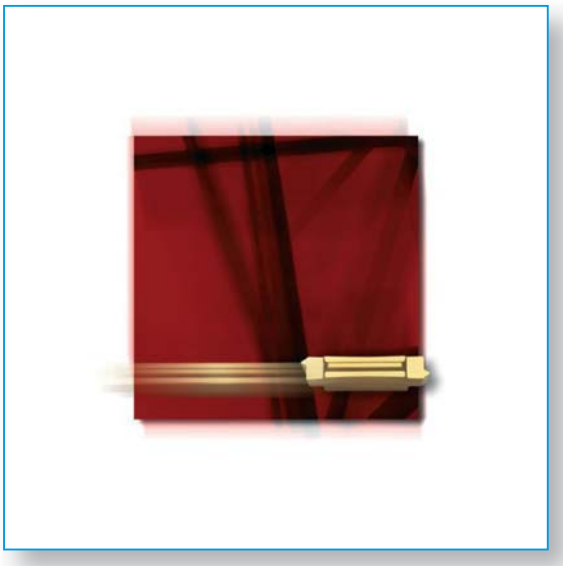
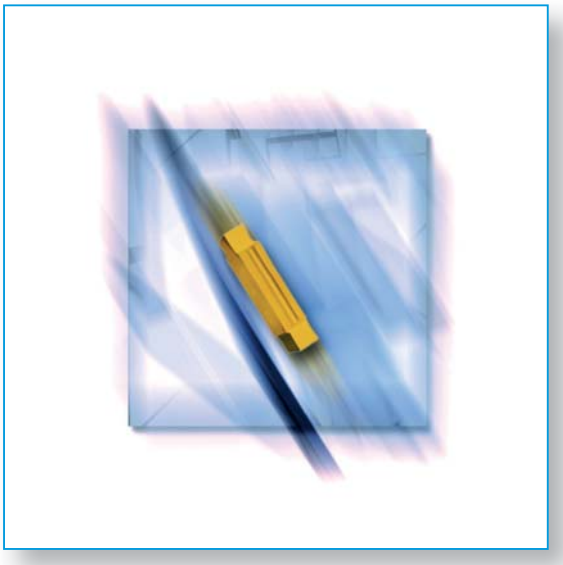
HAFFMAN High Precision Tools

System overview

new!





BUNDESREPUBLIK DEUTSCHLAND

URKUNDE

über die Eintragung der Marke

Nr. 30 2012 029 384

Az.: 30 2012 029 384.0 / 40

HAFFMAN
High Precision Tools

Markeninhaber/in:
D & C Industriebedarf GmbH, 63225 Langen, DE

Tag der Anmeldung: 10.05.2012 **Tag der Eintragung:** 22.08.2012

Die Präsidentin des Deutschen Patent- und Markenamts

Rudloff-Schäffer

Rudloff-Schäffer

DEUTSCHES PATENT- UND MARKENAMT

HAFFMAN

Production site at Zella-Mehlis

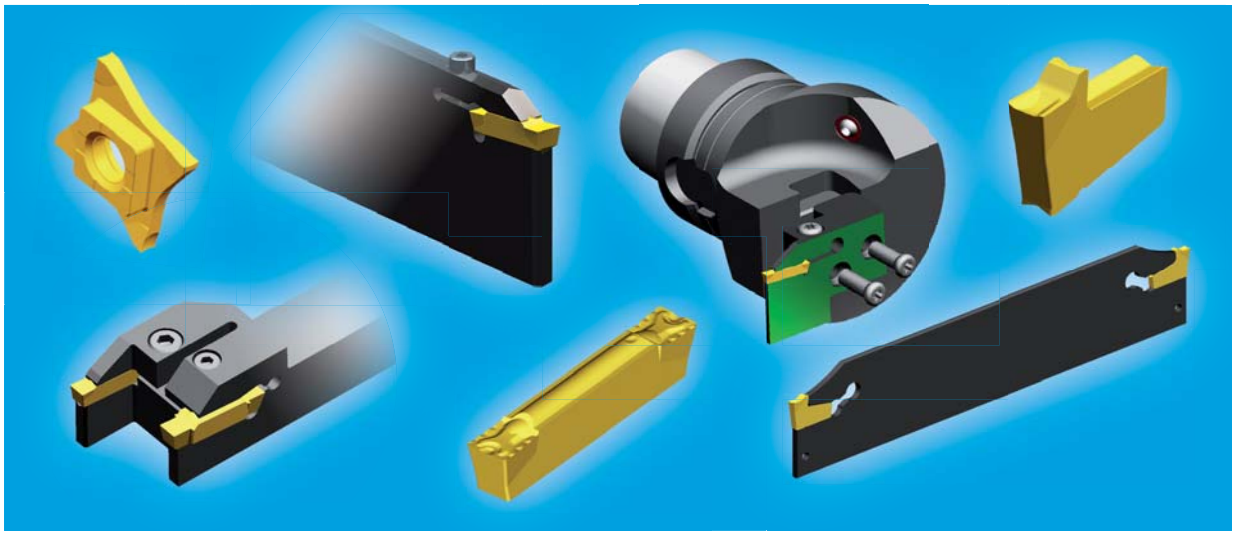
Since 1974 the Company's goal has been to develop and produce simply the best cutting and turning tools.

With its great variety of tools, HAFFMAN's supplier is among the leading manufacturers of such tools and surely a reliable and competent partner to its customers.

As an example the Standard Design parting-off series has been produced since 1983 – a perfect system! Nevertheless an even more advanced system has since been created from the Standard Design. Its name is passt perfekt – a new technical highlight!

Since 2010, however, the Flex Fix Edition represents perfection in parting off.

Numerous of the companies inventions, like the patented inserts of the Flex Fix program, as well as the MULTICUT 4 System and the corresponding basic tool holders, are being distributed worldwide.



Administration building at Wildberg in the Black Forest

HAFFMAN High Precision Tools

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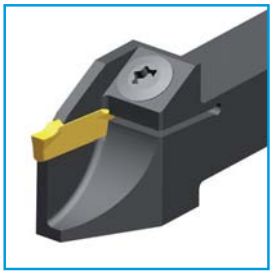

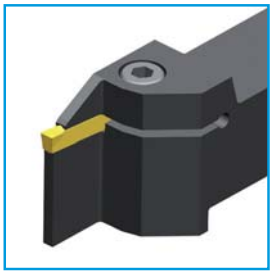

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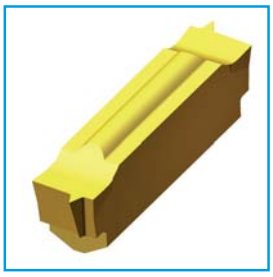
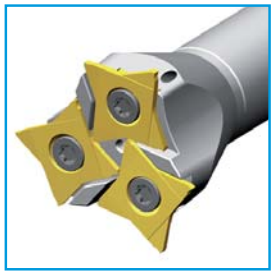
Thread machining

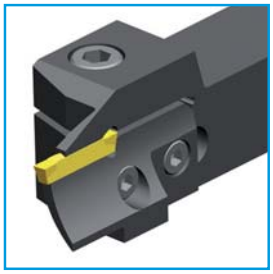


Circular milling

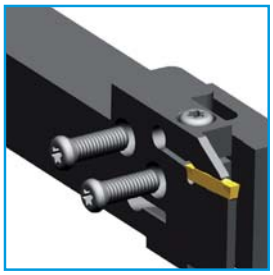
new!



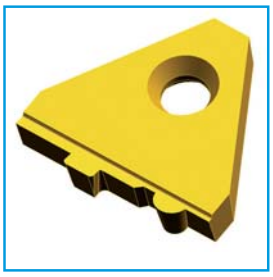
Face grooving



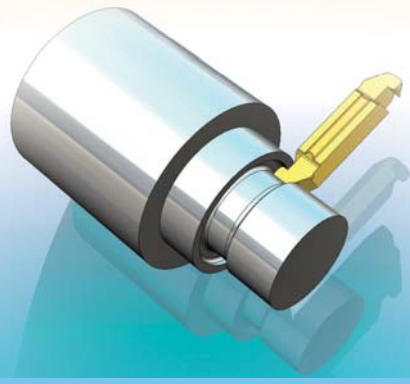
GLM - GripLock Modular System



Profile cutting



Special solutions page 159



Hard material cutting

Hardlox 2

Contents

Technical section

Additional comments

Our goal

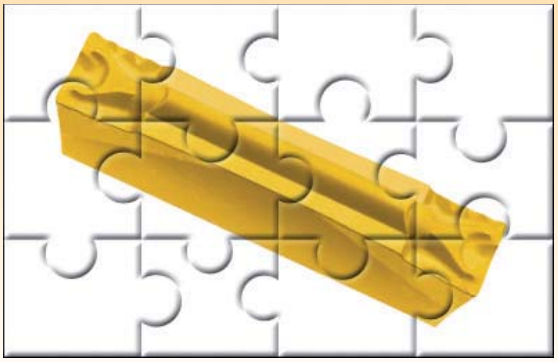
To solve problems

One must take into consideration the complexity of the work to be done. In order to manufacture a precise component, one needs aligned tools for each particular task. The varied selection of:
Tool holders, chipbreakers, cutting material and **coatings** require a **great deal of "know-how" of application technology** in order to select the appropriate tool for the particular task.

Our skills

We have acquired a vast knowledge of application technology by means of continuous testing operations which enable us to do the analysis to provide a strong price performance ratio.

Our task and goal is...



... to provide a strong price performance ratio in order to help you to solve the problem.

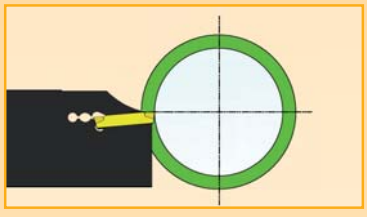
Cost controlling

- Cutting operations are far more expensive than turning or milling operations.
  For this reason the price performance ratio is essential.

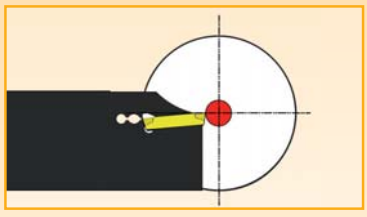
Turning insert	Turning insert	Milling insert	Parting off insert
			
CNMG 1204	**SNMG 1204**	**ODKT 1205**	**ITN 4**
4 + 4 edges	**8 edges**	**8 edges**	**1 edge**
~ 1 € / edge	**~ 1 € / edge**	**~ 1 € / edge**	**~ 8 € / edge**

- The "perfect" quality of insert grades is essential
- It is one of our goals to provide the best possible price performance ratio and offer you the best service for your job.

The difficult way to the center



- The way towards the center isn't easy at all:
  When beginning the operation all conditions are ideal:
  - → cutting speed (Vc)
  - → cooling and
  - → chip removal



- The more the cutting edge arrives at the center the more conditions deteriorate gradually
  - → cutting speed decreases to zero
  - → cooling becomes inefficient
  - → chip removal becomes very difficult

- Parting off is a difficult and expensive operation.
  Therefore professional and CASH SAVING applications are essential

. . . an intelligent way to save
a lot of money

Important characteristics for a good result

Insert pockets | **Clamping force** | **Tool extension**

- Parting off:
  The stronger the tool, the higher the gripping power, the better performance and results are, like:

  - ✓ True and straight run
  - ✓ Clean faces
  - ✓ Plane parallel faces
  - ✓ Tool life

Premium tool choice:

- TWIN "Schwert" P92 TMS (on page 13)
- Holder for deep cuts P92 A CXCB R/L (on page 13)
- Reinforced parting off blades with dovetail shank
  P92 CXCB R/L...X (on page 13)
- Reinforced parting off blades for inserts with 1 edge
  F16 R/L 65 (on page 106)

Additional information on page 13 onwards.

Typical weak points:

- insufficient clamping force between tools and machine tool
- insufficient clamping force between tool holders and inserts
- insufficient chucking force

P92 A CXCBL (page 13)

- **For parting off don't compromise! Choose the tools with the best solidity.**

Upgrading: NANOSPEED replaces TINVC

History

Although TIN coatings are of little wear resistance, they were used to have the advantage of the thin layer thickness of 2-4 microns. The thin layer thickness was applied on sharp cutting edges, recommended for machining stainless steels. However state of the art is a new coating system, called NANOSPEED, which combines the required advantages:

- best possible wear resistance
- layer thickness between 2-4 microns
- additional yellow top layer, which enables customers to see wearmarks easily

For this reason the TIN-VC coating was consequently replaced by the new high performance coating system Nanospeed.

NANOSPEED

super nitride layers

- The multi layer coating NANOSPEED combines extreme hardness, smooth surface and high toughness.
- An ideal coating to machine materials ranging from steel, stainless steels to cast irons.
- Layer thickness between 2 and 4 microns.
  Type of coating: super nitride
  Layers: nano composite TiALN

Nanokomposit: coating structure consists of several layer components in nm (nanometer thickness).

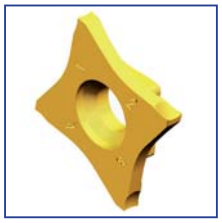
Nitride: reaction product with nitrogen.

Sputter: PVD-coating technology (Physical Vapour Deposition), which creates an extreme flat surface.

Product overview

M92-System - MULTICUT 4 — 4-edges

Cutting inserts



OFQ16R/L...N...
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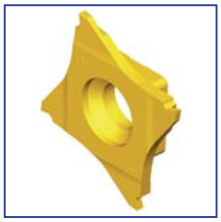
Precision cutting inserts



OFQ16R/L...N
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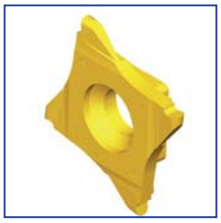
Full radius inserts



OFQ16R/L...R...
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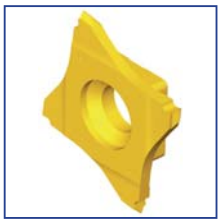
Threading inserts



OFQ16R/L...EL
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Part profile inserts

new!

OFQ16R/L...EIR
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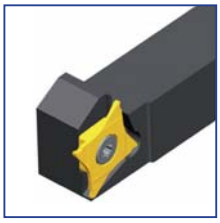
Holders and blades



M92 Q FXCBR/L...K...
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new!

M92 Q 90 FXCBR/L
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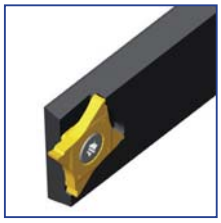


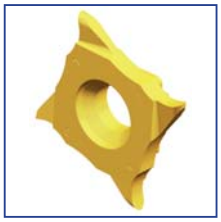
M92 Q FXCBR/L...X...
p. 34

Circular milling - MULTICUT 4 — new! — 4-edges

Cutting inserts (D = 28 mm)

OFQ16L..P..S
p. 37

Full radius inserts (D = 28 mm)



OFQ16L..R..P..S
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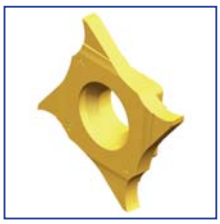
Precision cutting inserts (D = 28 mm)



OFQ16L..P..S (P)
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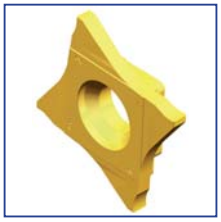
Cutting inserts for milling heads



OFQ16L..P..M (OF)
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Milling tools and heads

GLRM92..28..SW
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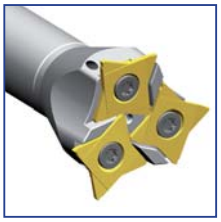

GLRM92..52..SW
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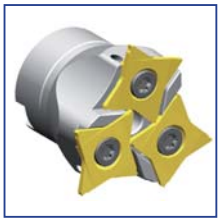

GLRM92..M
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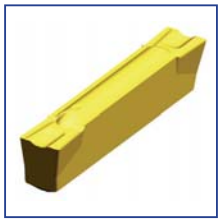
Product overview

HAFFMAN High Precision Tools

P92-System **2-edges**

Cutting and turning inserts



BTNX
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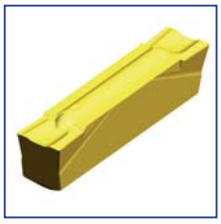

BTNG
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CTDS
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MTNS
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MTNZ
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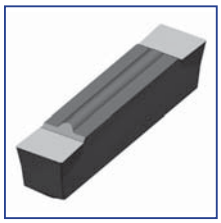

OTXS
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GTNS
p.

VTNS
p. 53

STNZ / STNG
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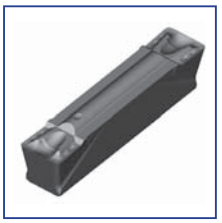

XTNS
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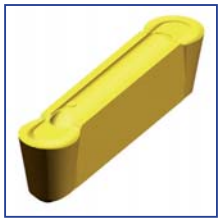

RTNG
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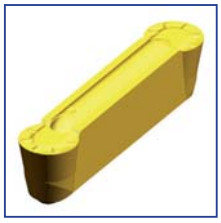

RTNX
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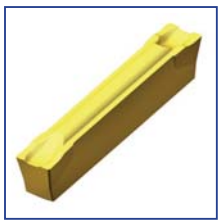
Parting off inserts



BTN
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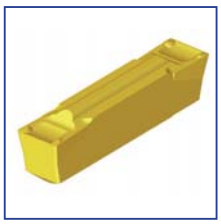

CT
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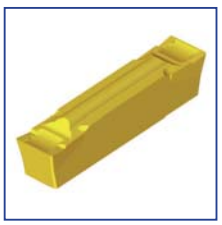

CT ALU
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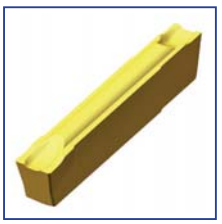
Parting off inserts for large diameters



A BTNN
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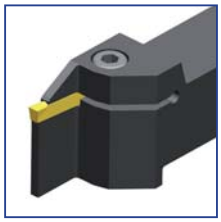
Holders, boring bars and blades for cutting, grooving and turning



P92 CXCBR/L...
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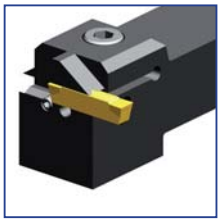

P92 90 UNI
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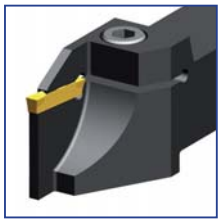

P92 A CXCBR/L...
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P92 A CXCBR/L...
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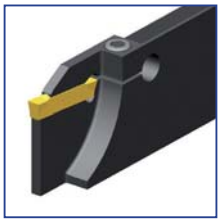

P92 CXCBR/L...R/L
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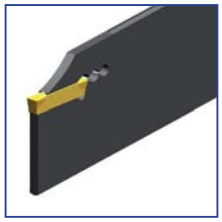

P92 TMS
p. 70

new!

P92 TMS 52
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P92 CGR/L
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new!

P92 C N..H
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new!

P92 C90..R/L
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new!

P92 C N
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new!

P92 CT
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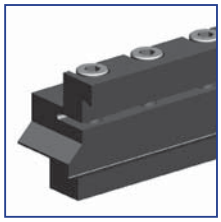

TS
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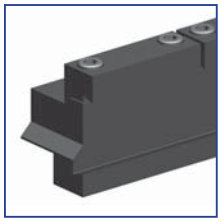

KL
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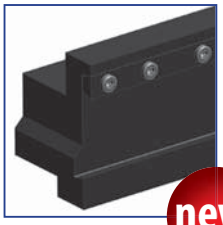

new!

KL 52
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Holders and cartridges for face grooving and face turning

P92 2 CXCLD
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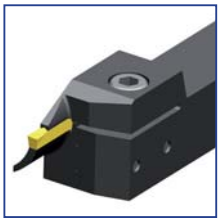

P92 2 CXCRD
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P92 90 CXCLD
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P92 90 CXCRD
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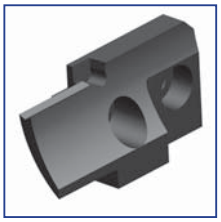
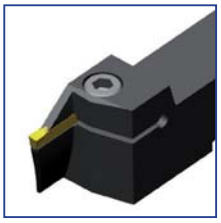
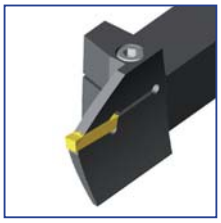


C92 RD/LD
p. 91-94

Monoblock holders for face grooving and -turning



P92 2 CXCBR
p. 96-98



P92 2 CXCBL
p. 96-98

Blades for face grooving and -turning

new!

P92 2 TMS
p. 99

Product overview

HAFFMAN High Precision Tools

P92-System — 1-edge

Boring bars and inserts for cutting, grooving and turning

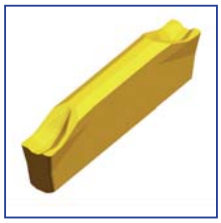
KCTD
p. 75

KCTDS
p. 75

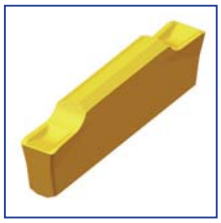
P92 CGR/L..30C
p. 75

P92 S-System (2 mm cutting width) — 2-edges

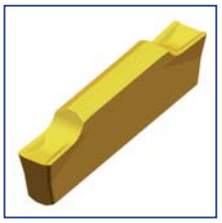
Inserts for parting off and small threading inserts



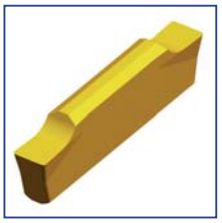
BTNS
p. 79



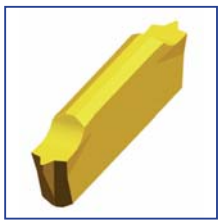
ITNS
p. 80



STNS
p. 80

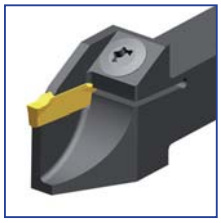


HTNS / HTNST
p. 79, 81



HTNG 2 ER / IR
p. 82-83

Holders, blades and boring bars for cutting, grooving, turning and threading



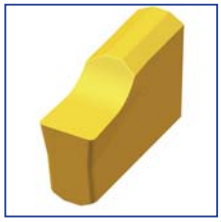
P92 S CXCBR/L
p. 84-85

P92 S CXCBR/L...X
p. 85

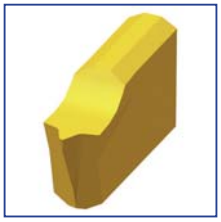
P92 S CGR/L
p. 86

P92 S-System — 1-edge

Inserts for cutting and threading



KHTNS 2
p. 81



KHTNG 2 IR
p. 84

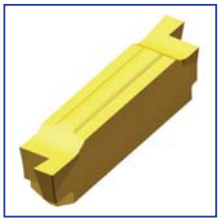
and fitting boring bars

P92 S CGR/L M20C
p. 86

Product overview

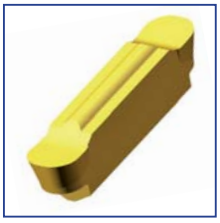
P92 P-System — 2-edges

Precision inserts

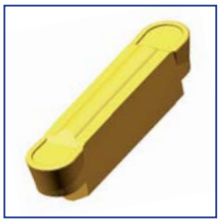


OTX...R/L
p. 103

OTXR...R/L
p. 104



OTXR...N
p. 105

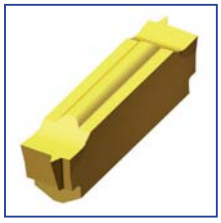


OTX.R...N R
p. 105

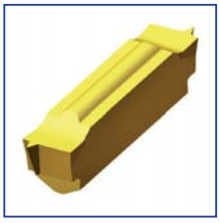
STV R/L
p. 52

P92 P-System — 2-edges

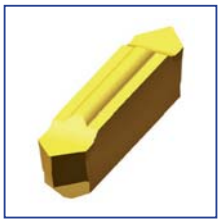
ISO-threading inserts (internal and external)



OTX ER full profil
p. 107

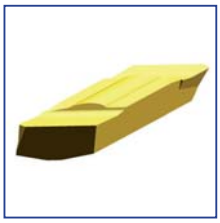


OTX IR full profil
p. 107



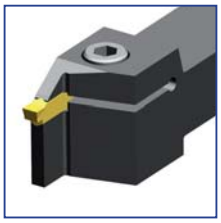
OTX EIR part profil
p. 108

Inserts for longitudinal turning

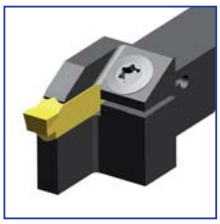


OTX DECO
p. 106

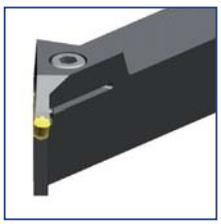
Precision tool holders and boring bars for OTX inserts



P92 P CXCBR/L
p. 109

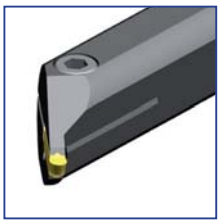


P92 P CXCBR/L..K4 11
p. 110



P92 P 45 CXCBR/L
p. 114

P92 P CGR/L
p. 112

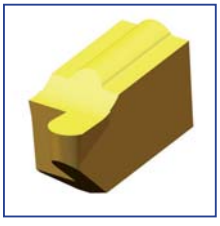


P92 P 45 CGR
p. 114

P92 P-System — 1-edge

Precision grooving and threading inserts (internal)

KOTX...R/L
p. 115



KOTX R...R/L
p. 115

KOTX 4 IR full profil
p. 116

and fitting boring bars

P92 P CGR...4C
p. 116

Product overview

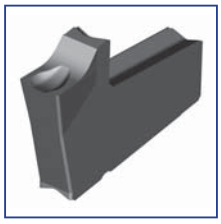
HAFFMAN High Precision Tools

FLEX FIX - System

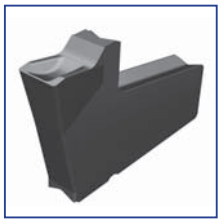
new!

1-edge

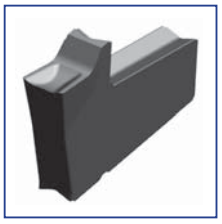
Parting off inserts



BFN
p. 120

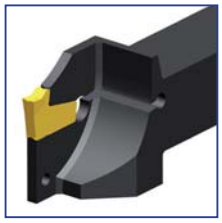


IFN
p. 121

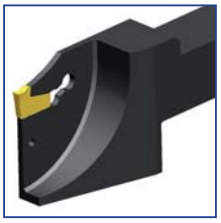


SFN
p. 122

Holders, blades and tool blocks



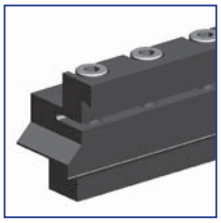
F16 R/L 42
p. 123



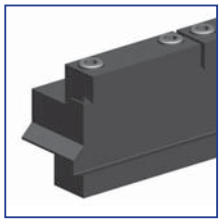
F16 R/L 65
p. 124

F16 T
p. 124

F16 R/L
p. 107



TS
p. 143

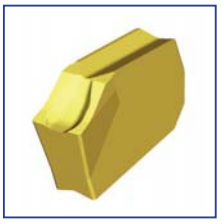


KL
p. 143

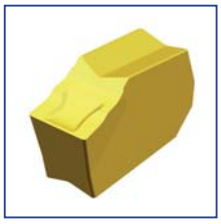
Parting off inserts

SNP
p. 126

ITP
p. 127

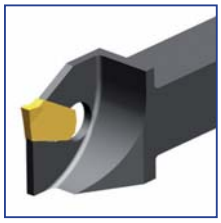


BGP
p. 128

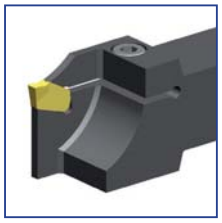


ITP ALU
p. 129

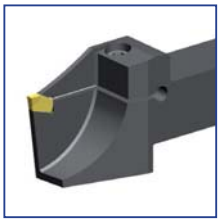
Holders, blades and tool blocks



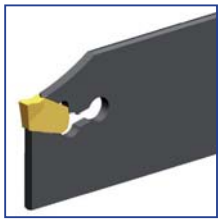
HPPL/R
p. 130



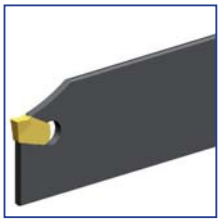
CLPPL/R
p. 131



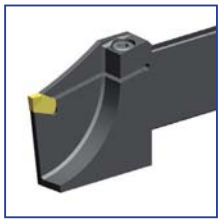
CLPPL/R...X
p. 132



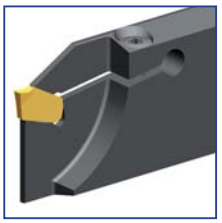
TMSPP
p. 132



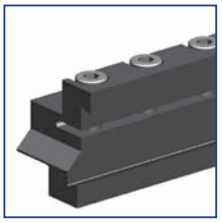
TPP
p. 133



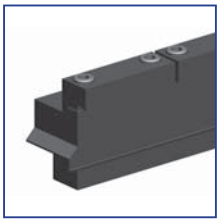
CLPPL/R...X...R/L
p. 133



TMSPR/L
p. 134

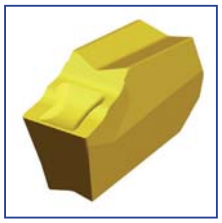


TS
p. 143

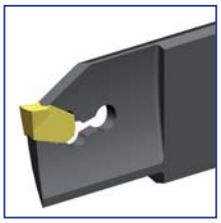


KL
p. 143

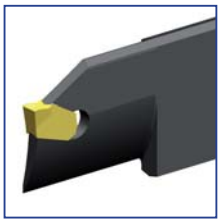
Inserts, blades and tool blocks for face grooving and face turning



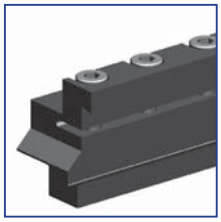
PPTNR/L
p. 129



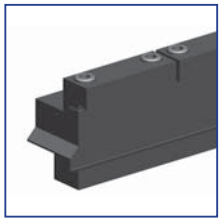
PPSMSR/L
p. 135



PPSTR
p. 135



TS
p. 143



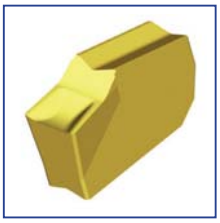
KL
p. 143

Product overview

HAFFMAN High Precision Tools

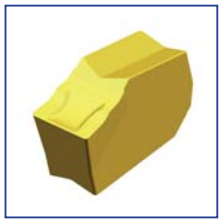
Standard Design-System (precision sintered) 1-edge

Parting off inserts



SNT.
p. 136

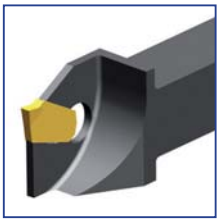
IT.
p. 137



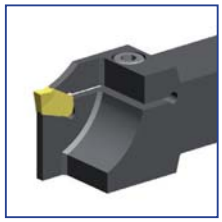
IT. ALU
p. 138

BGN/R/L
p. 138

Holders, blades and tool blocks

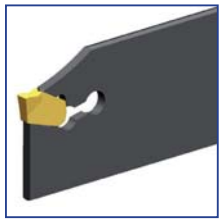


HR/L
p. 139

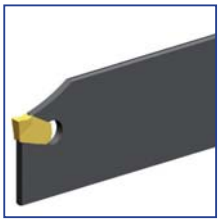


CLCBR/L
p. 140

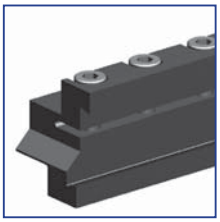
CLCBR/L...X
p. 141



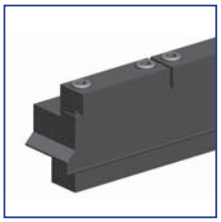
TMS
p. 142



T
p. 142



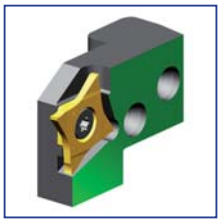
TS
p. 143



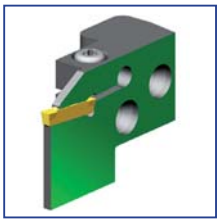
KL
p. 143

GLM - GripLock Modular System

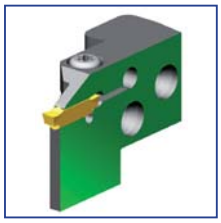
Cartridges



GLMCR/L M92 Q
p. 153



GLMCR/L P92
p. 153



GLMCR/L P92 P
p. 154

new!

GLMCR/L F16
p. 154

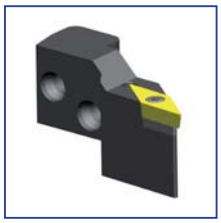
ISO-cartridges

new!

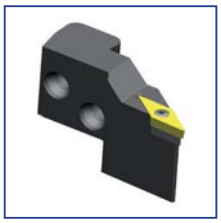
GLMCL 16EL ISO
S.

GLMCL CC09T3
S.

GLMCL DC11T3
S.



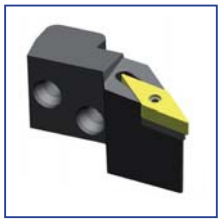
GLMCL VC1604
S.



GLMCL VC1303
S.

GLMCL CN1204
S.

GLMCL WN0804
S.



GLMCL VN1604
S.

GLMCL DN1506
S.

Tool holders

GLM HR/L
S. 149

GLM PSC..R/L 0
S. 150

GLM PSC..R/L 90
S. 150

GLM HSK63T..R/L 0
S. 151

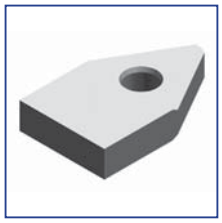
GLM HSK63T..R/L 10
S. 151

GLM HSK63T..R/L 45
S. 151

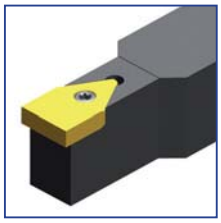
GLM HSK63T..R/L 90
S. 152

F92 Profiling tool system

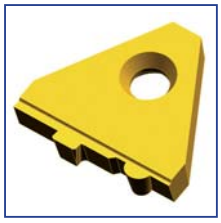
Inserts and holders for profile cutting



F 00000
p. 163



F92 SFCCN
p. 164



e.g. Profile insert
p. 163, 23

Torque keys

Torque tools

Torque VARIO ST plus
p. 201

Torque Vario-S
p. 201

TX 25 10
p. 202

Torque interchangeable blades

WT/F Torx
p. 201

WS/F hexagonal
p. 201

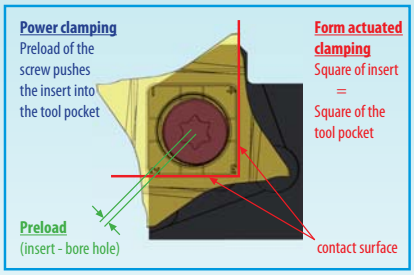
M92 Q MULTICUT 4

The perfect grooving and cutting system for many applications

- Parting off and grooving
- Threading
- Precision grooving
- Full radius grooving
- Special profiles

M92 Q MULTICUT 4

The perfect Grooving and Cutting System for many applications

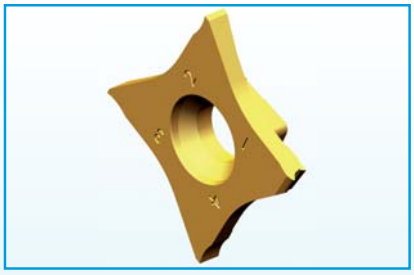


Vertical positioned inserts are well known. However, the segmented MULTICUT 4 inserts represent the new state of art technology. This improved development features a lot of advantages:

Perfect power and form actuated clamping.

Reinforced solidity of insert suppresses vibrations. Achieves high and consistant tool life. Maintains reliability on cutting operations.

Reinforced area of the cutting edge grants stability.

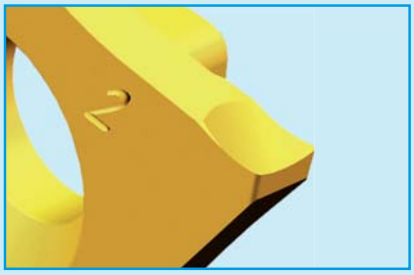


In case a cutting edge is damaged all other edges can be used independently.

Precise re-positioning when changing cutting edges.

Fast and safe fixing in pocket.

Only 1 insert pocket for many inserts for different cutting operations.



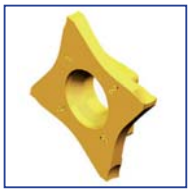
New cutting geometry!

MULTICUT 4 - Insert Designation Code

O F Q 16 R 000 000 R 00 TILOX

- O — Top rake
- F — 4-edges
- Q — Insert system: square and vertical
- 16 — Ø Inside diameter
- R — Right hand insert
- 000 — Cutting width
- 000 — Corner radius
- R — Rotation
- 00 — Lead angle
- TILOX — Coating

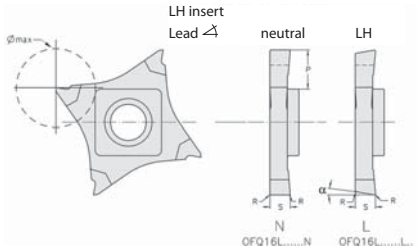
MULTICUT 4 - Cutting insert with 4 edges for grooving and parting off

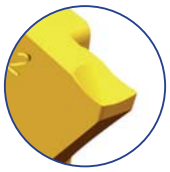


OFQ16L..N/L

System M92-Q

LH*





Enlarged view

Ref	FM NANOSPEED	FM TILOX	KM CARBOSPEED		P	R	S ±0,05	α°	Ømax.
	ID-Nr.	ID-Nr.	ID-Nr.						
OFQ16L 050 000 N 00	31019	31020	43890	N	2,5	0,00	0,50	0	5,0
OFQ16L 100 000 N 00	31021	31022	43891	N	3,5	0,00	1,00	0	7,0
OFQ16L 120 000 N 00	35046	38719	43892	N	6,5	0,00	1,20	0	13,0
OFQ16L 150 010 N 00	31239	31238	43893	N	6,5	0,10	1,50	0	13,0
OFQ16L 200 010 N 00	31026	31027	43894	N	6,5	0,10	2,00	0	13,0
OFQ16L 200 020 N 00 new!	43669	43670	44154	N	6,5	0,20	2,00	0	13,0
OFQ16L 250 010 N 00	30946	31028	43895	N	6,5	0,10	2,50	0	13,0
OFQ16L 250 020 N 00 new!	43671	43672	44155	N	6,5	0,20	2,50	0	13,0
OFQ16L 300 010 N 00	31029	31030	43896	N	6,5	0,10	3,00	0	13,0
OFQ16L 300 020 N 00 new!	43673	43674	44156	N	6,5	0,20	3,00	0	13,0
OFQ16L 100 000 L 06	31031	31032	43897	L	3,5	0,00	1,00	6	7,0
OFQ16L 100 000 L 15	31033	31034	43898	L	3,5	0,00	1,00	15	7,0
OFQ16L 120 000 L 06	38720	38721	43899	L	6,5	0,00	1,20	6	13,0
OFQ16L 150 010 L 06	37813	26738	43900	L	6,5	0,10	1,50	6	13,0
OFQ16L 150 010 L 15	31266	31265	43901	L	6,5	0,10	1,50	15	13,0
OFQ16L 200 010 L 06	31039	31040	43902	L	6,5	0,10	2,00	6	13,0
OFQ16L 200 020 L 06 new!	43675	43676	44157	L	6,5	0,20	2,00	6	13,0
OFQ16L 200 010 L 15	31041	31042	43903	L	6,5	0,10	2,00	15	13,0
OFQ16L 200 020 L 15 new!	43677	43678	44158	L	6,5	0,20	2,00	15	13,0

Comment:

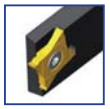
Segmented and ground micrograin insert.
Positive top-rake with **chipforming** groove, beginning with 1,5 mm width to 3 mm.

* LH = Left Hand = for clockwise (cw) rotation

Technical section page 187 onwards

Fitting tool holders and blades


p. 33


p. 34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p. 153

page 14

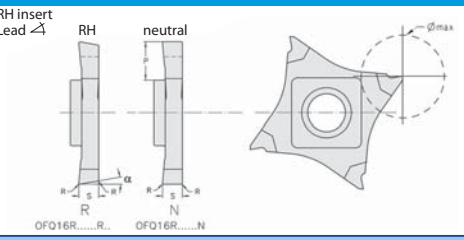
GripLock®

MULTICUT 4 - Cutting insert with 4 edges for grooving and parting off

OFQ16R...N/R

System M92-Q

RH*



Chip breaker from cutting width 1,5 mm to 3 mm.

Enlarged view

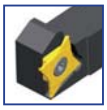
Ref.	FM NANOSPEED	FM TILOX	KM CARBOSPEED		P	R	S ±0,05	α°	Ømax.
	ID-Nr.	ID-Nr.	ID-Nr.						
OFQ16R 050 000 N 00	30971	30972	43904	N	2,5	0,00	0,50	0	5,0
OFQ16R 100 000 N 00	30973	30974	43905	N	3,5	0,00	1,00	0	7,0
OFQ16R 120 000 N 00	35044	38722	43906	N	6,5	0,00	1,20	0	13,0
OFQ16R 150 010 N 00	31257	31237	43907	N	6,5	0,10	1,50	0	13,0
OFQ16R 200 010 N 00	30977	30978	43908	N	6,5	0,10	2,00	0	13,0
OFQ16R 200 020 N 00 new!	43679	43680	44159	N	6,5	0,20	2,00	0	13,0
OFQ16R 250 010 N 00	30945	30979	43909	N	6,5	0,10	2,50	0	13,0
OFQ16R 250 020 N 00 new!	43681	43682	44160	N	6,5	0,20	2,50	0	13,0
OFQ16R 300 010 N 00	30980	30981	43910	N	6,5	0,10	3,00	0	13,0
OFQ16R 300 020 N 00 new!	43683	43684	44161	N	6,5	0,20	3,00	0	13,0
OFQ16R 100 000 R 06	30982	30983	43911	R	3,5	0,00	1,00	6	7,0
OFQ16R 100 000 R 15	30984	30985	43912	R	3,5	0,00	1,00	15	7,0
OFQ16R 120 000 R 06	38723	38724	43913	R	6,5	0,00	1,20	6	13,0
OFQ16R 150 010 R 06	31262	31261	43914	R	6,5	0,10	1,50	6	13,0
OFQ16R 150 010 R 15	31264	31263	43915	R	6,5	0,10	1,50	15	13,0
OFQ16R 200 010 R 06	30990	30991	43916	R	6,5	0,10	2,00	6	13,0
OFQ16R 200 020 R 06 new!	43685	43686	44162	R	6,5	0,20	2,00	6	13,0
OFQ16R 200 010 R 15	30992	30993	43917	R	6,5	0,10	2,00	15	13,0
OFQ16R 200 020 R 15 new!	43687	43688	44163	R	6,5	0,20	2,00	15	13,0

Comment:

Segmented and ground micro-grain insert.
Positive top-rake with **chipforming** groove, beginning with 1,5 mm width to 3 mm.

* RH = Right Hand = for counter clockwise (ccw) rotation

Fitting tool holders and blades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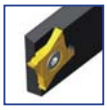
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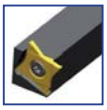
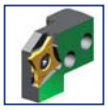

p. 34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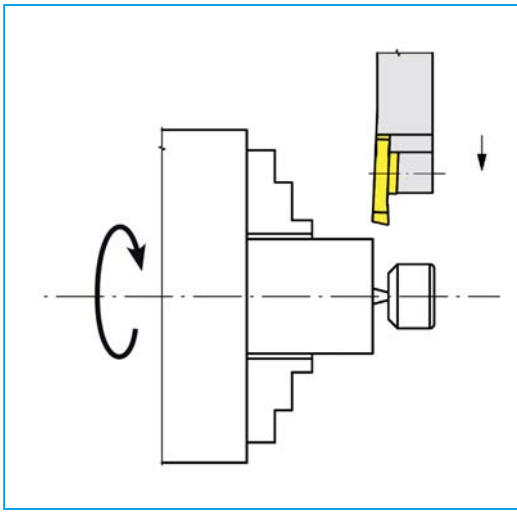

MULTICUT 4

Only 1 insert pocket for many different applications.

- Parting off and grooving
- Threading
- Precision grooving
- Full radius grooving
- Special profiles

Technical section page 187 onwards

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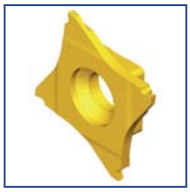
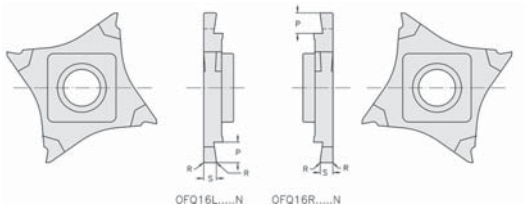
MULTICUT 4 - Precision grooving inserts according to DIN 471



OFQ16L...N
System M92-Q

L



OFQ16R...N
System M92-Q

RH

Ref.	FM NANOSPEED	FM TILOX	( )	P	R		S -0,05
	ID-Nr.	ID-Nr.					
OFQ16L 050 000 N	31152	31153	L	1,0	0,00	0,50	0,57
OFQ16L 060 000 N	31154	31155	L	1,0	0,00	0,60	0,67
OFQ16L 070 000 N	31156	31157	L	1,5	0,00	0,70	0,77
OFQ16L 080 000 N	31158	31159	L	1,5	0,00	0,80	0,87
OFQ16L 090 000 N	31160	31161	L	1,5	0,00	0,90	0,97
OFQ16L 100 000 N	38725	38727	L	1,5	0,00	1,00	1,07
OFQ16L 110 010 N	31162	31163	L	1,5	0,10	1,10	1,24
OFQ16L 130 010 N	31164	31165	L	1,5	0,10	1,30	1,44
OFQ16L 160 010 N	31172	31173	L	2,0	0,10	1,60	1,74
OFQ16L 185 010 N	31174	31175	L	2,0	0,10	1,85	1,99
OFQ16L 215 010 N	31176	31177	L	2,5	0,10	2,15	2,29
OFQ16L 265 010 N	31178	31179	L	2,5	0,10	2,65	2,79
OFQ16L 315 010 N	31180	31181	L	2,5	0,10	3,15	3,29
OFQ16R 050 000 N	31127	31128	R	1,0	0,00	0,50	0,57
OFQ16R 060 000 N	31129	31130	R	1,0	0,00	0,60	0,67
OFQ16R 070 000 N	31131	31132	R	1,5	0,00	0,70	0,77
OFQ16R 080 000 N	31133	31134	R	1,5	0,00	0,80	0,87
OFQ16R 090 000 N	31136	31137	R	1,5	0,00	0,90	0,97
OFQ16R 100 000 N	38726	38728	R	1,5	0,00	1,00	1,07
OFQ16R 110 010 N	31138	31139	R	1,5	0,10	1,10	1,24
OFQ16R 130 010 N	31140	31141	R	1,5	0,10	1,30	1,44
OFQ16R 160 010 N	31142	31143	R	2,0	0,10	1,60	1,74
OFQ16R 185 010 N	31144	31145	R	2,0	0,10	1,85	1,99
OFQ16R 215 010 N	31146	31147	R	2,5	0,10	2,15	2,29
OFQ16R 265 010 N	31148	31149	R	2,5	0,10	2,65	2,79
OFQ16R 315 010 N	31150	31151	R	2,5	0,10	3,15	3,29

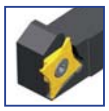
Comment:

Segmented and ground micrograin insert.
Horizontal cutting edge and positive top rake.

Enlarged LH edge

Enlarged RH edge

Fitting tool holders and blades



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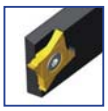
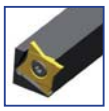


p. 34



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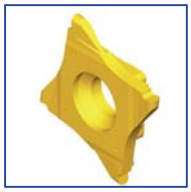
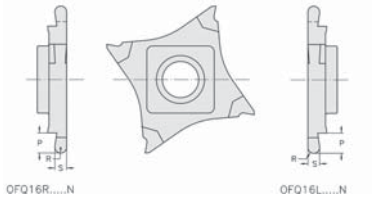
MULTICUT 4 - Full radius insert for grooving and copying



OFQ16L..R..N
System M92-Q

LH



OFQ16R..R..N
System M92-Q

RH

Ref.	FM NANOSPEED	FM TILOX	( )	P	R	S +0,05
	ID-Nr.	ID-Nr.				
OFQ16L 100 R050 N	31202	31203	L	1,0	0,50	1,00
OFQ16L 150 R075 N	31204	31205	L	1,5	0,75	1,50
OFQ16L 200 R100 N	31206	31207	L	2,0	1,00	2,00
OFQ16L 250 R125 N	31208	31209	L	2,5	1,25	2,50
OFQ16L 300 R150 N	31210	31211	L	3,0	1,50	3,00
OFQ16R 100 R050 N	31187	31188	R	1,0	0,50	1,00
OFQ16R 150 R075 N	31189	31190	R	1,5	0,75	1,50
OFQ16R 200 R100 N	31191	31192	R	2,0	1,00	2,00
OFQ16R 250 R125 N	31193	31194	R	2,5	1,25	2,50
OFQ16R 300 R150 N	31195	31196	R	3,0	1,50	3,00

Comment:

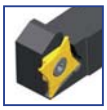
Segmented and ground micrograin insert.
Horizontal cutting edge and positive top rake.

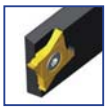
Technical section page 187 onwards

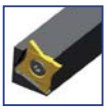

Enlarged LH edge


Enlarged RH edge

Fitting tool holders and blades


p. 33


p. 34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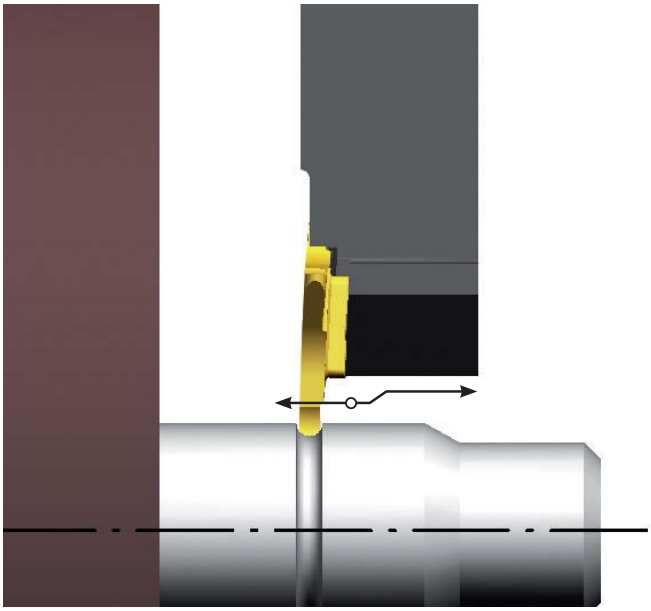
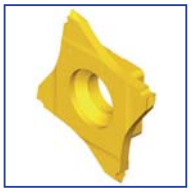


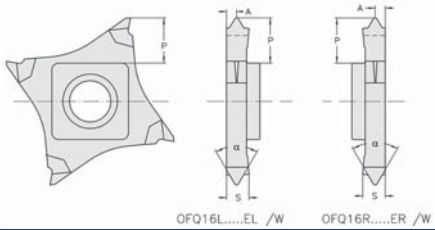
Full radius groove and copying with MC4 full radius inserts.

MULTICUT 4 - Precision threading inserts external



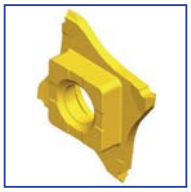
OFQ16L...EL
System M92-Q
ISO Full profile
Whitworth Full profile

LH



OFQ16R...ER
System M92-Q
ISO Full profile
Whitworth Full profile

RH

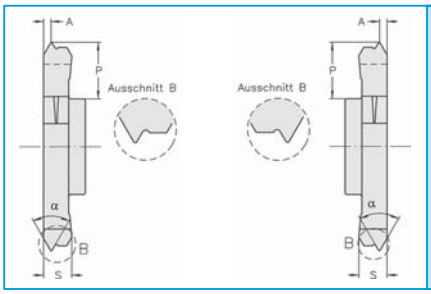


Ref.	FM NANOSPEED	FM TILOX			A	P	S	α°
	ID-Nr.	ID-Nr.						
OFQ16L 200 050 EL ISO	31418	31419	L	0,50	0,5	6,5	2,0	60
OFQ16L 200 070 EL ISO	31420	31421	L	0,70	0,5	6,5	2,0	60
OFQ16L 250 075 EL ISO	31422	31423	L	0,75	0,5	6,5	2,0	60
OFQ16L 250 080 EL ISO	31424	31425	L	0,80	0,7	6,5	2,0	60
OFQ16L 200 100 EL ISO	31426	31427	L	1,00	0,7	6,5	2,0	60
OFQ16L 200 125 EL ISO	31428	31429	L	1,25	0,7	6,5	2,0	60
OFQ16L 200 28W EL	31430	31431	L	28 Th/inch	1,0	6,5	2,0	55
OFQ16L 200 19W EL	31432	31433	L	19 Th/inch	1,0	6,5	2,0	55
OFQ16L 350 14W EL	31434	31435	L	14 Th/inch	1,3	6,5	3,5	55
OFQ16L 350 11W EL	31436	31437	L	11 Th/inch	1,5	6,5	3,5	55
OFQ16L 350 150 EL ISO	31438	31439	L	1,50	0,8	6,5	3,5	60
OFQ16L 350 175 EL ISO	31440	31441	L	1,75	0,9	6,5	3,5	60
OFQ16L 350 200 EL ISO	31442	31443	L	2,00	1,0	6,5	3,5	60
OFQ16L 350 250 EL ISO	37451	34994	L	2,50	1,3	6,5	3,5	60
OFQ16L 350 300 EL ISO	37452	34995	L	3,00	1,8	6,5	3,5	60
OFQ16R 200 050 ER ISO	31294	31297	R	0,50	0,5	6,5	2,0	60
OFQ16R 200 070 ER ISO	31298	31299	R	0,70	0,5	6,5	2,0	60
OFQ16R 250 075 ER ISO	31393	31394	R	0,75	0,5	6,5	2,0	60
OFQ16R 250 080 ER ISO	31395	31396	R	0,80	0,7	6,5	2,0	60
OFQ16R 200 100 ER ISO	31397	31400	R	1,00	0,7	6,5	2,0	60
OFQ16R 200 125 ER ISO	31401	31402	R	1,25	0,7	6,5	2,0	60
OFQ16R 200 28W ER	31403	31404	R	28 Th/inch	1,0	6,5	2,0	55
OFQ16R 200 19W ER	31405	31406	R	19 Th/inch	1,0	6,5	2,0	55
OFQ16R 350 14W ER	31407	31408	R	14 Th/inch	1,3	6,5	3,5	55
OFQ16R 350 11W ER	31409	31410	R	11 Th/inch	1,5	6,5	3,5	55
OFQ16R 350 150 ER ISO	31411	31412	R	1,50	0,8	6,5	3,5	60
OFQ16R 350 175 ER ISO	31413	31414	R	1,75	0,9	6,5	3,5	60
OFQ16R 350 200 ER ISO	31415	31417	R	2,00	1,0	6,5	3,5	60
OFQ16R 350 250 ER ISO	37450	34992	R	2,50	1,3	6,5	3,5	60
OFQ16R 350 300 ER ISO	34130	34993	R	3,00	1,8	6,5	3,5	60

LH inserts: Delivery time and price on request, minimum purchase 3 pieces.

Enlarged LH edge

Enlarged RH edge



Precision ground threading inserts for external threads:

The vertical position of the insert, its positive top rake, large chip chambers, large front clearance and coated micrograin carbide together create perfect conditions for difficult threading operations.

Fitting tool holders and blades

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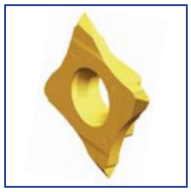
GripLock®

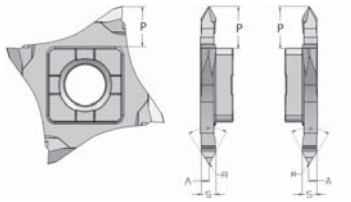
MULTICUT 4 - Part profile inserts

new!



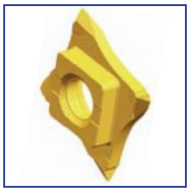
OFQ16L...EIR
System M92-Q

LH



OFQ16R...EIR
System M92-Q

RH



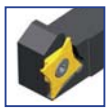
Ref.	FM NANOSPEED	FM TILOX			A	P	R	S	α°
	ID-Nr.	ID-Nr.							
OFQ16L 200 EIR55 28 W	43128	43129	L	28-20 Th/inch	0,9	6,5	0,1	2,0	55
OFQ16L 200 EIR60 050	43130	43131	L	0,5-1,00	0,9	6,5	0,1	2,0	60
OFQ16L 250 EIR55 19 W	43132	43133	L	19-14 Th/inch	1,2	6,5	0,2	2,5	55
OFQ16L 250 EIR60 125	43134	43135	L	1,25-1,75	1,2	6,5	0,2	2,5	60
OFQ16L 350 EIR55 12 W	43136	43137	L	12-10 Th/inch	1,8	6,5	0,3	3,5	55
OFQ16L 350 EIR60 200	43138	43139	L	2,00-3,00	1,8	6,5	0,3	3,5	60
OFQ16R 200 EIR55 28 W	43140	43141	R	28-20 Th/inch	0,9	6,5	0,1	2,0	55
OFQ16R 200 EIR60 050	43142	43143	R	0,5-1,00	0,9	6,5	0,1	2,0	60
OFQ16R 250 EIR55 19 W	43144	43145	R	19-14 Th/inch	1,2	6,5	0,2	2,5	55
OFQ16R 250 EIR60 125	43146	43147	R	1,25-1,75	1,2	6,5	0,2	2,5	60
OFQ16R 350 EIR55 12 W	43148	43149	R	12-10 Th/inch	1,8	6,5	0,3	3,5	55
OFQ16R 350 EIR60 200	43150	43151	R	2,00-3,00	1,8	6,5	0,3	3,5	60

LH inserts: Delivery time and price on request, minimum purchase 3 pieces.

Enlarged LH edge

Enlarged RH edge

Fitting tool holders and blades



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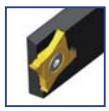

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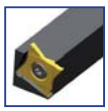

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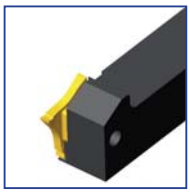
MULTICUT 4 - Tool Designation Code

M92 Q FXCB L 2020 M 16

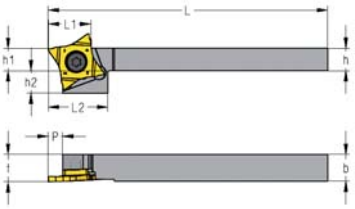
- M92 — Tool family
- Q — Insert type
- FXCB — Screw clamped holder for inserts with 4 edges
- L — Rotation
- 2020 — Shank dimensions
- M — ISO-Code length of holder
- 16 — Ø Inside diameter

MULTICUT 4 - holders for cutting, threading and precision grooving inserts



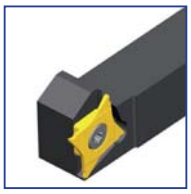
M92 Q...L
System M92-Q

LH holder for LH insert



M92 Q...R
System M92-Q

RH holder for RH inserts



Ref.	ID-Nr.		h	h1	h2	b	f	P	L	L1	L2	
M92 Q FXCBL 1012 K16	30306	L	10	10	10	12	12,3	6,5	125	19,5	27	24
M92 Q FXCBL 1212 K16	30312	L	12	12	8	12	12,3	6,5	125	19,5	27	24
M92 Q FXCBL 1616 K16	30316	L	16	16	4	16	16,3	6,5	125	19,5	19,5	23
M92 Q FXCBL 2020 K16	29120	L	20	20	-	20	20,3	6,5	125	19,5	-	23
M92 Q FXCBL 2525 M16	30320	L	25	25	-	25	25,3	6,5	150	19,5	-	23
M92 Q FXCBR 1012 K16	30324	R	10	10	10	12	12,3	6,5	125	19,5	27	24
M92 Q FXCBR 1212 K16	30328	R	12	12	8	12	12,3	6,5	125	19,5	27	24
M92 Q FXCBR 1616 K16	30332	R	16	16	4	16	16,3	6,5	125	19,5	19,5	23
M92 Q FXCBR 2020 K16	30302	R	20	20	-	20	20,3	6,5	125	19,5	-	23
M92 Q FXCBR 2525 M16	30336	R	25	25	-	25	25,3	6,5	150	19,5	-	23

Remark:

Only RH inserts will fit into RH tool holders and blades.
Only LH inserts will fit into LH tool holders and blades.

Fitting inserts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How to write an order:

			recommended
1 St.	M92 Q FXCB**R** 1012 K16	or:	**1 St.** ID-Nr. **30324**
5 St.	OFQ 16**R** 050 000N FM TILOX	or:	**5 St.** ID-Nr. **31128**

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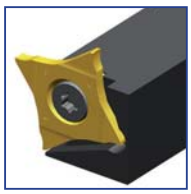
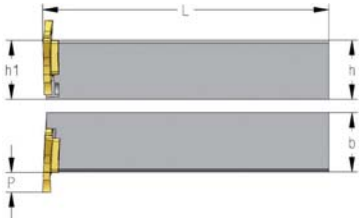
MULTICUT 4 - 90° holders for many different turning applications

new!



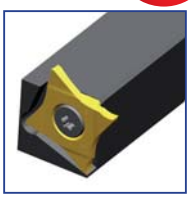
M92 Q 90 FXCBR
System M92-Q

LH holder for RH inserts



M92 Q 90 FXCBL
System M92-Q

RH holder for LH inserts



Bezeichnung	ID-Nr.	( )	h	h1	b	P	L	
M92 Q 90 FXCBR 2020 K16	43342	R	20	20	20	6,5	125	23
M92 Q 90 FXCBL 2020 K16	43343	L	20	20	20	6,5	125	23

Attention:
RH inserts fit LH holders.
LH inserts fit RH holders.

Fitting inserts

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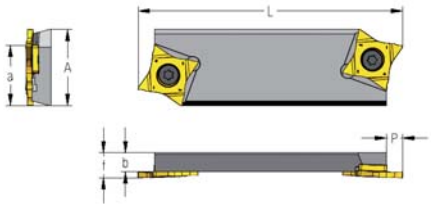
MULTICUT 4 - blades for cutting, threading and precision grooving inserts

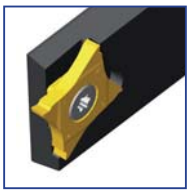
M92 Q...X..L
System M92-Q

LH blade for LH inserts



M92 Q...X..R
System M92-Q

RH blade for RH inserts



Bezeichnung	ID-Nr.	( )	A	a	b	f	P	L	
M92 Q FXCBL 2608 X16L	30349	L	26	21,4	8	10,5	6,5	110	24
M92 Q FXCBL 3208 X16L	29116	L	32	25,0	8	10,5	6,5	110	24
M92 Q FXCBR 2608 X16R	30353	R	26	21,4	8	10,5	6,5	110	24
M92 Q FXCBR 3208 X16R	30345	R	32	25,0	8	10,5	6,5	110	24

Remark:

Each blade has got **2 insert pockets.**
Only RH inserts will fit into RH tool holders and blades.
Only LH inserts will fit into LH tool holders and blades.

LH = Left Hand = for clockwise (CW) rotation
RH = Right Hand = for counter clockwise (CCW) rotation

Fitting inserts

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How to write an order:			recommended	
1 St.	M92 Q FXCB**R** 2608 X16R	or:	**1 St.**	**ID-Nr. 30353**
5 St.	OFQ 16**R** 050 000N FM TILOX	or:	**5 St.**	**ID-Nr. 31128**

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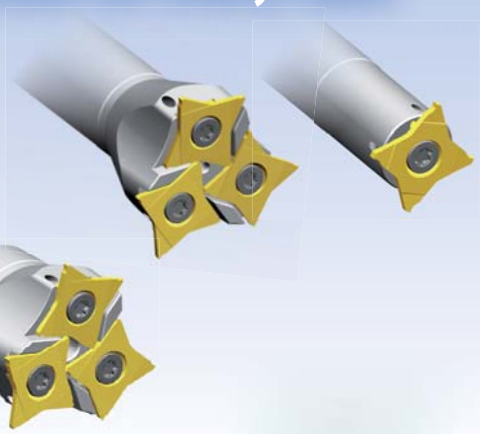
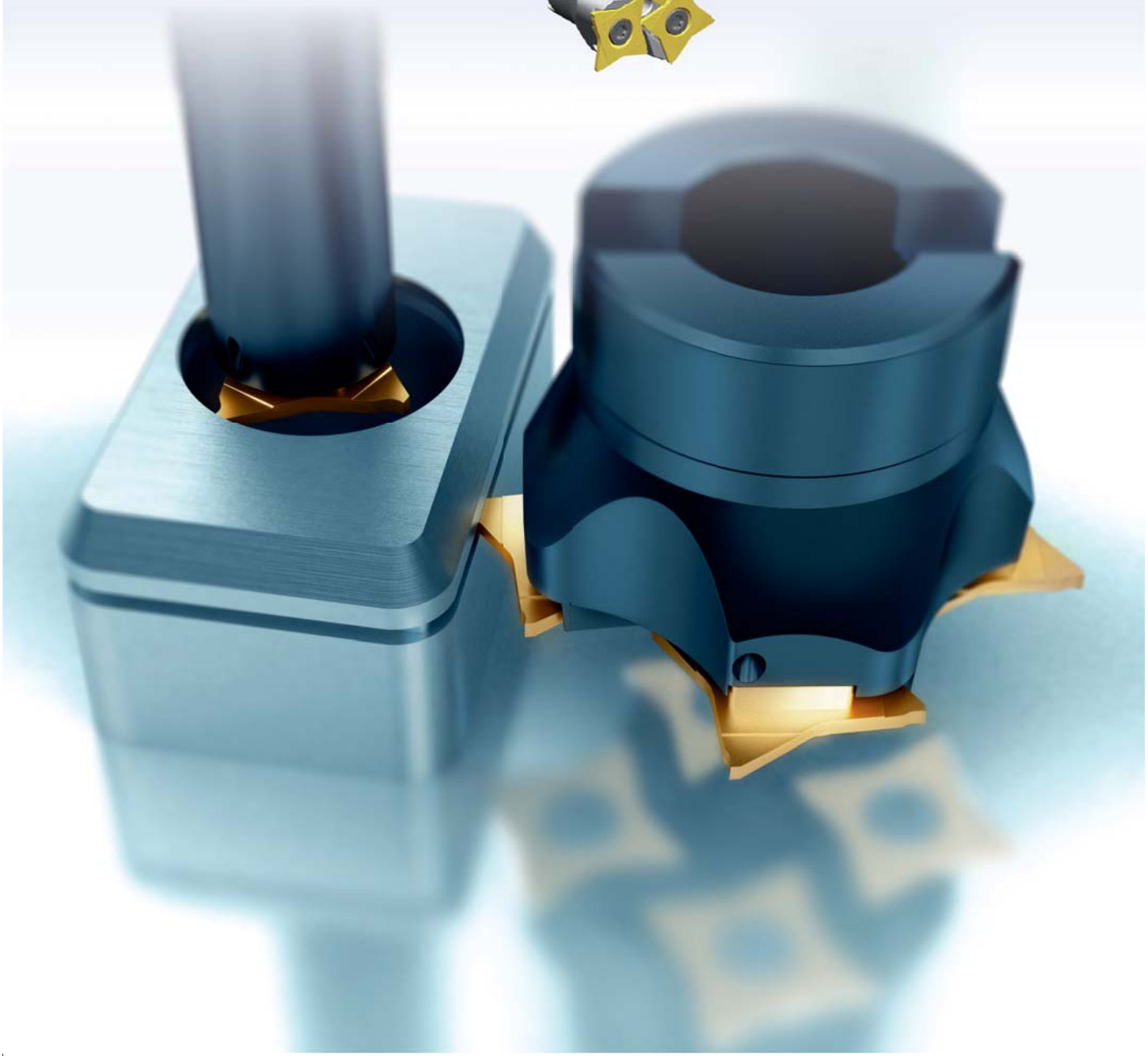
Circular milling cutter MULTICUT 4

The advantages of MULTICUT 4 system combined with the applications on rotary tools

- Shank end mills
- Milling heads





new!

