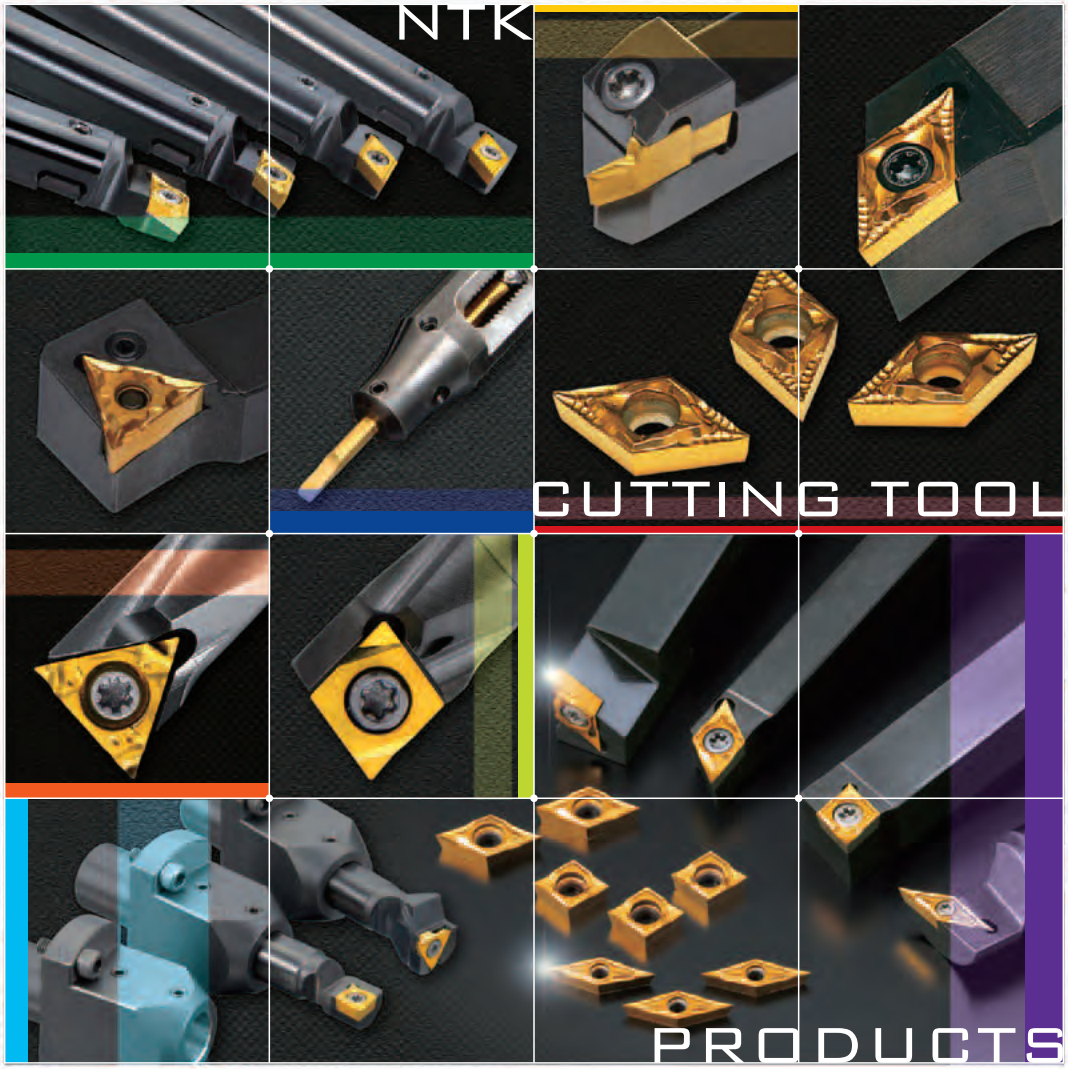
NTK
CUTTING TOOLS

2013
CUTTING TOOLS

FOR SMALL PARTS MACHINING
PRÄZISIONSWERKZEUGE



www.ntkcuttingtools.com/global/

App for iPad
Available on the App Store

WATCH ON YouTube www.youtube.com/NTKCUTTINGTOOLS

Tooling for Swiss type lathes
Werkzeuge für Präzisionsdrehmaschinen

Advanced DS holders
Einstellbare DS-Halter

NEW

DS-ACH

➡ A27 WATCH ON YouTube

A must for extended guide bushing users
Optimal für den Einsatz bei Langdrehern

NEW

Shifted Toolholders

➡ A29 WATCH ON YouTube

For front turning
Für Längs- und Plandrehen

NEW

CL Chipbreaker

➡ A10 WATCH ON YouTube

For light depth of cut
Für geringste Schnitttiefen

NEW

AMX Chipbreaker

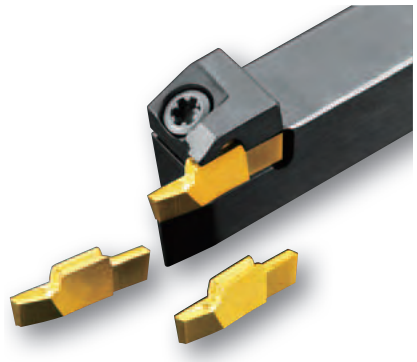
➡ A9 WATCH ON YouTube

For negative inserts
Für negative Wendeschneidplatten

NEW

UL Chipbreaker

➡ A8 WATCH ON YouTube



New back turning tool
Neues Hinterdreh-Werkzeug

NEW

BACK DUO

➡ A14 WATCH ON YouTube

For small diameter cut-off
Abstechen von sehr kleinen Durchmessern

NEW

CTP-SH type

➡ A13 WATCH ON YouTube

For large diameter cut-off
Abstechen von größeren Durchmessern

NEW

CUT DUO

➡ A12 WATCH ON YouTube

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High rigidity boring bar
Hoch Stabile Bohrstange

NEW

Mogul Bar

➡ A22 WATCH ON YouTube

Double-ended bars with adjustable length
Zweischneidige Hartmetall-Bohrstange mit einstellbarer Auspannlänge

NEW

STICK DUO Hyper

➡ A18 WATCH ON YouTube

New grooving tool
Neues Stechwerkzeug

NEW

SCRUM DUO

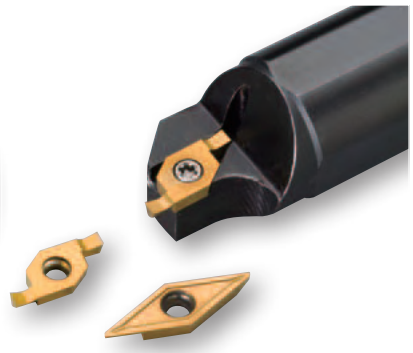
➡ A16 WATCH ON YouTube

Hight performance thread forming
Hochleistungs Gewindewirbeln

NEW

THREAD WHIRLING

➡ A25 WATCH ON YouTube



Face grooving tool
Axialstechen

NEW

SATURN DUO

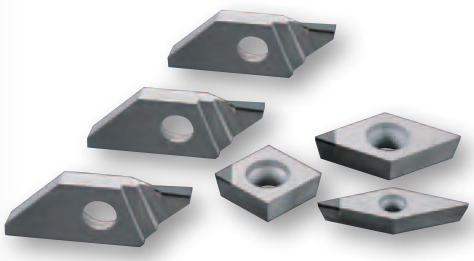
➡ A15 WATCH ON YouTube

Protection for live tool spindles
Schützt die Werkzeug-Aufnahmespindel

NEW

DS Sleeve

➡ A28



High quality polycrystalline diamond grade
Hochwertige PCD Sorte

PD1

➡ A30 WATCH ON YouTube

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More to Come

NTK CUTTING TOOLS

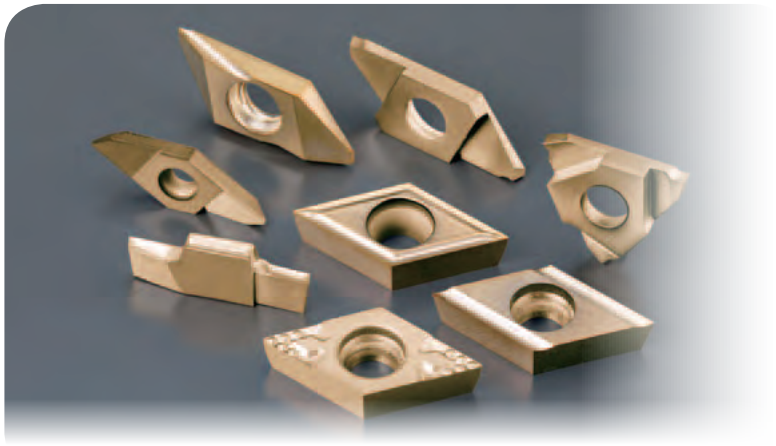
CONTENTS / INHALT

A | New Products
NEUE PRODUKTE

DELLA COAT "DT4/DM4" NEW

New PVD coated carbide "DELLA COAT"

Neue "DELLA COAT" Beschichtung (PVD)



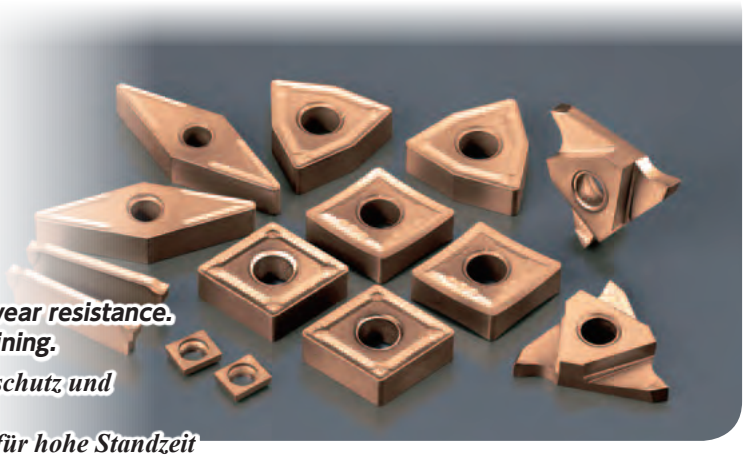
For super precise machining

Für die hochgenaue Feinstberabeitung

DT4

- *Thin coating with excellent oxidation resistance.*
  Superior sharp cutting edge

  Dünn-Beschichtung mit exzellenter Oxidationsbeständigkeit und Schneidkantenschärfe



For high productive machining

Für hochproduktive Zerspanung

DM4

- *Thick coating with both superior oxidation and wear resistance. Excellent adhesion resistance offers stable machining.*

  Dick-Beschichtung für ausgezeichneten Oxidationsschutz und Verschleißfestigkeit.
  Exzellenter Schutz gegen Aufbauschneidenbildung für hohe Standzeit und Zuverlässigkeit.

"DELLA coating" offers longer tool life, higher productivity and super precise machining in hard to cut work-materials

"DELLA coating" ermöglicht lange Standzeiten und hochproduktive Zerspanung in schwer zu bearbeitende Werkstoffe

Recommended work-materials - Werkstoff Übersicht

Work hardening materials
Rostfreie Stähle
SUS304, SUS316, Titanium alloy etc...
1.4301; 1.4401; Titan Legierung; etc...

Work materials that require adhesion resistance for efficient cutting
zähe Werkstoffe mit Anhaftungsneigung
Free cutting steel, DHS1, SF20T etc...
1.4104; 1.4105 etc...

Work materials with lower heat conductivity
Hitzebeständige Werkstoffe
SUS440C, SUS420J2 etc...
1.4028; 1.4722; etc...

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Application range of DT4/DM4 - Anwendungsbereich von DT4/DM4

DT4

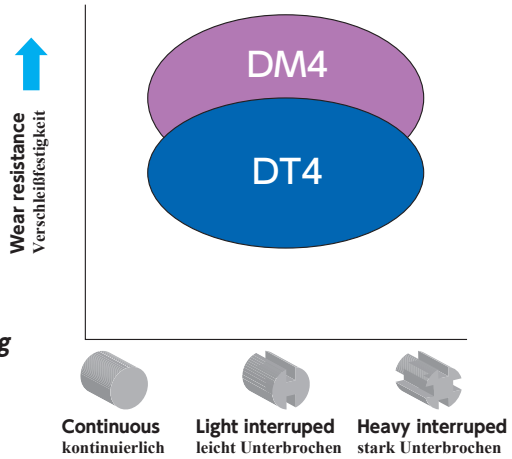
DT4(PVD TiAlN thin coating)
Superior sharp cutting edge thanks to precise grinding & thin coating
Best for Swiss type lathes

Herausragende Schneidkanten-Schärfe durch Präzisionschleifen und Dünnbeschichtung.
Hervorragende Wahl für Präzisionsmaschinen

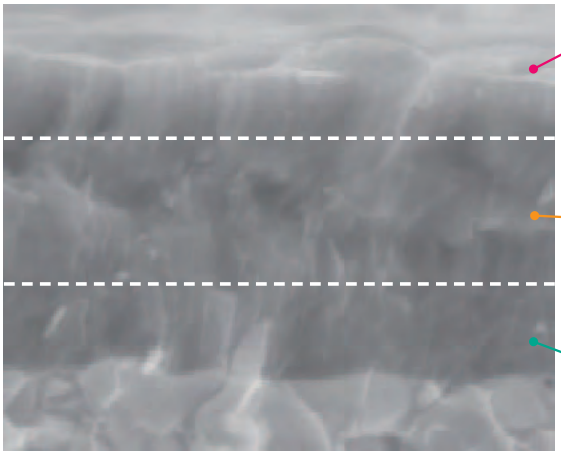
DM4

DM4(PVD TiAlN thick coating)
Excellent oxidation resistance and wear resistance thanks to thicker coating
Ideal for cut-off and grooving

Exzellente Oxidationsbeständigkeit und Verschleißschutz durch Dickbeschichtung.
Ideale Wahl für Ein-und Abstech Bearbeitung.



DELLA coating structure - DELLA Beschichtungs-Struktur



Adhension resistance layer
Schicht gegen Aufbauschneidenbildung

TiN Excellent adhesion resistance
Improved peeling resistance compared with other TiAlN coating

TiN Exzellenter Anhaftungsschutz
Verbesserte Spanablauf gegenüber herkömmlichen TiAlN Beschichtungen

Wear resistance layer
Schicht gegen Kerbverschleißbildung

TiCN Excellent wear resistance with NTK original coating layer
TiCN Exzellenter Verschleißschutz durch NTK Beschichtung

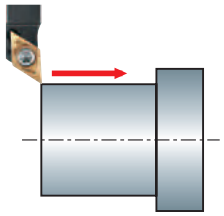
Oxidization resistance layer
Schicht gegen Oxidationsbildung

TiAlN Excellent oxidation and wear resistance
TiAlN Excellenter Oxidationsschutz durch NTK Beschichtung

Case study - Anwendungsbeispiele

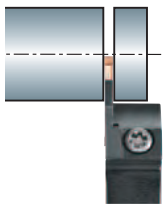
DT4 (external • Längsdrehen)

Work material Werkstoff	: SUS440C
Cutting speed (m/min) Schnittgeschwindigkeit	: 80
Feed rate (mm/rev) Vorschub	: 0.05
Depth of cut (mm) Schnitttiefe	: 1.0
Coolant Kühlung	: WET

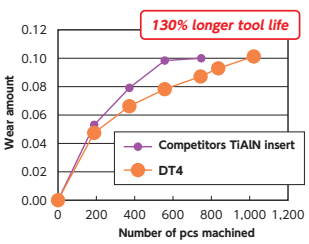


DM4 (cut off • Abstechen)

Work material Werkstoff	: SUJ2
Cutting speed (m/min) Schnittgeschwindigkeit	: 100
Feed rate (mm/rev) Vorschub	: 0.05
Coolant Kühlung	: WET

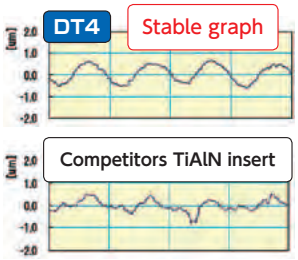


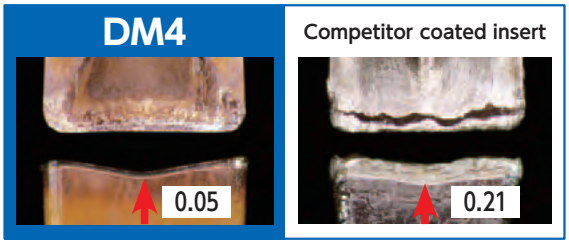
● Comparision of wear amount
Vergleich des Verschleißes



DT4 achieved 130% longer tool life and stable surface finish than Competitor TiAlN insert
DT4 erreicht eine 130% höher Werkzeugstandzeit und Oberflächenqualität als der Wettbewerber

● Comparision of surface finish
Vergleich der Oberflächengüte





※Comparision of DM4 and Competitor after 800 pcs machining
Vergleich zwischen DM4 und dem Wettbewerber nach 800 gefertigten Teilen

DM4 showed excellent wear resistance compared to the competitor's carbide
DM4 zeigt ein exzellentes Verschleiß-Verhalten gegnüber dem Wettbewerb

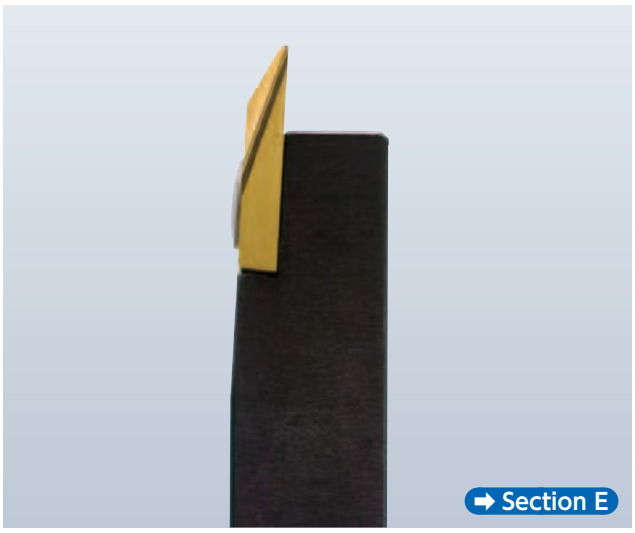
DT4 Applicable applications NEW

DT4 Einsatz und Anwendung

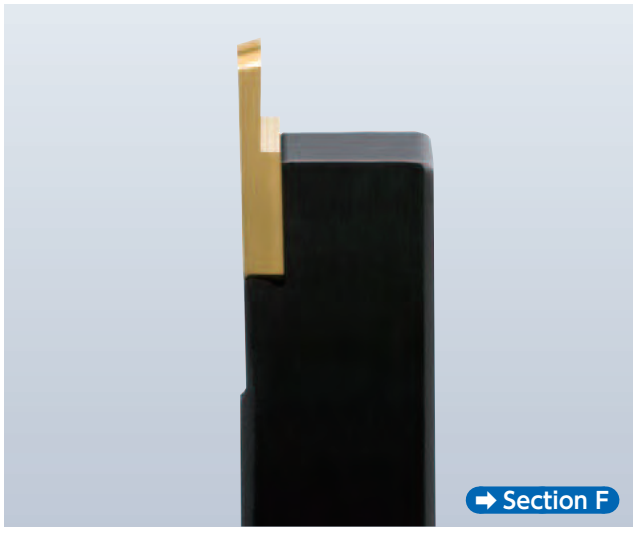
NTK CUTTING TOOLS

Front turning - Plandrehen

Back turning - Hinterbund-Drehen

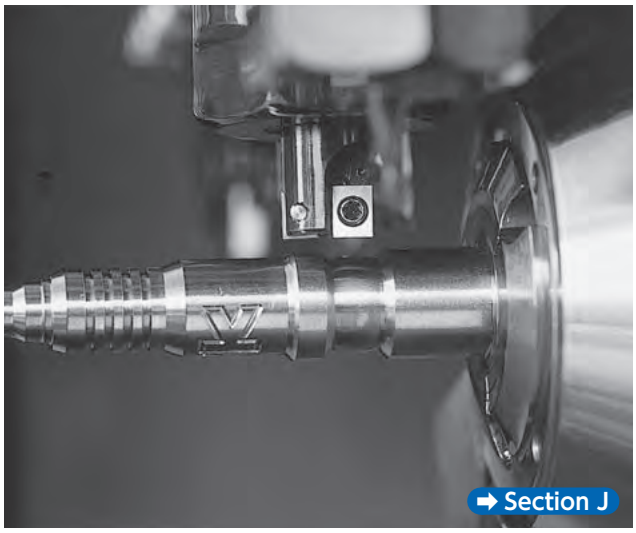


Cut off - Abstechen

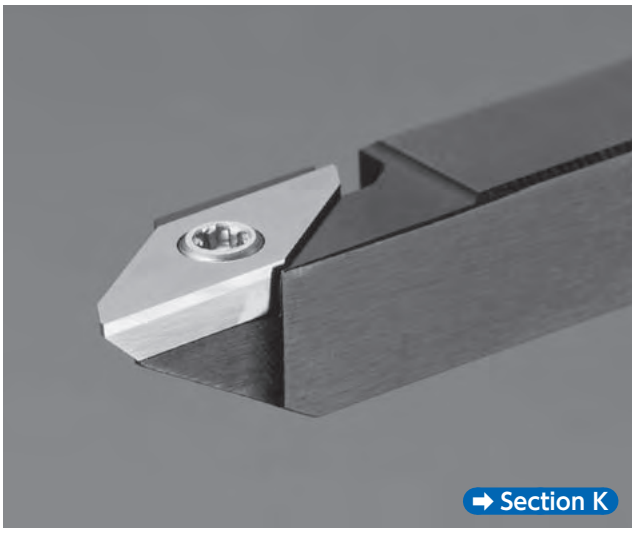


Grooving - Einstechen

End mill - Schaftfräser



CSV Series - CSV-Serie



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DM4 Applicable applications NEW

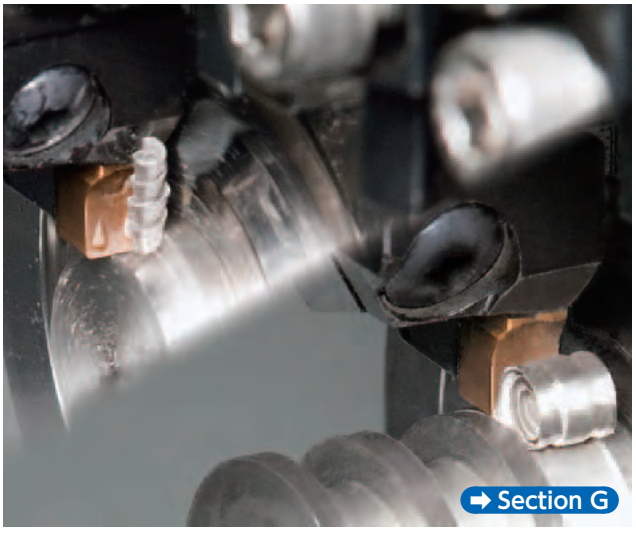
DM4 Einsatz und Anwendung

NTK CUTTING TOOLS

Front turning - Plandrehen

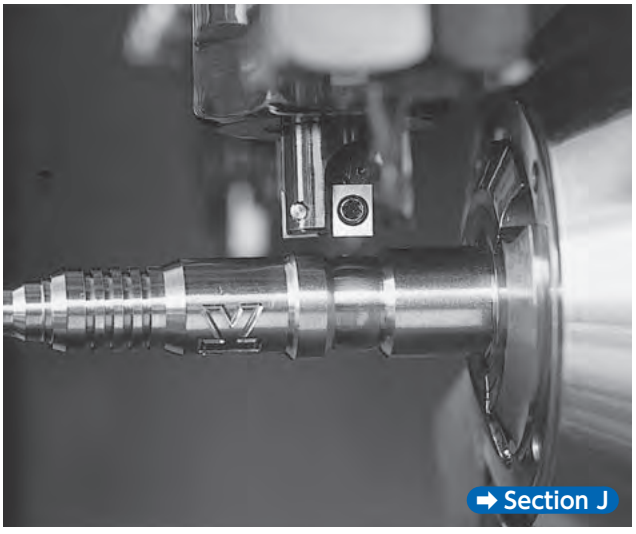
Cut off (Cut Duo) - Abstechen (Cut Duo)

Grooving (Scrum Duo) - Einstechen (Scrum Duo)



Grooving - Einstechen

End mill - Schaftfräser



Ultra-Z coat "TM4" NEW

Excellent insert surface finish and higher coating adhesion !!

Exzellente Oberfäche der Wendeplatte und höhere Festigkeit der Beschichtung !!

Features - Merkmale

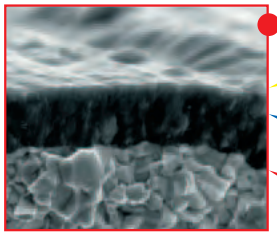
- ***Greatly improved coating adhesion due to the use of a triple titanium gradient hardening film.***

  Stark verbesserte Beschichtung durch Verwendung einer dreifachen Titanschicht.

- ***The hard surface layer has excellent in deposition resistance and superior surface finish enabling a superb-quality machined surface.***

  Die harte Oberfläche der Beschichtung bietet einen exzellenten Widerstand gegen Material-Anhaftungen und ermöglicht dadurch herausragende Werkstück-Oberflächen.

Film structure - Schicht-Aufbau

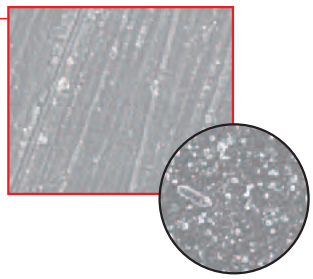


Excellent deposition resistance
Widerstand gegen Aufbauschneiden

Graded hard film
extra dünne Hart-Beschichtung

Outstanding adhesiveness of coating
Extreme Haftungseigenschaften

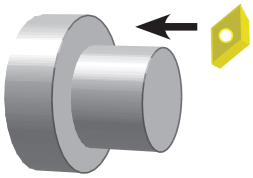
Ultra Z coat



Conventional coating
Herkömmliche Beschichtung

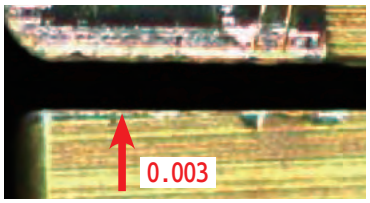
Evaluation of cutting performance - Wettbewerbs-Vergleich

- Cutting condition
  Cutting speed=80m/min
  Feed rate=0.01mm /rev
  Depth of cut=0.3mm ,WET



【Work material】
34CrMo4

New "TM4" coating

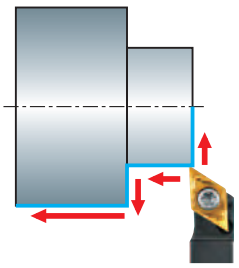


Competitor's coating

Actual machining examples - Bearbeitungs-Beispiele

Automobile parts . Automobil-Werkstück

Work material Werkstoff	: S20CL
Cutting speed (m/min) Schnittgeschwindigkeit	: 220 ~ 240
Feed rate (mm/rev) Vorschub	: 0.05
Depth of cut (mm) Schnitttiefe	: 0.15 ~ 0.5
Coolant Kühlung	: WET

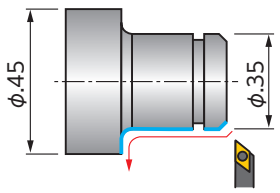


NTK : **TM4**	420 pcs/corner
Competitor's ground chipbreaker (PVD coated) Wettbewerbs-Spanbrecher (PVD Beschichtet)	300 pcs/corner

CL chipbreaker, with sharper cutting edge than competitor's, has achieved highly stable dimensional accuracy and excellent chip control, with less machine troubles due to chips.
CL-Spanbrecher. Durch die excellente Schneidkantenschärfe konnte die Maßstabilität enorm gesteigert und Produktionsstörungen durch Spanprobleme beseitigt werden.

Automobile parts . Automobil-Werkstück

Work material Werkstoff	: 304SS
Cutting speed (m/min) Schnittgeschwindigkeit	: 79.2
Feed rate (mm/rev) Vorschub	: 0.02
Depth of cut (mm) Schnitttiefe	: 1.19
Coolant Kühlung	: WET



NTK : **TM4**	950 pcs
Competitor's PVD-coated carbide	500 pcs

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The TM4 line up.

Die "TM4" Produkt Linie

For boring / Innen-Drehen

STICK DUO® Hyper

➡ A18

For cutting-off / Abstechen

CUT DUO

➡ A12

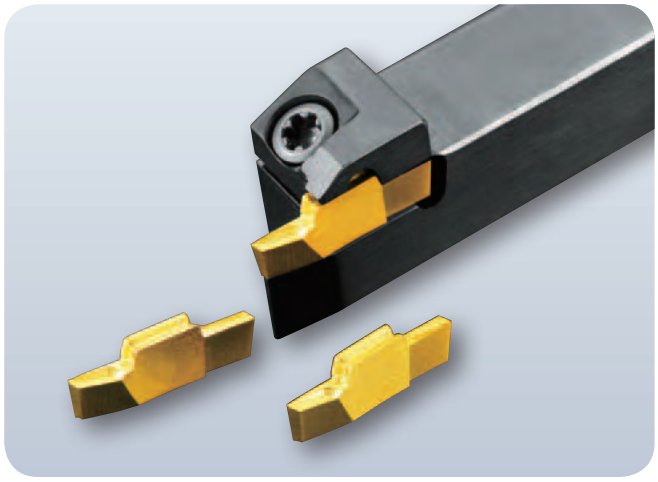
For face grooving / Axial-Stechen

SATURN DUO

➡ A15

For back turning / Hinterbund-Drehen

BACK DUO



➡ A14

Suitable all applications!!

"TM4" ist für alle Produkte-Linien verfügbar!!

UL chipbreaker NEW

NTK CUTTING TOOLS

Sharp and Economical chipbreaker

Scharfer und Wirtschaftlicher Spanbrecher

WATCH ON YouTube

Features - Merkmale ➡ C57 & C60

- ***Negative inserts with Positive like cutting edge***
  Scharfe negative Wendeschneidplatten mit den Schnitteigenschaften einer positiven WSP
- ***Lower cost per corner than positive inserts***
  Niedrigere Kosten pro Schneide gegnüber einer positiven WSP

Cut chips and costs

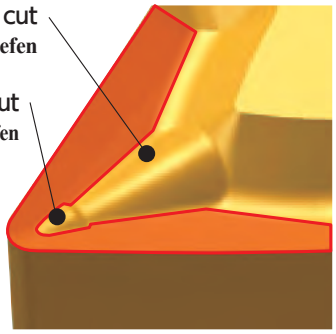
Reduziert die Kosten und kürzt den Span

1 Sharp edge with "double-positive" design

Scharfe Schneide mit "Doppelt Positivem" Design

Breaker for heavy depth of cut
Spanbrecher für höhere Schnitttiefen

Breaker for light depth of cut
Spanbrecher für geringe Schnitttiefen

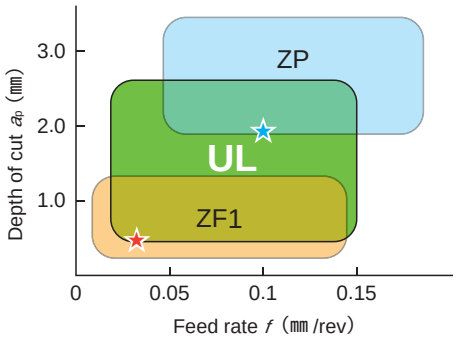


2 Covers wide range of cutting conditions

Deckt einen grossen Anwendungsbereich ab

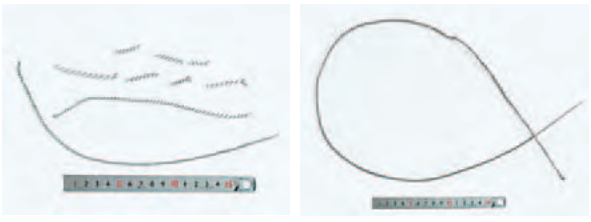
Wide coverage regardless of depth of cut and feed rate

Breite Abdeckung der Spantiefen und Vorschübe



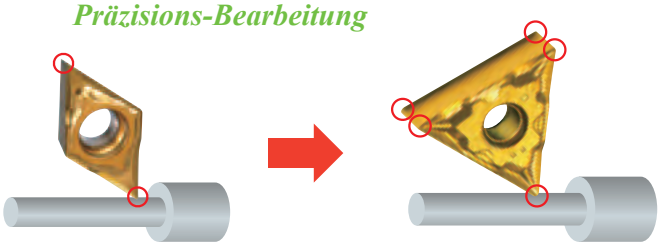
《304 SS》 80m/min WET

★ 0.025mm/rev 0.5mm DOC ★ 0.1mm/rev 2.0mm DOC



3 Reduction in cost

Kostenreduzierung bei Anwendungen in der Präzisions-Bearbeitung



Positive insert with sharp cutting edge is required for Swiss machining.

Präzisions-Bearbeitung erfordert den Einsatz von positiven Wendeplatten

With UL chipbreaker, negative insert provides sharp cutting edge AND more corners.

Der "UL" Spanbrecher verbindet alle Vorteile einer negativen und positiven Wendeschneidplatte. Mehr Schneid-Kanten - aber auch positive Schnitteigenschaft mit exellenter Schneidkantenschärfe.

Toolholders for Swiss-type lathes

Werkzeughalter für Präzisions–Drehmaschinen

Square shank Offset "0"

Vierkant-Aufnahme mit exakter Drehmitte

DS Holder, DS-ACH Holder

DS-Halter, DS-ACH Halter

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AMX chipbreaker NEW

NTK CUTTING TOOLS

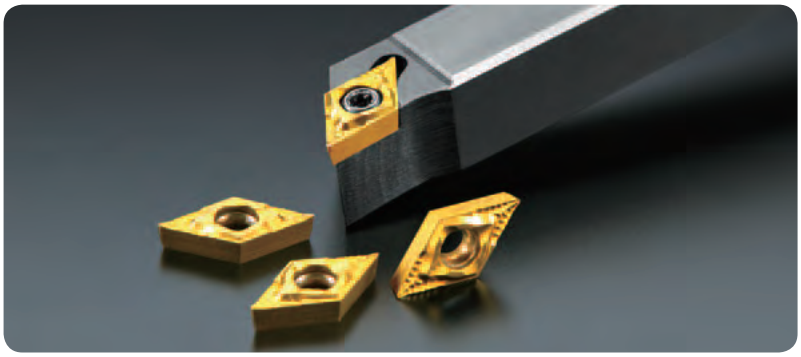
Specific for light cutting
Für geringste Schnitttiefen

WATCH ON YouTube

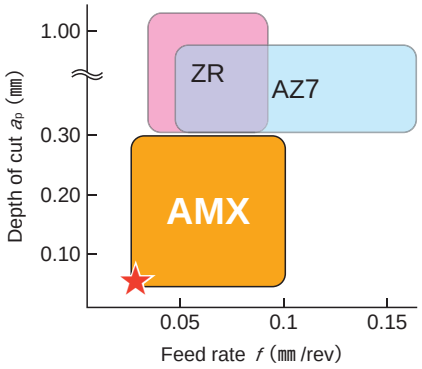
Features - Merkmale

➡ C67

- ***Excellent chip control for very light depth of cut where conventional chipbreakers will not work***
  Exzellente Spankontrolle bei geringen Spantiefen
- ***Perfect choice for Swiss style lathes and secondary-operation machines***
  Perfekte Wahl für Präzisions-Drehmaschinen

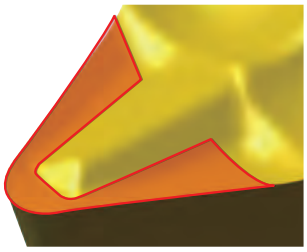


Chip control range - Spanbereich f / a_p



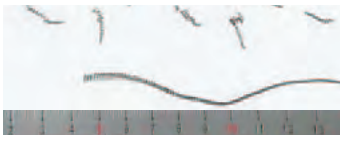
Control chips precisely even under light depth of cut and low feed rate
Präzise Spankontrolle auch bei geringsten Schnitttiefen und Vorschüben.

Burr-free and improved microfinish due to sharp cutting edges
Geringste Gratbildung bei Feinstbearbeitung durch superscharfe Schneidkanten.



Chip control - Spankontrolle

Incredible chip control !
Sensationelle Spankontrolle!

Depth of cut / Schnitttiefe (mm)	Feed rate / Vorschub (mm/rev) 0.02	0.025	0.05
0.05			
0.1			
0.3			

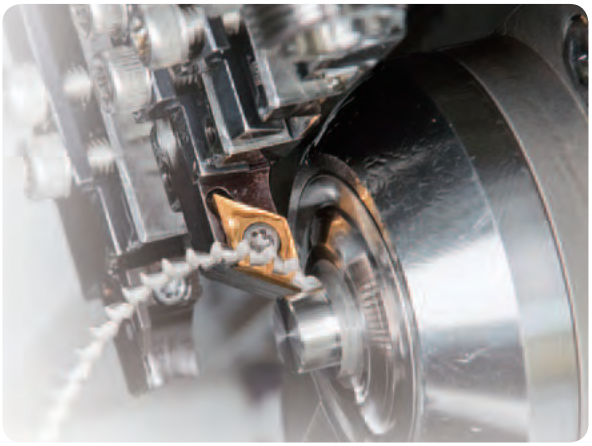
Work material / Werkstoff : 304 SS Holder / Halter : SDJCR1010X07N Insert / Schneidplatten : DCGT070201MAMX TM4
Cutting condition / Schnittbedingungen : 100m/min 0.2-0.05mm /rev 0.05-0.3mm DOC WET

CL chipbreaker NEW

NTK CUTTING TOOLS

All purpose Chipbreaker
Alle Universal-Spanbrecher

WATCH ON YouTube



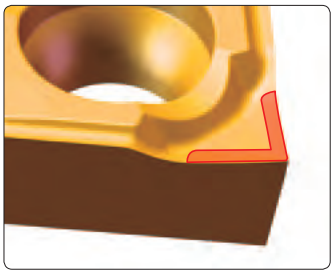
Features - Merkmale ➡ C65 & C67 & C74

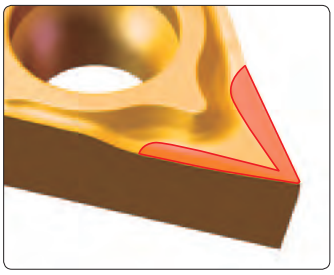
- ***Sharp edged moulded chipbreaker***
  Schärfster gepresster NTK-Spanbrecher mit exzellenter Spankontrolle
- ***Applicable for hard to cut work materials***
  Einsetzbar auch bei schwierigen Materialien
- ***Perfect choice for high precision machining***
  Perfekte Wahl für hochgenaues Bearbeiten
- ***Covers extremely wide cutting range***
  Deckt einen grossen Anwendungsbereich ab

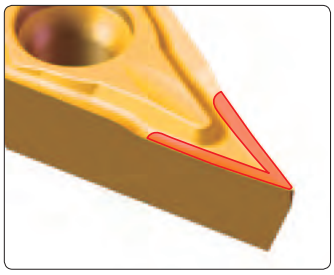
Up-sharp edge - Hochscharfe ansteigende Schneidkante

The combination of high rake angles and sharp cutting edges ensures burr free and stable precision machining

Die kombination eines hochpositiven Spanwinkels und die Verwendung einer Scharfen Schneide ermöglichen geringe Gratbildung und hochgenaue Feinstbearbeitung

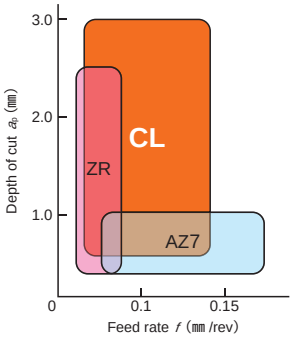






Chip control - Spankontrolle

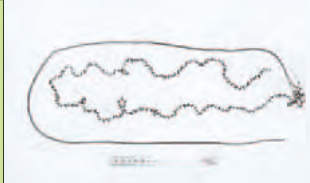
- ***Excellent chip control in wide range of cutting conditions***
  Exzellente Spankontrolle in einem weiten Anwendungsbereich
- ***Applicable for stainless steels to low carbon steels***
  Für alle Stahllegierungen geeignet



Machining of 304 SS
(Dry machining for filming purpose)
(Trockenbearbeitung nur für Filmaufnahme)

80m/min 0.08mm/rev 1.0mmDOC

Chip control comparison - Spanbildung im Vergleich

304 SS	80m/min , WET		
	0.02mm/rev 1.0mm DOC	0.025mm/rev 1.0mm DOC	0.05mm/rev 1.0mm DOC
CL chipbreaker 【DCGT11T301MCL TM4】			
Competitor's 3D chipbreaker			

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Mirror finish ground chipbreaker

Polierter Spanbrecher

Features - Merkmale ➡ C68

- ***All-purpose chipbreaker with good sharpness and high strength***

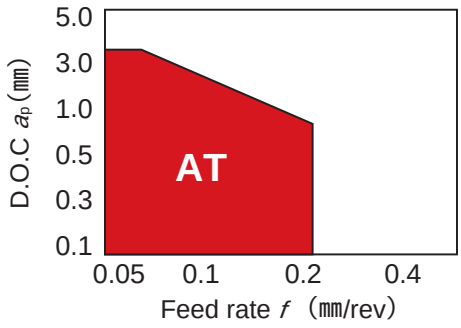
  Alle Universal-Spanbrecher mit hoher Schärfe und Stabilität

- ***Reduce buit-up edge problems with mirror finish ground chipbreaker***
  Available for low-cutting speed condition and for elastic work material

  Reduzierung der Aufbauschneidenbildung durch polierte Spanleitstufen.
  Anwendbar auch bei niedrigen Schnittwerten und für weiche Materialien

- ***Precise machining is possible with E-tolerance type insert***

  Präzise Bearbeitung durch reduzierte Toleranz (E-Toleranz)

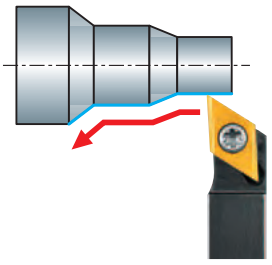


Ground mirror finish
geschliffene Spanleitstufen

Case study - Anwendungsbeispiele

Shaft - Schaft

Work material Werkstoff	: S15C
Cutting speed (m/min) Schnittges chwindigkeit	: 20 ~ 150
Feed (mm/rev) Vorschub	: 0.02
Depth of cut (mm) Schnitttiefe	: 0.10
Coolant Kühlung	: WET

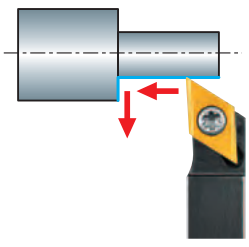


TM4 AT chipbreaker **TM4 AT Spanbrecher**	1,600 pcs/corner
Competitor's ground chipbreaker (PVD coated) Wettbewerbs-Spanbrecher (PVD Beschichtet)	500 pcs/corner

AT chipbreaker achieved stable machining and longer tool life with reducing adhension.
AT-Spanbrecher erreichen hochgenaue Bearbeitung und lange Standzeiten durch Reduzierung der Reibung

Shaft - Schaft

Work material Werkstoff	: S45CL
Cutting speed (m/min) Schnittges chwindigkeit	: 200
Feed (mm/rev) Vorschub	: 0.07
Depth of cut (mm) Schnitttiefe	: 0.5
Coolant Kühlung	: WET



TM4 AT chipbreaker **TM4 AT Spanbrecher**	1,500 pcs/corner
Competitor's ground chipbreaker (PVD coated) Wettbewerbs-Spanbrecher (PVD Beschichtet)	900 pcs/corner

AT chipbreaker avoid the chipping problem, and offered stale machining.
AT Spanbrecher vermeiden Materialabplatzung und ermöglichen sichere Bearbeitungen

CUT DUO NEW

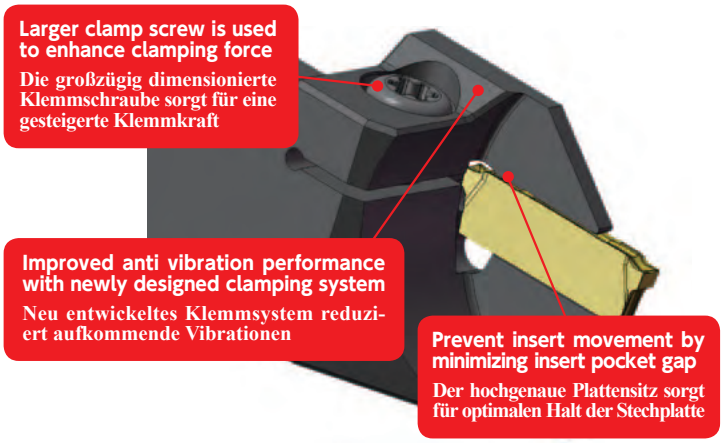
NTK CUTTING TOOLS

High rigidity cut-off tool F120

Hochstabiles Abstech-Werkzeug

Improved clamping system offers more stable machining

Verbessertes Klemmsystem ermöglicht stabile Bearbeitung



New PVD coated carbide "DM4" is available

Neue "DM4" PVD-Beschichtung ist verfügbar

Precision ground ground chipbreaker enables low cutting force and good chip control

Präzisions-Spanbrecher ermöglicht auch bei niedrigen Schnittbedingungen eine gute Spankontrolle

Chip control

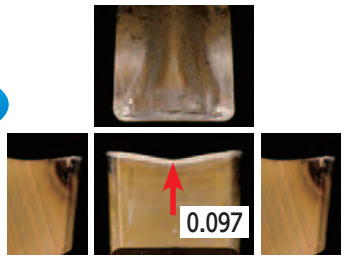
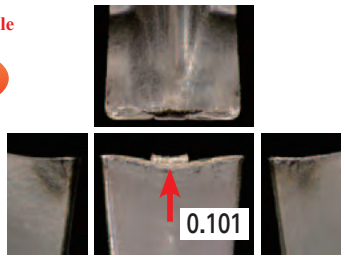
Cutting condition - Schnittbedingungen v_c=80m/min WET

f	0.05mm/rev	0.08mm/rev	0.12mm/rev
34CrMo4			
x5CrNi18-10			

Case study - Anwendungsbeispiele

DM4 doubles tool life over competitors! Superior chip control is an added benefit

DM4 erreicht die doppelte Werkzeugstandzeit gegenüber dem Wettbewerb

Maker	damage	Chip control
NTK CTDPL12-20D20 DM4 CTDP20N02	stable wear Stabile Abnutzung 100pcs/corner 	stable chip control Sichere Spankontrolle  start of machining Bearbeitungs Beginn end of machining Bearbeitungs Ende
Competitor Wettbewerbers	fracture Bruchstelle 50pcs/corner 	unstable chip control Unsichere Spankonrolle  start of machining Bearbeitungs Beginn end of machining Bearbeitungs Ende

[Cutting condition] Work material / Werkstoff : SUS304 Coolant / Kühlung : WET v_c Cutting speed / Schnittges chwindigkeit =110m/min
n Speed / Speed =1751min^{-1} *f* Feed / Vorschub =0.05mm/rev

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For small diameter cut-off

Abstechen von sehr kleinen Durchmessern

Features - Merkmale ➡ F124

Highly rigid CTP type cut-off insert for small diameter (up to 7mm).

Hochstabile CTP-Abstechplatte für kleinste Durchmesser (bis max. 7mm)

1 Anti vibration with newly designed shape.

Anti Vibrations Effekt durch neu entwickelte Form

2 Minimun cut-off width 0.5mm- Avoid waste of workmaterial and cost.

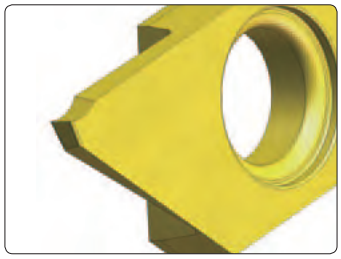
Werkstoff-Kostenreduzierung durch schmalste Abstechbreiten bis 0,5mm

3 Conventinal CTP type tool holder is available.

Konventioneller CTP Werkzeughalter ist verfügbar

Conventional shape

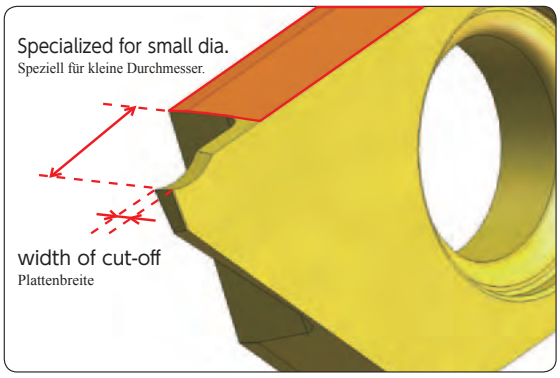
Konventionelle Formgebung



CTP10

New "CTP-SH"

Neues "CTP-SH"



CTP05

BACK DUO NEW

NTK CUTTING TOOLS

New back turning with NTK original moulded chipbreaker

Neues Hinterbund-Drehwerkzeug mit gepresstem NTK-Spanbrecher

WATCH ON YouTube

Features - Merkmale ➡ E106

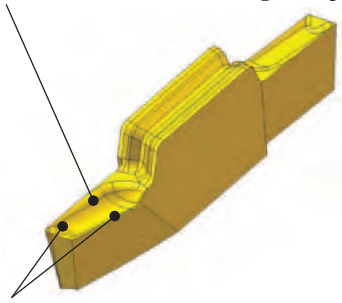
"Single pass back turning" is now possible with our newly designed chipbreaker. Possible to reduce cycle time

"Stechen und Hinterdrehen" in einer Bearbeitung durch neu entwickeltem Spanbrecher. Dadurch deutlich reduzierte Bearbeitungszeiten

1 New 3D chipbreaker
Neuer 3D-Spanbrecher

PAT.P

Excellent surface with good chip control
Excellente Oberfläche mit guter Spankontrolle

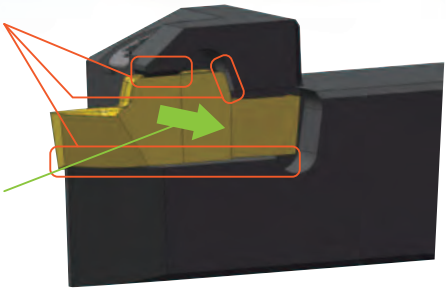


Improved surface finish thanks to wiper facet on cutting edge
Ermöglicht beste Oberfächen durch "Wiper" Schneidentechnologie

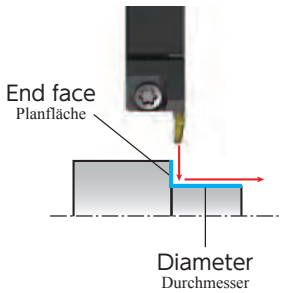
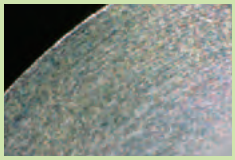
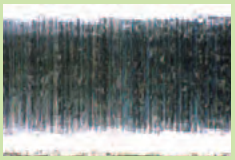
2 New clamping system
Neues Spann-System

Stable clamping force from three face contact with V-bottom
Stabile Klemmung durch Dreipunkt-Kontakt und V-Bodenprofil

Utilizes tool pressure to increase clamping force
Verwendet den aufkommenden Werkzeugdruck zur Klemmdruck-Erhöhung



Surface comparison for SUS304 - Oberflächen Vergleich bei 1.4301

1Pass	BACK DUO		Competitor Wettbewerbers	
	End face Planfläche	Diameter Durchmesser	End face Planfläche	Diameter Durchmesser
				
	Excellent surface Exzellente Oberfläche	Ra : 0.90 μm Rz : 4.11 μm	Rough surface Schrupp-Oberfläche	Ra : 2.16 μm Rz : 10.28 μm

Work material / Werkstoff : SUS304 Holder / Halter : TBDPR12 Insert / Schneidplatten : TM4 TBDP2201MR
Cutting condition / Schnittbedingungen : v_c=80m/min f (x)=0.02mm /rev f (z)=0.08mm /rev a_p=3.0mm WET

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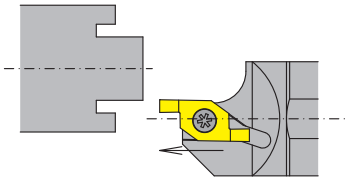
SATURN DUO NEW

NTK CUTTING TOOLS

Features - Merkmale

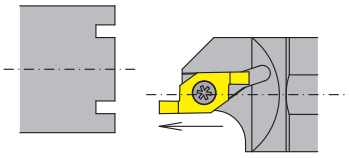
- ***FGV type for face grooving and FBV for face machining***
  FGV für Axial-Stechen und FBV für Plan-Drehen
- ***Economical double-corner specification***
  Wirtschaftliche Doppel Schneide
- ***Improved tool rigidity by optimizing the overhang and holder shape***
  Verbessert die Werkzeugstabilität durch Optimierung des Überhangs und der Halter-Form
- ***Gang-type, front-gang-type and sleeve holder types available***
  Verfügbar für Langdreher, Mehrspindler und Revolverdrehmaschinen

FGV for face grooving - FGV für Axial-Stechen



Holder : L-hand
Halter : Linke Ausführung

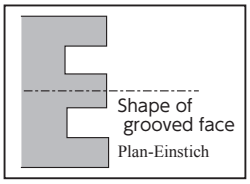
Insert : L-hand
Schneidplatten : Linke Ausführung



Holder : R-hand
Halter : Rechte Ausführung

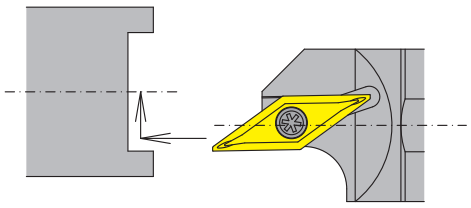
Insert : R-hand
Schneidplatten : Rechte Ausführung

Target work shape
Erforderliche Bearbeitung



- Grooving possible under a wide range of cutting conditions due to strengthened rigidity of both inserts and holders
  Große Anwendungsbreite durch erhöhte Stabilität von Halter- und Platten-System
- Minimum machining diameter 6mm, groove width from 1.0 mm.
  Kleinster Bearbeitungs-Durchmesser 6mm, Stechbreite ab 1mm
- L-hand types available for machining work with a boss
  Linke Ausführung ist geeignet für Einstiche an versetzten Planflächen

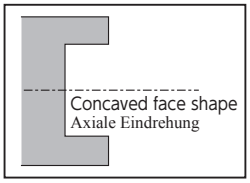
FBV for face machining - FBV für Plan-Drehen



Holder : R-hand
Halter : Rechte Ausführung

Insert : R-hand
Schneidplatten : Rechte Ausführung

Target work shape
Erforderliche Bearbeitung



- Further improved face machining efficiency
  Leistungs Verbesserung bei der Stirnseitenbearbeitung
- Minimum machining diameter 8mm
  Kleinster Bearbeitungsdurchmesser 8mm

SCRUM DUO NEW

New grooving tool with NTK original moulded chipbreaker

Neues Stechwerkzeug mit Original NTK Spanbrecher

WATCH ON YouTube

Features - Merkmale ➡ G136

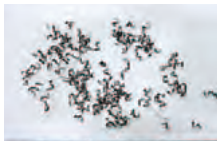
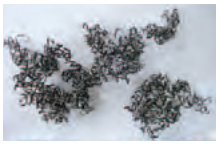
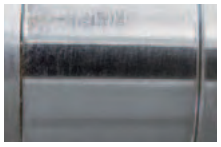
"SCRUM DUO" offers excellent stable machining and longer tool life in grooving and side turning

"SCRUM DUO" ermöglicht exzellente Bearbeitung und erhöhte Werkzeugstandzeiten beim Einstechen und Längsdrehen

Wide coverage from small to large diameter Max grooving depth is "20mm"

Grosse Abdeckung der Bearbeitungs Durchmesser Maximale Stechtiefe "20mm"

Side turning Längsdrehen

	NTK:GW chipbreaker NTK:GW Spanbrecher	Competitor Wettbewerbers
Chip Span		
Surface finish Oberflächen-Güte		

SCM415 v_c=150m/min f=0.1mm/rev a_p=1.0mm WET

Insert / Schneidplatten : DM4 GWPG500N04F-GW

Holder / Halter : GTWPR2525M-5F10

Excellent chip control in side turning process

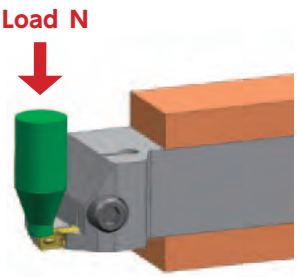
Excellent shiny surface finish

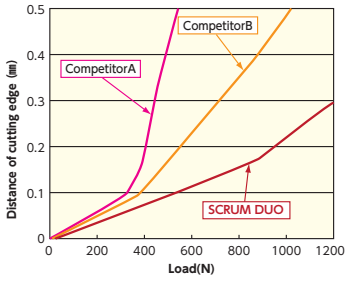
Exzellente Spankontrolle beim Längsdrehen

Exzellente Oberfächen Qualität

Toolholders and inserts designed to obtain higher rigidity

Neuentwickeltes Halter-System und Stechplatte zur Steigerung der Steifigkeit und Stabilität

