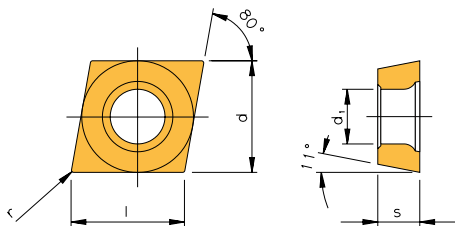
Designation	l	d	s	d ₁	r	uncoated	
						AP6010	
CCMT 060202EN-PM1	6.45	6.350	2.38	2.8	0.2	●	NEW
CCMT 060204EN-PM1	6.45	6.350	2.38	2.8	0.4	●	NEW
CCMT 09T302EN-PM1	9.67	9.525	3.97	4.4	0.2	●	NEW
CCMT 09T304EN-PM1	9.67	9.525	3.97	4.4	0.4	●	NEW

Will be available as coated version end of 2014

- Main application
- Secondary application

P	●
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CPMT



Designation	l	d	s	d ₁	r	uncoated	
						AP6010	
CPMT 05T102EN-PM1	5.60	5.560	1.98	2.5	0.2	●	NEW
CPMT 05T104EN-PM1	5.60	5.560	1.98	2.5	0.4	●	NEW
CPMT 05T102EN-PS2	5.60	5.560	1.98	2.5	0.2	●	
CPMT 05T104EN-PS2	5.60	5.560	1.98	2.5	0.4	●	

Will be available as coated version end of 2014

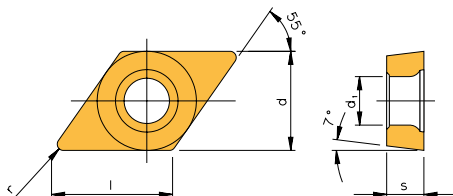
- Main application
- Secondary application

P	●
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Inserts

CERMET

DCMT



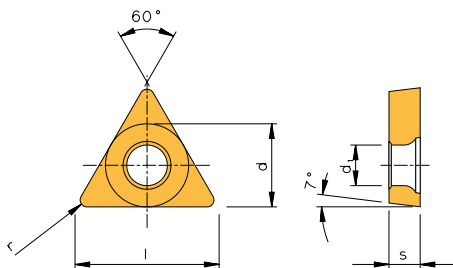
Designation	l	d	s	d ₁	r	uncoated	NEW
						AP6010	
DCMT 070202EN-PM1	7.75	6.350	2.38	2.8	0.2	●	NEW
DCMT 070204EN-PM1	7.75	6.350	2.38	2.8	0.4	●	NEW
DCMT 11T302EN-PM1	11.60	9.525	3.97	4.4	0.2	●	NEW
DCMT 11T304EN-PM1	11.60	9.525	3.97	4.4	0.4	●	NEW
DCMT 11T308EN-PM1	11.60	9.525	3.97	4.4	0.8	●	NEW

Will be available as coated version end of 2014

- Main application
- Secondary application

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TCMT



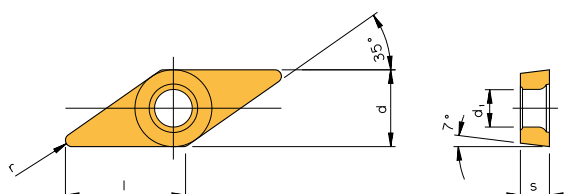
Designation	l	d	s	d ₁	r	uncoated	NEW
						AP6010	
TCMT 110204EN-PM1	11.00	6.350	2.38	2.8	0.4	●	NEW
TCMT 110208EN-PM1	11.00	6.350	2.38	2.8	0.8	●	NEW


Will be available as coated version end of 2014


- Main application
- Secondary application

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VCMT



						uncoated	
Designation	l	d	s	d ₁	r	AP6010	
 VCMT 070202EN-PM1	6.92	3.970	2.38	2.2	0.2	●	NEW
VCMT 070204EN-PM1	6.92	3.970	2.38	2.2	0.4	●	NEW
VCMT 110302EN-PM1	11.10	6.350	3.18	2.8	0.2	●	NEW
VCMT 110304EN-PM1	11.10	6.350	3.18	2.8	0.4	●	NEW
VCMT 160404EN-PM1	16.50	9.525	4.76	4.4	0.4	●	NEW
VCMT 160408EN-PM1	16.50	9.525	4.76	4.4	0.8	●	NEW

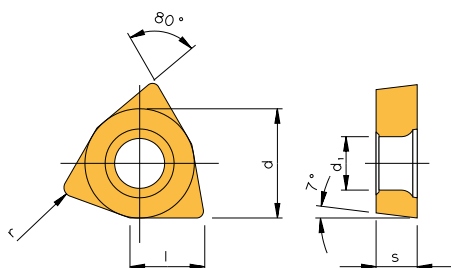
 VCMT 070202EN-PS2	6.92	3.970	2.38	2.2	0.2	●	
VCMT 070204EN-PS2	6.92	3.970	2.38	2.2	0.4	●	


Will be available as coated version end of 2014

- Main application
- Secondary application

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WCMT



						uncoated	
Designation	l	d	s	d ₁	r	AP6010	
 WCMT 020102EN-PM1	2.70	3.970	1.59	2.2	0.2	●	NEW
WCMT 020104EN-PM1	2.70	3.970	1.59	2.2	0.4	●	NEW

 WCMT 020102EN-PS2	2.70	3.970	1.59	2.2	0.2	●	
WCMT 020104EN-PS2	2.70	3.970	1.59	2.2	0.4	●	

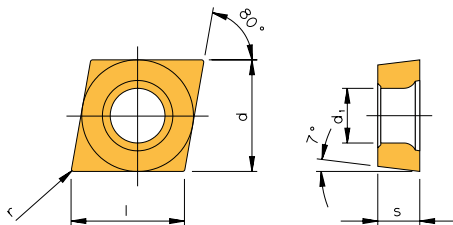
Will be available as coated version end of 2014

