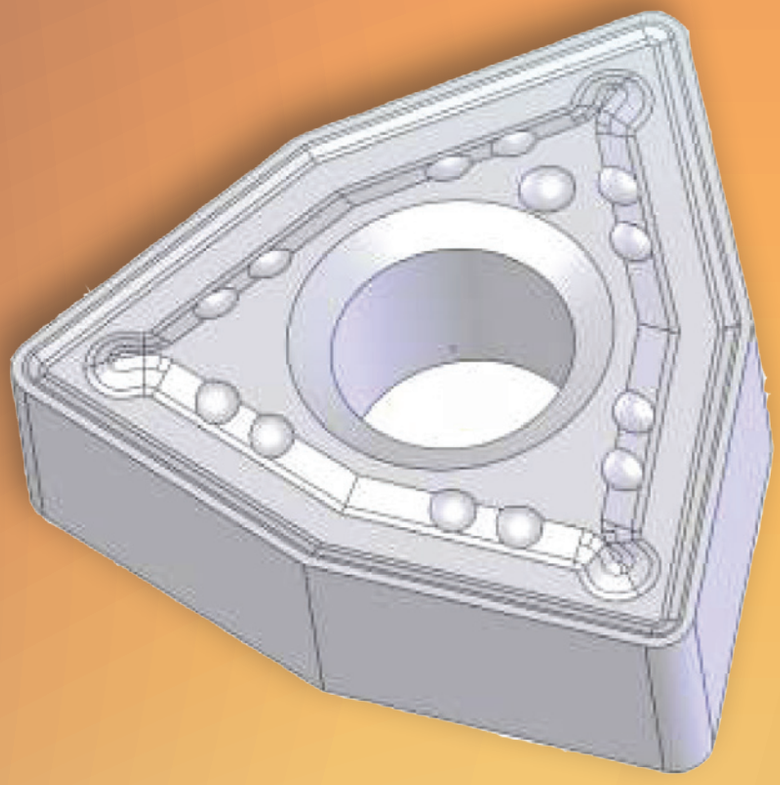
ADD engineering

METALWORKING
CUTTING INSERTS
TURNING TOOLS



Germany | India | Russia

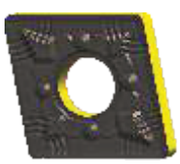
Germany | India | Russia

MODERN DESIGNS OF INSERTS

Designing and manufacturing of modern metal cutting inserts is one of the major scopes of the company for 2012-2013. The experience in close working with our customers confirm that demand on inserts with new design is constantly rising. Many companies have tested and now are using our inserts for efficient machining.

We are constantly obsessed in improving durability of our products, widening the product range. In many test runs on large machine building companies the most efficient designs were worked out and types and structures of protective coatings.

Today we can confidently recommend some of them.



Insert WNMG-080408 with chipbreaker geometry R2 turned out to be one of the most popular at metalworking companies. The insert is designed for rough machining of alloyed, carbon steel and also for grey and malleable cast iron. Cutting edge and chip breaker design allows to use the insert also for finishing. It can definitely be used for semifinish machining particularly for structural alloyed steel in wide range of cutting speeds (45-270 m/min).

Insert CNMG-120408 with chipbreaker geometry R4 also is in great demand among our customers. Insert is designed for machining of structural, alloyed steels and cast irons. In proper combination with hardmetal grade the insert can be used for machining of stainless and heat-resistant steels. Due to double-sided design the durability is twice comparing to single-sided inserts. Efficient design of chip breaker provides wide range of chipbreaking at different process rates.

Insert SNMM-250724 with chipbreaker geometry R1 after numerous test runs proved its universal application. Being previously designed for rough turning the insert showed good results in heavy rough and semifinish turning. Even some companies use this insert for finishing. Alloyed, carbon and stainless steels can also be treated with this insert. The possible cutting depth can reach 14 mm. Successful design of insert in combination with modern hardmetal grade TP35AM significantly improves the life time of tool.

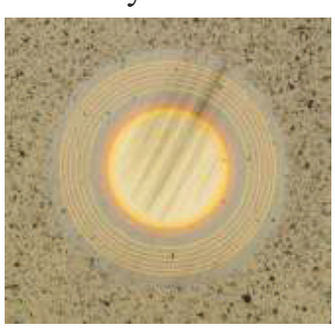
Inserts TCMT-110204 with geometry E-F2 and CCMT-060204 with geometry F3 are aimed for finish turning of alloyed, stainless steels and cast iron. Special features of insert (sharp edges, positive geometry with normal clearance of 7°) provide the application for treatment of hard-to-machine materials – heat-resistant steels, stainless steels of austenitic grade. It's important to notice that high demand on this inserts is provided by cheap price, lower than similar inserts of different hardmetal producers.

MODERN WEAR-RESISTANT COATINGS

High operating abilities of inserts can be reached only in appropriate combination of design features with proper hardmetal grade and type of resistant coating. Modern wear-resistant coatings which we use for new inserts proved their efficiency. Among coatings in demand we want to highlight the folowing:

CVD gold coating PT. As a rule four-layer wear-resistant coating is used for heavy rough turning. This coating can stand dynamic loads, shocks common for surface of castings and forgings. Wear-resistant coatings applied on hardmetal inserts consist of 4 layers - two layers of titanium nitride TiN, titanium carbonitride TiCN and aluminium oxide Al_2O_3.

Layer of titanium nitride provides good adhesion between substrate and coating. Titanium nitride is a material which can keep toughness and adhesion properties at increased temperatures. That's why it is also used as a top layer of **PT** coating and is a key to effective turning.



Layer of titanium carbonitride consists of columned vertical crystals. They provide high chipping and peeling resistance for cutting edge. Such tough structure is obtained as a result of using new technology in coating process. The process is made at decreased temperature and called MT-CVD (medium-temperature chemical coating). MT-CVD coatings differ from conventional in better adhesion of first layer to hardmetal substrate and provide the absence of η - phase in the boarder between hardmetal and coating.

Layer of aluminium oxide has universal properties. Aluminium oxide has a perfect hexagonal crystal structure, high hardness and low adhesion to machined material. Also as aluminium oxide has a low thermal conductivity it protects cutting edge from overheating and thermal crack formation.

CVD coating PT-P in black-golden color. New type of coating. Face surface of insert has a top layer of black aluminium oxide Al_2O_3 and high quality polished surface. All this provides easy chip flow and heat-removal from cutting area. Clearance surface of insert in gold color as it's covered with wear-resisted layer of titanium nitride. Also it indicates a wear of insert. Appearing of black scratches on clearance surface shows a wear of cutting edge.

PVD dark purple coating AM. Designed for milling of castings, stampings, forgings of carbon, alloyed and corrosion-resistant steels. Special feature of this coating is the presence of fine multilayers in significant quantities which consist of AlTiN and TiAlN compounds. Such multilayer structure provides durable interrupted cutting and machining in unstable conditions with high loads. Coating improves mechanical and thermal shock strength of cutting edges. Experience shows that AM coating can be successfully used in turning.

The usage of equipment for coating end mill products for manufacturers is constantly expanding. Our customers are assured that coated tools have increased durability and are more competitive.

LONG-LENGTH BLANKS FOR END MILL TOOLS

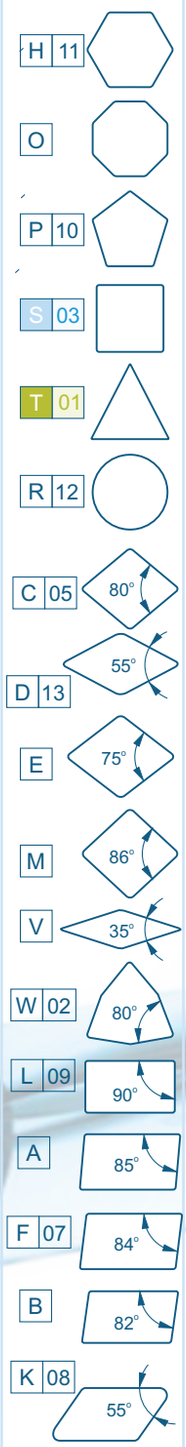
Hardmetal monolitic end mill tools which being used in metalworking by russian companies are usually made of import blanks with length of 300-330 mm.

ADD is the first in Russia who in 2010 started production of such blanks. In 2011 the product range was significantly increased. At the moment end mill blanks of following diameters are produced: 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16 and 20 mm. On request blanks can be produced with diameter step of 0,5 mm. In the future we are planning to start production of end mill blanks with special holes for admission of coolant to cutting area.

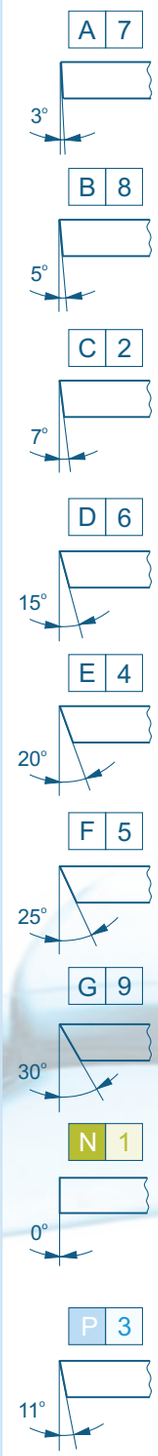
Specially for end mill blanks production new submicron hardmetal grade A04 was created and being used for serial production. Comparative tests showed that grade A04 in physical-mechanical properties is identical to analogs of the world leaders in hardmetal production.

S	P	K	N
03	3	7	1
T	**N**	**U**	**N**
01	1	1	1

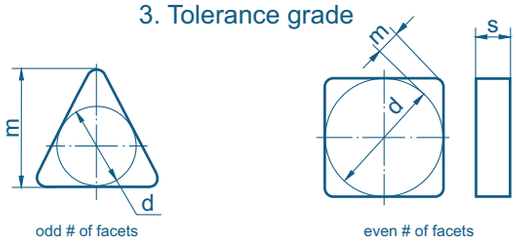
1. Shape of insert



2. Normal clearance



3. Tolerance grade



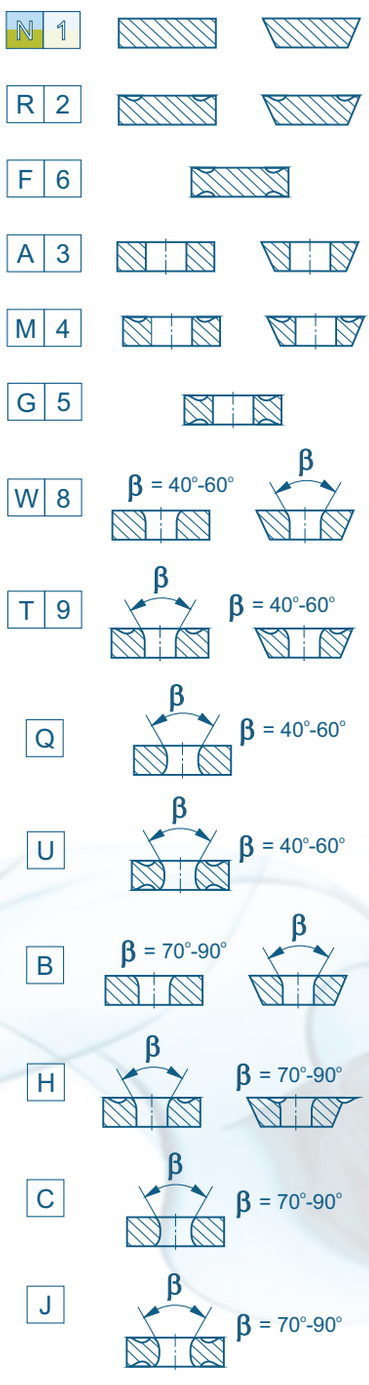
Dimensions deviations, mm			
d	m	s	
A*			6
± 0.025	± 0.005	± 0.025	
F*			
± 0.013	± 0.005	± 0.025	
C*			4
± 0.025	± 0.013	± 0.025	
H			
± 0.013	± 0.013	± 0.025	
E			5
± 0.025	± 0.025	± 0.025	
G			3
± 0.025	± 0.025	± 0.13	
J*			
±0.05 upto ±0.15**	± 0.005	± 0.025	
K*			7
±0.05 upto ±0.15**	± 0.013	± 0.025	
L*			
±0.05 upto ±0.15**	± 0.025	± 0.025	
M			2
±0.05 upto ±0.15**	±0.08 upto ±0.20**	± 0.13	
N			
±0.05 upto ±0.15**	±0.08 upto ±0.20**	± 0.025	
U			1
±0.08 upto ±0.25**	±0.13 upto ±0.38**	± 0.13	

* Tolerance grades for inserts with grinded facets

** Deviation depends on dimensions of inserts

Diameter of inscribed circle	Deviation of dimensions			
	d		m	
	Tolerance grade			
	J,K,L,M	U	M	U
from 4.76 to 10.0	± 0.05	± 0.08	± 0.08	± 0.13
from 12.0 to 12.7	± 0.08	± 0.13	± 0.13	± 0.20
from 15.875 to 22.25	± 0.10	± 0.18	± 0.15	± 0.27
from 25.0 to 25.4	± 0.13	± 0.25	± 0.18	± 0.38
from 31.75 to 32.0	± 0.15	± 0.25	± 0.20	± 0.38

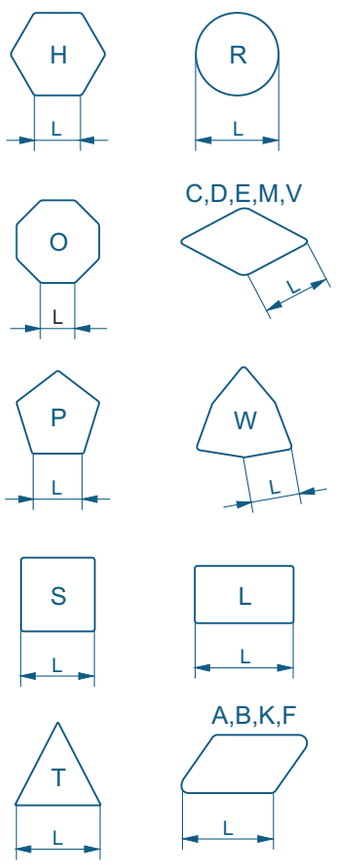
4. Constructional features



X - others need additional comments

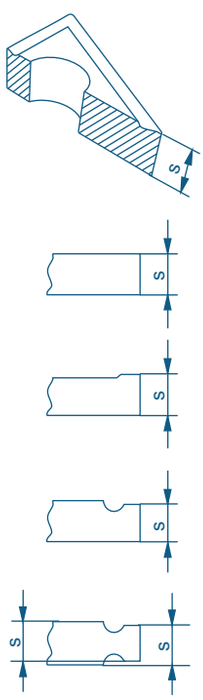
15	04	ED	S-13-02	R	-	
15	04	36	3-13-02	1	-	
16	06	08	T-13		-	
16	06	08	2-13		-	

5. Cutting edge length



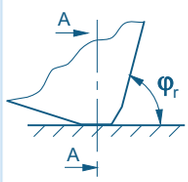
d,mm \ L,mm	H	O	P	S	T	C	D	E	M	V	W	R
3.97	–	–	–	03	06	04	–	–	–	–	–	–
4.76	–	–	–	04	08	04	05	04	04	08	–	–
5.56	–	–	–	05	09	05	06	05	05	09	03	–
6.35	03	02	04	06	11	06	07	06	06	11	04	06
7.94	04	03	05	07	13	08	09	08	07	13	05	07
9.525	05	04	07	09	16	09	11	09	09	16	06	09
12.7	07	05	09	12	22	12	15	13	12	22	08	12
15.875	09	06	11	15	27	16	19	16	15	27	10	15
19.05	11	07	13	19	33	19	23	19	19	33	13	19
25.4	14	10	18	25	44	25	31	26	25	44	17	25
31.75	18	13	23	31	54	32	38	32	31	54	21	31

6. Thickness of insert



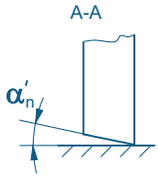
s, mm	Designation
1.59	01
1.98	T1
2.38	02
3.18	03
3.97	T3
4.76	04
5.56	05
6.35	06
7.94	07
8.00	08
9.52	09
12.70	12

7. Normal clearance on facet, nose radius

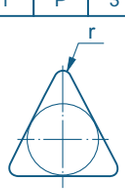


φ_r	Designation	
45°	A	1
60°	D	2
75°	E	3
85°	F	4
90°	P	5

A-A

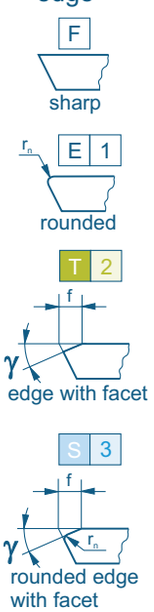


α'_n	Обозначение	
3°	A	7
5°	B	8
7°	C	2
15°	D	6
20°	E	4
25°	F	5
35°	G	9
0°	N	1
11°	P	3



r,мм	Обозначение
0.2	02
0.4	04
0.8	08
2.4	24
для круглых пластин	00 M0

8. Shape of cutting edge

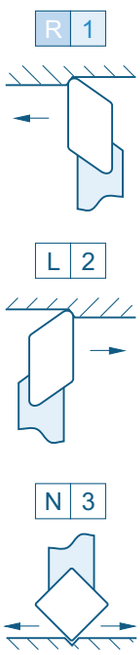


Code	r_n, mm
02	0.02 - 0.03
03	0.03 - 0.05
05	0.05 - 0.08
08	0.08 - 0.10

Code	f, mm
1	0.1 - 0.2
2	0.2 - 0.3
3	0.3 - 0.4
4	0.4 - 0.5
5	0.5 - 0.6
6	0.6 - 0.7
7	0.7 - 0.8
8	0.8 - 0.9
9	0.9 - 1.0

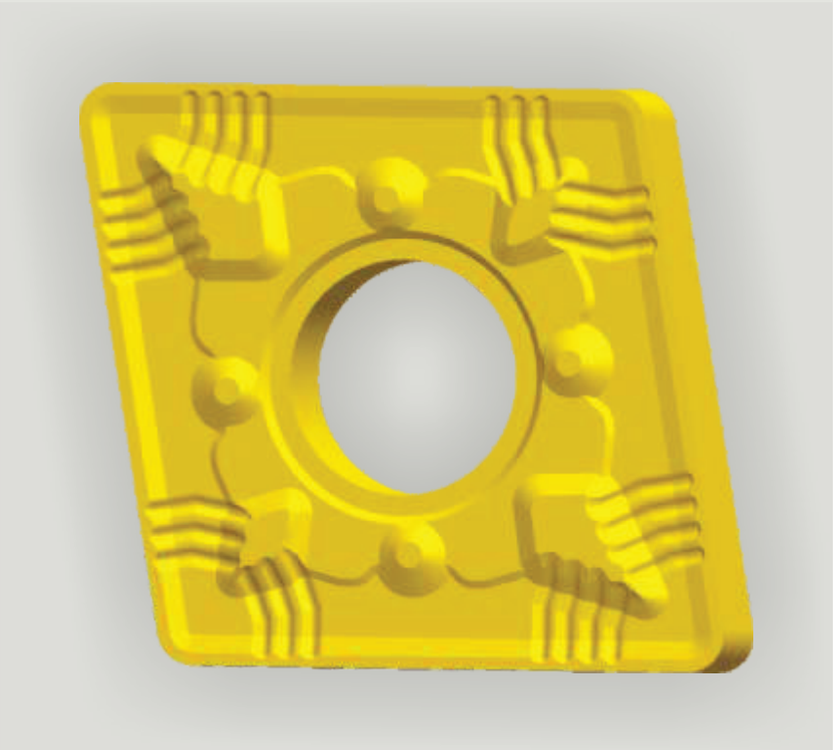
Code	γ
1	5°
2	10°
3	15°
4	20°
5	25°
6	30°
7	35°
8	40°
9	45°

9. Direction of cutting



10. Special designation of manufacturer

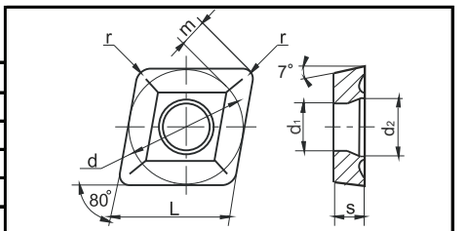
Epmsn on ISO	MATERIAL CHARACTERIZATION	TYPE OF STEELS AND ALLOYS on GOST
P	**Carbon steel**	
	C= 0,1 - 0,25 %	Ст0, Ст1, Ст2, Ст3, 05кп, 08кп, 08пс, 08, 10пс, 10, 15кп, 15пс, 15, 20кп, 20пс, 20, 25, 15Г, 20Г, 25Г, 10Г2, 09Г2, 09Г2С, А11, А12, А20, АС14, 14Г2АФ, 18Г2АФ, 10ХСНД, 15ХСНД, электротехнические: Э12, Э10, Э8
	C= 0,25 - 0,55 %	Ст4, Ст5, Ст6, 30, 35, 30Г, 40, 45, 40Г, 45Г, 47ГТ, 50, А30, А35, А40, А40Г, А35Е, А45Е, АС40, АС35Г2, АС40Г2
	C= 0,55 - 0,8 %	55, 60, 65, 70, 75, 80, 85, 60Г, 65Г, 70Г, У7А, У8А, У9А, У10А, У11А, У12А, У13А, 80С
	Alloyed steel	15Х, 20Х, 18ХГ, 15ХФ, 20ХФ, 12ГН2МФАЮ, 20ХН, 12ХН2, 12ХН3А, 20ХН3А, 12Х2Н4А, 20Х2Н4А, 14Х2Н3МА, 18Х2Н4МА, 20ХН2М, 15Н2М, 20Н2М, 15ХМ, 20ХМ, 18ХГТ, 25ХГТ, 25ХГМ, 30ХГТ, 20ХГР, 27ХГР, 20ХНР, 20ХГНР, 15ХГН2ТА, 20ХГНТР, 15Х2ГН2ТА, 30Г2, 35Г2, 40Г2, 45Г2, 50Г2, 30Х, 35Х, 38ХА, 40Х, 45Х, 50Х, 30ХРА, 33ХС, 38ХС, 40ХС, 20ХГСА, 25ХГСА, 30ХГСА, 35ХГСА, 30ХМА, 35ХМ, 40ХФА, 40ХГТР, 40ХН, 45ХН, 50ХН, 30ХН3А, 38ХГН, 30ХГСН2А, 30ХН2МА, 38Х2Н2МА, 40ХН2МА, 40Х2Н2МА, 25Х2Н4МА, 20ХН4ФА, 45ХН2МФА, 20Х3ВМФ, 30Х3МФ, 38ХН3МФА, 36Х2Н2МФА, 34ХН1МА, АС12ХН, АС12ХН, АС14ХГН, АС19ХГН, АС20ХГНМ, АС30ХМ, АС38ХГМ, АС40ХГНМ, 55С2А, 60С2А, 70С3А, 50ХГА, 55ХГР, 50ХФА, 50ХГФА, 60С2ХА, 70С2ХА, 60С2ХФА, 65С2ВА, 60С2Н2А
	Bearing	ШХ4, ШХ15, ШХ15ГС, ШХ4РП
	Electrical	Э310-Э360(3411-3425), 2011-2412
	High alloyed and tool steels	
	After annealing	Х12М, Х6ВФ, 7ХГ2ВМ, 6Х6В3МФС, 5ХНМ, 5ХНВ, 4Х3ВМФ, 4Х5В2ФС, 3Х2В8Ф, 11ХФ, 13Х,
	With high hardness	ХСВГ, 9ХС, Х, В2Ф, Р18, Р9, Р6М5, Р18К5Ф2, Р9К5, Р6М5К5, Р2АМ9К5, 11Р3АМ3Ф2, Р12Ф3
	Steel castings	
	Unalloyed	15Л, 20Л, 25Л, 30Л, 35Л, 40Л, 45Л, 50Л, 55Л, У8Л,
	Low-alloy, up to 5%	20ГЛ, 35ГЛ, 30ГСЛ, 20ГФЛ, 30ХГСФЛ, 45ФЛ, 30ХНМЛ, 23ХГС2МФЛ, 20Х5МЛ
	High-alloyed	10Х13Л, 15Х13Л, 20Х13Л, 5Х14НДЛ, 10Х14НДЛ, 20Х8ВЛ
	Manganese and armor steel	10Г13, Г13
M	**Stainless steel**	
	Ferritic / martensitic	08Х13, 12Х13, 20Х13, 30Х13, 40Х13, 14Х17Н2, 12Х17, 15Х25Т, 40Х9С2Л, 95Х18
	Heatproof and martensite aging	11Х11Н2В2МФ, Х5Н12К3М7Т, Н18К9М5Т, Н12К8М4Г2, Н10Х11М2Т, Н9Х12Д2ТБ, 30Х9Н8М4Г2С2, 25Н25М4Г1(TRIP или ПНП), 04Х11Н9М2Д2ТЮ (ЭП832), 03Н17К10В10МТ-ВД (ЭП836-ВД), 03Н18К9М5Т-ВД (ЭП637-ВД), ЧС4-ВИ, ЧС5-ВИ
	Austenitic	12Х18Н10Т, 17Х18Н9, 06Х18Н11, 10Х14АГ15, 10Х14Г14Н4Т (ЭИ711), 12Х17Г9АН4 (ЭИ878), 20Х13Н4Г9 (ЭИ100), 08Х10Н20Т2, 09Х16Н4Б (ЭП56)
	Austenitic, injection mouldin	30Х24Н12СЛ, 40Х24Н12СЛ, 35Х23Н7СЛ, 12Х18Н9ТЛ, 10Х18Н11БЛ, 12Х18Н12М3ТЛ, 55Х18Г14С2ТЛ, 45Г13Н3ЮЛ, 15Х18Н22В6М2Л, 20Х21Н46В8Л, 31Х19Н9МВБТЛ, 10Х17Н10Г4МБЛ, 08Х17Н34В5Т3Ю2Л
K	**Irons**	
	Grey ferritic class	СЧ10, СЧ15,СЧ18, АЧС-3
	Gray pearlitic class	СЧ21, СЧ24, СЧ25, СЧ30, СЧ35, АЧС-1, АЧС-2
	High strength ferritic	ВЧ35, ВЧ40, ВЧ45
	High strength pearlitic	ВЧ50, ВЧ60 ВЧ70, ВЧ80, ВЧ100
	Ductile iron	Ferritic КЧ37-12, КЧ35-10, КЧ30-6, КЧ33-8, АЧК-1, Perlitic КЧ50-5, КЧ55-4
N	**Aluminum alloys**	
	Pure aluminum	А999-А95, А85, А7-А0, АД1, АД0
	Deformable	Амц,Амг2, Амг3, Амг5, Амг6, АД31, Д1, Д16, АК4, АК6, АК8, В95
	Casting	АЛ3, АЛ5, АЛ32, АК52М, АЛ8, АЛ23, АЛ23-1, АЛ27, АЛ27-1, АЛ28, АЛ7, АЛ19, АЛ33, ВАЛ10, АЛ1, АЛ21, АЛ24
	Silumins Si 8%	АЛ2, АЛ4, АЛ9, АЛ34
	Copper and alloys	
	Brass	ЛС59-1,ЛС60-1, ЛС64-2, ЛС74-3, ЛС63-3, ЛЖС58-1-1 (>1%Pb) Л96, Л90, Л85, Л70, Л68, Л63,Л60 (<1% Pb)
	Bronze	БрОЦС4-4-4, БрО6Ц6С3 (>1%Pb) , БрОФ6, БрАЖН10-4-4
S	**Titanium alloys**	
	Commercially pure titanium	ВТ1-00, ВТ1-0, ВТ1Л
	alpha alloys	ВТ3-1, ВТ3-1Л, ВТ4, ВТ5, ВТ5-1, ОТ4
	Alpha + beta alloys	ВТ6, ВТС6, ВТ6Л, ВТ9Л, ВТ14, ВТ14Л, ВТ20, ВТ21Л
	Heat resistant alloys	
	Based on Fe	ХН38ВТ (ЭИ703), ХН28МАБ (ЭП126), 36ХНТЮ (ЭИ702), ХН35ВТЮ (ЭИ787), ХН32Т, ЭП99
	Based on Ni	ХН60В (ВЖ98,ЭИ868), ХН77ТЮ (ЭИ437), ХН72МВКЮ (ЭИ867), ХН60МВТЮ (ЭП487), ХН82ТЮМВ (ЭП460), ВЖ36-Л2, АНВ-300, ЖС6К, ЖС3ДК
	Based on Co	Inconel 600, 601, 604, 625
H	**Hard materials**	
	Hardened steel	Heat-treated steel
	Chilled cast iron	ЧХ16, ЧХ28, ЧХ32, ЧН15Д7, ЧН15Д3Ш, ЧН19Х3Ш, ЧН11Г7Ш, ЧС13, ЧС15, ЧС17



TURNING INSERTS

CCMT

Steel	P								x	x	x	x	x
Stainless steel	M	x	x	x		x	x	x		x			
Cast iron	K	x	x		x	x	x						
Nonferrous materials	N	x	x			x	x						
Heat-resistant alloy	S	x	x	x		x	x						
Increased hardness	H	x			x								



Insert name ISO	Alloy name												Dimensions, mm					
	AP10TT	AP10AM	AP30AM	BC20HT	BP20AM	BP20AT	BP20TT	TP20AM	TP20TT	TP40AM	TC20HT	TC20PT	L	d	d_1	d_2	s	r
CCMT-060202 F3		o			o			o					6,4	6,35	2,8	3,85	2,38	0,2
CCMT-060204 F3	+	+		+	o	o		o			o		6,4	6,35	2,8	3,85	2,38	0,4
CCMT-09T302E F2		o			o			o					9,7	9,525	4,4	6,3	3,97	0,2
CCMT-09T304E F2	+	+	+	+	o	o	o	o	o		+		9,7	9,525	4,4	6,3	3,97	0,4
CCMT-09T308 R5								o		+		o	9,7	9,525	4,4	6,3	3,97	0,8
CCMT-120408 F3	■	+		■	o	o		+	o	+	■		12,9	12,7	5,5	7,43	4,76	0,8
CCMT-120412 R5								o		+		o	12,9	12,7	5,5	7,43	4,76	1,2

geometry of the front surface

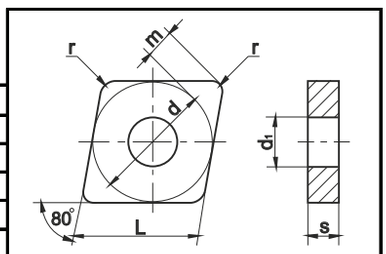

CCMT-F2


CCMT-F3


CCMT-R5

CNGA (05133), CNMA (05123), CNUA (05113)

Steel	P							x	x	x		x	
Stainless steel	M			x	x		x				x	x	
Cast iron	K	x	x	x	x	x	x						
Nonferrous materials	N				x		x						
Heat-resistant alloy	S			x	x		x						
Increased hardness	H	x	x										

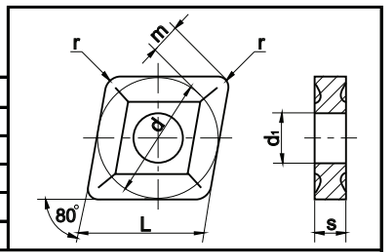


Insert name ISO	Alloy name											Dimensions, mm				
	BC20HT	BC20PT	BP35AM	B20	B25	B35	H10	H20	H30	T20	T40	L	d	d_1	s	r
CNGA-080304						+	+		+			8,1	7,93	3,18	3,18	0,4
CNGA-090304						+	+		+	o		9,7	9,525	3,81	3,18	0,4
CNGA-120408	+					o	o		+	o		12,9	12,7	5,16	4,76	0,8
CNGA-120412	+					o	o		+	o		12,9	12,7	5,16	4,76	1,2
CNGA-160412						o	o		+	o		16,1	15,875	6,35	4,76	1,2
CNMA-090304					o	o			o			9,7	9,525	3,81	3,18	0,4
CNMA-120408	o				+	+	+	o	+	o	o	12,9	12,7	5,16	4,76	0,8
CNMA-120412						o			o			12,9	12,7	5,16	4,76	1,2
CNMA-160412							o	o	+		o	16,1	15,875	6,35	4,76	1,2
CNMA-190612				o	o	o	o		o	o	o	19,3	19,05	7,93	6,35	1,2
CNMA-190616	+		o		o	+						19,3	19,05	7,93	6,35	1,6
CNMA-190624									o			19,3	19,05	7,93	6,35	2,4
CNUA-090304					o	+	+		+		■	9,7	9,525	3,81	3,18	0,4
CNUA-120404												12,9	12,7	5,16	4,76	0,4
CNUA-120408	+	+			o	■	+	+	■		o	12,9	12,7	5,16	4,76	0,8
CNUA-120412	o				o				o			12,9	12,7	5,16	4,76	1,2
CNUA-160412					o	o	■	o	o			16,1	15,875	6,35	4,76	1,2
CNUA-190612	+			o	+	o	o		+			19,3	19,05	7,93	6,35	1,2
CNUA-190616	+					o			+			19,3	19,05	7,93	6,35	1,6
CNUA-190624									o			19,3	19,05	7,93	6,35	2,4

geometry of the front surface

CNMG (05125)

Steel	P						x	x	x	x	x	x						x
Stainless steel	M	x	x		x	x				x			x	x	x	x	x	x
Cast iron	K	x		x	x								x	x		x		
Nonferrous materials	N	x			x								x		x	x		
Heat-resistant alloy	S	x	x		x	x							x	x	x	x		
Increased hardness	H	x		x									x					



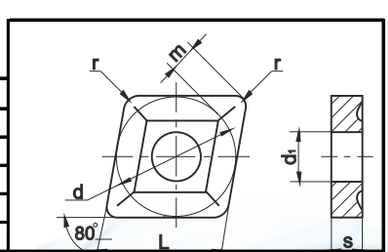
Insert name ISO	Alloy name																Dimensions, mm				
	AP10AM	AP30AM	BC20HT	BP20AM	BP35AM	TC20PT	TC20HT	TC35PT	TC40PT	TP20AM	TP40AM	A10	A20	A30	B20	T20	T40		d	d_1	s	r
CNMG-120404			o			o	o									o	o	12,9	12,7	5,16	4,76	0,4
CNMG-120404 F1	+	o	+	■		+	■			o								12,9	12,7	5,16	4,76	0,4
CNMG-120404 MS	■	+		o						o		+	+	+				19,3	12,7	5,16	4,76	0,4
CNMG-120408			+	o	+	o	o	o	o	o	o				o	o	o	12,9	12,7	5,16	4,76	0,8
CNMG-120408 F1	o			o	o	o	o			o	o							12,9	12,7	5,16	4,76	0,8
CNMG-120408 M2	+		+	+		■	o									o		12,9	12,7	5,16	4,76	0,8
CNMG-120408 R4			+	■	+	+	o	o	+	o	+						o	12,9	12,7	5,16	4,76	0,8
CNMG-120412 R4						o			+		o							12,9	12,7	5,16	4,76	1,2
CNMG-160612 M2				o		+				o								16,1	15,875	6,35	6,35	1,2
CNMG-160612 M7										■								16,1	15,875	6,35	6,35	1,2
CNMG-160612 R2						+			+	o	o						o	16,1	15,875	6,35	6,35	1,2
CNMG-160612 R4						+			+		o							16,1	15,875	6,35	6,35	1,2
CNMG-190612-R2			■	o		■			+	o	o						o	19,3	19,05	7,93	6,35	1,2
CNMG-190612-RS	o			o													o	19,3	19,05	7,93	6,35	1,2
CNMG-190616-M6			■			o				o								19,3	19,05	7,93	6,35	1,6
CNMG-190616-R4						o			+		o							19,3	19,05	7,93	6,35	1,6

geometry of the front surface

CNMG CNMG-F1 CNMG-M2 CNMG-M6 CNMG-M7 CNMG-MS CNMG-R2 CNMG-R4 CNMG-RS

CNMM (05124)
CNUM (05114)

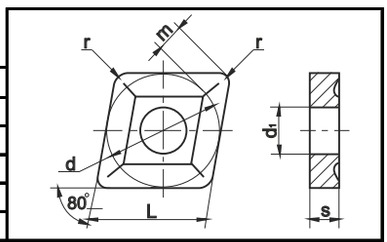
Steel	P				x	x	x	x	x	x				x	x	x		x
Stainless steel	M		x	x					x		x		x				x	x
Cast iron	K	x	x	x							x	x	x					
Nonferrous materials	N		x								x		x					
Heat-resistant alloy	S		x	x							x		x					
Increased hardness	H	x																



Insert name ISO	Alloy name																	Dimensions, mm				
	BC20HT	BP20AM	BP35AM	HP10TT	HP30TT	TC20PT	TC20HT	TC40PT	TP40AM	B20	B25	B35	H10	H20	H30	T20	T40	L	d	d_1	s	r
CNMM-090304												o	+		+			9,7	9,525	3,81	3,18	0,4
CNMM-120404															+			12,9	12,7	5,16	4,76	0,4
CNMM-120408				o	o	o	o	o		o	o	+	·■	o	o	+	+	12,9	12,7	5,16	4,76	0,8
CNMM-120408-2				+	o	·■	o	o		o	o	o	o	o	o	+	o	12,9	12,7	5,16	4,76	0,8
CNMM-120412-2												o	o		o	o	o	12,9	12,7	5,16	4,76	1,2
CNMM-160412				o				o				o	o		o			16,1	15,875	6,35	4,76	1,2
CNMM-160612				o	o		o	o					+		+		o	16,1	15,875	6,35	6,35	1,2
CNMM-190608								o			o	+	+	o	+	o	o	19,3	19,05	7,93	6,35	0,8
CNMM-190608-2												o	o		+	o	o	19,3	19,05	7,93	6,35	0,8
CNMM-190612								o				o	+		+	o	o	19,3	19,05	7,93	6,35	1,2
CNMM-190612-2	o			o	o		o					o	o		o	o	o	19,3	19,05	7,93	6,35	1,2
CNMM-190612-H1	+	o				o	+	+	+								o	19,3	19,05	7,93	6,35	1,2

CNMM (05124)
CNUM (05114)

Steel	P				x	x	x	x	x	x				x	x	x		x	
Stainless steel	M		x	x					x		x		x				x	x	
Cast iron	K	x	x	x							x	x	x						
Nonferrous materials	N		x								x		x						
Heat-resistant alloy	S		x	x							x		x						
Increased hardness	H	x																	



Insert name ISO	Alloy name																	Dimensions, mm				
	BC20HT	BP20AM	BP35AM	HP10TT	HP30TT	TC20PT	TC20HT	TC40PT	TP40AM	B20	B25	B35	H10	H20	H30	T20	T40	L	d	d_1	s	r
CNMM-190616							o	o		o		o	o		+	o	o	19,3	19,05	7,93	6,35	1,6
CNMM-190616-R1			o			+		+	o								o	19,3	19,05	7,93	6,35	1,6
CNMM-250724-H1						o		o	o								o	25,8	25,4	9,12	7,94	2,4
CNMM-250924-H4								o									o	25,8	25,4	9,12	9,52	2,4
CNUM-090304												+	+		+			9,7	9,525	3,81	3,18	0,4
CNUM-090308													o		o			9,7	9,525	3,81	3,18	0,8
CNUM-120404												+	o		+			12,9	12,7	5,16	4,76	0,4
CNUM-120408	o			o				o		o	o	+	+		+	o	o	12,9	12,7	5,16	4,76	0,8
CNUM-120408-2	+			o		o	+	o		o		o	■		■	o	o	12,9	12,7	5,16	4,76	0,8
CNUM-120412												o	o		o			12,9	12,7	5,16	4,76	1,2
CNUM-120412-2												o	o		o	o	o	12,9	12,7	5,16	4,76	1,2
CNUM-160412				o				o				+	+	o	+			16,1	15,875	6,35	4,76	1,2
CNUM-190608										o		o	■		+	o	o	19,3	19,05	7,93	6,35	0,8
CNUM-190608-2										o			+			o		19,3	19,05	7,93	6,35	0,8
CNUM-190612	o							o		o	o	+	+	o	+	o	o	19,3	19,05	7,93	6,35	1,2
CNUM-190612-2							o	o		o		o	■	o	o	o	o	19,3	19,05	7,93	6,35	1,2
CNUM-190616											o	+	+		+		o	19,3	19,05	7,93	6,35	1,6

geometry of the front surface

CNMM
CNUM

CNMM-2
CNUM-2

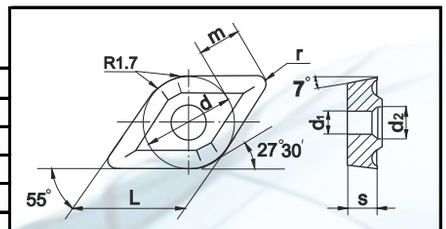
CNMM-R1

CNMM-H1

CNMM-H4

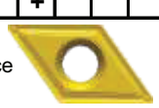
DCMT, DCGT

Steel	P							x		x	
Stainless steel	M	x	x		x	x	x		x		x
Cast iron	K	x		x	x	x					x
Nonferrous materials	N	x			x	x					x
Heat-resistant alloy	S	x	x		x	x					x
Increased hardness	H	x		x							



Insert name ISO	Alloy name										Dimensions, mm					
	AP10AT	AP30AM	BC20HT	BP20AM	BP20AT	BP20TT	TP20AM	TP20TT	TC20HT	A10	L	d	d_1	d_2	s	r
DCMT-11T304 F3	o						+		o		11,6	9,525	4,4	5,86	3,97	0,4
DCGT-11T304 F3	+						+		o	+	11,6	9,525	4,4	5,86	3,97	0,4
DCMT-11T308 F3	+						+				11,6	9,525	4,4	5,86	3,97	0,8

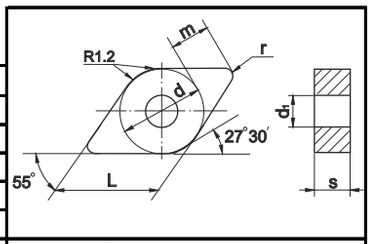
geometry of the front surface



DCMT
DCGT

DNMA (13123)

Steel	P			X	X	X	X	X	X			X	X		X
Stainless steel	M		X				X				X			X	X
Cast iron	K	X	X							X	X				
Nonferrous materials	N		X								X				
Heat-resistant alloy	S		X								X				
Increased hardness	H	X													

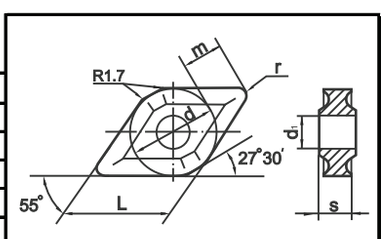


Insert name ISO	Alloy name													Dimensions, mm				
	BC20HT	BP20AM	HP10TT	TC20PT	TC20HT	TC40PT	TP20AM	TP40AM	B25	B35	H10	H30	T20	T40	L	d	d_1	s	r
DNMA-150408										o	o	o			15,5	12,7	5,16	4,76	0,8
DNMA-150608			o		o	o	o	o	o	o	o	+	o	o	15,5	12,7	5,16	6,35	0,8
DNMA-150612										o	o	o	o	o	15,5	12,7	5,16	6,35	1,2

geometry of the front surface

DNMG (13125)

Steel	P				X	X	X	X	X		X	X	X		
Stainless steel	M	X		X						X			X		
Cast iron	K	X	X	X						X					
Nonferrous materials	N	X		X						X					
Heat-resistant alloy	S	X		X						X					
Increased hardness	H	X	X												



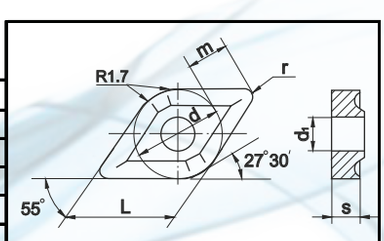
Insert name ISO	Alloy name												Dimensions, mm				
	AP10AM	BC20HT	BP20AM	TC20PT	TC20HT	TC40PT	TP20AM	TP40TT	B35	H10	H30	T40	L	d	d_1	s	r
DNMG-110404 F1	+			o			+						11,6	9,525	3,81	4,76	0,4
DNMG-150408									o	o	o		15,5	12,7	5,16	4,76	0,8
DNMG-150608					o	+	o	o		+	o	o	15,5	12,7	5,16	6,35	0,8
DNMG-150608 M4		o	o		o	+	o	+					15,5	12,7	5,16	6,35	0,8
DNMG-150612 R2				o		o		o					15,5	12,7	5,16	6,35	1,2

geometry of the front surface

DNMG DNMG-F1 DNMG-M4 DNMG-R2

DNMM (13124)

Steel	P		X	X	X	X	X	X			X	X		X	
Stainless steel	M					X				X			X	X	
Cast iron	K	X							X	X					
Nonferrous materials	N									X					
Heat-resistant alloy	S									X					
Increased hardness	H	X													



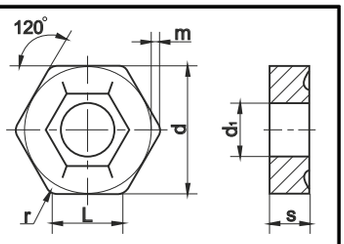
Insert name ISO	Alloy name													Dimensions, mm				
	BC20HT	HP10TT	TC20PT	TC20HT	TC40PT	TP20AM	TP40TT	B25	B35	H10	H30	T20	T40	L	d	d_1	s	r
DNMM-150408									■	■	■			15,5	12,7	5,16	4,76	0,8
DNMM-150608		o		■	■	+	+	o	+	+	■	■	■	15,5	12,7	5,16	6,35	0,8
DNMM-150612									o	+	o	o	o	15,5	12,7	5,16	6,35	1,2

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

HNUM (11114)

Steel	P	x	x	x	x			x	x	x		x
Stainless steel	M						x				x	x
Cast iron	K					x	x					
Nonferrous materials	N						x					
Heat-resistant alloy	S						x					
Increased hardness	H											

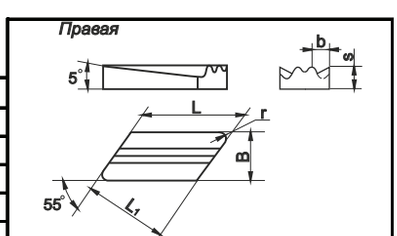


Insert name ISO	Alloy name											Dimensions, mm				
	HP10AM	HP10TT	HP30AM	HP30TT	B25	B35	H10	H20	H30	T20	T40	L	d	d_1	s	r
HNUM-090408			o			■	+	■	■			9,1	15,875	6,35	4,76	0,8
HNUM-110412						■	+	■	o			11	19,05	7,93	4,76	1,2
HNUM-110612						■	o	o	+	o	o	11	19,05	7,93	6,35	1,2
HNUM-120612	o	o		o	o	o	+	+	+		o	12,8	22,2	7,93	6,35	1,2

geometry of the front surface

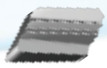
KNUX (08116)

Steel	P	x	x	x	x	x	x	x		x	x	x		x	
Stainless steel	M						x		x				x	x	
Cast iron	K								x						
Nonferrous materials	N								x						
Heat-resistant alloy	S								x						
Increased hardness	H														



Insert name ISO	Alloy name													Dimensions, mm					
	HP10TT	HP30TT	TC20PT	TC20HT	TC35PT	TC40PT	TP40TT	B35	H10	H20	H30	T20	T40	L	L_1	B	s	r	b
KNUX-170405R30								o	o		+			17,0	14,0	10,0	4,8	0,5	3,0
KNUX-170410R30	o	o						o	+		+			17,0	14,0	10,0	4,8	1,0	3,0
KNUX-170410R36	o							+	+		o			17,0	14,0	10,0	4,8	1,0	3,6
KNUX-170415R30														17,0	14,0	10,0	4,8	1,5	3,0
KNUX-170415R36								o	o					17,0	14,0	10,0	4,8	1,5	3,6
KNUX-190605R30	o	o		o		o		o	+	o	■		o	19,0	16,0	10,0	6,3	0,5	3,0
KNUX-190610R30				o		o		o	+	o	■		■	19,0	16,0	10,0	6,3	1,0	3,0
KNUX-190610R36	o		+	■		■	+	+	+	■	■		■	19,0	16,0	10,0	6,3	0,5	3,6
KNUX-190615R30	o					■		o	o		o			19,0	16,0	10,0	6,3	1,5	3,0
KNUX-190615R36								o	o		o		o	19,0	16,0	10,0	6,3	1,5	3,6
KNUX-160410R11						■								19,25	16,0	9,52	4,76	1,0	

geometry of the front surface



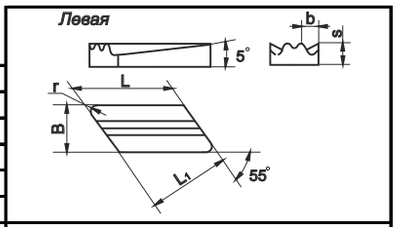
KNUX - R...

