



Applications

Anwendungsbereich

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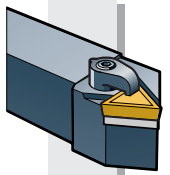
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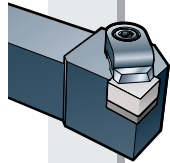
Tekniska specifikationer;
Sida



C pos

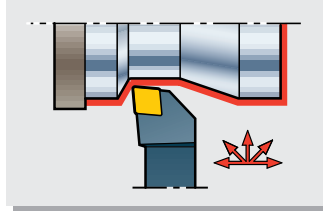
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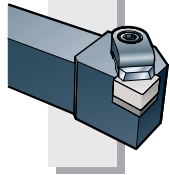
C...C

Ceramics
Keramik
Keramik



B12-B14, B20

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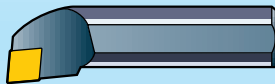
C...P

Ceramics
Keramik
Keramik

ISO

Code key
Kodeschlüssel
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B100-B101



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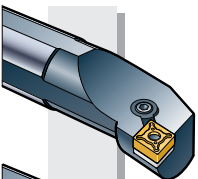
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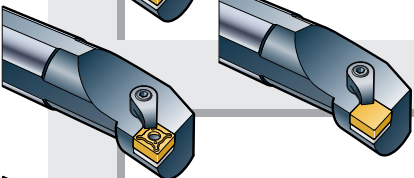
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Sida



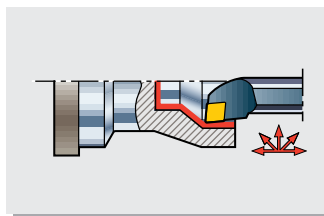
PMC

B12-B17

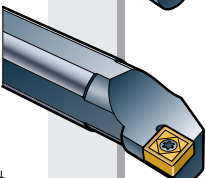
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S



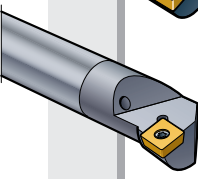
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S

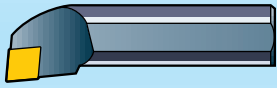
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Solid tungsten carbide
Massives Hartmetall
Solid hårdmetall





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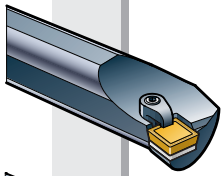
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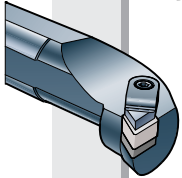
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C pos

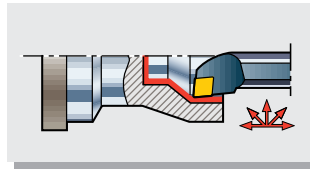
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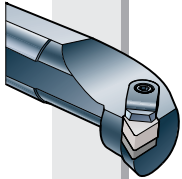
C...C

Ceramics
Keramik
Keramik



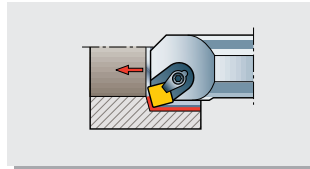
B12-B14, B20

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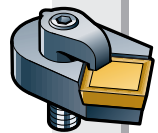
C...P

Ceramics
Keramik
Keramik

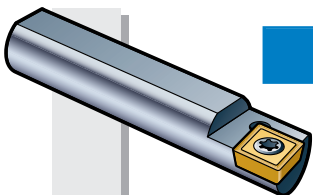


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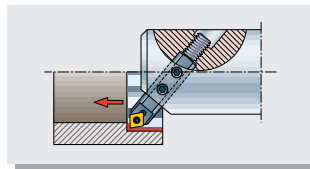
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C pos

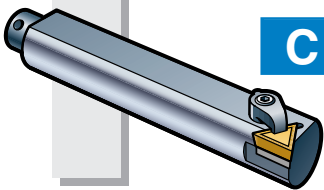


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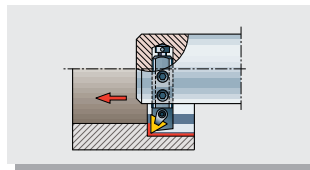


B12-B14, B18

B123-B125



C pos



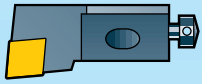
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ISO

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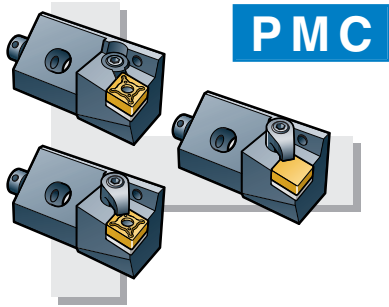
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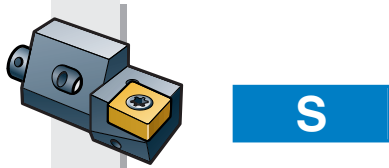
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Sida



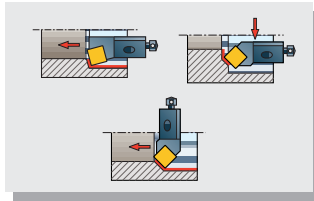
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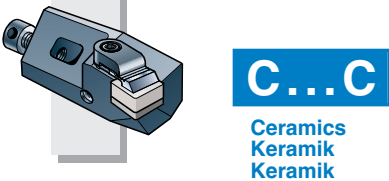
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C pos

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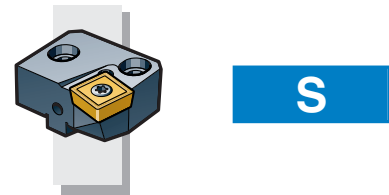


C...C

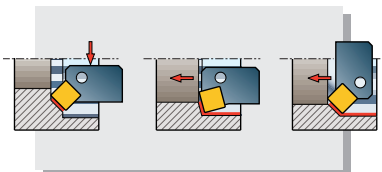
Ceramics
Keramik
Keramik

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S



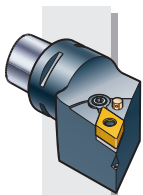
B12-B14, B18

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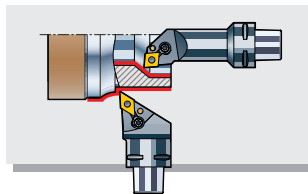
ISO