- Main application
- Secondary application

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Ground version

CCGT



Designation	l	d	s	d ₁	r	uncoated
						AP6010
CCGT 060201FL-U	6.45	6.350	2.38	2.8	0.1	●
CCGT 060201FR-U	6.45	6.350	2.38	2.8	0.1	●
CCGT 060202FL-U	6.45	6.350	2.38	2.8	0.2	●
CCGT 060202FR-U	6.45	6.350	2.38	2.8	0.2	●
CCGT 09T302FL-U	9.67	9.525	3.97	4.4	0.2	●
CCGT 09T302FR-U	9.67	9.525	3.97	4.4	0.2	●

CCGT 060201FN-AZ	6.45	6.350	2.38	2.8	0.1	●	NEW
CCGT 060202FN-AZ	6.45	6.350	2.38	2.8	0.2	●	NEW
CCGT 060204FN-AZ	6.45	6.350	2.38	2.8	0.4	●	NEW
CCGT 09T302FN-AZ	9.67	9.525	3.97	4.4	0.2	●	NEW
CCGT 09T304FN-AZ	9.67	9.525	3.97	4.4	0.4	●	NEW

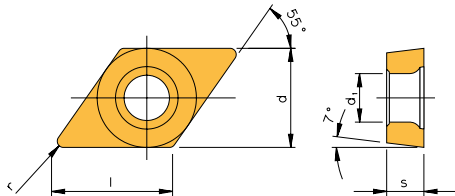
Will be available as coated version end of 2014

- Main application
- Secondary application

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For more information about the inserts please see our ARNO® catalogue „Turning and threading“ chapter 3

DCGT



Designation	l	d	s	d ₁	r	uncoated
						AP6010
DCGT 070201FL-U	7.75	6.350	2.38	2.8	0.1	●
DCGT 070201FR-U	7.75	6.350	2.38	2.8	0.1	●
DCGT 070202FL-U	7.75	6.350	2.38	2.8	0.2	●
DCGT 070202FR-U	7.75	6.350	2.38	2.8	0.2	●
DCGT 11T302FL-U	11.50	9.525	3.97	4.4	0.2	●
DCGT 11T302FR-U	11.50	9.525	3.97	4.4	0.2	●



DCGT 070201FN-AZ	7.75	6.350	2.38	2.8	0.1	●	NEW
DCGT 070202FN-AZ	7.75	6.350	2.38	2.8	0.2	●	NEW
DCGT 070204FN-AZ	7.75	6.350	2.38	2.8	0.4	●	NEW
DCGT 11T302FN-AZ	11.50	9.525	3.97	4.4	0.2	●	NEW
DCGT 11T304FN-AZ	11.50	9.525	3.97	4.4	0.4	●	NEW

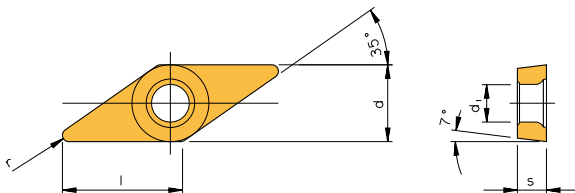
Will be available as coated version end of 2014

● Main application

○ Secondary application

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VCGT



						uncoated
Designation	l	d	s	d ₁	r	AP 6010
VCGT 110301FL-U	11.10	6.350	3.18	2.8	0.1	●
VCGT 110301FR-U	11.10	6.350	3.18	2.8	0.1	●
VCGT 110302FL-U	11.10	6.350	3.18	2.8	0.2	●
VCGT 110302FR-U	11.10	6.350	3.18	2.8	0.2	●

VCGT 110301FN-AZ	11.10	6.350	3.18	2.8	0.1	●	NEW
VCGT 110302FN-AZ	11.10	6.350	3.18	2.8	0.2	●	NEW
VCGT 110304FN-AZ	11.10	6.350	3.18	2.8	0.4	●	NEW

Will be available as coated version end of 2014

- Main application
- Secondary application

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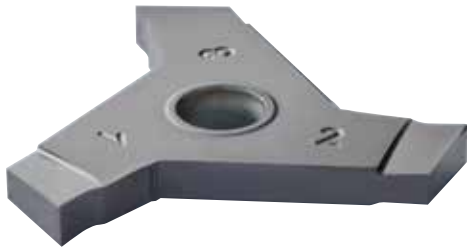
For more information about the inserts please see our ARNO® catalogue „Turning and threading“ chapter 3