KNUX - R11

see next page for continuation of table

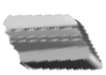
KNUX (08116)

Steel	P	X	X	X	X	X	X	X		X	X	X		X
Stainless steel	M						X		X				X	X
Cast iron	K								X					
Nonferrous materials	N								X					
Heat-resistant alloy	S								X					
Increased hardness	H													



Insert name ISO	Alloy name													Dimensions, mm					
	HP10TT	HP30TT	TC20PT	TC20HT	TC35PT	TC40PT	TP40TT	B35	H10	H20	H30	T20	T40	L	L_1	B	s	r	b
KNUX-170405L30								o	o		+			17,0	14,0	10,0	4,8	0,5	3,0
KNUX-170410L30								o	o		o			17,0	14,0	10,0	4,8	1,0	3,0
KNUX-170410L36									o		o			17,0	14,0	10,0	4,8	1,0	3,6
KNUX-170415L30											o			17,0	14,0	10,0	4,8	1,5	3,0
KNUX-170415L36											o			17,0	14,0	10,0	4,8	1,5	3,6
KNUX-190605L30						o		o	o	o	o			19,0	16,0	10,0	6,3	0,5	3,0
KNUX-190610L30								o	+		■		■	19,0	16,0	10,0	6,3	1,0	3,0
KNUX-190610L36				■		■		o	+				■	19,0	16,0	10,0	6,3	0,5	3,6
KNUX-190615L30								o	o		o		o	19,0	16,0	10,0	6,3	1,5	3,0
KNUX-190615L36								o	o		o		o	19,0	16,0	10,0	6,3	1,5	3,6
KNUX-160410L11						■								19,25	16,0	9,52	4,76	1,0	

geometry of the front surface

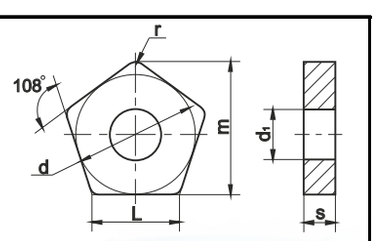


KNUX - L...

KNUX - L11

PNMA (10123)
PNUA (10113)

Steel	P			X	X	X	X	X				X	X	X		X	X	X	
Stainless steel	M	X	X						X		X				X		X	X	
Cast iron	K	X	X						X	X	X								
Nonferrous materials	N	X							X		X								
Heat-resistant alloy	S	X	X						X		X								
Increased hardness	H																		

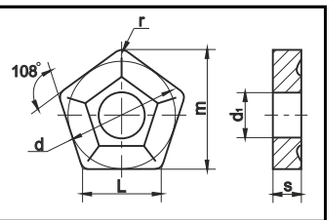


Insert name ISO	Alloy name																	Dimensions, mm				
	BP20AM	BP35AM	HP10AM	HP10TT	HP30AM	HP30TT	TP20AM	B20	B25	B35	H10	H20	H30	T20	T25	T40	T50	L	d	d_1	s	r
PNMA-110408		+	o				o		o	+	+	o	+	o	o	+	■	11,5	15,875	6,35	4,76	0,8
PNMA-130412			o							o	■		o					13,8	19,05	7,93	4,76	1,2
PNMA-130612										+	+		+					13,8	19,05	7,93	6,35	1,2
PNMA-160612										■	■		■			o		16,1	22,2	7,93	6,35	1,2
PNUA-110408	o	+	+	o	+	+	+	o	+	+	+	+	+	+	+	+		11,5	15,875	6,35	4,76	0,8
PNUA-130412		■	o						o	o	■	o	o			o	■	13,8	19,05	7,93	4,76	1,2
PNUA-130612					o			o	o	+	+	o	+	o				13,8	19,05	7,93	6,35	1,2
PNUA-160612					+				o	o	+	o	+					16,1	22,2	7,93	6,35	1,2

geometry of the front surface

PNMM (10124)
PNUM (10114)

Steel	P				x	x	x	x	x	x	x	x						x	x	x		x	x
Stainless steel	M		x	x							x		x	x	x		x					x	x
Cast iron	K	x	x	x										x	x	x	x						
Nonferrous materials	N													x	x		x						
Heat-resistant alloy	S			x										x	x		x						
Increased hardness	H	x												x									

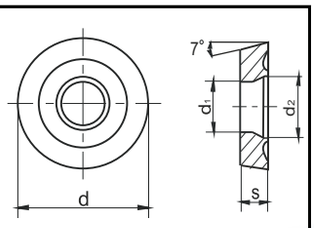


Insert name ISO	Alloy name																					Dimensions, mm				
	BC20HT	BC35PT	BP35AM	HP10AM	HP10TT	HP30AM	HP30TT	TC20HT	TC20PT	TC40PT	TP20AM	TP40TT	A10	B20	B25	B35	H10	H20	H30	T20	T25	T40	L	d	d_1	s	r
PNMM-110408		o	o	o		o	o								o	+	+	o	+	o	o	+	11,5	15,875	6,35	4,76	0,8
PNMM-110416		o	o			o	o								o	+	+		+				11,5	15,875	6,35	4,76	1,6
PNMM-130412																+	+		+				13,8	19,05	7,93	4,76	1,2
PNMM-130420																	o		o				13,8	19,05	7,93	4,76	2,0
PNMM-130612			o												o	■	+		+				13,8	19,05	7,93	6,35	1,2
PNMM-130620															o	■	o		o				13,8	19,05	7,93	6,35	2,0
PNMM-160612				o	o	o	o								o	+	+		■		o	o	16,1	22,2	7,93	6,35	1,2
PNUM-110408	o	+	o	o	o	o	o	+	+	+	■	+	+	+	+	+	+	+	+	■	o	+	11,5	15,875	6,35	4,76	0,8
PNUM-110416			o	o	o					+		o		o	+	+	+	+	+			■	11,5	15,875	6,35	4,76	1,6
PNUM-130412		o	o	o						■					o	+	+	o	■			o	13,8	19,05	7,93	4,76	1,2
PNUM-130420															o	o	o	o	o			o	13,8	19,05	7,93	4,76	2,0
PNUM-130612									+	+					o	+	+	o	+	o		o	13,8	19,05	7,93	6,35	1,2
PNUM-130620		+													o	+	■	o	■				13,8	19,05	7,93	6,35	2,0
PNUM-160612	o	+	o		+			+		+		o		o	o	+	+		+	o		■	16,1	22,2	7,93	6,35	1,2

geometry of the front surface

RCMT

Steel	P							x	x	x		
Stainless steel	M	x	x		x	x	x				x	
Cast iron	K	x		x	x	x						
Nonferrous materials	N	x			x	x						
Heat-resistant alloy	S	x	x		x	x						
Increased hardness	H	x	x	x								



Insert name ISO	Alloy name										Dimensions, mm			
	AP10AT	AP30AM	BC20HT	BP20AM	BP20AT	BP20TT	TP20AM	TC20PT- P	TC20HT	T20	d	s	d_1	d_2
RCMT-1204MO- F3								■	o	o	12,00	4,76	5,5	7,25
RCMT-1606MO- M1								+	o	o	16,00	6,35	5,16	7,3
RCMT-2006MO								■	o	+	20,00	6,35	6,5	9,4

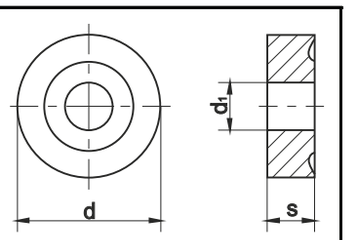
geometry of the front surface

RCMT-F3
RCMT-M1

RCMT

RNGA (12133), RNMA (12123), RNUA (12113)

Steel	P				x	x	x	x	x					x	x	x		x
Stainless steel	M	x	x	x				x		x	x		x				x	x
Cast iron	K	x	x	x						x	x	x	x					
Nonferrous materials	N	x								x	x		x					
Heat-resistant alloy	S	x		x						x	x		x					
Increased hardness	H									x								

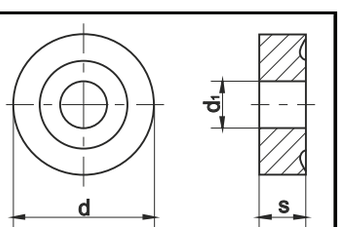


Insert name ISO	Allow name																Dimensions, mm		
	BP20AM	BC35PT	BP35AM	HP10AM	HP30AM	TC20HT	TC40PT	TP40AM	A10	B20	B25	B35	H10	H20	H30	T20	T40	d	d_1	s
RNGA-150400	o		o			o		o		o	o	o	+	o	+	+	o	15,875	6,35	4,76
RNMA-120400																		12,70	5,16	4,76
RNMA-150400												+	+	o	+		o	15,875	6,35	4,76
RNMA-150600												o	o	o	■			15,875	6,35	6,35
RNMA-190600												o	o		o			19,05	7,93	6,35
RNUA-120400					o				o		o	■	o	o	o		o	12,70	5,16	4,76
RNUA-150400			+	■	o	+	o	+	o	o	o	+	+	o	+	o	+	15,875	6,35	4,76
RNUA-150600				o							o	+	■	o	■			15,875	6,35	6,35
RNUA-190600		o	+								o	+	o	o	o			19,05	7,93	6,35

geometry of the front surface

RNMM (12124) RNUM (12114)

Steel	P			x	x	x	x			x	x	x		x
Stainless steel	M	x	x				x		x				x	x
Cast iron	K	x	x					x	x					
Nonferrous materials	N								x					
Heat-resistant alloy	S		x						x					
Increased hardness	H													



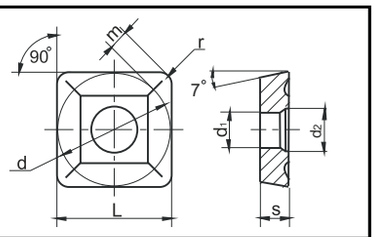
Insert name ISO	Alloy name													Dimensions, mm		
	BC35PT	BP35AM	HP10TT	HP30AM	TC20HT	TC40PT	B25	B35	H10	H20	H30	T20	T40	d	d_1	s
RNMM-120400							o			o	o			12,70	5,16	4,76
RNMM-150400							o	■	■	+	o			15,875	6,35	4,76
RNMM-150600								■	o		o			15,875	6,35	6,35
RNMM-190400										o				19,05	7,93	4,76
RNMM-190600					■		o	o	o		o			19,05	7,93	6,35
RNMM-220600														22,225	7,93	6,35
RNMM-250600														25,40	9,12	6,35
RNMM-250700									o		o			25,40	9,12	7,93
RNUM-090300								+	+		+			9,525	3,81	3,18
RNUM-120300							o	o	o		o			12,7	5,16	3,18
RNUM-120400		o						+	o	o	o			12,7	5,16	4,76
RNUM-150400		o			+	+	o	+	+	+	+	o	o	15,875	6,35	4,76
RNUM-150600							o	o	+		o			15,875	6,35	6,35
RNUM-190400								o	o	o	o			19,05	7,93	4,76
RNUM-190600								o	o	o	+			19,05	7,93	6,35
RNUM-220600							o	o	+		o			22,225	7,93	6,35
RNUM-250600								o	o		o			25,40	9,12	6,35
RNUM-250700									o		o			25,40	9,12	7,93

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

SCMT

Steel	P			x	x	x	x	
Stainless steel	M	x				x		x
Cast iron	K	x						x
Nonferrous materials	N	x						x
Heat-resistant alloy	S							x
Increased hardness	H							



Insert name ISO	Alloy name							Dimensions, mm				
	AP10AM	BP35TM	TC20PT	TP20AM	TC40PT	TC40AM	B35	L=d	d_1	d_2	s	r
SCMT-09T304 F3	o		o	o				9,525	4,4	6,0	3,97	0,4
SCMT-09T308 F3	o		o	+				9,525	4,4	6,0	3,97	0,8
SCMT-120408 F7			o	o	+	o	o	12,7	5,5	7,3	4,74	0,8
SCMT-380932	+	+					+	38,1	8,7	12,4	9,52	3,2

geometry of the front surface

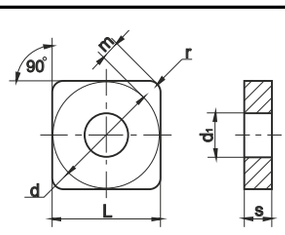

SCMT-F3


SCMT-F7


SCMT

SNGA (03133)
SNMA (03123), SNUA (03113)

Steel	P					x	x	x					x	x	x	x
Stainless steel	M			x	x		x		x	x		x				x
Cast iron	K	x	x	x	x				x	x	x	x				
Nonferrous materials	N								x	x		x				
Heat-resistant alloy	S								x	x		x				
Increased hardness	H	x							x							

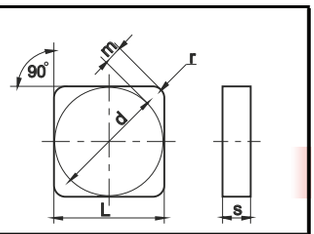


Insert name ISO	Alloy name															Dimensions, mm			
	BC20HT	BC25HT	BC35PT	BP35AM	HP30AM	TC40PTT	TP20AM	A10	B20	B25	B35	H10	H20	H30	T40	L=d	d_1	s	r
SNGA-140412									+		+	+		+		14	5,16	4,76	1,2
SNMA-090304											o					9,525	3,81	3,18	0,4
SNMA-090308											o					9,525	3,81	3,18	0,8
SNMA-120404											o	o		+		12,7	5,16	4,76	0,4
SNMA-120408	o									o	o	o		o	o	12,7	5,16	4,76	0,8
SNMA-120412	o									o	■	+		o	o	12,7	5,16	4,76	1,2
SNMA-150412										o	o	o	o	+		15,875	6,35	4,76	1,2
SNMA-150416											o	+		o		15,875	6,35	4,76	1,6
SNMA-150612	+															15,875	6,35	6,35	1,2
SNMA-190612									o	o	o	o		+	o	19,05	7,93	6,35	1,2
SNMA-190616		+			o				■	o	■			o	o	19,05	7,93	6,35	1,6
SNMA-250716								o		o	+			o		25,4	9,12	7,94	1,6
SNUA-090304										o	■	o	o	o		9,525	3,81	3,18	0,4
SNUA-090308										o	o	o	o	o		9,525	3,81	3,18	0,8
SNUA-120404										o	o	o	o	o	o	12,7	5,16	4,76	0,4
SNUA-120408			o						o	o	■	o	o	■	o	12,7	5,16	4,76	0,8
SNUA-120412		o						o	o	o	o	o	o	■		12,7	5,16	4,76	1,2
SNUA-120416										o	o	o	o	o		12,7	5,16	4,76	1,6
SNUA-120424																12,7	5,16	4,76	2,4
SNUA-150412		o		+	o	o				+	o	■	+	o	o	15,875	6,35	4,76	1,2
SNUA-150416										+	o	o	o	+		15,875	6,35	4,76	1,6
SNUA-190612									+	o	o	o	o	+		19,05	7,93	6,35	1,2
SNUA-190616		+		+						o	o	o	o	o		19,05	7,93	6,35	1,6
SNUA-190624		o								o	o	o	o	o		19,05	7,93	6,35	2,4
SNUA-250716										+	+	o	o	o		25,4	9,12	7,94	1,6
SNUA-250724				o	o					o	+	o	o	+		25,4	9,12	7,94	2,4
SNUA-250724S							+									25,4	9,12	7,94	2,4

geometry of the front surface

SNGN (03131)
SNUN (03111)

Steel	P					x	x	x	x							x	x	x	x		x
Stainless steel	M		x	x	x			x			x	x	x		x					x	x
Cast iron	K	x	x	x	x					x	x		x	x	x						
Nonferrous materials	N		x								x	x	x		x						
Heat-resistant alloy	S		x		x						x	x	x		x						
Increased hardness	H	x									x					x					



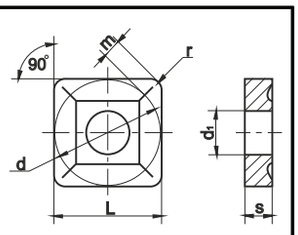
Insert name ISO	Alloy name																				Dimensions, mm		
	BC20HT	BP20AM	BC35PT	BP35AM	HP10TT	TC20HT	TC40PT	TP40AM	BC25HT	A10	A30	B20	B25	B35	H05	H10	H20	H30	T20	T40	L=d	s	r
SNGN-090304													o			o			o		9,525	3,18	0,4
SNGN-090308																o		o			9,525	3,18	0,8
SNGN-120300											+		o			+		+	o		9,525	3,18	0,2
SNGN-120304											+					o					12,7	3,18	0,4
SNGN-120308											+			o		o		+			12,7	3,18	0,8
SNGN-120312											+										12,7	3,18	1,2
SNGN-120408								+					o	+		+		o	o	o	12,7	4,76	0,8
SNGN-120412				o									o	+		o		+	o	o	12,7	4,76	1,2
SNGN-150408														o		o		o			15,875	4,76	0,8
SNGN-150412													o	o		o		o	o		15,875	4,76	1,2
SNGN-150416																					15,875	4,76	1,6
SNGN-190400													o	+		o			o		19,05	4,76	0,2
SNGN-190408																			■	■	19,05	4,76	0,8
SNGN-190412													o	o					o	o	19,05	4,76	1,2
SNGN-190416													o	o		o			o	o	19,05	4,76	1,6
SNUN-090304													o	o		o		o			9,525	3,18	0,4
SNUN-120304																					12,7	3,18	0,4
SNUN-120308														o		+		■	o		12,7	3,18	0,8
SNUN-120408	■				o		o		■				■	o	+	o	+	+	o	o	12,7	4,76	0,8
SNUN-120412	■					o	■	■	■			■	o	o		o		+	o	o	12,7	4,76	1,2
SNUN-120424	o		o						■			o	o	o							12,7	4,76	2,4
SNUN-150408																					15,875	4,76	0,8
SNUN-150412	o			+	o							o	o	o		+		■		+	15,875	4,76	1,2
SNUN-150416													o	o		+		o			15,875	4,76	1,6
SNUN-150424																					15,875	4,76	2,4
SNUN-190412							■						o	■		o		o		+	19,05	4,76	1,2

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

SNMM (03124)
SNUM (03114)

Steel	P					x	x	x	x		x	x	x			x	x	x		x
Stainless steel	M			x	x					x		x		x	x				x	x
Cast iron	K		x	x	x					x				x	x					
Nonferrous materials	N													x	x					
Heat-resistant alloy	S				x					x				x	x					
Increased hardness	H		x																	

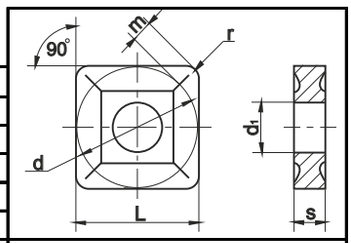


Insert name ISO	Alloy name																			Dimensions, mm			
	AC20HT	BC20HT	BC35PT	BP35AM	HP10TT	HP30TT	TC20PT	TC20HT	TP20AM	TC35PT	TC40PT	TP40AM	B20	B35	H10	H20	H30	T20	T40	L = d	d_1	s	r
SNMM-090304														o	o		o			9,525	3,81	3,18	0,4
SNMM-090308														o	o		o			9,525	3,81	3,18	0,8
SNMM-120404														o	o		o	o	o	12,7	5,16	4,76	0,4
SNMM-120408					o					o	o		o	+	+	o	o	o	o	12,7	5,16	4,76	0,8
SNMM-120408-2					o		o	o			o			o	+		o	o	o	12,7	5,16	4,76	0,8
SNMM-120412											o		o	+	o	o	+	o	o	12,7	5,16	4,76	1,2
SNMM-120412-2							o				o			o	+		o	o	o	12,7	5,16	4,76	1,2
SNMM-120412 R3											o								o	12,7	5,16	4,76	1,2
SNMM-150412		o	o		o	o		o			o			■	+	+	■	o	o	15,875	6,35	4,76	1,2
SNMM-150412-2	+										o			o	o		o	o	o	15,875	6,35	4,76	1,2
SNMM-150416							+	o			+			o	+	+	+	o	o	15,875	6,35	4,76	1,6
SNMM-150612								+			+			o	o		o	o	o	15,875	6,35	6,35	1,2
SNMM-150612-R5							+	o			+								o	15,875	6,35	6,35	1,2
SNMM-190612								o						o	+		o	o	o	19,05	7,93	6,35	1,2
SNMM-190612-2											o		o	o	o	o	o	o	o	19,05	7,93	6,35	1,2
SNMM-190612 H2		o					o	o			o	o							o	19,05	7,93	6,35	1,2
SNMM-190616					o	o		o			o			o	o	o	o	o	o	19,05	7,93	6,35	1,6
SNMM-190616 R1				+			o	o	+		+	■							o	19,05	7,93	6,35	1,6
SNMM-190624								o			o			o	o		o	o	o	19,05	7,93	6,35	2,4
SNMM-190624 R1							o				o									19,05	7,93	6,35	2,4
SNMM-250716								o			o			o	o		o	o	o	25,4	9,12	7,93	1,6
SNMM-250724								o			o		o	o	+		+	o	o	25,4	9,12	7,93	2,4
SNMM-250724-2													o	o	o	o	o	o	o	25,4	9,12	7,93	2,4
SNMM-250724 H1								o		o	+	o							o	25,4	9,12	7,93	2,4
SNMM-250724 R1				o			o	+	+	+	+	o							o	25,4	9,12	7,93	2,4
SNMM-250724 R7											o	+	o	o						25,4	9,12	7,93	2,4
SNMM-250732 H3							o				o	o								25,4	9,12	7,93	3,2
SNMM-250924 R1							o	o	o	o	o	o							o	25,4	9,12	9,52	2,4
SNMM-250924 H1								o		o	o	o							o	25,4	9,12	9,52	2,4
SNUM-090304														o	■	o	o			9,525	3,81	3,18	0,4
SNUM-090308														o	o	o	+			9,525	3,81	3,18	0,8
SNUM-120404			o		o									+	+	o	o			12,7	5,16	4,76	0,4
SNUM-120408			o	o	o	o		o			o			+	+	o	+	o	o	12,7	5,16	4,76	0,8
SNUM-120408-2					o		o	o			o			o	■		o		o	12,7	5,16	4,76	0,8
SNUM-120412			o	o	o	o	o							■	+	o	■	o	o	12,7	5,16	4,76	1,2
SNUM-120412-2															■		■		o	12,7	5,16	4,76	1,2
SNUM-150412			o	o	o		o	+			■			+	+	+	+	o	o	15,875	6,35	4,76	1,2
SNUM-150412-2								o						o	+		■	o	o	15,875	6,35	4,76	1,2
SNUM-150416			o		o	o								+	+	+	+	+	o	15,875	6,35	4,76	1,6
SNUM-190612			o		o	o	o	o					o	+	+	+	+	o	o	19,05	7,93	6,35	1,2
SNUM-190612-2											o		o	o	o	o	o	o	o	19,05	7,93	6,35	1,2
SNUM-190616						o					o		o	o	+	o	+	o	o	19,05	7,93	6,35	1,6
SNUM-190624														o	o	o	o	o	o	19,05	7,93	6,35	2,4
SNUM-250716						o								+	+	o	+	o	o	25,4	9,12	7,93	1,6
SNUM-250724			o		o	o					+		o	+	+	o	+	o	o	25,4	9,12	7,93	2,4
SNUM-250724-2											+			o	o	o	+	o	o	25,4	9,12	7,93	2,4

geometry of the front surface

SNMM SNUM | SNMM-2 SNMM-2 | SNMM-R1 | SNMM-R3 | SNMM-R5 | SNMM-R7 | SNMM-H1 | SNMM-H2

SNMG (03125)



Steel	P							x	x	x	x	x			x	x	x	x
Stainless steel	M	x	x		x	x	x			x			x	x			x	x
Cast iron	K	x	x	x	x	x	x						x	x				
Nonferrous materials	N	x	x		x								x	x				
Heat-resistant alloy	S	x	x		x	x							x	x				
Increased hardness	H	x	x	x														

Insert name ISO	Alloy name																Dimensions, mm			
	AP10AM	AP20AM	BC20HT	BP20AM	BP35AM	BC35PT	TC20PT	TC20HT	TC40PT	TP20AM	TP40AM	A10	B20	B35	H10	H30	T40	L=d	d_1	s	r
SNMG-120408			+	o		■		o	o		o			o			o	12,7	5,16	4,76	0,8
SNMG-120408 M2	o	+	o	o			+	o		o								12,7	5,16	4,76	0,8
SNMG-120408 MH	o			o						+		o	o					12,7	5,16	4,76	0,8
SNMG-120408 R4		■					o		+		o							12,7	5,16	4,76	0,8
SNMG-120408 R6			+	o			+		+	o	o						o	12,7	5,16	4,76	0,8
SNMG-120412 R4							o		o	o								12,7	5,16	4,76	1,2
SNMG-150412									■					o	o	o		15,875	6,35	4,76	1,2
SNMG-150412 R4							+		+	o	o							15,875	6,35	4,76	1,2
SNMG-150612							+		+		o			o	o	o	o	15,875	6,35	6,35	1,2
SNMG-150612 R4							o		o		o							15,875	6,35	6,35	1,2
SNMG-190612					o	o										o		19,05	7,93	6,35	1,2
SNMG-190612 - PC34XT															o	o	o	19,05	7,93	6,35	1,2
SNMG-190616															o	o	o	19,05	7,93	6,35	1,6
SNMG-190616 R2			o		o	o	o	o	+								o	19,05	7,93	6,35	1,6

geometry of the front surface


SNMG


SNMG-M2

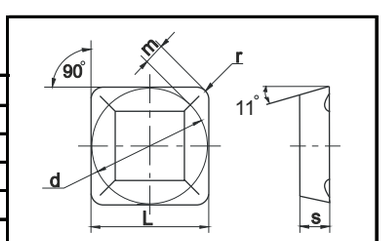

SNMG-MH


SNMG-R2


SNMG-R4


SNMG-R6

SPMR



Steel	P		x	x	x	x
Stainless steel	M	x				
Cast iron	K	x				
Nonferrous materials	N	x				
Heat-resistant alloy	S	x				
Increased hardness	H	x				

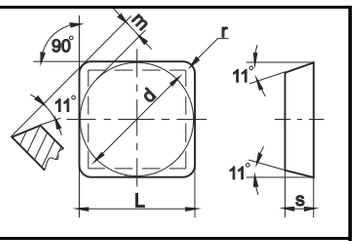
Insert name ISO	Alloy name					Dimensions, mm		
	AP10AM	HP10AM	HP30AM	TC20PT	TP20AM	L=d	s	r
SPMR-090308-F6	o			+	o	9,525	3,18	0,8
SPMR-120308-F6	■			+	+	12,7	3,18	0,8

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

SPUN (03311)

Steel	P			X	X	X	X					X	X	X		X
Stainless steel	M	X	X			X		X	X		X				X	X
Cast iron	K	X	X					X	X	X	X					
Nonferrous materials	N							X	X		X					
Heat-resistant alloy	S		X					X	X		X					
Increased hardness	H							X								

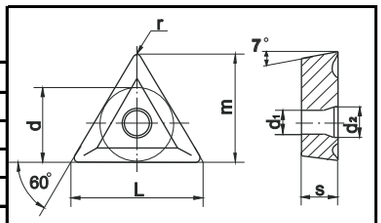


Insert name ISO	Alloy name														Dimensions, mm		
	BC35PT	BP35AM	HP10AM	HP30AM	TC40PT	TP40AM	A10	B20	B25	B35	H10	H20	H30	T20	T40	L=d	s	r
SPUN-090308					o		o		o	o	o	o	o		o	9,525	3,18	0,8
SPUN-120308		■			o	o			o	+	+		+		+	12,7	3,18	0,8
SPUN-120408						o		o		+	+		■		o	12,7	4,76	0,8
SPUN-150408			■								o	o	o			15,875	4,76	0,8
SPUN-150412			■	o		o			o	+	+		+	o	■	15,875	4,76	1,2
SPUN-190412							+		+	+	■		o			19,05	4,76	1,2
SPUN-250616						o				+	o		+		o	25,4	6,35	1,6

geometry of the front surface

TCMT

Steel	P							X		X	X	X	
Stainless steel	M	X	X		X	X	X		X				
Cast iron	K	X		X	X	X							
Nonferrous materials	N	X			X	X							
Heat-resistant alloy	S	X	X		X	X							
Increased hardness	H	X		X									



Insert name ISO	Alloy name										Dimensions, mm					
	AP10AM	AP30AM	BC20HT	BP20AM	BP20AT	BP20TT	TP20AM	TP20TT	TC20HT	TC20PT	TC40PT	L	d	d_1	d_2	s	r
TCMT-110204E-F2	+		+	+	o	+	o	o	+			11,0	6,35	2,8	3,8	2,38	0,4
TCMT-110308 R5										o	o	11,0	6,35	2,8	3,8	3,18	0,8
TCMT-16T304- F3	o		o	■	o	o	o		■	■		16,0	9,53	4,4	6,05	3,97	0,4

geometry of the front surface


TCMT-F2

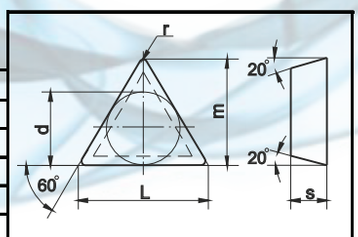

TCMT-F3


TCMT-R5

* AP10AT can be changed to AP10AM

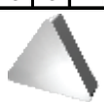
TEGN (01431)

Steel	P			X	X	X
Stainless steel	M		X			
Cast iron	K	X	X			
Nonferrous materials	N		X			
Heat-resistant alloy	S		X			
Increased hardness	H					



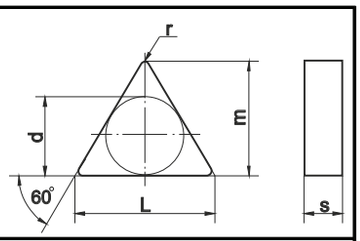
Insert name ISO	Alloy name					Dimensions, mm			
	B25	B35	H10	H20	H30	L	d	s	r
TEGN-110308	o	o				11,0	6,35	3,18	0,8
TEGN-160308	o	o				16,5	9,53	3,18	0,8

geometry of the front surface



TNGN (01131)
TNUN (01111)

Steel	P				x	x	x	x				x	x	x	x		x
Stainless steel	M		x	x			x		x		x					x	x
Cast iron	K	x	x	x					x	x	x						
Nonferrous materials	N		x						x		x						
Heat-resistant alloy	S		x						x		x						
Increased hardness	H	x							x			x					

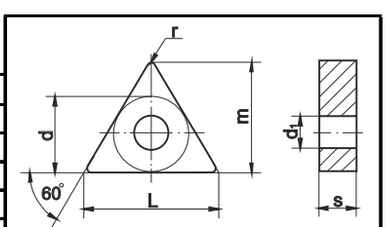


Insert name ISO	Alloy name																Dimensions, mm			
	BC20HT	BP20AM	BC35PT	TC20HT	TC35PT	TC40PT	TP20AM	A10	B25	B35	H05	H10	H20	H30	T20	T40	L	d	s	r
TNGN-160304										o		o		o	o		16,5	9,525	3,18	0,4
TNGN-160308														+			16,5	9,525	3,18	0,8
TNGN-160312										o		o		o			16,5	9,525	3,18	1,2
TNGN-160404			o					o	o	o	+	o			o		16,5	9,525	4,76	0,4
TNGN-160408									o	o		o		o	o		16,5	9,525	4,76	0,8
TNGN-160412									■	o		o		o	o		16,5	9,525	4,76	1,2
TNGN-220408										o		o	o	+			22,0	12,7	4,76	0,8
TNGN-220412										o		o	+	+	o	o	22,0	12,7	4,76	1,2
TNUN-160308										o		o		■			16,5	9,525	3,18	0,8
TNUN-160408	o			o		o			o	o		o		o	o	o	16,5	9,525	4,46	0,8
TNUN-220412				o					o	o		o	o	o	o	o	22,0	12,7	4,76	1,2
TNUN-270612									o	o				o			27,5	15,875	6,35	1,2

geometry of the front surface

TNMA (01123)
TNUA (01113)

Steel	P							x	x		x	
Stainless steel	M		x	x	x		x			x	x	
Cast iron	K	x	x	x	x	x	x					
Nonferrous materials	N		x				x					
Heat-resistant alloy	S		x				x					
Increased hardness	H	x										



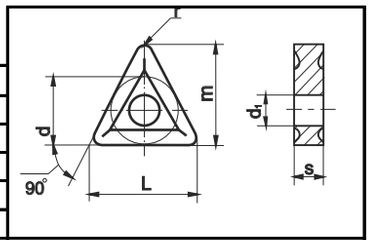
Insert name ISO	Alloy name										Dimensions, mm				
	BC20HT	BP20AM	BC35PT	BC35HT	B25	B35	H10	H30	T20	T40	L	d	d_1	s	r
TNMA-110308											11,00	6,35	2,26	3,18	0,80
TNMA-160308						o					16,50	9,525	3,81	3,18	0,80
TNMA-160408	o				o	o	o	o		o	16,50	9,525	3,81	4,76	0,80
TNMA-220408	+				o	o	o	o	o	o	22,00	12,70	5,16	4,76	0,80
TNMA-220416	+				o	o	+		o	o	22,00	12,70	5,16	4,76	1,60
TNMA-270612					o	o		o	o	o	27,50	15,88	6,35	6,35	1,20
TNUA-110308						o	o	+			11,00	6,35	2,26	3,18	0,80
TNUA-160308					o	o	+	+			16,50	9,525	3,81	3,18	0,80
TNUA-160408					o	o	+	o			16,50	9,525	3,81	4,76	0,80
TNUA-220408					■	o	o	+			22,00	12,70	5,16	4,76	0,80
TNUA-220416			o	+	o	+	o	o			22,00	12,70	5,16	4,76	1,60
TNUA-270612					o	o	+	+	o	o	27,50	15,88	6,35	6,35	1,20

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

TNMG (01125)

Steel	P				x	x		x				x	x	x		x	
Stainless steel	M	x		x			x	x	x		x				x	x	
Cast iron	K	x	x	x						x	x						
Nonferrous materials	N	x		x							x						
Heat-resistant alloy	S	x		x							x						
Increased hardness	H	x	x														



Insert name ISO	Alloy name														Dimensions, mm				
	AP10AT	BC20HT	BP20AM	TC20PT	TC20HT	TP20TT	TC40PT	TP40TT	B25	B35	H10	H20	H30	T20	T40	L	d	d1	s	r
TNMG-160408						o			o				o	o	o	16,50	9,525	3,81	4,76	0,80
TNMG-160412								o						o	o	16,50	9,525	3,81	4,76	1,20
TNMG-220408		■		o	o	o	o		o	o	o		o	o	o	22,00	12,70	5,16	4,76	0,80
TNMG-220412							o	o	o	o				o	o	22,00	12,70	5,16	4,76	1,20
TNMG-220416							+		o	o					o	22,00	12,70	5,16	4,76	1,60
TNMG-160408 M2	o		■	■	o	o								o		16,50	9,525	3,81	4,76	0,80
TNMG-220408 M2	o		o	+		o								o		22,00	12,70	5,16	4,76	0,80

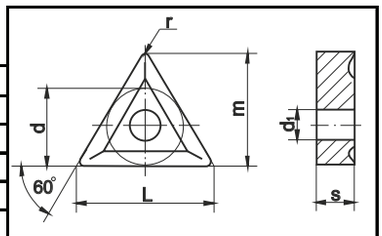
geometry of the front surface

TNMG

TNMG-M2

TNMM (01124)
TNUM (01114)

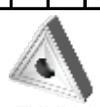
Steel	P	x	x	x	x					x	x	x		x	
Stainless steel	M				x	x			x				x	x	
Cast iron	K						x	x	x						
Nonferrous materials	N								x						
Heat-resistant alloy	S								x						
Increased hardness	H														



Insert name ISO	Alloy name													Dimensions, mm				
	HP30TT	TC20PT	TC35PT	TC40PT	TP40TT	B20	B25	B35	H10	H20	H30	T20	T40	L	d	d_1	s	r
TNMM-160308-2								o	o		o	o	o	16,50	9,525	3,81	3,18	0,80
TNMM-160408-2								o	■	+	o	o	o	16,50	9,525	3,81	4,76	0,80
TNMM-160412										o				16,50	9,525	3,81	4,76	1,20
TNMM-220404-2							o	o	o		o			22,00	12,70	5,16	4,76	0,40
TNMM-220408-2		o		+		o	o	o	■		+	o	o	22,00	12,70	5,16	4,76	0,80
TNMM-220412-2		o		+				o	o	o	+	o	o	22,00	12,70	5,16	4,76	1,20
TNMM-220416-2		o		o			o	o	o		o	o	o	22,00	12,70	5,16	4,76	1,60
TNMM-270612-2		o						■	o		+	o	■	27,50	15,875	6,35	6,35	1,20
TNMM-220412 H2		+		+	o								o	22,00	12,70	5,16	4,76	1,20
TNUM-160308-2							o	■	■		o		o	16,50	9,525	3,81	3,18	0,80
TNUM-160312-2								o	o					16,50	9,525	3,81	3,18	1,20
TNUM-160408									o					16,50	9,525	3,81	4,76	0,80
TNUM-160408-2				o			o	o	o	o	o	o	o	16,50	9,525	3,81	4,76	0,80
TNUM-220404-2								o	o		■			22,00	12,70	5,16	4,76	0,40
TNUM-220408									+		■			22,00	12,70	5,16	4,76	0,80
TNUM-220408-2				+			o	+	+		o	o	o	22,00	12,70	5,16	4,76	0,80
TNUM-220412-2				+				o	■		o	o	+	22,00	12,70	5,16	4,76	1,20
TNUM-220416-2	o			o				o	+		o	o	o	22,00	12,70	5,16	4,76	1,60
TNUM-270612-2								o	■		+	o	+	27,50	15,875	6,35	6,35	1,20

geometry of the front surface

TNMM
TNUM

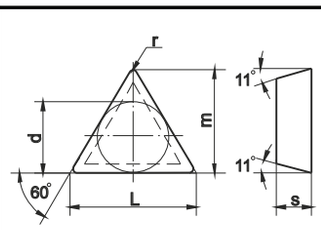


TNMM-2
TNUM-2

TNMM-H2

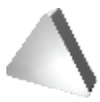
TPGN (01331)
TPUN (01311)

Steel	P					x	x	x	x	x						x	x	x		x	x	
Stainless steel	M		x	x	x				x		x	x	x		x				x		x	
Cast iron	K	x	x	x	x						x		x	x	x							
Nonferrous materials	N		x								x	x	x		x							
Heat-resistant alloy	S		x		x						x	x	x		x							
Increased hardness	H	x									x											



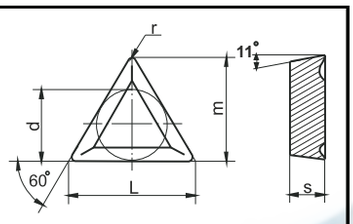
Insert name ISO	Alloy name																				Dimensions, mm			
	BC20HT	BP20AM	BC35HT	BP35AM	TP30TT	TC20HT	TC35PT	TC40PT	TP40AM	A10	A30	B20	B25	B35	H10	H20	H30	T20	T25	T40	L	d	s	r
TPGN-110300												o			o			o		o	11,0	6,35	3,18	0,2
TPGN-110304												o	o	o	o		o		o		11,0	6,35	3,18	0,4
TPGN-110308	o											o		■	o		o	o	o		11,0	6,35	3,18	0,8
TPGN-160300						o			o	o		o	o	■	+		o	o	o	o	16,5	9,525	3,18	0,2
TPGN-160304			o					o	o		o	o	o	o	o		o	o	o	o	16,5	9,525	3,18	0,4
TPGN-160308	+			+				o	o	o	o	o	o	+	+	o	+	o		o	16,5	9,525	3,18	0,8
TPGN-160312			+								o		o	+	o		o	o	o	o	16,5	9,525	3,18	1,2
TPGN-160408										o				o	+		o				16,5	9,525	4,76	0,8
TPGN-220408				+							■		o	+	o			o	o	o	22,0	12,70	4,76	0,8
TPGN-220412				o									o	+	o		+	o		o	22,0	12,70	4,76	1,2
TPGN-220416								■						■	o		o	o		o	22,0	12,70	4,76	1,6
TPUN-110308					o								o	o	o		o			o	11,0	6,35	3,18	0,8
TPUN-160308					o			o					o	+	o		■			o	16,5	9,525	3,18	0,8
TPUN-160312													o	+	o	o	■	o		o	16,5	9,525	3,18	1,2
TPUN-220412				o					o				o	o	o		o	o	o	o	22,0	12,70	4,76	1,2
TPUN-220416					o								o	o	o	o	o				22,0	12,70	4,76	1,6
TPUN-270616															o		o				27,5	15,875	6,35	1,6

geometry of the front surface



TPMR

Steel	P		x	x	x	x	x
Stainless steel	M	x					
Cast iron	K	x					
Nonferrous materials	N	x					
Heat-resistant alloy	S	x					
Increased hardness	H	x					



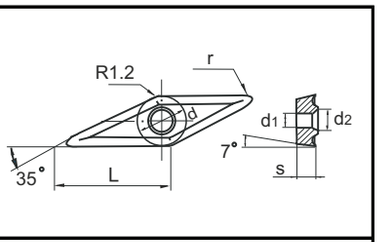
Insert name ISO	Alloy name						Dimensions, mm			
	AP10AT	HP10AM	HP30AM	TC20PT	TP20AM	TC40PT	L	d	s	r
TPMR-110308-F6	o			o	o	o	11,0	6,35	3,18	0,8
TPMR-160308-F6	o			o	+	+	16,5	9,525	3,18	0,8

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

VCMT

Steel	P	X	X	X	X	X	
Stainless steel	M						X
Cast iron	K						
Nonferrous materials	N						
Heat-resistant alloy	S						
Increased hardness	H						



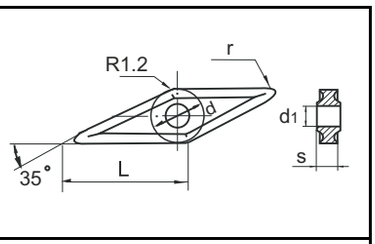
Insert name ISO	Alloy name						Dimensions, mm					
	AP10AM	BP20AM	TC20PT	TP20AM	TP40AM	T20	L	d	d_1	d_2	s	r
VCMT-160404 F4	o	o	+	+		o	16,6	9,525	4,4	6,4	4,76	0,4
VCMT-160408 M5			o	+	o	o	16,6	9,525	4,4	6,4	4,76	0,8

geometry of the front surface

VCMT - F4 VCMT - M5

VNMG

Steel	P				X	X			X
Stainless steel	M	X		X		X	X	X	
Cast iron	K	X	X	X					
Nonferrous materials	N	X		X					
Heat-resistant alloy	S	X		X					
Increased hardness	H	X	X						



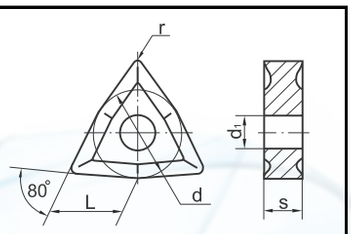
Insert name ISO	Alloy name								Dimensions, mm				
	AP10AM	BC20HT	BP20AM	TC20PT	TC40PT	TP20TT	TP40TT	TP20AM	L	d	d_1	s	r
VNMG-160404 M2	o		o	o				o	16,5	9,525	3,81	4,76	0,4
VNMG-160408 M2		■	+	■	o	■	+	o	16,5	9,525	3,81	4,76	0,8

geometry of the front surface

VNMG-M2

WNMG

Steel	P									X	X	X	X		X		X	X		X
Stainless steel	M	X	X	X		X	X	X	X			X		X		X			X	X
Cast iron	K	X			X	X		X	X							X				
Nonferrous materials	N	X				X										X				
Heat-resistant alloy	S	X	X	X		X			X							X				
Increased hardness	H	X			X															



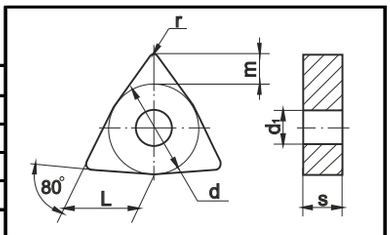
Insert name ISO	Alloy name																	Dimensions, mm				
	AP10AM	AP20AM	AP30AM	BC20HT	BP20AM	BP20TT	BC35PT	BP35AM	TC20HT	TC20PT	TC40PT	TP20AM	TP20TT	TP40AM	B35	H10	H30	T20	T40	L	d	d_1	s	r
WNMG-060404 M8	■					o					o	o	o							6,5	9,525	3,81	4,76	0,4
WNMG-060408 M8	+					o					o	o	o							6,5	9,525	3,81	4,76	0,8
WNMG-080408 M1	+			o	o				o			o	+					o		8,7	12,7	5,16	4,76	0,8
WNMG-080408 M2	+	+		■	o				■	+		o	■	o				o		8,7	12,7	5,16	4,76	0,8
WNMG-080408 M3	o			o	o				■	+	■	o	o	o				o		8,7	12,7	5,16	4,76	0,8
WNMG-080408 R2				■					o	+	+			+	+				o	8,7	12,7	5,16	4,76	0,8
WNMG-080412 M2									o			o	o							8,7	12,7	5,16	4,76	1,2
WNMG-080412 R2											+			o						8,7	12,7	5,16	4,76	1,2
WNMG-100608 R2										o	o									10,8	15,875	6,35	6,35	0,8
WNMG-100612 R2										+	+									10,8	15,875	6,35	6,35	1,2
WNMG-130612 R8			o					o			+									13,0	19,05	7,93	6,35	1,2

geometry of the front surface

WNMG-M1 WNMG-M2 WNMG-M3 WNMG-M8 WNMG-R2 WNMG-R8

WNUA (02113)

Steel	P		x	x			x	x	x			x
Stainless steel	M					x				x		x
Cast iron	K	x			x	x						
Nonferrous materials	N					x						
Heat-resistant alloy	S					x						
Increased hardness	H	x										



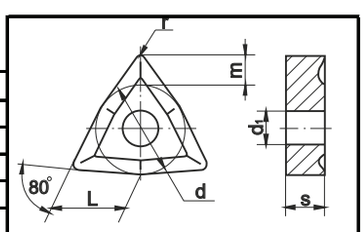
Insert name ISO	Alloy name										Dimensions, mm				
	BC20HT	HP10AM*	HP10AM*	B25	B35	H10	H20	H30	T20	T40	L	d	d_1	s	r
WNUA-060304				o	o	o	o	o	o	o	6,5	9,525	3,81	3,18	0,40
WNUA-060308				o	o	o	o	o			6,5	9,525	3,81	3,18	0,8
WNUA-080404		o	o	o	o	+	o	o			8,7	12,7	5,16	4,76	0,4
WNUA-080408	o	o	o	o	o	o	o	o			8,7	12,7	5,16	4,76	0,8
WNUA-100408				o	o	o	o	o			10,8	15,875	6,35	4,76	0,8
WNUA-100412				o	o	o	o	o		o	10,8	15,875	6,35	4,76	1,2
WNUA-100608		o		o	o	o	o	+	o		10,8	15,875	6,35	6,35	0,8
WNUA-100612				o	o	+	o	o			10,8	15,875	6,35	6,35	1,2
WNUA-120612				o	o	o	o	o			12,8	19,05	7,93	6,35	1,2

geometry of the front surface

* Grades HP10AM and HP30AM can be changed to HP10TT и HP30TT.