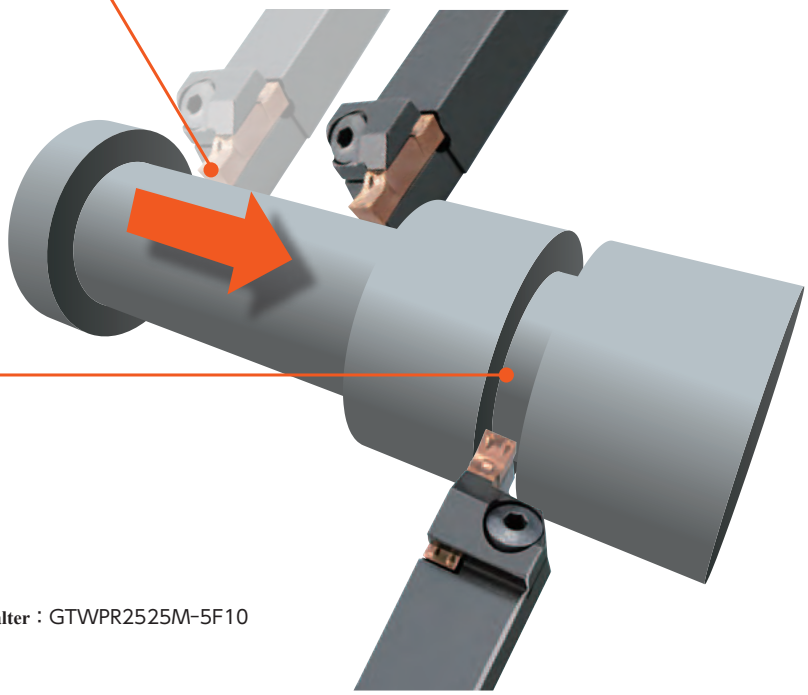




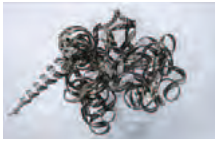
SCRUM DUO : GTWPR2525M-5F10

Thanks to the highly rigid toolholder, side turning with max depth of cut 3.5mm is possible

Durch die Entwicklung des hochstabilen Werkzeughalters, sind Spantiefen beim Längsdrehen von 3,5mm möglich



Grooving Stechen

	NTK:GW chipbreaker NTK:GW Spanbrecher	Competitor Wettbewerbers
Chip Span		
Surface finish Oberflächen Güte		

SCM415 v_c=150m/min f=0.1mm/rev

a_p Grooving depth=7.0mm No step feed WET

Insert / Schneidplatten : DM4 GWPG500N04F-GW、Holder / Halter : GTWPR2525M-5F10

Excellent chip control and excellent shiny surface finish

Exzellente Spankontrolle mit hervorragenden Oberflächen

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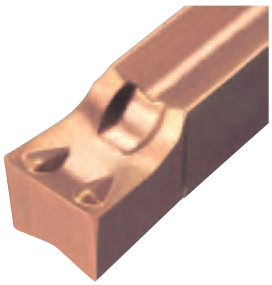
"Della coating DM4" and two types chipbreaker offer longer tool life and excellent surface finishing

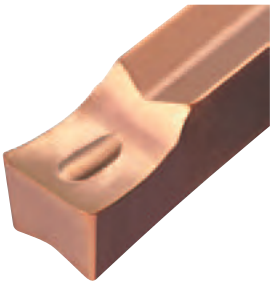
"DELLA coating DM4" und zwei Spanbrecher ermöglichen hohe Werkzeugstandzeiten und exzellente Oberfächen

GW chipbreaker GW Spanbrecher



Multi-purpose chipbreaker utilizing sharpness for better chip control
Side turning is also possible
Multi-Funktionaler Spanbrecher für die Spankontrolle. Längsdrehen ist möglich

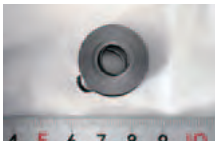
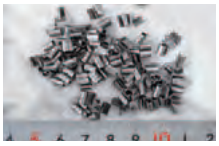
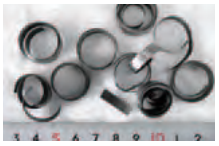
GV chipbreaker GV Spanbrecher



Super sharp chipbreaker with high-rake angle
Best for applications requiring low cutting forces
Super scharfer Spanbrecher mit steilem Spanwinkel
Beste Wahl wenn niedrige Schnittwerte gefordert sind

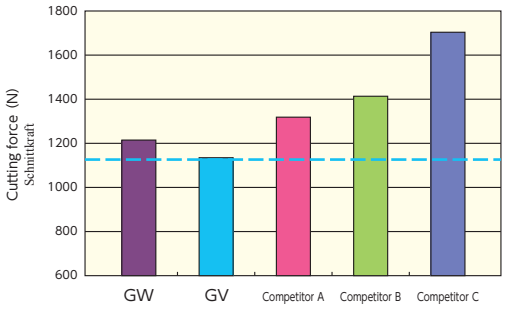
Chip condition (Grooving)

[Cutting condition]
v_c=80m/min f=0.08mm/rev width / width : 5mm WET

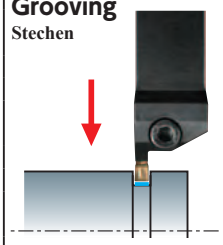
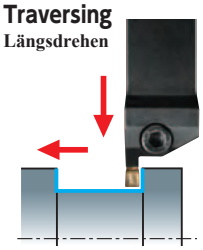
	GW chipbreaker	GV chipbreaker
SUS304		
SUS303		
SCM435		

Cutting force (Grooving)

[Cutting condition]
v_c=150m/min f=0.1mm/rev width / width : 5mm WET



Recommended cutting conditions - Empfohlene Schnittwerte

Application	Work material	Cutting speed (m/min) 50 100 150 200	Feed (mm/rev) 0.05 0.1 0.15	Depth of cut (mm)
Grooving Stechen 	Free cutting steels Automatenstähle			
	Carbon steels, Alloy steels Kohlenstoffstähle, Legierte Stähle			
	Stainless steel Edelstähle			
Traversing Längsdrehen 	Free cutting steels Automatenstähle			- 3.5 (mm)
	Carbon steels, Alloy steels Kohlenstoffstähle, Legierte Stähle			
	Stainless steel Edelstähle			

STICK DUO Hyper NEW

NTK CUTTING TOOLS

STICK DUO Hyper

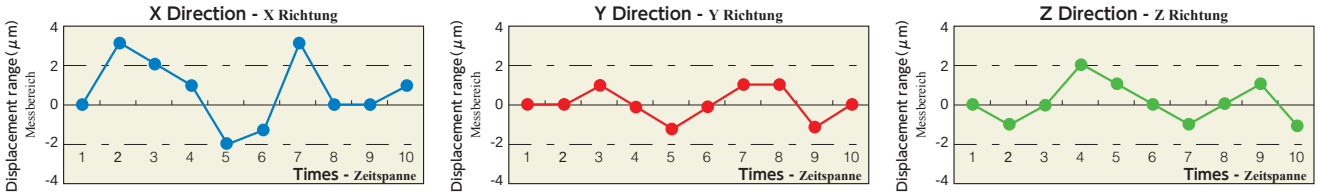
WATCH ON YouTube

Features - Merkmale

➡ H164

- ***Minimum bore diameter ϕ2.2***
  Minimaler Bearbeitungsdurchmesser ab 2,2mm
- ***The one and only double edged solid bar that can be length adjusted!***
  Die Einzige Vollhartmetall Bohrstnge mit zwei Schneidkanten die positioniert werden können
- ***Very precise sleeve that can clamp with high repeated accuracy!***
  Hochpräzise fest klemmbare Hülse mit hoher Wiederholgenauigkeit
- ***Overhang length can be changed by adjusting ball screw!***
  Ausspannlänge wird mit einem Kugelgewinde frei eingestellt
- ***Coated carbide "TM4" as the main grade!***
  "TM4" Beschichtung als Hauptsorte

Repeatability - Wiederhohlgenauigkeit



Line up

SHFS-H

mirror finish
Poliert

SHFS-S

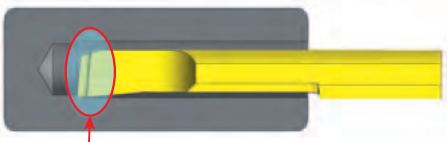
Sharp edge
Spanleitstufe

SHFB-F

Control the chip to feed backward
Kontrollierte Spanleitung nach hinten

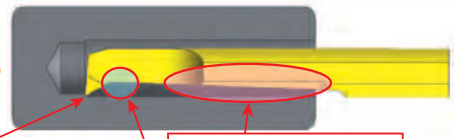
Good chip control No scratch mark on a work piece
Gute Spankontrolle Keine Kratzspuren am Werkstück

SHFS-S



Chipbreaker for sharp cutting - Scharfe Schneidkanten

SHFB-F



30°

Back taper - Verjüngung

Profile and undercut machining possible
Kopier-und Einstech-arbeiten möglich

Anti vibration
Verhindert Vibrationen

Wide chip clearance area - Grosse Spantasche

Backward chip control
Span wird nach hinten geleitet

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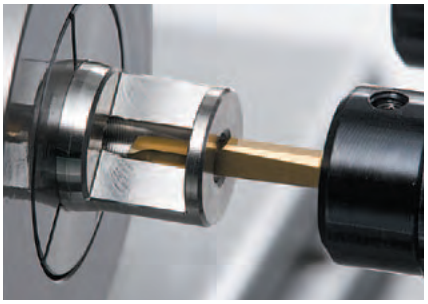
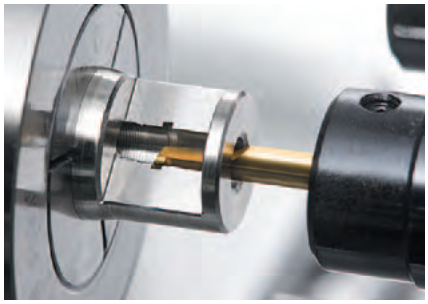
LINE UP "STICK DUO" NEW

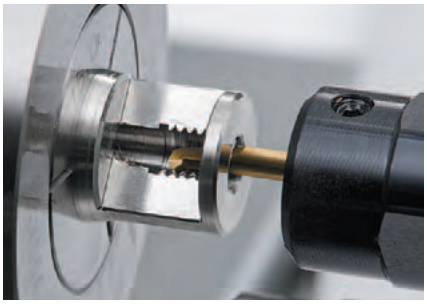
NTK CUTTING TOOLS



Boring - Bohren



Grooving - Einstechen

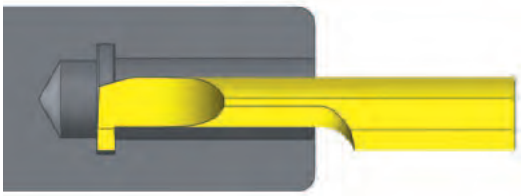


Threading - Gewindeschneiden

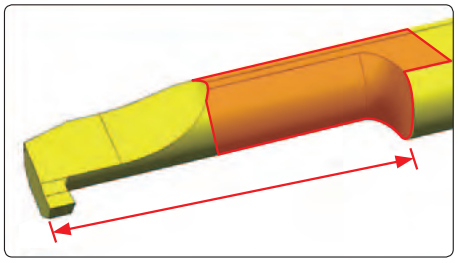
Grooving - Einstechen ➡ G151

- ***Minimum machining dia ϕ3-***
  Minimaler Bearbeitungsdurchmesser ab 3mm
- ***Groove width 0.5/0.75/1.0/1.5/2.0mm line up***
  Nutbreite 0,5/0,75/1,0/1,5/2,0mm

SBG

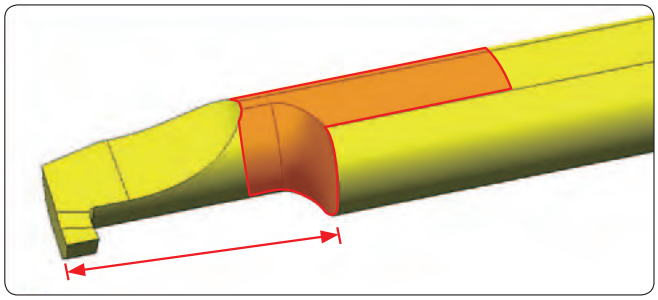


Normal type - Normale Ausführung



For various applications
Vielseitige Anwendungen

Short Type - Kurze Ausführung

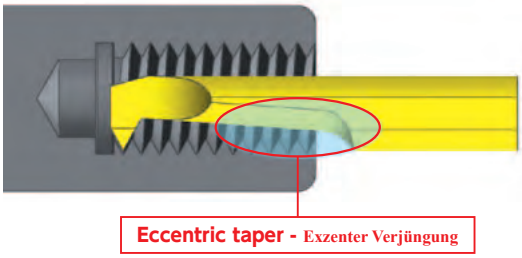


For Anti-vibration
Geringe Vibrationsneigung

Threading - Gewindeschneiden ➡ I 192

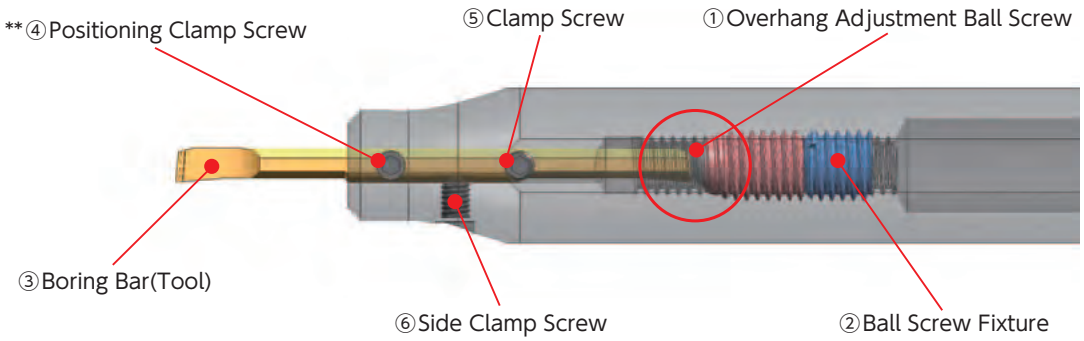
- ***Minimum threading size M4***
  Kleinstes mögliches Gewinde M4
- ***Minimum pitch 0.5-***
  Kleinste mögliche Gewindesteigung 0,5-
- ***Rigid design***
  Steifere Ausführung

SBT



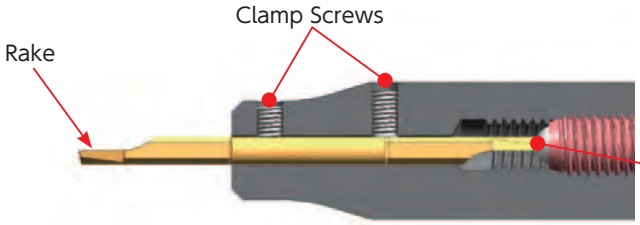
Installation Procedure for STICK DUO Hyper

Boring Tool Clamping Procedure



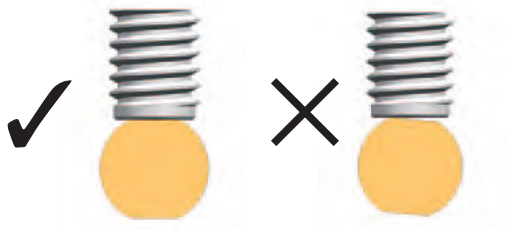
①Position the overhang adjustment ball screw to determine overhang amount
②Slide the ball screw fixture to secure the ball screw location
③Insert a boring bar (tool)

Note: Make sure to insert the boring bar correctly so that the rake faces toward the side where clamp screws are located



Caution: Improper installation dramatically increases the chance of chipping cutting edge

④Secure the boring bar by tightening the positioning clamp screw ▶Recommended Clamping Torque:17.7 lb in
** Make sure to clamp the boring bar so that flat surface of the bar makes proper contacts with clamp screws



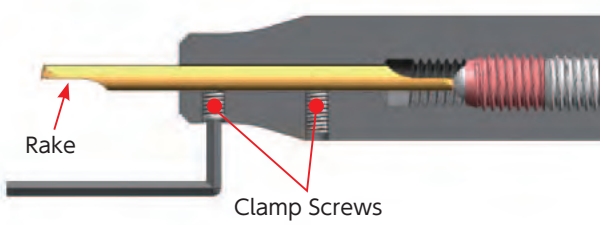
Improper clamping of boring bar causes unstable centerline height and offset

⑤Secure the boring bar by tightening the remaining clamp screws ▶Recommended Clamping Torque:17.7 lb in
⑥Even if 4 and 5 cannot be applied due to tool clearance and layout, the tool can be used only by using side clamp

Once the initial setup is complete, repeat the above procedures 3 thru 5 for each index

When tool is installed upside down

Toolholder must be installed so that clamp screws and rake of the tool face toward the same side



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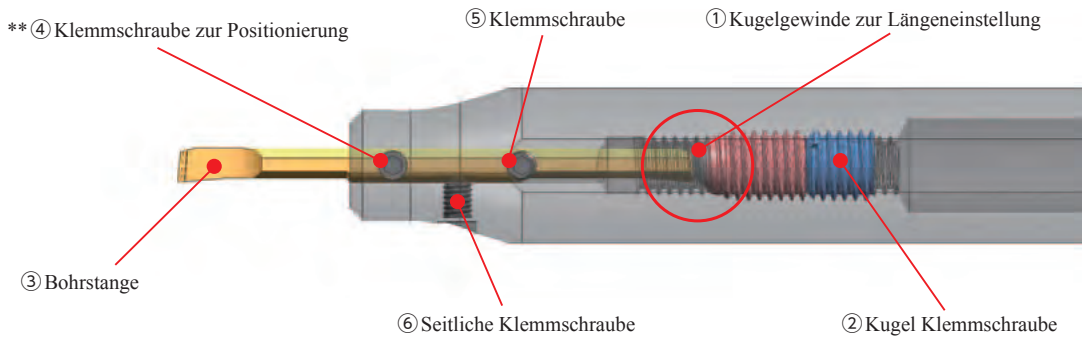
Montage Anweisung für STICK DUO HYPER

Einbau der Bohrstange

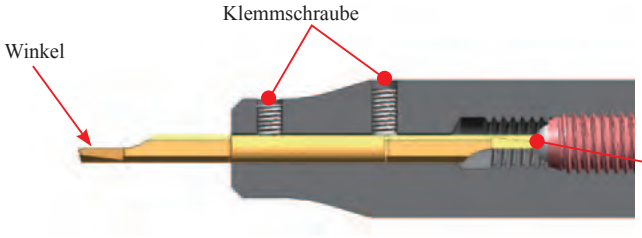


① Das Kugelgewinde verschieben und die Gesamtlängenpositionierung vornehmen

② Die Schraube zum Feststellen des Kugelgewindes verschieben und fixieren

③ Die Bohrstange einführen

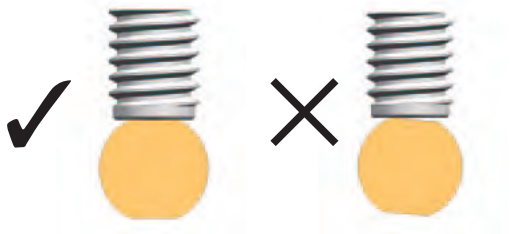
Anm.1) Die Bohrstange gemäß der Zeichnung so einführen, das die Schneidfläche und die Klemmschraube auf der gleichen Seite liegen



Achtung : Bei unsachgemäßem Einbau besteht die Gefahr das die Spitze absplittert

④ Mit der Positionierungs Klemmschraube die Bohrstange festklemmen ►Empfohlene Anzugsdrehmoment : 2Nm

Anm.2) Achten Sie beim Festklemmen darauf, das der flache Teil der Bohrstange auf der Unterseite der Schraube aufliegt



Wenn die Bohrstange verdreht bzw. schief eingebaut wird, kann keine einheitliche Spitzenhöhe erreicht werden

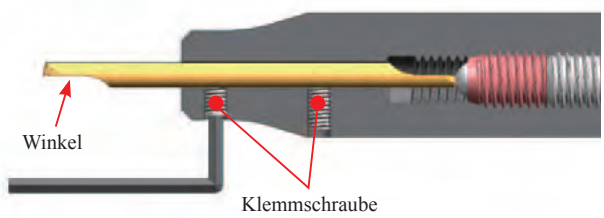
⑤ Sichern Sie die Bohrstange mit der Klemmschraube Empfohlener Drehmoment : 2Nm

⑥ Wenn aufgrund des zu bearbeitenden Werkstückes die Klemmschrauben von Schritt 4 und 5 nicht angezogen werden, ist die Verwendung auch nur mit der Seitenklemmschraube möglich

Nach der ersten Korrektur der Bohrstange, die Schritte 3-5 nochmals durchführen

Hinweise zur Benutzung einer Umkehrbohrstange

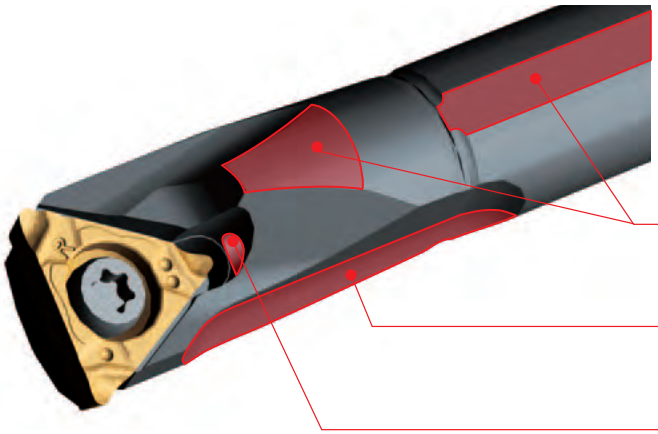
Achten Sie wie bei Anm.1 darauf, das die Schneidfläche und die Klemmschraube auf der gleichen Seite liegen



MogulBar NEW

Anti vibration boring bar !

WATCH ON YouTube



Features ➡ H172～H176

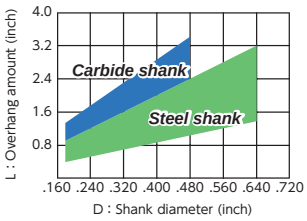
- ***High rigidity + Minimal flat widths Reduce vibration***
- ***Large clearance for improved chip evacuation***
- ***All MogulBar boring bars are through coolant***

Recommended amount of overhang

Steel Shank **L/D≦5**

Carbide Shank **L/D≦7**

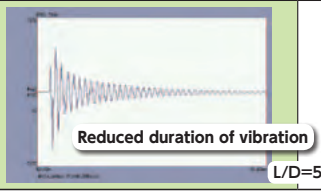
L : Overhang
D: Shank diameter



[Cutting condition example]
Work materials: Alloy steel, stainless
80 m/min 0.05-0.1 mm/rev 0.1-0.5mn DOC WET

Vibration analysis

MogulBar	Other boring bars

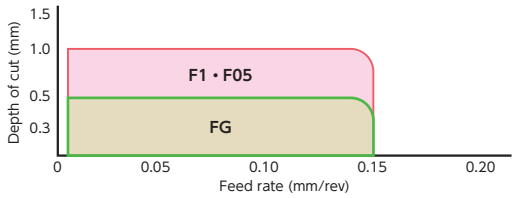


Note: Assuming a 100N load is applied. Equal amount of force was applied to both bars for vibration analysis.
Boring bar used in above analysis: S08H-STUPR09D10-OH

F Chipbreakers - Evacuate chips BACKWARD

- **F chipbreakers allow chips to evacuate backward**
- **Combination of the F-chipbreakers and MogulBar delivers the best performance**

Recommended Cutting Condition Range



F Chipbreakers - Features ➡ C73

	DOC (mm)	Feed (mm/rev) 0.05	Feed (mm/rev) 0.1
FG Chipbreaker NEW ● Best for finishing ● Works for small DOC (0.5 mm or less) ● High rake angle 	0.1		
	0.3		
F1/F05 Chipbreakers ● Cover wide condition range ● Ground chipbreaker 	0.5		
Note: Right-hand inserts with FG and F1 chipbreakers should be used with right-hand holders	[Cutting condition example] Carbon Steel Diameter : ϕ12 80 m/min Boring depth : 20 mm Coolant Holder : S10K-STUPR11D12-OH Insert : TPGH110304		

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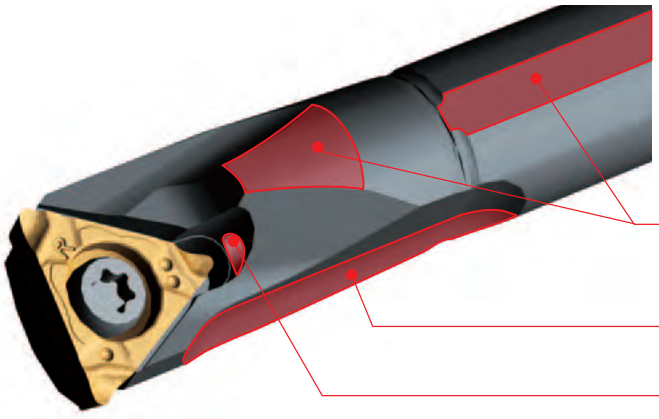
Vibrationsarme Bohrstange



Merkmale

- *Hohe Steifigkeit + Minimale Flächen Breiten Reduzieren Vibrationen*
- *Grosser Spanraum zur Spanabfuhr*
- *Alle "MOGUL Bars" mit Innenkühlung*

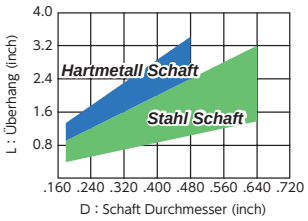
Empfohlene Auskraglänge

Stahl Schaft **L/D≦5**

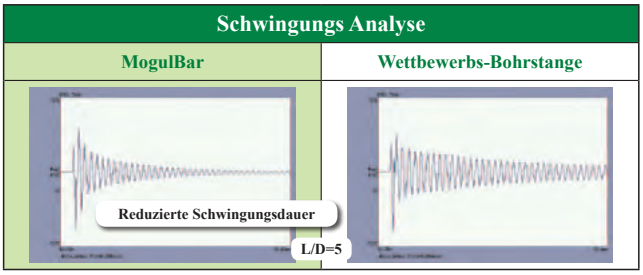
Hartmetall Schaft **L/D≦7**

L : Überhang
D: Schaft Durchmesser

[Bearbeitungs Beispiele]
Werkstoffe: Legierter Stahl, Edelstahl
80 m/min 0.05–0.1 mm/rev 0.1–0.5mn DOC WET



Schwingungs Analyse

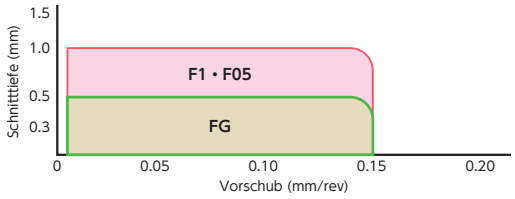


Anm : Zur Analyse der Schwingungen wurde bei beiden Bohrstangen eine Kraft von 100N angewendet. Verwendete Bohrstange: S08H-STUPR09D10-OH

F-Spanbrecher- Rückseitige Spanabfuhr

- **F-Spanbrecher ermöglicht eine rückseitige Spanabfuhr**
- **F-Spanbrecher in Kombination mit Mogul Bar bietet die beste Leistung**

Empfohlener Anwendungsbereich



Mogul Bar für Innen ZurückdrehenFeatures ➡ C73

	Schnitttiefe (mm)	Vorschub (mm/rev) 0.05	Vorschub (mm/rev) 0.1
FG Spanbrecher NEW ● Perfekt zur Fertigbearbeitung ● Perfekt für geringe Spantiefen (0.5 mm or less) ● Großer Spanwinkel 	0.1		
	0.3		
F1/F05 Spanbrecher ● Deckt einen breiten Anwendungsbereich ● Grund Spanbrecher 	0.5		
Anm.: Wendeschneidplatten in rechter Ausführung müssen in rechten Werkzeughaltern verwendet werden	[Bearbeitungs Beispiele] Kohlenstoff Stähle Durchmesser : φ12 80 m/min Bohrungstiefe : 20 mm Kühlung Halter : S10K-STUPR11D12-OH Schneidplatten : TPGH110304		

"C-STZP" type NEW

Mogul bar for internal back turning !

Mogul Bar für Innen Zurückdrehen

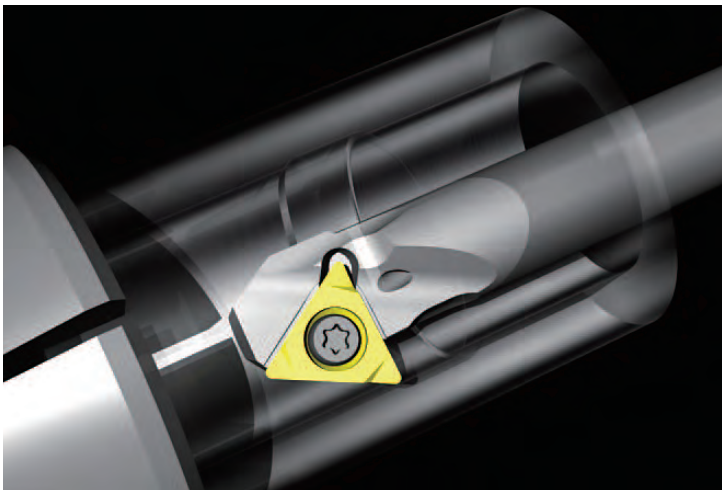
Features - Merkmale ➡ H176

Prevent chatter with high rigidity toolholder design

Neues Werkzeugdesign ermöglicht eine höhere Steifgigkeit zur Reduzierung von Rattermarken

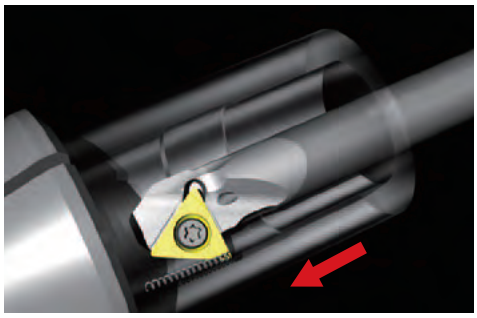
- **Higher rigidity toolholder offers max. machining length L/D ≦7**

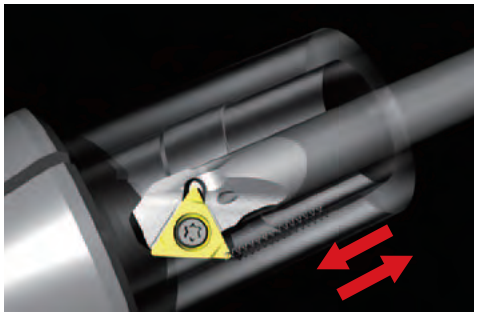
  Höhere Werkzeugsteifigkeit ermöglicht Bearbeitungen bis L/D ≦ 7



Both boring and back boring are possible

Neues Werkzeugdesign ermöglicht eine höhere Steifgigkeit zur Reduzierung von Rattermarken





"S-BG" type NEW

Mogul bar for internal grooving

Mogul Bar für Inneneinstechen

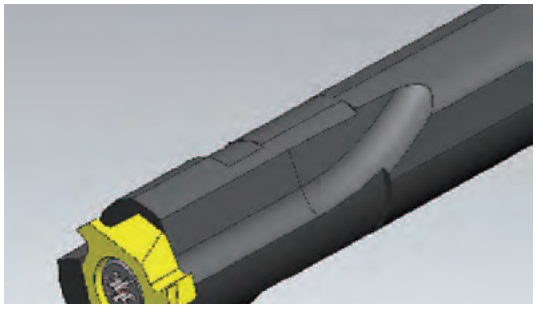
Features - Merkmale ➡ G152

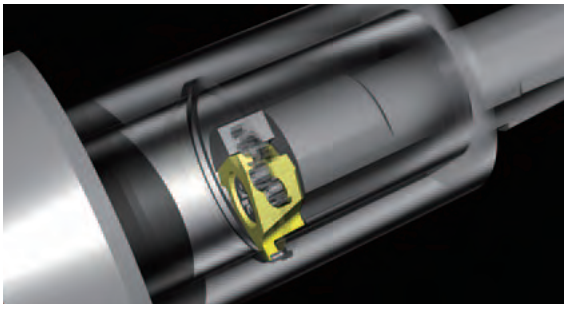
Prevent chattering with higher rigidity toolholder design

Neues Werkzeugdesign ermöglicht eine höhere Steifgigkeit zur Reduzierung von Rattermarken

Sharp cutting edge prevents burrs

Scharfe Schneidkanten verringern die Gratbildung





Newly designed chipbreaker offers good chip control

Neuer Spanbrecher bietet eine hervorragende Spankontrolle

Economical 3 cutting edges

Wirtschaftlich durch 3 Schneidkanten

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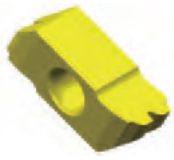
The solution for high performance screw production !

Die Lösung für die Hochleistungs Schrauben Produktion!

Features - Merkmale

➡ I 196

- **Dramatically improved productivity in thread forming operations**
  Drastische Verbesserung der Leistungsfähigkeit bei der Gewinde-Dreh-Operation
- **NTK's unique design technology (patented) makes precise and accurate inserts possible, the first time, without any redesign or adjustment**
  NTK's einzigartige,patentierte,Technolgie ermöglicht schon beim ersten Entwurf,einen präzisen und genauen Schneideinsatz, ohne weitere Neugestaltung.
- **Excellent surface finish and longer tool life than competitors'**
  Exzellente Oberflächen und längere WZ Standzeiten gegenüber dem Wettbewerb
- **Sharp cutting edge allows reduced tool pressure and superior chip control**
  Scharfe Schneidkanten reduzieren die Schnittkräfte und verbessern die Spankontrolle

	Double-lead threads	Triple-lead threads
Work	Bone screw	Worm gear
Work material	Ti-6Al-4V ELI	brass
Work appearance		
Insert appearance		
Major Dia.	ϕ4.0 mm	ϕ7.0 mm
Minor Dia.	ϕ2.4 mm	ϕ4.7 mm
Pitch	ϕ3.42 mm	ϕ4.9 mm

Mutiple-Lead Thread Whirling - Multiple-Lead Gewindewirbeln

Form multiple-lead threads in a single-pass
Fertigstellung des Gewindes in einem Bearbeitungsdurchgang

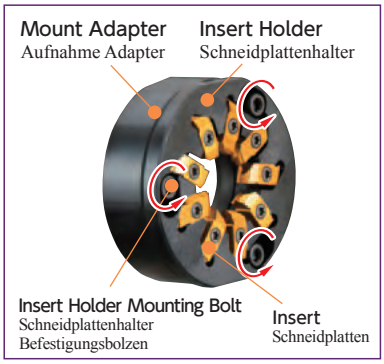
- Reduce cycle time by more than half*
  Reduziert die Bearbeitungszeit um mehr als 50%*
- 6.5mm thick inserts accommodate large pitch and lead
  6,5mm starke Schneideinsätze könne große Anstellwinkel und Gewindesteigungen aufnehmen

Patented
Patentgeschüzt

* Applies to cycle time for thread whirling only
Does not apply to total cycle time. Actual results may vary
Bezieht sich nur auf die Bearbeitungszeit des Gewindewirbelns. Bezieht sich nicht auf die gesammte Bearbeitungszeit.
Die tatsächlichen Ergebnisse könne variieren.

NTK's Unique Attachment System - NTK's Einzigartiges Aufnahme System

NTK' s whirling insert holder can be attached and detached without removing mounting bolts
NTK's Gewindewirbeleinsätze können aus- und eingebaut werden ohne die Befestigungsbolzen zu entfernen.



① Loosen the Mounting Bolts
Lösen des Befestigungsbolzens

② Rotate the Insert Holder to 10 degrees
Verdrehen des Scheidplattenhalters um 10 Grad

③ Pull the Whirling Insert Holder without pull out the Mounting Bolts
Herausziehen des Gewindewirbeleinsatzes ohne entfernen des Befestigungsbolzens.

Small Diameter Indexable End Mills NEW

NTK CUTTING TOOLS

Features - Merkmale

➡ J201

- **Precise machining is possible with low-cutting force chipbreaker**

Präzise Bearbeitung durch die geringen Schnittkräfte eines speziellem Spanbrechers.

- **"DT4" new coating improves wear and adhension resistance which results in longer tool life Excellent for oxidization resistance Superior sharp cutting edge**

"DT4" Neue Beschichtung mit niedrigem Reibungskoeffizienten und hoher Haftfestigkeit Daraus ergibt sich eine exzellente Standzeit und Oxidations Widerstand bei ausgezeichneter Schneidkanten Schärfe

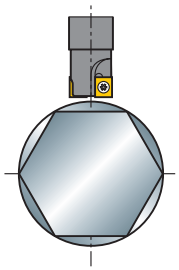
Recommencled cutting conditions - Empfohlene Schnittwerte

Work material Werkstoff	Cutting speed Schnittgeschwindigkeit (m/min)	Traversing feed rate Vorschub Seitwärtsdrehen (mm /t)	Depth of cut Schnitttiefe (mm)	a_p (mm)
Stainless / Steel Edelstahl	40 ~ 60	~ 0.05	~ 1.5	-50% of cutter diameter 50% des Fräserdurchmessers
Non-ferrous metals Nichteisenmetalle	80 ~ 120	~ 0.05	~ 3.0	-50% of cutter diameter 50% des Fräserdurchmessers

Case study - Anwendungsbeispiele

Connecter / Verbindungsstück

Work material Werkstoff	: SUS304
Cutting speed (m/min) Schnittges chwindigkeit	: 75
Speed (min⁻¹) Geschwindigkeit	: 1,200
Feed (mm/min) Vorschub	: 70
Depth of cut (mm) Schnitttiefe	: ~ 1.25
Coolant Kühlung	: WET



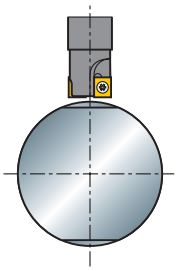
TM4 with chipbreaker	300 pcs/corner
NTK non chipbreaker	200 pcs/corner

NTK Endmill insert with chipbreaker offered good surface of workmaterial with good sharpness, stable machining.

NTK Wendeschneidplatten mit Spanbrecher stellen hervorragende Oberflächen mit scharfen Kanten her, stabile Bearbeitung.

Machine parts / Maschinenbauteil

Work material Werkstoff	: SUM24L
Cutting speed (m/min) Schnittges chwindigkeit	: 80
Speed (min⁻¹) Geschwindigkeit	: 2,100
Feed (mm/min) Vorschub	: 300
Depth of cut (mm) Schnitttiefe	: 0.8
Coolant Kühlung	: WET



TM4 with chipbreaker	350 pcs/corner
Comp. solid endmill	260 pcs/corner

NTK Endmill insert with chipbreaker offered stable machining, longer tool life and excellent surface.

NTK Wendeschneidplatten mit Spanbrecher ermöglichen stabile Bearbeitung , lange WZ Standzeit und exzellente Oberflächen

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DS Holders with adjustable center height NEW

NTK CUTTING TOOLS

New Products

Features - Merkmale ➡ D85, D89, D95, D99

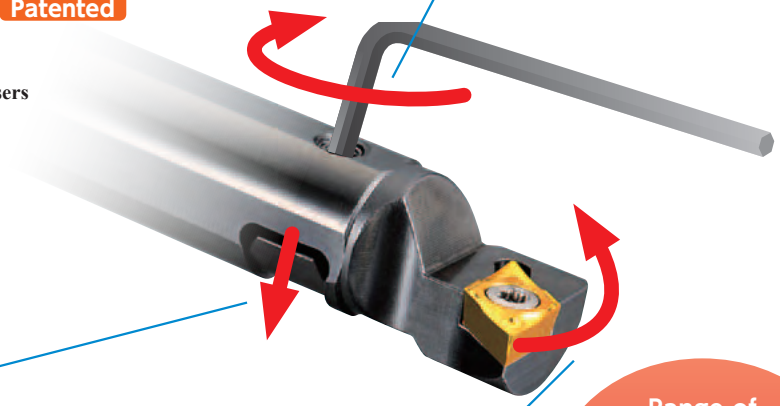
1 Adjust centerline height easily
Einfaches Einstellen der Mittenhöhe

Eliminate center boss on end faces Patented
Verhindert die Mittenspitze beim Plandrehen

Provides constant OD dimension
Sichert die Maßhaltigkeit des Außendurchmessers

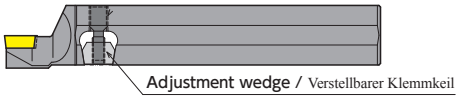
Adjust easily in machine
Einfaches einstellen bei der Bearbeitung

Setting time is reduced
Einstellzeit wird reduziert



1 *Turn a screw clockwise*
Verstellung im Uhrzeigersinn

2 *Setting time is reduced*
Einstellzeit wird reduziert

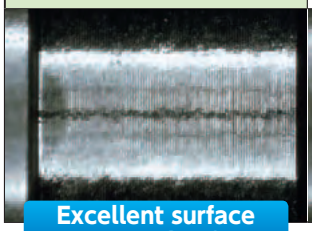
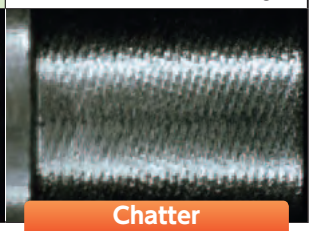


3 *Insert edge moves up*
Schneidkante bewegt sich nach oben

Range of centerline height adjustment
Bereich der Mittenhöhen Verstellung
0 ~ 0.2mm

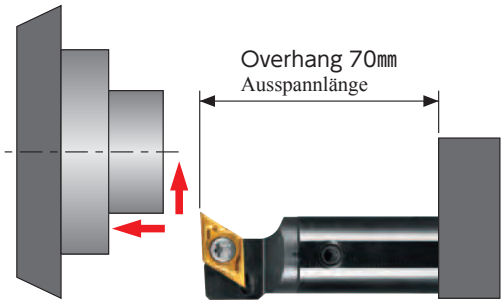
2 Optimized design reduces vibration
Optimiertes design verringent Vibrationen

Improved chatter resistance
Verhindert Rattermarken

DS-ACH type	Conventional type Konventionelle Ausführung
	
Excellent surface Exzellente Operfäce	Chatter Rattern

Tested cutting conditions. SUS304

Work material / Werkstoff : SUS304
Holder / Halter : DS-SDUL19-11-ACH
Insert / Schneidplatten : TM4 DCGT11T302MCL
Cutting condition / Schnittbedingungen : V_c = 75 m/min , f = 0.05 mm /rev, a_p = 2.0 mm

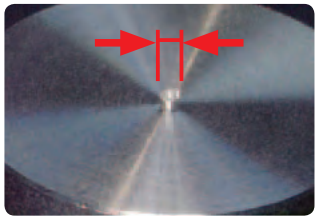


How to use - Die Richtige Anwendung

Insert moves in an upward direction only. See the instruction shown on the back page.
(Loosen wedge screw before making any adjustment)

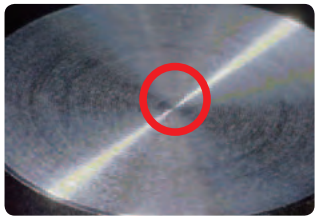
Die verstellung der Platten erfolgt nur aufwärts. Bitte beachten Sie die Darstellung der folgenden Seite.
(Vor der Verstellung muß der Klemmkeil gelöst werden)

① Install the holder slightly below centerline. Then take a facing test cut.
Setzen Sie den Werkzeughalter nur mit leichter Vorspannungder Mittenhöhe ein. Führen Sie einen Probe Schnitt durch.



② Measure the diameter of the centerboss.
Durchmesser der Mittenspitze ausmessen

③ Raise the center height by one half of the diameter of the boss. Adjustment references are available in the tool case.
Verstellen Sie die Mittenhöhe um die Hälfte des gemessenen Durchmessers der Drehmittenspitze. Einstell Referenz Werte finden Sie in der Werkzeugverpackung



④ Re-machine the end face.
Wiederholung der Bearbeitung zur Kontrolle

*Adjustment instructions are supplied in the tool case
Einstellhinweise befinden sich in der Werkzeugverpackung

DS Sleeve NEW

NTK CUTTING TOOLS

New tool adaptor prevents damage from chips.

Neuer Adapter, schützt vor Beschädigungen durch Späne

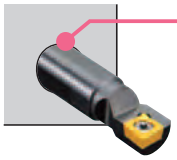
Features - Merkmale

- **Prevents both chips and coolant from entering the sleeve holder!**
  Verhindert das eindringen von Kühlwasser und Späne in die Werkzeugbuchse
- **DS sleeve offer various applications!**
  DS Sleeve ermöglicht weitere Anwendungen
- **Atachment hole size is ϕ22 only!**
  Ausführung nur für Werkzeugaufnahmen mit φ22
- **ϕ16 DS holders is available for "DS sleeve"!**
  "DS-sleeve" ist auch als DS Halter für WZ φ16 verfügbar!

1 Prevents both chips and coolant from entering the sleeve holder.

Verhindert das eindringen von Kühlwasser und Späne in die Werkzeugbuchse.

△



Coolant and chips enter into the sleeve!

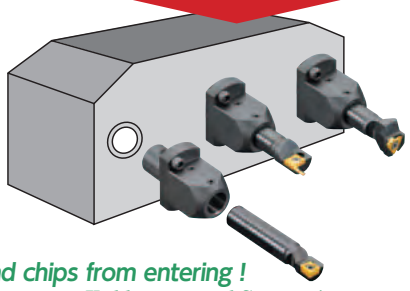
Eindringen von Kühlwasser und Spänen in die Werkzeugbuchse!

Attaching DS holders directly to the sleeve holders, coolant and chips enter from D cut part (flat part) of toolholder.
That can break the device.

Verwenden Sie die DS Halter direkt in den Werkzeugbuchsen, können Kühlmittel und Späne ungehindert in die Werkzeugbuchsen eindringen. Das kann die Werkzeugeinheit beschädigen

Using DS sleeve…
Verwendung von "DS sleeve"...

○



Prevent coolant and chips from entering !

Verhindert das eindringen von Kühlwasser und Spänen !

DS sleeves enable DS holders to attach with no problems, and to expand attachable tools!!

"DS-sleeve" ermöglicht die einfache Verwendung und Erweiterung von DS Halter Steckwerkzeugen.

2 DS sleeve offer various applications in back turning.

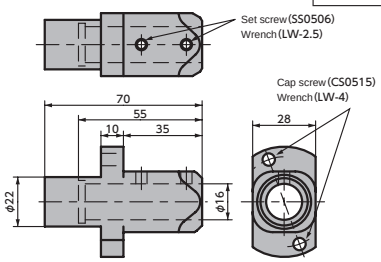
"DS-sleeve" bietet weitere Einsatzmöglichkeiten für das Hinterbund Drehen

Item list

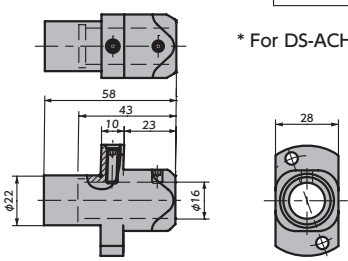
Holder number	Spare parts			
	Cap screw	Wrench	Set screw	Wrench
SS-DSU-SK	CS0515	LW-4	SS0506	LW-2.5
SS-DSU-L23	CS0515	LW-4	SS0506 SS0515	LW-2.5

Shape

SS-DSU-SK



SS-DSU-L23



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Shift Holder NEW

NTK CUTTING TOOLS

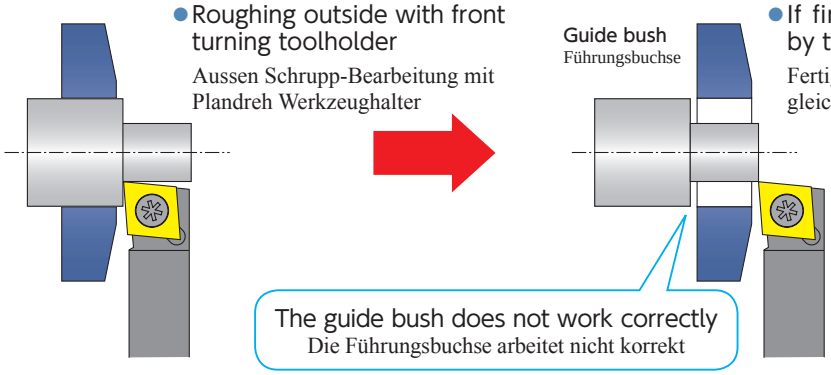
New Products

Features - Merkmale ➡ D84, D86

- ***Roughing and finishing are available with swiss type automatic lathes.***
  Schrupp- und Schlicht- Bearbeitung sind möglich

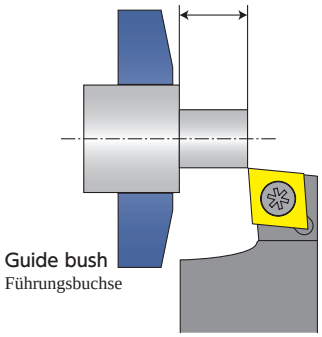
Conventional holder / Konventionelle Halter

- Roughing outside with front turning toolholder
  Aussen Schrupp-Bearbeitung mit Plandreh Werkzeughalter



- If finishing is performed by the same holder
  Fertigbearbeitung mit dem gleichen Werkzeughalter

Shift Holder



- Possible to finish cut holding the work piece with the guide bush
  Möglichkeit zur Komplettbearbeitung durch Klemmung des Werkstückes mit der Führungsbuchse

- Offers excellent chip control.
  Bietet eine hervorragende Spankontrolle

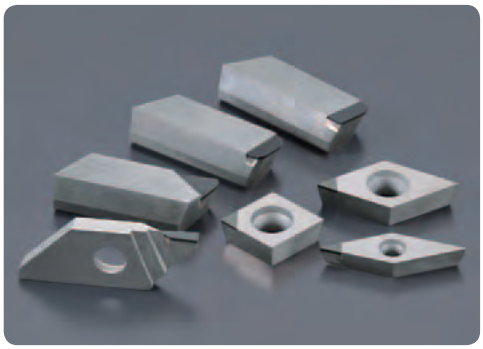
Wide lineup : Toolholder for 80° and 50° rhombic positive inserts !!
Grosse Produktpalette: Werkzeughalter für 80° und 55° rhombisch positive Wendeschneidplatten

PD1 NEW High Quality Polycrystalline Diamond Tool
Hochwertige PKD-Wendeschneidplatten

NTK CUTTING TOOLS

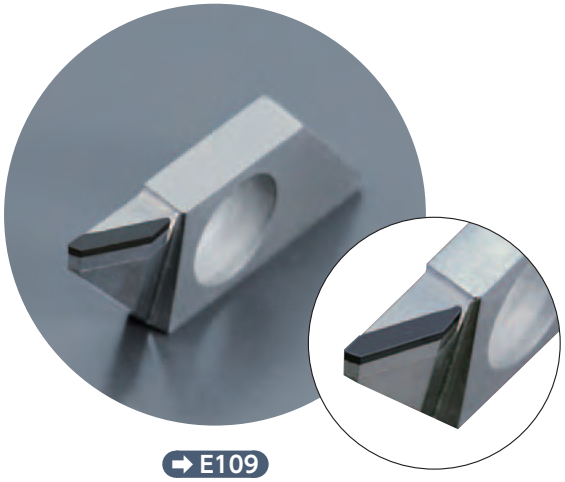
Specific for aluminum and copper alloys !
Spezieller Schneidstoff für die Aluminium- und Kupfer-Bearbeitung!

Features - Merkmale



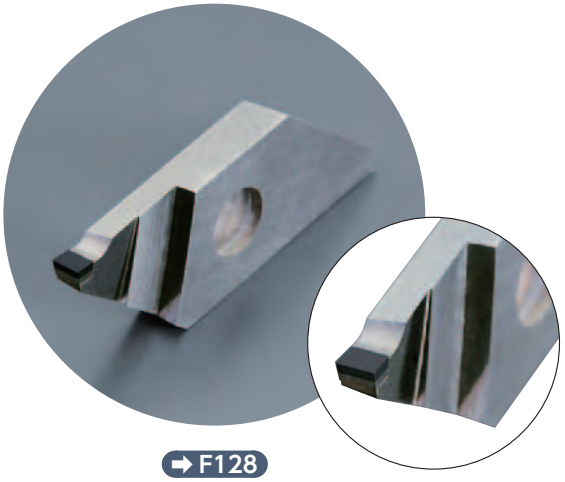
- ***Back turning and cut-off types lined up in addition to current types for milling, grooving and multi-functional front turning.***
  Hinter-Drehen und Abstechen erweitern die bestehende PD1-Produktlinie.
- ***Excellent cutting performance with sharp cutting edge.***
  Exzellente Schneidleistung durch scharfe Schneidkantenausführung.
- ***Excellent deposition resistance due to lower affinity with non ferrous materials.***
  Excellenter Widerstand gegen Aufbauschneide durch geringere Reaktion mit NE-Metallen.
- ***Enables high precision and stable machining by controlling built-up edge.***
  Durch kontrollierte Schneidkanten ist ein hochgenaues Bearbeiten am Werkstück möglich.
- ***Higher cutting speed available compared with carbide tools.***
  Höhere Schnittleistung als mit Hartmetall.

Back turning
Hinter-Drehen NEW



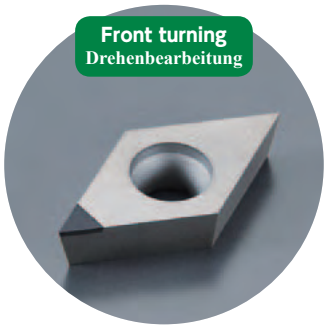
➡ E109

Cut-off
Abstechen NEW



➡ F128

Front turning
Drehenbearbeitung



➡ C65, C69, C74

Multi-functional
Stech-Drehen

➡ G150

Applications - Anwendungen

- The recommended range for cutting aluminum alloys, brass, graphite, copper alloys and ceramic molds.
  Empfohlene Qualität für Aluminium, Grafit, Kupfer, Messing und Keramik-Formen.