ISO	Material	Tensile strength (N/mm ²)	Cutting speed Vc (m/min)	
			uncoated	
			AP6010	
P	Unalloyed steel and cast steel	< 0.15 % C/hardened and tempered	350	100 – 450
		0.15 - 0.45% C/hardened and tempered	650	80 – 450
		> 0.45% C/hardened and tempered	1000	50 – 350
	Low alloyed steel and cast steel	annealed	600	80 – 450
		hardened and tempered	900	70 – 450
	High alloyed steel	annealed	700	60 – 250
		hardened	1200	50 – 350
High alloyed tool steel and cast steel	hardened	1100	50 – 180	
Stainless steel	ferritic, annealed	700	80 – 300	
M	Stainless steel	martensitic, hardened and tempered	1000	80 – 350
		ferritic / martensitic, annealed	450 – 600	80 – 300
K	Cast iron	martensitic / austenitic, heat treated	600 – 900	60 – 300
		pearlitic/ferritic	500 – 700	100 – 300
		pearlitic/martensitic	700 – 850	100 – 300
	Cast iron with nodular graphite	800 – 1100	100 – 300	
		ferritic	550	100 – 300
	Malleable cast iron	pearlitic	800	100 – 300
		ferritic	450	100 – 300
	pearlitic	750	100 – 300	
N	Aluminium alloys long chipping	not heat treatable	200	-
		heat treatable, heat treated	350	-
	Casted aluminium alloys	≤ 12 % Si, heat treated	250	-
		≤ 12 % Si, heat treatable, heat treated	300	-
		≤ 12 % Si, not heat treatable	450	-
	Copper and copper alloys (Brass/Bronze)	Lead alloys, Pb > 1 %	400	-
		Brass, Bronze	300	-
Aluminium bronze		500	-	
Copper and elektrolyte copper		200	-	
Non-ferrous materials	Duroplastic	-	-	
	Re-inforced plastics	-	-	
	Hard rubber	-	-	
S	High temperature resistant alloys	Fe-alloyed, annealed	700	-
		Fe-alloyed, heat treated	950	-
		Ni- or Co-alloyed, annealed	800	-
		Ni- or Co-alloyed, casting	1100	-
	Titanium alloys	Ni- or Co-alloyed, heat treated	1200	-
Alpha- and Beta-alloys	Pure titan	500 – 700	-	
H	Hardened steel	heat treated	700 – 1000	-
		hardened	55 HRC	-
	Hard cast iron	60 HRC	-	
		casting	41 HRC	-
Hardened cast iron	hardened	55 HRC	-	

The recommended cutting data are only approximate values.
It may be necessary to adjust them to each individual machining application.

Clip-Groove®

Portfolio expanded

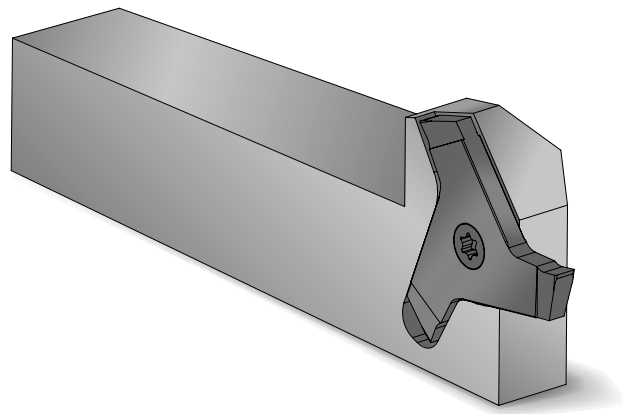


With three effective cutting edges the TNMU insert offers a fantastic balance of price and productivity.

With a maximum groove depth of 10 mm and maximum part-off diameter of 20 mm the new TNMU inserts benefit from producing excellent straightness and surface finish as well as flatness, providing outstanding results in a number of applications and on a number of materials. The combination of a very strong tangential insert location and stable insert design provides high productivity potential.

Advantages

- Maximum groove depth 10 mm
- Parting-off up to 20 mm diameter possible
- Shanks 16 x 16 / 20 x 20 / 25 x 25
- 4 groove width 1.5 / 2.0 / 3.0 / 4.0 mm
- Periphery ground insert with 3 edges
- Precision ground
- Repeatability < 0.02 mm
- Carbide grades for steel and stainless



Grade description

AM5140

PVD coated carbide grade

Universally applied with medium cutting speeds. Main application area being stainless steel, this grade is also suitable for steel machining.

AP5020

PVD coated carbide grade

A versatile grade for low to medium cutting speeds. Main application area is steel but can also be used on stainless steel and both high temperature and non-ferrous materials.

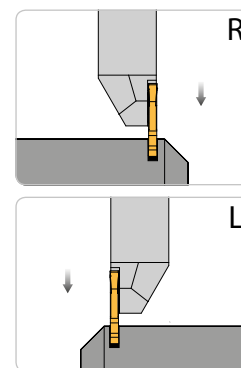
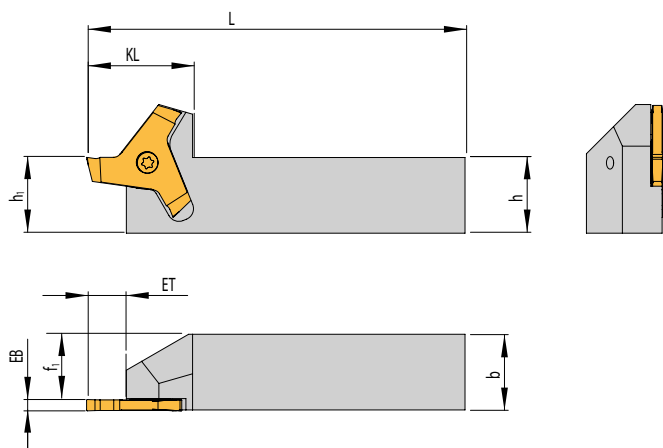
Geometry description