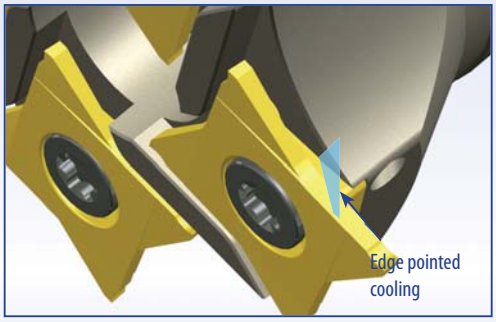
Circular milling cutter MULTICUT 4

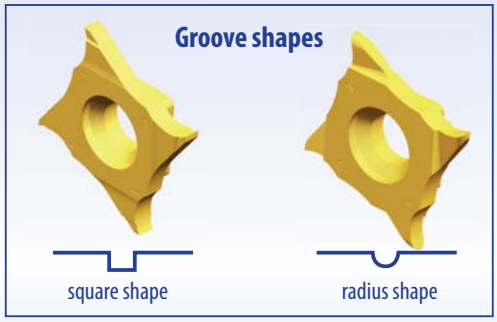
2

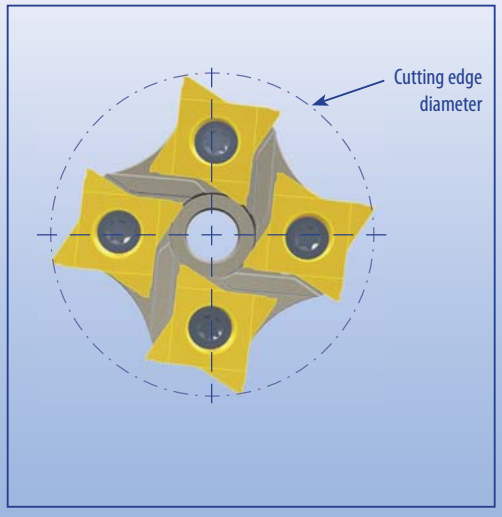
The advantages of MULTICUT 4 System combined with the applications of rotary tools

Advantages of the MULTICUT 4 System:

- *Perfect power and form actuated clamping.*
- *Reinforced insert*
- *Reinforced cutting edges*
- *High efficiency (In case a cutting edge is damaged all other edges can be used independently)*
- *Only 1 insert pocket size for many different cutting and turning operations*







Milling heads	Shank end mills
Cutting edges: 3-5 **cutting edge diameter Ø:** 52 mm - 80 mm	This end mill needs special inserts, displayed on page 9 **Cutting edges:** 4 **Cutting edge diameter Ø:** 28 mm
	More than one pocket **Cutting edges:** 3 **Cutting edge diameter Ø:** 52 mm

Dimension Z describes the amount of cutting edges in action. Z does not describe the amount of inserts on a milling cutter.

Designation Code of milling heads and shank end mills

O F Q 16 L 000 000 P00 S NANOSPEED

- Top rake
- 4-edges
- Insert system: square and vertical
- Inside diameter Ø 16
- Right hand insert
- Cutting with
- Corner radius
- Cutting depth P
- Milling tpe: S = shank end mill; M = milling head
- Coating

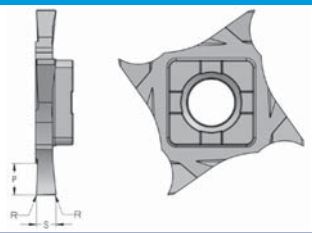
Shank end mill with 1 insert
All 4 cutting edges are engaged

Shank end mills D52 and milling heads D52 - 80 with 3-5 inserts
Only one cutting edge of each insert is engaged

Cutting inserts for shank end mills with D =28 mm

new!

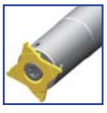
OFQ16L..P..S
Circular



Enlarged view

Ref.	KM NANOSPEED		P	R	S ±0,05
	ID-Nr.				
OFQ16L 050 000 P25 S	43091	L	2,5	0,10	0,50
OFQ16L 100 000 P35 S	43092	L	3,5	0,10	1,00
OFQ16L 150 010 P35 S	43093	L	3,5	0,15	1,50
OFQ16L 200 010 P35 S	43094	L	3,5	0,15	2,00
OFQ16L 250 010 P35 S	43095	L	3,5	0,15	2,50
OFQ16L 300 010 P35 S	43096	L	3,5	0,15	3,00

Fitting milling tools



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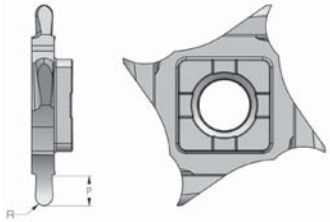
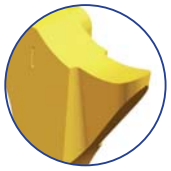
new!

Full radius inserts for shank end mills with D =28 mm

OFQ16L..R..P..S

Circular

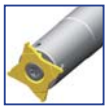




Enlarged view

Ref.	KM NANOSPEED	( )	P	R	S +0,05
	ID-Nr.				
OFQ16L 100 R050 P35 S	43110	L	3,5	0,50	1,00
OFQ16L 150 R075 P35 S	43111	L	3,5	0,75	1,50
OFQ16L 200 R100 P35 S	43112	L	3,5	1,00	2,00
OFQ16L 250 R125 P35 S	43113	L	3,5	1,25	2,50
OFQ16L 300 R150 P35 S	43114	L	3,5	1,50	3,00

Fitting milling tools



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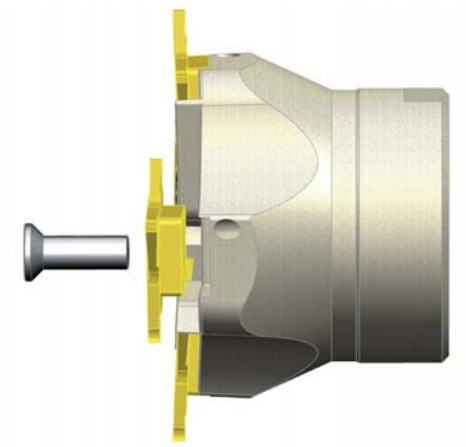


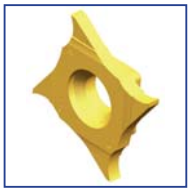
Application: left hand insert

Only left hand inserts fit in milling heads and shank end mills.

Technical section page 187 onwards

Precision grooving inserts for shank end mills with D =28 mm

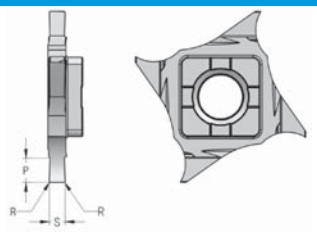
new!



OFQ16L..P..S

Circular

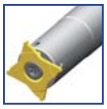
Inserts without chamfer



Enlarged view

Ref.	KM NANOSPEED		P	R		S -0,05
	ID-Nr.					
OFQ16L 130 010 P35 S	43115	L	3,5	0,10	1,30	1,44
OFQ16L 160 010 P35 S	43116	L	3,5	0,10	1,60	1,74
OFQ16L 185 015 P35 S	43117	L	3,5	0,15	1,85	1,99
OFQ16L 215 015 P35 S	43118	L	3,5	0,15	2,15	2,29
OFQ16L 265 015 P35 S	43119	L	3,5	0,15	2,65	2,79
OFQ16L 315 015 P35 S	43120	L	3,5	0,15	3,15	3,29

Fitting milling tools



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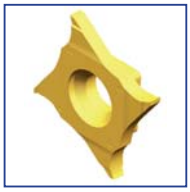
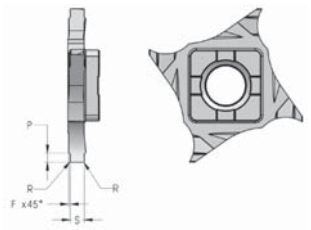


OFQ16L..P..S

Circular

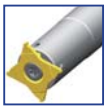
Inserts with chamfer



Enlarged view

Ref.	KM NANOSPEED		F	P	R		S -0,05
	ID-Nr.						
OFQ16L 110 010 P050 S	43121	L	0,15	0,50	0,10	1,10	1,24
OFQ16L 130 010 P067 S	43122	L	0,15	0,67	0,10	1,30	1,44
OFQ16L 160 010 P100 S	43123	L	0,15	1,00	0,10	1,60	1,74
OFQ16L 185 015 P125 S	43124	L	0,20	1,25	0,15	1,85	1,99
OFQ16L 215 015 P150 S	43125	L	0,20	1,50	0,15	2,15	2,29
OFQ16L 265 015 P150 S	43126	L	0,20	1,50	0,15	2,65	2,79
OFQ16L 265 015 P175 S	43127	L	0,20	1,75	0,15	2,65	2,79

Fitting milling tools



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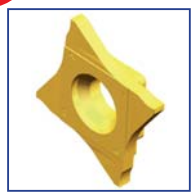
Technical section page 187 onwards

new!

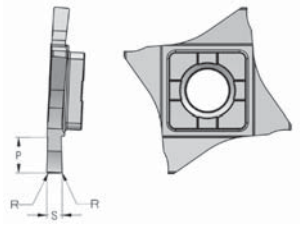
Precision inserts for milling heads and shank end mills



OFQ16L..P..M

Circular

Inserts without chamfer



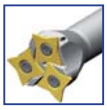
Enlarged view

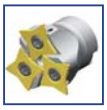
Ref.	KM NANOSPEED		P	R		S -0,05
	ID-Nr.					
OFQ16L 130 010 P55 M	43097	L	5,5	0,10	1,30	1,44
OFQ16L 160 010 P55 M	43098	L	5,5	0,10	1,60	1,74
OFQ16L 185 015 P55 M	43099	L	5,5	0,15	1,85	1,99
OFQ16L 215 015 P55 M	43100	L	5,5	0,15	2,15	2,29
OFQ16L 265 015 P55 M	43101	L	5,5	0,15	2,65	2,79
OFQ16L 315 015 P55 M	43102	L	5,5	0,15	3,15	3,29

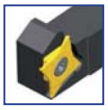
Remark:

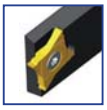
These inserts may as well be used with the MULTICUT 4 cutting tool holders as displayed in the GripLock catalogue.
Recommended for grooves to DIN 471 (outside) and DIN 472 (inside).

Fitting tool holders


p. 41


p. 42


p. 33


p. 34


p. 34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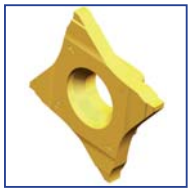
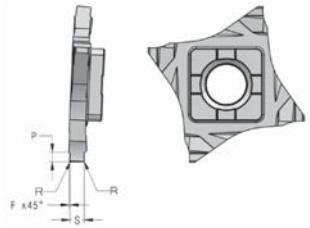


OFQ16L..P..M

Circular

Inserts with chamfer



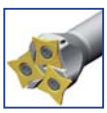
Enlarged view

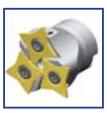
Ref.	KM NANOSPEED		F	P	R		S -0,05
	ID-Nr.						
OFQ16L 110 010 P050 M	43103	L	0,15	0,50	0,10	1,10	1,24
OFQ16L 130 010 P067 M	43104	L	0,15	0,67	0,10	1,30	1,44
OFQ16L 160 010 P100 M	43105	L	0,15	1,00	0,10	1,60	1,74
OFQ16L 185 015 P125 M	43106	L	0,20	1,25	0,15	1,85	1,99
OFQ16L 215 015 P150 M	43107	L	0,20	1,50	0,15	2,15	2,29
OFQ16L 265 015 P150 M	43108	L	0,20	1,50	0,15	2,65	2,79
OFQ16L 265 015 P175 M	43109	L	0,20	1,75	0,15	2,65	2,79

Remark:

These inserts may as well be used with the MULTICUT 4 cutting tool holders as displayed in the GripLock catalogue.
Special insers to machine grooves to DIN 471 or DIN 472.

Fitting tool holders


p. 41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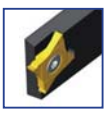
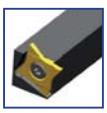
p. 33


p. 34


p. 34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Technical section page 187 onwards

Designation code for shank end mills and milling heads

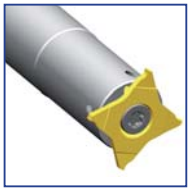
GLR M92 28 20 SW 16 3 04

- GLR — system designation for GripLock rotary tools
- M92 — clamping system M92
- 28 — edge diameter (miiling head or shank end millls equipped with inserts)
- 20 — shaft diameter / location whole diameter
- SW — type of milling cutter: slot cutter = T, milling head = M, shank end mill = S (additional for Weldon clamping = W), example: SW= shank end mill with Weldon attachement
- 16 — insert type Multicut 4
- 3 — maximum cutting depth = P
- 04 — amount of edges in action

Shank end mills

new!

Attention, please! On the shank end mills and milling heads, only **left** hand MC4 inserts will fit



GLRM92 28..SW...

Circular

Shank end mill with one insert pocket

Ref.	ID-Nr.	D	d1	Insert pockets	P	Z	d	L	
GLR M92 28 20 SW 16 3.5 04	41052	28	20	1	3.5	4	-	125	23

Attention, please!

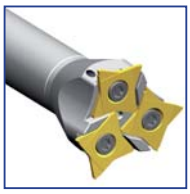
On the shank end mill diameter = 28mm only the inserts, described on pages 37-39 will fit.

Fitting inserts


p. 37


p.38

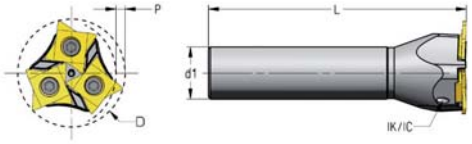

p. 39



GLRM92 52..SW...

Circular

Shank end mill with more than 1 insert pocket



Ref.	ID-Nr.	D	d1	Insert pockets	P	Z	d	L	
GLR M92 52 25 SW 16 3.5 03	41053	52	25	3	3.5	3	-	125	23

Fitting inserts


p. 27-28

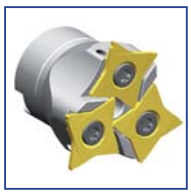

p. 29


p. 30


p. 40

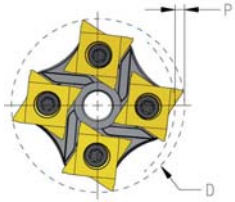
new!

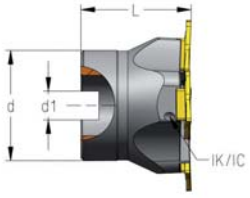
Milling heads



GLRM92..M...
Circular

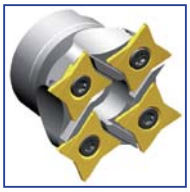
Milling head with 3 insert pockets





GLRM92..M...
Circular

Milling head with 4 insert pockets



Ref.	ID-Nr.	D	d1	Plattensitze	Pmax	Z	d	L	
GLR M92 52 16 M 16 3.5 03	41054	52	16	3	3.5	3	32	40	23
GLR M92 63 22 M 16 4.5 04	41055	63	22	4	4.5	4	40	40	23
GLR M92 80 27 M 16 5.5 05	41056	80	27	5	5.5	5	55	50	23

Attention, please!
Only left hand MC4 inserts will fit on shank end mills and milling heads

Fitting inserts


p. 27-28

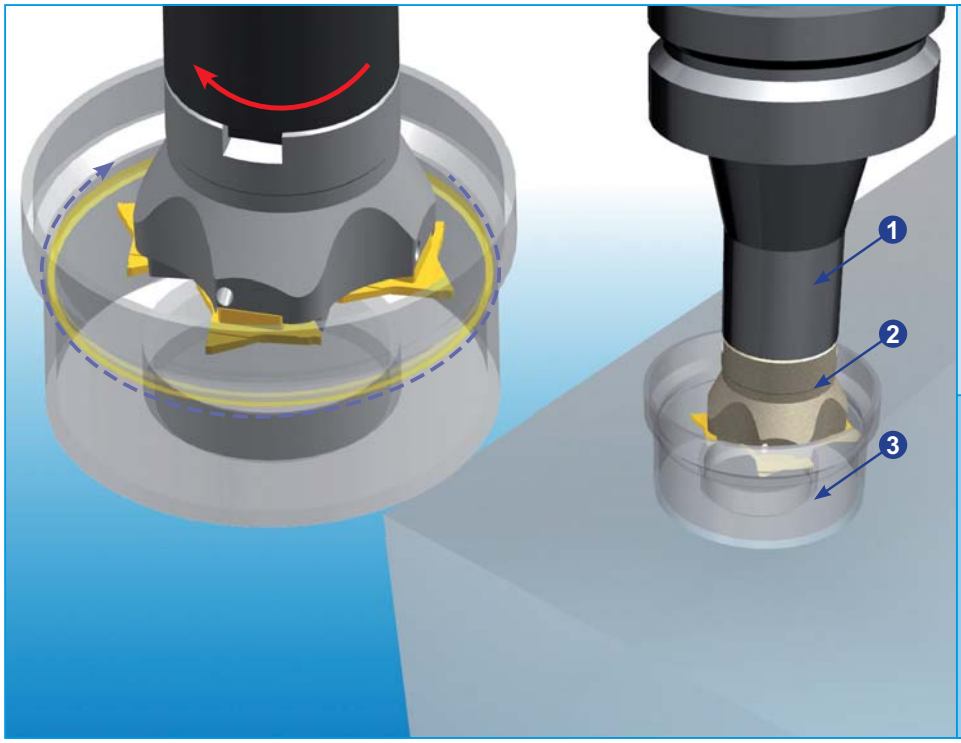

p. 29


p. 30


p. 40

Spare parts

ET	ID-Nr.		ID-Nr.		Recommended torque [Nm]
35	34839	TxM5x14/25	38549	TX25	12
32	44188	M6x20/1	14747	P5	14



Internal milling with MC4 milling head

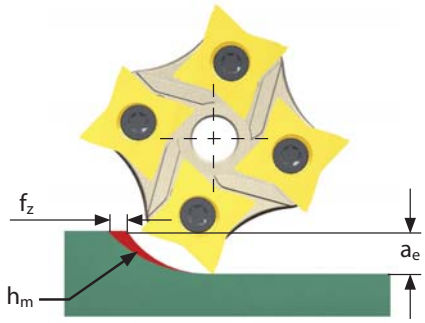
1. Milling head fixture
2. Milling head MC4
3. Component

Attention please!
For internal milling operations, the milling head (equipped with inserts)diameter has got to be smaller than the diameter of the component.

Milling parameters

Recommendations

type of milling tool	insert type	feed per tooth f_z in [mm] min - max	max. chip thickness h_m in [mm] min - max
	OFQ16L...P...S	0,04 - 0,22	0,02 - 0,07
	OFQ16L...P...M	0,11 - 0,20	0,06 - 0,14

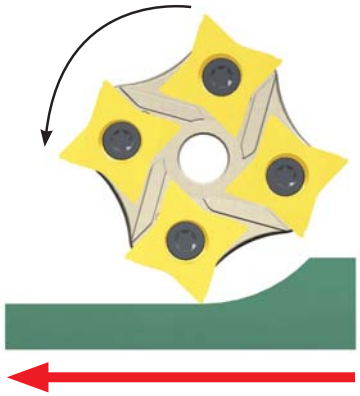


Drawing: dimensions for groove milling

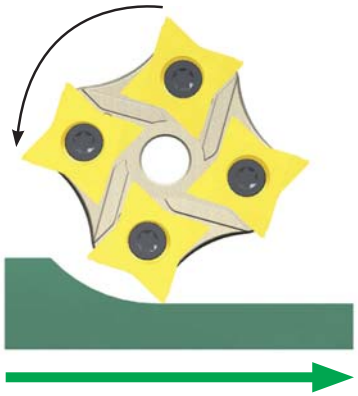
Calculation

average chip thickness	feed per tooth
$h_m = f_z \cdot \sqrt{\frac{a_e}{D}}$ [mm]	$f_z = h_m \cdot \sqrt{\frac{D}{a_e}}$ [mm]

recommended values for the chip thickness:
steel: 0,06 mm
grey cast iron: 0,08 mm



OPPOSED MILLING
not recommended



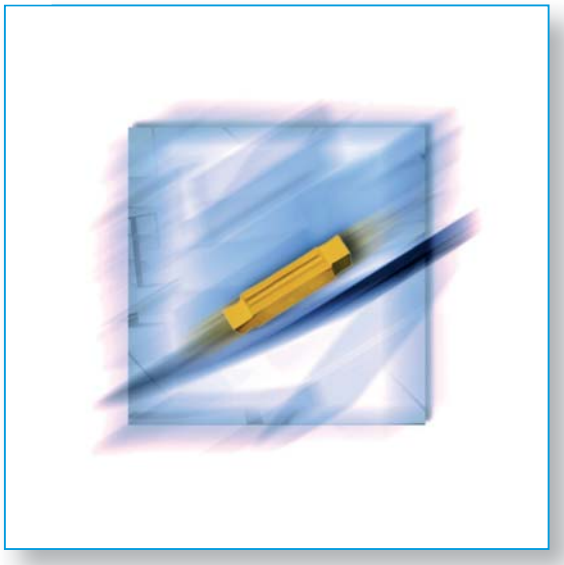
CUT-DOWN MILLING
recommended to achieve best results

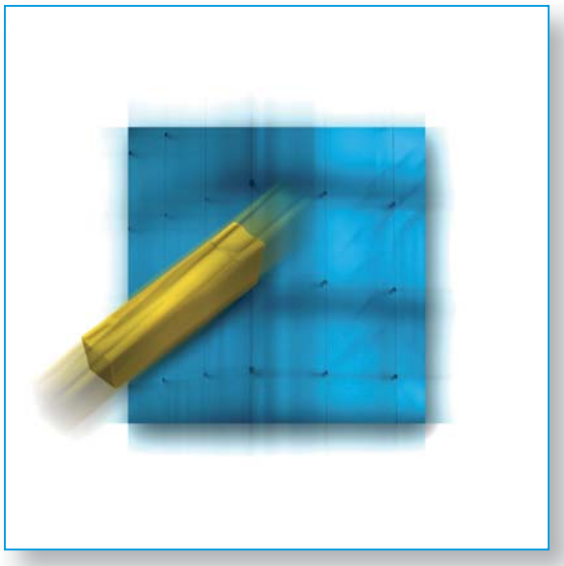
Fomulars

Cutting speed	Feed per tooth
$V_c = \frac{D \cdot \pi \cdot n}{1000}$ [$^m/_{min}$]	$f_z = \frac{V_f}{n \cdot z}$ [mm]

Revolution	Feed speed
$n = \frac{Vc \cdot 1000}{D \cdot \pi}$ [min^{-1}]	$V_f = f_z \cdot z \cdot n$ [$^{mm}/_{min}$]

caption
V_c = Cutting speed
f_z = Feed per tooth
n = Revolution
V_f = Feed speed
h_m = Average chip thickness
a_e = Cutting depth
D = Tool diameter
z = Amount of cutting edges in action
π = Basic circle dimension = 3,14





P92 - Parting off, grooving and turning

A gread variety of applications

- Turning
- Parting off
- Grooving

HAFFMAN High Precision Tools

P92 - Parting off, Grooving and Turning

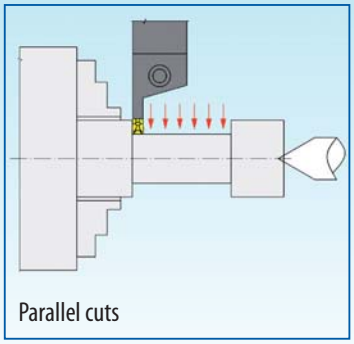
A great variety of applications

3

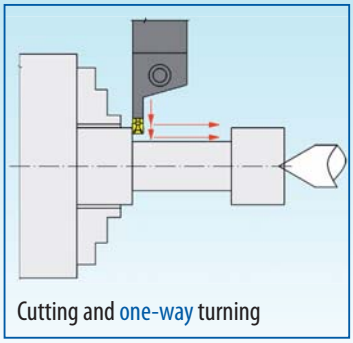
Cutting and turning machining

The major cutting edge cuts a groove and then the minor edge turns in longitudinal direction

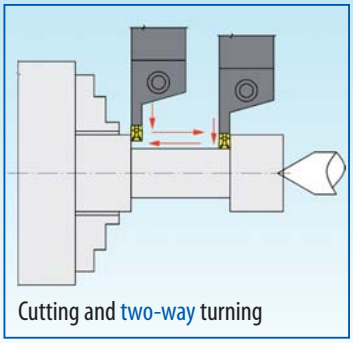
Different methods of cutting and turning



Parallel cuts

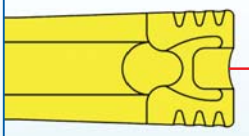


Cutting and one-way turning

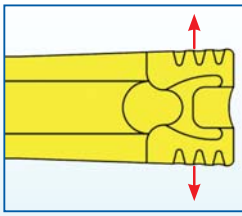


Cutting and two-way turning

The cutting edges

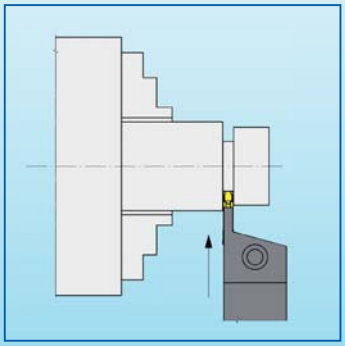


The major cutting edge features an efficient chip breaker for cutting applications.



The minor cutting edges, left and right, feature efficient chip breaker for longitudinal turning.

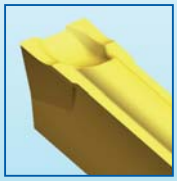
Grooving



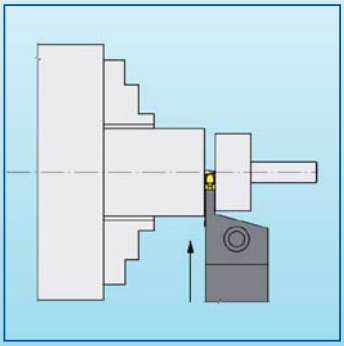
Grooving: MTNS insert with solid and rounded cutting edge

The major cutting edge cuts a groove.

Parting off



Parting off: BTNN insert featuring a large and efficient chip breaker



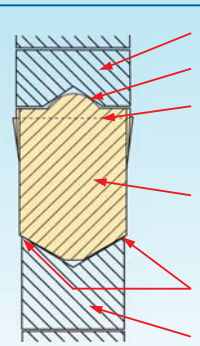
The major edge parts off a component from the bar.

P92 - Parting off, Grooving and Turning

A great variety of applications

Team work: Insert and holder

The insert has to fit perfectly into the pocket for all machining operations.

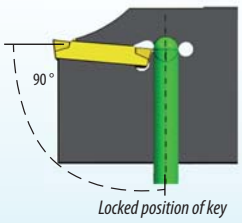


Cross section of insert pocket

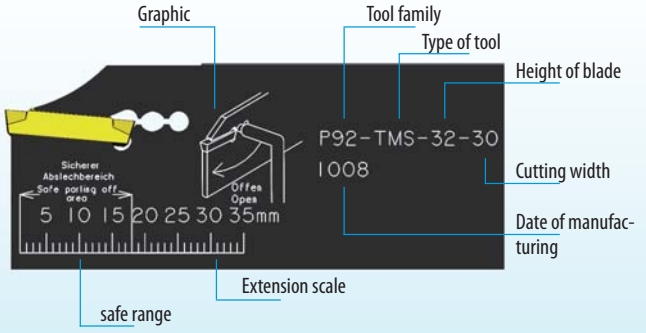
TWIN blade P92-TMS

on page 70

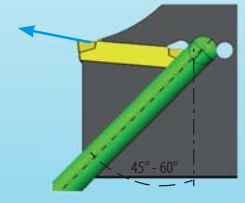
Insert in locked condition



Insert firmly locked



Insert in unlocked condition

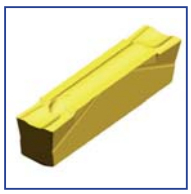


Insert to be removed

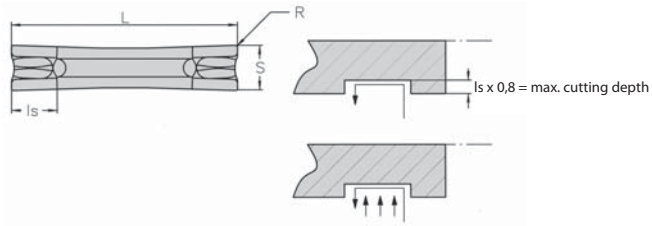
Advantages

- ✓ Increased profitability compared to blades holding 1-edge inserts
- ✓ Reinforced solidity
- ✓ Perfect clamping
- ✓ Easy handling
- ✓ Marking for easy understanding
- ✓ Excellent tool life together with parting off inserts BTNN and A BTNN
- ✓ Steady run

Inserts for grooving and turning



BTNG
System P92



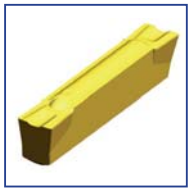
Enlarged view

Ref.	GF110	GF110 NANOSPEED	GF110 TILOX	( )	L	ls	R	S ±0,025
	ID-Nr.	ID-Nr.	ID-Nr.					
BTNG 202	32649	34264	34263	N	20,00	2,00	0,2	2,00
BTNG 2,5	32652	34005	34004	N	20,00	2,00	0,2	2,50
BTNG 302	13403	13404	-	N	20,00	3,50	0,2	3,00
BTNG 304	13405	13406	-	N	20,00	3,50	0,4	3,00
BTNG 402	13407	13408	-	N	20,00	3,50	0,2	4,00
BTNG 404	13409	13410	-	N	20,00	3,50	0,4	4,00
BTNG 408	13411	13412	-	N	20,00	3,50	0,8	4,00
BTNG 504	13402	13124	-	N	25,00	4,20	0,4	5,00
BTNG 508	13396	13395	-	N	25,00	4,20	0,8	5,00
BTNG 604	19292	20502	-	N	30,00	4,90	0,4	6,00
BTNG 608	19293	20503	-	N	30,00	4,90	0,8	6,00
BTNG 808	19294	20504	-	N	30,00	6,40	0,8	8,00
BTNG 812	19295	20505	-	N	30,00	6,40	1,2	8,00
BTNG 1008	19296	20506	-	N	30,00	8,10	0,8	10,00
BTNG 1012	19297	20507	-	N	30,00	8,10	1,2	10,00

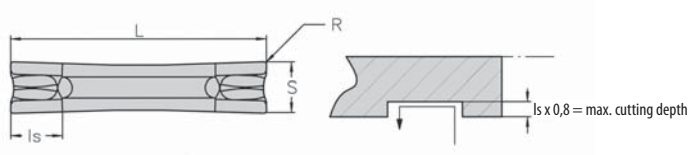
BTNG-Finishing

Fitting tool holders at the bottom

Grooved cutting edge. Horizontal turning edges with parallel chip breakers. The **precision ground micro-grain insert** is recommended especially for heat resistant alloys.



BTNX
System P92



Enlarged view

( )

Ref.	KM TILOX	GS 530 NANOSPEED	( )	L	ls	R	S
	ID-Nr.	ID-Nr.					
BTNX 202	38825	32658	N	20,10	2,00	0,2	2,05 +0,10
BTNX 2,5	38824	32661	N	20,10	2,00	0,2	2,62 +0,10
BTNX 302	38826	12669	N	20,00	3,50	0,2	3,05 +0,15
BTNX 304	38827	12687	N	20,00	3,50	0,4	3,05 +0,15
BTNX 404	38828	12691	N	20,00	3,50	0,4	4,05 +0,20
BTNX 408	38829	12686	N	20,00	3,50	0,8	4,05 +0,20
BTNX 504	38830	12692	N	25,00	4,20	0,4	5,05 +0,25
BTNX 508	38831	12685	N	25,00	4,20	0,8	5,05 +0,25

BTNX-Semi finishing

Fitting tool holders

Grooved cutting edge. Horizontal turning edges with parallel chip breakers. The TIN-coated **cermet insert** is recommended for high speed finishing. The insert can be used universally.
The grade KM TILOX is recommended for semi finishing to roughing machining.

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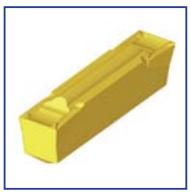
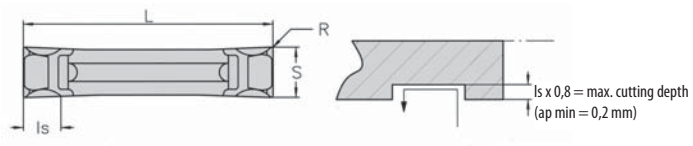
Inserts for grooving and turning



CTDS

System P92



Enlarged view

Ref.	PM NANOSPEED	PM TILOX	KM TILOX	( )	L	ls	R	S
	ID-Nr.	ID-Nr.	ID-Nr.					
CTDS 302	10418	10417	15318	N	20	3,0	0,2	3,0 $^{+0,15}$
CTDS 402	10422	10421	21412	N	20	3,0	0,2	4,0 $^{+0,20}$
CTDS 502	10426	10425	-	N	25	3,0	0,2	5,0 $^{+0,25}$

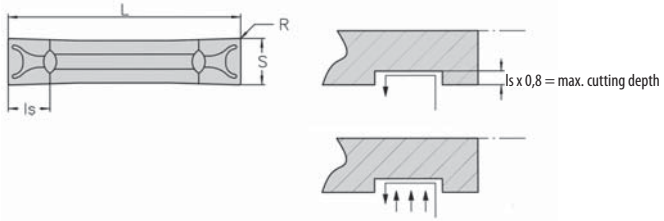
CTDS-Super finishing

Chamfered cutting edge and sharply ground turning edges. Excellent chip control even on turning with small cutting depths.

Fitting tool holders

MTNS

System P92



Enlarged view

Ref.	PM NANO SPEED	KM NANO SPEED	PM ALOX	KM TILOX	PM TILOX	GF110 TILOX	GF110 ALOX	KM CARBO SPEED	( )	L	ls	R	S
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
MTNS 202	-	33879	-	33878	-	-	-	43918	N	20,10	2,0	0,2	2,05 $^{+0,10}$
MTNS 2,5	-	33889	-	33888	-	-	-	43919	N	20,10	2,0	0,2	2,62 $^{+0,10}$
MTNS 302	11011	-	11008	38482	11010	26719	44290	43920	N	20,00	3,5	0,2	3,0 $^{+0,15}$
MTNS 304	11015	-	11012	38541	11014	26720	36063	43921	N	20,00	3,5	0,4	3,0 $^{+0,15}$
MTNS 402	11019	-	11016	38542	11018	26721	44291	43922	N	20,00	3,5	0,2	4,0 $^{+0,20}$
MTNS 404	11023	-	11020	38543	11022	26722	44275	43923	N	20,00	3,5	0,4	4,0 $^{+0,20}$
MTNS 408	21555	-	21344	13170	43814	43815	44292	43816	N	20,00	3,5	0,8	4,0 $^{+0,20}$
MTNS 504	11031	-	11028	38544	11030	25964	39451	43817	N	25,00	4,2	0,4	5,0 $^{+0,25}$
MTNS 508	43821	-	43822	13413	43823	24807	44293	40998	N	25,00	4,2	0,8	5,05 $^{+0,25}$
MTNS 604	43827	-	43828	19268	43829	26723	44294	43836	N	30,00	4,9	0,4	6,05 $^{+0,25}$
MTNS 608	21557	-	32197	19269	40340	20861	21022	43837	N	30,00	4,9	0,8	6,05 $^{+0,25}$
MTNS 612	-	-	-	19270	-	-	-	43840	N	30,00	4,9	1,2	6,05 $^{+0,25}$
MTNS 808	21559	-	28346	19271	-	-	-	43841	N	30,00	6,4	0,8	8,05 $^{+0,25}$
MTNS 812	-	-	-	19272	-	-	-	43842	N	30,00	6,4	1,2	8,05 $^{+0,25}$
MTNS 1008	-	-	-	19274	-	-	-	43843	N	30,00	8,1	0,8	10,05 $^{+0,25}$
MTNS 1012	-	-	-	19275	-	-	-	43844	N	30,00	8,1	1,2	10,05 $^{+0,25}$

MTNS-Roughing

Cutting edge with large parting off chip breakers. Excellent chip control in the range ls x 0,8. Especially recommended for carbon steels, low and high alloy steels.

Fitting tool holders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p. 74


p. 91-94


p. 96-98


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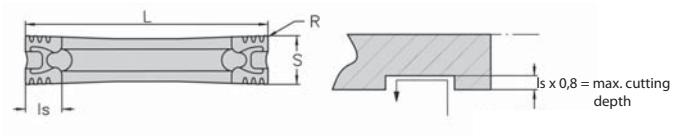
Inserts for grooving and turning

MTNZ
System P92




Enlarged view

Ref.		PM NANOSPEED	KM NANOSPEED	PM ALOX	PM TILOX	KM TILOX	◇	L	ls	R	S
		ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
MTNZ 304	new!	42791	42790	42793	42792	41018	N	20,00	3,5	0,4	3,075 $^{\pm 0,075}$
MTNZ 3,5		11035		11032	11034		N	20,00	3,5	0,2	3,550 $^{+0,080}$
MTNZ 402		11039	15723	11036	11038	15724	N	20,00	3,5	0,2	4,000 $^{+0,200}$
MTNZ 404	new!	42797	42796	42799	42798	41017	N	20,00	3,5	0,4	4,100 $^{\pm 0,100}$
MTNZ 504		11043		11040	11042		N	25,00	4,2	0,4	5,000 $^{+0,250}$
MTNZ 508	new!	42801	42800	42803	42802	41000	N	25,00	4,2	0,8	5,125 $^{\pm 0,125}$
MTNZ 604	new!	42805	42804	42807	42806	41019	N	30,00	4,9	0,4	6,125 $^{\pm 0,125}$
MTNZ 608	new!	42809	42808	42811	42810	41196	N	30,00	4,9	0,8	6,125 $^{\pm 0,125}$
MTNZ 808	new!	42814	42813	42816	42815	42812	N	30,00	6,4	0,8	8,125 $^{\pm 0,125}$
MTNZ 812	new!	42818	42817	42820	42819	41197	N	30,00	6,4	1,2	8,125 $^{\pm 0,125}$

MTNZ-Roughing

Grooved cutting edge and wave shaped turning edges. Chip control even when machining high alloy steels and stainless steels.

Fitting tool holders

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How to write an order:

			recommended	
1 St.	P92 CXCBL 1212 K30 10	or:	**1 St.**	**ID-Nr. 28189**
10 St.	MTNZ 304 PM NANOSPEED	or:	**10 St.**	**ID-Nr. 42791**

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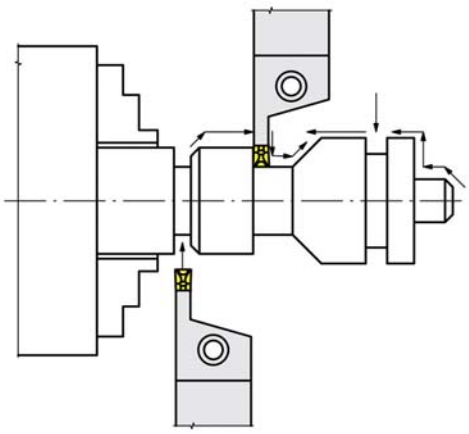
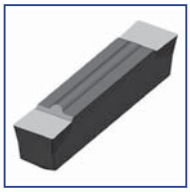


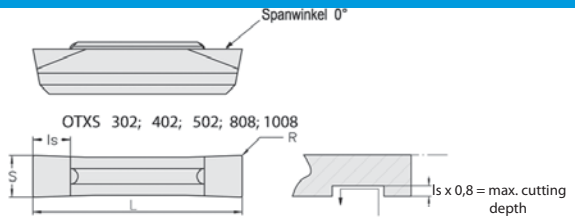
... all operations with 1 tool holder and 1 insert ...

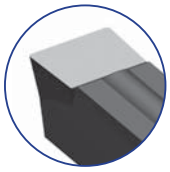
- Face turning
- Profiling
- Grooving
- Large groove cutting
- Roughing
- Finishing
- Chamfering
- Parting-off

Inserts for grooving and turning



OTXS
System P92



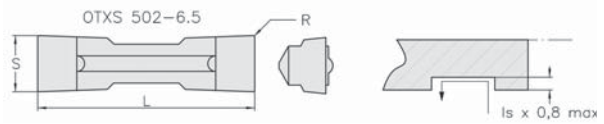


Enlarged view

Ref.	PM	KM	( )	L	ls	R	S
	ID-Nr.	ID-Nr.					
OTXS 302	11199	11198	N	20	3,5	0,2	3,0 $^{+0,15}$
OTXS 402	11201	11200	N	20	3,5	0,2	4,0 $^{+0,20}$
OTXS 502	11203	11202	N	25	4,2	0,2	5,0 $^{+0,25}$
OTXS 502 6,5	11205	11204	N	25	4,9	0,2	6,5 $^{+0,25}$
OTXS 808	-	20544	N	30	6,4	0,8	8,05 $^{+0,25}$
OTXS 1008	-	20543	N	30	8,1	0,8	10,05 $^{+0,25}$

OTXS-Semi finishing

Ground top rake with 0° rake angle. Recommended for cast materials and for **customers applications**.



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Fitting tool holders

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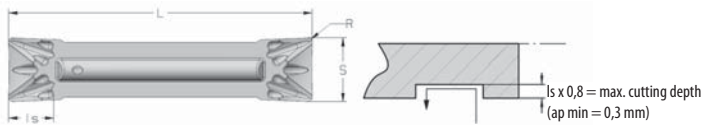
new!

STNZ / STNG
System P92



Enlarged view

Ref.	KM	KM Aluspeed	KM HYPERSPEED	KM TILOX	( )	L	R	S
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.				
STNZ 504	-	45003	45009	45117	N	25,0	0,4	5,25 $^{\pm 0,075}$
STNG 502	45014	45004	45010	45118	N	25,0	0,2	5,10 $^{-0,050}$
STNG 504	45015	45005	45011	45119	N	25,0	0,4	5,10 $^{-0,050}$

Comment:

STNG has been developed, to machine materials, which are difficult to cut, like:

- nonferrous heavy metals
- nickel alloys
- plastic materials
- composite materials
- aluminum alloys

STNZ = polished surfaces, honed edges
STNG = polished surfaces, sharp cutting edges

Passende Werkzeuge

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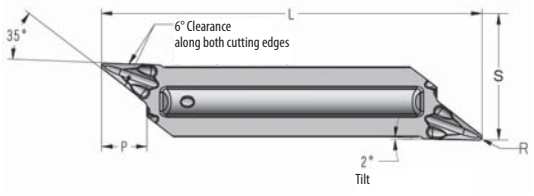
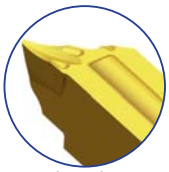
Inserts for grooving and copying

new!

STV R/L
System P92





Enlarged view

Ref.	KM	KM Aluspeed	KM HYPERSPEED	KM TILOX	( )	L	R	P	S
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
STVL 501	45034	45018	45026	45121	L	25,0	0,1	2,50	5,00
STVL 502	45035	45019	45027	45122	L	25,0	0,2	2,50	5,00
STVR 501	45038	45022	45030	45123	R	25,0	0,1	2,50	5,00
STVR 502	45039	45023	45031	45124	R	25,0	0,2	2,50	5,00

Comment:

STV R/L has been developed, to machine materials, which are difficult to cut, like:

- nonferrous heavy metals
- nickel alloys
- plastic materials
- composite materials
- aluminum alloys

STVL/R = polished surfaces, sharp cutting edges

Passende Werkzeuge

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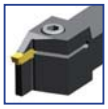

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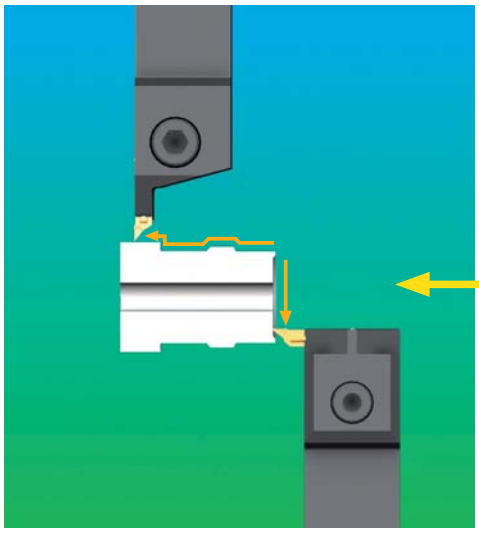
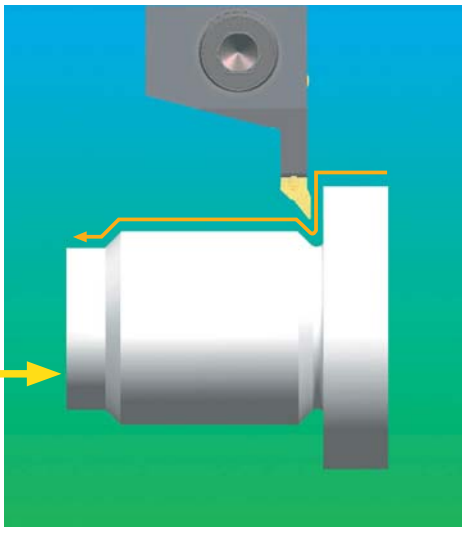


Recommended application of STV R/L, copying insert

Longitudinal turning, semi finishing and finishing

Semi finishing and finishing face cuts

Clearance cuts for threads and others



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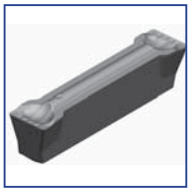
„Gozzilla" Cutting inserts for face grooving

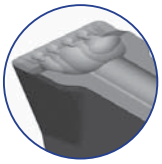
new



GTNS

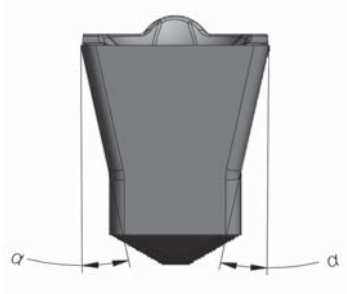
System P92

„Gozzilla"

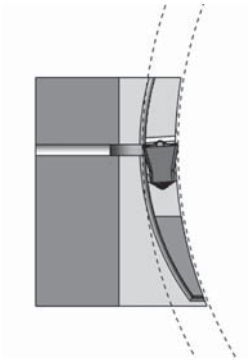


Enlarged view

Ref.	KM CARBOSPEED	PM CARBOSPEED	KM ALOX	KM TILOX	PM ALOX	PM TILOX	( )	Ls	L	R	S$^{\pm 0,125}$
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
GTNS 504	48309	48310	48308	40195	48307	40194	N	1,5	25,0	0,4	5,125



Additional clearance



Chip breaker:
Especially developed for effective chip flow when face grooving.

Insert:
Developed for machining of stainless and alloys steels.

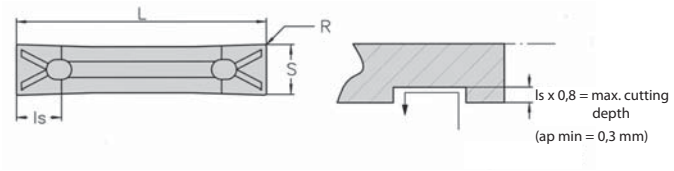
Clearance:
Especially for face grooving.

Remark:
To be used as well for radial grooving and parting off

Inserts for grooving and turning

VTNS

System P92 P



Enlarged view

Ref.	PM NANOSPEED	PM ALOX	PM TILOX	KM TILOX	( )	L	ls	R	S
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
VTNS 302	11445	11442	11444	30668	N	20	3,0	0,2	3,0 $^{+0,15}$
VTNS 3,5	11449	11446	11448	-	N	20	3,0	0,2	3,55 $^{\pm 0,035}$
VTNS 402	11453	11450	11452	-	N	20	3,5	0,2	4,0 $^{+0,20}$
VTNS 502	11457	11454	11456	-	N	25	4,2	0,4	5,0 $^{+0,25}$

VTNS-Roughing to finishing

Horizontal cutting edge with V-shaped chip breaker. Horizontal turning edges with large chip spaces to allow deep cuts. Especially recommended for carbon steels, low alloy steels and free cutting materials.

Fitting tool holders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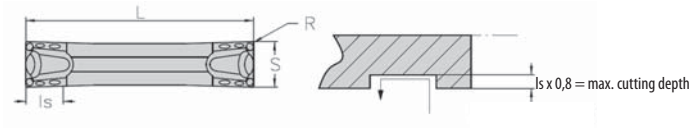
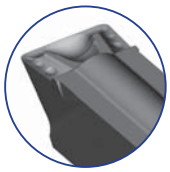
Inserts for grooving and turning

XTNS

System P92





Enlarged view

3

Bezeichnung	KM TILOX	GF110 TILOX	( )	L	ls	R	S
	ID-Nr.	ID-Nr.					
XTNS 202	14268	38917	N	20,15	2,00	0,2	2,05 $^{+0,10}$
XTNS 302	14055	38918	N	20,15	3,00	0,2	3,05 $^{+0,15}$
XTNS 304	14053	38919	N	20,15	3,00	0,4	3,05 $^{+0,15}$
XTNS 404	38903	38920	N	20,15	3,40	0,4	4,05 $^{+0,20}$
XTNS 408	38904	38921	N	20,15	3,40	0,8	4,05 $^{+0,20}$
XTNS 504	38905	-	N	25,15	4,20	0,4	5,05 $^{+0,25}$
XTNS 508	38906	-	N	25,15	4,20	0,8	5,05 $^{+0,25}$
XTNS 604	38910	-	N	30,10	4,50	0,4	6,05 $^{+0,25}$
XTNS 608	38911	-	N	30,10	4,50	0,8	6,05 $^{+0,25}$
XTNS 612	38912	-	N	30,10	4,50	1,2	6,05 $^{+0,25}$
XTNS 808	38913	-	N	30,10	6,00	0,8	8,05 $^{+0,25}$
XTNS 812	38914	-	N	30,10	6,00	1,2	8,05 $^{+0,25}$
XTNS 1008	38915	-	N	30,10	6,00	0,8	10,05 $^{+0,25}$
XTNS 1012	38916	-	N	30,10	6,10	1,2	10,05 $^{+0,25}$

XTNS - Roughing to finishing

A 9° declining major cutting edge with a reinforcing chamfer and a 24° positive entry to the chip former, achieve excellent chip control especially on difficult to cut materials. The minor cutting edges with 16° positive entry angle achieve efficient profile turning creating clean surfaces.
Although the insert has been developed for universal cutting and turning, parting off tests with KM TILOX proved excellent tool life on stainless steels, e.g. 1.4404 (X2 CrNiMo1810). Therefore the insert is also recommmended for stainless steel parting off. The best tool life on parting off hexagon material 1.4571 Ø 38 has been 409 pcs so far. This could be increased to an amazing 678 pcs with the same speeds.
(Vc: 60 m/min; f: 0,05 mm/Rev.)

Fitting tool holders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p. 70

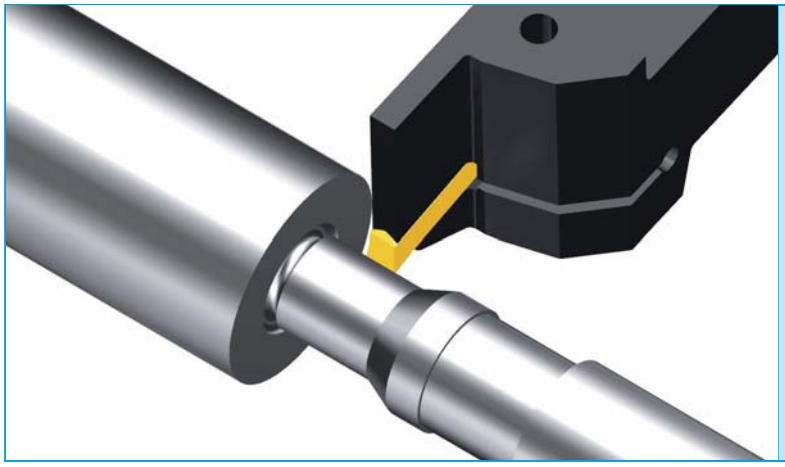

p. 65-66


p. 74


p. 91-94


p. 96-97

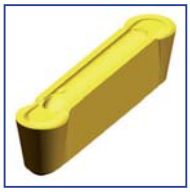

p. 153



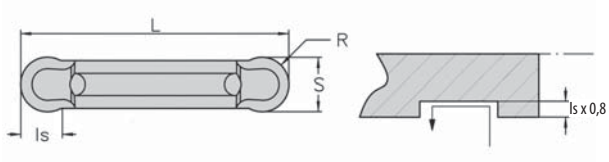
Recommendation: Overhead positioning

- Avoiding chip build-up
- Reducing danger of tool fracturing caused by chip build-up
- Fine surfaces

Inserts for copying and turning



RTNG
System P92



Enlarged view

Ref.	GF 110	GF 110 NANOSPEED	( )	L	ls	R	S +0,025
	ID-Nr.	ID-Nr.					
RTNG 210	34649	34650	N	20,00	1,71	1,0	2,00
RTNG 315	19302	20471	N	20,00	2,60	1,5	3,00
RTNG 420	13415	12681	N	20,00	3,40	2,0	4,00
RTNG 525	13416	13417	N	25,00	4,10	2,5	5,00
RTNG 630	19303	20508	N	30,00	4,90	3,0	6,00
RTNG 840	19304	20509	N	30,00	6,50	4,0	8,00
RTNG 1050	19310	20510	N	30,00	8,10	5,0	10,00

RTNG-Finishing

Precision ground full radius insert. Horizontal cutting edge with parallel chip breaker. The **micrograin** insert is especially recommended for heat resistant alloys.

Fitting tool holders

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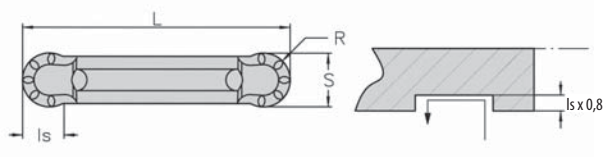
RTNX
System P92



Enlarged view

Ref.	KM TILOX	( )	L	ls	R	S
	ID-Nr.					
RTNX 210	31706	N	20,10	1,76	1,1	2,05 +0,10
RTNX 315	19298	N	20,00	2,60	1,5	3,05 +0,15
RTNX 420	13067	N	20,00	3,40	2,0	4,05 +0,15
RTNX 525	13414	N	25,00	4,10	2,5	5,05 +0,25
RTNX 630	19299	N	30,00	4,90	3,0	6,05 +0,25
RTNX 840	19300	N	30,00	6,50	4,0	8,05 +0,25
RTNX 1050	19301	N	30,00	8,10	5,0	10,05 +0,25

RTNX-Roughing

Full radius insert. The horizontal cutting edge with its chip breaker rips makes short chips on almost all materials.

Fitting tool holders

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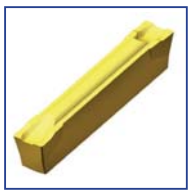
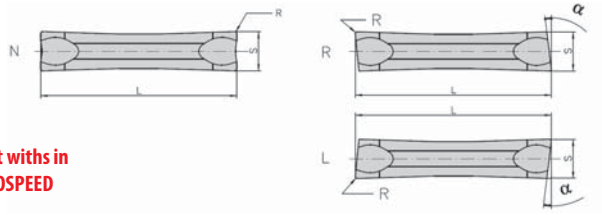
GripLock®

Parting off and grooving inserts with 2 edges



BTNN/R/L

System P92



All insert withs in PM NANOSPEED

Enlarged view

Ref.	KM NANO SPEED	PM NANO SPEED (new!)	KM TILOX	PM TILOX	KM CARBO SPEED	GS 530 NANO SPEED	( )	L	R	S	α°
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
BTNN 1,5	-	45058	30595	-	43845	43561	N	15,50	0,2	1,50	0
BTNN 2	34208	45059	30944	-	43846	-	N	20,02	0,2	2,05	0
BTNN 2,5	33999	45060	30850	-	43847	-	N	20,03	0,2	2,50	0
BTNN 3	-	20532	12689	20917	43848	-	N	20,10	0,2	3,05	0
BTNN 4	-	20533	15843	30597	43849	-	N	20,10	0,2	4,05	0
BTNR 1,5 6D	-	45061	30576	-	43850	-	R	15,50	0,2	1,50	6
BTNR 1,5 10D	-	45062	30666	-	43852	-	R	15,50	0,2	1,50	10
BTNR 1,5 16D	-	45063	30667	-	43854	-	R	15,50	0,2	1,50	16
BTNR 2 6D	34210	45064	34209	-	43855	-	R	20,02	0,2	1,99	6
BTNR 2 10D	34207	45065	34206	-	43856	-	R	20,02	0,2	1,99	10
BTNR 2,5 6D	34003	45066	34002	-	43857	-	R	20,03	0,2	2,49	6
BTNR 2,5 10D	34001	45067	34000	-	43858	-	R	20,03	0,2	2,49	10
BTNR 3 6D	-	20534	12690	-	43859	-	R	20,10	0,2	3,05	6
BTNR 3 10D	-	20536	19665	-	43860	-	R	20,10	0,2	3,05	10
BTNR 4 6D	-	20538	15844	-	43861	-	R	20,10	0,2	4,05	6
BTNR 4 10D	-	20540	19667	-	43864	-	R	20,10	0,2	4,05	10
BTNL 1,5 6D	-	45068	30665	-	43866	-	L	15,50	0,2	1,50	6
BTNL 1,5 10D	-	45069	30663	-	43867	-	L	15,50	0,2	1,50	10
BTNL 1,5 16D	-	45070	30664	-	43869	-	L	15,50	0,2	1,50	16
BTNL 2 6D	33994	45071	33993	-	43870	-	L	20,02	0,2	1,99	6
BTNL 2 10D	34205	45072	34204	-	43871	-	L	20,02	0,2	1,99	10
BTNL 2,5 6D	33996	45073	33995	-	43872	-	L	20,03	0,2	2,49	6
BTNL 2,5 10D	33998	45074	33997	-	43873	-	L	20,03	0,2	2,49	10
BTNL 3 6D	-	20535	12688	-	43874	-	L	20,10	0,2	3,05	6
BTNL 3 10D	-	20537	19666	-	43875	-	L	20,10	0,2	3,05	10
BTNL 4 6D	-	20539	15845	-	43877	-	L	20,10	0,2	4,05	6
BTNL 4 10D	-	20541	19668	-	43879	-	L	20,10	0,2	4,05	10

BTN Parting off chip breaker

Grooved parting off edge with reinforced flanks. The deep and spacious **chip-trough** gives excellent chip control. Efficient on almost all materials.

Fitting tool holders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p. 65-66


p. 74


p. 91-94


p. 96-97


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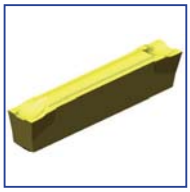
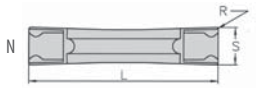
Parting off and grooving inserts

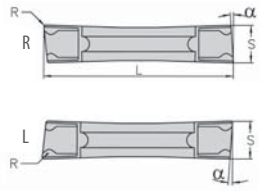
new



BTNN/R/L F

System P92



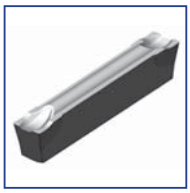


Enlarged view

Ref.	GF 110 Nanospeed	↻	L	R	S ±0,1
	ID-Nr.				
BTNNF1,5	48311	N	14,90	0,0	1,50
BTNNF 2	48312	N	19,40	0,0	2,00
BTNRF1,5 6D	48313	R	14,90	0,0	1,50
BTNRF 2 6D	48314	R	19,40	0,0	2,00
BTNLF 1,5 6D	48315	L	14,90	0,0	1,50
BTNLF 2 6D	48316	L	19,40	0,0	2,00

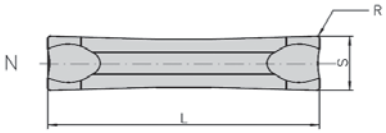
Remark:
Sharply ground cutting edge without corner radius.
Recommended for automatic lathe cutting jobs.

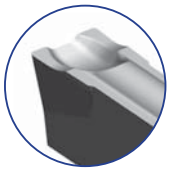
Parting off and grooving inserts with special surface preparation and cutting edge honing



BTNN/R/L

System P92





Enlarged view

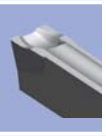
new

Ref.	GF110 Carbospeed	GF110 Nanospeed	GF110 Hyperspeed	GF 110 Hardlox	↻	L	R	S	α°
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
BTNN 1,5	45075	45076	45077	47696	N	15,50	0,2	1,50	0
BTNN 2	45078	45079	45080	47697	N	20,02	0,2	2,05	0
BTNN 2,5	45081	45082	45083	47698	N	20,03	0,2	2,50	0
BTNN 3	42824	42825	42826	47699	N	20,10	0,2	3,05	0
BTNN 4	45085	45086	45087	47700	N	20,1	0,2	4,05	0

The new high performance coatings

CARBOSPEED
a new generation of a heat- and wear resisting nitride coating

It has been developed especially to machine low and high alloy steels.

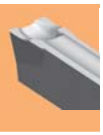


NANOSPEED
a super nitride coating

It has been developed especially to machine steels in general and stainless steels.

HYPERSPEED
a super nitride coating

It has been developed especially to machine difficult to cut materials.



Complete information see page 186

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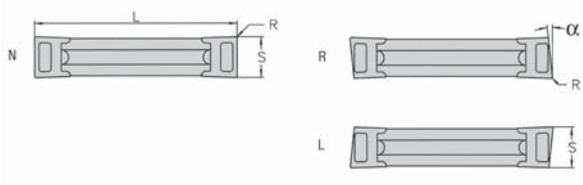
GripLock®

Parting off and grooving inserts with 2 edges

CTD/R/L-ALU

System P92



Enlarged view

Ref.	KM	KM ALUSPEED	PM NANOSPEED	( )	L	R	S	α°
	ID-Nr.	ID-Nr.	ID-Nr.					
CTD 3 ALU	10400	10709	10402	N	20	0,2	3,0 +0,15	0
CTD 4 ALU	10405	30661	10407	N	20	0,2	4,0 +0,20	0
CTD 5 ALU	10410	38483	10412	N	25	0,2	5,0 +0,25	0
CTR 3 6D ALU	10427	30598	10431	R	20	0,2	3,0 +0,15	6
CTR 4 6D ALU	10439	38484	10443	R	20	0,2	4,0 +0,20	6
CTR 5 6D ALU	10451	10453	10455	R	25	0,2	5,0 +0,25	6
CTL 3 6D ALU	10428	30662	10432	L	20	0,2	3,0 +0,15	6
CTL 4 6D ALU	10440	36195	10444	L	20	0,2	4,0 +0,20	6
CTL 5 6D ALU	10452	10454	10456	L	25	0,2	5,0 +0,25	6

ALU chip breaker...

Fitting tool holders

Horizontal ground cutting edge. The flat chip chamber conveys chips at high speed.
Recommended for:
Nonferrous heavy metals, Machining steels, Thinwalled parts, Unstable components and Pipes.

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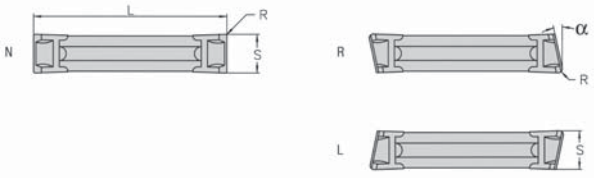
CTD/R/L-IT

System P92



Enlarged view

Ref.	PM NANOSPEED	PM TILOX	KM TILOX	KM CARBOSPEED	( )	L	R	S	α°
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
CTD 3	10404	10403	23613	43880	N	20	0,2	3,0 +0,15	0
CTD 4	10409	10408	18387	43881	N	20	0,2	4,0 +0,20	0
CTD 5	10414	10413	43883	43882	N	25	0,2	5,0 +0,25	0
CTR 3 6D	10437	10435	28953	-	R	20	0,2	3,0 +0,15	6
CTR 4 6D	10449	10447	-	-	R	20	0,2	4,0 +0,20	6
CTR 5 6D	10461	10459	-	-	R	25	0,2	5,0 +0,25	6
CTL 3 6D	10438	10436	21757	-	L	20	0,2	3,0 +0,15	6
CTL 4 6D	10450	10448	-	-	L	20	0,2	4,0 +0,20	6
CTL 5 6D	10462	10460	-	-	L	25	0,2	5,0 +0,25	6

IT Classic chip breaker...

Fitting tool holders see above

Horizontal, chamfered parting off edge with reinforced flanks and large chip breaker. To be used universally and especially on interrupted cuts.

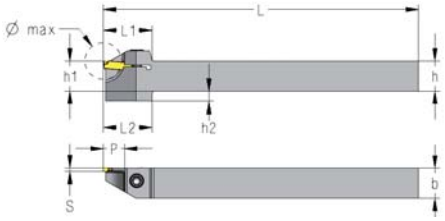
- Alloy steels
- Stainless steels
- Interrupted cuts

page 14

Holders for parting off, grooving and turning for cutting width 1,5 mm

P92 CXCBL
System P92

LH holder



P92 CXCBR
System P92

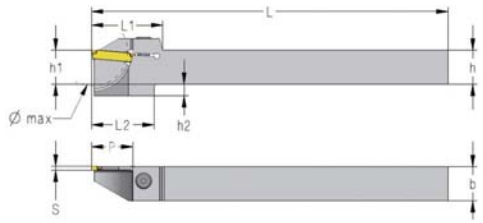
RH holder

Ref.		ID-Nr.	( )	Ø max	h	h1	h2	b	P	S	L	L1	L2	
P92 CXCBL 0808 K15		33450	L	16	8	8	4	8	8	1,5	125	19	19	10
P92 CXCBL 1010 K15		30110	L	16	10	10	6	10	8	1,5	125	19	19	10
P92-CXCBL 1010 K15 14	new!	44738	L	28	10	10	6	10	14	1,5	125	25	22	10
P92 CXCBL 1212 K15		30109	L	16	12	12	4	12	8	1,5	125	19	19	10
P92-CXCBL 1212 K15 14	new!	44739	L	28	12	12	4	12	14	1,5	125	25	22	10
P92 CXCBL 1616 K15		30100	L	16	16	16	-	16	8	1,5	125	19	-	10
P92-CXCBL 1616 K15 14	new!	44740	L	28	16	16	-	16	14	1,5	125	25	-	10
P92 CXCBL 2020 K15		33458	L	28	20	20	-	20	14	1,5	125	30	-	1
P92-CXCBL 2020 K15 14	new!	44741	L	28	20	20	-	25	14	1,5	125	25	-	10
P92 CXCBL 2525 M15		33460	L	28	25	25	-	25	14	1,5	150	30	-	1
P92 CXCBR 0808 K15		33449	R	16	8	8	4	8	8	1,5	125	19	19	10
P92 CXCBR 1010 K15		30124	R	16	10	10	6	10	8	1,5	125	19	19	10
P92-CXCBR 1010 K15 14	new!	44733	R	28	10	10	6	10	14	1,5	125	25	22	10
P92 CXCBR 1212 K15		30125	R	16	12	12	4	12	8	1,5	125	19	19	10
P92-CXCBR 1212 K15 14	new!	44734	R	28	12	12	4	12	14	1,5	125	25	22	10
P92 CXCBR 1616 K15		30126	R	16	16	16	-	16	8	1,5	125	19	-	10
P92-CXCBR 1616 K15 14	new!	44735	R	28	16	16	-	16	14	1,5	125	25	-	10
P92 CXCBR 2020 K15		33457	R	28	20	20	-	20	14	1,5	125	30	-	1
P92-CXCBR 2020 K15 14	new!	44736	R	28	20	20	-	25	14	1,5	125	25	-	10
P92 CXCBR 2525 M15		33459	R	28	25	25	-	25	14	1,5	150	30	-	1

new!