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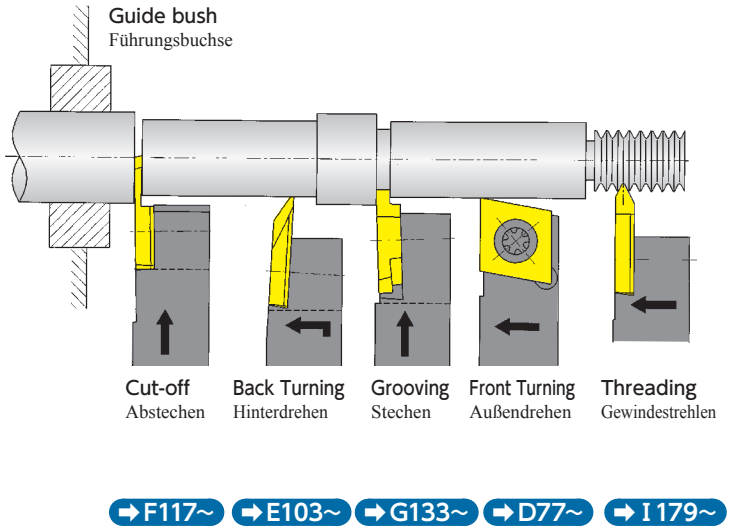
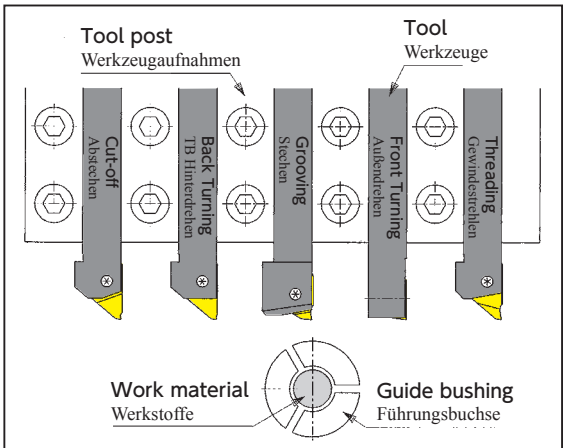
General Information
Gesamtübersicht Präzisionswerkzeuge

B

Tooling example for a small CNC automatic lathe (gang type)
Werkzeugauswahl für Präzisions-Drehmaschinen

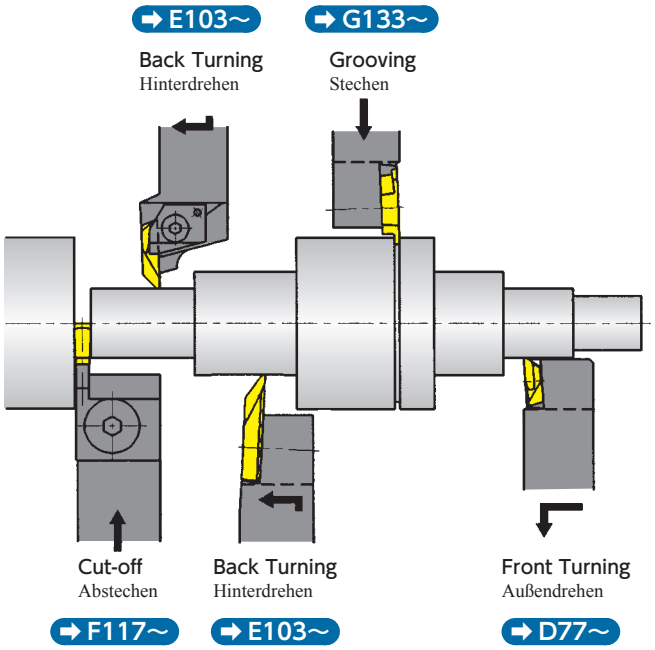


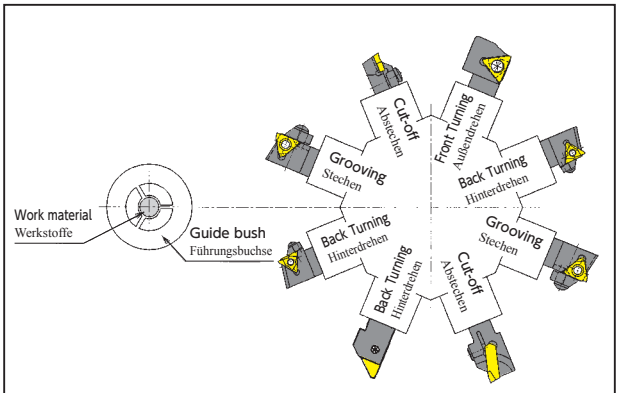
➡F117~ ➡E103~ ➡G133~ ➡D77~ ➡I 179~



Tooling for gang type tool post
Werkzeuge für Drehmaschinen mit Gang Type System

Tooling example for a small CNC automatic lathe (turret type)
Werkzeugbeispiele für Revolver-Drehmaschinen





Tooling for turret type tool post
Werkzeuge für Revolver-Drehmaschinen

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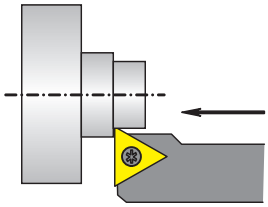
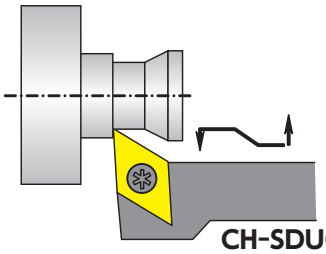
Tooling example for a small CNC automatic lathe (Front gang type)
Werkzeugbeispiele für Drehmaschinen mit Gang Type System

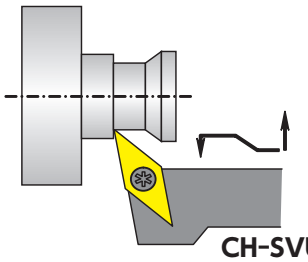
Front Turning
Außendrehen



CH-STUCL ➡ D96~

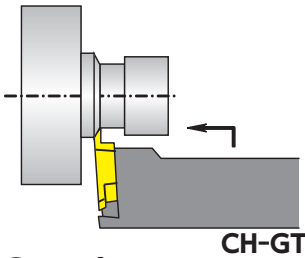


CH-SDUCL ➡ D87~



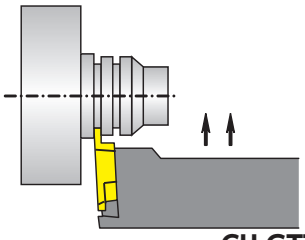
CH-SVUPL ➡ D95~

Back Turning
Hinterdrehen



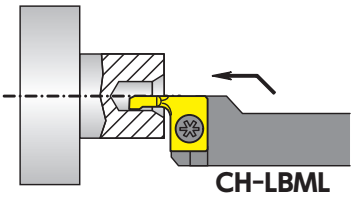
CH-GTTL ➡ E115~

Grooving
Stechen

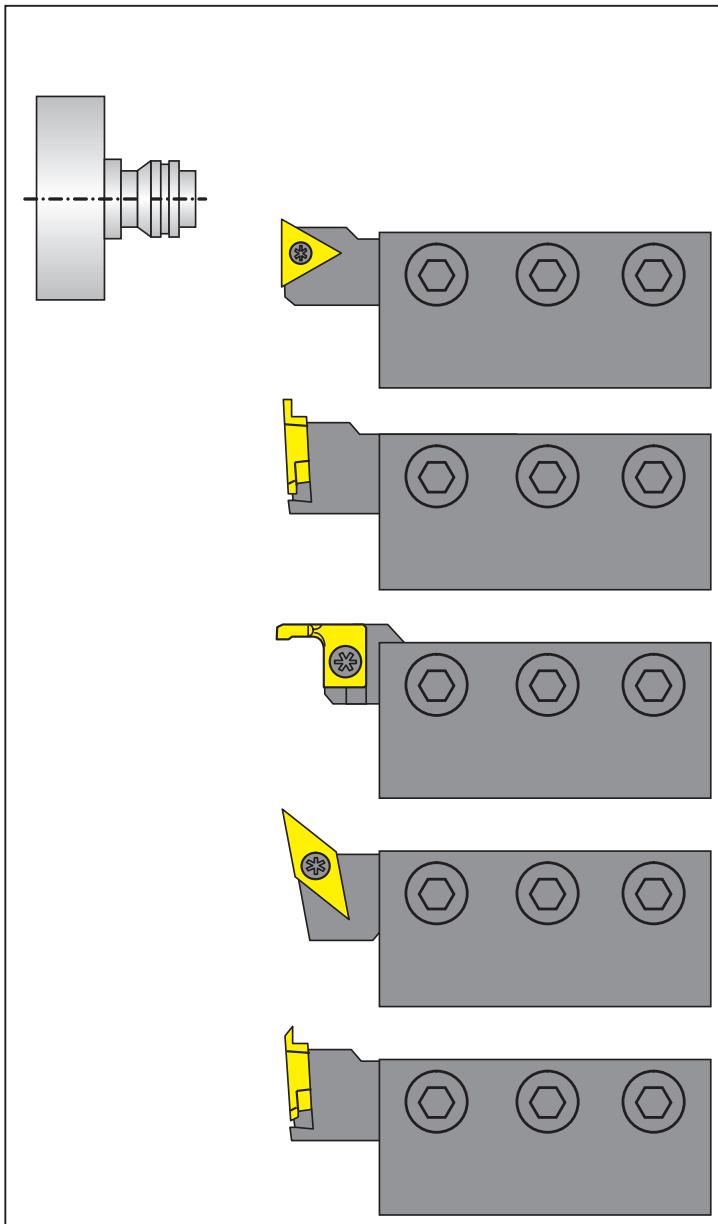


CH-GTTL ➡ G141~

Boring
Bohren



CH-LBML ➡ H162~

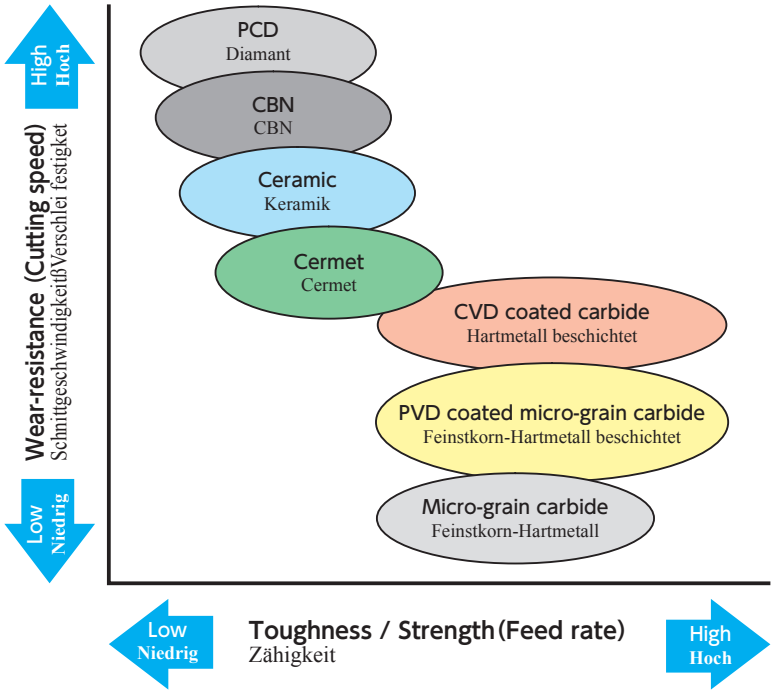


Tooling for front gang type tool post
Werkzeuge für Drehmaschinen mit Gang Type System

NTK Cutting Tools offer a wide range of tool materials, including PCD, CBN, ceramics, cermets and coated carbides, to accommodate various cutting applications. In the tools for small parts, PCD, cermet and micro-grain ultra-hard carbides are set as the standard materials to meet the requirements of automatic and sliding head machines. They are especially suited to micro-machining, offering excellent cutting performance and high quality surface finish.

Bei NTK werden verschiedene Sorten von Werkzeugsubstraten verwendet, wie z.B. Diamant, Keramik, Cermet, CBN und beschichtete Feinstkorn-Hartmetalle um verschiedenen Schnittbereichen zu entsprechen. Diese werden gezielt als Standard verwendet, um einen geringen Materialverschleiß zu erreichen, was spezifisch für Langdrehmaschinen, scharte Schneidkanten und Oberflächenansprüche ist.

Material map
Shneidstoff
Darstellung



PCD Diamant	**High-speed cutting of non ferrous metals** Hochgeschwindigkeitsbearbeitung von NE Materialien	Polycrystalline diamond PCD **PD1**
Cermet Cermet	**Finishing of steelss** Schlichtbearbeitung von Stahl	Cermet **T15** High strength cermet **N40, C7X** PVD coated cermet **Q15, C7Z**
CVD coated carbide Hartmetall beschichtet	**General and multi-purpose machining of steels and cast irons** Zur Stahlbearbeitung	CVD coated carbide **CP1**···Cast iron Gußeisen **CP7**···Steel Stähle
PVD coated micro-grain carbide FeinstkornHartmetall beschichtet	**Precision cutting, Cutting of stainless steel and hard-to-cut materials** Präzisionsbearbeitung von rostfreien und schwierig zu bearbeitenden Materialien	PVD coated micro-grain carbide **TM4, ZM3, QM3, VM1, ZA3** **DT4, DM4**
Micro-grain carbide FeinstkornHartmetall	**Cutting of nonferrous metals and non-metal materials** Zur Bearbeitung von NE Materialien und Kunststoften	Micro-grain carbide **KM1**

*Please see ceramic catalogue for CBN and Ceramic
*Unsere Keramik- und CBN-Produkte finden Sie im Keramik Katalog

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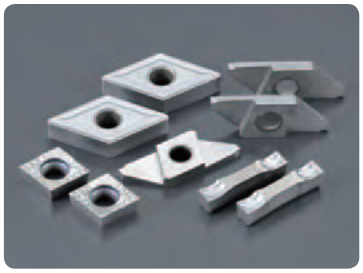
Q Coating — QM3 / Q15



Best wear resistance
Exzellenter Schutz gegen Freiflächenverschleiß

- *Stainless steel*
  Rostfreie Stähle
- *Carbon steel*
  Kohlenstoff Stähle
- *Alloy steel*
  Legierte Stähle

TM Coating — TM4

Best balance of wear resistance and adhesion resistance
Exzellente Kombination,reduzierter Kerbverschleiß und Aufbauschneidenbildung

- *For general small part machining*
  Für die Drehbearbeitung von kleinen, langen und schlanken Werkstücken

DM Coating — DM4

Best heat resistance
Sehr gute Hitzebeständigkeit

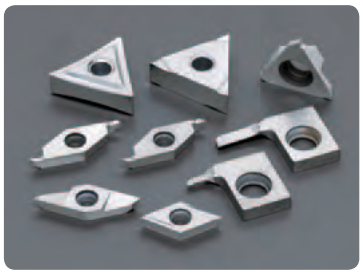
- *Heat resistant alloy*
  Hitzebeständige Legierungen
- *Stainless steel*
  Rostfreie Stähle
- *Hardened material*
  Gehärtete Materialien

DT Coating — DT4

Best balance of heat resistance combined with sharp edged insert
Optimale Kombination zwischen Hitzebeständigkeit und Schneidkantenschärfe

- *Titanium alloy*
  Titanlegierungen
- *Heat resistant alloy*
  Hitzebeständige Legierungen
- *Stainless steel*
  Rostfreie Stähle
- *Hardened material*
  Gehärtete Materialien

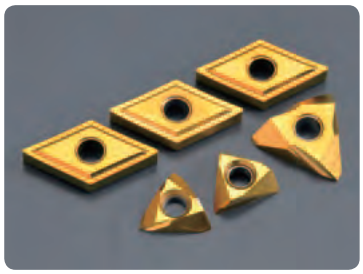
V Coating — VM1



Best edge sharpness
Herausragende Schneidkantenschärfe

- *Titanium alloy*
  Titanlegierungen
- *Non-ferrous material*
  NE-Metalle / Buntmetalle
- *Stainless steel*
  Rostfreie Stähle
- *Plastic*
  Kunststoff

Z Coating — ZM3 / ZA3 / C7Z



Best adhesion resistance
Reduzierte Aufbauschneidenbildung

- *General purpose machining*
  Großer Anwendungsbereich

Coating Specitications - Beschichtungs-Eigenschaften

	Q	TM	DM	DT	V	Z
Thickness Beschichtungs-Stärke	Thick Dick	Thin Dünn	Thin Dünn	Thin Dünn	Thin Dünn	Thick Dick
Wear Resistance Schutz gegen Freiflächenverschleiß	◎	○	○	○	○	
Heat Resistance Hitzebeständigkeit			◎	◎		○
Adhesion Resistance Aufbauschneidenbildung		○				◎
Edge Sharpness Schneidkantenschärfe		○		○	◎	
Composition (for coating) Beschichtungs-Art	TiCN	Multilayer Mehrschichtig	Multilayer Mehrschichtig	Multilayer Mehrschichtig	TiCN	TiN

◎1st choice/Erste Empfehlung ○2nd choice/Zweite Empfehlung

Recommended insert grade and cutting conditions
Empfohlene Sorten und Schnittbedingungen

Front Turning
Außendrehen

CSVF / CC.. / DC.. / VC.. / VB.. / TN.. / TF

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy	Ti-6Al-4V 3.7164 Ti-Al-V	ASTM F-75 ISO5832-4	1.4301 (304) 1.4571 (316) 1.4504 (17-4PH)	1.4310 (303) 1.4016 (430F)	20CrS4 (SCr420) 34CrMoS4 (SCM430)	1.1191 (S45C) C45E (S48C)
Grade	1st choice	DT4			DT4	TM4	QM3	
	2nd choice	TM4 / QM3			QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (m/min)		20 40 70	30 60 80		40 70 100	45 90 180	Carbide 45 90 150 C7Z(X) 120 150 240	
Recommended Chipbreaker Feed Rate (mm/rev)	≤ 0.1 DOC	AMX KHG 0.01 0.02 0.03					AMX KHG 0.01 0.03 0.04	
	0.1 to 1.5 DOC	CL S AM3 0.02 0.04 0.06					CL AM3 AZ7 ZR S U/U1 UL 0.02 0.05 0.08	
	≥ 1.5 DOC	CL S AM3 0.02 0.04 0.06					CL AM3 ZP 0.03 0.06 0.10	

Back Turning
Hinterdrehen

CSVB

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V 3.7164 Ti-Al-V	ASTM F-75 ISO5832-4	1.4301 (304) 1.4571 (316) 1.4504 (17-4PH)	1.4310 (303) 1.4016 (430F)	20CrS4 (SCr420) 34CrMoS4 (SCM430)	1.1191 (S45C) C45E (S48C)
Grade	1st choice	DT4					VM1	
	2nd choice	VM1					DT4	
Cutting Speed (m/min)		20 40 70	30 60 80			30 60 90		
Feed Rate (mm/rev)	X Direction	0.01 0.02 0.03						
	Z Direction	0.01 0.03 0.04						

TBDP / TBMH / TBP / TBPA / TBVC

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V 3.7164 Ti-Al-V	ASTM F-75 ISO5832-4	1.4301 (304) 1.4571 (316) 1.4504 (17-4PH)	1.4310 (303) 1.4016 (430F)	20CrS4 (SCr420) 34CrMoS4 (SCM430)	1.1191 (S45C) C45E (S48C)
Grade	1st choice	DT4			DT4 / QM3	TM4	QM3	
	2nd choice	TM4 / QM3			VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (m/min)		20 40 70	30 60 80			45 90 150		
Feed Rate (mm/rev)	X Direction	0.01 0.02 0.03				0.01 0.02 0.04		
	Z Direction	0.02 0.04 0.06				0.02 0.04 0.08		

TB32 / TB43

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V 3.7164 Ti-Al-V	ASTM F-75 ISO5832-4	1.4301 (304) 1.4571 (316) 1.4504 (17-4PH)	1.4310 (303) 1.4016 (430F)	20CrS4 (SCr420) 34CrMoS4 (SCM430)	1.1191 (S45C) C45E (S48C)
Grade	1st choice	ZM3					ZM3	
	2nd choice						Z15	
Cutting Speed (m/min)		15 30 45				ZM3 45 90 130 T15 120 180 240		
Feed Rate (mm/rev)	X Direction	0.01 0.03 0.05				0.01 0.03 0.05		
	Z Direction	0.04 0.05 0.08				0.04 0.08 0.15		

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Cut-off
Abstechen

CSVC

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V 3.7164 Ti-Al-V	ASTM F-75 ISO5832-4	1.4301 (304) 1.4571 (316) 1.4504 (17-4PH)	1.4310 (303) 1.4016 (430F)	20CrS4 (SCr420) 34CrMoS4 (SCM430)	1.1191 (S45C) C45E (S48C)
Grade	1st choice	DT4					VM1	
	2nd choice	VM1					DT4	
Cutting Speed (m/min)		30 50 70				30 60 90		
Feed Rate (mm/rev)		0.01 0.02 0.03				0.01 0.03 0.05		

CTP / CTPA / CTPS / CTPW

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V 3.7164 Ti-Al-V	ASTM F-75 ISO5832-4	1.4301 (304) 1.4571 (316) 1.4504 (17-4PH)	1.4310 (303) 1.4016 (430F)	20CrS4 (SCr420) 34CrMoS4 (SCM430)	1.1191 (S45C) C45E (S48C)
Grade	1st choice	DT4				TM4	QM3	
	2nd choice	TM4			QM3 / VM1	QM3	TM4 / DT4 / C7Z(X)	
Cutting Speed (m/min)		30 50 70				30 60 90		
Feed Rate (mm/rev)		0.02 0.03 0.05				0.02 0.04 0.06		

CTDP / CTV

Work Material		High Temperature Alloys	Titanium Alloys	Cobalt Chrome Alloys	Stainless Steels		Alloy Steels	Carbon Steels
					Hard to cut	Free cutting		
Common Name		Inconel Hastelloy MP35N	Ti-6Al-4V 3.7164 Ti-Al-V	ASTM F-75 ISO5832-4	1.4301 (304) 1.4571 (316) 1.4504 (17-4PH)	1.4310 (303) 1.4016 (430F)	20CrS4 (SCr420) 34CrMoS4 (SCM430)	1.1191 (S45C) C45E (S48C)
Grade	1st choice	DM4				TM4	QM3	
	2nd choice	TM4 / QM3				QM3	TM4 / DM4	
Cutting Speed (m/min)		30 50 70				30 60 90		
Feed Rate (mm/rev)		0.03 0.05 0.08				0.04 0.08 0.12		

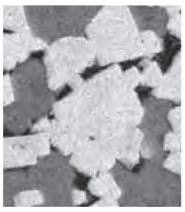
Micro-grain carbide and PVD-coated carbide
Feinstkorn-Hartmetall und PVD-beschichtetes Hartmetall

Precision machining and machining of hard-to-cut stainless materials
Präzisionsbearbeitung und schwer zu bearbeitende Werkstoffe

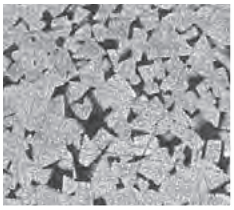
These material grades use WC micro grain carbide, the hard layer of which is granulated to a micro size 1 μm), as the base material. Furthermore, the base material is coated by the PVD method with TiN, TiCN, and/or TiAlN. Thus, the materials are suitable for precision machining and machining of materials that are difficult to cut. Inserts of these grades are tougher and harder than carbide, exhibiting precision sharp cutting edges They even have higher toughness and sharper cutting edges than those materials with ultra micro-grain carbide, exhibiting excellent wear resistance and thermal crack resistance

NTK Feinstkornhartmetall zeichnet sich durch extrem kleine Korngröße (kleiner 1µm) aus. Dadurch wird eine hohe Zähigkeit mit gleichzeitiger optimaler Härte erreicht. Dies ermöglicht extrem scharfe Schneidkanten. Im Vergleich zum bisherigen konventionellen Feinstkorn, bietet es bei hohen Temperaturen einen exzellenten Verschleiß- und Bruchwiderstand. NTK-Feinstkornhartmetall bietet zusammen mit PVD-Beschichtung mehr Widerstand gegen Verschleiß und Aufbauschneiden.

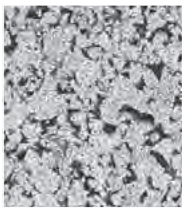
Carbide grade . Hartmetall Sorte



General carbide structure
Herkömliches Hartmetall



Micro-grain carbide structure
Feinstkorn-Hartmetall



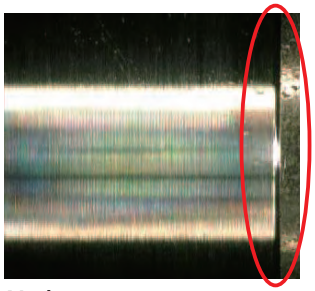
Super micro-grain carbide structure
Super-Feinstkorn-Hartmetall

Long experience of using Micro-grain carbide
lange Erfahrung im Feinstkorn Hartmetall

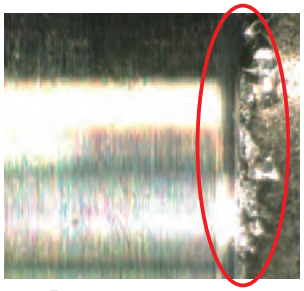
The NTK carbide grade series perform very stably under a wide variety of conditions, using micro-grain carbide well balanced between wear resistance and chipping resistance, as the base material

NTK Hartmetall Sorten bieten einen breiten Anwendungsbereich, durch die Verwendung von Feinstkorn Hartmetall. Ermöglicht wird dies durch ein ausgewogenes Verhältnis zwischen Verschleiss- und Bruchfestigkeit des Basis Materials.

Features - Merkmale — Superior cutting performance . Hervorragende Zerspanleistung



No burrs . keine Gradbildung
Machined with our insert with a sharp cutting edge
Bearbeitet mit NTK-Schneidplatten und scharfen Schneidkanten



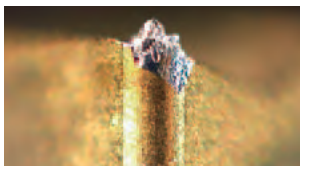
Burrs . Gradbildung
Machined with a competitor's product with a honed cutting edge
Bearbeitet mit Wettbewerbsschneidplatten und polierten Schneidkanten

Long experience of focus low cutting force machining
Lange Erfahrung mit Focus auf Maschinen mit geringen Spindelleistungen

NTK takes pride in its carbide grade series for their outstanding cutting performance attained with honed and ultra sharp cutting edges. This outstanding cutting performance allows for better burr control, lower cutting forces, stabilized dimensions, improved work hardening control and more (grinding grade inserts)

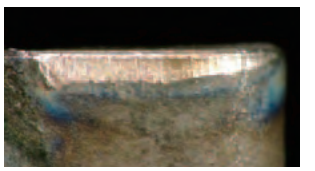
NTK ist stolz auf seine Hartmetall-Sorten mit hervorragenden Schneideigenschaften und geschliffenen und äußerst scharfen Schneidkanten. Diese Vorteile minimieren Gratbildung, verringern Schnittkräfte und erhöhen die Präzision.

Features - Merkmale — Precise analysis on insert wear patterns
Präzise Analyse der Verschleißmöglichkeiten



Build-up edge . Aufbauschneide

Chipping / fracture . Ausbrüche



Flank wear . Freiflächenverschleiß

Crater wear . Kolkverschleiß

Long experience of research on insert tool life
Schneidplatten Analyse im Langzeittest

Damage to insert cutting edges vary depending on the machining process and the work material. There are various types of coatings that reduce such damages to prolong the tool life. NTK carbide series offer a variety of coated insert grades which have been developed to improve their resistance characteristics, including wear, fracture, adhesion, oxidation and the likes, by utilizing our state-of-the-art technologies.

Beschädigungen an den Schneidplatten können abweichen in Abhängigkeit der Bearbeitung und des Werkstoffes.Es gibt verschiedene Beschichtungen um die Beschädigungen an den Schneidplatten zu reduzieren und die Werkzeugstandzeit zu verlängern. NTK bietet eine breite Auswahl an Beschichtungen und Hartmetall Sorten, die entwickelt wurden um die Merkmale der Widerstandsfähigkeit, beim Verschleiß, beim Bruch, bei der Anhaftung und der Oxidation durch nutzen der neuesten Technolgien zu optimieren. State-of-the-art-technologies

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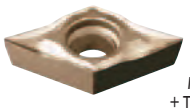
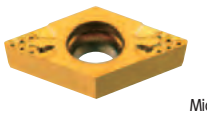
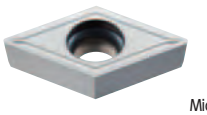
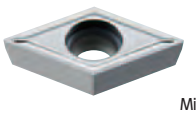
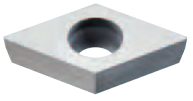
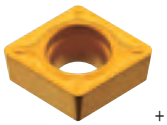
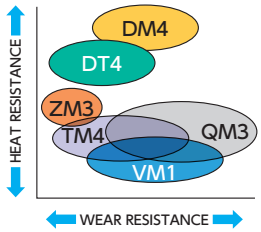
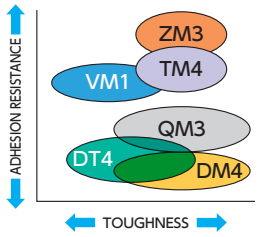
	Grade / Coating	Applications / Features	Physical properties *						Applications map
			Density g /cm³	Hardness HRA	Bending strength GPa	Young's modulus GPa	Thermal expansion coefficient X10⁻⁶/K	Thermal conductivity W/m・K	
PVD coated	**DM4**  Micro-grain carbide + Thick TiN-TiCN-TiAlN coat	P M S H ●Best oxidation resistance enable high temperature machining Sehr gute Oxidationbeständigkeit erlauben hohe Bearbeitungstemperaturen.	14.4	91.0	3000	580	5.8	63	
	DT4  Micro-grain carbide + Thin TiN-TiCN-TiAlN coat	P M S H ●Excellent oxidation resistance for Swiss-type lathes Sehr gute Oxidationbeständigkeit für Präzisionsbearbeitungen	14.4	91.0	3000	580	5.8	63	
	TM4  Micro-grain carbide +Thin TiN-TiCN-TiN coat	P M N S ●Best combination of wear resistance and toughness and adhesion resistance for Swiss-type lathes Sehr gute Kombination aus Verschleißfestigkeit, Zähigkeit und reduzierte Aufbauschneidenbildung	14.4	91.0	3000	580	5.8	63	
	ZM3/ZA3  Micro-grain carbide + Thick TiN coat	P M N ●Best Adhesion resistance enables high accuracy machining Perfekter Widerstand gegen Aufbauschneiden ermöglichen eine hohe Präzisionsbearbeitung	14.4	91.0	3000	580	5.8	63	
	QM3  Micro-grain carbide + Thick TiCN coat	P M S H ●Best wear resistance enable stable machining Hohe Verschleißfestigkeit erlauben eine stabile Produktion	14.4	91.0	3000	580	5.8	63	
	VM1  Micro-grain carbide + Thin TiCN coat	P M N ●Best edge sharpness and good wear resistance Extreme Schneidkanten-Schärfe und gute Verschleißfestigkeit	14.8	92.0	2500	640	5.7	84	
Uncoated	**KM1**  Micro-grain carbide	P M N ●Best for non-ferrous material with mirror finish Beste Wahl für NE-Metallen	14.8	92.0	2500	640	5.7	84	
CVD coated	**CP7**  Carbide + Thick film Al_2O_3-TiCN coat	K ●Best for roughing and semi finishing steel Beste Wahl für Schruppen und Semischlichten	13.8	90.1	2200	580	—	—	

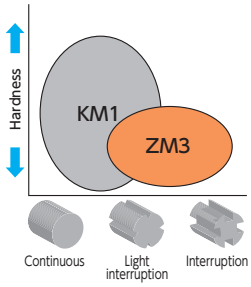
■ Correlation chart 1



■ Correlation chart 2



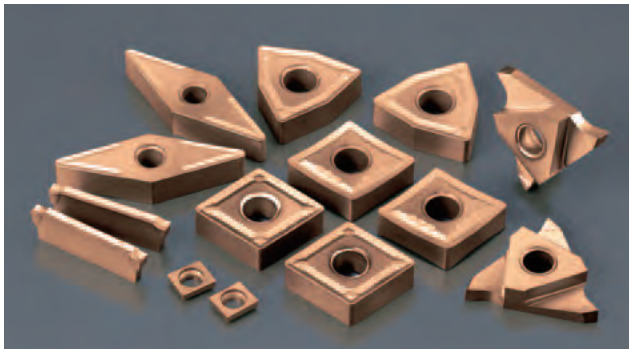
■ Aluminum / Brass

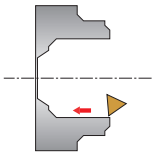


*For products with coating, the values of the base material are indicated.
*Daten für beschichtete Produkte beziehen sich auf die jeweiligen Grundmaterialien

DM4 NEW

Excellent oxidation resistance !
Exzellente Oxidationsbeständigkeit

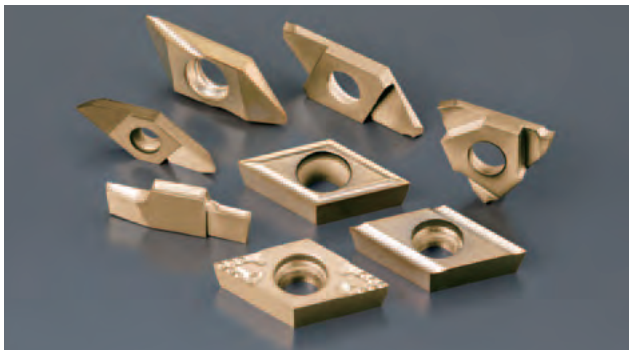


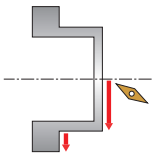
Case . Hülse	
Inco 718	
40 m/min	
0.025 mm/rev	
0.2 mm DOC	
WET	
NTK : **DM4**	110 pcs
Competitor's PVD-coated carbide PVD Beschichtete WSP des Wettbewerbers	90 pcs

Best for . Sehr gut geeignet für	Optimized for . Optimiert für	Excellent in . Hervorragende Eigenschaften
● Titanium alloys Titanlegierungen ● Stainless steels Rostfreie Säthle ● Alloy steels Legierte Stähle ● Carbon steels Kohlenstoff Stähle ● Heat resistant alloys Hitzebeständige Stähle	Conventional lathes, Swiss-type lathes herkömmliche Drehmaschinen und Präzisionsdrehmaschinen	Oxidation Heat resistance Oxidations- und Hitzebeständigkeit

DT4 NEW

Excellent heat resistance for Swiss-type lathes !
Sehr gute Hitzebeständigkeit für Präzisionsdrehmaschinen

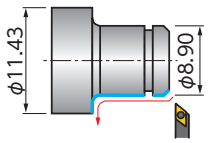


Pin . Bolzen	
440 CSS	
80 m/min	
0.05 mm/rev	
1.0 mm DOC	
WET	
NTK : **DT4**	1100 pcs
Competitor's PVD-coated carbide PVD Beschichtete WSP des Wettbewerbers	800 pcs

Best for . Sehr gut geeignet für	Optimized for . Optimiert für	Excellent in . Hervorragende Eigenschaften
● Titanium alloys Titanlegierungen ● Stainless steels Rostfreie Säthle ● Alloy steels Legierte Stähle ● Carbon steels Kohlenstoff Stähle ● Heat resistant alloys Hitzebeständige Stähle	Swiss-type lathes Präzisionsdrehmaschinen	Oxidation Heat resistance Oxidations- und Hitzebeständigkeit

TM4 NEW

Next generation standard insert grade Swiss-type lathes !
Nächste ISO-Generation für Präzisionsdrehmaschinen

Automobile parts . Automobilteil	
304 SS	
80 m/min	
0.02 mm/rev	
1.2 mm DOC	
WET	
NTK : **TM4**	950 pcs
Competitor's PVD-coated carbide PVD Beschichtete WSP des Wettbewerbers	500 pcs

Best for . Sehr gut geeignet für	Optimized for . Optimiert für	Excellent in . Hervorragende Eigenschaften
● Carbon steels Kohlenstoff Stähle ● Stainless steels Rostfreie Säthle ● Alloy steels Legierte Stähle	Swiss-type lathes Präzisionsdrehmaschinen	Balance Balance

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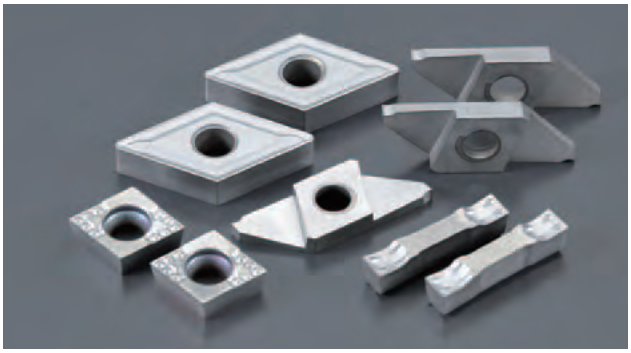
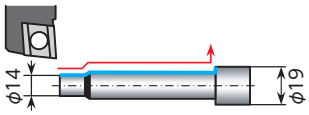
QM3

Superb wear resistance and fracture resistance in interrupted cutting !
Hervorragende Verschleißfestigkeit und Bruchsicherheit in unterbrochenem Schnitt

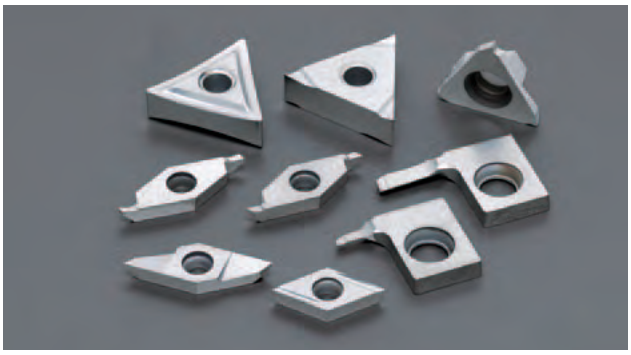


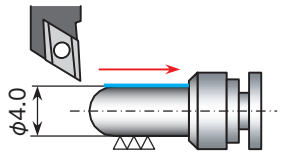
Spindle . Spindel	
4135	
100 m/min	
0.3 mm/rev	
0.2 mm DOC	
WET	
NTK : **QM3**	600 pcs
Competitor's PVD-coated carbide PVD Beschichtete WSP des Wettbewerbers	300 pcs

Best for . Sehr gut geeignet für	Optimized for . Optimiert für	Excellent in . Hervorragende Eigenschaften
● Carbon steels Kohlenstoff Stähle ● Stainless steels Rostfreie Säthle ● Alloy steels Legierte Stähle ● Heat resistant alloys Hitzebeständige Stähle	Conventional lathes, Swiss-type lathes herkömmliche Drehmaschinen und Präzisionsdrehmaschinen	Wear resistance Verschleissfest

VM1

High precision machining of small diameter parts !
Präzisionsbearbeitung von kleinen Drehteilen

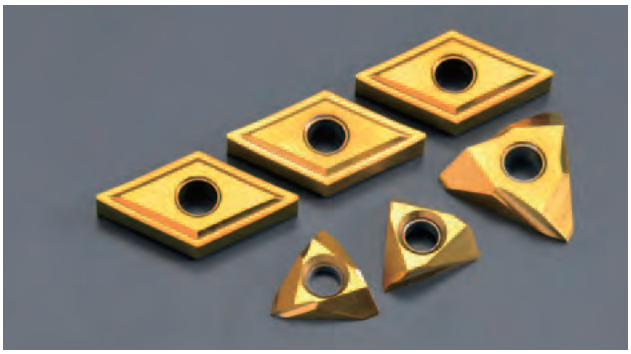


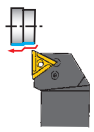
Plug . Hahn	
12L14	
140 m/min	
0.015 mm/rev	
0.1 mm DOC	
WET	
NTK : **VM1**	800–1000 pcs
Competitor's PVD-coated carbide PVD Beschichtete WSP des Wettbewerbers	150 pcs

Best for . Sehr gut geeignet für	Optimized for . Optimiert für	Excellent in . Hervorragende Eigenschaften
● Carbon steels Kohlenstoff Stähle ● Stainless steels Rostfreie Säthle ● Alloy steels Legierte Stähle	Swiss-type lathes Präzisionsdrehmaschinen	Edge sharpness Schneidkantenschärfe

ZM3/ZA3

The best selling grade for automatic lathes !
Beste Wahl für Drehautomaten



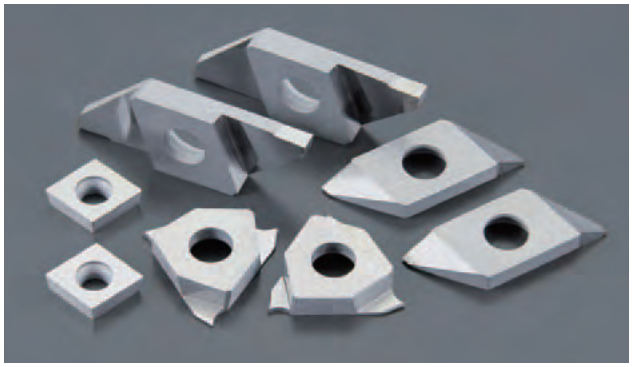
Case . Hülse	
1010	
100 m/min	
0.12 mm/rev	
0.3–0.4 mm DOC	
WET	
NTK : **ZM3**	6000 pcs
Competitor's PVD-coated carbide PVD Beschichtete WSP des Wettbewerbers	150 pcs

Best for . Sehr gut geeignet für	Optimized for . Optimiert für	Excellent in . Hervorragende Eigenschaften
● Carbon steels Kohlenstoff Stähle ● Stainless steels Rostfreie Säthle ● Alloy steels Legierte Stähle ● Non-ferrous materials NE-Metalle	Conventional lathes, Swiss-type lathes herkömmliche Drehmaschinen und Präzisionsdrehmaschinen	Adhesion resistance Geringe Anhaftungsneigung

NTK CUTTING TOOLS

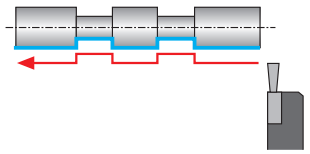
KM1

Longer tool life even for machining hard-to-cut materials !
Hohe Standzeit bei Bearbeitungen von schwierigen Werkstoffen

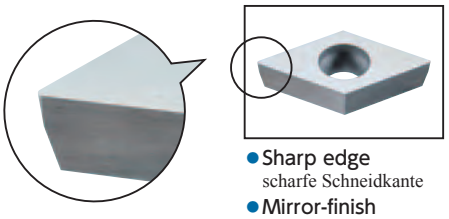


Spool machining . Spulenbearbeitung

5056 (Aluminium)	
90 ~ 170 m/min	
0.04 mm/rev	
0.5 ~ 5 mm DOC	
WET	
NTK : **KM1**	300 pcs
Competitor's PVD-coated carbide PVD Beschichtete WSP des Wettbewerbers	200 pcs



Best for . Sehr gut geeignet für	**Optimized for .** Optimiert für	**Excellent in .** Hervorragende Eigenschaften
● Aluminium Aluminium ● Plastic Kunststoff ● Non-ferrous materials NE-Metalle	Conventional lathes, Swiss-type lathes herkömmliche Drehmaschinen und Präzisionsdrehmaschinen	Edge sharpness Schneidkantenschärfe



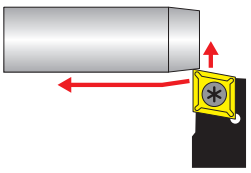
- Sharp edge
  scharfe Schneidkante
- Mirror-finish
  polierte Oberfläche

CP7

For roughing at high speed in steel machining !
Zum Hochgeschwindigkeits-Schruppen in Stahl

Spool machining . Spulenbearbeitung

SUJ2	CP7
90 m/min	
0.15 mm/rev	
0.5 mm DOC	
WET	
NTK : **CP7**	10,000 pcs
Competitor's coated carbide Beschichtete WSP des Wettbewerbers	3,500 pcs



Best for . Sehr gut geeignet für	**Optimized for .** Optimiert für	**Excellent in .** Hervorragende Eigenschaften
● Carbon stells Kohlenstoff Stähle ● Alloy steels Legierte Stähle	Conventional lathes, Swiss-type lathes herkömmliche Drehmaschinen und Präzisionsdrehmaschinen	Wear resistance Verschleissfest

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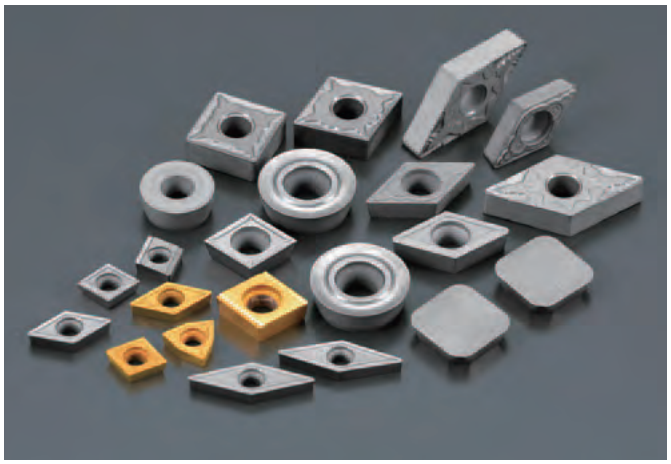
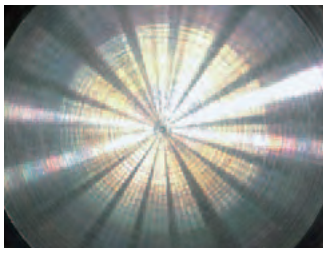
MEMO

Cermet
Cermet

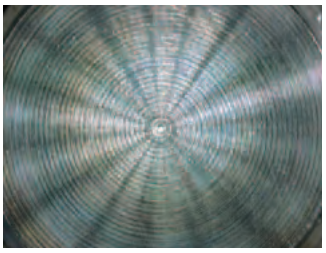


Cermet is a tool material composed mainly of TiC (Titanium Carbide) and TiN (Titanium Nitride). The name, cermet, is derived from the words CERAMIC and METAL (representing carbide). As the name suggests, cutting performance is also is in the mid- range of ceramic's and carbide's. The advantages of this material grade are that high-quality and excellent surface finishes can be achieved allied with elevated cutting speeds

NTK bietet zwei Arten von Cermet an: TiC-TiN Cermet und Nitrid-Cermet. Der Name Cermet ensteht aus dem Wortpaar Ceramic und Metall. Sie zeichnen sich durch eine besonders hohe Härte und Verschleißfestigkeit aus. Dies ermöglicht sehr gute Werkstückoberflächen bei sehr gerigem Verschleißerscheinen aber wesentlich höhrere Schnittgeschwindigkeiten.



Surface finished with cermet



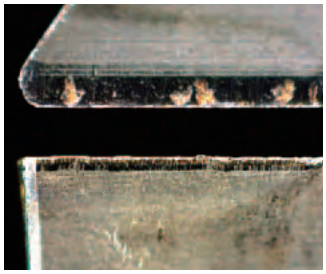
Surface finished with carbide

Features - Merkmale

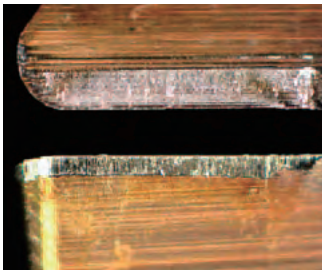
High quality surface finish
Hohe Oberflächegüte

The main components, TiC and TiN, have good deposition resistance as they are low in affinity with work materials. Thus, machining with these grades allows for a high degree of surface finish over extended periods of cut

Cermet hat eine sehr geringe Neigung zur Material-Anhaftung und erreicht dadurch exzellente Oberflächen bei gesteigerter Standmenge bzw. Standzeit.



Cermet



Carbide

Features - Merkmale

High speed cutting
Hochgeschwindigkeitsbearbeitung

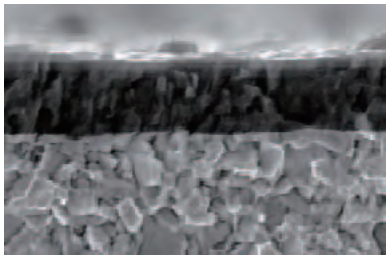
The main components, TiC and TiN, are more resistant to wear and oxidation at high temperature than WC (tungsten carbide), the main component of carbide tools. Because of this, cermet grades are less reactive with work materials, allowing for stable machining at high speed

Cermet bietet gesteigerte Verschleißfestigkeit und Oxidationsschutz bei hohen Bearbeitungstemperaturen. Cermet hat eine geringe Affinität zu Werkstoffen und erlaubt sehr stabile Bearbeitungsprozesse.

PVD-coated cermet
PVD beschichtetes Cermet

This grade has improved wear resistance by coating the cermet with TiN or TiCN. Since the coating layer does not contain any binder components, the original wear resistance of the titanium compound delivers excellent performance, enabling the tool life to be

Tin- oder TiCN beschichtete Cermets bieten eine nochmal gesteigerte Verschleißfestigkeit.



Smooth coating layer offers excellent deposition resistance

Sehr glatte Beschichtungen bieten einen excellenten Widerstand gegen Aufbauschneiden

Outstanding coating adhesion

Herrausragende Festigkeit der Beschichtung

Features - Merkmale

Highly wear- and deposition-resistant due to the PVD coat providing high hardness and surface smoothness

Hoher Widerstand gegen Verschleiß und Aufbauschneiden durch PVD-Beschichtung. Bietet hohe Härte und glatte Oberflächen

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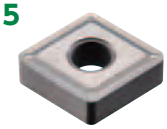
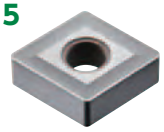
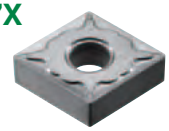
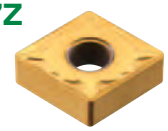
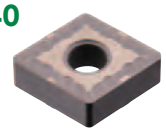
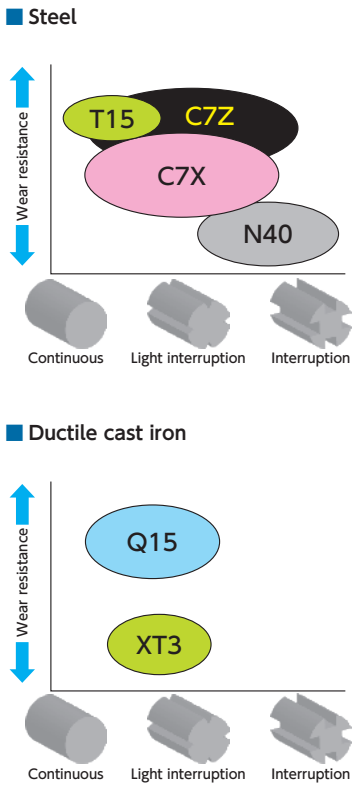
Grade / Coating	Applications / Features	Physical properties *						Applications and ceramic property map
		Density g /cm³	Hardness HRA	Bending strength MPa	Young's modulus GPa	Thermal expansion coefficient X10⁻⁶/K	Thermal conductivity W/m・K	
T15  TiC + TiN base	P M K N ● Well balanced between wear resistance and toughness Gute Kombination zwischen Verschleißfestigkeit und Zähigkeit	6.3	92.5	1,700	450	8.4	21	
Q15  TiC + TiN base + TiCN coat	P M K ● Superior wear resistance and toughness Bester Verschleißschutz und Zähigkeit	6.3	92.5	1,700	450	8.4	21	
C7X  TiCN base	P M K N ● Good combination of heat resistance and toughness Gute Kombination zwischen Hitzebeständigkeit und Zähigkeit	7.0	91.5	1,800	440	8.2	31	
C7Z  TiCN base + TiN coat	P M K N ● Perfect combination of heat resistance and toughness Perfekte Kombination zwischen Hitzebeständigkeit und Zähigkeit	7.0	91.5	1,800	440	8.2	31	
N40  TiN base	P M ● Excellent toughness Excellente Zähigkeit	5.9	91.5	1,900	450	8.9	42	

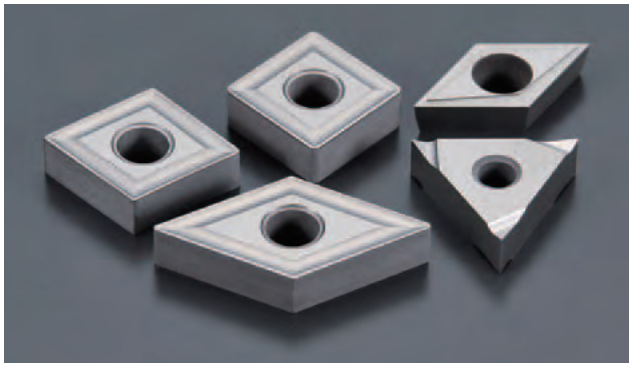


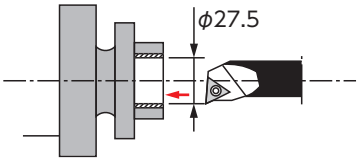
*For products with coating, the values of the base material are indicated.
*Daten für beschichtete Produkte beziehen sich auf die jeweiligen Grundmaterialien

Applications
Anwendungen

Material	General steel Carbon steel , Alloy steel					Stainless steel Stainless steel , Cast steel					Cast iron Gray cast iron , Ductile cast iron			
Cutting	Finish ⇦				⇨ Rough	Finish ⇦				⇨ Rough	Finish ⇦			⇨ Rough
Range	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30
Cermets	T15	T15	C7X	C7X	N40	T15	T15	C7X	C7X			T15	T15	
PVD Coated cermets	Q15	Q15	C7Z	C7Z		Q15	Q15	C7Z	C7Z			Q15	Q15	

T15 Well balanced between wear resistance and fracture resistance !
Gute Kombination zwischen Verschleißfestigkeit und Zähigkeit

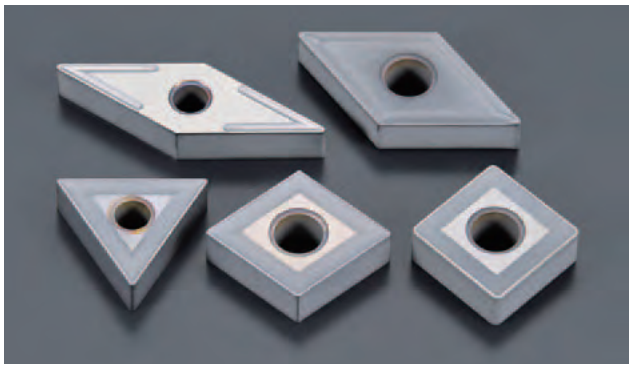


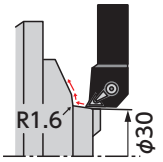
Crank shaft machining . Kurbelwellen-Bearbeitung	
S50C	
75 m/min	
0.05 mm/rev	
0.25 mm	
WET	
NTK : **T15**	100 pcs
Competitor's cermet Wettbewerbs-Cermet	60 pcs

Features - Merkmale

- ***Well balanced between wear resistance and fracture resistance***
- ***Covers a wide range of steel cutting, from medium cutting to finishing of steel***
- ***Gute Kombination zwischen Verschleißfestigkeit und Zähigkeit***
- ***Einsetzbar in vielen Stahlsorten. Von mittleren Bearbeitungen bis Schlichtbearbeitungen***

Q15 Cermet grade for high-speed finishing of ductile cast iron !
Cermet-Sorte zur Hochgeschwindigkeitsbearbeitung von Sphäroguss-Werkstoffen (GJS)



Differential case machining . Differenzialgehäuse-Bearbeitung	
FCD550	
160 m/min	
0.10 mm/rev	
0.2 mm	
WET	
NTK : **Q15**	35 pcs
Competitor's cermet Wettbewerbs-Cermet	20 pcs

Features - Merkmale

- ***Further improved wear resistance and fracture resistance from the TiCN-based coating***
- ***The recommended grade for finishing of ductile cast iron at high speed***
- ***Verbesserter Verschleißschutz und Bruchbeständigkeit durch eine zusätzliche TiCN-Beschichtung***
- ***Empfohlene Sorte für die Schlichtbearbeitung von Sphäroguss-Werkstoffen (GJS)***

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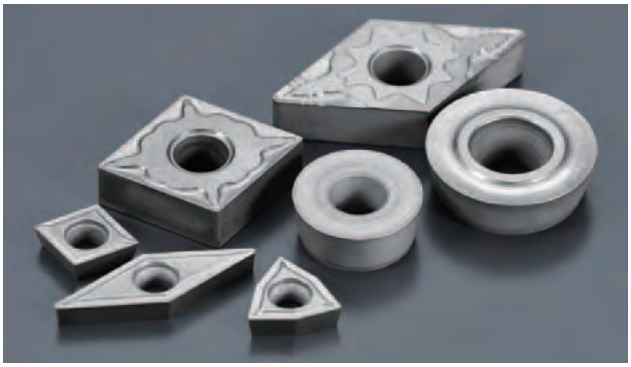
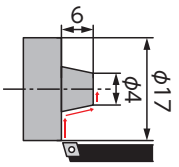
C7X
High-strength cermet grade that offers remarkable machining stability !
Hochfeste Cermet-Sorte für ausserordentliche Maß- und Prozesssicherheit



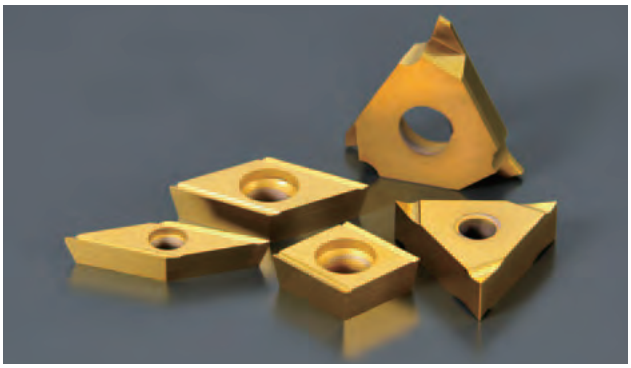
Crank shaft machining . Kurbelwellen-Bearbeitung

S50C	
130 m/min	
0.05 mm/rev	
0.3 mm	
WET	
NTK : **C7X**	2,000 pcs
Competitor's cermet Wettbewerbs-Cermet	1,400 pcs

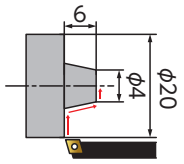
Features - Merkmale

- *Overcomes the traditional weakness of conventional cermet grades with improved thermal shock resistance*
- *Performs well especially for grooving and bearing machining*
- *Wesentlich verbesserte Thermoschockbeständigkeit gegenüber dem herkömmlichen Cermet-Schneidstoffen*
- *Speziell entwickelt für die Stechbearbeitung und Kugellagerfertigung*

C7Z
Combining the advantages of thermal shock resistance and fracture resistance !
Kombiniert die Vorteile von Thermoschockbeständigkeit und Bruchsicherheit



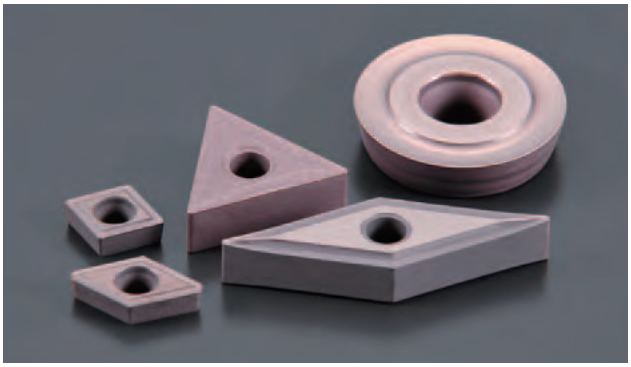
Differential case machining . Differenzialgehäuse-Bearbeitung

FCD550	
130 m/min	
0.05 mm/rev	
0.3 mm	
WET	
NTK : **C7Z**	1,600 pcs
Competitor's cermet Wettbewerbs-Cermet	1,200 pcs

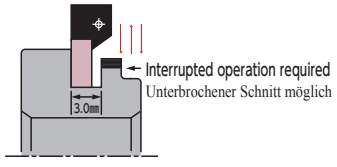
Features - Merkmale

- *Achieved further improved wear resistance and thermal shock resistance with a TiN-based coating*
- *Performs well especially in grooving and bearing machining*
- *The recommended grade for high-efficiency machining of steel*
- *Verbesserter Verschleißschutz und Thermoschockbeständigkeit durch eine zusätzliche TiN-Beschichtung*
- *Speziell entwickelt für die Stechbearbeitung und Kugellagerfertigung*
- *Die empfohlene Sorte für wirtschaftliches und effizientes Zerspanen von Stahllegierungen*

N40
Highly tough cermet grade with excellent fracture resistance !
Extrem zähe Cermet-Sorte mit enormer Bruchsicherheit.