Code key
Kodeschlüssel
Kodnyckel

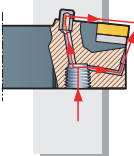
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POLYGON-KOPPLING

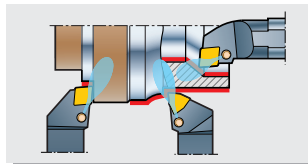


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EB

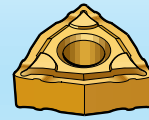
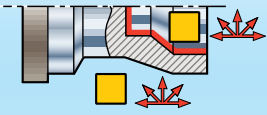
Micro-lubrication system
Minimalschmiersystem
Minimalsmörjsystem



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Hårdmetallsorter

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Ceramic grades

Keramiksorten

Keramiska sorter

B186-B188

Cutting data:
for carbide
for ceramics

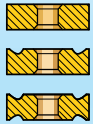
Schnittdaten:
für Hartmetall
für Keramik

Skärdata:
för hårdmetall
för keramik

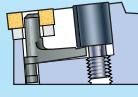
B196-B205

B197-B205

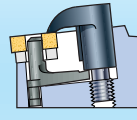
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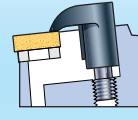
P



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TNMG-NF1

TNMG-NM1

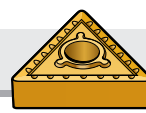
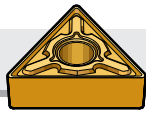
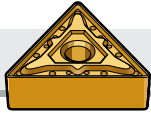
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TNMG-NM3

TNMG-NM4

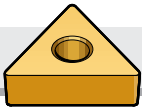
TNMM-NR2

TNMM-NR3



TNMA

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SNMG-NF1

SNMG-NM1

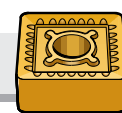
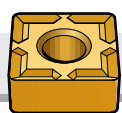
SNMG-NM2

SNMG-NM3

SNMG-NM4

SNMM-NR1

SNMM-NR2



SNMM-NR3

SNMA

B172-B178



CNMG-NF1

CNGG-NF2

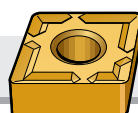
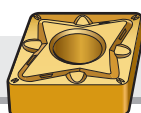
CNMG-NF3

CNMG-NM1

CNMG-NM2

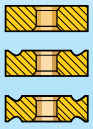
CNMG-NM3

CNMG-NM4

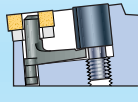


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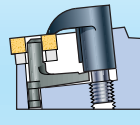




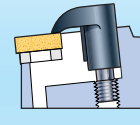
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M



C



CNMG-NM5

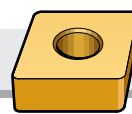
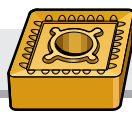
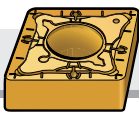
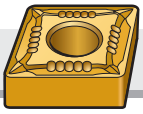
CNMG-NMW

CNMM-NR1

CNMM-NR2

CNMM-NR3

CNMA



WIPER

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WNMG-NF1

WNGG-NF2

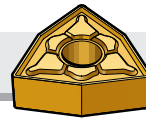
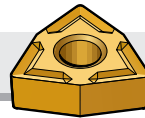
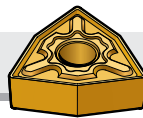
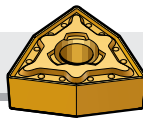
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WNMG-NM1

WNMG-NM2

WNMG-NM3

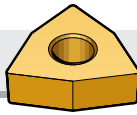
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WNMG-NM5

WNMG-NMW

WNMA



WIPER

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DNMG-NF1

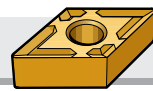
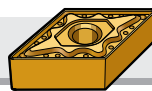
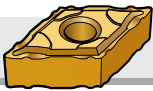
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DNMG-NF3

DNMG-NM1

DNMG-NM2

DNMG-NM3

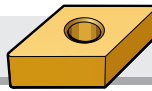
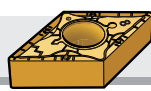
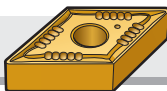


DNMG-NM4

DNMG-NM5

DNMG-NMW

DNMA



WIPER

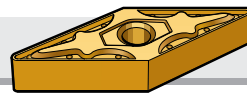
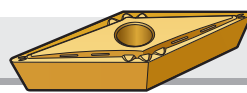
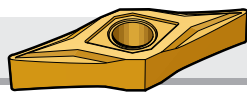
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VNMG-NF1

VNGG-NF2

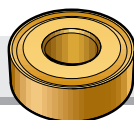
VNMG-NF3

VNMG-NM1



VNMG-NM3

RNMG-NF2



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S



TCMT-PF1

TCGT-PF1

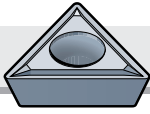
TCMT-PF2

TCMT-PF3

TCMT-PM1

TCMT-PM2

Cermet



B179-B184

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SCMT-PF1

SCMT-PF2

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SCMT-PM2

SCGT-AL1

Cermet



B179-B184

CCMT-PF1

CCGT-PF1

CCMT-PF2

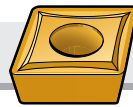
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CCMT-PM1

CCMT-PM2

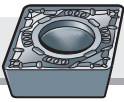
CCGT-AL1

Cermet



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CCXT-AL2



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WCMT-PF1

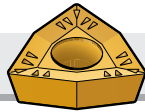
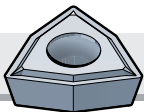
WCGT-PF1

WCMT-PF2

WCMT-PM1

WCMT-PM2

Cermet



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DCMT-PF1

DCGT-PF1

DCMT-PF2

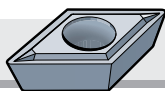
DCMT-PF3

DCMT-PM1

DCMT-PM2

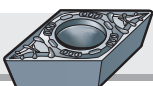
DCGT-AL1

Cermet



B179-B184

DCXT-AL2



B179-B184



S



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Sida

VCGT-PF1

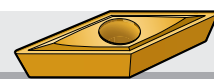
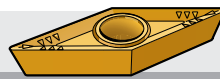
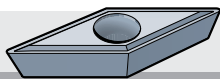
Cermet