P92 CXCBL...14
System P92

LH holder



P92 CXCBR...14
System P92

RH holder

new!

Comment

Tool holders with an extension of 17 mm offer an enlarged range for parting off. When used for turning, moderate feeds should be applied.

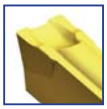
Holder and inserts with the same "S" dimension fit together.

Fitting inserts

p.200-201,212

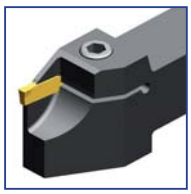
p. 48-54

p. 55



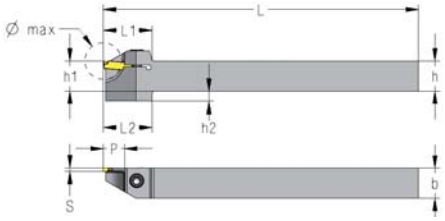
p. 56

Holders for parting off, grooving and turning for cutting width 2 and 2,5 mm



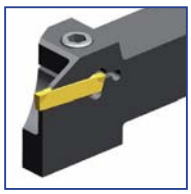
P92 CXCBL
System P92

LH holder



P92 CXCBR
System P92

RH holder



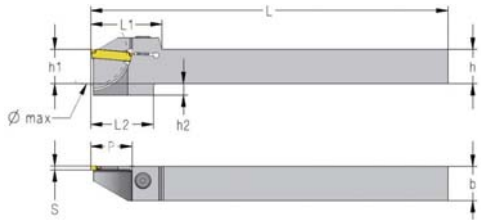
3

Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	P	S	L	L1	L2	
P92 CXCBL 0808 K20+25	33444	L	22	8	8	4	8	11	2+2,5	125	19,5	19,5	10
P92 CXCBL 1010 K20+25	33445	L	22	10	10	6	10	11	2+2,5	125	19,5	19,5	10
P92 CXCBL 1212 K20+25	33448	L	22	12	12	4	12	11	2+2,5	125	19,5	19,5	10
P92-CXCBL 1212 K20+25 14 new!	44742	L	28	12	12	4	12	14	2+2,5	125	25	22	10
P92 CXCBL 1616 K20+25 11	33452	L	22	16	16	-	16	11	2+2,5	125	19,5	-	10
P92 CXCBL 1616 K20+25 17	33473	L	34	16	16	5	16	17	2+2,5	125	34	26	1
P92 CXCBL 2020 K20+25 14	33454	L	28	20	20	-	20	14	2+2,5	125	30	-	1
P92 CXCBL 2020 K20+25 17	33474	L	34	20	20	-	20	17	2+2,5	125	34	-	1
P92 CXCBL 2525 M20+25 14	33455	L	28	25	25	-	25	14	2+2,5	150	30	-	1
P92 CXCBL 2525 M20+25 17	33475	L	34	25	25	-	25	17	2+2,5	150	34	-	1
P92 CXCBR 0808 K20+25	33336	R	22	8	8	4	8	11	2+2,5	125	19,5	19,5	10
P92 CXCBR 1010 K20+25	33446	R	22	10	10	6	10	11	2+2,5	125	19,5	19,5	10
P92 CXCBR 1212 K20+25	33447	R	22	12	12	4	12	11	2+2,5	125	19,5	19,5	10
P92-CXCBR 1212 K20+25 14 new!	44737	R	28	12	12	4	12	14	2+2,5	125	25	22	10
P92 CXCBR 1616 K20+25 11	33451	R	22	16	16	-	16	11	2+2,5	125	19,5	-	10
P92 CXCBR 1616 K20+25 17	33470	R	34	16	16	5	16	17	2+2,5	125	34	26	1
P92 CXCBR 2020 K20+25 14	33453	R	28	20	20	-	20	14	2+2,5	125	30	-	1
P92 CXCBR 2020 K20+25 17	33471	R	34	20	20	-	20	17	2+2,5	125	34	-	1
P92 CXCBR 2525 M20+25 14	33456	R	28	25	25	-	25	14	2+2,5	150	30	-	1
P92 CXCBR 2525 M20+25 17	33472	R	34	25	25	-	25	17	2+2,5	150	34	-	1

new!

P92 CXCBL...14
System P92

LH holder



P92 CXCBR...14
System P92

RH holder

new!

Comment

Tool holders with an extension of 17 mm offer an enlarged range for parting off. When used for turning, moderate feeds should be applied.

Holder and inserts with the same "S" dimension fit together.

Advantage!

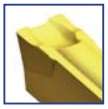
In these tool holders 2 different insert fit: width 2,0 mm or 2,5 mm.

Fitting inserts

p.200-201,212

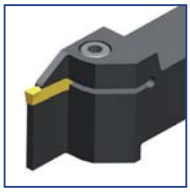
p. 48-54

p. 55



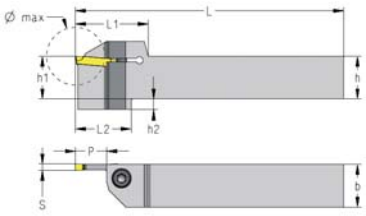
p. 56

Holders for parting off, grooving and turning for cutting width range 3 to 3,5 mm



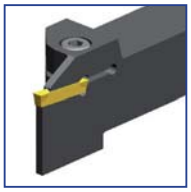
P92 CXCBL
System P92

LH holder



P92 CXCBR
System P92

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	P	S	L	L1	L2	
P92 CXCBL 1212 K30 10	28189	L	20	12	12	5	12	10	3,0	125	21,0	22	11
P92 CXCBL 1212 K30 14	19698	L	28	12	12	5	12	14	3,0	125	34,0	26	1
P92 CXCBL 1616 K30 10	38514	L	20	16	16	5	16	10	3,0	125	28,0	22	1
P92 CXCBL 1616 K30 14	10092	L	28	16	16	5	16	14	3,0	125	34,0	26	1
P92 CXCBL 1616 K30 17	10094	L	34	16	16	5	16	17	3,0	125	37,0	29	1
P92 CXCBL 2020 K30 10	38515	L	20	20	20	5	20	10	3,0	125	30,0	26	1
P92 CXCBL 2020 K30 14	10096	L	28	20	20	5	20	14	3,0	125	34,0	26	1
P92 CXCBL 2020 K30 17	10098	L	34	20	20	5	20	17	3,0	125	37,0	29	1
P92 CXCBL 2525 M30 10	31254	L	20	25	25	-	25	10	3,0	150	30,0	-	2
P92 CXCBL 2525 M30 14	10108	L	28	25	25	-	25	14	3,0	150	34,0	-	2
P92 CXCBL 2525 M30 17	10110	L	34	25	25	-	25	17	3,0	150	37,0	-	2
P92 CXCBL 2020 K35 17	10100	L	34	20	20	5	20	17	3,5	125	37,0	29	1
P92 CXCBL 2525 M35 17	10112	L	34	25	25	-	25	17	3,5	150	37,0	-	2
P92 CXCBR 1212 K30 10	28188	R	20	12	12	5	12	10	3,0	125	21,0	22	11
P92 CXCBR 1212 K30 14	19533	R	28	12	12	5	12	14	3,0	125	34,0	26	1
P92 CXCBR 1616 K30 10	38516	R	20	16	16	5	16	10	3,0	125	28,0	22	1
P92 CXCBR 1616 K30 14	10091	R	28	16	16	5	16	14	3,0	125	34,0	26	1
P92 CXCBR 1616 K30 17	10093	R	34	16	16	5	16	17	3,0	125	37,0	29	1
P92 CXCBR 2020 K30 10	38517	R	20	20	20	5	20	10	3,0	125	30,0	26	1
P92 CXCBR 2020 K30 14	10095	R	28	20	20	5	20	14	3,0	125	34,0	26	1
P92 CXCBR 2020 K30 17	10097	R	34	20	20	5	20	17	3,0	125	37,0	29	1
P92 CXCBR 2525 M30 10	36432	R	20	25	25	-	25	10	3,0	150	30,0	-	2
P92 CXCBR 2525 M30 14	10107	R	28	25	25	-	25	14	3,0	150	34,0	-	2
P92 CXCBR 2525 M30 17	10109	R	34	25	25	-	25	17	3,0	150	37,0	-	2
P92 CXCBR 2020 K35 17	10099	R	34	20	20	5	20	17	3,5	125	37,0	29	1
P92 CXCBR 2525 M35 17	10111	R	34	25	25	-	25	17	3,5	150	37,0	-	2

Comment

Tool holders with an extension of 17 mm offer an enlarged range for parting off. When used for turning, moderate feeds should be applied.

Holder and inserts with the same "S" dimension fit together.

Fitting inserts

p.200-201,212

p. 48-54

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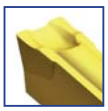
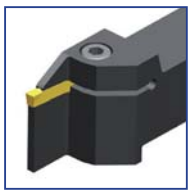


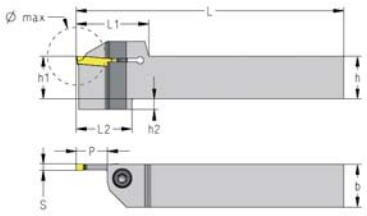
p. 56-58

Holders for parting off, grooving and turning for cutting width range 4 to 5 mm



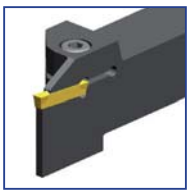
P92 CXCBL
System P92

LH holder



P92 CXCBR
System P92

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	P	S	L	L1	L2	
P92 CXCBL 1212 K40 10	28190	L	20	12	12	5	12	10	4	125	28,0	22	1
P92 CXCBL 1212 K40 14	19756	L	28	12	12	5	12	14	4	125	34,0	26	1
P92 CXCBL 1616 K40 10	38523	L	20	16	16	5	16	10	4	125	28,0	22	1
P92 CXCBL 1616 K40 14	19476	L	28	16	16	5	16	14	4	125	34,0	26	1
P92 CXCBL 1616 K40 17	28191	L	34	16	16	5	16	17	4	125	37,0	29	1
P92 CXCBL 2020 K40 10	38524	L	20	20	20	5	20	10	4	125	30,0	26	1
P92 CXCBL 2020 K40 14	10102	L	28	20	20	5	20	14	4	125	34,0	26	1
P92 CXCBL 2020 K40 17	10104	L	34	20	20	5	20	17	4	125	37,0	29	1
P92 CXCBL 2525 M40 10	38525	L	20	25	25	-	25	10	4	150	30,0	-	2
P92 CXCBL 2525 M40 14	10114	L	28	25	25	-	25	14	4	150	34,0	-	2
P92 CXCBL 2525 M40 17	10116	L	34	25	25	-	25	17	4	150	37,0	-	2
P92 CXCBL 2020 K50 10	19568	L	20	20	20	5	20	10	5	125	34,5	30	1
P92 CXCBL 2020 K50 20	44224	L	38	20	20	5	20	20	5	125	40,0	33	2
P92 CXCBL 2525 M50 10	38526	L	20	25	25	-	25	10	5	150	34,5	-	2
P92 CXCBL 2525 M50 20	10118	L	40	25	25	-	25	20	5	150	40,0	-	2
P92 CXCBR 1212 K40 10	25920	R	20	12	12	5	12	10	4	125	28,0	22	1
P92 CXCBR 1212 K40 14	19697	R	28	12	12	5	12	14	4	125	34,0	26	1
P92 CXCBR 1616 K40 10	20619	R	20	16	16	5	16	10	4	125	28,0	22	1
P92 CXCBR 1616 K40 14	19477	R	28	16	16	5	16	14	4	125	34,0	26	1
P92 CXCBR 1616 K40 17	23199	R	34	16	16	5	16	17	4	125	37,0	29	1
P92 CXCBR 2020 K40 10	38527	R	20	20	20	5	20	10	4	125	30,0	26	1
P92 CXCBR 2020 K40 14	10101	R	28	20	20	5	20	14	4	125	34,0	26	1
P92 CXCBR 2020 K40 17	10103	R	34	20	20	5	20	17	4	125	37,0	29	1
P92 CXCBR 2525 M40 10	38528	R	20	25	25	-	25	10	4	150	30,0	-	2
P92 CXCBR 2525 M40 14	10113	R	28	25	25	-	25	14	4	150	34,0	-	2
P92 CXCBR 2525 M40 17	10115	R	34	25	25	-	25	17	4	150	37,0	-	2
P92 CXCBR 2020 K50 10	16033	R	20	20	20	5	20	10	5	125	34,5	30	1
P92 CXCBR 2020 K50 20	44223	R	38	20	20	5	20	20	5	125	40,0	33	2
P92 CXCBR 2525 M50 10	38529	R	20	25	25	-	25	10	5	150	34,5	-	2
P92 CXCBR 2525 M50 20	10117	R	40	25	25	-	25	20	5	150	40,0	-	2

Comment

Tool holders with an extension of 17 mm offer an enlarged range for parting off. When used for turning, moderate feeds should be applied.

Holder and inserts with the same "S" dimension fit together.

Fitting inserts

p.200-201,212

p. 48-54

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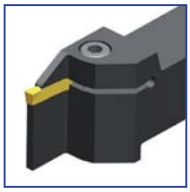
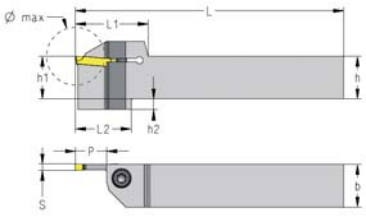
p. 56-58

Holders for parting off, grooving and turning for cutting width range 6 to 10 mm



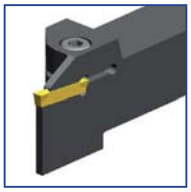
P92 CXCBL
System P92

LH holder



P92 CXCBR
System P92

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	P	S	L	L1	L2	
P92 CXCBL 2020 M60 10	21252	L	20	20	20	5	20	10	6	150	38	30	2
P92 CXCBL 2020 M60 20	19757	L	40	20	20	5	20	20	6	150	43	35	2
P92 CXCBL 2525 M60 10	38520	L	20	25	25	-	25	10	6	150	38	-	2
P92 CXCBL 2525 M60 20	19347	L	40	25	25	-	25	20	6	150	40	-	2
P92 CXCBL 3225 P60	19349	L	52	32	32	-	25	26	6	170	45	-	2
P92 CXCBL 2020 M80 10	21255	L	20	20	20	5	20	10	8	150	37	28	2
P92 CXCBL 2020 M80 14	30298	L	28	20	20	5	20	14	8	150	40	31	2
P92 CXCBL 2020 M80 20	21097	L	40	20	20	5	20	20	8	150	46	37	3
P92 CXCBL 2525 M80 10	38521	L	20	25	25	-	25	10	8	150	38	-	2
P92 CXCBL 2525 M80 20	19354	L	40	25	25	-	25	20	8	150	43	-	3
P92 CXCBL 3225 P80	19350	L	52	32	32	-	25	26	8	170	47	-	3
P92 CXCBL 3225 P100	19352	L	52	32	32	-	25	26	10	170	47	-	3
P92 CXCBR 2020 M60 10	21253	R	20	20	20	5	20	10	6	150	38	30	2
P92 CXCBR 2020 M60 20	19758	R	40	20	20	5	20	20	6	150	43	35	2
P92 CXCBR 2525 M60 10	20803	R	20	25	25	-	25	10	6	150	38	-	2
P92 CXCBR 2525 M60 20	19327	R	40	25	25	-	25	20	6	150	40	-	2
P92 CXCBR 3225 P60	19348	R	52	32	32	-	25	26	6	170	45	-	2
P92 CXCBR 2020 M80 10	21254	R	20	20	20	5	20	10	8	150	37	28	2
P92 CXCBR 2020 M80 14	30297	R	28	20	20	5	20	14	8	150	40	31	2
P92 CXCBR 2020 M80 20	21096	R	40	20	20	5	20	20	8	150	46	37	3
P92 CXCBR 2525 M80 10	38522	R	20	25	25	-	25	10	8	150	38	-	2
P92 CXCBR 2525 M80 20	19355	R	40	25	25	-	25	20	8	150	43	-	3
P92 CXCBR 3225 P80	19351	R	52	32	32	-	25	26	8	170	47	-	3
P92 CXCBR 3225 P100	19353	R	52	32	32	-	25	26	10	170	47	-	3

Comment

Tool holders with an extension of 17 mm offer an enlarged range for parting off. When used for turning, moderate feeds should be applied.

Holder and inserts with the same "S" dimension fit together.

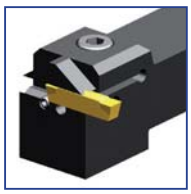
Fitting inserts

p.200-201,212

p. 48-54

p. 55

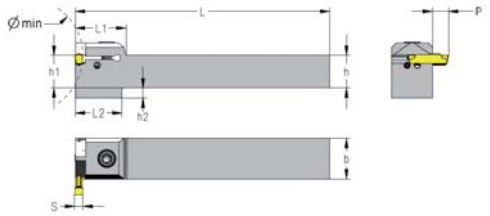
90 ° - Holders for many different turning applications



P92 90 UNI

System P92

RH and LH pocket



Ref.	ID-Nr.	⟲	Dmin	h	h1	h2	b	P	S	L	L1	L2	
P92 90 CXCBRL 1616 K30 UNI	38485	R + L	>70	16	16	4	16	5	3	125	25	26	1+13
P92 90 CXCBRL 2020 K30 UNI	38486	R + L	>70	20	20	-	20	5	3	125	25	-	1+13
P92 90 CXCBRL 2525 M30 UNI	38487	R + L	>70	25	25	-	25	5	3	150	25	-	1+13
P92 90 CXCBRL 2020 K60 UNI	24260	R + L	>120	20	20	-	20	11,0	6	125	34	-	14+20
P92 90 CXCBRL 2525 M60 UNI	24261	R + L	>120	25	25	-	25	11,0	6	150	34	-	14+20
P92 90 CXCBRL 3232 P60 UNI	24262	R + L	>120	32	32	-	32	11,0	6	170	34	-	14+20
P92 90 CXCBRL 2020 K80 UNI	24263	R + L	>120	20	20	5	20	11,0	8	125	40	31	3+21
P92 90 CXCBRL 2525 M80 UNI	24264	R + L	>120	25	25	-	25	11,0	8	150	40	-	3+21
P92 90 CXCBRL 3232 P80 UNI	24265	R + L	>120	32	32	-	32	11,0	8	170	40		3+21

Anmerkung

Holder and inserts with the same "S" dimension fit together.

Fitting inserts

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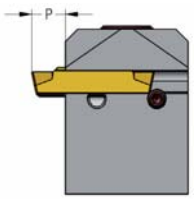
p. 55

p. 56-58

UNI-Holder for clockwise (CW) and counter clockwise (CCW) run

Insert positioned for clockwise (CW) run, face grooving

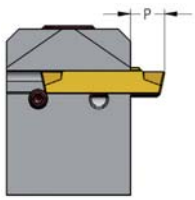
Insert positioned for counter clockwise (CCW) run, grooving



P92 inserts

Insert positioned for counter clockwise (CCW) run, face grooving

Insert positioned for clockwise (CW) run, grooving

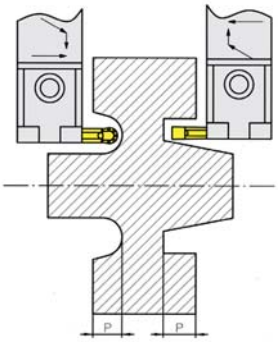


P92 inserts

2 tapped holes for a positioning pin permit the use of P92 inserts for CW and CCW run!

Face turning

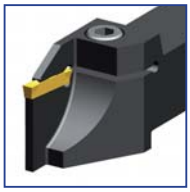
with RTNX 840 TILOX



Face turning

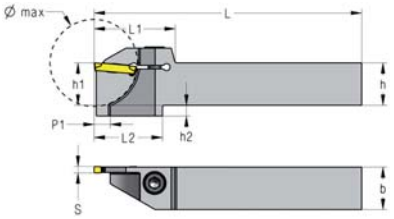
with MTNS 812 TILOX

Holder for deep cuts from Ø 42 mm up to Ø 56 mm and deep grooving



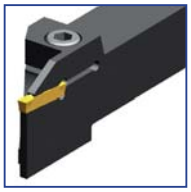
P92 A CXCBL
System P92

LH holder



P92 A CXCBR
System P92

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	P1	S	L	L1	L2	
P92 A CXCBL 1616 K30 42	35158	L	42	16	16	5	16	7,0	3,0	125	39	31	1
P92 A CXCBL 2020 K30 42	35160	L	42	20	20	5	20	7,0	3,0	125	39	31	1
P92 A CXCBL 2020 K30 56	24890	L	56	20	20	5	20	20,5	3,0	125	46	38	1
P92 A CXCBL 2020 K40 56	28182	L	56	20	20	5	20	20,5	4,0	125	46	38	1
P92 A CXCBL 2525 M30 42	35163	L	42	25	25	-	25	-	3,0	150	39	-	1
P92 A CXCBL 2525 M30 56	24891	L	56	25	25	-	25	13,0	3,0	150	46	-	1
P92 A CXCBL 2525 M40 56	28181	L	56	25	25	-	25	13,0	4,0	150	46	-	1
P92 A CXCBR 1616 K30 42	35159	R	42	16	16	5	16	7,0	3,0	125	39	31	1
P92 A CXCBR 2020 K30 42	35161	R	42	20	20	5	20	7,0	3,0	125	39	31	1
P92 A CXCBR 2020 K30 56	25568	R	56	20	20	5	20	20,0	3,0	125	46	38	1
P92 A CXCBR 2020 K40 56	28184	R	56	20	20	5	20	20,0	4,0	125	46	38	1
P92 A CXCBR 2525 M30 42	35162	R	42	25	25	-	25	-	3,0	150	39	-	1
P92 A CXCBR 2525 M30 56	25685	R	56	25	25	-	25	13,0	3,0	150	46	-	1
P92 A CXCBR 2525 M40 56	28180	R	56	25	25	-	25	13,0	4,0	150	46	-	1

Remark

P92 A-inserts and P92 A CXCB...holder join together to form an extremely solid unit owing to long guide surfaces between insert and pocket and reinforced tool holders. A-type tools are therefore recommended for heavy duty cutting, deep cuts and to achieve clean faces.

Fitting inserts

p.200-201,212

p. 48-54

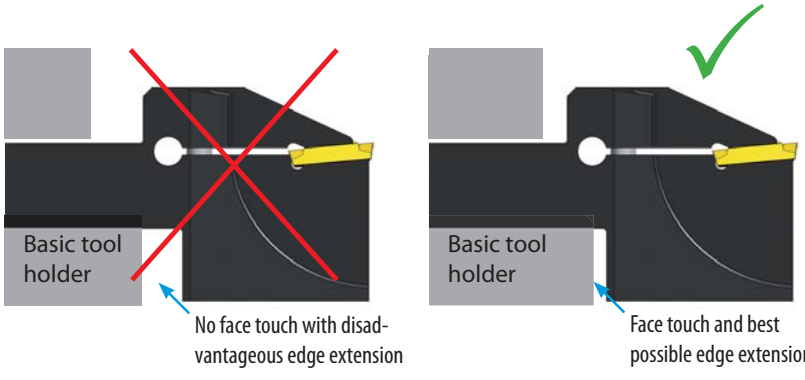
p. 55

p. 56-58, 73

Recommendation

For deep grooving inserts with 2-edges are recommended.

Holders and inserts with the same "S" dimension fit together.



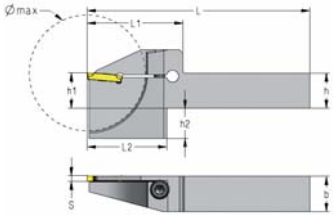
Please note!

On parting off operations always select the **strongest tool holders**. This is a tremendous advantage!
Make sure the holder's rear face **touches** the front face of the slide or basic tool holder firmly. If not, vibrations and fast edge wear will be the negative result of such improper operations.

Holder for deep cuts from Ø 65 mm up to Ø 80 mm and deep grooving

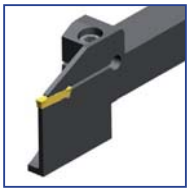
P92 A CXCBL
System P92

LH holder



P92 A CXCBR
System P92

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	S	L	L1	L2	
P92 A CXCBL 2020 K30	10136	L	65	20	20	17	20	3,0	125	54	45	12
P92 A CXCBL 2020 K35	10138	L	65	20	20	17	20	3,5	125	54	45	12
P92 A CXCBL 2020 K40	10140	L	65	20	20	17	20	4,0	125	54	45	12
P92 A CXCBL 2020 M50	10142	L	80	20	20	17	20	5,0	150	62	52	12
P92 A CXCBL 2525 M30	10144	L	65	25	25	12	25	3,0	150	54	45	12
P92 A CXCBL 2525 M35	10146	L	65	25	25	12	25	3,5	150	54	45	12
P92 A CXCBL 2525 M40	10148	L	65	25	25	12	25	4,0	150	54	45	12
P92 A CXCBL 2525 P50	10150	L	80	25	25	12	25	5,0	170	62	52	12
P92 A CXCBR 2020 K30	10135	R	65	20	20	17	20	3,0	125	54	45	12
P92 A CXCBR 2020 K35	10137	R	65	20	20	17	20	3,5	125	54	45	12
P92 A CXCBR 2020 K40	10139	R	65	20	20	17	20	4,0	125	54	45	12
P92 A CXCBR 2020 M50	10141	R	80	20	20	17	20	5,0	150	62	52	12
P92 A CXCBR 2525 M30	10143	R	65	25	25	12	25	3,0	150	54	45	12
P92 A CXCBR 2525 M35	10145	R	65	25	25	12	25	3,5	150	54	45	12
P92 A CXCBR 2525 M40	10147	R	65	25	25	12	25	4,0	150	54	45	12
P92 A CXCBR 2525 P50	10149	R	80	25	25	12	25	5,0	170	62	52	12

Remark

P92 A-inserts and P92 A CXCB...holder join together to form an extremely solid unit owing to long guide surfaces between insert and pocket and reinforced tool holders. A-type tools are therefore recommended for heavy duty cutting, deep cuts and to achieve clean faces.

Fitting inserts

p.200-201,212


p. 48-54

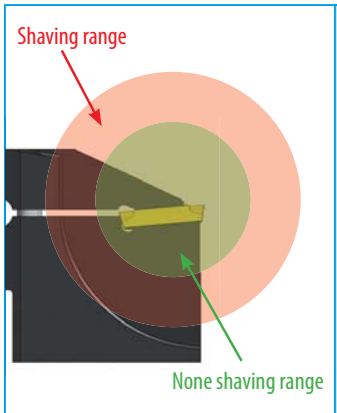

p. 55


p. 56-58, 73

Recommendation

For cutting deep chambers inserts with 2-edges are recommended.

Holders and inserts with the same "S" dimension fit together.



Shaving

If the cutting depth exceeds the length of the cutting insert, the second edge of the insert penetrates into the slot and may cause shaving marks on the component. To prevent from shaving the insert type A-BTNN is recommended.

How to write an order:			**recommended**
1 St.	P92 A CXCBR 2020 K30	or:	**1 St.** **ID-Nr. 10135**
10 St.	A BTNN 3 KM TILOX	or:	**10 St.** **ID-Nr. 13953**

Designation Code

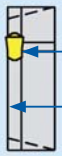
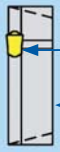
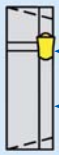
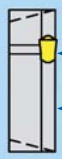
P92 CXCB R 2608 X 20 R

- P92 — Tool family
- CXCB — Cutting tool holder for inserts with 2 cutting edges. Screw clamping type
- R — Spindle rotation counterclockwise
- 2608 — Main tool dimensions
- X — With radial stiffening
- 20 — Cutting width in 1/10 mm
- R — Right hand. The side of the dovetail with the smaller height

How to select the blade to fit your machine tool

To select a fitting blade for your machine tool, you have to determine:

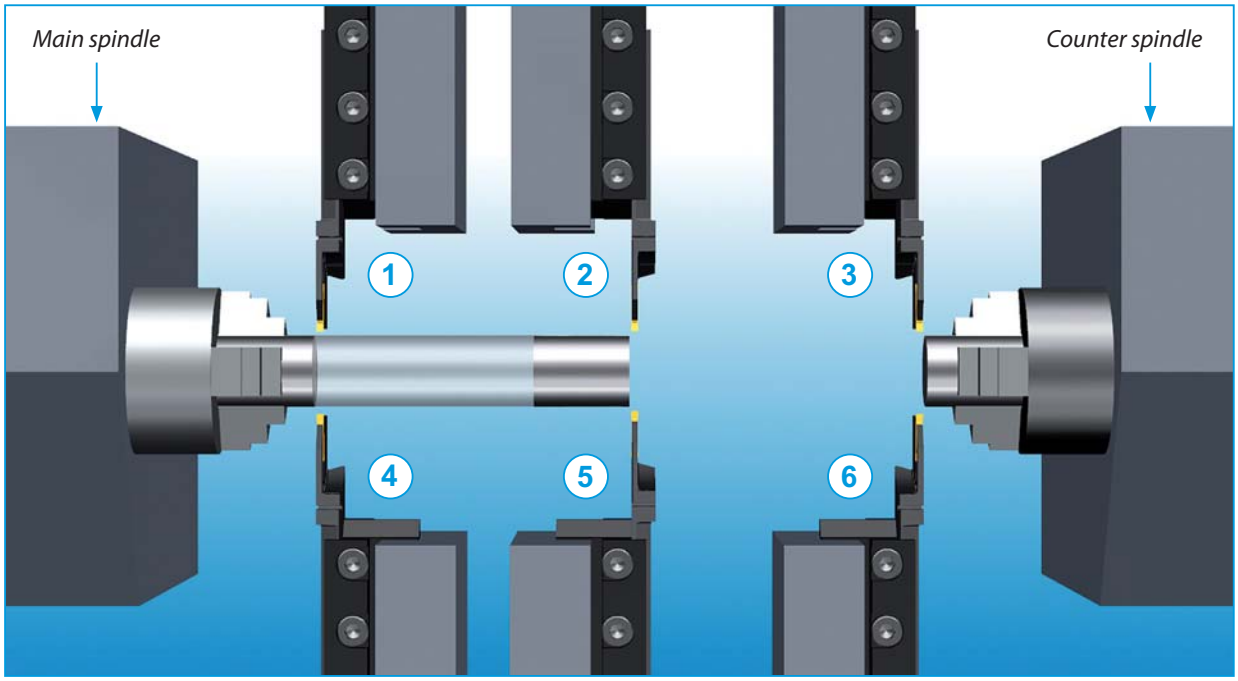
- Spindle rotation CW: LH blade is required
  CCW: RH blade is required
- The dovetail's small side when looked from the front side of the blade.

 **P92 CXCBL 2608 X30L** Cutting edge left hand for clockwise rotation. Small side of the dovetail on the left side: LH.	**Type 1**
 **P92 CXCBL 2608 X30R** Cutting edge left hand for clockwise rotation. Small side of the dovetail on the right side: RH.	**Type 2**
 **P92 CXCBR 2608 X30R** Cutting edge right hand for clockwise rotation. Small side of the dovetail on the right side: RH.	**Type 3**
 **P92 CXCBR 2608 X30L** Cutting edge right hand for clockwise rotation. Small side of the dovetail on the left side: LH.	**Type 4**

Remarks:

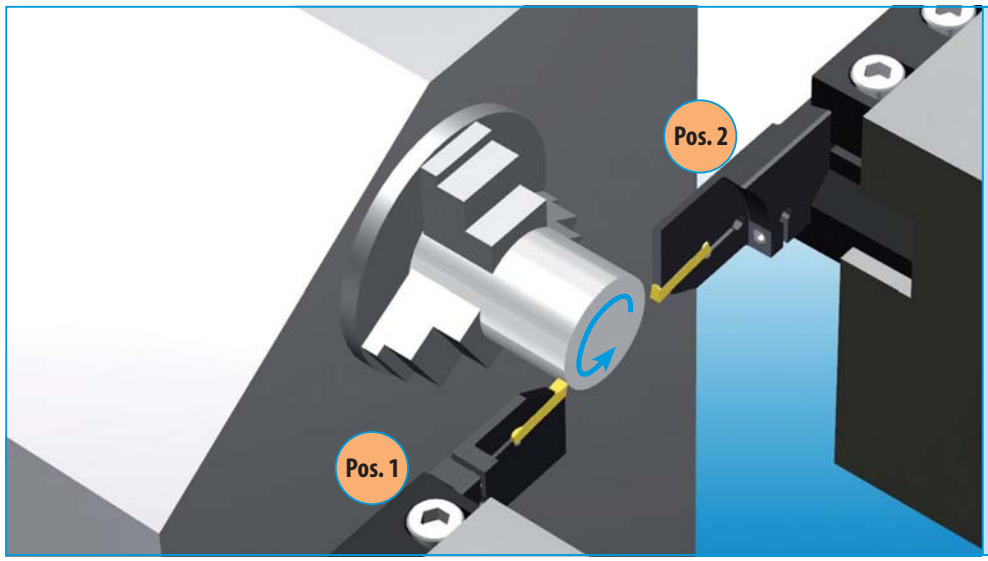
- These dovetail tool blades fit into many basic tool holders of automatic lathes like Traub, EMCO, Tornos, Bechler etc. **AND they also fit into the tool blocks on page 125.**

Application field of dove-tail blades



Nr.	Working position	Rotation	Type
1	Main spindle Behind center line	clockwise	LL (Type 1, p. 54)
2	Main spindle Behind center line	clockwise	LR (Type 2, p. 54)
3	Counter spindle Behind center line	counter clockwise (getrennt von Hauptspindel)	RR (Type 3, p. 54)
4	Main spindle In front of center line	counter clockwise	RR (Type 3, p. 54)
5	Main spindle In front of center line	counter clockwise	RL (Type 4, p. 54)
6	Counter spindle In front of center line	clockwise (getrennt von Hauptspindel)	LL (Type 1, p. 54)

A few application examples of dovetail blades on different machine tool postions.



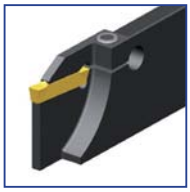
Example for application

Counter clockwise rotation regular and overhead, machining with a BTNN 3 GF110 NANOSPEED insert.

Pos. 1:
Blade R-R in front of bar

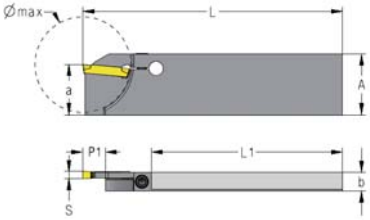
Pos. 2:
Blade R-R overhead behind the bar

Reinforced parting off blades with dovetail shank



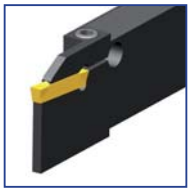
P92..CXCBL 2608X..R/L
System P92

LH blade



P92 CXCBR 2608X..R/L
System P92

RH blade



Ref.	ID-Nr.	( )	A	a	Ø max	b	P1	S	L	L1	
P92 CXCBR 2608 X30R	21222	R	26	21,4	42	8	9,0	3,0	110	81,3	10
P92 CXCBR 2608 X30L	21613	R	26	21,4	42	8	9,0	3,0	110	81,3	10
P92 CXCBL 2608 X30R	19669	L	26	21,4	42	8	9,0	3,0	110	81,3	10
P92 CXCBL 2608 X30L	21614	L	26	21,4	42	8	9,0	3,0	110	81,3	10

Fitting inserts and tool blocks

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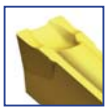

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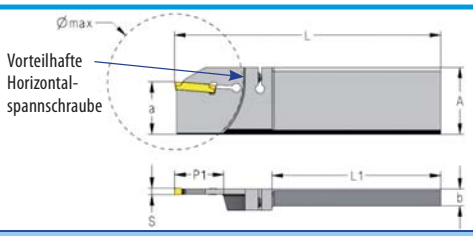
P92..CXCBL 3208X..R/L
System P92

LH blade



P92 CXCBR 3208X..R/L
System P92

RH blade

Ref.	ID-Nr.	( )	A	a	Ø max	b	P1	S	L	L1	
P92 CXCBR 3208 X30R 65	31780	R	32	25,0	65	8	22,0	3,0	126	80,0	26
P92 CXCBR 3208 X30L 65	29826	R	32	25,0	65	8	22,0	3,0	126	80,0	26
P92 CXCBL 3208 X30R 65	31784	L	32	25,0	65	8	22,0	3,0	126	80,0	26
P92 CXCBL 3208 X30L 65	31788	L	32	25,0	65	8	22,0	3,0	126	80,0	26

Comment

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

Fitting inserts and tool blocks

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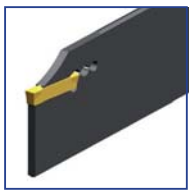
TWIN blade parting off blade



P92 TMS
System P92

Ref.	ID-Nr.		A	a	P1	S	L	
P92 TMS 26 20+25	36644	N	26	21,4	18,5	2+2,5	110	28
P92 TMS 26 30	36645	N	26	21,4	18,5	3,0	110	28
P92 TMS 32 20+25	36643	N	32	25,0	18,5	2+2,5	150	28
P92 TMS 32 30	33429	N	32	25,0	18,5	3,0	150	28
P92 TMS 32 40	36642	N	32	25,0	18,5	4,0	150	28
P92 TMS 32 50 neu!	44524	N	32	25,0	23,5	5,0	150	28
P92 TMS 32 60 neu!	44537	N	32	25,0	28,5	6,0	150	28

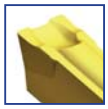
Remark

Blades and tool blocks with the same "A" dimension fit together.

If the cutting depth exceeds the length of the cutting insert, the second edge of the insert penetrates into the slot and may cause shaving marks on the components faces. To prevent from shaving the insert type A-BTNN is recommended.

Holders and inserts with the same "S" dimension fit together.

Fitting inserts and tool blocks



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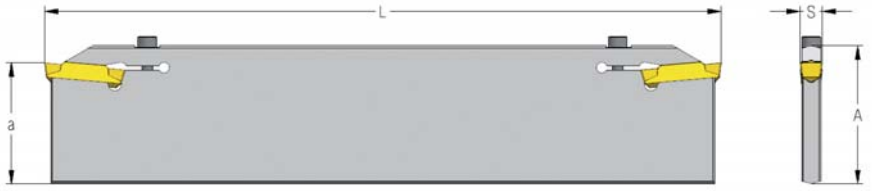
new!

P92 TMS 52
System P92



Ref.	ID-Nr.		A	a	S	L	
P92 TMS 52 80	31464	N	52,6	45,0	8,0	250	11
P92 TMS 52 100	44539	N	52,6	45,0	10,0	250	11

Remark

These blades fit in basic tool holders and tool blocks.

Holders and inserts with the same "S" dimension fit together.

Fitting inserts

p. 48-55

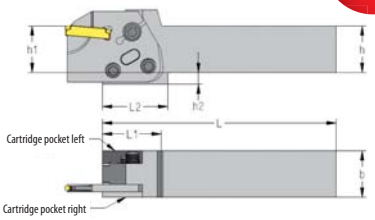
p 144.

Holders with cartridges for parting off, grooving and turning

new!

P92 C N...H

System P92



Bezeichnung	ID-Nr.	⟲	h	h1	h2	b	L	L1	L2	
P92 C N 2020 H	44744	N	20	20	5	20	100	24	24	36+37
P92 C N 2525 H	44745	N	25	25	0	25	100	24	24	36+37

Comment:

On these tool holders, five different cartridges fit. These holders can be used as left hand **and** right hand holders.

Fitting cartriges

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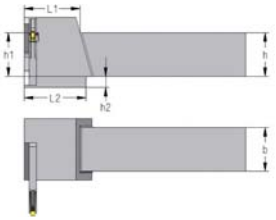
p. 72

new!

P92 C90 R/L

System P92

RH holder



Ref.	ID-Nr.	⟲	h	h1	h2	b	L	L1	L2	
P92 C90 R 2020 H	44746	R	20	20	5	20	100	20	20	36+37
P92 C90 R 2525 H	44747	R	25	25	0	25	100	20	20	36+37
P92 C90 L 2020 H	44748	L	20	20	5	20	100	20	20	36+37
P92 C90 L 2525 H	44749	L	25	25	0	25	100	20	20	36+37

Comment:

These 90° tool holders can be used as left hand or right hand holders. On these holders, five different cartridges fit.

Fitting cartriges

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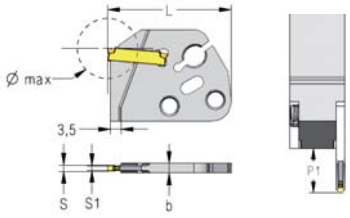
p. 72

Cartridges for holders for parting off, grooving and turning

new!

P92 C N (Type A)
System P92



new!

P92 C N (Type B)
System P92

Ref.	ID-Nr.	( )	Ømax	b	S1	S	L	P1	Type
P92-C N 15 16	44750	N	16	3,2	1,0	1,5	36,8	12	A
P92-C N 15 20	44822	N	20	3,2	1,0	1,5	41,0	16	A
P92-C N 20+25 20	44751	N	20	3,2	1,6	2,0+2,5	41,0	16	A
P92-C N 20+25 32	44752	N	32	3,2*	1,6	2,0+2,5	41,0	16	B

Comment:

These reinforced cartridges allow to use very small inserts. An advantage, especially, when producing short compponents on multi spindle automatics.
They fit on special basic tool holders, e.g. on:

- New Britain
- Conomatic
- Wickman
- Acme Gridley
- Tornos

Fitting inserts

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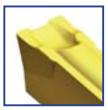
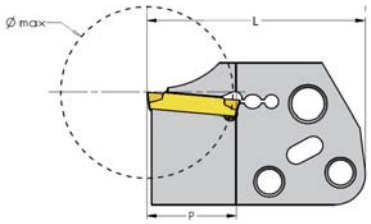


p.56

new!

P92 CT
System P92



Ref.	ID-Nr.	( )	Ømax	b	S1	S	L	P	P1	
P92-CT N 15 28	44823	N	28	3,2	1	1,5	42,5	14	17,5	28
P92-CT N 20+25 32	44753	N	32	3,2	1,6	2,0+2,5	45,8	16	20,8	28
P92-CT N 30 32	44754	N	32	4,0	2,4	3,0	45,8	16	20,8	28

Comment:

These cartridges allow to use small inserts. An advantage, especially, when producing short compponents on multi spindle automatics.
They fit on special basic tool holders, e.g. on:

- New Britain
- Conomatic
- Wickman
- Acme Gridley
- Tornos

Fitting inserts

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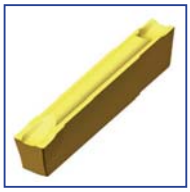
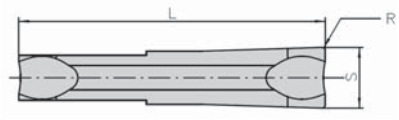
p. 56-58

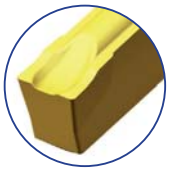
Parting off inserts for deep cuts



A-BTNN

System P92





Enlarged view

Ref.	PM NANOSPEED	KM TILOX		L	R	S +0,15
	ID-Nr.	ID-Nr.				
A BTNN 3	24050	13953	N	20,10	0,2	3,05
A BTNN 4	24051	20291	N	20,10	0,2	4,05

BTN-insert, reduced type with 1 cutting edge

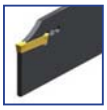
Deep cutting depth and clean turning faces. **Reduces feed** while cutting depth increases.

Grooved parting off edge with reinforced flanks. The deep and spacious **chip-trough** gives excellent chip control. Efficient on almost all materials.

Remark

P92 A-inserts and P92 A CXCB...holder join together to form an extremely solid unit owing to long guide surfaces between insert and pocket and reinforced tool holders. A-type tools are therefore recommended for heavy duty cutting, deep cuts and to achieve clean faces.

Fitting tool holders



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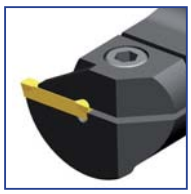
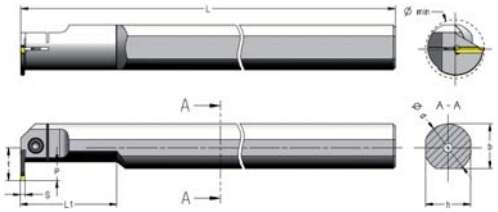
p. 65-66

Boring bars with internal cooling for grooving and turning



P92 CGL
System P92

LH boring bar



P92 CGR
System P92

RH boring bar

Ref.	ID-Nr.	↻	Ømin	Ø d	h	b	f	P	S	L	L1	
P92 CGL 0016 P15	33461	L	20	16	15	15,5	11	7	1,5	170	26	7
P92 CGL 0020 R15	34954	L	25	20	18	18,5	13	7	1,5	200	40	6
P92 CGL 0020 R20+25	33463	L	25	20	18	18,5	13	7	2,0+2,5	200	40	6
P92 CGL 0020 R30	10066	L	25	20	18	18,5	13	7	3,0	200	40	6
P92 CGL 0020 R35	10068	L	25	20	18	18,5	13	7	3,5	200	40	6
P92 CGL 0020 R40	10070	L	25	20	18	18,5	13	7	4,0	200	40	6
P92 CGL 0025 R20+25	33465	L	32	25	23	23,0	17	10	2,0+2,5	200	50	14
P92 CGL 0025 R30	10072	L	32	25	23	23,0	17	10	3,0	200	50	14
P92 CGL 0025 R35	10074	L	32	25	23	23,0	17	10	3,5	200	50	14
P92 CGL 0025 R40	10076	L	32	25	23	23,0	17	10	4,0	200	50	14
P92 CGL 0032 S20+25	33467	L	40	32	30	30,0	22	12	2,0+2,5	250	64	14
P92 CGL 0032 S30	10078	L	40	32	30	30,0	22	12	3,0	250	64	14
P92 CGL 0032 S35	10080	L	40	32	30	30,0	22	12	3,5	250	64	14
P92 CGL 0032 S40	10082	L	40	32	30	30,0	22	12	4,0	250	64	14
P92 CGL 0032 S50	10084	L	44	32	30	30,0	26	16	5,0	250	64	14
P92 CGL 0040 T40	10086	L	52	40	38	38,0	30	16	4,0	300	80	2
P92 CGL 0040 T50	10088	L	52	40	38	38,0	30	16	5,0	300	80	2
P92 CGL 0040 T60	19357	L	52	40	38	38,0	30	16	6,0	300	80	2
P92 CGR 0016 P15	33337	R	20	16	15	15,5	11	7	1,5	170	26	7
P92 CGR 0020 R15	34953	R	25	20	18	18,5	13	7	1,5	200	40	6
P92 CGR 0020 R20+25	33462	R	25	20	18	18,5	13	7	2,0+2,5	200	40	6
P92 CGR 0020 R30	10065	R	25	20	18	18,5	13	7	3,0	200	40	6
P92 CGR 0020 R35	10067	R	25	20	18	18,5	13	7	3,5	200	40	6
P92 CGR 0020 R40	10069	R	25	20	18	18,5	13	7	4,0	200	40	6
P92 CGR 0025 R20+25	33464	R	32	25	23	23,0	17	10	2,0+2,5	200	50	14
P92 CGR 0025 R30	10071	R	32	25	23	23,0	17	10	3,0	200	50	14
P92 CGR 0025 R35	10073	R	32	25	23	23,0	17	10	3,5	200	50	14
P92 CGR 0025 R40	10075	R	32	25	23	23,0	17	10	4,0	200	50	14
P92 CGR 0032 S20+25	33466	R	40	32	30	30,0	22	12	2,0+2,5	250	64	14
P92 CGR 0032 S30	10077	R	40	32	30	30,0	22	12	3,0	250	64	14
P92 CGR 0032 S35	10079	R	40	32	30	30,0	22	12	3,5	250	64	14
P92 CGR 0032 S40	10081	R	40	32	30	30,0	22	12	4,0	250	64	14
P92 CGR 0032 S50	10083	R	44	32	30	30,0	26	16	5,0	250	64	14
P92 CGR 0040 T40	10085	R	52	40	38	38,0	30	16	4,0	300	80	2
P92 CGR 0040 T50	10087	R	52	40	38	38,0	30	16	5,0	300	80	2
P92 CGR 0040 T60	19356	R	52	40	38	38,0	30	16	6,0	300	80	2

Fitting inserts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Remark

Boring bars and inserts with the same "S" dimension fit together.

P92 System for grooving and turning with 1-edge inserts

KCTD
System P92

Ref.	PM	KM	PM NANOSPEED	KM TILOX	( )	P	L	R	S +0,15
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
KCTD 3	10899	20748	10902	29682	N	3/4,5	9,5	0,2	3,0
KCTD 3 MAX	10903	26940	10906	31091	N	5,5/7	12	0,2	3,0

Remark

Ground cutting edge with positive top-rake and wide chip-space.

Fitting boring bars below on this page

KCTDS
System P92

Ref.	PM	KM	PM NANOSPEED	KM TILOX	( )	P	L	R	S +0,15
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
KCTDS 3	10907	20746	10910	35903	N	3/4,5	9,5	0,2	3,0
KCTDS 3 MAX	10911	14603	10914	12644	N	5,5/7	12	0,2	3,0

Remark

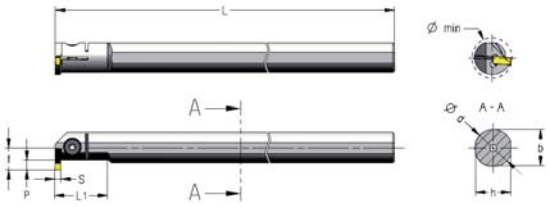
Chamfered cutting edge and ground turning edges for excellent chip control.

Fitting boring bars below on this page

Small boring bars with internal cooling for grooving and turning

P92 CGL..30C
System P92

Linke Bohrstange



P92 CGR..30C
System P92-K

Rechte Bohrstange

Ref.	ID-Nr.	( )	KCTD Ømin	KCTD MAX Ømin	d	h	b	f	P	S	L	L1	
P92 CGR 0012 M30C	10061	R	15,5	18	12	11	-	9	3/5,5	3,0	150	22	7
P92 CGR 0016 P30C	10063	R	20	22,5	16	15	15,5	11	4,5/7	3,0	170	26	19
P92 CGL 0012 M30C	10062	L	15,5	18	12	11	-	9	3/5,5	3,0	150	22	7
P92 CGL 0016 P30C	10064	L	20	22,5	16	15	15,5	11	4,5/7	3,0	170	26	19

Fitting inserts: KCTD und KCTDS siehe oben

Remark

Recommended turning speed range: Vc ~ 40 m/min → 120 m/min
Recommended turning feed range: f ~ 0,02 mm/U → 0,08 mm/U

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GripLock®

Notes

P92 S Grooving and parting off

Cutting and turning, grooving and parting off and threading with twin-cut series (edge width 2 mm)

twin-cut
CHIP BREAKERS

HAFFMAN High Precision Tools

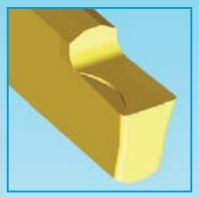
P92 S Grooving and Parting off

Cutting and turning, grooving and parting off and threading with twin-cut series (edge width 2 mm)

4

Chip breaker typs *twin cut*

Grooving / turning



HTNST
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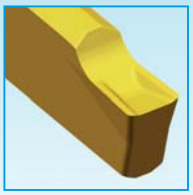
HEUBERG-T

Parting off / grooving



STN…
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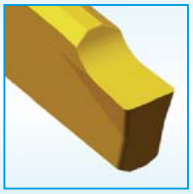
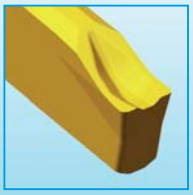
SUPERNOVA



HTN…
Page 79

HEUBERG



BTN…
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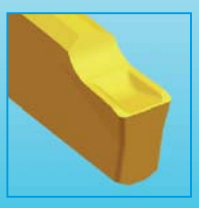
BT-CHIP BREAKER



ITN…
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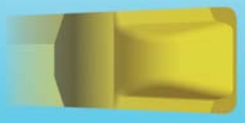
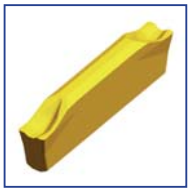


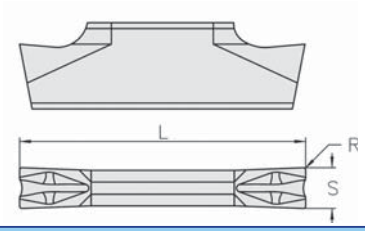
IT-CHIP BREAKER

GripLock®

Inserts with 2 edges for parting off and grooving



BTNS
System P92-S



Enlarged view

Ref.	KM	PM NANOSPEED	KM TILOX	( )	L	R	S ±0,10	α°
	ID-Nr.	ID-Nr.	ID-Nr.					
BTNS 2	30501	30504	30502	N	14,00	0,2	2,00	0

BTN Parting off chip breaker

Grooved parting off edge with reinforced flanks. The deep and spacious **chip-trough** gives excellent chip control. Efficient on almost all materials.

Fitting tool holders

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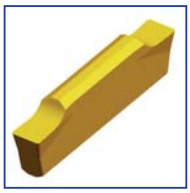
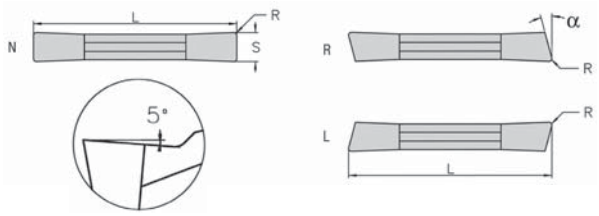


HTN S/R/L
System P92-S



Enlarged view

Ref.	KM	PM NANOSPEED	PM TILOX	KM TILOX	( )	L	R	S ±0,10	α°
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
HTNS 2	10579	10581	10580	23647	N	14,00	0,2	2,00	0
HTNSF 2	23648	23693	23690	-	N	13,40	0,0	2,00	0
HTNR 2 6D	23654	23700	23696	-	R	14,00	0,2	2,00	6
HTNRF 2 6D	23652	23701	23697	-	R	13,40	0,0	2,00	6
HTNR 2 15D	10573	10577	10575	-	R	14,00	0,2	2,00	15
HTNRF 2 15D	23651	23694	23691	-	R	13,40	0,0	2,00	15
HTNL 2 6D	23660	23702	23698	-	L	14,00	0,2	2,00	6
HTNLF 2 6D	23659	23703	23699	-	L	13,40	0,0	2,00	6
HTNL 2 15D	10574	10578	10576	-	L	14,00	0,2	2,00	15
HTNLF 2 15D	23656	23695	23692	-	L	13,40	0,0	2,00	15

twin-cut | Typ: „Heuberg"

Horizontal ground cutting edge with positive top rake angle. Recommended for automatic lathe cutting jobs on free cutting materials.

Remark

Inserts marked with **"F"** have ground cutting edges without corner radius.
e.g. HTNS**F**

Fitting tool holders

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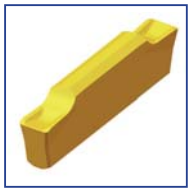
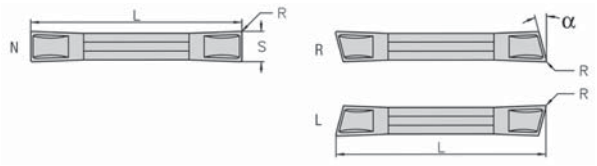
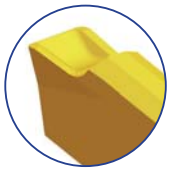
Inserts with 2 edges for parting off and grooving



ITN S/R/L

System P92-S





Enlarged view

Ref.	KM	PM NANOSPEED	KM TILOX	( )	L	R	S ±0,10	α°
	ID-Nr.	ID-Nr.	ID-Nr.					
ITNS 2	10534	10536	15172	N	14,00	0,2	2,00	0
ITNR 2 8D	10528	10532	13801	R	14,00	0,2	2,00	8
ITNL 2 8D	10529	10533	30508	L	14,00	0,2	2,00	8

twin-cut | Typ-IT

Horizontal, chamfered cutting edge with reinforced flanks and large chip chamber.
Especially recommended for:

- high alloy steels
- stainless steels
- interrupted cuts

Fitting tool holders

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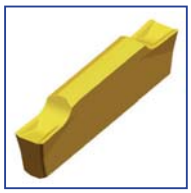
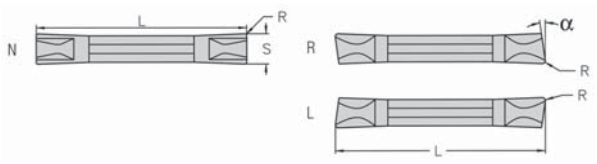


STN S/R/L

System P92-S



Enlarged view

Ref.	KM	PM NANOSPEED	PM TILOX	KM TILOX	( )	L	R	S ±0,10	α°
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.					
STNS 2	19587	11441	11440	26742	N	14,00	0,2	2,00	0
STNR 2 10D	11433	11437	11435	-	R	14,00	0,2	2,00	10
STNL 2 10D	11434	11438	11436	-	L	14,00	0,2	2,00	10

twin-cut | Typ SUPERNOVA

The arc-shaped, slightly honed cutting edge with its large chip-chamber leads to good chip control. For universal use.

Fitting tool holders

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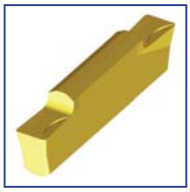
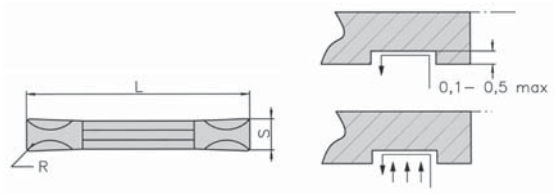
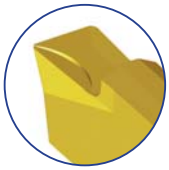
Inserts with 2 edges for grooving and turning



HTNST

System P92-S





Enlarged view

Ref.	KM	PM NANOSPEED	KM TILOX	( )	L	R	S ±0,10	α°
	ID-Nr.	ID-Nr.	ID-Nr.					
HTNST 2	24058	24061	34314	N	14,00	0,2	2,00	0

Cutting and turning insert

Horizontal major cutting edge with sharply ground minor turning edges.
Excellent chip control.

Fitting tool holders

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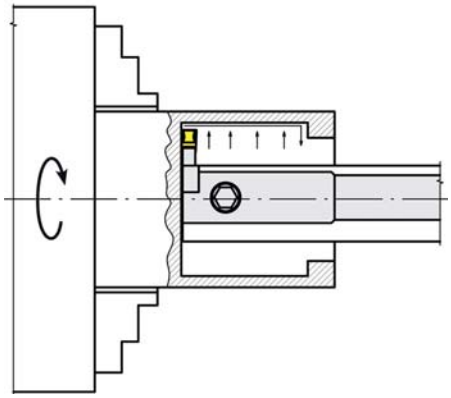
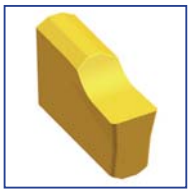
HTNST 2 KM TILOX in action: grooving a large chamber with a final finishing cut.

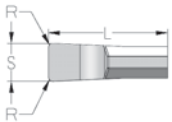


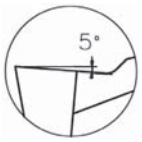
Inserts with 1 edge for grooving and turning



KHTNS

System P92-S





Ref.	PM NANOSPEED	( )	L ±0,1	R	S ±0,10
	ID-Nr.				
KHTNS 2	36299	N	6,35	0,2	2,0
KHTNSF 2	38497	N	6,00	0,0	2,0

Remark

Inserts marked with **"F"** have ground cutting edges without corner radius.
e.g. HTNS**F**

Fitting tool holders

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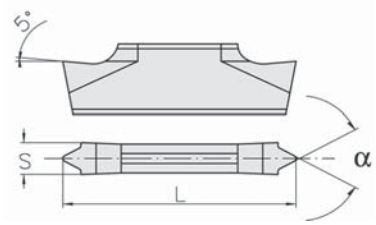
GripLock®

External threading inserts for Whitworth and ISO Full profile

HTNG 2 ER
System P92-S



Enlarged view

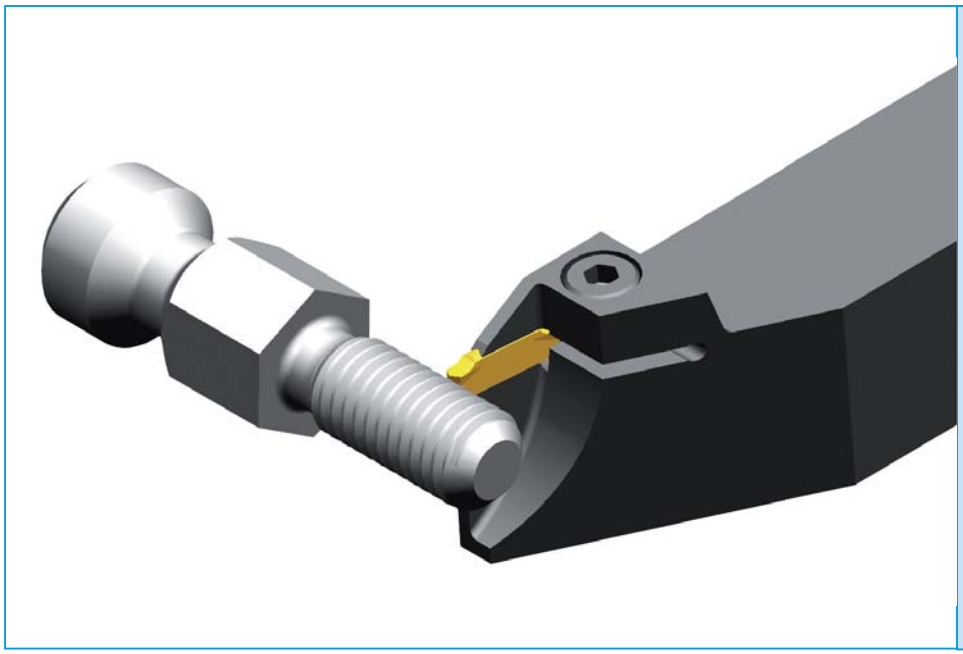
Ref.	KM	PM NANOSPEED		L- 0,1	S	α°
	ID-Nr.	ID-Nr.				
HTNG 2 ER ISO 035	28436	38475	0,35	13,8	2,00	60°
HTNG 2 ER ISO 050	10998	10999	0,50	13,8	2,00	60°
HTNG 2 ER ISO 070	25925	31391	0,70	13,8	2,00	60°
HTNG 2 ER ISO 075	11000	11001	0,75	13,8	2,00	60°
HTNG 2 ER ISO 080	25927	30791	0,80	13,8	2,00	60°
HTNG 2 ER ISO 100	11002	11003	1,00	13,8	2,00	60°
HTNG 2 ER ISO 125	11004	11005	1,25	13,8	2,00	60°
HTNG 2 ER ISO 150	11006	11007	1,50	13,8	2,00	60°
HTNG 2 ER 14W	38474	29937	14 G/Zoll	13,8	2,00	55°
HTNG 2 ER 19W	10994	10995	19 G/Zoll	13,8	2,00	55°
HTNG 2 ER 28W	10996	10997	28 G/Zoll	13,8	2,00	55°

Remark

These inserts can be used for RH and LH threading.

Fitting tool holders

p. 84 - 85



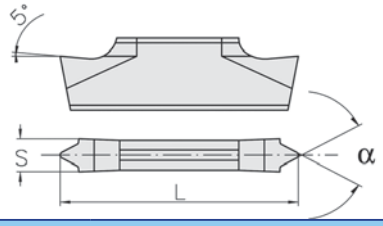
Threading with HTNG 2ER...ISO

Technical section page 187 onwards

Internal threading inserts for Whitworth and ISO Full profile

HTNG 2 IR

System P92-S



Enlarged view

Ref.	KM	PM NANOSPEED		L-0,1	S	α°
	ID-Nr.	ID-Nr.				
HTNG 2 IR ISO 100	38498	38501	1,00	13,8	2,00	60°
HTNG 2 IR ISO 150	38499	38502	1,50	13,8	2,00	60°
HTNG 2 IR 14W	38500	38503	14 G/Zoll	13,8	2,00	55°

Remark

These inserts can be used for RH and LH threading.

