HEAVY MACHINING

SANDVIK Coromant

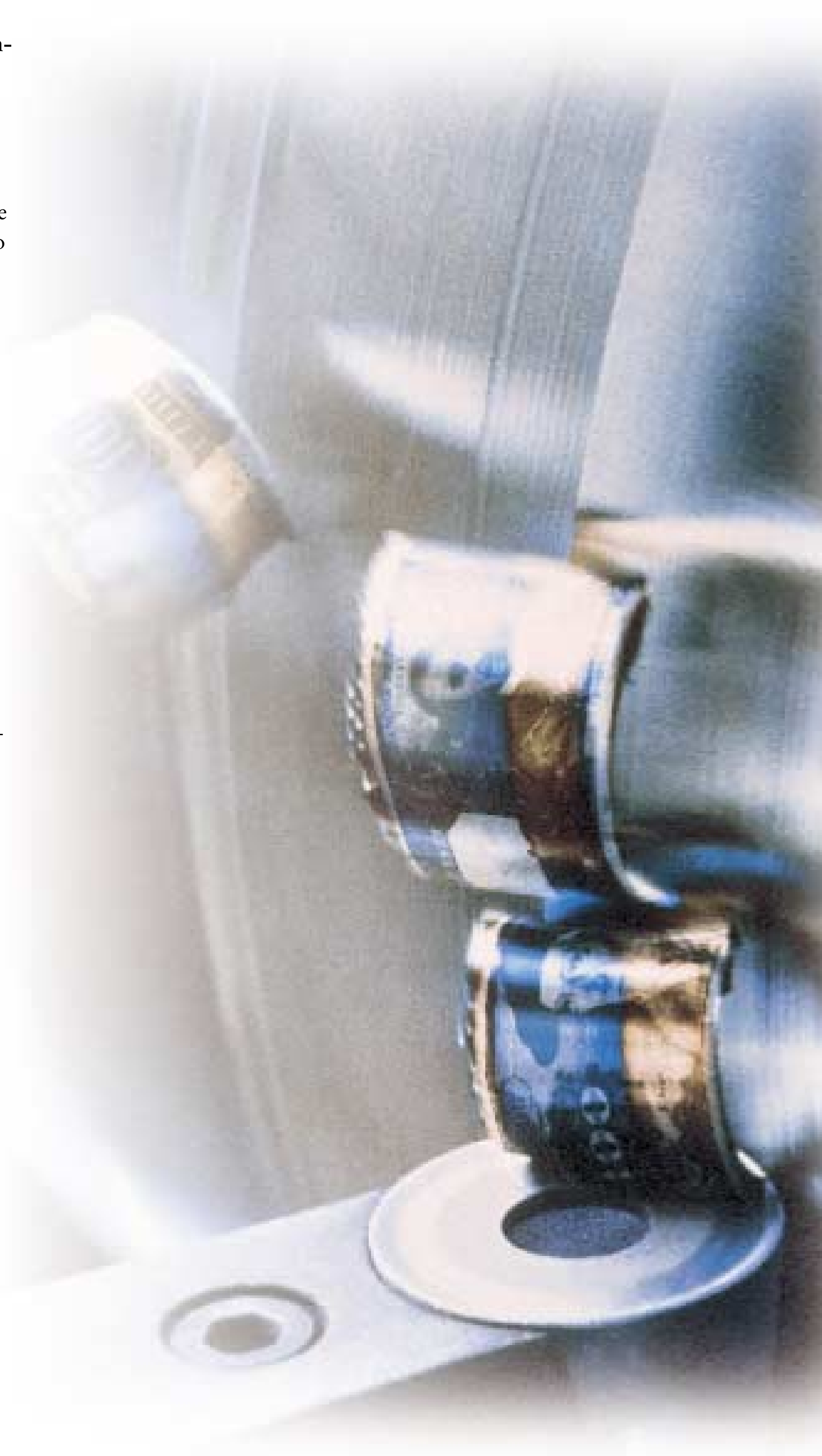
HEAVY MACHINING

Heavy machining

Coromant's T-Max P system is mainly used for external turning operations, from roughing to finishing. The total inserts programme is presented in the General Turning chapter where also these big size inserts are included.

T-Max P inserts comply with ISO standards and have a negative basic shape which gives them very strong cutting edges. We also offer a positive round insert RCMT to be used in our T-Max P holders.

To effectively meet the requirements in costly heavy operations, use T-Max P inserts in rigid Coromant Capto and shank holders.



Sandvik engineered inserts

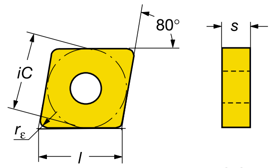
In addition to our extensive standard programme we can also offer a wide range of engineered inserts.

These inserts are not available from stock and have to be quoted for price and delivery. Delivery time is about 4 to 6 weeks after order.

For quotation please contact your Sandvik Coromant representative.

Negative inserts - T-MAX P

Rhombic 80°



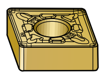
For dimensions, see code key on page A 10.

Coromant grades

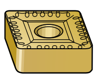
For ISO application areas, see bottom of the page.
For grade descriptions, see chapter K.

GC = Coated carbide (ISO = HC)
– = Uncoated cemented carbide (ISO = HW)

ROUGHING



PR
P-Line
For light roughing of steel.

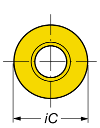


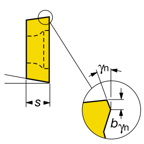
HR
First choice for heavy roughing.
Single sided insert.

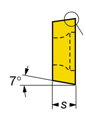
ISO	P			M					K				
	GC	GC	GC	GC	GC	GC	GC	GC	GC	GC	GC	–	
	4015	4025	4035	1025	2015	2025	2035	235	3005	3015	3025	H13A	
CNMG 25 09 24-PR	☆	★	☆										
CNMM 25 09 24-MR	☆	★	☆		☆	★	☆						First choice for roughing of stainless steel. Single sided insert.
25 09 24-MR	☆	★	☆		☆	★	☆						
CNMM 25 09 24-HR	☆	☆	★										
25 09 32-HR	☆	☆	★										
	P15	P25	P35	M15	M15	M25	M35	M35	K10	K10	K20	K20	

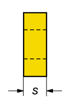
Negative inserts - T-MAX P

Round **RCMT** **RCMX** **RNMG**









ISO

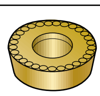
For dimensions, see code key on page A 10.

Coromant grades

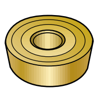
For ISO application areas, see bottom of the page.
For grade descriptions, see chapter K.

GC = Coated carbide (ISO = HC)
– = Uncoated cemented carbide (ISO = HW)

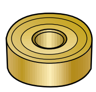
ROUGHING



Positive
Round insert for medium machining.



Positive
For finishing to roughing.
Single sided.



For finishing to roughing.

ISO	P			M					K				N	
	GC	GC	GC	GC	GC	GC	GC	GC	GC	GC	GC	–	–	
	4015	4025	4035	1025	2015	2025	2035	235	3005	3015	3025	H13A	H13A	
RCMT 25 07 M0[2)]	☆	★	☆					★				★	★	
32 09 M0[2)]	☆	★	☆					★				★	★	
RCMX 25 07 00	☆	★	☆									★	★	
32 09 00	☆	★	☆									★	★	
RNMG 25 09 00		★	☆											
	P15	P25	P35	M15	M15	M25	M35	M35	K10	K10	K20	K20	N20	

Ordering example: 10 pieces CNMG 25 09 24-PR 4025

★ = First choice

Tool holders A 96-A 97
Cutting data v_c F 9
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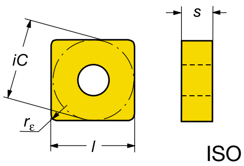
SANDVIK Coromant

Negative inserts - T-MAX P

Square



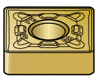
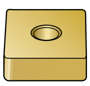
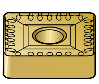
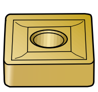
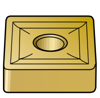
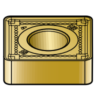
For dimensions, see code key on page A 10.

Coromant grades

For ISO application areas, see bottom of the page.
For grade descriptions, see chapter K.

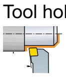
GC = Coated carbide (ISO = HC)
– = Uncoated cemented carbide (ISO = HW)

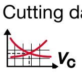
ROUGHING

Insert	ISO	Code	P GC 5015	P GC 4015	P GC 4025	P GC 4035	M GC 1025	M GC 2015	M GC 2025	M GC 2035	M GC 235	K GC 3005	K GC 3015	K GC 3025	K – H13A
 **PR** **P-Line** For light roughing of steel.	SNMG	**25** 07 16-PR		☆	★	☆									
		25 07 24-PR		☆	★	☆									
		25 09 24-PR		☆	★	☆									
 **KR** First choice for cast iron roughing.	SNMA	**25** 07 24-KR										☆	★	☆	
 **HR** First choice for heavy roughing. Single sided insert.	SNMM	**25** 07 24-HR		☆	☆	★					★				
		25 07 32-HR		☆	☆	★									
		25 09 24-HR		☆	☆	★					★				
		25 09 32-HR		☆	☆	★									
 **-31** For heavy roughing. Single sided insert.	SNMM	**25** 07 24-31			★										
		25 07 32-31			★										
 For heavy duty machining. Single sided insert.	SNMM	**25** 07 16				★									
		25 07 24			★	☆							★		
 **-MR** First choice for roughing of stainless steel. Single sided	SNMM	**25** 07 24-MR		☆	★	☆		☆	★	☆					
		25 07 32-MR		☆	★	☆		☆	★	☆					
		25 09 24-MR		☆	★	☆		☆	★	☆					
		25 09 32-MR		☆	★	☆		☆	★	☆					
			P05	P15	P25	P35	M15	M15	M25	M35	M35	K10	K10	K20	K20

Ordering example: 10 pieces SNMG 25 07 16-PR 4025

★ = First choice

Tool holders

A 96-A 97

Cutting data

F 9

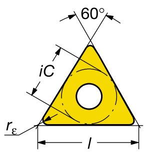
Technical information

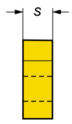
A 233

SANDVIK Coromant

Negative inserts - T-MAX P

Triangular





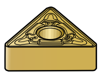
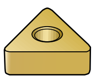
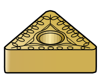
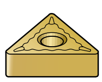
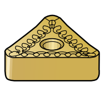
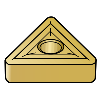
ISO

For dimensions, see code key on page A 10.

Coromant grades

For ISO application areas, see bottom of the page.
For grade descriptions, see chapter K.