Soft cutting and stable geometry

- Wide application area
- Ground version

Radial grooving

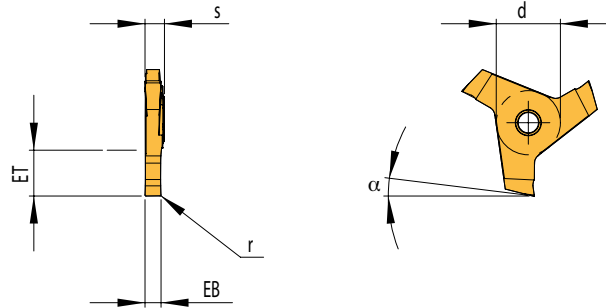


Designation	ET	h	b	L	f ₁	h ₁	KL	KT	Insert	News
STGOL 1616 F31/2	10	16	16	85.0	16.25	16	28	30	TNMU31 15100.. / 20100..	Holders for groove depths up to 10 mm
STGOR 1616 F31/2	10	16	16	85.0	16.25	16	28	30	TNMU31 15100.. / 20100..	
STGOL 1616 F31/3	10	16	16	85.0	16.25	16	28	30	TNMU 31 30100...	
STGOR 1616 F31/3	10	16	16	85.0	16.25	16	28	30	TNMU 31 30100...	
STGOL 1616 F31/4	10	16	16	85.0	16.25	16	28	30	TNMU 31 40100...	
STGOR 1616 F31/4	10	16	16	85.0	16.25	16	28	30	TNMU 31 40100...	
STGOL 2020 H31/2	10	20	20	100.0	20.25	20	28	34	TNMU31 15100.. / 20100..	Holders for groove depths up to 10 mm
STGOR 2020 H31/2	10	20	20	100.0	20.25	20	28	34	TNMU31 15100.. / 20100..	
STGOL 2020 H31/3	10	20	20	100.0	20.25	20	28	34	TNMU 31 30100...	
STGOR 2020 H31/3	10	20	20	100.0	20.25	20	28	34	TNMU 31 30100...	
STGOL 2020 H31/4	10	20	20	100.0	20.25	20	28	34	TNMU 31 40100...	
STGOR 2020 H31/4	10	20	20	100.0	20.25	20	28	34	TNMU 31 40100...	
STGOL 2525 H31/2	10	25	25	125.0	25.25	25	28	39	TNMU31 15100.. / 20100..	Holders for groove depths up to 10 mm
STGOR 2525 H31/2	10	25	25	125.0	25.25	25	28	39	TNMU31 15100.. / 20100..	
STGOL 2525 H31/3	10	25	25	125.0	25.25	25	28	39	TNMU 31 30100...	
STGOR 2525 H31/3	10	25	25	125.0	25.25	25	28	39	TNMU 31 30100...	
STGOL 2525 H31/4	10	25	25	125.0	25.25	25	28	39	TNMU 31 40100...	
STGOR 2525 H31/4	10	25	25	125.0	25.25	25	28	39	TNMU 31 40100...	

Spare parts

Holder	Screw	Key
STGO L/R ... 31 ...	AS0002	KS8000

TNMU 31



Designation	EB ± 0.02	ET	d	s	r	α	coated		News
							AM5140	AP5020	
TNMU31 1510001L	1.5	10.0	14.0	2.25	0.1	7°	●		Inserts with groove depth potential up to 10 mm
TNMU31 1510001L	1.5	10.0	14.0	2.25	0.1	7°		●	
TNMU31 1510001R	1.5	10.0	14.0	2.25	0.1	7°	●		
TNMU31 1510001R	1.5	10.0	14.0	2.25	0.1	7°		●	
TNMU31 2010001L	2.0	10.0	14.0	2.25	0.1	7°	●		Inserts with groove depth potential up to 10 mm
TNMU31 2010001L	2.0	10.0	14.0	2.25	0.1	7°		●	
TNMU31 2010001R	2.0	10.0	14.0	2.25	0.1	7°	●		
TNMU31 2010001R	2.0	10.0	14.0	2.25	0.1	7°		●	
TNMU31 3010002L	3.0	10.0	14.0	3.25	0.2	7°	●		Inserts with groove depth potential up to 10 mm
TNMU31 3010002L	3.0	10.0	14.0	3.25	0.2	7°		●	
TNMU31 3010002R	3.0	10.0	14.0	3.25	0.2	7°	●		
TNMU31 3010002R	3.0	10.0	14.0	3.25	0.2	7°		●	
TNMU31 4010002L	4.0	10.0	14.0	4.25	0.2	7°	●		Inserts with groove depth potential up to 10 mm
TNMU31 4010002L	4.0	10.0	14.0	4.25	0.2	7°		●	
TNMU31 4010002R	4.0	10.0	14.0	4.25	0.2	7°	●		
TNMU31 4010002R	4.0	10.0	14.0	4.25	0.2	7°		●	

● Main application
○ Secondary application

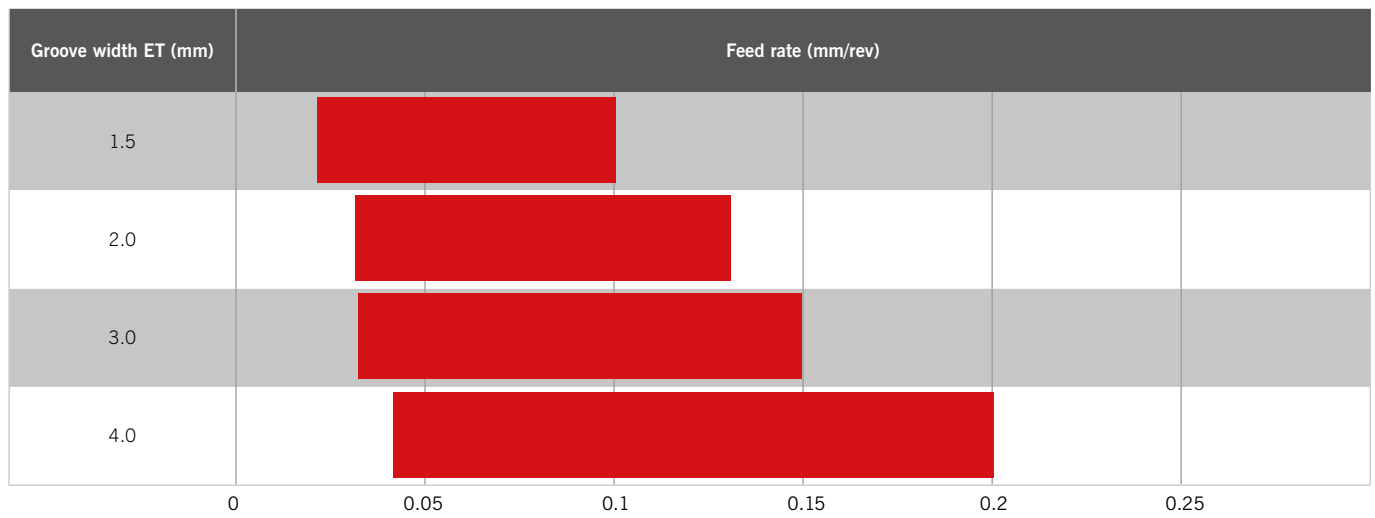
P	○	●
M	●	○
K		
N		○
S		○
H		

For more information about the Clip-Groove® please see our ARNO® catalogue „Tools and inserts for parting and grooving“ chapter 4