Crank shaft machining . Kurbelwellen-Bearbeitung

S50C	
110 m/min	
0.09 mm/rev	
200 mm	
WET	
NTK : **N40**	300 pcs
Competitor's cermet Wettbewerbs-Cermet	100 pcs

Features - Merkmale

- *Allows for stable machining with longer tool life thanks to its excellent fracture resistance*
- *Die enorme Bruchsicherheit ermöglicht eine deutlich erhöhte Standzeit*

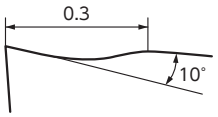
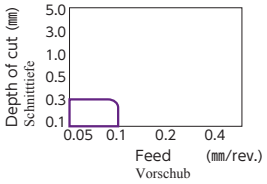
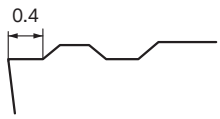
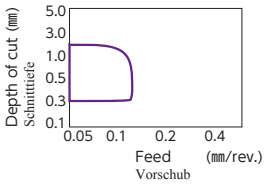
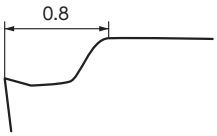
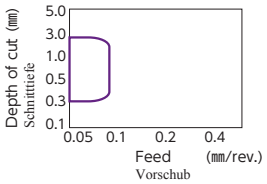
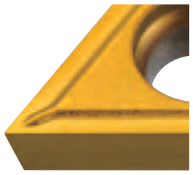
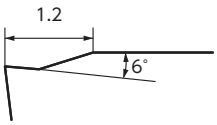
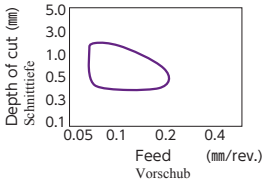
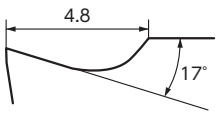
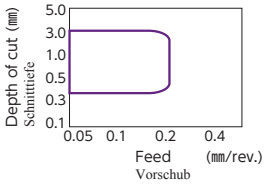
MEMO

ISO Standard Inserts
ISO-Standard Wendeschneidplatten

C

ISO Standard Insert

Moulded Chipbreakers for Positive Inserts
Gepresste Spanbrecher für positive Wendeplatten

Name	Chipbreaker Geometry Spanbrecher-Geometrie		Features Merkmale	Chip Control Range Spanbereich f / a_p
AMX		 DCGT11T302M shown	●Excellent chip control on very light depth of cut Optimale Spankontrolle bei geringsten Schnitttiefen	
AZ7		 DCGT11T302M shown	●Excellent chip control at light feed and light depth of cut Optimale Spankontrolle bei geringen Schnitttiefen und kleinen Vorschüben	
ZR		 DCMT11T302 shown	●Covers a wide range of depth of cut under high-speed and low-feed conditions Flexible Anwendungsbereiche, auch bei größeren Spantiefen und kleinen Vorschüben	
AM3		 DCGT11T302 shown	●All-purpose chipbreaker Vielseitigster Spanbrecher ●First choice for most applications Erste Wahl für viele Anwendungen ●Great combination of sharp edge and chip control Optimale Kombination zwischen scharfer Schneide und Spankontrolle	
CL		 DCGT11T302M shown	●Double-positive geometry Hochpositive Spanbrechergeometrie ●Sharp edge and low tool pressure Scharfe Schneidkante mit sehr geringem Schnittdruck ●Very wide chip control range Exzellente Spankontrolle in einem weiten Anwendungsbereich	

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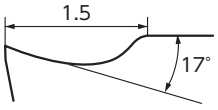
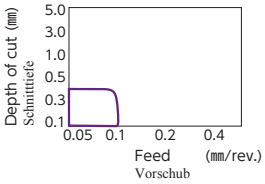
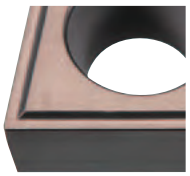
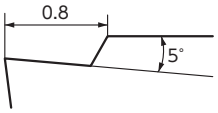
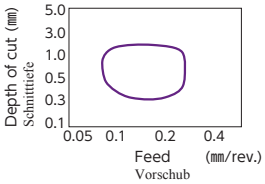
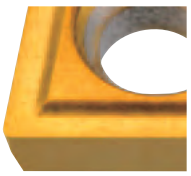
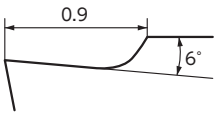
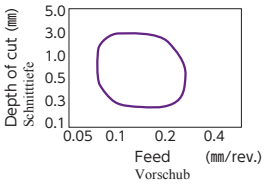
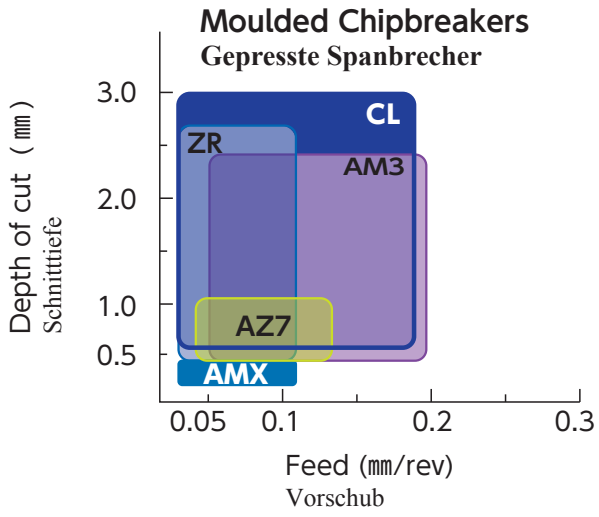
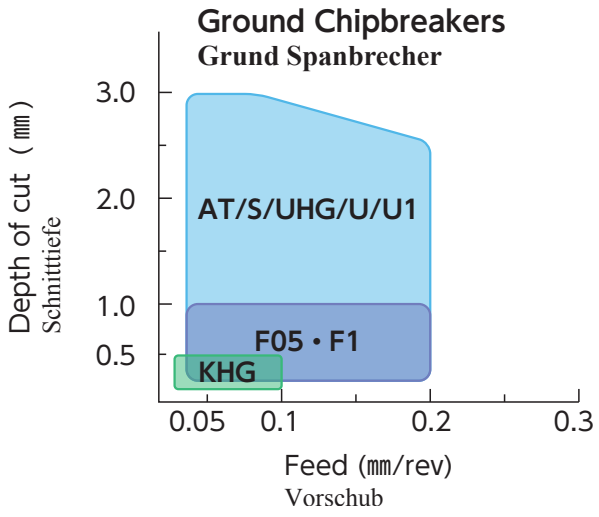
Moulded Chipbreakers for Positive Inserts (continued)
Gepresste Spanbrecher

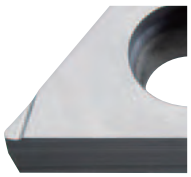
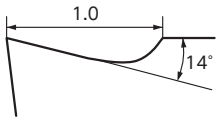
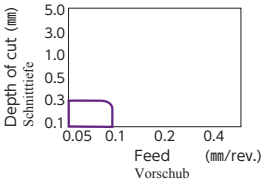
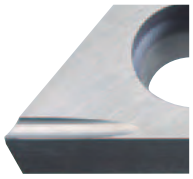
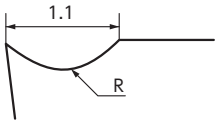
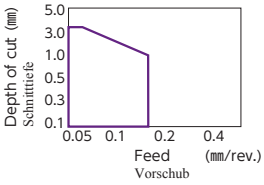
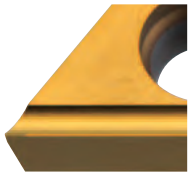
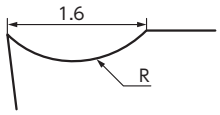
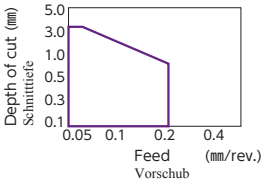
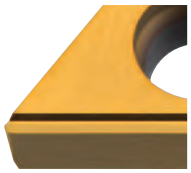
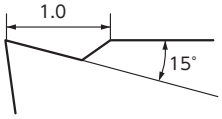
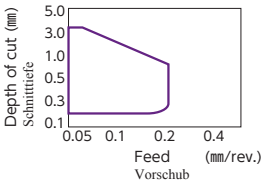
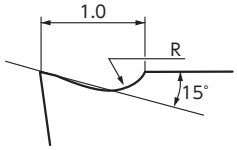
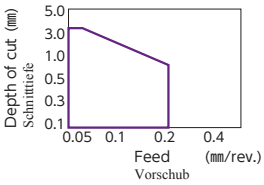
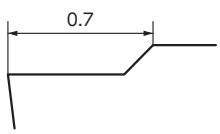
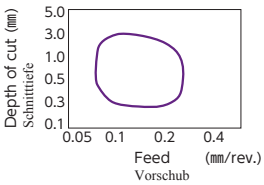
Name	Chipbreaker Geometry Spanbrecher-Geometrie		Features Merkmale	Chip Control Range Spanbereich f / a_p
FG		 TPGH110304 shown	●Exclusively designed for ID boring Speziell entwickelt für Innen-Drehen ●Evacuate chips BACKWARD at light depth of cut Rückseitige Spanabfuhr auch bei geringen Schnitttiefen ●Sharp cutting edge with high rake angle Scharfe Schneidkante mit hoch postivem Spanwinkel	
AF1		 CCGT09T302 shown	●Produces remarkable surfaces in semi-finishing of steels Halbschlichten mit sehr guten Oberflächen-Ergebnissen	
AM5		 CPGH060202 shown	●Chipbreaker for boring Optimaler Spanbrecher für kleine Innen-Durchmesser ●Provides both good cutting performance and chip control Bietet optimale Schnittbedingungen und Spankontrolle	





ISO Standard Insert

Ground Chipbreakers for Positive Inserts
Geschliffene Spanbrecher für positive Wendeplatten

Name	Chipbreaker Geometry Spanbrecher-Geometrie		Features Merkmale	Chip Control Range Spanbereich f / a_p
KHG		 DCET11T302 shown	●Excellent chip control on finishing cuts Außergewöhnliche Spankontrolle für die Schlichtbearbeitung ●For super high-precision machining Für die hochgeaue Präzisionsbearbeitung * Precision tolerance in corner radius: ±0.01 Hochpräzieser Eckenradius (±0.01mm)	
UHG		 DCET11T301M shown	●Shap cutting edge Scharfe Schneidkante ●Covers wide cutting condition range Deckt einen hohen Anwendungsbereich ab * Precision tolerance in corner radius: ±0.01 Hochpräzieser Eckenradius (±0.01mm)	
U/U1		 DCGT11T302 shown	●Sharp cutting edge prevents work materials from work hardening Scharfe Schneidkante für optimalen Spanfluss	
S		 DCGT11T302 shown	●Standard ground chipbreaker with wide cutting condition coverage Geschliffener Standard-Spanbrecher für einen großen Anwendungsbereich ●Sharp cutting edge with excellent chip control Scharfe Schneidkante für exzellente Spankontrolle	
AT		 DCGT11T302 shown	●Excellent adhesion resistance with dimensional stability Geringste Aufbauschneidenbildung für hohe Maßhaltigkeit ●Best for small diameter parts and for machining low carbon steels Sehr gut geeignet für kleinste Drehbearbeitungen	
FM		 DCGT11T302 shown	●Full-peripheral ground chipbreaker Umlaufende geschlifferne Spanleitstufe	

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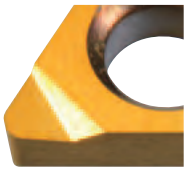
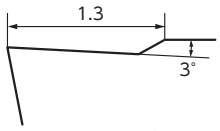
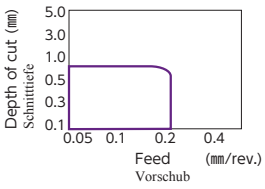
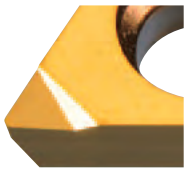
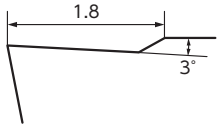
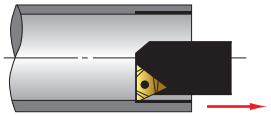
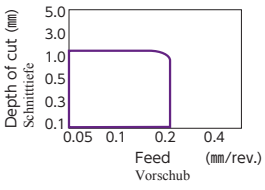
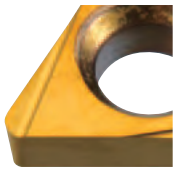
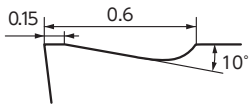
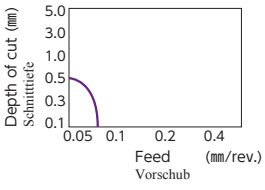
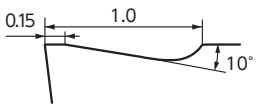
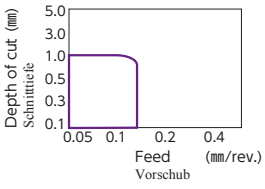
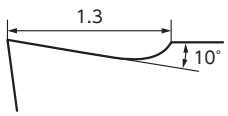
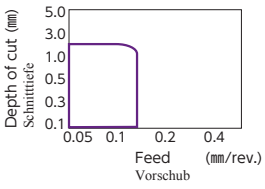
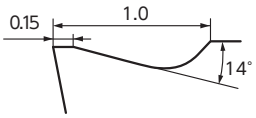
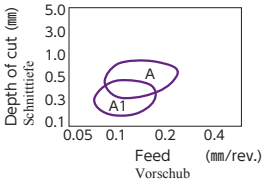
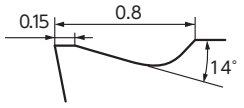
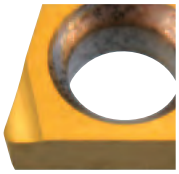
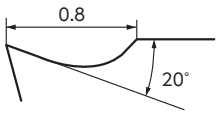
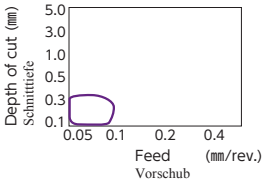
Ground Chipbreakers for Positive Inserts (continued)
Geschliffene Spanbrecher für positive Wendeplatten

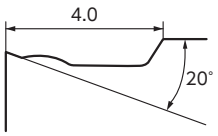
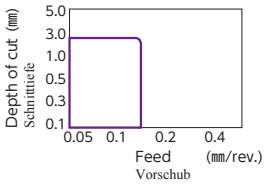
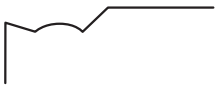
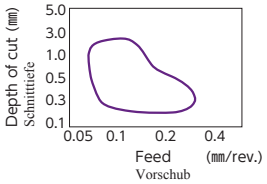
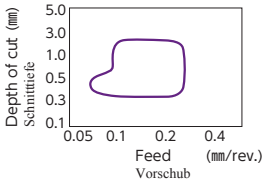
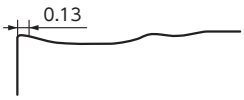
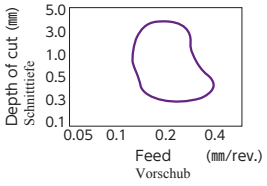
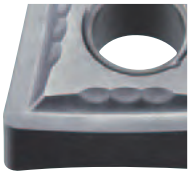
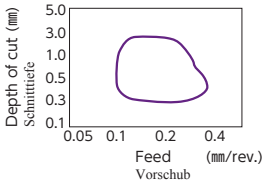
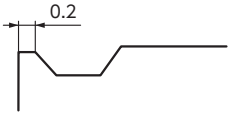
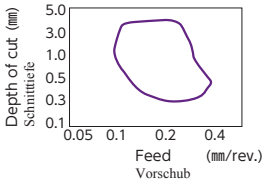
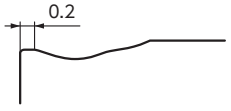
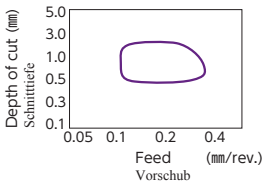
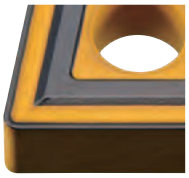
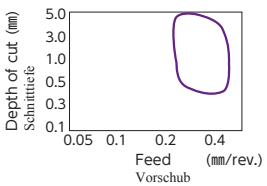
Name	Chipbreaker Geometry Spanbrecher-Geometrie	Features Merkmale	Chip Control Range Spanbereich f / a_p
F05	  TCGH060102 shown	●Exclusively designed for ID boring Speziell entwickelt für Innen-Drehen ●Evacuate chips BACKWARD Rückseitige Spanabfuhr ●Excellent choice for blind hole machining Optimal geeignet für Sackloch-Bohrungen	
F1	  TPGH110302 shown	 Chip is fed backward	
B1	  TCGH060102 shown	●Stable cutting in boring thanks to sharp and tough cutting edge Sehr gute Schnitt-Performance durch scharfe aber stabile Schneidkante	
B2	  TPGH090202 shown		
B3	  TPGH080202 shown		
A	  CPGH080202 shown	●Tough cutting edge and good chip control Stabile Schneidkante mit guter Spankontrolle ●General-purpose ID chipbreaker Vielseitigster Spanbrecher für die Innenbearbeitung	
A1	  CPGH040102 shown		
A2	  ERGHT30102 shown	●Control chips at light feed and light depth of cut Sehr gute Spankontrolle bei niedrigen Vorschüben und Schnitttiefen ●Sharp cutting edge due to large rake angle Scharfe Schneidkante durch sehr steile positive Spanleitstufe	

ISO Standard Insert

NTK CUTTING TOOLS

ISO Standard Insert

Moulded Chipbreakers for Negative Inserts
Gepresste Spanbrecher für negative Wendeplatten

Name	Chipbreaker Geometry Spanbrecher-Geometrie		Features Merkmale	Chip Control Range Spanbereich f / a_p
UL		 TNGG160401M shown	●Negative insert with positive insert's chipbreaker Negative Wendeschneidplatten mit den Schnitteigenschaften einer positiven WSP ●Reduced burr Improved microfinish Reduzierte Gratbildung Verbesserte Oberflächen ●Superb advantage in cost per corner over positive inserts Vorteil! Niedrigere Kosten pro Schneide gegnüber einer positiven WSP	
ZF1		 CNMG120408 shown	●Cut small curled chips on finishing cuts Optimale Spanentwicklung bei geringsten Spantiefen (Schlichtbearbeitung)	
WM		 CNMG120404 shown	●Remarkable chip control in the low feed range Außergewöhnliche Spankontrolle auch bei geringsten Vorschüben	
ZW1		 CNMG120408 shown	●Versatile chipbreaker with remarkable chip control performance in a wide range Vielseitiger Spanbrecher mit sehr guter Spankontrolle für große Anwendungsbereiche	
ZP		 CNMG120408 shown	●Double-positive rake and sharp cutting edge Hochpositive Spanbrechergeometrie mit scharfer Schneidkante ●Low tool pressure even at heavy depth of cut Geringer Spandruck bei hohen Spantiefen	
Z5		 CNMG120408 shown	●Very tough insert Sehr stabile Schneidkante ●Suitable for high loaded interrupted machining bestens geeignet für hohe Schnittkräfte und unterbrochene Schnitte ●Designed for machining with heavy interruption Enwickelt für stark unterbrochene Schnitte	
WV		 CNMG120408 shown	●Offers the advantages of both tough cutting edge and chip control Bietet die Kombination aus stabile Schneidkante und guter Spankontrolle	
G		 CNMG120408 shown	●Tough chipbreaker for roughing with exceptional stability Stabiler Spanbrecher für die Schruppbearbeitung	

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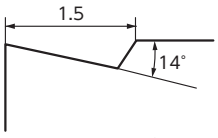
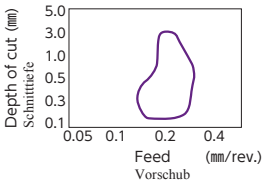
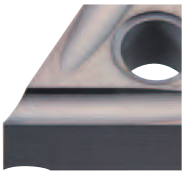
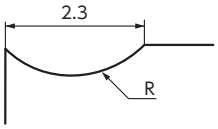
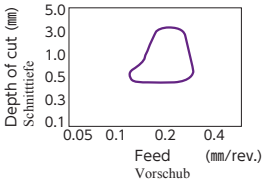
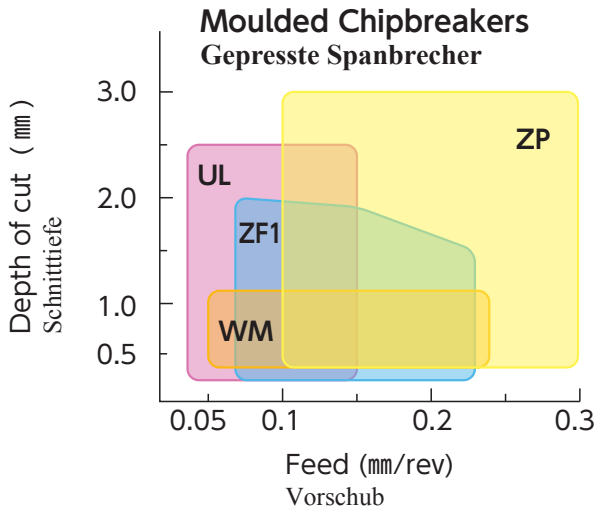
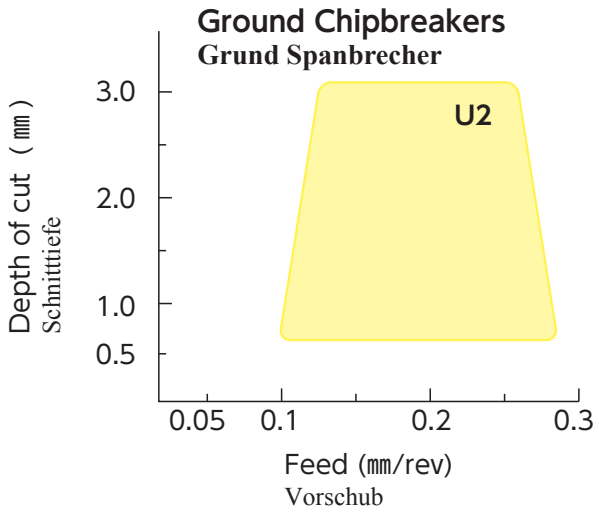
Ground Chipbreakers for Negative Inserts
Gepresste Spanbrecher für negative Wendeplatten

Name	Chipbreaker Geometry Spanbrecher-Geometrie		Features Merkmale	Chip Control Range Spanbereich f / a_p
N1		 TNGG160402 shown	●Double-positive design with the large rake angle Doppelt positives Designe mit grosser steiler Spanleitstufe ●Excellent chip control Optimale Spankontrolle	
U2		 TNGG160402 shown	●Reduced burr and work hardening due to high rake design Reduzierte Gratbildung und Materialverformung durch große und steil geschliffene Spanleitstufe	

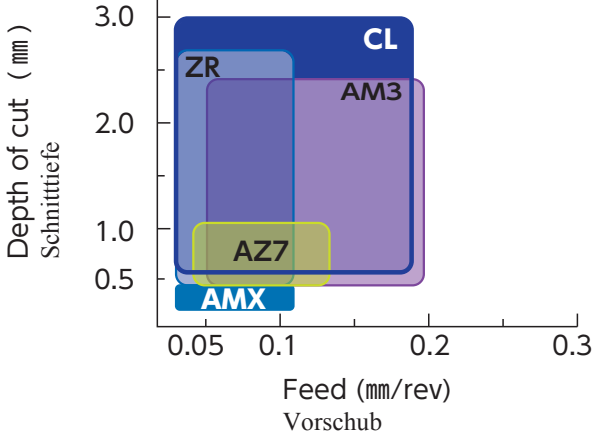




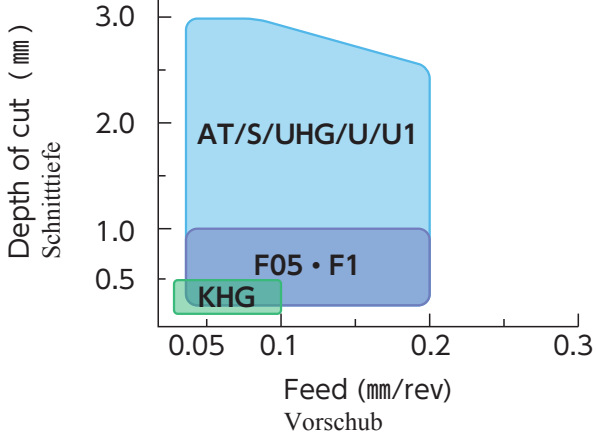
ISO Standard Insert

Positive Inserts
Positive Wendeplatten

Moulded Chipbreakers
Gepresste Spanbrecher

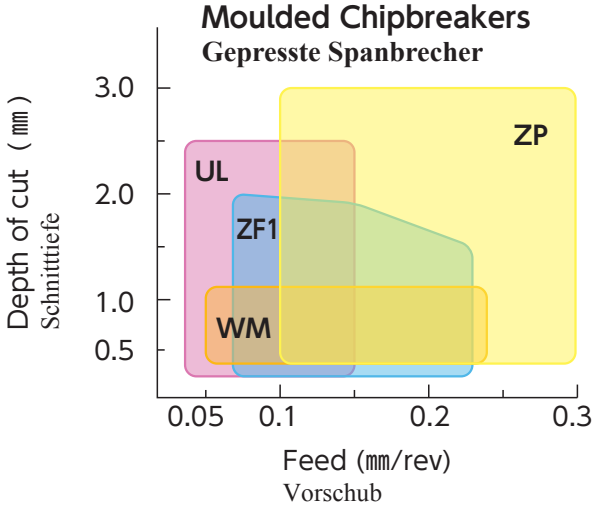


Ground Chipbreakers
Grund Spanbrecher

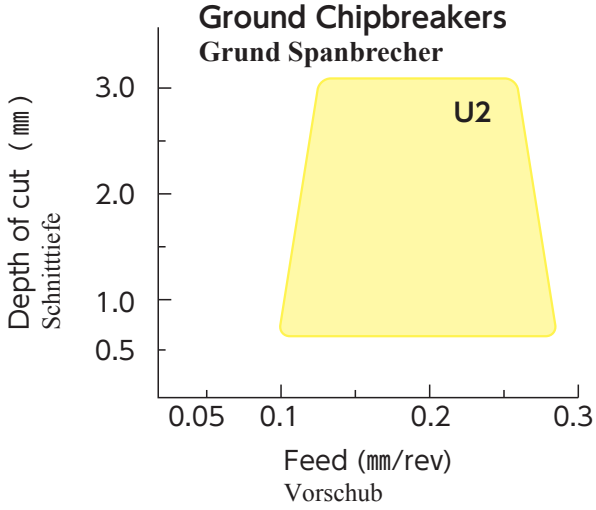


Negative Inserts
Negative Wendeplatten

Moulded Chipbreakers
Gepresste Spanbrecher

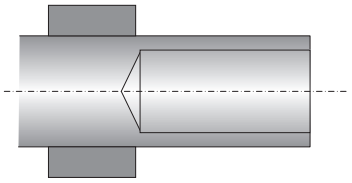


Ground Chipbreakers
Grund Spanbrecher



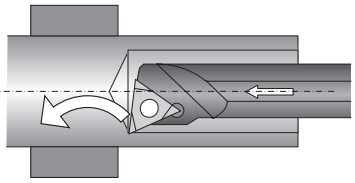
Features of FG, F1, and F05 chipbreakers . Merkmale der FG,F1 und F05 Spanbrecher

Suitable application



Blind hole.
Sackloch-Bohrung

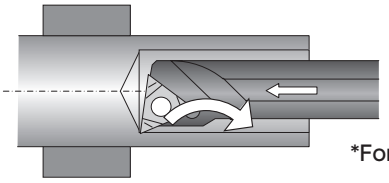
With normal chipbreaker



Insert breakage may occur as chips jam in the blind hole.

Späne werden in die Bohrung befördert und zerstören dadurch die Schneide.

With FG, F1, and F05 chipbreakers



FG, F1 and F05 chipbreakers allow the chips to evacuate the bore reducing the possibility of insert damage.

Die Spanbrecher FG, F1 und F05 befördern Späne aus der Bohrung und ermöglichen somit eine kontrollierte Bohrungsbearbeitung.

*For FG, F1, and F05 chipbreakers, use Right-hand insert for Right-hand holder.
*Spanbrecher FG, F1 und F05 in rechte Ausführung in rechte Halter einsetzen!

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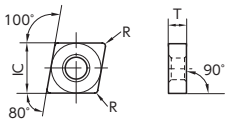
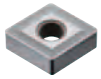
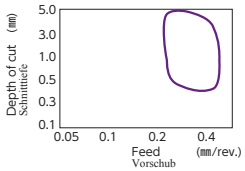
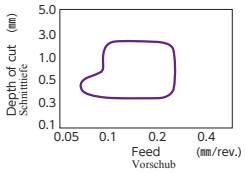
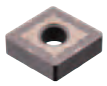
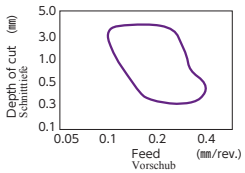
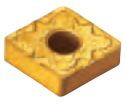
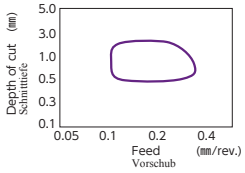
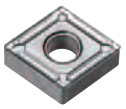
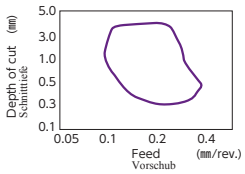
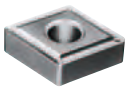
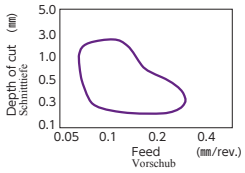
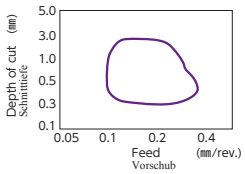
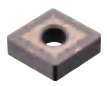
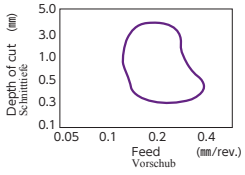
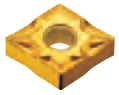
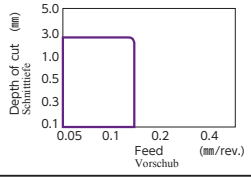
NTK CUTTING TOOLS

80 degree Rhombic Negative type
80° rhombisch negative Schneidplatten

CNMG, CNGG



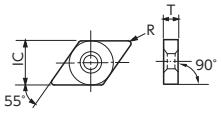
Part No.	IC	T
CN_1204	12.7	4.76

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 G	CNMG120404ENBG	0.4	T15, N40		
	CNMG120408ENBG	0.8	T15, N40		
	CNMG120412ENBG	1.2	N40		
	CNMG120404TNG	0.4	Q15		
	CNMG120408TNG	0.8	Q15		
	CNMG120412TNG	1.2	Q15		
 WM	CNMG120404ENWM	0.4	C7X, C7Z		
	CNMG120408ENWM	0.8	C7X, C7Z		
 WR	CNMG120408ENBWR	0.8	N40		
 WV	CNMG120408ENWV	0.8	C7X, C7Z		
 Z5	CNMG120408ENBZ5	0.8	N40		
	CNMG120408TNBZ5	0.8		DM4, QM3	
 ZF1	CNMG120404ENBZF1	0.4	T15, N40 Q15		
	CNMG120408ENBZF1	0.8	T15, N40 Q15		
	CNMG120412ENBZF1	1.2	T15, N40		
 ZP	CNMG120408ENBZP	0.8	T15		
	CNGG120404FNZP	0.4		DM4, ZM3, QM3	
	CNGG120408FNZP	0.8		DM4, ZM3, QM3	
 ZW1	CNMG120408ENBZW1	0.8	T15, N40		
	CNMG120412ENBZW1	1.2	T15, N40		
 UL	CNGG120404FNUL	0.4		TM4	

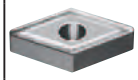
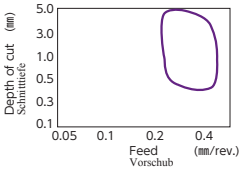
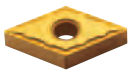
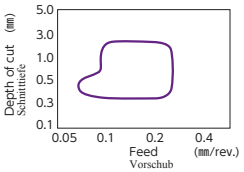
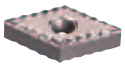
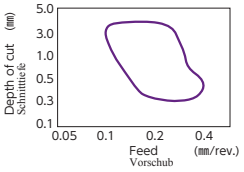
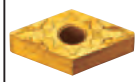
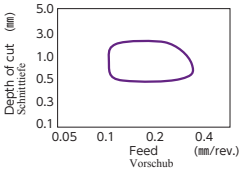
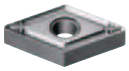
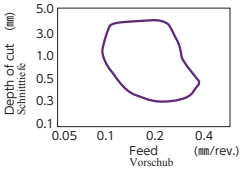
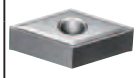
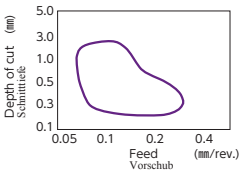
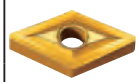
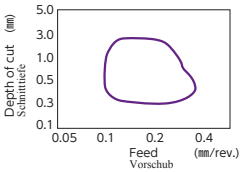
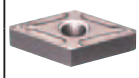
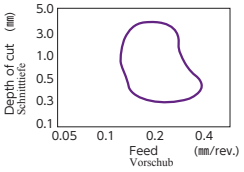
NTK CUTTING TOOLS

55 degree Rhombic Negative type
55° rhombisch negative Schneidplatten

DNMG, DNGG



Part No.	IC	T
DN_1504	12.7	4.76
DN_1506	12.7	6.35

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 G	DNMG150404ENBG	0.4	T15		
	DNMG150408ENBG	0.8	T15		
	DNMG150404TNG	0.4	Q15	QM3	
	DNMG150408TNG	0.8	Q15		
	DNMG150604ENBG	0.4	N40		
 WM	DNMG150404ENWM	0.4	C7X, C7Z		
	DNMG150408ENWM	0.8	C7X, C7Z		
 WR	DNMG150408ENBWR	0.8	N40		
	DNMG150412ENBWR	1.2	N40		
 WV	DNMG150408ENWV	0.8	C7X, C7Z		
 Z5	DNMG150408TNBZ5	0.8		DM4, QM3	
 ZF1	DNMG150404ENBZF1	0.4	T15, N40, Q15		
	DNMG150408ENBZF1	0.8	T15, N40, Q15		
	DNMG150604ENBZF1	0.4	T15, N40		
	DNMG150608ENBZF1	0.8	T15, N40		
 ZP	DNGG150404FNZP	0.4		DM4, ZM3, QM3	
	DNGG150408FNZP	0.8		DM4, ZM3, QM3	
 ZW1	DNMG150404ENBZW1	0.4	N40		
	DNMG150408ENBZW1	0.8	N40		
	DNMG150608ENBZW1	0.8	T15, N40		

＊ Please ask sales office for further grades & edge preparation.
Weitere Informationen zu diesen Werkzeugen erhalten Sie im Backoffice

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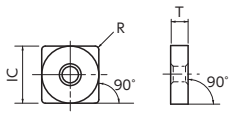
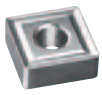
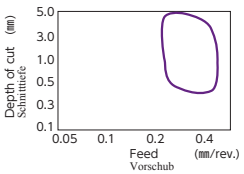
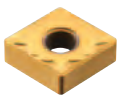
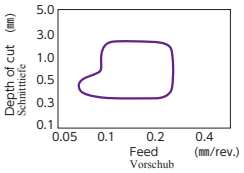
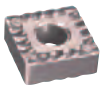
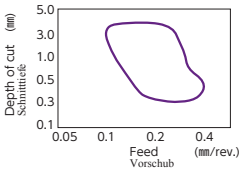
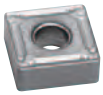
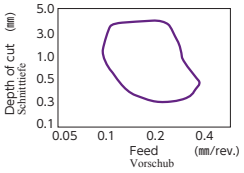
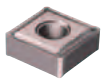
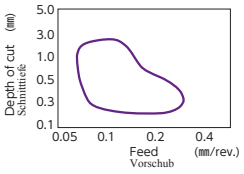
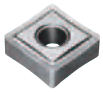
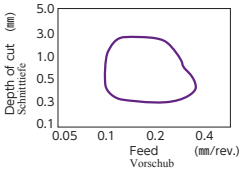
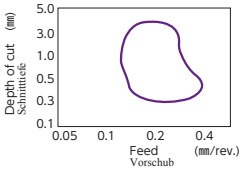
Square Negative type
90° negative Schneidplatten



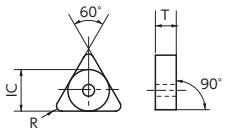
Part No.	IC	T
SN_0903	9.525	3.18
SN_1204	12.7	4.76

SNMG

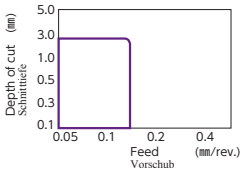
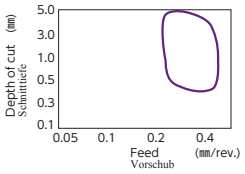
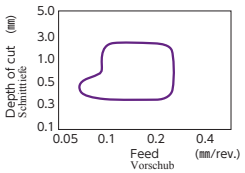
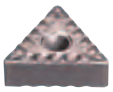
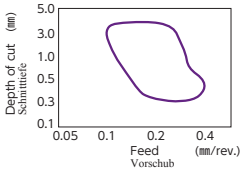
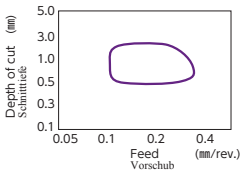
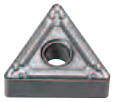
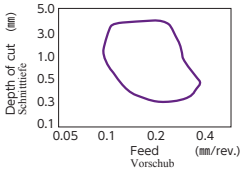
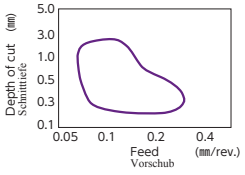
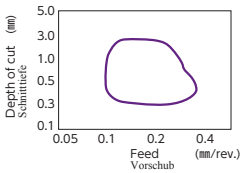
Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 G	SNMG090308ENBG	0.8	N40		
	SNMG120408ENBG	0.8	T15, N40		
	SNMG1204012ENBG	1.2	N40		
	SNMG120416ENBG	1.6	N40		
	SNMG120408TNG	0.8	Q15		
	SNMG120412TNG	1.2	Q15		
 WM	SNMG120408ENWM	0.8	C7X, C7Z		
 WR	SNMG120408ENBWR	0.8	N40		
 Z5	SNMG120408ENBZ5	0.8	N40		
	SNMG120408TNBZ5	0.8		DM4, QM3	
 ZF1	SNMG120408ENBZF1	0.8	T15, N40		
	SNMG120412ENBZF1	1.2	T15		
 ZP	SNMG120408ENBZP	0.8	T15		
 ZW1	SNMG120408ENBZW1	0.8	N40		
	SNMG120412ENBZW1	1.2	N40		

Triangle Negative type
60° negative Schneidplatten

TNMG, TNGG



Part No.	IC	T
TN_1604	9.525	4.76
TN_2204	12.7	4.76

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 UL	TNGG160401MFNUL	0.08		TM4	
	TNGG160402MFNUL	0.18		TM4	
	TNGG160404MFNUL	0.38		TM4	
 G	TNMG160404ENBG	0.4	T15, N40		
	TNMG160412ENBG	1.2	N40		
	TNMG160404TNG	0.4	Q15		
	TNMG160408TNG	0.8	Q15		
	TNMG160412TNG	1.2	Q15		
	TNMG220412ENBG	1.2	N40		
 WM	TNMG160404ENWM	0.4	C7X, C7Z		
	TNMG160408ENWM	0.8	C7X C7Z		
 WR	TNMG160408ENBWR	0.8	N40		
 WV	TNMG160408ENWV	0.8	C7X, C7Z		
 Z5	TNMG160408ENBZ5	0.8	N40		
	TNMG160404TNBZ5	0.4		DM4, QM3	
	TNMG160408TNBZ5	0.8		DM4, QM3	
 ZF1	TNMG160404ENBZF1	0.4	N40, Q15		
	TNMG160408ENBZF1	0.8	T15, N40 Q15		
	TNMG160412ENBZF1	1.2	T15		
 ZP	TNMG160404ENBZP	0.4	T15		
	TNMG160408ENBZP	0.8	T15		
	TNMG220408ENBZP	0.8	T15		
	TNGG160402FNZP	0.2		DM4, ZM3 QM3, VM1	
	TNGG160404FNZP	0.4		DM4, ZM3 QM3, VM1	
	TNGG 160408 FN ZP	0.8		DM4, ZM3 QM3, VM1	

* Please ask sales office for further grades & edge preparation.
Weitere Informationen zu diesen Werkzeugen erhalten Sie im Backoffice

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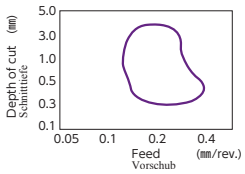
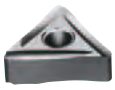
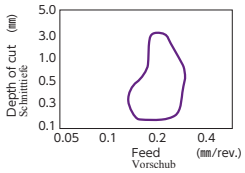
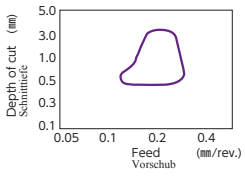
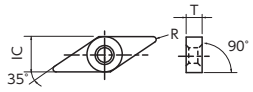
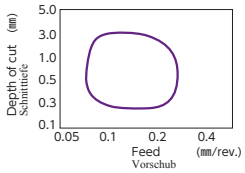
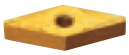
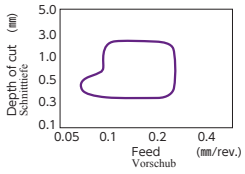
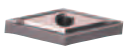
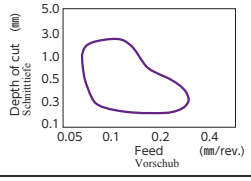
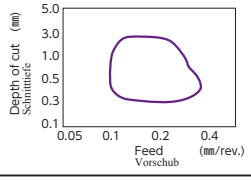
Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 ZW1	TNMG160404ENBZW1	0.4	N40		
	TNMG160408ENBZW1	0.8	T15, N40		
	TNMG220408ENBZW1	0.8	N40		
 N1 R-hand shown Rechte Ausführung	TNGG160402TR/LN1	0.2	T15		
	TNGG160404TR/LN1	0.4	T15		
	TNGG160408TR/LN1	0.8	T15		
 U2 R-hand shown Rechte Ausführung	TNGG160401FRU2	0.1	T15	ZM3, VM1	
	TNGG160402FR/LU2	0.2	T15	DM4, ZM3	
	TNGG160404FR/LU2	0.4	T15	DM4, ZM3	
	TNGG160408FR/LU2	0.8		ZM3	

35 degree Rhombic Negative type
35° rhombisch negative Schneidplatten



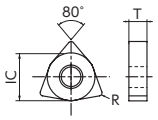
Part No.	IC	T
VN_1604	9.525	4.76

VNMG, VNGG, VNMM

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 AM1	VNMG160404ENAM1	0.4	C7X, C7Z		
	VNMG160408ENAM1	0.8	C7X, C7Z		
	VNMG160404ENBAM1	0.4	T15, N40, Q15		
	VNMG160408ENBAM1	0.8	T15, N40, Q15		
	VNMG160404TNBAM1	0.4		DM4, QM3	
	VNMG160408TNBAM1	0.8		DM4, QM3	
 WM	VNMG160408ENWM	0.8	C7X, C7Z		
 ZF1	VNMG160404ENBZF1	0.4	N40		
 ZP	VNMM160404ENBZP	0.4	T15		
	VNGG160402FNZP	0.2		DM4, QM3	
	VNGG160404FNZP	0.4		DM4, QM3	
	VNGG160408FNZP	0.8		DM4, QM3	

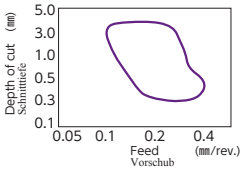
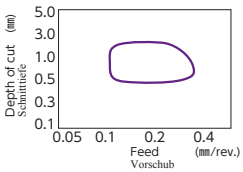
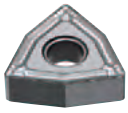
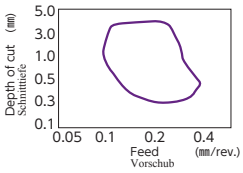
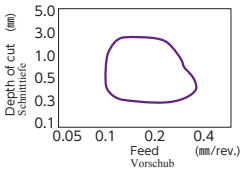
NTK CUTTING TOOLS

80 degree Hexagon Negative type
80° Trigonale negative Schneidplatten



Part No.	IC	T
WN_0804	12.7	4.76

WNMG, WNGG

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 WR	**WNMG080408ENWR**	0.8	**C7X, C7Z**		
 WV	**WNMG080408ENWV**	0.8	**C7X, C7Z**		
 Z5	**WNMG080408TNBZ5**	0.8		**DM4, QM3**	
	WNMG080412TNBZ5	1.2		**DM4, QM3**	
 ZP	**WNGG080404FNZP**	0.4		**DM4, QM3**	
	WNGG080408FNZP	0.8		**DM4, QM3**	

* **Please ask sales office for further grades & edge preparation.**
Weitere Informationen zu diesen Werkzeugen erhalten Sie im Backoffice

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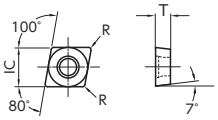
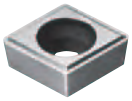
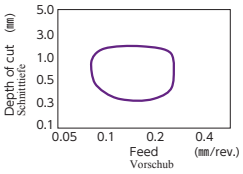
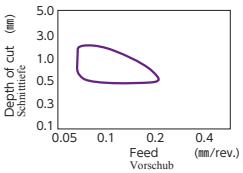
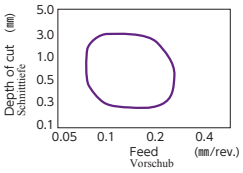
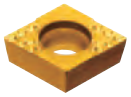
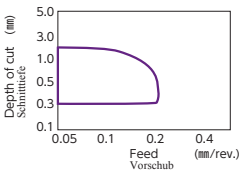
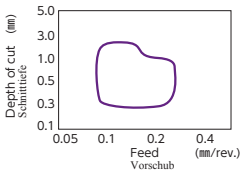
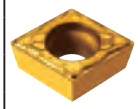
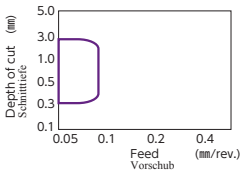
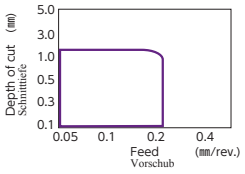
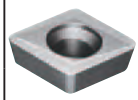
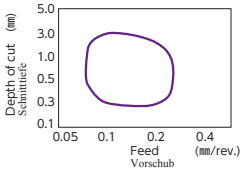
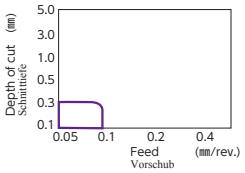
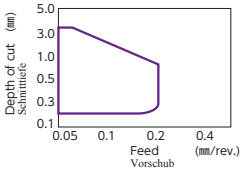
80 degree Rhombic 7° Positive type
Positive Schneidplatten- 80° Rhombisch

CCGT, CCMT, CCET, CCGW, CCMW



Part No.	IC	T
CC_0602	6.35	2.38
CC_09T3	9.525	3.97

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 AF1	CCGT09T302ENBAF1	0.2	T15		
	CCGT09T304ENBAF1	0.4	T15		
	CCGT09T308ENBAF1	0.8	T15		
 AM3	CCGT060200FNAM3	0.03		DT4, VM1	
	CCGT060201MFNAM3	0.08		QM3	
	CCGT060201FNXAM3	0.1	C7X		
	CCGT060202MFNAM3	0.18		DT4, QM3	
	CCGT060202FNXAM3	0.2	C7X		
	CCGT060202FNAM3	0.2		ZA3, VM1	
	CCMT060202ENBAM3	0.2	C7X, C7Z		
	CCGT060204MFNAM3	0.38		DT4	
	CCGT060204FNAM3	0.4		ZA3	
	CCMT060204ENBAM3	0.4	C7X, C7Z		
	CCGT060208FNAM3	0.8		ZA3	
	CCGT09T300FNAM3	0.03		DT4, VM1, TM4	
	CCGT09T301MFNAM3	0.08		DT4, ZM3, QM3, VM1, TM4	
	CCGT09T301FNXAM3	0.1	C7X		
	CCGT09T302MFNAM3	0.18		DT4, ZM3, QM3, VM1, TM4	
	CCGT09T302FNXAM3	0.2	C7X		
	CCGT09T302FNAM3	0.2		ZA3, QM3, VM1	
	CCMT09T302ENBAM3	0.2	C7X, C7Z		
	CCGT09T304MFNAM3	0.38		DT4, ZM3, QM3, VM1, TM4	
	CCGT09T304FNXAM3	0.4	C7X		
	CCGT09T304FNAM3	0.4		ZA3, QM3, VM1,	
	CCMT09T304ENBAM3	0.4	C7X, C7Z		
	CCGT09T308FNAM3	0.8		ZA3	
	CCMT09T308ENBAM3	0.8	C7X, C7Z		
	CCMT09T312ENBAM3	1.2	C7X, C7Z		
 AM5	CCMT060204ENBAM5	0.4	N40		
	CCMT09T304ENBAM5	0.4	N40		
	CCMT09T308ENBAM5	0.8	N40		
 AZ7	CCGT060200FNAZ7	0.03		QM3	
	CCGT060201MFNAZ7	0.08		QM3	
	CCGT060202MFNAZ7	0.18		QM3	
	CCGT09T300FNAZ7	0.03		DT4, ZM3, QM3, VM1, TM4	
	CCGT09T301MFNAZ7	0.08		DT4, ZM3, QM3, VM1, TM4	
	CCGT09T302MFNAZ7	0.18		DT4, ZM3, QM3, VM1, TM4	
	CCGT09T304MFNAZ7	0.38		DT4, ZM3, QM3, VM1, TM4	

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 AZ8	CCMT060202ENAAZ8	0.2		CP7	
	CCMT060204ENBAZ8	0.4		CP7	
	CCMT060208ENBAZ8	0.8		CP7	
	CCMT09T302ENAAZ8	0.2		CP7	
	CCMT09T304ENBAZ8	0.4		CP7	
	CCMT09T308ENBAZ8	0.8		CP7	
 ZR	CCMT060202ENBZR	0.2	C7X, C7Z		
	CCMT060204ENBZR	0.4	C7X, C7Z		
	CCMT09T302ENBZR	0.2	C7X, C7Z		
	CCMT09T304ENBZR	0.4	C7X, C7Z		
	CCMT09T308ENBZR	0.8	C7X, C7Z		
 F1 R-hand shown Rechte Ausführung	CCGT060202FRF1	0.2		TM4	
	CCGT060204FRF1	0.4		TM4	
	CCGT09T302FRF1	0.2		TM4	
	CCGT09T304FRF1	0.4		TM4	
 FM	CCGT060202ENBFM	0.2	T15		
	CCGT060204ENBFM	0.4	T15		
 KHG	CCET0602005R/LKHG	0.05		VM1	
	CCET0602008R/LKHG	0.08		VM1	
	CCET0602018R/LKHG	0.18		VM1	
	CCET060202R/LKHG	0.2		VM1	
	CCET09T3005R/LKHG	0.05		VM1 TM4 (R)	
	CCET09T3008R/LKHG	0.08		VM1 TM4 (R)	
	CCET09T3018R/LKHG	0.18		VM1 TM4 (R)	
	CCET09T302R/LKHG	0.2		VM1 TM4 (R)	
 S L-hand shown Linke Ausführung	CCGT060200R/LS	0.03		DT4 (R) , ZM3, VM1	
	CCGT060201MR/LS	0.08		DT4 (R) , QM3 (R)	
	CCGT060201R/LS	0.1	C7X	ZM3, VM1	
	CCMT060201TR/LAS	0.1	C7X C7Z		
	CCGT060202MR/LS	0.18		QM3 (R)	
	CCGT060202R/LS	0.2	C7X	ZM3, VM1	
	CCMT060202TR/LAS	0.2	C7X C7Z		
	CCMT060204TR/LAS	0.4	C7X C7Z		
	CCGT09T300R/LS	0.03		DT4 (R) , ZM3 (R) , VM1, TM4 (R)	
	CCGT09T301MR/LS	0.08		DT4 (R) , QM3 (R) , TM4 (R)	
	CCGT09T301R/LS	0.1		ZM3, QM3 (R) , VM1	
	CCMT09T301TR/LAS	0.1	C7X C7Z		
	CCGT09T302MR/LS	0.18		DT4 (R) , QM3 (R) , TM4 (R)	
	CCGT09T302R/LS	0.2		ZM3 (R) , QM3 (R) , VM1	
	CCMT09T302TR/LAS	0.2	C7X C7Z		
	CCGT09T304MR/LS	0.38		QM3 (R) , TM4 (R)	
	CCGT09T304R/LS	0.4		QM3 (R)	
	CCMT09T304TR/LAS	0.4	C7X C7Z		

* Please ask sales office for further grades & edge preparation.
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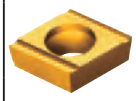
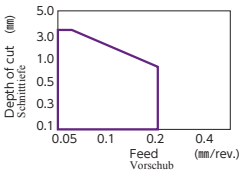
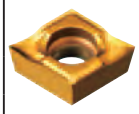
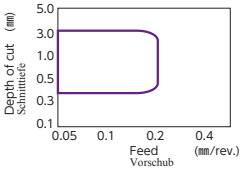
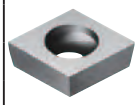
Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 U • U1 R-hand shown Rechte Ausführung	CCGT060200R/LU	0.03		DT4 (R) , ZM3 (R)	
	CCGT060201R/LU	0.1		DT4 (R) , ZM3	
	CCGT060202R/LU	0.2		DT4 (R) , ZM3	
	CCGT09T300R/LU1	0.03		ZM3, TM4 (R)	
	CCGT09T301R/LU1	0.1		DT4 (R) , ZM3, TM4 (R)	
	CCGT09T302R/LU1	0.2		DT4 (R) , ZM3, TM4 (R)	
	CCGT09T304R/LU1	0.4		ZM3, TM4 (R)	
 CL	CCGT060201MCL	0.08		DT4, TM4	
	CCGT060202MCL	0.18		DT4, TM4	
	CCGT09T301MCL	0.08		DT4, TM4	
	CCGT09T302MCL	0.18		DT4, TM4	
	CCGT09T304MCL	0.38		DT4, TM4	
 No Chipbreaker ohne Spanbrecher	CCGW060200FN	0.03		ZM3	—
	CCGW060201FN	0.1		ZM3	
	CCGW060200H	0.03		KM1	
	CCGW060201H	0.1		KM1	
	CCGW060202H	0.2		KM1	
	CCGW09T300FN	0.03		ZM3	
	CCGW09T301FN	0.1		ZM3	
	CCGW09T300H	0.03		KM1	
	CCGW09T301H	0.1		KM1	
	CCGW09T302H	0.2		KM1	
	CCGW09T302MP	0.18		DT4	
	CCGW09T30V	0.0		VM1	
	CCGW09T301P	0.1		VM1	
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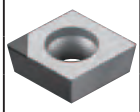
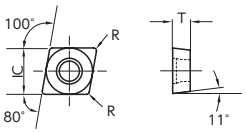
 PCD	CCMW09T301	0.1	PD1		—
	CCMW09T302	0.2	PD1		
	CCMW09T304	0.4	PD1		
	CCMW09T308	0.8	PD1		

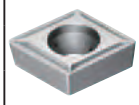
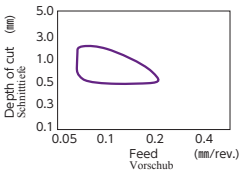
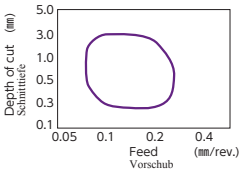
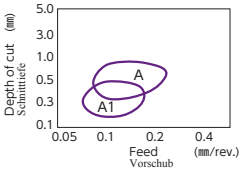
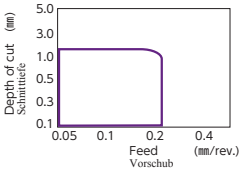
NTK CUTTING TOOLS

80 degree Rhombic 11° Positive type
Positive Schneidplatten- 80° Rhombisch



Part No.	IC	T
CP_0401	4.76	1.59
CP_0602	6.35	2.38
CP_0802	7.94	2.38
CP_0903	9.525	3.18
CP_09T3	9.525	3.97

CPGT, CPGH, CPMH

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 AM3	CPGT060201FNXAM3	0.1	C7X		
	CPGT060202FNXAM3	0.2	C7X		
	CPGT09T301FNXAM3	0.1	C7X		
	CPGT09T302FNXAM3	0.2	C7X		
 AM5	CPGH060202ENBAM5	0.2	N40		
	CPGH060202FNAM5	0.2		ZM3, TM4	
	CPMH060204AM5	0.4	N40		
	CPGH080202ENBAM5	0.2	N40		
	CPGH080202FNAM5	0.2		ZM3, TM4	
	CPMH080204AM5	0.4	N40		
	CPMH080208AM5	0.8	N40		
	CPGH090302ENBAM5	0.2	T15		
	CPGH090302FNAM5	0.2		ZM3, TM4	
	CPGH090304ENBAM5	0.4	T15		
	CPGH090304FNAM5	0.4		ZM3, TM4	
	CPMH090304AM5	0.4	N40		
	CPGH090308ENBAM5	0.8	T15		
	CPGH090308FNAM5	0.8		ZM3, TM4	
	CPMH090308AM5	0.8	N40		
 A • A1 L-hand shown Linke Ausführung	CPGH040102FLA1	0.2		ZM3, TM4	
	CPGH040104FLA1	0.4		ZM3, TM4	
	CPGH040102TLA1	0.2	T15 C7X		
	CPGH040104TLA1	0.4	T15 C7X		
	CPGH060202FLA	0.2		ZM3, TM4	
	CPGH060204FLA	0.4		ZM3, TM4	
	CPGH060202TLA	0.2	T15 C7X		
	CPGH060204TLA	0.4	T15 C7X		
	CPGH080202FLA	0.2		ZM3 TM4	
	CPGH080204FLA	0.4		ZM3 TM4	
	CPGH080204TLA	0.4	T15 C7X		
 F1 R-hand shown Rechte Ausführung	CPGH040101FRF1	0.1		TM4	
	CPGH040102FRF1	0.2		TM4	
	CPGH040104FRF1	0.4		TM4	
	CPGH060202FRF1	0.2		TM4	
	CPGH060204FRF1	0.4		TM4	

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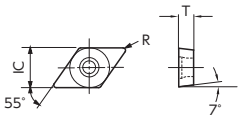
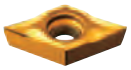
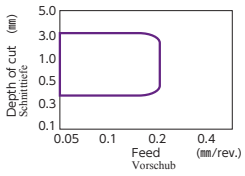
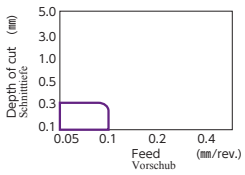
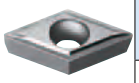
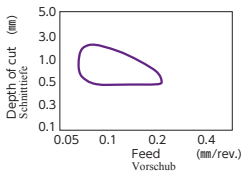
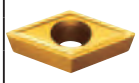
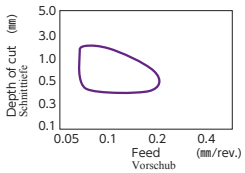
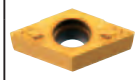
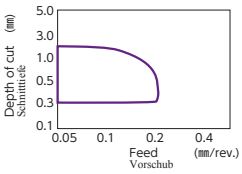
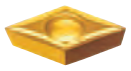
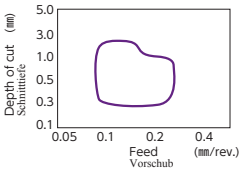
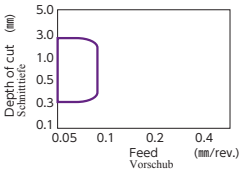
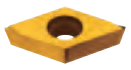
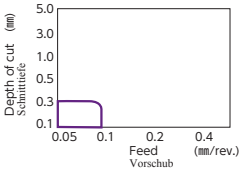
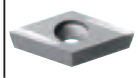
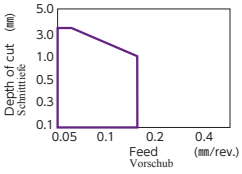
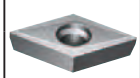
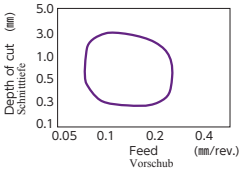
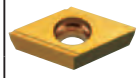
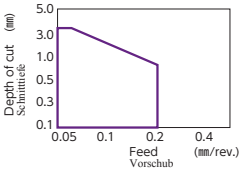
55 degree Rhombic 7° Positive type
Positive Schneidplatten- 55° Rhombisch