GC = Coated carbide (ISO = HC)
– = Uncoated cemented carbide (ISO = HW)

ROUGHING			P				M					K				
			GC	GC	GC	GC	GC	GC	GC	GC	GC	GC	GC	GC	–	
	ISO		5015	4015	4025	4035	1025	2015	2025	2035	235	3005	3015	3025	H13A	
 **PR** **P-Line** For light roughing of steel.	TNMG	27 06 08-PR		☆	★	☆										
		27 06 12-PR		☆	★	☆										
		27 06 16-PR		☆	★	☆										
		33 07 16-PR		☆	★	☆										
		33 09 24-PR		☆	★	☆										
	TNMM	27 06 12-MR		☆	★	☆		☆	★	☆						First choice for roughing of stainless steel. Single sided insert.
		27 06 16-MR		☆	★	☆		☆	★	☆						
		27 06 24-MR		☆	★	☆		☆	★	☆						
 **KR** **K-Line** First choice for cast iron roughing.	TNMA	27 06 16-KR										☆	★	☆		
 **HR** First choice for heavy roughing. Single sided insert.	TNMM	27 06 16-HR		☆	☆	★										
		27 06 24-HR		☆	☆	★										
 **QM** For semifinishing medium to light roughing in mixed production.	TNMG	27 06 08-QM		☆	★						★					
		27 06 12-QM		☆	★						★					
 **QR** Roughing in mixed production. Single sided insert.	TNMM	27 06 12-QR				★					★					
		27 06 16-QR			★						★					
		27 06 24-QR				★										
 Insert for heavy duty machining. Single sided.	TNMG	27 06 08-MR			★	☆					★					Dedicated MR-geometry for roughing
		27 06 12-MR			★	☆					★					
		27 06 16-MR			★	☆					★		★			
	TNMM	27 06 16				★										
		27 06 24			★											
		27 06 32			★											
			P05	P15	P25	P35	M15	M15	M25	M35	M35	K10	K10	K20	K20	

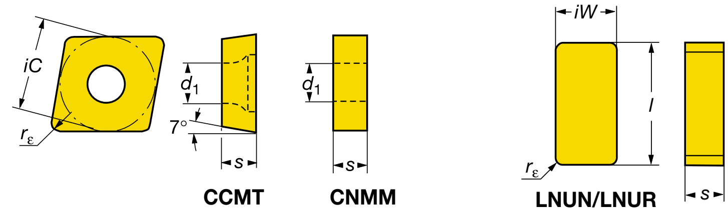
Ordering example: 10 pieces TNMG 27 06 08-PR 4025

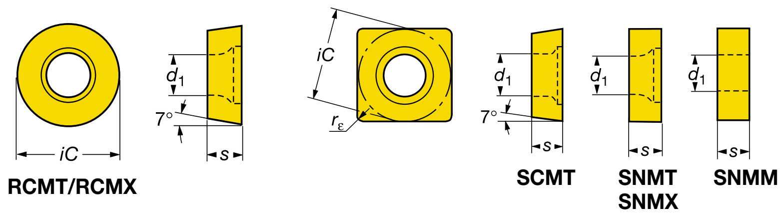
★ = First choice

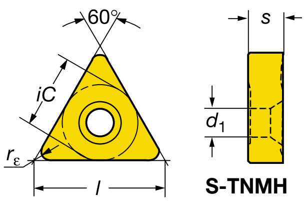
Tool holders A 96-A 97 | Cutting data F 9 | Technical information A 233

SANDVIK Coromant

Engineered inserts







Code key
(ISO or Coromant code)

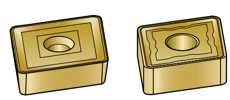
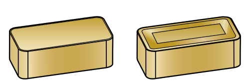
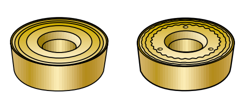
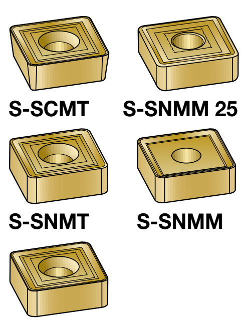
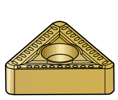
Corresponds to existing standard geometry

S — SNMM 25 09 24 — MM / — R1

Engineered inserts

F = Finishing
M = Medium
R = Roughing

Chipbreaker version

Heavy machining		Dimensions, mm						Coromant grades														
								P					M					K				
		iC	d_1	l	iW	s	$r_ε$	4015	4025	4035			2015	2025	2035			3005	3015			
Roughing  S-CCMT S-CNMM	**S-CCMT 38 09 32-R1**	38,10	9,12	–	–	9,52	3,16	☆	☆	☆					☆							
	S-CNMM 25 09 24-R1	25,40	9,12	–	–	9,52	2,38	☆	☆				☆	☆								
 S-LNUN S-LNUR	**S-LNUN 38 12 32-R1**	–	–	38,10	19,05	12,70	3,20	☆	☆	☆			☆									
	S-LNUR 38 12 32-R1	–	–	38,10	19,05	12,70	3,20	☆	☆	☆			☆									
 S-RCMT S-RCMX	**S-RCMT 25 07 M0-R1**	25,00	7,60	–	–	7,94			☆				☆	☆				☆				
	S-RCMX 32 09 M0-R1	32,00	9,70	[illegible]	–	9,52		☆	☆										☆			
 S-SCMT S-SNMM 25 07 S-SNMT S-SNMM S-SNMX	**S-SCMT 25 09 24-R1**	25,40	9,12	–	–	9,52	2,38	☆	☆				☆	☆								
	S-SCMT 38 09 32-R1	38,10	9,12	–	–	9,52	3,16	☆	☆	☆				☆	☆							
	S-SNMM 25 07 24-R1	25,40	9,12	–	–	7,94	2,38	☆	☆	☆									☆			
	S-SNMT 25 09 24-R1	25,40	9,12	–	–	9,52	2,38	☆	☆				☆		☆							
	S-SNMM 25 09 24-R1	25,40	9,12	–	–	9,52	2,38	☆	☆	☆					☆							
	S-SNMM 25 09 24-R2	25,40	9,12	–	–	9,52	2,38	☆	☆	☆					☆							
	S-SNMM 25 09 24-R3	25,40	9,12	–	–	9,52	2,38	☆	☆	☆					☆							
	S-SNMX 32 09 24-R1	31,75	8,75	–	–	9,52	2,38	☆	☆	☆					☆							
 S-TNMH	**S-TNMH 44 11 32-HR**	25,40	9,19	43,99	–	11,13	3,18	☆	☆	☆			☆		☆				☆			

TO BE QUOTED

To order, please contact your Sandvik representative.

Nominal cutting speed and feed values

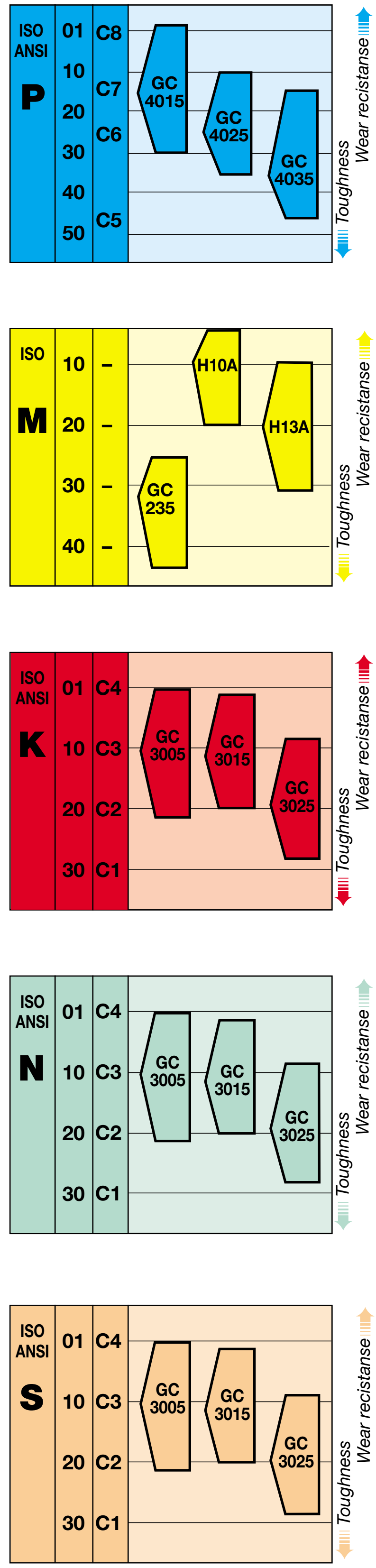
ISO	CMC No.	Material	Specific cutting force k_c 0,4	Hardness Brinell HB	Feed f_n, mm/r 0,7 — 1,8 Cutting speed v_c, m/min
P		**Non-alloy carbon steel**			
	01.1	C=0,15%	1500	125	120 — 30
	01.2	C=0,35%	1600	150	
	01.4	C=0,70%	1700	180–250	
		Alloy steel			
	02.1	Annealed	1600	125–200	120 — 30
	02.2	Hardened and tempered	1800	200–275	
	02.2	Hardened and tempered	2100	220–325	
	02.2	Hardened and tempered	2250	325–450	
		Steel castings			
	06.1	Non-alloy	1350	150	120 — 30
	06.2	Low-alloy	1550	150–250	
	06.3	High-alloy	1800	160–200	

ISO	CMC No.	Material	Specific cutting force k_c 0,4	Hardness Brinell HB	Feed f_n, mm/r 0,6 – 1,5 Cutting speed v_c, m/min
M		**Stainless steel**			
	05.11	Bars, forged, non-hardened	1800	150–270	100 — 15
	05.21	Bars, forged austenitic	1950	150–220	
	15.11/15.12	Cast ferritic/martensitic	1600	200	

ISO	CMC No.	Material	Specific cutting force k_c 0,4	Hardness Brinell HB	Feed f_n, mm/r 0,5 – 2,0 Cutting speed v_c, m/min
K	04	**Extra hard steel**[1)2)3)]	3400	*59 HRC*	50 — 15
	10	**Chilled cast iron**[2)]	2050	400	
		Malleable cast iron			
	07.1	Ferritic	850	110–145	100 — 50
	07.2	Pearlitic	1750	200–250	
		Grey cast iron			
	08.1	Low tensile	600	180	100 — 50
	08.2	High tensile	1150	260	
		Nodular SG iron			
	09.1	Ferritic	850	160	100 — 50
	09.2	Pearlitic	1400	250	
N		**Aluminium alloys**			
	30.11	Wrought or wrought and coldworked, non-aging	500	60	100 — 50
	30.21	Cast non-aging	900	90	
S	20	**Heat resistant alloys**			
	23	**Titanium alloys**			

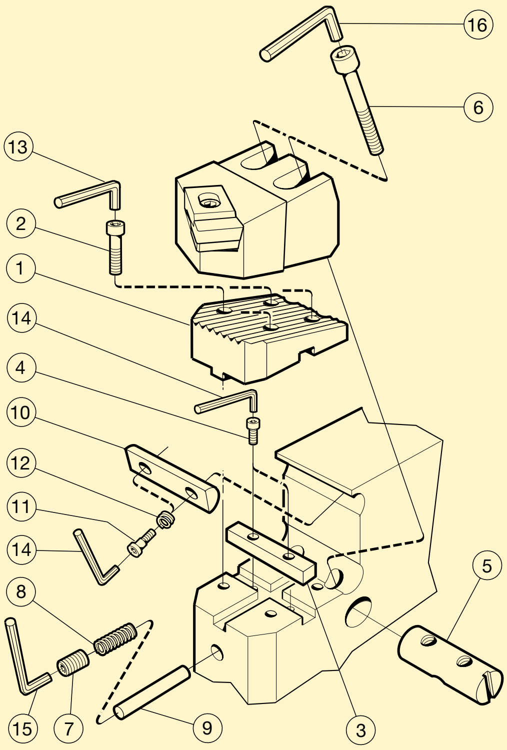
1) Negative rake should be used.
2) 75° entering angle and feed rate of 0,5–1 mm/r may often be used.
3) Negative primary land may be necessary.