VCMT-PF2

VCMT-PF3

VCMT-PM1

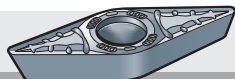
VCMT-PM2



B179-B184

VCGT-AL1

VCXT-AL2



B179-B184

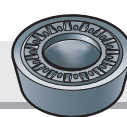
RCMT-PF2

RCMT-PM1

RCMX

RCGT-AL1

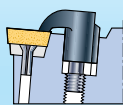
RCXT-AL2



B179-B184



C



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Sida

TPMR

SPMR

KNUX

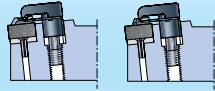


B185



Ceramics
Keramik
Keramik

C



P



M



C



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Sida

TNGN

TNGA

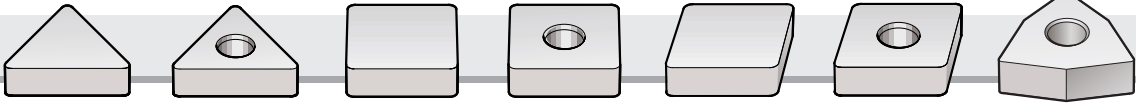
SNGN

SNGA

CNGN

CNGA

WNGA



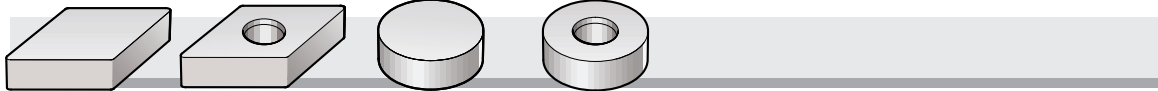
B190-B193

DNGN

DNGA

RNGN

RNGA

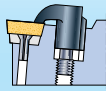


B190-B193



Ceramics
Keramik
Keramik

C



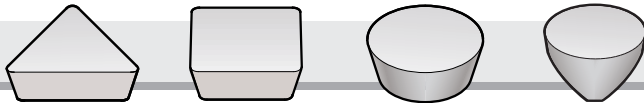
Page
Seite
Sida

TPGN

SPGN

RPGN

RCGX



B190-B193

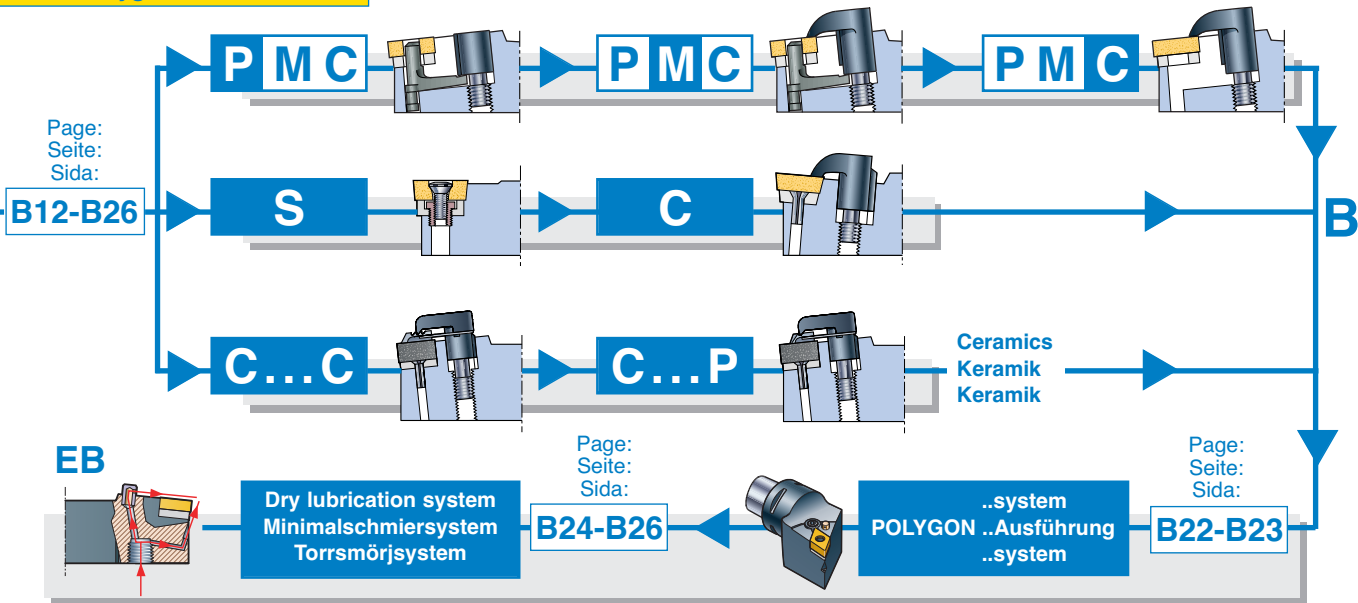
ISO

Code key
Kodeschlüssel
Kodnyckel

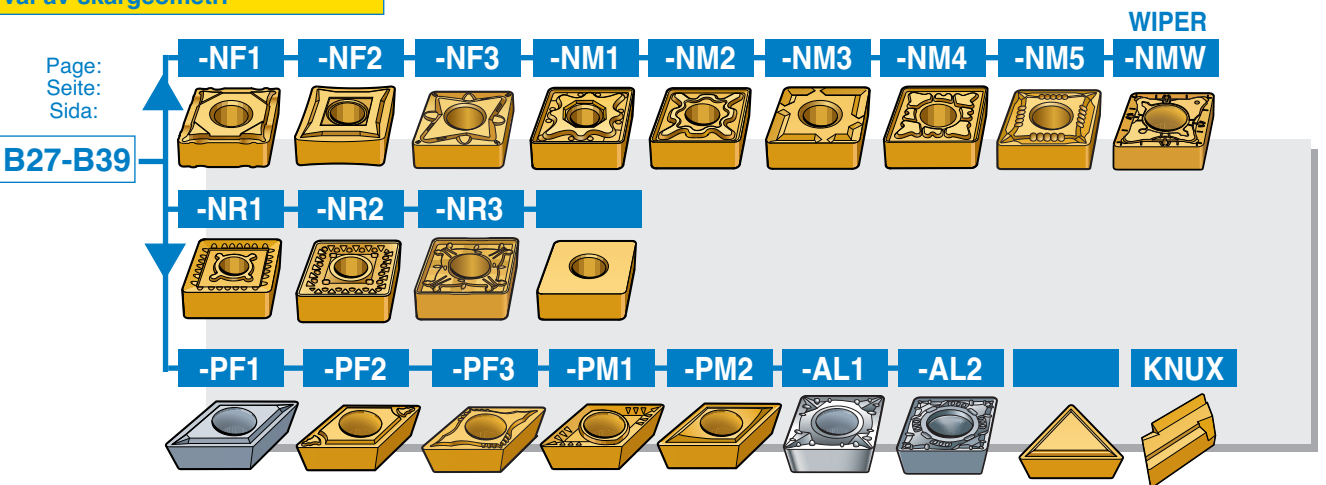
B194-B195

Recommendations for Selection of Cutting Tool Empfehlungen für Wahl der Schneidwerkzeug Rekommendationer för val av skärverktyg