DCGT, DCMT, DCET, DCGW, DCMW



Part No.	IC	T
DC_0702	6.35	2.38
DC_11T3	9.525	3.97

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 CL	DCGT070201MCL	0.08		DT4, TM4	
	DCGT070202MCL	0.18		DT4, TM4	
	DCGT11T301MCL	0.08		DT4, TM4	
	DCGT11T302MCL	0.18		DT4, TM4	
	DCGT11T304MCL	0.38		DT4, TM4	
 AMX	DCGT070201MAMX	0.08		TM4	
	DCGT070202MAMX	0.18		TM4	
	DCGT11T301MAMX	0.08		TM4	
	DCGT11T302MAMX	0.18		TM4	
 AF3	DCGT11T302ENBAF3	0.2	T15		
	DCGT11T304ENBAF3	0.4	T15		
 AM3	DCGT070200FNAM3	0.03		DT4, ZM3, VM1	
	DCGT070201MFNAM3	0.08		DT4, QM3	
	DCGT070201FNAM3	0.1		ZM3, VM1	
	DCGT070201FNXAM3	0.1	C7X		
	DCGT070202MFNAM3	0.18		DT4, QM3	
	DCGT070202ENBAM3	0.2	T15		
	DCGT070202FNAM3	0.2		ZA3, VM1	
	DCGT070202FNXAM3	0.2	C7X		
	DCMT070202ENBAM3	0.2	C7X, C7Z		
	DCGT070204MFNAM3	0.38		DT4	
	DCGT070204ENBAM3	0.4	T15		
	DCGT070204FNAM3	0.4		ZA3, VM1	
	DCGT070204FNXAM3	0.4	C7X		
	DCMT070204ENBAM3	0.4	C7X, C7Z, N40		
	DCGT070208FNAM3	0.8		ZA3	
	DCMT070208ENBAM3	0.8	N40		
	DCGT11T300FNAM3	0.03		ZM3, VM1, TM4	
	DCGT11T301MFNAM3	0.08		DT4, ZM3, QM3, VM1, TM4	
	DCGT11T301FNXAM3	0.1	C7X		
	DCGT11T302MFNAM3	0.18		DT4, ZM3, QM3, VM1, TM4	
	DCGT11T302FNAM3	0.2		ZA3, QM3, VM1	
	DCGT11T302FNXAM3	0.2	C7X		
	DCMT11T302ENBAM3	0.2	C7X, C7Z		
	DCGT11T304MFNAM3	0.38		DT4, ZM3, QM3, VM1, TM4	
	DCGT11T304FNAM3	0.4		ZA3, QM3, VM1	
	DCGT11T304FNXAM3	0.4	C7X		
	DCMT11T304ENBAM3	0.4	C7X, C7Z, N40		
	DCGT11T308ENBAM3	0.8	T15		
	DCGT11T308FNAM3	0.8		ZA3	
	DCGT11T308FNXAM3	0.8	C7X		
	DCMT11T308ENBAM3	0.8	C7X, C7Z, N40		
	DCMT11T312ENBAM3	1.2	C7X C7Z		

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 AZ7	DCGT070200FNAZ7	0.03		QM3	
	DCGT070201MFNAZ7	0.08		QM3	
	DCGT070202MFNAZ7	0.18		QM3	
	DCGT11T300FNAZ7	0.03		DT4, ZM3, QM3 VM1, TM4	
	DCGT11T301MFNAZ7	0.08		DT4, ZM3, QM3, VM1, TM4	
	DCGT11T302MFNAZ7	0.18		DT4, ZM3, QM3, VM1, TM4	
	DCGT11T304MFNAZ7	0.38		DT4, ZM3, QM3, VM1, TM4	
	DCGT11T308FNAZ7	0.8		DT4, ZM3, QM3, VM1	
 AZ8	DCMT070202ENAAZ8	0.2		CP7	
	DCMT070204ENBAZ8	0.4		CP7	
	DCMT070208ENBAZ8	0.8		CP7	
	DCMT11T302ENAAZ8	0.2		CP7	
	DCMT11T304ENBAZ8	0.4		CP7	
	DCMT11T308ENBAZ8	0.8		CP7	
 ZR	DCMT070202ENBZR	0.2	C7X, C7Z		
	DCMT070204ENBZR	0.4	C7X, C7Z		
	DCMT11T302ENBZR	0.2	C7X, C7Z		
	DCMT11T304ENBZR	0.4	C7X, C7Z		
	DCMT11T308ENBZR	0.8	C7X, C7Z		
 KHG	DCET0702005R/LKHG	0.05		VM1	
	DCET0702008R/LKHG	0.08		VM1	
	DCET0702018R/LKHG	0.18		VM1	
	DCET070202R/LKHG	0.2		VM1	
	DCET11T3005R/LKHG	0.05		VM1, TM4 (R)	
	DCET11T3008R/LKHG	0.08		VM1, TM4 (R)	
	DCET11T3018R/LKHG	0.18		VM1, TM4 (R)	
	DCET11T302R/LKHG	0.2		VM1, TM4 (R)	
 UHG R-hand shown Rechte Ausführung	DCET0702008RUHG	0.08		VM1	
	DCET11T3008RUHG	0.08		VM1	
 FM	DCGT11T302ENBFM	0.2	T15		
	DCGT11T304ENBFM	0.4	T15		
	DCGT11T308ENBFM	0.8	T15		
 AT	DCET11T301MRAT	0.08		TM4	
	DCET11T302MRAT	0.18		TM4	

* Please ask sales office for further grades & edge preparation.
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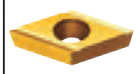
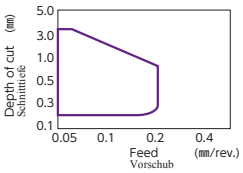
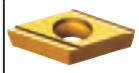
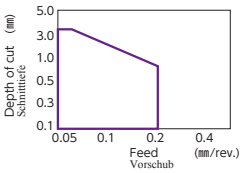
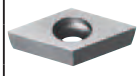
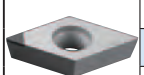
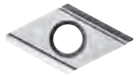
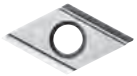
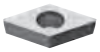
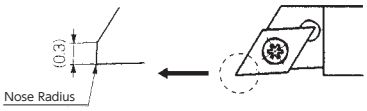
Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 S R-hand shown Rechte Ausführung	DCGT070200R/LS	0.03		ZM3, VM1	
	DCGT070201MRS	0.08		DT4, QM3	
	DCGT070201R/LS	0.1	C7X (R)	ZM3, VM1	
	DCMT070201TR/LAS	0.1	C7X, C7Z		
	DCGT070202MRS	0.18		DT4, QM3	
	DCGT070202R/LS	0.2	C7X	ZM3, VM1	
	DCMT070202TR/LAS	0.2	C7X, C7Z		
	DCGT070204RS	0.4		VM1	
	DCMT070204TR/LAS	0.4	C7X, C7Z		
	DCGT11T300R/LS	0.03		DT4 (R), ZM3 (R), VM1, TM4 (R)	
	DCGT11T301MRS	0.08		DT4, QM3, TM4	
	DCGT11T301R/LS	0.1		ZM3 (R), QM3 (R), VM1	
	DCMT11T301TR/LAS	0.1	C7X, C7Z		
	DCGT11T302MRS	0.18		DT4, QM3, TM4	
	DCGT11T302R/LS	0.2		ZM3 (R), QM3 (R), VM1	
	DCMT11T302TR/LAS	0.2	C7X, C7Z		
	DCGT11T304MRS	0.38		QM3, TM4	
	DCGT11T304RS	0.4		QM3	
	DCMT11T304TR/LAS	0.4	C7X, C7Z		
 U • U1 R-hand shown Rechte Ausführung	DCGT070200RU	0.03		ZM3, VM1	
	DCGT070201RU	0.1		ZM3, VM1	
	DCGT070202R/LU	0.2		ZM3, VM1 (R)	
	DCGT11T300R/LU1	0.03		ZM3, VM1 (R), TM4 (R)	
	DCGT11T301R/LU1	0.1		DT4 (R), ZM3, VM1 (R), TM4 (R)	
	DCGT11T302R/LU1	0.2		DT4 (R), ZM3, VM1 (R), TM4 (R)	
	DCGT11T304R/LU1	0.4		ZM3, VM1 (R), TM4 (R)	
 No Chipbreaker ohne Spanbrecher	DCGW070200FN	0.03		ZM3	—
	DCGW070201FN	0.1		ZM3	
	DCGW070200H	0.03		KM1	
	DCGW070201H	0.1		KM1	
	DCGW070202H	0.2		KM1	
	DCGW07020V	0.0		VM1	
	DCGW11T300FN	0.03		ZM3	
	DCGW11T301FN	0.1		ZM3	
	DCGW11T300H	0.03		KM1	
	DCGW11T301H	0.1		KM1	
	DCGW11T302H	0.2		KM1	
	DCGW11T30V	0.0		VM1	
 PCD	DCMW11T301	0.1	PD1		—
	DCMW11T302	0.2	PD1		
	DCMW11T304	0.4	PD1		
	DCMW 11T308	0.8	PD1		

● TFD type inserts (with wiper)

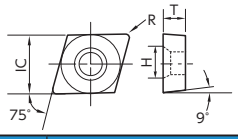
TFD Insert	Dimensions (mm) IC	Thickness	Nose radius	ISO	Grade
 S type chipbreaker . R-hand shown Rechte Ausführung	6.35	2.38	0.05	TFD07FR05	ZM3,QM3,VM1
	6.35	2.38	0.15	TFD07FR15	ZM3,QM3
	9.525	3.97	0.05	TFD11FR05	ZM3,QM3,VM1
	9.525	3.97	0.15	TFD11FR15	ZM3,QM3
	6.35	2.38	0.05	TFD07FL05	ZM3
	6.35	2.38	0.15	TFD07FL15	ZM3
 R-hand shown . Rechte Ausführung	6.35	2.38	0.05	TFD07FR05U	ZM3,QM3,VM1
	6.35	2.38	0.15	TFD07FR15U	ZM3,QM3
	9.525	3.97	0.05	TFD11FR05U1	ZM3,QM3,VM1
	9.525	3.97	0.15	TFD11FR15U1	ZM3,QM3
Mirror finish  R-hand shown . Rechte Ausführung	6.35	2.38	0.05	TFD07FR05H	KM1
	9.525	3.97	0.05	TFD11FR05H	KM1

◆Features of TFD
Besonderheiten des TFD



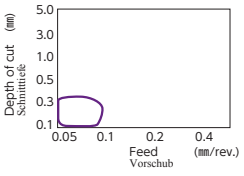
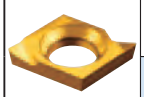
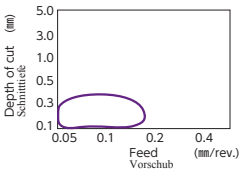
For better surface finish
Width of wiper flat：0.3mm
Holders：SDJC type, CH-SDUC type and Y-SDJC type
Für bessere Oberflächen
Wiper-Länge：0.3mm
Halter：SDJC type, CH-SDUC type and Y-SDJC type

■ 75 degree Rhombic 9° Positive type
Positive Schneidplatten- 75° Rhombisch



Part No.	IC	T
ER_T301	3.97	1.59

ERGH

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 A2 R-hand shown Rechte Ausführung	ERGHT30102FR/LA2	0.2	T15, C7X	ZM3, VM1, TM4	
	ERGHT30104FR/LA2	0.4		ZM3(L), TM4 (R)	
 F1 R-hand shown Rechte Ausführung	ERGHT30101FRR/LF1	0.1		TM4	
	ERGHT30102FRR/LF1	0.2		TM4	
	ERGHT30104FRR/LF1	0.4		TM4	

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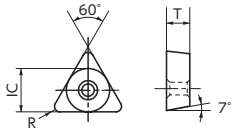
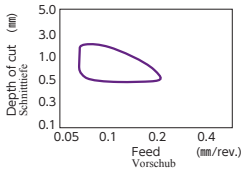
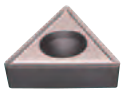
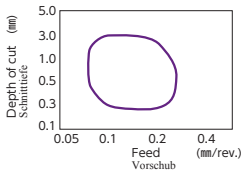
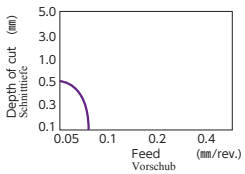
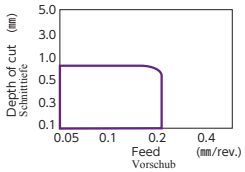
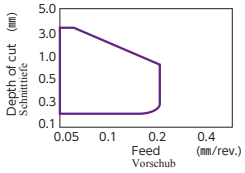
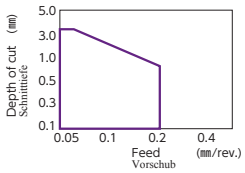
Triangle 7° Positive type
Dreieckige positive Schneidplatten - 60°



Part No.	IC	T
TC_0601	3.97	1.59
TC_0902	5.56	2.38
TC_1102	6.35	2.38
TC_16T3	9.525	3.97

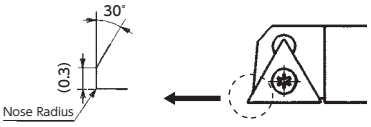
TCGT, TCMT, TCGH, TCGB, TCGW

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 AM3	TCGT110202FNXAM3	0.2	C7X		
	TCGT16T304ENBAM3	0.4	T15		
	TCMT110204ENBAM3	0.4	C7X		
 AM5	TCMT16T308ENBAM5	0.8	N40		
 B1 L-hand shown Linke Ausführung	TCGH060102FLB1	0.2		ZM3, TM4	
	TCGH060102TR/LB1	0.2	T15		
	TCGH060104FLB1	0.4		ZM3, TM4	
	TCGH060104TLB1	0.4	T15		
 F05 R-hand shown Rechte Ausführung	TCGH060101FRF05	0.1		TM4	
	TCGH060102FR/LF05	0.2		ZM3, VM1 (R), TM4	
	TCGH060102TR/LF05	0.2	C7X		
	TCGH060104FRF05	0.4		ZM3, VM1, TM4	
	TCGH060104TR/LF05	0.4	C7X		
 S R-hand shown Rechte Ausführung	TCGT090201R/LS	0.1	C7X (R)	ZM3 (R), VM1	
	TCGT090202R/LS	0.2	C7X	ZM3 (R)	
	TCGT110201R/LS	0.1		ZM3 (R), VM1	
 U R-hand shown Rechte Ausführung	TCGT090201RU	0.1		ZM3	
	TCGT090202RU	0.2		ZM3	
 No Chipbreaker ohne Spanbrecher	TCGB060102TN	0.2	T15		—
	TCGB060104TN	0.4	T15		
	TCGW090200FN	0.03		ZM3	
	TCGW090201FN	0.1		ZM3	
	TCGW110200FN	0.03		ZM3	
	TCGW110201FN	0.1		ZM3	

TFT type inserts(with wiper)

TFT Insert	Dimensions (mm) IC	Thickness	Nose radius	ISO	Grade
 S chipbreaker . R-hand shown Rechte Ausführung	5.56	2.38	0.05	**TFT09FR05**	**ZM3**
	5.56	2.38	0.15	**TFT09FR15**	**ZM3**
	6.35	2.38	0.05	**TFT11FR05**	**ZM3**
	6.35	2.38	0.15	**TFT11FR15**	**ZM3**
	5.56	2.38	0.05	**TFT09FL05**	**ZM3**
	5.56	2.38	0.15	**TFT09FL15**	**ZM3**
 U/U1 chipbreaker . R-hand shown Rechte Ausführung	5.56	2.38	0.05	**TFT09FR05U**	**ZM3**
	5.56	2.38	0.15	**TFT09FR15U**	**ZM3**
	6.35	2.38	0.05	**TFT11FR05U1**	**ZM3**
	6.35	2.38	0.15	**TFT11FR15U1**	**ZM3**

◆ Features of TFT
Besonderheiten des TFT



For better surface finish
Width of wiper flat : 0.3mm
Holders : STAC-N type
Für bessere Oberflächen
Wiper-Länge : 0.3mm
Halter : STAC-Ntype

* **Please ask sales office for further grades & edge preparation.**
Weitere Informationen zu diesen Werkzeugen erhalten Sie im Backoffice

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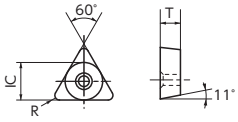
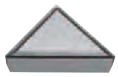
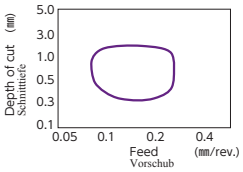
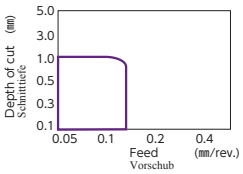
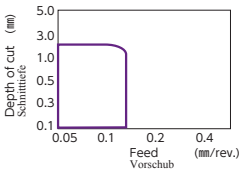
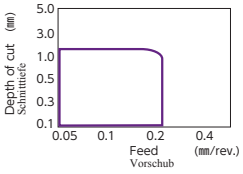
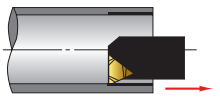
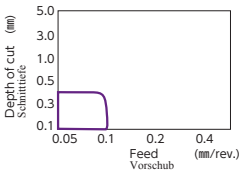
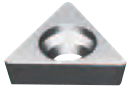
Triangle 11° Positive type
Dreieckige positive Schneidplatten - 60°



Part No.	IC	T
TP_0802	4.76	2.38
TP_0902	5.56	2.38
TP_1103	6.35	3.18
TP_1603	9.525	3.18

TPGR, TPGH, TPGB

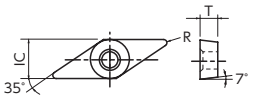
Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 AF1	TPGR110304ENBAF1	0.4	T15		
	TPGR110308ENBAF1	0.8	T15		
	TPGR160304ENBAF1	0.4	T15		
	TPGR160308ENBAF1	0.8	T15		
 B2 • B3 L-hand shown Linke Ausführung	TPGH090202FLB2	0.2		ZM3, TM4	
	TPGH090204FLB2	0.4		ZM3, TM4	
	TPGH090208FLB2	0.8		ZM3, TM4	
	TPGH090204TLB2	0.4	T15		
	TPGH080202FLB3	0.2		ZM3, TM4	
	TPGH080204FLB3	0.4		ZM3, TM4	
	TPGH080204TLB3	0.4	T15		
	TPGH110304TLB3	0.4	T15		
 F1 R-hand shown Rechte Ausführung	TPGH080202FRF1	0.2		ZM3, VM1, TM4	  Chip is fed backward
	TPGH080202TRF1	0.2	C7X		
	TPGH080204FRF1	0.4		ZM3, VM1, TM4	
	TPGH080204TRF1	0.4	C7X		
	TPGH090202FRF1	0.2		ZM3, VM1, TM4	
	TPGH090202TRF1	0.2	C7X		
	TPGH090204FRF1	0.4		ZM3, VM1, TM4	
	TPGH090204TRF1	0.4	C7X		
	TPGH090208FRF1	0.8		ZM3, TM4	
	TPGH110302FRF1	0.2		ZM3, VM1, TM4	
	TPGH110302TRF1	0.2	C7X		
	TPGH110304FRF1	0.4		ZM3, VM1, TM4	
	TPGH110304TRF1	0.4	C7X		
	TPGH110308FRF1	0.8		ZM3, TM4	
	TPGH110308TRF1	0.8	C7X		
 FG R-hand shown Rechte Ausführung	TPGH090202RFG	0.2	C7Z	TM4	
	TPGH090204RFG	0.4	C7Z	TM4	
	TPGH110302RFG	0.2	C7Z	TM4	
	TPGH110304RFG	0.4	C7Z	TM4	
 No Chipbreaker ohne Spanbrecher	TPGB080202TN	0.2	T15		—
	TPGB080204TN	0.4	T15		
	TPGB090202TN	0.2	T15		
	TPGB090204TN	0.4	T15		

ISO Standard Insert

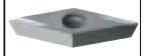
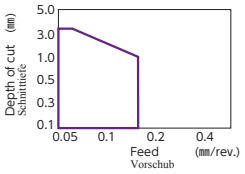
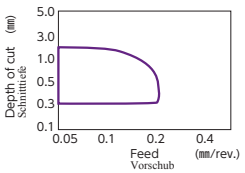
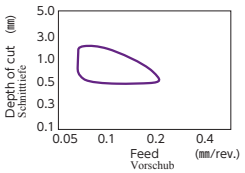
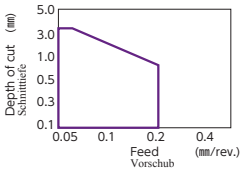
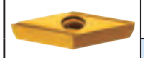
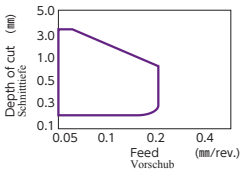
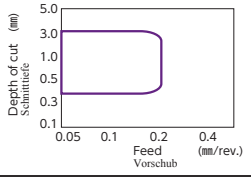
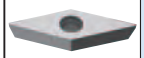
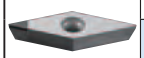
NTK CUTTING TOOLS

35 degree Rhombic 7° Positive type
Positive Schneidplatten- 35° Rhombisch

VCGT, VCET, VCMT, VCGW, VCMW



Part No.	IC	T
VC_1103	6.35	3.18

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 UHG R-hand shown Rechte Ausführung	VCET1103008RUHG	0.08		VM1	
 AZ7	VCGT110300FNAZ7	0.03		ZM3, QM3, VM1	
	VCGT110301MFNAZ7	0.08		ZM3, QM3, VM1	
	VCGT110302MFNAZ7	0.18		ZM3, QM3, VM1	
	VCGT110304MFNAZ7	0.38		ZM3, QM3, VM1	
 AM3	VCGT110300FNAM3	0.03		VM1	
	VCGT110301MFNAM3	0.08		DT4, QM3, VM1	
	VCGT110301FNAM3	0.1		ZM3, VM1	
	VCGT110302MFNAM3	0.18		DT4, QM3, VM1	
	VCGT110302FNAM3	0.2		ZM3, VM1	
	VCGT110302FNXAM3	0.2	C7X		
	VCGT110304MFNAM3	0.38		DT4, QM3	
	VCGT110304FNXAM3	0.4	C7X		
 U R-hand shown Rechte Ausführung	VCGT110300RU	0.03		ZM3, VM1	
	VCGT110301MRU	0.08		DT4	
	VCGT110301RU	0.1		ZM3, VM1	
	VCGT110302MRU	0.18		DT4	
	VCGT110302RU	0.2		ZM3, VM1	
 S R-hand shown Rechte Ausführung	VCMT110301TR/LAS	0.1	C7X, C7Z		
	VCMT110302TR/LAS	0.2	C7X, C7Z		
	VCMT110304TR/LAS	0.4	C7X, C7Z		
 CL	VCGT110301MCL	0.08		DT4, TM4	
	VCGT110302MCL	0.18		DT4, TM4	
 No Chipbreaker ohne Spanbrecher	VCGW110300H	0.03		KM1	—
	VCGW110301H	0.1		KM1	
	VCGW110302H	0.2		KM1	
 PCD	VCMW110301	0.1	PD1		—
	VCMW110302	0.2	PD1		
	VCMW110304	0.4	PD1		

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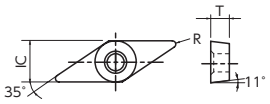
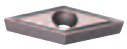
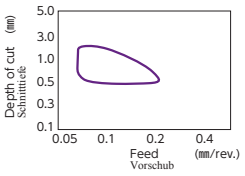
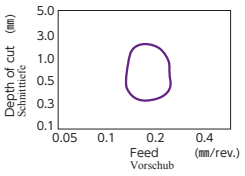
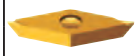
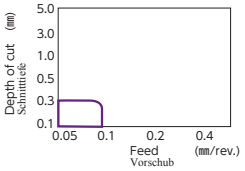
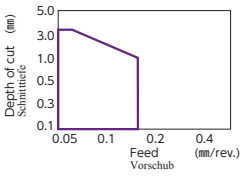
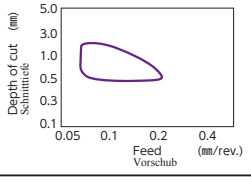
35 degree Rhombic 5° & 11° Positive type
Positive Schneidplatten- 35° Rhombisch

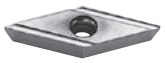
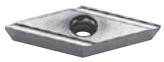
Part No.	IC	T
VB_1102	6.35	2.38
VB_1103	6.35	3.18
VB_1604	9.525	4.76
VP_0802	4.76	2.38
VP_1103	6.35	3.18



VBGT, VBMT, VPET, VPGT

Shape	ISO	R	Cermet	Micro grain Carbide	Chip control range
 AM3	VBGT110204FNXAM3	0.4	C7X		
	VBGT110302FNXAM3	0.2	C7X		
	VBMT160404ENBAM3	0.4	N40		
 GA	VBGT160404ENBGA	0.4	T15		
	VBGT160412ENBGA	1.2	T15		
 KHG R-hand shown Rechte Ausführung	VPET0802005R/LKHG	0.05		VM1	
	VPET0802008R/LKHG	0.08		DT4 (R), VM1	
	VPET0802018R/LKHG	0.18		VM1	
	VPET080202R/LKHG	0.2		VM1	
	VPET1103005R/LKHG	0.05		VM1, TM4 (R)	
	VPET1103008R/LKHG	0.08		VM1, TM4 (R)	
	VPET1103018R/LKHG	0.18		VM1, TM4 (R)	
	VPET110302R/LKHG	0.2		VM1, TM4 (R)	
 UHG R-hand shown Rechte Ausführung	VPET0802008R/LUHG	0.08		DT4	
 AM3	VPGT110300FNAM3	0.03		DT4, TM4	
	VPGT110301MFNAM3	0.08		DT4, QM3, TM4	
	VPGT110302MFNAM3	0.18		QM3, TM4	

● TFV type inserts (with wiper)

TFV Insert	Dimensions (mm)			ISO	Grade
	IC	Thickness	Nose radius		
	6.35	3.18	0.05	**TFV11FR05U**	**ZM3, VM1**
	6.35	3.18	0.10	**TFV11FR10U**	**ZM3, VM1**
	6.35	3.18	0.05	**TFV11FR05SX**	**ZM3, VM1**
	6.35	3.18	0.10	**TFV11FR10SX**	**ZM3, VM1**

◆ Features of TFV
Besonder heiten des TFV

For better surface finish
Width of wiper flat : 0.2mm
Holders : SVAC type
Für bessere Oberflächen
Wiper-Länge : 0.2mm
Halter : SVAC type

* **Please ask sales office for further grades & edge preparation.**
Weitere Informationen zu diesen Werkzeugen erhalten Sie im Backoffice

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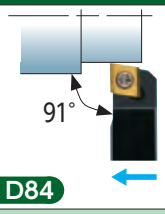
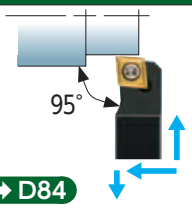
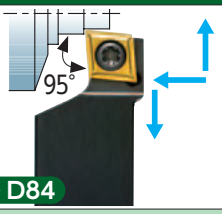
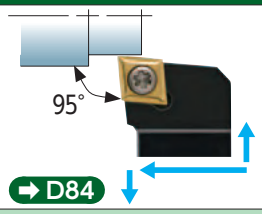
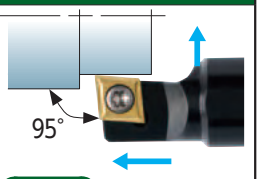
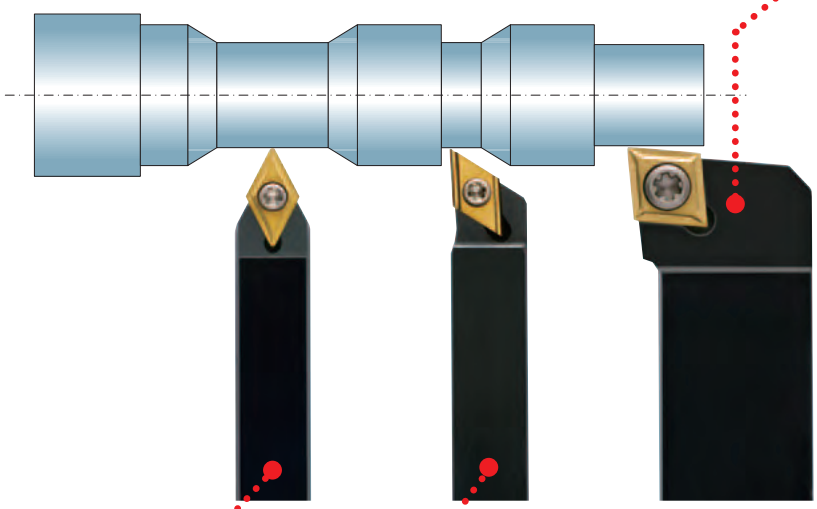
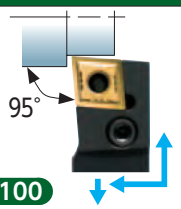
Front Turning
Außendrehen

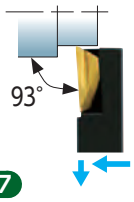
D

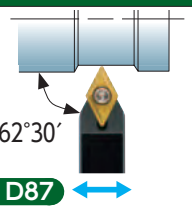
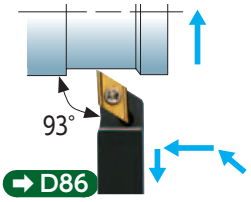
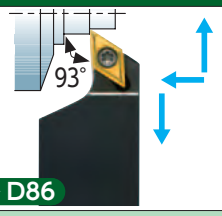
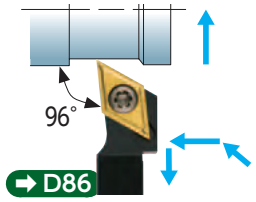
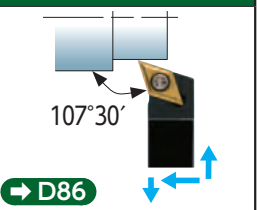
Selection guide for front turning tools
Auswahlhilfe für Außendrehen

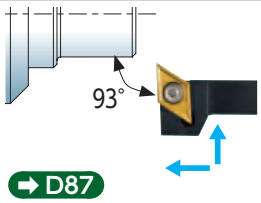
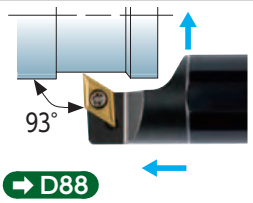
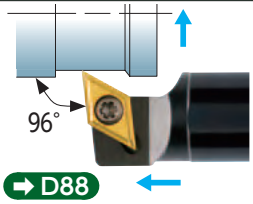
SCAC-N	SCLC-N	SCLC-N-F	SCLC	DS-SCL
 ➡ D84	 ➡ D84	 ➡ D84	 ➡ D84	 ➡ D84
Insert : CC□□	Insert : CC□□	Insert : CC□□	Insert : CC□□	Insert : CC□□
Shank size : □8～□12	Shank size : □8～□16	Shank size : □10～□12	Shank size : □20	Shank dia. : ϕ14～25.4

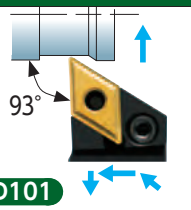


PCLN-N
 ➡ D100
Insert : CN□□
Shank size : □16

TFT
 ➡ D97
Insert : TF33
Shank size : □10～□20

SDNC	SDJC-N	SCJC-N-F	SDXC-N	SDQC
 ➡ D87	 ➡ D86	 ➡ D86	 ➡ D86	 ➡ D86
Insert : DC□□	Insert : DC□□	Insert : DC□□	Insert : DC□□	Insert : DC□□
Shank size : □8～□20	Shank size : □8～□16	Shank size : □10～□12	Shank size : □10～□16	Shank size : □10～□20
For Y-axis type··· ➡ D88	For Y-axis type··· ➡ D88			

CH-SDUC	DS-SDU	DS-SDX
 ➡ D87	 ➡ D88	 ➡ D88
Insert : DC□□	Insert : DC□□	Insert : DC□□
Shank size : □10～□12	Shank dia. : ϕ14～ϕ25.4	Shank dia. : ϕ19.05～ϕ25

PDJN-N
 ➡ D101
Insert : DN□□
Shank size : □16

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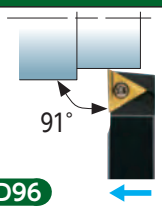
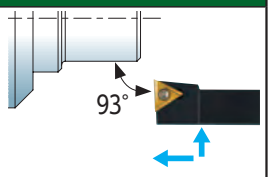
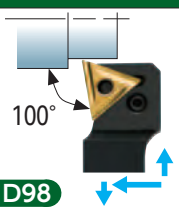
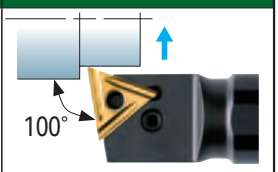
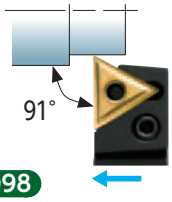
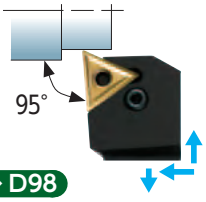
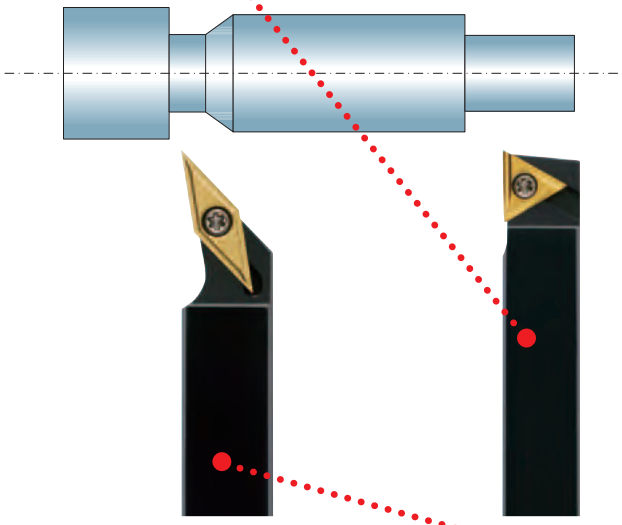
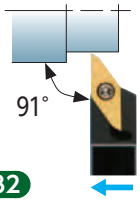
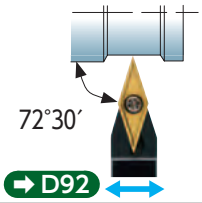
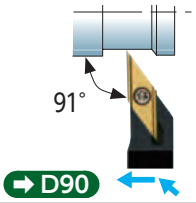
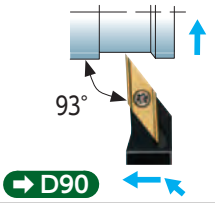
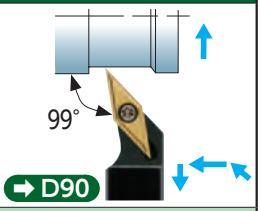
STAC-N	CH-STUC
 ➡ D96	 ➡ D96
Insert : TC□□	Insert : TC□□
Shank size : □8 ~□12	Shank size : □10 ~□12

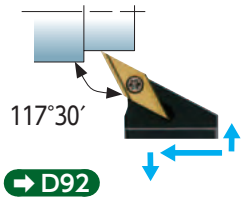
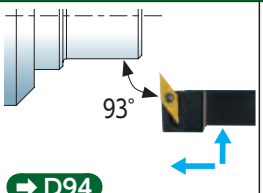
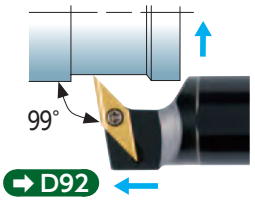
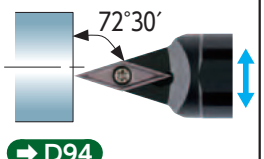
PTXN-N	DS-PTX
 ➡ D98	 ➡ D98
Insert : TN□□16	Insert : TN□□16
Shank size : □10 ~□12	Shank dia. : ϕ19.05 ~ϕ25.4

PTAN-N	PTLN
 ➡ D98	 ➡ D98
Insert : TN□□16	Insert : TN□□16
Shank size : □16	Shank size : □20



CSV
 ➡ D82
Insert : CSV□
Shank size : □7 ~□12

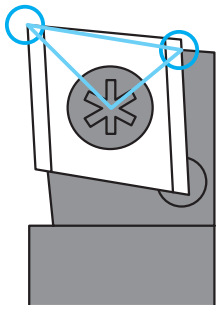
SVVC-N	SVAC-N	SVJC-N	SVXC-N
 ➡ D92	 ➡ D90	 ➡ D90	 ➡ D90
Insert : VC□□	Insert : VC□□	Insert : VC□□	Insert : VC□□
Shank size : □10 ~□20	Shank size : □10 ~□16	Shank size : □10 ~□16	Shank size : □10 ~□12

SVQC	CH-SVUP	DS-SVX	DS-SVVP
 ➡ D92	 ➡ D94	 ➡ D92	 ➡ D94
Insert : VC□□	Insert : VP□□	Insert : VC□□	Insert : VP□□
Shank size : □20	Shank size : □10 ~□12	Shank dia. : ϕ14 ~ϕ25.4	Shank dia. : ϕ19.0 ~ϕ22

Guidance for front turning . Übersicht für Plan und Längsdrehen

Advantage of each geometry
Vorteil in jeder Geometrie

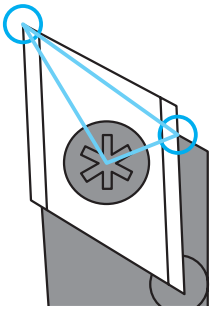
CC type



Most rigid type.
Cutting edge is close toclamping point.

Hochstabil durch kürzeste Distanz zwischen Scheidkante und Klemmschraube

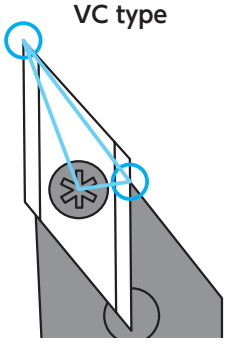
DC type



First choice for most applications.

Erste Wahl für viele Anwendungen

VC type

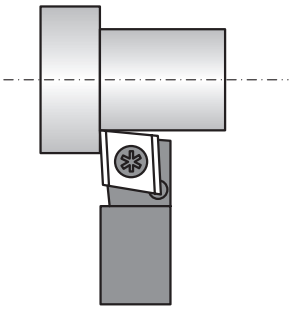


Covers wide application range but is less rigidity.

Breite Anwendung ohne Verlust der Stabilität

Undercut selection
Hinterdreh-Möglichkeiten

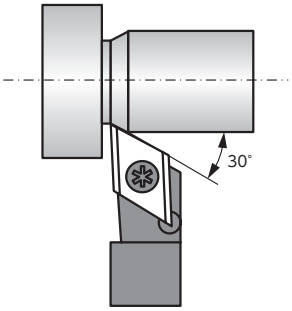
C type



Not suitable for undercut

Nicht verwendbar zum Hinterdrehen

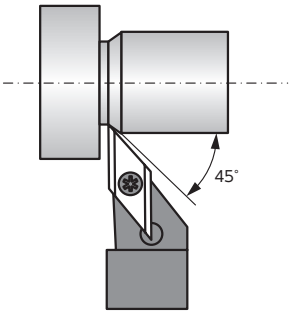
D type



Up to 30 degree undercut

Hinterdrehen bis 30° möglich

V type

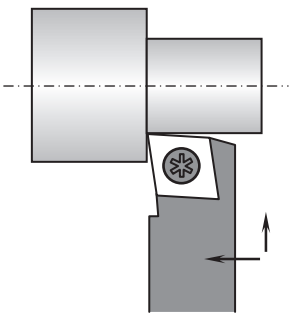


Up to 45 degree undercut

Hinterdrehen bis 45° möglich

Clip Cntrol and Finish
Spankontrolle bei Fertigbearbeitungen

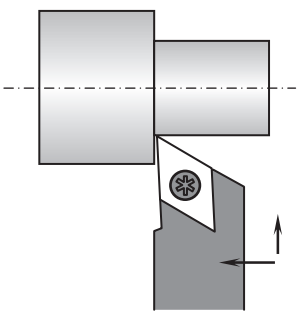
SCLCR ➡ D84



High dimensional repeatability due to strong clamping.

Hohe Wiederholgenauigkeit durch präzises Klemm-system

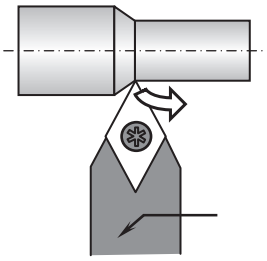
SDJCR ➡ D86



Better surface finish due to room for chip evacuation.

Bessere Oberflächen durch größeren Spanraum am Klemm-Halter

SDNCN ➡ D87



Better chip control by chip flow away from the work piece.

Seitlich kontrollierter Spanabfluss

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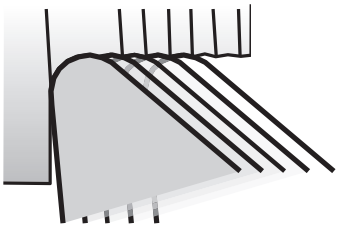
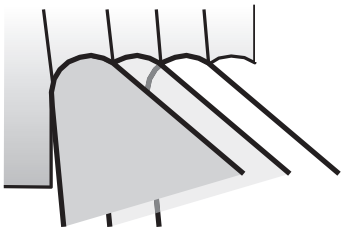
Insert with wiper flat . Schneidplatten mit Wiper-Technologie



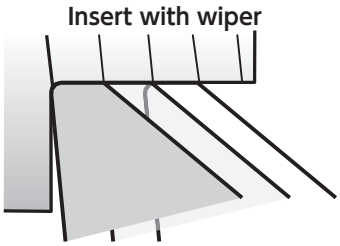
Lower feed rate creates better surface finish, but it causes short tool life and worse chip control.

Kleine Vorschübe erreichen gute Oberflächen zu Lasten der Standzeit und der Spankontrolle



Higher feed rate creates better chip control, but it causes worse surface finish.

Hohe Vorschübe erreichen bessere Spankontrolle aber schlechte Oberflächen

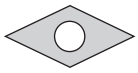


Inserts with wiper flat achieve both good surface and good chip control.

Die Wiper-Technologie ermöglicht beide Vorteile. Bessere Spankontrolle und gute Oberflächen

Inserts with wiper flat range . Auswahl Schneidplatten mit Wiper-Technologie

TFD ➡ C70



For SDJC tool holders

TFT ➡ C72

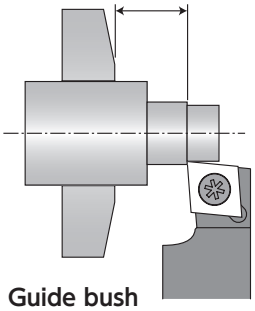
For STAC tool holders

TFV ➡ C76

For SVAC tool holders

Roughing and finishing on swiss type lathes . Schrupp- und Schlichtbearbeitung auf Präzisions-Drehmaschinen

●Shift holder . Shift holder



Guide bush
Führungsbuchse

Shift Holders make finishing process possible without bar material coming off guide bushing.

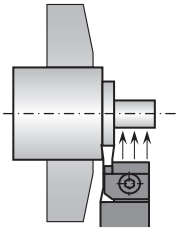
Versetzte Werkzeughalter ermöglichen eine bessere Bearbeitung auf Langdrehautomaten

Improved chip control by better coolant flows.

Verbesserte Spankontrolle durch bessere Kühlmittelzufuhr

SCLC-N ➡ D84 SDJC-N ➡ D86

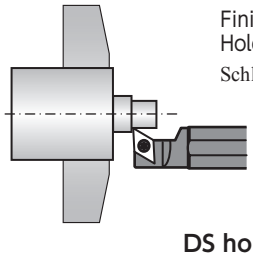
●Combination of Grooving Tool and DS Holders . Kombinierte Bearbeitung , Stechwerkzeug und DS-Halter



Rough with grooving tool for good chip control.

Schruppen mittels Stechwerkzeug für gute Spankontrolle

GTWP holder ➡ G136



Finishing can be done by using DS Holders.

Schlichten mittels Einsatz von DS-Haltern

DS holder ➡ D84 ➡ D88 ➡ D92 ➡ D94 ➡ D98

CSV

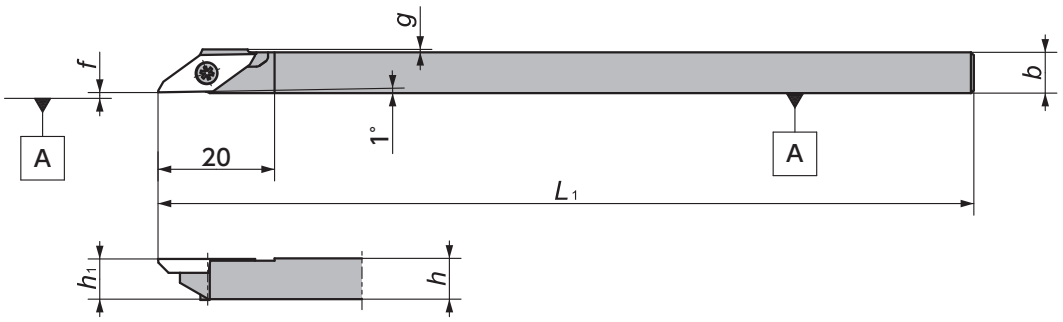


Figure-1

● Right-hand shown.
● Rechte Ausführung

CSV-NC/CSV-NC-F

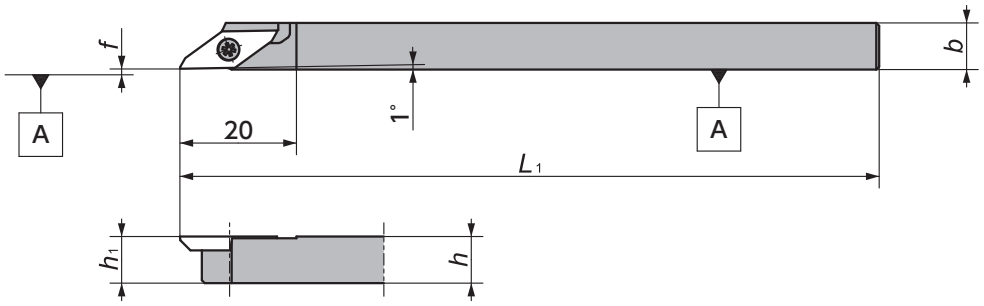


Figure-2

● Right-hand shown.
● Rechte Ausführung

● "*f*" dimension of CSV⅝08NC-F is very small
● Sehr kleines Versatz-Maß (*f*) bei Ausführung CSV⅝08NC-F

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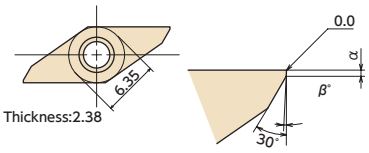
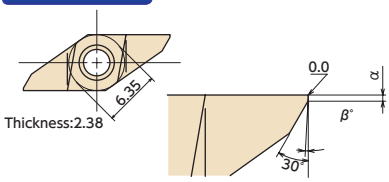
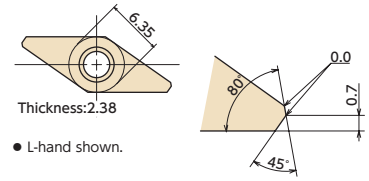
Holders . Halter

Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	f	g	Insert	Parts: Clamping screw	Parts: Wrench
										
Figure-1	CSVR/L07GX	7	7	85	7	0.1	0.5	CSVF	LRIS-2.5*7	CLR-15S
	CSVR/L07			140						
	CSVR/L08	8	8		8		0.0			
	CSVR/L08GX			85						
	CSVR/L095	9.5	9.5	140	9.5					
	CSVR/L10	10	10		10					
	CSVR/L12GX	12	12	85	12					
	CSVR/L12			140						
Figure-2	CSVR/L08NC	8	8	120	8	0.1	–	CSVF	LRIS-2.5*7	CLR-15S
	CSVR/L08NC-F					0.0 ∫ 0.1				
	CSVR/L10GXNC	10	10	85	10	0.1				
	CSVR/L10NC			120						
	CSVR/L12NC	12	12		12					

Inserts . Schneidplatten

CSVF Insert	Dimensions (mm) Max. depth of cut	Cutting edge (α×β°)	ISO	Grade
Mirror finish  ● R-hand shown.	–	0.3×5°	CSVF11FR/LV	VM1
	–	0.3×2°	CSVF11FRV-A	VM1
	–	0.15×2°	CSVF11FR/LV-M	ZM3(R), VM1, DT4(R)
	–	0.15×5°	CSVF11FRV-C	VM1
Mirror finish  ● R-hand shown.	3.00	0.3×5°	CSVF11FR/LVB	VM1
	3.00	0.3×2°	CSVF11FRVB-A	VM1
	3.00	0.15×2°	CSVF11FR/LVB-M	ZM3(R), VM1, DT4(R)
	3.00	0.15×5°	CSVF11FRVB-C	VM1
Mirror finish – For profiling –  ● L-hand shown.	–		CSVF11FLVX	VM1

*All angles shown are obtained when insert is set on the holder.
*Winkeldarstellung im eingebautem Zustand

SCAC-N

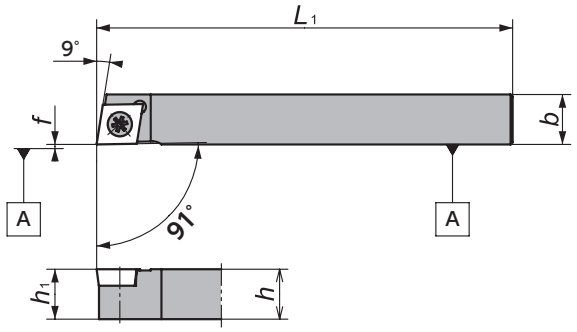
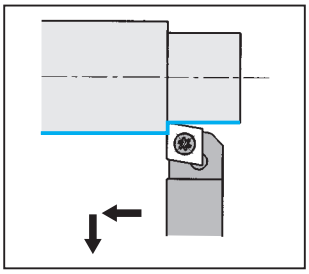


Figure-1



● Right-hand shown.
● Rechte Ausführung

SCLC-N

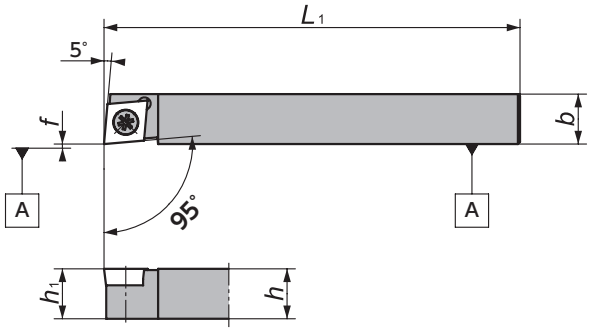
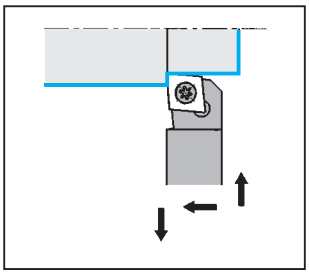


Figure-2



● Right-hand shown.
● Rechte Ausführung

SCLC-N-F

Shift holder

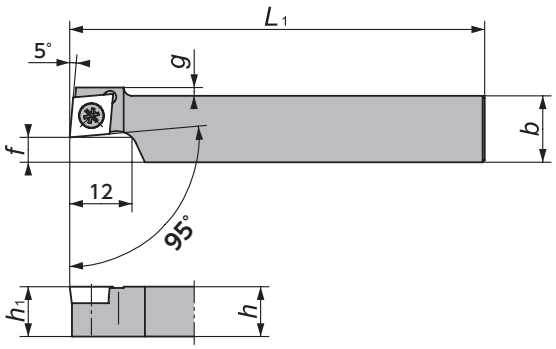
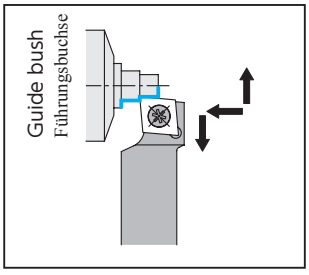


Figure-3



● Right-hand shown.
● Rechte Ausführung

SCLC

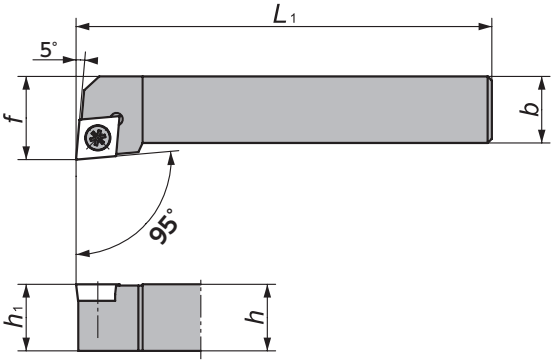
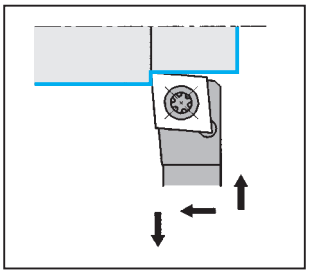


Figure-4



● Right-hand shown.
● Rechte Ausführung

DS-SCL / DS-SCL-ACH

DS holder

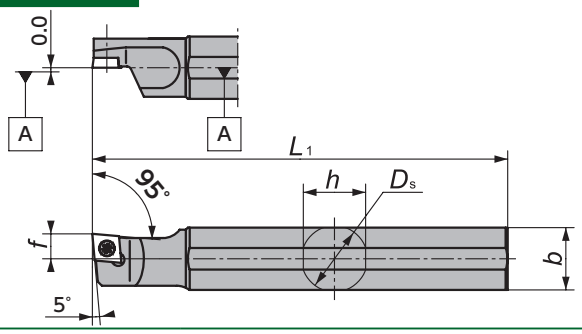
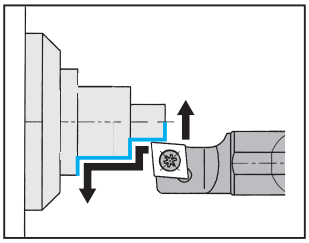


Figure-5



● Left-hand shown.
● Linke Ausführung

Note) Use Right hand or neutral insert.
Hinweis: Verwende rechte oder neutrale Ausführung

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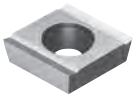
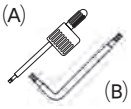
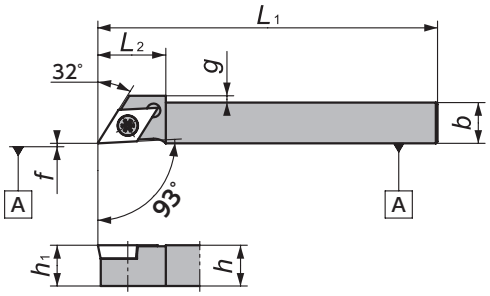
Shape	Toolholder	Dimensions (mm)							Insert	Parts	
										Clamping screw	Wrench
		D_s	h	b	L_1	h_1	f	h_2			 (A) (B)
Figure-1	SCAC[R/L]0808X06N	—	8	8	120	8	0.0	—	CC□□0602 C63～C65	LRIS-2.5＊7	CLR-15S (A)
	SCAC[R/L]1010X06N		10	10		10		—			
	SCACR1212GX09N		12	12	85	12		—	CC□□09T3 C63～C65	LRIS-4＊10	LLR-25S (B)
	SCAC[R/L]1212X09N		12	12	120	12		—			
Figure-2	SCLC[R/L]0808X06N	—	8	8	120	8	0.0	—	CC□□0602 C63～C65	LRIS-2.5＊7	CLR-15S (A)
	SCLC[R/L]1010X06N		10	10		10		—			
	SCLC[R/L]1010X09N							—	CC□□09T3 C63～C65	LRIS-4＊10	LLR-25S (B)
	SCLC[R/L]1212GX09N		12	12	85	12		—			
	SCLC[R/L]1212X09N				120			—			
	SCLC[R/L]1616X09N		16	16		16		—			
Figure-3	SCLC[R/L]1015X09N-F05	—	10	15	120	10	5	2	CC□□09T3 C63～C65	LRIS-4＊10	LLR-25S (B)
	SCLC[R/L]1020X09N-F10			20			10				
	SCLC[R/L]1218X09N-F06		12	18		12	6	0			
	SCLC[R/L]1224X09N-F12			24			12				
Figure-4	SCLCR20-X09	—	20	20	120	20	24.0	–	CC□□09T3 C63～C65	LRIS-4＊10	LLR-25S (B)
Figure-5	DS-SCLL14F-06	14.000	13	13	80	—	6.0	—	CC□□0602 C63～C65	LRIS-2.5＊7	CLR-15S (A)
	DS-SCLL15H-06	15.875	15	15	100						
	DS-SCLL16F-06	16.000			80						
	DS-SCLL19-06	19.050	18	18	120						
	DS-SCLL20X-06	20.000	19	19	95						
	DS-SCLL20-06				120						
	DS-SCLL22-06	22.000	21	21							
	DS-SCLL25-06MET	25.000	24	24							
	DS-SCLL25-06	25.400			150						
	DS-SCLL14F-09	14.000	13	13	80				CC□□09T3 C63～C65	LRIS-4＊8	LLR-25S-20*65 (B)
	DS-SCLL15H-09	15.875	15	15	100						
	DS-SCLL16F-09	16.000			80						
	DS-SCLL16F-09-ACH		15.5	15.5							
	DS-SCLL19GX-09	19.050	18	18	85						
	DS-SCLL19-09				120						
	DS-SCLL19-09-ACH										
	DS-SCLL20X-09	20.000	19	19	95						
	DS-SCLL20-09				120						
	DS-SCLL20-09-ACH										
	DS-SCLL22-09	22.000	21	21							
	DS-SCLL22-09-ACH										
	DS-SCLL25-09MET	25.000	24	24							
	DS-SCLL25-09	25.400			150						
	DS-SCLL25-09-ACH										