Insert grades:



F

Tools with cassette for HD turning

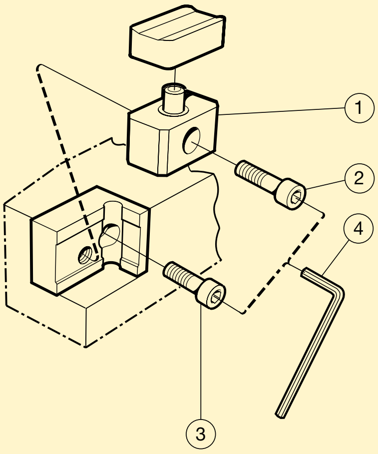


Cassette size	Standard parts Delivered with the tool					
	1 Angle plate	2 Screw	3 Wedge	4 Screw	5 Nut	6 Screw
KA40 KA80 KA120	150.22-830 150.22-831 150.22-832	3212 010-412	150.22-835 150.22-836 150.22-837	3212 010-257	150.22-864 150.22-865 150.22-866	150.22-867-1

Cassette size	7 Screw	8 Spring	9 Pin	10 Stop	11 Screw	12 Spring
KA40 KA80 KA120	3214 010-560	150.22-870	3111 020-725	150.22-840 150.22-841 150.22-842	430.21-820	430.21-821

Cassette size	13 Key (mm)	14 Key (mm)	15 Key (mm)	16 Key (mm)
KA40 KA80 KA120	3021 010-060 (6,0)	174.1-864 (3,0)	3021 010-080 (8,0)	3021 010-140 (14,0)

HD tools with T-MAX P clamp block R/L 175.33



	Standard parts Delivered with the tool				
	1 Shim with pin (R)	(L)	2 Screw	3 Screw	4 Key (mm)
38	5323 020-011	5323 020-012	3212 010-361	3212 010-359	3021 010-050 (5,0)

Ordering example: 10 pieces 5323 020-011

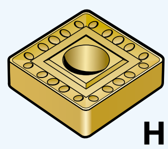
F

SANDVIK Coromant

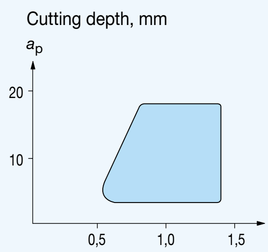
Basic insert geometries for roughing operations

Single sided inserts for roughing

P M



HR

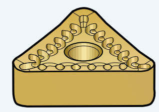


Application area:
SNMM 250924-HR

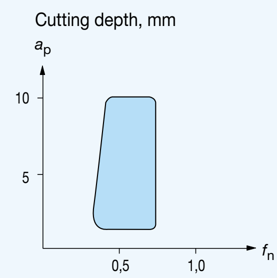
a_p = 3–18 mm
f_n = 0,5–1,4 mm/r

Single sided inserts for roughing

P M



QR

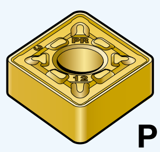


Application area:
TNMM 270612-QR

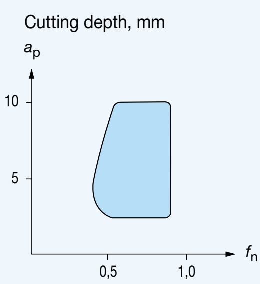
a_p = 1,5–10 mm
f_n = 0,3–0,7 mm/r

Double sided inserts for light roughing

P



PR

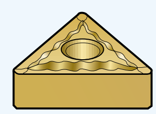


Application area:
SNMG 250924-PR

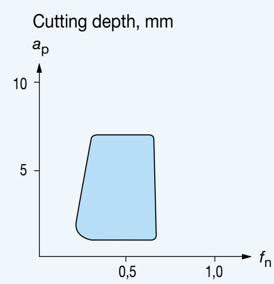
a_p = 2,5–10 mm
f_n = 0,4–0,9 mm/r

Double sided inserts for semi-finishing and medium machining

P M



QM

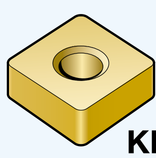


Application area:
TNMG 270612-QM

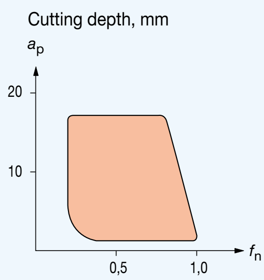
a_p = 1–7 mm
f_n = 0,2–0,65 mm/r

Double sided inserts for roughing in cast iron

K



KR

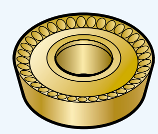


Application area:
SNMA 250724-KR

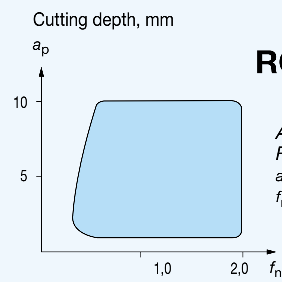
a_p = 1–17 mm
f_n = 0,2–1,0 mm/r

Positive round inserts for profiling

P M K N S



RCMT/RCMX



Application area:
RCMT 2507M0

a_p = 1–10 mm
f_n = 0,4–2,0 mm/r

F

Bar peeling

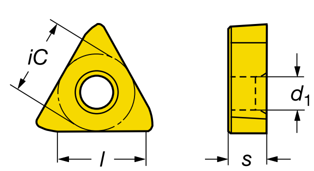
Bar peeling is a method which is used to remove oxide scale, mill scale, surface cracks, etc. from hot-rolled and forged blanks. The size of blank can vary from 4 mm to over 400 mm in diameter. Bar peeling is also applied to thick walled tubes.

The most common materials which are peeled are carbon steel, spring steel and stainless steels. Bar peeling is also applied to other materials, such as high-temperature steel, titanium, aluminium and uranium.

Application areas vary, but bar peeled blanks are often used as an intermediate stage in the production of products which are to be processed further. Examples of these are extrusion blanks for tube manufacturing and axle components for the automobile industry.

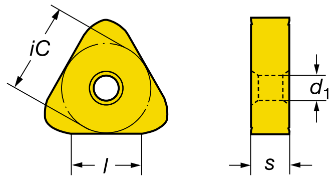
Compared with conventional turning, bar peeling is a method of machining which provides high productivity and low production costs due to the shorter throughput times. The surface quality and dimensional tolerances are also high, which in turn leads to less machining at succeeding stages.

Single sided



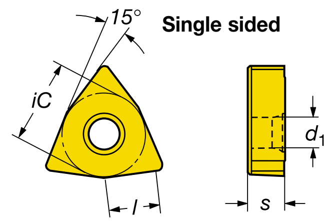
TNMX 11 06-2
TNMX 24 07-1
TNMT 330931-PF
TNMX 330932-PF
TNMX 330931-MF

Double sided



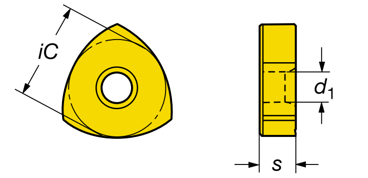
TNMX 491051-MF

Single sided



WNMT 150931-PM
WNMX 150931-MM

Single sided



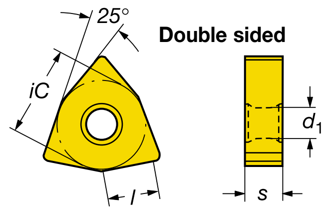
TNMT 440901-PR
TNMX 440901-MR

Finishing and medium inserts have support chamfer, for example:

3 = 3° and 5 = 5°.

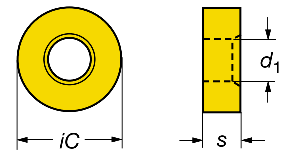
WNMX15 09 31-MM – 31: *Chipbreaker version*; 3° angle of support chamfer.

Double sided



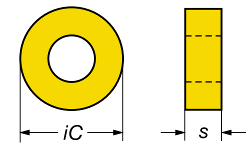
WNMX 211251-MM
TNMX 15 09-2

Single sided



RNMX 381200-MR
RNMX 5018M0-MR

Double sided



190.1- 38 12 00
RNMG 25 09 00

Basic geometries

Coromant grades
For grade descriptions, see chapter K.
GC = Coated carbide (ISO = HC)

			Ordering code	iC	d_1	l	s	Max a_p	P GC 4015	P GC 4025	P GC 4035	M GC 2015	M GC 2025	M GC 2035	M GC 2135	M GC 235	K GC 3005	K GC 3015
FINISHING		11	TNMX 11 06-2	15,875	6,335	8,0	6,35	2,0		☆							☆	
		24	TNMX 24 07-1	19,05	7,93	22,0	7,94	1,2		☆							☆	
	PF	33	TNMT 33 09 31-PF	19,05	7,93	21,0	9,52	1,3	☆	☆							☆	
	PF	33	TNMX 33 09 32-PF	19,05	7,93	21,0	9,52	1,3		☆			☆				☆	
	MF		33 09 31-MF	19,05	7,93	21,0	9,52	1,3				☆	☆		☆			
	MF	49	TNMX 49 10 51-MF	28,575	7,93	21,0	10,0	2,5		☆		☆	☆					
MEDIUM	PM	15	WNMT15 09 31-PM	22,225	7,93	13,0	9,52	3,0	☆	☆	☆						☆	
	MM	15	WNMX15 09 31-MM	22,225	7,93	13,0	9,52	3,0				☆	☆	☆	☆			
		15	TNMX 15 09-2[1)2)]	22,225	7,93	13,0	9,52	3,0	☆	☆		☆	☆				☆	
	MM	21	WNMX 21 12 51-MM	31,75	9,12	15,0	12,7	5,0		☆	☆	☆	☆	☆	☆			
ROUGHING	MR	44	TNMX 44 09 01-MR	25,4	12,7	-	9,52	5,0					☆		☆			
	PR	44	TNMT 44 09 01-PR	25,4	7,93	-	9,52	5,0		☆								
	MR	38	RNMX 38 12 00-MR	38,1	12,8	-	12,0	8,0			☆		☆	☆	☆			
		50	RNMX 50 18 M0-MR	50,8	12,8	-	18,0	12,0					☆	☆	☆			
		38	190.1- 38 12 00	38,1	12,7	-	12,7	8,0					☆			☆		
		25	RNMG 25 09 00	25,4	9,119	-	9,55	25,0		☆	☆							☆

1) Now with support chamfer eliminating vibrations giving increased tool life.
2) Double sided insert, can be used in the same tip seat as WNMT(X)-15.