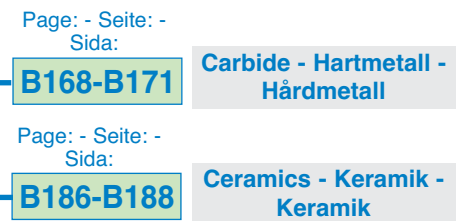
1 Selection of tool holder Wahl der Werkzeughalter Val av verktygshållare



2 Selection of cutting geometry Wahl der Schneidengeometrie Val av skärgeometri



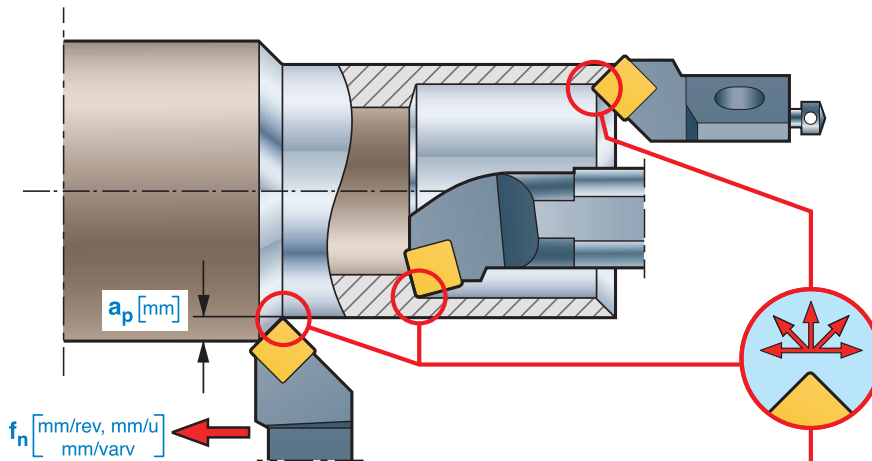
3 Selection of insert grade Wahl der Schneidensorte Val av skärsort



4 Selection of cutting data Wahl der Schnittdaten Val av skärdata



Recommendations for Selection of Tool Holder Empfehlungen für Wahl der Klemmhalter Rekommendationer för val av verktygshållare



Roughing:
Schruppen:
Grobbearbetning:

$$a_p = 3 - 15$$

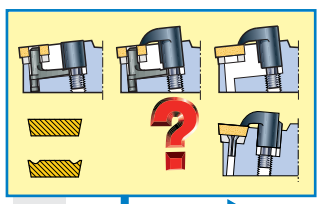
$$f_n = 0,5 - 1,8$$

Finishing
Schlichten
Finbearbetning

$$a_p = 0,2 - 2$$

$$f_n = 0,1 - 0,4$$

PMC	PMC	S	C pos
PMC	S	C pos	C...C
PMC	S	C pos	C...P



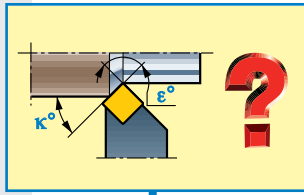
<ul style="list-style-type: none"> ● Roughing ● Schruppen ● Grobbearbetning 	●	●	●	○	○	●	●
<ul style="list-style-type: none"> ● Finishing ● Schlichten ● Finbearbetning 	●	○	○	●	●	●	●
<ul style="list-style-type: none"> ● Time, insert change ● Zeit, Schneidwechsell ● Tid, skärbyte 	●	●	●	○	○	●	●
<ul style="list-style-type: none"> ● Swarf flow ● Spanfluss ● Spånflöde 	●	○	○	●	○	●	●
<ul style="list-style-type: none"> ● Insert type ● Schneidtyp ● Skärtyp 							
<ul style="list-style-type: none"> ● Insert shape ● Schneidform ● Skärform 							
Page – Seite – Sida	B172-B178	B179-B184	B185	B190-B193			
<ul style="list-style-type: none"> ● Description, page: ● Beschreibung, Seite: ● Beskrivning, sida: 	B15-B17	B18	B19	B20			

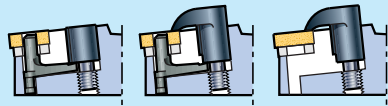
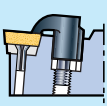
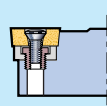
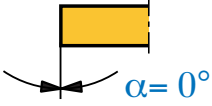
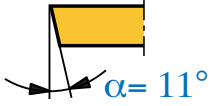
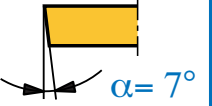
● Recommended
Empfohlen
Rekommenderat

○ Alternative
Alternativ

○ Recommended to limited extend
Empfohlen in begrenztem Ausmass
Rekommenderas i begränsad omfattning

B

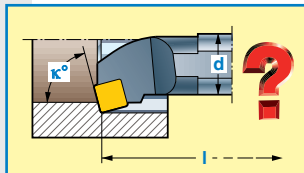
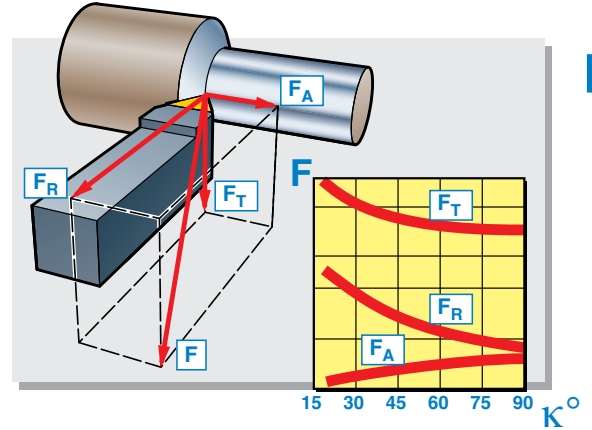


	 P, M, C	 C	 S
	 $\alpha = 0^\circ$	 $\alpha = 11^\circ$	 $\alpha = 7^\circ$
ISO	N	P	C

● If possible select $\kappa = 60^\circ - 75^\circ$ to reduce vibrations/cutting forces (important for internal machining). Select small α and large ϵ to give the edge strength/reduced working temperature.