WNUM (02114)

Steel	P						x	x	x	x	x	x					x	x	x	x		x
Stainless steel	M	x		x	x	x					x		x	x		x					x	x
Cast iron	K	x	x	x	x	x							x	x	x	x						
Nonferrous materials	N	x		x									x	x		x						
Heat-resistant alloy	S	x		x		x							x	x		x						
Increased hardness	H	x	x										x				x					



Insert name ISO	Alloy name																					Dimensions, mm				
	AP10AT	BC20HT	BP20AM	BC35PT	BP35AM	HP10TT	HP30TT	TC20PT	TC20HT	TC40PT	TP40AM	A10	B20	B25	B35	H05	H10	H20	H30	T20	T40	L	d	d_1	s	r
WNUM-060304									o					o	o		o	o	+	o	o	6,5	9,525	3,81	3,18	0,40
WNUM-060308		o								o				o	o		■	o	+	o	o	6,5	9,525	3,81	3,18	0,8
WNUM-060404						o	o							o	o		o	o	+		o	6,5	9,525	3,81	4,76	0,4
WNUM-080404	o					o	o		■			o		o	+		+	o	+	o	+	8,7	12,7	5,16	4,76	0,4
WNUM-080408		+		o		o	o	+	+	+			o	o	+		+	o	+	■	+	8,7	12,7	5,16	4,76	0,8
WNUM-100408						o	o	■	o	+		o	o	o	+		+	o	+	o	o	10,8	15,875	6,35	4,76	0,8
WNUM-100412					o	o	o			+				o	■		■	o	+		o	10,8	15,875	6,35	4,76	1,2
WNUM-100608		o	o	o		o	o	+	■	+				o	+		+	o	+	+	+	10,8	15,875	6,35	6,35	0,8
WNUM-100612		o	o	o	o	+	■	o	+	+				o	+		+	o	+	o	o	10,8	15,875	6,35	6,35	1,2
WNUM-120612				■	o	+	+	o	+	+	o	+	o	o	+	o	+	o	+	+	+	12,8	19,05	7,93	6,35	1,2

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

Turning. Cutter face geometry

FINISH MACHINING

Negative inserts:

F1 – Double-sided insert for finish and semifinish machining. Sharp cutting edge and positive face angle which reduces friction. Main application - groups P, M, S. Possible application - groups K, N.

Positive inserts:

F2 – Fine finish turning. Continuous cutting. Main application - groups P, K. Possible application - M.
F3 – Semifinish and finish machining. Medium feeds. Main application - groups P, M, K.
F6 – For finish machining. Main application - groups P, M, K.
F7 - Form rough to finish machining. Medium and high feeds. Main application - group P, M, K.

SEMIFINISH MACHINING

Negative double-sided inserts:

M1 – Stable chip breaking in wide range of application. Effective on NC machines. Main application - groups P, M, K.
M2 – Positive face angle which prevents deformation. Negative slope of edge prevents chipping. Main application - groups P, M, S.
M3 – Durable cutting edge. Semifinish and light rough machining of cast irons and steels.
M4 – Semifinish turning. Linear turning, across cutting and shaped machining. Universal geometry creates good cutting conditions. Main application - group P.
M6 – Semifinish and finish machining. Main application - groups P and K. Possible application - M.
M7 – Semifinishing machining. Main application - groups P.
M8 –Semifinish and finish machining. Main application - groups M and S.
MH – Finish and semifinish turning. Main application - groups S and M.
MS – Decreasing friction forces by means of positive face geometry. High durability of cutting edge. Machining of low-carbon steels, aluminium and copper.

Positive inserts:

M5 – Universal geometry for machining of stainless steels.

ROUGH MACHINING

R1 – For single-sided inserts. Rough to heavy rough turning. Continuous to highly interrupted cutting. Main application - groups P, K. Possible application - group M. Conditional application - group S.
R2 – For double-sided inserts. Machining of steels and cast irons at high cutting depth and feed. High durability at interrupted cutting.
R3 – For single-sided inserts. Recommended for rough machining of small-batch details of material groups P, M, K.
R4 – For double-sided inserts. Rough machining of material groups P, M, K, S.
R5 – Rough turning with possibility of efficient cut of steel in bulk volume. Positive geometry provides low friction forces. Single-sided insert with improved toughness.
R6 – Double-sided chipbreaker for removing skin and interrupted cutting. Large chip groove and wide cutting edge allows high feeds main application - groups P and M.
R7 – Single-sided insert. Universal geometry. Rough to semifinish machining. Main application - groups P, M, S. Possible application - group K.
RS – Double-sided insert. First choice for light rough cutting of hard-to-machine materials. Double-sided chip breaker. Good combination of durability and toughness of cutting edge with high wear-resistant geometry of insert.

RS – Double-sided insert. First choice for semi-heavy cutting of hard machining materials. Double-sided chip breaker. Good combination of strength and stiffness of cutting edge with high resistence geometry.

Negative double-sided inserts:

R8 – Rough cutting. Main application - group P, M, S.

HEAVY ROUGH MACHINING

H1 – Single-sided insert. Stable chipbreaking at high cutting depth and feed. Shock load resistance due to reinforced cutting edge geometry. Friction forces decrease by means of special geometry design. Machining of steels.
H2 – Single-sided insert. Heavy rough machining of alloyed and carbon steels.
H3 – Single-sided insert. Extra heavy roughing. Very durable cutting edge geometry. Several small knobs along perimeter resist to face wear. Main application - groups P and K.
H4 – Single-sided insert. Heavy rough machining. Main application - group P.

TRADITIONAL FACE GEOMETRY

.NMG – Double-sided insert with one chip groove. Yields to modern geometry of chip breakers in the range of stable chipbreaking. Main application - semifinish machining of carbon steels.
.NMM – Single-sided insert. Simple face geometry in one chip groove. Suitable for machining of group P materials.
.NMM-2 – Single-sided insert with double chip groove. Negative geometry of cutting edge for large-scale tools meets usual standards. Application - semifinish to rough machining of carbon and stainless steels.
.NM(U)A – Insert with flat face surface. Universal choice for machining of cast iron and hard materials.

List of inserts with modern face geometry and ranges of stable chip breaking

Negative inserts

Face geometry	Field of application	INSERT	Chipbreaking range	
			fn, mm/turn	ap, mm
F1	P, M, K, N, S	CNMG-120404-F1	0,07-0,25	0,4-3,5
MS	P, N	CNMG-120404-MS	0,05-0,20	0,8-3,5
F1	P, M, K, N, S	CNMG-120408-F1	0,08-0,25	0,6-3,5
M2	P, M, S	CNMG-120408-M2	0,12-0,35	1,0-4,0
R4	P, M, K, S	CNMG-120408-R4	0,15-0,50	1,0-5,0
R4	P, M, K, S	CNMG-120412-R4	0,20-0,50	1,0-5,0
M2	P, M, S	CNMG-160612-M2	0,15-0,45	1,5-6,0
M7	P	CNMG-160612 M7	0,18-0,6	0,8-7,0
R2	P, K	CNMG-160612-R2	0,25-0,70	1,3-8,0
R4	P, M, K, S	CNMG-160612-R4	0,30-0,60	2,0-7,0
R2	P, K	CNMG-190612-R2	0,30-0,75	1,7-10,0
RS	S	CNMG-190612-RS	0,15-0,35	1.0-3,0
M6	P, M, K	CNMG-190616-M6	0,20-0,80	1,6-8,0
R4	P, M, K, S	CNMG-190616-R4	0,30-0,80	4,0-8,0

see next page for continuation of table

Face geometry	Field of application	INSERT	Chipbreaking range	
			fn, mm/turn	ap, mm
H1	P	CNMM-190612-H1	0,30-0,70	3,0-8,0
H2	P	CNMM-190612-H2	0,45-0,80	3,0-9,0
R1	P, M, K, S	CNMM-190616-R1	0,50-1,21	5,0-13,4
H1	P	CNMM-250724-H1	0,50-1,20	5,0-12,0
H4	P	CNMM-250924-H4	0,80-1,40	7,0-12,0
F1	P, M, K, N, S	DNMG-110404-F1	0,07-0,30	0,8-3,0
M4	P	DNMG-150608-M4	0,30-0,50	0,5-6,0
R2	P, K	DNMG-150612-R2	0,25-0,70	1,3-7,0
M2	P, M, S	SNMG-120408-M2	0,13-0,40	1,0-4,0
MH	M, S	SNMG-120408-MH	0,20-0,40	1,0-4,0
R4	P, M, K, S	SNMG-120408-R4	0,20-0,60	2,0-5,0
R4	P, M, K, S	SNMG-120412-R4	0,30-0,70	2,0-5,0
R6	P, M	SNMG-120408-R6	0,25-0,60	1,5-6,0
R4	P, M, K, S	SNMG-150412-R4	0,25-0,80	2,0-7,0
R4	P, M, K, S	SNMG-150612-R4	0,30-0,80	2,5-7,0
R2	P, K	SNMG-190616-R2	0,31-0,82	1,9-12,3
R3	P, M, K	SNMM-120412-R3	0,35-0,90	2,0-8,0
R5	P	SNMM-150612-R5	0,25-0,70	1,0-9,0
H2	P	SNMM-190612-H2	0,45-0,80	4,0-9,0
R1	P, M, K, S	SNMM-190616-R1	0,50-1,36	5,0-13,3
R1	P, M, K, S	SNMM-190624-R1	0,50-1,40	5,0-13,0
H1	P	SNMM-250724-H1	0,55-1,20	5,0-12,0
R1	P, M, K, S	SNMM-250724-R1	0,50-1,40	5,0-14,0
R7	P, M, K, S	SNMM-250724-R7	0,50-1,40	3,0-16,0
H3	P, K	SNMM-250732-H3	0,55-1,30	5,0-12,7
H1	P	SNMM-250924-H1	0,55-1,20	5,0-12,0
R1	P, M, K, S	SNMM-250924-R1	0,50-1,40	5,0-14,0
M2	P, M, S	TNMG-160408-M2	0,12-0,30	1,0-3,0
M2	P, M, S	TNMG-220408-M2	0,15-0,40	1,0-4,0
H2	P	TNMM-220408-H2	0,25-0,60	1,3-7,0
M2	P, M, S	VNMG-160404-M2	0,10-0,30	1,0-3,0
M2	P, M, S	VNMG-160408-M2	0,10-0,40	1,0-3,5
M8	M, S	WNMG-060404-M8	0,10-0,40	0,5-3,0
M8	M, S	WNMG-060408-M8	0,10-0,45	0,5-3,0
M1	P, M, K	WNMG-080408-M1	0,10-0,50	1,0-5,0
M2	P, M, K, S	WNMG-080408-M2	0,12-0,35	1,0-4,0
M3	P, K, H, M	WNMG-080408-M3	0,16-0,45	1,0-4,5
R2	P, K	WNMG-080408-R2	0,20-0,50	1,0-7,0
M2	P, M, K, S	WNMG-080412-M2	0,15-0,40	1,5-4,5
R2	P, K	WNMG-080412-R2	0,25-0,50	1,3-7,0
R2	P, K	WNMG-100608-R2	0,30-0,80	2,5-7,5
R2	P, K	WNMG-100612-R2	0,30-0,80	3,0-7,5
R8	P, M, S	WNMG-130612-R8	0,25-0,65	2,5-7,0

Positive inserts

Face geometry	Field of application	INSERT	Chipbreaking range	
			fn, mm/turn	ap, mm
F3	P,M,K	CCMT-060202-F3	0,12-0,22	0,5-2,5
F3	P,M,K	CCMT-060204-F3	0,14-0,25	0,5-2,5
F2	P,M,K	CCMT-09T302E-F2	0,08-020	0,5-3,0
F2	P,M,K	CCMT-09T304E-F2	0,08-0,25	0,5-3,0
R5	P	CCMT-09T308-R5	0,12-0,35	1,0-4,0
F3	P,M,K	CCMT-120408-F3	0,14-0,30	0,8-3,0
R5	P	CCMT-120412-R5	0,17-0,50	1,5-4,5
F3	P,M,K	DCMT-11T304-F3	0,15-0,25	1,0-2,5
F3	P,M,K	DCMT-11T308-F3	0,12-0,3	1,5-3,0
F3	P,M,K	RCMT-1204MO-F3	0,20-0,50	1,5-6,0
M	P,M,K	RCMT-1606MO-M1	0,20-0,60	2,0-6,0
-	P,M,K	RCMT-2006MO	0,20-0,60	2,0-8,0
F3	P,M,K	SCMT-09T304-F3	0,12-0,30	1,0-3,5
F3	P,M,K	SCMT-09T308-F3	0,12-0,30	1,0-3,5
F7	P,M,K	SCMT-120408-F7	0,20-0,50	1,0-5,0
-	P,M	SCMT-380932	1,00-2,00	4,0-16,0
F6	P,M,K	SPMR-090308-F6	0,16-0,40	1,5-6,0
F6	P,M,K	SPMR-120308-F6	0,16-0,40	1,5-6,0
F2	P,K,M	TCMT-110204E-F2	0,05-0,10	0,5-3,0
R5	P	TCMT-110308-R5	0,10-0,30	0,8-3,0
F3	P,M,K	TCMT-16T304-F3	0,18-0,40	1,0-4,0
F6	P,M,K	TPMR-110308-F6	0,15-0,30	1,0-3,5
F6	P,M,K	TPMR-160308-F6	0,15-0,40	1,0-4,0
F4	P,M,K,S	VCMT-160404-F4	0,05-0,25	0,5-2,5
M5	M	VCMT-160408-M5	0,13-0,33	0,6-2,6

Directions for choosing cutter face geometry and hardmetal grades for turning

ISO	P
Type of turning	finish · light rough · heavy rough fine finish · semifinish · rough Wear-resistance · Plasticity
Chip breaker	F2[1] **F1** F3[1] M5 M4 **M2** M3 .NMG M1 M6 R4 R6 **R2** R3[2]R5[2]R7[2] .NM(U)M[2] .NMM-2[2] R1[2] H1[2]**H2**[2] H4[2] H3[2]
Grade[3]	TC20HT TC20HT TC20PT TC40PT TP40AM T40

ISO	M
Type of turning	finish · light rough fine finish · semifinish · rough Wear-resistance · Plasticity
Chip breaker	F2[1] **F1** F3[1] MS **M5** **M2** MH .NMM-2[2]M1 M6 R4 R6 **R3**[2]R7[2] .NMM-2[2] R1[2]
Grade[3]	AP10AT TP20TT BP20TT A30 TP40TT A30 BP35AM

ISO	K
Type of turning	finish · light rough fine finish · semifinish · rough Wear-resistance · Plasticity
Chip breaker	**F2**[1] .NGA **M3** M6 **.NGA** .NUN **R2** H3[2] **.NM(U)A**
Grade[3]	AP10AT BC20HT BC25HT BC35PT

ISO	N
Type of turning	finish · semifinish · rough Wear-resistance · Plasticity
Chip breaker	F1 MS MS
Grade[3]	A10 A10 A10 B20 BP20AM

ISO	S
Type of turning	finish · light rough fine finish · semifinish · rough Wear-resistance · Plasticity
Chip breaker	**F1** **M2** **MH** **RS** R7[2] R1[2]
Grade[3]	A10 B20 A30 A30 B35

ISO	H
Type of turning	finish · semifinish Wear-resistance · Plasticity
Chip breaker	**.NGA** .NGN **M3**
Grade[3]	A10 AP10AM

First choice

[1] Chipbreaker for positive inserts

[2] Chipbreaker for single-sided inserts

[3] Recommended hard metal grade

Hardmetal grades without coating for turning

Hardmetal grade		Material group ISO	Application field
Basic	**A10**	M05-M15 K05-K15 N05-N20 S05-S15 H10-H15	~ modern substitute for BK6OM; ~ finish and semifinish machining of cold, alloyed and chilled cast iron, hardened steels and some grades of stainless, heat-resistant steels and alloys, especially alloys based on Ti, W, and Mo.
	B20	K15-K25 N15-N30 S10-S20 M15-M25	~ modern substitute for MC321; ~ semifinish and rough turning of cast iron, heat-resistant steels and alloys, corrosion-resistant steels, nonferrous metals and alloys, nonmetals at medium cutting speeds and section cuts; ~ high mechanical and termo shock strength of cutting edges.
	B35	K20-K35 S20-S30 M25-M40 N25-N30	~ modern substitute for BK8; ~ rough turning at unqual section cut and interrupted cutting for grey cast iron, nonferrous metals and alloys, nonmetallic materials, corrosion-resistant steels, heat-resistant steels and alloys, incl. Ti alloys.
	H10	P05-P20	~ modern substitute for T15K6; ~ semifinish turning at continuous cutting; ~ finish turning at interrupted cutting of carbon and alloyed steels.
	H30	P25-P35	~ modern substitute for T5K10; ~ rough turning at unequal section cut and interrupted cutting; ~ form turning of carbon and alloyed steels in type of forgings, stampings and castings with skin and scale.
	T20	M15-M25	~ modern substitute for MC221; ~ semifinish and rough turning of corrosion-resistant steels; ~ high mechanical and termo shock strength of cutting edges.
	T40	P30-P50 M25-M35	~ modern substitute for MC146; ~ rough turning of stampings and forgings of structural, tools and corrosion-resistant steels, steels for castings at medium and low cutting speeds and large section cuts; ~ high mechanical and termo shock strength of cutting edges.
Additional	**A30**	M20-M30 S15-S25	~ modern substitute for BK10OM; ~ rough and semifinish turning of some grades of corrosion-resistant steels, high-strength and heat-resistant steels and alloys, alloys based on Ti, W, Mo.
	B25	K20-K30	~ modern substitute for BK6; ~ rough and semifinish turning of grey cast iron.
	H05	P01-P05 H15-H25	~ modern substitute for T30K4; ~ finish turning at small section cut of carbon and alloyed steels; ~ machining of hardened steels (hardness 50-55 HRC).
	H20	P15-P25	~ modern substitute for T14K8; ~ rough turning at unequal section cut and continuous cutting; ~ semifinish and finish turning at interrupted cutting of carbon and alloyed steels.
	T50	P40-P50 M30-M40	~ modern substitute for TT7K12; ~ heavy roughing of forgings, stampings and castings with skin, bleb and sand, slag, different nonmetallic inclusions at unequal section cuts and shocks. ~ for carbon, alloyed and corrosion-resistant steels.

Hardmetal grades with coating for turning

Hardmetal grade		Characterictics of hardmetal	Material grade ISO	Application field
Basic	**AP10AT**	Hardmetal grade with gradient PVD coating and fine-grained substrate.	M05-M15 S05-S15 H10-H15 N01-N15 K05-K10	~ finish and semifinish machining of corrosion-resistant steels, heat-resistant alloys, Ti based alloys, nonferrous metals, cast iron, materials with increased hardness.
	BC20HT	Hardmetal grade with CVD coating	K10-K20 H15-H20	~ finish and semifinish machining all types of cast iron; ~ high wear-resistance at medium and high cutting speeds; ~ hard substrate.
	BC25HT	Hardmetal grade with CVD coating	K15-K25	~ finish and semifinish turning of cast iron; ~ high wear-resistance at medium and high cutting speeds.
	BC35PT	Hardmetal grade with CVD coating	K20-K30 M20-M35	~ grade with increased reliability for machining all types of cast iron and stainless steels of martensitic and ferritic grades at heavy cutting conditions; ~ durable substrate.
	BP20AM	Hardmetal grade with multilayer PVD coating	M10-M15 S10-S20 K10-K25 N10-N30	~ finish and semifinish machining of cast iron, corrosion-resistant steels and alloys, heat-resistant alloys, titanium alloys, nonferrous metals.
	BP35AM	Hardmetal grade with multilayer PVD coating	M25-M40 K25-K35 S15-S30	~ durable hardmetal grade for rough machining corrosion-resistant steels, cast iron, heat-resistant steel and alloys, incl. Ti at adverse cutting conditions.
	TC20PT	Hardmetal grade with CVD coating	P10-P25	~ finish and semifinish machining of steels at medium and high cutting speeds; ~ high durability.
	TC40PT	Hardmetal grade with CVD coating	P20-P40 M20-M30	~ efficient machining of carbon and alloyed steels, steel casting, corrosion-resistant steels of martensitic and perlitic grades at heavy cutting conditions; ~ durable substrate.
	TP20TT	Hardmetal grade with PVD coating	M10-M25	~ finish and semifinish machining of corrosion-resistant steels at high and medium cutting speeds.
	TP40AM	Hardmetal grade with multilayer PVD coating	P30-P50	~ durable grade for rough machining of carbon and alloyed steels at adverse cutting conditions.
	TP40TT	Hardmetal grade with PVD coating	M20-M35	~ durable grade for rough machining of carbon, alloyed and corrosion-resistant steels at adverse cutting conditions.

see next page for continuation of table

Hardmetal grade		Characterictics of hardmetal	Material grade ISO	Application field
Additional	**AP30AT**	Hardmetal grade with gradient PVD coating and fine-grained substrate.	M15-M30 S10-S25	~ semifinish machining of corrosion-resistant steels, heat-resistant alloys, titanium alloys; ~ meets high requirements of accuracy and surface quality.
	BP20TT	Hardmetal grade with PVD coating	M10-M20	~ finish and semifinish machining of corrosion-resistant steels.
	HP10TT	Hardmetal grade with PVD coating	P05-P15	~ finish machining of steels and steel castings.
	HP30TT	Hardmetal grade with PVD coating	P20-P35	~ semifinish and rough machining of carbon and alloyed steels.
	TC20HT	Hardmetal grade with CVD coating	P10-P25	~ finish and semifinish machining of steel at medium and high cutting speeds; ~ high wear-resistance.
	TC35PT	Hardmetal grade with CVD coating	P25-P40	~ efficient machining of steel castings, corrosion-resistant steels of martensitic and ferritic grades at heavy cutting conditions; ~ durable substrate.
	TP20AM	Hardmetal grade with multilayer PVD coating	P15-P30	~ finish and semifinish machining of carbon and alloyed steels at high and medium cutting speeds.

AP10AT and AP30AT can be changed to AP10AM and AP30AM upon request.

Recommendations for basic

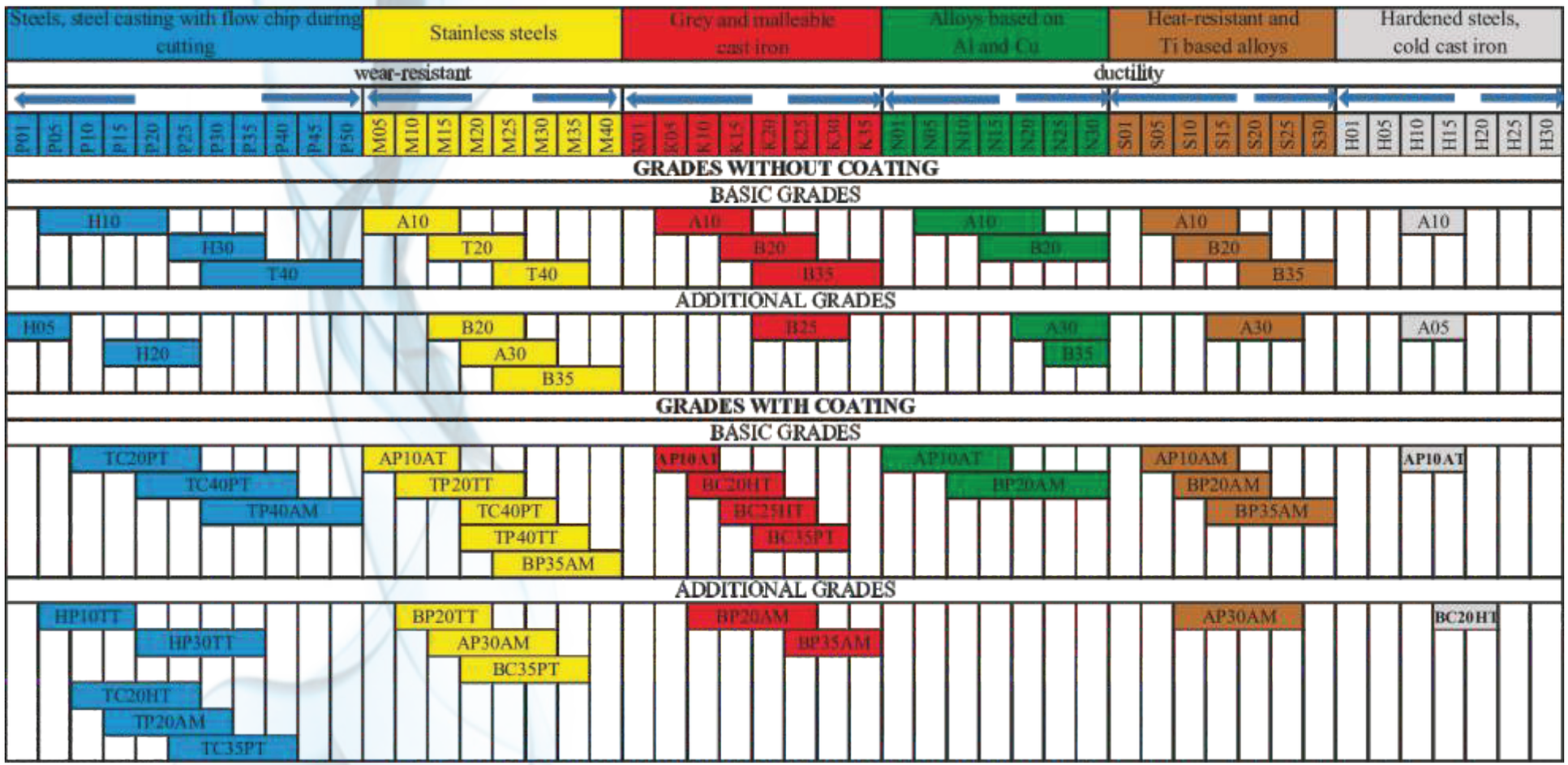
ISO		Machined material	Brinell hardness (HB)	HARDMETAL GRADE							
				H10	H30	T20	TC20HT	TP20TT	T40	TC40PT	TP40TT
				FEED, fn (mm/turn)							
				CUTTING SPEED Vc (m/min)							
P	1	**Carbon steel**		0,1-0,5	0,2-1,2		0,1-0,6		0,3-1,2	0,2-0,8	
	2	C= 0,1-0,55 %	125-150	270-130	130-60		400-190		140-70	250-140	
	3	C= 0,55-0,8 %	150-180	230-120	110-40		320-150		120-50	200-120	
	4	Alloyed steel	180-350	220-110	100-30		290-80		110-40	180-80	
	5	High-alloyed and tool steel	200-350	0,1-0,25							
				175-100	65-20		230-100		90-20	130-40	
	6	Steel casting	180-225		55-20		210-110		70-30	120-50	
	7	Manganouse and armoured steel	250						0,2-0,8		
	8								50-10		
M	9	**Stainless steel**				0,1-0,5		0,1-0,5	0,2-0,8	0,2-0,6	0,2-0,8
	10	Ferritic/ martensitic	200-240			180-90		220-100	110-30	180-70	140-50
	11	Heat-resistant	330						50-25		55-30
	12	Austenitic	180								
	13	Austenitic, casted	300								
K	14	**Cast iron**									
	15	Grey ferritic	180								
	16	Grey perlitic	260								
	17	High-strength ferritic	160								
	18	High-strength perlitic	250								
	19	Malleable cast iron	130-230								
N	20	**Aluminium alloys**									
	21	Wrought	60-100								
	22	Casted	75-90								
	23	Silumins Si > 8 %	130								
	24	**Copper and Cu alloys**									
	25	Brass	110								
	26	Bronze	90								
S	27	**Titanium alloys**									
	28	Pure Ti	400МПа								
	29	Alloys alpha+beta	1050МПа								
	30	**Heat-resistant**									
	31	Based on Fe	200-280								
	32	Based on Ni and Co	250-320								
H	33	**Hard materials**									
	34	Heat-treated steel	45-55HRC								
	35	Chilled cast iron	400								

! Shown speeds and feeds are basic and can be corrected depending on cutting conditions and desired durability of insert.

cutting speed Vc (m/min) for turing

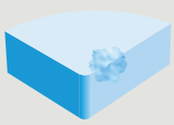
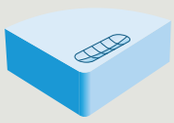
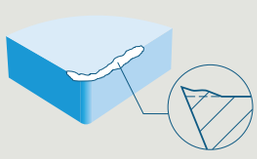
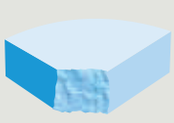
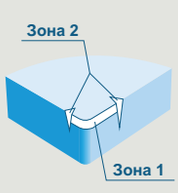
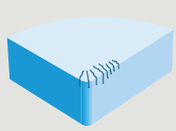
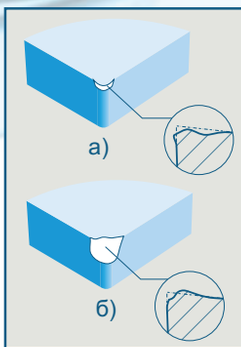
	HARDMETAL GRADE												
	TP40AM	B20	B35	BC20HT	BC25HT	BC35PT	BP20AM	BP35AM	A10	AP10AT	AP10AM	H05	A05
	FEED, fn (mm/turn)												
	CUTTING SPEED Vc (m/min)												
1	0,25-1,0												
2	200-110												
3	150-90												
4	130-60												
5													
	90-30												
6	90-40												
7	0,2-0,6												
8	60-20												
9		0,1-0,5	0,1-0,5				0,1-0,35	0,2-0,6	0,1-0,25	0,1-0,2			
10													
11			45-25					60-40					
12		80-40	70-20				100-40	80-30	100-70	100-80			
13			40-25					55-30					
14		0,1-0,8	0,3-1,0	0,1-0,6	0,1-0,6	0,2-0,8			0,1-0,2	0,1-0,2			
15		135-50		210-110	210-110								
16		85-40	80-35	180-80	180-80	140-60			160-100	170-110			
17		110-45		225-100	225-100								
18		95-30	65-20	180-80	180-80	120-50			170-100	180-110			
19		100-25	80-20	225-70	225-70	130-50							
20		0,1-0,2							0,1-0,2				
21									670-500				
22									670-500				
23		250-200							270-210				
24													
25									320-270				
26									340-290				
27		0,1-0,35	0,1-0,5				0,1-0,35	0,1-0,5	0,1-0,2		0,1-0,2		
28		120-90	110-80				140-90	120-90	140-100		160-110		
29		50-35	50-30				60-35	60-30	55-40		75-50		
30													
31		45-25	40-20				55-35	50-25	50-30		60-40		
32		20-12	18-8				30-20	20-15	20-15		35-25		
33										0,05-0,15		0,05-0,15	0,05-0,15
34												80-30	
35										40-15			35-15

Application of hardmetal grades for turning



AP10AT can be changed to AP10AM.

Typical wear types of hardmetal inserts

Wear pattern	Cause of wear	Eliminating
Microchipping in cutting zone		
 Microchipping of small parts from cutting edge leads to decreasing of machining surface quality and to excessive wear of back suface.	1. Too crisp hard alloy grade. 2. Insert's geometry doesn't provide enough strength. 3. Scab formation.	1. Choose more ductile hard alloy grade. 2. Choose insert geometry, provides higher strength. 3. Increase cutting speed or choose insert with positive geometry. 4. Decrease feeding on initial bite stage.
Craterformation on front surface		
 Excessive craterformation leads to decay of cutting edge.	1. Diffusive wear as a result of too high temperature on the front surface of cutting edge.	1. Choose insert with positive geometry. 2. Decrease cutting speed.
Scab formation		
 Scab formation decreases machining surface quality and leads to cutting edge microchipping in time of scab separation.	1. Low cutting speed. 2. Absence of back angle on cutting part of insert. 3. Material "sticking" for instance some stainless steels and pure aluminium.	1. Increase cutting speed or choose more resistant insert. 2. Choose back angle insert. 3. Greatly increase cutting speed. 4. If durability time is too short, use lubricating fluid in large quantities.
Insert breakage (chip)		
 Insert breakage.	1. Too crispy hard alloy grade. 2. Excessive load to cutting insert. 3. Insert's geometry doesn't provide resistance needed. 4. Too small insert's dimentions.	1. Choose more resistant grade. 2. Decrease feeding and/or cutting depth. 3. Choose geometry provides higher resistance preferably one-sided. 4. Choose thicker insert.
Rapid wear on clearance surface		
 **Zone 1:** Causes surface quality decrease or tolerance limit exceeding. **Zone 2:** Deep grooves formation on back surface causes surface quality decrease and makes risk of cutting edge crashing.	1. Too high cutting speed or insufficient wear resistance. 2. Oxidation or excessive abrasive wear.	1. Decrease cutting speed. 2. Choose more resistant grade. 3. For cold-hardening materials choose smaller angle or more resistant grade.
Thermal crack formation		
 Small cracks, normal to cutting edge, leads to microchipping and machining surface quality decay	1. Thermal cracks as a result of temperature fluctuations caused by discrete cutting or astatic lubricating fluid feeding.	1. Choose harder grade which better resists to sharp temperature fluctuations. 2. Lubricating fluid in large quantities or it's total absence.
Plastic deformation		
 Plastic deformation: edge sinking (a) or back surface indentation (b), lead to bad cutting-eductoring and surface machining decay.	1. Too high temperature in cutting zone in combination with high pressure.	1. Choose more plastic deformation resistant hard alloy grade. a) Decrease cutting speed. b) Decrease feed.