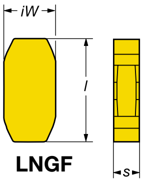
Ordering example: 10 pieces TNMX 11 06-2 4025

★ = First choice

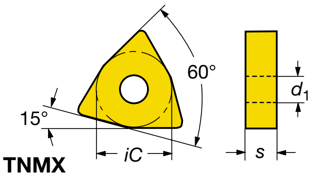
Tool holders F 15 | Cutting data V_c F 19

F

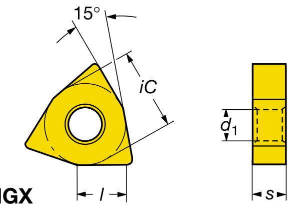
Engineered inserts



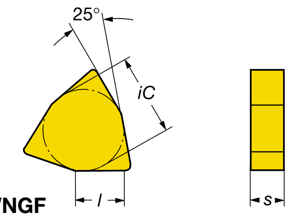
LNGF



TNMX



WNGX



WNGF

Code key
(ISO or Coromant code)

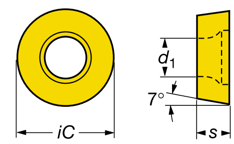
Corresponds to existing standard geometry

S — **LNGF 30 08 51** → — **MM** / — **F1**

Engineered inserts

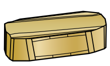
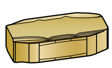
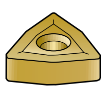
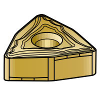
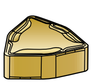
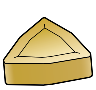
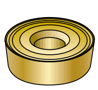
F = Finishing
M = Medium
R = Roughing

Chipbreaker version



RCMT

Bar peeling — **Coromant grades**

		Ordering code	iC	d_1	l	iW	s	Max a_p	P 4015	P 4025	P 4035	P 4040	M 2015	M 2025	M 235	M 2135	K 3005	K 3015
FINISHING	 S-LNGF 30	**S-LNGF 30 08 51-F1**	–	–	30,5	12,0	8,0	1,3		☆			☆	☆			☆	
		S-LNGF 40 10 51-F1	–	–	40,0	20,0	10,0	2,5		☆			☆	☆				
		S-LNGF 40 12 51-F1	–	–	40,0	20,0	12,0	2,5		☆			☆	☆			☆	
	 S-LNGF 40	**S-TNMX 49 10 61-MF**	28,575	7,93	21,0	–	10,0	2,5	☆									
		TNMX 15 09-2	22,225	7,93	13,0	–	9,52	3,0								☆		
		TNMX 15 09-2 MOD	22,225	7,93	13,0	–	9,52	3,0							☆			
		S-TNMX 33 09 31-F1	19,05	7,93	21,0	–	9,52	1,3		☆	☆		☆				☆	
	 S-TNMX	**S-TNMX 33 09 31-F2**	19,05	7,93	21,0	–	9,52	1,3		☆	☆		☆				☆	
MEDIUM		**S-TNMX 06 03 1**1)	9,525	3,81	5,0	–	3,18	1,3		☆								
	 S-WNGX	**S-WNGX 15 09 31-MM**	22,225	7,93	13	–	9,525	3,0		☆			☆	☆				
		S-WNGX 15 09 31-M1	22,225	7,93	13	–	9,525	3,0		☆			☆	☆			☆	
	 S-WNGF	**S-WNGF 21 13 51-MM**	31,75	–	15	–	13,0	5,0		☆			☆	☆			☆	
		S-WNGF 21 13 51-M1	31,75	–	15	–	13,0	5,0		☆			☆	☆			☆	
	 WNMF	**WNMF 96**	28,58	–	14,78	–	8.885	6,6				☆	☆					☆
ROUGHING	 S-RCMT	**S-RCMT 25 07 M0-R**1)	25,0	7,6	–	–	7,94			☆			☆	☆			☆	
		S-RNMX 38 12 00-MR	38,1	12,8	–	–	12,0	8,0	☆							☆		☆

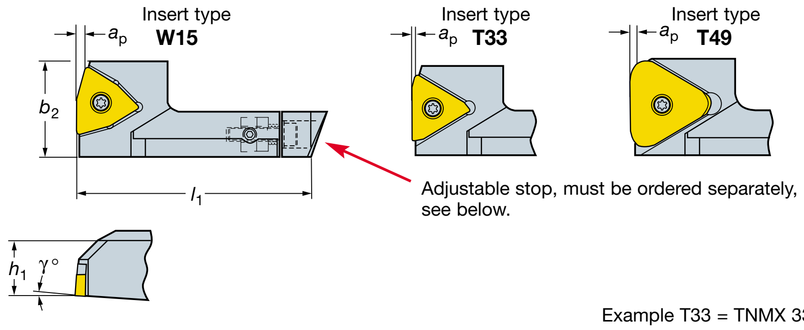
TO BE QUOTED

1) Only for lever clamping

To order, please contact your Sandvik representative.

Precision bar peeling holders

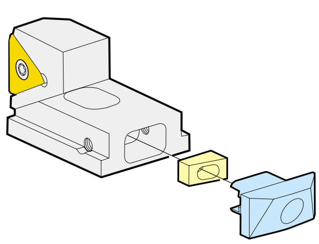
Suitable for Kieserling machine types WDH..75, WDH..80 and 35



Example T33 = TNMX 33 09 31-PF

Ordering code	Bar. diameter, mm	Dimensions, mm				Adjustable stop To be ordered separately		
		h_1	b_2	γ°	Max a_p	Ordering code	l_1	Adjustment range ±0,5 mm
WDH..75								
L190.1-K075J008-W15	8–20	24,5	42,5	3	3	**5331 050-04**	106,6	
	19–32	24,5	42,5	3	3	**-03**	100,6	
-K075J031-W15	31–44	24,5	42,5	3	3	**5331 050-04**	94,6	
	43–56	24,5	42,5	3	3	**-03**	88,6	
-K075J055-W15	55–68	24,5	42,5	3	3	**5331 050-04**	82,6	
	67–80	24,5	42,5	3	3	**-03**	76,6	
L190.1-K075J008-T33	8–20	24,5	40	3	1,3	**5331 050-04**	106,6	
	19–32	24,5	40	3	1,3	**-03**	100,6	
-K075J031-T33	31–44	24,5	40	3	1,3	**5331 050-04**	94,6	
	43–56	24,5	40	3	1,3	**-03**	88,6	
-K075J055-T33	55–68	24,5	40	3	1,3	**5331 050-04**	82,6	
	67–80	24,5	40	3	1,3	**-03**	76,6	
L190.1-K075L008-T49	8–20	24,5	43	5	2,5	**5331 050-04**	106,6	
	19–32	24,5	43	5	2,5	**-03**	100,6	
-K075L031-T49	31–44	24,5	43	5	2,5	**5331 050-04**	94,6	
	43–56	24,5	43	5	2,5	**-03**	88,6	
-K075L055-T49	55–68	24,5	43	5	2,5	**5331 050-04**	82,6	
	67–80	24,5	43	5	2,5	**-03**	76,6	
WDH..80 and 35								
L190.1-K080J008-W15	8–20	34	42,5	3	3	**5331 050-02**	106,6	
	19–32	34	42,5	3	3	**-01**	100,6	
-K080J031-W15	31–44	34	42,5	3	3	**5331 050-02**	94,6	
	43–56	34	42,5	3	3	**-01**	88,6	
-K080J055-W15	55–68	34	42,5	3	3	**5331 050-02**	82,6	
	67–80	34	42,5	3	3	**-01**	76,6	
L190.1-K080J008-T33	8–20	34	40	3	1,3	**5331 050-02**	106,6	
	19–32	34	40	3	1,3	**-01**	100,6	
-K080J031-T33	31–44	34	40	3	1,3	**5331 050-02**	94,6	
	43–56	34	40	3	1,3	**-01**	88,6	
-K080J055-T33	55–68	34	40	3	1,3	**5331 050-02**	82,6	
	67–80	34	40	3	1,3	**-01**	76,6	
L190.1-K080L008-T49	8–20	34	43	5	2,5	**5331 050-02**	106,6	
	19–32	34	43	5	2,5	**-01**	100,6	
-K080L031-T49	31–44	34	43	5	2,5	**5331 050-02**	94,6	
	43–56	34	43	5	2,5	**-01**	88,6	
-K080L055-T49	55–68	34	43	5	2,5	**5331 050-02**	82,6	
	67–80	34	43	5	2,5	**-01**	76,6	

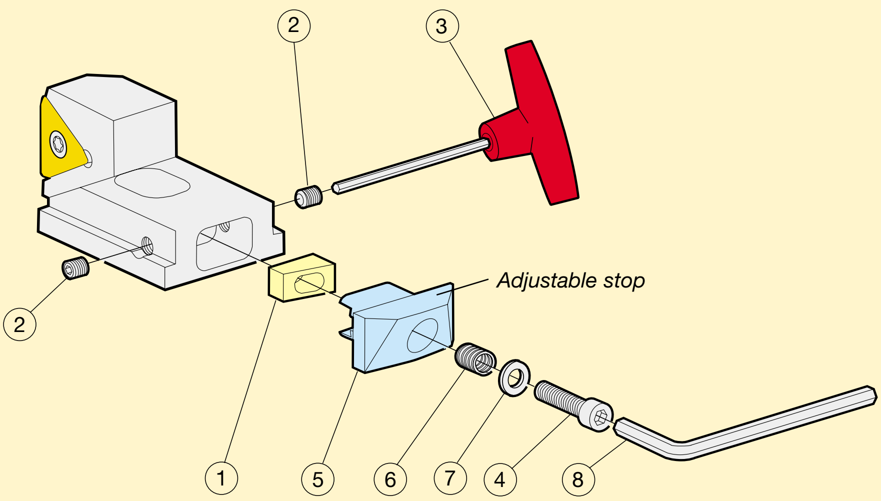
Ordering example: 4 pieces L190.1-K075J008-T15
Ordering example: 4 pieces 5331 050-04

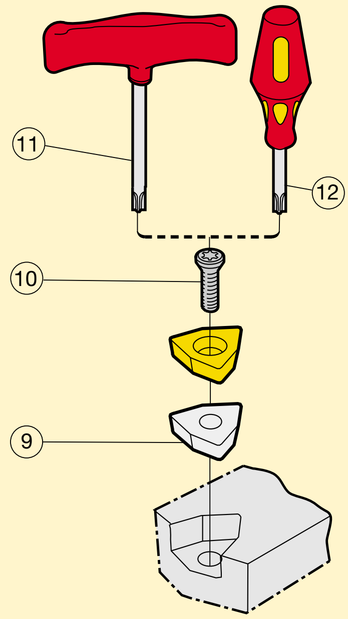


All toolholders can be adjusted to the same length by using an adjustable stop.
1 holder + 2 adjustable stops cover 2 dimension areas in the machine.
Other types of toolholders can be ordered as special.