● Wenn möglich, wählen Sie $\kappa = 60^\circ - 75^\circ$, um Vibrationen/Schnittkräfte zu reduzieren (wichtig bei der Innenbearbeitung). Wählen Sie grosses ϵ und kleines α , um der Schneidkante Stärke/reduzierte Arbeitstemperatur zu geben.

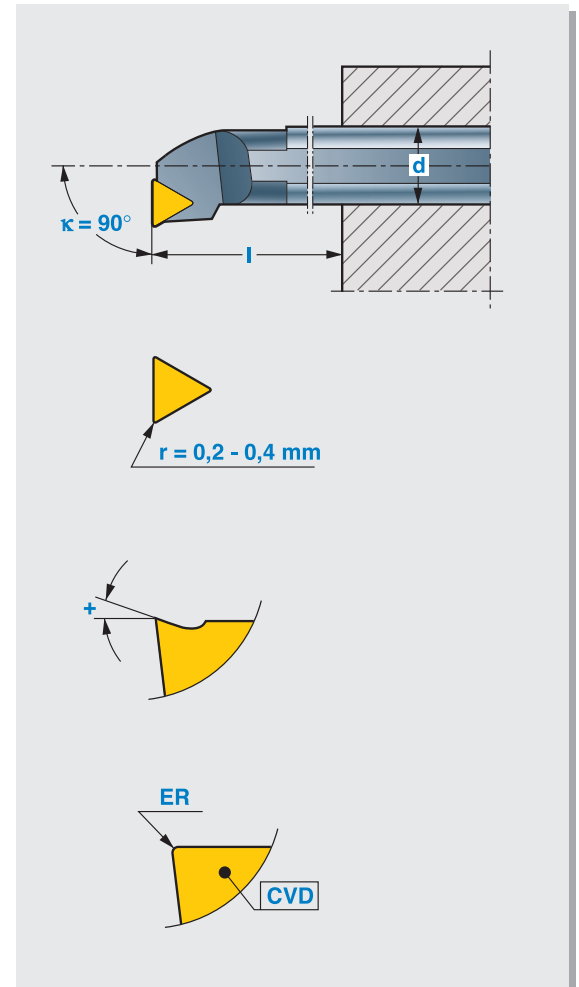
● Om möjligt välj $\kappa = 60^\circ - 75^\circ$ för att minimera vibrationer/skärkrafter (viktigt vid invändig bearbetning). Om möjligt välj ϵ stor och α liten för att ge eggen styrka/reducerad arbetstemperatur.

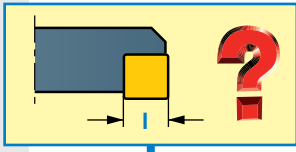


● To minimise vibrations select:
 - smallest possible l and largest possible d .
 - if possible $\kappa = 90^\circ$ and positive holders/cutting edges and smallest possible r .
 - sharp cutting edges, CVD-coated carbide grades have "large" edge honing.
 For severe vibration problems use holders with carbide shank, see page B109 -B112.

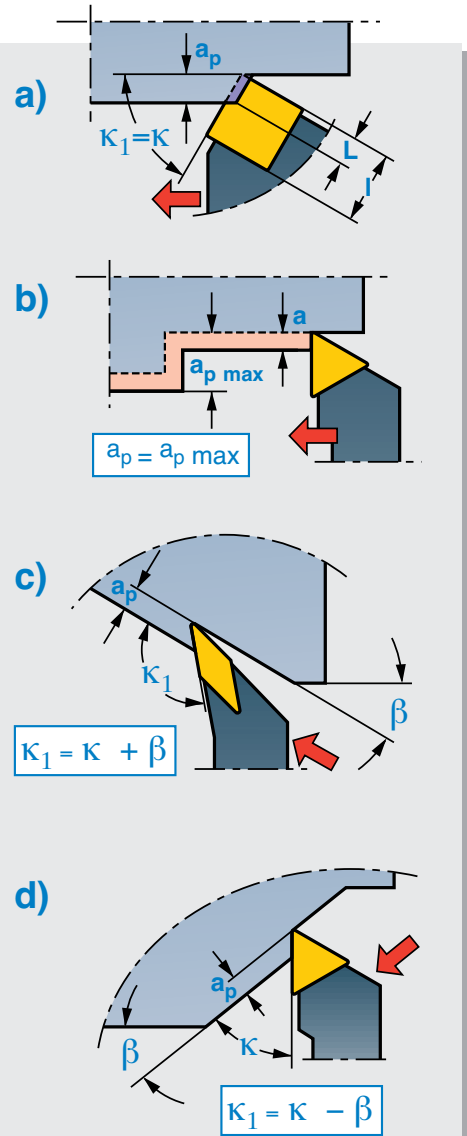
● Um Vibrationen zu minimieren, wählen Sie:
 - Die kleinstmögliche l und grösst möglichen Schaftdurchmesser d .
 - Wenn möglich Einstellwinkel $\kappa = 90^\circ$ und positive Werkzeughalter/Schneidkanten, und kleinstmögliche r .
 - Scharfe Schneidkanten, CVD-beschichtete Hartmetallsorten haben „grosse“ gehonte Schneidkanten.
 Bei grossen Vibrationsprobleme empfehlen wir die Benutzung eines Werkzeughalters aus Vollhartmetall, Siehe Seite B109 -B112.

● För att minimera vibrationer välj:
 - minsta möjliga l och största möjliga d .
 - om möjligt $\kappa = 90^\circ$ och positiva hållare/skär, samt liten r .
 - skarpa skäreppor, CVD-belagda hårdmetallsorter har stor eggavrundning.
 Vid svåra vibrationsproblem använd verktyg med hårdmetallskäft, se sid B109 -B112.