Fitting tool holders

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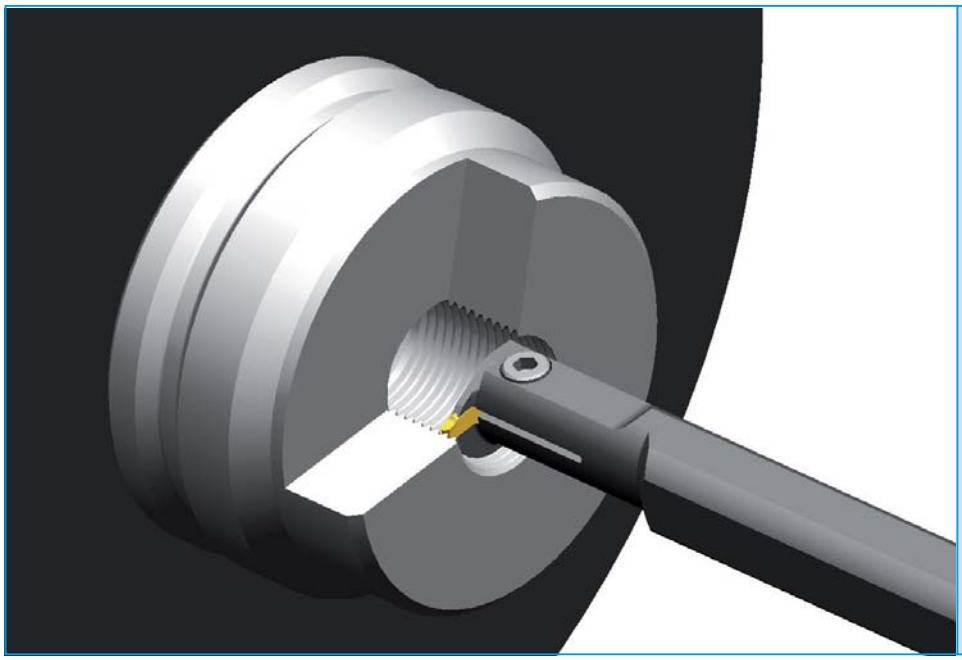
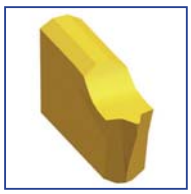


Internal threading with HTNG 2IR...ISO

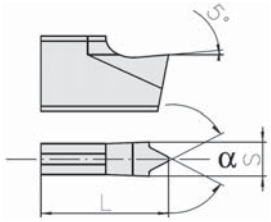
Technical section page 187 onwards

page 14

Internal threading inserts with 1 edge for Whitworth and ISO Full profile



KHTNG IR
System P92-S



Bezeichnung	KM	PM NANOSPEED		L±0,1	S	α°
	ID-Nr.	ID-Nr.				
KHTNG 2 IR ISO 050	38504	38509	0,50	6,35	2,00	60°
KHTNG 2 IR ISO 100	38505	38510	1,00	6,35	2,00	60°
KHTNG 2 IR ISO 150	38506	38511	1,50	6,35	2,00	60°
KHTNG 2 IR 14W	38507	38512	14Gg	6,35	2,00	55°
KHTNG 2 IR 19W	38508	38513	19Gg	6,35	2,00	55°

Fitting tool holders

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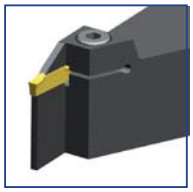
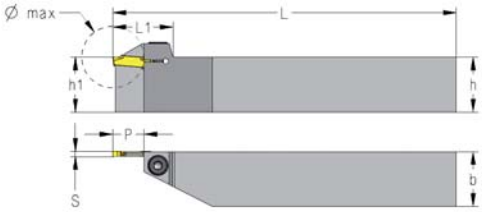
Technical section page 187 onwards

Holders for parting off and grooving



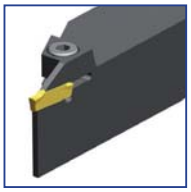
P92 S CXCBL
System P92-S

LH holder



P92 S CXCBR
System P92-S

RH holder

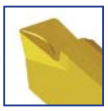


Ref.	ID-Nr.		Ø max	h	h1	b	P	S	L	L1	
P92 S CXCBR 1616 K20	23576	R	22	16	16	16	11	2	125	22	11
P92 S CXCBR 2020 K20	10203	R	22	20	20	20	11	2	125	22	11
P92 S CXCBR 2525 M20	10205	R	22	25	25	25	11	2	150	22	11
P92 S CXCBL 1616 K20	23579	L	22	16	16	16	11	2	125	22	11
P92 S CXCBL 2020 K20	10204	L	22	20	20	20	11	2	125	22	11
P92 S CXCBL 2525 M20	10206	L	22	25	25	25	11	2	150	22	11

Fitting inserts

p.200-201,212

p. 79-80



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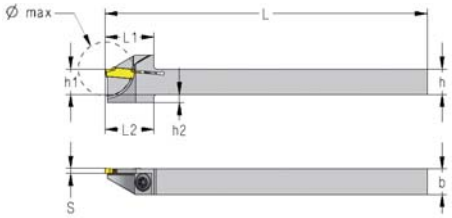
page 14

Holders for parting off, grooving and threading

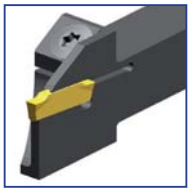
P92 S CXCBL
System P92-S

LH holder radialversteift



P92 S CXCBR
System P92-S

RH holder radialversteift

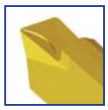


Bezeichnung	ID-Nr.	( )	Ø max	h	h1	h2	b	S	L	L1	
P92 S CXCBL 1010 K20 11	19260	L	22	10	10	3	10	2	125	19	9
P92 S CXCBL 1212 K20 11	18547	L	22	12	12	-	12	2	125	19	4
P92 S CXCBL 1616 K20 11	23571	L	22	16	16	-	16	2	125	19	4
P92 S CXCBL 2020 K20 11	23577	L	22	20	20	-	20	2	125	22	11
P92 S CXCBL 2525 M20 11	23578	L	22	25	25	-	25	2	150	22	11
P92 S CXCBR 1010 K20 11	19259	R	22	10	10	3	10	2	125	19	9
P92 S CXCBR 1212 K20 11	18548	R	22	12	12	-	12	2	125	19	4
P92 S CXCBR 1616 K20 11	23570	R	22	16	16	-	16	2	125	19	4
P92 S CXCBR 2020 K20 11	23574	R	22	20	20	-	20	2	125	22	11
P92 S CXCBR 2525 M20 11	23575	R	22	25	25	-	25	2	150	22	11

Fitting inserts

p.200-201,212


p. 79-80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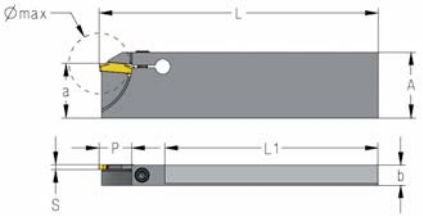
Reinforced parting off blades with dovetail shank

P92 S CXCBL..X
System P92-S

LH holder



P92 S CXCBR..X
System P92-S

RH holder

Bezeichnung	ID-Nr.	( )	A	a	Ø max	b	P	S	L	L1	
P92 S CXCBR 2608 X20R	21610	R	26	21,4	24	8	12,0	2,0	110	84,0	10
P92 S CXCBR 2608 X20L	21611	R	26	21,4	24	8	12,0	2,0	110	84,0	10
P92 S CXCBL 2608 X20R	20123	L	26	21,4	24	8	12,0	2,0	110	84,0	10
P92 S CXCBL 2608 X20L	21612	L	26	21,4	24	8	12,0	2,0	110	84,0	10

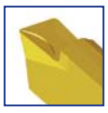
Remark

Blades and tool blocks with the same "A" dimension fit together.

Fitting inserts and tool blocks

p.200-201,212


p. 79-80


p. 81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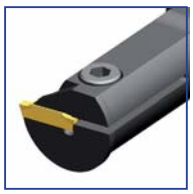
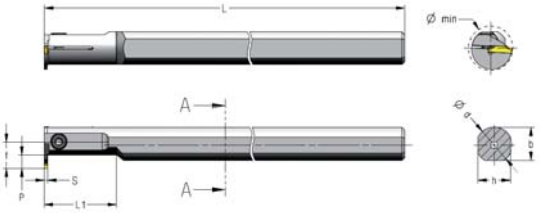
Boring bars with internal cooling for internal grooving



P92 S CGL
System P92-S #

LH boring bar



P92 S CGR
System P92-S

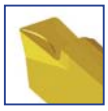
RH boring bar

Ref.	ID-Nr.	( )	Ø min	Ø d	h	b	f	P	S	L	L1	
P92 S CGL 0012 M20	19258	L	15,5	12	11	-	9	5,5	2	150	22	27
P92 S CGL 0016 P20	10190	L	20,0	16	15	15,5	11	7,0	2	170	26	7
P92 S CGL 0020 R20	10192	L	25,0	20	18	18,5	13	7,0	2	200	40	6
P92 S CGL 0025 R20	10194	L	27,0	25	23	23,0	12	7,0	2	200	50	6
P92 S CGR 0012 M20	20308	R	15,5	12	11	-	9	5,5	2	150	22	27
P92 S CGR 0016 P20	10189	R	20,0	16	15	15,5	11	7,0	2	170	26	7
P92 S CGR 0020 R20	10191	R	25,0	20	18	18,5	13	7,0	2	200	40	6
P92 S CGR 0025 R20	10193	R	27,0	25	23	23,0	12	7,0	2	200	50	6

Fitting inserts

p.200-201,212

p. 79-80

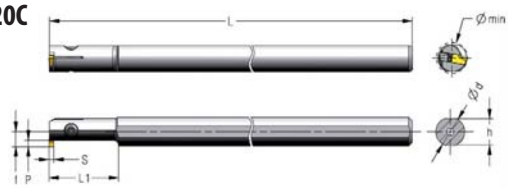


p. 81

p. 82

P92 S CGL...M20C
System P92-S

LH boring bar



P92 S CGR...M20C
System P92-S

RH boring bar

Bezeichnung	ID-Nr.	( )	Ø min	Ø d	h	b	f	P	S	L	L1	
P92 S CGL 0012 M20C	35943	L	12	12	11	-	6,25	2,5	2,0	150	22	27
P92 S CGR 0012 M20C	35007	R	12	12	11	-	6,25	2,5	2,0	150	22	27

Attention

When using KHTNSF 2 inserts reduce max. depth to 2.1 mm.

Fitting inserts

p.200-201,212

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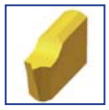

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How to write an order:			recommended
1 St.	P92 S CGR 0012 M20C	or:	**1 St.** ID-Nr. **35007**
10 St.	KHTNG 2 IR ISO 050 PM NANOSPEED	or:	**10 St.** ID-Nr. **38509**

P92-2 & P92-90
Face grooving tools

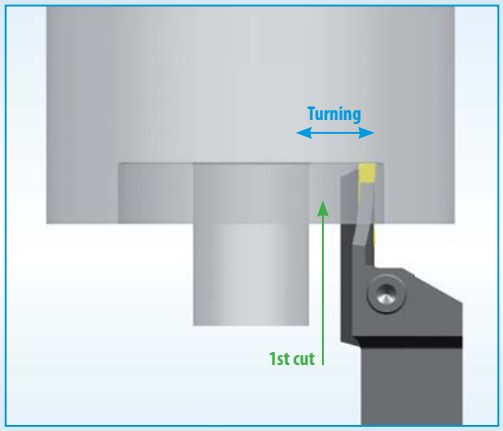
for the range Ø 25 mm - ∞ mm

- *Cartridge-system*
- *Monoblock-system*
- *P92 2 TMS Blade*

P92-2 & P92-90 Face Grooving Tools

Modular Cartridge System

Turning to the center or to the outside diameter is possible provided the 1st cut has been positioned inside the range Ø min - Ø max.



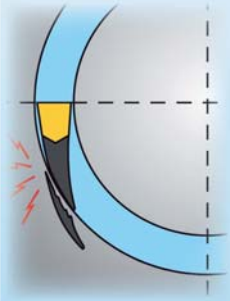
Face grooving: Cartridge choice

Each cartridge is designed for a certain diameter range. This range is marked as Ø min - Ø max.

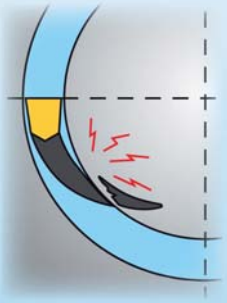
The drawing marks the collision-safe range Ø min - Ø max.

See page 192 for more details.

Damage caused when the 1st cut has been positioned incorrectly.



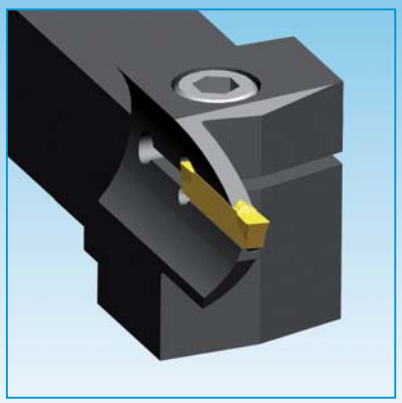
Shows the damage caused when the 1st cut is positioned within a smaller dimension than Ø min. **The outer face** of the cartridge collides with the component.

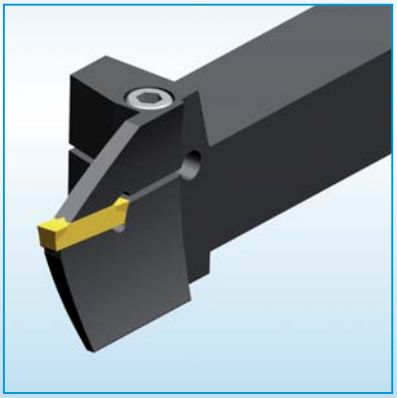


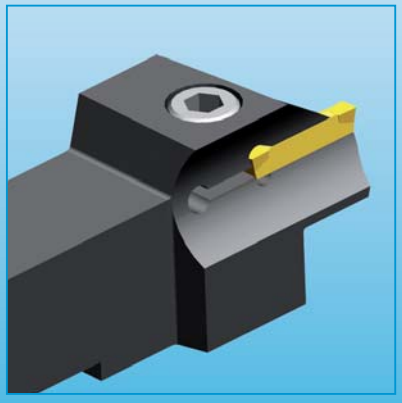
Shows the damage caused when the 1st cut is positioned outside Ø max, to the outer diameter. **The inner face** of the cartridge collides with the component.

P92-2 & P92-90 Face Grooving Tools

MONOBLOCK Face grooving







Characteristics

- ✓ The strong and rigid tool holder construction, provides for vibration free run and grants production reliability.
- ✓ All GripLock P92 inserts fit in the MONOBLOCK face grooving tool holders.
- ✓ In case of problems you can just select the most effective chip breaker from the assortment of applicable inserts.
- ✓ 40 right hand and 40 left hand different tool holders with shank dimensions 20 mm x 20 mm and 25 mm x 25 mm.

Technical specifications

Available width of inserts:
3 mm, 4 mm and 5 mm; 6 mm (optional)

Range of diameters:
25 mm - 450 mm

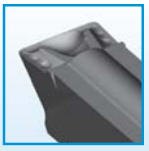
Depth of cut:
15 mm - 45 mm

Available chip breaker:
14


BTNN p. 56


MTNS p. 49


VTNS p. 53


XTNS p. 54


MTNZ p. 50

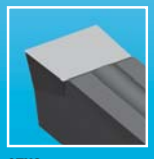

BTNG p. 48


BTNX p. 48


CTD/R/L p. 58


CTD/R/L-ALU p. 58


CTDS p. 49


OTXS p. 51


RTNX p. 55


RTNG p. 55

Designation Code for face grooving cartridges

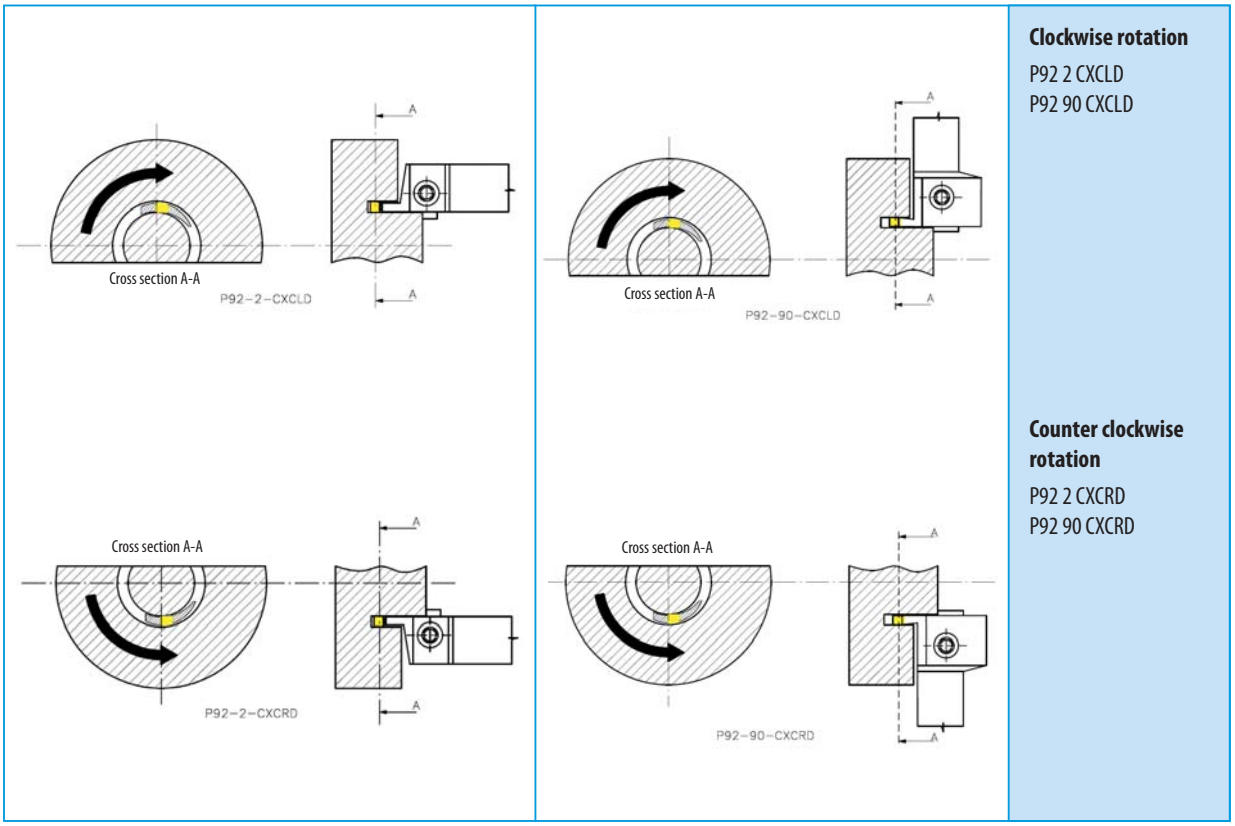
C92 LD 25 30 30

- C92 — Tool family
- LD — CW Rotation
- 25 — Ø min (25 mm) smallest safe diameter
- 30 — Ø max (30 mm) biggest safe diameter
- 30 — Cutting width S = 3 mm

Designation Code for face grooving holders

P92 2 CXCRD 2020 K 30

- P92 — Tool family
- 2 — Face grooving
- CXCRD — Face grooving tool CW / CCW for cartridges
- 2020 — Shank dimensions
- K — ISO tool length
- 30 — Cutting width S = 3 mm



Clockwise rotation

P92 2 CXCLD
P92 90 CXCLD

Counter clockwise rotation

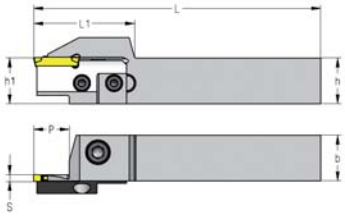
P92 2 CXCRD
P92 90 CXCRD

Tool holders with cartridges for face grooving

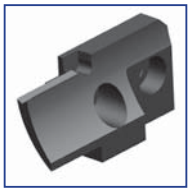
P92 2 CXCLD

System P92-2

LH holder



LH Cartridge



KASSETTEN-HALTER Ref.	ID-Nr.		h	h1	b	P	L	L1	
P92 2 CXCLD 2020 K 30	10119	L	20	20	20	15	125	44	11+2
P92 2 CXCLD 2525 M 30	10121	L	25	25	25	15	150	44	11+2

KASSETTEN Ref.	ID-Nr.	S	Ø min-max
C92 LD 2530 30	10371	3	25-30
C92 LD 3035 30	10372	3	30-35
C92 LD 3542 30	10373	3	35-42
C92 LD 4250 30	10374	3	42-50
C92 LD 5058 30	10376	3	50-58
C92 LD 5866 30	10378	3	58-66
C92 LD 6675 30	10379	3	66-75
C92 LD 75100 30	10381	3	75-100
C92 LD 100200 30	10369	3	100-200

KASSETTEN-HALTER Ref.	ID-Nr.		h	h1	b	P	L	L1	
P92 2 CXCLD 2020 K 40	10120	L	20	20	20	15	125	44	11+2
P92 2 CXCLD 2525 M 40	10122	L	25	25	25	15	150	44	11+2

KASSETTEN Ref.	ID-Nr.	S	Ø min-max
C92 LD 4254 40	10375	4	42-54
C92 LD 5466 40	10377	4	54-66
C92 LD 6680 40	10380	4	66-80
C92 LD 80100 40	10382	4	80-100
C92 LD 100200 40	10370	4	100-200

Remark

Holder and cartridges fit together provided the final two figures of the Reference-Nr. are identical.

Cartridges and inserts with the same "S" dimension fit together.

Example:

P92 2 CXCLD 2020 K **30** and C92 LD 3035 **30**
P92 2 CXCLD 2525 M **40** and C92 LD 6680 **40**

Fitting inserts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p. 55


p. 56-58

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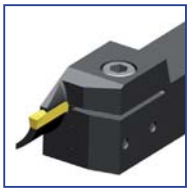
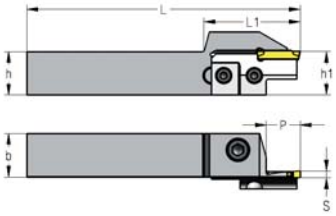
Tool holders with cartridges for face grooving



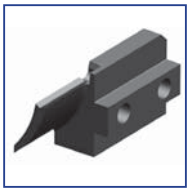
P92 2 CXCRD

System P92-2

RH holder



RH Cartridge



KASSETTEN-HALTER Ref.	ID-Nr.		h	h1	b	P	L	L1	
P92 2 CXCRD 2020 K 30	10123	R	20	20	20	15	125	44	11+2
P92 2 CXCRD 2525 M 30	10125	R	25	25	25	15	150	44	11+2

KASSETTEN Ref.	ID-Nr.	S	Ø min-max
C92 RD 2530 30	10385	3	25-30
C92 RD 3035 30	10386	3	30-35
C92 RD 3542 30	10387	3	35-42
C92 RD 4250 30	10388	3	42-50
C92 RD 5058 30	10390	3	50-58
C92 RD 5866 30	10392	3	58-66
C92 RD 6675 30	10393	3	66-75
C92 RD 75100 30	10395	3	75-100
C92 RD 100200 30	10383	3	100-200

KASSETTEN-HALTER Ref.	ID-Nr.		h	h1	b	P	L	L1	
P92 2 CXCRD 2020 K 40	10124	R	20	20	20	15	125	44	11+2
P92 2 CXCRD 2525 M 40	10126	R	25	25	25	15	150	44	11+2

KASSETTEN Ref.	ID-Nr.	S	Ø min-max
C92 RD 4254 40	10389	4	42-54
C92 RD 5466 40	10391	4	54-66
C92 RD 6680 40	10394	4	66-80
C92 RD 80100 40	10396	4	80-100
C92 RD 100200 40	10384	4	100-200

Remark

Holder and cartridges fit together provided the final two figures of the Reference-Nr. are identical.

Cartridges and inserts with the same "S" dimension fit together.

Example:

P92 2 CXCRD 2020 K **30** and C92 RD 3035 **30**
P92 2 CXCRD 2525 M **40** and C92 RD 6680 **40**

Fitting inserts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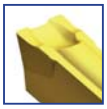
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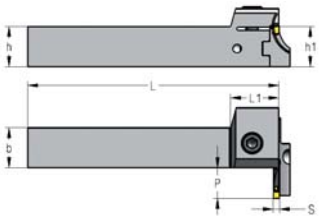
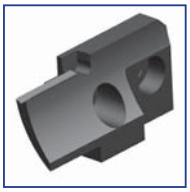
Tool holders with cartridges for face grooving

P92 90 CXCLD

System P92-90

LH holder





LH Cartridge

HALTER Ref.	ID-Nr.		h	h1	b	P	L	L1	
P92 90 CXCLD 2020 K 30	10127	L	20	20	20	15	125	24	11+2
P92 90 CXCLD 2525 M 30	10129	L	25	25	25	15	150	24	11+2

KASSETTEN Ref.	ID-Nr.	S	Ø min-max
C92 LD 2530 30	10371	3	25-30
C92 LD 3035 30	10372	3	30-35
C92 LD 3542 30	10373	3	35-42
C92 LD 4250 30	10374	3	42-50
C92 LD 5058 30	10376	3	50-58
C92 LD 5866 30	10378	3	58-66
C92 LD 6675 30	10379	3	66-75
C92 LD 75100 30	10381	3	75-100
C92 LD 100200 30	10369	3	100-200

HALTER Ref.	ID-Nr.		h	h1	b	P	L	L1	
P92 90 CXCLD 2020 K 40	10128	L	20	20	20	15	125	24	11+2
P92 90 CXCLD 2525 M 40	10130	L	25	25	25	15	150	24	11+2

KASSETTEN Ref.	ID-Nr.	S	Ø min-max
C92 LD 4254 40	10375	4	42-54
C92 LD 5466 40	10377	4	54-66
C92 LD 6680 40	10380	4	66-80
C92 LD 80100 40	10382	4	80-100
C92 LD 100200 40	10370	4	100-200

Remark

Holder and cartridges fit together provided the final two figures of the Reference-Nr. are identical.

Cartridges and inserts with the same "S" dimension fit together.

Example:

P92 90 CXCLD 2020 K **30** and C92 LD 3035 **30**
P92 90 CXCLD 2525 M **40** and C92 LD 6680 **40**

Fitting inserts

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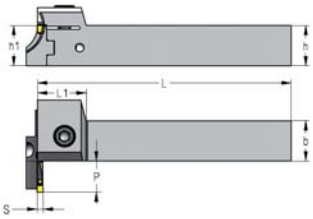
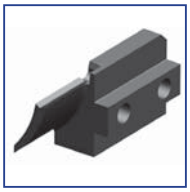
Tool holders with cartridges for face grooving

P92 90 CXCRD

System P92-90

RH holder





RH Cartridge

HALTER Ref.	ID-Nr.	( )	h	h1	b	P	L	L1	
P92 90 CXCRD 2020 K 30	10131	R	20	20	20	15	125	24	11+2
P92 90 CXCRD 2525 M 30	10133	R	25	25	25	15	150	24	11+2

KASSETTEN Ref.	ID-Nr.	S	Ø min-max
C92 RD 2530 30	10385	3	25-30
C92 RD 3035 30	10386	3	30-35
C92 RD 3542 30	10387	3	35-42
C92 RD 4250 30	10388	3	42-50
C92 RD 5058 30	10390	3	50-58
C92 RD 5866 30	10392	3	58-66
C92 RD 6675 30	10393	3	66-75
C92 RD 75100 30	10395	3	75-100
C92 RD 100200 30	10383	3	100-200

HALTER Ref.	ID-Nr.	( )	h	h1	b	P	L	L1	
P92 90 CXCRD 2020 K 40	10132	R	20	20	20	15	125	24	11+2
P92 90 CXCRD 2525 M 40	10134	R	25	25	25	15	150	24	11+2

KASSETTEN Ref.	ID-Nr.	S	Ø min-max
C92 RD 4254 40	10389	4	42-54
C92 RD 5466 40	10391	4	54-66
C92 RD 6680 40	10394	4	66-80
C92 RD 80100 40	10396	4	80-100
C92 RD 100200 40	10384	4	100-200

Remark

Holder and cartridges fit together provided the final two figures of the Reference-Nr. are identical.

Cartridges and inserts with the same "S" dimension fit together.

Example:

P92 90 CXCRD 2020 K **30** and C92 RD 3035 **30**

P92 90 CXCRD 2525 M **40** and C92 RD 6680 **40**

Fitting inserts

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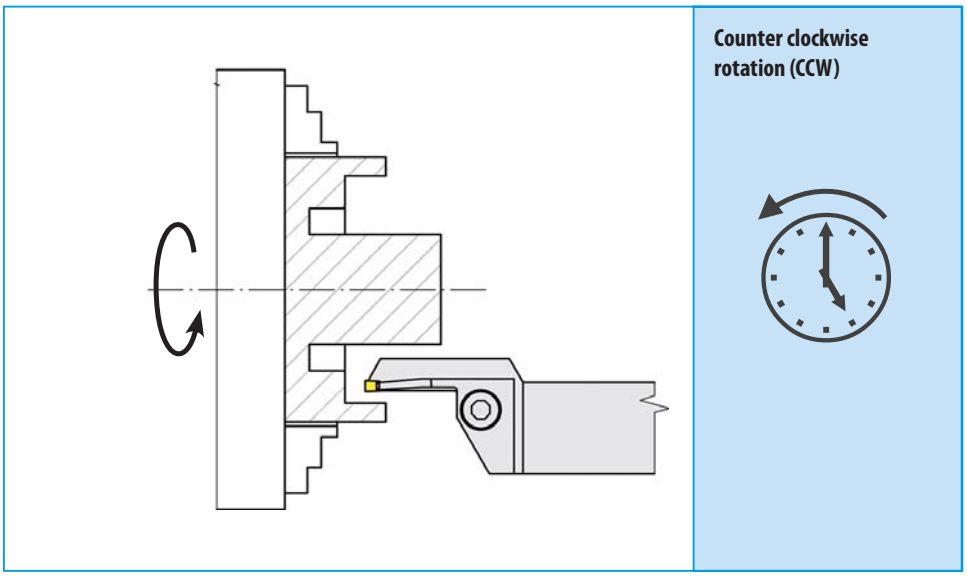
Designation Code for MONOBLOCK face grooving tools

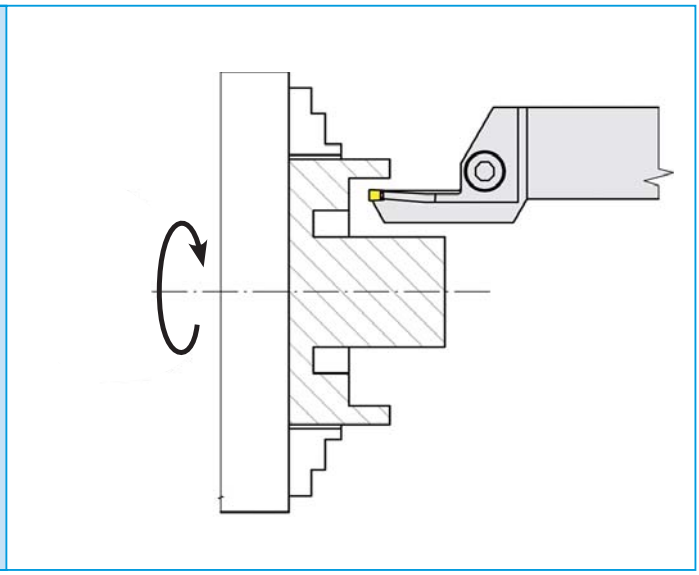
P92 2 CXCB R 2020 K 30 30 A

- P92 — Tool family
- 2 — Face grooving
- CXCB — Cutting tool holder for inserts with 2 edges. Screw clamping type
- R — Rotation
- 2020 — Shank dimensions
- K — ISO holder length
- 30 — Cutting width in tenth mm
- 30 — Ø min
- A — Dimension P enlarged

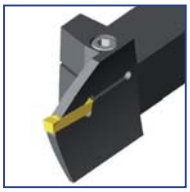


Counter clockwise rotation (CCW)

Clockwise rotation (CW)

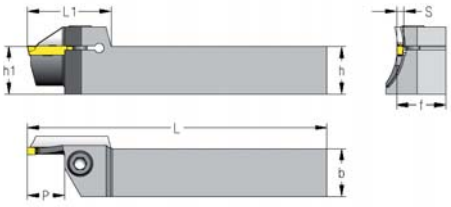


MONOBLOCK Face grooving tool holders for cutting width 3 mm



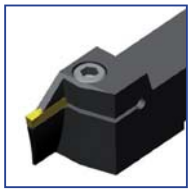
P92 2 CXCBL
System P92-2

LH holder



P92 2 CXCBR
System P92-2

RH holder



Ref.	ID-Nr.	( )	Ø min	Ø max	h	h1	b	f	P	S	L	L1	
P92 2 CXCBL 2020 K 30 25	30164	L	25	30	20	20	20	20,5	15	3	125	35	2
P92 2 CXCBL 2020 K 30 30	30167	L	30	38	20	20	20	20,5	15	3	125	35	2
P92 2 CXCBL 2020 K 30 38	30169	L	38	48	20	20	20	20,5	15	3	125	35	2
P92 2 CXCBL 2020 K 30 48	30170	L	48	60	20	20	20	20,5	15	3	125	35	2
P92 2 CXCBL 2020 K 30 60	30171	L	60	75	20	20	20	20,5	22	3	125	43	2
P92 2 CXCBL 2020 K 30 75	30172	L	75	100	20	20	20	20,5	25	3	125	45	2
P92 2 CXCBL 2020 K 30 100	30173	L	100	200	20	20	20	20,5	25	3	125	45	2
P92 2 CXCBL 2525 M 30 25	30174	L	25	30	25	25	25	25,5	15	3	150	35	2
P92 2 CXCBL 2525 M 30 30	30175	L	30	38	25	25	25	25,5	15	3	150	35	2
P92 2 CXCBL 2525 M 30 38	30179	L	38	48	25	25	25	25,5	15	3	150	35	2
P92 2 CXCBL 2525 M 30 48	30181	L	48	60	25	25	25	25,5	15	3	150	35	2
P92 2 CXCBL 2525 M 30 60	30182	L	60	75	25	25	25	25,5	22	3	150	43	2
P92 2 CXCBL 2525 M 30 75	30184	L	75	100	25	25	25	25,5	25	3	150	45	2
P92 2 CXCBL 2525 M 30 100	30185	L	100	200	25	25	25	25,5	25	3	150	45	2
P92 2 CXCBR 2020 K 30 25	29786	R	25	30	20	20	20	20,5	15	3	125	35	2
P92 2 CXCBR 2020 K 30 30	29787	R	30	38	20	20	20	20,5	15	3	125	35	2
P92 2 CXCBR 2020 K 30 38	29788	R	38	48	20	20	20	20,5	15	3	125	35	2
P92 2 CXCBR 2020 K 30 48	29789	R	48	60	20	20	20	20,5	15	3	125	35	2
P92 2 CXCBR 2020 K 30 60	29790	R	60	75	20	20	20	20,5	22	3	125	43	2
P92 2 CXCBR 2020 K 30 75	29791	R	75	100	20	20	20	20,5	25	3	125	45	2
P92 2 CXCBR 2020 K 30 100	29792	R	100	200	20	20	20	20,5	25	3	125	45	2
P92 2 CXCBR 2525 M 30 25	29793	R	25	30	25	25	25	25,5	15	3	150	35	2
P92 2 CXCBR 2525 M 30 30	29794	R	30	38	25	25	25	25,5	15	3	150	35	2
P92 2 CXCBR 2525 M 30 38	29795	R	38	48	25	25	25	25,5	15	3	150	35	2
P92 2 CXCBR 2525 M 30 48	29796	R	48	60	25	25	25	25,5	15	3	150	35	2
P92 2 CXCBR 2525 M 30 60	29797	R	60	75	25	25	25	25,5	22	3	150	43	2
P92 2 CXCBR 2525 M 30 75	29798	R	75	100	25	25	25	25,5	25	3	150	45	2
P92 2 CXCBR 2525 M 30 100	29799	R	100	200	25	25	25	25,5	25	3	150	45	2

Remark

Holder and inserts with the same "S" dimension fit together.

Fitting inserts

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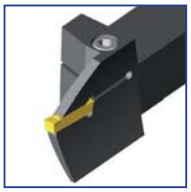
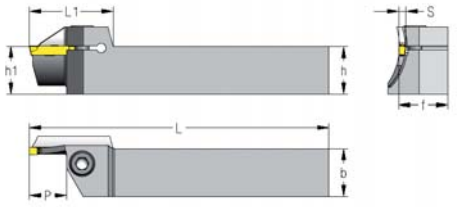
MONOBLOCK Face grooving tool holders for cutting width 4 mm



P92 2 CXCBL

System P92-2

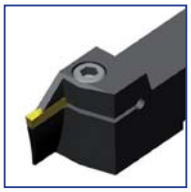
LH holder



P92 2 CXCBR

System P92-2

RH holder



Ref.	ID-Nr.	( )	Ø min	Ø max	h	h1	h2	b	f	P	S	L	L1	L2	
P92 2 CXCBL 2020 K 40 34	30186	L	34	40	20	20		20	20,5	20	4	125	41		2
P92 2 CXCBL 2020 K 40 40	30187	L	40	48	20	20		20	20,5	25	4	125	45		2
P92 2 CXCBL 2020 K 40 48	30188	L	48	60	20	20		20	20,5	25	4	125	45		2
P92 2 CXCBL 2020 K 40 60	30189	L	60	75	20	20		20	20,5	25	4	125	45		2
P92 2 CXCBL 2020 K 40 75	30190	L	75	150	20	20		20	20,5	25	4	125	45		2
P92 2 CXCBL 2020 K 40 150	29718	L	150	450	20	20	5	20	20,5	25	4	125	45	46	2
P92 2 CXCBL 2525 M 40 34	30192	L	34	40	25	25		25	25,5	20	4	150	41		2
P92 2 CXCBL 2525 M 40 40	30193	L	40	48	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBL 2525 M 40 48	30194	L	48	60	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBL 2525 M 40 60	30195	L	60	75	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBL 2525 M 40 75	30196	L	75	150	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBL 2525 M 40 150	30197	L	150	450	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBL 2525 M 40 450	30198	L	450	∞	25	25	5	25	25,5	25	4	150	45	46	2
P92 2 CXCBR 2020 K 40 34	29742	R	34	40	20	20		20	20,5	20	4	125	41		2
P92 2 CXCBR 2020 K 40 40	29743	R	40	48	20	20		20	20,5	25	4	125	45		2
P92 2 CXCBR 2020 K 40 48	29744	R	48	60	20	20		20	20,5	25	4	125	45		2
P92 2 CXCBR 2020 K 40 60	29745	R	60	75	20	20		20	20,5	25	4	125	45		2
P92 2 CXCBR 2020 K 40 75	29746	R	75	150	20	20		20	20,5	25	4	125	45		2
P92 2 CXCBR 2020 K 40 150	29717	R	150	450	20	20	5	20	20,5	25	4	125	45	46	2
P92 2 CXCBR 2525 M 40 34	29747	R	34	40	25	25		25	25,5	20	4	150	41		2
P92 2 CXCBR 2525 M 40 40	29748	R	40	48	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBR 2525 M 40 48	29749	R	48	60	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBR 2525 M 40 60	29750	R	60	75	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBR 2525 M 40 75	29751	R	75	150	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBR 2525 M 40 150	29719	R	150	450	25	25		25	25,5	25	4	150	45		2
P92 2 CXCBR 2525 M 40 450	29721	R	450	∞	25	25	5	25	25,5	25	4	150	45	46	2

Remark

Holder and inserts with the same "S" dimension fit together.

Fitting inserts

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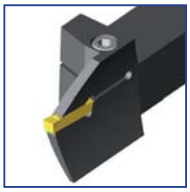
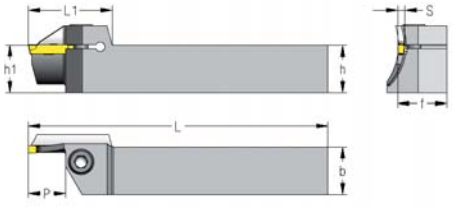
MONOBLOCK Face grooving tool holders for cutting width 5 mm



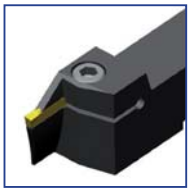
P92 2 CXCBL
System P92-2

LH holder



P92 2 CXCBR
System P92-2

RH holder



Ref.	ID-Nr.	( )	Ø min	Ø max	h	h1	h2	b	f	P	S	L	L1	L2	
P92 2 CXCBL 2020 K 50 42	28296	L	42	55	20	20		20	20,5	25	5	125	45		2
P92 2 CXCBL 2020 K 50 55	30199	L	55	75	20	20		20	20,5	25	5	125	45		2
P92 2 CXCBL 2020 K 50 75	29714	L	75	130	20	20	3	20	20,5	28	5	125	48	49	2
P92 2 CXCBL 2525 M 50 42	28298	L	42	55	25	25		25	25,5	25	5	150	45		2
P92 2 CXCBL 2525 M 50 55	30201	L	55	75	25	25		25	25,5	25	5	150	45		2
P92 2 CXCBL 2525 M 50 75	30202	L	75	130	25	25		25	25,5	32	5	150	52		2
P92 2 CXCBL 2525 M 50 75A	30203	L	75	130	25	25		25	25,5	40	5	150	60		2
P92 2 CXCBL 2525 M 50 130	30204	L	130	200	25	25	5	25	25,5	32	5	150	52	53	2
P92 2 CXCBL 2525 M 50 130A	30205	L	130	200	25	25	5	25	25,5	40	5	150	60	61	2
P92 2 CXCBL 2525 M 50 200	30207	L	200	450	25	25	5	25	25,5	32	5	150	52	53	2
P92 2 CXCBL 2525 M 50 200A	30208	L	200	450	25	25	5	25	25,5	45	5	150	65	66	2
P92 2 CXCBL 2525 M 50 450	30210	L	450	∞	25	25	5	25	25,5	32	5	150	52	53	2
P92 2 CXCBL 2525 M 50 450A	30209	L	450	∞	25	25	5	25	25,5	45	5	150	65	66	2
P92 2 CXCBR 2020 K 50 42	28295	R	42	55	20	20		20	20,5	25	5	125	45		2
P92 2 CXCBR 2020 K 50 55	29774	R	55	75	20	20		20	20,5	25	5	125	45		2
P92 2 CXCBR 2020 K 50 75	29713	R	75	130	20	20	3	20	20,5	28	5	125	48	49	2
P92 2 CXCBR 2525 M 50 42	28297	R	42	55	25	25		25	25,5	25	5	150	45		2
P92 2 CXCBR 2525 M 50 55	29775	R	55	75	25	25		25	25,5	25	5	150	45		2
P92 2 CXCBR 2525 M 50 75	29776	R	75	130	25	25		25	25,5	32	5	150	52		2
P92 2 CXCBR 2525 M 50 75A	29777	R	75	130	25	25		25	25,5	40	5	150	60		2
P92 2 CXCBR 2525 M 50 130	29780	R	130	200	25	25	5	25	25,5	32	5	150	52	53	2
P92 2 CXCBR 2525 M 50 130A	29781	R	130	200	25	25	5	25	25,5	40	5	150	60	61	2
P92 2 CXCBR 2525 M 50 200	29782	R	200	450	25	25	5	25	25,5	32	5	150	52	53	2
P92 2 CXCBR 2525 M 50 200A	29784	R	200	450	25	25	5	25	25,5	45	5	150	65	66	2
P92 2 CXCBR 2525 M 50 450	29715	R	450	∞	25	25	5	25	25,5	32	5	150	52	53	2
P92 2 CXCBR 2525 M 50 450A	29785	R	450	∞	25	25	5	25	25,5	45	5	150	65	66	2

Remark

Holder and inserts with the same "S" dimension fit together.

Fitting inserts

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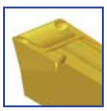
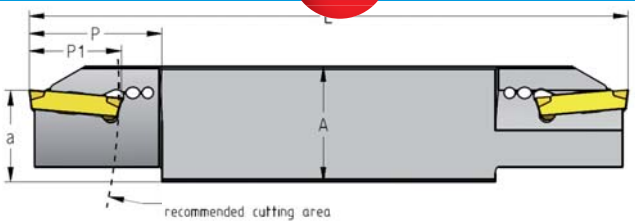

p. 58

How to write an order:				**recommended**
1 St.	P92 2 CXCBR 2020 K 50 42	or:	**1 St.**	**ID-Nr. 28295**
10 St.	RTNX 525 KM TILOX	or:	**10 St.**	**ID-Nr. 13414**

Blades for face grooving

new!

P92 2 TMS
System P92-2



Ref.	ID-Nr.		Ømin	Ømax	A	a	P	P1	S	L	
P92 2 TMS 32 4 85 R	44531	R	85	160	32	25,0	32	18,5	4,0	160	28
P92 2 TMS 32 4 140 R	44542	R	140	260	32	25,0	32	18,5	4,0	160	28
P92 2 TMS 32 4 240 R	44543	R	240	~	32	25,0	32	18,5	4,0	160	28
P92 2 TMS 32 5 85 R	44538	R	85	160	32	25,0	35	23,5	5,0	160	28
P92 2 TMS 32 5 140 R	44540	R	140	260	32	25,0	35	23,5	5,0	160	28
P92 2 TMS 32 5 240 R	44541	R	240	~	32	25,0	35	23,5	5,0	160	28

Comment

For correct application refer to page 192.

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

Fitting inserts

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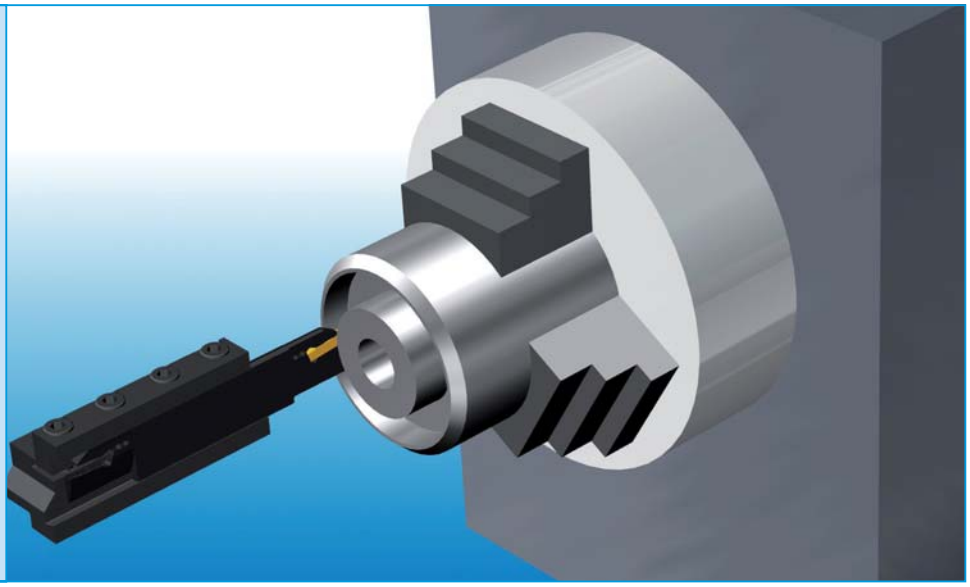
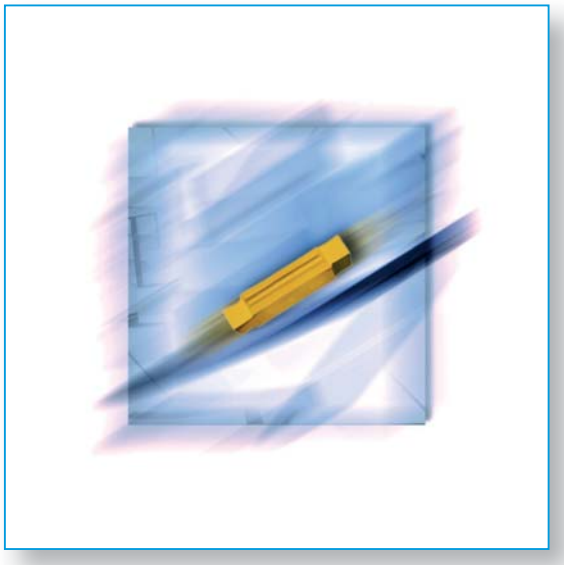
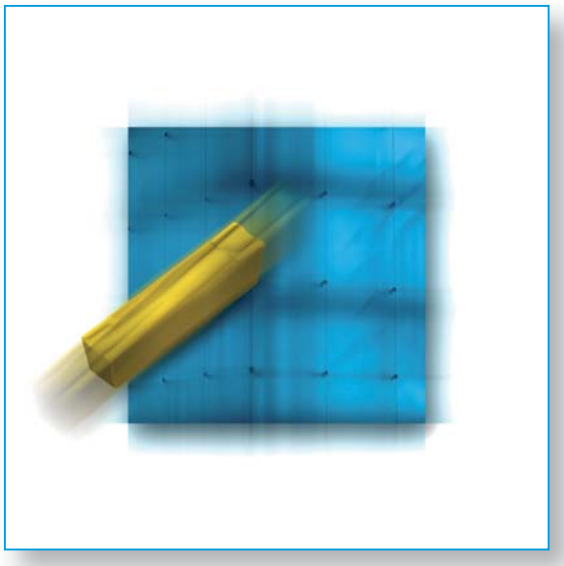
p. 56-58


p. 143

Application
P92 2 TMS 32



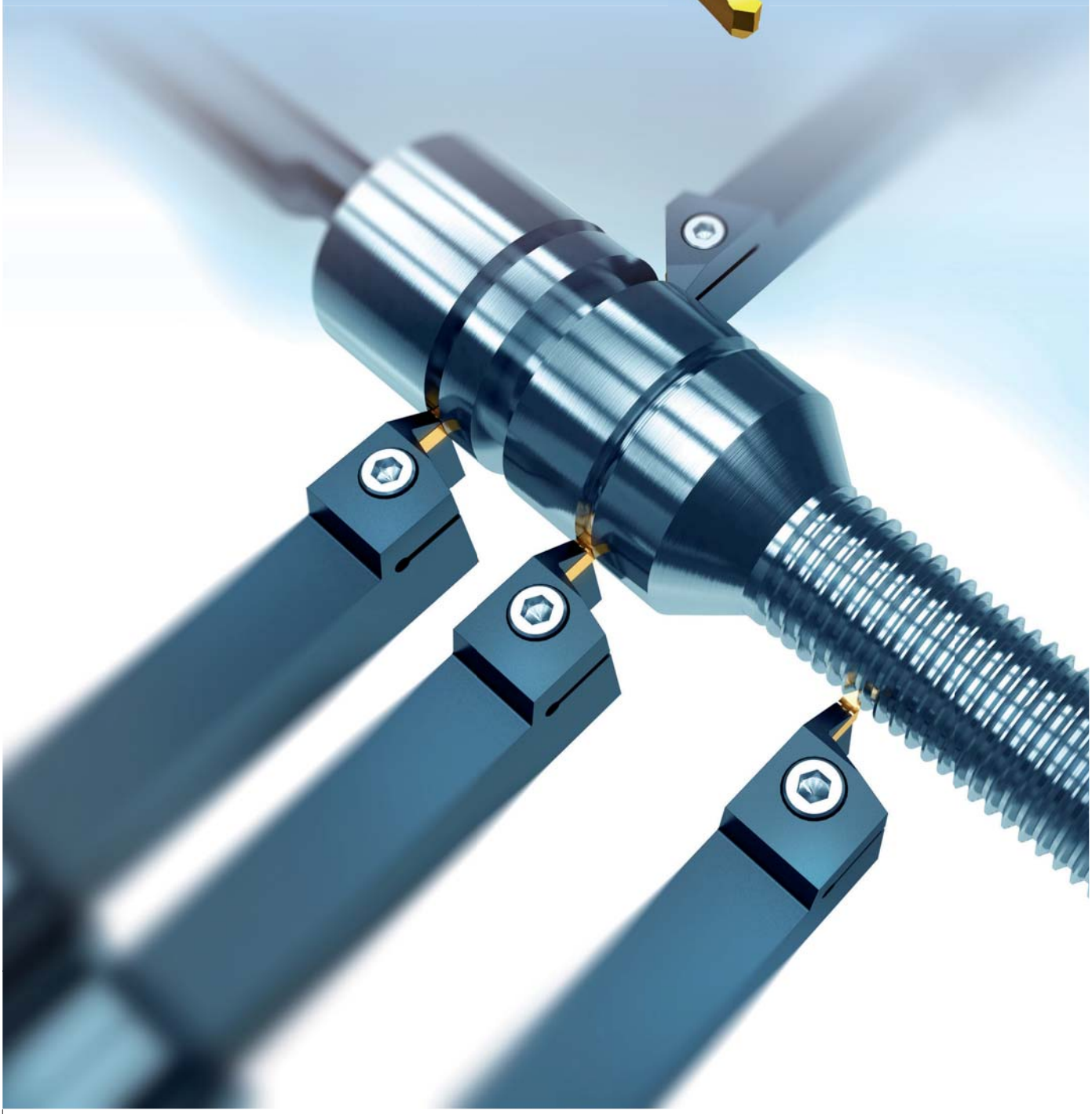




P92 P - Precision system

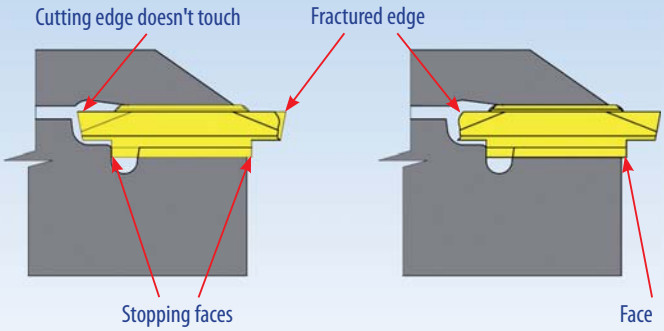
The precision system for machining

- Precision grooving
- Precision copying
- Precision threading



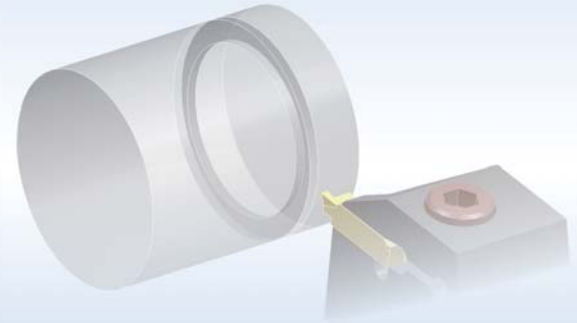
P92 P - Precision System

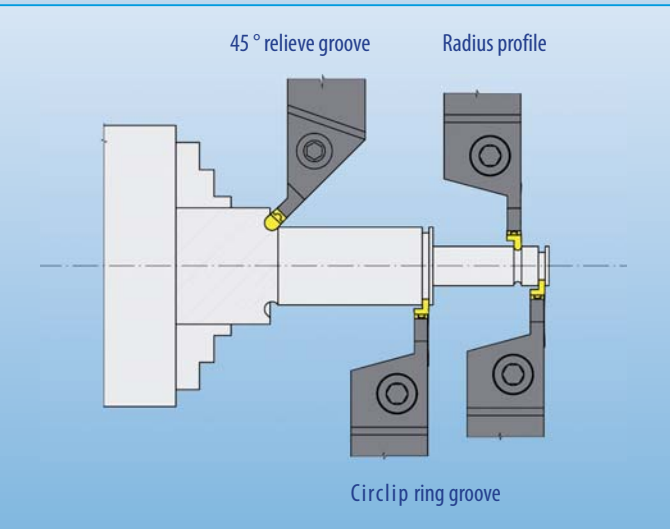
The precision system for machining



- ✓ Precise repositioning of cutting edge
- ✓ No loss! In case of fractured edge, the so far unused edge can be employed.

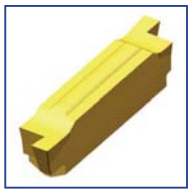
- ✓ Long guide surfaces between insert and pocket achieve a solid unit and therefore lead to a perfect straight run.





- ✓ Many applications

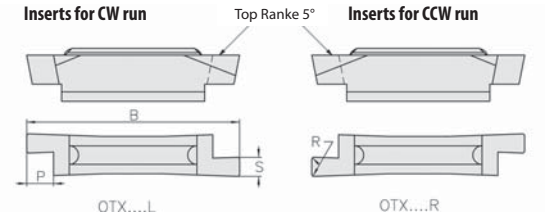
Precision grooving inserts (DIN 471)



P92 P OTX..R/L

System P92-P

RH insert



Enlarged view

Ref.	KM	PM NANOSPEED	KM NANOSPEED		B - 0,1	P	R		S $^{-0,05}$
	ID-Nr.	ID-Nr.	ID-Nr.						
OTX 4 050R	23939	23963	23962	R	19,2	1,0	0,05	0,50	0,57
OTX 4 060R	23938	23967	23966	R	19,2	1,0	0,05	0,60	0,67
OTX 4 070R	23937	23971	23970	R	19,2	1,5	0,05	0,70	0,77
OTX 4 080R	23936	23975	23974	R	19,2	1,5	0,05	0,80	0,87
OTX 4 090R	11046	11052	11048	R	19,2	1,5	0,1	0,90	0,97
OTX 4 110R	11054	11060	11056	R	19,2	1,5	0,1	1,10	1,24
OTX 4 130R	11062	11068	11064	R	19,2	1,5	0,1	1,30	1,44
OTX 4 160R	11070	11076	11072	R	19,2	2,0	0,1	1,60	1,74
OTX 4 185R	11078	11084	11080	R	19,2	2,0	0,1	1,85	1,99
OTX 4 215R	11086	11092	11088	R	19,2	2,5	0,1	2,15	2,29
OTX 4 265R	11094	11100	11096	R	19,2	2,5	0,1	2,65	2,79
OTX 4 315R	11110	11116	11112	R	19,2	2,5	0,1	3,15	3,29
OTX 5 415R	11160	11166	11162	R	23,6	3,5	0,1	4,15	4,29
OTX 4 050L	23940	23961	23960	L	19,2	1,0	0,05	0,50	0,57
OTX 4 060L	23941	23965	23964	L	19,2	1,0	0,05	0,60	0,67
OTX 4 070L	23942	23969	23968	L	19,2	1,5	0,05	0,70	0,77
OTX 4 080L	23943	23973	23972	L	19,2	1,5	0,05	0,80	0,87
OTX 4 090L	11047	11053	11049	L	19,2	1,5	0,1	0,90	0,97
OTX 4 110L	11055	11061	11057	L	19,2	1,5	0,1	1,10	1,24
OTX 4 130L	11063	11069	11065	L	19,2	1,5	0,1	1,30	1,44
OTX 4 160L	11071	11077	11073	L	19,2	2,0	0,1	1,60	1,74
OTX 4 185L	11079	11085	11081	L	19,2	2,0	0,1	1,85	1,99
OTX 4 215L	11087	11093	11089	L	19,2	2,5	0,1	2,15	2,29
OTX 4 265L	11095	11101	11097	L	19,2	2,5	0,1	2,65	2,79
OTX 4 315L	11111	11117	11113	L	19,2	2,5	0,1	3,15	3,29
OTX 5 415L	11161	11167	11163	L	23,6	3,5	0,1	4,15	4,29

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Fitting tool holders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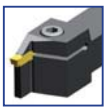
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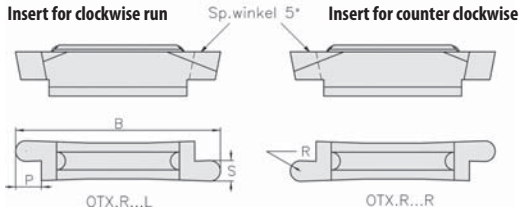
Full radius grooving and copying inserts

P92 P OTX R..R/L

System P92-P

RH insert



Enlarged view

Ref.	KM	PM NANOSPEED	KM NANOSPEED	( )	B - 0,1	P	R	S $^{+0,05}$
	ID-Nr.	ID-Nr.	ID-Nr.					
OTX 4 R 050R	23953	23959	23958	R	19,2	2,0	0,50	1,00
OTX 4 R 075R	29642	25284	29652	R	19,2	2,0	0,75	1,50
OTX 4 R 100R	11142	11148	11144	R	19,2	3,0	1,00	2,00
OTX 4 R 125R	29650	25287	29654	R	19,2	3,0	1,25	2,50
OTX 4 R 150R	11150	11156	11152	R	19,2	3,0	1,50	3,00
OTX 5 R 200R	11170	11176	11172	R	23,6	4,0	2,00	4,00
OTX 6 R 250R	11180	11186	11182	R	23,6	4,0	2,50	5,00
OTX 6 R 300R	11188	11194	11190	R	23,6	4,0	3,00	6,00
OTX 4 R 050L	23952	23957	23956	L	19,2	2,0	0,50	1,00
OTX 4 R 075L	29648	25285	29651	L	19,2	2,0	0,75	1,50
OTX 4 R 100L	11143	11149	11145	L	19,2	3,0	1,00	2,00
OTX 4 R 125L	29649	25286	29653	L	19,2	3,0	1,25	2,50
OTX 4 R 150L	11151	11157	11153	L	19,2	3,0	1,50	3,00
OTX 5 R 200L	11171	11177	11173	L	23,6	4,0	2,00	4,00
OTX 6 R 250L	11181	11187	11183	L	23,6	4,0	2,50	5,00
OTX 6 R 300L	11189	11195	11191	L	23,6	4,0	3,00	6,00

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Fitting tool holders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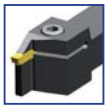
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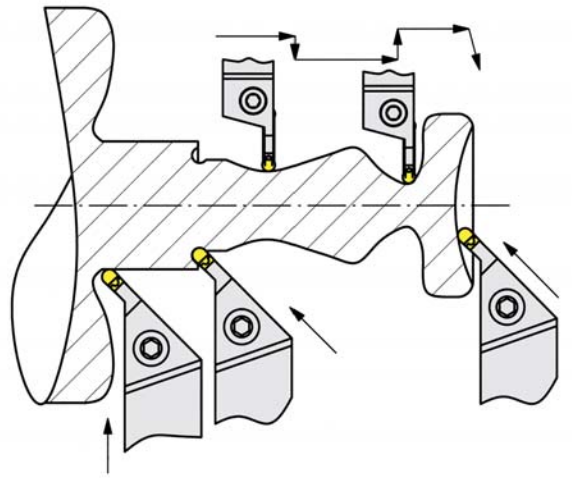
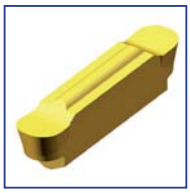


Full radius inserts for different applications

Technical section page 187 onwards

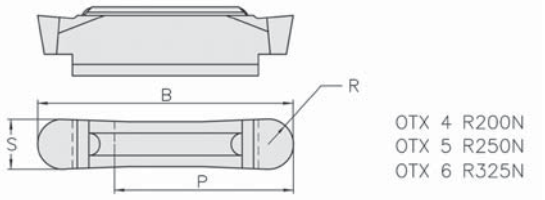
Radius and copying inserts

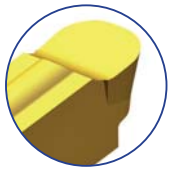


P92 P OTX R N

System P92-P

Neutral insert





Enlarged view

Ref.	KM	PM NANOSPEED	( )	B - 0,1	P	R	S $^{-0,20}$
	ID-Nr.	ID-Nr.					
OTX 4 R 200N	11158	11159	R und L	19,2	11	2,00	4,00
OTX 5 R 250N	11178	11179	R und L	23,6	14	2,50	5,00
OTX 6 R 325N	11196	11197	R und L	23,6	14	3,25	6,50

Superfinishing

Precision ground full radius inserts with 5° positive top rake angle.

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Fitting tool holders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p. 112, 114


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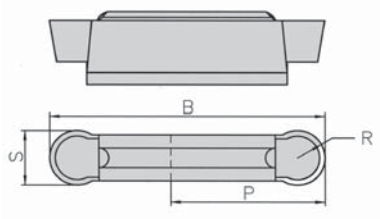
P92 P OTX R N R

System P92-P

Neutral insert



Enlarged view

Ref.	GF110	GF110 NANOSPEED	( )	B - 0,1	P	R	S $^{\pm 0,025}$
	ID-Nr.	ID-Nr.					
OTX 4 R 200N R	24266	24267	R und L	20,0	11	2,00	4,00
OTX 5 R 250N R	24268	24269	R und L	25,0	14	2,50	5,00

Finishing

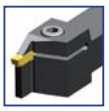
Precision ground full radius insert. Horizontal cutting edge with parallel chip breaker. Especially recommended for heat resistant alloys.

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Fitting tool holders


p. 111


p.109-110,114


p. 112, 114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How to write an order: **recommended**

1 St.	P92 P 90 CXCBRL 1620 K5+6 UNI	or:	**1 St.**	**ID-Nr. 24885**
10 St.	OTX5 R 250N R GF110 NANOSPEED	or:	**10 St.**	**ID-Nr. 24269**

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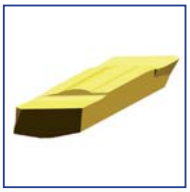
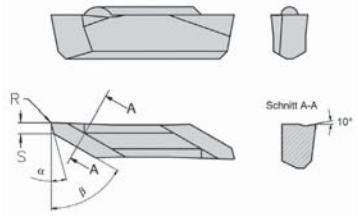
Decolletage turning insert for sliding-head machine tools

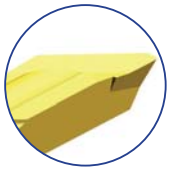


P92 P OTX4

System P92-P

RH insert





Enlarged view

Ref.	KM	PM NANOSPEED		S	R	α°	β°
	ID-Nr.	ID-Nr.					
OTX 4 DECO SL0660 R01	24289	24295	R	0,6	0,1	15	60
OTX 4 DECO SL1260 R01	24290	24298	R	1,2	0,1	15	60
OTX 4 DECO SL0660 L01	24291	24301	L	0,6	0,1	15	60
OTX 4 DECO SL1260 L01	24292	24304	L	1,2	0,1	15	60
OTX 4 DECO SL0660 R02	11120	11121	R	0,6	0,2	15	60
OTX 4 DECO SL1260 R02	11124	11125	R	1,2	0,2	15	60
OTX 4 DECO SL0660 L02	11118	11119	L	0,6	0,2	15	60
OTX 4 DECO SL1260 L02	11122	11123	L	1,2	0,2	15	60

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Fitting tool holders

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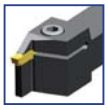

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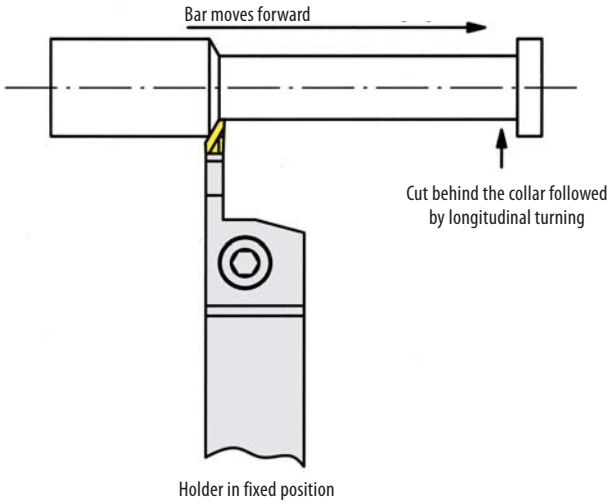
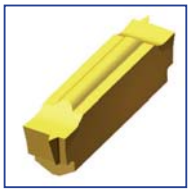


Precision ground DECO-insert:

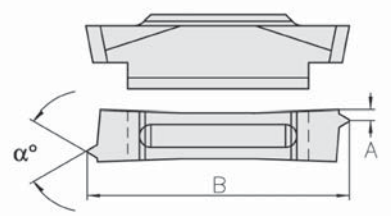
- cuts easily
- runs quietly
- makes clean faces
- achieves long tool life

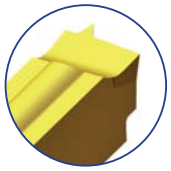
Technical section page 187 onwards

Threading inserts for ISO full profile



P92 P OTX ER
External thread
System P92-P

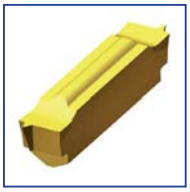




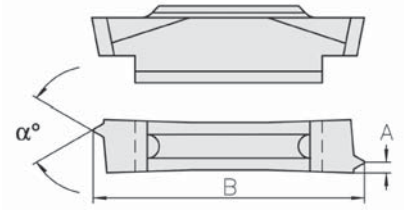
Enlarged view

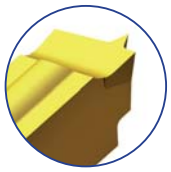
Ref.	PM NANOSPEED		A	B - 0,1	
	ID-Nr.				
OTX 4 ER ISO 100	11128	1,00	0,8	19,20	60
OTX 4 ER ISO 125	11129	1,25	0,8	19,20	60
OTX 4 ER ISO 150	11130	1,50	1,0	19,20	60
OTX 4 ER ISO 175	11131	1,75	1,1	19,20	60
OTX 4 ER ISO 200	11132	2,00	1,4	19,20	60
OTX 4 ER ISO 250	11133	2,50	1,5	19,20	60
OTX 4 ER ISO 300	11134	3,00	1,8	19,20	60
OTX 4 ER 14 W	18235	14 Th/inch	1,3	19,20	55
OTX 4 ER 11 W	18242	11 Th/inch	1,5	19,20	55

Fitting tool holders see below



P92 P OTX IR
Internal thread
System P92-P





Enlarged view

Ref.	PM NANOSPEED		A	B - 0,1	
	ID-Nr.				
OTX 4 IR ISO 100	11135	1,00	0,8	19,20	60
OTX 4 IR ISO 125	11136	1,25	0,8	19,20	60
OTX 4 IR ISO 150	11137	1,50	1,0	19,20	60
OTX 4 IR ISO 175	11138	1,75	1,1	19,20	60
OTX 4 IR ISO 200	11139	2,00	1,4	19,20	60
OTX 4 IR ISO 250	11140	2,50	1,5	19,20	60
OTX 4 IR ISO 300	11141	3,00	1,8	19,20	60
OTX 4 IR 14 W	31362	14 Th/inch	1,3	19,20	55
OTX 4 IR 19 W	31365	19 Th/inch	0,8	19,20	55

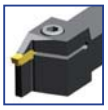
Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Technical section page 187 onwards

Fitting tool holders


p. 111

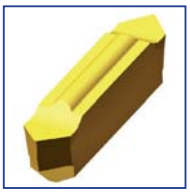

p.109-110,114


p. 112, 114


p. 154

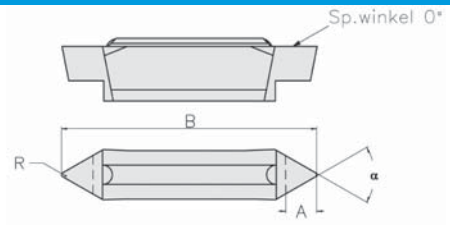
page 14

Part-profile threading inserts internal and external



P92 P OTX EIR

System P92-P



Enlarged view

Ref.	PM NANOSPEED		A	B - 0,1	R	
	ID-Nr.					
OTX **4** EIR 55 28 W	11126	28 - 20 Th/inch	2,7	19,20	0,10	55
OTX **4** EIR 60 050	11127	0,5 - 1,00	2,7	19,20	0,10	60
OTX **4** EIR 55 19 W	24272	19 - 14 Th/inch	2,7	19,20	0,20	55
OTX **4** EIR 60 125	24278	1,25 - 1,75	2,7	19,20	0,20	60
OTX **4** EIR 55 12 W	24275	12 - 10 Th/inch	2,7	19,20	0,30	55
OTX **4** EIR 60 200	24281	2,00 - 3,00	2,7	19,20	0,30	60

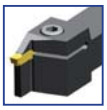
Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Gewindeschneidplatten, die für außen **und** innen eingesetzt werden können.