Inserts F 13 | Spare parts F 16 | Technical information F 19

Spare parts for precision bar peeling holders





	1 Wedge	2 Adjustment screw	3 Key (mm)	4 Locking screw	5 Adjustable stop	6 Spring
L190.1-Kxxxxxxx-W15	5332 055-01	3214 010-355	265.2-817	3212 010-361	5331 050-XX	5561 001-48
L190.1-Kxxxxxxx-T33	5332 055-01	3214 010-355	265.2-817	3212 010-361	5331 050-XX	5561 001-48
L190.1-Kxxxxxxx-T49	5332 055-01	3214 010-355	265.2-817	3212 010-361	5331 050-XX	5561 001-48

	7 Washer	8 Key	9 Shim	10 Inserts screw	11 Key (Torx)	12 Key (Torx)
L190.1-Kxxxxxxx-W15	3411 011-064	3021 010-050	5322 333-03	5513 021-02	5680 048-05 (25IP)	5680 046-07 (25IP)
L190.1-Kxxxxxxx-T33	3411 011-064	3021 010-050	5322 338-02	5513 021-02	5680 048-05 (25IP)	5680 046-07 (25IP)
L190.1-Kxxxxxxx-T49	3411 011-064	3021 010-050	5322 354-01	5513 021-06	5680 048-05 (25IP)	5680 046-07 (25IP)

Ordering example: 10 pieces 5332 055-01

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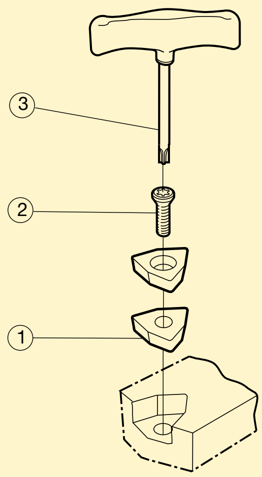
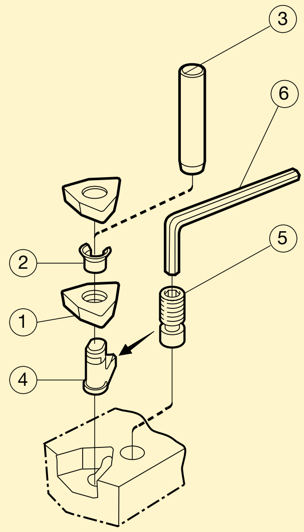
Spare parts for machine related holders



Screw clamping tools



Lever clamping tools

Screw clamping tools

Insert	Standard parts Delivered with the tool 1 Shim	 2 Inserts screw	 3 Key (Torx Plus)
TNMT 330931-PF	5322 338-02	5513 021-02	5680 048-05 (25IP)
330931-MF	5322 338-02	5513 021-02	5680 048-05 (25IP)
491051-MF	5322 354-01	5513 021-06	5680 048-05 (25IP)
WNMT 150931-PM	5322 333-03	5513 021-02	5680 048-05 (25IP)
WNMX 150931-MM	5322 333-03	5513 021-02	5680 048-05 (25IP)
211251-MM	5322 352-01	5513 023-01	3021 010-050 (5,0)
TNMT 440901-PR	5322 345-01	5513 021-02	5680 048-05 (25IP)
TNMX 440901-MR	5322 345-01	5513 021-02	5680 048-05 (25IP)
RNMX 381200-MR	190.1-850	5513 019-01	3021 010-060 (6,0)
5018M0-MR	5322 120-09	3213 010-463	3021 010-060 (6,0)
TNMX 11 06-2	5322 333-01	5513 021-01	5680 043-15 (25IP)
15 09-2	5322 333-03	5513 021-02	5680 043-15 (25IP)
24 07-1	5322 338-01	5513 021-02	5680 043-15 (25IP)
190.1- 38 12 00	190.1-850	3213 010-462	3021 010-060 (6,0)
RNMG 25 09 00	5322 120-08	5513 021-03	5680 043-17 (30IP)

Lever clamping tools

Insert	Standard parts Delivered with the tool 1 Shim	 2 Shim pin	 3 Punch	 4 Lever	 5 Clamping screw	 6 Key (mm)
TNMX 06 03-1	–	–	–	174.3-845-1	174.3-829	174.1-870 (1,98)
	179.3-840	174.3-863	174.3-870	174.3-840M	174.3-820	174.1-863 (2,5)
TNMX 11 06-2	179.3-841	174.3-864	174.3-872	174.3-843M	174.3-821	174.1-864 (3,0)
15 09-2	179.3-842	174.3-866	174.3-872	174.3-842M	174.3-822M	3021 010-040 (4,0)
24 07-1	179.3-843	174.3-866	174.3-872	174.3-842M	174.3-822M	3021 010-040 (4,0)
RNMG 25 09 00	176.3-853M	174.3-865	174.3-874	174.3-844M	174.3-827	5680 043-17 (31IP)

Ordering example: 10 pieces 5322 338-02

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Bar peeling holders

Bar peeling holders can be supplied to special order to suit the machines of individual machine tool manufacturers. And in order to improve handling, adjustable holders and cassettes are also available. In this way the surface finish and dimensional tolerances are improved and higher cutting data can be used. When turning wire (10–40 mm diameter), dimensional tolerances of between h10–h8 are common and the surface finish has an R_a value of 1 µm. It has been found from experience that adjustable holders and cassettes are most suitable for turning bars and wires of less than 150 mm in diameter.

The setting of the adjustable holder is done by displacing an internal wedge in the holder with the aid of two adjustable screws. This enables the holders to be set radial very accurately. It is important that the dimension between holders is as accurate as possible.

This enables the feed speed to be increased while maintaining quality.

Precision is high and a tolerance of ±0.01 mm can be obtained. When the length l_1 has been set (the whole setting area is ±0.5 mm) the adjustable stop is locked in position with the locking screw.

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Examples of machine related holders:

Farmer Norton

Kieserling

Daisho

Hetran

Calow

Bar peeling lathe

When planning to invest in a new bar peeling lathe, it is necessary to take into account the maximum stock removal, the demands that will be made on surface finish and dimensional tolerances, and how much capacity you want to have in reserve in order to be able to increase productivity in the

future.

The following formula for calculating the power output in the machine can be a great asset in determining how many cutting edges the machine can be equipped with.

Cutting depth

Insert geometries are developed for optimal chipbreaking within a specific field of materials and cutting depth interval. When choosing a cutting depth, a rule of thumb is that a cutting depth should be chosen in the centre of the range for which the geometry has been developed. In this way both the most favourable chipbreaking and the most suitable distribution of cutting forces are obtained. When using a roughing insert in combination with a finishing insert, it is recommended that the finishing insert should have a radial cutting depth of 0,2–1,3 mm.

Formula for calculating power:

$$P_c = \frac{(v_c \times a_p \times f_n \times k_{c0,4})}{60\,000} \times \frac{(0,4)^{0,29}}{f_n} \quad \text{(kW)}$$

It has to be taken into account that the cutting depth (ap) is the total radial cutting depth. That is, if a holder contains both a roughing insert and a finishing insert, then the cutting depth of the roughing insert and finishing insert is added together. The feed is calculated in accordance with the surface requirements of the finishing insert, i.e. feed (f_n). The power which is then calculated applies for just one of the machines' holders. If the machine is equipped with four holders, the power output required will be four times greater. By calculating the power output in this way the margin of error will only be 10%.

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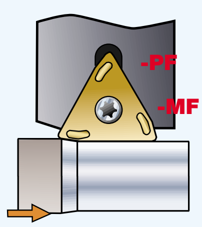
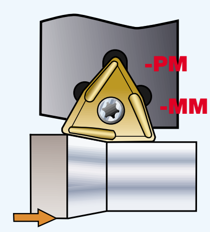
Example of cutting conditions

Max a_p = 1,3 mm
Bar dia. = 25 mm
CMC 01.2
f_n = 25 mm/r
v_c = 125 m/min
➔ P_c = 41 kW



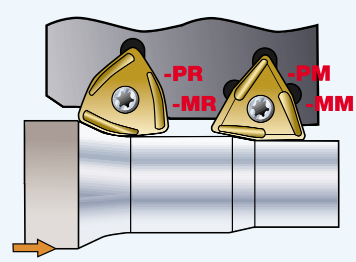
Bar direction

Max a_p = 3 mm
Bar dia. = 80 mm
CMC 02.1
f_n = 15 mm/r
v_c = 125 m/min
➔ P_c = 69 kW



Bar direction

Rec. a_p = 3,5 + 1,5 = 5 mm
Bar dia. = 170 mm
CMC 05.5
f_n = 12 mm/r
v_c = 50 m/min
➔ P_c = 56 kW



Bar direction

Feed

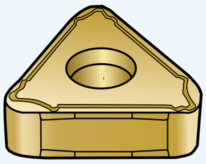
The feed has a direct bearing on productivity. Therefore it is important to know how high a feed the bar peeling lathe can cope with in routine production. If the power is known then, with the help of the known maximum cutting depth, the feed speed can be calculated.

To obtain high quality surface finish to the bar, the finishing insert has a surface generating cutting edge. The clearance side of this edge is ground to form a support chamfer which runs parallel with the surface of the bar and stabilizes the cutting process. A long, surface-generating cutting edge offers a high bar feed which provides increased production and good machining economy.