- - Determine κ_1 [a), c), d)].
 - Determine a_p [a-d)].
 - L is found in table 1.
 - l is found in table 2 for secure continuous turning.
- - Legen Sie κ_1 [a), c), d)] fest.
 - Legen Sie a_p [a-d)] fest.
 - L finden Sie in Tabelle 1.
 - l finden Sie in Tabelle 2 für sichere, kontinuierliche Drehoperationen.
- - Bestäm κ_1 [a), c), d)].
 - Bestäm a_p [a-d)].
 - L erhålls ur tabell 1.
 - l erhålls ur tabell 2 för tillförlitlig kontinuerlig svarvning.

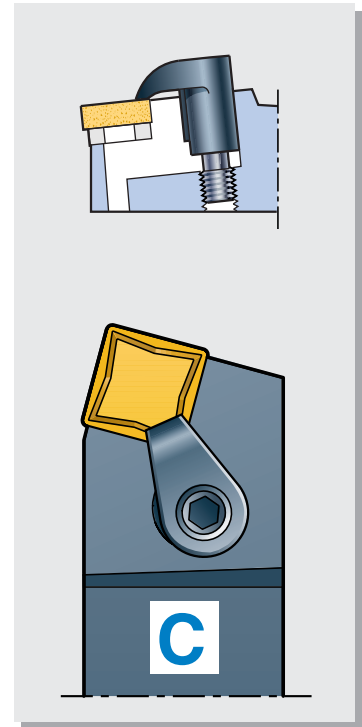
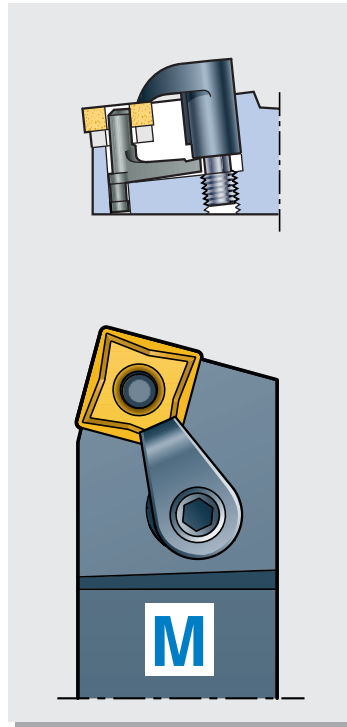
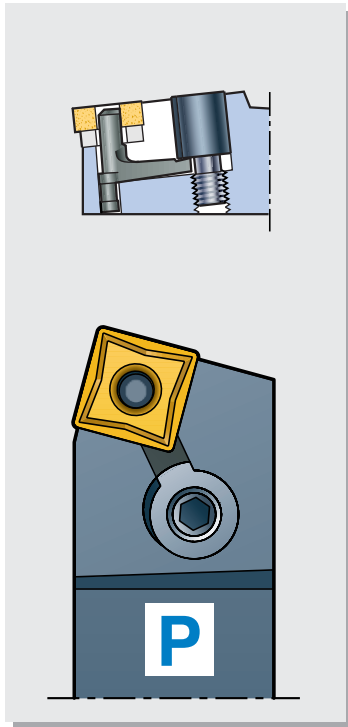
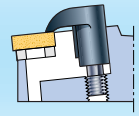
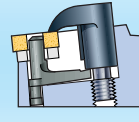
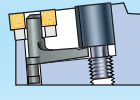


1.

κ_1°	a_p (mm)											
	1	2	3	4	5	6	7	8	9	10	15	
	L (mm)											
90	1	2	3	4	5	6	7	8	9	10	15	
105	75	1,5	2,1	3,1	4,1	5,2	6,2	7,3	8,3	9,3	11	16
120	60	1,2	2,3	3,5	4,7	5,8	7	8,2	9,3	11	12	18
135	45	1,4	2,9	4,3	5,7	7,1	8,5	10	12	13	15	22
150	30	2	4	6	8	10	12	14	16	18	20	20
165	15	4	8	12	16	20	24	27	31	35	39	58

2.

	T	S	C	D	V	R	W
Finishing Schlichten Finbearbetning	$l = 4L$	$l = 3L$	$l = 4L$	$l = 3L$	$l = 4L$	$d = 2,5L$	$l = 4L$
Roughing Schruppen Grovbearbetning	$l = 2L$	$l = 1,5L$	$l = 2L$	$l = 1,5L$	-	$d = 2,5L$	$l = 2L$



The PMC-system

The **MIRCONA PMC** clamping system is intended for external or internal roughing and finishing machining with negative double- or single-sided throw-away inserts with or without a centre hole.

The system allows the application of **three different ISO clamping systems - P, M and C in one** and the **same** tool holder.

The tooling range offers the following alternative ways of clamping and applications:

P
Lever pin only for finishing to medium roughing.

M
Both lever pin and clamp in **one** tightening operation for medium to heavy roughing and during **extreme cutting** conditions as intermittent cutting.

C
Clamp only usually for machining of cast iron.

Das PMC-System

MIRCONA PMC-Spannsystem ist für die aussen oder innen Schrupp- und Schlichtbearbeitung mit negativen doppel- oder einseitigen Schneiden mit oder ohne Loch gedacht. Das System gestattet den Gebrauch von **drei verschiedenen Spannsystemen - P, M und C** laut ISO in **ein** und **demselben** Werkzeughalter.

Das Werkzeugprogramm bietet folgende alternative Einspannungs- und Gebrauchsbereiche an:

P
Spannstift für fein bis mittelgrobe Bearbeitung.

M
Spannstift und Spannhaken in **einem** Anziehmoment für mittelgrobe bis grobe Bearbeitung, und bei **extremen Belastungen** wie bei Schlagbelastungen.

C
Spannhaken hauptsächlich für die Bearbeitung in Gusseisen.

PMC-systemet

MIRCONAs PMC-fastspänningssystem är avsett för ut- eller invändig grov- och finbearbetning med negativa enkel- eller dubbelsidiga vändskär med eller utan hål. Systemet medger tillämpning av **tre olika spännsystem - P, M och C**, enligt ISO, i **en** och **samma** verktyghållare.

Verktygssystemet erbjuder följande alternativa fastspänningsprinciper och användningsområden:

P
Enbart låspinne för fin- till medelgrov bearbetning.

M
Både låspinne och spännhake i **ett** åtdragningsmoment för medelgrov till grov bearbetning och **extrema belastningar** som intermittent bearbetning.

C
Enbart spännhake för företrädesvis gjutjärnsbearbetning.