ISO	Material	Tensile strength (N/mm ²)	Cutting speed Vc (m/min)		
			coated		
			AM5140	AP5020	
P	Unalloyed steel and cast steel	< 0.15 % C/hardened and tempered	350	120-200	120 – 220
		0.15- 0.45% C/hardened and tempered	650	80-150	80 – 150
		> 0.45% C/hardened and tempered	1000	60-140	60 – 140
	Low alloyed steel and cast steel	annealed	600	80-160	80 – 170
		hardened and tempered	900	60-130	60 – 130
			1200	60-120	60 – 120
	High alloyed steel	annealed	700	80-140	80 – 140
	High alloyed tool steel and cast steel	hardened	1100	50-120	50 – 120
Stainless steel	ferritic, annealed	700	60-160	60 – 170	
Cast steel	martensitic, hardened and tempered	1000	50-100	50 – 100	
M	Stainless steel	ferritic / martensitic, annealed	450 – 600	60-160	60 – 180
		martensitic / austenitic, heat treated	600 – 900	50-90	50 – 90
K	Cast iron	pearlitic/ferritic	500 – 700	-	-
		pearlitic/martensitic	700 – 850	-	-
			800 – 1100	-	-
	Cast iron with nodular graphite	ferritic	550	-	-
		pearlitic	800	-	-
	Malleable cast iron	ferritic	450	-	-
pearlitic		750	-	-	
N	Aluminium alloys long chipping	not heat treatable	200	-	100 – 500
		heat treatable, heat treated	350	-	100 – 300
	Casted aluminium alloys	≤ 12 % Si, heat treated	250	-	100 – 500
		≤ 12 % Si, heat treatable, heat treated	300	-	100 – 300
		≤ 12 % Si, not heat treatable	450	-	100 – 200
	Copper and copper alloys (Brass/Bronze)	Lead alloys, Pb > 1 %	400	-	100 – 500
		Brass, Bronze	300	-	100 – 500
Aluminium bronze		500	-	100 – 300	
Copper and elektrolyte copper		200	-	100 – 300	
Non-ferrous materials	Duroplastic	-	-	80 – 180	
	Re-inforced plastics	-	-	60 – 150	
	Hard rubber	-	-	100 – 220	
S	High temperature resistant alloys	Fe-alloyed, annealed	700	-	20 – 50
		Fe-alloyed, heat treated	950	-	20 – 40
		Ni- or Co-alloyed, annealed	800	-	15 – 25
		Ni- or Co-alloyed, casting	1100	-	10 – 20
		Ni- or Co-alloyed, heat treated	1200	-	10 – 20
	Titanium alloys	Pure titan	500 – 700	-	50 – 120
Alpha- and Beta-alloys	heat treated	700 – 1000	-	30 – 50	
H	Hardened steel	hardened	55 HRC	-	-
			60 HRC	-	-
	Hard cast iron	casting	41 HRC	-	-
	Hardened cast iron	hardened	55 HRC	-	-

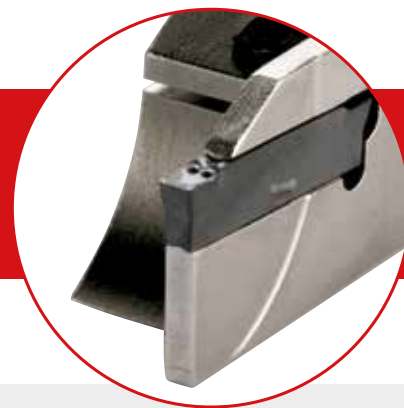
The recommended cutting data are only approximate values.
It may be necessary to adjust them to each individual machining application.

Application recommendations – TNMU31



SA-Grooving and parting system

Portfolio expanded



With the SA-Grooving and parting system we offer you a cost competitive and productive solution for part-off and grooving up to 80 mm diameter. The product portfolio includes monoblock holders, holders especially for sliding head auto lathes, NC modules and blades. The inserts are available in sizes SA16, SA17, SA24 and SA35 and in groove width 2, 2.5, 3 and 4 mm.