When a high level of surface finish is required, the feed per revolution (f_n) should not exceed the surface-generating cutting edge of the insert. When a combination of roughing insert and finishing insert is used, it is the finishing insert that governs which feed can be used.

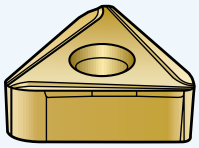
Double sided inserts

Double sided inserts are ground to 3° support chamfer.



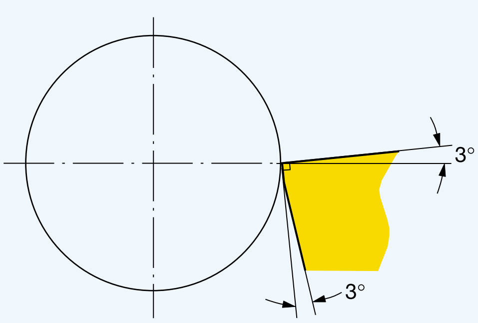
Single sided inserts

A single sided insert has the advantage that the geometry can be optimized to provide the best chipbreaking. In addition, the insert must also be firmly fixed in the tip seat. Single sided inserts, with a flat base, provide stability in the tip seat.



Support chamfer

Support chamfers are ground in two versions, 3° and 5°. The insert is inclined in the holder at the same angle.



Finishing and medium inserts have support chamfer, for example:
0 = 0°, 3 = 3° and 5 = 5°.

WNMX 15 09 31 -MM
Chipbreaker version
3° angle of support chamfer.

Choosing inserts

When choosing an insert for an operation, there are a large number of options to choose from and it is important to take the following points into account to determine which inserts are best suited to the operation: material composition, hardness, size, cutting depth and surface quality of the finished bar.

Material

The material has a considerable effect on the choice of insert geometry and grade.

There are specially developed geometries and grades for carbon steel and stainless steels. Geometries and grades should primarily be chosen according to the respective group of materials, but consideration should also be given to the great variations in material composition. It may, therefore, be necessary to deviate from the recommendations.

Just as the material composition and hardness are related, so are the size and cutting depth. The most frequently worked materials in sizes of less than 150 mm diameter are those in rolled versions. The material can be rolled down close to dimensional tolerances, which means smaller cutting depths than with forgings. Therefore, in these cases, insert geometries are required which can work at small cutting depths and relatively high bar feeds.

Forgings

Forgings are often encountered in materials measuring over 150 mm in diameter. Forgings have a more uneven surface structure, which often entails a larger cutting depth than with rolled materials. Therefore insert geometries are required which can work at large cutting depths and relatively low bar feeds.

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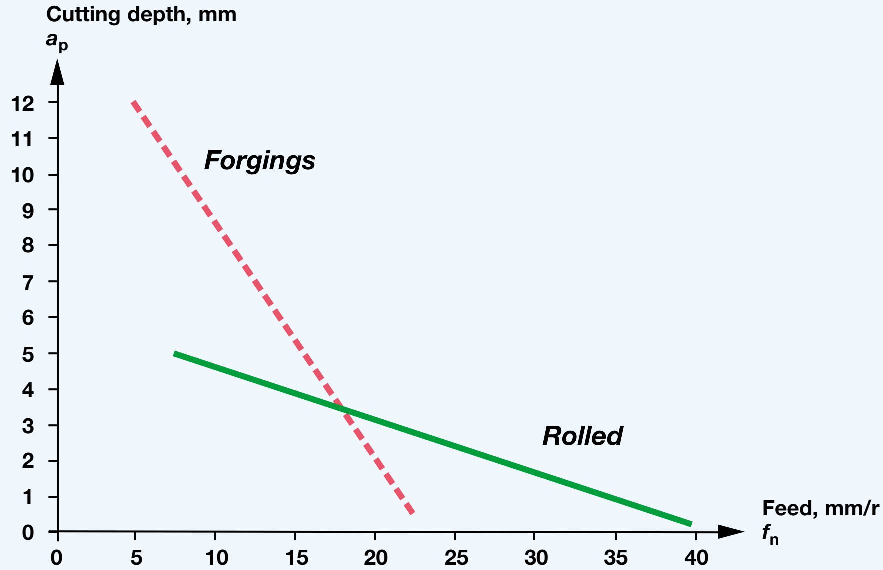


The relationship between cutting depth and feed for forged and rolled materials respectively.

Clamping

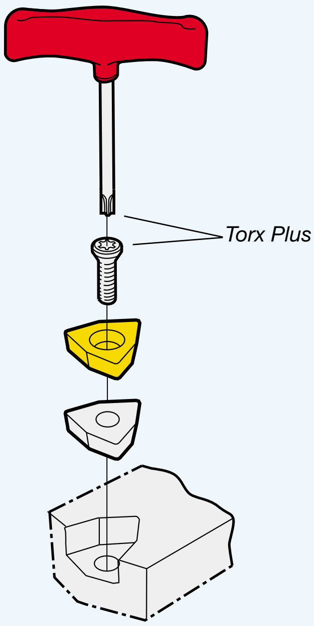
A prerequisite for increasing surface quality is ensuring that the insert is firmly clamped in the holder in a stable and safe manner. This is achieved by screw clamping the insert. Screw clamping involves first drawing the insert against the tip seat and then into the tip seat.

Screw clamping provides:

- Axial and radial clamping
- Few spare parts
- Economic solution
- No problems with chip removal

Other methods of clamping, such as lever clamps or similar, have the advantage that it is easy to index the insert since it is not necessary to unscrew the clamp screw fully to free the insert. However, the disadvantage is that the resulting clamping force is only in one direction, which is far too unstable bearing in mind the cutting forces which arise during bar peeling.

Utilizing screw clamping avoids the problem of chips getting caught on protruding parts such as top clamps or chipbreaking clamps.



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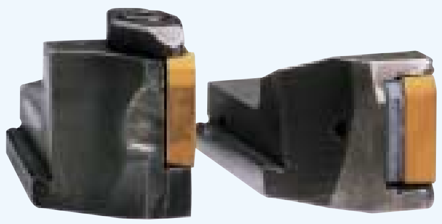
Shims

An important component is the shim on which the insert rests in the tip seat. The shim protects the insert holder against chip wear under the insert which is very common in a bar peeling operation. The shim is also there to ensure that deformation does not occur in the tip seat and to provide protection when there is insert breakage. It also provides protection against indentations caused by a double sided insert geometry.



A shim in the tip seat will protect the insert holder and ensure that deformation does not occur. See the right hand tool.

Turning on the centre line of the machine often provides the best cutting conditions. If the cutting edge lies below the centre there is a risk of vibration. Turning carried out above the centre results in high cutting pressure, a hardened surface and deformation of the insert.

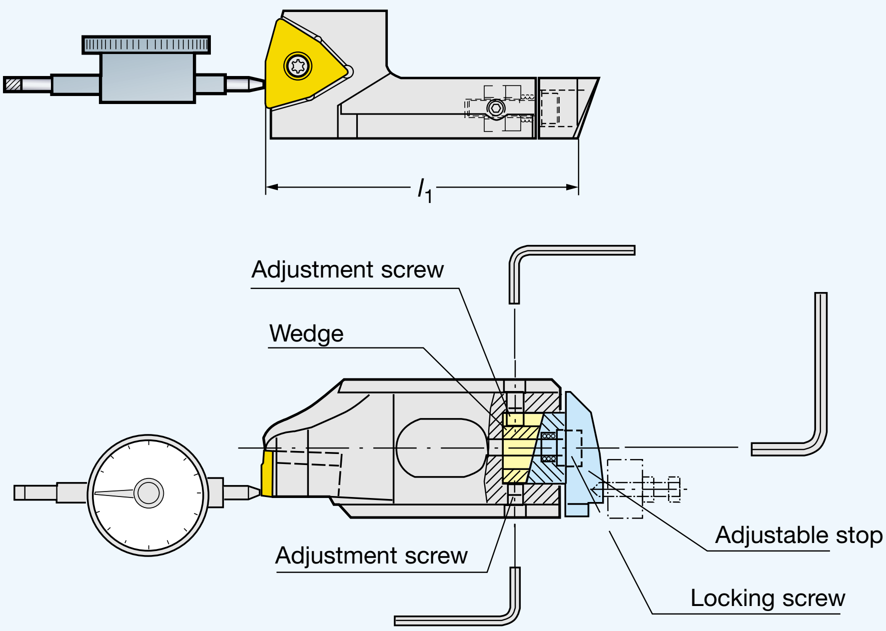
One way to find the centre line of the machine is to try different thicknesses of shim to see where on the insert wear occurs. No wear on the support chamfer, edge chipping or substantial wear on the chipbreaker can mean that you are turning below the centre line. Extensive wear on the support chamfer but no wear on the chipbreaker can mean that you are turning above the centre line.

SANDVIK Coromant

Choosing toolholders

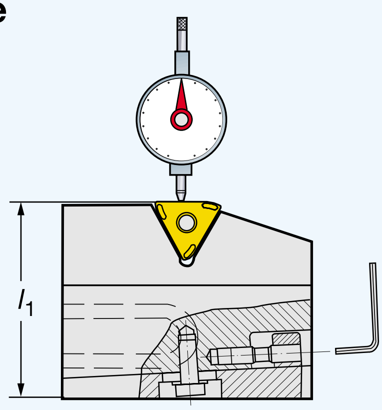
Most bar peeling lathes are different and the toolholders are normally not standardized.

Tool indexing for l_1 measure

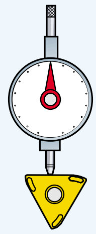


Adjustable standard toolholder for a Kieserling WDH 80 lathe.

Tool indexing for l_1 measure



Adjustable toolholder for a Calow lathe.

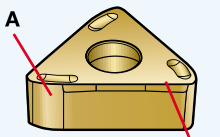


When setting the length, it is important to bear in mind that the tip of the dial indicator must be positioned at the centre of the inserts ground support chamfer. Measuring below the support chamfer, or at some other point in the centre of the insert, means that the reciprocal length between holders can be different.

Corresponding measurement points on the adjustable stop should be the same on each holder.