Fitting tool holders

p. 111



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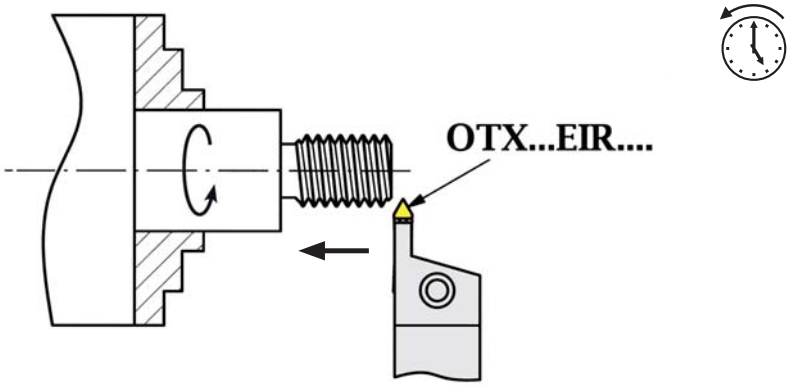
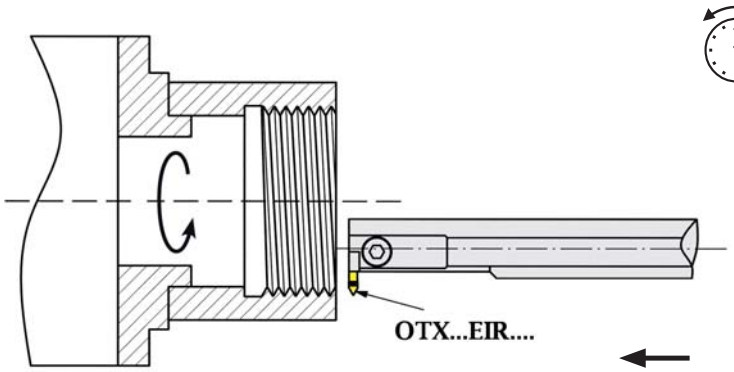
p. 112, 114

p. 154

CCW run



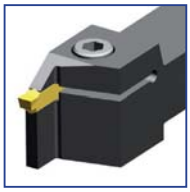
CCW run



OTX...EIR... for internal and external threading.

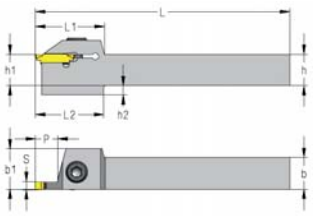
Technical section page 187 onwards

Precision holders



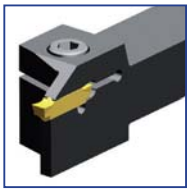
P92 P CXCBL
System P92-P

LH holder



P92 P CXCBR
System P92-P

RH holder



Ref.	ID-Nr.	( )	h	h1	h2	b	b 1	P	S	L	L1	L2	
P92 P CXCBL 0808 K4	10168	L	08	08	4	08	12	11	4	125	19,5	19,5	10
P92 P CXCBL 1616 K4	28169	L	16	16	-	16	-	11	4	125	34,0	-	1
P92 P CXCBL 1616 K5+6	24257	L	16	16	-	16	-	14	5+6,5	125	35,0	-	1
P92 P CXCBL 2020 K4	10178	L	20	20	-	20	-	11	4	125	34,0	-	14
P92 P CXCBL 2020 K5+6	10180	L	20	20	-	20	-	14	5+6,5	125	35,0	-	14
P92 P CXCBL 2525 M4	10182	L	25	25	-	25	-	11	4	150	34,0	-	2
P92 P CXCBL 2525 M5+6	10184	L	25	25	-	25	-	14	5+6,5	150	37,0	-	2
P92 P CXCBR 0808 K4	10167	R	08	08	4	08	12	11	4	125	19,5	19,5	10
P92 P CXCBR 1616 K4	28168	R	16	16	-	16	-	11	4	125	34,0	-	1
P92 P CXCBR 1616 K5+6	24256	R	16	16	-	16	-	14	5+6,5	125	35,0	-	1
P92 P CXCBR 2020 K4	10177	R	20	20	-	20	-	11	4	125	34,0	-	14
P92 P CXCBR 2020 K5+6	10179	R	20	20	-	20	-	14	5+6,5	125	35,0	-	14
P92 P CXCBR 2525 M4	10181	R	25	25	-	25	-	11	4	150	34,0	-	2
P92 P CXCBR 2525 M5+6	10183	R	25	25	-	25	-	14	5+6,5	150	37,0	-	2

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Holder marked **5 + 6**, e.g. P92 P CXCBL 1616 K**5+6**, accept OTX **5 or** OTX **6** inserts.
OTX **5** (s = 5 mm maximal)
OTX **6** (s = 6,5 mm maximal)

Fitting inserts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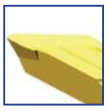
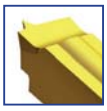
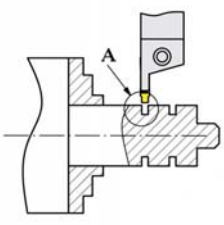
p. 104, 113

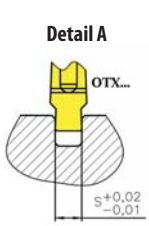

p. 105

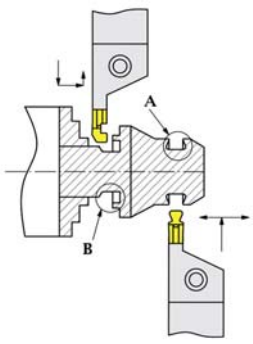

p. 106

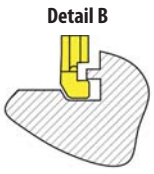

p. 107-108

p.200-201,212





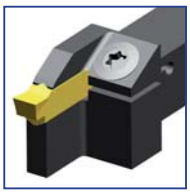




Special profiles 144

Precision grooving

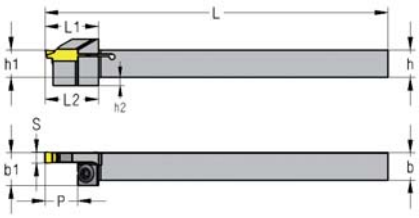
Precision tool holders for sliding head machine tools



P92 P CXCBL..K4-11

System P92-P

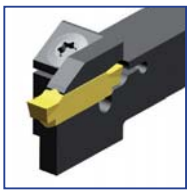
LH holder



P92 P CXCBR..K4-11

System P92-P

RH holder



Ref.	ID-Nr.	( )	h	h1	h2	b	b 1	P	S	L	L1	L2	
							-						
P92 P CXCBL 1010 K4 11	15617	L	10	10	3	10	12	11	4	125	19,5	19,5	9
P92 P CXCBL 1212 K4 11	14374	L	12	12	-	12	-	11	4	125	-	19,5	4
P92 P CXCBL 1616 K4 11	24259	L	16	16	-	16	-	11	4	125	-	19,5	4
P92 P CXCBR 1010 K4 11	15618	R	10	10	3	10	12	11	4	125	19,5	19,5	9
P92 P CXCBR 1212 K4 11	18705	R	12	12	-	12	-	11	4	125	-	19,5	4
P92 P CXCBR 1616 K4 11	24258	R	16	16	-	16	-	11	4	125	-	19,5	4

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Fitting inserts

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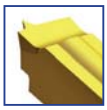
p. 103

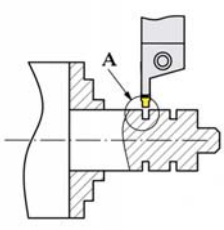
p. 104, 113

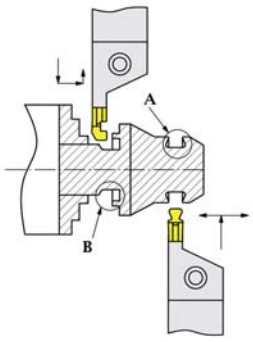
p. 105

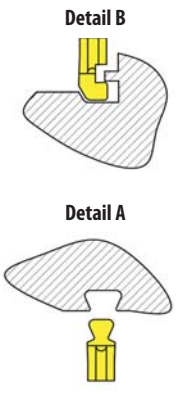
p. 106



p. 107-108



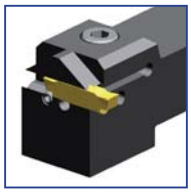




Special profiles 144

Precision grooving

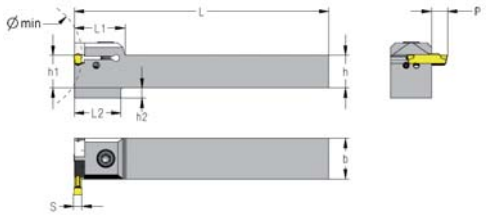
90 ° - Holders for many different turning applications



P92 P 90 UNI

System P92-P und P92

RH and LH pocket



Ref.	ID-Nr.		h	h1	h2	b	P	P1	S	L	L1	L2	
P92 P 90 CXCBRL 1620 K4 UNI	24694	R + L	16	16	5	20	7,5	5,0	4	125	25	23	1+13
P92 P 90 CXCBRL 2020 K4 UNI	10185	R + L	20	20	-	20	7,5	5,0	4	125	25	-	1+13
P92 P 90 CXCBRL 2525 M4 UNI	10187	R + L	25	25	-	25	7,5	5,0	4	150	25	-	1+13
P92 P 90 CXCBRL 1620 K5+6 UNI	24885	R + L	16	16	5	20	9,5	6,0	5 + 6,5	125	25	23	1+13
P92 P 90 CXCBRL 2020 K5+6 UNI	10186	R + L	20	20	-	20	9,5	6,0	5 + 6,5	125	25	-	1+13
P92 P 90 CXCBRL 2525 M5+6 UNI	10188	R + L	25	25	-	25	9,5	6,0	5 + 6,5	150	34	-	1+13

Remark

Holder and inserts with the same "S" dimension fit together.

Holder marked **5 + 6**, e.g. P92 P CXCBL 1616 K**5+6**, accept OTX **5** or OTX **6** inserts.
OTX **5** (s = 5 mm maximal)
OTX **6** (s = 6,5 mm maximal)

Fitting inserts System P92
(please pay attention to dimension P)

p. 49-48 p. 55 p. 58-56

Multifunctional tool holder for: Ø min face for grooving only

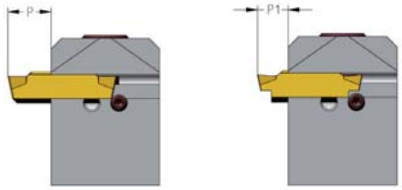
OTX-Precision pages 85 - 87	➞ face + radial cuts	> 50 mm
OTX-Threads pages 107 + 108	➞ threading	
OTXS page 51	➞ special profiles	> 50 mm
turning inserts page 48 - 55		> 80 mm

Fitting inserts System P92 P
(please pay attention to dimension P1)

p. 103 p. 104-105 p. 107-108

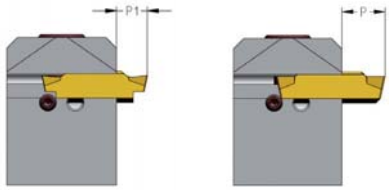
UNI-Holder for clockwise (CW) and counter clockwise (CCW) run

Insert positioned for clockwise (CW) run, face grooving
Insert positioned for counter clockwise (CCW) run, grooving



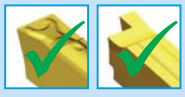
P92 inserts P92 P inserts

Insert positioned for counter clockwise (CCW) run, face grooving
Insert positioned for clockwise (CW) run, grooving

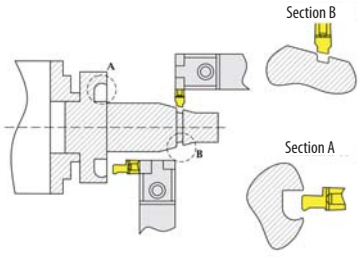


P92 P inserts P92 inserts

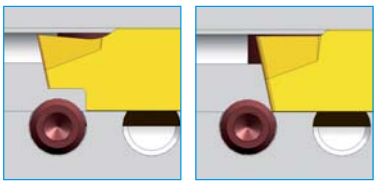
2 tapped holes for a positioning pin permit the use of P92 and P92-P inserts for CW and CCW run!



Multifunctional tool holder for many different applications.

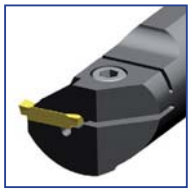


Stopping face P92 P **Stopping face P92**



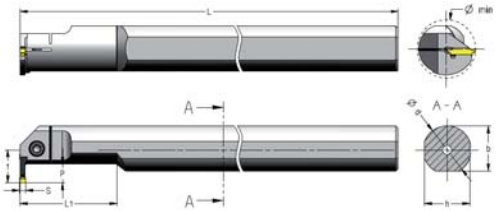
Stopping face P92 und P92 P

Precision boring bars with internal cooling



P92 P CGL
System P92-P

LH boring bar



P92 P CGR
System P92-P

RH boring bar

Ref.	ID-Nr.	( )	Ømin	d	h	b	f	P	S	L	L1	
P92 P CGL 0020 R4	10156	L	24	20	18	18,5	13	7	4,0	200	40	6
P92 P CGL 0020 R5+6	10158	L	27	20	18	18,5	15	9	5+6,5	200	40	6
P92 P CGL 0025 R4	10160	L	32	25	23	23,0	17	10	4,0	200	50	14
P92 P CGL 0025 R5+6	10162	L	32	25	23	23,0	17	10	5+6,5	200	50	14
P92 P CGL 0032 S4	10164	L	42	32	30	30,0	22	12	4,0	250	64	14
P92 P CGL 0032 S5+6	10166	L	44	32	30	30,0	26	16	5+6,5	250	64	14
P92 P CGL 0040 T5+6	33468	L	52	40	38	38,0	30	16	5+6,5	300	80	2
P92 P CGR 0020 R4	10155	R	24	20	18	18,5	13	7	4,0	200	40	6
P92 P CGR 0020 R5+6	10157	R	27	20	18	18,5	15	9	5+6,5	200	40	6
P92 P CGR 0025 R4	10159	R	32	25	23	23,0	17	10	4,0	200	50	14
P92 P CGR 0025 R5+6	10161	R	32	25	23	23,0	17	10	5+6,5	200	50	14
P92 P CGR 0032 S4	10163	R	42	32	30	30,0	22	12	4,0	250	64	14
P92 P CGR 0032 S5+6	10165	R	44	32	30	30,0	26	16	5+6,5	250	64	14
P92 P CGR 0040 T5+6	24445	R	52	40	38	38,0	30	16	5+6,5	300	80	2

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Holder marked **5 + 6**, e.g. P92 P CXCBL 1616 K**5+6**, accept OTX **5 or** OTX **6**.
OTX **5** (s = 5 mm maximal)
OTX **6** (s = 6,5 mm maximal)

Fitting inserts

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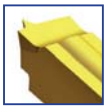
p. 103

p. 104, 113

p. 105



p. 107-108

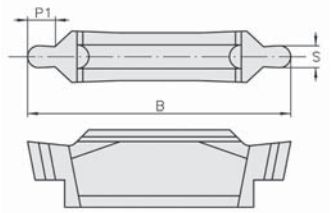
Attention!
LH inserts and RH boring bars fit together.
RH inserts and LH boring bars fit together.

How to write an order:			**recommended**
1 St.	P92 P CGR 0020 R4	or:	**1 St.** **ID-Nr. 10155**
10 St.	OTX4 IR ISO 100 PM TINVC	or:	**10 St.** **ID-Nr. 11135**

Full radius insert for standardized grooves according to DIN 509

OTX4 R...N

System P92-P



Enlarged view

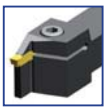
Ref.	PM NANOSPEED	KM NANOSPEED		B - 0,1	P	P1	R	S $^{-0,15}$	Ø min	Ø min
	ID-Nr.	ID-Nr.								
OTX 4 R050N	27160	31383	N	19,2	0,8	1,5	0,50	1,00	10	25
OTX 4 R075N	27161	31384	N	19,2	0,8	2,0	0,75	1,50	10	25
OTX 4 R100N	27162	31385	N	19,2	0,8	2,0	1,00	2,00	10	25

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Fitting tool holders

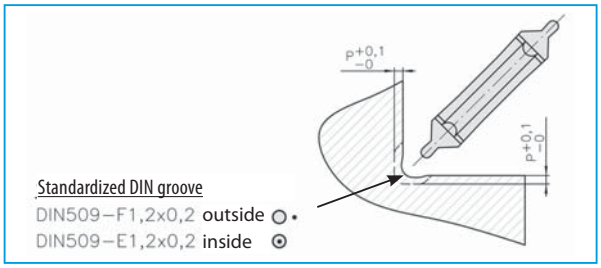
p. 111

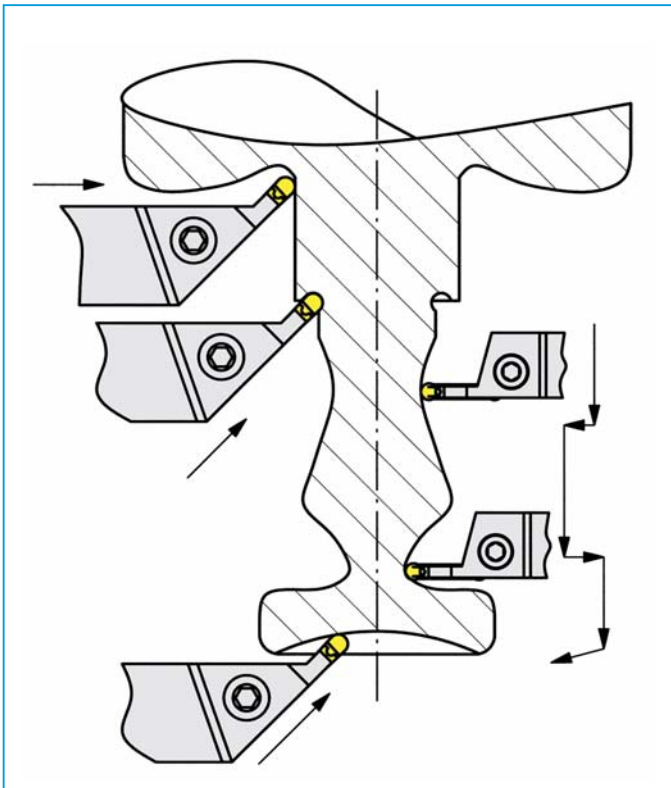


p.109-110,114

p. 112, 114

p. 154

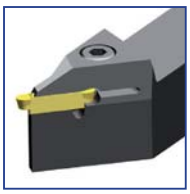




Grooving and copy turning.

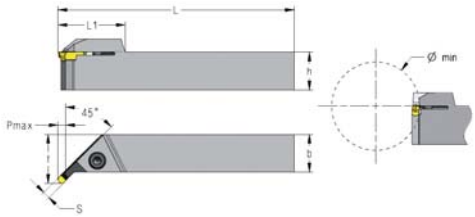
Technical section page 187 onwards

Holders for relieve grooves and copy turning



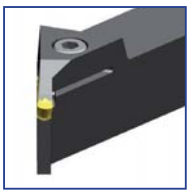
P92 P 45 CXCBL
System P92-P

LH holder



P92 P 45 CXCBR
System P92-P

RH holder



Ref.	ID-Nr.	( )	Ømin	h	b	f	Pmax	S	L	L1	
P92 P 45 CXCBL 1616 K4	19747	L	>25	16	16	22	1,5	4	125	35	1
P92 P 45 CXCBL 2020 K4	19664	L	>25	20	20	26	1,5	4	125	35	5
P92 P 45 CXCBL 2525 M4	19755	L	>25	25	25	31	1,5	4	150	39	5
P92 P 45 CXCBL 1620 K5+6	19749	L	>40	16	20	26	2,0	5+6,5	125	35	1
P92 P 45 CXCBL 2020 K5+6	19751	L	>40	20	20	26	2,0	5+6,5	125	37	5
P92 P 45 CXCBL 2525 M5+6	19752	L	>40	25	25	31	2,0	5+6,5	150	39	5
P92 P 45 CXCBR 1616 K4	19746	R	>25	16	16	22	1,5	4	125	35	1
P92 P 45 CXCBR 2020 K4	19663	R	>25	20	20	26	1,5	4	125	35	5
P92 P 45 CXCBR 2525 M4	19754	R	>25	25	25	31	1,5	4	150	39	5
P92 P 45 CXCBR 1620 K5+6	19748	R	>40	16	20	26	2,0	5+6,5	125	35	1
P92 P 45 CXCBR 2020 K5+6	19750	R	>40	20	20	26	2,0	5+6,5	125	37	5
P92 P 45 CXCBR 2525 M5+6	19753	R	>40	25	25	31	2,0	5+6,5	150	39	5

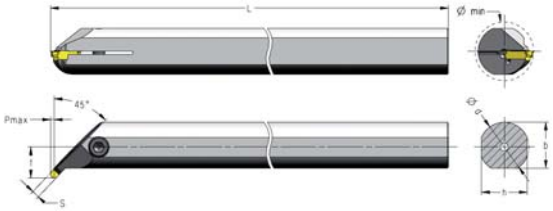
Fitting inserts see below

Attention!
LH inserts and RH boring bars fit together.
RH inserts and LH boring bars fit together.

Boring bars with internal cooling for relieve grooves

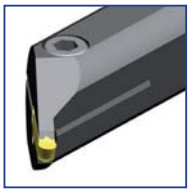
P92 P 45 CGL
System P92-P

LH boring bar



P92 P 45 CGR
System P92-P

RH boring bar



Ref.	ID-Nr.	( )	Ømin	h	b	f	Pmax.	S	L	
P92 P 45 CGL 0020 R4	19660	L	25	18	18,5	13	1,5	4	200	6
P92 P 45 CGL 0025 R4	19662	L	28	23	23	15,5	1,5	4	200	1
P92 P 45 CGR 0020 R4	19659	R	25	18	18,5	13	1,5	4	200	6
P92 P 45 CGR 0025 R4	19661	R	28	23	23	15,5	1,5	4	200	1

Remark

4, 5 and **6** are identification numbers for the insert size and the compatible tool holder. Inserts and holder with identical numbers fit together.
e.g. P92 P CXCBR 0808 K**4** with OTX**4** 050R

Holder marked **5 + 6**, e.g. P92 P CXCBL 1616 K**5+6**, accept OTX **5 or** OTX **6**.
OTX **5** (s = 5 mm maximal)
OTX **6** (s = 6,5 mm maximal)

Fitting inserts

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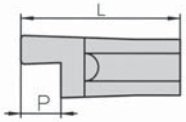
Precision grooving inserts according to DIN 472

P92 P KOTX L

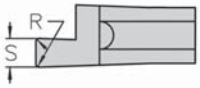
System P92-P

LH insert

LH insert for CW run



RH insert for CCW run



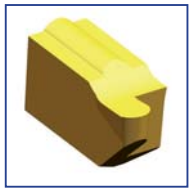
P92 P KOTX R

System P92-P

RH insert

Ref.	PM NANOSPEED		L - 0,1	P	R		S $^{-0,05}$
	ID-Nr.						
KOTX4 090L	10918	L	9,2	1,5	0,1	0,90	0,97
KOTX4 110L	10922	L	9,2	1,5	0,1	1,10	1,24
KOTX4 130L	10926	L	9,2	1,5	0,1	1,30	1,44
KOTX4 160L	10930	L	9,2	2,0	0,1	1,60	1,74
KOTX4 185L	10934	L	9,2	2,0	0,1	1,85	1,99
KOTX4 215L	10938	L	9,2	2,5	0,1	2,15	2,29
KOTX4 265L	10942	L	9,2	2,5	0,1	2,65	2,79
KOTX4 315L	10950	L	9,2	2,5	0,1	3,15	3,29
KOTX4 090R	10917	R	9,2	1,5	0,1	0,90	0,97
KOTX4 110R	10921	R	9,2	1,5	0,1	1,10	1,24
KOTX4 130R	10925	R	9,2	1,5	0,1	1,30	1,44
KOTX4 160R	10929	R	9,2	2,0	0,1	1,60	1,74
KOTX4 185R	10933	R	9,2	2,0	0,1	1,85	1,99
KOTX4 215R	10937	R	9,2	2,5	0,1	2,15	2,29
KOTX4 265R	10941	R	9,2	2,5	0,1	2,65	2,79
KOTX4 315R	10949	R	9,2	2,5	0,1	3,15	3,29

Fitting tool holders see below

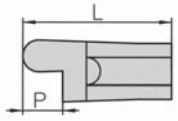


P92 P KOTX R..L

System P92-P

LH insert

LH insert for CW run

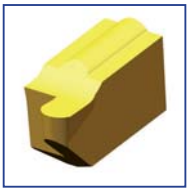


RH insert for CCW run

P92 P KOTX R..R

System P92-P

RH insert



Ref.	PM NANOSPEED		L - 0,1	P	R	S $^{+0,05}$
	ID-Nr.					
KOTX4 R 100R	10960	R	9,2	2,5	1,00	2,00
KOTX4 R 150R	10964	R	9,2	2,5	1,50	3,00
KOTX4 R 100L	10961	L	9,2	2,5	1,00	2,00
KOTX4 R 150L	10965	L	9,2	2,5	1,50	3,00

Fitting boring bars

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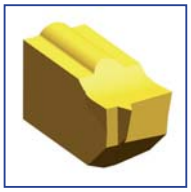
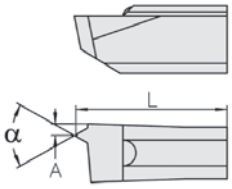
NANOSPEED ↑ TINVC page 14

Part profile inserts for internal and external threading

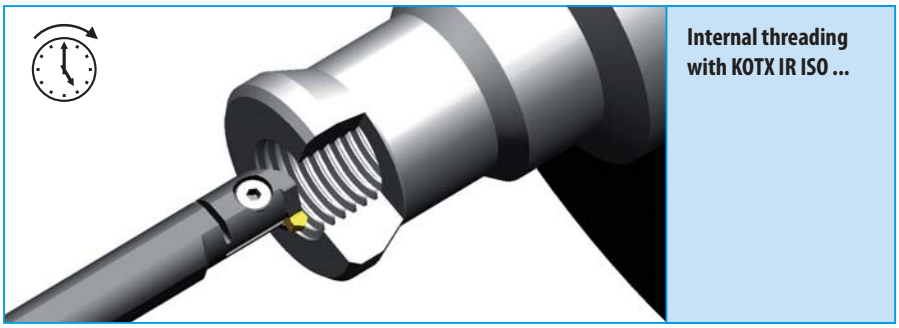


P92 P KOTX IR

System P92-P



Ref.	PM NANOSPEED		A	L ± 0,1	
	ID-Nr.				
KOTX4 IR ISO 100	10951	1,00	0,8	9,20	60
KOTX4 IR ISO 125	10952	1,25	0,8	9,20	60
KOTX4 IR ISO 150	10953	1,50	1,0	9,20	60
KOTX4 IR ISO 175	10954	1,75	1,1	9,20	60
KOTX4 IR ISO 200	10955	2,00	1,4	9,20	60
KOTX4 IR ISO 250	10956	2,50	1,5	9,20	60
KOTX4 IR ISO 300	10957	3,00	1,8	9,20	60



Internal threading with KOTX IR ISO ...

Fitting boring bars

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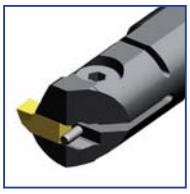
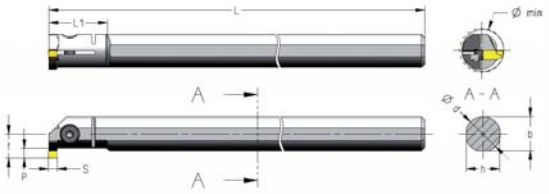
Boring bars with internal cooling for grooving and threading



P92 P CGL 4C

System P92-P

LH boring bar



P92 P CGR 4C

System P92-P

RH boring bar

Ref.	ID-Nr.		Ømin	d	h	b	f	P	S	L	L1	
P92 P CGL 0012 M4C	10152	L	15,5	12	11	-	8,7	2,5	max 1,85	150	22	22
P92 P CGL 0016 P4C	10154	L	20	16	15	15,5	11	2,5	max 3,15	170	26	19
P92 P CGR 0012 M4C	10151	R	15,5	12	11	-	8,7	2,5	max 1,85	150	22	22
P92 P CGR 0016 P4C	10153	R	20	16	15	15,5	11	2,5	max 3,15	170	26	19

Attention!

LH inserts and RH boring bars fit together.
RH inserts and LH boring bars fit together.

Fitting inserts

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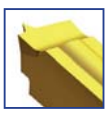

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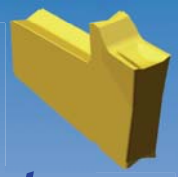
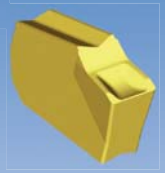
1 edge cutting system

Parting off and grooving

- Flex Fix system
- passt perfekt system
- Standard Design system





HAFFMAN High Precision Tools

1-edge cutting system

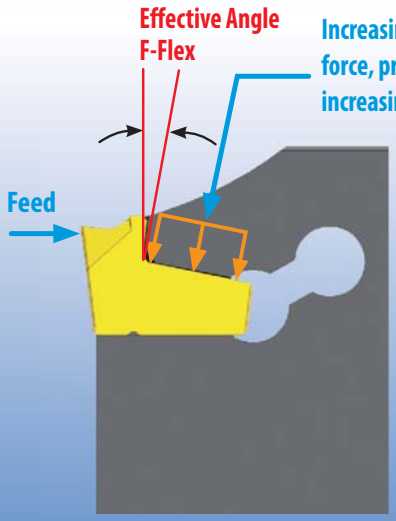
Parting off and grooving

Construction and the way, these perfect grooving and parting off tools fit together

Just a few degrees in the right direction, lead to a new technique, which solves the old and well known system problems like

- Loss of center height
- Opening of insert pocket
- Fatigue of material
- Insert creeping

and increase tool life by **120 %**, stated by absolute authentic test series, compared with the system passt perfekt.



- Vibrations → 0
- Positioning in insert pocket → perfect
- Heat rejection improved
- Quick and defined insert change

Authentic tests: Parting off

Testmaterial	Quantity Flex Fix	Quantity Passt Perfekt	Result in %
1.0277 (hexagonal)	220	180	22 % more
1.7227 (Ø 45mm)	265	130	103 % more
1.4301 (Ø 45mm)	85	25	240 % more

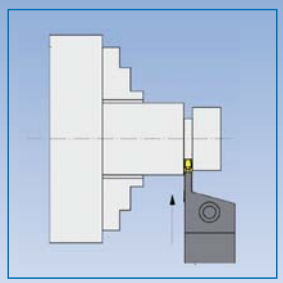
Increased tool life by **120 %**

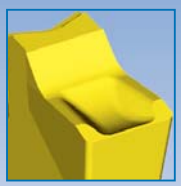
1-edge cutting system

Parting off and grooving

One-edge cutting system for grooving and parting off

Grooving

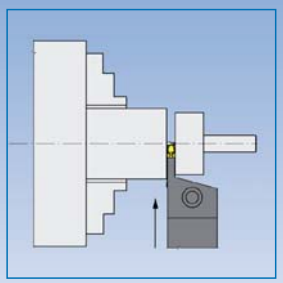




Parting off and grooving IFN

Grooving, the major edge cuts a groove

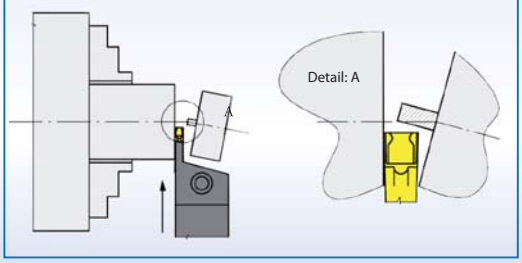
Parting off



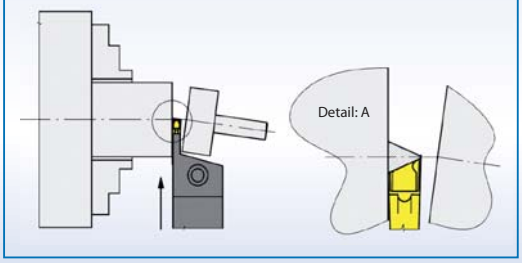
Parting off BFN

The major edge **parts off** a comonent.

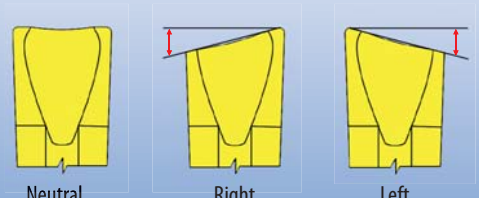
Parting off components leaving a bur



Parting off components without leaving a bur



Neutral inserts, inserts with lead angel right and lead angel left



Definition of rotation

CCW and CW rotation

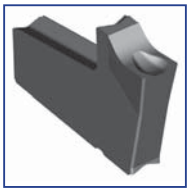
View into the spindle:

RH or CCW: Workpiece or bar rotates counter clockwise (german: „Rechtslauf"

LH or CW: Workpiece or bar rotates clockwise (german: „Linkslauf")

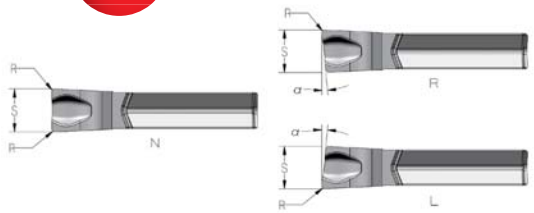
Parting off and grooving inserts

new!



BF N/R/L

FLEX FIX



Ref.	KM TILOX	KM NANOSPEED	KM HYPERSPEED	KM CARBOSPEED	( )	R	S ±0,05	α°
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.				
BFN 2	43199	43201	43202	43200	N	0,2	2,0	0
BFN 3	43203	43204	41172	41173	N	0,2	3,0	0
BFN 4	43205	43207	43208	43206	N	0,2	4,0	0
BFR 2 8D	43209	43211	43212	43210	R	0,2	2,0	8
BFR 3 8D	43213	43215	43216	43214	R	0,2	3,0	8
BFR 4 8D	43217	43219	43220	43218	R	0,2	4,0	8
BFR 2 12D	43221	43223	43224	43222	R	0,2	2,0	12
BFR 3 12D	43225	43227	43228	43226	R	0,2	3,0	12
BFR 4 12D	43229	43231	43232	43230	R	0,2	4,0	12
BFL 2 8D	43233	43235	43236	43234	L	0,2	2,0	8
BFL 3 8D	43237	43239	43240	43238	L	0,2	3,0	8
BFL 4 8D	43241	43243	43244	43242	L	0,2	4,0	8
BFL 2 12D	43245	43247	43248	43246	L	0,2	2,0	12
BFL 3 12D	43249	43251	43253	43250	L	0,2	3,0	12
BFL 4 12D	43252	43255	43256	43254	L	0,2	4,0	12

BF-Parting off geometry

Grooved parting off edge with reinforced flanks. The deep and spacious **chip-trough** gives excellent chip control. To be used on almost all materials.

Fitting tool holders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p. 125


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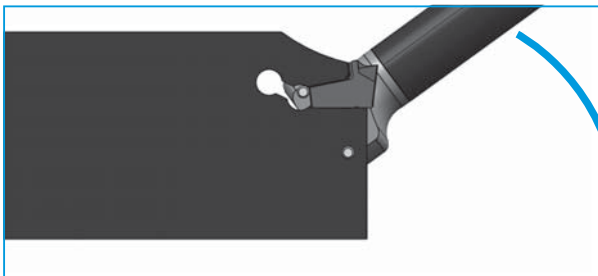

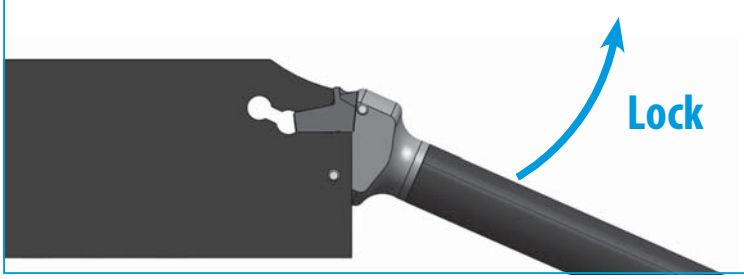

FLEX FIX insert changing

easy
safe
quick

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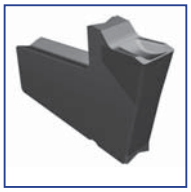
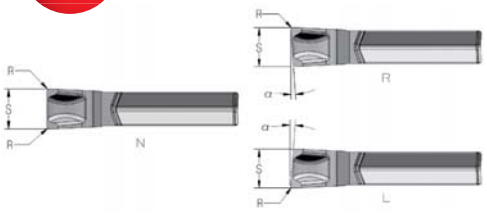
Parting off and grooving inserts

new!



IF N/R/L

FLEX FIX



Ref.	KM TILOX	KM NANOSPEED	KM HYPERSPEED	KM CARBOSPEED	↻	R	S ±0,05	α°
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.				
IFN 2	43260	43262	43263	43261	N	0,2	2,0	0
IFN 3	39203	43259	41153	40017	N	0,2	3,0	0
IFN 4	43264	43266	43267	43265	N	0,2	4,0	0
IFR 2 4D	43268	43270	43271	43269	R	0,2	2,0	4
IFR 3 4D	39853	43273	43274	43272	R	0,2	3,0	4
IFR 4 4D	43275	43277	43278	43276	R	0,2	4,0	4
IFR 2 8D	43279	43281	43282	43280	R	0,2	2,0	8
IFR 3 8D	39851	43284	43285	43283	R	0,2	3,0	8
IFR 4 8D	43286	43288	43289	43287	R	0,2	4,0	8
IFL 2 4D	43290	43292	43293	43291	L	0,2	2,0	4
IFL 3 4D	39204	43295	43296	43294	L	0,2	3,0	4
IFL 4 4D	43297	43299	43300	43298	L	0,2	4,0	4
IFL 2 8D	43301	43303	43304	43302	L	0,2	2,0	8
IFL 3 8D	39205	43306	43307	43305	L	0,2	3,0	8
IFL 4 8D	43308	43310	43311	43309	L	0,2	4,0	8

IF Geometry

IF Geometry with its cutting edge strengthening, ground chamfer is recommended for:

- Alloy steels
- Stainless steels
- Interrupted cuts

Ground chamfer

Fitting tool holders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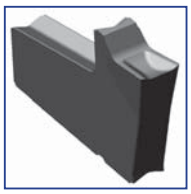
Technical section page 187 onwards

page 14

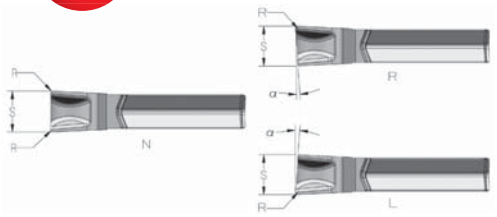
Parting off and grooving inserts

new



SF N/R/L

FLEX FIX



Ref.	KM TILOX	KM NANOSPEED	KM HYPERSPEED	KM CARBOSPEED	( )	R	S ±0,05	α°
	ID-Nr.	ID-Nr.	ID-Nr.	ID-Nr.				
SFN 2	43087	43169	43174	43168	N	0,2	2,0	0
SFN 3	38635	43170	41155	40018	N	0,2	3,0	0
SFN 4	43171	43173	43175	43172	N	0,2	4,0	0
SFR 2 6D	43176	43178	43179	43177	R	0,2	2,0	6
SFR 3 6D	14272	43181	43182	43180	R	0,2	3,0	6
SFR 4 6D	43183	43185	43186	43184	R	0,2	4,0	6
SFL 2 6D	43187	43189	43190	43188	L	0,2	2,0	6
SFL 3 6D	14270	43192	43193	43191	L	0,2	3,0	6
SFL 4 6D	43194	43196	43197	43195	L	0,2	4,0	6

SF-Geometry SUPERNOVA

The arc shaped cutting edge with its reinforced flanks achieves ideal chips.
Recommended for free cutting and low alloy steels and stainless steels , also to be used on unstable machine tools.

Fitting tool holders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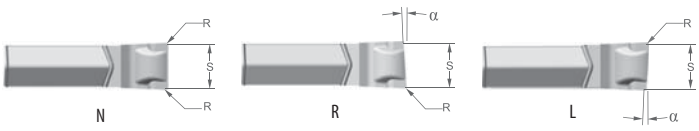
IF N/R/L ALU

Flex Fix

FLEX FIX

new



Ref.	KM	KM ALUSPEED	( )	R	S ±0,05	α°
	ID-Nr.	ID-Nr.				
IFN 2 ALU	47727	47730	N	0,2	2,0	0
IFN 3 ALU	47728	47731	N	0,2	3,0	0
IFN 4 ALU	47729	47732	N	0,2	4,0	0
IFR 2 4D ALU	47733	47736	R	0,2	2,0	4
IFR 3 4D ALU	47734	47737	R	0,2	3,0	4
IFR 4 4D ALU	47735	47738	R	0,2	4,0	4
IFL 2 4D ALU	47739	47742	L	0,2	2,0	4
IFL 3 4D ALU	47740	47743	L	0,2	3,0	4
IFL 4 4D ALU	47741	47744	L	0,2	4,0	4

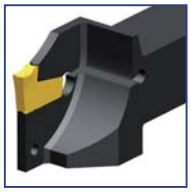
The new IF Alu geometry

The new IF Alu geometry has got a horizontally ground cutting edge with a flat chip breaker for high speed chip removal. The geometry is positive and sharply ground and is recommended for nonferrous heavy metals, pipes, thinwalled parts, unstable components, free cutting materials and titanium.

Technical section page 187 onwards

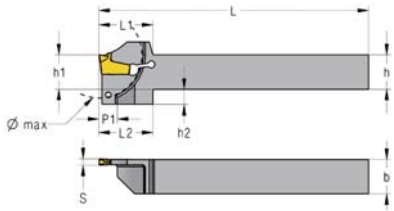
Parting off and grooving inserts

new!



F16 L 42
FLEX FIX

LH holder

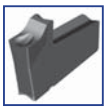


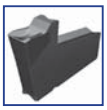
F16 R 42
FLEX FIX

RH holder

Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	P1	S	L	L1	L2	
F16 R 1616 K20 42	43322	R	42	16	16	7	16	8	2,0	125	25	25	AWF16
F16 R 1616 K30 42	43323	R	42	16	16	7	16	8	3,0	125	25	25	AWF16
F16 R 1616 K40 42	43324	R	42	16	16	7	16	8	4,0	125	25	25	AWF16
F16 R 2020 K20 42	43325	R	42	20	20	3	20	8	2,0	125	25	25	AWF16
F16 R 2020 K30 42	43326	R	42	20	20	3	20	8	3,0	125	25	25	AWF16
F16 R 2020 K40 42	43327	R	42	20	20	3	20	8	4,0	125	25	25	AWF16
F16 R 2525 M20 42	43328	R	42	25	25	0	25	8	2,0	150	25	25	AWF16
F16 R 2525 M30 42	43329	R	42	25	25	0	25	8	3,0	150	25	25	AWF16
F16 L 1616 K20 42	43330	L	42	16	16	7	16	8	2,0	125	25	25	AWF16
F16 L 1616 K30 42	43331	L	42	16	16	7	16	8	3,0	125	25	25	AWF16
F16 L 1616 K40 42	43332	L	42	16	16	7	16	8	4,0	125	25	25	AWF16
F16 L 2020 K20 42	43333	L	42	20	20	3	20	8	2,0	125	25	25	AWF16
F16 L 2020 K30 42	43334	L	42	20	20	3	20	8	3,0	125	25	25	AWF16
F16 L 2020 K40 42	43335	L	42	20	20	3	20	8	4,0	125	25	25	AWF16
F16 L 2525 M20 42	43336	L	42	25	25	0	25	8	2,0	150	25	25	AWF16
F16 L 2525 M30 42	43337	L	42	25	25	0	25	8	3,0	150	25	25	AWF16

Fitting inserts


p. 120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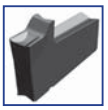
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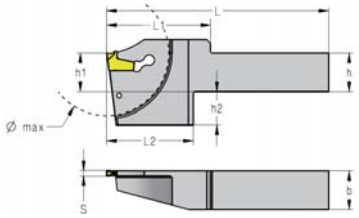
Parting off holders for FLEX FIX inserts

new!

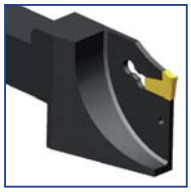
F16 L 65
FLEX FIX

LH holder



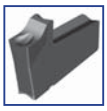
F16 R 65
FLEX FIX

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	S	L	L1	L2	
F16 R 2020 X30 65	38878	R	65	20	20	17	20	3,0	115	54	45	AWF16
F16 R 2020 X40 65	43316	R	65	20	20	17	20	4,0	115	54	45	AWF16
F16 R 2525 X30 65	43317	R	65	25	25	12	25	3,0	140	54	45	AWF16
F16 R 2525 X40 65	43318	R	65	25	25	12	25	4,0	140	54	45	AWF16
F16 L 2020 X30 65	38875	L	65	20	20	17	20	3,0	115	54	45	AWF16
F16 L 2020 X40 65	43319	L	65	20	20	17	20	4,0	115	54	45	AWF16
F16 L 2525 X30 65	43320	L	65	25	25	12	25	3,0	140	54	45	AWF16
F16 L 2525 X40 65	43321	L	65	25	25	12	25	4,0	140	54	45	AWF16

Fitting inserts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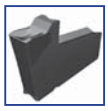
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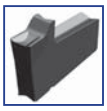
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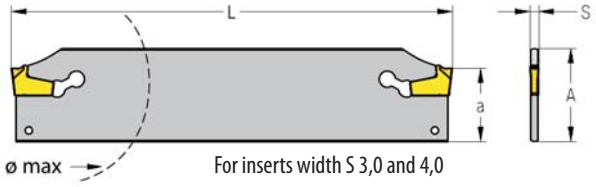
Parting off blades for FLEX FIX inserts

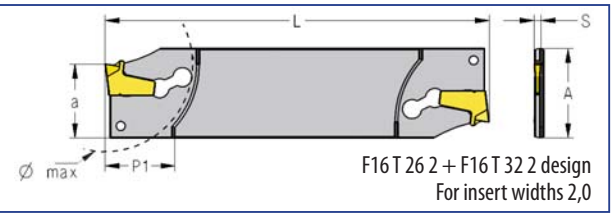
new

F16 T
FLEX FIX



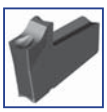
For inserts width S 3,0 and 4,0

Ref.	ID-Nr.	a	Ø max.	A	P1	S	L	
F16 T 26 2	41093	21,4	42	26	15	2	110	AWF 16
F16 T 26 3	38743	21,4	75	26	-	3	110	AWF 16
F16 T 26 4	41096	21,4	80	26	-	4	110	AWF 16
F16 T 32 2	41094	25	42	32	15	2	150	AWF 16
F16 T 32 3	35217	25	100	32	-	3	150	AWF 16
F16 T 32 4	41095	25	100	32	-	4	150	AWF 16



F16 T 26 2 + F16 T 32 2 design
For insert widths 2,0

Fitting inserts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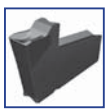
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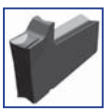
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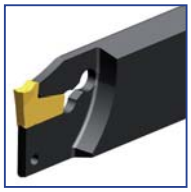
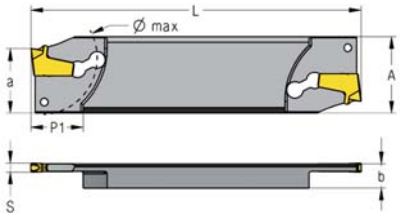
Reinforced parting off blades for FLEX FIX inserts

new!



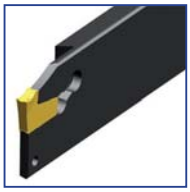
F16 L 2608
FLEX FIX

LH blade



F16 R 2608
FLEX FIX

RH blade

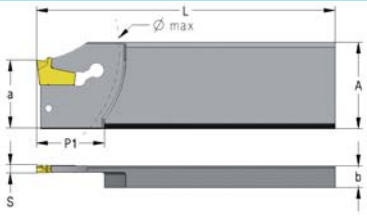


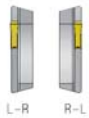
Ref.	ID-Nr.	( )	A	a	Ø max	b	P1	S	L	
F16 R 2608 J30 L 50	43312	R	26	21,4	50	8	17	3,0	110	AWF16
F16 L 2608 J30 R 50	43313	L	26	21,4	50	8	17	3,0	110	AWF16

Fitting inserts see below

F16 L 3208
FLEX FIX

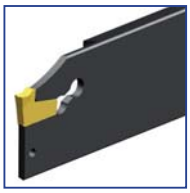
LH blade





F16 R 3208
FLEX FIX

RH blade

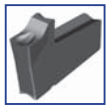


Ref.	ID-Nr.	( )	A	a	Ø max	b	P1	S	L	
F16 R 3208 J30 L 65	43314	R	32	25	65	8	24,5	3,0	110	AWF16
F16 L 3208 J30 R 65	43315	L	32	25	65	8	24,5	3,0	110	AWF16

Remark

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

Fitting inserts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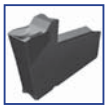
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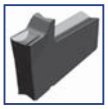
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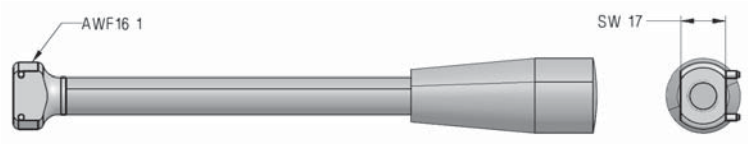
Key for FLEX FIX tools

new

AW F16
FLEX FIX

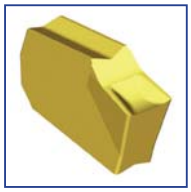
LH holder



Ref.	ID-Nr.	
AW F16	39880	AW F16 1
AW F16 1	39881	

Remark:
The key is added to each FLEX FIX tool delivery.

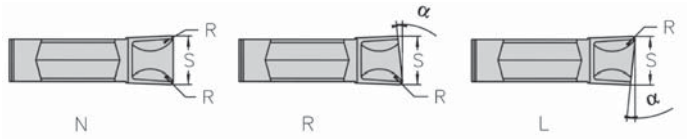
Parting off and grooving inserts



SNP N/R/L

passt perfekt

New carbide grades

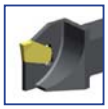


Ref.	new GF110 TILOX	new PM NANOSPEED	( )	R	S ±0,1	α°
	ID-Nr.					
SNPN 20	47978	20418	N	0,2	2,0	0
SNPN 3	22695	11244	N	0,2	3,1	0
SNPN 4	40623	11252	N	0,2	4,1	0
SNPN 5	11257	47979	N	0,2	5,1	0
SNPR 20 6D	47984	20419	R	0,2	2,0	6
SNPR 20 12D	47982	20421	R	0,2	2,0	12
SNPR 20 16D	47983	20423	R	0,2	2,0	16
SNPR 3 6D	31746	11281	R	0,2	3,1	6
SNPR 4 6D	31747	11293	R	0,2	4,1	6
SNPR 5 6D	11303	-	R	0,2	5,1	6
SNPL 20 6D	47975	20420	L	0,2	2,0	6
SNPL 20 12D	47973	20422	L	0,2	2,0	12
SNPL 20 16D	47974	20424	L	0,2	2,0	16
SNPL 3 6D	47976	11282	L	0,2	3,1	6
SNPL 4 6D	47977	11294	L	0,2	4,1	6
SNPL 5 6D	11304	-	L	0,2	5,1	6

SUPERNOVA

The arc shaped cutting edge with its reinforced flanks achieves ideal chips.
Recommended for free cutting and low alloy steels and stainless steels, also to be used on unstable machine tools.

Fitting tool holders


p. 130-131


p. 132

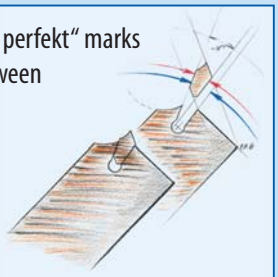

p. 132-133


p. 133-134

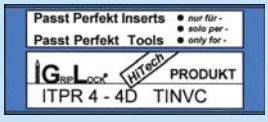
passt perfekt - autolock System

- ✓ No creeping of insert
- ✓ No vibrations
- ✓ Rigid tool unit
- ✓ Clean faces
- ✓ Constant tool life
- ✓ Reliable machining

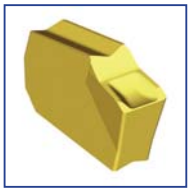
The TRADE MARK „passt perfekt" marks a technique: the fit between insert and insert pocket is simply perfect.



The clear marking of the passt perfekt tools avoids getting mixed up with tools looking similar



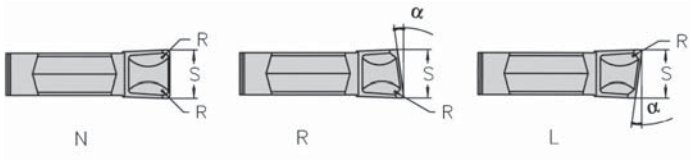
Parting off and grooving inserts



ITP N/R/L

passt perfekt

New carbide grades



Ref.	new GF110 TILOX	new PM NANOSPEED	( )	R	$S^{\pm 0,1}$	α°
	ID-Nr.	ID-Nr.				
ITPN 20	47936	20400	N	0,2	2,0	0
ITPN 3	19854	10562	N	0,2	3,1	0
ITPN 4	19810	10594	N	0,2	4,1	0
ITPN 5	10599	47938	N	0,2	5,1	0
ITPR 20 4D	47941	20401	R	0,2	2,0	4
ITPR 20 8D	47942	20403	R	0,2	2,0	8
ITPR 20 12D	47939	20405	R	0,2	2,0	12
ITPR 20 16D	47940	20407	R	0,2	2,0	16
ITPR 3 4D	19856	10653	R	0,2	3,1	4
ITPR 4 4D	47943	10683	R	0,2	4,1	4
ITPR 5 4D	10705	-	R	0,2	5,1	4
ITPR 3 8D	19857	10665	R	0,2	3,1	8
ITPR 4 8D	47944	10695	R	0,2	4,1	8
ITPR 5 8D	10717	-	R	0,2	5,1	8
ITPL 20 4D	47931	20402	L	0,2	2,0	4
ITPL 20 8D	47932	20404	L	0,2	2,0	8
ITPL 20 12D	47929	20406	L	0,2	2,0	12
ITPL 20 16D	47930	20408	L	0,2	2,0	16
ITPL 3 4D	19859	10654	L	0,2	3,1	4
ITPL 4 4D	47933	10684	L	0,2	4,1	4
ITPL 5 4D	10706	-	L	0,2	5,1	4
ITPL 3 8D	19858	10666	L	0,2	3,1	8
ITPL 4 8D	47934	10696	L	0,2	4,1	8
ITPL 5 8D	10718	-	L	0,2	5,1	8

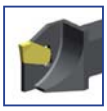
Remark that grades **GF110 · Nanospeed · Tilox** as listed in GripLock catalogue 2012 become obsolete.

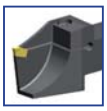
IT Geometry

IT Geometry with its cutting edge strengthening, ground chamfer is recommended for:

- Alloy steels
- Stainless steels
- Interrupted cuts

Fitting tool holders


p. 130-131


p. 132


p. 132-133


p. 133-134

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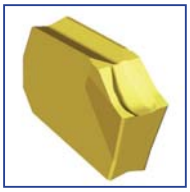
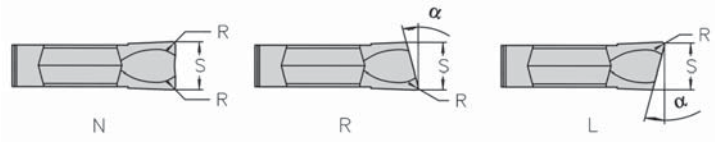
Parting off inserts



BGP N/R/L F

passt perfekt

New carbide grade

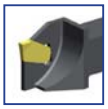


new

Ref.	GF110 TILOX	PM NANOSPEED	PM RED SPEED	( )	R	S ±0,1	α°
	ID-Nr.	ID-Nr.	ID-Nr.				
BGPN 3	48201	20439	26004	N	0,2	3,1	0
BGPNF 3	48203	23663	-	N	0,0	3,1	0
BGPN 4	48202	26289	27961	N	0,2	4,1	0
BGPNF 4	48204	26232	-	N	0,0	4,1	0
BGPR 3 8D	48206	20440	27958	R	0,2	3,1	8
BGPRF 3 8D	48210	23665	-	R	0,0	3,1	8
BGPR 3 12D	48205	20442	-	R	0,2	3,1	12
BGPRF 3 12D	48209	23667	-	R	0,0	3,1	12
BGPR 4 8D	48208	26313	27959	R	0,2	4,1	8
BGPRF 4 8D	48212	26316	-	R	0,0	4,1	8
BGPR 4 12D	48207	26317	-	R	0,2	4,1	12
BGPRF 4 12D	48211	26318	-	R	0,0	4,1	12
BGPL 3 8D	48198	20441	27957	L	0,2	3,1	8
BGPLF 3 8D	48194	23669	-	L	0,0	3,1	8
BGPL 3 12D	48193	20443	-	L	0,2	3,1	12
BGPLF 3 12D	48197	23671	-	L	0,0	3,1	12
BGPL 4 8D	48196	26319	27960	L	0,2	4,1	8
BGPLF 4 8D	48200	26320	-	L	0,0	4,1	8
BGPL 4 12D	48195	26321	-	L	0,2	4,1	12
BGPLF 4 12D	48199	26322	-	L	0,0	4,1	12

Remark that grade **PM TILOX** as listed in GripLock catalogue 2012 become obsolete.

Fitting tool holders


p. 130-131


p. 132


p. 132-133


p. 133-134

BGP-Parting off Geometry

Grooved parting off edge with reinforced flanks. The deep and spacious **chip-trough** gives excellent chip control. To be used on almost all materials.

Inserts marked with "F" like BGPNF-3 are ground with R = 0 mm..

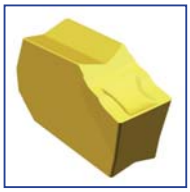
Coating RED SPEED:

Special coating for machining stainless steels.

Technical section page 187 onwards

page 14

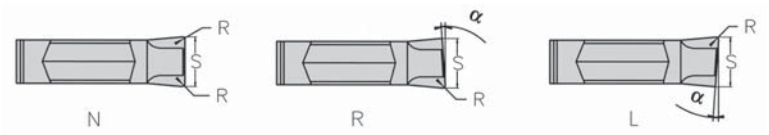
Parting off inserts



ITP ALU

passt perfekt

New carbide grade



Ref.	GF 110	new PM NANOSPEED	( )	R	S ±0,1	α
	ID-Nr.	ID-Nr.				
ITPN 20 ALU	26229	23675	N	0,2	2,0	0
ITPN 3 ALU	10550	10554	N	0,2	3,1	0
ITPN 4 ALU	10563	10567	N	0,2	4,1	0
ITPR 20 4D ALU	26230	23677	R	0,2	2,0	4
ITPR 3 4D ALU	10635	10639	R	0,2	3,1	4
ITPR 4 4D ALU	10667	10671	R	0,2	4,1	4
ITPL 20 4D ALU	26231	23679	L	0,2	2,0	4
ITPL 3 4D ALU	10636	10640	L	0,2	3,1	4
ITPL 4 4D ALU	10668	10672	L	0,2	4,1	4

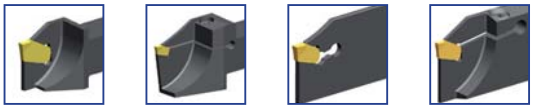
ALU Geometry

ALU Geometry with sharply ground, positive cutting edge is recommended for:

- Nonferrous heavy metals
- Machining steels
- **Thinwalled parts**
- Unstable components
- Pipes

Technical section page 187 onwards

Fitting tool holders



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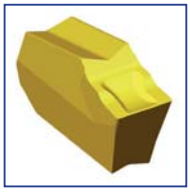
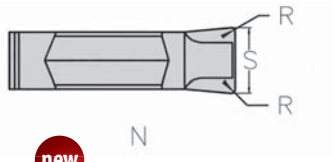
Inserts for face grooving



PPTNL

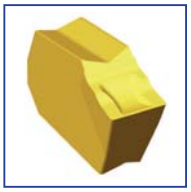
passt perfekt

New carbide grades

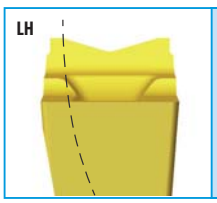


PPTNR

passt perfekt

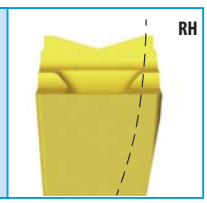


Ref.	new PM NANOSPEED	new GF110 CARBOSPEED	( )	R	S ±0,1
	ID-Nr.	ID-Nr.			
PPTNL 4	28858	47968	L	0,2	4,1
PPTNL 5	47969	47970	L	0,2	5,1
PPTNR 4	11209	47971	R	0,2	4,1
PPTNR 5	11212	47972	R	0,2	5,1



PPTN R/L - Face grooving inserts

Special chip breaker and ground side clearances.
Both features achieve efficient chip flow.



Fitting blades

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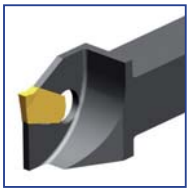
GripLock®

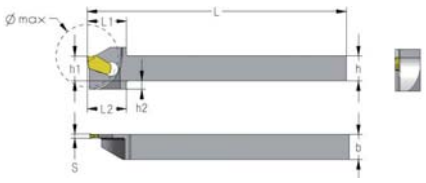
7

Parting off holders with autolock pocket



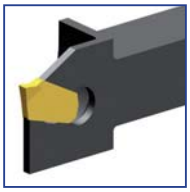
HPPL
passt perfekt

LH holder



HPPR
passt perfekt

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	S	L	L1	L2	
HPPL 1010 20X	19736	L	30	10	10	6	10	2,0	125	18,5	18,5	16
HPPL 1010 3	10230	L	30	10	10	6	10	3,0	125	18,5	18,5	16
HPPL 1212 20X	24252	L	30	12	12	4	12	2,0	125	18,5	18,5	16
HPPL 1212 3	10234	L	36	12	12	5	12	3,0	125	22,0	22,0	16
HPPL 1612 20X	24253	L	30	16	16	0	12	2,0	125	18,5	-	16
HPPL 1612 3	10238	L	36	16	16	5	12	3,0	125	22,0	22,0	16
HPPL 1612 4	10240	L	42	16	16	5	12	4,0	125	25,0	25,0	16
HPPL 1616 3	10242	L	42	16	16	5	16	3,0	125	25,0	25,0	16
HPPL 2020 20X	24254	L	42	20	20	0	20	2,0	125	25,0	-	16
HPPL 2020 3	10246	L	42	20	20	0	20	3,0	125	25,0	-	16
HPPL 2020 4	10248	L	42	20	20	0	20	4,0	125	25,0	-	16
HPPL 2525 20X	24255	L	42	25	25	0	25	2,0	150	25,0	-	16
HPPL 2525 3	10252	L	42	25	25	0	25	3,0	150	25,0	-	16
HPPL 2525 4	10254	L	50	25	25	0	25	4,0	150	30,0	-	16
HPPL 2525 5	10256	L	80	25	25	0	25	5,0	150	45,0	-	16
HPPR 1010 20X	19735	R	30	10	10	6	10	2,0	125	18,5	18,5	16
HPPR 1010 3	10229	R	30	10	10	6	10	3,0	125	18,5	18,5	16
HPPR 1212 20X	19737	R	30	12	12	4	12	2,0	125	18,5	18,5	16
HPPR 1212 3	10233	R	36	12	12	5	12	3,0	125	22,0	22,0	16
HPPR 1612 20X	19738	R	30	16	16	0	12	2,0	125	18,5	-	16
HPPR 1612 3	10237	R	36	16	16	5	12	3,0	125	22,0	22,0	16
HPPR 1612 4	10239	R	42	16	16	5	12	4,0	125	25,0	25,0	16
HPPR 1616 3	10241	R	42	16	16	5	16	3,0	125	25,0	25,0	16
HPPR 2020 20X	24250	R	42	20	20	0	20	2,0	125	25,0	-	16
HPPR 2020 3	10245	R	42	20	20	0	20	3,0	125	25,0	-	16
HPPR 2020 4	10247	R	42	20	20	0	20	4,0	125	25,0	-	16
HPPR 2525 20X	24251	R	42	25	25	0	25	2,0	150	25,0	-	16
HPPR 2525 3	10251	R	42	25	25	0	25	3,0	150	25,0	-	16
HPPR 2525 4	10253	R	50	25	25	0	25	4,0	150	30,0	-	16
HPPR 2525 5	10255	R	80	25	25	0	25	5,0	150	45,0	-	16

Remark

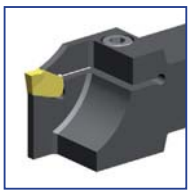
Holder and inserts with the same "S" dimension fit together.