News

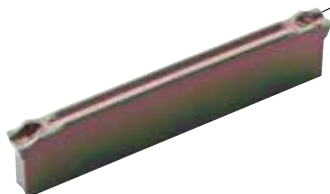
Monoblock holders

- Shank sizes from 8 x 8 to 40 x 40 mm
- Groove widths from 1.5 to 10 mm



Part-off blades

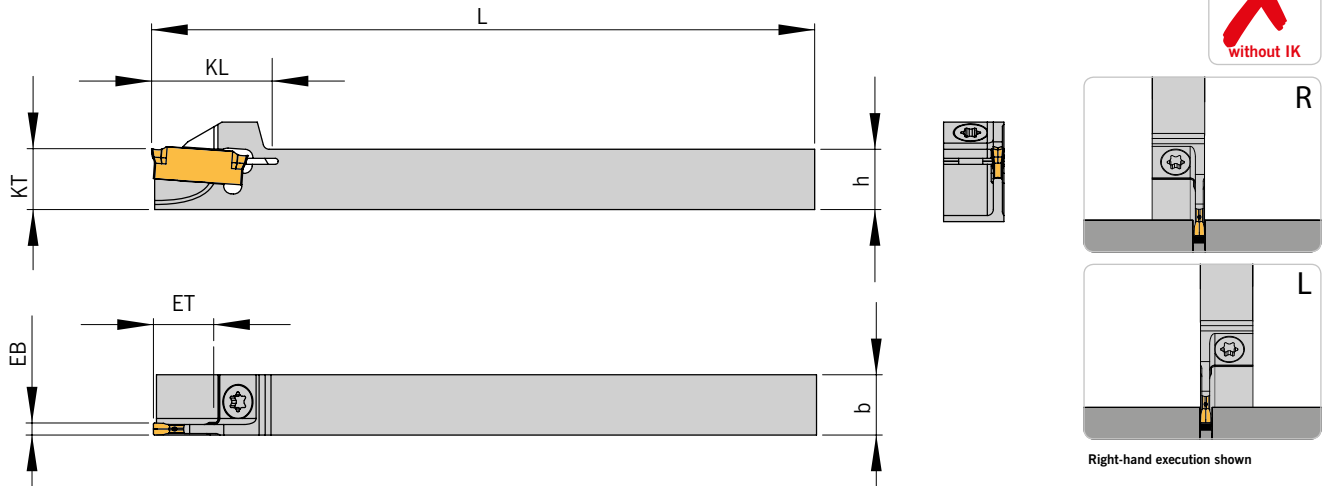
- Sizes 26 and 32 mm
- Groove widths from 1.5 to 4 mm



Inserts

- SA17.. -ALU geometry
- SA24.../SA35... Grade AP2240

HSA



For sliding head auto lathes

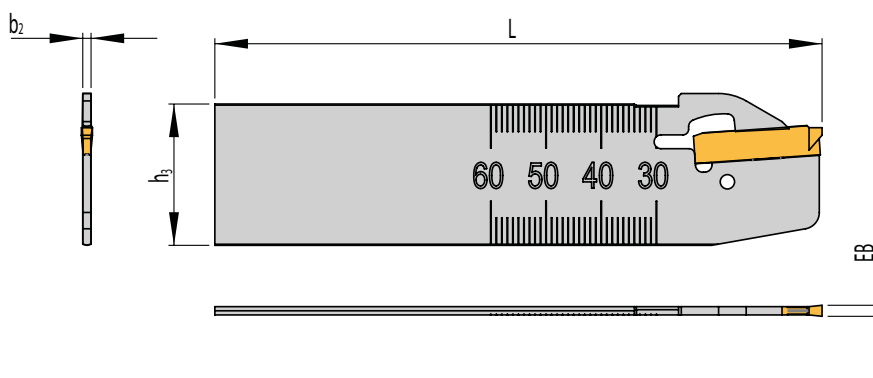
Designation	EB	ET	D _{max}	D _R	h	b	L	KL	KT	Inserts	News
HSA 2020R-SA1603-26	3	13	26	-	20	20	110	-	-	SA 1603...	Expansion of standard range
HSA 2020L-SA1603-26	3	13	26	-	20	20	110	-	-	SA 1603...	

Spare parts

Holder	Screw	Key
HSA 2020...	AS0022	KS8000

For more information about the SA-Grooving and parting system see our ARNO® catalogue „Tools and inserts for parting and grooving“ chapter 1

KSA-N



Self-clamping blade

Designation	EB	h ₃	b ₂	L	Insert	News
KSA 32025N	2.5	32	2	110	SA24E-2503... / SA24-25...	New groove width 2.5 mm

Spare parts

Blade	Key
KSA ...N	S-KSA



For more information about the SA-Grooving and parting system see our ARNO® catalogue „Tools and inserts for parting and grooving“ chapter 1

Grade description

Coated

AP2240

CVD coated carbide grade

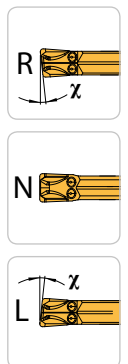
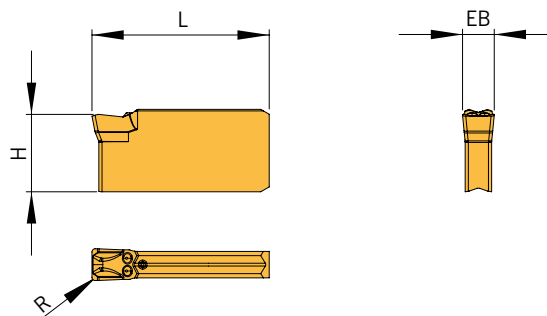
The AP2240 provides more toughness and heat resistance and thereby even more tool life. The strong cutting edge improves the process reliability. Main application area is steel and cast iron machining. Can also be used for stainless steel machining.

Uncoated

AN1015

Uncoated carbide grade which in connection with a ground cutting edge is for finishing and roughing of aluminium alloys and non-ferrous materials. In order to reduce build up edge problems the insert is also highly polished.