Basic insert geometries for bar peeling

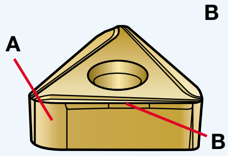
PF — FINISHING



Single sided

TNMT 33 09 31-PF — P K

Cutting depth (a_p) 0,2–1,3 mm
Feed (f_n) 10–40 mm/r
Cutting speed (v_c) 40–200 m/min



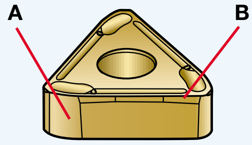
Single sided

TNMX 33 09 32-PF — P M K

Cutting depth (a_p) 0,2–1,3 mm
Feed (f_n) 10–40 mm/r
Cutting speed (v_c) 40–200 m/min

A *Positive clearance in cutting part of the edge.*
B *Negative support chamfer along the support edge eliminates vibration.*

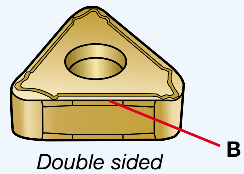
MF — FINISHING



Single sided

TNMX 33 09 31-MF — P M K

Cutting depth (a_p) 0,2–1,3 mm
Feed (f_n) 10–40 mm/r
Cutting speed (v_c) 40–200 m/min



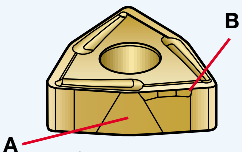
Double sided

TNMX 49 10 51-MF — M

Cutting depth (a_p) 0,3–2,5 mm
Feed (f_n) 10–40 mm/r
Cutting speed (v_c) 40–150 m/min

A *Positive clearance in cutting part of the edge.*
B *Negative support chamfer along the support edge eliminates vibration.*

PM — MEDIUM



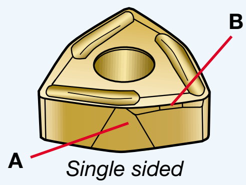
Single sided

WNMT 15 09 31-PM — P M K

Cutting depth (a_p) 0,5–3,0 mm
Feed (f_n) 7–18 mm/r
Cutting speed (v_c) 40–150 m/min

A *Positive clearance in the nose permits high feeds.*
B *Negative support chamfer along the support edge eliminates vibration.*

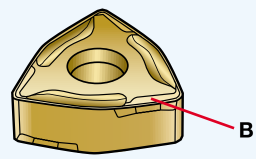
MM — MEDIUM



Single sided

WNMX 15 09 31-MM — P M K

Cutting depth (a_p) 0,5–3,0 mm
Feed (f_n) 7–18 mm/r
Cutting speed (v_c) 40–150 m/min



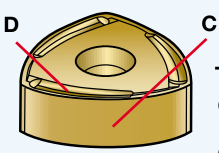
Double sided

WNMX 21 12 51-MM — P M

Cutting depth (a_p) 0,5–5,0 mm
Feed (f_n) 7–18 mm/r
Cutting speed (v_c) 40–150 m/min

A *Positive clearance in the nose permits high feeds.*
B *Negative support chamfer along the support edge eliminates vibration.*

PR — ROUGHING



Single sided

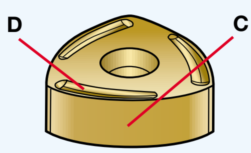
TNMT 44 09 01-PR — P M

Cutting depth (a_p) 0,7–5,0 mm
Feed (f_n) 7–18[1] mm/r
Cutting speed (v_c) 40–120 m/min

C *Polygon shape 25 mm radius.*
D *Chipbreaker width increases with depth of cut.*

[1] *Depending on combination of inserts*

MR — ROUGHING



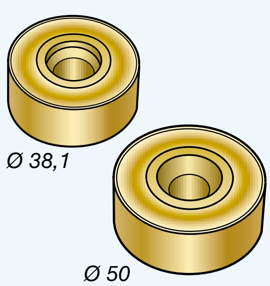
Single sided

TNMX 44 09 01-MR — P M

Cutting depth (a_p) 0,7–5,0 mm
Feed (f_n) 7–18[1] mm/r
Cutting speed (v_c) 40–120 m/min

C *Polygon shape 25 mm radius.*
D *Chipbreaker width increases with depth of cut.*

[1] *Depending on combination of inserts*



RNMX 38 12 00-MR/ 190.1-38 12 00 — P M

Cutting depth (a_p) 1,5–8,0 mm
Feed (f_n) 7–18[1] mm/r
Cutting speed (v_c) 40–120 m/min

RNMX 50 18 MO-MR — P M K

Cutting depth (a_p) 2,0–12,0 mm
Feed (f_n) 7–18[1] mm/r
Cutting speed (v_c) 40–120 m/min

F

Railway wheel re-turning

Sandvik Coromant's tool system for the re-turning of railway wheels consists of holders with replaceable tip seats for tangential mounted inserts. This type of insert withstands the stresses which large cutting depths at high temperatures produce.

When choosing tools and inserts, it is important to bear in mind the type of wheel to be turned, the condition of the predominant part of the worn wheel, as well as the machine stability and power which is available.

It is desirable to be able to choose as large a cutting depth as possible in order to achieve short machining times. This is not always possible.

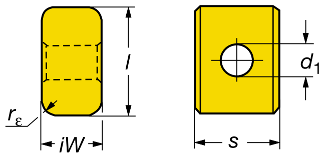
In certain cases the profile can be turned in one single pass. With other machines it may be necessary to divide the machining into several stages in order to produce the right profile and diameter dimensions for the wheel.

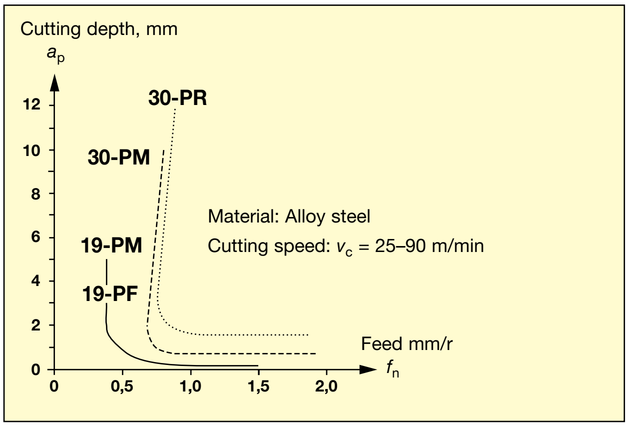
Two machines are used. Underfloor type with friction drives and portal machines with facedrives. Cutting depth (a_p) for underflore machines is 3-5 mm and for portal machines 10-12 mm.

Depending on the type of machining, there are various options of insert geometries and grades.

T-MAX P

Inserts for railway wheel re-turning

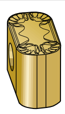
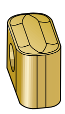
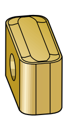




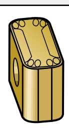
Coromant grades

For grade descriptions, see page chapter K.

GC = Coated carbide (ISO = HC)
– = Uncoated cemented carbide (ISO = HW)

Basic geometries				Ordering code	Dimensions, mm					P			
										GC	GC	GC	–
					l	s	iW	d_1	r_ε	4015	4025	3015	SH
Finishing		PF	19	LNUX 191940-PF	19,05	19,05	10	6,35	4,0	★	☆	☆	☆
Medium		PM	19	LNUX 191940-PM	19,05	19,05	10	6,35	4,0	☆	☆	★	☆
			19	LNMX 191940-PM	19,05	19,05	10	6,35	4,0	★	☆	☆	☆
			30	LNMX 301940-PM	30,00	19,05	12	6,35	4,0	★	☆	☆	☆
Roughing		PR	30	LNUX 301940-PR	30,00	19,05	12	6,35	4,0	☆	☆	★	☆
			30	LNMX 301940-PR	30,00	19,05	12	6,35	4,0	★	☆	☆	☆

Complementary geometries

		Ordering code	l	s	iW	d_1	r_ε	4015	4025	3015	SH
	19	175.32-191940-25	19,05	19,05	10	6,35	4,0		☆	★	☆

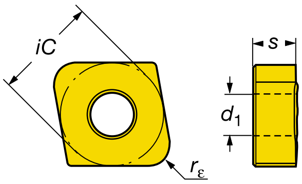
Ordering example: 10 pieces LNUX 191940-PF 4015

★ = First choice

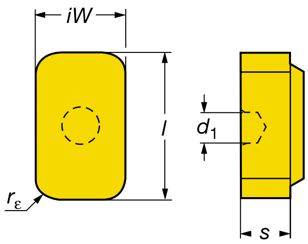
Tool holders F 28 | Cutting data F 30 | Technical information F 30

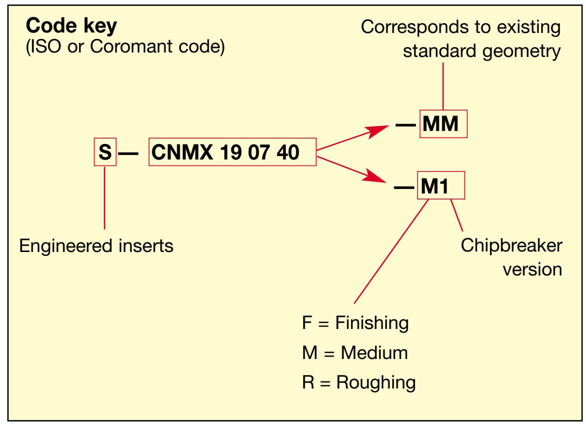
Engineered inserts

CNMX

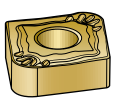
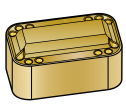


LNUX





Railway wheel re-turning

		Dimensions, mm							Coromant grades					
									P			H		
		iC	d_1	l	iW	s	r_ε	Max a_p	4015	4025		3015		
Medium	**S-CNMX 19 07 40-M1**  **S-CNMX**	19,05	7,93	–	–	7,94	4,0	1,3	☆	☆		☆		
Roughing	**S-LNUX 32 12 48-R1**  **S-LNUX**	–	7,92	31,75	19,05	12,7	4,75	2,5		☆		☆		

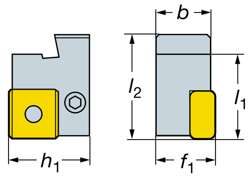
TO BE QUOTED

To order, please contact your Sandvik representative.