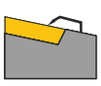
ADD engineering

TURNING TOOLS FOR EXTERNAL WORK (on ISO)

Name scheme of tool holder for external work

M	W	L	N	R	32	25	P	10	- 04
1	2	3	4	5	6	7	8	9	10

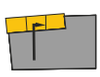
1. Fixing system



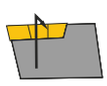
C
clamp
on top

D
clamp
increased
stiffness

M
wedge-clamp
on top

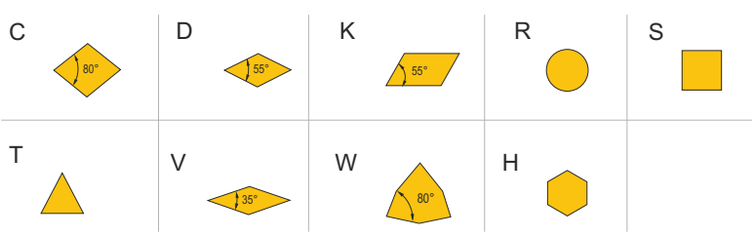


P
clamp
lever for
hole

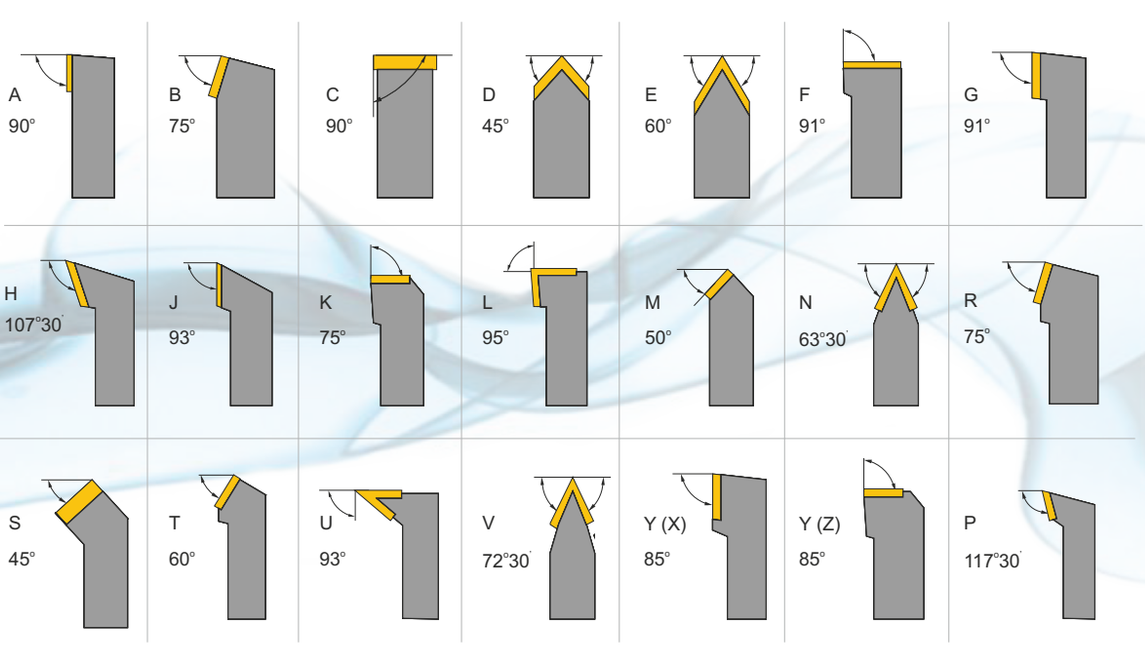


S
screw
fixing

2. Shape of the inserts



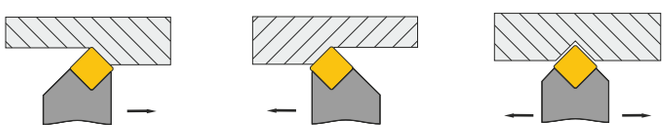
3. Type of the holder



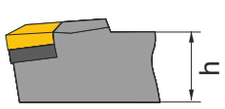
Name scheme of tool holder for external work

4. Back-off angle

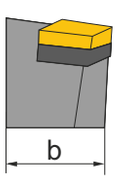
5. Modification



6. Height of the holder, h mm

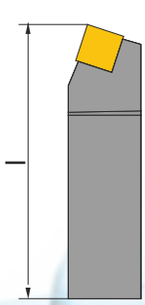


7. Weight of the holder, h mm



Before the single value
0 is placed, for example, b = 8,
then put 08

8. Length , l mm

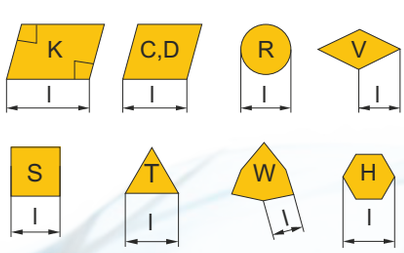


A=32
B=40
C=50
D=60
E=70
F=80
G=90
H=100
J=110

N=160
P=170
Q=180
R=200
S=250
T=300
K=125
L=140
M=150

U=350
V=400
W=450
Y=500
X=special

9. Length ot cutting edge, l mm

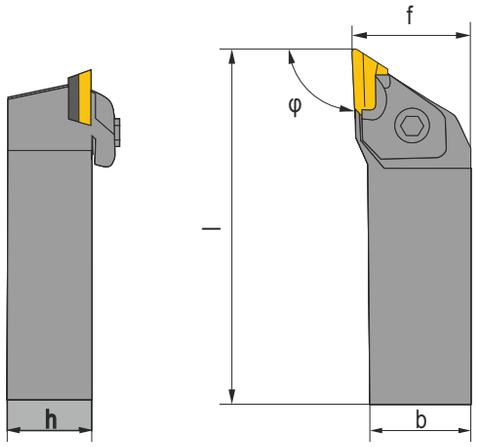


10. Supplementary designations

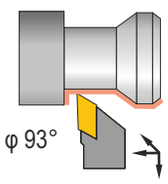
03 - cutting insert with a length 3.18 mm
04 - cutting insert with a length 4.76 mm
06 - cutting insert with a length 6.35 mm
07 - cutting insert with a length 7.94 (7.93) mm
09 - cutting insert with a length 9.52 mm

Clamp on top CKJNR/L

Main angle 93°



Application



Main dimensions

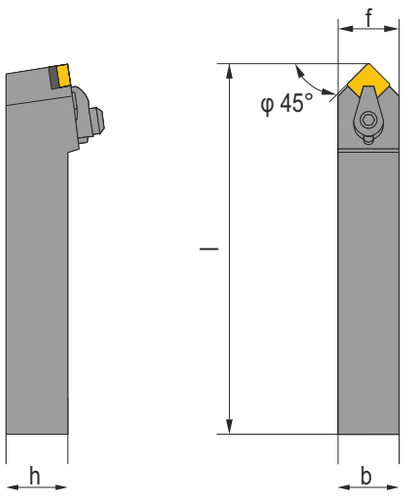
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
CKJNR/L 2525 M16	KNUX 160410...	32	25	25	150
CKJNR/L 3225 P16		32	32	25	170
CKJNR/L 2525 M17	KNUX 1704...	32	25	25	150
CKJNR/L 3225 P17		32	32	25	170
CKJNR/L 2525 M19	KNUX 1906...	32	25	25	150
CKJNR/L 3225 P19		32	32	25	170

Main components

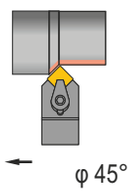
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
KNUX 160410..R11	OKN-16R	STK	CKR16	BCM6x20	KS4
KNUX 160410..L11	OKN-16L		CKL16		
KNUX 1704..R..	OKN-1704R		CKR	BM8x30	KS6
KNUX 1704..L..	OKN-1704L		CKL		
KNUX 1906..R..	OKN-1904R		CKR		
KNUX 1906..L..	OKN-1904L		CKL		

Clamp on top CSDNN, CSDPN

Main angle 45°



Application



Main dimensions

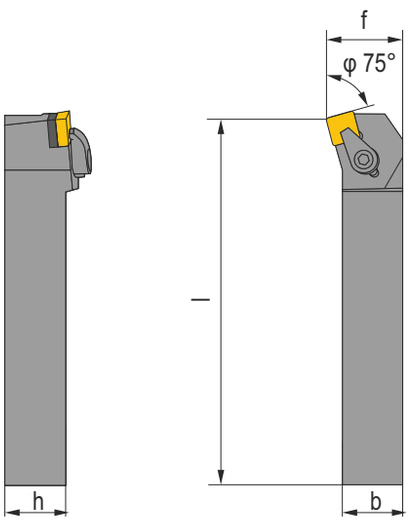
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
CSDNN 1616 H09	SN.N 0903..	8	16	16	100
CSDNN 2020 K12-03	SN.N 1203..	10	20	20	125
CSDNN 2525 M12-03		12.5	25	25	150
CSDNN 2020 K12-04	SN.N 1204..	10	20	20	125
CSDNN 2525 M12-04		12.5	25	25	150
CSDNN 3225 P12-04		12.5	32	25	170
CSDPN 1616 H09	SP.. 0903..	8	16	16	100
CSDPN 2020 K12-03	SP.. 1203..	10	20	20	125
CSDPN 2525 M12-03		12.5	25	25	150
CSDPN 2020 K12-04	SP.. 1204..	10	20	20	125
CSDPN 2525 M12-04		12.5	25	25	150
CSDPN 3225 P12-04		12.5	32	25	170

Main components

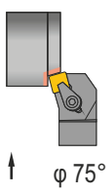
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SN.N 0903..	OSN-0903	STK	C1	BCM5	KS2.5
SN.N 1203..	OSN-1204	M4x10	C3	BCM6	KS3
SN.N 1204..	OSN-1203				
SP.. 0903..	OSP-0903	STK	C1	BCM5	KS2.5
SP.. 1203..	OSP-1204	M4x10	C2	BCM6	KS3
SP.. 1204..	OSP-1203				

Clamp on top CSKNR/L, CSKPR/L

Main angle 75°



Application



Main dimensions

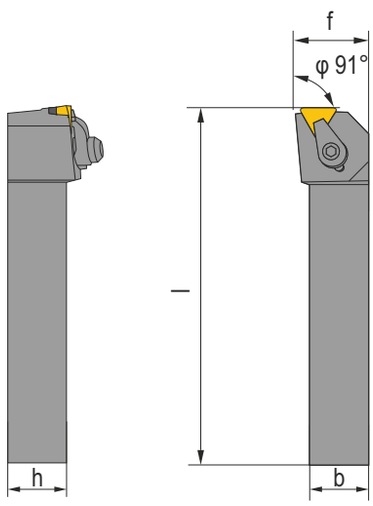
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
CSKNR/L 1616 H09	SN.N 0903..	20	16	16	100
CSKNR/L 2020 K12-03	SN.N 1203..	25	20	20	125
CSKNR/L 2525 M12-03		32	25	25	150
		32	32	25	170
CSKNR/L 2020 K12-04	SN.N 1204..	25	20	20	125
CSKNR/L 2525 M12-04		32	25	25	150
CSKNR/L 3225 P12-04		32	32	25	170
CSKPR/L 2525 M12-03	SP.. 1203..	32	25	25	150
CSKPR/L 2525 M12-04	SP.. 1204..	32	25	25	150

Main components

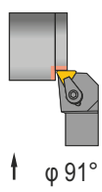
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SN.N 0903..	OSN-0903	STK	C1	BCM5	KS2.5
SN.N 1203..	OSN-1204	M4x10	C3	BCM86	KS4
SN.N 1204..	OSN-1203				
SP.. 1203..	OSP-1204	M4x10	C3	BCM8	KS4
SP.. 1204..	OSP-1203				

Clamp on top CTFNR/L, CTFPR/L

Main angle 91°



Application



Main dimensions

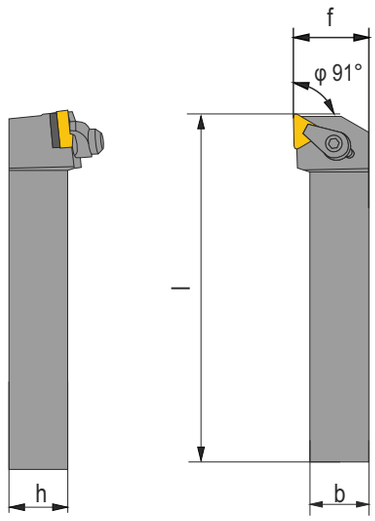
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
CTFNR/L 2020 K16-03	TN.N 1603..	25	20	20	125
CTFNR/L 2525 M16-03		32	25	25	150
		32	32	25	170
CTFNR/L 2020 K16-04	TN.N 1604..	25	20	20	125
CTFNR/L 2525 M16-04		32	25	25	150
CTFNR/L 3225 P16-04		32	32	25	170
CTFPR/L 2020 K16-03	TP.. 1603..	25	20	20	125
CTFPR/L 2525 M16-03		32	25	25	150
		32	32	25	170
CTFPR/L 2020 K16-04	TP.. 1604..	25	20	20	125
CTFPR/L 2525 M16-04		32	25	25	150
CTFPR/L 3225 P16-04		32	32	25	170

Main components

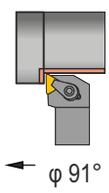
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TN.N 1603..	OTN-1604	STK	C2	BCM6	KS3
TN.N 1604..	OTN-1603				
TP.. 1603..	OTP-1604	STK	C2	BCM6	Ks3
TP.. 1604..	OTP-1603				

Clamp on top CTGNR/L, CTGPR/L

Main angle 91°



Application



Main dimensions

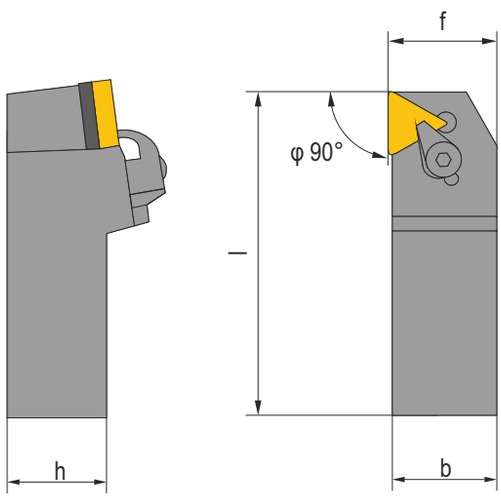
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
CTGNR/L 2020 K16-03	TN.N 1603..	25	20	20	125
CTGNR/L 2525 M16-03		32	25	25	150
		32	32	25	170
CTGNR/L 2020 K16-04	TN.N 1604..	25	20	20	125
CTGNR/L 2525 M16-04		32	25	25	120
CTGNR/L 3225 P16-04		32	32	25	170
CTGPR/L 1212 F11	TP.. 1103..	16	12	12	80
CTGPR/L 1616 H11		20	16	16	100
CTGPR/L 2020 K11		25	20	20	125
CTGPR/L 2020 K16-03	TP.. 1603..	25	20	20	125
CTGPR/L 2525 M16-03		32	25	25	150
CTGPR/L 2020 K16-04	TP.. 1604..	25	20	20	125
CTGPR/L 2525 M16-04		32	25	25	150

Main components

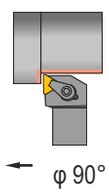
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TN.N 1603..	OTN-1604	STK	C2	BCM6	Ks3
TN.N 1604..	OTN-1603				
TP.. 1103..			C1	BCM5	KS2.5
TP.. 1603..	OTP-1604	STK	C2	BCM6	Ks3
TP.. 1604..	OTP-1603				

Clamp on top CTAPR/L

Main angle 90°



Application



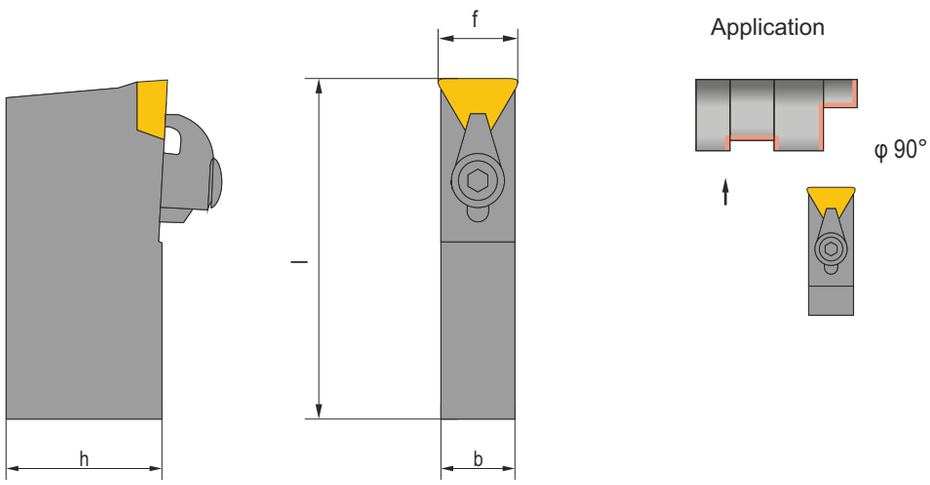
Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
CTAPR/L 2020 K16-03	TP.. 1603..	20.5	20	20	125
CTAPR/L 2525 M16-03		25.5	25	25	150
CTAPR/L 2020 K16-04	TP.. 1604..	20.5	20	20	125
CTAPR/L 2525 M16-04		25.5	25	25	150
CTAPR/L 3225 P16-04		25.5	32	25	170

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TP.. 1603..	OTP-1604	STK	C2	BCM6	Ks3
TP.. 1604..	OTP-1603				

Clamp on top CTCPN



Main dimensions

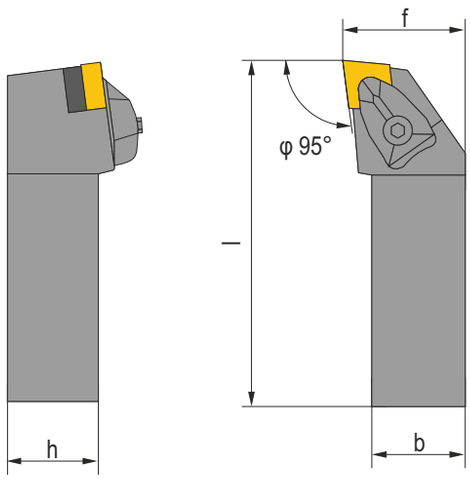
Holder name	Cutting insert	Dimensions, mm		
		h	b	l
CTCPN 2509 K11	TP.. 1103..	25	8.9	125
CTCPN 2514 M16-03	TP.. 1603..	25	13.8	150
CTCPN 3214 P16-03		32	13.8	170
CTCPN 2514 M16-04	TP.. 1604..	25	13.8	150
CTCPN 3214 P16-04		32	13.8	170

Main components

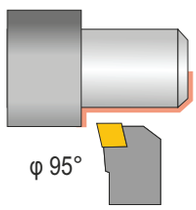
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TP.. 1103..		STK	C2	BCM6	KS3
TP.. 1603..	OTP-1604		C3	BCM8	KS4
TP.. 1604..	OTP-1603				

Clamp increased stiffness DCLNR/L

Main angle 95°



Application



Main dimensions

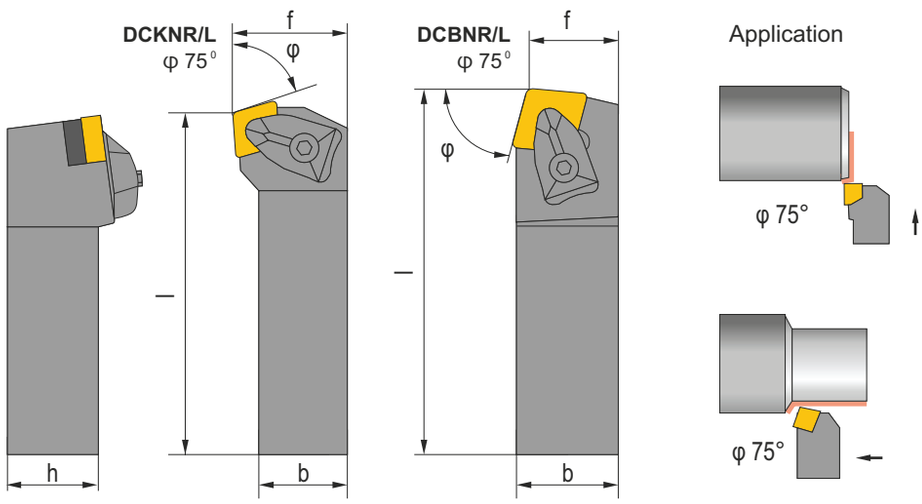
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DCLNR/L 1616 H09	CN.. 0903..	20	16	16	100
DCLNR/L 2020 K09		25	20	20	125
DCLNR/L 2525 M09		32	25	25	150
DCLNR/L 1616 H12	CN.. 1204..	20	16	16	100
DCLNR/L 2020 K12		25	20	20	125
DCLNR/L 2525 M12		32	25	25	150
DCLNR/L 3225 P12		32	32	25	170
DCLNR/L 3232 P12		40	32	32	170
DCLNR/L 2525 M16-04	CN.. 1604..	32	25	25	150
DCLNR/L 3225 P16-04		32	32	25	170
DCLNR/L 3225 R16-04		32	32	25	200
DCLNR/L 2525 M16-06	CN.. 1606..	32	25	25	150
DCLNR/L 3225 P16-06		32	32	25	170
DCLNR/L 3225 R16-06		32	32	25	200
DCLNR/L 3232 P16-06		40	32	32	170
DCLNR/L 2525 M19	CN.. 1906..	32	25	25	150
DCLNR/L 3225 P19		32	32	25	170
DCLNR/L 3232 P19		40	32	32	170
DCLNR/L 4040 S19		50	40	40	250
DCLNR/L 5050 T19		60	50	50	300

Main components

Cutting insert	cross section of clamp	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
CN.. 0903..		OCN-0903	STK	D1	BM4x16	KS3
CN.. 1204..	1616	OCN-1203	M4x10	D2	BM5x20	KS4
		OCN-1204				
CN.. 1604..		OCN-1604	M5x10	D3	BM6x25	KS5
CN.. 1606..						
CN.. 1906..		OCN-1904	M6x12	D4	BM6x25	KS5

Clamp increased stiffness DCKNR/L, DCBNR/L

Main angle 75°



Main dimensions

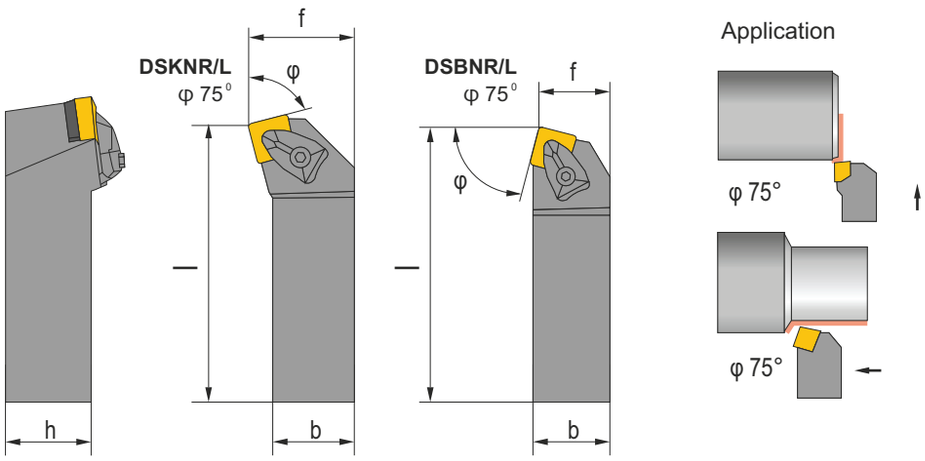
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DCKNR/L 2020 K09	CN.. 0903..	25	20	20	125
DCKNR/L 2020 K12	CN.. 1204..	25	20	20	125
DCKNR/L 2525 M12		32	25	25	150
DCKNR/L 3225 P12		32	32	25	170
DCKNR/L 3232 P16-04	CN.. 1604..	40	32	32	170
DCKNR/L 3232 P16-06	CN.. 1606..	40	32	32	170
DCKNR/L 4040 S16-06		50	40	40	250
DCBNR/L 2020 K09	CN.. 0903..	25	20	20	125
DCBNR/L 2020 K12	CN.. 1204..	17	20	20	125
DCBNR/L 2525 M12		22	25	25	150
DCBNR/L 3225 P12		22	32	25	170
DCBNR/L 2525 M16-04	CN.. 1604..	22	25	25	150
DCBNR/L 3225 P16-04		22	32	25	170
DCBNR/L 3232 P16-04		27	32	32	170
DCBNR/L 2525 M16-06	CN.. 1606..	22	25	25	150
DCBNR/L 3225 P16-06		22	32	25	170
DCBNR/L 3232 P16-06		27	32	32	170
DCBNR/L 4040 S16-06		35	40	40	250
DCBNR/L 3232 P19	CN.. 1906..	27	32	32	170
DCBNR/L 4040 S19		35	40	40	250
DCBNR/L 5050 T19		43	50	50	300

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
CN.. 0903..	OCN-0903	STK	D1	BM4x16	KS3
CN.. 1204..	OCN-1204	M4x10	D2	BM5x20	KS4
CN.. 1604..	OCN-1604	M5x10	D3	BM6x25	KS5
CN.. 1606..					
CN.. 1906..	OCN-1904	M6x12	D4	BM6x25	KS5

Clamp increased stiffness DSKNR/L, DSBNR/L

Main angle 75°



Main dimensions

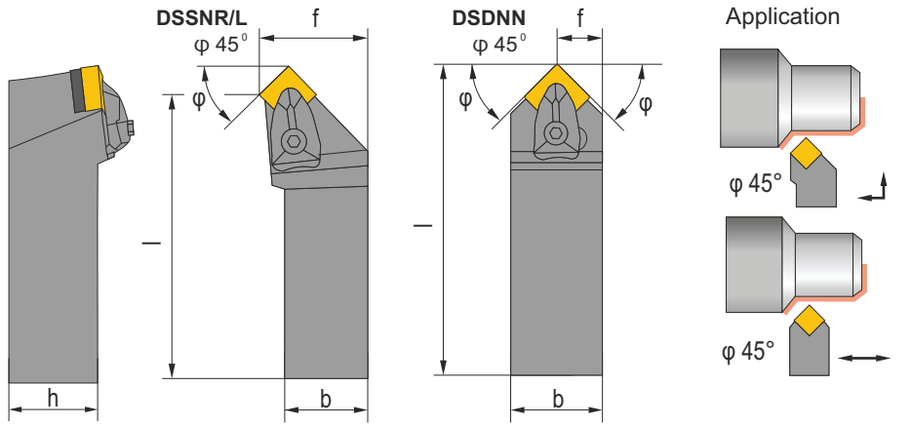
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DSKNR/L 2020 K09	SN.. 0903..	25	20	20	125
DSKNR/L 2020 K12	SN.. 1204..	25	20	20	125
DSKNR/L 2525 M12		32	25	25	150
DSKNR/L 3225 P12		32	32	25	170
DSKNR/L 3232 P15-04	SN.. 1504..	40	32	32	170
DSKNR/L 3232 P15-06	SN.. 1506..	40	32	32	170
DSKNR/L 3232 P19	SN.. 1906..	40	32	32	170
DSKNR/L 4040 S25-07	SN.. 2507..	50	40	40	250
DSKNR/L 4040 S25-09	SN.. 2509..	50	40	40	250
DSBNR/L 1616 H09	SN.. 0903..	13	16	16	100
DSBNR/L 2020 K09		17	20	20	125
DSBNR/L 2525 M09		22	25	25	150
DSBNR/L 2020 K12	SN.. 1204..	17	20	20	125
DSBNR/L 2525 M12		22	25	25	150
DSBNR/L 3225 P12		22	32	25	170
DSBNR/L 2525 M15-04	SN.. 1504..	22	25	25	150
DSBNR/L 3225 P15-04		22	32	25	170
DSBNR/L 3232 P15-04		27	32	32	170
DSBNR/L 2525 M15-06	SN.. 1506..	22	25	25	150
DSBNR/L 3225 P15-06		22	32	25	170
DSBNR/L 3232 P15-06		27	32	32	170
DSBNR/L 3232 P19	SN.. 1906..	27	32	32	170
DSBNR/L 4040 S25-07	SN.. 2507..	35	40	40	250
DSBNR/L 4040 S25-09	SN.. 2509..	35	40	40	250

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SN.. 0903..	OSN-0903	STK	D1	BM4x16	KS3
SN.. 1204..	OSN-1204	M4x10	D2	BM5x20	KS4
SN.. 1504..	OSN-1504	M5x10	D3	BM6x25	KS5
SN.. 1506..					
SN.. 1906..	OSN-1904	M6x12	D4	BM6x25	KS5
SN.. 2507..	OSN-2506	M8x12	D5	BM8x30	KS6
SN.. 2509..					

Clamp increased stiffness DSSNR/L, DSDNN

Main angle 45°



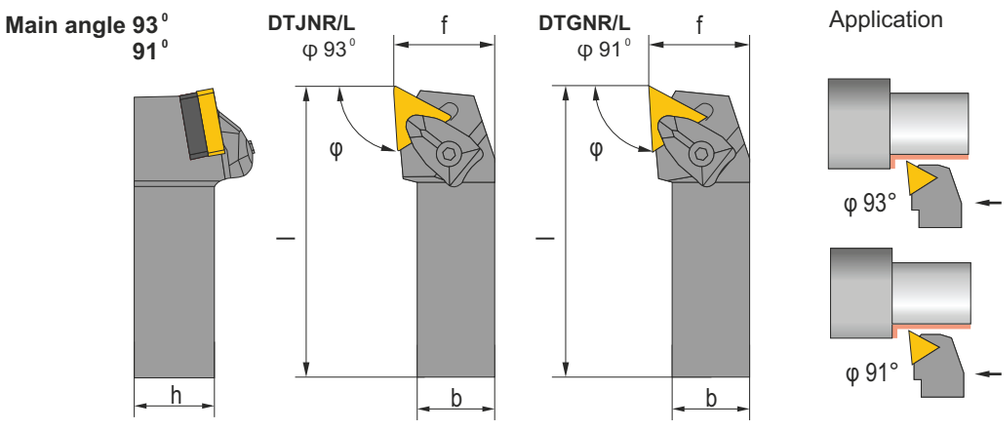
Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DSSNR/L 1616 H09	SN.. 0903..	20	16	16	100
DSSNR/L 2020 K09		25	20	20	125
DSSNR/L 2525 M09		32	25	25	150
DSSNR/L 2020 K12	SN.. 1204..	25	20	20	125
DSSNR/L 2525 M12		32	25	25	150
DSSNR/L 3225 P12	SN.. 1504..	32	32	25	170
DSSNR/L 2525 M15-04		32	25	25	150
DSSNR/L 3225 P15-04		32	32	25	170
DSSNR/L 3232 S15-04		40	32	32	250
DSSNR/L 2525 M15-06	SN.. 1506..	32	25	25	150
DSSNR/L 3225 P15-06		32	32	25	170
DSSNR/L 3232 S15-06		40	32	32	250
DSSNR/L 3232 P19	SN.. 1906..	40	32	32	170
DSSNR/L 4040 S25-07	SN.. 2507..	50	40	40	250
DSSNR/L 4040 S25-09	SN.. 2509..	50	40	40	250
DSDNN 1616 H09	SN.. 0903..	20	16	16	100
DSDNN 2020 K12	SN.. 1204..	25	20	20	125
DSDNN 2525 M12		32	25	25	150
DSDNN 3225 P12		32	32	25	170
DSDNN 2525 M15-04	SN.. 1504..	32	25	25	150
DSDNN 3225 P15-04		32	32	25	170
DSDNN 2525 M15-06	SN.. 1506..	32	25	25	150
DSDNN 3225 P15-06		32	32	25	170
DSDNN 3232 P19	SN.. 1906..	40	32	32	170
DSDNN 4040 S25-07	SN.. 2507..	40	40	40	250
DSDNN 4040 S25-09	SN.. 2509..	40	40	40	250

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SN.. 0903..	OSN-0903	STK	D1	BM4x16	KS3
SN.. 1204..	OSN-1204	M4x10	D2	BM5x20	KS4
SN.. 1504..	OSN-1504	M5x10	D3	BM6x25	KS5
SN.. 1506..					
SN.. 1906..	OSN-1904	M6x12	D4	BM6x25	KS5
SN.. 2507..	OSN-2506	M8x12	D5	BM8x30	KS6
SN.. 2509..					

Clamp increased stiffness DTJNR/L , DTGNR/L



Main dimensions

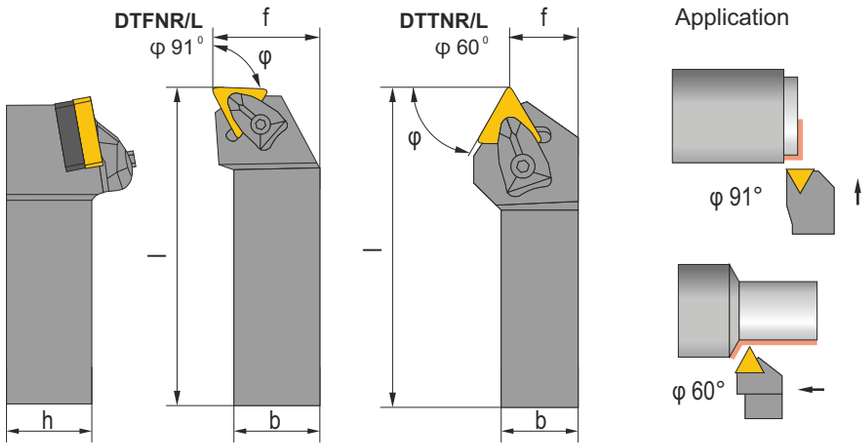
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DTJNR/L 1616 H16-03	TN.. 1603..	20	16	16	100
DTJNR/L 2020 K16-03		25	20	20	125
DTJNR/L 2525 M16-03		32	25	25	150
DTJNR/L 3225 P16-03		32	32	25	170
DTJNR/L 1616 H16-04	TN.. 1604..	20	16	16	100
DTJNR/L 2020 K16-04		25	20	20	125
DTJNR/L 2525 M16-04		32	25	25	150
DTJNR/L 3225 P16-04		32	32	25	170
DTJNR/L 2525 M22	TN.. 2204..	32	25	25	150
DTJNR/L 3225 P22		32	32	25	170
DTJNR/L 3232 P22		40	32	32	170
DTJNR/L 3232 P27	TN.. 2706..	40	32	32	170
DTJNR/L 4040 S27		50	40	40	250
DTGNR/L 1616 H16-03	TN.. 1603..	20	16	16	100
DTGNR/L 2020 K16-03		25	20	20	125
DTGNR/L 2525 M16-03		32	25	25	150
DTGNR/L 3225 P16-03		32	32	25	170
DTGNR/L 1616 H16-04	TN.. 1604..	20	16	16	100
DTGNR/L 2020 K16-04		25	20	20	125
DTGNR/L 2525 M16-04		32	25	25	150
DTGNR/L 3225 P16-04		32	32	25	170
DTGNR/L 2525 M22	TN.. 2204..	32	25	25	150
DTGNR/L 3225 P22		32	32	25	170
DTGNR/L 3232 P22		40	32	32	170
DTGNR/L 3232 P27	TN.. 2706..	40	32	32	170
DTGNR/L 4040 S27		50	40	40	250

Main components

Cutting insert	cross section of clamp	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TN.. 1603..	1616, 2020	OTN-1603	STK	D1	BM4x16	KS3
		OTN-1604				
TN.. 1604..	1616, 2020	OTN-1603	STK	D1	BM4x16	KS3
		OTN-1604				
TN.. 2204..		OTN-2204	M4x10	D2	BM5x20	KS4
TN.. 2706..		OTN-2704	M5x10	D3	BM6x25	KS5

Clamp increased stiffness DTFNR/L, DTTNR/L

Main angle 91°
60°



Main dimensions

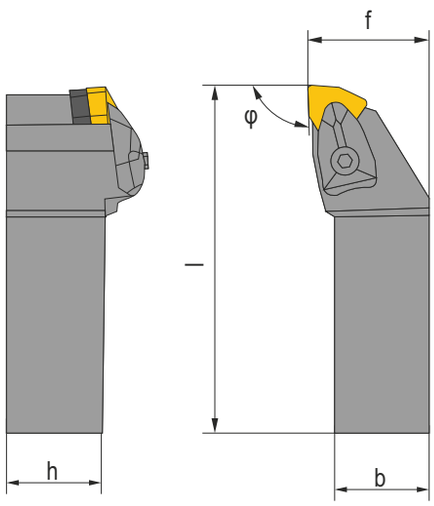
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DTFNR/L 1616 H16-03	TN.. 1603..	20	16	16	100
DTFNR/L 2020 K16-03		25	20	20	125
DTFNR/L 2525 M16-03		32	25	25	150
DTFNR/L 3225 P16-03		32	32	25	170
DTFNR/L 1616 H16-04	TN.. 1604..	20	16	16	100
DTFNR/L 2020 K16-04		25	20	20	125
DTFNR/L 2525 M16-04		32	25	25	150
DTFNR/L 3225 P16-04		32	32	25	170
DTFNR/L 3225 P22	TN.. 2204..	32	32	25	170
DTFNR/L 3232 P22		40	32	32	170
DTFNR/L 3232 P27	TN.. 2706..	40	32	32	170
DTFNR/L 4040 S27		50	40	40	250
DTTNR/L 1616 H16-03	TN.. 1603..	13	16	16	100
DTTNR/L 2020 K16-03		17	20	20	125
DTTNR/L 1616 H16-04	TN.. 1604..	13	16	16	100
DTTNR/L 2020 K16-04		17	20	20	125
DTTNR/L 2525 M22	TN.. 2204..	22	25	25	150
DTTNR/L 3225 P22		22	32	25	170

Main components

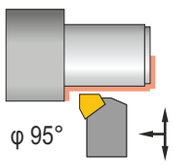
Cutting insert	cross section of clamp	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TN.. 1603..	1616, 2020	OTN-1603	STK	D1	BM4x16	KS3
		OTN-1604				
TN.. 1604..	1616, 2020	OTN-1603	STK	D1	BM4x16	KS3
		OTN-1604				
TN.. 2204..		OTN-2204	M4x10	D2	BM5x20	KS4
TN.. 2706..		OTN-2704	M5x10	D3	BM6x25	KS5

Clamp increased stiffness DWLNR/L

Main angle 95°



Application



Main dimensions

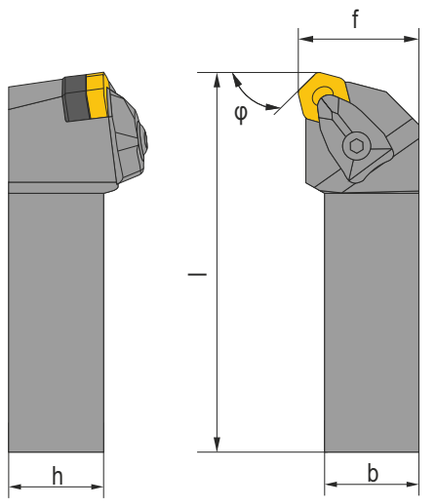
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DWLNR/L 1616 H06-03	WN.. 0603..	20	16	16	100
DWLNR/L 2020 K06-03		25	20	20	125
DWLNR/L 2525 M06-03		32	25	25	150
DWLNR/L 1616 H06-04	WN.. 0604..	20	16	16	100
DWLNR/L 2020 K06-04		25	20	20	125
DWLNR/L 2525 M06-04		32	25	25	150
DWLNR/L 2020 K08	WN.. 0804..	25	20	20	125
DWLNR/L 2525 M08		32	25	25	150
DWLNR/L 3225 P08		32	32	25	170
DWLNR/L 3232 P08		40	32	32	170
DWLNR/L 2525 M10-04	WN.. 1004..	32	25	25	150
DWLNR/L 3225 P10-04		32	32	25	170
DWLNR/L 3232 P10-04		40	32	32	170
DWLNR/L 2525 M10-06	WN.. 1006..	32	25	25	150
DWLNR/L 3225 P10-06		32	32	25	170
DWLNR/L 3232 P10-06		40	32	32	170
DWLNR/L 3232 P12	WN.. 1206..	40	32	32	170
DWLNR/L 4040 S12		50	40	40	250

Main components

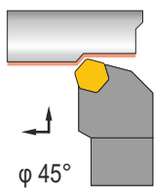
Cutting insert	cross section of clamp	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
WN.. 0603..	1616	OWN-0603	STK	D1	BM4x16	KS3
		OWN-0604				
WN.. 0604..	1616	OWN-0603				
		OWN-0604				
WN.. 0804..		OWN-0804	M4x10	D2	BM5x20	KS4
WN.. 1004..		OWN-1006	M5x10	D3	BM6x25	KS5
WN.. 1006..		OWN-1004				
WN.. 1206..		OWN-1206	M6x12	D4	BM6x25	KS5

Clamp increased stiffness DHSNR/L

Main angle 45°



Application



Main dimensions

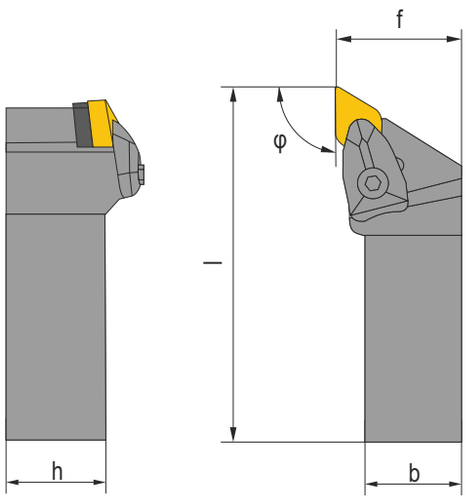
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DHSNR/L 2525 M09	HN.. 0904..	32	25	25	150
DHSNR/L 3225 P11-04	HN.. 1104..	32	32	25	170
DHSNR/L 3225 P11-06	HN.. 1106..	32	32	25	170

Main components

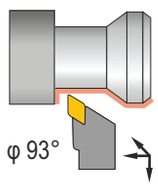
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
HN..0904..	OHN-0904	M5x10	D3	BM6x25	KS5
HN..1104..	OHN-1106	M6x12	D4	BM6x30	KS5
HN..1106..	OHN-1104	M6x12	D4	BM6x30	KS5

Clamp increased stiffness DDJNR/L

Main angle 93°



Application



Main dimensions

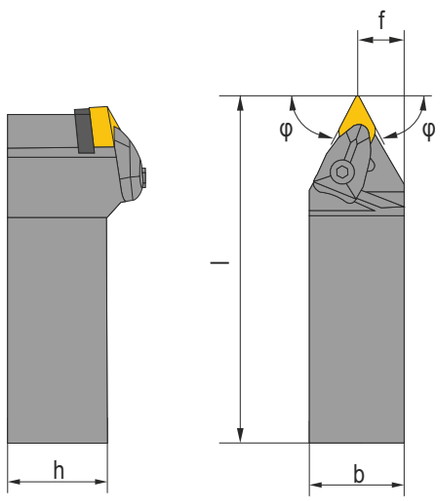
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DDJNR/L 1616 H11	DN.. 1104..	20	16	16	100
DDJNR/L 2020 K11		25	20	20	125
DDJNR/L 2020 K15-04	DN.. 1504..	25	20	20	125
DDJNR/L 2525 M15-04		32	25	25	150
DDJNR/L 3225 P15-04		32	32	25	170
DDJNR/L 2020 K15-06	DN.. 1506..	25	20	20	125
DDJNR/L 2525 M15-06		32	25	25	150
DDJNR/L 3225 P15-06		32	32	25	170
DDJNR/L 4040 S15-06		50	40	40	250

Main components

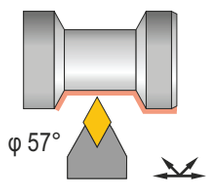
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
DN..1104..	ODN-1103	SM3	D1	BM4x16	KS3 K09IP
DN..1504..	ODN-1503	M4x10	D2	BM5x20	KS4
DN..1506..	ODN-1503	M4x10	D2	BM5x20	KS4

Clamp increased stiffness DDNNN

Main angle 57°



Application



Main dimensions

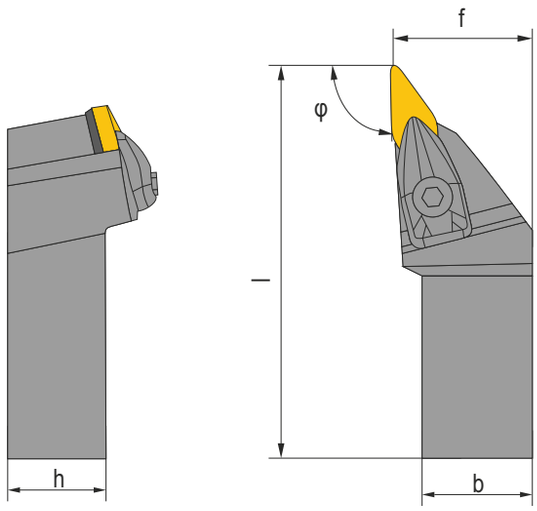
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DDNNN 2020 K11	DN.. 1104..	10.5	20	20	125
DDNNN 2525 M11		13	25	25	150
DDNNN 2525 M15-04	DN.. 1504..	13	25	25	150
DDNNN 3225 P15-04		13	32	25	170
DDNNN 3232 P15-04		16.5	32	32	170
DDNNN 2525 M15-06	DN.. 1506..	13	25	25	150
DDNNN 3225 P15-06		13	32	25	170
DDNNN 3232 P15-06		16.5	32	32	170
DDNNN 4040 S15-06		20.5	40	40	250

Main components

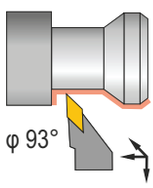
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
DN..1104..	ODN-1103	SM3	D1	BM4x16	KS3 K09IP
DN..1504..	ODN-1503	M4x10	D2	BM5x20	KS4
DN..1506..	ODN-1503	M4x10	D2	BM5x20	KS4

Clamp increased stiffness DVJNR/L

Main angle 93°



Application



Main dimensions

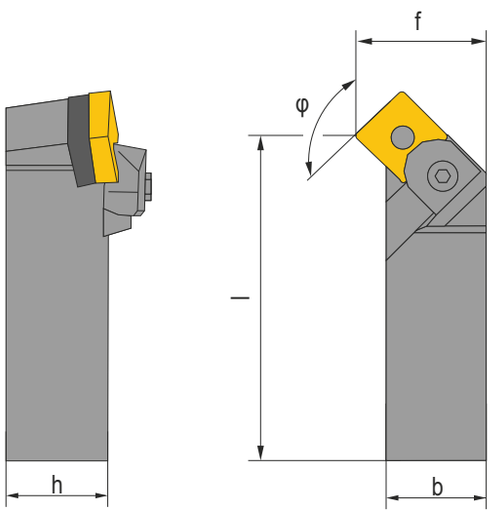
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
DVJNR/L 2020 K16	VN.. 1604..	25	20	20	125
DVJNR/L 2525 M16		32	25	25	150
DVJNR/L 3225 P16		32	32	25	170
DVJNR/L 3232 P16		40	32	32	170
DVJNR/L 4040 S16		50	40	40	250

Main components

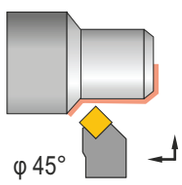
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
VN.. 1604..	OVN-1603	SM3.5-1	D6	BM5x20	KS4 K15IP

Clamp increased stiffness MSSNR/L

Main angle 45°



Application



Main dimensions

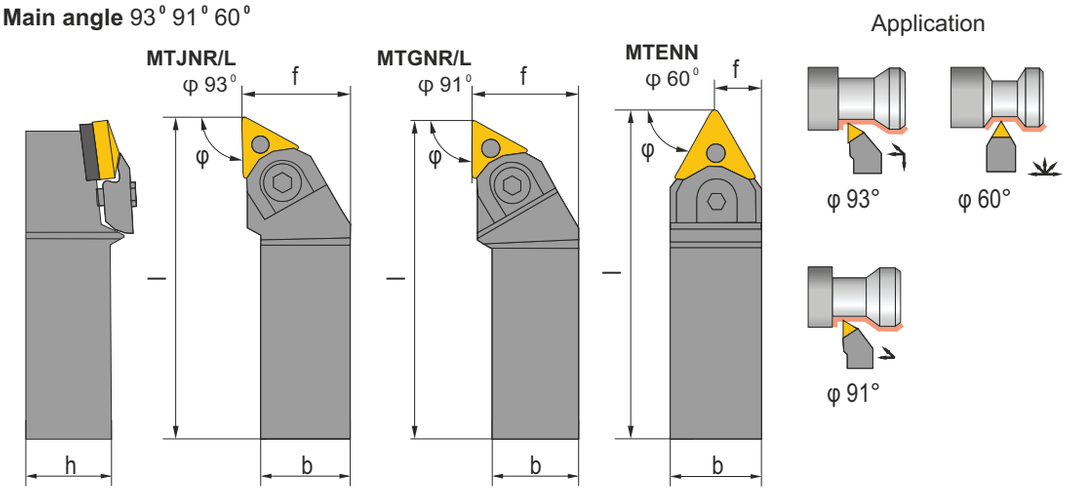
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
MSSNR/L 2525 M12	SN.. 1204..	32	25	25	150
MSSNR/L 2525 M15-04	SN.. 1504..	32	25	25	150
MSSNR/L 2525 M15-06	SN.. 1506..	32	25	25	150
MSSNR/L 3225 P15-04	SN.. 1504..	32	32	25	170
MSSNR/L 3225 P15-06	SN.. 1506..	32	32	25	170
MSSNR/L 3232 P15-04	SN.. 1504..	40	32	32	170
MSSNR/L 3232 P15-06	SN.. 1506..	40	32	32	170
MSSNR/L 3232 P19	SN.. 1906..	40	32	32	170
MSSNR/L 4040 S25-07	SN.. 2507..	50	40	40	250
MSSNR/L 4040 S25-09	SN.. 2509..	50	40	40	250

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SN.. 1204..	OSN-1203	STM1	MS1	BM6x20	KS5
SN.. 1504..	OSN-1504	STM2	MS1	BM6x20	KS5
SN.. 1506..					
SN.. 1906..	OSN-1906	STM3	MS2	BM8x30	KS6
SN.. 2507..	OSN-2506	STM4	MS3	BM8x30	KS6
SN.. 2509..					