SA17



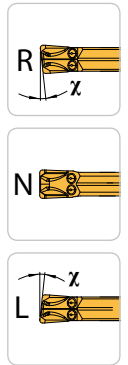
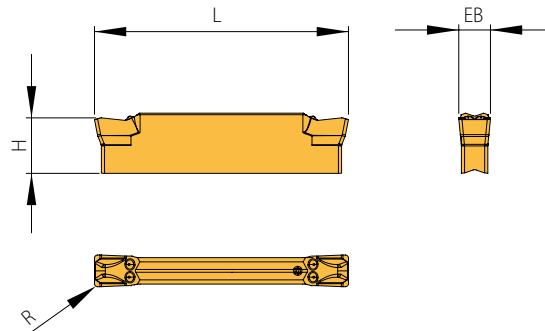
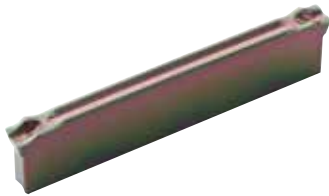
Designation	EB	H	L	R	χ	uncoated		News
							AN1015	
SA17-2002N-ALU	2.0	7.5	16.75	0.2	0°		●	SA17 in -ALU geometry with 2.0 mm groove width
SA17-2001L-ALU-15	2.0	7.5	16.75	0.1	15°		●	
SA17-2001R-ALU-15	2.0	7.5	16.75	0.1	15°		●	
SA17-3003N-ALU	3.0	7.5	16.75	0.3	0°		●	SA17 in -ALU geometry with 3.0 mm groove width
SA17-3002L-ALU-15	3.0	7.5	16.75	0.2	15°		●	
SA17-3002R-ALU-15	3.0	7.5	16.75	0.2	15°		●	

● Main application
○ Secondary application

P	
M	
K	○
N	●
S	○
H	

Inserts

SA24/SA35



Designation	EB	H	L	R	χ	PG 38 coated	News
						AP2240	
SA24-2002N-S1	2.0	5.5	24.00	0.2	0°	●	New grade for steel machining. 2.0 mm width
SA24-2002N-T1	2.0	5.5	24.00	0.2	0°	●	
SA24-3003N-M1	3.0	5.5	24.00	0.3	0°	●	New grade for steel machining. 3.0 mm width
SA24-3003L-M1	3.0	5.5	24.00	0.3	6°	●	
SA24-3003R-M1	3.0	5.5	24.00	0.3	6°	●	
SA24-3003N-S1	3.0	5.5	24.00	0.3	0°	●	
SA24-3003N-T1	3.0	5.5	24.00	0.3	0°	●	
SA35-3003N-M1	3.0	7.5	35.00	0.3	0°	●	New grade for steel machining. Size SA35. 3.0 mm wide
SA35-3003L-M1	3.0	7.5	35.00	0.3	6°	●	
SA35-3003R-M1	3.0	7.5	35.00	0.3	6°	●	
SA35-3003N-S1	3.0	7.5	35.00	0.3	0°	●	
SA35-3003N-T1	3.0	7.5	35.00	0.3	0°	●	

Application	P	M	K	N	S	H
● Main application	●	○	●			
○ Secondary application						

For more information about the SA-Grooving and parting system see our ARNO® catalogue „Tools and inserts for parting and grooving“ chapter 1

Recommended cutting data

SA

ISO	Material	Tensile strength (N/mm ²)	Cutting speed Vc (m/min)		
			coated	uncoated	
			AP2240	AN1015	
P	Unalloyed steel and cast steel	< 0.15 % C/hardened and tempered	350	130–250	-
		0.15–0.45 % C/hardened and tempered	650	110–190	-
		> 0.45 % C/hardened and tempered	1000	70–170	-
	Low alloyed steel and cast steel	annealed	600	120–200	-
		hardened and tempered	900	110–180	-
	High alloyed steel	annealed	1200	70–150	-
		hardened	700	90–170	-
	High alloyed tool steel and cast steel	hardened	1100	70–160	-
Stainless steel	ferritic, annealed	700	120–200	-	
M	Cast steel	martensitic, hardened and tempered	1000	60–100	-
		martensitic / austenitic, heat treated	450–600	100–170	-
K	Stainless steel	ferritic / martensitic, annealed	600–900	60–90	-
		pearlitic/ferritic	500–700	100–200	120–160
	Cast iron	pearlitic/martensitic	700–850	90–180	100–150
			800–1100	80–150	90–140
	Cast iron with nodular graphite	ferritic	550	100–160	130–170
		pearlitic	800	70–140	90–130
	Malleable cast iron	ferritic	450	100–200	140–200
		pearlitic	750	80–150	120–160
N	Aluminium alloys long chipping	not heat treatable	200	-	300–500
		heat treatable, heat treated	350	-	200–300
	Casted aluminium alloys	≤ 12 % Si, heat treated	250	-	100–500
		≤ 12 % Si, heat treatable, heat treated	300	-	100–300
		≤ 12 % Si, not heat treatable	450	-	100–200
	Copper and copper alloys (Brass/Bronze)	Lead alloys, Pb > 1 %	400	-	250–500
		Brass, Bronze	300	-	200–500
		Aluminium bronze	500	-	150–300
Copper and elektrolyte copper		200	-	150–300	
Non-ferrous materials	Duroplastic	-	-	80–180	
	Re-inforced plastics	-	-	60–150	
	Hard rubber	-	-	100–200	
S	High temperature resistant alloys	Fe-alloyed, annealed	700	-	30–45
		Fe-alloyed, heat treated	950	-	20–35
		Ni- or Co-alloyed, annealed	800	-	15–25
		Ni- or Co-alloyed, casting	1100	-	10–20
		Ni- or Co-alloyed, heat treated	1200	-	10–20
	Titanium alloys	Pure titan	500–700	-	60–120
Alpha- and Beta-alloys	heat treated	700–1000	-	30–50	
H	Hardened steel	hardened	55 HRC	-	-
			60 HRC	-	-
	Hard cast iron	casting	41 HRC	-	-
	Hardened cast iron	hardened	55 HRC	-	-

The recommended cutting data are only approximate values.
It may be necessary to adjust them to each individual machining application.

Milling system FTA

New inserts



FTA face milling cutter

The FTA milling has a 45° approach angle and its inserts 8 effective cutting edges. Excellent stability and low power consumption even at maximum cutting data.