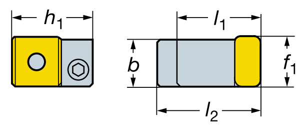
T-MAX P cutting units

Inserts

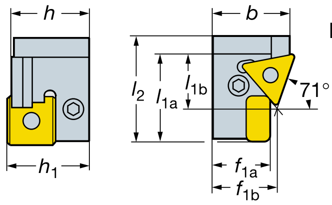
LNUX, LNMX
TNMG
TNMM



R/L175.32-19
R/L175.32-30



R/L177.32-19



R/L175.32-1922

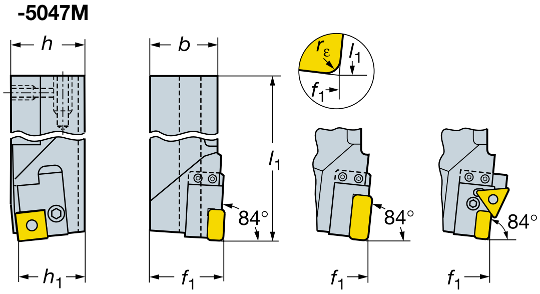
Right hand style shown

		Ordering code	Dimensions, mm h_1	h	b	f_1	l_2	l_1	l_{1a}	l_{1b}	f_1	f_{1a}	f_{1b}	Gauge inserts
19		R/L175.32-3223-19	32	–	22,6	–	42,2	35	–	–	23	–	–	LNM. 19 19 40
30		R/L175.32-3223-30	32	–	22,6	–	42,2	35	–	–	23	–	–	LNM. 19 19 40
19	22	R/L175.32-3223-1922	32	31,4	31,5	–	42,2	–	35	20,5	–	23	25,4	LNM. 19 19 40/ TNM. 22 04 08
19		R/L177.32-3219-19	32	–	18,6	19,1	42,2	35	–	–	–	–	–	SNM. 12 04 12

Toolholders for T-MAX P cutting units R/L 175.32 and R/L 177.32

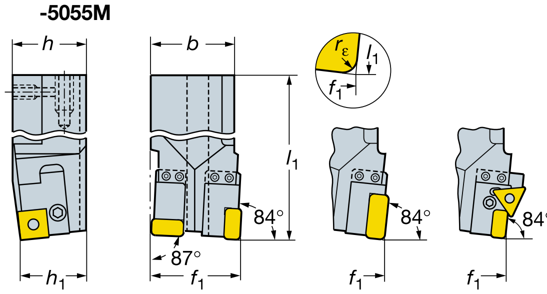
For one cutting unit

-5047M



For two cutting units

-5055M



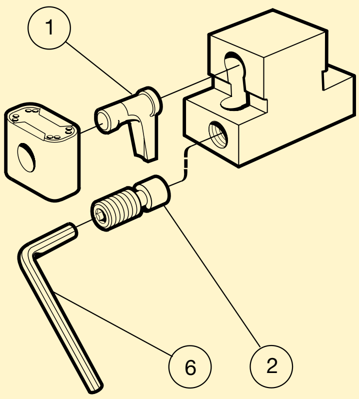
Right hand style shown

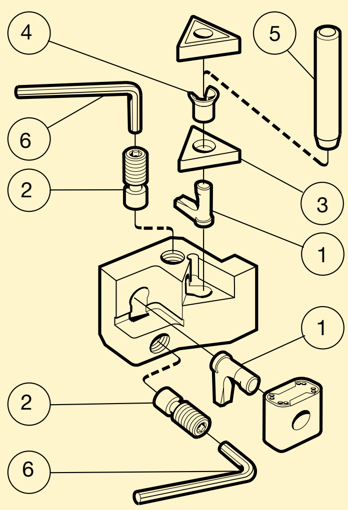
Ordering code	Dimensions, mm h	h_1	b	l_1	f_1	$r_ε$
R/L175.32-5047M	50	44	47	275	44	4,0
R/L175.32-5055M	50	44	55	210	55	4,0

Ordering example: 2 pieces R175.32-3223-19
2 pieces L175.32-3223-19

Inserts A 35-37 A 40-43 F 26
Spare parts F 29
Technical information F 30

Spare parts





T-MAX P cutting units

T-MAX P units

Cutting edge length	Standard parts Delivered with the tool 1 Lever	2 Screw	3 Shim	4 Shim pin	5 Shim pin punch	6 Key (mm)
19 30	174.3-843M	174.3-825	-	-	-	265.2-817 (3,0)
22	174.3-841M	174.3-821	179.3-852M	174.3-861	174.3-871	265.2-817(3,0)

Ordering example: 2 pieces 174.3-843M

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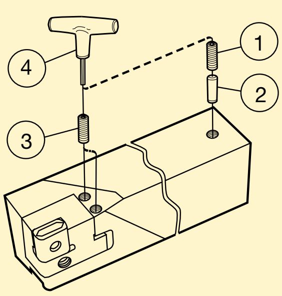
Toolholders for T-MAX P cutting units

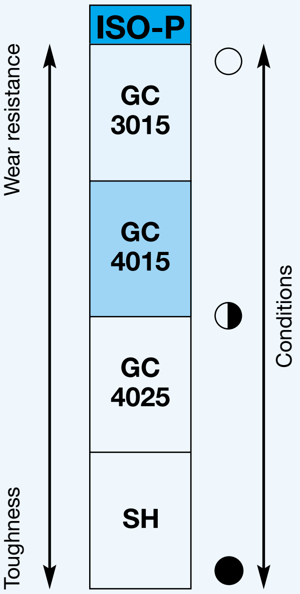


Toolholders

Shank size	Standard parts Delivered with the tool 1 Screw	2 Locking pin	3 Screw	4 Key (mm)
5047M 5055M	3214 010-359	175.32-820	174.32-831	265.2-817 (3,0)

Ordering example: 2 pieces 3214 010-359

Grades



Wheel condition

Various tough wheel conditions require effective grades.

Wheel condition 1: Wheels with less worn out profiles are machined with higher cutting data for maximum productivity. Use the harder grade GC3015.
Wheel condition 2: The majority of worn out wheels with some skid flats, shelled tread or thermal cracks are machined with the overall first choice grade GC4015.
Wheel condition 3: Wheels with heavier damage as well as low speed machines that require a tougher tool shall be machined with grade GC4025.
Wheel condition 4: Badly damaged wheels are machined at low cutting speed. Use the uncoated grade SH.

First choice

GC4015 – The universal grade for railway wheel re-turning is recommended as the first choice for all types of re-turning operations.

The choice of cutting speed is always a combination of the type of grade you choose to work with and the condition of the wheel. However, it is recommended that you choose a lower cutting speed when turning hard wheels with brake plates and similar, plus a higher cutting speed with softer wheels in better condition.

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Cutting data

The chipbreaking performance is dependent on many factors such as material quality, cutting speed and entering angle. The cutting data table only gives a general indication of how and where different geometries can be used.

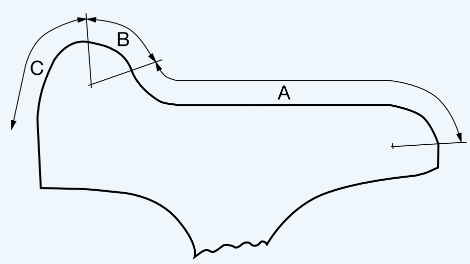
The cutting data shown is recommended for the type of material normally used for railway wheels.

This cutting data is valid for the grades SH, GC4015, GC4025 and GC3015.

When extreme skid flats, shelled tread, or heavy build-up on the tread has occurred, the lower cutting speeds are recommended. The lower cutting speeds (vc1) are also recommended when re-turning wheels with a high carbon content. If any adjustment in the feed rate is necessary, it should be kept to a minimum.

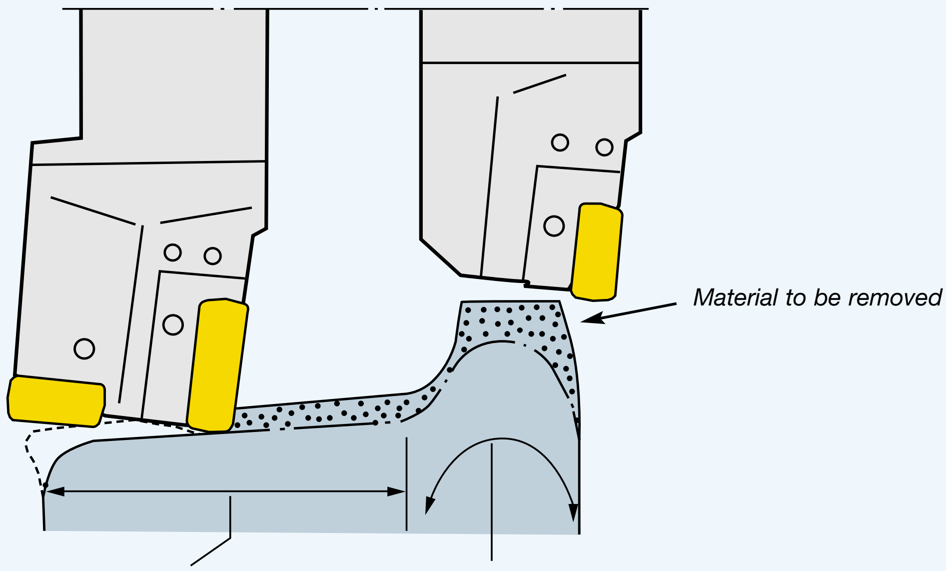
Machine type	**Cutting speed, m/min**		**Feed, mm/r**	
	v_{c1}	v_{c2}	f_n	
Under-floor lathe[1)]	50	90	0,3—1,5	GC4015/ GC4025
Portal lathe	50	90	0,5—1,8	GC4015/ GC4025
—	50	90	0,3—1,5	GC3015
—	50	70	0,5—1,8	SH
Cutting depth (a_p) mm and chipbreaking capacity	-PF 0,3 — 3,0 mm -PM 1,5 — 6,0 mm -PR 2,0 — 12,0 mm			

1) Restricted by power supply and friction drive installed.



The cutting speed recommendations (v_{c1}) in the table are valid when turning the tread (section A of the wheel profile). The flange copying operation will normally be made with the higher cutting speeds (v_{c2}) and feeds given (section B and C of the wheel profile).

Practical tips

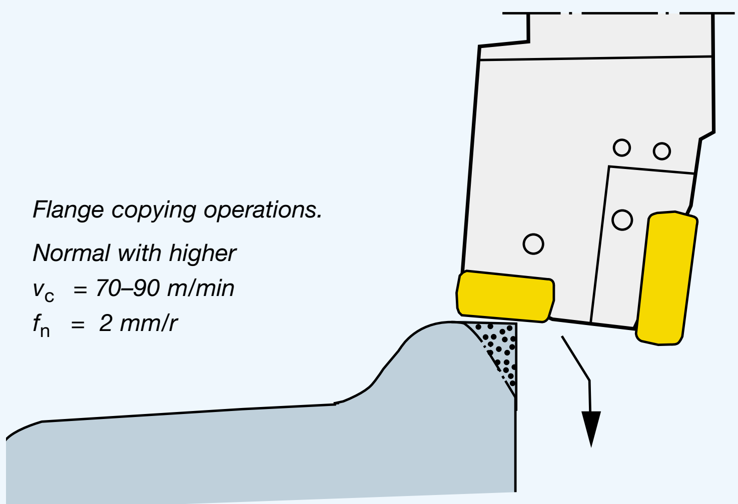


Lower v_c 40 m/min when:

- extreme skid flats
- shelled tread
- high carbon content

Flange copying operations.

Normal with higher
v_c = 70–90 m/min
f_n = 2 mm/r



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