Wedge-clamp on top MTJNR/L, MTGNR/L, MTENN

Main angle 93° 91° 60°



Main dimensions

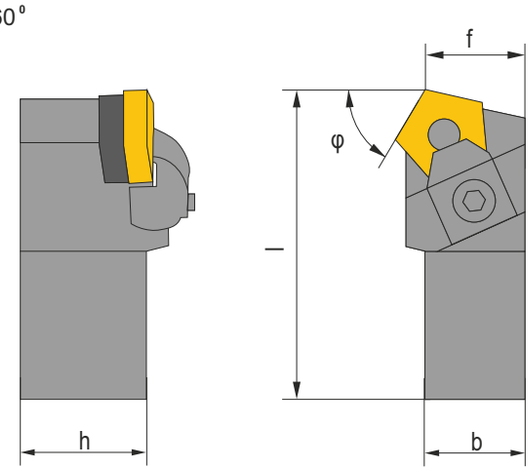
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
MTJNR/L 2020 K16-03	TN.. 1603..	25	20	20	150
MTJNR/L 2525 M16-03		32	25	25	150
MTJNR/L 3225 P16-03		32	32	25	170
MTJNR/L 2020 K16-04	TN.. 1604..	25	20	20	150
MTJNR/L 2525 M16-04		32	25	25	150
MTJNR/L 3225 P16-04		32	32	25	170
MTJNR/L 2525 M22	TN.. 2204..	32	25	25	150
MTJNR/L 3225 P22		32	32	25	170
MTJNR/L 3232 P22		40	32	32	170
MTJNR/L 3232 P27	TN.. 2706..	40	32	32	170
MTGNR/L 2525 M22	TN.. 2204..	32	25	25	150
MTGNR/L 3225 P22		32	32	25	170
MTGNR/L 3232 P22		40	32	32	170
MTENN 2525 M22	TN.. 2204..	13	25	25	150
MTENN 3225 P22		13	32	25	170
MTENN 3232 P22		16,5	32	32	170

Main components

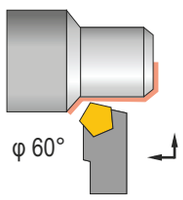
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TN.. 1603..	OTN-1604	STM0	MT1-1	BCM6x25	KS4
TN.. 1604..	OTN-1603				
TN.. 2204..	OTN-2204	STM1	MT1	BCM6x25	KS4
TN.. 2706..	OTN-2704	STM2	MT1	BCM6x25	Ks4

Wedge-clamp on top MPTNR/L

Main angle 60°



Application



Main dimensions

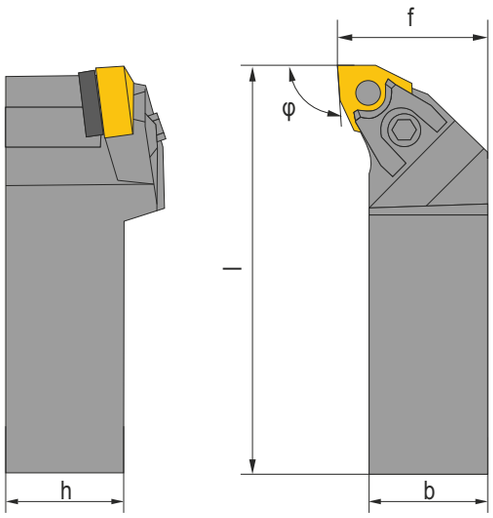
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
MPTNR/L 2525 M11	PN.. 1104..	25	25	25	150
MPTNR/L 3225 P11		25	32	25	170
MPTNR/L 2525 M13-04	PN.. 1304..	25	25	25	150
MPTNR/L 3225 P13-04		25	32	25	170
MPTNR/L 3232 P13-04		32	32	32	170
MPTNR/L 2525 M13-06	PN.. 1306..	25	25	25	150
MPTNR/L 3225 P13-04		25	32	25	170
MPTNR/L 3232 P13-06		32	32	32	170
MPTNR/L 4040 S16	PN.. 1606..	40	40	40	250

Main components

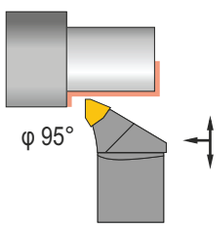
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
PN.. 1104..	OPN-1104	STM2	MT1-1	BCM6x25	KS4
PN.. 1304..	OPN-1306	STM3	MT1	BCM6x25	KS4
PN.. 1306..	OPN-1304				
PN.. 1606..	OPN-1604	STM3	MT1	BCM6x25	KS4

Wedge-clamp on top MWLNR/L

Main angle 95°



Application



Main dimensions

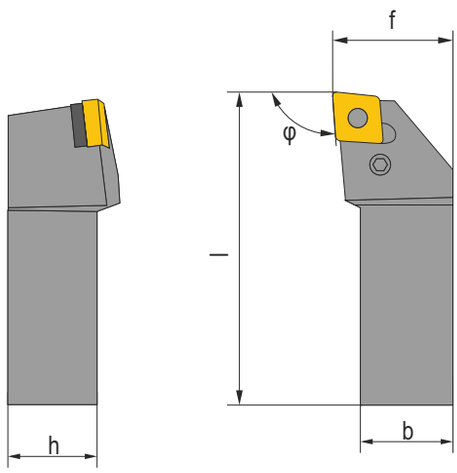
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
MWLNR/L 2020 K06-03	WN.. 0603..	25	20	20	150
MWLNR/L 2525 M06-03		32	25	25	150
MWLNR/L 2020 K06-04	WN.. 0604..	25	20	20	150
MWLNR/L 2525 M06-04		32	25	25	150
MWLNR/L 2020 K08	WN.. 0804..	27	20	20	150
MWLNR/L 2525 M08		32	25	25	150
MWLNR/L 3225 P08		32	32	25	170
MWLNR/L 3225 P10-04	WN.. 1004..	32	32	25	170
MWLNR/L 3232 P10-04		40	32	32	170
MWLNR/L 4040 S10-04		50	40	40	250
MWLNR/L 3225 P10-06	WN.. 1006..	32	32	25	170
MWLNR/L 3232 P10-06		40	32	32	170
MWLNR/L 4040 S10-06		50	40	40	250
MWLNR/L 3225 P12	WN.. 1206..	32	32	25	170
MWLNR/L 3232 P12		40	32	32	170
MWLNR/L 4032 R12		40	40	32	200
MWLNR/L 4040 S12		50	40	40	250

Main components

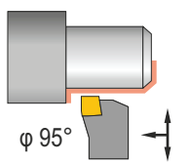
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
WN.. 0603..	OWN-0604	STM0	MW1	BM4x16	KS3
WN.. 0604..					
WN.. 0804..	OWN-0804	STM1	MW2	BM5x20	KS4
WN.. 1004..	OWN-1006	STM2	MW3	BCM6x25	KS4
WN.. 1006..	OWN-1004				
WN.. 1206..	OWN-1206	STM3	MW3	BCM6x25	KS4

Clamp lever for hole PCLNR/L

Main angle 95°



Application



Main dimensions

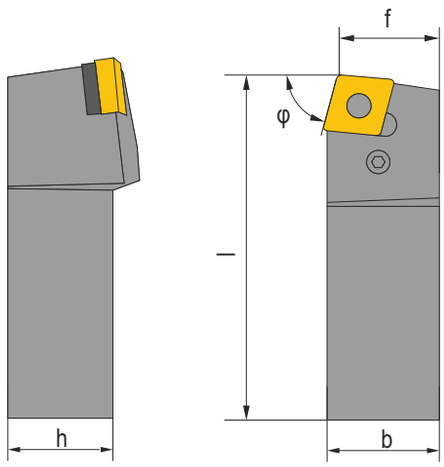
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PCLNR/L 1616 H09	CN.. 0903..	20	16	16	100
PCLNR/L 2020 K09		25	20	20	125
PCLNR/L 2525 M09		32	25	25	150
PCLNR/L 2020 K12	CN.. 1204..	25	20	20	125
PCLNR/L 2525 M12		32	25	25	150
PCLNR/L 3225 P12		32	32	25	170
PCLNR/L 2525 M16-04	CN.. 1604..	32	25	25	150
PCLNR/L 3225 P16-04		32	32	25	170
PCLNR/L 3232 P16-04		40	32	32	170
PCLNR/L 2525 M16-06	CN.. 1606..	32	25	25	150
PCLNR/L 3225 P16-06		32	32	25	170
PCLNR/L 3232 P16-06		40	32	32	170
PCLNR/L 2525 M19	CN.. 1906..	32	25	25	150
PCLNR/L 3225 P19		32	32	25	170
PCLNR/L 3232 P19		40	32	32	170
PCLNR/L 4040 S19		50	40	40	250

Main components

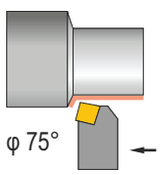
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
CN.. 0903..	OCN-0903-P	STP1	P1	BP1	KS2.5
CN.. 1204..	OCN-1204-P	STP2	P2	BP2	KS3
CN.. 1604..	OCN-1604-P	STP3	P3	BP3	KS3
CN.. 1606..					
CN.. 1906..	OCN-1906-P	STP4	P4	BP4	KS4

Clamp lever for hole PCBNR/L

Main angle 75°



Application



Main dimensions

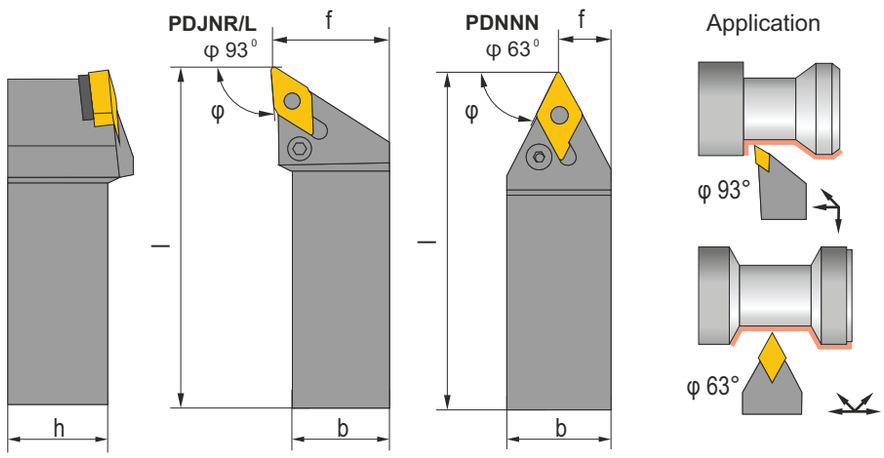
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PCBNR/L 2525 M12	CN.. 1204..	22	25	25	150
PCBNR/L 2525 M16-04	CN.. 1604..	22	25	25	150
PCBNR/L 3225 P16-04		22	32	25	170
PCBNR/L 3232 P16-04		27	32	32	170
PCBNR/L 2525 M16-06	CN.. 1606..	22	25	25	150
PCBNR/L 3225 P16-06		22	32	25	170
PCBNR/L 3232 P16-06		27	32	32	170
PCBNR/L 3232 P19	CN.. 1906	27	32	32	170
PCBNR/L 4040 S19		35	40	40	250

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
CN.. 1204..	OCN-1204-P	STP2	P2	BP2	KS3
CN.. 1604..	OCN-1604-P	STP3	P3	BP3	KS3
CN.. 1606..					
CN.. 1906	OCN-1906-P	STP4	P4	BP4	KS4

Clamp lever for hole PDJNR/L, PDNNN

Main angle 93°
63°



Main dimensions

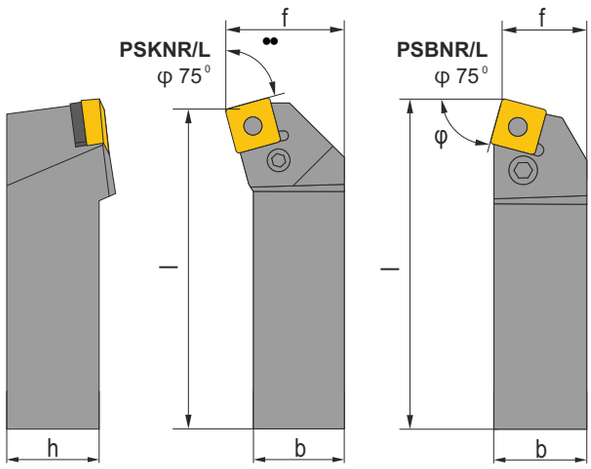
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PDJNR/L 1616 H11	DN.. 1104..	20	16	16	100
PDJNR/L 2020 K11		25	20	20	125
PDJNR/L 2525 M11		32	25	25	150
PDJNR/L 3225 P11		32	32	25	170
PDJNR/L 2020 K15-04	DN.. 1504..	25	20	20	125
PDJNR/L 2525 M15-04		32	25	25	150
PDJNR/L 3225 P15-04		32	32	25	170
PDJNR/L 3232 P15-04		40	32	32	170
PDJNR/L 2020 K15-06	DN.. 1506..	25	20	20	125
PDJNR/L 2525 M15-06		32	25	25	150
PDJNR/L 3225 P15-06		32	32	25	170
PDJNR/L 3232 P15-06		40	32	32	170
PDNNN 2525 M15-04	DN.. 1504..	32	25	25	150
PDNNN 3225 P15-04		32	32	25	170
PDNNN 3232 P15-04		40	32	32	170
PDNNN 2525 M15-06	DN.. 1506..	32	25	25	150
PDNNN 3225 P15-06		32	32	25	170
PDNNN 3232 P15-06		40	32	32	170

Main components

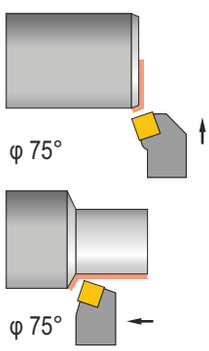
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
DN.. 1104..	ODN-1104-P	STP0	P0	BP0	KS2.5
DN.. 1504..	ODN-1504-P	STP2	P9	BP9	KS3
DN.. 1506..					

Clamp lever for hole PSKNR/L, PSBNR/L

Main angle 75°



Application



Main dimensions

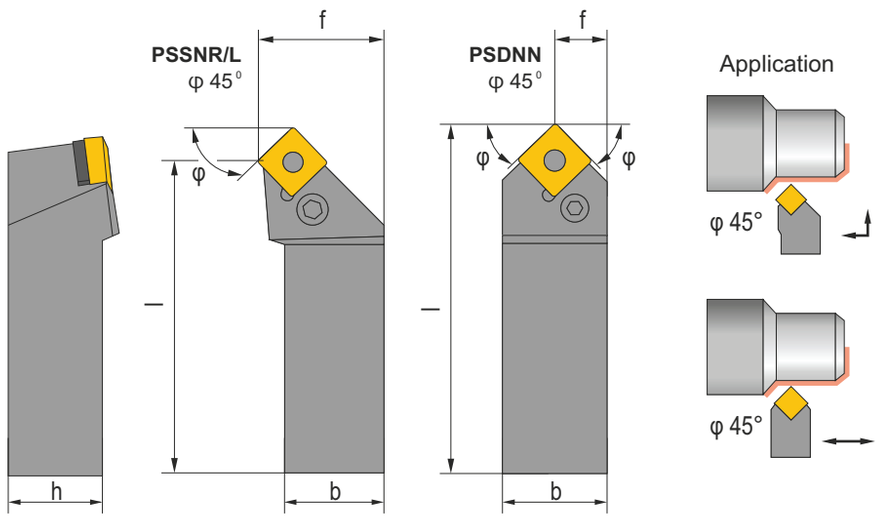
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PSKNR/L 1616 H09	SN.. 0903..	20	16	16	100
PSKNR/L 2020 K09		25	20	20	125
PSKNR/L 2020 K12	SN.. 1204..	25	20	20	125
PSKNR/L 2525 M12		32	25	25	150
PSKNR/L 3225 P12		32	32	25	170
PSKNR/L 2525 M15-04	SN.. 1504..	32	25	25	150
PSKNR/L 2525 M15-06	SN.. 1506..	32	25	25	150
PSKNR/L 3232 P19	SN.. 1906..	40	32	32	170
PSKNR/L 4040 S19		50	40	40	250
PSKNR/L 5050 T25-07	SN.. 2507..	60	50	50	300
PSKNR/L 5050 T25-09	SN.. 2509..	60	50	50	300
PSBNR/L 1616 H09	SN.. 0903..	13	16	16	100
PSBNR/L 2020 K12	SN.. 1204..	17	20	20	125
PSBNR/L 2525 M12		22	25	25	150
PSBNR/L 3225 P12		22	32	25	170
PSBNR/L 2525 M15-04	SN.. 1504..	22	25	25	150
PSBNR/L 3225 P15-04		22	32	25	170
PSBNR/L 3232 P15-04		27	32	32	170
PSBNR/L 2525 M15-06	SN.. 1506..	22	25	25	150
PSBNR/L 3225 P15-06		22	32	25	170
PSBNR/L 3232 P15-06		27	32	32	170
PSBNR/L 3232 P19	SN.. 1906..	27	32	32	170
PSBNR/L 4040 S19		35	40	40	250
PSBNR/L 4040 S25-07	SN.. 2507..	35	40	40	250
PSBNR/L 5050 T25-07		43	50	50	300
PSBNR/L 4040 S25-09	SN.. 2509..	35	40	40	250
PSBNR/L 5050 T25-09		43	50	50	300

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SN.. 0903..	OSN-0903-P	STP1	P1	BP1	KS2.5
SN.. 1204..	OSN-1204-P	STP2	P2	BP2	KS3
SN.. 1504..	OSN-1504-P	STP3	P3	BP3	KS3
SN.. 1506..					
SN.. 1906..	OSN-1906-P	STP4	P4	BP4	KS4
SN.. 2507..	OSN-2507-P	STP5	P5	BP5	KS5
SN.. 2509..					

Clamp lever for hole PSSNR/L, PSDNN

Main angle 45°



Main dimensions

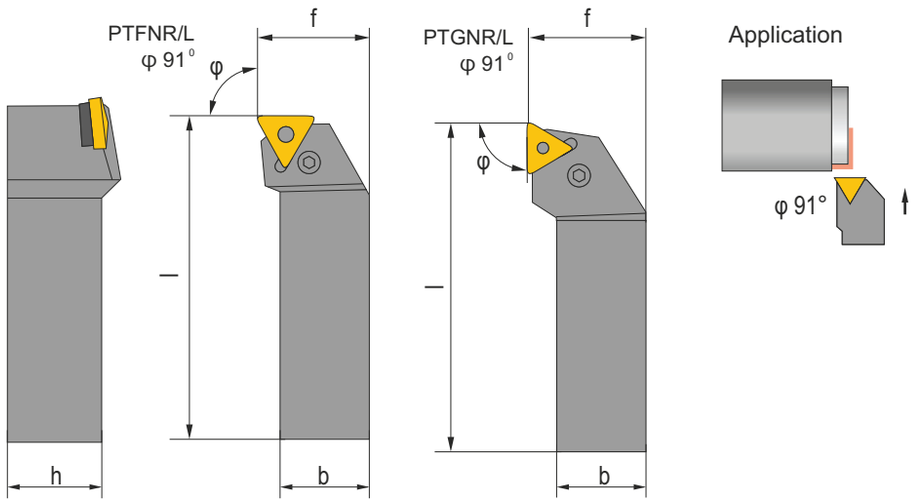
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PSSNR/L 1616 H09	SN.. 0903..	20	16	16	100
PSSNR/L 2020 K09		25	20	20	125
PSSNR/L 2525 M09		32	25	25	150
PSSNR/L 2020 K12	SN.. 1204..	25	20	20	125
PSSNR/L 2525 M12		32	25	25	150
PSSNR/L 3225 P12		32	32	25	170
PSSNR/L 2525 M15-04	SN.. 1504..	32	25	25	150
PSSNR/L 3225 P15-04		32	32	25	170
PSSNR/L 3232 P15-04		40	32	32	170
PSSNR/L 2525 M15-06	SN.. 1506..	32	25	25	150
PSSNR/L 3225 P15-06		32	32	25	170
PSSNR/L 3232 P15-06		40	32	32	170
PSSNR/L 3232 P19	SN.. 1906..	40	32	32	170
PSSNR/L 4040 S19		50	40	40	250
PSSNR/L 4040 S25-07	SN.. 2507..	50	40	40	250
PSSNR/L 4040 S25-09	SN..2509..	50	40	40	250
PSDNN 1616 H09	SN.. 0903..	8.3	16	16	100
PSDNN 2020 K12	SN.. 1204..	10.3	20	20	125
PSDNN 2525 M12		12.8	25	25	150
PSDNN 3225 P12		12.8	32	25	170
PSDNN 3225 P19	SN.. 1906..	13	32	25	170
PSDNN 3232 P19		16.3	32	32	170
PSDNN 4040 S25-07	SN.. 2507..	21	40	40	250
PSDNN 4040 S25-09	SN.. 2509..	21	40	40	250

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SN.. 0903..	OSN-0903-P	STP1	P1	BP1	KS2.5
SN.. 1204..	OSN-1204-P	STP2	P2	BP2	KS3
SN.. 1504..	OSN-1504-P	STP3	P3	BP3	KS3
SN.. 1506..					
SN.. 1906..	OSN-1906-P	STP4	P4	BP4	KS4
SN.. 2507..	OSN-2507-P	STP5	P5	BP5	KS5
SN.. 2509..					

Clamp lever for hole PTFNR/L, PTGNR/L

Main angle 91°



Main dimensions

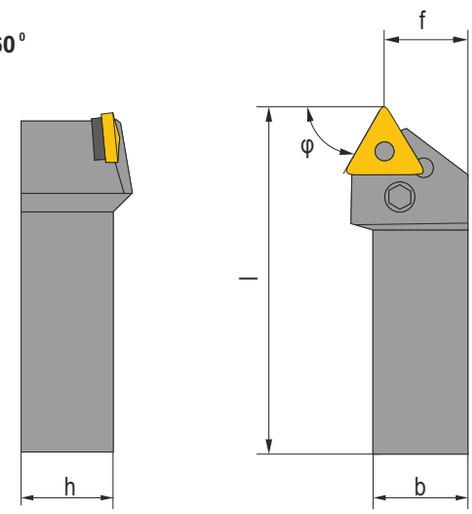
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PTFNR/L 1616 H16-03	TN.. 1603..	20	16	16	100
PTFNR/L 2020 K16-03		25	20	20	125
PTFNR/L 2525 M16-03		32	25	25	150
PTFNR/L 1616 H16-04	TN.. 1604..	20	16	16	100
PTFNR/L 2020 K16-04		25	20	20	125
PTFNR/L 2525 M16-04		32	25	25	150
PTFNR/L 2525 M22	TN.. 2204..	32	25	25	150
PTFNR/L 3225 P22		32	32	25	170
PTFNR/L 3232 P22		40	32	32	170
PTFNR/L 3232 P27	TN.. 2706..	40	32	32	170
PTFNR/L 4040 S27		50	40	40	250
PTGNR/L 1616 H16-03	TN.. 1603..	20	16	16	100
PTGNR/L 2020 K16-03		25	20	20	125
PTGNR/L 2525 M16-03		32	25	25	150
PTGNR/L 1616 H16-04	TN.. 1604..	20	16	16	100
PTGNR/L 2020 K16-04		25	20	20	125
PTGNR/L 2525 M16-04		32	25	25	150
PTGNR/L 2525 M22	TN.. 2204..	32	25	25	150
PTGNR/L 3225 P22		32	32	25	170
PTGNR/L 3232 P22		40	32	32	170
PTGNR/L 3232 P27	TN.. 2706..	40	32	32	170
PTGNR/L 4040 S27		50	40	40	250

Main components

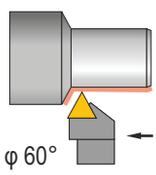
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TN.. 1603..	OTN-1603	STP1	P1	BP1	KS2.5
TN.. 1604..					
TN.. 2204..	OTN-2204P	STP2	P2	BP2	KS3
TN.. 2706..	OTN-2706	STP3	P3	BP3	KS3

Clamp lever for hole PTTNR/L

Main angle 60°



Application



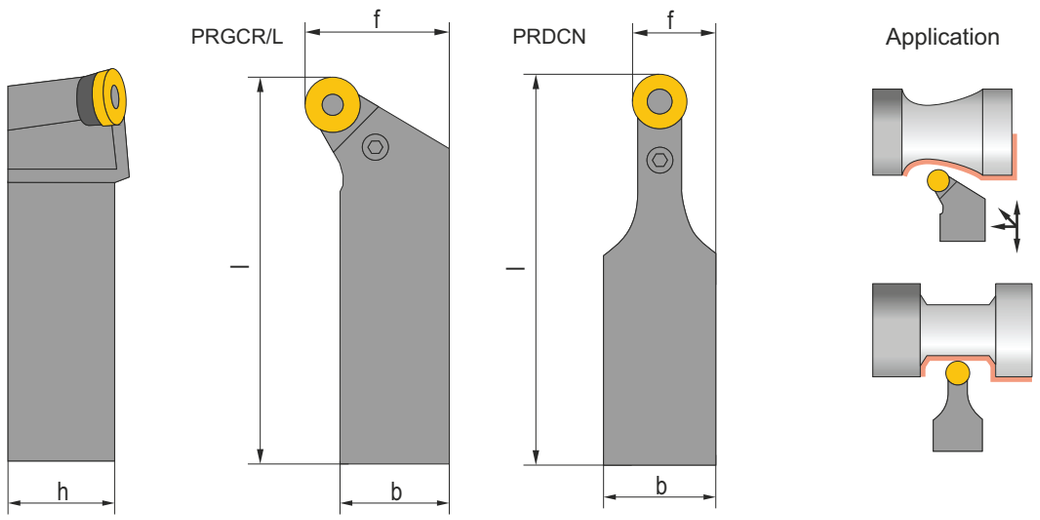
Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PTTNR/L 1616 H16-03	TN.. 1603..	13	16	16	100
PTTNR/L 2020 K16-03		17	20	20	125
PTTNR/L 1616 H16-04	TN.. 1604..	13	16	16	100
PTTNR/L 2020 K16-04		17	20	20	125
PTTNR/L 2525 M22	TN.. 2204..	22	25	25	150
PTTNR/L 3225 P22		22	32	25	170
PTTNR/L 3232 M27	TN.. 2706..	27	32	32	170
PTTNR/L 4040 S27		35	40	40	250

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TN.. 1603..	OTN-1603	STP1	P1	BP1	KS2.5
TN.. 1604..					
TN.. 2204..	OTN-2204-P	STP2	P2	BP2	KS3
TN.. 2706..	OTN-2706-P	STP3	P3	BP3	KS3

Clamp lever for hole PRGCR/L, PRDCN



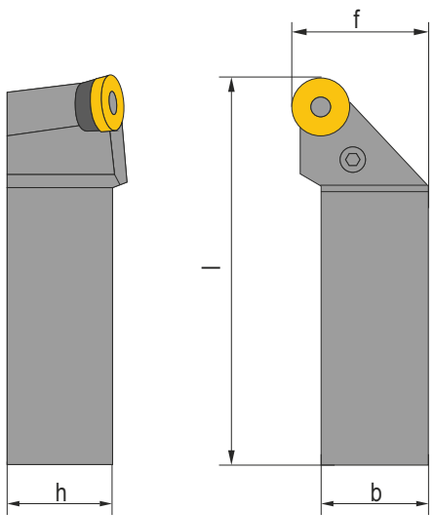
Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PRGCR/L 2525 M12	RC.. 1204..	32	25	25	150
PRGCR/L 3225 P16	RC.. 1606..	32	32	25	170
PRGCR/L 3232 P20	RC.. 2006..	40	32	32	170
PRDCN 2525 M12	RC.. 1204..	18.5	25	25	150
PRDCN 3225 P16	RC.. 1606..	20.5	32	25	170
PRDCN 3232 P20	RC.. 2006..	26	32	32	170

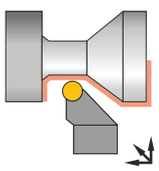
Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
RC.. 1204..	ORC-1203-P	STP1	P6	BP6	KS2.5
RC.. 1606..	ORC-1604-P	STP2	P7	BP7	KS2.5
RC.. 2006..	ORC-2004-P	STP3	P8	BP8	KS4

Clamp lever for hole PRGNR/L



Application



Main dimensions

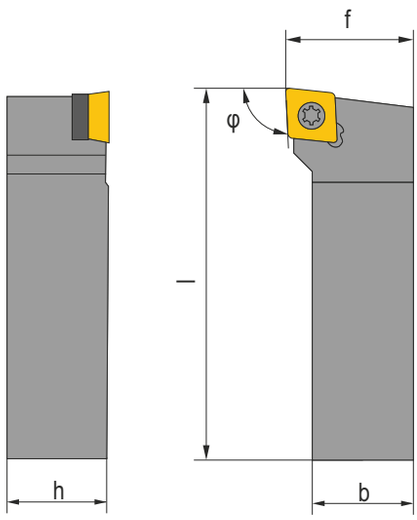
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
PRGNR/L 2020 K09	RNMM 090300	25	20	20	125
PRGNR/L 2525 M12-03	RN.. 120300	32	25	25	150
PRGNR/L 2525 M12-04	RN.. 120400	32	25	25	150
PRGNR/L 3225 P15-04	RN.. 150400	32	32	25	170
PRGNR/L 3225 P15-06	RN.. 150600	32	32	25	170
PRGNR/L 3232 P19-04	RN.. 190400	40	32	32	170
PRGNR/L 3232 P19-06	RN.. 190600	40	32	32	170
PRGNR/L 4040 S25-06	RN.. 250600	50	40	40	250
PRGNR/L 4040 S25-07	RN.. 250700	50	40	40	250

Main components

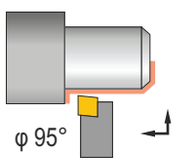
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
RNMM 090300	ORN-0903-P	STRP1	P1	BP1	KS2.5
RN.. 120300	ORN-1203-P	STP2	P2	BP2	KS3
RN.. 120400					
RN.. 150400	ORN-1504-P	STP3	P3	BP3	KS3
RN.. 150600					
RN.. 190400	ORN-1904-P	STP4	P4	BP4	KS4
RN.. 190600					
RN.. 250600	ORN-2506-P	STP5	P5	BP5	KS5
RN.. 250700					

Screw fixing SCLCR/L

Main angle 95°



Application



Main dimensions

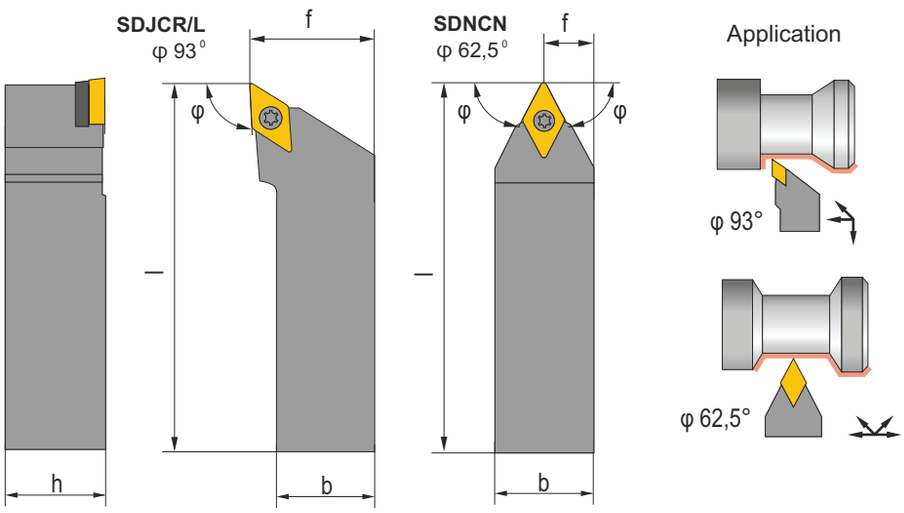
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
SCLCR/L 1010 K06	CCMT 060204	15	10	10	125
SCLCR/L 1212 K06		16	12	12	125
SCLCR/L 1616 H06		20	16	16	100
SCLCR/L 1616 H09	CCMT 09T304	25	16	16	100
SCLCR/L 2020 K09		20	20	20	125
SCLCR/L 2020 K12	CCMT 120408	25	20	20	125
SCLCR/L 2525 M12		32	25	25	150

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
CCMT 060204				SM2.5	K7IP
CCMT 09T304	OCC-09T3-S	2SM5x3.5		SM3.5-1	KS3.5 K15IP
CCMT 120408	OCC-1204-S	2SM6x4		Sm4	KS4 K15IP

Screw fixing SDJCR/L, SDNCN

Main angle 93°
62,5°



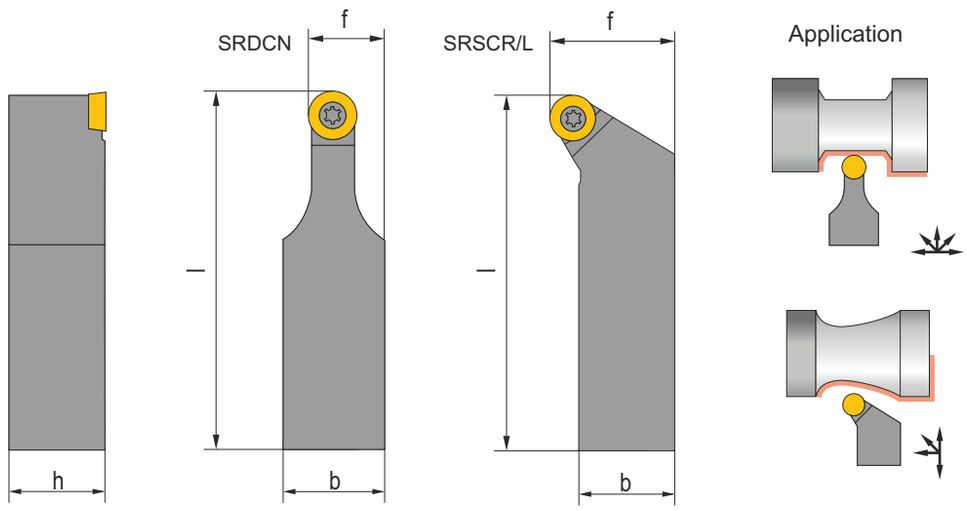
Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
SDJCR/L 1616 H11	DCMT 11T304	20	16	16	100
SDJCR/L 2020 K11		25	20	20	125
SDJCR/L 2525 M11		32	25	25	150
SDNCN 1616 H11		8,5	16	16	100
SDNCN 2020 K11		10,5	20	20	125
SDNCN 2525 M11		13	25	25	150

Main components

Cutting insert	Bearing insert	Screw of clamp	Clamp	Key
DCMT 11T304	ODC-11T3-S	2SM5x3.5	SM3.5-2	KS3.5 K15IP

Screw fixing SRDCN, SRSCR/L



Main dimensions

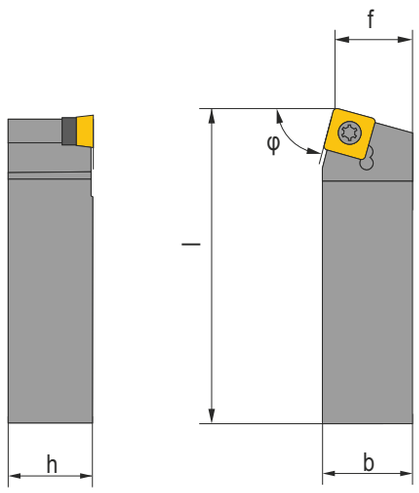
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
SRDCN 2525 M12	RCMT 1204MO	18.5	25	25	150
SRDCN 3225 P12		18.5	32	25	170
SRDCN 3225 P16	RCMT 1606MO	20.5	32	25	170
SRDCN 3232 P20	RCMT 2006MO	26	32	32	170
SRSCR/L 2525 M12	RCMT 1204MO	32	25	25	150
SRSCR/L 3225 P12		32	32	25	170
SRSCR/L 3225 P16	RCMT 1606MO	32	32	25	170
SRSCR/L 3232 P20	RCMT 2006MO	40	32	32	170

Main components

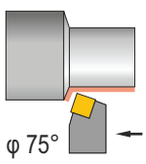
Cutting insert	Bearing insert	Screw of clamp	Clamp	Key
RCMT 1204MO	ORC-1204-S	2SM5x3.5	SM3.5-2	KS3.5 K15IP
RCMT 1606MO	ORC-1606-S	2SM8x5	SM5	KS5 K20IP
RCMT 2006MO	ORC-2006-S	2SM9x6	SM6	KS6 K25IP

Screw fixing SSBCR/L

Main angle 75°



Application



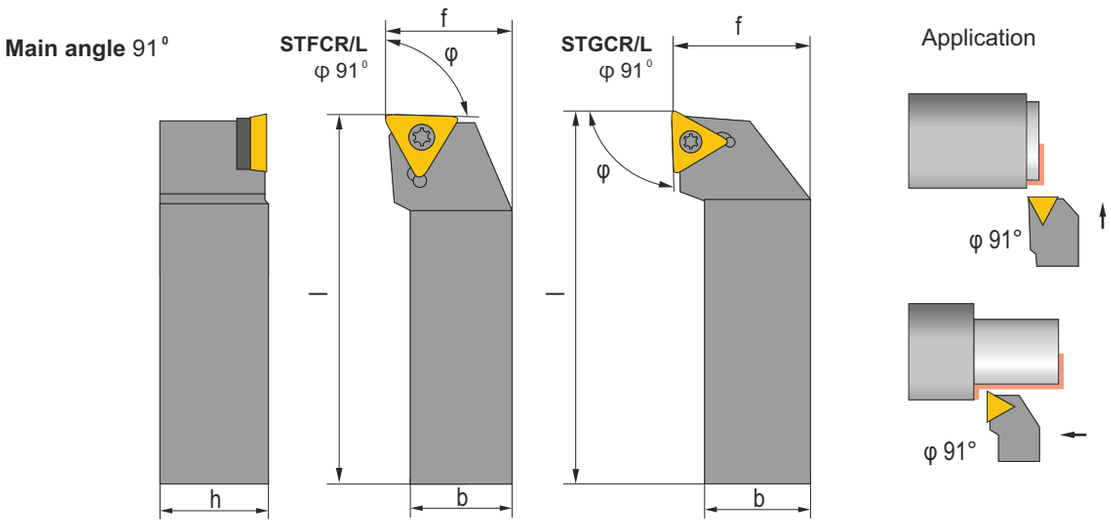
Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
SSBCR/L 5050 T38	SCMT 380932	43	50	50	300
SSBCR/L 6060 V38		53	60	60	400

Main components

Cutting insert	Bearing insert	Screw of clamp	Clamp	Key
SCMT 380932	OSN-3806	2SM12x6	SM6-1	KS5 KT30

Screw fixing STFCR/L, STGCR/L



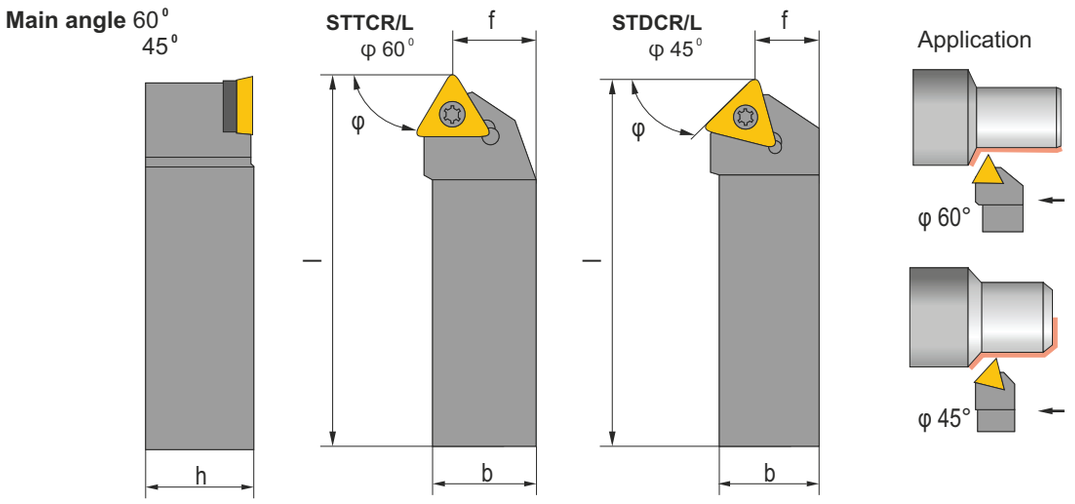
Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
STFCR/L 2020 K11	TCMT 110204	25	20	20	125
STFCR/L 1616 H16	TCMT 16T304	20	16	16	100
STFCR/L 2020 K16		25	20	20	125
STFCR/L 2525 M16		32	25	25	150
STGCR/L 2020 K11	TCMT 110204	25	20	20	125
STGCR/L 1616 H16	TCMT 16T304	20	16	16	100
STGCR/L 2020 K16		25	20	20	125
STGCR/L 2525 M16		32	25	25	150

Main components

Cutting insert	Bearing insert	Screw of clamp	Clamp	Key
TCMT 110204			SM2.5	K7IP
TCMT 16T304	OTC-16T3-S	2SM5x3.5	SM3.5-2	KS3.5 K15IP

Screw fixing STTCR/L, STDCR/L



Main dimensions

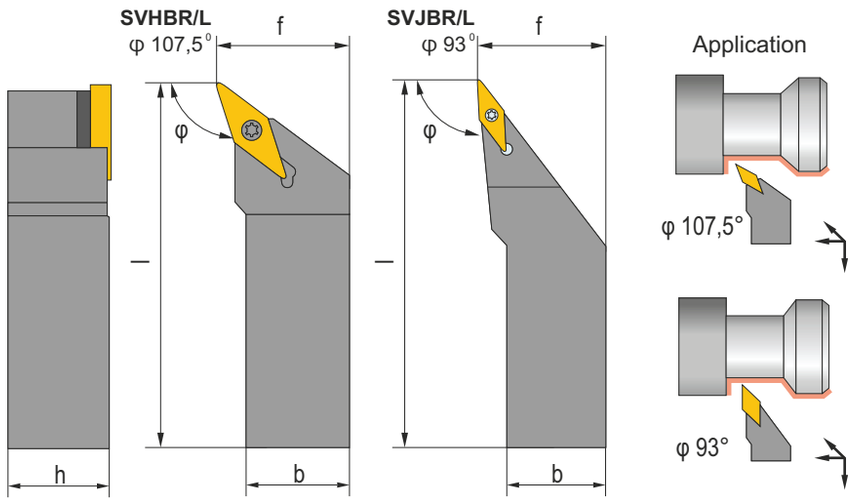
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
STTCR/L 2020 K11	TCMT 110204	17	20	20	125
STTCR/L 1616 H16	TCMT 16T304	13	16	16	100
STTCR/L 2020 K16		17	20	20	125
STTCR/L 2525 M16		22	25	25	150
STDCR/L 2020 K11	TCMT 110204	11.8	20	20	125
STDCR/L 1616 H16	TCMT 16T304	6.8	16	16	100
STDCR/L 2020 K16		11.8	20	20	125
STDCR/L 2525 M16		16.8	25	25	150

Main components

Cutting insert	Bearing insert	Screw of clamp	Clamp	Key
TCMT 110204			SM2.5	K7IP
TCMT 16T304	OTC-16T3-S	2SM5x3.5	SM3.5-2	KS3.5 K15IP

Screw fixing SVHCR/L, SVJCR/L

Main angle 107,5°
93°



Main dimensions

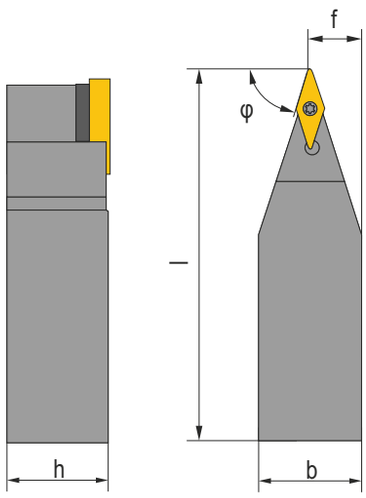
Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
SVHCR/L 1616 H16	VCMT 160408	20	16	16	100
SVHCR/L 2020 K16		25	20	20	125
SVHCR/L 2525 M16		32	25	25	150
SVJCR/L 1616 H16		20	16	16	100
SVJCR/L 2020 K16		25	20	20	125
SVJCR/L 2525 M16		32	25	25	150

Main components

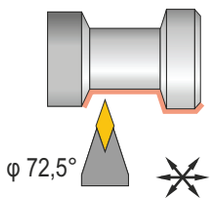
Cutting insert	Bearing insert	Screw of clamp	Clamp	Key
VCMT 160408			SM3.5-1	K15IP

Screw fixing SVVCN

Main angle 72,5°



Application



Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		f	h	b	l
SVVCN 2020 K16	VCMT 160408	10.6	20	20	125
SVVCN 2525 M16		13.1	25	25	150
SVVCN 3225 P 16		13.1	32	25	170

Main components

Cutting insert	Bearing insert	Screw of clamp	Clamp	Key
VCMT 160408			SM3.5-1	K15IP

ADD engineering

TURNING TOOLS FOR INTERNAL WORK (on ISO)

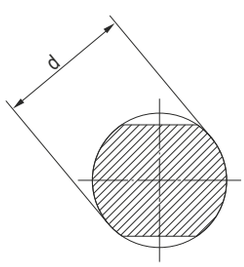
Name scheme of tool holder for internal work

S	32	U	-	P	C	L	N	R	12	-	04
1	2	3		4	5	6	7	8	9		10

1. Type of internal tool holder

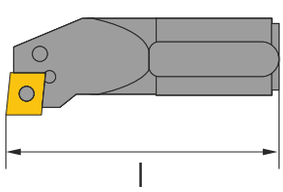
S - steel tool holder without coolant-cutting fluid

2. Holder diameter, d mm



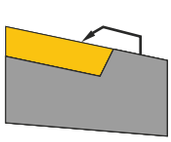
3. Holder length, l mm

Cylindrical



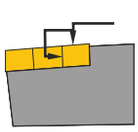
F=80	S=250
H=100	T=300
K=125	U=350
M=150	V=400
P=180	W=450
Q=180	Y=500
R=200	X=special

4. Fixing system



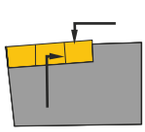
C

clamp on top



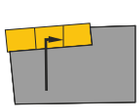
D

clamp increased stiffness



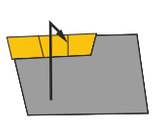
M

clamp on top and clamp for hole



P

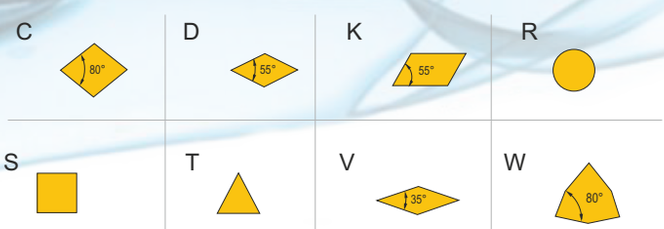
clamp lever for hole



S

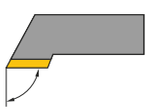
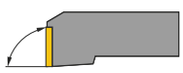
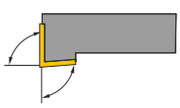
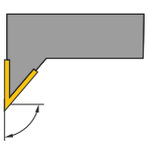
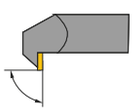
screw fixing

5. Shape of inserts

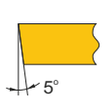
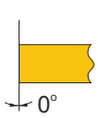


Name scheme of tool holder for internal work

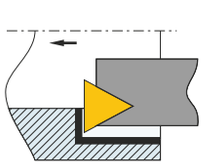
6. Type of holder

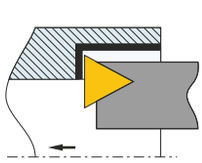
F 91° 	J 93° 	K 75° 
L 95° 	P 117°30' 	Q 107°30' 
U 93° 	U-X 93° 	

7. Back-off angle on main cutting edge

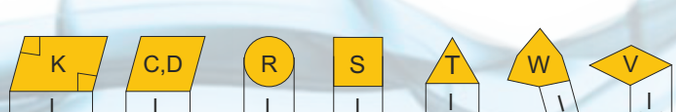
B	C	E	N	P	O
					Different value

8. Modification

R 

L 

9. Length of cutting edge, l mm

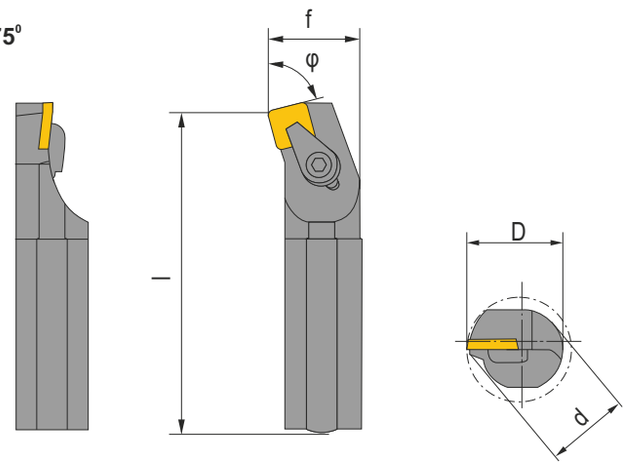


10. Supplementary designations

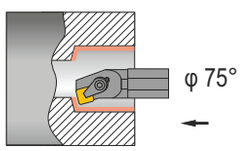
03 - cutting insert thickness 3.18 mm
04 - cutting insert thickness 4.76 mm
06 - cutting insert thickness 6.35 mm
07 - cutting insert thickness 7.94 (7.93) mm
09 - cutting insert thickness 9.52 mm

Clamp on top S...-CSKPR/L

Main angle 75°



Application



Main dimensions

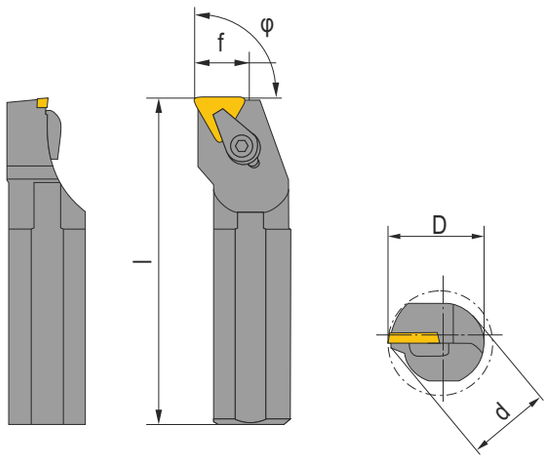
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S16R-CSKPR/L 09	SP.. 0903..	16	20	11	200
S20S-CSKPR/L 09		20	25	13	250
S20S-CSKPR/L 12-03	SP.. 1203..	20	25	13	250
S25T-CSKPR/L 12-03		25	32	17	300
S20S-CSKPR/L 12-04	SP.. 1204..	20	25	13	250
S25T-CSKPR/L 12-04		25	32	17	300

Main components

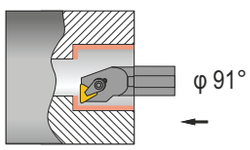
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SP.. 0903..			C1	BCM5	KS2.5
SP.. 1203..			C3	BCM8	KS4
SP.. 1204..					