The positive chip breaker geometry provides a very soft cutting action and is therefore gentle to the wear of the machine spindle. The cutter is made with unequal pitch design which reduces vibrations. An excellent combination of price and productivity.

Grade description

AP5440

PVD coated carbide grade

This PVD coated grade is first choice when machining under unstable conditions or with long overhang at low to medium cutting speeds. AP5440 is mainly for milling steel materials.

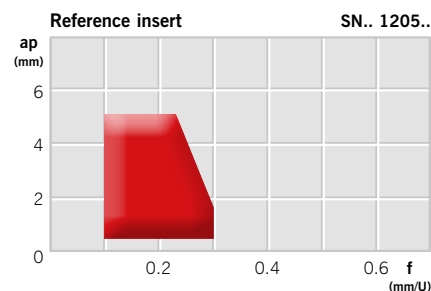
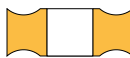
Geometry description

- NMS1

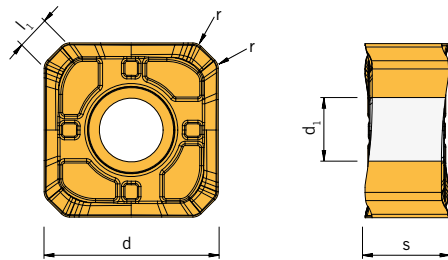
This new geometry is for steel milling, the high positive geometry has a chip angle of 26°.



Medium to rough cutting
double sided



SNMX



						coated	News												
Designation	IK	l_1	s	d_1	r	AP5440													
SNMX 120508EN-NMS1	12.0	2.0	5.56	4.4	0.8	●	New grade and geometry for steel milling												
<ul style="list-style-type: none"> ● Main application ○ Secondary application 						<table border="1"> <tr><td>P</td><td>●</td></tr> <tr><td>M</td><td></td></tr> <tr><td>K</td><td></td></tr> <tr><td>N</td><td></td></tr> <tr><td>S</td><td></td></tr> <tr><td>H</td><td></td></tr> </table>	P	●	M		K		N		S		H		
P	●																		
M																			
K																			
N																			
S																			
H																			

For more information about the Milling system FTA see our ARNO® catalogue „Milling and thread milling“ chapter 1

ISO	Material	Tensile strength (N/mm ²)	Cutting speed Vc (m/min)	
			uncoated	
			AP5440	
P	Unalloyed steel and cast steel	< 0.15 % C/hardened and tempered	350	200-275
		0.15-0.45% C/hardened and tempered	650	170-250
		> 0.45% C/hardened and tempered	1000	150-250
	Low alloyed steel and cast steel	annealed	600	150-250
		hardened and tempered	900	140-200
	High alloyed steel	annealed	700	140-210
		hardened	1100	100-170
High alloyed tool steel and cast steel	hardened	1100	100-170	
Stainless steel	ferritic, annealed	700	140-190	
Cast steel	martensitic, hardened and tempered	1000	100-170	
M	Stainless steel	ferritic / martensitic, annealed	450-600	-
		martensitic / austenitic, heat treated	600-900	-
K	Cast iron	pearlitic/ferritic	500-700	-
		pearlitic/martensitic	700-850	-
	Cast iron with nodular graphite	ferritic	550	-
		pearlitic	800	-
	Malleable cast iron	ferritic	450	-
pearlitic	750	-		
N	Aluminium alloys long chipping	not heat treatable	200	-
		heat treatable, heat treated	350	-
	Casted aluminium alloys	≤ 12 % Si, heat treated	250	-
		≤ 12 % Si, heat treatable, heat treated	300	-
		≤ 12 % Si, not heat treatable	450	-
	Copper and copper alloys (Brass/Bronze)	Lead alloys, Pb > 1 %	400	-
		Brass, Bronze	300	-
Aluminium bronze		500	-	
Copper and elektrolyte copper		200	-	
Non-ferrous materials	Duroplastic	-	-	
	Re-inforced plastics	-	-	
	Hard rubber	-	-	
S	High temperature resistant alloys	Fe-alloyed, annealed	700	-
		Fe-alloyed, heat treated	950	-
		Ni- or Co-alloyed, annealed	800	-
		Ni- or Co-alloyed, casting	1100	-
	Ni- or Co-alloyed, heat treated	1200	-	
Titanium alloys	Pure titan	500-700	-	
Alpha- and Beta-alloys	heat treated	700-1000	-	
H	Hardened steel	hardened	55 HRC	-
		hardened	60 HRC	-
	Hard cast iron	casting	41 HRC	-
Hardened cast iron	hardened	55 HRC	-	

The recommended cutting data are only approximate values.
It may be necessary to adjust them to each individual machining application.

NEW LEAFLETS 2014

ACS technology leaflet

With this new leaflet we introduce our ACS – ARNO®-Cooling-System range of through tool coolant part-off tooling.

- ACS1 and ACS2 modules
- Monoblock holders with various coolant connectors
- KMH holders for monoblock ACS1 holders
- Part-off holders with through tool ACS coolant



AMS & SIM leaflet

The extended and current leaflet of our AMS & SIM range.

- Extensive range of inserts for circlip DIN471/472 grooves
- Extended range of axial grooving inserts
- New inserts for 95° turning
- New inserts for 45° copy-turning



Carbide turning insert leaflet

New insert range for machining high temperature alloys and exotic materials.

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- Extensive product range



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for parting and grooving



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for milling and thread milling



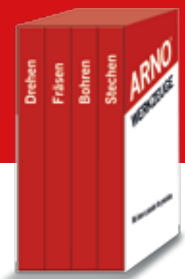
Drilling tools and indexable inserts
for drilling

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