SDJC-N



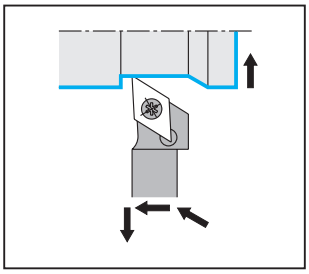
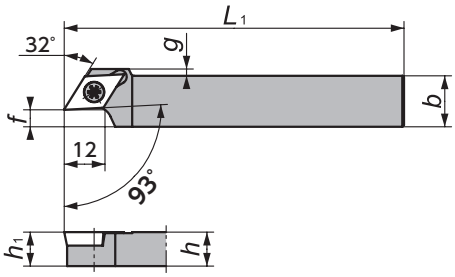


Figure-1

● Right-hand shown.
● Rechte Ausführung

SDJC-N-F

Shift holder



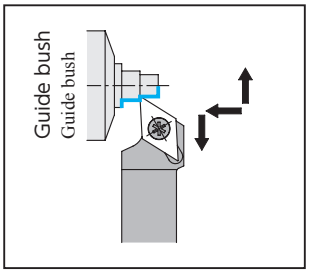
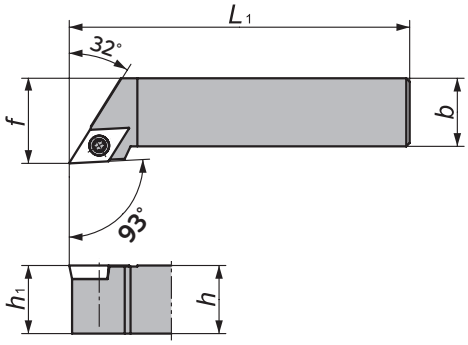


Figure-2

● Right-hand shown.
● Rechte Ausführung

SDJC



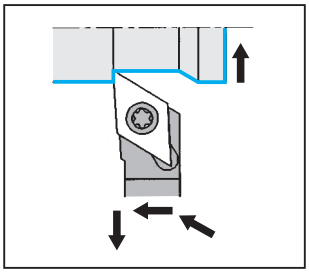
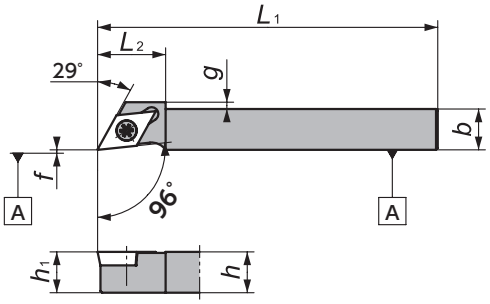


Figure-3

● Right-hand shown.
● Rechte Ausführung

SDXC-N



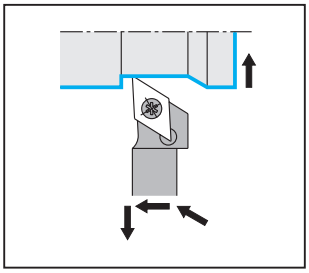
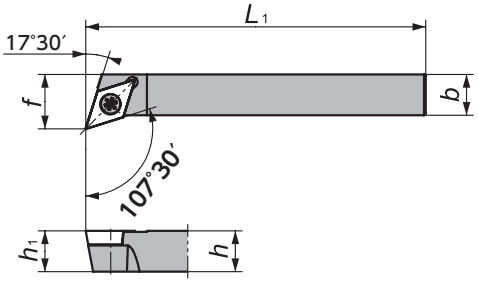


Figure-4

● Right-hand shown.
● Rechte Ausführung

SDQC



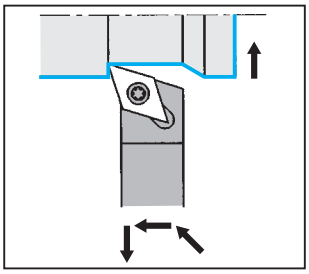


Figure-5

● Right-hand shown.
● Rechte Ausführung

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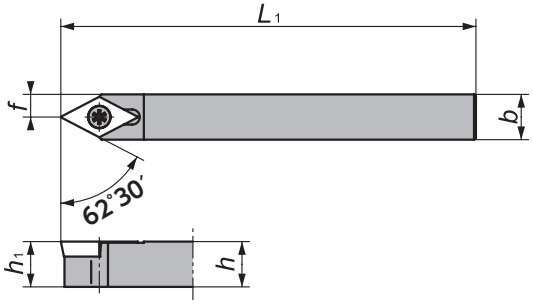
SDNC



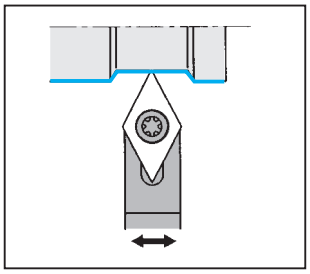
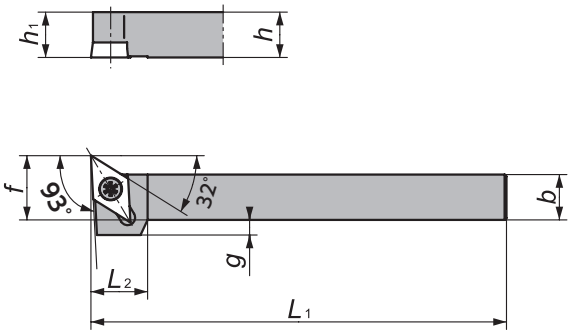
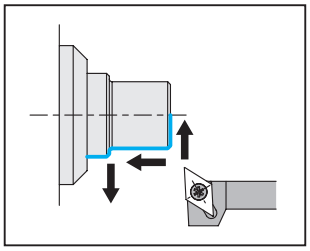


Figure-6

CH-SDUC

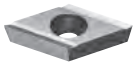
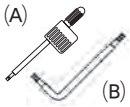
For front gang type tool post
Für Drehmaschinen mit Gang Type System





● Left-hand shown.
● Linke Ausführung

Figure-7

Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	f	L_2	g	Insert	Parts: Clamping screw	Parts: Wrench
											 (A) (B)
Figure-1	SDJCR/L0808X07N	8	8	120	8	0	–	0	DC□□0702 **C67~C69** TFD07 **C70**	LRIS-2.5*7	CLR-15S (A)
	SDJCR/L1010GX07N	10	10	85	10						
	SDJCR/L1010X07N			120							
	SDJCR/L1010X11N						19	2	DC□□11T3 **C67~C69** TFD11 **C70**	LRIS-4*10	LLR-25S (B)
	SDJCR1210X11N		12				–	0			
	SDJCR/L1212GX11N	12		85	12						
	SDJCR1216GX11N		16								
	SDJCR/L1212X11N		12	120							
	SDJCR/L1616X11N	16	16		16						
Figure-2	SDJCR/L1015X07N-F05	10	15	120	10	5	–	0	DC□□0702 **C67~C69** TFD07 **C70**	LRIS-2.5*7	CLR-15S (A)
	SDJCR/L1020X07N-F10		20			10					
	SDJCR/L1015X11N-F05		15			5	19	2	DC□□11T3 **C67~C69** TFD11 **C70**	LRIS-4*10	LLR-25S (B)
	SDJCR/L1020X11N-F10		20			10					
	SDJCR/L1218X11N-F06	12	18		12	6	–	0			
	SDJCR/L1224X11N-F12		24			12					
Figure-3	SDJCR20-X11	20	20	120	20	25.0	–	–			
Figure-4	SDXCR1010X11N	10	10	120	10	0	20	3	DC□□11T3 **C67~C69**	LRIS-4*10	LLR-25S (B)
	SDXCR1016X11N		16				–	0			
	SDXCR1212X11N	12	12		12		20	1			
	SDXCR1216X11N		16				–	0			
	SDXCR1616X11N	16			16						
Figure-5	SDQCR/L10-X07	10	10	120	10	12	–	–	DC□□0702 **C67~C69**	LRIS-2.5*7	CLR-15S (A)
	SDQCR/L12-X11	12	12		12	16			DC□□11T3 **C67~C69**	LRIS-4*10	LLR-25S (B)
	SDQCR/L16-X11	16	16		16	20					
	SDQCR20-X11	20	20		20	25					
Figure-6	SDNCN08-X07	8	8	120	8	4	–	–	DC□□0702 **C67~C69**	LRIS-2.5*7	CLR-15S (A)
	SDNCN10-X07	10	10		10	5					
	SDNCN12-X11	12	12		12	6			DC□□11T3 **C67~C69**	LRIS-4*10	LLR-25S (B)
	SDNCN16-X11	16	16		16	8					
	SDNCN20-X11	20	20		20	10					
Figure-7	CH-SDUCL1010H11	10	10	100	15	10	15	6	DC□□11T3 **C67~C69**	LRIS-4*10PW	CLR-15S (A)
	CH-SDUCL1212H11	12	12		17	12		4			

DS-SDU / DS-SDU-ACH

DS holder

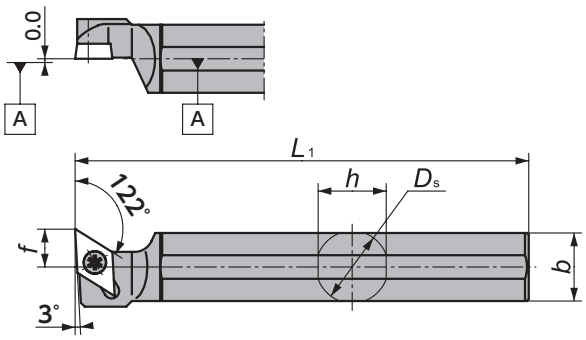
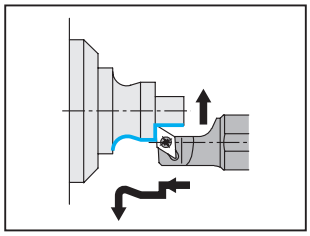


Figure-1



●Left-hand type shown.
●Linke Ausführung

Note) Use Right-hand or neutral insert.
Hinweis: Verwende rechte oder neutrale Ausführung

DS-SDX

DS holder

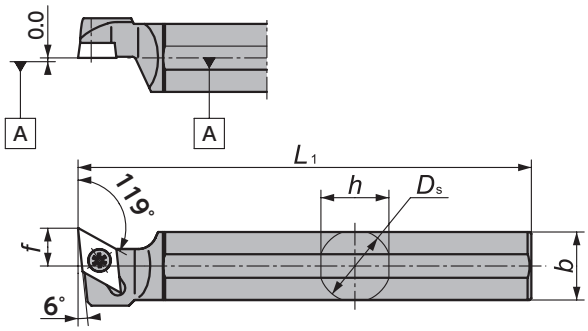
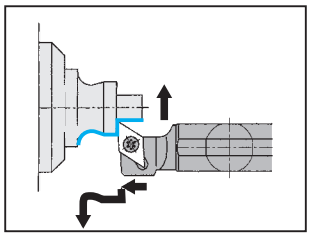


Figure-2



●Left-hand type shown.
●Linke Ausführung

Note) Use Right hand or neutral insert.
Hinweis: Verwende rechte oder neutrale Ausführung

Y-SDJC

Y-axis holder

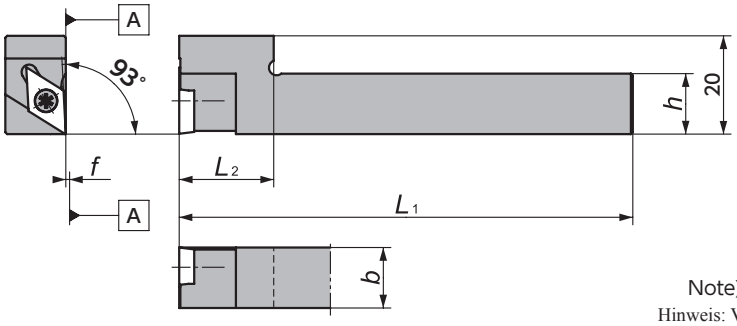
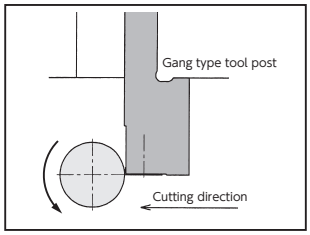


Figure-3



●Right-hand shown.
●Rechte Ausführung

Note) Use Right-hand or neutral insert.
Hinweis: Verwende rechte oder neutrale Ausführung

Y-SDJC-OH

Y-axis with high-pressure coolant
Y-Achsen Typ hohem Kühlmitteldruck

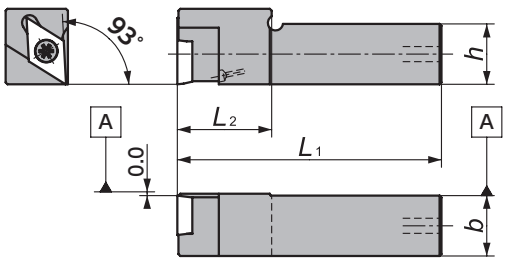
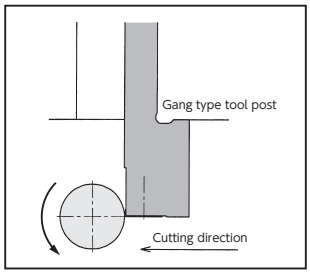


Figure-4



●Right-hand shown.
●Rechte Ausführung

Y-SDNC

Y-axis holder

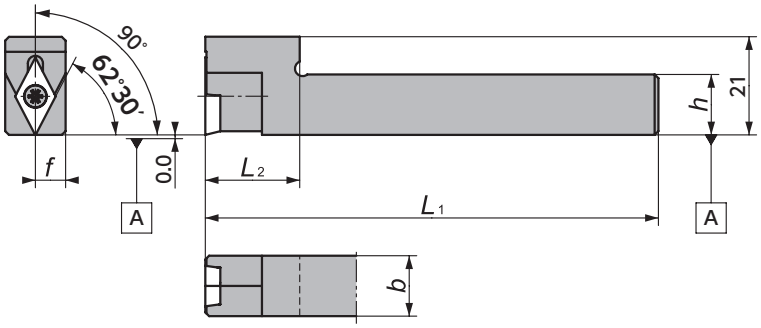
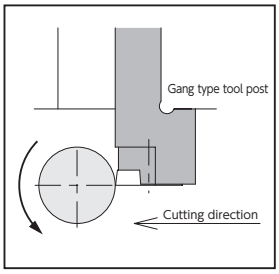


Figure-5



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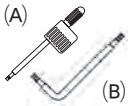
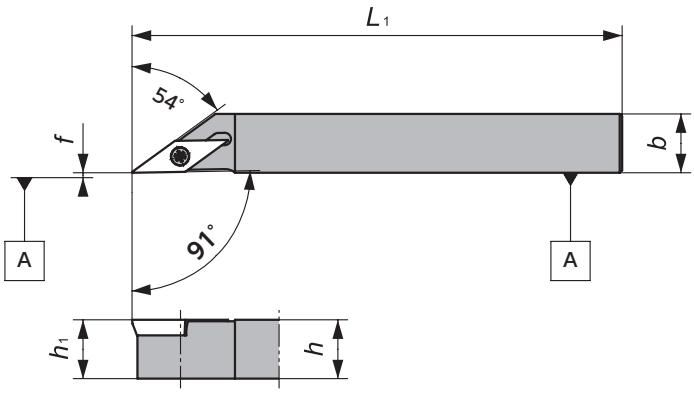
Shape	Toolholder	Dimensions (mm)							Insert	Parts	
										Clamping screw	Wrench
		D_s	h	b	L_1	h_1	f	L_2			 (A) (B)
Figure-1	DS-SDUL14F-07	14.000	13	13	80	–	6.0	–	DC□□0702 **C67 ~ C69** TFD07 **C70**	LRIS-2.5*7	CLR-15S (A)
	DS-SDUL15H-07	15.875	15	15	100						
	DS-SDUL16F-07	16.000			80						
	DS-SDUL16X-07				95						
	DS-SDUL19-07	19.050	18	18	120						
	DS-SDUL20X-07	20.000	19	19	95						
	DS-SDUL20-07				120						
	DS-SDUL22-07	22.000	21	21							
	DS-SDUL14F-11	14.000	13	13	80		10.0		DC□□11T3 **C67 ~ C69** TFD11 **C70**	LRIS-4*10	LLR-25S-20*65 (B)
	DS-SDUL16F-11	16.000	15	15							
	DS-SDUL16F-11-ACH		15.5	15.5							
	DS-SDUL19-11	19.050	18	18	120						
	DS-SDUL19-11-ACH										
	DS-SDUL19-11SPL				160		11.0				
	DS-SDUL20X-11	20.000	19	19	95		10.0				
	DS-SDUL20-11				120						
	DS-SDUL20-11-ACH										
	DS-SDUL22-11	22.000	21	21							
	DS-SDUL22-11-ACH										
	DS-SDUL23-11-007	23.000	22	22	70						
	DS-SDUL25-11MET	25.000	24	24	120						
	DS-SDUL25-11	25.400			150						
	DS-SDUL25-11-ACH										
	DS-SDUL25-11SPL	25.400					12.5				
Figure-2	DS-SDXL19-11	19.050	18	18	120	–	10.0	–	DC□□11T3 **C67 ~ C69**	LRIS-4*10	LLR-25S-20*65 (B)
	DS-SDXL20X-11	20.000	19	19	95						
	DS-SDXL20-11				120						
	DS-SDXL25-11MET	25.000	24	24							
Figure-3	Y-SDJCR10-07S	–	10	10	120	–	0.0	20	DC□□0702 **C67 ~ C69** TFD07 **C70**	LRIS-2.5*7	CLR-15S (A)
	Y-SDJCR12-07S		12	12							
	Y-SDJCR10-07		10	10				25			
	Y-SDJCR12-07		12	12							
	Y-SDJCR10-07L		10	10				30			
	Y-SDJCR12-07L		12	12							
	Y-SDJCR10-11L		10	16				20	DC□□11T3 **C67 ~ C69** TFD11 **C70**	LRIS-4*10	LLR-25S-20*65 (B)
	Y-SDJCR12-11S		12								
	Y-SDJCR12-11L							30			
	Y-SDJCR16-11L		16								
	Y-SDJCR16-11LL				140			42			
Figure-4	Y-SDJCR12-11SOH	–	12	12	70	–	–	20	DC□□11T3 **C67 ~ C69** TFD11 **C70**	LRIS-4*10	LLR-25S-20*65 (B)
	Y-SDJCR16-11OH		16	16				25			
Figure-5	Y-SDNCN12-11S	–	12	12	120	–	6.0	20	DC□□11T3 **C67 ~ C69**	LRIS-4*10	LLR-25S-20*65 (B)
	Y-SDNCN16-11L		16	16			8.0	30			

SVAC-N



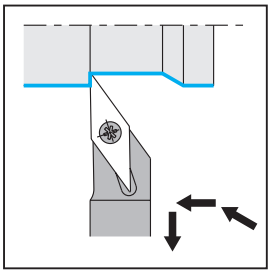
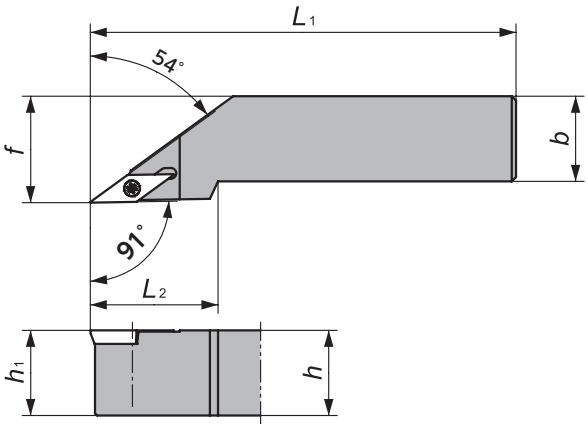


Figure-1

● Right-hand shown.
● Rechte Ausführung

SVAC



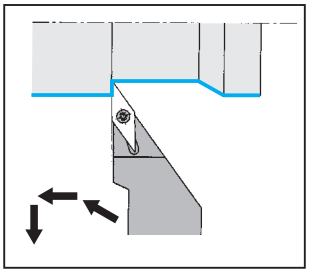
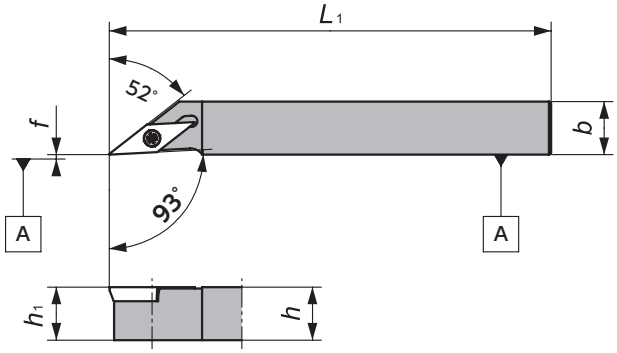


Figure-2

● Right-hand shown.
● Rechte Ausführung

SVJC-N



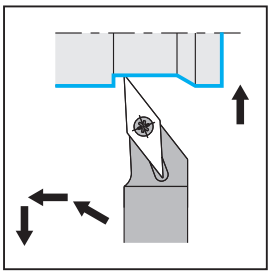
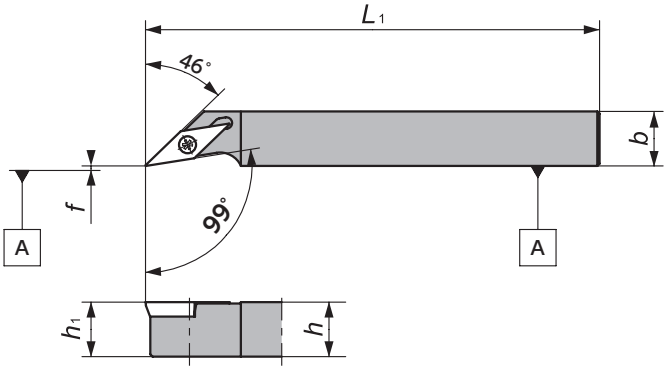


Figure-3

● Right-hand shown.
● Rechte Ausführung

SVXC-N



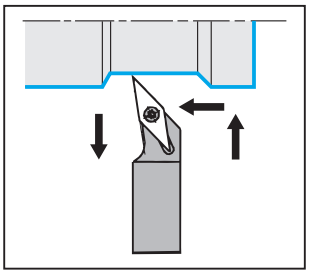


Figure-4

● Right-hand shown.
● Rechte Ausführung

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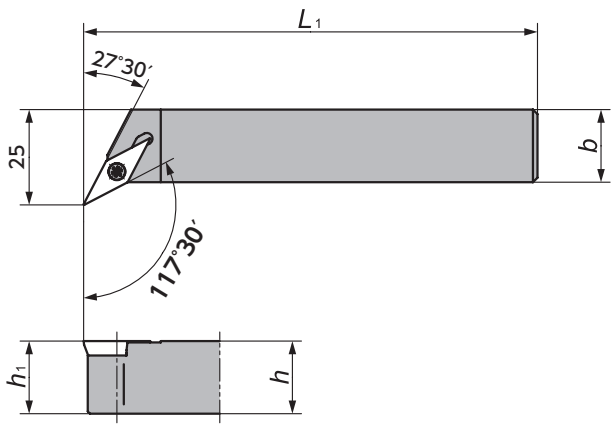
Shape	Toolholder	Dimensions (mm)						Insert	Parts	
									Clamping screw	Wrench
		h	b	L_1	h_1	f	L_2			
Figure-1	SVACR/L1010X11N	10	10	120	10	0.0	–	VC□□1103 **C74** TFV11 **C76**	LRIS-2.5*7	CLR-15S
	SVACR/L1212X11N	12	12		12					
	SVACR1616X11N	16	16		16					
Figure-2	SVACR20-X11	20	20	120	20	25.0	30	VC□□1103 **C74** TFV11 **C76**	LRIS-2.5*7	CLR-15S
Figure-3	SVJCR/L1010X11N	10	10	120	10	0.0	–	VC□□1103 **C74**	LRIS-2.5*7	CLR-15S
	SVJCR/L1212X11N	12	12		12					
	SVJCR/L1616X11N	16	16		16					
Figure-4	SVXCR/L1210X11N	10	12	120	10	0.0	–	VC□□1103 **C74**	LRIS-2.5*7	CLR-15S
	SVXCR1212X11N	12			12					

NTK CUTTING TOOLS

SVQC



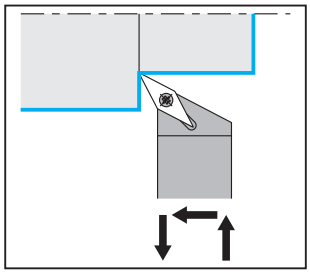
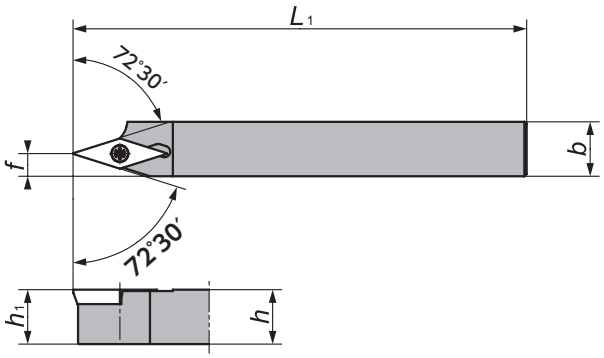


Figure-1

● Right-hand shown.
● Rechte Ausführung

SVVC-N



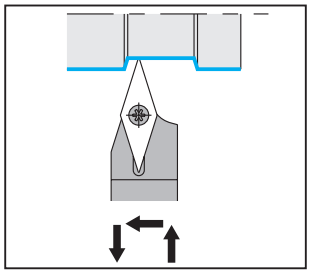
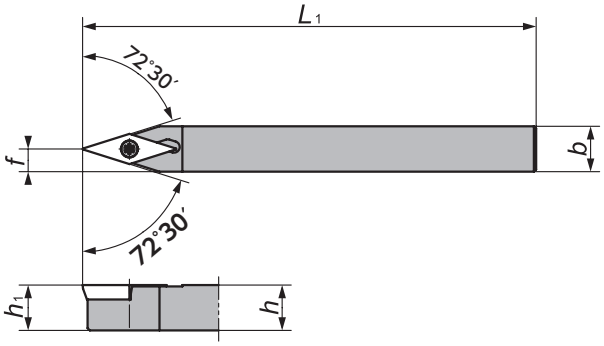


Figure-2

● Right-hand shown.
● Rechte Ausführung

SVVC-N



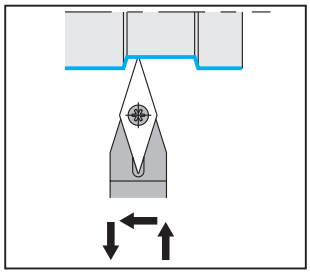
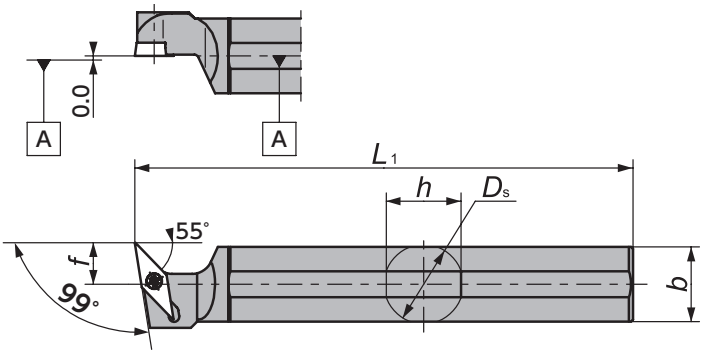


Figure-3

DS-SVX



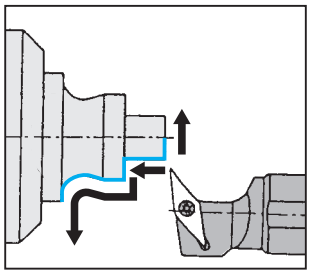


Figure-4

● Left-hand shown.
● Linke Ausführung

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Shape	Toolholder	Dimensions (mm)						Insert	Parts	
		D_s	h	b	L_1	h_1	f		Clamping screw	Wrench
										
Figure-1	**SVQCR20-X11**	–	20	20	120	20	–	VC□□1103 **C74**	LRIS-2.5*7	CLR-15S
Figure-2	**SVVCR1212X11N**	–	12	12	120	12	5	VC□□1103 **C74**	LRIS-2.5*7	CLR-15S
	SVVCR1616X11N		16	16		16				
Figure-3	**SVVCN1010X11N**	–	10	10	120	10	5	VC□□1103 **C74**	LRIS-2.5*7	CLR-15S
	SVVCN20-X11		20	20		20	10			
Figure-4	**DS-SVXL14F-11**	14.000	13	13	80	–	10.0	VC□□1103 **C74**	LRIS-2.5*7	CLR-15S
	DS-SVXL15H-11	15.875	15	15	100					
	DS-SVXL16F-11	16.000			80					
	DS-SVXL19-11	19.050	18	18	120					
	DS-SVXL19-11SPL				160		11.0			
	DS-SVXL20X-11	20.000	19	19	95		10.0			
	DS-SVXL20-11				120					
	DS-SVXL22-11	22.000	21	21						
	DS-SVXL25-11	25.400	24	24	150					

SVXP-N

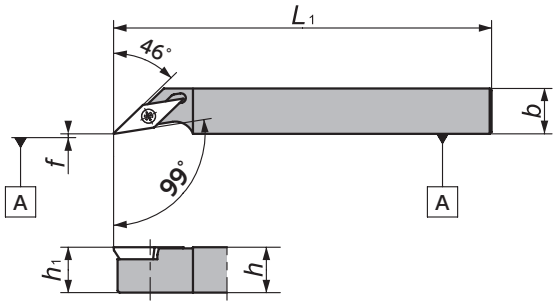
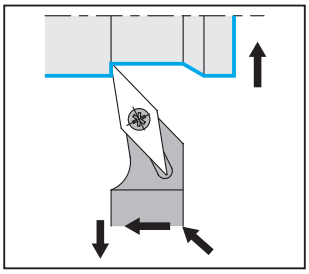


Figure-1



● Right-hand shown.
● Rechte Ausführung

SVQP-N

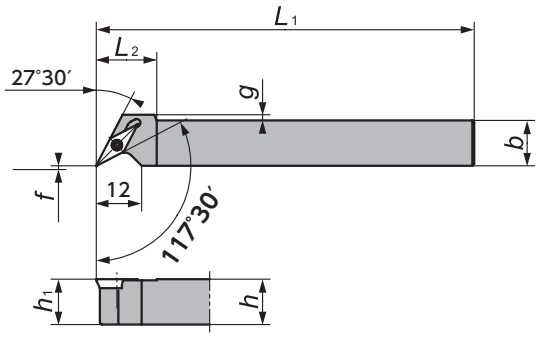
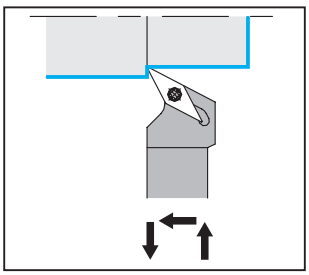


Figure-2



● Right-hand shown.
● Rechte Ausführung

DS-SVVP / DS-SVVP-ACH

DS holder

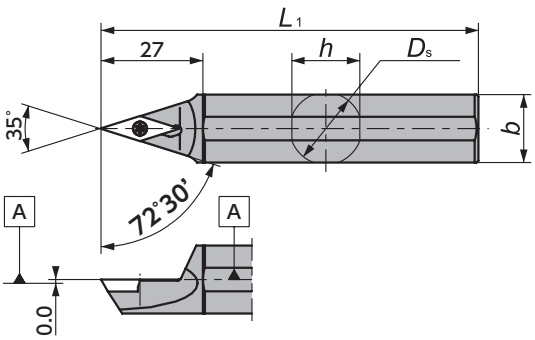
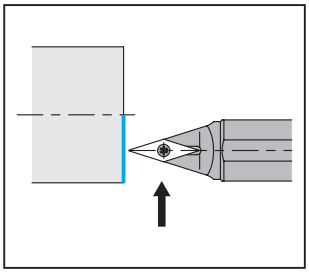


Figure-3



CH-SVUP

For front gang type tool post

Für Drehmaschinen mit Gang Type System

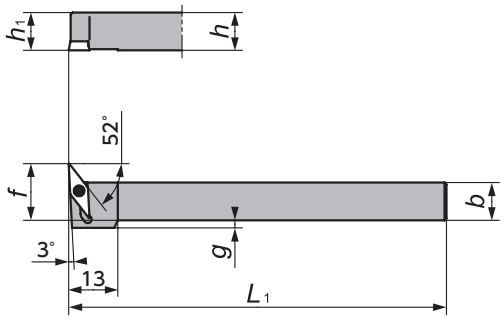
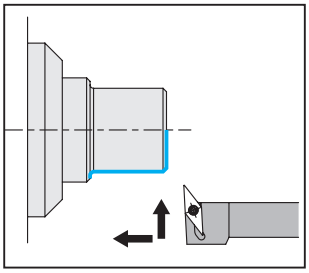


Figure-4



● Left-hand shown.
● Linke Ausführung

DS-SVXP

DS holder

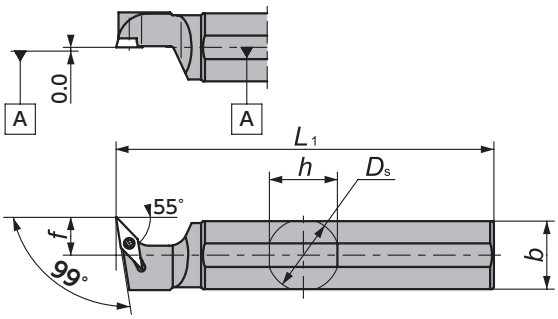
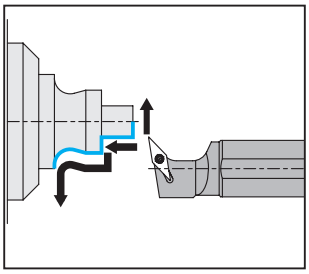


Figure-5



● Left-hand shown.
● Linke Ausführung

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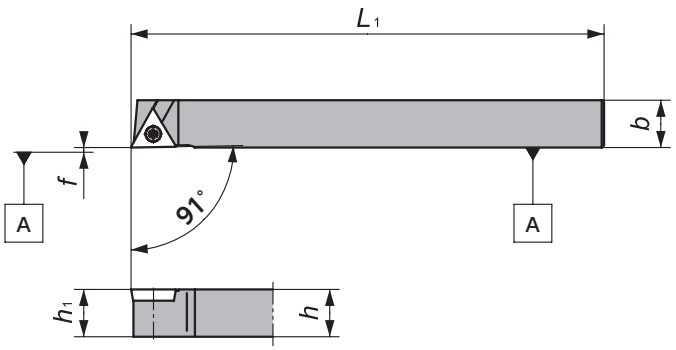
Shape	Toolholder	Dimensions (mm)							Insert	Parts	
										Clamping screw	Wrench
		D_s	h	b	L_1	h_1	f	g			
Figure-1	SVXP[R/L]1012X11N	—	10	12	120	10	0.0	—	VP□□1103 **C75**	LRIS-2.5*7	CLR-15S
	SVXP[R/L]1212X11N		12			12					
Figure-2	SVQP[R/L]1010X08N	—	10	10	120	10	0.0	3.5	VP□□0802 **C75**	LRIS-2*6	CLR-13S
	SVQP[R/L]1212X08N		12	12				1.5			
	SVQP[R/L]1616X08N		16	16				—			
Figure-3	DS-SVVPN16-11-ACH	16.000	15.5	15.5	120	—	—	—	VP□□1103 **C75**	LRIS-2.5*7	CLR-15S
	DS-SVVPN19-11	19.050	18	18							
	DS-SVVPN19-11-ACH										
	DS-SVVPN20-11-ACH	20.000	19	19							
	DS-SVVPN22-11	22.000	21	21							
	DS-SVVPN22-11-ACH										
	DS-SVVPN25-11-ACH	25.400	24	24	150						
Figure-4	CH-SVUPL1010H08	—	10	10	100	10	15	2	VP□□0802 **C75**	LRIS-2*6	CLR-13S
	CH-SVUPL1212H08		12	12		12	17	0			
Figure-5	DS-SVXPL19-08	19.050	18	18	120	—	10	—	VP□□0802 **C75**	LRIS-2*6	CLR-13S
	DS-SVXPL20-08	20.000	19	19							
	DS-SVXPL22-08	22.000	21	21							
	DS-SVXPL25-08	25.400	24	24	150						

STAC-N



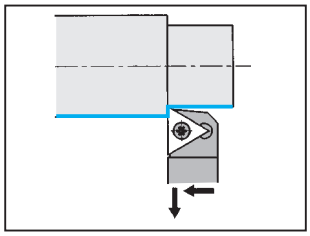
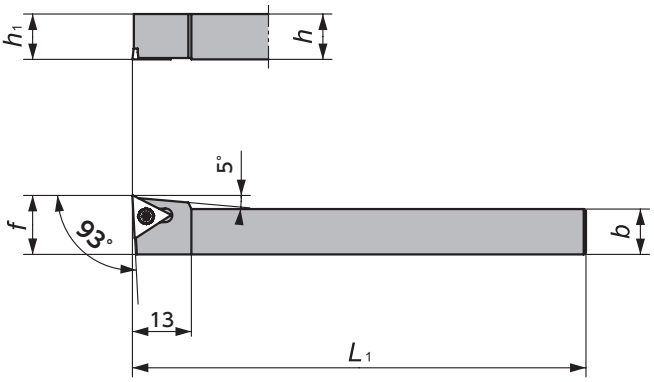


Figure-1

● Right-hand shown.
● Rechte Ausführung

CH-STUC

For front gang type tool post
Für Drehmaschinen mit Gang Type System



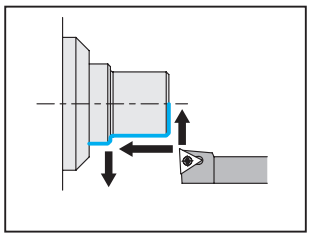


Figure-2

● Left-hand shown.
● Linke Ausführung

Shape	Toolholder	Dimensions (mm)					Insert	Parts	
								Clamping screw	Wrench
		h	*b*	L_1	h_1	*f*			
Figure-1	**STAC□0808X09N**	8	8	120	8	0.0	TC□□0902 **C71** TFT09 **C72**	LRIS-2.2*6	CLR-13S
	STAC□1010X09N	10	10		10				
	STAC□1212X11N	12	12		12		TC□□1102 **C71** TFT11 **C72**	LRIS-2.5*7	CLR-15S
Figure-2	**CH-STUCL1010H09**	10	10	100	10	13	TC□□0902 **C71**	LRIS-2.2*6	CLR-13S
	CH-STUCL1212H09	12	12		12	15			

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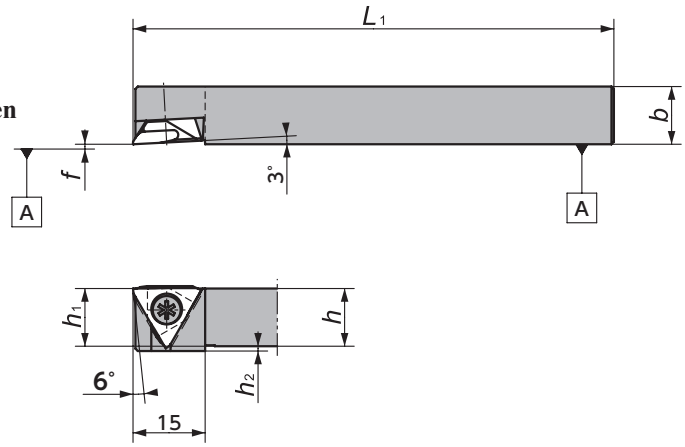
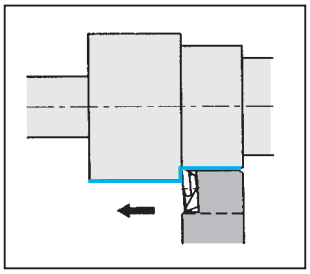
TFT

Screw accessible from both sides

Schraube von beiden Seiten montierbar



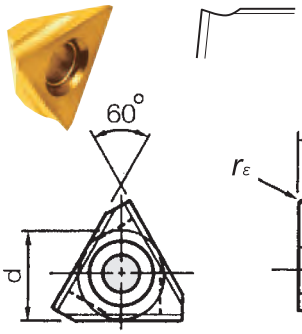


● Right-hand shown.
● Rechte Ausführung

Toolholder	Dimensions (mm)						Insert	Parts	
	h	b	L_1	h_1	f	h_2		Clamping screw 	Wrench 
TFTR10	10	10	120	10	0.0	3	TF33	LR-S-4＊10PW	CLR-15S
TFTR12	12	12		12		1			
TFTR16	16	16		16		—			
TFTR20	20	20		20					

● Inserts . Schneidplatten

TF

Insert	Dimensions (mm)			ISO	Grade
	d	s	r_ε		
	9.525	4.76	0	**TF3300R**	**ZM3**
	9.525	4.76	0.05	**TF3305R**	**ZM3**
	9.525	4.76	0.15	**TF3315R**	**ZM3**
	9.525	4.76	0.2	**TF3320R**	**ZM3**

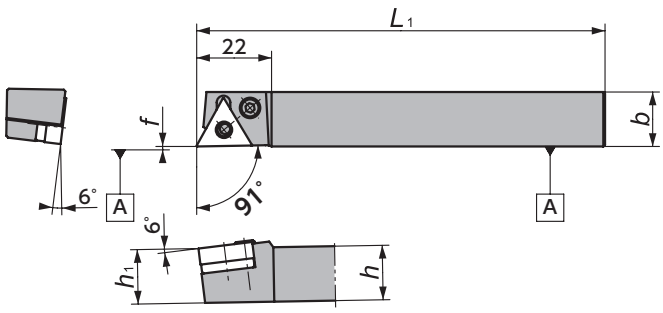
*The max.depth of cut is 4.0 mm.
*Maximale Schnitttiefe 4mm

☆All angles shown are obtained when insert is set on the holder
☆Winkeldarstellung im eingebautem Zustand

● R-hand shown.
● Rechte Ausführung

PTAN-N

Lever lock



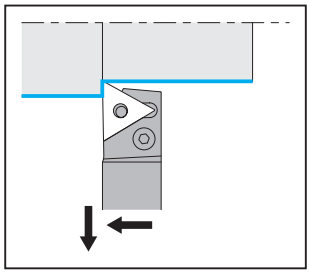
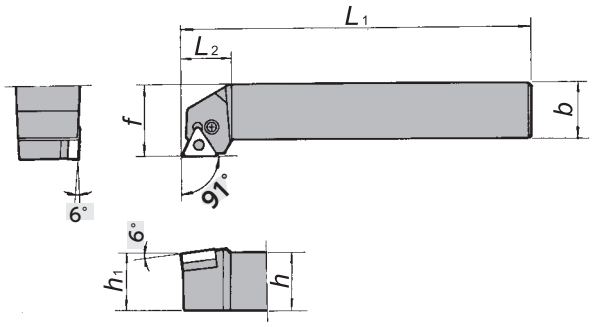


Figure-1

● Right-hand shown.
● Rechte Ausführung

PTGN

Lever lock



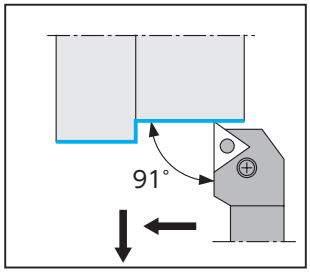
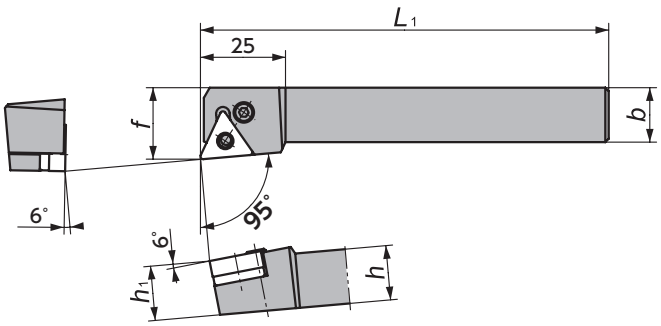


Figure-2

● Right-hand shown.
● Rechte Ausführung

PTLN

Lever lock



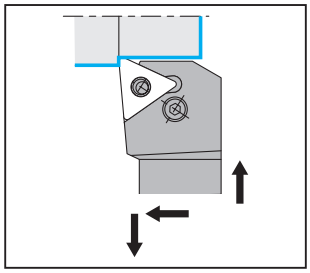
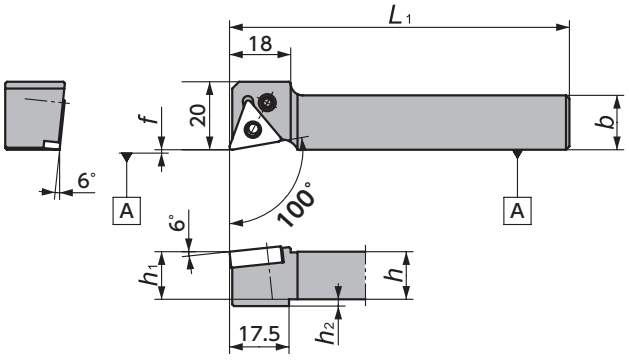


Figure-3

● Right-hand shown.
● Rechte Ausführung

PTXN-N

Lever lock



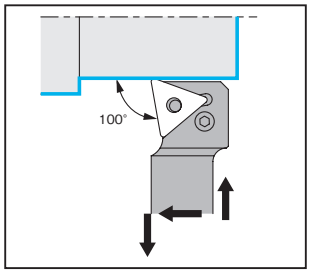
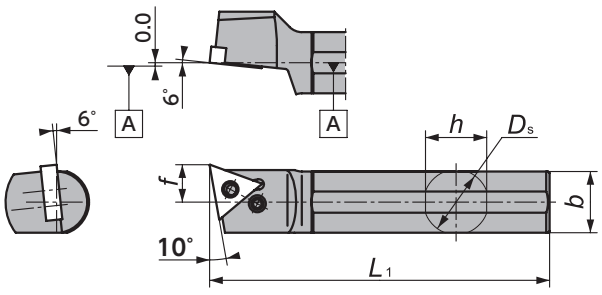


Figure-4

● Right-hand shown.
● Rechte Ausführung

DS-PTX / DS-PTX-ACH

Lever lock
DS holder



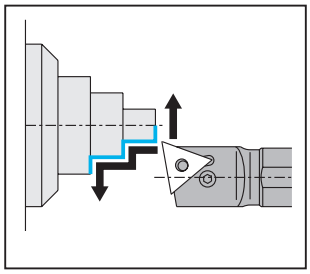


Figure-5

● Left-hand shown.
● Linke Ausführung

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Shape	Toolholder	Dimensions (mm)								Insert	Parts				
											Shim seat	Lever	Clamping screw	Spring	Wrench
		D_s	h	b	L_1	h_1	f	L_2	h_2						
Figure-1	**PTANR1616X33N**	–	16	16	120	16	0.0	22	–	TN□□1604 **C60,C61**	LST317	LCL3	LCL3	LSP3	LW-2.5
Figure-2	**PTGNL2525M33**	–	25	25	150	25	32	22	–	TN□□1604 **C60,C61**	LST317	LCL3	LCL3	LSP3	LW-2.5
Figure-3	**PTLNR/L2020L33**	–	20	20	140	20	25	25	–	TN□□1604 **C60,C61**	LST317	LCL3	LCS3	LSP3	LW-2.5
Figure-4	**PTXNR1016X33N**	–	10	16	120	10	0.0	18	2	TN□□1604 **C60,C61**		LCL33N	LCS33		LW-2
	PTXNR1216X33N		12			12			0						
	PTXNR1616X33N		16			16									
	PTXNR2020X33N		20	20		20									
Figure-5	**DS-PTXL16-33-ACH**	16.000	15.5	15.5	120	–	11.0	–	–	TN□□1604 **C60,C61**		LCL33N	LCS33		LW-2
	DS-PTXL19-33	19.050	18	18											
	DS-PTXL19-33-ACH														
	DS-PTXL20-33	20.000	19	19											
	DS-PTXL20-33-ACH														
	DS-PTXL22-33	22.000	21	21			12.0								
	DS-PTXL22-33-ACH														
	DS-PTXL25M-33	25.400	24	24	150		13.0								
	DS-PTXL25-33-ACH														

PCLN-N

Lever lock

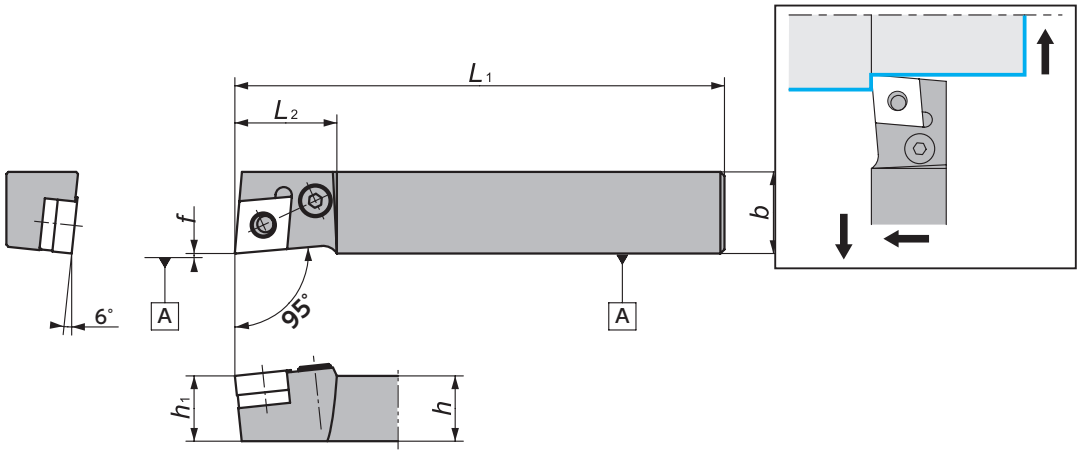

Figure-1

● Right-hand shown.
● Rechte Ausführung

PCLN

Lever lock

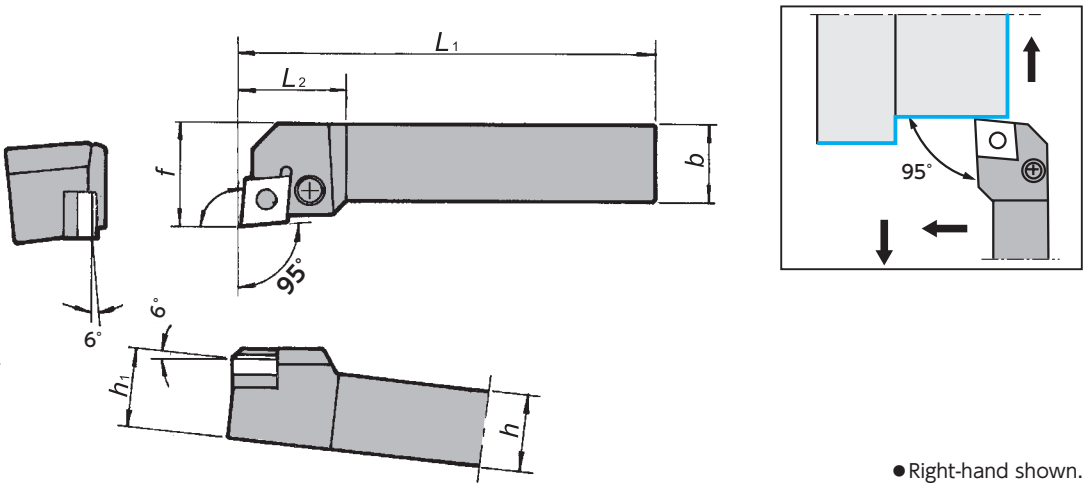

Figure-2

● Right-hand shown.
● Rechte Ausführung

Shape	Toolholder	Dimensions (mm)								Insert	Parts				
											Shim seat	Lever	Clamping screw	Spring	Wrench
		D_s	h	b	L_1	h_1	f	L_2	h_2						
Figure-1	**PCLNR1620X43N**	–	16	20	120	16	0.0	25	–	CN□□1204 **C57**	LSC42	LCL4	LCS4CA	LSP4	LW-3
Figure-2	**PCLNR/L2020K43**	–	20	20	125	20	25	28	–	CN□□1204 **C57**	LSC42	LCL4	LCS4	LSP4	LW-3
	PCLNR/L2525M43		25	25	150	25	32	28							

*For other shank sizes, please contact us for more information.
*Für weitere Ausführungen kontaktieren Sie unser Backoffice

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PDJN-N

Lever lock

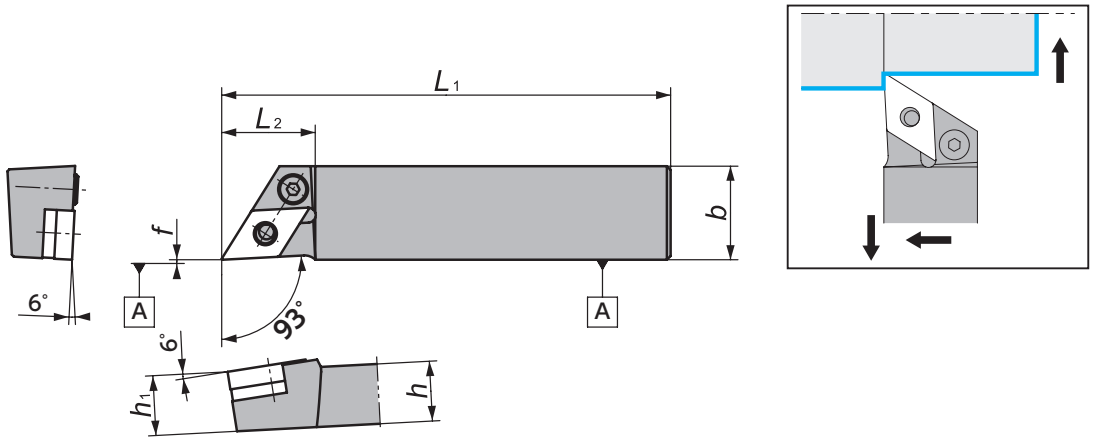

Figure-1

●Right-hand shown.
●Rechte Ausführung

PDJN

Lever lock

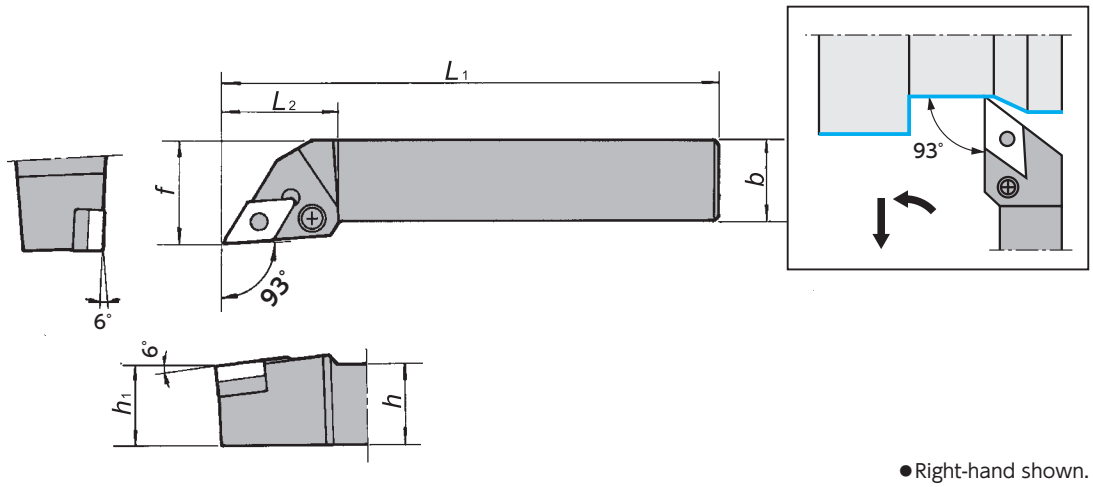

Figure-2

●Right-hand shown.
●Rechte Ausführung

Shape	Toolholder	Dimensions (mm)								Insert	Parts				
											Shim seat	Lever	Clamping screw	Spring	Wrench
		D_s	h	b	L_1	h_1	f	L_2	h_2						
Figure-1	**PDJNR1625X43N**	–	16	25	120	16	0.0	2.5	–	DN□□1504 **C58**	LSD42 (A)	LCL4	LCS4CA	LSP4	LW-3
Figure-2	**PDJNR2525M43**	–	25	25	150	25	32	32	–	DN□□1504 **C58**	LSC42	LCL4	LCS4	LSP4	LW-3

*For other shank sizes, please contact us for more information.
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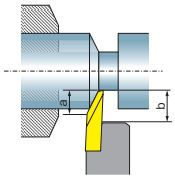
MEMO

Back Turning
Hinterbund Drehen

E

Selection guide for back turning tools

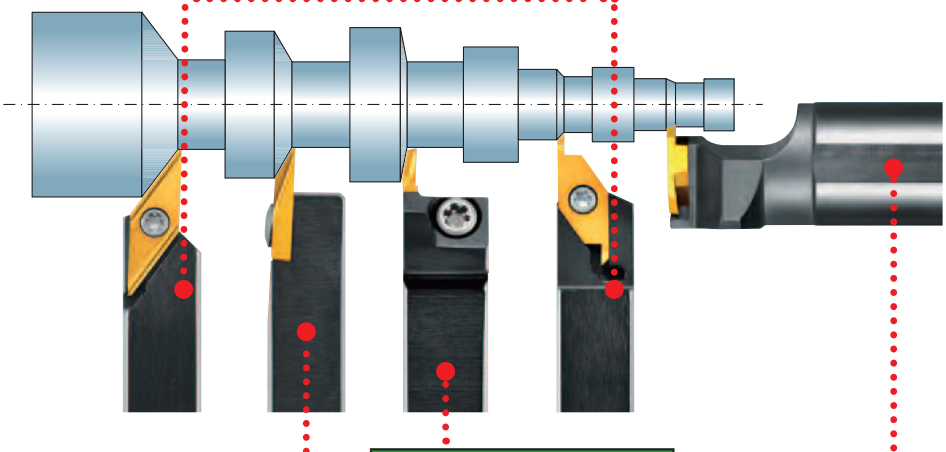


a : Effective cutting edge length
The length the edge can cut.
(Cutting edge length)

b : Maximum cutting depth
Available cutting depth. The length between the tip of the cutting edge and front end of the holder. Designed to be greater than the effective length of cutting edge.