Fitting inserts

p. 126-127

p. 128-129

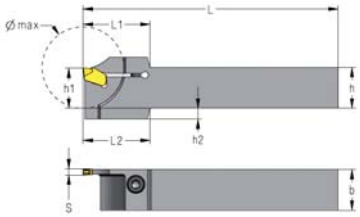
Parting off tool holders



CLPPL

passt perfekt

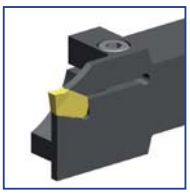
LH holder



CLPPR

passt perfekt

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	S	L	L1	L2	
CLPPL 1010 K20X	24248	L	28	10	10	10	10	2,0	125	26	36	11
CLPPL 1212 K20X	19741	L	28	12	12	8	12	2,0	125	26	33	11
CLPPL 1212 K30	10336	L	34	12	12	8	12	3,0	125	29	33	11
CLPPL 1612 K20X	19743	L	28	16	16	4	12	2,0	125	26	31	11
CLPPL 1612 K30	10340	L	34	16	16	4	12	3,0	125	29	34	11
CLPPL 1612 K40	10342	L	40	16	16	8	12	4,0	125	33	34	11
CLPPL 2020 K20X	19745	L	40	20	20	5	20	2,0	125	33	33	5
CLPPL 2020 K30	10346	L	40	20	20	5	20	3,0	125	33	33	5
CLPPL 2020 K40	10348	L	53	20	20	5	20	4,0	125	40	40	5
CLPPL 2525 M20X	24249	L	40	25	25	0	25	2,0	150	36	-	2
CLPPL 2525 M30	10356	L	40	25	25	0	25	3,0	150	36	-	2
CLPPL 2525 M40	10358	L	53	25	25	0	25	4,0	150	40	-	2
CLPPL 2525 P50	10360	L	80	25	25	15	25	5,0	170	56	62	2
CLPPR 1010 K20X	19739	R	28	10	10	10	10	2,0	125	26	36	11
CLPPR 1212 K20X	19740	R	28	12	12	8	12	2,0	125	26	33	11
CLPPR 1212 K30	10335	R	34	12	12	8	12	3,0	125	29	33	11
CLPPR 1612 K20X	19742	R	28	16	16	4	12	2,0	125	26	31	11
CLPPR 1612 K30	10339	R	34	16	16	4	12	3,0	125	29	34	11
CLPPR 1612 K40	10341	R	40	16	16	8	12	4,0	125	33	34	11
CLPPR 2020 K20X	19744	R	40	20	20	5	20	2,0	125	33	33	5
CLPPR 2020 K30	10345	R	40	20	20	5	20	3,0	125	33	33	5
CLPPR 2020 K40	10347	R	53	20	20	5	20	4,0	125	40	40	5
CLPPR 2525 M20X	24247	R	40	25	25	0	25	2,0	150	36	-	2
CLPPR 2525 M30	10355	R	40	25	25	0	25	3,0	150	36	-	2
CLPPR 2525 M40	10357	R	53	25	25	0	25	4,0	150	40	-	2
CLPPR 2525 P50	10359	R	80	25	25	15	25	5,0	170	56	62	2

Remark

Holder and inserts with the same "S" dimension fit together.

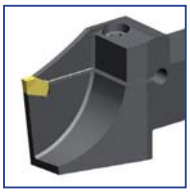
Fitting inserts

p.200-201,212

p. 126-127

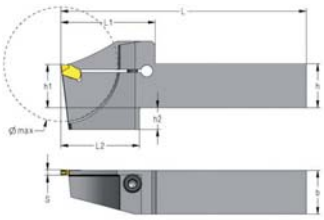
p. 128-129

Reinforced parting off holders



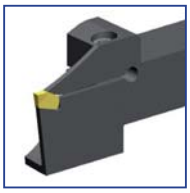
CLPPL..X
passt perfekt

LH holder



CLPPR..X
passt perfekt

RH holder



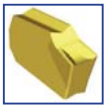
Ref.	ID-Nr.		Ø max	h	h1	h2	b	S	L	L1	L2	
CLPPL 2020 X30 65	10350	L	65	20	20	17	20	3,0	115	54	45	12
CLPPL 2020 X40 65	10352	L	65	20	20	17	20	4,0	115	54	45	12
CLPPL 2525 X30 65	10362	L	65	25	25	12	25	3,0	140	54	45	12
CLPPL 2525 X40 65	10364	L	65	25	25	12	25	4,0	140	54	45	12
CLPPR 2020 X30 65	10349	R	65	20	20	17	20	3,0	115	54	45	12
CLPPR 2020 X40 65	10351	R	65	20	20	17	20	4,0	115	54	45	12
CLPPR 2525 X30 65	10361	R	65	25	25	12	25	3,0	140	54	45	12
CLPPR 2525 X40 65	10363	R	65	25	25	12	25	4,0	140	54	45	12

Remark

Holder and inserts with the same "S" dimension fit together.

Fitting inserts

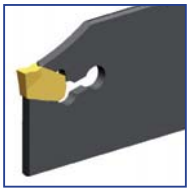
p.200-201,212



p. 126-127

p. 128-129

Parting off blades with autolock pocket



TMSPP
with insert stopping face
passt perfekt

Ref.	ID-Nr.		A	a	S	L	
TMSPP 26 20X	19732	N	26	21,4	2,0	110	16
TMSPP 26 3	10024	N	26	21,4	3,0	110	16
TMSPP 26 4	10025	N	26	21,4	4,0	110	16
TMSPP 32 20X	24245	N	32	25,0	2,0	150	16
TMSPP 32 3	10026	N	32	25,0	3,0	150	16
TMSPP 32 4	10027	N	32	25,0	4,0	150	16
TMSPP 32 5	10028	N	32	25,0	5,0	150	16

Remark

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

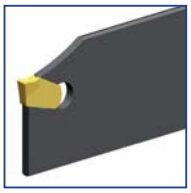
Fitting inserts and tool blocks

p. 126-127

p. 128-129

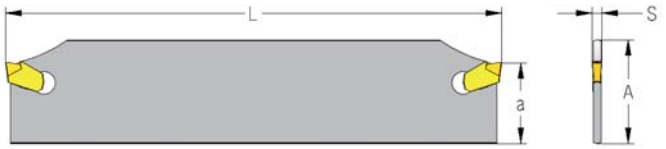
p. 143

Parting off blades with autolock pocket



TPP

passt perfekt



Ref.	ID-Nr.	( )	A	a	S	L	
TPP 19 20X	19733	N	19	15,5	2,0	86	16
TPP 26 20X	19734	N	26	21,4	2,0	110	16
TPP 26 3	10042	N	26	21,4	3,0	110	16
TPP 26 4	10043	N	26	21,4	4,0	110	16
TPP 26 5	10044	N	26	21,4	5,0	110	16
TPP 32 20X	24246	N	32	25,0	2,0	150	16
TPP 32 3	10046	N	32	25,0	3,0	150	16
TPP 32 4	10047	N	32	25,0	4,0	150	16
TPP 32 5	10048	N	32	25,0	5,0	150	16

Remark

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

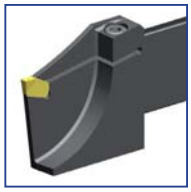
Fitting inserts and tool blocks

p. 126-127

p. 128-129

p. 143

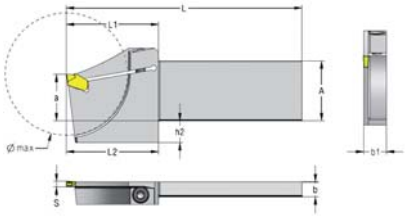
Reinforced parting off blades



CLPPL..L

passt perfekt

LH blade

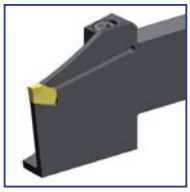


Hinteransicht

CLPPR..R

passt perfekt

RH blade



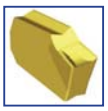
Ref.	ID-Nr.	( )	a	Ø max	A	h2	b	b1	S	L	L1	L2	
CLPPL 3208 X30 65L	10366	L	25	65	32,0	11,7	8	12	3	125	49	49	5
CLPPL 3208 X40 65L	10368	L	25	65	32,0	11,7	8	12	4	125	49	49	5
CLPPR 3208 X30 65R	10365	R	25	65	32,0	11,7	8	12	3	125	49	49	5
CLPPR 3208 X40 65R	10367	R	25	65	32,0	11,7	8	12	4	125	49	49	5

Remark

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

Fitting inserts and tool blocks

p.200-201,212



p. 126-127

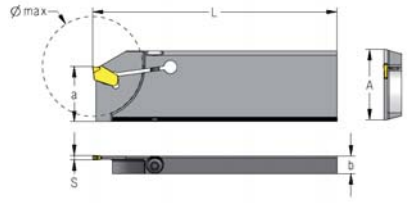
p. 128-129

p. 143

Reinforced parting off blades

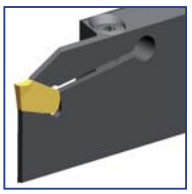
TMSPL
passt perfekt

LH blade



TMSPR
passt perfekt

RH blade



Ref.	ID-Nr.	( )	A	a	Ø max	b	S	L	
TMSPR 2608 J30 L	10031	R	26	21,4	46	8	3,0	110	10
TMSPR 2608 J40 L	10033	R	26	21,4	46	8	4,0	110	10
TMSPR 3208 J30 L	32383	R	32	25,0	46	8	3,0	110	10
TMSPR 3208 J40 L	10039	R	32	25,0	46	8	4,0	110	10
TMSPR 2608 J20X R	29532	R	26	21,4	46	8	2,0	110	10
TMSPR 3208 J20X R	29533	R	32	25,0	46	8	2,0	110	10
TMSPR 3208 J30 R	10037	R	32	25,0	46	8	3,0	110	10
TMSPL 2608 J20X R	29534	L	26	21,4	46	8	2,0	110	10
TMSPL 2608 J30 R	10032	L	26	21,4	46	8	3,0	110	10
TMSPL 2608 J40 R	10034	L	26	21,4	46	8	4,0	110	10
TMSPL 3208 J20X R	29535	L	32	25,0	46	8	2,0	110	10
TMSPL 3208 J30 R	10038	L	32	25,0	46	8	3,0	110	10
TMSPL 3208 J40 R	10040	L	32	25,0	46	8	4,0	110	10

Remark

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

Fitting inserts and tool blocks

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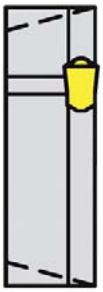
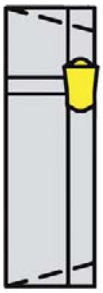
p. 126-127

p. 128-129

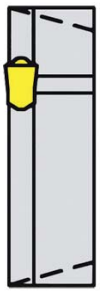
p. 143



TMSPR...L



TMSPR...R



TMSPL...R

Different models TMSPR/L...R/L

How to write an order:

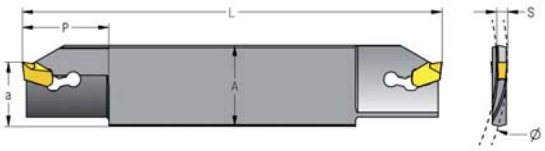
			recommended
1 St.	TMSPL 3208 J40 R	or:	**1 St. ID-Nr. 10040**
10 St.	ITPL 4 4D ALU NANOSPEED	or:	**10 St. ID-Nr. 10672**
1 St.	TS 32 32	or:	**1 St. ID-Nr. 10053**

Face grooving blades with autolock pocket

PPSMS L with insert stopping face

passt perfekt

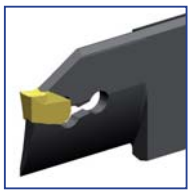
LH blade



PPSMS R with insert stopping face

passt perfekt

RH blade



Ref.	ID-Nr.	( )	A	a	Ø min-max	P	S	L	
PPSMS 85 4 L	28859	L	32	25	85-160	32	4,0	160	16
PPSMS 140 4 L	38491	L	32	25	140-260	32	4,0	160	16
PPSMS 240 4 L	38493	L	32	25	240-∞	32	4,0	160	16
PPSMS 85 5 L	26194	L	32	25	85-160	32	5,0	160	16
PPSMS 140 5 L	38492	L	32	25	140-260	32	5,0	160	16
PPSMS 240 5 L	38494	L	32	25	240-∞	32	5,0	160	16
PPSMS 85 4 R	10209	R	32	25	85-160	32	4,0	160	16
PPSMS 140 4 R	10207	R	32	25	140-260	32	4,0	160	16
PPSMS 240 4 R	38495	R	32	25	240-∞	32	4,0	160	16
PPSMS 85 5 R	10210	R	32	25	85-160	32	5,0	160	16
PPSMS 140 5 R	10208	R	32	25	140-260	32	5,0	160	16
PPSMS 240 5 R	38496	R	32	25	240-∞	32	5,0	160	16

Fitting inserts and tool blocks

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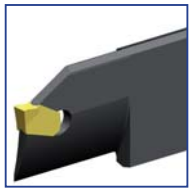
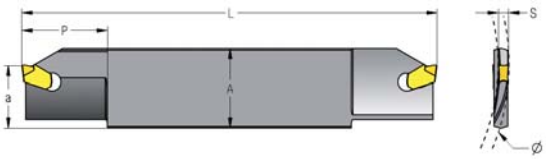


PPST R

passt perfekt

RH blade for RH inserts

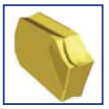


Ref.	ID-Nr.	( )	A	a	Ø min-max	P	S	L	
PPST 85 4 R	10215	R	32	25	85-160	32	4,0	160	16
PPST 140 4 R	10211	R	32	25	140-260	32	4,0	160	16
PPST 240 4 R	10213	R	32	25	240-∞	32	4,0	160	16
PPST 85 5 R	10216	R	32	25	85-160	32	5,0	160	16
PPST 140 5 R	10212	R	32	25	140-260	32	5,0	160	16
PPST 240 5 R	10214	R	32	25	240-∞	32	5,0	160	16

Remark

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

Fitting inserts and tool blocks



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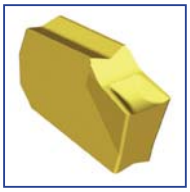
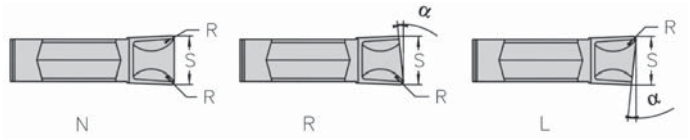
Parting off and grooving inserts



SNT N/R/L

Standard Design

New carbide grades



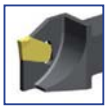
Ref.	new GF110 CARBOSPEED	new PM NANOSPEED	( )	R	S ±0,1	α°
		ID-Nr.				
SNTN 2	47917	47916	N	0,2	2,2	0
SNTN 3	47918	11330	N	0,2	3,1	0
SNTN 4	47919	11342	N	0,2	4,1	0
SNTN 5	47921	47920	N	0,2	5,1	0
SNTR 2 6D	47923	47922	R	0,2	2,2	6
SNTR 3 6D	47924	11391	R	0,2	3,1	6
SNTR 4 6D	47925	11411	R	0,2	4,1	6
SNTR 5 6D	47927	47926	R	0,2	5,1	6
SNTL 2 6D	47911	47910	L	0,2	2,2	6
SNTL 3 6D	47912	11392	L	0,2	3,1	6
SNTL 4 6D	47913	11412	L	0,2	4,1	6
SNTL 5 6D	47915	47914	L	0,2	5,1	6

7

SUPERNOVA

The arc-shaped cutting edge with its reinforced flanks forms ideal chips.
Recommended for free cutting and low alloy steels and stainless steels, also to be used on unstable machine tools.

Fitting tool holders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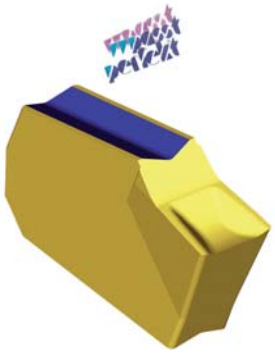
The difference!

Standard Design...

„Standard Design"

not ground



„passt perfekt"

ground top guide

Attention!

The two systems are **not interchangeable**!

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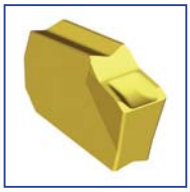
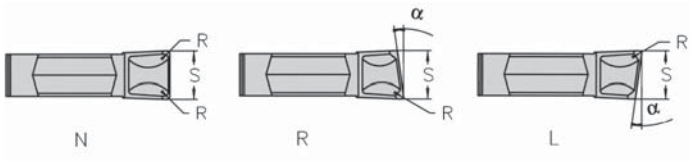
Parting off and grooving inserts



IT N/R/L

Standard Design

New carbide grades



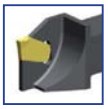
Ref.	new GF 110 CARBOSPEED ID-Nr.	new PM NANOSPEED ID-Nr.		R	S ±0,1	α°
ITN 2	47892	47890	N	0,2	2,2	0
ITN 3	47893	10497	N	0,2	3,1	0
ITN 4	47894	10515	N	0,2	4,1	0
ITN 5	47895	47896	N	0,2	5,1	0
ITN 6		10527	N	0,2	6,35	0
ITR 2 4D	47899	47898	R	0,2	2,2	4
ITR 3 4D	47902	10791	R	0,2	3,1	4
ITR 4 4D	47904	10837	R	0,2	4,1	4
ITR 5 4D	47907	47906	R	0,2	5,1	4
ITR 2 8D	47901	47900	R	0,2	2,2	8
ITR 3 8D	47903	10811	R	0,2	3,1	8
ITR 4 8D	47905	10857	R	0,2	4,1	8
ITR 5 8D	47909	47908	R	0,2	5,1	8
ITL 2 4D	47878	47877	L	0,2	2,2	4
ITL 3 4D	47881	10792	L	0,2	3,1	4
ITL 4 4D	47883	10838	L	0,2	4,1	4
ITL 5 4D	47886	47885	L	0,2	5,1	4
ITL 2 8D	47880	47879	L	0,2	2,2	8
ITL 3 8D	47882	10812	L	0,2	3,1	8
ITL 4 8D	47884	10858	L	0,2	4,1	8
ITL 5 8D	47888	47887	L	0,2	5,1	8

IT Geometry

IT Geometry with its cutting edge strengthening, ground chamfer is recommended for:

- Alloy steels
- Stainless steels
- Interrupted cuts

Fitting tool holders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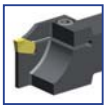
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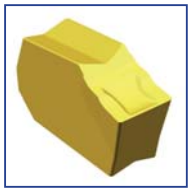
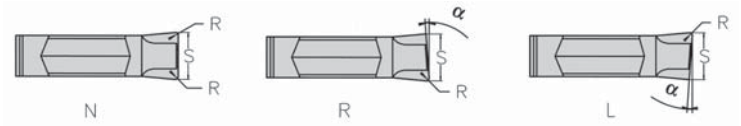
Parting off and grooving inserts



IT ALU N/R/L

Standard Design

New carbide grades



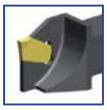
Ref.	GF 110	new PM NANOSPEED	( )	R	S ±0,1	α°
	ID-Nr.	ID-Nr.				
ITN 2 ALU	29338	47891	N	0,2	2,2	0
ITN 3 ALU	10480	10485	N	0,2	3,1	0
ITN 4 ALU	10498	10503	N	0,2	4,1	0
ITR 2 4D ALU	29602	47897	R	0,2	2,2	4
ITR 3 4D ALU	20692	10771	R	0,2	3,1	4
ITR 4 4D ALU	29215	10817	R	0,2	4,1	4
ITL 2 4D ALU	32370	47876	L	0,2	2,2	4
ITL 3 4D ALU	21489	10772	L	0,2	3,1	4
ITL 4 4D ALU	29212	10818	L	0,2	4,1	4

ALU Geometry

ALU Geometry with sharply ground, positive cutting edge is recommended for:

- Nonferrous heavy metals
- Machining steels
- **Thinwalled parts**
- Unstable components
- Pipes

Fitting tool holders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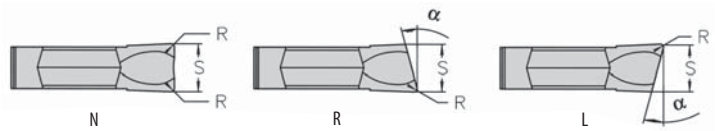
BGN/R/L

Standard Design

new



Ref.	GF110 CARBOSPEED	PM NANOSPEED	( )	R	S ±0,1	α°
	ID-Nr.	ID-Nr.				
BGN 3	48181	30874	N	0,2	3,1	0
BGN 4	48182	48183	N	0,2	4,1	0
BGR 3 4D	48184	48185	R	0,2	3,1	4
BGR 3 8D	48186	48187	R	0,2	3,1	8
BGR 4 4D	48188	48189	R	0,2	4,1	4
BGR 4 8D	48190	48191	R	0,2	4,1	8
BGL 3 4D	48173	48174	L	0,2	3,1	4
BGL 3 8D	48175	48176	L	0,2	3,1	8
BGL 4 4D	48177	48178	L	0,2	4,1	4
BGL 4 8D	48179	48180	L	0,2	4,1	8

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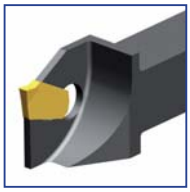
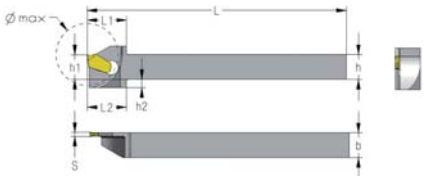
Parting off holders with autolock pocket



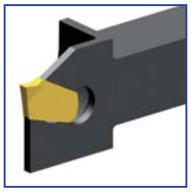
HL
Standard Design

LH holder



HR
Standard Design

RH holder

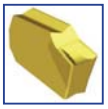


Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	S	L	L1	L2	
HL 1010 2	10258	L	30	10	10	6	10	2,2	125	18,5	18,5	16
HL 1010 3	10260	L	30	10	10	6	10	3,0	125	18,5	18,5	16
HL 1212 2	10262	L	30	12	12	4	12	2,2	125	18,5	18,5	16
HL 1212 3	10264	L	36	12	12	5	12	3,0	125	22,0	22,0	16
HL 1612 2	10266	L	30	16	16	0	12	2,2	125	18,5	-	16
HL 1612 3	10268	L	36	16	16	5	12	3,0	125	22,0	22,0	16
HL 1612 4	10270	L	42	16	16	5	12	4,0	125	25,0	25,0	16
HL 1616 3	10272	L	42	16	16	5	16	3,0	125	25,0	25,0	16
HL 1616 4	10274	L	42	16	16	5	16	4,0	125	25,0	25,0	16
HL 2020 2	10276	L	42	20	20	0	20	2,2	125	25,0	-	16
HL 2020 3	10278	L	42	20	20	0	20	3,0	125	25,0	-	16
HL 2020 4	10280	L	42	20	20	0	20	4,0	125	25,0	-	16
HL 2525 2	10282	L	42	25	25	0	25	2,2	150	25,0	-	16
HL 2525 3	10284	L	42	25	25	0	25	3,0	150	25,0	-	16
HR 1010 2	10257	R	30	10	10	6	10	2,2	125	18,5	18,5	16
HR 1010 3	10259	R	30	10	10	6	10	3,0	125	18,5	18,5	16
HR 1212 2	10261	R	30	12	12	4	12	2,2	125	18,5	18,5	16
HR 1212 3	10263	R	36	12	12	5	12	3,0	125	22,0	22,0	16
HR 1612 2	10265	R	30	16	16	0	12	2,2	125	18,5	-	16
HR 1612 3	10267	R	36	16	16	5	12	3,0	125	22,0	22,0	16
HR 1616 3	10271	R	42	16	16	5	16	3,0	125	25,0	25,0	16
HR 1616 4	10273	R	42	16	16	5	16	4,0	125	25,0	25,0	16
HR 2020 2	10275	R	42	20	20	0	20	2,2	125	25,0	-	16
HR 2020 3	10277	R	42	20	20	0	20	3,0	125	25,0	-	16
HR 2020 4	10279	R	42	20	20	0	20	4,0	125	25,0	-	16
HR 2525 2	10281	R	42	25	25	0	25	2,2	150	25,0	-	16
HR 2525 3	10283	R	42	25	25	0	25	3,0	150	25,0	-	16
HR 2525 4	10285	R	50	25	25	0	25	4,0	150	30,0	-	16
HR 2525 5	10287	R	80	25	25	0	25	5,0	150	45,0	-	16

Remark

Holder and inserts with the same "S" dimension fit together.

Fitting inserts



p. 136-137

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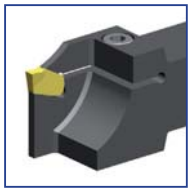
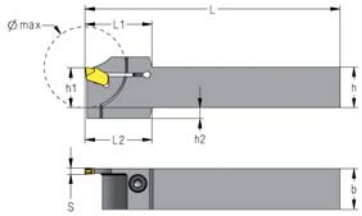
Parting off holders



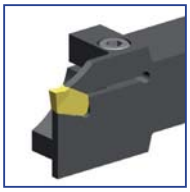
CLCBL
Standard Design

LH holder



CLCBR
Standard Design

RH holder



Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	S	L	L1	L2	
CLCBL 1010 K20	10290	L	28	10	10	10	10	2,2	125	26	36	11
CLCBL 1212 K20	10292	L	28	12	12	8	12	2,2	125	26	33	11
CLCBL 1212 K30	10294	L	34	12	12	8	12	3,0	125	29	33	11
CLCBL 1612 K20	10298	L	28	16	16	4	12	2,2	125	26	31	11
CLCBL 1612 K30	10300	L	34	16	16	4	12	3,0	125	29	34	11
CLCBL 1612 K40	10302	L	40	16	16	8	12	4,0	125	33	34	11
CLCBL 2020 K20	10304	L	40	20	20	5	20	2,2	125	33	33	5
CLCBL 2020 K30	10306	L	40	20	20	5	20	3,0	125	33	33	5
CLCBL 2020 K40	10308	L	53	20	20	5	20	4,0	125	40	40	5
CLCBL 2525 M20	10316	L	40	25	25	0	25	2,2	150	36	-	2
CLCBL 2525 M30	10318	L	40	25	25	0	25	3,0	150	36	-	2
CLCBL 2525 M40	10320	L	53	25	25	0	25	4,0	150	40	-	2
CLCBL 2525 P50	10322	L	80	25	25	15	25	5,0	170	56	62	2
CLCBR 1010 K20	10289	R	28	10	10	10	10	2,2	125	26	36	11
CLCBR 1212 K20	10291	R	28	12	12	8	12	2,2	125	26	33	11
CLCBR 1212 K30	10293	R	34	12	12	8	12	3,0	125	29	33	11
CLCBR 1612 K20	10297	R	28	16	16	4	12	2,2	125	26	31	11
CLCBR 1612 K30	10299	R	34	16	16	4	12	3,0	125	29	34	11
CLCBR 1612 K40	10301	R	40	16	16	8	12	4,0	125	33	34	11
CLCBR 2020 K20	10303	R	40	20	20	5	20	2,2	125	33	33	5
CLCBR 2020 K30	10305	R	40	20	20	5	20	3,0	125	33	33	5
CLCBR 2020 K40	10307	R	53	20	20	5	20	4,0	125	40	40	5
CLCBR 2525 M20	10315	R	40	25	25	0	25	2,2	150	36	-	2
CLCBR 2525 M30	10317	R	40	25	25	0	25	3,0	150	36	-	2
CLCBR 2525 M40	10319	R	53	25	25	0	25	4,0	150	40	-	2
CLCBR 2525 P50	10321	R	80	25	25	15	25	5,0	170	56	62	2

Remark

Holder and inserts with the same "S" dimension fit together.

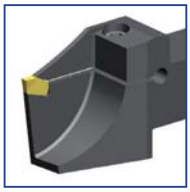
Fitting inserts

p.200-201,212

p. 136-137

p. 138

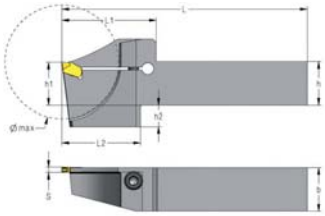
Reinforced parting off holders



CLCBL..X

Standard Design

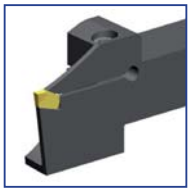
LH holder



CLCBR..X

Standard Design

RH holder



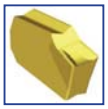
Ref.	ID-Nr.	( )	Ø max	h	h1	h2	b	S	L	L1	L2	
CLCBL 2020 X20 65	10310	L	65	20	20	17	20	2,2	115	54	45	12
CLCBL 2020 X30 65	10312	L	65	20	20	17	20	3,0	115	54	45	12
CLCBL 2020 X40 65	10314	L	65	20	20	17	20	4,0	115	54	45	12
CLCBL 2525 X30 65	10324	L	65	25	25	12	25	3,0	140	54	45	12
CLCBL 2525 X40 65	10326	L	65	25	25	12	25	4,0	140	54	45	12
CLCBR 2020 X20 65	10309	R	65	20	20	17	20	2,2	115	54	45	12
CLCBR 2020 X30 65	10311	R	65	20	20	17	20	3,0	115	54	45	12
CLCBR 2020 X40 65	10313	R	65	20	20	17	20	4,0	115	54	45	12
CLCBR 2525 X30 65	10323	R	65	25	25	12	25	3,0	140	54	45	12
CLCBR 2525 X40 65	10325	R	65	25	25	12	25	4,0	140	54	45	12

Remark

Holder and inserts with the same "S" dimension fit together.

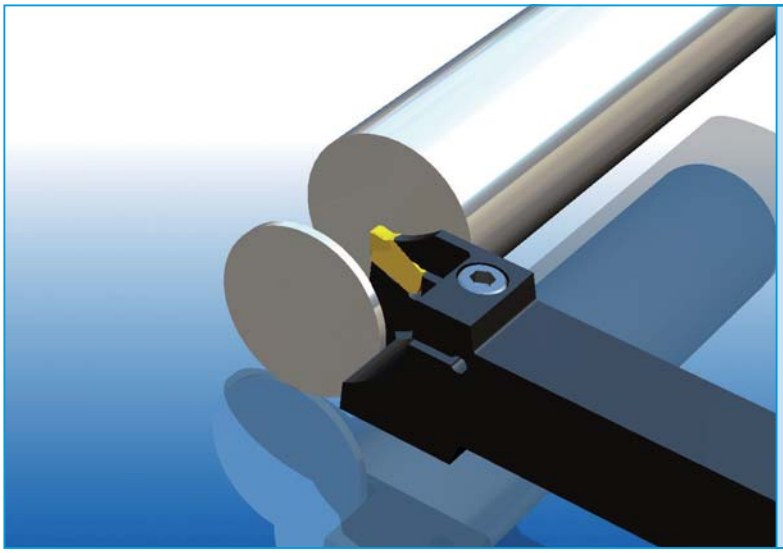
Fitting inserts

p.200-201,212



p. 136-137

p. 138



Parting off basics

Always select the strongest tool holder with the most powerful clamping system and the appropriate inserts:

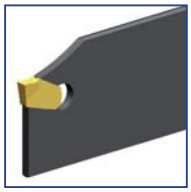
- True and straight run
- Clean faces
- Plane-parallel faces
- Good tool life
- Don't compromise!

Parting off blades with autolock pocket

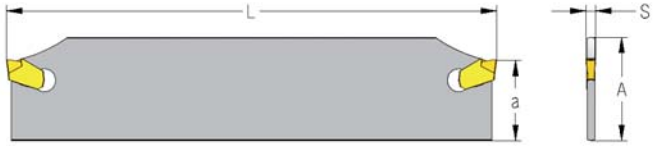
TMS
with insert stopping face
Standard Design

Ref.	ID-Nr.		A	a	S	L	
TMS 26 2	10016	N	26	21,4	2,2	110	16
TMS 26 3	10017	N	26	21,4	3,0	110	16
TMS 26 4	10018	N	26	21,4	4,0	110	16
TMS 32 3	10019	N	32	25,0	3,0	150	16
TMS 32 4	10020	N	32	25,0	4,0	150	16
TMS 32 5	10021	N	32	25,0	5,0	150	16
TMS 32 6	10022	N	32	25,0	6,0	150	16

Fitting inserts and tool blocks see below



T
Standard Design

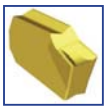


Ref.	ID-Nr.		A	a	S	L	
T 19 2	10001	N	19	15,5	2,2	86	16
T 26 2	10002	N	26	21,4	2,2	110	16
T 26 3	10003	N	26	21,4	3,0	110	16
T 26 3 90	10004	N	26	21,4	3,0	90	16
T 26 4	10005	N	26	21,4	4,0	110	16
T 26 5	10007	N	26	21,4	5,0	110	16
T 26 6	10008	N	26	21,4	6,35	110	16
T 32 2	10009	N	32	25,0	2,2	150	16
T 32 3	10010	N	32	25,0	3,0	150	16
T 32 3 100	10011	N	32	25,0	3,0	100	16
T 32 4	10012	N	32	25,0	4,0	150	16
T 32 5	10014	N	32	25,0	5,0	150	16
T 32 6	10015	N	32	25,0	6,35	150	16

Remark

Blades and tool blocks with the same "A" dimension fit together.
Holder and inserts with the same "S" dimension fit together.

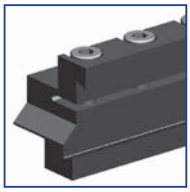
Fitting inserts and tool blocks


p. 136-137

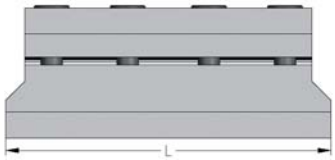

p. 138

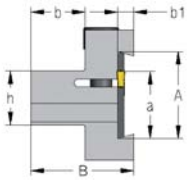

p. 143

Tool blocks for parting off blades



TS





Ref.	ID-Nr.		A	a	h	B	b	b1	L	
TS 26 16	10049	N	26	21,4	16	34	16	5	90	3
TS 26 20	10050	N	26	21,4	20	38	20	5	90	3
TS 32 20	10051	N	32	25,0	20	38	20	6	120	3
TS 32 25	10052	N	32	25,0	25	38	20	6	120	3
TS 32 32	10053	N	32	25,0	32	44	25	6	120	3

Remark

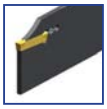
Tool blocks KL and TS are recommended for the dovetail shaft tools on page 69, 85 and 107.

Blades and tool blocks with the same "A" dimension fit together.

Fitting blades

p.200-201,212

p. 56, 69



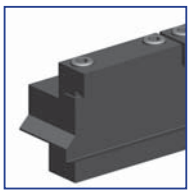
p. 57

p. 106-107

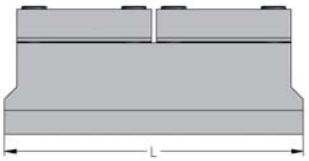
p. 115-116

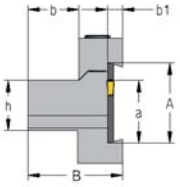
p. 117

p.114,115,124



KL





Ref.	ID-Nr.		A	a	h	B	b	b1	L	
KL 26 16	10054	N	26	21,4	16	34	16	5	90	2+17
KL 26 20	10055	N	26	21,4	20	38	20	5	90	2+17
KL 32 20	10056	N	32	25,0	20	38	20	6	120	2+31
KL 32 25	10057	N	32	25,0	25	38	20	6	120	2+31

Remark

Dismountable wedge lock (26L) for KL 26...
Dismountable wedge lock (32L) for KL 32...

Tool blocks KL and TS are recommended for the dovetail shaft tools on page 69, 85 and 107.

Blades and tool blocks with the same "A" dimension fit together.

Fitting blades

p.200-201,212

p. 56, 69

p. 57

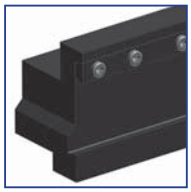
p. 106-107

p. 115-116

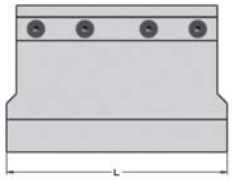
p. 117

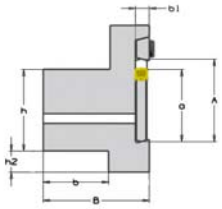
p.114,115,124

Tool blocks for parting off blades



KL 52





Ref.	ID-Nr.		A	h	h1	h2	B	b	b1	L	
KL 52 40	45128	N	52,6	40	90	25	60	35	8,5	135	2+38
KL 52 50	45129	N	52,6	50	90	15	63	38	8,5	135	2+38

Fitting blades

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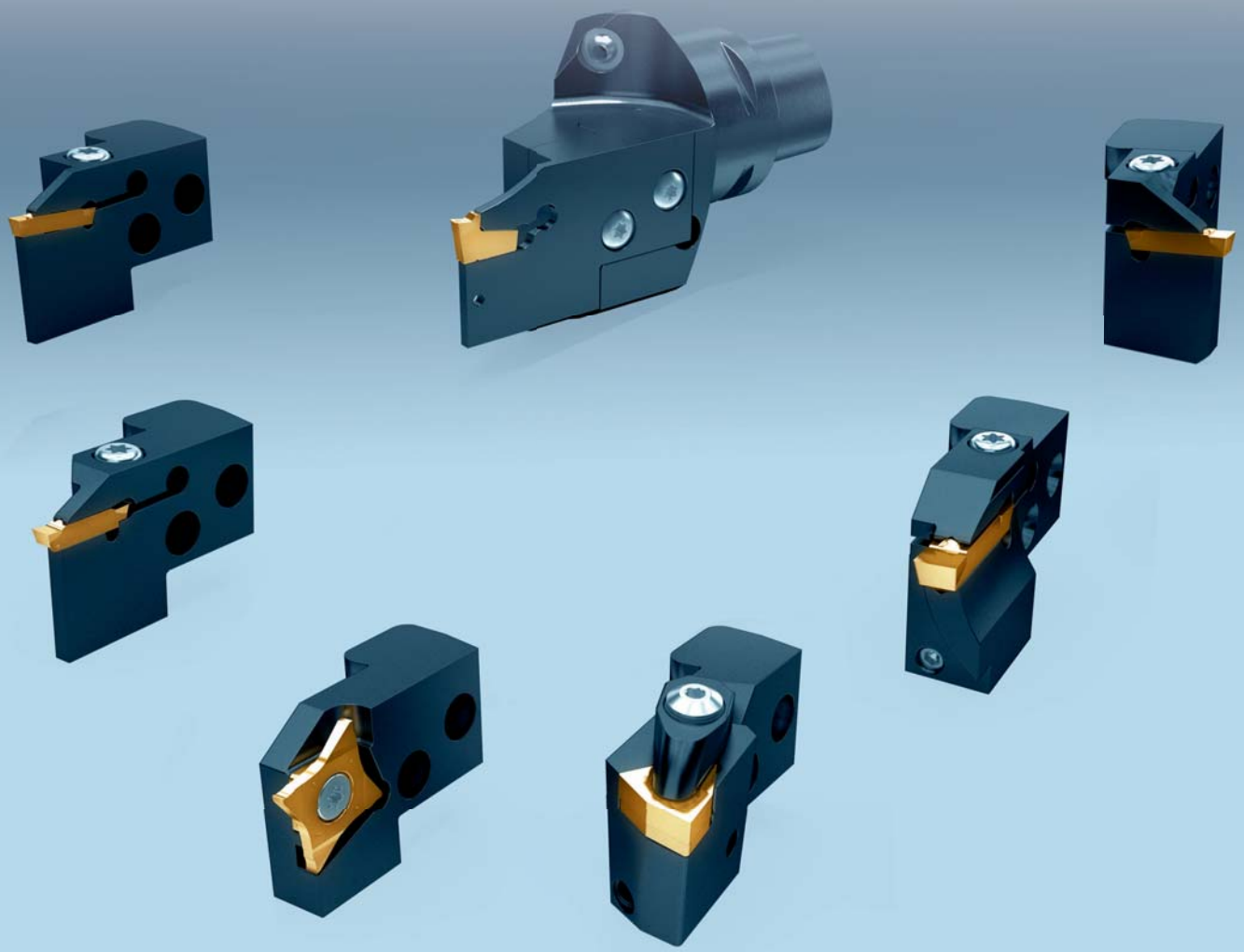
GLM - GripLock Modular

Quick change tool system

- Now available for ISO-inserts **new!**

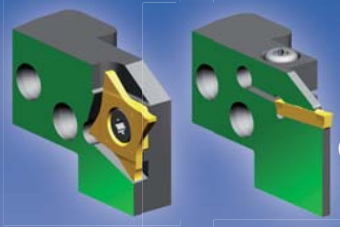


HAFFMAN High Precision Tools

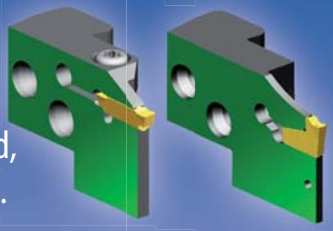
GLM - GripLock Modular

Quickchange tool system

With an **ingenious** interlock on the way to a new, green, horizon.

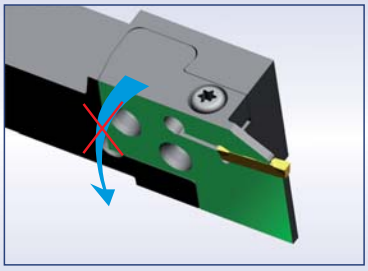


Due to this **ingenious** interlock the complete GripLock world can be applied to the most advanced, state-of-the-art, clamping systems.

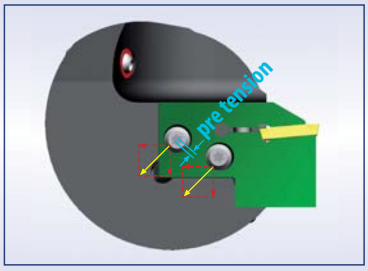


This brilliant engineering achievement saves resources and takes care of our environment.

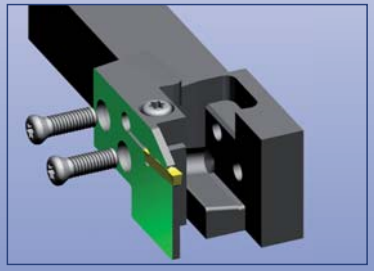
- A cleverly constructed interlock-face makes single handed assembly possible.



- The perfect interlock creates monoblock stability.



- Change of cartridges: simple, safe and fast! One key fits all three screws!

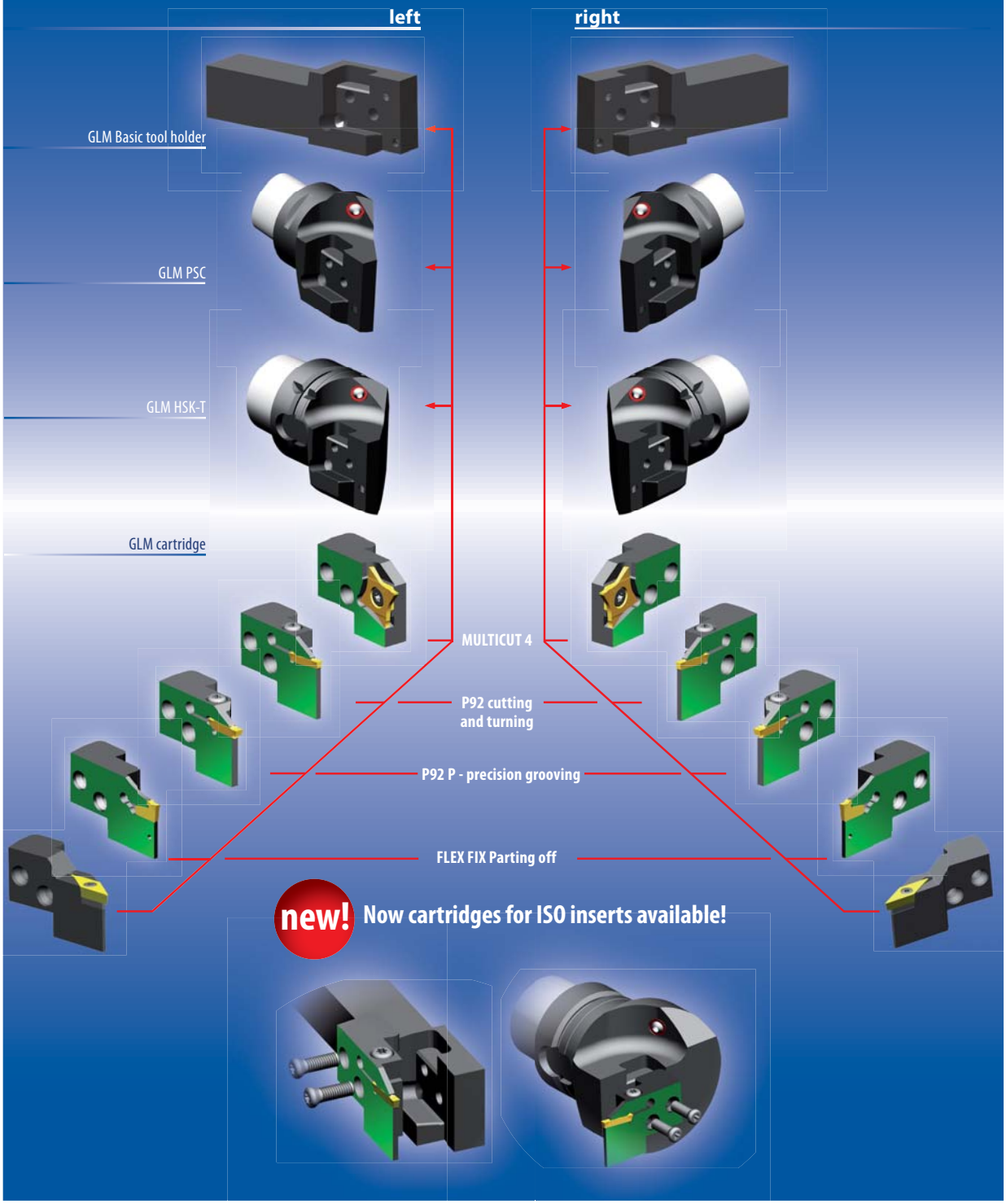


- All important information at a glance: The type of cartridge, cutting width, NC-Parameter, ID-No. and ISO- drawing.

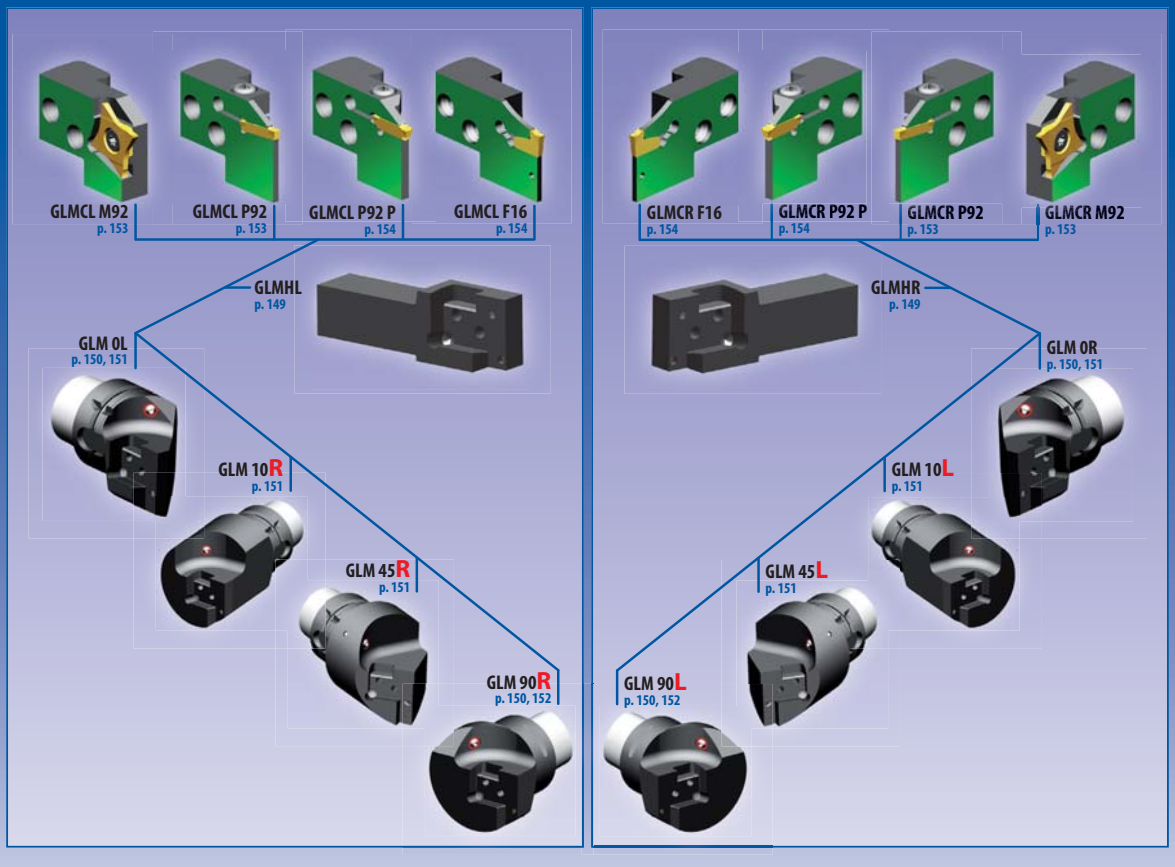
The green colour on all GripLock Modular cartridges symbolizes an environmentally friendly poduction.

GLM - GripLock Modular

Quick change tool system

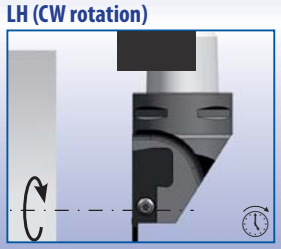


Basic tool holders with interchangeable cartridges



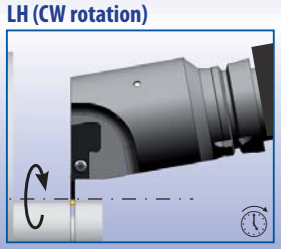
Examples for application and how to fit tools together correctly

LH (CW rotation)



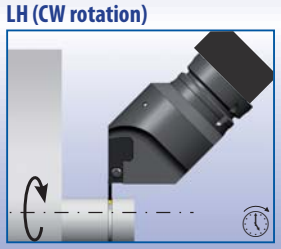
GLM 0° left hand basic tool holder + left hand cartridge

LH (CW rotation)



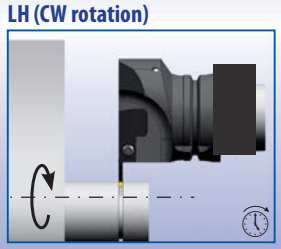
GLM 10° right hand basic tool holder + left hand cartridge

LH (CW rotation)



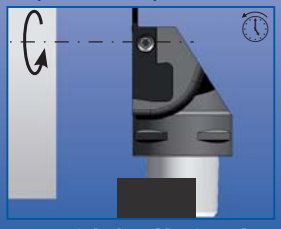
GLM 45° right hand basic tool holder + left hand cartridge

LH (CW rotation)



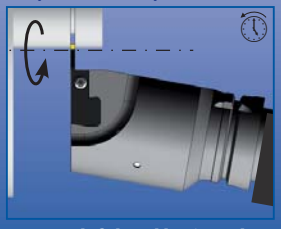
GLM 90° right hand basic tool holder + left hand cartridge

RH (CCW rotation)



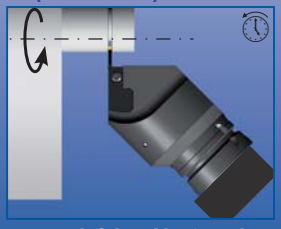
GLM 0° right hand basic tool holder + right hand cartridge

RH (CCW rotation)



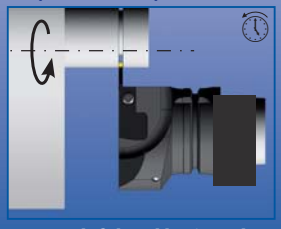
GLM 10° left hand basic tool holder + right hand cartridge

RH (CCW rotation)



GLM 45° left hand basic tool holder + right hand cartridge

RH (CCW rotation)



GLM 90° left hand basic tool holder + right hand cartridge

Designation Code for GLM - Basic tool holders

GLM H R 2020

- GLM — Tool System GripLock Modular
- H — Type of coupling
- R — RH / LH
- 2020 — Shank size: h; b

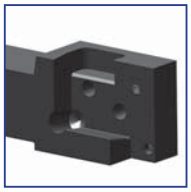
Designation Code for GLM - PSC and HSK-T

GLM PSC 40 R 0 10 70

- GLM — Tool system GripLock Modular
- PSC — Type of coupling: PSC = (Capto); HSKT = (HSK-T)
- 40 — 40 → D = 40 mm; 50 → D = 50 mm; 63 → D = 63 mm — Dimension of PSC / HSK-T
- R — RH / LH
- 0 — Tool unit setting angle
- 10 — Dimension: F
- 70 — Dimension: L

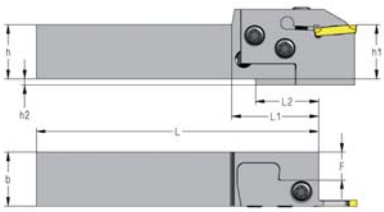
0 → 0 °
10 → 10 °
45 → 45 °
90 → 90 °

GLM - basic tool holders

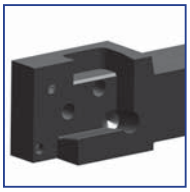


GLM H L

LH holder



GLM H R



RH holder

Ref.	ID-Nr.	( )	h	h1	h2	b	L	L1	L2	F	
GLMHL 2020	38072	L	20	20	8	20	130	40	39	8	29
GLMHL 2525	38073	L	25	25	3	25	130	40	29	13	29
GLMHL 3225	38074	L	32	32	0	25	140	40	0	13	29
GLMHR 2020	38069	R	20	20	8	20	130	40	39	8	29
GLMHR 2525	38070	R	25	25	3	25	130	40	29	13	29
GLMHR 3225	38071	R	32	32	0	25	140	40	0	13	29

Fitting cartridges

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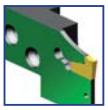

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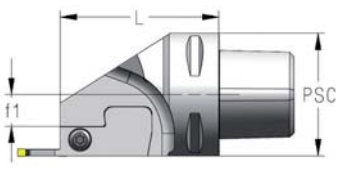
GLM - PSC

GLM PSC 0 L

LH holder

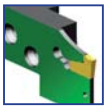


GLM PSC 0 R

RH holder

Ref.	ID-Nr.	( )	D	PSC	f1	L		kg
GLM PSC40 L 0 12 65	38078	L	40	40	12,0	65	29	0,59
GLM PSC50 L 0 13 65	38079	L	50	50	13,0	65	29	0,82
GLM PSC63 L 0 195 70	38080	L	63	63	19,5	70	29	1,37
GLM PSC40 R 0 12 65	38075	R	40	40	12,0	65	29	0,59
GLM PSC50 R 0 13 65	38076	R	50	50	13,0	65	29	0,82
GLM PSC63 R 0 195 70	38077	R	63	63	19,5	70	29	1,37

Fitting cartridges



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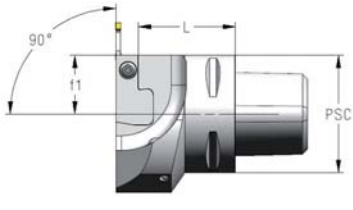
GLM PSC 90 L

LH holder



GLM PSC 90 R

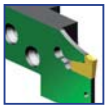
RH holder

Ref.	ID-Nr.	( )	D	PSC	f1	L		kg
GLM PSC40 L 90 29 50	38090	L	40	40	29,0	50	29	1,04
GLM PSC50 L 90 29 50	38091	L	50	50	29,0	50	29	1,23
GLM PSC63 L 90 315 52	38092	L	63	63	31,5	52	29	1,73
GLM PSC40 R 90 29 50	38087	R	40	40	29,0	50	29	1,04
GLM PSC50 R 90 29 50	38088	R	50	50	29,0	50	29	1,23
GLM PSC63 R 90 315 52	38089	R	63	63	31,5	52	29	1,73

Remark

RH cartridges will fit only on LH basic tool holders with setting angles 10°, 45° and 90°. (Assembly for CCW run)
LH cartridges will fit only on RH basic tool holders with setting angles 10°, 45° and 90°. (Assembly for CW run)

Fitting cartridges



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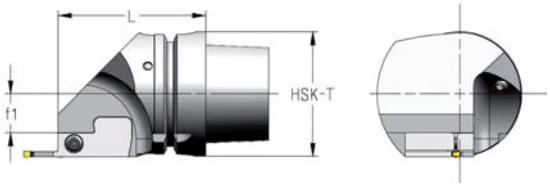
How to write an order correctly: — **recommended**

1 pcs	GLM HSK63T **L 90** 315 60	or:	**1 pcs ID-Nr. 38094**
1 pcs	GLMC**R** P92 30 17	or:	**1 pcs ID-Nr. 38098**

GLM - HSKT

GLM HSKT 0 L

LH holder



GLM HSKT 0 R

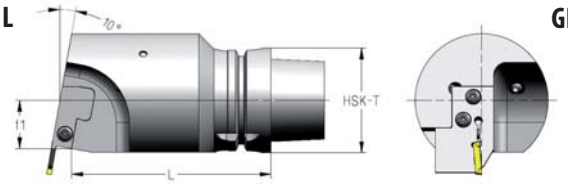
RH holder

Ref.	ID-Nr.	( )	D	HSK-T	f1	L		kg
GLM HSK63T L 0 195 75	38082	L	63	63	19,5	75	29	1,30
GLM HSK63T R 0 195 75	38081	R	63	63	19,5	75	29	1,30

Fitting cartridges see below

GLM HSKT 10 L

LH holder



GLM HSKT 10 R

RH holder

Ref.	ID-Nr.	( )	D	HSK-T	f1	L		kg
GLM HSK63T L 10 29 120	38084	L	63	63	29	120	29	3,56
GLM HSK63T R 10 29 120	38083	R	63	63	29	120	29	3,56

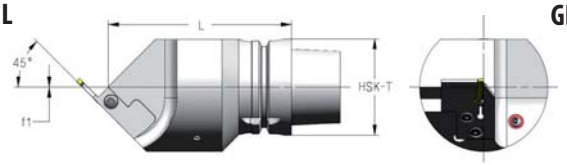
Fitting cartridges see below

Remark

RH cartridges will fit only on LH basic tool holders with setting angles 10°, 45° and 90°. (Assembly for CCW run)
LH cartridges will fit only on RH basic tool holders with setting angles 10°, 45° and 90°. (Assembly for CW run)

GLM HSKT 45 L

LH holder



GLM HSKT 45 R

RH holder

Ref.	ID-Nr.	( )	D	HSK-T	f1	L		kg
GLM HSK63T L 45 00 120	38086	L	63	63	00	120	29	3,19
GLM HSK63T R 45 00 120	38085	R	63	63	00	120	29	3,19

Remark

RH cartridges will fit only on LH basic tool holders with setting angles 10°, 45° and 90°. (Assembly for CCW run)
LH cartridges will fit only on RH basic tool holders with setting angles 10°, 45° and 90°. (Assembly for CW run)

Fitting cartridges

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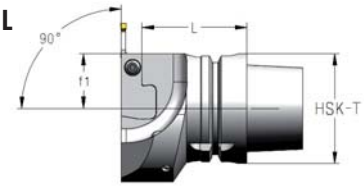
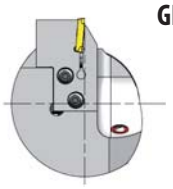
GLM - HSKT

GLM HSKT 90 L

LH holder





GLM HSKT 90 R

RH holder

Ref.	ID-Nr.		D	HSK-T	f1	L		kg
GLM HSK63T L 90 315 60	38094	L	63	63	31,5	60	29	1,71
GLM HSK63T R 90 315 60	38093	R	63	63	31,5	60	29	1,71

Remark

RH cartridges will fit only on **LH** basic tool holders with setting angles 10°, 45° and 90°. (Assembly for CCW run)
LH cartridges will fit only on **RH** basic tool holders with setting angles 10°, 45° and 90°. (Assembly for CW run)

Fitting cartridges

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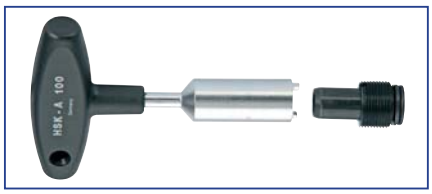
Cooling flow unit and key



Abmessung	Cooling flow unit	Key
	ID-Nr.	ID-Nr.
HSK63T	38834	38833

Remark

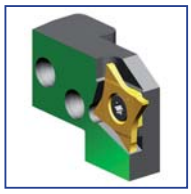
This sealing unit stops coolant flowing through the spindle and prevents bearings from being damaged.

Designation Code for GLM - cartridges

GLM C R P92 30 17

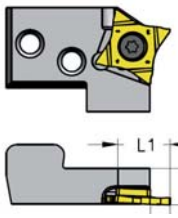
- GLM — Tool family GripLock Modular
- C — cartridge
- R — RH / LH
- P92 — Tool system (Applied inserts)
  - P92 → Cutting
  - P92 P → Precision grooving
  - M92 Q → MULTICUT
  - F16 → Flex Fix
- 30 — Cutting width
- 17 — Cutting depth

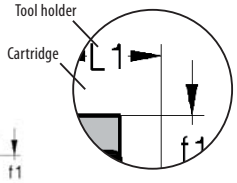
GLM - Cartridges



GLMC L M92 Q

LH Cartridge





GLMC R M92 Q

RH Cartridge

Ref.	ID-Nr.		P	L1	f1	
GLMCL M92 Q 16 65	38182	L	6,5	17,5	12,3	24
GLMCR M92 Q 16 65	38179	R	6,5	17,5	12,3	24

Fitting inserts

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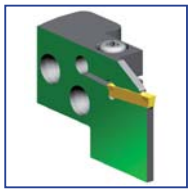
p. 29

p. 30

p. 31

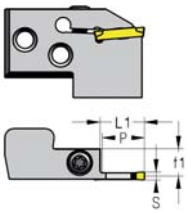
p. 32

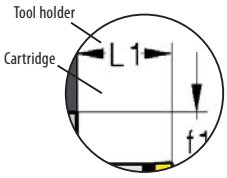
p. 40



GLMC L P92

LH Cartridge





GLMC R P92

RH Cartridge

Ref.	ID-Nr.		P	L1	S	f1	
GLMCL P92 20+25 17	38107	L	17	17,5	2+2,5	11,20	29
GLMCL P92 30 17	38108	L	17	17,5	3	10,76	29
GLMCL P92 40 17	38109	L	17	17,5	4	10,26	29
GLMCL P92 50 22	38110	L	22	22,5	5	9,86	29
GLMCR P92 20+25 17	38097	R	17	17,5	2+2,5	11,20	29
GLMCR P92 30 17	38098	R	17	17,5	3	10,76	29
GLMCR P92 40 17	38099	R	17	17,5	4	10,26	29
GLMCR P92 50 22	38100	R	22	22,5	5	9,86	29

Fitting inserts

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p. 56-58

How to write an order: **recommended**

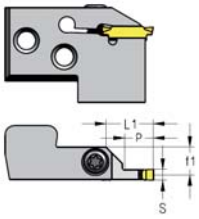
1 St. GLM HSK63T **R** 0 195 75 or: **1 St. ID-Nr. 38081**

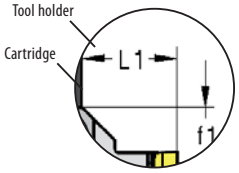
1 St. GLMC**R** P92 30 17 or: **1 St. ID-Nr. 38098**

GLM - Cartridges

GLMC L P92 P

LH Cartridge



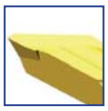


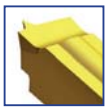
GLMC R P92 P

RH Cartridge

Ref.	ID-Nr.	( )	P	L1	S	f1	
GLMCL P92 P 4 11	38175	L	11	17,5	4	10,26	29
GLMCL P92 P 5+6 14	38176	L	14	20,5	5+6,5	9,86	29
GLMCR P92 P 4 11	38171	R	11	17,5	4	10,26	29
GLMCR P92 P 5+6 14	38172	R	14	20,5	5+6,5	9,86	29

Fitting inserts





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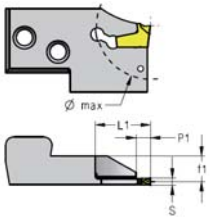
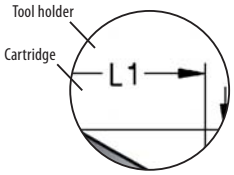
new

GLM C L F16

LH Cartridge





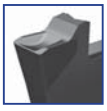
GLMC R M92 Q

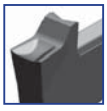
RH Cartridge

new

Ref.	ID-Nr.	( )	P1	L1	Ø max	S	f1	
GLMCL F16 20 50	43338	L	6,0	25,5	50	2	11,2	AWF16
GLMCL F16 30 50	38880	L	6,0	25,5	50	3	10,8	AWF16
GLMCL F16 40 50	43339	L	6,0	25,5	50	4	10,3	AWF16
GLMCR F16 20 50	43340	R	6,0	25,5	50	2	11,2	AWF16
GLMCR F16 30 50	39726	R	6,0	25,5	50	3	10,8	AWF16
GLMCR F16 40 50	43341	R	6,0	25,5	50	4	10,3	AWF16

Fitting inserts





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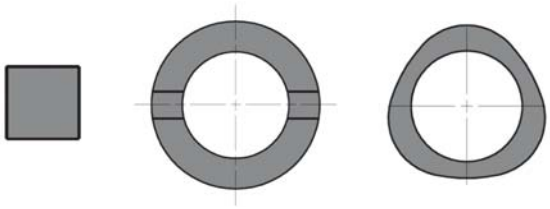
The GripLock modular cartridge system now available for ISO inserts

A unique interface

The GripLock modular system fits:



Square shanks | HSK-T flange | PSC flange

Tailor made ISO cartridges can be ordered

Required information for Specials

- Type of insert
- Right hand or left hand
- Setting angle
- Clamping with spare parts
- Holder/flange type/setting angle of cartridge
- Setting angle of cartridge
- Maximal extension

Designation Code for ISO - cartridges

GLM C R CN 12 04

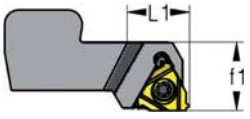
- GLM — Tool family GripLock Modular
- C — Cartridge
- R — RH/LH
- CN — Form and clearance of insert
- 12 — Length of cutting edge
- 04 — Insert thickness

GLM-ISO-cartridges for ISO threading inserts

new

GLMCL 16EL ISO

LH



GLMC R 16ER ISO

RH

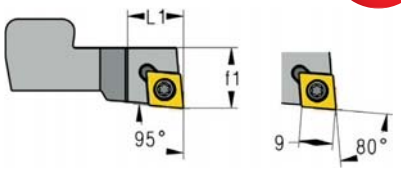
Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL 16EL ISO	47680	L	8,8	17	16 EL
GLMCR 16ER ISO	46962	R	8,8	17	16 ER

GLM-ISO-cartridges with positive insert pocket

new

GLMCL CC09T3

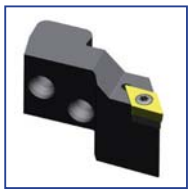
LH



GLMCR CC09T3

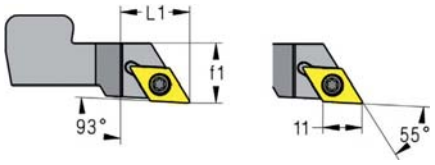
RH

Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL CC09T3	46966	L	12,5	17	CCMT09T3.. / CCGT09T3..
GLMCR CC09T3	46961	R	12,5	17	CCMT09T3.. / CCGT09T3..



GLMCL DC11T3

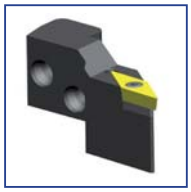
LH



GLMCR DC11T3

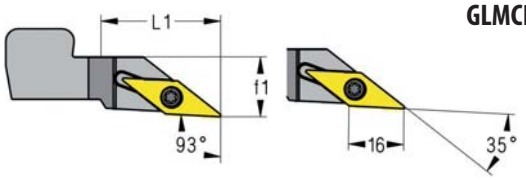
RH

Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL DC11T3	46959	L	15,5	17	DCMT11T3.. / DCGT11T3..
GLMCR DC11T3	46965	R	15,5	17	DCMT11T3.. / DCGT11T3..



GLMCL VC1604

LH



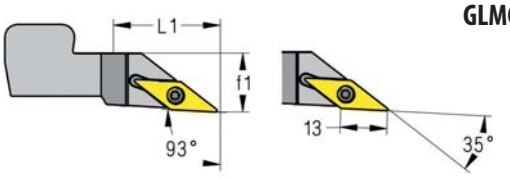
GLMCR VC1604

RH

Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL VC1604	46968	L	24,5	17	VCMT1604.. / VCGT1604..
GLMCR VC1604	46967	R	24,5	17	VCMT1604.. / VCGT1604..