Clamp on top S...-CTFPR/L

Main angle 91°



Application



Main dimensions

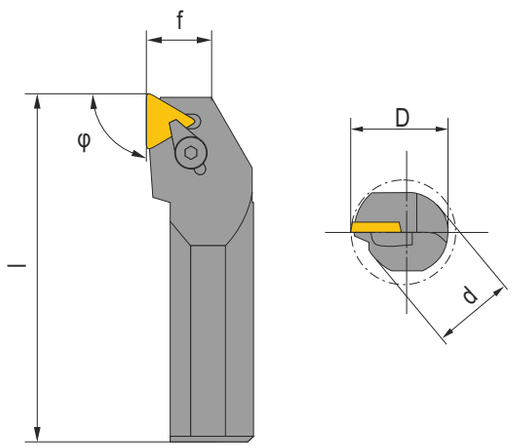
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S12M-CTFPR/L 11	TP.. 1103..	12	16	9	150
S16R-CTFPR/L 11		16	20	11	200
S20S-CTFPR/L 11		20	25	13	250
S16R-CTFPR/L 16-03	TP.. 1603..	20	16	11	200
S20S-CTFPR/L 16-03		20	25	13	250
S25T-CTFPR/L 16-03		25	32	17	300
S16R-CTFPR/L 16-04	TP.. 1604..	20	16	11	200
S20S-CTFPR/L 16-04		20	25	13	250
S25T-CTFPR/L 16-04		25	32	17	300
S32U-CTFPR/L 16-04		32	40	22	350

Main components

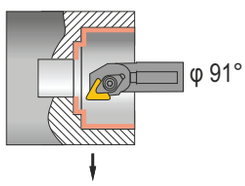
Cutting insert	Holder diameter, d	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TP.. 1103..				C1	BCM5-1	KS2.5
TP.. 1603..	16, 20, 25			C2	BCM6-1	Ks3
	32	OTP-1604	STK	C2	BCM6	
TP.. 1604..	16, 20, 25			C2	BCM6-1	
	32	OTP-1603	STK	C2	BCM6	

Clamp on top S...-CTGPR/L

Main angle 91°



Application



Main dimensions

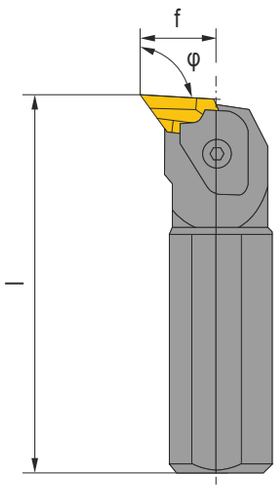
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S20S-CTGPR/L 11	TP.. 1103..	20	25	13	250
S25T-CTGPR/L 16-03	TP.. 1603..	25	32	17	300
		32	40	22	350
S25T-CTGPR/L 16-04	TP.. 1604..	25	32	17	300
S32U-CTGPR/L 16-04		32	40	22	350

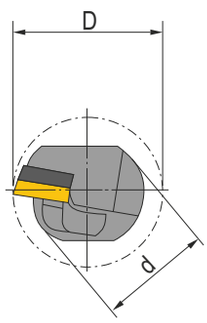
Main components

Cutting insert	Holder diameter, d	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
TP.. 1103..				C1	BCM5-1	KS2.5
TP.. 1603..	20, 25			C2	BCM6-1	KS3
	32	OTP-1604	STDC	C2	BCM6	
TP.. 1604..	20, 25			C2	BCM6-1	
	32	OTP-1603	STDC	C2	BCM6	

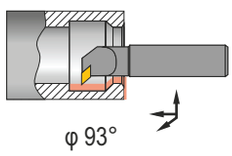
Clamp on top S...-CKUNR/L

Main angle 93°





Application



Для правых державок используется левая режущая пластина, для левых державок-правая пластина.

Main dimensions

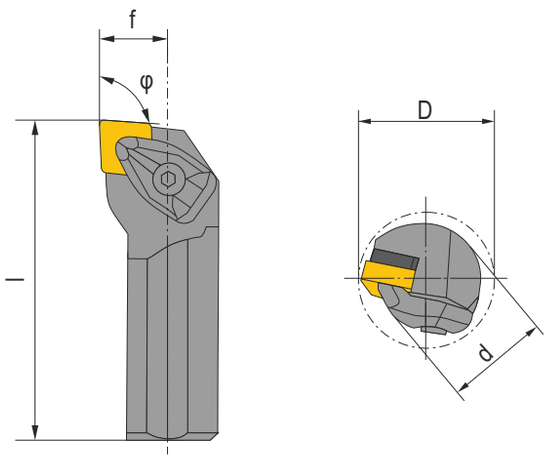
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S32T-CKUNR/L 16	KNUX 1604.....	32	44	22	300
S40V-CKUNR/L 16		40	48	27	400

Main components

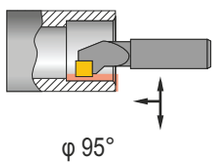
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
KNUX 160410R11	OKN-16R	STK	CKR16	BCM6x20	KS4
KNUX 160410L11	OKN-16L		CKL16		

Clamp increased stiffness S...-DCLNR/L

Main angle 95°



Application



Main dimensions

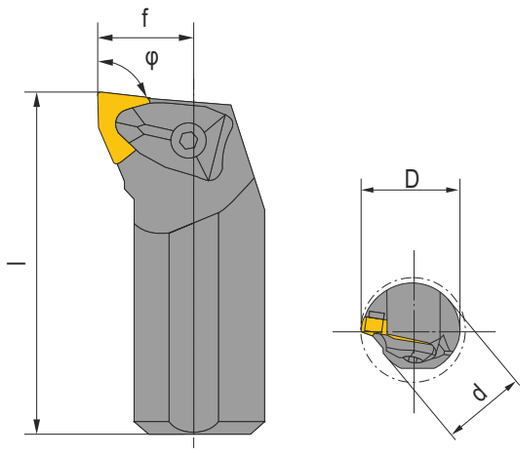
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S25T-DCLNR/L 09	CN.. 0903..	25	32	17	300
S25T-DCLNR/L 12	CN.. 1204..	25	32	17	300
S32T-DCLNR/L 12		32	40	22	300
S40T-DCLNR/L 12		40	50	27	300
S50U-DCLNR/L 16-06	CN.. 1606..	50	63	35	350
S50V-DCLNR/L 16-06		50	63	35	400
S50V-DCLNR/L 19	CN.. 1906..	50	63	35	400
S60W-DCLNR/L 19		60	80	43	450

Main components

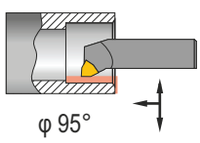
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
CN.. 0903..	OCN-0903	STK	D1	BM4x16	KS3
CN.. 1204..	OCN-1204	M4x10	D2	BM5x20	Ks4
CN.. 1604..	OCN-1604	M5x10	D3	BM6x25	KS5
CN.. 1606..					
CN.. 1906..	OCN-1904	M6x12	D4	BM6x25	KS5

Clamp increased stiffness S...-DWLNR/L

Main angle 95°



Application



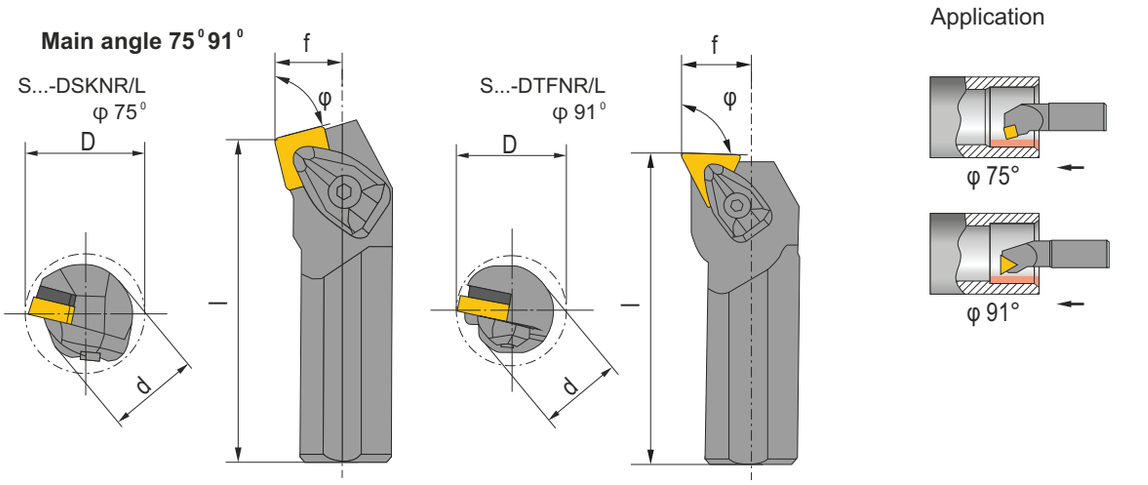
Main dimensions

Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S25T-DWLNR/L 06-03	WN.. 0603..	25	32	17	300
S25T-DWLNR/L 06-04	WN.. 0604..	25	32	17	300
S32T-DWLNR/L 06-04		32	40	22	300
S25T-DWLNR/L 08	WN.. 0804..	25	32	17	300
S32T-DWLNR/L 08		32	40	22	300
S40T-DWLNR/L 08		40	50	27	300
S50U-DWLNR/L 08		50	63	35	350
S32T-DWLNR/L 10-04	WN.. 1004..	32	40	22	300
S32T-DWLNR/L 10-06	WN.. 1006..	32	40	22	300
S40V-DWLNR/L 10-06		40	50	27	400
S50W-DWLNR/L 10-06		50	63	35	450
S40V-DWLNR/L 12	WN.. 1206..	40	50	27	400
S50W-DWLNR/L 12		50	63	35	450

Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
WN.. 0603..	OWN-0604	STK	D1	BM4x16	KS3
WN.. 0604..	OWN-0603	STK	D1	BM4x16	KS3
WN.. 0804..	OWN-0804	M4x10	D2	BM5x20	KS4
WN.. 1004..	OWN-1006	M5x10	D3	BM6x25	KS5
WN.. 1006..	OWN-1004	M6x12	D4	BM6x25	KS5
WN.. 1206..	OWN-1206				

Clamp increased stiffness S...-DSKNR/L, S...-DTFNR/L



Main dimensions

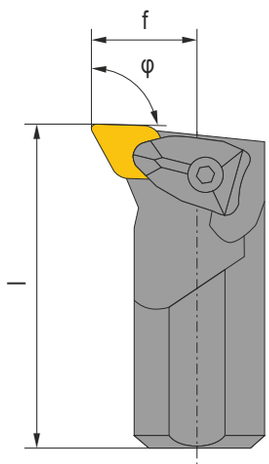
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S25T-DSKNR/L 09	SN.. 0903..	25	32	17	300
S25T-DSKNR/L 12	SN.. 1204..	25	32	17	300
S32U-DSKNR/L 12		32	40	22	350
S40V-DSKNR/L 12		40	50	27	400
S25T-DTFNR/L 16-03	TN.. 1603..	25	32	17	300
S25T-DTFNR/L 16-04	TN.. 1604..	25	32	17	300
S32U-DTFNR/L 16-04		32	40	22	350
S40V-DTFNR/L 16-04		40	50	27	400
S40V-DTFNR/L 22	TN.. 2204..	40	50	27	400
S50W-DTFNR/L 22		50	63	35	450

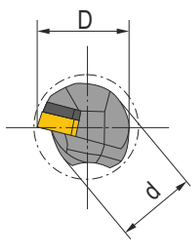
Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
SN.. 0903..	OSN-0903	STK	D1	BM4x16	KS3
SN.. 1204..	OSN-1203	M4x10	D2	BM5x20	KS4
SN.. 1504..	OSN-1504	M5x10	D3	BM6x25	KS5
SN.. 1506..					
TN.. 1603..	OTN-1604	STK	D1	BM4x16	KS3
TN.. 1604..	OTN-1603				
TN.. 2204..	OTN-2204	M4x10	D2	BM5x20	KS4

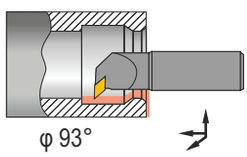
Clamp increased stiffness S...-DDUNR/L

Main angle 93°





Application



Main dimensions

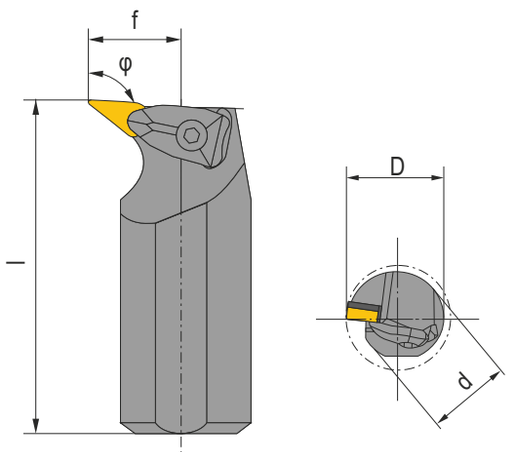
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S25T-DDUNR/L 11	DN.. 1104..	25	32	17	300
S32T-DDUNR/L 11		32	40	22	300
S40T-DDUNR/L 15-04	DN.. 1504..	40	50	27	300
S40T-DDUNR/L 15-06	DN.. 1506..	40	50	27	300
S50U-DDUNR/L 15-06		50	63	35	350

Main components

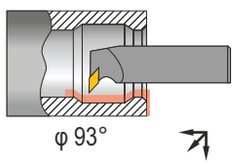
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
DN.. 1104..	ODN-1104	STK	D1	BM4x16	KS3
DN.. 1504..	ODN-1503	M4x10	D2	BM5x20	KS4
DN.. 1506..					

Clamp increased stiffness S...-DVUNR/L

Main angle 93°



Application



Main dimensions

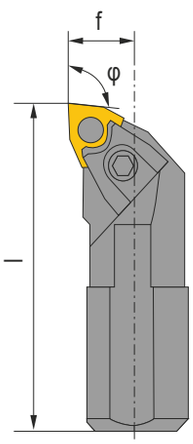
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S40T-DVUNR/L 16	VNMG 160408	40	50	27	300

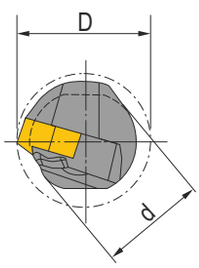
Main components

Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
VNMG 160408	OVN-1603	STK	D6	BM5x20	KS4

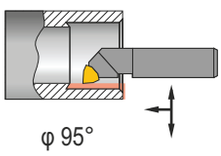
Wedge-clamp on top S...-MWLNR/L

Main angle 95°





Application



Main dimensions

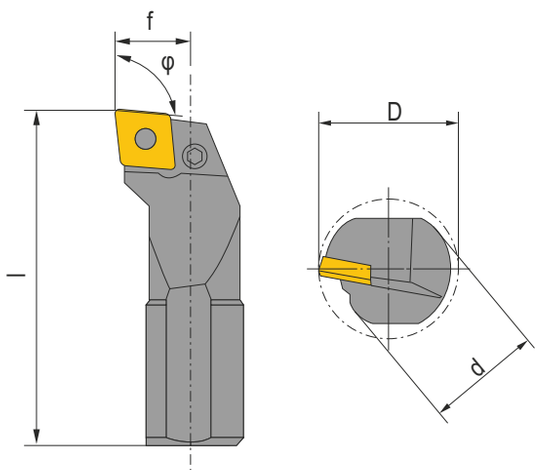
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S20S-MWLNR/L 06-03	WN.. 0603..	20	25	13	250
S20S-MWLNR/L 06-04	WN.. 0604..	20	25	13	250
S25T-MWLNR/L 06-04		25	32	17	300
S25T-MWLNR/L 08	WN.. 0804..	25	32	17	300
S32U-MWLNR/L 08		32	40	22	350
S32T-MWLNR/L 10-04	WN.. 1004..	25	32	22	300
S32T-MWLNR/L 10-06	WN.. 1006..	25	32	22	300
S40V-MWLNR/L 10-06		40	50	27	400
S50W-MWLNR/L 10-06		50	63	35	450
S40V-MWLNR/L 12	WN.. 1206..	40	50	27	400
S50W-MWLNR/L 12		50	63	35	450

Main components

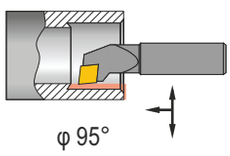
Cutting insert	Bearing insert	Screw (pin) bearing insert	Clamp	Screw of clamp	Key
WN.. 0603..	OWN-0604	STM0	MW1	BM4x16	KS3
WN.. 0604..	OWN-0603				
WN.. 0804..	OWN-0804	STM1	MW2	BCM6	KS3
WN.. 1004..	OWN-1006	STM2	MW3	BCM6x25	KS4
WN.. 1006..	OWN-1004				
WN.. 1206..	OWN-1206	STM3	MW3	BCM6x25	KS4

Clamp lever for hole S...-PCLNR/L

Main angle 95°



Application



Main dimensions

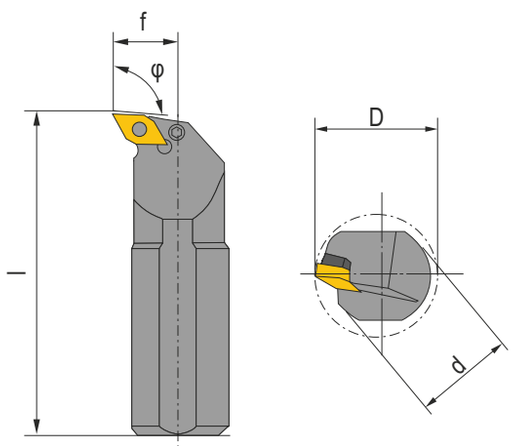
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S16R-PCLNR/L 09	CN.. 0903..	16	20	11	200
S20S-PCLNR/L 09		20	25	13	250
S25T-PCLNR/L 09		25	32	17	300
S25T-PCLNR/L 12	CN.. 1204..	25	32	17	300
S32U-PCLNR/L 12		32	40	22	350
S40V-PCLNR/L 12		40	50	27	400
S40V-PCLNR/L 16-04	CN.. 1604..	40	50	27	400
S40V-PCLNR/L 16-06	CN.. 1606..	40	50	27	400
S50W-PCLNR/L 16-06		50	63	35	450
S40V-PCLNR/L 19	CN.. 1906..	40	50	27	400
S50W-PCLNR/L 19		50	63	35	450
S60V-PCLNR/L 19		60	80	43	400

Main components

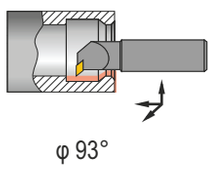
Cutting insert	Holder diameter, d	Bearing insert	Screw (pin) bearing insert	Lever	Screw of clamp	Key
CN.. 0903..				P10	BP10	KS2.5
CN.. 1204..	25			P11-1	BP1	KS2.5
	32	OCN-1204-P	STP2	P11	BP1	
	40	OCN-1204-P	STP2	P2	BP2	KS3
CN.. 1604..		OCN-1604-P	STP3	P3	BP3	KS3
CN.. 1606..						
CN.. 1906..		OCN-1906-P	STP4-1	P13	Bp4	KS4

Clamp lever for hole S...-PDUNR/L

Main angle 93°



Application



Main dimensions

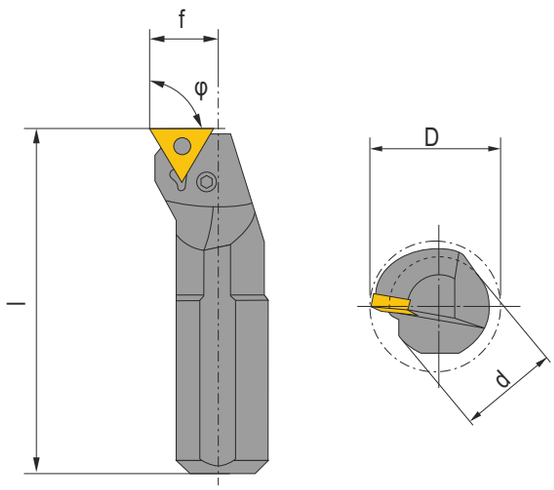
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S40V-PDUNR/L 15-04	DN.. 1504..	40	50	27	400
S40V-PDUNR/L 15-06	DN.. 1506..	40	50	27	400
S50W-PDUNR/L 15-06		50	63	35	450

Main components

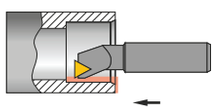
Cutting insert	Holder diameter, d	Bearing insert	Screw (pin) bearing insert	Lever	Screw of clamp	Key
DN.. 1504		ODN-1504-P	STP2	P9	BP9	KS3
DN.. 1506						

Clamp lever for hole S...-PTFNR/L

Main angle 91°



Application



φ 91°

Main dimensions

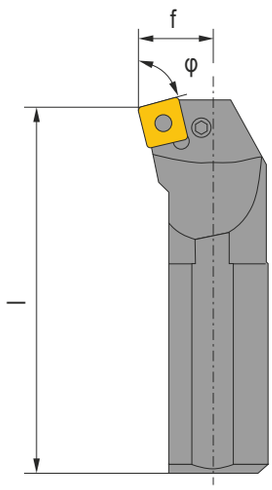
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S25T-PTFNR/L 16-03	TN.. 1603..	25	32	17	300
S32U-PTFNR/L 16-03		32	40	22	350
S25T-PTFNR/L 16-04	TN.. 1604..	25	32	17	300
S32U-PTFNR/L 16-04		32	40	22	350
S40V-PTFNR/L 16-04		40	50	27	400
S50W-PTFNR/L 16-04		50	63	35	450
S40V-PTFNR/L 22	TN.. 2204..	40	50	27	400
S50W-PTFNR/L 22		50	63	35	450

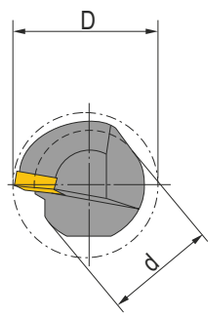
Main components

Cutting insert	Holder diameter, d	Bearing insert	Screw (pin) bearing insert	Lever	Screw of clamp	Key
TN.. 1603..	25			P10	BP10	KS2.5
		OTN-1603	STP1	P1	BP1	KS2.5
TN.. 1604..	25			P10	BP10	KS2.5
		OTN-1603	STP1	P1	BP1	KS2.5
TN.. 2204..		OTN-2204-P	STP2	P2	BP2	KS3

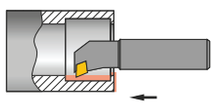
Clamp lever for hole S...-PSKNR/L

Main angle 75°





Application



φ 75°

Main dimensions

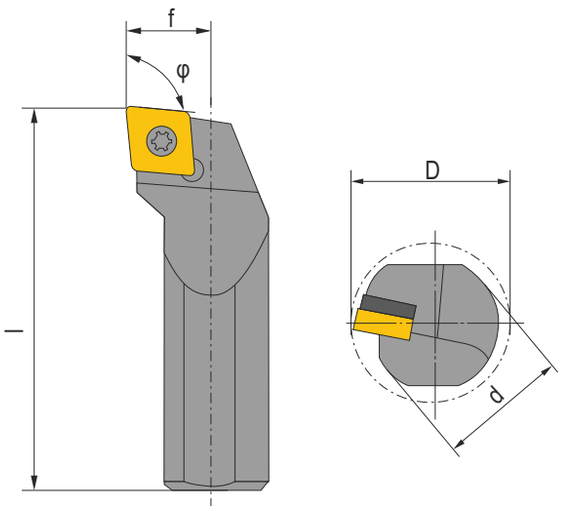
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S25T-PSKNR/L 12	SN.. 1204..	25	32	17	300
S32U-PSKNR/L 12		32	40	22	350
S40V-PSKNR/L 12		40	50	27	400
S40V-PSKNR/L 15-04	SN.. 1504..	40	50	27	400
S40V-PSKNR/L 15-06	SN.. 1506..	40	50	27	400
S40V-PSKNR/L 19	SN.. 1906..	32	40	22	400
S50W-PSKNR/L 19		40	50	27	450

Main components

Cutting insert	Holder diameter, d	Bearing insert	Screw (pin) bearing insert	Lever	Screw of clamp	Key
SN.. 1204..	25			P11-1	BP1	KS2.5
	32	OSN-1204-P	STP2	P11	Bp1	KS2.5
	40	OSN-1204-P	STP2	P2	BP2	KS3
SN.. 1504..		OSN-1506-P	STP3	P3	BP3	KS3
SN.. 1506..		OSN-1504-P				
SN.. 1906..		OSN-1904-P	STP4-1	P13	BP13	KS4

Screw fixing S...-SCLCR/L

Main angle 95°



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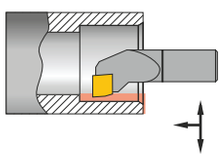


Main dimensions

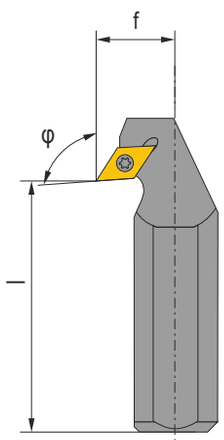
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S10M-SCLCR/L 06	CCMT 060204	10	12	6	150
S12M-SCLCR/L 06		12	16	9	150
S16R-SCLCR/L 06		16	20	11	200
S16R-SCLCR/L 09	CCMT 09T304	16	20	11	200
S20S-SCLCR/L 09		20	25	13	250
S25T-SCLCR/L 09		25	32	17	300
S25T-SCLCR/L 12	CCMT 120408	25	32	17	300
S32U-SCLCR/L 12		32	40	22	350
S40U-SCLCR/L 12		40	50	27	350

Main components

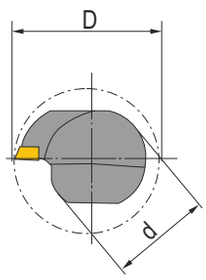
Cutting insert	Holder diameter, d	Bearing insert	Screw (pin) bearing insert	Screw of clamp	Key
CCMT 060204				SM2.5	K7IP
CCMT 09T304				SM3.5	K15IP
CCMT 120408	25			SM4	K15IP
		OCC-1204-S	2SM6x4	SM4-1	KS4
					K15IP

Screw fixing S...-SDUCR/L

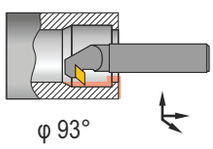
Main angle 93°



S...-SDUCR/L



Application



Main dimensions

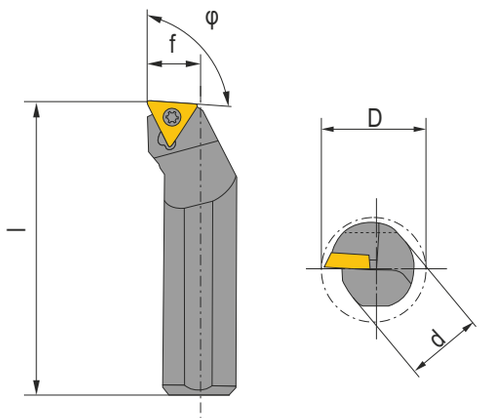
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S20S-SDUCR/L 11	DCMT 11T304	20	25	13	250
S20S-SDUCR/L 11-X		20	27	15	250
S25T-SDUCR/L 11-X		25	33	18	300

Main components

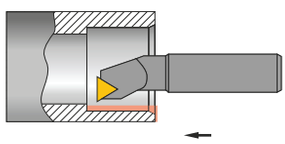
Cutting insert	Bearing insert	Screw (pin) bearing insert	Screw of clamp	Key
DCMT 11T304			SM3.5-1	K15IP

Screw fixing S...-STFCR/L

Main angle 91°



Application



φ 91°

Main dimensions

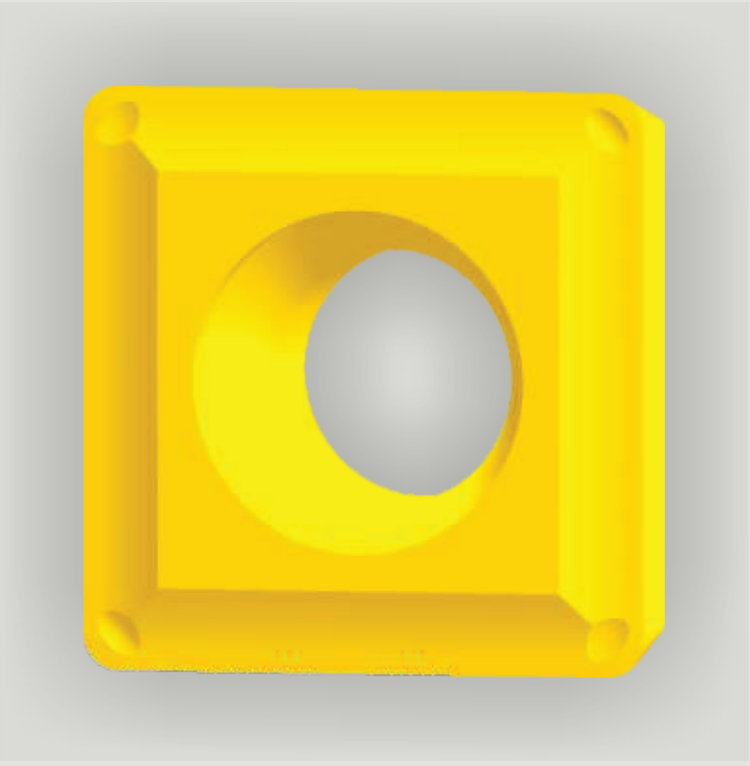
Holder name	Cutting insert	Dimensions, mm			
		d	D	f	l
S12M-STFCR/L 11	TCMT 110204	12	16	9	150
S16R-STFCR/L 11		16	20	11	200
S20S-STFCR/L 11		20	25	13	250
S25T-STFCR/L 16	TCMT 16T304	25	32	17	300
S32U-STFCR/L 16		32	40	22	350
S40V-STFCR/L 16		40	50	27	400

Main components

Cutting insert	Holder diameter, d	Bearing insert	Screw (pin) bearing insert	Screw of clamp	Key
TCMT 110204				SM2.5	K7IP
TCMT 16T304	25			SM3.5-3	K15IP
		OTC-16T3-S	2SM5x3.5	SM3.5-2	KS3.5
					K15IP

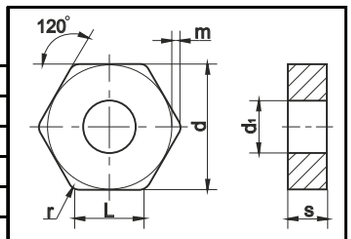
ADD engineering

MILLING INSERTS



HNUA (11113)

Steel	P			x	x	x		x
Stainless steel	M		x				x	x
Cast iron	K	x	x					
Nonferrous materials	N		x					
Heat-resistant alloy	S		x					
Increased hardness	H							

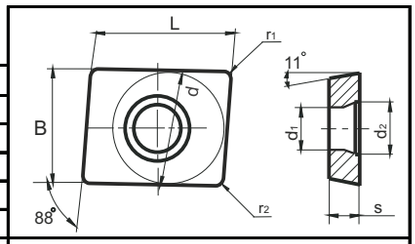


Insert name ISO	Alloy name							Dimensions, mm				
	B25	B35	H10	H20	H30	T20	T40	L	d	d_1	s	r
HNUA-090408		o	+	+	+		o	9,1	15,9	6,35	4,76	0,8
HNUA-110412		o	o	+	o			11	19,1	7,93	4,76	1,2
HNUA-110612		o	o	o	o		o	11	19,1	7,93	6,35	1,2
HNUA-120612	o	o	o					12,8	22,2	7,93	6,35	1,2

geometry of the front surface

LPHW

Steel	P	x	x
Stainless steel	M	x	x
Cast iron	K		
Nonferrous materials	N		
Heat-resistant alloy	S		
Increased hardness	H		

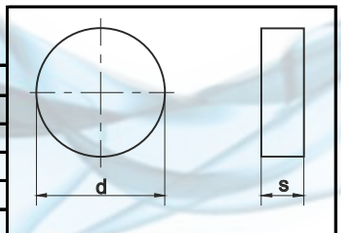


Insert name ISO	Alloy name		Dimensions, mm						
	TP20AM	TP40AM	L	d	d_1	d_2	s	r1	r2
LPHW-110408 SR	o	o	11,0	7,94	3,4	4,5	4,8	0,8	0,5
LPHW-150612 R	+	+	15,88	12,7	5,5	8,5	6,35	1,2	0,7
LPHW-150612 SR	o	o	15,88	12,7	5,5	8,5	6,35	1,2	0,7
LPHW-180612 SR	o		18,0	12,7	5,5	8,5	6,35	1,2	0,7

geometry of the front surface

RNGN (12131)

Steel	P	x				x
Stainless steel	M	x	x		x	x
Cast iron	K		x	x	x	
Nonferrous materials	N		x		x	
Heat-resistant alloy	S		x		x	
Increased hardness	H					



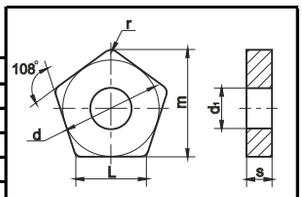
Insert name ISO	Alloy name					Dimensions, mm	
	TC40PT	B20	B25	B35	T40	d	s
RNGN-090300	+	o	o	o	o	9,525	3,18

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

PNEA (10153)
PNMA (10123), PNUA (10113)

		AP10AM	BC20HT	BP20AM	BC35PT	BP35AM	HP10AM	HP10TT	HP30AM	HP30TM	HP30TT	TC20HT	TC40PT	TP20AM	TP40AM	TP40TM	A10	B20	B25	B35	H10	H20	H30	T20	T25	T40	T50
Steel	P						x	x	x	x	x	x	x	x	x	x					x	x	x		x	x	x
Stainless steel	M	x		x	x	x							x	x	x	x		x		x				x	x	x	x
Cast iron	K	x	x	x	x	x												x	x	x							
Nonferrous materials	N	x		x													x	x		x							
Heat-resistant alloy	S	x		x		x												x		x							
Increased hardness	H	x	x														x										

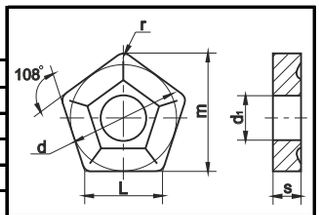


Insert name ISO	L	d	d_1	s	r
PNEA-110408	11,5	15,9	6,35	4,76	0,8
PNEA-110416	11,5	15,9	6,35	4,76	1,6
PNEA-130412	13,8	19,1	7,93	4,76	1,2
PNEA-130420	13,8	19,1	7,93	4,76	2
PNEA-130612	13,8	19,1	7,93	6,35	1,2
PNEA-130620	13,8	19,1	7,93	6,35	2
PNMA-110408	11,5	15,9	6,35	4,76	0,8
PNMA-130412	13,8	19,1	7,93	4,76	1,2
PNMA-130612	13,8	19,1	7,93	6,35	1,2
PNMA-160612	16,1	22,2	7,93	6,35	1,2
PNUA-110408	11,5	15,9	6,35	4,76	0,8
PNUA-130412	13,8	19,1	7,93	4,76	1,2
PNUA-130612	13,8	19,1	7,93	6,35	1,2
PNUA-160612	16,1	22,2	7,93	6,35	1,2

geometry of the front surface

PNMM (10124), PNUM (10114)

		BC20HT	BC35PT	BP35AM	HP10AM	HP10AT	HP10TT	HP30AM	HP30TT	TC20HT	TC20PT	TC40HT	TC40PT	TP20AM	TP40TT	A10	B20	B25	B35	H10	H20	H30	T20	T25	T40
Steel	P				x	x	x	x	x	x	x	x	x	x	x	x					x	x	x		x	x
Stainless steel	M		x	x								x	x	x	x			x		x				x	x	x
Cast iron	K	x	x	x														x	x	x						
Nonferrous materials	N															x				x						
Heat-resistant alloy	S			x														x		x						
Increased hardness	H	x														x										

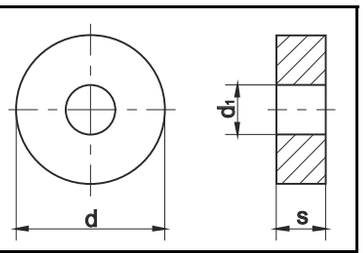


Insert name ISO	L	d	d_1	s	r
PNMM-110408	11,5	15,9	6,35	4,76	0,8
PNMM-110416	11,5	15,9	6,35	4,76	1,6
PNMM-130412	13,8	19,1	7,93	4,76	1,2
PNMM-130420	13,8	19,1	7,93	4,76	2,0
PNMM-130612	13,8	19,1	7,93	6,35	1,2
PNMM-130620	13,8	19,1	7,93	6,35	2,0
PNMM-160612	16,1	22,2	7,93	6,35	1,2
PNUM-110408	11,5	15,9	6,35	4,76	0,8
PNUM-110416	11,5	15,9	6,35	4,76	1,6
PNUM-130412	13,8	19,1	7,93	4,76	1,2
PNUM-130420	13,8	19,1	7,93	4,76	2,0
PNUM-130612	13,8	19,1	7,93	6,35	1,2
PNUM-130620	13,8	19,1	7,93	6,35	2,0
PNUM-160612	16,1	22,2	7,93	6,35	1,2

geometry of the front surface

RNGA (12133)
RNMA (12123), RNUA (12113)

Steel	P				x	x	x	x	x					x	x	x		x
Stainless steel	M		x	x				x	x		x		x				x	x
Cast iron	K	x	x	x							x	x	x					
Nonferrous materials	N									x	x		x					
Heat-resistant alloy	S			x							x		x					
Increased hardness	H	x								x								

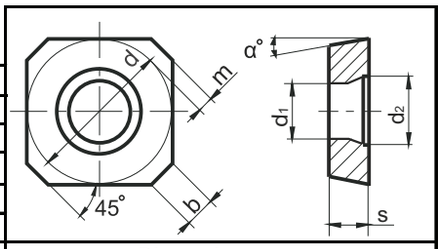


Insert name ISO	Alloy name																Dimensions, mm		
	BC20HT	BC35PT	BP35AM	HP10AM	HP30AM	TC20HT	TC40TT	TP40AM	A10	B20	B25	B35	H10	H20	H30	T20	T40	d	d_1	s
RNGA-150400			o			o		■		o	o	o	+	o	+	+	+	15,875	6,35	4,76
RNMA-120400																		12,7	5,16	4,76
RNMA-150400												+	+	o	+		o	15,875	6,35	4,76
RNMA-150600												o	+	o	o			15,875	6,35	6,35
RNMA-190600												o	o		o			19,05	7,93	6,35
RNUA-120400					o				o		o	o	o	o	o		o	12,7	5,16	4,76
RNUA-150400			+	+	+	o	+	+	o	o	o	+	+	o	+	o	+	15,875	6,35	4,76
RNUA-150600				o							o	■	■	o	■			15,875	6,35	6,35
RNUA-190600		o	+				+				o	+	o	o	o			19,05	7,93	6,35

geometry of the front surface

SDCW, SEHW, SPCW

Steel	P			x	x	x				x		x	x	
Stainless steel	M	x	x		x	x	x		x		x	x	x	
Cast iron	K	x	x				x	x	x					
Nonferrous materials	N	x							x					
Heat-resistant alloy	S	x	x				x		x					
Increased hardness	H													