■ Guidelines for max depth of cut = Effective cutting edge length x guide line value

Work material \ Insert grade	Micro-grain carbide ZM3・QM3・VM1・DT4・TM4	Cermet T15・Q15
Steel	0.7	0.5
Stainless steel	0.6	0.4
Nonferrous metals	0.9	0.8
Nonmetal	0.9	0.9



TBVC

➡E111
a 8.3mm Max.
b 8.3mm
TBVC..

TB

➡E112
a 3.5mm Max.
b 5.0/9.0mm
TB..

CSV

➡E107
a 1.0mm Max.
b 2.2mm
CSVB..

TBMH (GTT Holder)

➡E114
a 1.3mm Max.
b 2.7mm
TBMH..
Y-axis Holder available
➡E114

DS-GTT

➡E114
a 1.3mm Max.
b 2.7mm
TBMH..

CH-GTT

➡E114
a 1.3mm Max.
b 2.7mm
TBMH..

TBDP
BACK DUO
NEW

➡E106
a 3.5mm
b 5.0mm
TBDP..

TBP

➡E108
a 4.8mm Max.
b 5.3mm
TBP..
Y-axis Holder available
➡E108

DS-TBP

➡E108
a 4.8mm Max.
b 5.3mm
TBP..FR

CTPA

➡E110
a 4.3mm
b 5.2mm
TBPA..

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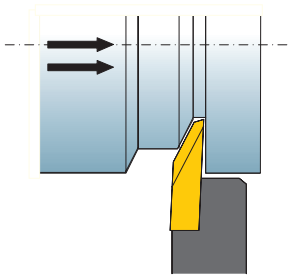
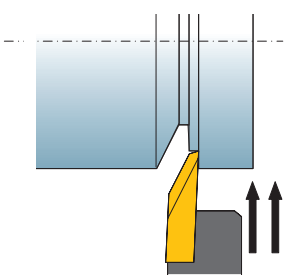
When blade length (a) is not long enough
Wenn Schneidenlänge nicht ausreicht



Back turning can be performed multiple times until the total depth of cut reaches b.

Hinterbund-Drehen in mehreren Arbeitsschritten durchführen, bis der Enddurchmesser erreicht wird.

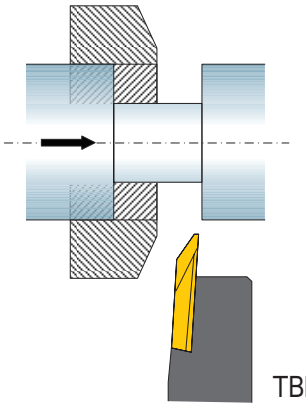
When a rough finish on the shoulder occurs
Bei schlechter Oberfläche an der seitlichen Schulter



Turning the shoulder twice can improve the finish. This problem can be solved by using Back Duo without increasing the number of pass.

Zweifache Bearbeitung verbessert die Oberfläche. Dieses Problem kann durch den Einsatz von Back Duo ohne Erhöhung der Schnitte behoben werden.

Finish cut
Fertig-Bearbeitung

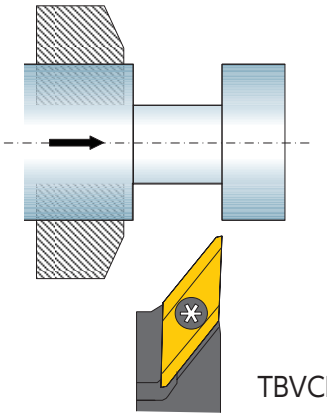


TBP

➡E108

Roughed section goes into the guide bush when performing finish cuts. (Deburring may be needed after roughing)

Die Hinterdrehung ragt in die Führungsbuchse wenn Schlichtbearbeitung erfolgt. (Entgraten kann notwendig sein)



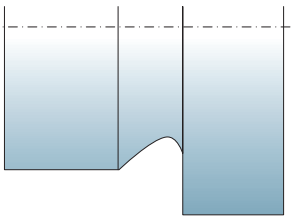
TBVCR··F10

➡E111

Cutting edge is located away from the guide bush. Roughing can be done without retracting roughed part to guide bush.

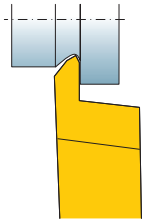
Werkzeug ist weiter entfernt. Dadurch kann die Schlichtbearbeitung ohne Stangenrückzug in die Führungsbuchse erstellt werden.

Undercut
Hinterschnitt



In case undercut is reguired on back turning section

Hinterschnitte innerhalb der Hinterdreh-Kontur



TBMH style inserts should be used to cut the undercut

TBMH Type ermöglicht den Hinterschnitt

TBMH32 ➡E114
GTTR ➡E114
DS-GTTL ➡E114

NTK CUTTING TOOLS

Back Turning - BACK DUO NEW

WATCH ON YouTube

New back turning with NTK original moulded chipbreaker

Neues Hinterbund-Drehwerkzeug mit gepresstem NTK-Spanbrecher

Features - Merkmale

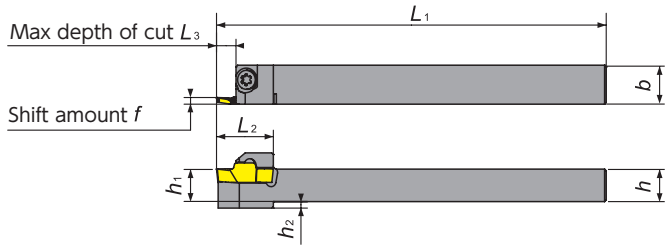
"Single pass back turning" is now possible with newly designed chipbreaker. Possible to reduce cycle time

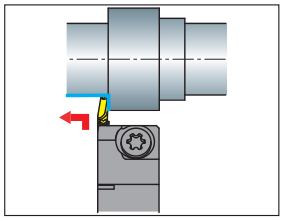
"Stechen und Hinterdrehen" in einer Bearbeitung durch neu entwickeltem Spanbrecher. Dadurch deutlich reduzierte Bearbeitungszeiten

1 New 3D chipbreaker PAT.P
Neuer 3D-Spanbrecher

2 New clamping system
Neues Spann-System

Holders . Halter

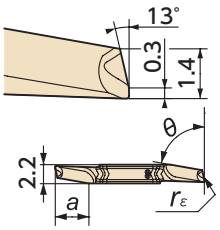




● Right-hand shown.
● Rechte Ausführung.

Toolholder	Dimensions (mm)								Insert	Parts	
										Clamping screw	Wrench
	h	b	L_1	h_1	f	L_2	L_3	h_2			
TBDPR1012	10	12	120	10	2.05	15	5	0	TBDP	LRIS-4＊12	LLR-25S
TBDPR12	12	12		12		18					
TBDPR16	16	16		16		19.5					
TBDPR20	20	20		20		19.5					

● Inserts . Schneidplatten

Shape	Effective length of cutting edge a	Dimensions (mm)		ISO	Grade
		θ	Corner radius r_ε		
	3.5	80	0.05	**TBDP22005R**	**TM4, QM3**
	3.5	80	0.08	**TBDP2201MR**	**TM4, QM3**
	3.5	80	0.18	**TBDP2202MR**	**TM4, QM3**

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CSV

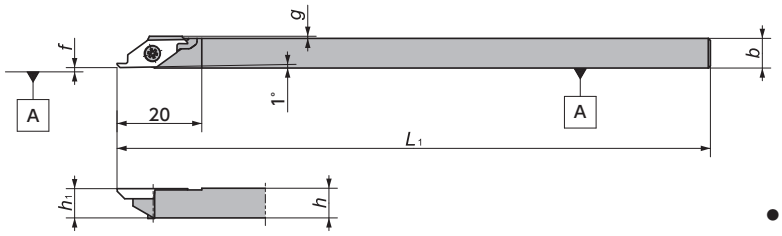


Figure-1

● Right-hand shown.
● Rechte Ausführung.

CSV-NC/CSV-NC-F

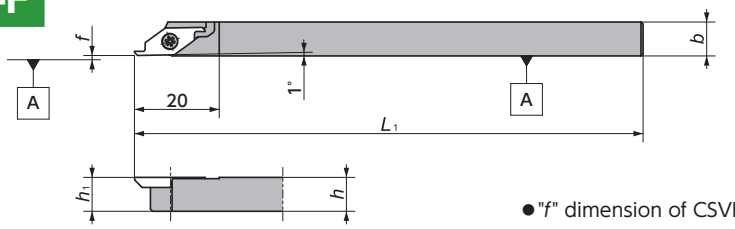


Figure-2

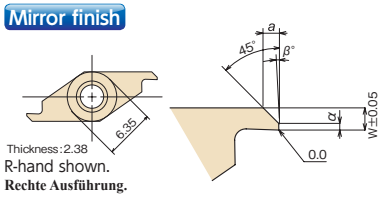
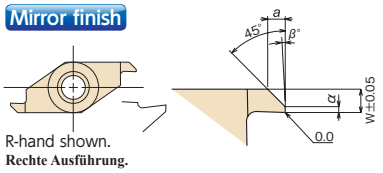
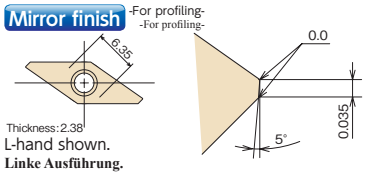
● Right-hand shown.
● Rechte Ausführung.
● "f" dimension of CSVR/L 08NC-F is very small.
● Sehr kleines Versatz-Maß (f) bei Ausführung CSVR/L 08NC-F.

■ Holders . Halter

Go to page ➡D82

● Inserts . Schneidplatten

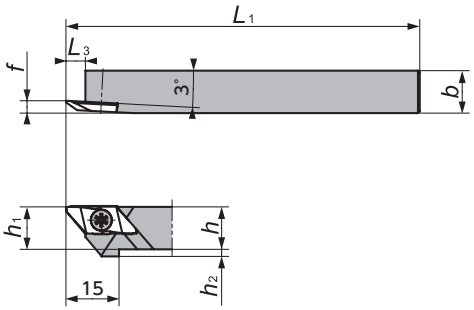
CSVB

Shape	Chip-breaker	Effective length of cutting edge a	Available cutting depth b	Dimensions (mm) Width of the cutting edge W	Dimensions (mm) Cutting edge (α×β)	ISO	Grade
Mirror finish  Thickness:2.38 R-hand shown. **Rechte Ausführung.**	No	0.7	2.0	1.00	0.3×5°	CSVB11FR/LV	VM1
	No	0.7	2.0	1.00	0.3×2°	CSVB11FRV-A	VM1
	No	0.7	2.0	1.00	0.15×2°	CSVB11FR/LV-M	ZM3(R), VM1, DT4(R)
	No	0.7	2.0	1.00	0.15×5°	CSVB11FRV-C	VM1
	No	0.8	2.0	1.20	0.3×5°	CSVB11FRV12	VM1
	No	1.0	2.0	1.40	0.3×5°	CSVB11FRV14	VM1
Mirror finish  R-hand shown. **Rechte Ausführung.**	Yes	0.7	2.0	1.00	0.3×5°	CSVB11FRVB	VM1
	Yes	0.7	2.0	1.00	0.3×2°	CSVB11FRVB-A	VM1
	Yes	0.7	2.0	1.00	0.15×2°	CSVB11FR/LVB-M	ZM3(R), VM1, DT4(R)
	Yes	0.7	2.0	1.00	0.15×5°	CSVB11FRVB-C	VM1
	Yes	0.8	2.0	1.20	0.3×5°	CSVB11FRVB12	VM1
	Yes	1.0	2.0	1.40	0.3×5°	CSVB11FRVB14	VM1
Mirror finish -For profiling-  Thickness:2.38 L-hand shown. **Linke Ausführung.**	No	–	–	–	–	CSVB11FLVX	VM1

*θ indicates the value when the insert is set into the holder.
*Winkelangabe gilt bei montierter Platte im Halter.

TBP

Screw accessible from both sides
Schraube von beiden Seiten montierbar



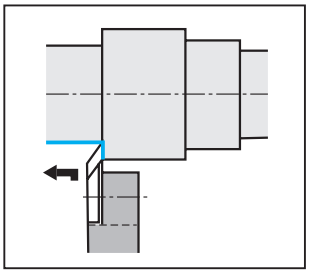
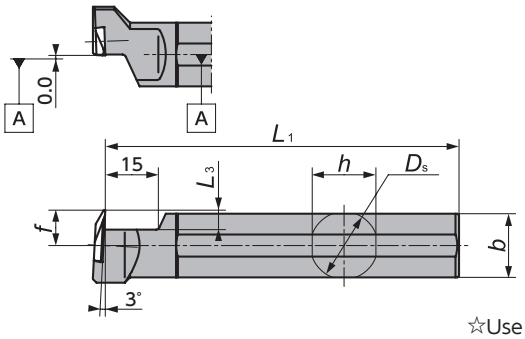


Figure-1

● Right-hand shown.
● Rechte Ausführung.

DS-TBP

DS holder



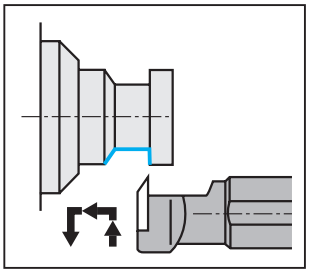
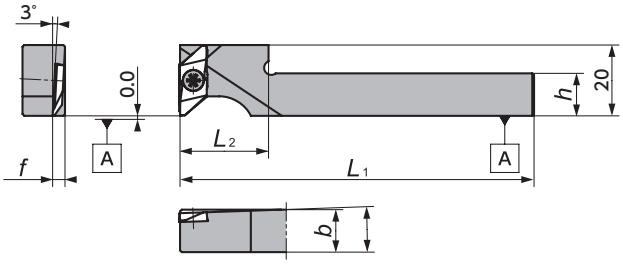


Figure-2

● Left-hand shown.
● Linke Ausführung.
☆Use a R-hand insert for L-hand holder.
☆Rechte Schneidplatte für linke halter verwenden.

Y-TBP

Screw accessible from both sides
Schraube von beiden Seiten montierbar



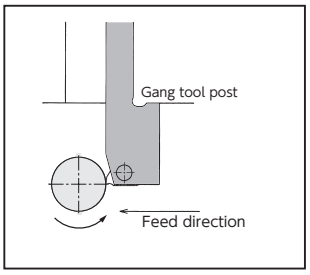
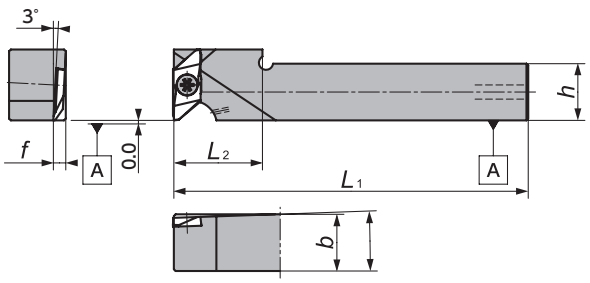


Figure-3

● Right-hand shown.
● Rechte Ausführung.
☆Use Right-hand insert for Right-hand holder.
☆Rechte Schneidplatte für rechten halter verwenden.

Y-TBP-OH

Screw accessible from both sides
Y-axis with high-pressure through coolant
Schraube von beiden Seiten montierbar
Y-Achsen Typ hohem Kühlmitteldruck



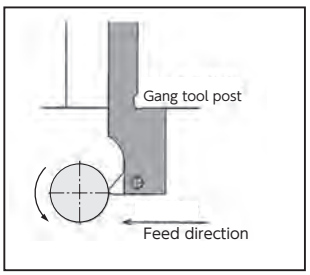


Figure-4

● Right-hand shown.
● Rechte Ausführung.
☆Use Right-hand insert for Right-hand holder.
☆Rechte Schneidplatte für rechten halter verwenden.

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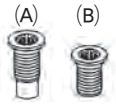
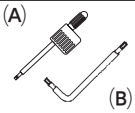
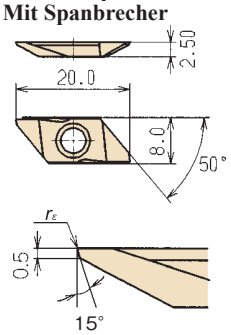
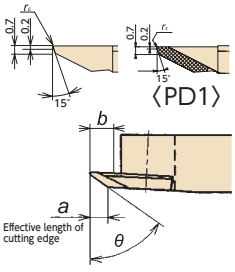
Holders . Halter

Shape	Toolholder	Dimensions (mm) D_s	h	b	L_1	h_1	h_2	f	L_2	L_3	Insert	Parts: Clamping screw	Parts: Wrench
												(A) (B) 	(A) (B) 
Figure-1	TBPR/L08	–	8	10	120	8	4	3.5	–	5.5	TBP	LRIS-4*10PW (A)	CLR-15S (A)
	TBPR/L10		10			10	2						
	TBPR12GX		12	12	85	12	0					LRIS-4*12PW (A)	
	TBPR/L12				120								
	TBPR/L13		13	13		13							
	TBPR16H		16	16	100	16							
	TBPR/L16				120								
Figure-2	DS-TBPL19	19.050	18	18	120	–	–	11.0	–	5.5	TBP	LRIS-4*10 (B)	LLR-25S -20*65 (B)
	DS-TBPL20	20.000	19	19									
	DS-TBPL25	25.400	24	24	150			13.0					
Figure-3	Y-TBPR10S	–	10	10	120	–	–	3.5	20	–	TBP	LRIS-4*10PW (A)	CLR-15S (A)
	Y-TBPR12S		12	12								LRIS-4*12PW (A)	
	Y-TBPR10		10	10					25			LRIS-4*10PW (A)	
	Y-TBPR12		12	12								LRIS-4*12PW (A)	
	Y-TBPR10L		10	10					30			LRIS-4*10PW (A)	
	Y-TBPR12L		12	12								LRIS-4*12PW (A)	
Figure-4	Y-TBPR12SOH	–	12	12	70	–	–	3.5	20	–	TBP	LRIS-4*12PW (A)	CLR-15S (A)
	Y-TBPR16OH		16	16					25				

Inserts . Schneidplatten

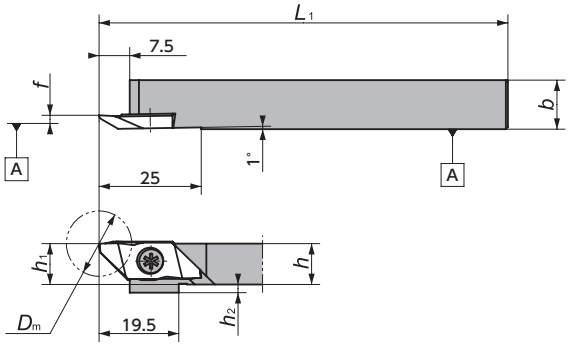
TBP Shape	Chip-breaker	Effective length of cutting edge a	Available cutting depth b	Dimensions (mm) θ	Dimensions (mm) r_ε	ISO	Grade
With chipbreaker Mit Spanbrecher 	Yes	3.0	5.3	55°	0.00	TBP55FR/L00	ZM3, VM1(R)
	Yes	3.0	5.3	55°	0.10	TBP55FR/L10	ZM3, VM1(R)
	Yes	3.7	5.3	60°	0.00	TBP60FR00	ZM3, QM3, VM1, DT4, TM4
	Yes	3.7	5.3	60°	0.10	TBP60FR10	ZM3, QM3, VM1, TM4
	Yes	3.7	5.3	60°	*0.08	TBP60FR10M	QM3, VM1, DT4
	Yes	3.7	5.3	60°	0.2	TBP60FR20	TM4
Without chipbreaker Ohne Spanbrecher Mirror finish 	No	4.8	5.3	60°	0.00	TBP60FR/LV (M)	KM1(R), ZM3(R), VM1
	No	4.0	5.3	60°	0.00	TBP60FRV00-P	PD1
	No	4.8	5.3	60°	0.05	TBP60FRV05 (M)	KM1, VM1
	No	4.8	5.3	60°	0.10	TBP60FRV10 (M)	KM1, VM1, ZM3
	No	4.0	5.3	60°	0.10	TBP60FRV10-P	PD1

● Right-hand shown.
● Rechte Ausführung.

*θ indicates the value when the insert is set into the holder.
*Winkelangabe gilt bei montierter Platte im Halter.

CTPA

Screw accessible from both sides
Schraube von beiden Seiten montierbar



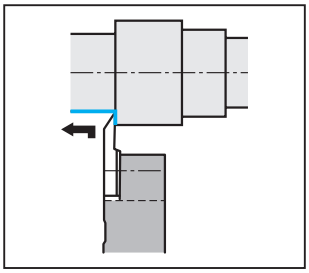
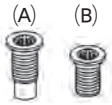
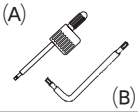


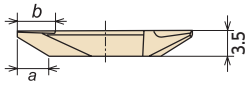
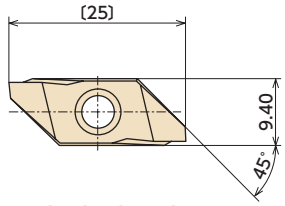
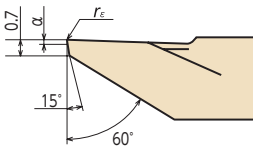
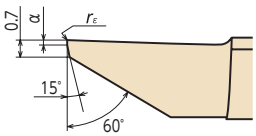
Figure-1

● Right-hand shown.
● Rechte Ausführung.

Holders . Halter

Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	f	h_2	D_m	Insert	Parts: Clamping screw	Parts: Wrench
										(A)  (B)	(A)  (B)
Figure-1	CTPA[R/L]10	10	10	120	10	2.0	2	16	TBPA (Back Turning) CTPA (cutting-off) **F126~F127**	LRIS-4*10PW (A)	CLR-15S (A)
	CTPA[R/L]12	12	12		12		0			LRIS-4*12PW (A)	
	CTPA[R/L]16	16	16		16						
	CTPA[R/L]20F	20	20	80	20					LRIS-4*10 (B)	LLR-25S (B)

● Inserts . Schneidplatten

TBPA Shape	Chip-breaker	Effective length of cutting edge a	Available cutting depth b	Dimensions (mm) α	Dimensions (mm) r_ε	ISO	Grade
  **With chipbreaker** Mit Spanbrecher  **Without chipbreaker** Ohne Spanbrecher Mirror finish 	Yes	4.5	5.3	0.2	0.0	TBPA60FRVB Ⓜ	ZM3, VM1, DT4
	Yes	4.5	5.3	0.3	0.1	TBPA60FRPB10 Ⓜ	ZM3, VM1
	Yes	4.5	5.3	0.3	*0.08	TBPA60FR10M	QM3
	Yes	4.5	5.3	0.3	*0.08	TBPA60FRPB10M Ⓜ	VM1, DT4
	Yes	4.5	5.3	0.3	*0.18	TBPA60FRPB20M Ⓜ	DT4
	No	6.3	6.8	0.2	0.0	TBPA60FRV Ⓜ	ZM3, VM1

● Right-hand shown.
● Rechte Ausführung.

*All angles shown are obtained when insert is set on the holder.
* Dargestellter Winkel bezieht sich auf eingebauter Schneidplatte.

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TBVC

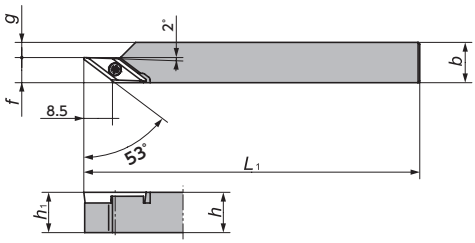
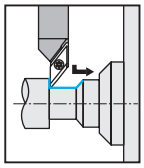


Figure-1



● Right-hand shown.
● Rechte Ausführung.
*For non ferrous materials.
*Für NE-Metalle

TVBC-F10

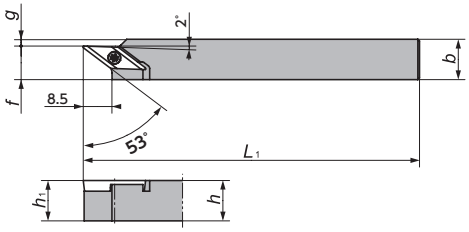
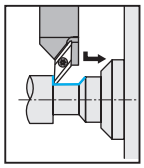


Figure-2

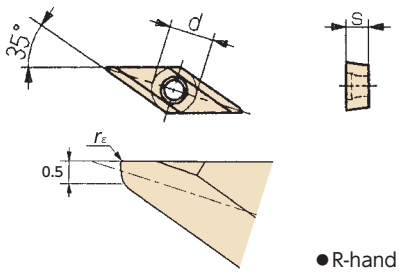


● Right-hand shown.
● Rechte Ausführung.
*For steel materials.
*Für Stahl

Holders . Halter

Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	f	g	Insert	Parts: Clamping screw	Parts: Wrench
Figure-1	**TBVCR10**	10	10	120	10	7.5	2.5	TBVC VCGT1103 **C74**	LRIS-2.5*7	CLR-15S
	TBVCR12	12	12		12		4.5			
	TBVCR16	16	16		16		8.5			
Figure-2	**TBVCR10-F10**	10	10	120	10	10	0	TBVC VCGT1103 **C74**	LRIS-2.5*7	CLR-15S
	TBVCR12GX-F10	12	12	85	12		2			
	TBVCR12-F10			120						
	TBVCR16H-F10	16	16	100	16		6			
	TBVCR16-F10			120						
	TBVCR20F-F10	20	20	80	20		10			

● Inserts . Schneidplatten

TBVC Shape	Dimensions (mm) d	s	r_ε	ISO	Grade
 ● R-hand shown. ● Rechte Ausführung.	6.35	3.18	0.05	**TBVC11FR05U**	**ZM3**
	6.35	3.18	0.10	**TBVC11FR10U**	**ZM3, VM1**
	6.35	3.18	–	**TBVC11FR10S**	**ZM3**

TBT

Screw accessible from both sides
Schraube von beiden Seiten montierbar

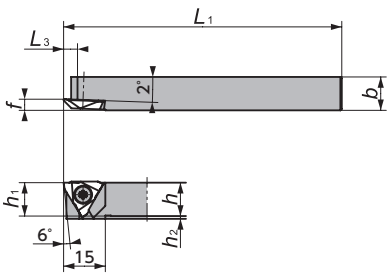
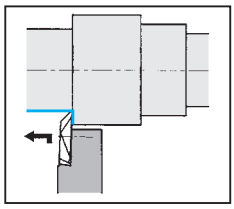


Figure-1



● Right-hand shown.
● Rechte Ausführung.

TB-N

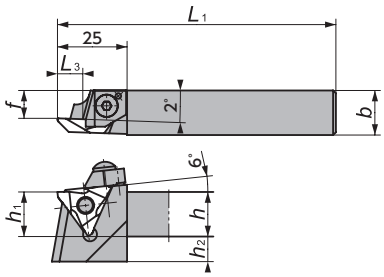
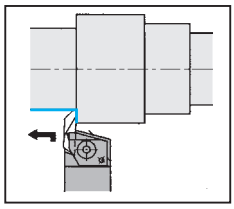


Figure-2



● Right-hand shown.
● Rechte Ausführung.

TB-F

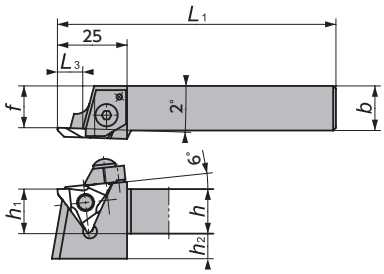
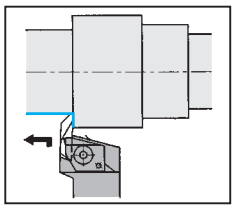
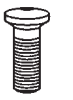
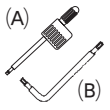


Figure-3



● Right-hand shown.
● Rechte Ausführung.

Holders . Halter

Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	h_2	f	L_3	Insert	Parts: Clamping screw	Clamp	Clamping bolt	Spring	Wrench
														
Figure-1	TBTR/L08F	8	8	80	8	5	4	5.0	TB32	LR-S-4*10PW	–	–	–	CLR-15S (A)
	TBTR/L08K			120										
	TBTR/L10F	10	10	80	10	3								
	TBTR/L10K			120										
	TBTR/L12F	12	12	80	12	1								
	TBTR/L12K			120										
Figure-2	TBR16N-42	16	16	78	16	9	11.5	9.0	TB42	–	CPR/L5S	A0S-5*25	ASG-5	LW-2.5 (B)
	TBR16NS						10	5.0	TB43					
	TBR/L16N							9.0						
	TBR16N-H			100										
	TBR/L16N-K			125										
	TBR/L20N	20	20	100	20	5								
	TBL25N	25	25	150	25	0								
Figure-3	TBR16FS	16	16	100	16	9	15	5.0	TB43	–	CPR/L5	A0S-5*25	ASG-5	LW-2.5 (B)
	TBR16F							9.0						
	TBR20FS	20	20		20	5	20	5.0						
	TBR20F							9.0						
	TBR25F	25	25	150	25	0	25							

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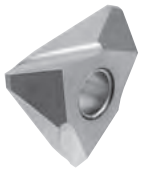
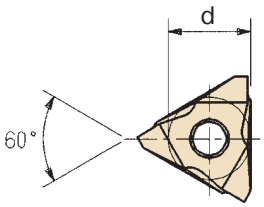
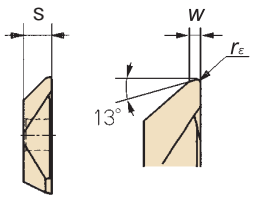
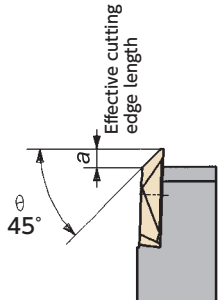
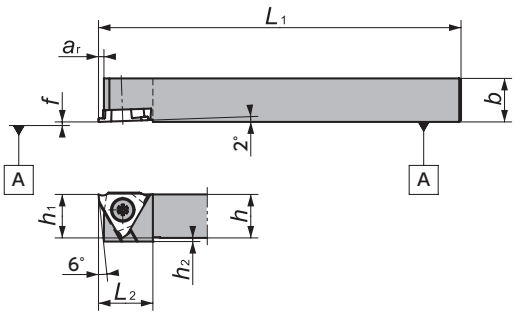
● Inserts . Schneidplatten

TB32, 42 and 43 Shape	Chip-breaker	Effective length of cutting edge *a*	Available cutting depth *b*	Dimensions (mm) θ	r_ε	*w*	*d*	*s*	ISO	Grade
	Yes	2.7	*1	45°	0.00	0.5	9.525	3.18	TB3200R	ZM3
	Yes	2.7	*1	45°	0.05	0.5	9.525	3.18	TB3205R/L	T15(R), ZM3
	Yes	2.7	*1	45°	0.10	0.5	9.525	3.18	TB3210L	T15
	Yes	2.7	*1	45°	0.15	0.5	9.525	3.18	TB3215R/L	T15, ZM3
	Yes	2.7	*1	45°	0.20	0.5	9.525	3.18	TB3220R	ZM3
	Yes	2.3	*1	45°	0.15	1.0	12.70	3.18	TB4215R	ZM3
	Yes	4.0	*1	45°	0.05	1.0	12.70	4.76	TB4305R	T15, ZM3
	Yes	4.0	*1	45°	0.15	1.0	12.70	4.76	TB4315R/L	T15, ZM3(R)
	Yes	3.9	*1	45°	0.40	1.0	12.70	4.76	TB4340R/L	T15. ZM3(R)

* PVD-coated micro-grain carbide grade ZM3 has a sharp edge.
* PVD-beschichtete Feinstkornhartmetall Sorte ZM3 mit scharfer Schneide.
* θ indicates the value when the insert is set into the holder.
* Winkelangabe gilt bei montierter Platte im Halter.

GTT

Screw accessible from both sides
Schraube von beiden Seiten montierbar



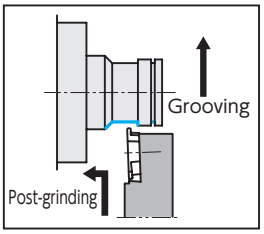
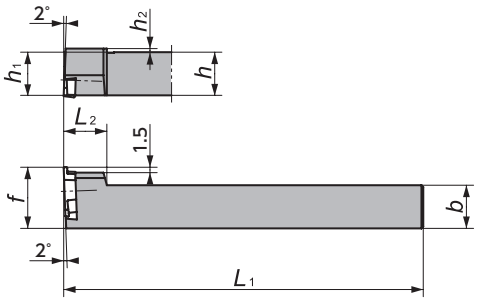


Figure-1

● Left-hand shown.
● Linke Ausführung.

CH-GTT

For front gang type tool post
Für Drehmaschinen mit Gang Type System



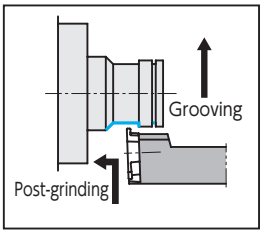
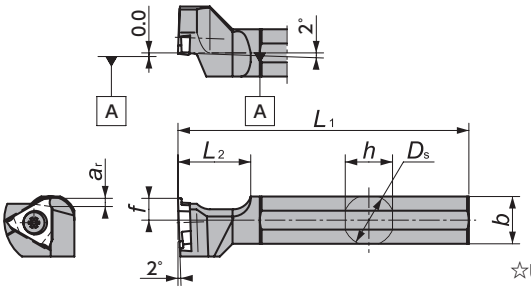


Figure-2

● Left-hand shown.
● Linke Ausführung.

DS-GTT

DS holder



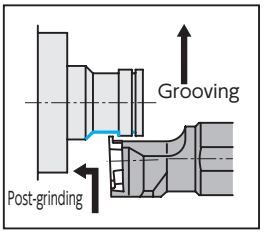
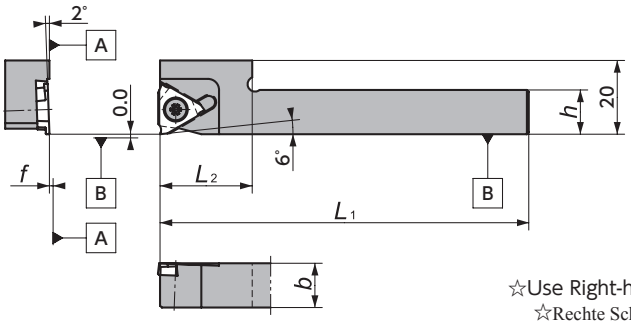


Figure-3

● Left-hand shown.
● Linke Ausführung.
☆Use a Right-hand insert for Right-hand holder.
☆Rechte Schneidplatte für rechten halter verwenden.

Y-GTT

Screw accessible from both sides
Schraube von beiden Seiten montierbar



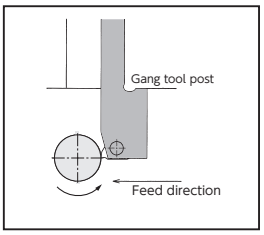
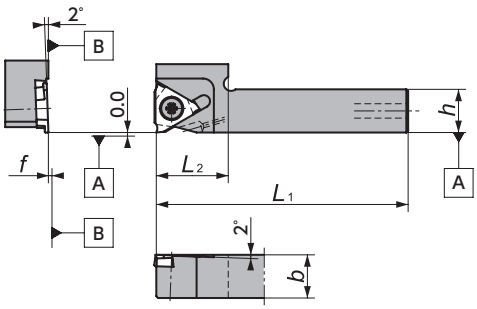


Figure-4

● Right-hand shown.
● Rechte Ausführung.
☆Use Right-hand insert for Right-hand holder.
☆Rechte Schneidplatte für rechten halter verwenden.

Y-GTT-OH

Screw accessible from both sides
Y-axis with high-pressure through coolant
Schraube von beiden Seiten montierbar
Y-Achsen Typ hohem Kühlmitteldruck



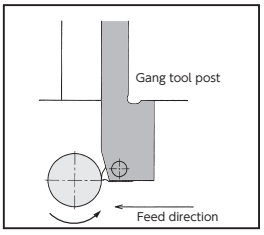


Figure-5

● Right-hand shown.
● Rechte Ausführung.

* GTM32, GTMH32 and GTMX32 inserts can be mounted to GTT holders.
* Schneideinsätze GTM32, GTMH32 und GTMX32 können im Haltertyp GTT verwendet werden.

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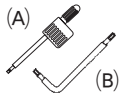
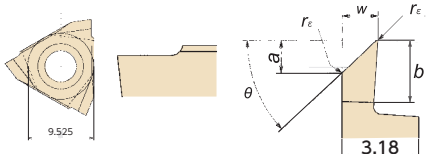
Holders . Halter

Shape	Toolholder	Dimensions (mm) D_s	h	b	L_1	h_1	f	L_2	h_2	Insert	Parts: Clamping screw	Parts: Wrench
											 (A) (B)	 (A) (B)
Figure-1	GTTR/L08F00	—	8	8	80	8	0	15	5	TBMH32 (back turning) GTM32 GTMH32 GTMX32 **G114 ⟆ G147**	R-hand: LR-S-4*10PW (A) L-hand: LR-S-4*5.8 (B)	CLR-15S (A)
	GTTR0810F00		8	10							LR-S-4*10PW (A)	
	GTTR/L08K00			8	120						R-hand: LR-S-4*10PW (A) L-hand: LR-S-4*5.8 (B)	
	GTTR0810K00			10								
	GTTR/L10F00		10	10	80	10			3		LR-S-4*10PW (A)	
	GTTR/L10K00				120							
	GTTR/L12F00		12	12	80	12			1			
	GTTR/L12K00				120							
	GTTR/L16H00		16	16	100	16			0			
	GTTR/L16K00				120							
	GTTR/L20K00		20	20	125	20						
	GTTR/L25M00		25	25	150	25						
	GTTR/L10F15		10	10	80	10			3			
	GTTR/L10K15				120							
	GTTR/L12F15		12	12	80	12			1			
	GTTR/L12K15				120							
	GTTR/L16H15		16	16	100	16			0			
	GTTR/L16K15				120							
	GTTR/L10F25		10	10	80	10			3			
	GTTR/L10K25				120							
	GTTR/L12F25		12	12	80	12			1			
	GTTR/L12K25				120							
	GTTR/L16H25		16	16	100	16			0			
	GTTR/L16K25				120							
Figure-2	CH-GTTL10H00	—	10	10	120	10	15	12	3		LR-S-4*9 (B)	CLR-15S (A)
	CH-GTTL12H00		12	12		12	17		1			
Figure-3	DS-GTTL14F	14.000	13	13	80	—	6	20	—		LR-S-4*9 (B)	RLR-20S (B)
	DS-GTTL15H	15.875	15	15	100							
	DS-GTTL16X	16.000			95							
	DS-GTTL19	19.050	18	18	120							
	DS-GTTL20	20.000	19	19								
	DS-GTTL22	22.000	21	21								
	DS-GTTL25	25.400	24	24			10					
Figure-4	Y-GTTR10S	—	10	10	120	—	0	20	—		LR-S-4*10PW (A)	CLR-15S (A)
	Y-GTTR10							25				
	Y-GTTR10L							30				
	Y-GTTR12S		12	12				20				
	Y-GTTR12							25				
	Y-GTTR12L							30				
Figure-5	Y-GTTR12SOH	—	12	12	70	—	0	20	—			

Inserts . Schneidplatten

TBMH32 for back turning . Für Hinterbund-Drehwerkzeuge Shape	Chip-breaker	Effective length of cutting edge a	Available cutting depth b	Dimensions (mm) w	θ	r_ε	ISO	Grade
	Yes	0.3	1.8	1.0	22°	0.05	TBMH32100R05-22	ZM3
	Yes	0.9	1.8	1.0	45°	0.05	TBMH32100R05-45	ZM3
	Yes	0.5	2.7	1.5	22°	0.05	TBMH32150R05-22	ZM3
	Yes	1.3	2.6	1.5	45°	0.05	TBMH32150R05-45	ZM3

* θ indicates the value when the insert is set into the holder.
* Winkelangabe gilt bei montierter Platte im Halter.

MEMO

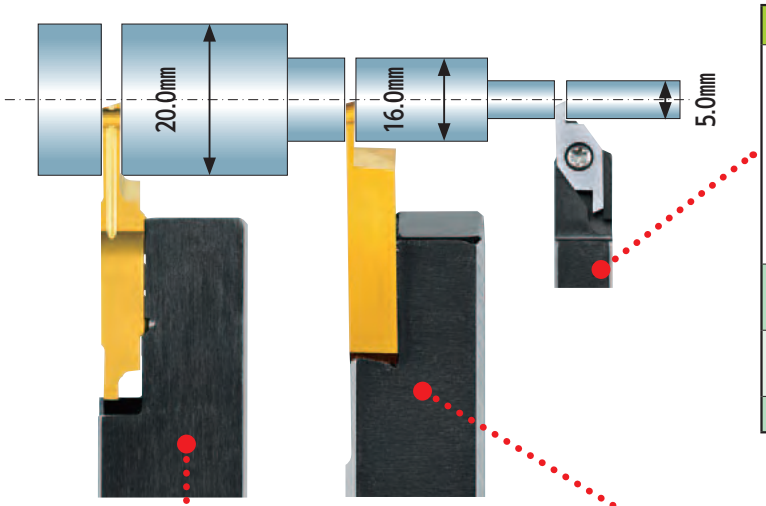
Cut-off
Abstechen

F

Selection guide for cut-off tools
Auswahlhilfe für Abstechen

NTK offers a variety of cut-off tools down to 0.5mm wide
NTK bietet verschiedenste Abstech-Werkzeuge. Kleinste Stechbreite 0.5mm

NTK cut-off tools are specialized to small part applications
NTK-Abstechwerkzeuge sind spezialisiert für das Abstechen von sehr kleinen Durchmessern

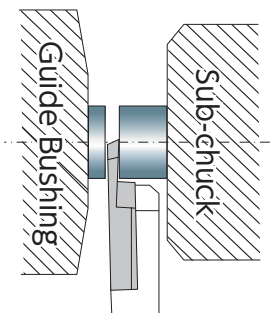


CSV	CSV-NC
	
➡F121	➡F121
Covered range Max. ϕ5.0mm	Covered range Max. ϕ5.0mm
Blade width 0.6 to 1.3mm	Blade width 0.6 to 1.3mm
CSVC..	CSVC..

CTPW	CTP	CTPA
		
➡F130	➡F122	➡F126
Covered range Max. ϕ20mm	Covered range Max. ϕ12mm	Covered range Max. ϕ16mm
Blade width 2.5mm	Blade width 0.5 to 2.0mm	Blade width 0.7 to 2.0mm
CTPW..	CTP..	CTPA..

For CTP and CTPA, SUB style holders are available, which have extra clearance for sub spindle

Bei Gegenspindelanwendungen können die Einsätze CTP, CTPA und CTPS in speziellen Haltern verbaut werden (siehe Seite 12)



- All inserts shown on this page are double-ended
- Alle dargestellten Schneideinsätze verfügen über zwei Schneiden.
- Even if a cutting edge broke, the other edge can be used without any limitations
- Im Falle eines Schneidkantenbruch kann die Gegenschneide ohne Einschränkung verwendet werden.

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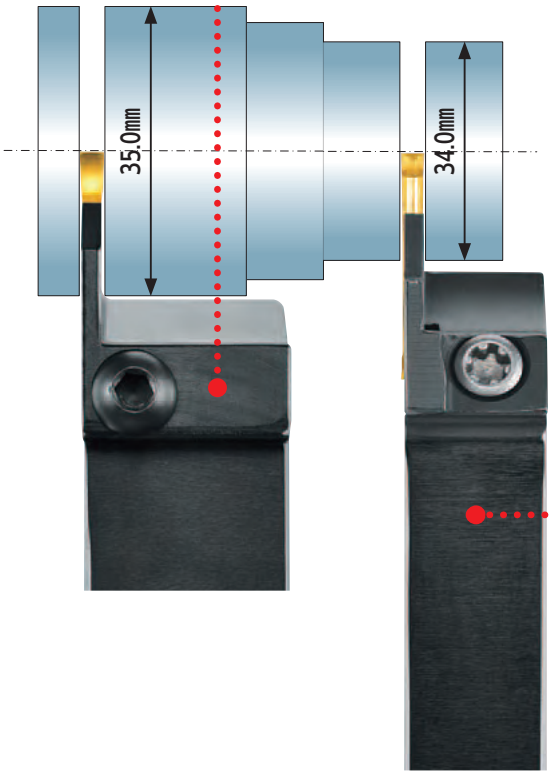


CTV

➡F131

Covered range Max. ϕ35mm
Blade width 2.5 to 3.0mm
CTV..

CTDP

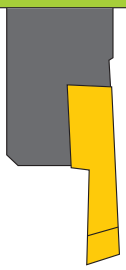
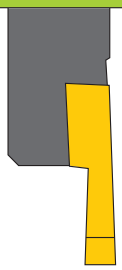
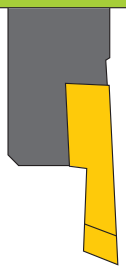
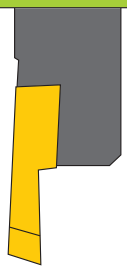
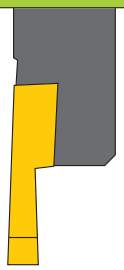
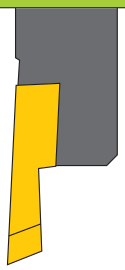
CUT DUO
NEW

➡F120

Covered range Max. ϕ34mm
Blade width 2.0 to 2.5mm
CTDP..

Cut-off Insert Edge Variation

Übersicht der Abstechtypen

For Right Hand Toolholder			For Left Hand Toolholder		
					
FR, FRV**	FRN, FRS* FRNV**	FRK	FL, FLV**	FLN, FLS*	FLK, FLKV**

* FRS and FLS have flat top (No chipbreakers)
* Ausführungen FRS und FLS mit flacher Spanfläche (ohne Spanbrecher)

** FRV, FRNV, FLV and FLKV have flat top with mirror finish
** Ausführungen FRV, FRNV und FLV mit flacher polierter Spanfläche (ohne Spanbrecher)

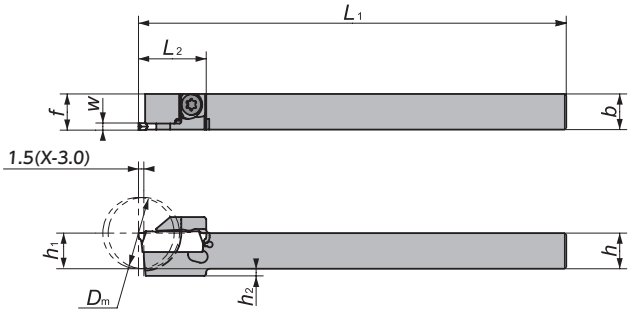
NTK CUTTING TOOLS

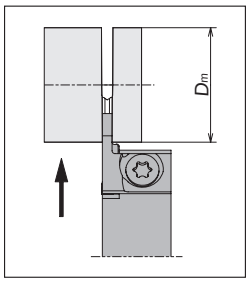
CUT DUO NEW

Maximum diameter for cutting off : ϕ34

Maximaler Abstechdurchmesser : ϕ34mm

CTDP





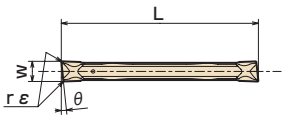
● Right-hand shown.
● Rechte Ausführung.

Holders . Halter

Toolholder	Max. cutting-off dia. (mm) D_m	Dimensions (mm) w	h_1	b	L_1	h_1	f	L_2	h_2	Insert	Parts: Clamping screw	Parts: Wrench
												
CTDPR/L10-20D20	20.0	2.0	10	10	120	10	10.15	19.0	2	CTDP20	LRIS-4*12	LLR-25S
CTDPR/L12-20D20		2.0	12	12	120	12	12.15	19.0	0			
CTDPR/L12-20D25	25.4	2.0	12	12	120	12	12.15	22.0	0			
CTDPR/L16-20D25		2.0	16	16	120	16	16.15	22.0	0			
CTDPR/L16-20D32A	32.0	2.0	16	16	120	16	16.15	27.5	0			
CTDPR/L2012-20D32A		2.0	20	12	120	20	12.15	29.5	0			
CTDPR/L20-20D32A		2.0	20	20	120	20	20.15	29.5	0			
CTDPR/L16-25D34A	34.0	2.5	16	16	120	16	16.15	27.5	0	CTDP25		
CTDPR/L2012-25D34A		2.5	20	12	120	20	12.15	29.5	0			
CTDPR/L20-25D34A		2.5	20	20	120	20	20.15	29.5	0			

Inserts . Schneidplatten

CTDP



Shape	Dimensions (mm) w	L	θ	r_ε	ISO	Grade
	2.0	19.1	0°	0.05	CTDP20N	DM4, TM4, QM3
	2.0	19.1	0°	0.2	CTDP20N02	DM4, TM4, QM3
	2.0	19.1	6°	0.05	CTDP20R6	DM4, TM4, QM3
	2.0	19.1	15°	0.05	CTDP20R15	DM4, TM4, QM3
	2.5	21.2	0°	0.05	CTDP25N	DM4, TM4, QM3
	2.5	21.2	0°	0.2	CTDP25N02	DM4, TM4, QM3
	2.5	21.2	6°	0.05	CTDP25R6	DM4, TM4, QM3
	2.5	21.2	15°	0.05	CTDP25R15	DM4, TM4, QM3

* For details, please refer to pages A12
* Details auf den Produktseiten A12

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Maximum diameter for cutting off : ϕ5
Maximaler Abstechdurchmesser : ϕ5mm

CSV

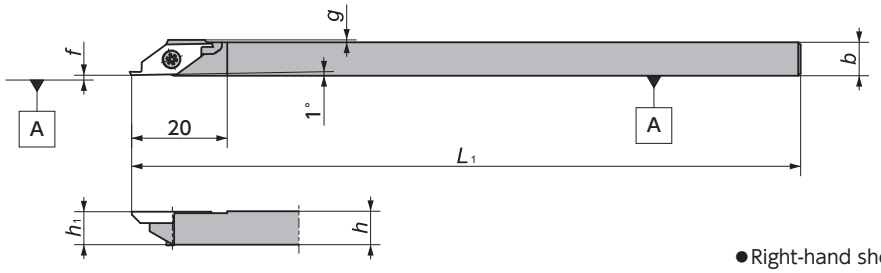


Figure-1

● Right-hand shown.
● Rechte Ausführung.

CSV-NC/CSV-NC-F

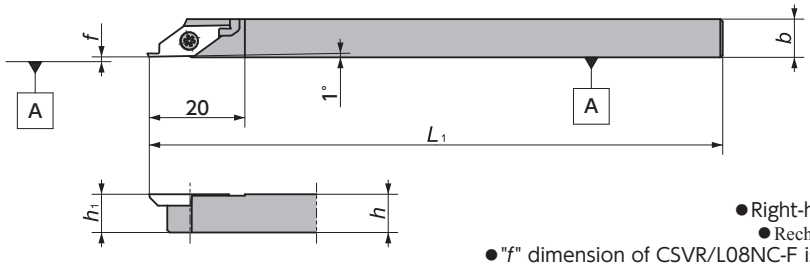


Figure-2

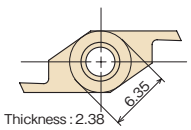
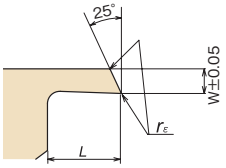
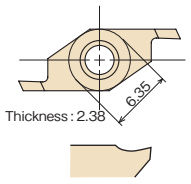
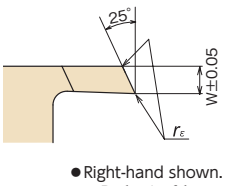
● Right-hand shown.
● Rechte Ausführung.
● "f" dimension of CSVR/L08NC-F is very small.
● Sehr kleines Versatz-Maß (f) bei Ausführung CSVR/L08NC-F.

Holders . Halter

Go to page ➡D82

Inserts . Schneidplatten

CSVC

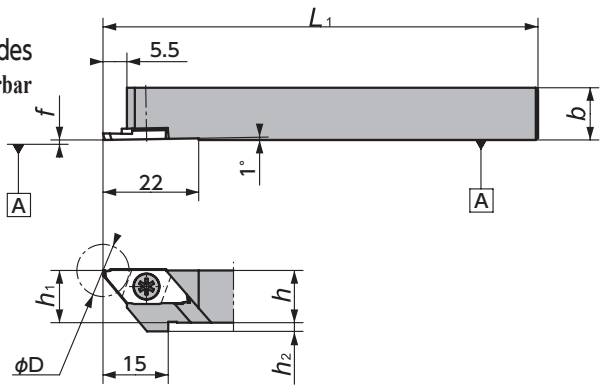
Shape	Chip-brarker	Max. cutting-off dia. (mm) φD	Dimensions (mm) L	r_ε	W	ISO	Grade
Mirror finish   ● Right-hand shown. ● Rechte Ausführung.	No	3.0	2.0	0.0	0.6	CSVC11FRV06	VM1
	No	4.0	2.5	0.0	0.7	CSVC11FRV07	VM1
	No	4.0	2.5	0.0	0.8	CSVC11FRV08	VM1
	No	4.0	2.5	0.0	0.9	CSVC11F R V09	VM1
	No	5.0	3.0	0.0	1.0	CSVC11FRV10	VM1
	No	5.0	3.0	0.0	1.3	CSVC11FRV13	VM1
	No	5.0	3.0	0.0	1.5	CSVC11FRV15	VM1
  ● Right-hand shown. ● Rechte Ausführung.	Yes	3.0	2.0	0.0	0.6	CSVC11FRVB06	VM1
	Yes	4.0	2.5	0.0	0.7	CSVC11FRVB07	VM1
	Yes	4.0	2.5	0.0	0.8	CSVC11FRVB08	VM1
	Yes	4.0	2.5	0.0	0.9	CSVC11FRVB09	VM1
	Yes	5.0	3.0	0.0	1.0	CSVC11FRVB10	VM1
	Yes	5.0	3.0	0.0	1.3	CSVC11FRVB13	VM1
	Yes	5.0	3.0	0.0	1.5	CSVC11FRVB15	VM1

* All angles shown are obtained when insert is set on the holder.
* Dargestellter Winkel bezieht sich auf eingebauter Schneidplatte.

Maximum diameter for cutting off : ϕ12
Maximaler Abstechdurchmesser : ϕ12mm

CTP

Screw accessible from both sides
Schraube von beiden Seiten montierbar



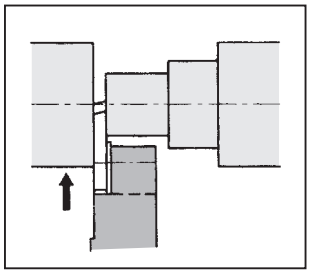
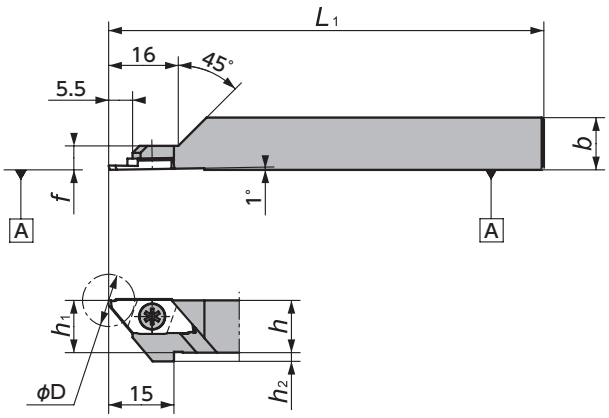


Figure-1

● Right-hand shown.
● Rechte Ausführung.

Holders for using sub-chuck
Halter für den Einsatz mit Gegenspindel

CTPR-SUB



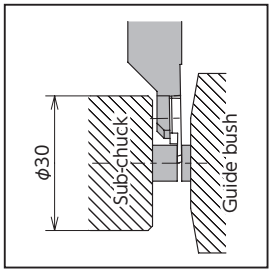
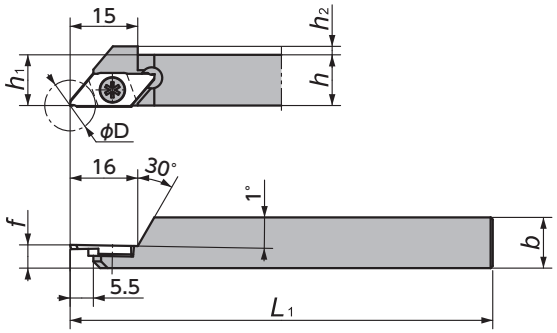


Figure-2

● Right-hand shown.
● Rechte Ausführung.

CTPL-SUB



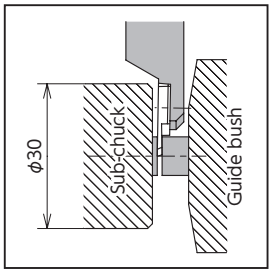


Figure-3

● Right-hand shown.
● Rechte Ausführung.