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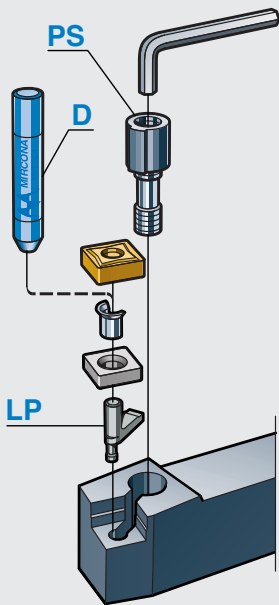
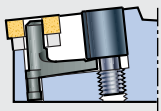
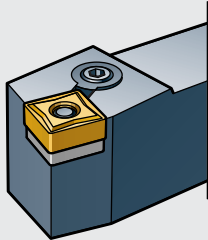
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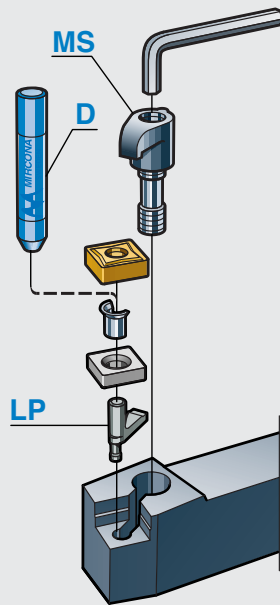
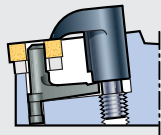
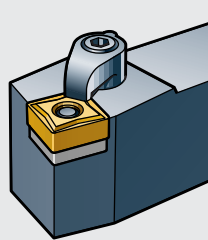
Page: **B130-B137**
Seite:
Sida:

Assembly instruction for the MIRCONA PMC-clamping system Montageanweisung für das MIRCONA PMC-Spannsystem Monteringsanvisning för MIRCONA PMC-system

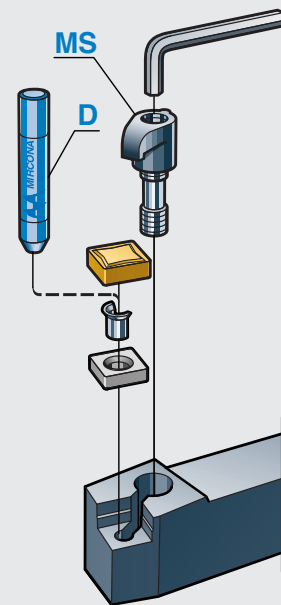
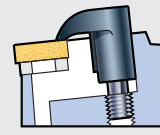
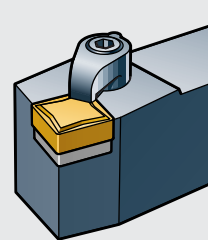
P



M



C



Assembly of the PMC-system

The parts are mounted in the correct order according to the respective exploded diagrams and are checked **that**:

- The shim has its chamfered face down.
- The opening of the shim pin is positioned according to sketch ①.
- The shim pin's collar retains the shim in the holder and sits below the top face of the shim.
- The clamping screw, before being assembled in the holder, is screwed into the clamping nut (PS) or the clamp (MS) the correct number of threads indicated in the sketches ② and ③ respectively.

A **correctly** made assembly means that the clamping screw is lying flush with the top face of the clamping nut (PS) and the clamp (MS) respectively.

Montage des PMC-Systems

Die Teile werden der Reihe nach laut resp Sprengskizze montiert, wobei kontrolliert wird **dass**:

- Die Zwischenlage die abgeschrägte Seite nach unten hat.
- Die Öffnung des Rohrstifts laut Skizze ① angebracht wird.
- Der Rohrstift ganz heruntergedrückt wird und der Kragen gut gegen die Zwischenlage anliegt.
- Die Spannschraube, vor der Montage im Halter, bis zur Gewindeanzahl, die auf der Skizze ② und ③ angegeben ist, in die Spannmutter (PS) oder den Spannhaken (MS) eingeschraubt wird.

Eine **richtig** ausgeführte Montage ist dann durchgeführt, wenn die Spannschraube in gleicher Ebene mit der Oberkante des Spannelementes (PS) oder (MS) liegt.

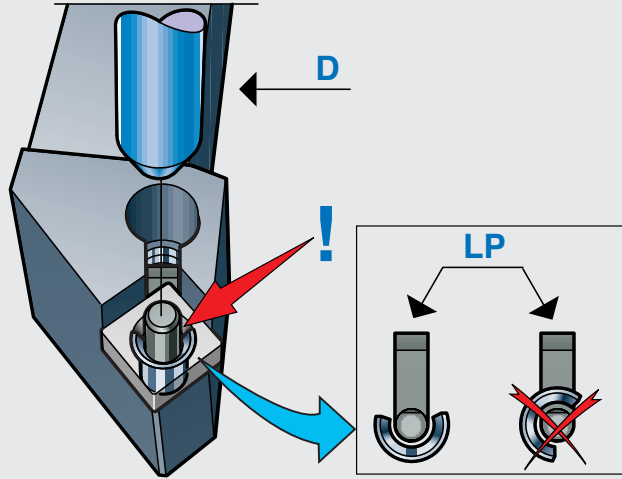
Montering av PMC-systemet

Delarna monteras i ordningsföljd enligt respektive sprängskiss, varvid kontrolleras **att**:

- Underläggsplattan har den fasade sidan nedåt.
- Rörstiftets öppning placeras enligt skiss ①.
- Rörstiftet blir nedtryckt och kragen ligger an mot underläggsplattan.
- Spännskruven, före montering i hållaren, är iskruvad i spännmuttern (PS) eller spännhaken (MS), det antal gängor som anges i skiss ② respektive ③.

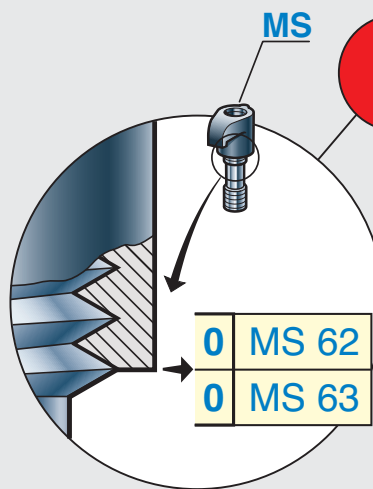
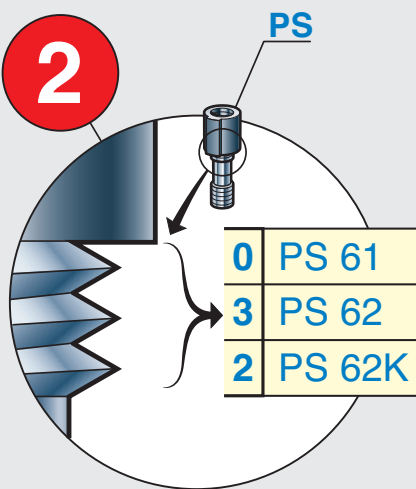
Rätt utförd montering innebär att spännskruven ligger i plan med översidan av spännmuttern (PS) respektive spännhaken (MS).