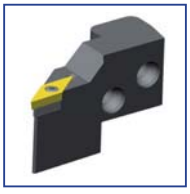
GLMCL VC1303

LH



GLMCR VC1303

RH



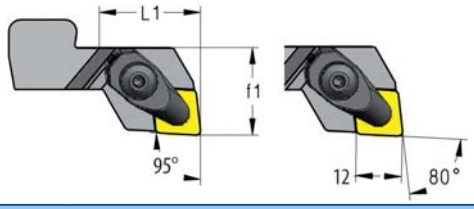
Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL VC1303	47553	L	22,5	16,5	VCGT1303..
GLMCR VC1303	47554	R	22,5	16,5	VCGT1303..

GLM-ISO-cartridges with negative pocket

new

GLMCL CN1204

LH



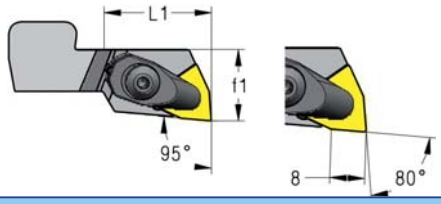
GLMCR CN1204

RH

Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL CN1204	47607	L	17,5	25	CNMG1204..
GLMCR CN1204	47341	R	17,5	25	CNMG1204..

GLMCL WN0804

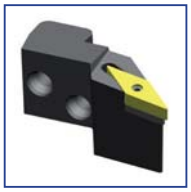
LH



GLMCR WN0804

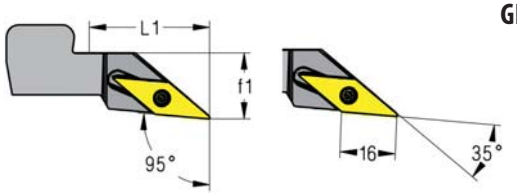
RH

Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL WN0804	46964	L	20,5	20,5	WNMG0804..
GLMCR WN0804	46969	R	20,5	20,5	WNMG0804..



GLMCL VN1604

LH



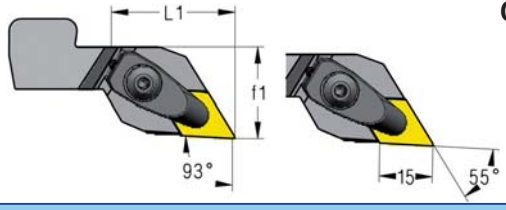
GLMCR VN1604

RH

Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL VN1604	46960	L	21,5	19	VNMG1604..
GLMCR VN1604	46963	R	21,5	19	VNMG1604..

GLMCL DN1506

LH

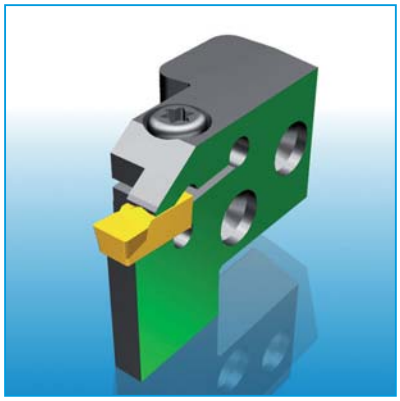


GLMCR DN1506

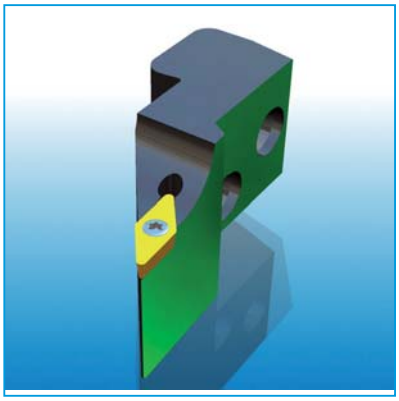
RH

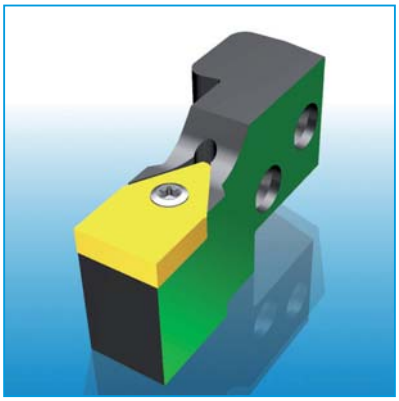
Ref.	ID-Nr.	( )	L1	f1	Insert
GLMCL DN1506	47606	L	27,5	26	DNMG1506..
GLMCR DN1506	47340	R	27,5	26	DNMG1506..

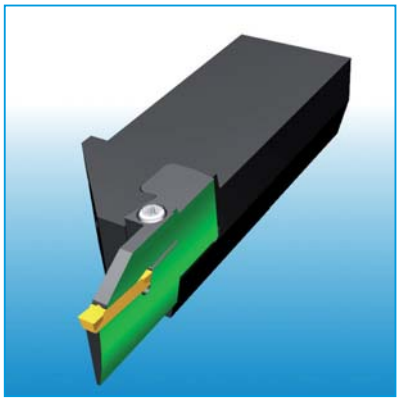
GLM - Tailor made solutions

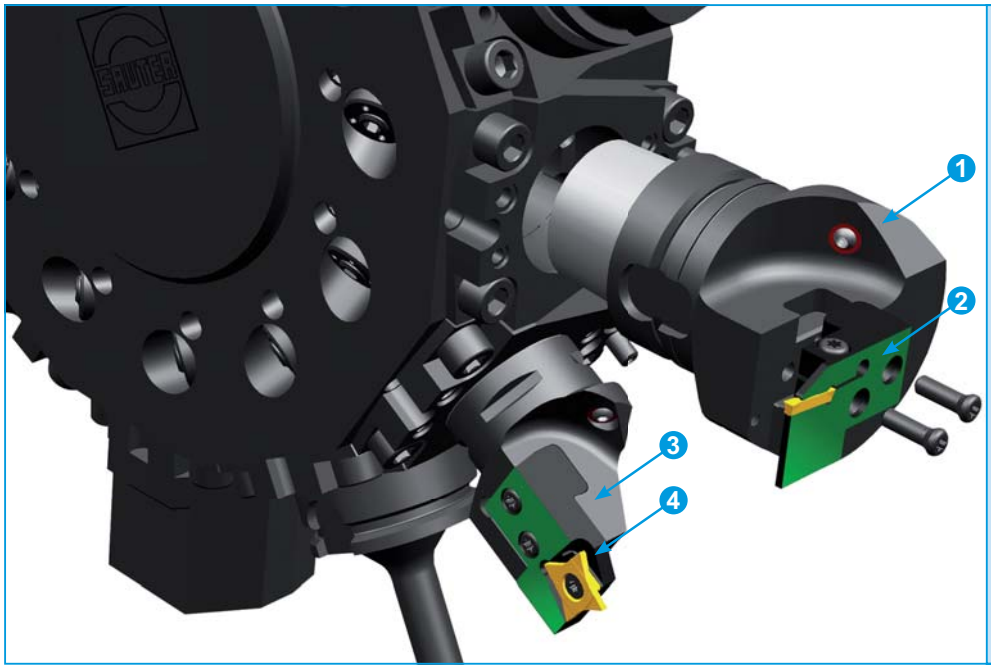


- ✓ Customer's special requirements
- ✓ Customers advantage
- ✓ Flexible system
- ✓ Interchangeable with GLM holders







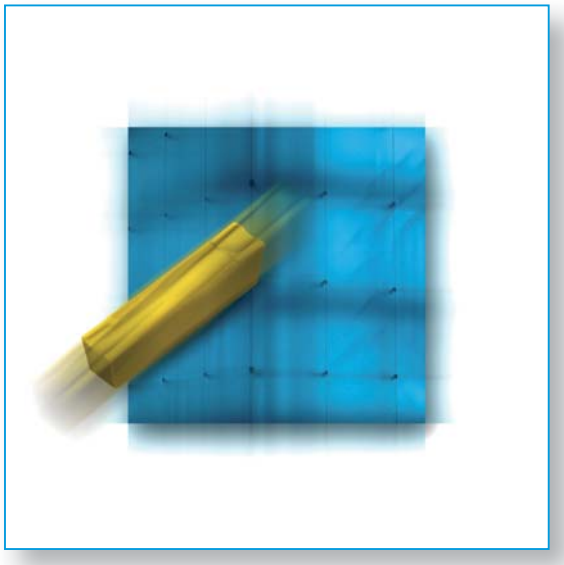


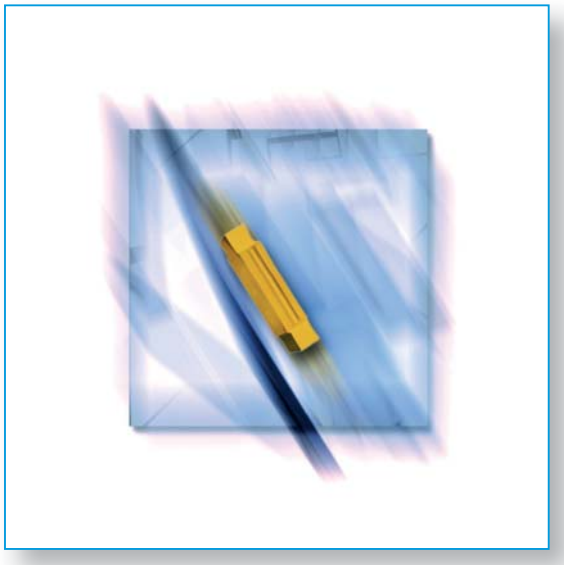
Application on a turret

e.g. on a Sauter turret with fitting interfaces for HSK-T, PSC and VDI basic tool holders

1. GLM HSK63T L 90 315 60
2. GLMCR P92 30 17
3. GLM PSC63 L 0 195 70
4. GLMCL M92 Q 16 65


GLM - GripLock Modular
Perfect tailor made solutions unlimited
Tooling units
Special cartridges for
standard basic tool holders

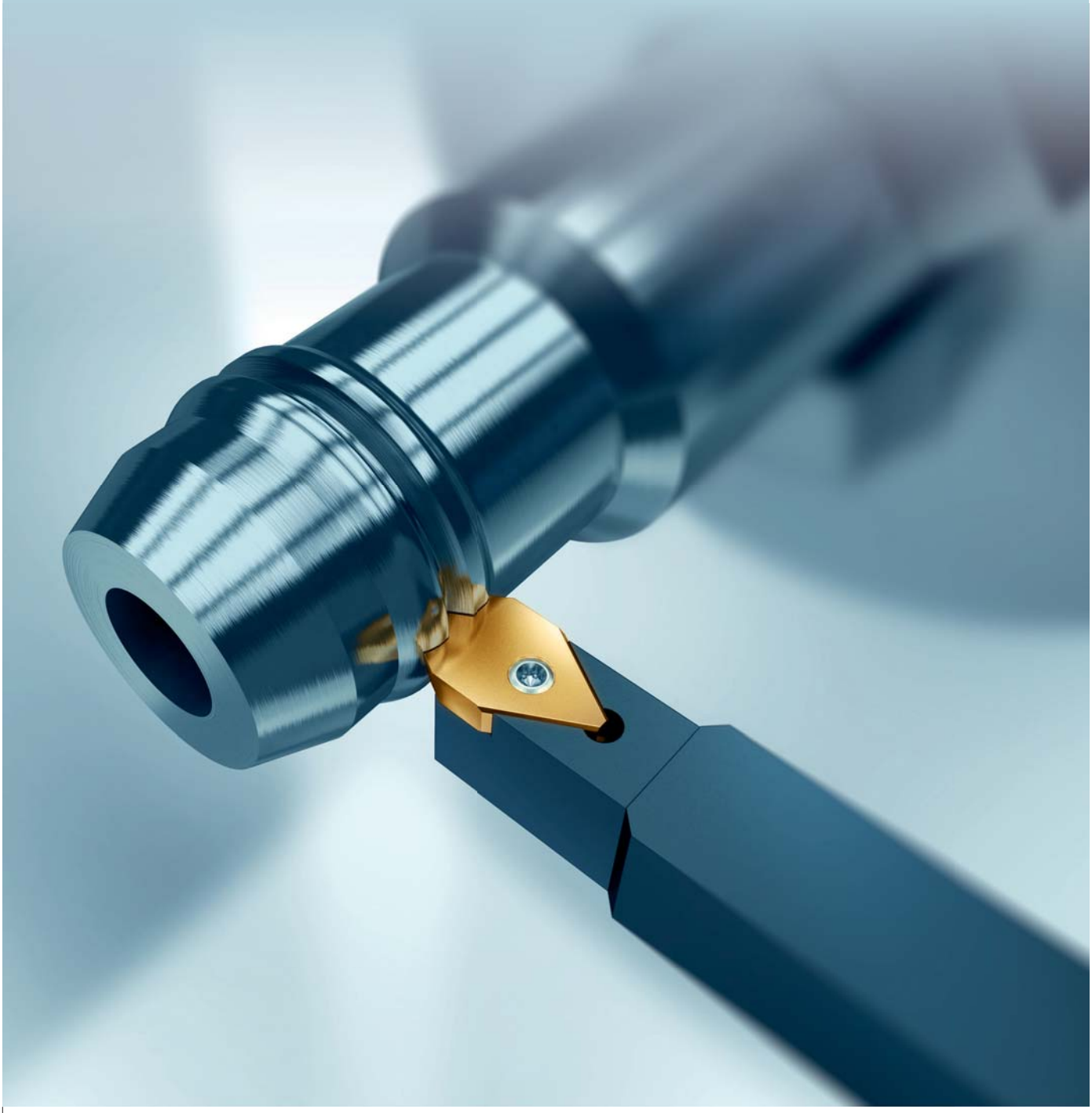




F92 - Profiling system

Special profiles to customer specifications

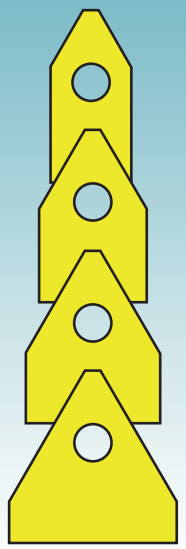
- Fast production of special profiles
- 4 different pre ground blanks
- Perfect interlock between holder and insert
- Excellent price-performance ratio



F92 - Profiling S ystem

Special profils to customers specifications

Semi-finished insert
width: 12 mm - 25 mm



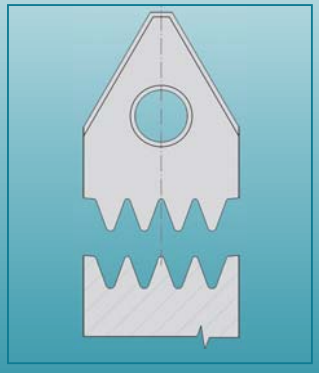
How to place an order:

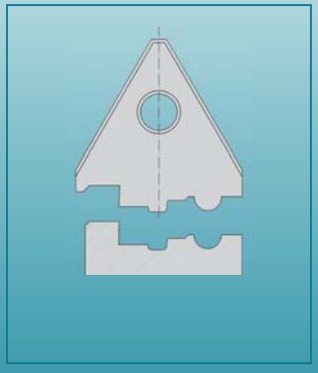
Example 1: If you intend to grind profiles yourself, you can order tool holders and pre ground inserts.

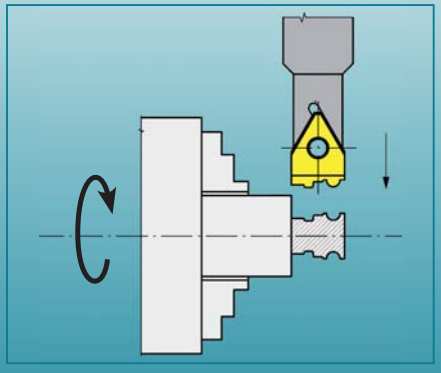
Example 2: If you give us the order to produce profile inserts, we definitely need

- Complete drawing of the component or the profile with dimensions and tolerances
- Lathe rotation: clockwise or counter clockwise
- Material to be machined
- Required coating (s. listing p.156)
- Planned order quantities of tool holders and inserts
- Required delivery times

Many applications







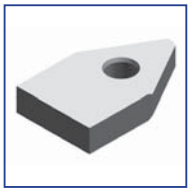
You can see further interesting examples in the section "Special solutions" page 156 onwards

Designation code for profile inserts

F 00000 16 15 10

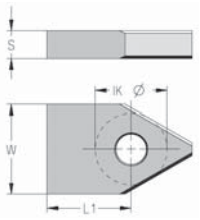
- F — Insert typ
- 00000 — Profile number
- 16 — Width of insert W = 16,3
- 15 — Length of profile insert L1 = 15,0
- 10 — Production year (10 = 2010)

Pre-ground inserts



F 00000...00

System F92



Ref.	GF 25	S ±0,10	W+0,2	L1±0,1	IKØ ±0,02
	ID-Nr.				
F 00000 12 15 00	29269	5,1	12,3	15,0	13,0
F 00000 16 15 00	29272	5,1	16,3	15,0	13,0
F 00000 20 15 00	29273	5,1	20,3	15,0	13,0
F 00000 25 15 00	29275	5,1	25,3	15,0	13,0

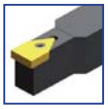
Remark

Ground faces:

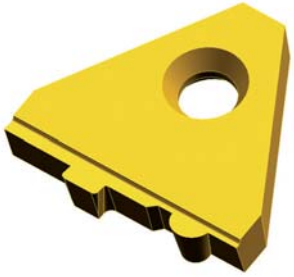
- Both flat-faces
- Both pocket faces
- Chamfer between these faces

The hole has got countersinks on both sides to turn the insert around.

Fitting holder



p. 164



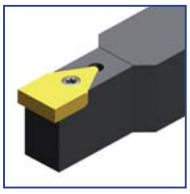
Finished ground profile insert coated with NANOSPEED.

Designation code of tool holders for profile inserts

F92 S F C C N 2020 M 1612

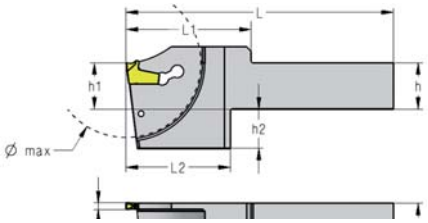
- F92 — Tool family
- S — Clamping system
- F — Type of insert
- C — Angle of attack
- C — Front clearance
- N — Tool holder type
- 2020 — Shank dimension
- M — Tool holder length
- 1612 — Insert size

F92 Tool holders for profile inserts



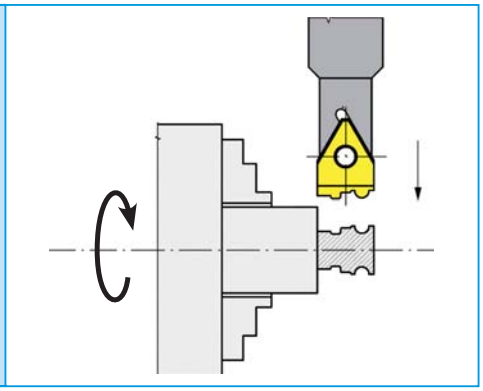
F92 SFCCN

System F92



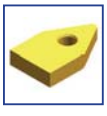
Ref.	ID-Nr.		h	h1	b	W	L	L1	L2	
F92 SFCCN 1212 K12 15	29265	N	12	12	12	12,0	125	15	35	25
F92 SFCCN 1212 K16 15	29342	N	12	12	12	16,0	125	15	35	25
F92 SFCCN 1616 K12 15	29343	N	16	16	16	12,0	125	15	35	25
F92 SFCCN 1616 K16 15	29266	N	16	16	16	16,0	125	15	35	25
F92 SFCCN 1616 K20 15	29344	N	16	16	16	20,0	125	15	35	25
F92 SFCCN 2020 M12 15	29345	N	20	20	20	12,0	150	15	35	25
F92 SFCCN 2020 M16 15	29346	N	20	20	20	16,0	150	15	35	25
F92 SFCCN 2020 M20 15	29267	N	20	20	20	20,0	150	15	35	25
F92 SFCCN 2525 M16 15	29347	N	25	25	25	16,0	150	15	35	25
F92 SFCCN 2525 M20 15	29348	N	25	25	25	20,0	150	15	35	25
F92 SFCCN 2525 M25 15	29268	N	25	25	25	25,0	150	15	35	25

CW run



Fitting inserts

p.200-201,212



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Remark

AWN-28 System on request.

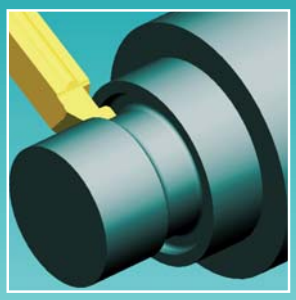
Tailor made solutions

...a real challenge

- Special tool holders

- Special inserts

When and why should tailor made solutions be applied?

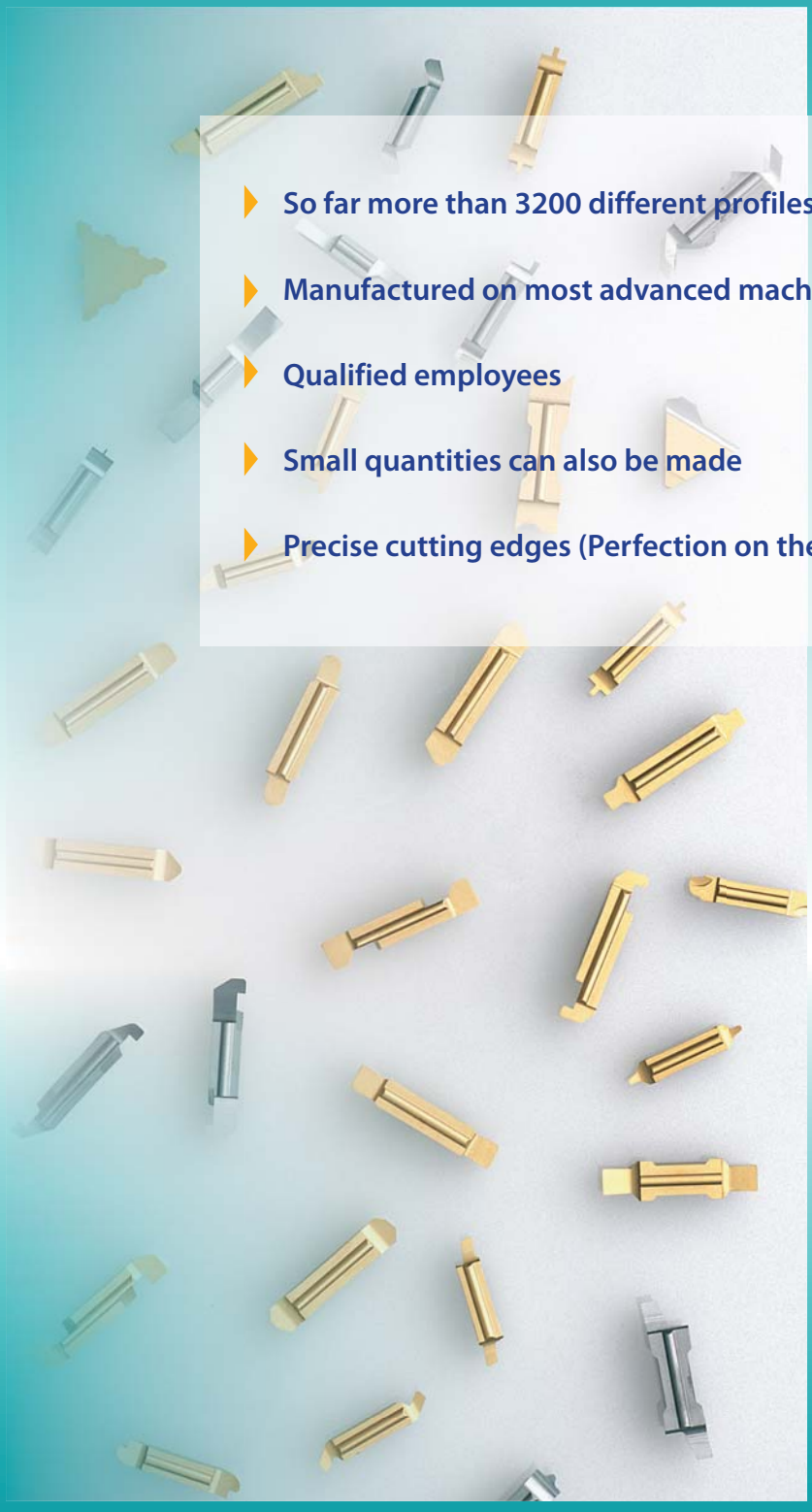


- when standard tools are not efficient,
- general cost saving measures,
- to reduce production time,
- to save on tool costs.

Our Strengths

- Qualified service
- Specified quotations
- Fair prices
- Production on most advanced machine tools
- Short delivery times

Tailor made inserts



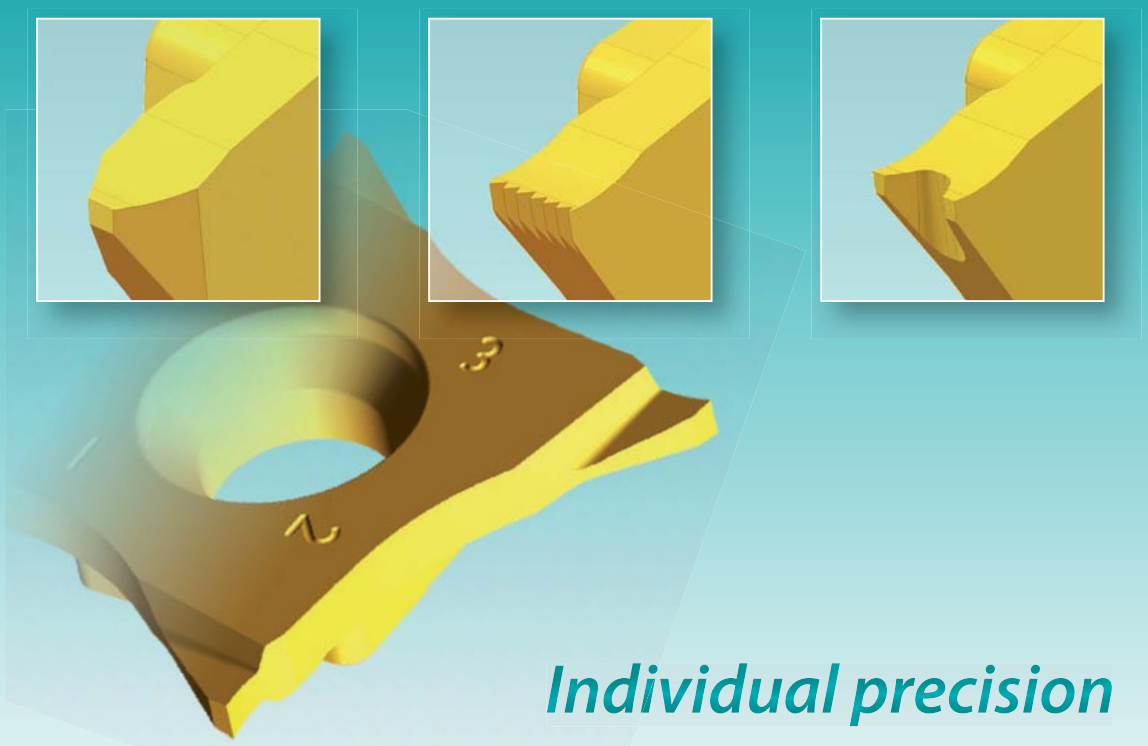
- So far more than 3200 different profiles have been ground
- Manufactured on most advanced machine tools
- Qualified employees
- Small quantities can also be made
- Precise cutting edges (Perfection on the edge)

Tailor made inserts with 2 edges based on P92 and P92-P System

Special requirements?

We will fulfill them!

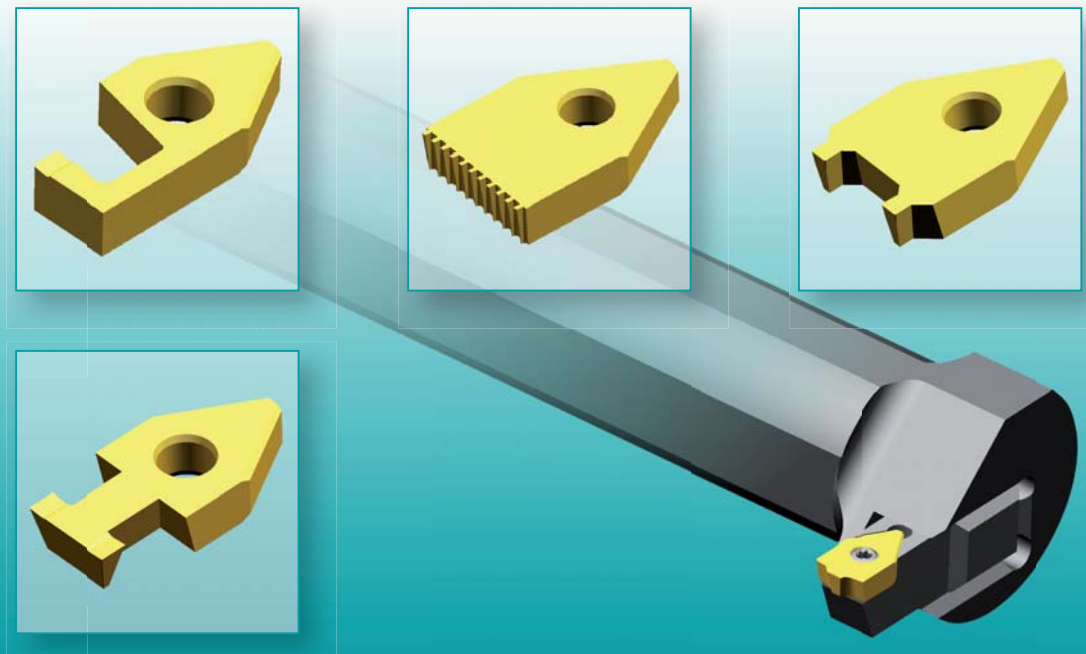
Tailor made insert with 4 edges based on MC4 system



Individual precision

on each corner

Profile inserts based on F92 system



Special tool holders with inserts

Two examples for cost saving solutions

The cutting and grooving insert MTNZ 4 NANOSPEED completely finishes the shaft; front and rear side of the pinion.

Actual situation:

Expensive production sequence caused by awkward turning operations using left and right tool holders. The customer delegates the problem to the designer.

Process:

At first he considers the problem.

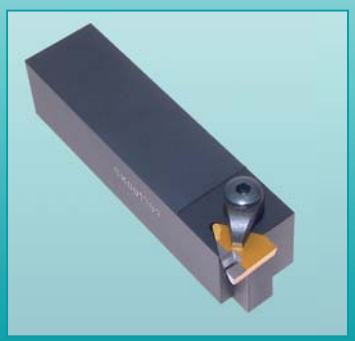
Some days later, he has found the solution.

Clearance cut using a modified TPGN insert.

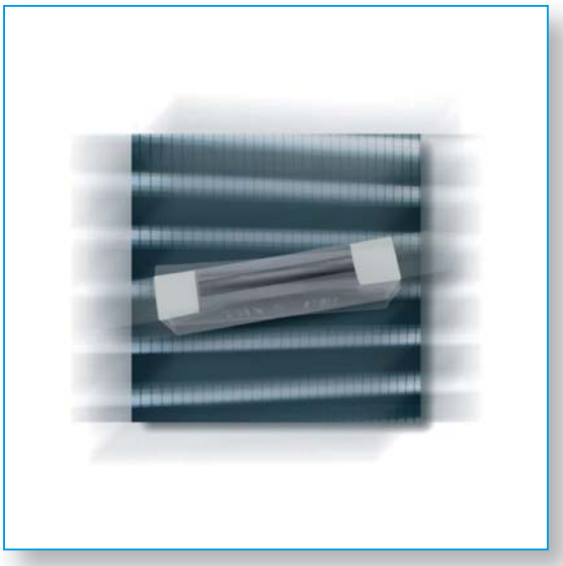
Goal: The production time for this piston had to be reduced.

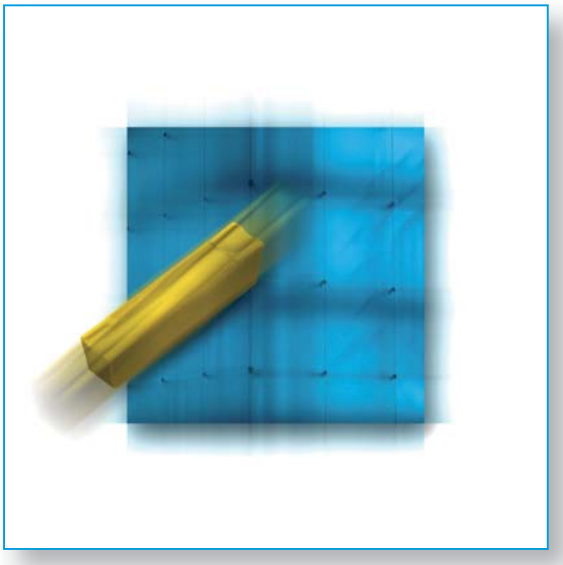
Mission: The task to create a special tool to save time. A tough nut to crack, for the designer. However he solved it.

In a letter of gratitude the customer stated that the special tool reduces component production time by 10 minutes.



Production time reduced by 10 min!

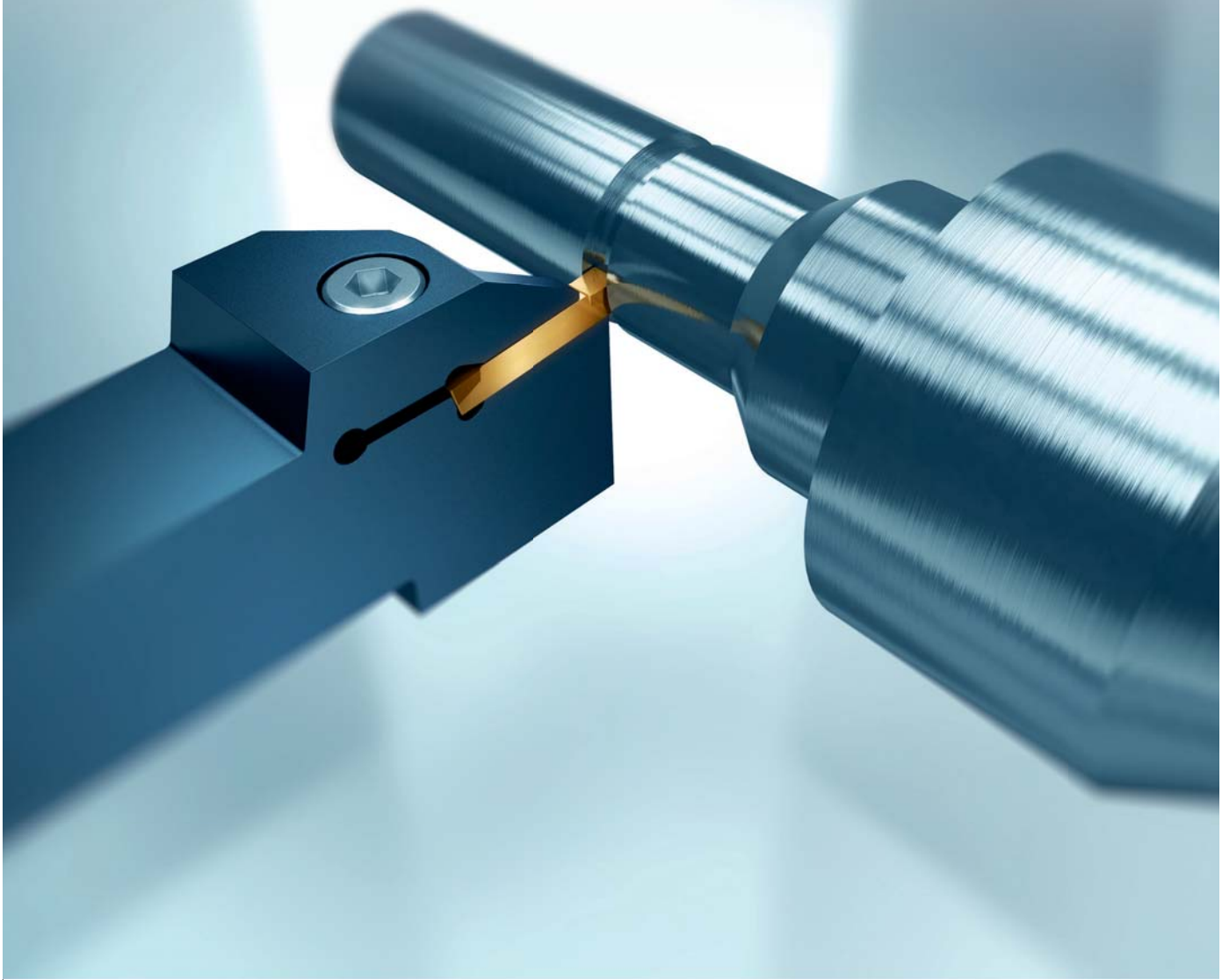




Hard material machining

Inserts, coating and tool holders for parting off, grooving and turning

- Inserts with efficient chip breakers and special coating for:
- machining hardened materials
- hard materials
- exotic and tempered materials



Hard material machining

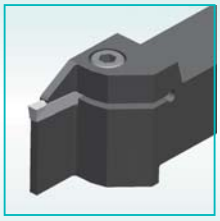
Inserts, coating and tool holders parting off, grooving and turning

Definition:
Machining materials with a Rockwell hardness of 54 and more. Inserts and holders are stressed heavily on such operations.
Therefore starting-up speeds, feeds and depths should be low graded.

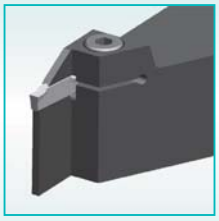
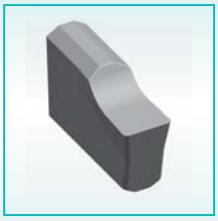
To be able to machine hard materials inserts are coated with Hardlox 2 coating. This coating features red hardness and an extremely smooth surface which reduces resistance to cutting forces.
You can find a detailed description of this coating on page 186 onwards.

Grooving and turning

P92 System

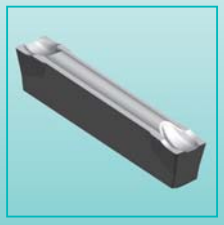



P92 S System

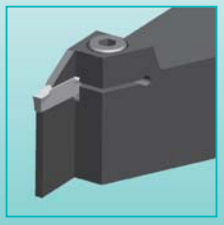
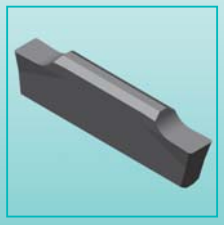



Grooving and parting off

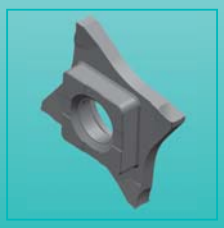
P92 System

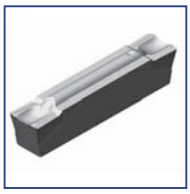
P92 S System

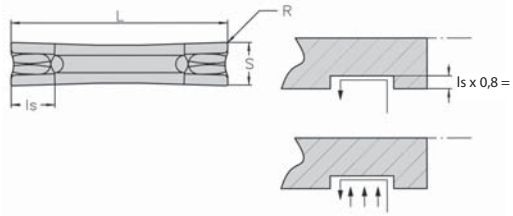
M92 Q System

Cutting and turning inserts



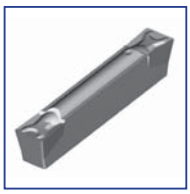
BTNG
System P92



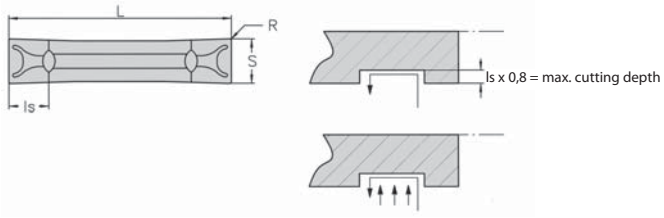
Enlarged view

Ref.	GF110 Hardlox 2		L	ls	R	S ±0,025
	ID-Nr.					
BTNG 202	38751	N	20,00	2,0	0,2	2,00
BTNG 302	38752	N	20,00	3,5	0,2	3,00
BTNG 304	38753	N	20,00	3,5	0,4	3,00
BTNG 504	38754	N	25,00	4,2	0,4	5,00
BTNG 808	38755	N	30,00	6,4	0,8	8,00

Fitting tool holders see below



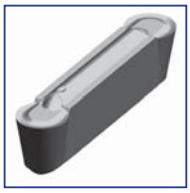
MTNS
System P92



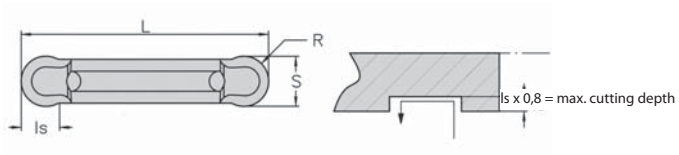
Enlarged view

Ref.	KM Hardlox 2	GF110 Hardlox 2		L	ls	R	S
	ID-Nr.	ID-Nr.					
MTNS 202	38745	-	N	20,10	2,0	0,2	2,05 +0,10
MTNS 302	-	38746	N	20	3,5	0,2	3,00 +0,15
MTNS 304	-	38747	N	20	3,5	0,4	3,00 +0,15
MTNS 402	-	38748	N	20	3,5	0,2	4,00 +0,20
MTNS 604	-	38749	N	30	4,9	0,4	6,05 +0,25
MTNS 808	38750	-	N	30	6,4	0,8	8,05 +0,25

Fitting tool holders see below



RTNG
System P92



Enlarged view

Ref.	GF110 Hardlox 2		L	ls	R	S +0,025
	ID-Nr.					
RTNG 210	38756	N	20,00	1,71	1,0	2,00
RTNG 315	38757	N	20,00	2,60	1,5	3,00

Fitting tool holders







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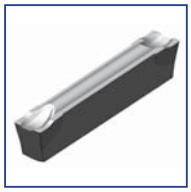
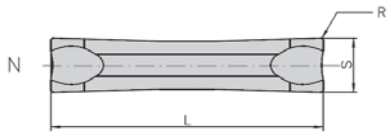
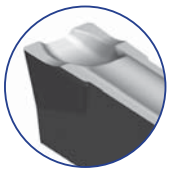
Inserts for grooving and parting off



BTNN
System P92

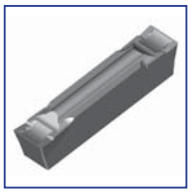




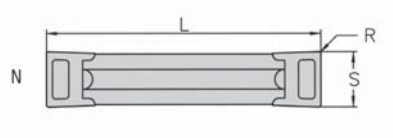
Enlarged view

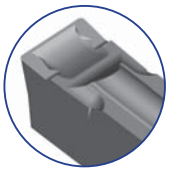
Ref.	KM Hardlox 2	( )	L	R	S
	ID-Nr.				
BTNN1,5	38760	N	15,50	0,2	1,50
BTNN 2	38761	N	20,02	0,2	2,05
BTNN 2,5	38762	N	20,03	0,2	2,50
BTNN 3	38763	N	20,10	0,2	3,05
BTNN 4	38764	N	20,10	0,2	4,05

Fitting tool holders see below



CTD ALU
System P92





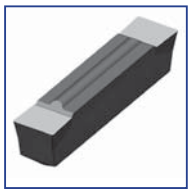
Enlarged view

Ref.	KM Hardlox 2	( )	L	R	S
	ID-Nr.				
CTD 3 ALU	38758	N	20,00	0,2	3,0 +0,15
CTD 4 ALU	38759	N	20,00	0,2	4,0 +0,20

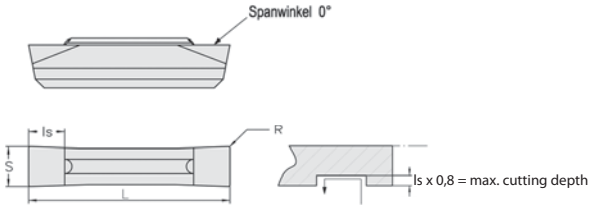
Remark

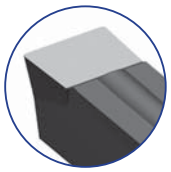
Insert with ground cutting edge.

Fitting tool holders see below



OTXS
System P92





Enlarged view

Ref.	KM Hardlox 2	( )	L	ls	R	S
	ID-Nr.					
OTXS 302	38765	N	20	3,5	0,2	3,0 +0,15
OTXS 402	38766	N	20	3,5	0,2	4,0 +0,20

Remark

Inserts with ground top-face.

Fitting tool holders

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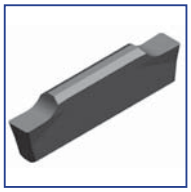
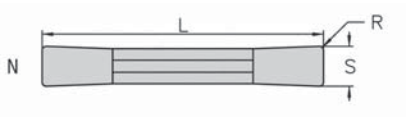
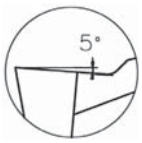
Inserts for grooving and parting off

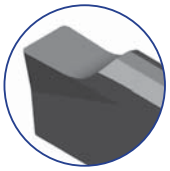


HTNS

System P92 S







Enlarged view

Ref.	KM Hardlox2	( )	L	R	S $^{\pm 0,10}$
	ID-Nr.				
HTNS 2	38767	N	14,00	0,2	2,00

Remark

Inserts for internal and external machining

Fitting tool holders

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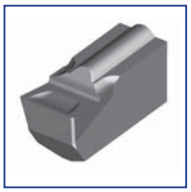
Inserts for grooving



KCTD

System P92

Ref.	KM Hardlox 2	( )	P	L	R	S $^{+0,15}$
	ID-Nr.					
KCTD 3	38768	N	3/4,5	9,5	0,2	3,0
KCTD 3 MAX	38769	N	5,5/7	12	0,2	3,0

Remark

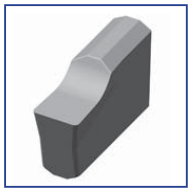
Inserts for small diameters.

Fitting boring bars

p. 75

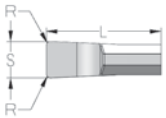
Technical section page 187 onwards

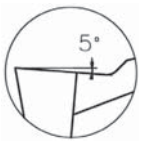
Inserts for grooving



KHTNS

System P92 S





Ref.	KM Hardlox2		L ±0,1	R	S ±0,10
	ID-Nr.				
KHTNS 2	38770	N	6,35	0,2	2,0

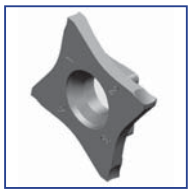
Remark

Inserts for small diameters.

Fitting tool holders

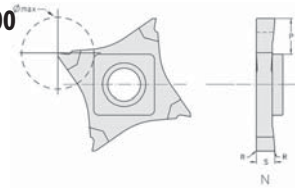
p. 86

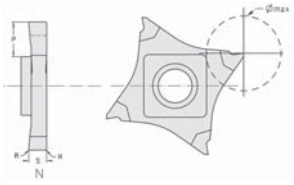
MULTICUT 4 Inserts for grooving and parting off

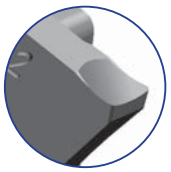


1770FQ16R/L...N00

System M92 Q







Enlarged view

Ref.	FM Hardlox2		P	R	S +/- 0,05	α°	Ømax.
	ID-Nr.						
OFQ16L 120 000 N 00	38771	N	6,5	0,00	1,20	0	13,0
OFQ16L 150 010 N 00	38772	N	6,5	0,10	1,50	0	13,0
OFQ16L 200 010 N 00	38773	N	6,5	0,10	2,00	0	13,0
OFQ16L 200 020 N 00	43689	N	6,5	0,20	2,00	0	13,0
OFQ16R 120 000 N 00	38774	N	6,5	0,00	1,20	0	13,0
OFQ16R 150 010 N 00	38775	N	6,5	0,10	1,50	0	13,0
OFQ16R 200 010 N 00	38776	N	6,5	0,10	2,00	0	13,0
OFQ16R 200 020 N 00	43690	N	6,5	0,20	2,00	0	13,0

Fitting tool holders

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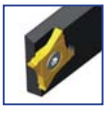

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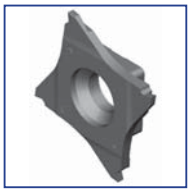
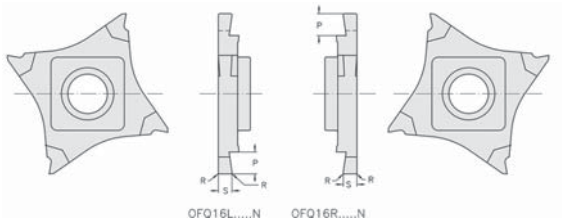
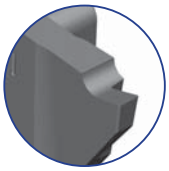
MULTICUT 4 Precision grooving inserts



OFQ16 R/L...N

System M92 Q





Enlarged view

Ref.	FM Hardlox2		P	R		S $^{-0,05}$
	ID-Nr.					
OFQ16R 050 000 N	38777	R	1,0	0,00	0,50	0,57
OFQ16R 100 000 N	38778	R	1,5	0,00	1,00	1,07
OFQ16R 160 010 N	38779	R	2,0	0,10	1,60	1,74
OFQ16R 215 010 N	38780	R	2,5	0,10	2,15	2,29
OFQ16L 050 000 N	38781	L	1,0	0,00	0,50	0,57
OFQ16L 100 000 N	38782	L	1,5	0,00	1,00	1,07
OFQ16L 160 010 N	38783	L	2,0	0,10	1,60	1,74
OFQ16L 215 010 N	38784	L	2,5	0,10	2,15	2,29

Fitting tool holders

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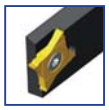

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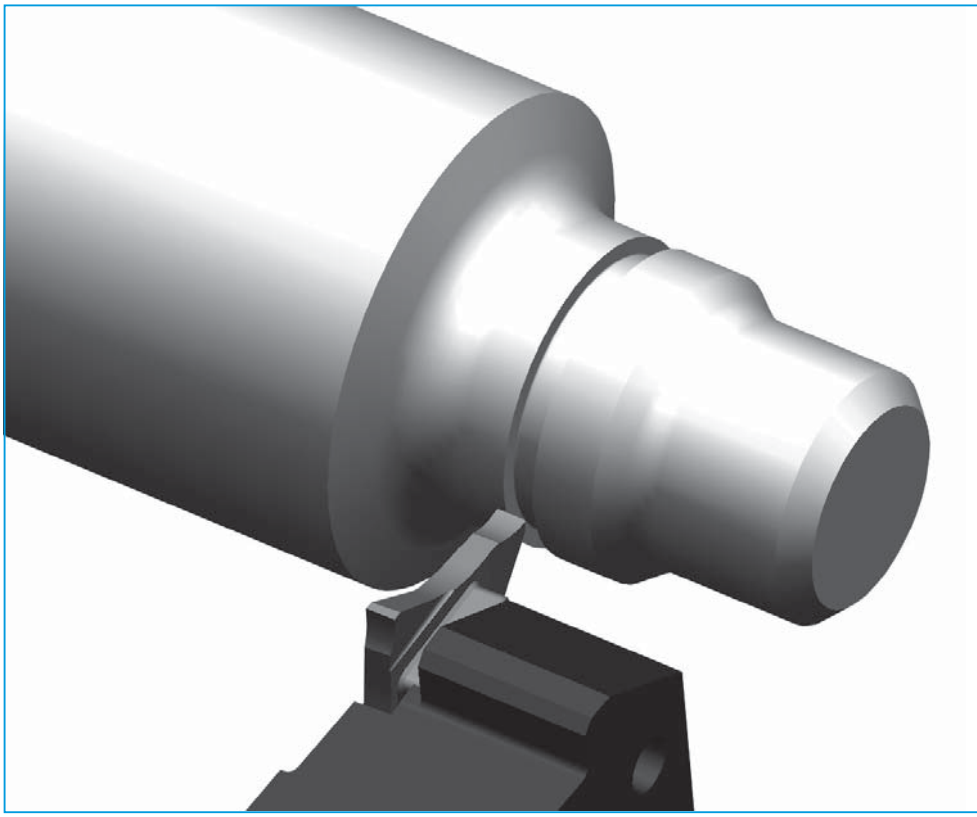

Hardened material

PRECISION GROOVING with MULTICUT 4

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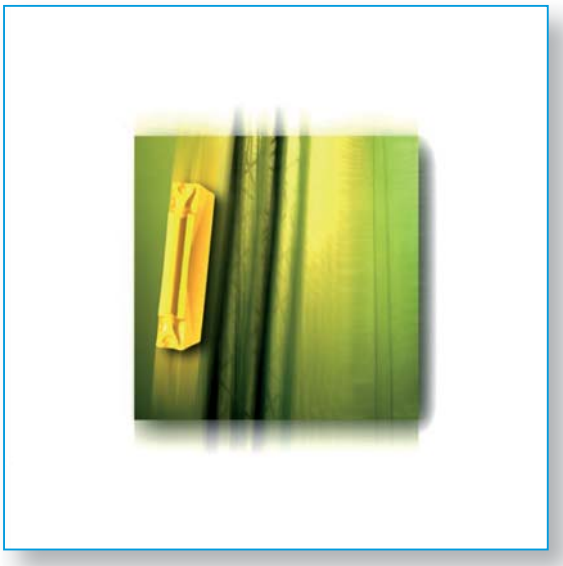
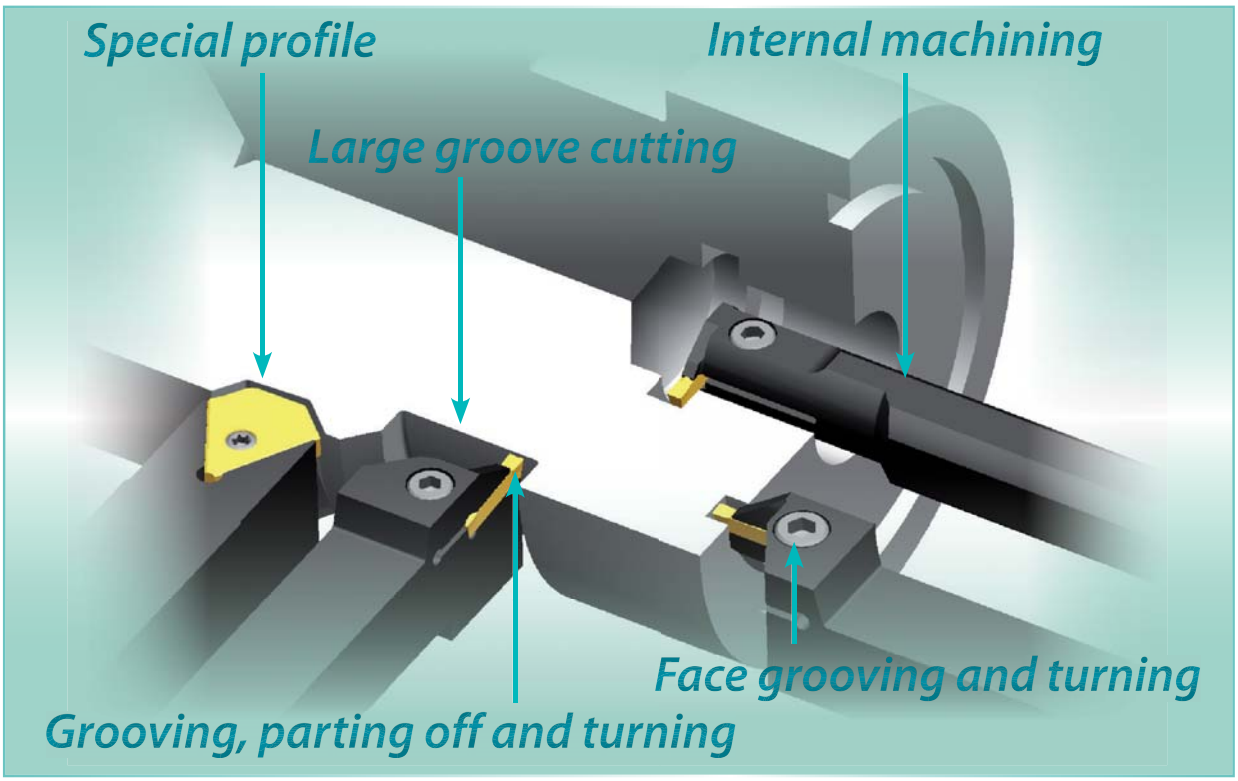


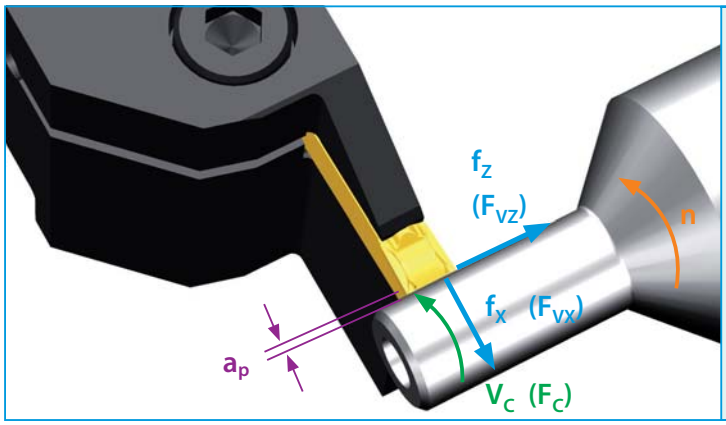
Technical Section

Basics, speeds, feeds, coatings and explanations

Basics to select the right tools



Cutting: Dimensions and formulas



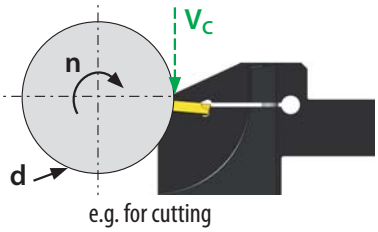
Dimensions

a_p ... cutting depth [mm]
F_c ... cutting force [N]
F_{vx} ... feedforce in X - direction [N]
F_{vz} ... feedforce in Z - direction [N]
f_x ... feed in X - direction [mm]
f_z ... feed in Z - direction [mm]
n ... revolutions of main spindel [min^{-1}]
V_c ... cutting speed [m/min]

Cutting speed V_C [m/min]:

Resulting force: **Cutting force (F_C)**

$$V_C = \frac{\pi \cdot d\ [mm] \cdot n\ [min^{-1}]}{1\,000}$$

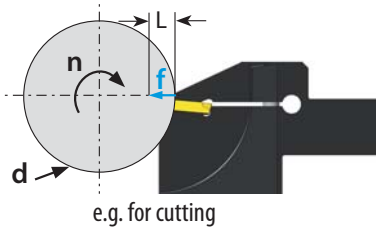


e.g. for cutting

Feed f [mm/Rev]:

Resulting force: **Feedforce (F_V)**

$$f = \frac{L\ (depth)\ [mm]}{Revolution\ s}$$

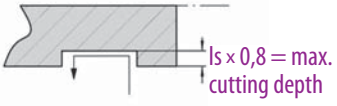


e.g. for cutting

Cutting depth a_p [mm]:

Cutting depth for longitudinal turning

$a_p = \ldots$ mm



Dimension **ls x 0,8** is the maximum cutting depth refering to the minor cutting edges of the different chip breakers.

Selection of chip breakers and feeds

Select the most efficient chip breaker for the different materials

	Steel	Staniless steel	Cast iron	Nonferrous materials	Difficult to cut materials	Hard materials
Cutting and turning	MTNS MTNZ CTDS VTNS RTNX	MTNS VTNS CTDS MTNZ RTNG XTNS BTNX	OTXS MTNS CTDS	BTNG HTNST HTNS OTXS RTNG BTNX STNZ/ STNG	BTNG CTDS RTNG XTNS BTNX STNZ/ STNG	MTNS Hardlox 2 BTNG Hardlox 2 RTNG Hardlox 2
Grooving and parting off	CTD BTNN ITNS BTNS IFN BFN ITPN BGPN OFQ16	STNS BTNS BTNN XTNS SFN BFN SNPN BGPN OFQ16	CTD ALU ITNS HTNS ITPN ALU IFN OFQ16	CTD ALU ITPN ALU SFN BFN OFQ16	XTNS SFN BFN OFQ16	CTD ALU Hardlox 2 BTNN Hardlox 2 OTXS Hardlox 2 HTNS Hardlox 2 OFQ16 Hardlox 2

Selection of chip breaker and feeds

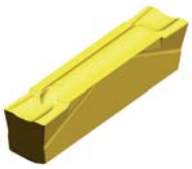
Recommended cutting depth and feeds for cutting inserts:

e.g. MTNS chip breaker

- precision sintered inserts
- solid and rounded cutting edges

e.g. BTNG chip breaker

- precision ground inserts with sharp edges
- positive top rake



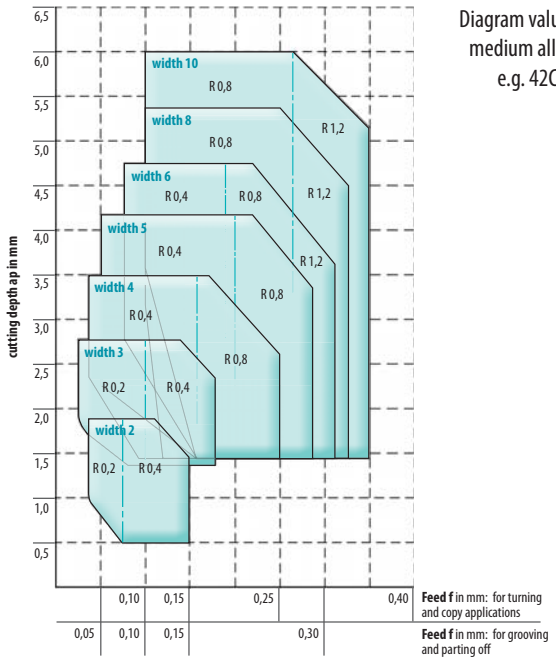
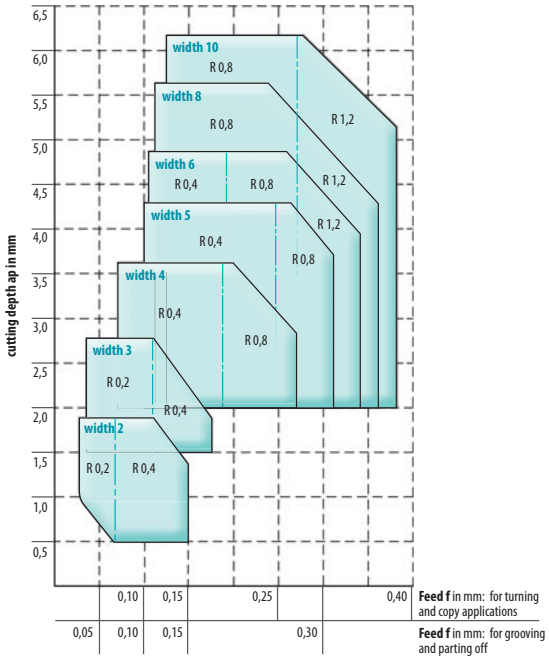


Diagram values refer to medium alloy steels, e.g. 42CrMo4



Remark: Select feeds according to the radius of inserts.
Diagram explanation: e.g. R 0,4 means corner radius of the insert is 0,4 mm.

Recommended cutting depth an feeds for full radius inserts:

RTNX chip breaker

precision sintered

On turning and copy turning the maximum cutting depth should not exceed half of the insert width
e.g. cutting width 6 mm → cutting depth 3 mm

On turning and copy turning the maximum possible feed depends on the material to be machined and the cutting depth. On free cutting materials the feed may be increased multiplied by 1.8
e. g. MTNS 304, cutting width 3 mm, radius 0.4 mm, cutting depth 1.5, feed (Diagram) 0.15 x 1.8 = 0.27

RTNG chip breaker

precision ground

Selection of grades and speeds

Recommended grades

Cutting conditions	Steel	Stainless steel	Cast iron	Nonferrous materials	Dificult to cut materials	Hard materials
interrupted cutting	PM ALOX/TILOX PM TILOX/CARBOSPEED KM TILOX/CARBOSPEED	PM TILOX/NANOSPEED KM TILOX/NANOSPEED GF110 HYPERSPEED	KM TILOX GF110 NANOSPEED	GF110 NANOSPEED GF110	PM TILOX/NANOSPEED KM TILOX/NANOSPEED/ HYPERSPEED	HARDLOX 2
variable cutting depth, crusts, deposits	PM ALOX/TILOX	PM ALOX/TILOX	PM ALOX/TILOX GF110 ALOX	KM	PM ALOX/TILOX	HARDLOX 2
even cutting	KM TILOX/NANOSPEED GF110 TILOX	KM TILOX/NANOSPEED GF110 TILOX KM HYPERSPEED	KM TILOX GF110 TILOX	KM NANOSPEED/ ALUSPEED	KM TILOX/NANOSPEED GF110 TILOX/ HYPERSPEED	HARDLOX 2

Recommended speeds

Steel

Material code	Grade	Cutting speed - m/min 60 120 180 240 300	Initial cutting speed in m/min
P	PM ALOX/TILOX/CARBOSPEED		100
	KM TILOX/CARBOSPEED		160
	FM TILOX/CARBOSPEED		220
	GF110 TILOX/CARBOSPEED		220
	GS530 CARBOSPEED		260

Stainless steel

Material code	Grade	Cutting speed - m/min 60 120 180 240	Initial cutting speed in m/min
M	PM TILOX/NANOSPEED		80
	KM TILOX/NANOSPEED		120
	FM TILOX/NANOSPEED		150
	GF110 TILOX/NANOSPEED		150

Cast iron

Material code	Grade	Cutting speed - m/min 150 200 250 300	Initial cutting speed in m/min
K	KM/GF110 TILOX/ALOX		150
	PM ALOX		150

Nonferrous materials

Material code	Grade	Cutting speed - m/min 150 300 450 600 750	Initial cutting speed in m/min
N	GF110 NANOSPEED/Aluspeed		360
	KM NANOSPEED/Aluspeed		450

Difficult to cut materials

Material code	Grade	Cutting speed - m/min 15 35 55 75 95 115 135 155	Initial cutting speed in m/min
S	PM ALOX/TILOX/NANOSPEED		30
	KM TILOX/NANOSPEED/ HYPERSPEED		45
	GF110 TILOX/NANOSPEED/ HYPERSPEED		60

Hard materials

Material code	Grade	Cutting speed - m/min 15 35 55 75	Initial cutting speed in m/min
H	HARDLOX 2		30

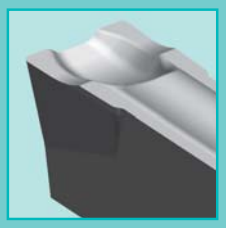
Beschichtungen

TILOX

Coating type:
Super Nitrid

Layers:
Nanocomposite, TiAlN

The multi layer coating TILOX
combines extreme hardness, smooth surface and high toughness. An ideal coating to machine materials ranging from steel, stainless steel to cast iron. Layer thickness: 2-4 µm.

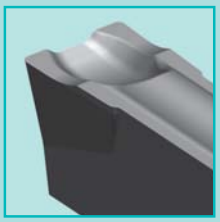


ALOX

Coating type:
Super Nitrid

Layers:
Nanocomposite, TiAlN

The multi layer coating ALOX
with a layer thickness of 8-10 µm it is the ideal coating for turning steel with interrupted cuts, crusts and it is especially recommended for cast iron machining. The cutting edges of inserts coated with ALOX are honed before being coated.

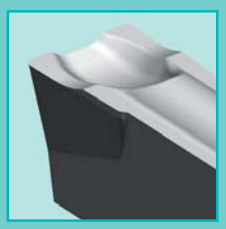


AluSpeed

Coating type:
Borid

Layers:
Monolayer, TiB2

The mono layer coating AluSpeed
has been developed especially for Aluminium and Aluminium alloys. Its colour is light gray. The high performance coating features an extremely smooth surface and high hardness. It withstands wear extensively and achieves an easy chip flow.