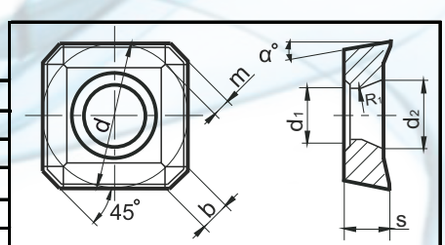


Insert name ISO	Alloy name												Dimensions, mm						
	BP20AM	BP35AM	HP30AM	TP20AM	TP40AM	B20	B25	B35	H30	T20	T25	T40	d	s	d_1	d_2	b	m	α°
SDCW-0903 ADTN			o		+							o	9,53	3,18	4,4	6	1,4	1,27	15
SPCW-120408 S				+	+								12,7	4,76	5,45	7,5	0,8	1,27	
SPCW-120408 SN				■	+								12,7	4,76	5,45	7,5	0,8	1,48	
SEHW-1204 AFTN					o								12,7	4,76	5,45	7,5	2,3	1,48	20
SPCW-1204 APTN	o	o	o		+							o	12,7	4,76	5,45	7,5	2,3	1,48	11

geometry of the front surface

SDET

Steel	P			x	x	x				x		x	x	
Stainless steel	M	x	x		x	x	x		x		x	x	x	
Cast iron	K	x	x				x	x	x					
Nonferrous materials	N	x							x					
Heat-resistant alloy	S	x	x				x		x					
Increased hardness	H													



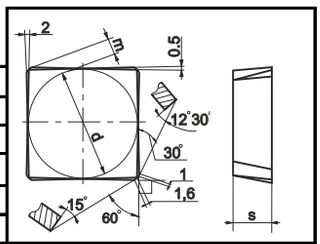
Insert name ISO	Alloy name												Dimensions, mm						
	BP20AM	BP35AM	HP30AM	TP20AM	TP40AM	B20	B25	B35	H30	T20	T25	T40	d	s	d_1	d_2	b	m	α°
SDET-1204 AETN		o						o					12,7	4,76	4,76	6,9	1,93	1,65	15

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

SPKN-2

Steel	P	X	X		X	X
Stainless steel	M	X		X	X	X
Cast iron	K					
Nonferrous materials	N					
Heat-resistant alloy	S					
Increased hardness	H					

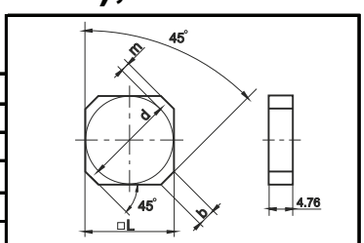


Insert name ISO	Alloy name					Dimensions, mm		
	TP40AM	H30	T20	T25	T40	L=d	s	m
SPKN-2506-DDR	o	o			o	25,4	6,35	3,65

geometry of the front surface

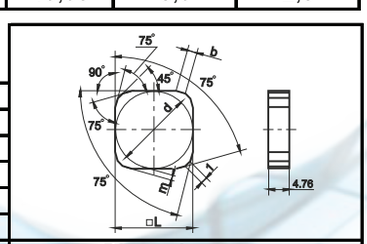
SNAN (03161), SNCN (03141), SNKN (03171)

Steel	P		X		X	X	X	X
Stainless steel	M	X	X	X				X
Cast iron	K	X		X				
Nonferrous materials	N	X		X				
Heat-resistant alloy	S	X		X				
Increased hardness	H							



Insert name ISO	Alloy name							Dimensions, mm		
	BP20AM	TP40AM	B35	H10	H30	T25	T40	L=d	b	m
SNAN 1204ANN		■					■	12,70	2,0	1,6
SNAN 1504ANN							■	15,88	2,5	2,0
SNAN 1904ANN								19,05	3,0	2,5
SNCN-1204ANN		■					■	12,70	2,0	1,6
SNCN-1504ANN							■	15,88	2,5	2,0
SNCN-1904ANN								19,05	3,0	2,5
SNKN-1204ANN		■			■		■	12,70	2,0	1,6
SNKN-1504ANN		o		o	■		■	15,88	2,5	2,0
SNKN-1904ANN								19,05	3,0	2,5

Steel	P		X		X	X	X	X
Stainless steel	M	X	X	X				X
Cast iron	K	X		X				
Nonferrous materials	N	X		X				
Heat-resistant alloy	S	X		X				
Increased hardness	H							

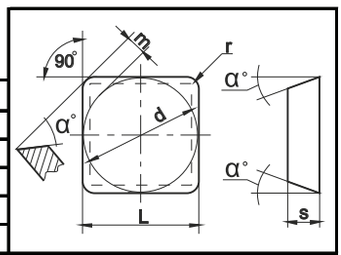


Insert name ISO	Alloy name							Dimensions, mm		
	BP20AM	TP40AM	B35	H10	H30	T25	T40	L=d	b	m
SNAN 1204EN	o	■	+				■	12,70	1,4	0,8
SNAN 1504EN						o	■	15,88	1,4	1,2
SNAN 1904EN								19,05	2,0	1,3
SNCN-1204EN		■						12,70	1,4	0,8
SNCN-1504EN							■	15,88	1,4	1,2
SNCN-1904EN								19,05	2,0	1,3
SNKN-1204EN		■	o		■	o	o	12,70	1,4	0,8
SNKN-1504EN		o				o	■	15,88	1,4	1,2
SNKN-1904EN								19,05	2,0	1,3

geometry of the front surface

SEEN (03451), SEGN (03431), SFGN

Steel	P	x	x	x	x	x						x		x	x
Stainless steel	M			x	x	x		x	x		x		x	x	x
Cast iron	K							x	x	x	x				
Nonferrous materials	N						x	x			x				
Heat-resistant alloy	S							x	x		x				
Increased hardness	H						x								

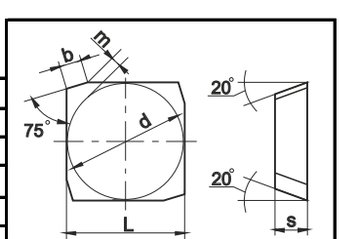


Insert name ISO	Alloy name														размеры СМП, мм			
	HP30AM	TC20HT	TP20AM	TC40PT	TP40AM	A10	A30	B20	B25	B35	H30	T20	T25	T40	L=d	s	r	α °
SEEN-120308	o			o	o					o	+		o	+	12,7	3	0,8	20
SEGN-120308	o	o	■	+	+	o	o	o			+	o	o	+	12,7	3,18	0,8	20
SFGN-150410									o						15,88	4,76	1,0	25

geometry of the front surface

SEKN (03471)

Steel	P	
Stainless steel	M	
Cast iron	K	
Nonferrous materials	N	x
Heat-resistant alloy	S	
Increased hardness	H	x

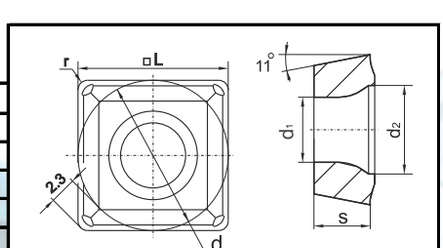


Insert name ISO	Alloy name	Dimensions, mm			
	A10	L=d	b	s	m
SEKN-1203EFFL	o	12,70	2,59	3,18	0,78
SEKN-1203EFFR	o	12,70	2,60	3,18	0,80

geometry of the front surface

SPMT

Steel	P		x	x			x
Stainless steel	M	x	x	x	x	x	x
Cast iron	K	x			x		
Nonferrous materials	N				x		
Heat-resistant alloy	S	x			x		
Increased hardness	H						



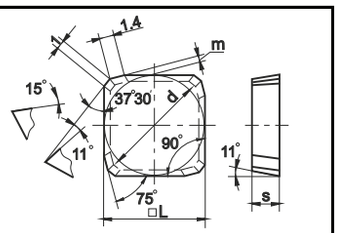
Insert name ISO	Alloy name						Dimensions, mm				
	BP35AM	TP20AM	TP40AM	B35	T20	T40	L=d	d_1	d_2	s	r
SPMT-120408	+	o	+	+	o	o	12,7	5,5	7,5	4,76	0,8

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

SPAN (03361), SPCN (03341) SPKN (03371)

Steel	P		x	x				x		x	x
Stainless steel	M	x	x	x	x		x		x	x	x
Cast iron	K	x			x	x	x				
Nonferrous materials	N	x			x		x				
Heat-resistant alloy	S	x			x		x				
Increased hardness	H										



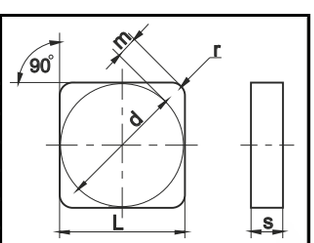
Insert name ISO	Alloy name										Dimensions, mm		
	BP20AM	TP20AM	TP40AM	B20	B25	B35	H30	T20	T25	T40	L=d	s	m
SPAN 1203 EDR				o			■			o	12,7	3,18	0,9
SPAN 1203 EDL				o			■			o	12,7	3,18	0,9
SPAN 1504 EDR			o				■			o	15,875	4,76	1,25
SPAN 1504 EDL							■			o	15,875	4,76	1,25
SPCN 1203 EDR				o			■			o	12,7	3,18	0,9
SPCN 1203 EDL				o			■			o	12,7	3,18	0,9
SPCN 1504 EDR			o				■		o	o	15,875	4,76	1,25
SPCN 1504 EDL										o	15,875	4,76	1,25
SPKN 1203 EDR	o	o	■	■	+	o	■	o	o	o	12,7	3,18	0,9
SPKN 1203 EDL			■	■	+	o	o	o	o	■	12,7	3,18	0,9
SPKN 1504 EDR	o	■	+	o	o	o	+	o	■	+	15,875	4,76	1,25
SPKN 1504 EDL			o				■			■	15,875	4,76	1,25
SPKN 2506 EDR								o		o	25,4	6,35	3,65

geometry of the front surface

On demand inserts can be produced with rounded edge and facet.

SNGN (03131)

Steel	P					x	x	x	x						x	x	x	x		x	x
Stainless steel	M		x	x	x			x	x		x	x		x					x	x	x
Cast iron	K	x	x	x	x						x	x	x	x							
Nonferrous materials	N		x							x	x			x							
Heat-resistant alloy	S		x		x						x	x		x							
Increased hardness	H	x								x					x						

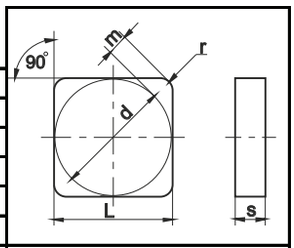


Insert name ISO	Alloy name																			Dimensions, mm		
	BC20HT	BP20AM	BC35PT	BP35AM	HP10TT	TC20HT	TC40PT	TP40AM	A10	A30	B20	B25	B35	H05	H10	H20	H30	T20	T25	T40	L=d	s	r
SNGN-090304												o			o			o			9,525	3,18	0,4
SNGN-090308															+		+				9,525	3,18	0,8
SNGN-120300										■		o			o		o	o			9,525	3,18	0,2
SNGN-120304									■	■					o				o		12,7	3,18	0,4
SNGN-120308				■						■			■		■		o				12,7	3,18	0,8
SNGN-120312				■						■			■		■						12,7	3,18	1,2
SNGN-120408								+		■		o	o		+		o	o	o	o	12,7	4,76	0,8
SNGN-120412				o						■		o	o		o		+	o	o	o	12,7	4,76	1,2
SNGN-150408													o		o		■				15,875	4,76	0,8
SNGN-150412												o	o		o		■	o	+	■	15,875	4,76	1,2
SNGN-150416																					15,875	4,76	1,6
SNGN-190400												o	+		o			o	o		19,05	4,76	0,2
SNGN-190408																		■		■	19,05	4,76	0,8
SNGN-190412												o	o					o	o	o	19,05	4,76	1,2
SNGN-190416												o	o		o			o		o	19,05	4,76	1,6
SNUN-090304												o	o		o		o				9,525	3,18	0,4

geometry of the front surface

SNUN (03111)

Steel	P							x	x	x	x	x						x	x	x	x		x	x	x
Stainless steel	M	x		x		x	x				x	x		x	x		x					x	x	x	x
Cast iron	K		x	x	x	x	x							x		x	x								
Nonferrous materials	N			x									x	x			x								
Heat-resistant alloy	S	x		x			x							x	x		x								
Increased hardness	H		x										x					x							

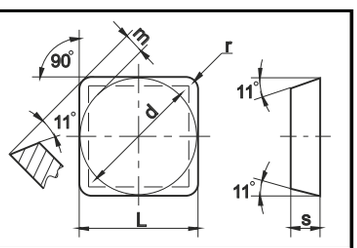


Insert name ISO	Alloy name																							Dimensions, mm		
	AC20HT	BC20HT	BP20AM	BC25HT	BC35PT	BP35AM	HP10TT	HP30AM	TC20HT	TC40PT	TP40AM	A10	A30	B20	B25	B35	H05	H10	H20	H30	T20	T25	T40	T50	L=d	s	r
SNUN-090304															o	+		+		o					9,525	3,18	0,4
SNUN-120304																									12,7	3,18	0,4
SNUN-120308								+								o	■	+		+	o	+			12,7	3,18	0,8
SNUN-120408		■					o			+					■	+	+	+	o	+	o		+		12,7	4,76	0,8
SNUN-120412		■		+					o	+	+			+	+	+		+		+	o		+		12,7	4,76	1,2
SNUN-120424	+	o		+	o									o	o	o									12,7	4,76	2,4
SNUN-150408																									15,875	4,76	0,8
SNUN-150412		o				+	o							o	o	+		+		+			+		15,875	4,76	1,2
SNUN-150416															+	o		+		o					15,875	4,76	1,6
SNUN-150424																									15,875	4,76	2,4
SNUN-190412										+					o	+		+		o			o	+	19,05	4,76	1,2

geometry of the front surface

SPGN (03331)

Steel	P			x	x	x	x	x							x	x	x		x	x				
Stainless steel	M	x	x				x	x		x	x	x		x				x	x	x				
Cast iron	K	x	x								x	x	x	x										
Nonferrous materials	N								x		x	x		x										
Heat-resistant alloy	S		x							x	x	x		x										
Increased hardness	H								x															



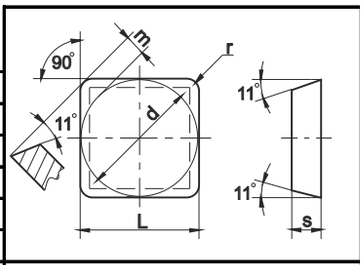
Insert name ISO	Alloy name																				Dimensions, mm		
	BC35PT	BP35AM	HP10AM	HP30AM	TC20PT	TC40PT	TP40AM	A10	A20	A30	B20	B25	B35	H10	H20	H30	T20	T25	T40	L=d	s	r
SPGN-090300								o						o					o	9,525	3,18	0,2
SPGN-090304							o	o				o	+	+	o		o			9,525	3,18	0,4
SPGN-090308							o	o					o	+	o	+	o		o	9,525	3,18	0,8
SPGN-120300											o	o	o	o		o	o	o	o	12,7	3,18	0,2
SPGN-120304	o	+					+	o		+	+		+	+	o	+	o		+	12,7	3,18	0,4
SPGN-120308								+	+	o	o	o	+	+		+	o		o	12,7	3,18	0,8
SPGN-120312	+						o	o		+	o	o	+	+		+	o	o	+	12,7	3,18	1,2
SPGN-120408							o	+		+	+		o	+		+	o	o		12,7	4,76	0,8
SPGN-120412										+			+	o			o			12,7	4,76	1,2
SPGN-150408							o				o	o	+			+	o	o	o	15,875	4,76	0,8
SPGN-150412													+	+		+	o	o	+	15,875	4,76	1,2
SPGN-150416						o							o	+		+		o	o	15,875	4,76	1,6
SPGN-190400													+	o		o			o	19,05	4,76	0,2
SPGN-190408							+				+		+	o		o	o		+	19,05	4,76	0,8
SPGN-190412	o				o	o	o						+	o		o	o		o	19,05	4,76	1,2
SPGN-190416													o				o		o	19,05	4,76	1,6

geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

SPUN (03311)

Steel	P			X	X	X	X	X	X	X						X	X	X		X	X
Stainless steel	M	X	X				X	X	X	X		X	X		X				X	X	X
Cast iron	K	X	X									X	X	X	X						
Nonferrous materials	N										X	X	X		X						
Heat-resistant alloy	S		X									X	X		X						
Increased hardness	H										X										

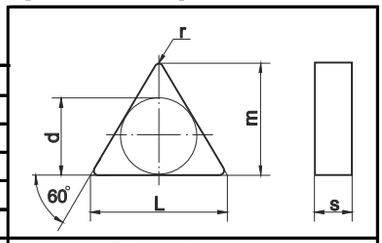


Insert name ISO	Alloy name																			Dimensions, mm		
	BC35PT	BP35AM	HP10AM	HP30AM	TC20PT	TC40HT	TC40PT	TP40AM	TP40TT	A10	A30	B20	B25	B35	H10	H20	H30	T20	T25	T40	L=d	s	r
SPUN-250620	o							■						o			+			o	25,4	6,35	2
SPUN-090308						+	o	o		o			o	o	+	o	o			o	9,525	3,18	0,8
SPUN-120308		+					o	o					+	+	+		+			+	12,7	3,18	0,8
SPUN-120408								o	+			o		+	+		+			o	12,7	4,76	0,8
SPUN-150408			+												o	o	+				15,875	4,76	0,8
SPUN-150412			+	o				+					o	+	+		+	o		+	15,875	4,76	1,2
SPUN-190412										+			+	+	+		+				19,05	4,76	1,2
SPUN-250616								o						+	o		+			o	25,4	6,35	1,6

geometry of the front surface

TNCN (01141), TNGN (01131)

Steel	P	X	X		X	X	X	X
Stainless steel	M		X				X	X
Cast iron	K							
Nonferrous materials	N			X				
Heat-resistant alloy	S							
Increased hardness	H			X				

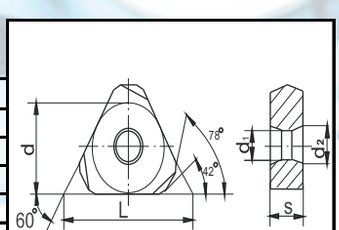


Insert name ISO	Alloy name							Dimensions, mm			
	HP20AM	TP40AM	A10	H20	H30	T25	T40	L	d	s	r
TNCN-240624T44		o				+		24	13,856	6,35	2,4
TNCN-350680T44		o				+		35	20,207	6,35	8
TNGN-220424	+	o		o				22	12,7	4,76	2,4
TNGN-330620T		o			o			33,0	19,05	6,35	2,0

geometry of the front surface

TNCQ

Steel	P		X	X
Stainless steel	M	X	X	X
Cast iron	K			
Nonferrous materials	N	X		
Heat-resistant alloy	S	X		
Increased hardness	H			

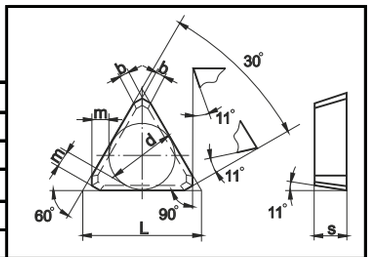


Insert name ISO	Alloy name			Dimensions, mm				
	AP30AM	TP20AM	TP40AM	L	d	d_1	d_2	s
TNCQ-2507 ZZ	o	o	o	25,98	15,0	5,5	6,85	4,5

geometry of the front surface

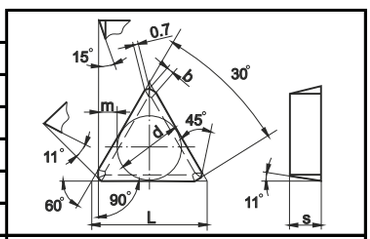
TPAN (01361), TPCN (01341), TPKN (01371)

Steel	P			x	x	x				x		x	x
Stainless steel	M	x	x		x	x	x		x		x	x	x
Cast iron	K	x	x				x	x	x				
Nonferrous materials	N	x					x		x				
Heat-resistant alloy	S	x	x				x		x				
Increased hardness	H												



Insert name ISO	Alloy name											Dimensions, mm				
	BP20AM	BP35AM	HP30AM	TP20AM	TP40AM	B20	B25	B35	H30	T20	T25	T40	L	d	s	m	b
TPAN-1603PPN					o			o			o	o	16,5	9,53	3,18	2,45	1,2
TPAN-2204PPN			o		o				+			o	22	12,7	4,76	3,55	1,3
TPCN-1603PPN					o		o			o		o	16,5	9,53	3,18	2,45	1,2
TPCN-2204PPN			+	+	+			o			o	o	22	12,7	4,76	3,55	1,3
TPKN-1603PPN				+	■						o	·	16,5	9,53	3,18	2,45	1,2
TPKN-2204PPN			o		o							o	22	12,7	4,76	3,55	1,3

Steel	P			x	x	x				x		x	x
Stainless steel	M	x	x		x	x	x		x		x	x	x
Cast iron	K	x	x				x	x	x				
Nonferrous materials	N	x					x		x				
Heat-resistant alloy	S	x	x				x		x				
Increased hardness	H												



Insert name ISO	Alloy name											Dimensions, mm				
	BP20AM	BP35AM	HP30AM	TP20AM	TP40AM	B20	B25	B35	H30	T20	T25	T40	L	d	s	m	b
TPAN-1603PDR											o	o	16,5	3,18	9,53	2,45	1,3
TPAN-1603PDL												o	16,5	3,18	9,53	2,45	1,3
TPAN-2204PDR	o	o			o			o			o	o	22	4,76	12,7	3,55	1,4
TPAN-2204PDL	o	o			o			o			o	o	22	4,76	12,7	3,55	1,4
TPCN-1603PDR									o				16,5	3,18	9,53	2,45	1,3
TPCN-1603PDL									o				16,5	3,18	9,53	2,45	1,3
TPCN-2204PDR	o	o			o			o			o	o	22	4,76	12,7	3,55	1,4
TPCN-2204PDL	o	o			o			o			o	o	22	4,76	12,7	3,55	1,4
TPKN-1603PDR					+	o	o		+	o		+	16,5	3,18	9,53	2,45	1,3
TPKN-1603PDL					o							o	16,5	3,18	9,53	2,45	1,3
TPKN-2204PDR	+	o		+	+	o	o	+	+	+	+	+	22	4,76	12,7	3,55	1,4
TPKN-2204PDL	+				+	o	o	+	+			o	22	4,76	12,7	3,55	1,4

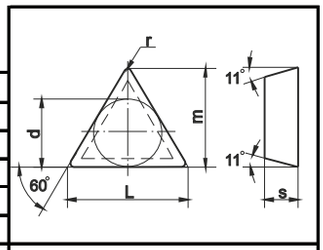
geometry of the front surface

On demand inserts can be produced with rounded edge and facet.

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

TPGN (01331)

Steel	P						x	x	x	x	x						x	x	x		x	x
Stainless steel	M		x	x	x	x			x	x	x		x	x		x				x	x	x
Cast iron	K	x	x	x	x	x							x	x	x	x						
Nonferrous materials	N		x									x	x	x		x						
Heat-resistant alloy	S		x			x							x	x		x						
Increased hardness	H	x										x										

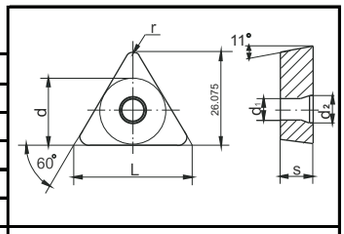


Insert name ISO	Alloy name																				Dimensions, mm			
	BC20HT	BP20AM	BC35HT	BC35PT	BP35AM	TP30TT	TC20HT	TC40PT	TP40AM	TP40TT	A10	A30	B20	B25	B35	H10	H20	H30	T20	T25	T40	L	d	s	r
TPGN-110300													o			o			o		o	11,0	6,35	3,18	0,2
TPGN-110304													+	o	o	o		+		o		11,0	6,35	3,18	0,4
TPGN-110308	+												o		+	+		+	o	o		11,0	6,35	3,18	0,8
TPGN-160300							o		o		o	+	o	o	+	+		o	o	+	+	16,5	9,53	3,18	0,2
TPGN-160304				o				o	o			+	+	o	o	o		+	o	o	+	16,5	9,53	3,18	0,4
TPGN-160308	+				+			+	+		o	+	+	+	+	+	o	+	o		+	16,5	9,53	3,18	0,8
TPGN-160312			+							+		+		o	+	o		+	o	o	o	16,5	9,53	3,18	1,2
TPGN-160408											+	+			o	+		+				16,5	9,53	4,76	0,8
TPGN-220408					+							+		o	+	+		+	+	o	+	22,0	12,70	4,76	0,8
TPGN-220412					+									o	+	o		+	o		+	22,0	12,70	4,76	1,2
TPGN-220416								+							■	o		o	o		o	22,0	12,70	4,76	1,6
TPGN-330620T																		o				33,0	19,05	6,35	2,0

geometry of the front surface

TPMW

Steel	P	x
Stainless steel	M	x
Cast iron	K	
Nonferrous materials	N	
Heat-resistant alloy	S	
Increased hardness	H	

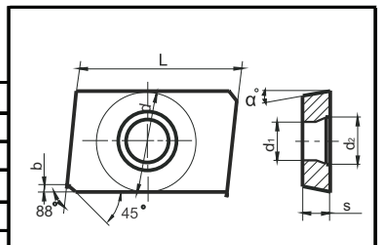


Insert name ISO	Alloy name	Dimensions, mm					
	TP40AM	L	d	d_1	d_2	s	r
TPMW-330725	o	33,0	19,1	6,5	9,2	7,0	2,5

geometry of the front surface

ZDCW, ZPCW

Steel	P			x	x	x				x
Stainless steel	M	x	x		x		x		x	
Cast iron	K	x	x				x	x	x	
Nonferrous materials	N	x					x		x	
Heat-resistant alloy	S	x	x				x		x	
Increased hardness	H									



Insert name ISO	Alloy name									Dimensions, mm						
	BP20AM	BP20TT	BP35AM	HP30AM	HP30TT	TP20AM	TP40AM	A10	A30	L	s	d	d1	d2	b	α °
ZDCW-1503ADTR	o	+	+		+	o	+			15	3,2	9,5	4,4	6,0	1,0	15,0
ZPCW-2004 APTR	o		+	o	+	+	+	o	o	20	4,8	13	5,5	7,5	1,0	11,0

geometry of the front surface

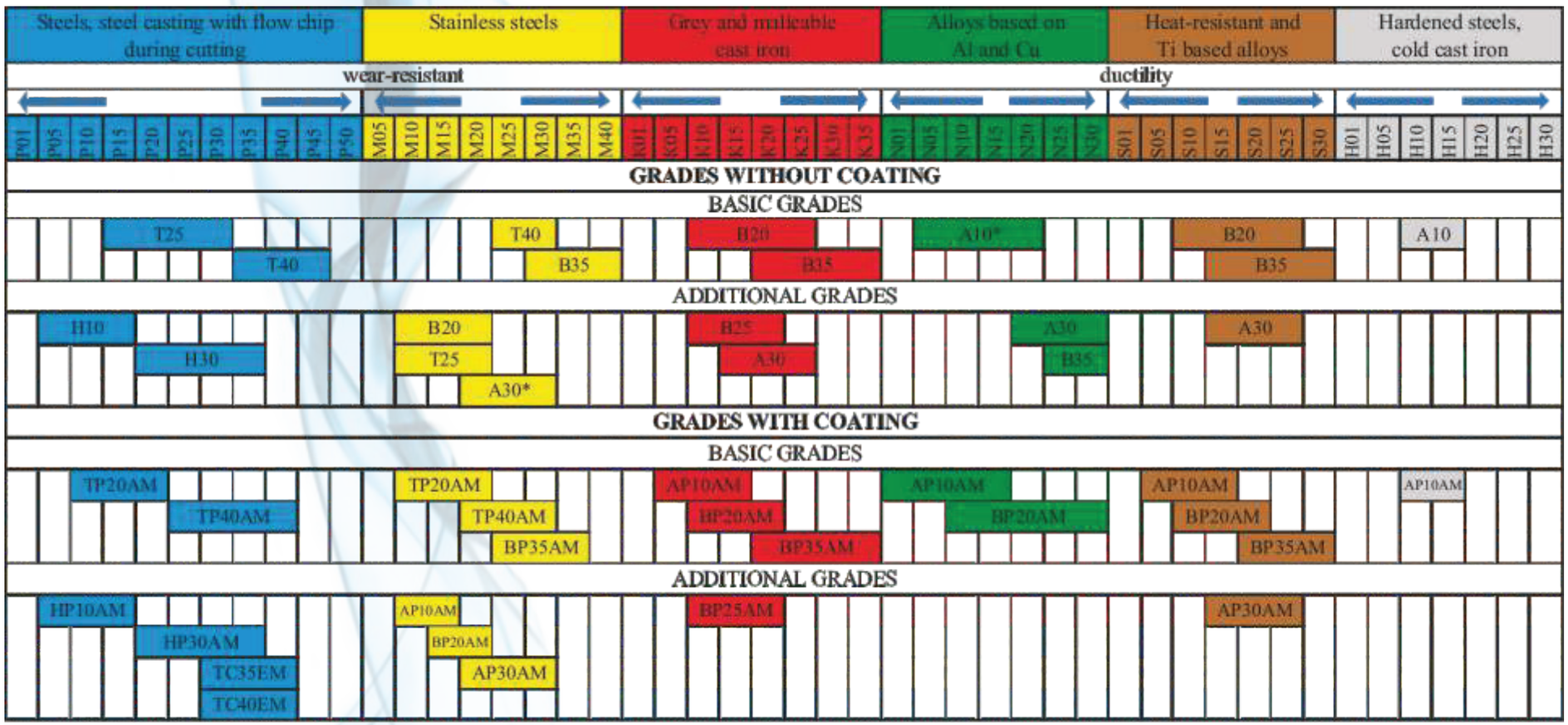
Hardmetal grades without coating for milling

Hardmetal grade		Material group ISO	Application field
Basic	**A10**	N05-N20 H10-H15	~ modern substitute for BK6OM; ~ finish and semifinish machining of hardened sttels, nonferrous metals and alloys, nonmetallic materials.
	B20	M10-M20 K10-K25 S10-S25	~ modern substitute for MC321; ~ semifinish and rough milling of cast iron, corrosion-resistant steels, heat-resistant steels and alloys, alloys based on Ti, W, Mo.
	B35	M30-M40 K20-K35 N25-N30 S15-S30	~ modern substitute for BK8; ~ rough milling of grey cast iron, nonferrous metals and alloys, nonmetallic materials; for machining of corrosion-resistant, heat-resistant hard-to-machine steels and alloys, incl. Ti based alloys.
	T25	P15-P30 M10-M20	~ modern substitute for MC137; ~ milling at good and moderate conditions. For cutting blanks of constructional, automatic, tool, corrosion-resistant steels, steels for mouldings for moderate cutting speed and section cut; ~ high mechanical and termo shock strength of cutting edges.
	T40	P35-P45 M25-M40	~ modern substitute for MC146; ~ rough milling of mouldings, stampings and forgings of constructional, tool and corrosion-resistant steels, steels for mouldings for medium and low cutting speed and large section of cut; ~ high mechanical and termo shock strength of cutting edges.
Additional	**A30**	M20-M30 K15-K25 N20-N30 S15-S25	~ modern substitute for BK10OM; ~ rough and semifinish machining of cold, alloyed and chilled cast irons, some grades of corrosion-resistant, high-strength and heat-resistant steels and alloys, nonferrous metals, alloys based on Ti, W, Mo.
	B25	K10-K20	~ modern substitute for BK6; ~ semifinish milling of solid grey cast iron surfaces.
	H10	P05-P15	~ modern substitute for T15K6; ~ semifinish and finish milling of carbon and alloyed steel solid surfaces.
	H30	P20-P35	~ modern substitute for T5K10; ~ rough milling of carbon and alloyed steel interrupted surfaces mainly as forgings, stampings and mouldings with skin and scale.

Hardmetal grades with coating for milling

Hardmetal grade		Characteristics of hardmetal	Material group ISO	Application field
Basic	**AP10AM**	Hardmetal grade with multilayer PVD coating and fine-grained substrate	M10-M15 K05-K15 N01-N15 S05-S15 H10-H15	~ finish milling of cast iron, corrosion-resistant steels, heat-resistant alloys, titanium alloys, nonferrous metals, materials with enhanced hardness.
	BP20AM	Hardmetal grade with multilayer PVD coating	M15-M20 K10-K20 N10-N30 S10-S20	~ finish and semifinish milling of cast iron (incl. ductile iron), heat-resistant alloys, corrosion-resistance steels; ~ milling of aluminium alloys (ensure sharp edges).
	BP35AM	Hardmetal grade with multilayer PVD coating	K20-K40 M20-M30 S20-S30	~ rough milling of cast iron, corrosion-resistant steels, heat-resistant steels and alloys, including Ti alloys.
	TP20AM	Hardmetal grade with multilayer PVD coating	P10-P20 M10-M20	~ finish and semifinish milling of carbon, alloyed and corrosion-resistant steel blanks; ~ medium and high cutting speed; ~ medium section of cut.
	TP40AM	Hardmetal grade with multilayer PVD coating	P20-P40 M20-M30	~ semifinish and rough milling of castings, forgings and stampings of carbon, alloyed, corrosion-resistant steels; ~ high mechanical and thermo shock strength of cutting edges. ~ medium and low cutting speed. ~ medium and large sections of cut.
Additional	**AP30AM**	Hardmetal grade with multilayer PVD coating and fine-grained substrate	M20-M30 N10-N25 S15-S25	~ semifinish and rough milling of corrosion-resistant, heat-resistant, titanium alloys, nonferrous metals.
	BP25AM	Hardmetal grade with multilayer PVD coating	K10-K20	~ semifinish milling of cast iron.
	HP10AM	Hardmetal grade with multilayer PVD coating	P05-P15	~ finish and semifinish milling carbon and alloyed steels; ~ high cutting speed; ~ small section of cut.
	HP30AM	Hardmetal grade with multilayer PVD coating	P20-P35	~ rough milling of carbon and alloyed steels in forgings, castings and stampings with skin and scale.

Application of hardmetal grades for milling



Recommendations for basic process speeds (ranges) Vc (m/min) for milling

ISO	Machined material	Brinell hardness (HB)	HARDMETAL GRADE									
			T25	T40	TP40AM	TP20AM	B20	BP20AM	B35	BP35AM	A10	AP10AM
			FEED, tz (mm/tooth)									
			CUTTING SPEED Vc (m/min)									
P	**Carbon steel**		0,1-0,4	0,1-0,4	0,1-0,4	0,1-0,3	0,1-0,2		0,1-0,2			
	C= 0,1-0,55 %	125-150	190-110	135-80	200-80	260-150						
	C= 0,55-0,8 %	150-180	125-75	80-50	165-50	210-120						
	Alloyed steel	180-350	130-40	90-30	130-30							
	High-alloyed and tool steel	200-350	120-35	80-30	115-30	180-60						
	Steel casting	180-225	115-40	85-30	110-30	150-50						
	Manganouse and armoured steel	250					25 - 15		16 - 10			
M	**Stainless steel**		0,1-0,4	0,1-0,4	0,1-0,4	0,1-0,2	0,1-0,2	0,1-0,2	0,1-0,2	0,1-0,2		
	Ferritic/ martensitic	200-240	150-40	120-30	150-40	200-60						
	Heat-resistant	330	75-25	70-30		95-60				90-40		
	Austenitic	180				150-50	90-40	100-40	75-25	75-25		
	Austenitic, casted	300							50-25	60-30		
K	**Cast iron**						0,1-0,3	0,1-0,3	0,1-0,4	0,1-0,4		0,1-0,15
	Grey ferritic	180					80-50	100-60	70-30	80-40		
	Grey perlitic	260					80-45	90-50	55-25	65-35		135-90
	High-strength ferritic	160					70-40	80-45	65-30	75-40		
	High-strength perlitic	250					60-35	75-40	55-25	65-35		125-80
	Malleable cast iron	130-230					130-70	150-80	110-60	125-70		
N	**Aluminium alloys**						0,1-0,3				0,1-0,2	
	Wrought	60-100									670-500	
	Casted	75-90									670-500	
	Silumins Si > 8 %	130					250-150				270-230	
	Copper and Cu alloys											
	Brass	110									300-250	
	Bronze	90									300-250	
S	**Ti based alloys**						0,1-0,2		0,1-0,2		0,08-0,12	
	Pure Ti	400MPa					95-55		90-50		110-95	
	Alloys alpha+beta	1050MPa					45-25		40-20		50-40	
	Heat-resistant											
	Based on Fe	200-280					35-30		30-20		40-35	
	Based on Ni and Co	250-320					30-10		20-10		40-10	
H	**Hard materials**										0,05-0,1	0,05-0,1
	Heat-treated steel	45-55HRC									15-10	15-10
	Chilled cast iron	400									25-15	25-15

! Shown speeds and feeds are basic and can be corrected depending on cutting conditions and desired durability of insert.

ADD engineering

SUBSTRATE INSERTS

DESIGNATION OF SUBSTRATE INSERTS

OK	N	17	04	–	R
74	1	17	04	–	1
OS	N	12	03	–	
72	1	12	03	–	

1. Shape of substrate insert

OH 76

OP 75

OS 72

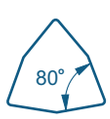
OT 70

OR 77

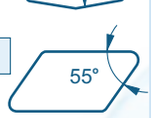
OC 73

OD 78

OW 71

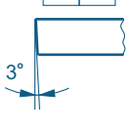


OK 74

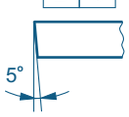


2. Normal clearance of substrate insert

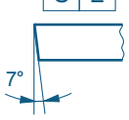
A 7



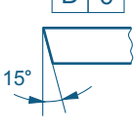
B 8



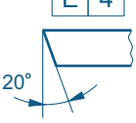
C 2



D 6

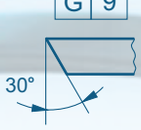


E 4



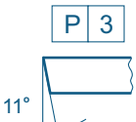
F 5

G 9

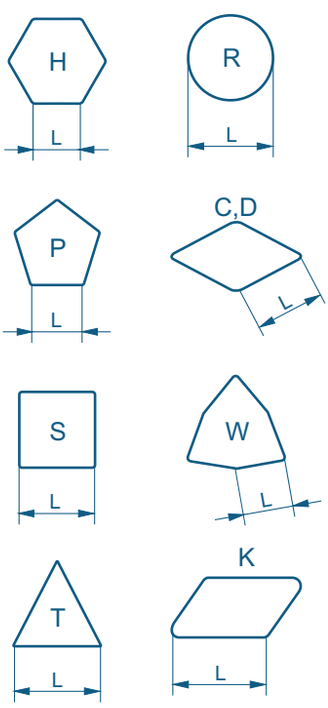


N 1

P 3

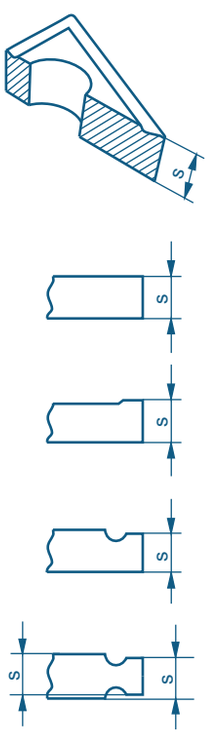


3. Cutting egde length of cutting insert



L, ìì	H	P	S	T	C	D	W	R
3.97	–	–	03	06	04	–	–	–
4.76	–	–	04	08	04	05	–	–
5.56	–	–	05	09	05	06	03	–
6.35	03	04	06	11	06	07	04	06
7.94	04	05	07	13	08	09	05	07
9.525	05	07	09	16	09	11	06	09
12.7	07	09	12	22	12	15	08	12
15.875	09	11	15	27	16	19	10	15
19.05	11	13	19	33	19	23	13	19
25.4	14	18	25	44	25	31	17	25
31.75	18	23	31	54	32	38	21	31

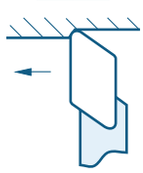
4. Thickness of cutting insert



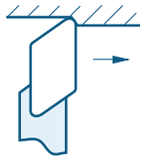
s, ìì	Îáîçíà÷åíèå
1.59	01
1.98	T1
2.38	02
3.18	03
3.97	T3
4.76	04
5.56	05
6.35	06
7.94	07
8.00	08
9.52	09
12.70	12

5. Direction of cutting

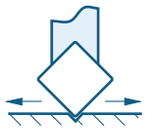
R 1



L 2

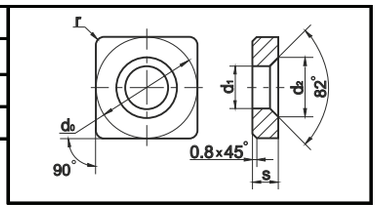


N 3



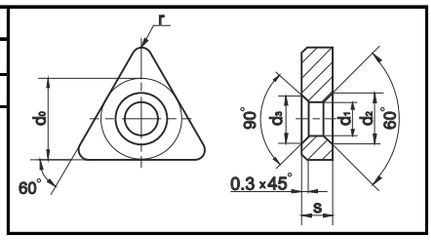
2007

Insert name	Alloy name	Dimensions, mm				
	BK15	d_0	s	r	d_1	d_2
2007-1003	+	12,5	4,76	1,6	3,3	7,0
2007-1058	+	12,5	3,18	3,0	3,3	7,0

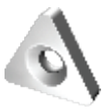


geometry of the front surface

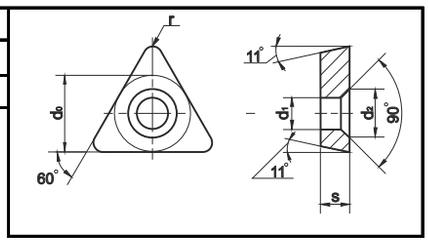
Insert name		Alloy name	Dimensions, mm					
ТУ 48-19-405-86	ISO	BK15	d_0	s	r	d_1	d_2	d_3
2007-0074	OTN-2204-P	+	11,6	3,18	0,8	6,4	7,9	9,7



geometry of the front surface

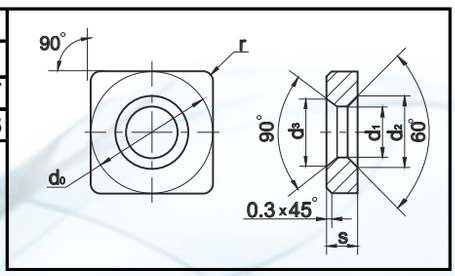


Insert name	Alloy name	Dimensions, mm				
	BK15	d_0	s	r	d_1	d_2
2007-0151	+	8,1	3,18	0,4	2,3	5,0



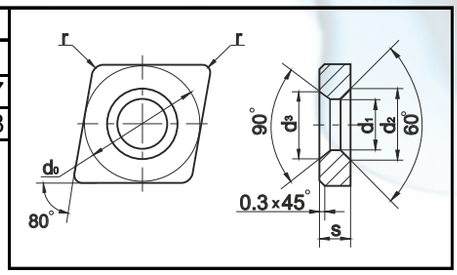
geometry of the front surface

Insert name		Alloy name	Dimensions, mm					
ТУ 48-19-405-86	ISO	BK15	d_0	s	r	d_1	d_2	d_3
2007-1072	OSN-1204-P	+	11,6	3,18	1,2	6,4	7,9	9,7
2007-1073	OSN-1204-P	+	17,8	4,76	1,6	9,6	11,8	12,8



geometry of the front surface

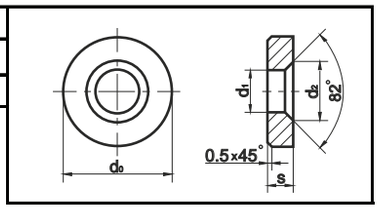
Insert name		Alloy name	Dimensions, mm					
ТУ 48-19-405-86	ISO	BK15	d_0	s	r	d_1	d_2	d_3
2007-1671	OCN-1204-P	+	11,6	3,18	1,2	6,4	7,9	9,7
2007-1672	OCN-1904-P	+	17,8	4,76	1,8	9,6	11,8	12,8



geometry of the front surface

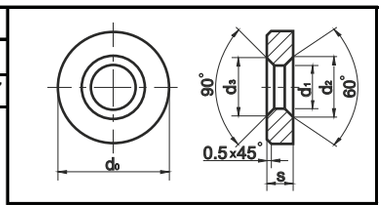
+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