1

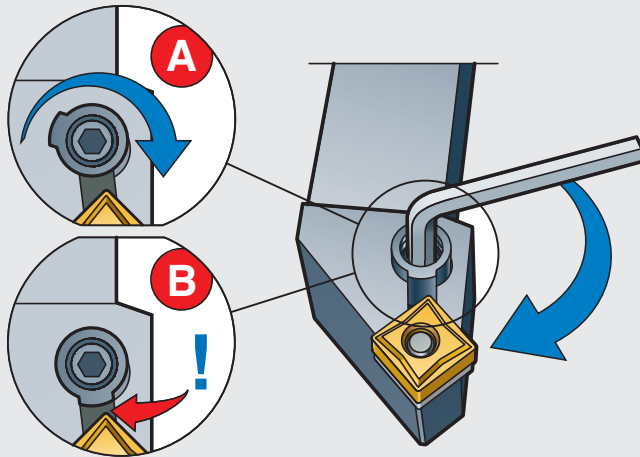
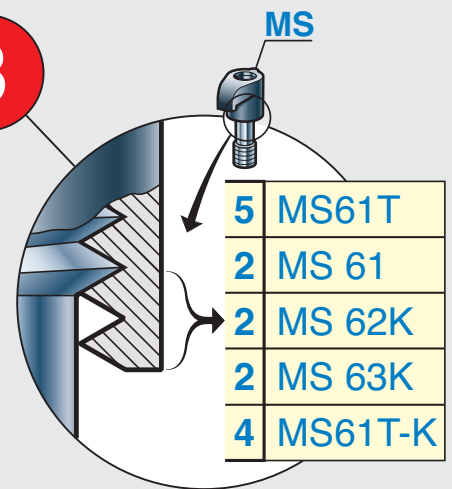


- Opening of shim pin in direction of pin (LP) and groove.
- Öffnung des Rörstifts soll in Richtung des Spannstifts (LP) und Nute liegen.
- Rörstiftets öppning placeras i låspinnens (LP) och spårets riktning.

2



3



- Let clamp or clamping nut rotate when tightening the screw.
- Spannhaken oder Spannmutter beim Anziehen der Schraube rotieren lassen.
- Låt spännhake eller spännmutter rotera vid åtdragning av skruven.



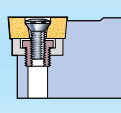
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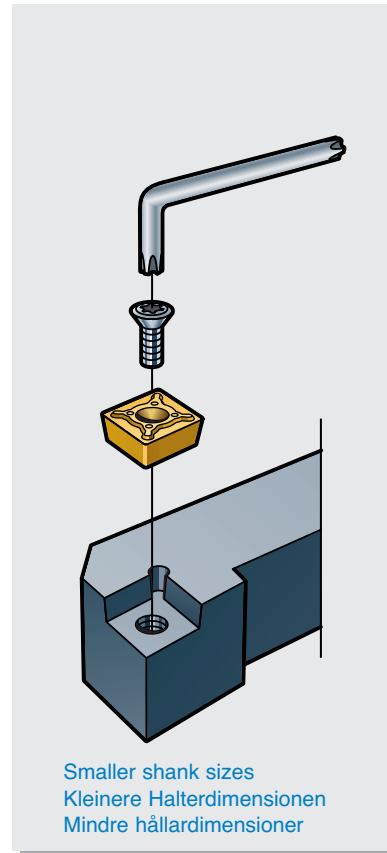
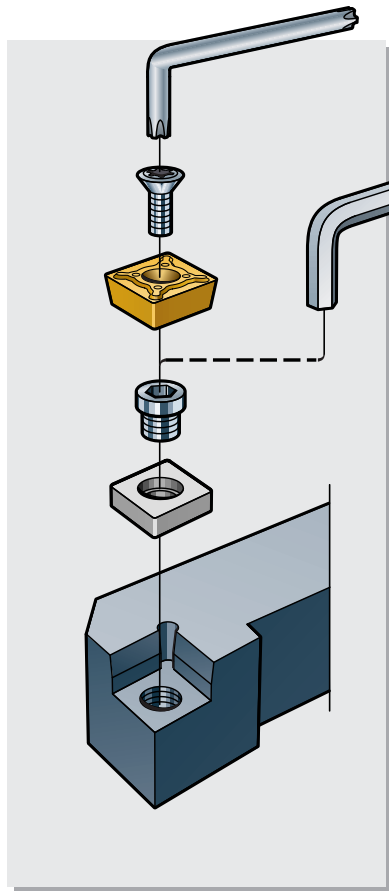
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B



Smaller shank sizes
Kleinere Halterdimensionen
Mindre hållardimensioner

The S-system

MIRCONA tool holders with centre screw clamping manufactured to **ISO** standards, intended for external and internal finishing to medium roughing, offer the following advantages:

- Positive insert cutting geometry
- Small shank tooling
- Improved chip flow
- Limited number of spare parts.

Das S-System

Die **MIRCONA** Klemmhalter mit Schraubbefestigung hergestellt nach **ISO** Standard, geeignet für das aussen und innen fein bis mittelgrobe Bearbeitung, bietet folgende Vorteile an:

- Positive Schneidengeometrie
- Kleine Halterdimensionen
- Freier Spanfluss
- Minimaler Ersatzteilbedarf.

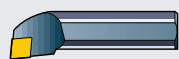
S-systemet

MIRCONA verktygshållare med skruvfastspänning tillverkade enligt **ISO**-standard, avsedda för ut- och invändig fin till medelgrov bearbetning, erbjuder följande fördelar:

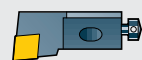
- Positiv skärgeometri
- Små hållardimensioner
- Underlättat spånflöde
- Begränsat antal reservdelar.



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