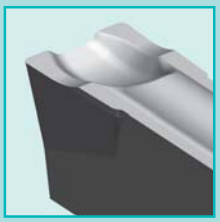


Hardlox 2

Coating type:
Super Nitrid

Layers:
Nanocomposite, AlTixN

The multi layer coating Hardlox 2
has been developed to machine especially hardened materials. This most advanced coating represents the current state of the art.
It is now possible to machine hard materials with a hardness of more than 50 HRC (Rockwell hardness). The coating layer consists of a micro crystalline structure.



Beschichtungen

CARBOSPEED

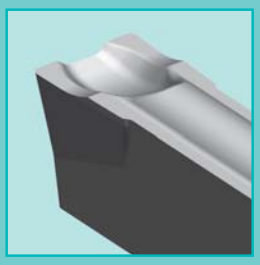
Coating type:
Powernitrid

Layers:
Nanocomposite, TiAlCrN

The multi layer coating CARBOSPEED

the special HiPMS technology combines the advantages of the different PVD coating processes. It features a dense and hard coating layer, with low residual stress. It also features an excellent adhesive force with a fine and smooth surface.

Recommended for low and high alloy steels.



HYPERSPEED

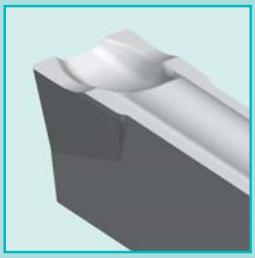
Coating type:
Supernitrid

Layers:
Nanocomposite AlTiN

The multi layer coating HYPERSPEED

Features an extremely fine layer-structure and surface hardness. Due to outstanding oxidation-stability, red hardness and, owing to the high aluminum contents, this coating is especially suitable for machining without cooling. It performs with an amazing wear-resistance.

Recommended for difficult to cut materials.



NANOSPEED

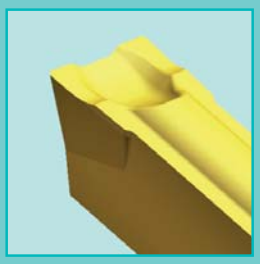
Coating type:
Super Nitrid

Layers:
Nanocomposite TiAlN + TiN

The multi layer coating NANOSPEED

Owing to the nano layer-structure, it combines extreme hardness with high toughness. The layer has been processed with the new sputter-technology. Therefore the surface is extremely even and smooth. Owing to the golden colour of the coating, wearmarks can be seen easily. Layer thickness: 2-4 µm.

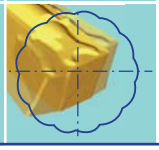
Recommended for tool steels and stainless steels.



Hardness range of grades with principle recommendations

Sorten	Coarse grade structure Tough grades, safe against fracturing Wear quickly Low speeds Interrupted cut; Instable machining conditions	Micrograin structure Brittle grades, liable to fracturing Wear resisting High speeds Even cuts; Perfect machining conditions
Grade hardness	40 35 30 25 20 15 10 5	
FM Hardlox 2		
FM TILOX		
FM NANOSPEED		
GF 25 uncoated		
GF 110 uncoated		
GF 110 TILOX		
GF 110 NANOSPEED		
GF 110 Hardlox 2		
GF 110 CARBOSPEED		
GF 110 HYPERSPEED		
GS 530 NANOSPEED		
KM uncoated		
KM Alu Speed		
KM Hardlox 2		
KM TILOX		
KM NANOSPEED		
KM CARBOSPEED		
KM HYPERSPEED		
PM uncoated		
PM ALOX		
PM Red Speed		
PM TILOX		
PM NANOSPEED		
NANOSPEED (only inserts with 1 edge)		
TILOX (only inserts with 1 edge)		

Wear marks and tips to solve them

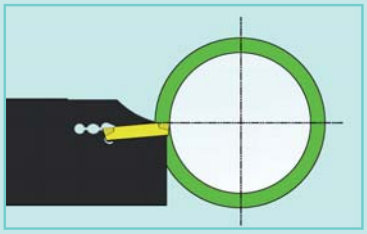
Effects on and around the cutting edge \ *Recommendations*		Take smaller corner radius	Take mor positive geometry	Increase cutting speed	Reduce cutting speed	Increase cutting depth	Reduce cutting depth	Take a more wear resistant grade	Increase feed	Reduce feed	Take a tougher grade
Built-up-edge			☺	☺							
Splintering			☺	☺							☺
Wear on flanks or top clearances					☺			☺			
Notch wear					☺			☺			
Long chips			☺		☺			☺		☺	
Crater wear		☺				☺			☺		
Plastic deformation					☺			☺		☺	
Cracks vertical to edge											☺
Vibrations		☺	☺		☺		☺		☺		

!

The cutting edge area shows the effects of undefined causes.
To assume the damage is due to unfit and/or a poor grade might be entirely wrong.

Recommendations for parting off

Starting area

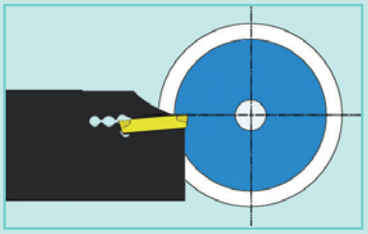


Start with a small value and gradually increase until you reach the ideal technical value:

Feed: f = 0.02 - 0.05

Start carefully! Otherwise the cutting edge may be damaged on the first cut.

Stable cutting conditions

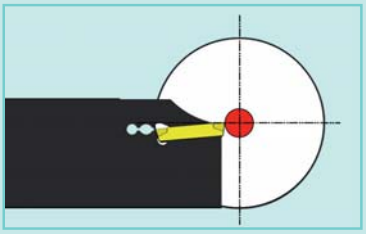


Ideal chips can be machined with numerous geometries if correctly selected.

Feed: f = 0.08 - 0.2

Excellent chips, good tool life!

Runout area



Reduce feed before you reach the center (~ Ø 5 mm) to 0.02.

Feed: f = 0.05 - 0.02

Proceed carefully. Bad chip removal. No efficient cooling. Speed runs to zero.

A practical and safe way to select coatings and find appropriate speeds and feeds

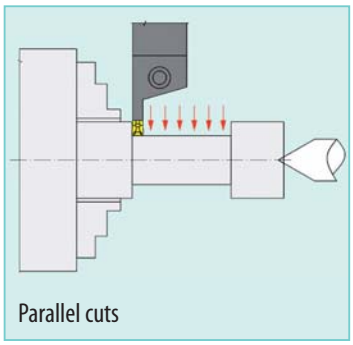
Grades	cutting speed Vc in m/min	Feed f in mm/Rev.
	Alloy Steel	
KM TILOX	160 → 300	0,1 → 0,3
KM CARBOSPEED		
FM TILOX		
GS530 NANOSPEED		
GF110 NANOSPEED		
FM NANOSPEED		
PM NANOSPEED	120 → 240	0,08 → 0,3
	Stainless Steel	
PM TILOX	60 → 120	0,08 → 0,2
KM TILOX		
PM NANOSPEED		
KM NANOSPEED		
GF 110 NANOSPEED		
FM TILOX		
FM NANOSPEED		
Red Speed		
	Hard materials	
FM Hardlox 2	20 → 60	0,05 → 0,1
GF Hardlox 2		
KM Hardlox 2		

Recommendations for cutting and turning

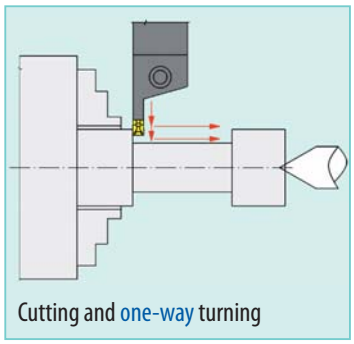
Cutting and turning machining

The major cutting edge cuts a groove and then the minor edge turns in longitudinal directions

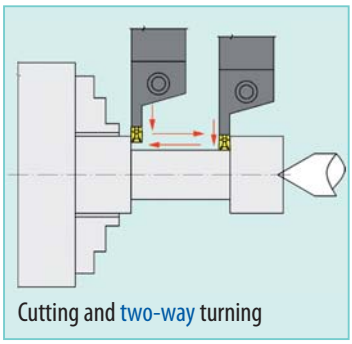
Different methods to cut and turn



Parallel cuts

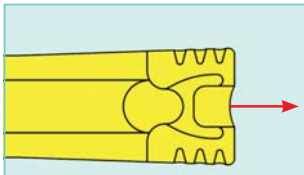


Cutting and one-way turning

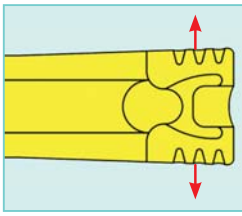


Cutting and two-way turning

The cutting edges

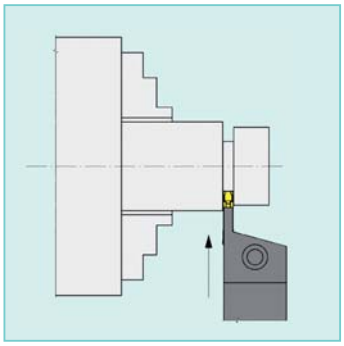


The major cutting edge features an efficient chip breaker for cutting applications.



The minor cutting edges, left and right, feature efficient chip breaker for longitudinal turning.

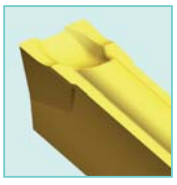
Grooving



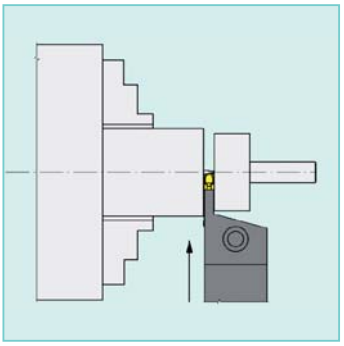
Grooving: MTNS insert with solid and rounded cutting edge

The major cutting edge cuts a groove.

Parting off



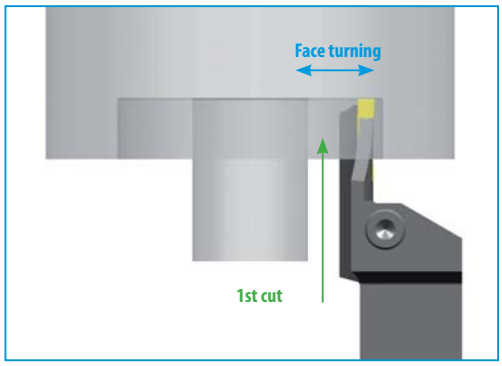
Parting off: BTNN insert featuring a large and efficient chip breaker



The major edge parts off a component from the bar.

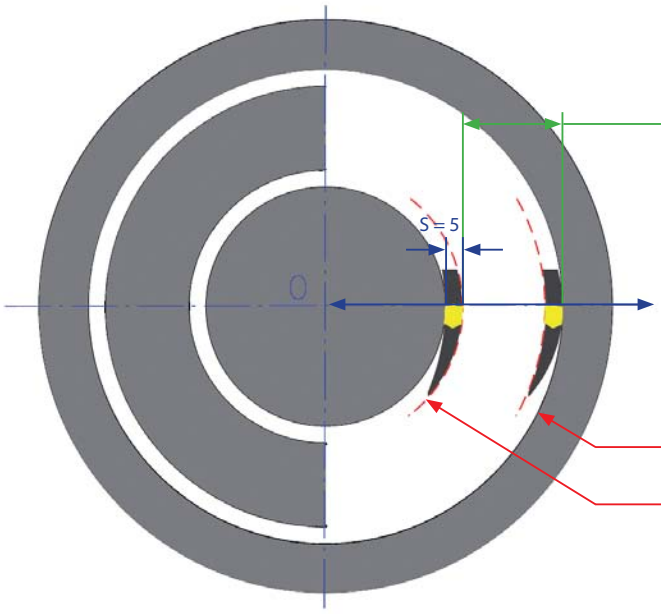
Explanations on face grooving

Diameter for the 1st cut



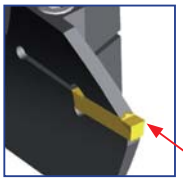
Each cartridge fits for a certain diameter range. This range is marked as Ømin - Ø max. The 1st cut has to be positioned within this range. The dimension Ø min is reduced by the width of the cutting insert.
After the 1st cut the groove width can be enlarged moving the tool radially to the center or to the outer diameter. No danger of collision! The following insert types are ideal for radial front turning: CTDS, MTNS, VTNS, MTNZ and BTNG.

Tool holder: P92 2 CXCBR 2020 K50 75



Ø Range for the 1st cut

Provided the 1st cut has been set correctly, turning to the outer diameter or to the center is possible.



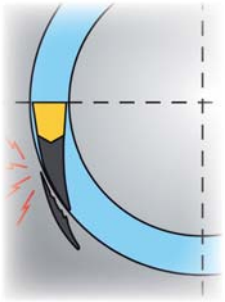
Edge corner facing the outer diameter of the component.

Ø max = 130 mm

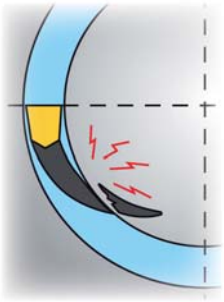
Ø min = 75 mm

The diameter range always refers to the cutting edge corner, which faces the outer diameter of the component.

Damage caused when the 1st cut is not within the Ø min - Ø max range.



Shows the damage caused when the 1st cut is positioned within a smaller dimension than Ø min. **The outer face** of the cartridge collides with the component.



Shows the damage caused when the 1st cut is positioned outside Ø max, to the outer diameter. **The inner face** of the cartridge collides with the component.

Find out the RIGHT cutting speed: Chips must come out SMOOTHLY and may be slightly blue!

Advantages of GripLock threading inserts

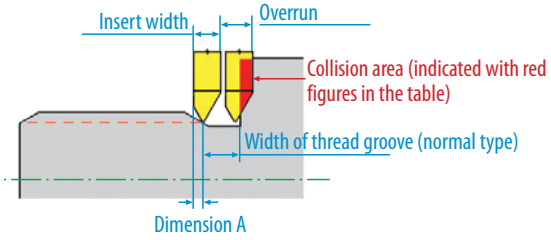
- ✓ Inserts fit into many already available tool holders and boring bars.
- ✓ Precision ground inserts.
- ✓ Wide chip-flow clearances.
- ✓ No spare parts.
- ✓ Easy cutting owing to ground clearance angles.
- ✓ Price per cutting edge is comparable to inserts with 3 cutting edges.
- ✓ No shims necessary.

Basics on threading

Overrun dimensions for GripLock threading inserts

System		MC4-external thread full profile			P92-P external and internal thread full and part profile					P92-S external and internal thread full profile		
Pitch	Width of thread relieve cut to DIN76-A	Dimension A	Insert width	Overrun	Dimension A full profile	Dimension A part profile	Insert width	Overrun full profile	Overrun part profile	Dimension A	Insert width	Overrun
0,35	0,7									1,0	2,0	-0,3
0,50	1,1	0,5	2,0	-0,4		2,0	4,0		-0,9	1,0	2,0	0,1
0,70	1,5	0,5	2,0	0,0		2,0	4,0		-0,5	1,0	2,0	0,5
0,75	1,6	0,5	2,0	0,1		2,0	4,0		-0,4	1,0	2,0	0,6
0,80	1,7	0,7	2,0	0,4		2,0	4,0		-0,3	1,0	2,0	0,7
1,00	2,1	0,7	2,0	0,8	0,8	2,0	4,0	-1,1	0,1	1,0	2,0	1,1
1,25	2,7	0,7	2,0	1,4	0,8	2,0	4,0	-0,5	0,7	1,0	2,0	1,7
28W=0,907	2,1	1,0	2,0	1,1		2,0	4,0		0,1	1,0	2,0	1,1
24W=1,05	2,1					2,0	4,0		0,1			
20W=1,27	2,7					2,0	4,0		0,7			
19W=1,337	3,2	1,0	2,0	2,2	0,8	2,0	4,0	0,0	1,2	1,0	2,0	2,2
18W=1,411	3,2					2,0	4,0		1,2			
16W=1,587	3,2					2,0	4,0		1,2			
14W=1,814	3,9	1,3	3,5	1,7	1,3	2,0	4,0	1,2	1,9	1,0	2,0	2,9
12W=2,116	4,5					2,0	4,0	0,5	2,5			
11W=2,309	5,6	1,5	3,5	3,6	1,5	2,0	4,0	3,1	3,6			
10W=2,54	5,6					2,0	4,0		3,6			
1,50	3,2	0,8	3,5	0,5	1,0	2,0	4,0	0,2	1,2	1,0	2,0	2,2
1,75	3,9	0,9	3,5	1,3	1,1	2,0	4,0	1,0	1,9			
2,00	4,5	1,0	3,5	2,0	1,4	2,0	4,0	1,9	2,5			
2,50	5,6	1,3	3,5	3,4	1,5	2,0	4,0	3,1	3,6			
3,00	6,7	1,8	3,5	5	1,8	2,0	4,0	4,5	4,7			

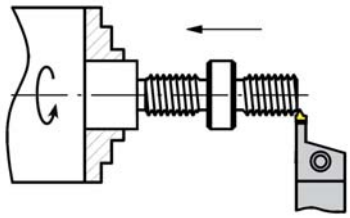
Overrun dimensions marked in RED indicate that a special insert is needed to prevent collision.



Basics on threading

EXTERNAL THREAD – Threading on main spindle

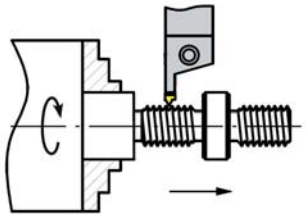
Threading with: *Main spindle* Holder: *RH*
Thread: *RH* Rotation: *CCW*



Available tool holders and inserts

M92 Q	P92 P	P92 S
p. 31	p107-108	p.82-83

Working area: *behind the collar*
Threading with: *Main spindle* Holder: *LH*
Thread: *RH* Rotation: *CW*

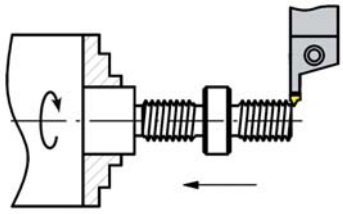


Available tool holders and inserts

P92 S

p.82-83

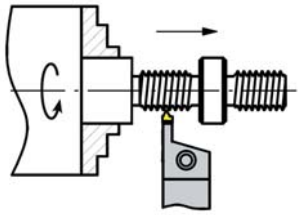
Threading with: *Main spindle* Holder: *LH*
Thread: *LH* Rotation: *CW*



Available tool holders and inserts

M92 Q	P92 P	P92 S
p. 31	p107-108	p.82-83

Threading with: *Main spindle* Holder: *RH*
Thread: *LH* Rotation: *CCW*

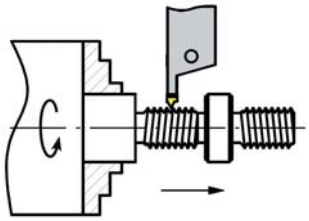


Available tool holders and inserts

P92 S

p.82-83

Working area: *behind the collar*
Threading with: *Main spindle* Holder: *RH overhead*
Thread: *RH* Rotation: *CCW*

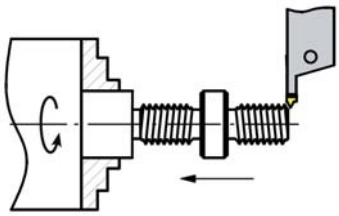


Available tool holders and inserts

P92 S

p.82-83

Threading with: *Main spindle* Holder: *RH overhead*
Thread: *RH* Rotation: *CCW*

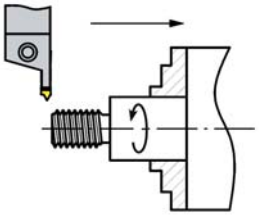


Available tool holders and inserts

M92 Q	P92 P	P92 S
p. 31	p107-108	p.82-83

EXTERNAL THREAD – Threading on tail spindle

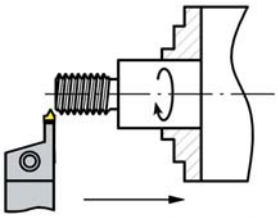
Threading with: *Tail spindle* Holder: *RH*
Thread: *RH* Rotation: *CCW*



Available tool holders and inserts

M92 Q	P92 P	P92 S
p. 31	p107-108	p.82-83

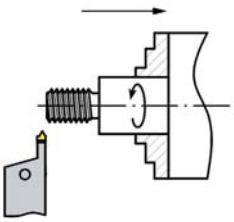
Threading with: *Tail spindle* Holder: *LH*
Thread: *LH* Rotation: *CW*



Available tool holders and inserts

M92 Q	P92 P	P92 S
p. 31	p107-108	p.82-83

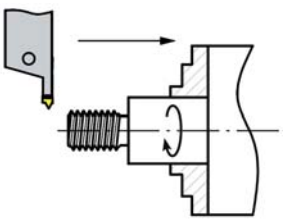
Threading with: *Tail spindle* Holder: *RH overhead*
Thread: *RH* Rotation: *CCW*



Available tool holders and inserts

M92 Q	P92 P	P92 S
p. 31	p107-108	p.82-83

Threading with: *Tail spindle* Holder: *LH overhead*
Thread: *LH* Rotation: *CW*



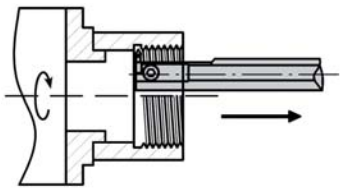
Available tool holders and inserts

M92 Q	P92 P	P92 S
p. 31	p107-108	p.82-83

Basics on threading

INTERNAL THREAD – Threading on main spindle

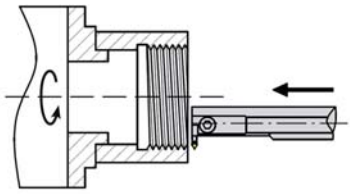
Threading with: *Main spindle* Boring bar: *LH*
Thread: *RH* Rotation: *CW*



Available tool holders and inserts

P92 S	P92 S
p.82-83	p. 84

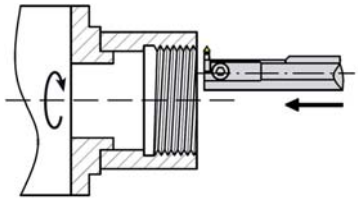
Threading with: *Main spindle* Boring bar: *RH*
Thread: *RH* Rotation: *CCW*



Available tool holders and inserts

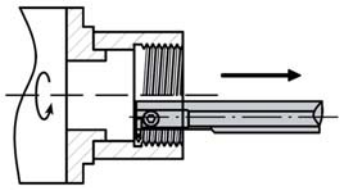
P92 P	P92 P K	P92 S	P92 S
p107-108	p. 116	p.82-83	p. 84

Threading with: *Main spindle* Boring bar: *LH*
Thread: *LH* Rotation: *CW*



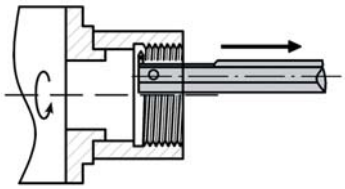
P92 P	P92 P K	P92 S	P92 S
p107-108	p. 116	p.82-83	p. 84

Threading with: *Main spindle* Boring bar: *RH*
Thread: *LH* Rotation: *CCW*



P92 P	P92 P K	P92 S	P92 S
p107-108	p. 116	p.82-83	p. 84

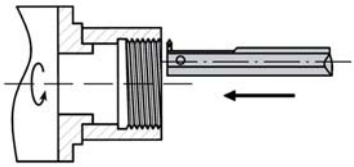
Threading with: *Main spindle* Boring bar: *RH overhead*
Thread: *LH* Rotation: *CCW*



Available tool holders and inserts

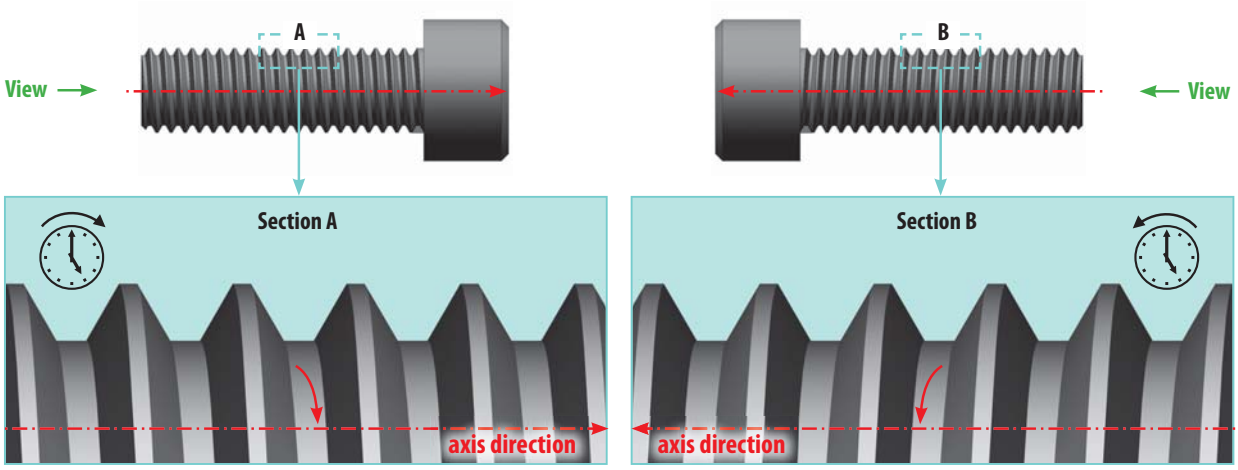
P92 P	P92 P K	P92 S	P92 S
p107-108	p. 116	p.82-83	p. 84

Threading with: *Main spindle* Boring bar: *RH overhead*
Thread: *RH* Rotation: *CCW*



P92 P	P92 P K	P92 S	P92 S
p107-108	p. 116	p.82-83	p. 84

RH and LH threads



RH thread

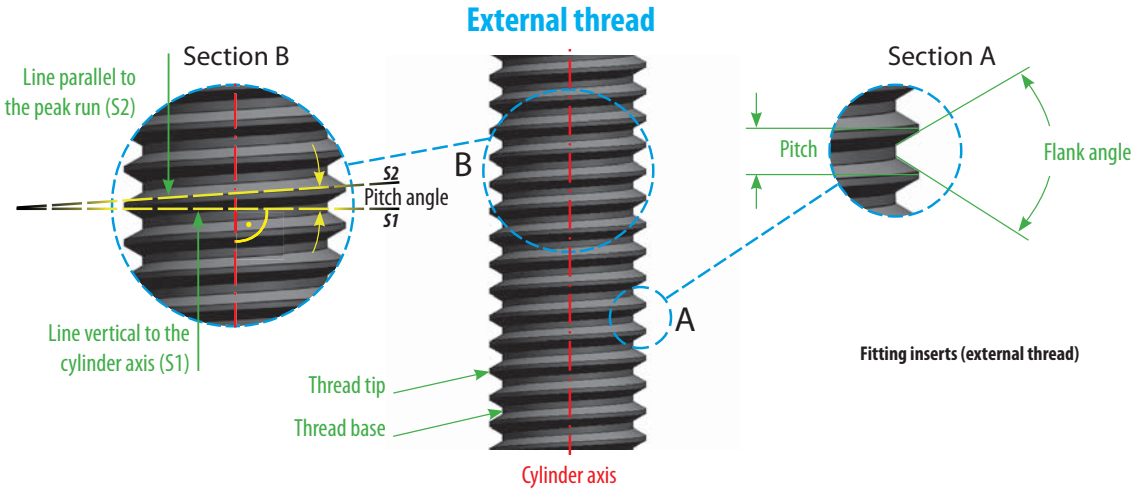
View in axis direction:
Tooth profile winds in clockwise (CW) direction.

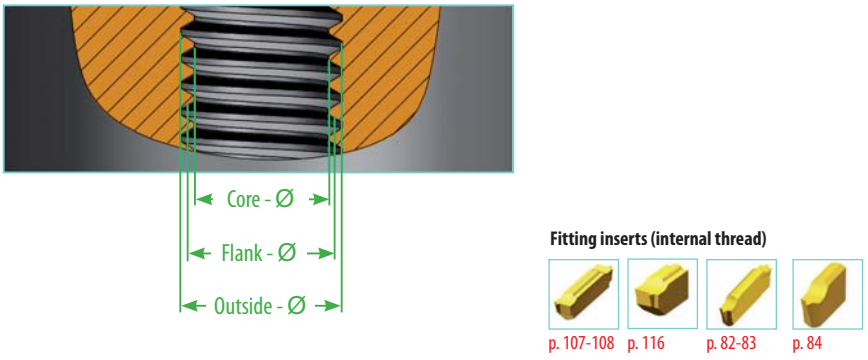
LH thread

View in axis direction:
Tooth profile winds in counter clockwise (CCW) direction.

Basics on threading

Definitions





External thread:
Thread on the outside of a cylinder.

Internal thread:
A thread machined in the surface of a hollow shaft of cylinder.

Outside - Ø (Nominal - Ø):
Diameter of the imaginary cylinder, which touches the thread tips.

Core - Ø:
Diameter of an imaginary cylinder whose surface line touches the thread of the external thread or the thread tips of the internal thread.

Flank - Ø:
The diameter at which the width of the thread tooth equals the width of the spacing between two flanks.

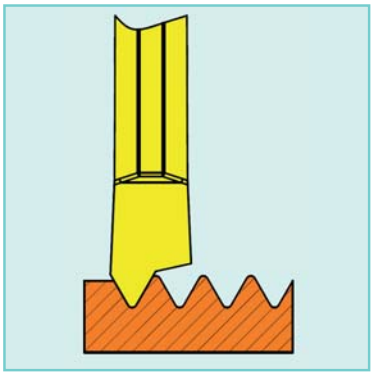
Pitch:
Distance between two threads.

Pitch angle:
Angle between a line vertical to the cylinder axis (S1) and a line parallel with the peak run (S2).

Basics on threading

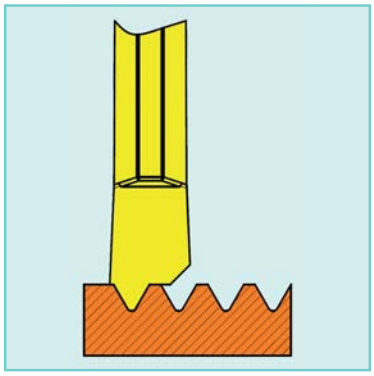
Thread profiles

Part profile



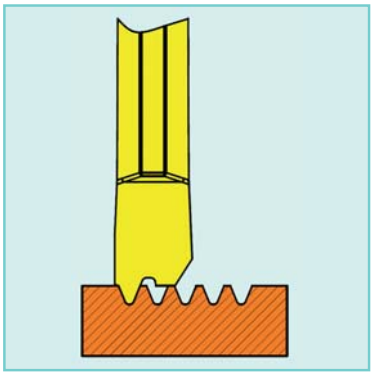
The part profile insert does not finish the outside diameter of external threads or the inside diameter of internal threads.

Full profile



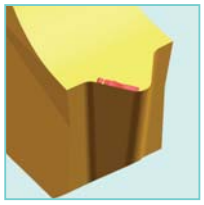
The full profile insert finishes the thread completely. For each pitch and thread type a different insert is necessary

Full profile for small pitches



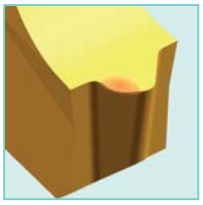
A minor cutting edge finishes the thread.

Wear marks and tips to solve them



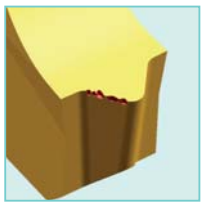
Built up edge

- increase speed step by step



Plastic deformation

- reduce speed
- increase amount of cuts
- increase cooling
- check diameter of component. This diameter may be 1.14 mm bigger than the thread diameter. No more!



Splintering

- check speed. Is it appropriate?
- increase stability of tooling (Least possible extension? Strongest possible tool holder?)
- change to modified flank feed
- take a tougher grade

Vibration

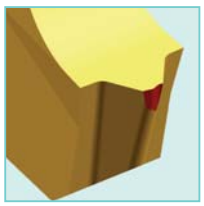
- alter speed until vibrations cease
- check stability of tooling (Least possible extension? Strongest possible tool holder?)
- check center height
- check diameter of component

Front clearance wear

- reduce speed
- increase feed
- change to modified flank feed
- take a more wear resistant grade

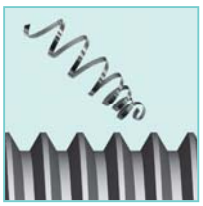
Poor thread surface

- increase speed step by step
- change to modified flank feed or to radial feed if possible
- take a more wear resistant grade



Fractured edge

- increase amount of cuts
- increase stability of tooling (Least possible extension? Strongest possible tool holder?)
- change to modified flank feed
- take a tougher grade
- check center height

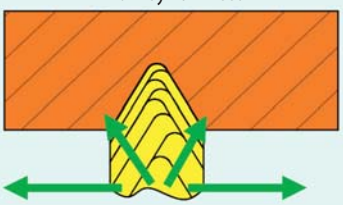
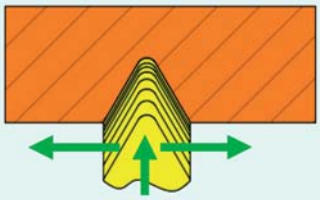


Poor chip control

- reduce amount of cuts
- change to modified flank feed
- increase speed step by step
- increase cooling flow

Basics on threading

Feed methods

Feed method	Machine tools	Adviced
Modified flank feed 	CNC	1 st choice for CNC machine tools. Good results provided feed direction differs 3° - 5° from the thread flank. **This method achieves:** • Good chip control • Good thread surface • Good tool life
Two-way flank feed 	CNC	1 st choice on large thread profiles. **This method achieves:** • Good tool life • Even flank wear
Flank feed 	CNC and conventional machine tools	Recommended provided the modified flank feed method can´t be applied. **This method achieves:** • Good chip control • Good heat conveyance
Radial feed 	conventional machine tools	Multi edge inserts require radial feed

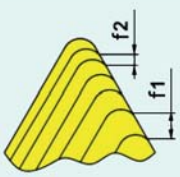
Amount of cuts

to machine the full depth of the thread several different cuts are necessary.
The chip volume increases steadily the more the cutting edge arrives at the bottom of the thread. For this reason the depth of each cut must be reduced constantly, otherwise the edge may fracture quickly.
In any case it is recommended to keep a check on the cutting edge at the beginning of the thread machining:

- Built-up edge will occur, if the speed is too low.
- Plastic deformation will occur, if the speed is too high.
- Fractured edge will occur, if the amount of cuts and the cut setting are insufficient and not fit for the job.

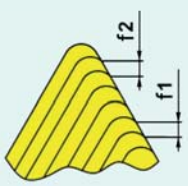
The amount of cuts, the setting accuracy of cuts, the components hardness, respectively toughness and the way cooling or lubrication is applied, strongly influences the quality of the thread.

right



f2 < f1

wrong



f2 = f1

Basics on threading

Number of cuts

Pitch in mm	0.50	0.75	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	8.00
Threads per inch	48	32	24	20	16	14	12	10	8	7	6	5.5	5	4.5	4	3
Amount of cuts	4-6	4-7	4-8	5-9	6-10	7-12	7-12	8-14	9-16	10-18	11-18	11-19	12-20	12-20	12-20	15-24

Recommended threading speeds

				PM NANOSPEED
Material to be machined			HB (Härte Brinell)	Vc in m/min
P	None alloy steel	Carbon steel	125	120 - 180
	Low alloy steel	none hardened	180	85 - 140
		hardened	275	60 - 130
		hardened	350	60 - 130
	High alloy steel	annealed	200	70 - 100
		hardened	325	50 - 100
	Cast steel	low alloy	200	60 - 140
		high alloy	225	60 - 120
M	Stainless steel ferritic	none hardened	200	70 - 130
		hardened	330	60 - 100
	Stainless steel austenitic	austenitic	180	90 - 140
		austenitic	200	40 - 100
	Stainless cast steel		200	90 - 110
		hardened	330	65 - 110
K	Malleable cast iron	ferritic	130	70 - 160
		pearlitic	230	60 - 140
	Grey cast iron	low tensile strength	180	70 - 130
		high tensile strength	260	50 - 115
	Cast iron, nodular graphit	ferritic	160	125 - 160
		pearlitic	260	80 - 120
N	Aluminium materials	none hardened	60	100 - 365
		aged	100	80 - 180
	Aluminium alloys	cast	75	200 - 450
		aged cast	90	200 - 280
	Aluminium materials	cast Si 13 - 22 %	130	60 - 160
	Brass, copper alloy		100	80 - 190
		Bronze	100	80 - 190
S	Heat resisting materials	annealed	200	40 - 60
		aged	280	35 - 50
	Titanium alloys	clean	400 RM	140 - 180
		Alloys Alpha, Beta	1050 RM	50 - 70
H	Hardended steel	hardened & tempered	58 Hrc	45 - 55

Tool holder damages: cause, effect and solution

Cause

Key and pipe prolongation	Key and forcing with hammer	
		

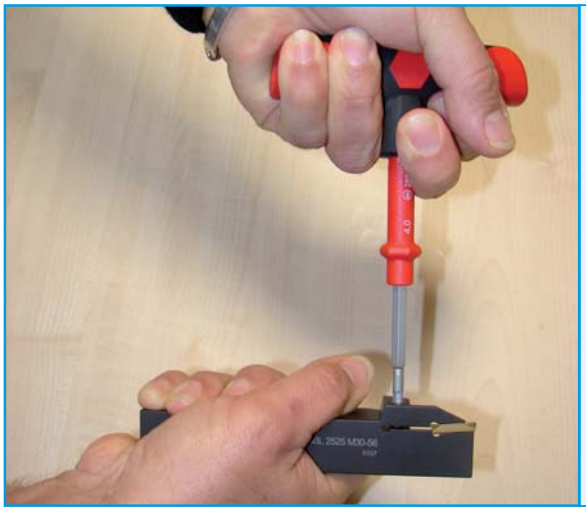
Effect

Screw fracturing	Countersink fracturing	Cracking	Hexagonal screw wear
			

Solution

Handforce	Perfect: with the correct torque	Torque key
	Only with a torque key, correct screw forces can be applied. To apply correct torques by hand force, requires a lot of experience.	

Recommended torques on page 212



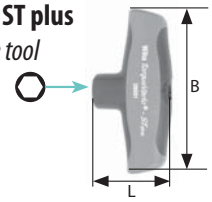
Save youreself a lot of trouble and energy!

By using our high quality torque keys, which you will find on the following page.

Torque key

Torque VARIO ST plus

T-handle torque tool



Torque Vario-S

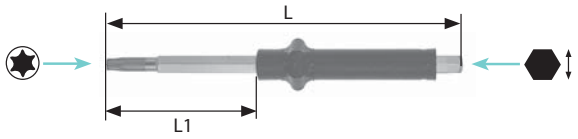
Torque screwdriver

Ref.	Torque Nm	EUR/St. WG355	ID-Nr.	⬡	L	B	D	Interchangeable blades
Torque VARIO ST plus	5,0 - 14,0	205,48	43723	6	56	120	-	Wp..+ WS
Torque Vario-S	1,0 - 5,0	129,24	43884	4	138	-	36	WSF.. + WTF

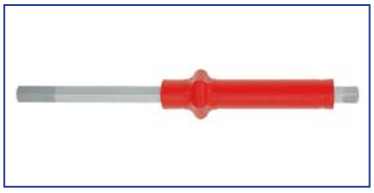
Handle: Window scale displays torque value numerically. Torque infinitely adjustable with Torque-Setter setting tool (also supplied). Soft-grip T-handle for optimal torque transmission.
Audible and perceptible click when the pre-set torque has been attained.
Standards: Based on EN ISO 6789, BS EN 26789, ASME B107.14M.
Accuracy: ±6%, traceable to national standards.
Application: For applications where recommended torque settings are important. Use in combination with an interchangeable 6 mm blade for Wiha T-handle torque tools.
Extra: Delivered in practical plastic box, incl. factory calibration certificate.

Handle: Ergonomic multi-component handle, particulary light and compact. Handle sizes proportioned to optimise torque setting.
Audible and perceptible click when the pre-set torque has been attained.
Standards: EN ISO 6798, BS EN 26789, ASME B107.14M.
Accuracy: ±6%, traceable to national standards.
Application: For applications where recommended torque settings are important.
Use in combination with a Wiha torque interchangeable blade.
Extra: Delivered in practical plastic box, incl. factory calibration certificate.

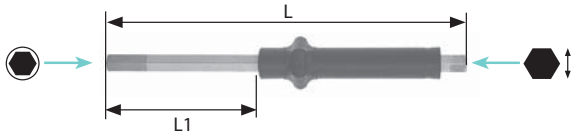
Torx-interchangeable blade



Ref.	EURO/St. WG355	ID-Nr.	✶	⬢↕	L	L1	max Nm	max in ibs.
WTF15	5,44	43888	T15	4	175	42	5,5	-
WT15	7,92	43716	T15	6	130	53	6	53
WT20	7,92	43717	T20	6	130	53	10	88
WT25	7,92	43718	T25	6	130	53	15	132



hex interchangeable blade



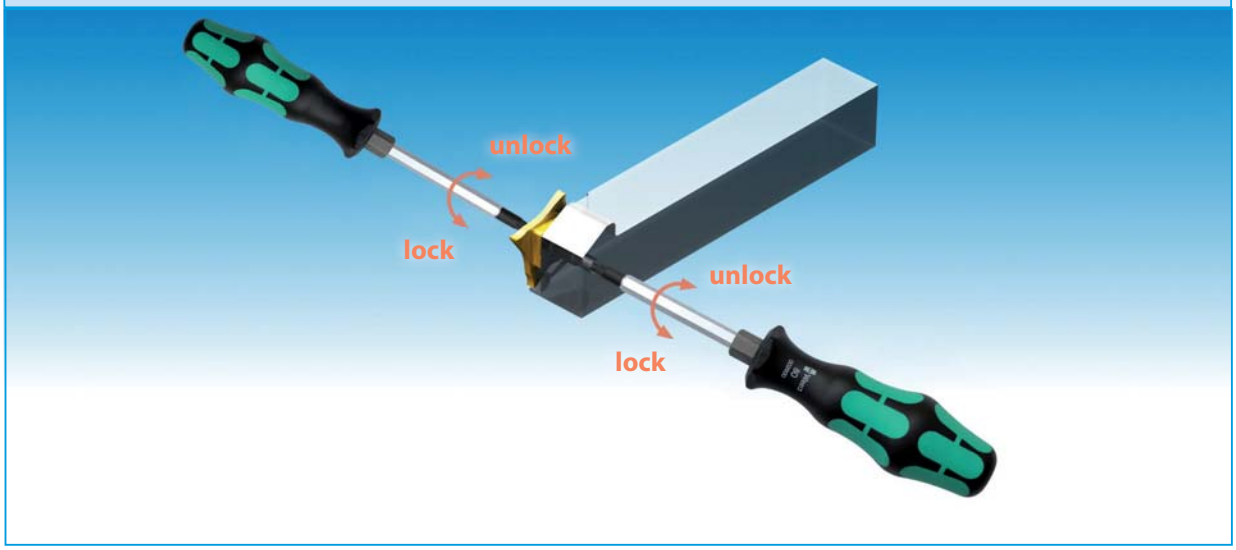
Ref.	EURO/St. WG355	ID-Nr.	⬢	⬢↕	L	L1	max Nm	max in ibs.
WSF2	5,34	43885	2	4	175	42	1,8	-
WSF2,5	5,34	43886	2,5	4	175	42	3,8	-
WSF3	5,34	43887	3	4	175	42	5,5	-
WS3	7,80	43719	3	6	130	53	9	79
WS4	7,80	43720	4	6	130	53	15	132
WS5	7,80	43721	5	6	130	53	15	132
WS6	7,80	43722	6	6	130	53	15	132

Blade: High quality chrome-vanadium-molybdenum steel, through hardened. Wiha ChromTop® finish on tip for a perfect fit. Colour-coding Torx-iterchangeable blades: dark green.

Colour-coding: Hex interchangeable blades: red.
Application: For applications where recommended torque settings are important.

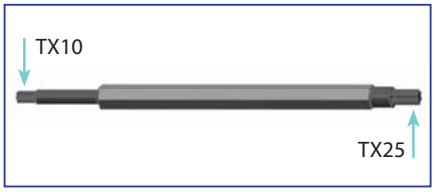
Torque key for MULTICUT 4 holders and blades

Clamping screw and torque key with interchangeable blade to change MULTICUT 4 inserts in confined spaces



TX 6
Handle

ET-Nr.	Ref.	ID-Nr.	Item
40	TX 6	45112	Handle

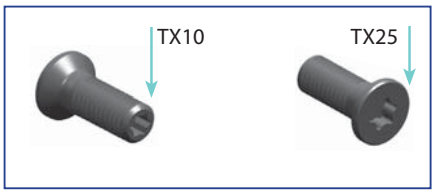


WK 25 10
interchangeable blade

ET-Nr.	Ref.	ID-Nr.	Item
39	WK 25 10	45113	Blade

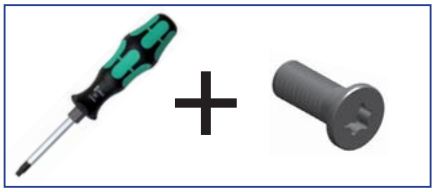
TX 25 10
Screwdriver

ET-Nr.	Ref.	ID-Nr.	Item
41	TX 25 10	45130	Screwdriver



TXM5x14 10 25
Torx screw

ET-Nr.	Ref.	ID-Nr.	Items	Recommended Torque max. [Nm]
33	TXM5x14 10 25	44641	Torx screw L=14	4,5
34	TXM5x10 10 25	44817	Torx screw L=10	4,5



TX 25 10 1
TX 25 10 2
Torque screwdriver

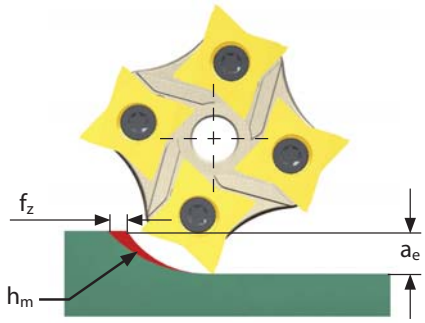
Offer assembly

Ref.	ID-Nr.	Items
TX25 10 1	45131	Setcontents: ET 39 + 40 + 33
TX25 10 2	45132	Setcontents: ET 39 + 40 + 34

Milling parameters

Recommendations

type of milling tool	insert type	feed per tooth f_z in [mm] min - max	max. chip thickness h_m in [mm] min - max
	OFQ16L...P...S	0,04 - 0,22	0,02 - 0,07
	OFQ16L...P...M	0,11 - 0,20	0,06 - 0,14

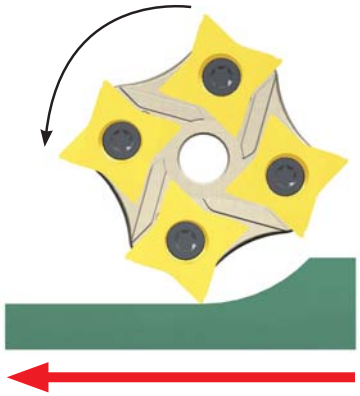


Drawing: dimensions for groove milling

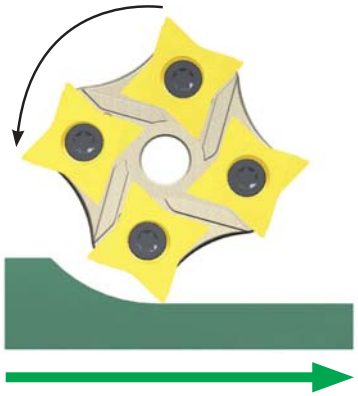
Calculation

average chip thickness	feed per tooth
$h_m = f_z \cdot \sqrt{\frac{a_e}{D}}$ [mm]	$f_z = h_m \cdot \sqrt{\frac{D}{a_e}}$ [mm]

recommended values for the chip thickness:
steel: 0,06 mm
grey cast iron: 0,08 mm



OPPOSED MILLING
not recommended



CUT-DOWN MILLING
recommended to achieve best results

Fomulars

Cutting speed	Feed per tooth
$V_c = \frac{D \cdot \pi \cdot n}{1000}$ [$^m/_{min}$]	$f_z = \frac{V_f}{n \cdot z}$ [mm]

Revolution	Feed speed
$n = \frac{Vc \cdot 1000}{D \cdot \pi}$ [min^{-1}]	$V_f = f_z \cdot z \cdot n$ [$^{mm}/_{min}$]

caption
V_c = Cutting speed
f_z = Feed per tooth
n = Revolution
V_f = Feed speed
h_m = Average chip thickness
a_e = Cutting depth
D = Tool diameter
z = Amount of cutting edges in action
π = Basic circle dimension = 3,14

Material Comparison Table

Material group	Material No.	Germany DIN No.	Italy UNI	Japan JIS
		Steel, free cutting steel		
P	1.0036	USt37-3	FE37BFU	
	1.0050	St50-2	FE50	SM50YA
	1.0060	St60-2	FE60-2	SM570
	1.0070	St70-2	FE70-2	
	1.0332	St14		
	1.0401	C15	C15C16	515C
	1.0402	C22	C20C21	S20C; S22C
	1.0715	95Mn28	CF95Mn28	SUM22
	1.0501	C35	C35	S35C
	1.0503	C45	C45	S45C
	1.0535	C55	C55	S55C
	1.0601	C60	C60	S60C
	1.0718	95MnPb28	CF95MnPb28	SUM22L
	1.0721	10S20		
	1.1158	Ck25	C25	S25C
	1.1121	Ck10		S10C
	1.1141	CK 15	C16	S15C
	1.1183	Cf35	C36	S35C
	1.1191	Ck45	C45	S45C
	1.1203	Ck55	C50	S55C
	1.1213	Cf53	C53	S50C
	1.1221	Ck60	C60	S58C
	1.1203	Ck55	C50	S55C
	1.1221	Ck60	C60	S58C
	1.2311	40CrMnMo7	35CrMo8KU	
	1.3501	100Cr2		
	1.4882	X50CrMnNiNbN219		
	1.5415	15Mo3	16Mo3KW	
	1.5423	16Mo5	16Mo5	SB450M
	1.5710	36NiCr6		SNC236
	1.5736	36NiCr10		SNC631(H)
	1.5755	31NiCr14		SNC836
	1.5864	35NiCr18		
	1.7223	41CrMo4	41CrMo4	SCM440
	1.7225	42CrMo4	42CrMo4	SCM440(H)
	1.7238	49CrMo4		
	1.7242	16CrMo4		
	1.7262	15CrMo5		SCM415(H)
	1.7335	13CrMo4 4	14CrMo45	SPVAF12
	1.7337	16CrMo4 4	A18CrMo45KW	
	1.7361	32CrMo12	32CrMo12	
	1.7362	12CrMo19 5	16CrMo205	
	1.7380	10CrMo9 10		SPVA, SCMV4
	1.7561	42CrV6		
	1.7701	51CrMoV4	51CrMoV4	
	1.7715	14MoV6 3		
	1.7733	24CrMoV55	21CrMoV511	
	1.7755	GS-45CrMoV104		
	1.8070	21CrMoV511	35NiCr9	
	1.8159	50CrV4	50CrV4/ 51CrV4	SUP10
	1.8509	41CrAlMo7	41CrAlMo7	SACM645
	1.8523	39CrMoV139	36CrMoV12	

Material Comparison Table

Material group	Material No.	Germany DIN No.	Italy UNI	Japan JIS
		Alloy steel and tool steel		
P	1.2067	100Cr6		SUJ2
	1.2210	115CrV3	107CrV3KU	
	1.2241	51CrV4		
	1.2419	105WCr6	10WCr6/107WCr5KU	SKS31
	1.2542	45WCrV7	45WCrV8KU	
	1.2550	60WCrV7	58WCr9KU	
	1.2713	55NiCrMoV6		SKH1/SKT4
	1.2721	50NiCr13		
	1.2762	75CrMoNiW67		
	1.2842	90MnCrV8	88MnV8KU	
	1.3505	100Cr6	100Cr6	
	1.5622	14Ni6	14Ni6	SUJ2
	1.5752	14NiCr10/14NiCr14	16NiCr11	SNC415(H)
	1.6511	36CrNiMo4	38NiCrMo4(KB)	SNC815(H)
	1.6523	21NiCrMo2	20NiCrMo2	SNCM447
	1.6546	40NiCrMo22	40NiCrMo2(KB)	SNCM220(H)
	1.6582	35CrNiMo6	35NiCrMo6(KB)	SNCM240
	1.6587	17CrNiMo6		SNCM447
	1.6657	14NiCrMo34	15NiCrMo13	
	1.7033	34Cr4		
	1.7035	41Cr4	41Cr4	SCR430(H)
	1.7045	42Cr4		SCR440(H)
	1.7131	16MnCr5	16MnCr5	SCR415
	1.7176	55Cr3		SUP9(A)
	1.7218	25CrMo4	25CrMo4(KB)	SM420/SCM430
	1.7220	34CrMo4	35CrMo4	SCM432/SCCRM3
		High alloy steel and high alloy tool steel		
P	1.2343	X38CrMoV51	X37CrMoV51KYU	SKD6
	1.2344	X40CrMoV51	X40CrMoV511KU	SKD61
	1.2379	X155CrVMo121	X155CrVMo12 1KU	SKD11
	1.2436	X210CrW12	X215CrW121KU	SKD2
	1.2581	X30WCrV93	X30WCrV93KU	SKD5
	1.2601	X165CrMoV12	X165CrMoW12KU	
	1.2606	X37CrMoW 51	X35CrMoW05KU	SKD62
	1.3202	S12-1-4-5	HS12-1-5-5	
	1.3207	S10-4-3-10	HS10-4-3-10	SKH57
	1.3243	S6-5-2-5	HS6-5-2-5	SLKH55
	1.3246	S7-4-2-5	HS7-4-2-5	
	1.3247	S2-10-1-8	HS2-9-1-8	SKH51
	1.3249	S2-9-2-8		
	1.3343	S6-5-2	HS6-5-2-5	SKH9; SKH51
	1.5662	X8Ni9	X10Ni9	SL9N60(53)
	1.5680	12Ni19		

Material Comparison Table

Material group	Material No.	Germany DIN No.	Italy UNI	Japan JIS
Stainless steel				
M	1.4000	X6Cr13	X6Cr3	SUS403
	1.4001	X6Cr14		4105, 429
	1.4002	X6CrAl13	X6CrAl13	SUS405
	1.4006	(G-)X10Cr13	X12Cr13	SUS410
	1.4016	X8Cr17	X8Cr17	SUS430
	1.4021	X20Cr13	X20Cr13	SUS420/1
	1.4027	G-X20Cr14		SCS2
	1.4034	X46Cr13	X40Cr14	
	1.4057	X20CrNi17	X16CrNi16	SUS431
	1.4086	G-X120Cr29		
	1.4104	X12CrMoS17	X10CrS17	SUS430F
	1.4113	X6CrMo17	X8CrMo17	SUS434
	1.4125	X105CrMo17	X105CrMo17	SUS440C
	1.4340	G-X40CrNi274		
	1.4417	X2CrNiMoSi195		
	1.4720	X20CrMo13		
	1.4724	X10CrA113	X10CrA112	SUS405
	1.4742	X10CrA118	X8Cr17	SUS430
	1.4762	X10CrA124	X16Cr26	SUH446
Austenitic stainless steel				
M	1.4301	X5CrNi189	X5CrNi1810	SUS304
	1.4310	X12CrNi177	X2CrNi1807	SUS301
	1.4311	X2CrNiN1810	X2CrNiN1810	SUS304LN
	1.4312	G-X10CrNi188		
	1.4350	X5CrNi189	X5CrNi1810	
	1.4362	X2CrNiN234		
	1.4401	X5CrNiMo17 122	X5CrNiMo17 12	SUS316
	1.4404	X2CrNiMo1810	X2CrNiMo1712	SUS316
	1.4410	G-X10CrNiMo189		
	1.4429	X2CrNiMoN17133	X2CrNiMoN1713	SUS316LN
	1.4435	X2CrNiMo18 143	X2CrNiMo1712	SCS16
	1.4436	X3CrNiMo17133	X8CrNiMo1713	SUS316
	1.4438	X2CrNiMo17133	X2CrNiMo1816	SUS317L
	1.4500	G-X7NiCrMoCuNb2520		
	1.4541	X5CrNiTi18 9	X6CrNiTi18 11	SUS321
	1.4550	X10CrNiNb	X6CrNiNb18 11	SUS347
	1.4552	G_X7CrNiNb189		
	1.4571	X10CrNiMoTi1810	X6CrNiMoTi1712	SUS316Ti
	1.4583	X10CrNiMoNb1812	X6CrNiMoNb	
	1.4828	X12CrNi2521		SUH309
	1.4850	G-X7CrNiMoCuNb1818	X6CrNiMoTi1712	
	1.4845	X12CrNi25 21	X6CrNi25 20	SUH310/SUS310S
Austenitic / ferritic stainless steel (Duplex)				
M	1.4460	X8CrNiMo275		SUS329J1
	1.4462	X2CrNiMoN2253		
	1.4821	X15CrNiSi254		
	1.4823	GX40CrNiSi274		

Material Comparison Table

Material group	Material No.	Germany DIN No.	Italy UNI	Japan JIS
Grey cast iron				
K	0.6010	GG10	G10	FC100
	0.6015	GG15	G14	FC150
	0.6020	GG20	G20	FC200
	0.6025	GG25	G25	FC250
	0.6030	GG30	G30	FC300
	0.6035	GG35	G35	FC350
	0.6040	GG40		FC400
Nodular cast iron				
K	0.7033	GGG35,3		FDC350
	0.7040	GGG40	GGG40	FDC400
	0.7043	GGG40,3		FDC400
	0.7050	GGG50	GGG50	FDC500
	0.7060	GGG60	GGG60	FCD600
	0.7070	GGG70	GGG70	FCD700
Malleable cast iron				
K	0.8035	GTW-35		
	0.8040	GTW-40	GMB40	
	0.8045	GTW-45	GMB45	
	0.8055	GTW-55		
	0.8065	GTW-65		
	0.8135	GTS-35		
	0.8145	GTS-45		
	0.8155	GTS-55		
	0.8165	GTS-65		
	0.8170	GTS-70		

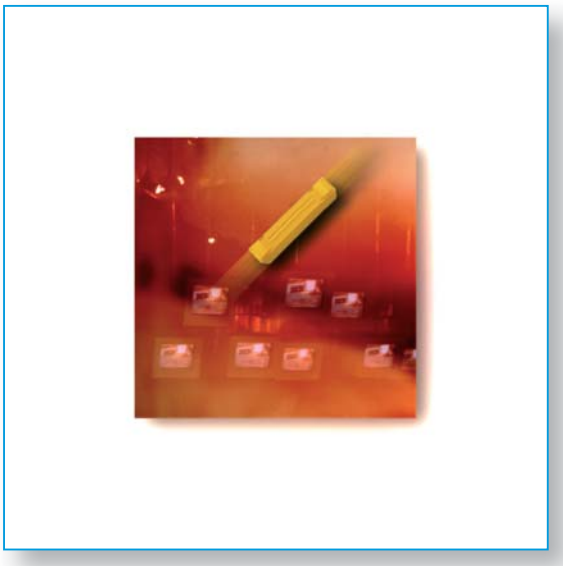
Material Comparison Table

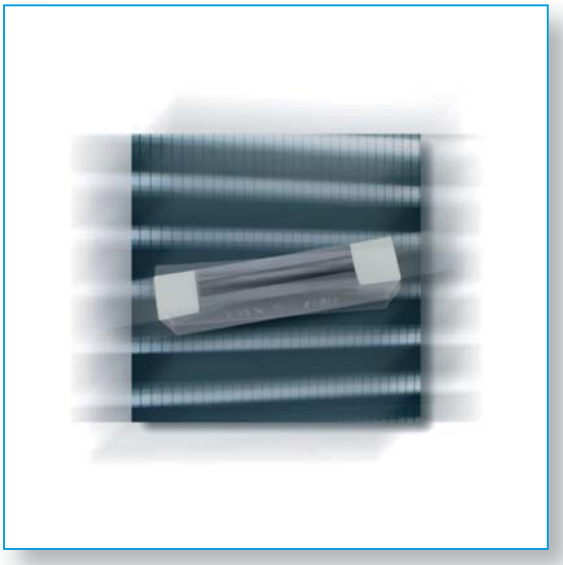
Material group	Material No.	Germany DIN No.	Italy UNI	Japan JIS
Aluminium alloys				
N	3.0255	Al99.5		
	3.1655	AlCuSiPb		
	3.1754	G-AlCu5Ni1,5	AZ4GU/9051	7050
	3.2373	G-AlSi9Mg		
	3.2381	G-AlSi10Mg		
	3.2382	GD-AlSi10Mg		
	3.2383	G-AlSi10Mg(Cu)		
	3.2581	G-AlSi12		
	3.2582	GD-AlSi12		A6061
	3.2583	G-AlSi12(Cu)		ADC12
	3.3315	AlMg1		
	3.3561	G-AlMg5		AC4A
	3.5101	G-MgZn4SE1Zr1		
	3.5103	MgSE3Zn2Zr1		
	3.5106	G-MgAg3SE2Zr1		
	3.5812	G-MgAl8Zn1		
	3.5912	G-MgAl9Zn1		
	2.1871	G-AlCu4TiMg		
	3.2371	G-AlSi7Mg		
Copper alloys				
N	2.1090	G-CuSn7ZnPb		
	2.1096	G-CuSn5ZnPb		
	2.1098	G-CuSn2ZnPb		
	2.1176	G-CuPb10Sn		
	2.1182	G-CuPb15Sn		
	2.0240	CuZn15		
	2.0265	CuZn30		
	2.0321	CuZn37	C2700,C2720	
	2.0592	G-CuZn35Al1		
	2.0596	G-CuZn34Al2		
	2.1188	G-CuPb20Sn		
	2.1292	G-CuCrF35		
	2.1293	CuCrZr		
	2.0966	CuAl10Ni5Fe4		
	2.0975	G-CuAl10Ni		
	2.1050	G-CuSn10		
	2.1052	G-CuSn12		

Material Comparison Table

Material group	Material No.	Germany DIN No.	Italy UNI	Japan JIS
Super alloys on Fe-basis			**US-Trade Mark**	
S	1.4558	X2NiCrAlTi3220	Incoloy 800	
	1.4562	X1NiCrMoCu32287		
	1.4563	X1NiCrMoCuN31274		
	1.4864	X12NiCrSi		SUH330
	1.4864	X5NiCrSi3616		SUH330
	1.4958	X5NiCrAlTi3120		
	1.4977	X40CoCrNi2020		
Super alloys on Ni-basis			**US-Trade Mark**	
S	1.4360	NiCu30FE	Monel 400	
	2.4375	NiCu30Al	Monel K-500	
	2.4610	NiMo16Cr16Ti	Hastelloy C-4	
	2.4630	NiCr20Ti	Nimonic 75	
	2.4642	NiCr29Fe	Inconel 690	
	2.4668	NiCr19FeNbMo	Inconle 718	
	2.4669	NiCr15Fe7TiAl	Inconel X-750	
	2.4685	G-NiMo28	Hastelloy B	
	2.4694	NiCr16Fe7TiAl	Inconel 751	
	2.4810	G-NiMo30	Hastelloy C-4	
	2.4856	NiCr22Mo9N	Inconel 625	
	2.4858	NiCr21Mo	Incoloy 825	
Titanium and Titanium alloys			**US-Trade Mark**	
S	3.7025	Ti 1		
	3.7124	TiCu2		
	3.7195	TiAl3V2.5		
	3.2250	Ti1Pd		
	3.7115	TiAl6Sn2		
	3.7145	TiAl6Sn2Zr4Mo2Si		
	3.7165	TiAl6V4	TiAl6V4	
	3.7175	TiAl6V6Sn2	Ti6V6Al2Sn	
	3.7185	TiAl4Mo4Sn2		

Material group	Material No.	Germany DIN No.	Italy UNI	Japan JIS
Hard cast iron				
H	0.9620	G-X260NiCr42		
	0.9625	G-X330NiCr42		
	0.9630	G-X300CrNiSi952		
	0.9635	G-X300CrMo153		
Hardened cast iron				
H	0.9640	G-X300CrMoNi1521		
	0.9645	G-X260CrMoNi2021		
	0.9650	G-X260Cr27		
	0.9655	G-X300CrMo271		





Explanations

Symbols, spare parts, product index and abbreviations

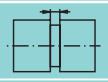
Spare parts

ET	ID-Nr.		ID-Nr.		Recommended Torque [Nm]
1	13701	M 5x16	14746	P4	7
2	13707	M 6x20	14747	P5	14
3	13709	M 8x25	14748	P6	14
4	15635	TXM 4x16 15	12900	T15W	3,8
5	13702	M 5x20	14746	P4	7
6	13700	M 5x12	14746	P4	7
7	15166	M 4x8 DIN 7984	14745	P3	5
8	13699	M 5x10	14746	P4	7
9	18777	TXM 4x12	12900	T15W	3,8
10	41015	TXM 4x12/15	40681	T15F	3,8
11	13698	M 4x16	14745	P3	5
12	13708	M 6x25	14747	P5	8
13	15086	M 3x12 DIN 913(Tapped pin)	14743	P1,5	0,8
14	13705	M 6x16	14747	P5	14
15	14846	LM 4x8	12771	P2,5	3
16	10397	Order Nr. 1856 (Ejector)		-	
17	10398	26 L (wedge lock)		-	
18	13696	M 4x10	14745	P3	5
19	16203	M 5x10 DIN 7984	14746	P4	7
20	14749	M 4x16 DIN 913 (Tapped pin)	14744	P2	1,9
21	21949	M 5x20 DIN 913 (Tapped pin)	12771	P2,5	4
22	14846	LM 4x8 DIN 7380	14745	P3	3
23	34839	TXM 5x14 25	31353	T25W	5
24	35587	TXM 5x10 25	31353	T25W	5
25	29276	TXM 5x13 20	29312	T20W	5
26	33051	M 5x8 DIN 914 (Tapped pin)	35393	PQ2,5	6
27	35166	LM 3x8 DIN7380	14744	P2	1,5
28	34656	Order Nr. 34656 (Ejector A-TWIN)		-	
29	37353	LM 6x20 (Oval head screw)	38549	TX25	7
30	37556	M4x4 (Tapped pin)	14744	P2	4
31	25714	32 L (wedge lock)		-	
32	44188	M 6x20 1	14747	P5	14
33	44641	TXM5x14 10 25	45130	TX25/10	4,5
34	44817	TXM5x10 10 25	45130	TX25/10	4,5
35	34839	TXM 5x14 25	38549	TX25	7
36	44609	TXM5x13 20P92C	29312	T20W	5
37	44630	TXM6x17 20P92C	29312	T20W	5
38	45133	52 L (wedge lock)			
39	45113	WK 25 10 (interchangeable blade)			
40	45112	TX 6 (Griff)			
41	45130	TX25/10 (ET 39+40)			

Further technical informations on page 201

Symbols

Symbols	Meaning
	Rotation / Run
	Diameter
	Angle

Symbols	Meaning
	Pitch
	Groove width
	Outside

Symbols	Meaning
	Inside
	Spare parts (ET)
	Weight

Product index

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I

K

M

O

P

Product index

Abbreviations

Abbreviation	Meaning
ALU	Aluminium
ap	Cutting depth [mm]
b	Width
CCW	Counter clockwise
CW	Clockwise
D	Degree
e. g.	For instance
f	Cutting feed [mm/Revolution]
h	Height
ID-Nr	Identification Number
L	Length

Abbreviation	Meaning
LH	Left hand
max	No mor than
o. r.	On request
P	Extension range
p.	Page, e.g. p. 16 = page 16
R	Radius
Ref.	Reference order code
RH	Right hand
S	Width of cutting edge [mm]
Vc	Cutting speed [m/min]

Notes

Notes

Notes