Insert name	Alloy name	Dimensions, mm			
	BK15	d_0	s	d_1	d_2
2007-2501	+	12,7	3,18	3,3	7,0



geometry of the front surface

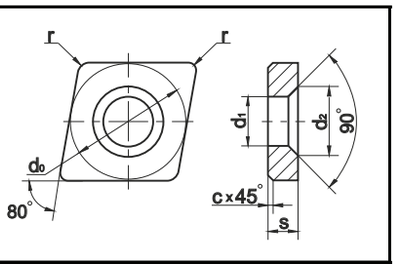
Insert name	Alloy name	Dimensions, mm				
	BK15	d_0	s	d_1	d_2	d_3
2007-2513	+	13,4	4,76	6,4	7,9	9,7



geometry of the front surface

731 (OCN)

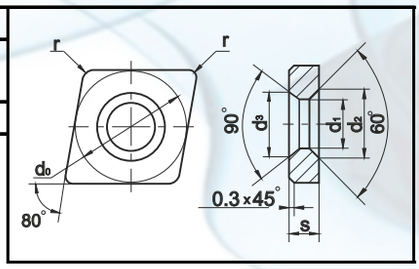
Insert name ISO		Alloy name	Dimensions, mm						
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2	c
731-0903	OCN-0903	γ	9,7	9,3	3,18	0,4	3,81	6,5	0,5
731-1203	OCN-1203	+	12,9	12,5	3,18	1,2	5,16	8,5	0,8
731-1204	OCN-1204	+	12,9	12,5	4,76	1,2	5,16	8,5	0,8
731-1604	OCN-1604	+	16,1	15,6	4,76	1,6	6,35	10,5	0,8
731-1904	OCN-1904	+	19,3	18,8	4,76	1,6	7,93	12,5	0,8



geometry of the front surface

731 (OCN)

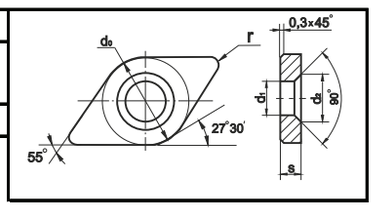
Insert name ISO		Alloy name	Dimensions, mm							
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2	d_3	c
731-1604-P	OCN-1604-P	γ	16,1	14,8	4,76	1,2	8,5	10,7	11,5	0,3



geometry of the front surface

781 (ODN)

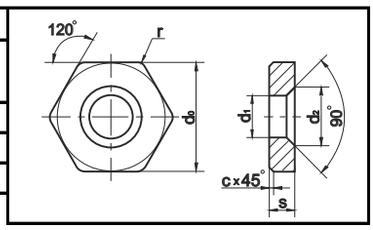
Insert name ISO		Alloy name	Dimensions, mm					
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2
781-1503	ODN-1503	+	15,5	11,6	3,18	0,8	5,16	8,0



geometry of the front surface

761 (OHN)

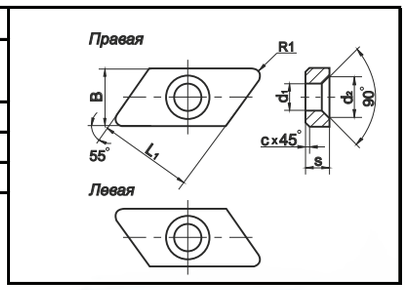
Insert name ISO		Alloy name	Dimensions, mm						
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2	c
761-0904	OHN-0904	+	9,1	15,6	4,76	1,6	6,35	10,5	0,8
761-1104	OHN-1104	+	11	18,8	4,76	2	7,93	12,5	0,8
761-1106	OHN-1106	+	11	18,8	6,35	2	7,93	12,5	0,8



geometry of the front surface

741 (OKN-R), 742 (OKN-L)

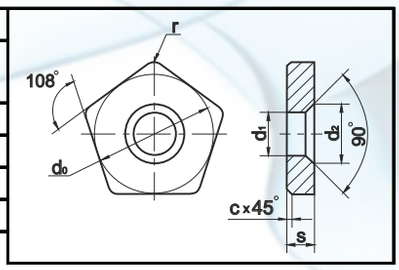
Insert name ISO		Alloy name	Dimensions, mm					
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2
741-1704-1	OKN-1704-R	+	17	13,8	9,8	4,2	3,81	6,5
741-1904-1	OKN-1904-R	+	19	15,8	9,8	4,2	3,81	6,5
742-1904-2	OKN-1904-L	+	19	15,8	9,8	4,2	3,81	6,5



geometry of the front surface

751 (OPN)

Insert name ISO		Alloy name	Dimensions, mm						
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2	c
751-1104	OPN-1104	+	11,5	15,6	4,76	1,6	6,35	10,5	0,8
751-1304	OPN-1304	+	13,8	18,8	4,76	2	7,93	12,5	0,8
751-1306	OPN-1306	+	13,8	18,8	6,35	2	7,93	12,5	0,8
751-1604	OPN-1604	+	16,1	22	4,76	1,2	7,93	12,5	0,8

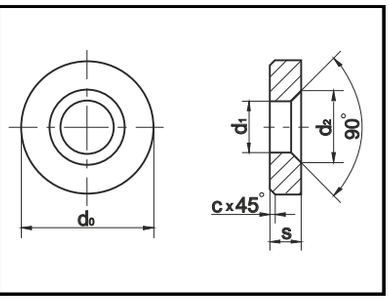


geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

771 (ORN)

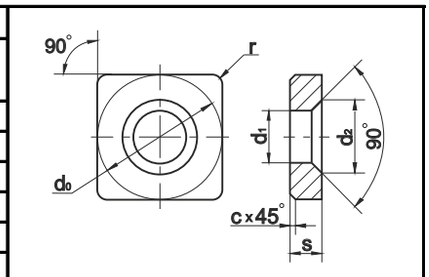
Insert name ISO		Alloy name	Dimensions, mm					
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	d_1	d_2	c
771-0903	ORN-0903	+	9,525	9,3	3,18	3,81	6,5	0,5
771-1203	ORN-1203	+	12,7	12,5	3,18	5,16	8	0,5
771-1504	ORN-1504	+	15,875	15,6	4,76	6,35	9,2	0,8
771-1904	ORN-1904	+	19,05	18,8	4,76	6,35	9,2	0,8
771-2204	ORN-2204	+	22,2	22	4,76	6,35	9,2	0,8
771-2506	ORN-2506	+	25,4	25,2	6,35	7,93	11,1	0,8



geometry of the front surface

721 (OSN)

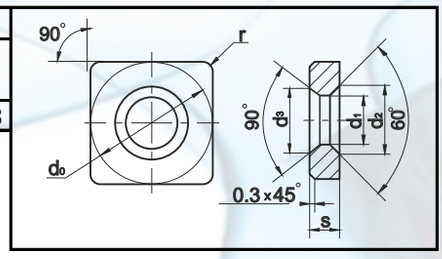
Insert name ISO		Alloy name	Dimensions, mm						
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2	c
721-0903	OSN-0903	+	9,5	9,3	3,18	0,8	3,81	6,5	0,5
721-1203	OSN-1203	+	12,7	12,5	3,18	1,2	5,16	8,5	0,5
721-1204	OSN-1204	+	12,7	12,5	4,76	1,2	5,16	8,5	0,8
721-1504	OSN-1504	γ	15,9	15,6	4,76	1,6	6,35	10,5	0,8
721-1904	OSN-1904	+	19	18,8	4,76	1,6	7,93	12,5	0,8
721-1906	OSN-1906	+	19	18,8	6,35	2,5	7,93	12,5	0,8
721-2506	OSN-2506	+	25,4	25,2	6,35	2,5	9,12	13,1	0,8
721-2506-1	OSN-2506-1	+	25,4	25,2	6,35	2,5	12,8	16,8	0,8
721-3806	OSN-3806	γ	35,1	34,9	6,35	2	12,65	14,65	1



geometry of the front surface

721 (OSN)

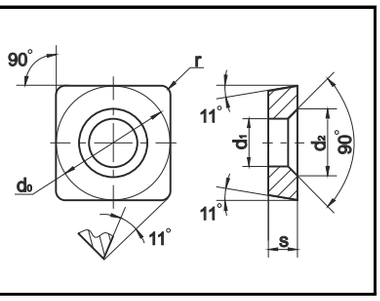
Insert name ISO		Alloy name	Dimensions, mm							
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2	d_3	c
721-1504-P	OSN-1504-P	γ	15,9	14,67	4,76	1,2	8,5	10,7	11,5	0,3



geometry of the front surface

723 (OSP)

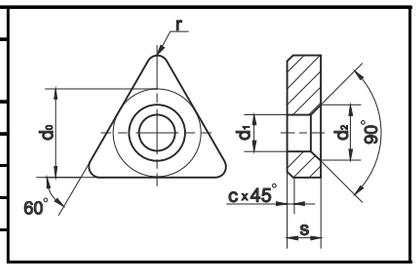
Insert name ISO		Alloy name	Dimensions, mm					
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2
723-0903	OSP-0903	+	9,5	8,1	3,18	0,8	3,81	6,5
723-1203	OSP-1203	+	12,7	11,3	3,18	0,8	5,16	8,5
723-1204	OSP-1204	+	12,7	11,3	4,76	0,8	5,16	8
723-1504	OSP-1504	+	15,9	13,8	4,76	1,2	6,35	10,5
723-1904	OSP-1904	+	19	17	4,76	0,8	7,93	12,5
723-2506	OSP-2506	+	25,4	22,6	6,35	2	9,12	13,1



geometry of the front surface

701 (OTN)

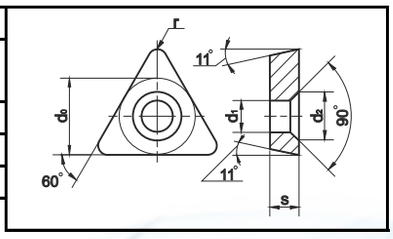
Insert name ISO		Alloy name	Dimensions, mm						
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2	c
701-1603	OTN-1603	+	16,5	9,3	3,18	1,2	3,81	6,5	0,5
701-1604	OTN-1604	+	16,5	9,3	4,76	0,8	3,81	6,5	0,8
701-2204	OTN-2204	+	22	12,5	4,76	1,2	5,16	8,5	0,8
701-2704	OTN-2704	+	27,5	15,6	4,76	1,6	6,35	10,5	0,8



geometry of the front surface

703 (OTP)

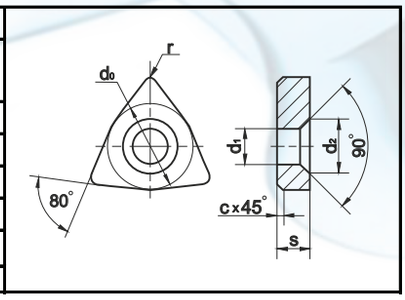
Insert name ISO		Alloy name	Dimensions, mm					
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2
703-1603	OTP-1603	+	16,5	7,5	3,18	0,8	3,81	6,5
703-1604	OTP-1604	+	16,5	8,1	4,76	0,8	3,81	6,5
703-2204	OTP-2204	+	22	10,6	4,76	1,6	5,16	8,5



geometry of the front surface

711 (OWN)

Insert name ISO		Alloy name	Dimensions, mm						
Digital	Alphabetic-numeric	BK15	Length of cutting edge L	d_0	s	r	d_1	d_2	c
711-0603	OWN-0603	+	6,5	9,3	3,18	0,8	3,81	6,5	0,5
711-0604	OWN-0604	+	6,5	9,3	4,76	0,8	3,81	6,5	0,8
711-0804	OWN-0804	+	8,7	12,5	4,76	0,8	5,16	8,5	0,8
711-1004	OWN-1004	+	10,8	15,6	4,76	1,2	6,35	10,5	0,8
711-1006	OWN-1006	+	10,8	15,6	6,35	1,2	6,35	10,5	0,8
711-1206	OWN-1206	+	12,8	18,8	6,35	1,2	7,93	12,5	0,8



geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

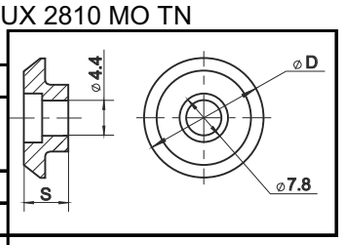
ADD engineering

RAILWAY INSERTS

42

use with insert
ROUX 3110 MO TN and ROUX 2810 MO TN

Insert name	Alloy name				Dimensions, mm	
	BK8	T5K10	T14K8	T15K6	D	S
42030	o	o		o	18	8
42050	o	o	o	o	20	8,5
42070	+	+	o	o	21	7,5
42090	+	o	o	o	22	7,5
42110	+	o		o	23	7,5

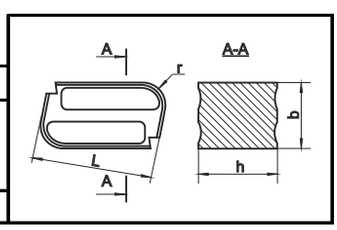


geometry of the front surface

BNUX

use for turning of railway wheels

Insert name	Alloy name					Dimensions, mm			
	KC35PT	KC25	KC35	MC221	T14K8	L	h	b	r
BNUX 201540 TN	o	o	o	o	+	22	15	12	4

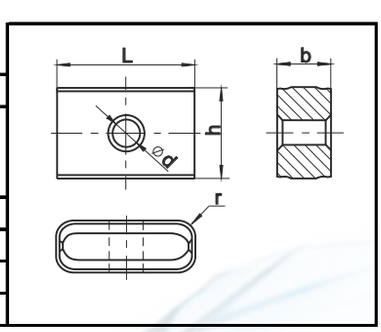


geometry of the front surface

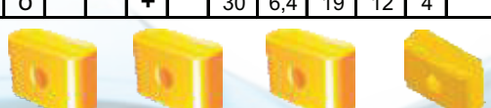
LNUX

use for rough turning of railway wheels

Insert name	Alloy name						Dimensions, mm				
	KC35HT	KC35PT	TC20PT	KC25	KC35	MC221	L	d	h	b	r
LNUX 191940 220	o	o	o		+	o	19	6,4	19	10	4
LNUX 191940 SN						o	19	6,4	19	10	4
LNUX 301940 TN 02	o	o			+	+	30	6,4	19	12	4
LNUX 301940 23	o	o			+		30	6,4	19	12	4



geometry of the front surface

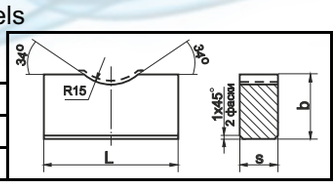


LNUX-220 LNUX-SN LNUX-TN02 LNUX-23

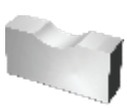
R 15/1

use for planing of railway wheels

Insert name	Alloy name	Dimensions, mm		
	MC146	L	b	s
R 15/1	+	49,2	24,0	13,4



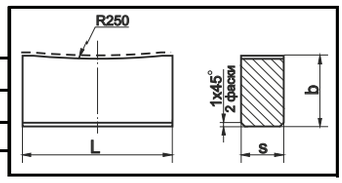
geometry of the front surface



+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

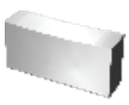
R 250/1

use for planing of rail-trucks



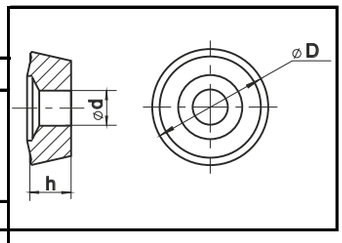
Insert name	Alloy name	Dimensions, mm		
	MC146	L	b	s
R 250/1	+	49,2	24,0	13,4

geometry of the front surface



RCMX

use for turning of railway wheels



Insert name	Alloy name			Dimensions, mm		
	TC20PT-P	TC20HT	TP20AT	D	d	h
RCMX 2507MO	O	O		25	7,2	7,94
RCMX 3009MO-79	O			30	10	9,5
RCMX 3209MO-76	O		O	32	10	9,5

geometry of the front surface

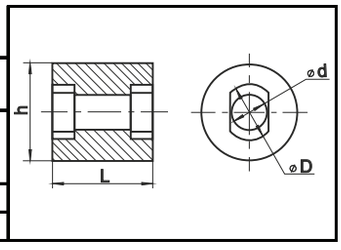
RCMX-2507MO

RCMX 3009MO-79

RCMX 3209MO-76

RNUX

use for milling of railway wheels

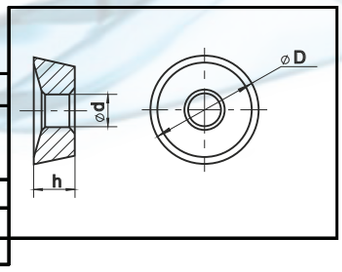


Insert name	Alloy name		Dimensions, mm			
	KC25	T14K8	L	D	d	h
RNUX 1212 MO TN	+	+	12	7	4,4	12
3-RNUX 1212 MO TN		+	12	6,9	4,4	12

geometry of the front surface

ROUX, RCMM

use for turning of railway wheels



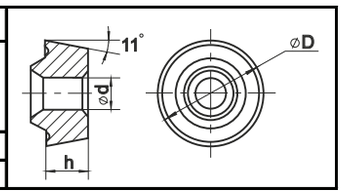
Insert name	Alloy name				Dimensions, mm		
	KC25	KC35	T5K10	T14K8	D	d	h
3-ROUX 3110MO TN				+	30,5	10	10
ROUX 2810MO TN			+	+	27,5	10	10
RCMM 3010MO TN	O	O		+	30	10	9,5

geometry of the front surface

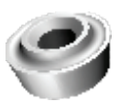
RPUX

use for finish turning of railway wheels

Insert name	Alloy name							Dimensions, mm		
	KC35PT	HC20PT	TP20AT	KC25	KC35	MC221	T14K8	D	d	h
RPUX 2709 MO TN	o	o	o	+	o	o	+	27,8	10	9,5
RPUX 3010 MO TN				+	+		+	30,8	10	10,5



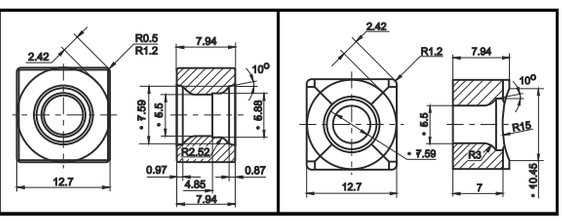
geometry of the front surface



SNEX

use for milling of railway track

Insert name	Alloy name		
	TC35EM	TP35TM	T35
SNEX 1207 AN-H1	+	o	+
SNEX 1207 AN-15H1	+	o	+



geometry of the front surface

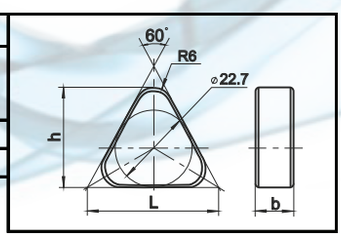
SNEX AN-H1

SNEX AN-15H1

TNUN

use for turning of railway wheels

Insert name	Alloy name			Dimensions, mm		
	KC25	T5K10	T14K8	L	b	h
TNUN 381060 TN	+	+	o	39,3	10,0	28,0
3-TNUN 381060 TN		+	+		10,2	28,4

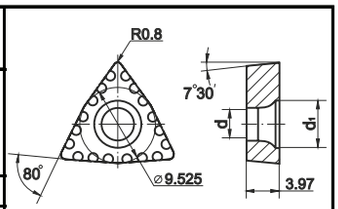


geometry of the front surface

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

WCMX

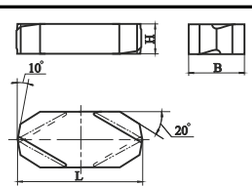
применяются для сверления отверстий в железнодорожных рельсах

обозначение	обозначение сплава			размеры, мм			
	TC40EM	TP20AM	T40	d	d_1	s	
WCMX 050308	+	+	■	3,4	4,5	3,2	
WCMX 06T308 37	+	+	■	3,75	5,35	3,97	
WCMX 06T308 44			+	4,4	6,0	3,97	

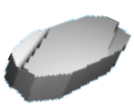
геометрии передней поверхности

ZNGF

применяются для черновой токарной обработки

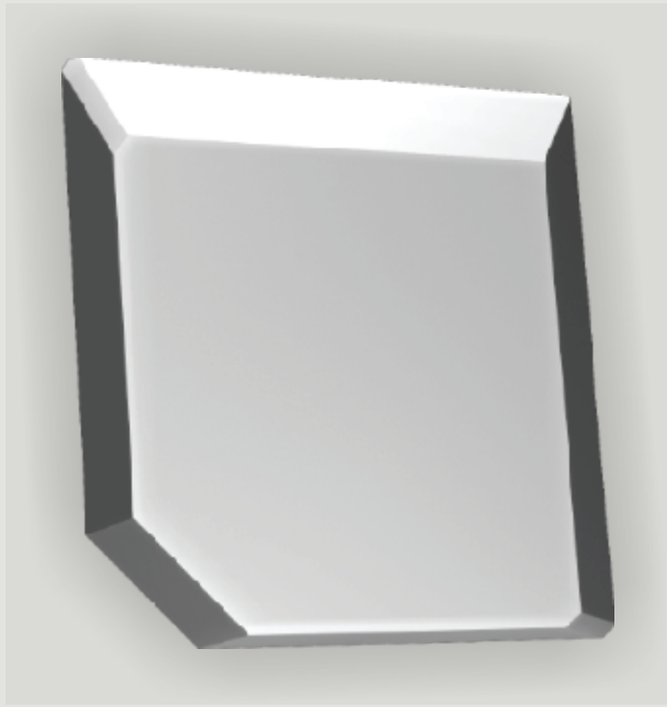
обозначение	обозначение сплава			размеры, мм			
	H10	H20	H30	L	b	s	
ZNGF 0507 NER	O	O	O	49,2	22,7	13,4	

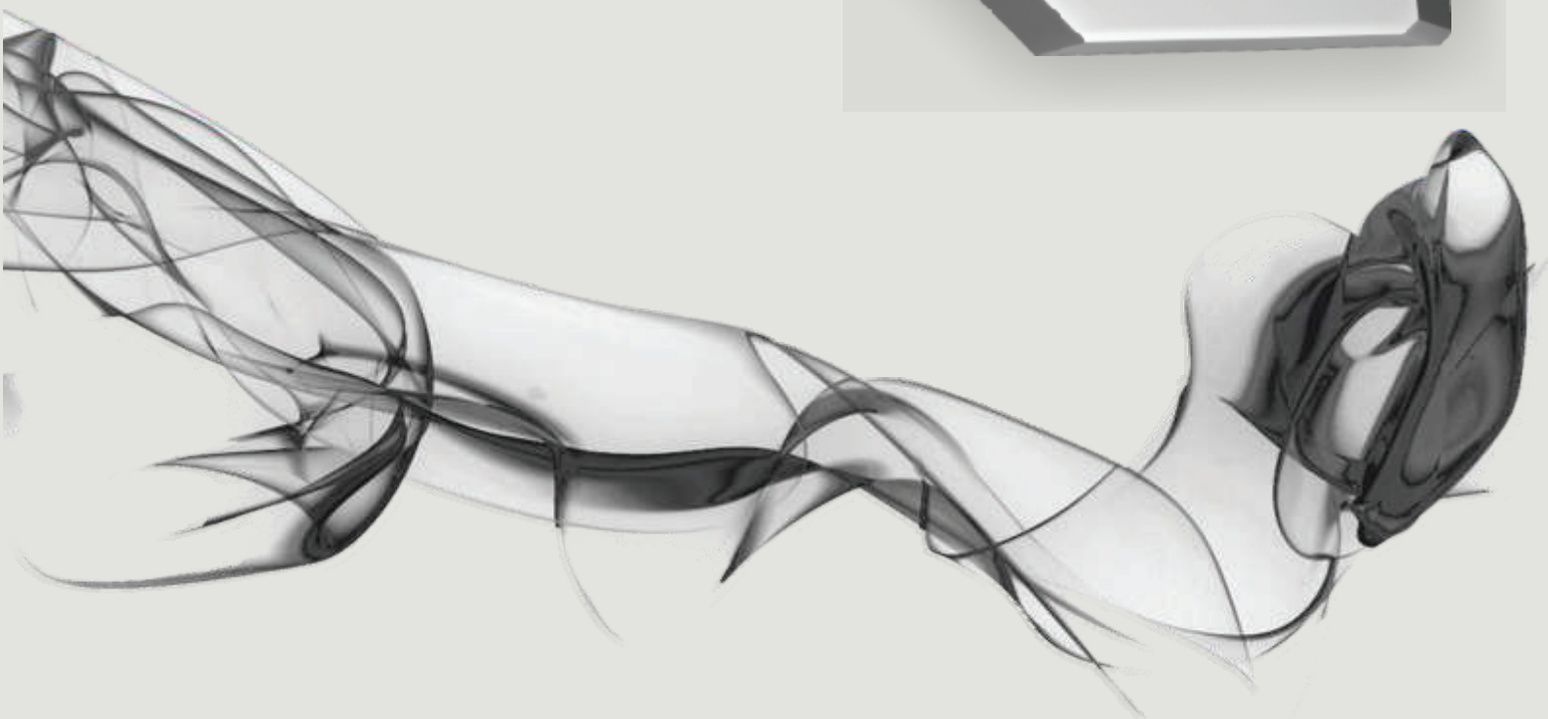
геометрии передней поверхности



ADD engineering

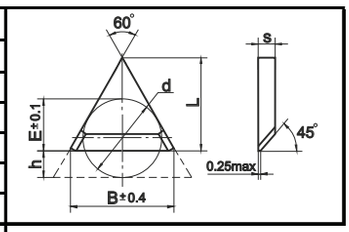
CHIPBREAKING INSERTS





2009-0001...0064

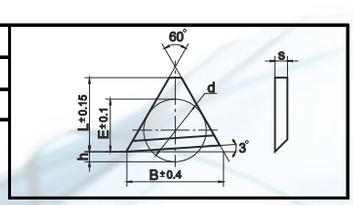
Insert name	Alloy name	Dimensions, mm					
	BK8	d	L	s	h	E	B
2009-0001	+	6,35	7,96	1,58	1,57	4,78	8,19
2009-0002	+	6,35	8,53	1,58	1,0	5,35	8,84
2009-0003	+	9,53	11,02	2,38	3,27	6,26	11,7
2009-0004	■	9,53	11,49	2,38	2,8	6,72	12,3
2009-0005	+	9,53	12,26	2,38	2,03	7,5	13,2
2009-0006	+	9,53	12,84	2,38	1,45	8,08	13,8
2009-0007	+	12,7	14,23	2,38	4,82	7,88	15,4
2009-0008	+	12,7	16,51	2,38	2,54	10,1	18,1
2009-0009	■	12,7	17,68	2,38	1,37	11,33	19,4
2009-0010	■	15,9	18,99	2,38	4,82	11,06	20,9
2009-0011	γ	15,9	21,27	2,38	2,54	13,34	23,6
2009-0051	+	6,35	8,5	1,0	0,0	6,3	11,0
2009-0052	γ	6,35	7,3	1,0	1,2	5,1	9,6
2009-0053	+	6,35	6,5	1,0	2,0	4,4	8,7
2009-0054	+	9,53	12	2,0	0,0	9,5	16,5
2009-0055	+	9,53	10,8	2,0	1,2	8,3	15,1
2009-0056	+	9,53	10	2,0	2,0	7,5	14,2
2009-0057	+	9,53	9	2,0	3,0	6,5	13
2009-0059	γ	6,35	7,3	2,0	1,2	5,1	9,6
2009-0060	γ	6,35	6,5	2,0	2,0	4,4	8,7
2009-0062	γ	6,35	7,7	1,0	0,8	5,5	10,1
2009-0063	+	12,7	13,8	2,38	3,0	9,7	18,5
2009-0064	+	12,7	14,8	2,38	2,0	10,7	19,7



geometry of the front surface

2009-0065

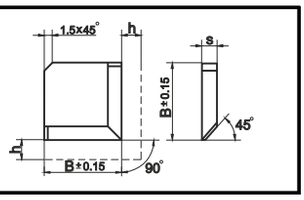
Insert name	Alloy name	Dimensions, mm					
	BK8	d	L	s	h	E	B
2009-0065	γ	12,7	15,6	2,4	2,3	10,4	20,7



geometry of the front surface

2009-1001…1056

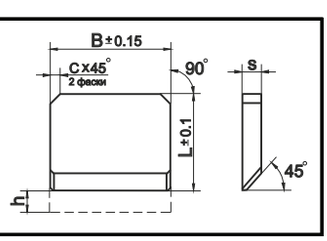
Insert name	Alloy name	Dimensions, mm		
	BK8	B	s	h
2009-1001	+	7,9	1,58	1,6
2009-1002	+	10,3	2,38	2,4
2009-1003	γ	15,9	2,38	0
2009-1004		20,6	3,97	4,8
2009-1051		9,5	1,0	0,0
2009-1052	γ	8,3	1,0	1,2
2009-1053	γ	7,5	1,0	2,0
2009-1054	■	12,7	2,0	0,0
2009-1055	+	11,5	2,0	1,2
2009-1056	+	10,7	2,0	2,0



geometry of the front surface

2009-2101…2160

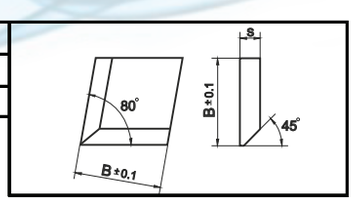
Insert name	Alloy name	Dimensions, mm				
	BK8	B	L	s	h	c
2009-2101	+	9,4	7,9	1,58	1,6	-
2009-2102	■	18,6	8,7	2,38	4	-
2009-2103	■	18,6	10,1	2,38	2,6	-
2009-2104	■	18,6	11,1	2,38	1,6	-
2009-2105	+	18,6	12	2,38	0,7	-
2009-2107	+	18,9	14,3	2,38	4,8	-
2009-2108	+	18,9	16,5	2,38	2,6	-
2009-2109	+	18,9	17,4	2,38	1,7	-
2009-2113	γ	6,2	4,8	1,58	1,6	-
2009-2152	+	9,2	8,3	1,0	1,2	1
2009-2153	γ	9,2	7,5	1,0	2,0	1
2009-2154	+	12,2	12,7	2,0	0,0	1
2009-2155	+	12,2	11,5	2,0	1,2	1
2009-2156	+	12,2	10,7	2,0	2,0	1
2009-2157	γ	12,2	9,7	2,0	3,0	1
2009-2158	γ	9,2	9,5	2,0	0,0	1
2009-2160	γ	9,2	7,5	2,0	2,0	1



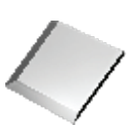
geometry of the front surface

2009-2901

Insert name	Alloy name	Dimensions, mm	
	BK8	B	s
2009-2901	·	10,2	2,38



geometry of the front surface ■



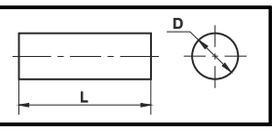
+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

ADD engineering

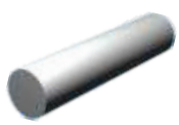
SOLID END MILL BLANKS

41

Name	Alloy name									Dimensions, mm	
	ВК3М	ВК6	ВК6ОМ	ВК8	ВП322	Т30К4	Т15К6	Т14К8	Т5К10	d	L
41110	+	+		+	+	o	+		+	3,4	10,0
41130	γ	+	o	+	+	+	+		+	4,4	12,0
41150	γ	o		+	o	o	o		o	4,4	16,0
41170	γ	+		+	o	+	+	+	o	4,4	20
41190	+	+	+	+	+	+	+	o	+	5,2	16
41210	γ	+		■	o	o	+		+	5,4	20
41230	γ	+		o	+	+	o		+	5,4	25

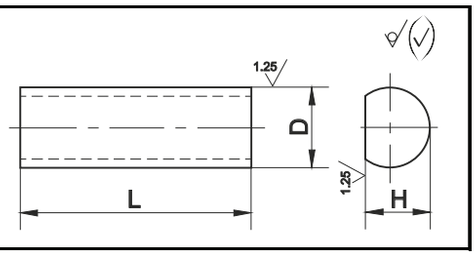


General view

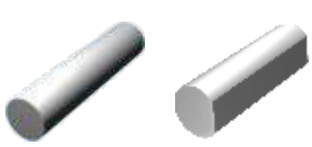


P01

Name	Alloy name							Dimensions, mm		
	A04	BK6	BK6OM	BK8	T15K6	T14K8	T5K10	D	L	H
P01-002		o			+			3	13,8	2,7
P01-003		+						3	14,8	2,7
P01-006				o				4	10,8	3,6
P01-006				+				4	10,8	without flat
P01-007				+				4	11,8	3,6
P01-008		+						4	15,8	3,6
P01-009					o			4	18,3	3,6
P01-010		o	o		o			4	18,8	3,6
P01-011		o						4,76	15,3	4,3
P01-012		o						4,76	16,8	4,3
P01-013		o			o			4,76	20,8	4,3
P01-014		o						4,76	23,8	4,3
P01-015		+						5	12,3	4,5
P01-016		+			+			5	15,8	4,5
P01-017							o	5	16,8	4,5
P01-018		+	o		o			5	18,8	4,5
P01-020		o		o				5	23,8	4,5
P01-021			o	o				5	27,8	4,5
P01-022				o				5	30,8	4,5
P01-024		+	+	+	+		+	5	50,3	without flat
P01-025		+			o			6	20,8	5,3
P01-028		o						6	25,8	5,3
P01-031		o				o		6	30,8	5,3
P01-032		o						6	31,3	5,3
P01-035		o		o		o		6	35,8	5,3
P01-036		o			o	o		6	38,3	5,3
P01-038	o	■	■	+	o		o	6	60,0	without flat
P01-039		o						8	25,8	7
P01-041		o			o			8	31,8	7
P01-042		o	o	o	o		+	8	32,5	7
P01-044		o			o			8	36,8	7
P01-046		o			o			8	42,3	7
P01-048	o	o	o	o	■	o	o	8	80,0	without flat
P01-049	o	o	o	o	o		o	10	100,0	without flat
P01-050	o	■	o	o	o		o	12	100,0	without flat
P01-056		o				+		10	37,0	9
P01-057				o				10	45,5	9
P01-112		+						3	26,0	without flat
P01-113		o		o	o			3	33,0	without flat
P01-114		o	o	+	o		o	3	51,0	without flat
P01-115		+		o			o	4	31,0	without flat
P01-118		o		o				5,5	20,0	without flat
P01-119		o						6	20,0	without flat
P01-117		o		■				4	33,0	without flat
P01-120		o						8	19,0	without flat
P01-122		o		o				10	26,0	without flat



General view

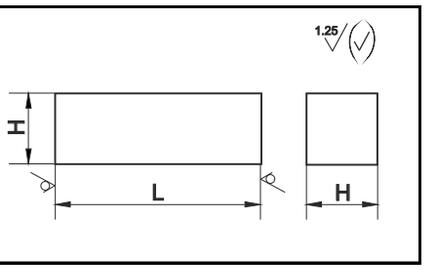


Solid end mill blanks can be produced without grinding operation according to STO 00196144-0715-2004 with diameter tolerance - 0,4…+0,3 mm.

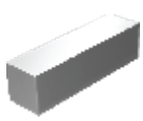
+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

P02

Name	Alloy name						Dimensions, mm	
	BK6	BK6OM	BK8	T15K6	T14K8	T5K10	H	L
P02-001	γ			o		■	4,00	15,3
P02-002	γ						4,76	20,8
P02-004	o					o	5,00	15,8
P02-005				o			5,00	17,8
P02-006	o	o		o	o		5,00	26,8
P02-007	o						5,00	28,8
P02-008	o					o	6,00	16,8
P02-009	o			o			6,00	17,3
P02-011				o		o	6,00	18,8
P02-012	o			o		+	6,00	20,8
P02-013	o			o		o	6,00	25,8
P02-014				o			6,00	26,8
P02-015	o				o		6,00	30,8
P02-017				o			6,00	35,8
P02-018						o	6,00	38,8
P02-020			■				6,35	19,8
P02-021				o			6,35	20,8
P02-023							6,35	24,8
P02-024	o				o		7,94	39,8
P02-025	o			o		o	7,94	30,8
P02-026	o		o	o	o		8,00	40,8
P02-027	o			o	o	+	8,00	32,5
P02-028	o						8,00	35,5
P02-032	■						6,35	30,0

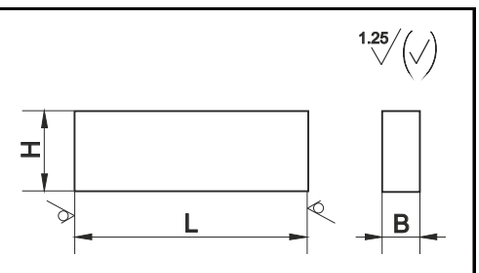


General view

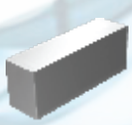


P03

Name	Alloy name						Dimensions, mm		
	BK6	BK6OM	BK8	T15K6	T14K8	T5K10	B	H	L
P03-101	+		o		o	o	2,4	10	40
P03-102	γ		o		o		6	12	60
P03-103	γ			o			3,8	15	80
P03-104	γ						4,2	15	80
P03-105	γ		o				4,2	16	80
P03-106	γ						4	13	85
P03-107	+						4	6	17,5
P03-108	+				o		4,76	12,7	70
P03-109	γ		+		o		3	7	60
P03-110	γ		■		■		6	12	35,5
P03-111	γ					■	4	11,1	18,3
P03-112	+					o	3,2	10	27,5
P03-113				+			3	4	19,5

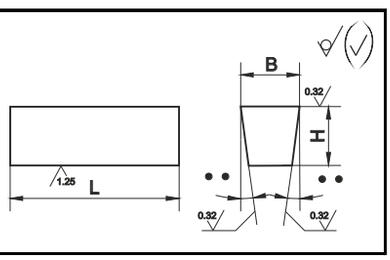


General view

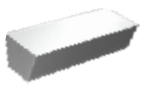


P04

Name	Alloy name					Dimensions, mm			
	BK6	BK8	T15K6	T14K8	T5K10	B	H	L	°α
P04-001	γ	o	o			2,1	8,0	63,0	3,0
P04-002				γ		2,5	8,0	63,0	3,0
P04-003	+			+		2,5	8,0	63,0	3,0
P04-008	γ				+	4,8	5,3	30	-
P04-009	γ					5,3	5,3	30	-
P04-011	γ					6,3	6,3	30	-
P04-012	γ					6,8	6,3	30	-
P04-013	+			o		7,8	8,3	30	-
P04-016		γ				103	8,3	35	-
P04-021			+		o	6,4	4,4	18,5	15

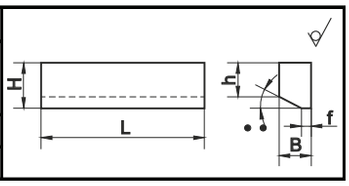


General view

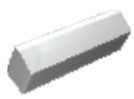


P07

Name	Alloy name				Dimensions, mm					
	BK6	BK8	T15K6	T30K4	B	H	h	L	a	α°
P07-001			+	+	4,5	6,4	5,4	23,0	0,8	15,0
P07-002					9,6	8,1	5,6	20,6	0,2	15,0

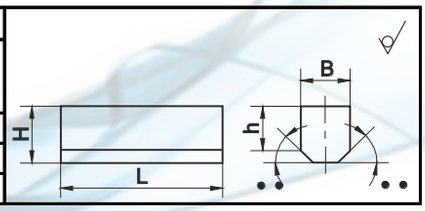


General view

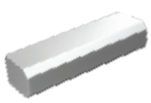


P08

Name	Alloy name			Dimensions, mm				
	BK6	BK8	T15K6	B	H	h	L	°
P08-001				9,7	11,1	6,3	20,6	45
P08-002			γ	5,7	7,0	6,2	22,5	15
P08-003				4,7	7,1	6,47	22,8	15



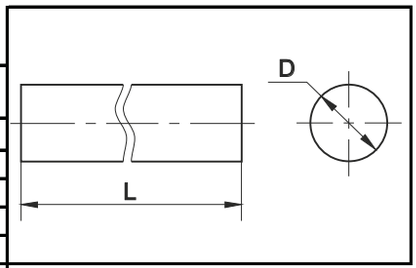
General view



+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

TCLR (ground on h6)

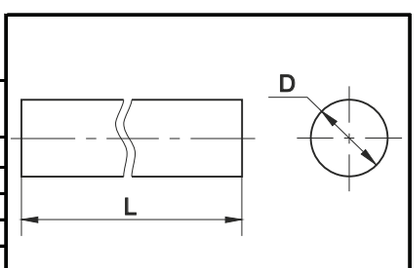
Name	Alloy name	Dimensions, mm	
	A04	L**	d
TCLR-030-330	+	330	3,0
TCLR-035-330	+	330	3,5
TCLR-040-330	+	330	4,0
TCLR-045-330	■	330	4,5
TCLR-050-330	+	330	5,0
TCLR-055-330	+	330	5,5
TCLR-060-330	+	330	6,0
TCLR-065-330	+	330	6,5
TCLR-070-330	+	330	7,0
TCLR-075-330	+	330	7,5
TCLR-080-330	+	330	8,0
TCLR-085-330	■	330	8,5
TCLR-090-330	+	330	9,0
TCLR-100-330	+	330	10,0
TCLR-120-330	+	330	12,0
TCLR-140-330	+	330	14,0
TCLR-160-330	+	330	16,0
TCLR-180-330	+	330	18,0
TCLR-200-330	+	330	20,0



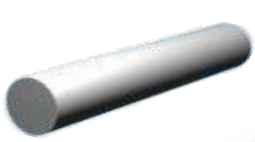
General view

T3LR (unground)

Name	Alloy name	Dimensions, mm	
	A04	L**	d
T3LR-033-330	■	330	3,3
T3LR-043-330	■	330	4,3
T3LR-053-330	■	330	5,3
T3LR-063-330	■	330	6,3
T3LR-073-330	■	330	7,3
T3LR-083-330	+	330	8,3
T3LR-093-330	■	330	9,3
T3LR-103-330	■	330	10,3
T3LR-123-330	■	330	12,3
T3LR-143-330	+	330	14,3
T3LR-163-330	+	330	16,3
T3LR-183-330	■	330	18,3
T3LR-203-330	■	330	20,3



General view



** production of rods with length less than 330mm is possible after approval of order volume

+ - stock assortment
■ - one month manufacturing
o - manufacturing after agreeing quantities

Hardmetal grades for solid end mill blanks

Hardmetal grade	Material group ISO	Application field
A04	P15-P30 M10-M25 K10-K30 N10N30 S10-S30 H15-H25	**~ submicron grade for semifinish and rough machining (milling and drilling)** ~ for alloyed, heat-resistant, hardened and corrosion-resistant steels ~ for alloys based on Ti, Al ~ for cast iron
BK3M	K01-K05 H05-H10	**~ finish machining (turning, boring, threading and reaming)** ~ for cold, alloyed and chilled cast iron ~ for cemented and heat-treated steels ~ for high abrasive non-metallic materials
BK6OM	M05-M15 K05-K15 N05-N20 S05-S15 H10-H15	**~ finish and semifinish machining** ~ for cold, alloyed and chilled cast iron ~ for heat-treated steels, some grades of stainless, high-strength and heat-resistant steels and alloys ~ especially for alloys based on Ti, W and Mo (turning, boring, reaming, threading, scraping
BK8	K20-K35 S20-S30 M25-M40 N25-N30	**~ rough planing at unequal section of cut and interrupted cutting, rough milling, drilling, rough boring, rough core-drilling** ~ for grey cast iron, non-ferrous metals and alloys, non-metallic materials ~ machining of stainless, high-strength and heat-resistant hard-to-machine steels and alloys incl. Ti based
VP322	M15-M30 K10-K20 S10-S20	**~ rough turning, boring and milling** ~ for forgings, stampings, castings of corrosion-resistant, heat-resistant alloys based on Ni-Co, Ti, alloyed cast iron ~ large section of cut and moderate and low cutting speed
T30K4	P01-P05 H15-H25	**~ finish turning with small section of cut** ~ for carbon and alloyed steels ~ machinig of hardened steels HRC 50-55
T30K4	P01-P05 H15-H25	**~ semifinish turning at continuous cutting** ~ finish turning at interrupted cutting ~ semifinish and finish milling of solid surfaces ~ boring and reaming of rough holes ~ finish core-drilling and reaming ~ similar types of machining of carbon and alloyed steels
T14K8	P15-P25	**~ rough turning at unequal section of cut and continuous cutting** ~ semifinish and finish turning at interrupted cutting ~ rough milling of solid surfaces ~ boring of cast and forged holes ~ rough core-drilling ~ similar types of machining of carbon and alloyed steels
T5K10	P25-P35	**~ rough turning at unequal section of cut and interrupted cutting** ~ cutting-off with lathe tools ~ rough milling of solid surfaces ~ similar types of machining of carbon and alloyed steels in types of forgings, stampings and castings with skin and scales

Alphabetical list

Turning inserts

Turning tools

Milling tools

ADD engineering