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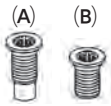
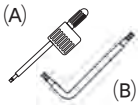
Holders . Halter

Shape	Toolholder	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) h	b	L_1	h_1	h_2	f	Insert	Parts: Clamping screw	Parts: Wrench
										 (A) (B)	 (A) (B)
Figure-1	CTPR/L08	12.0*	8	10	120	8	4	0.0	CTP CTP-X CTPX **F124~F125**	LRIS-4*10PW (A)	CLR-15S (A)
	CTPR/L10		10			10	2				
	CTPR/L12GX		12	12	85	12	0			LRIS-4*12PW (A)	
	CTPR/L12				120						
	CTPR/L13		13	13		13					
	CTPR16H		16	16	100	16					
	CTPR/L16				120						
Figure-2	CTPR08-SUB	12.0*	8	8	120	8	4	5.5	CTP-FR (N) (V) (NV) CTP-FRX (FRNX) CTPX-FR (N) **F124~F125**	LRIS-4*5 (B)	LLR-25S (B)
	CTPR10F-SUB		10	10	80	10	2				
	CTPR10KX-SUB				120						
	CTPR/L12GX-SUB		12	12	85	12	0				
	CTPR12-SUB				120						
Figure-3	CTPL08-SUB	12.0*	8	8	120	8	4	5.5	CTP-FLK CTP-FLKV CTP-FLN CTP-FLNV CTPX-FLN CTP-FLNX **F124~F125**	LRIS-4*5 (B)	LLR-25S (B)
	CTPL10GX-SUB		10	10	85	10	2				
	CTPL12GX-SUB		12	12		12	0				

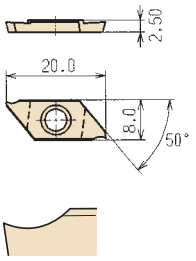
* The max. cut off diameter varies depending on the insert. Please refer to page **F124**.
* Maximaler Abstechdurchmesser ist abhängig von der verwendeten Abstechplatte. Siehe Seite F124.

NTK CUTTING TOOLS

Inserts . Schneidplatten

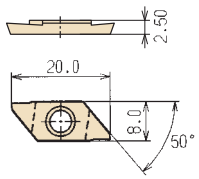
CTP

Shape	Cutting edge shape	ISO	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) W	L	θ	r_ε	Grade
<With chipbreaker>		NEW CTP05FR-SH	5.0	0.5	2.8	15°	0.03	ZM3
		CTP07FR	8.0	0.7	4.5	16°	0.05	ZM3
		CTP10FR	12.0	1.0	6.7			DT4, ZM3
		NEW CTP10FR-SH	7.0	1.0	4.1	15°		DT4, ZM3
		CTP15FR	12.0	1.5	6.7	16°		ZM3, VM1
		CTP20FR		2.0				ZM3, VM1
		NEW CTP05FRN-SH	5.0	0.5	2.8	0°	0.03	ZM3
		CTP10FRN	12.0	1.0	6.7		0.05	DT4, ZM3
		NEW CTP10FRN-SH	7.0	1.0	4.1			DT4, ZM3
		CTP15FRN	12.0	1.5	6.7			ZM3, VM1
		CTP20FRN		2.0				ZM3, VM1
		CTP10FRK	11.0	1.0	6.7	16°		ZM3
		CTP15FRK		1.5				ZM3
		CTP20FRK		2.0				ZM3
		CTP07FL	8.0	0.7	4.5	16°	0.05	ZM3
		CTP10FL	12.0	1.0	6.7			ZM3
		CTP15FL		1.5				ZM3
		CTP20FL		2.0				ZM3
		NEW CTP05FLN-SH	5.0	0.5	2.8	0°	0.03	ZM3
		CTP10FLN	12.0	1.0	6.7		0.05	DT4, ZM3
		NEW CTP10FLN-SH	7.0	1.0	4.1			DT4, ZM3
		CTP15FLN	12.0	1.5	6.7			ZM3, VM1
		CTP20FLN		2.0				ZM3, VM1
		NEW CTP05FLK-SH	5.0	0.5	2.8	17°	0.03	ZM3
		CTP10FLK	11.0	1.0	6.7	16°	0.05	DT4, ZM3
		NEW CTP10FLK-SH	7.0	1.0	4.1	17°		DT4, ZM3
		CTP15FLK	11.0	1.5	6.7	16°		ZM3, VM1
		CTP20FLK		2.0				ZM3, VM1
<Without chipbreaker> Mirror finish		CTP10FRV	12.0	1.0	6.7	20°	0.0	DT4, KM1, ZM3, VM1
		CTP15FRV		1.5				KM1, ZM3, VM1
		CTP20FRV		2.0				KM1, ZM3, VM1
		CTP15FRNV		1.5		0°		KM1
		CTP20FRNV		2.0				KM1
		CTP10FLV	12.0	1.0	6.7	20°	0.0	ZM3, VM1
		CTP15FLV		1.5				ZM3, VM1
		CTP20FLV		2.0				ZM3, VM1
		CTP15FLNV		1.5		0°		KM1
		CTP20FLNV		2.0				KM1
		CTP15FLKV	11.0	1.5		20°		KM1, VM1



θ shows the angle when the holder is set.
Winkeldarstellung im eingebautem Zustand

● R-hand shown.
● Rechte Ausführung.



θ shows the angle when the holder is set.
Winkeldarstellung im eingebautem Zustand

● R-hand shown.
● Rechte Ausführung.

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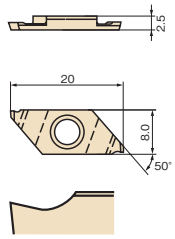
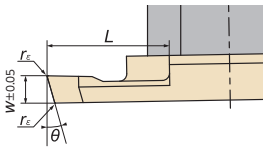
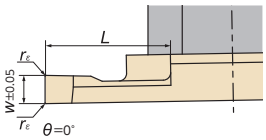
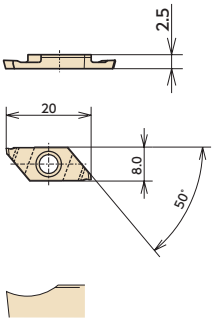
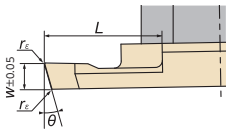
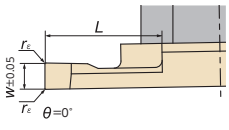
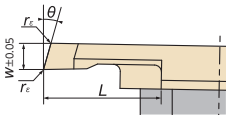
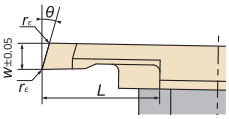
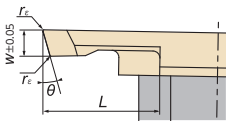
CTP-X

Insert with flat land
Schneidplatten mit flachen Spanleiter

Shape	Cutting edge shape	ISO	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) w	L	θ	r_ε	Grade
<With chipbreaker>  θ shows the angle when the holder is set. Winkeldarstellung im eingebautem Zustand		CTP15FRX	12.0	1.5	6.7	16°	0.05	ZM3
		CTP20FRX		2.0				ZM3
		CTP15FRNX		1.5		0°		ZM3
		CTP20FRNX		2.0				ZM3

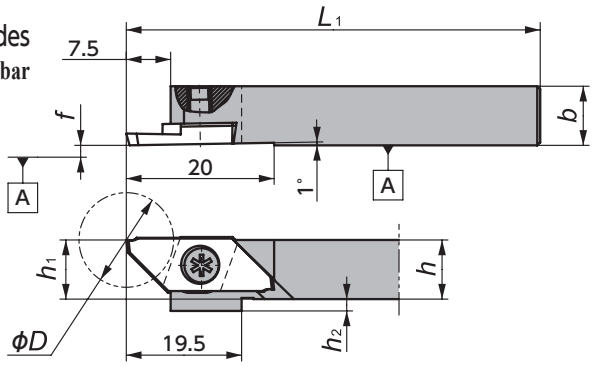
CTPX

Shape	Cutting edge shape	ISO	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) w	L	θ	r_ε	Grade
<With chipbreaker>  ● R-hand shown. ● Rechte Ausführung.		CTPX15FR	12.0	1.5	6.7	16°	0.05	ZM3, QM3, DT4
		CTPX20FR		2.0				ZM3, QM3, DT4
		CTPX15FRN		1.5		0°		QM3, DT4
		CTPX20FRN		2.0				QM3, DT4
		CTPX15FL		1.5		16°		DT4
		CTPX20FL		2.0				DT4
		CTPX15FLN		1.5		0°		QM3, DT4
		CTPX20FLN		2.0				QM3, DT4
		CTPX15FLK	11.0	1.5		16°		QM3, DT4
		CTPX20FLK		2.0				QM3, DT4

Maximum diameter for cutting off : ϕ16
Maximaler Abstechdurchmesser : ϕ16mm

CTPA

Screw accessible from both sides
Schraube von beiden Seiten montierbar



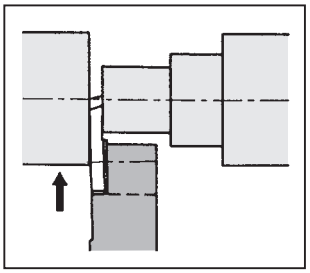
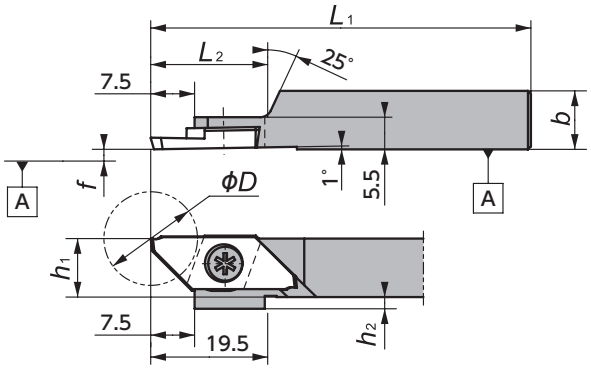


Figure-1

- Right-hand shown.
- Rechte Ausführung.

Holders for use with sub-chuck
Halter für den Einsatz mit Gegenspindel

CTPAR-SUB



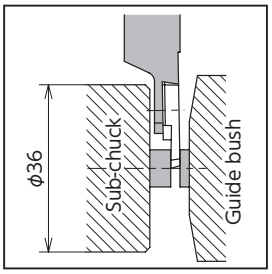
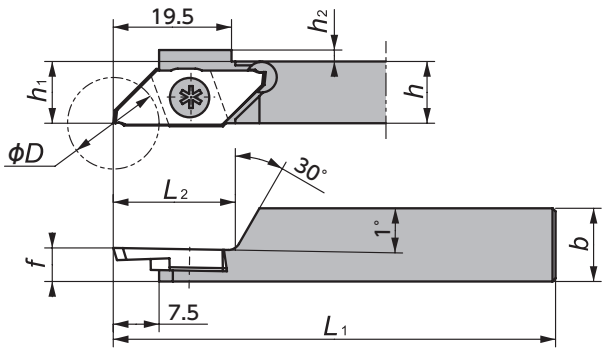


Figure-2

- Right-hand shown.
- Rechte Ausführung.
- For machining of short parts
- Zum Abstechen von sehr kurzen Werkstücken

CTPAL-SUB



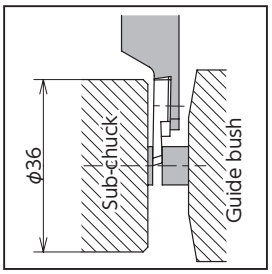
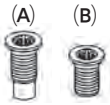
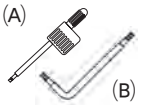


Figure-3

- Left-hand shown.
- Linke Ausführung.
- For machining of very short parts
- Zum Abstechen von sehr kurzen Werkstücken

Holders . Halter

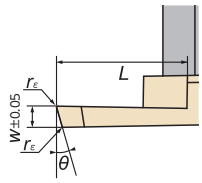
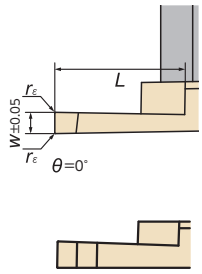
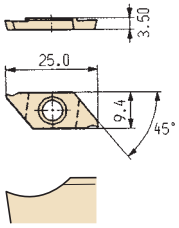
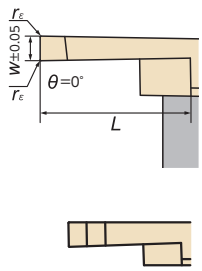
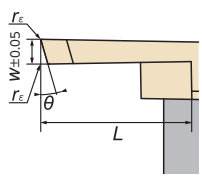
Shape	Toolholder	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) h	b	L_1	h_1	h_2	L_2	f	Insert	Parts: Clamping screw	Parts: Wrench
											(A) (B) 	(A) (B) 
Figure-1	CTPA R/L 10	16.0*	10	10	120	10	2	—	0.0	CTPA (cut-off) (Abstechen) **F128～F129** TBPA (back turning)* (Hinterbund Drehen)* **E110**	LRIS-4*10PW (A)	CLR-15S (A)
	CTPA R/L 12		12	12		12	0				LRIS-4*12PW (A)	
	CTPA R/L 16		16	16		16						
	CTPA R/L 20F		20	20	80	20					LRIS-4*10 (B)	LLR-25S (B)
Figure-2	CTPAR10GX-SUB	16.0*	10	10	85	10	2	20	0.0	CTPA-FR (N)(V)(NV) **F128～F129**	LRIS-4*5 (B)	LLR-25S (B)
	CTPAR12GX-SUB		12	12		12	0					
	CTPAR12KX-SUB				120							
Figure-3	CTPAL10GX-SUB	16.0*	10	10	85	10	2	20	5.5	CTPA-FL (N)(K)(NV)(KV) **F128～F129**	LRIS-4*5 (B)	LLR-25S (B)
	CTPAL12GX-SUB		12	12		12	0					
	CTPAL12KX-SUB				120							
	CTPAL16GX-SUB		16	16	85	16		28				

* The max. cut off diameter varies depending on the insert. Please refer to pages F128～F129.
* Maximaler Abstechdurchmesser ist abhängig von der verwendeten Abstechplatte. Siehe Seite F128～F129.

NTK CUTTING TOOLS

Inserts . Schneidplatten

CTPA

Shape	Toolholder	ISO	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) w	L	θ	r_ε	Grade
<With chipbreaker>		CTPA07FR	8.0	0.7	4.5	16°	0.05	ZM3
		CTPA10FR	12.0	1.0	6.7			ZM3
		CTPA15FR	16.0	1.5	9.2			DT4, ZM3, QM3, VM1
		CTPA20FR		2.0				DT4, ZM3, QM3, VM1
		CTPA07FRN	8.0	0.7	4.5	0°	0.05	ZM3
		CTPA10FRN	12.0	1.0	6.7			ZM3
		CTPA15FRN	16.0	1.5	9.2			DT4, ZM3, QM3, VM1
		CTPA20FRN		2.0				DT4, ZM3, QM3, VM1
		CTPA20FRN-P					0.1	PD1
	⟨PD1⟩	CTPA30FRN		3.0			0.05	QM3
		CTPA07FL	8.0	0.7	4.5	16°	0.05	ZM3
		CTPA10FL	12.0	1.0	6.7			ZM3
		CTPA15FL	16.0	1.5	9.2			DT4, ZM3
		CTPA20FL		2.0				DT4, ZM3
		CTPA10FLN	12.0	1.0	6.7	0°		ZM3
		CTPA10FLND	16.0		9.2			ZM3
		CTPA15FLN		1.5				DT4, ZM3, QM3, VM1
		CTPA20FLN		2.0				DT4, ZM3, QM3, VM1
		CTPA20FLN-P					0.1	PD1
	⟨PD1⟩	CTPA30FLN		3.0			0.05	QM3
		CTPA07FLK	6.5	0.7	4.5	16°	0.05	ZM3
		CTPA10FLK	11.0	1.0	6.7			ZM3
		CTPA10FLKD	16.0		9.2			ZM3
		CTPA15FLK	14.5	1.5				DT4, ZM3, QM3, VM1
		CTPA20FLK		2.0				DT4, ZM3, QM3, VM1

● R-hand shown.
● Rechte Ausführung.

☆θ shows the angle when the holder is set.
☆ Winkeldarstellung im eingebautem Zustand.

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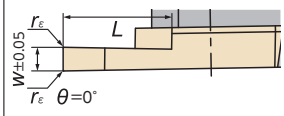
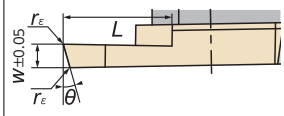
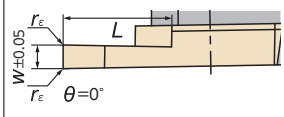
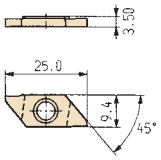
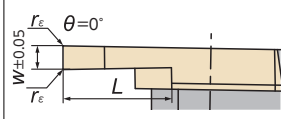
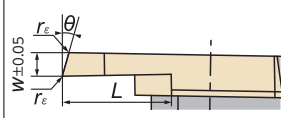
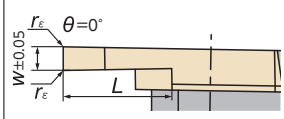
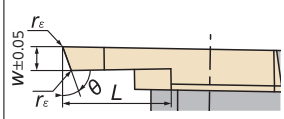
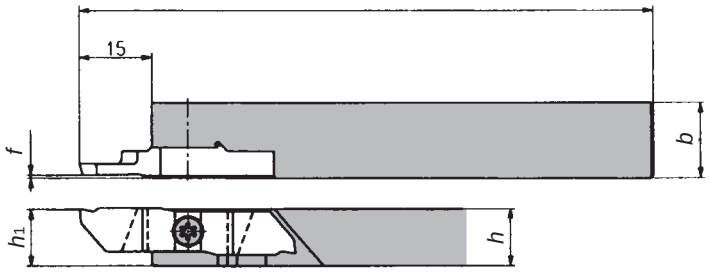
CTPA

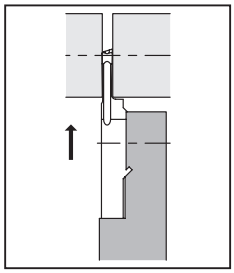
Shape	Cutting edge shape	ISO	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) w	L	θ	r_ε	Grade
<With chipbreaker>		CTPA20FRS	16.0	2.0	9.2	0°	0.05	ZM3
		CTPA20FRV Ⓜ				20°	0.0	KM1, VM1
		CTPA20FRNV Ⓜ				0°		KM1
		CTPA20FLS	16.0	2.0	9.2	0°	0.05	ZM3
		CTPA20FLV Ⓜ				20°	0.0	VM1
		CTPA20FLNV Ⓜ				0°		KM1
●R-hand shown. ●Rechte Ausführung.		CTPA20FLKV Ⓜ	14.5			20°		KM1, VM1

☆θ indicates the value when the insert is set into the holder.
☆ Winkelangabe gilt bei montierter Platte im Halter.

Maximum diameter for cutting off : ϕ20
Maximaler Abstechdurchmesser : ϕ20mm

CTPW





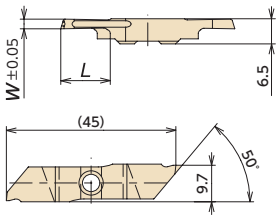
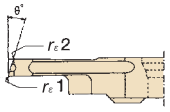
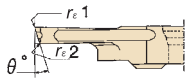
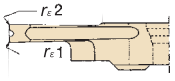
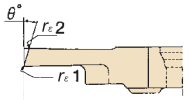
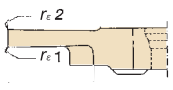
● Right-hand shown.
● Rechte Ausführung.

Holders . Halter

Toolholder	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) h	b	L_1	h_1	f	Insert	Parts: Clamping screw	Parts: Wrench
									
CTPWL10A	20.0	10	12	120	9.95	0.6	CTPW25 R/L	LR1S-4*10	LLR-25S
CTPWR10			16						
CTPWL12A		12	12		11.95				
CTPWR12			16						
CTPWR/L16		16	16		15.95				
CTPWR/L20		20	20		19.95				

Inserts . Schneidplatten

CTPW

Shape	Cutting edge shape	ISO	Chip-breaker	Max. cutting-off dia. (mm) ϕD	Dimensions (mm) w	L	θ	$r_{\varepsilon 1}$	$r_{\varepsilon 2}$	Grade
		CTPW25FR/L	Yes	20.0	2.5	12	17°	0.05	0.20	ZM3
		CTPW25FR/LK					17°	0.05	0.20	ZM3
		CTPW25FR/LN					0°	0.05	0.05	ZM3
		CTPW25FR/LP Ⓜ	No				17°	0.05	0.20	ZM3
		CTPW25FR/LNV* Ⓜ					0°	0.00	0.00	ZM3

L-hand shown.
Linke Ausführung.

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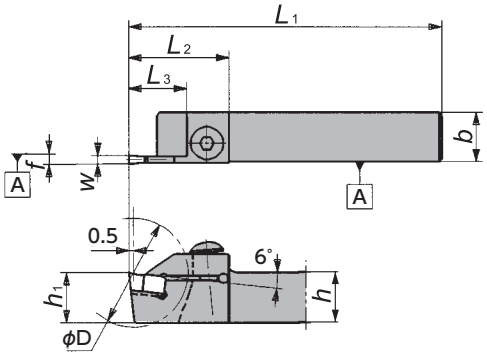
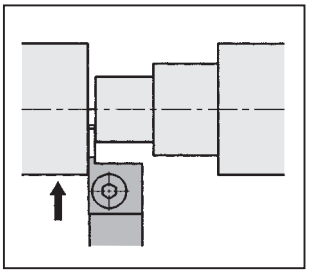
NTK CUTTING TOOLS

Maximum diameter for cutting off : ϕ45
Maximaler Abstechdurchmesser : ϕ45mm

CTV





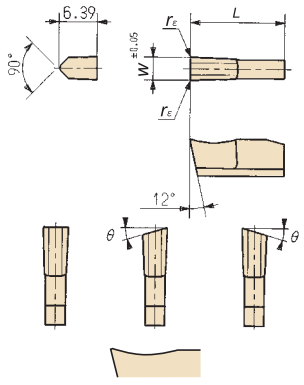
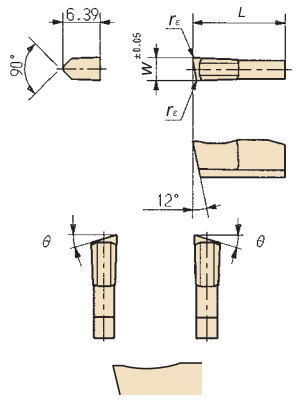
● Right-hand shown.
● Rechte Ausführung.

Holders . Halter

Part No.	Max. cutting-off dia. (mm) φD	Dimensions (mm) w	h	b	L_2	h_1	f	L_2	L_3	Insert	Parts: Clamping screw	Parts: Wrench
CTV R/L 25-30B	45.0	3.0	25	25	150	25	0.5	34.5	23.5	CTV	BS0625	LW-4

Inserts . Schneidplatten

CTV

Shape	Dimensions (mm) w	L	θ	r_ε	ISO	Grade
  Neutral (N) R-hand (R) L-hand (L)	3.0	12	0°	0.20	CTV30N	ZM3, QM3
	3.0	12	8°	0.20	CTV30R	ZM3
	3.0	12	8°	0.20	CTV30L	ZM3
  R-hand (R) L-hand (L)	3.0	12	8°	0.05 or less	CTV30R00A	ZM3
	3.0	12	17°	0.05 or less	CTV30R00B	ZM3

Cut-Off

MEMO

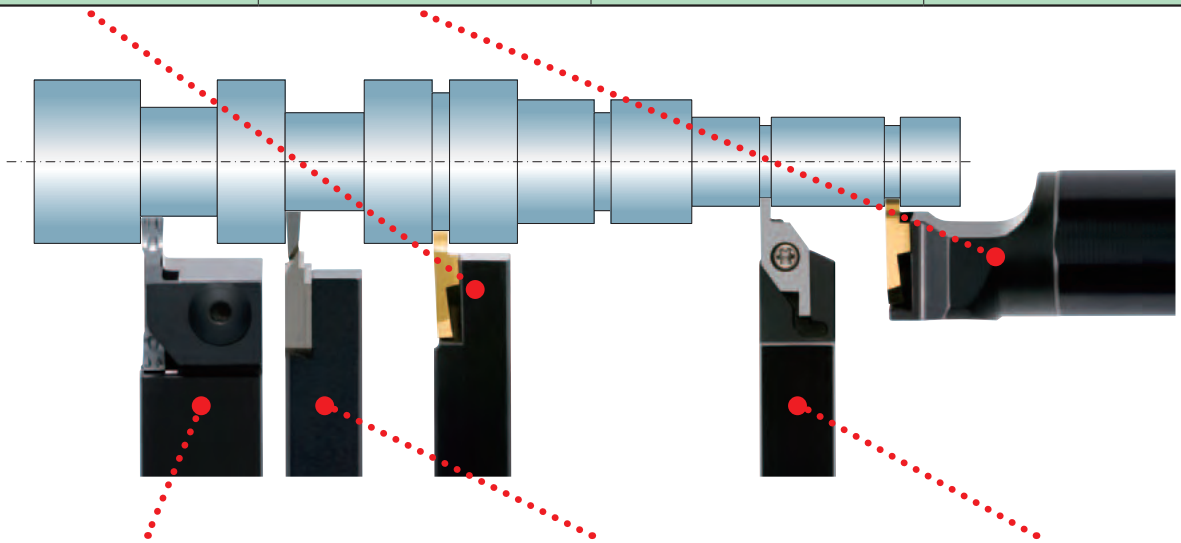
Grooving
Stechen

G

Selection guide for grooving
Auswahlhilfe für Stechen

Grooving

GTT	DS-GTT	NGTN	NGTB
 ➡ G140	 ➡ G140	 ➡ G142, G148	 ➡ G142, G148
Groove width : 0.3 ~ 3.0	Groove width : 0.3 ~ 3.0	Groove width : 0.3 ~ 5.5	Groove width : 0.3 ~ 5.5
Machining depth : 0.25 ~ 2.7	Machining depth : 0.25 ~ 2.7	Machining depth : 0.25 ~ 5.5	Machining depth : 0.25 ~ 5.5
Shank size : □ 8 ~□ 25	Shank dia. : ϕ 14 ~ϕ 25.4	Shank size : □ 16	Shank size : □ 16 • □ 25
Inserts : GTMH32 • GTMX32 • GTM32		Inserts : GTMH32 • GTMX32 • GTM32 • GTMA43 GTMT43 • GTM43	
For narrow grooving applications such as O-ring machining !! Für kleine Einstiche wie z.B. O-Ringnuten !!		3 edges for cost saving !! Kostenreduzierung durch 3 Schneiden !!	
Y-axis type ··· ➡ G142			



GTWP	GTPA	CSV
SCRUM DUO  ➡ G136	 ➡ G150	 ➡ G138
Groove width : 3.0 ~ 6.0	Groove width : 2.0 ~ 2.5	Groove width : 0.25 ~ 1.5
Machining depth : 7.0 ~ 25	Machining depth : 3.0 ~ 5.0	Machining depth : 0.15 ~ 2.6
Shank size : 12 × 16 ~□ 25	Shank size : □ 10 ~□ 16	Shank size : □ 7 ~□ 12
Inserts : GVW □□□ N □□	Inserts : GTPA □□ FRN □□	Inserts : CSVG11
Good chip control for grooving and side turn Sehr gute Spankontrolle bei Stech und Stechdrehen	Suitable for machining of spools !! Sehr gut geeignet für die Spulenbearbeitung !!	Suitable for small-diameter work pieces !! Geeignet für Werkstücke mit kleinen Durchmessern !!
	Y-axis type ··· ➡ G150	

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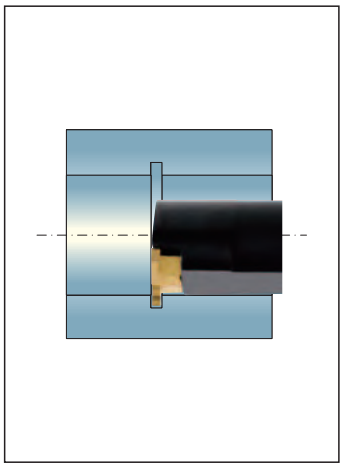
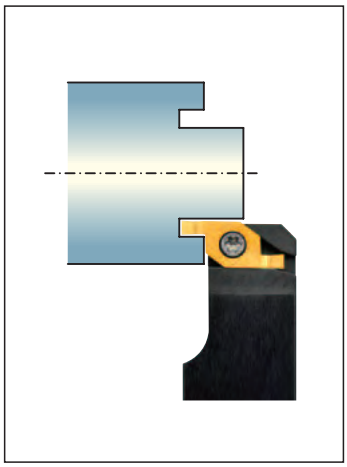
Internal grooving



STICK DUO

SBG	BG, S-BG
	
➡ G151	➡ G152
Groove width : 0.5 ~ 2.0	Groove width : 0.5 ~ 2.0
Machining depth : 0.8 ~ 2.2	Machining depth : 1.2 ~ 3.2
Shank dia. : ϕ 3 ~ ϕ 8	Shank dia. : ϕ 8 ~ ϕ 20
Min. machining dia. : ϕ 3 ~	Inserts : GTG □□
For small diameter grooving !! Für Einstiche mit kleinen Durchmessern !!	3 edges for cost saving !! Kostenreduzierung durch 3 Schneiden !!

Face grooving

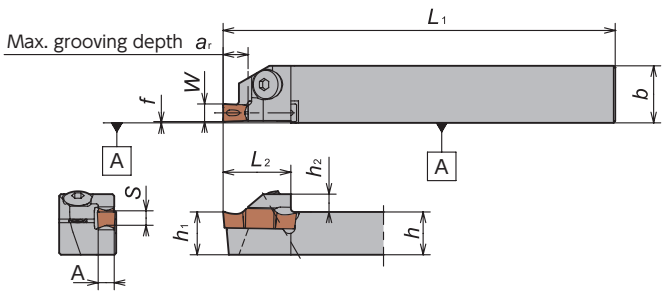


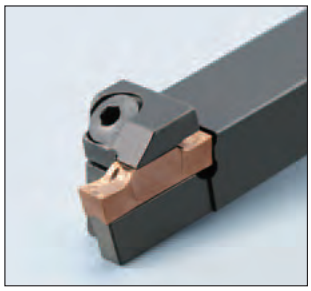
CH-FGV	DS-FGV	FGV
		
➡ G156	➡ G156	➡ G156
Groove width : 1.0 ~ 2.0	Groove width : 1.0 ~ 2.0	Groove width : 1.0 ~ 2.0
Machining depth : 1.5 ~ 3.0	Machining depth : 1.5 ~ 3.0	Machining depth : 1.5 ~ 3.0
Shank size : □ 10 ~□ 16	Shank dia. : ϕ 19.05 ~ ϕ 25.4	Shank dia. : ϕ 16.0 ~ ϕ 25.4
Inserts : FGV □□□	Inserts : FGV □□□	Inserts : FGV □□□
Suitable for front gang type tool post Geeignet für Drehmaschinen mit Gang Type System	Holders for drill sleeve Halter mit runden Schäften	For gang type tool posts Für Drehmaschinen mit Gang Type System

SCRUM DUO Series NEW

■ Holders . Halter

For Swiss lathe (shank size □ 16) . Für Präzisions-Drehmaschinen (Schaftbreite 16mm)



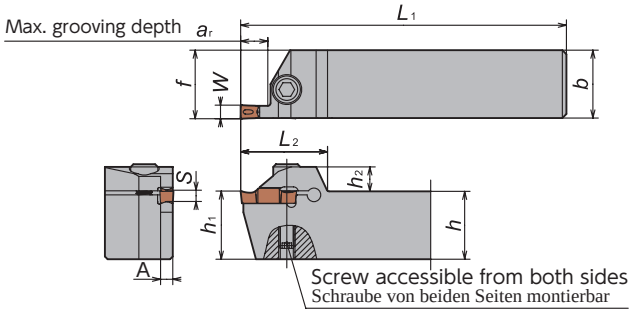


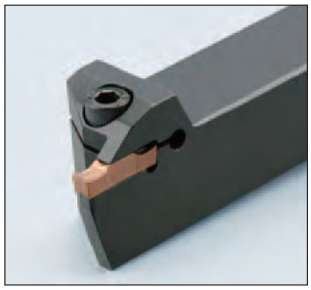
● Right-hand shown / Rechte Ausführung

Toolholder	Width W	Max. grooving depth a_r	Dimensions (mm) h	b	h_1	h_2	f	L	L_2	A	Height *1 S	Insert	Parts Bolt	Wrench
GTWP□1216-3D07	3	7	12	16	12	5	0.3	120	19.5	2.6	D	GWP○300	AOB-5*16	LW-3S
GTWP□1616-3D09		9	16	16	16				22					
GTWP□1216-4E07	4	7	12	16	12				19.5	3.5	E	GWP○400		
GTWP□1616-4E09		9	16	16	16				22					
GTWP□1216-5F07	5	7	12	16	12				19.5	4.5	F	GWP○500		
GTWP□1616-5F09		9	16	16	16				22					

*Please make sure the insert height fit on the toolholder
*Auf präzise Drehmitte achten

For mutipurpose lathe(shank size □ 20, □ 25) . Für allgemeine Drehbearbeitung (Schaftbreite 20mm, 25mm)





● Right-hand shown / Rechte Ausführung

Toolholder	Width W	Max. grooving depth a_r	Dimensions (mm) h	b	h_1	h_2	f	L	L_2	A	Height *1 S	Insert	Parts Bolt	Wrench	Wrench *2
GTWP□2020K-3D10	3	10	20	20	20	8	20.2	125	29	2.6	D	GWP○300	CS0520W	LW-4	LW-2.5
GTWP□2525M-3D10			25	25	25	9	25.2	150	32				CS0625W	LW-5	LW-3
GTWP□2020K-3D20		20	20	20	20	8	20.2	125	41				CS0520W	LW-4	LW-2.5
GTWP□2525M-3D20			25	25	25	9	25.2	150	44				CS0625W	LW-5	LW-3
GTWP□2020K-4E10	4	10	20	20	20	8	20.3	125	29	3.5	E	GWP○400	CS0520W	LW-4	LW-2.5
GTWP□2525M-4E10			25	25	25	9	25.3	150	32				CS0625W	LW-5	LW-3
GTWP□2020K-4E20		20	20	20	20	8	20.3	125	41				CS0520W	LW-4	LW-2.5
GTWP□2525M-4E20			25	25	25	9	25.3	150	44				CS0625W	LW-5	LW-3
GTWP□2020K-5F10	5	10	20	20	20	8	20.3	125	29	4.5	F	GWP○500	CS0520W	LW-4	LW-2.5
GTWP□2525M-5F10			25	25	25	9	25.3	150	32				CS0625W	LW-5	LW-3
GTWP□2020K-5F20		20	20	20	20	8	20.3	125	41				CS0520W	LW-4	LW-2.5
GTWP□2525M-5F20			25	25	25	9	25.3	150	44				CS0625W	LW-5	LW-3
GTWP□2020K-6G12	6	12	20	20	20	8	20.35	125	34	5.3	G	GWP○600	CS0520W	LW-4	LW-2.5
GTWP□2525M-6G12			25	25	25	9	25.35	150	37				CS0625W	LW-5	LW-3
GTWP□2020K-6G25		25	20	20	20	8	20.35	125	49				CS0520W	LW-4	LW-2.5
GTWP□2525M-6G25			25	25	25	9	25.35	150	52				CS0625W	LW-5	LW-3

*Please make sure the insert height fit on the toolholder
*Auf präzise Drehmitte achten
*Wrench for back side clamping is optional
*Schlüssel für das rückseitige Klemmen ist optional erhältlich

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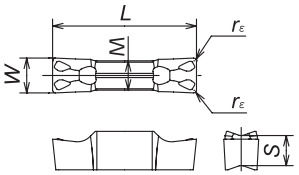
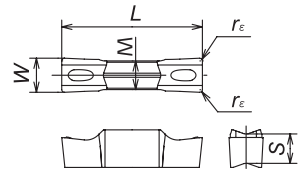
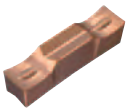
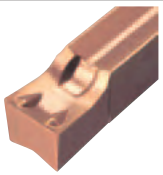
Inserts . Schneidplatten

Insert		ISO	Dimensions (mm) W Width	W Tolerance	r_ε	M	L	Height *1 S	Grade
	**GW** Periphery ground Umfangs-Geschliffen 	GWPG300N02D-GW	3.0	± 0.025	0.2	2.5	20.6	D	DM4
		GWPG300N04D-GW			0.4				DM4
		GWPG400N02E-GW	4.0		0.2	3.4		E	DM4
		GWPG400N04E-GW			0.4				DM4
		GWPG400N08E-GW			0.8				DM4
		GWPG500N02F-GW	5.0		0.2	4.3		F	DM4
		GWPG500N04F-GW			0.4				DM4
		GWPG500N08F-GW			0.8				DM4
		GWPG600N02G-GW	6.0		0.2	5.2	25.6	G	DM4
		GWPG600N04G-GW			0.4				DM4
		GWPG600N08G-GW			0.8				DM4
	GW Periphery unground Gepresste Form 	GWPM300N04D-GW	3.0	± 0.03	0.4	2.5	20.6	D	DM4
		GWPM400N04E-GW	4.0			3.4		E	DM4
		GWPM500N04F-GW	5.0	± 0.04		4.3		F	DM4
		GWPM600N04G-GW	6.0			5.2	25.6	G	DM4
	**GV** Periphery ground Umfangs-Geschliffen 	GWPG300N02D-GV	3.0	± 0.025	0.2	2.5	20.6	D	DM4
		GWPG300N04D-GV			0.4				DM4
		GWPG400N02E-GV	4.0		0.2	4.3		E	DM4
		GWPG400N04E-GV			0.4				DM4
		GWPG500N02F-GV	5.0		0.2	4.3		F	DM4
		GWPG500N04F-GV			0.4				DM4
		GWPG600N02G-GV	6.0		0.2	4.3	25.6	G	DM4
		GWPG600N04G-GV			0.4				DM4

*Please make sure the insert height fit on the toolholder
*Auf präzise Drehmitte achten

Chipbreaker . Spanbrecher

Type	Shape	Features, usage
GW		● Excellent in both edge sharpness and chipcontrol Bemerkenswerte Schärfe und Spankontrolle ● Applicable for both grooving and side turning Für Stechen und Stechdrehen geeignet ● Both ground and moulded chipbreakers are available Geschliffene und gepresste Spanleiter verfügbar
GV		● Excellent sharpness with high-rake angle Excellente Schärfe mit steilem Spanwinkel ● Chipbreaker designed to avoid chips marking the component wall. Neue Spanbrecher-Technologie. Verhindert das Einklemmen der Späne zwischen Werkstück und Schneide.

CSV

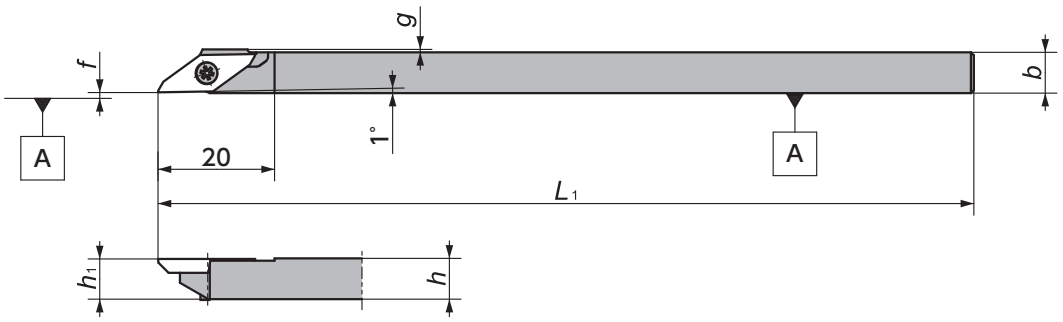


Figure-1

● Right-hand shown.
● Rechte Ausführung.

CSV-NC/CSV-NC-F

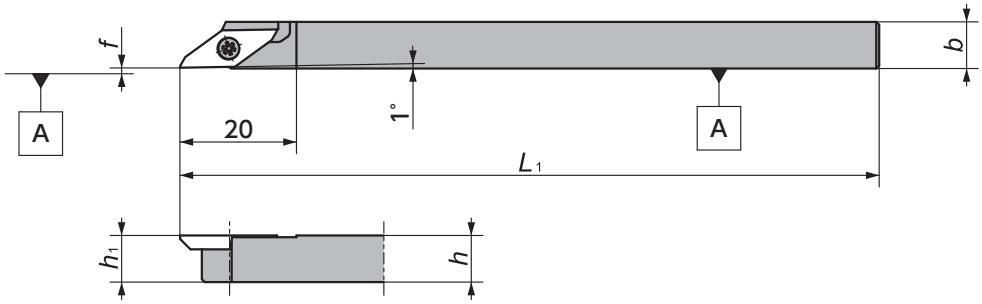


Figure-2

● Right-hand shown.
● Rechte Ausführung
● "*f*" dimension of CSV R/L 08NC-F is very small
● Sehr kleines Versatz-Maß (*f*) bei Ausführung CSVR/L08NC-F

Holders . Halter

Shape	Toolholder	Dimensions (mm)						Insert	Parts	
									Clamping screw	Wrench
		h	*b*	L_1	h_1	*f*	*g*			
Figure-1	CSV R/L 07GX	7	7	85	7	0.1	0.5	CSVG **G139**	LRIS-2.5＊7	CLR-15S
	CSV R/L 07			140						
	CSV R/L 08	8	8		8		0.0			
	CSV R/L 08GX			85						
	CSV R/L 095	9.5	9.5	140	9.5					
	CSV R/L 10	10	10		10					
	CSV R/L 12GX	12	12	85	12					
	CSV R/L 12			140						
Figure-2	CSV R/L 08NC	8	8	120	8	0.1	–	CSVG **G139**	LRIS-2.5＊7	CLR-15S
	CSV R/L 08NC-F					0.0 ∫ 0.1				
	CSV R/L 10GXNC	10	10	85	10	0.1				
	CSV R/L 10NC			120						
	CSV R/L 12NC	12	12		12					

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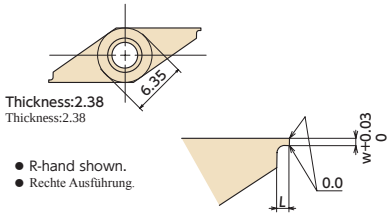
Inserts . Schneidplatten

Mirror finish

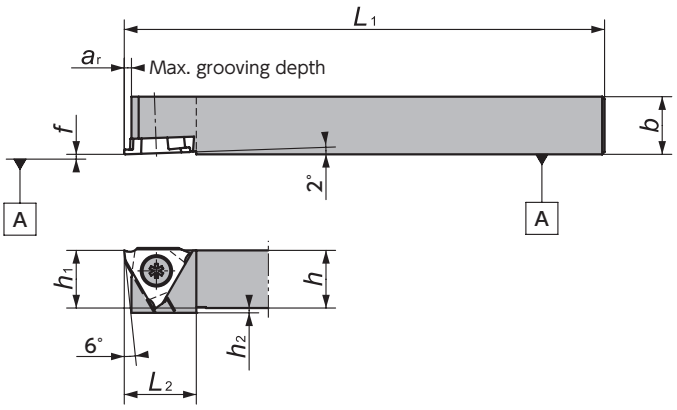


● R-hand shown.
● Rechte Ausführung.

CSVG Insert	Chip-breaker	Dimensions (mm) w	L	r_ε	Maximum machining depth	ISO	Grade
	–	0.25	0.50	–	0.15	CSVG11FRV025	VM1
	–	0.30	0.50	–	0.15	CSVG11FRV030	VM1
	–	0.35	0.50	–	0.15	CSVG11FRV035	VM1
	–	0.40	0.50	–	0.15	CSVG11FRV040	VM1
	–	0.45	1.00	–	0.45	CSVG11FRV045	VM1
	–	0.50	1.00	–	0.45	CSVG11FRV050	VM1
	–	0.55	1.00	–	0.45	CSVG11FRV055	VM1
	–	0.60	1.00	–	0.45	CSVG11FRV060	VM1
	–	0.65	1.00	–	0.45	CSVG11FRV065	VM1
	–	0.70	1.00	–	0.45	CSVG11FRV070	VM1
	–	0.75	2.00	–	1.40	CSVG11F$^{R}_{L}$V075	VM1
	–	0.80	2.00	–	1.40	CSVG11FRV080	VM1
	–	0.85	2.00	–	1.40	CSVG11FRV085	VM1
	–	0.90	2.00	–	1.40	CSVG11FRV090	VM1
	–	0.95	2.00	–	1.40	CSVG11F$^{R}_{L}$V095	VM1
	–	1.00	2.00	–	1.40	CSVG11FRV100	VM1
	–	1.10	3.00	–	2.60	CSVG11FRV110	VM1
	–	1.20	3.00	–	2.60	CSVG11F$^{R}_{L}$V120	VM1
	–	1.30	3.00	–	2.60	CSVG11FRV130	VM1
	–	1.40	3.00	–	2.60	CSVG11FRV140	VM1
	–	1.50	3.00	–	2.60	CSVG11FRV150	VM1

GTT

Screw accessible from both sides
Schraube von beiden Seiten montierbar



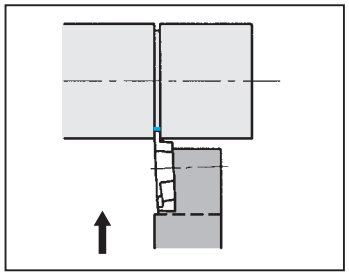


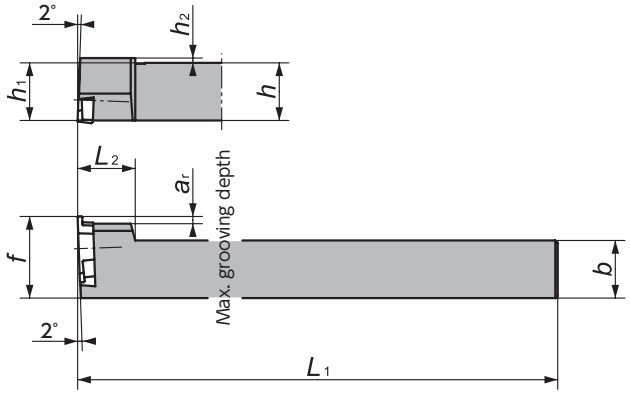
Figure-1

- Right-hand shown.
- Rechte Ausführung.

*Use L-hand inserts for R-hand holder.
*Linke Schneidplatte mit rechtem Halter verwenden.

CH-GTT

Screw accessible from both sides
Schraube von beiden Seiten montierbar



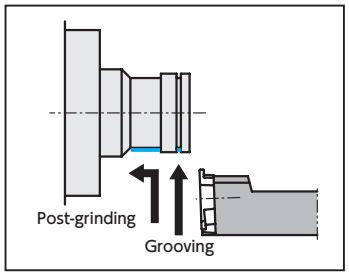


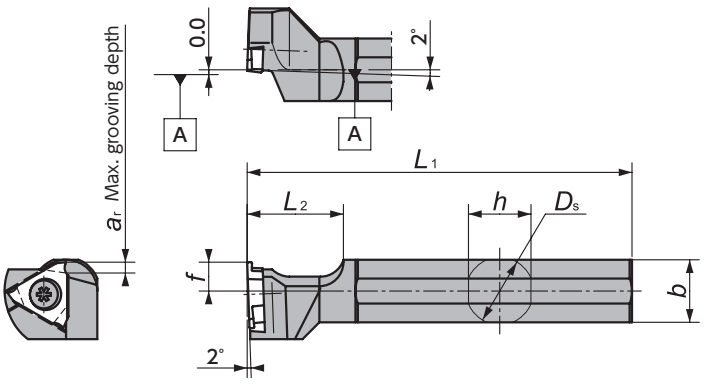
Figure-2

- Left-hand shown.
- Linke Ausführung.

*Use R-hand inserts for L-hand holder.
*Rechte Schneidplatte für rechten halter verwenden.

DS-GTT

DS holder



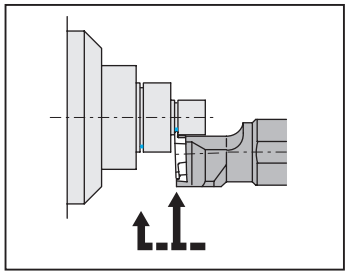


Figure-3

- Left-hand shown.
- Linke Ausführung.

*Use R-hand inserts for L-hand holder.
*Rechte Schneidplatte für rechten halter verwenden.

*TBMH32 inserts for back turning can be mounted onto GTT holders.
*TBMH32 Schneiplatte kann im Haltertyp GTT verwendet werden.

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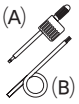
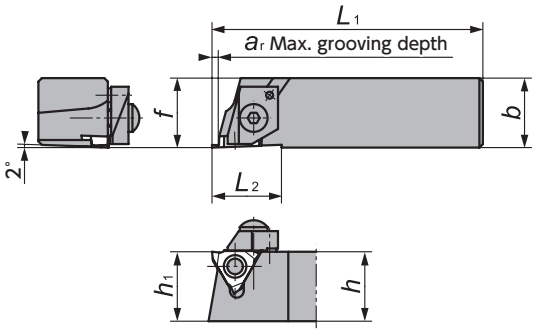
Holders . Halter

Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	f	L_2	a_r	h_2	D_s	Width of groove (mm) w	Insert	Parts: Clamping screw	Parts: Wrench
													 (A) (B)	 (A) (B)
Figure-1	GTTR/L08F00	8	8	80	8	0	15	1.6	5	–	0.30 ~ 3.00	GTM32 GTMH32 GTMX32 **G144 ~G147**	R-hand : LR-S-4∗10PW (A) L-hand : LR-S-4∗5.8 (B)	CLR-15S (A)
	GTTR0810F00		10										LR-S-4∗10PW (A)	
	GTTR/L08K00		8	120									R-hand : LR-S-4∗10PW (A) L-hand : LR-S-4∗5.8 (B)	
	GTTR0810K00		10										LR-S-4∗10PW (A)	
	GTTR/L10F00	10	10	80	10				3					
	GTTR/L10K00			120										
	GTTR/L12F00	12	12	80	12				1					
	GTTR/L12K00			120										
	GTTR/L16H00	16	16	100	16				0					
	GTTR/L16K00			120										
	GTTR/L20K00	20	20	125	20			2.7	0		1.45 ~ 3.00	TBMH32 (back turning) (back turning) **E115**		
	GTTR/L25M00	25	25	150	25				0					
	GTTR/L10F15	10	10	80	10				3					
	GTTR/L10K15			120										
	GTTR/L12F15	12	12	80	12				1					
	GTTR/L12K15			120										
	GTTR/L16H15	16	16	100	16				0					
	GTTR/L16K15			120										
	GTTR/L10F25	10	10	80	10				3		2.50 ~ 3.00			
	GTTR/L10K25			120										
	GTTR/L12F25	12	12	80	12				1					
	GTTR/L12K25			120										
	GTTR/L16H25	16	16	100	16				0					
	GTTR/L16K25			120										
Figure-2	CH-GTTL10H00	10	10	100	10	15	12	1.5	3	–	0.30 ~ 3.00	GTM32 GTMH32 GTMX32 **G144 ~G147** TBMH32 (back turning) (back turning) **E115**	LR-S-4∗9 (B)	RLR-20S (B)
	CH-GTTL12H00	12	12		12	17			1					
Figure-3	DS-GTTL14F	13	13	80	—	6	20	1.6	—	14.000	0.30 ~ 3.00		LR-S-4∗9 (B)	RLR-20S (B)
	DS-GTTL15H	15	15	100						15.875				
	DS-GTTL16X			95						16.000				
	DS-GTTL19	18	18	120						19.050				
	DS-GTTL20	19	19							20.000				
	DS-GTTL22	21	21							22.000				
	DS-GTTL25	24	24			10				25.400				

NGTN

Without offset



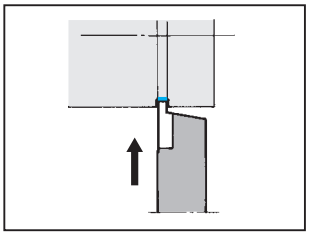
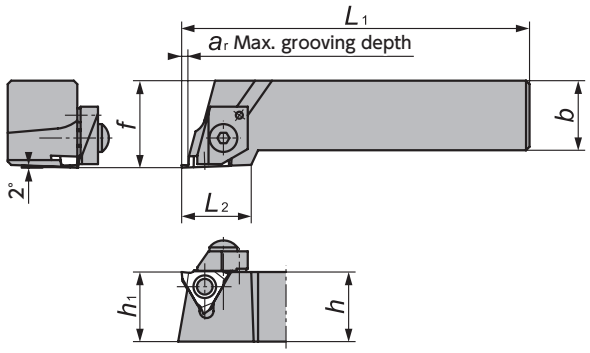


Figure-1

- Right-hand shown.
- Rechte Ausführung.

NGTB

With offset



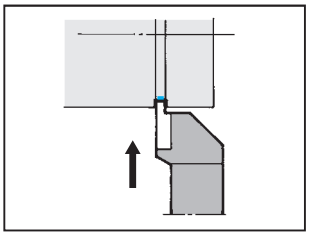
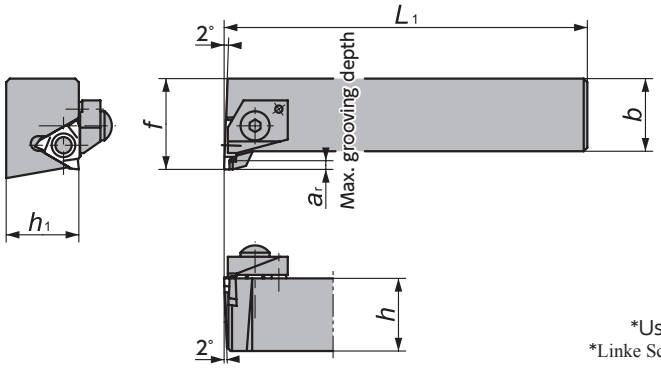


Figure-2

- Right-hand shown.
- Rechte Ausführung.

NGTA



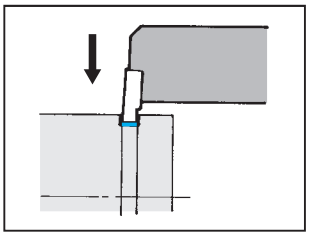


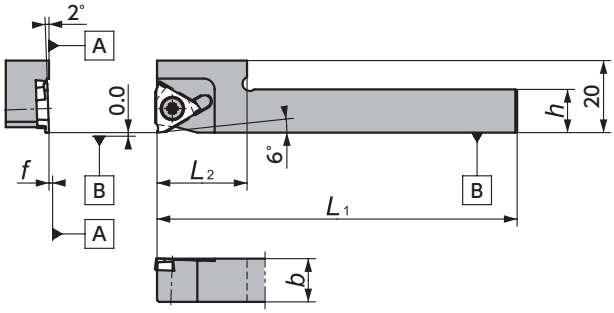
Figure-3

- Right-hand shown.
- Rechte Ausführung.

*Use L-hand inserts for R-hand holder.
*Linke Schneidplatte mit rechtem Halter verwenden.

Y-GTT

Y-axis holder



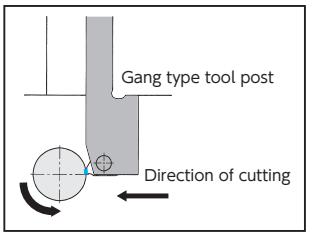


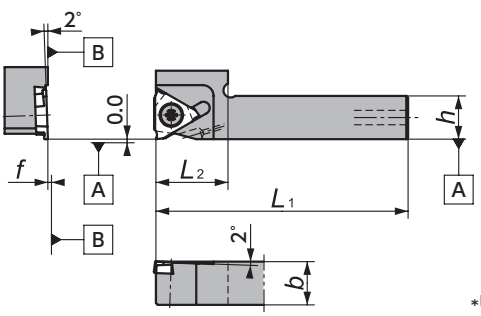
Figure-4

- Right-hand shown.
- Rechte Ausführung.

*Use R-hand inserts for R-hand holder.
*Rechte Schneidplatte für rechten halter verwenden.

Y-GTT-OH

Y-axis with high-pressure coolant
Y-Achsen Typ hohem Kühlmitteldruck



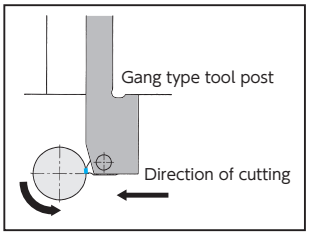


Figure-5

- Right-hand shown.
- Rechte Ausführung.

*Use R-hand inserts for R-hand holder.
*Rechte Schneidplatte für rechten halter verwenden.

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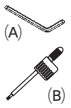
NTK CUTTING TOOLS

Holders . Halter

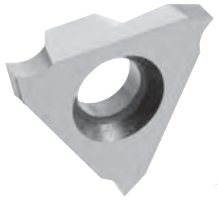
Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	f	L_2	a_r		Width of groove (mm) w	Insert	Parts: Clamp	Clamping bolt	Spring	Clamping screw	Wrench
																 (A) (B)
Figure-1	NGTNR/L161632-00	16	16	78	16	16	20	1.6	—	0.30～3.00	GTM32 GTMH32 GTMX32 **G144～G147**	CPR/L5S	AOS-5*20	ASG-5	—	LW-2.5 (A)
	NGTNR161632-15							2.7		1.45～3.00						
	NGTNR161632-25									2.50～3.00						
Figure-2	NGTBR202032-00S	20	20	125	20	25	25	1.6	—	0.30～3.00	GTM32 GTMH32 GTMX32 **G144～G147**	CPR/L5	AOS-5*25	ASG-5	—	LW-2.5S (A)
	NGTBR202032-15S							2.7		1.45～3.00						
	NGTBR202032-25S									2.50～3.00						
	NGTBR252532-00S	25	25	150	25	30		1.6		0.30～3.00						
	NGTBR252532-15S							2.7		1.45～3.00						
	NGTBR252532-25S									2.50～3.00						
Figure-3	NGTAL202032-00S	20	20	125	20	25	—	1.6	—	0.30～3.00	GTM32 GTMH32 GTMX32 **G144～G147**	CPR/L5*	AOS-5*25	ASG-5	—	LW-2.5 (A)
	NGTAL202032-15S							2.7		1.45～3.00						
Figure-4	Y-GTTR10S	10	10	120	—	0	20	1.6	—	0.30 ⟆ 3.00	GTM32 GTMH32 GTMX32 **G144～G147** TBMH32 (back turning) **E115**	—	—	—	LR-S-4* 10PW	CLR-15S (B)
	Y-GTTR10						25									
	Y-GTTR10L						30									
	Y-GTTR12S	12	12				20									
	Y-GTTR12						25									
	Y-GTTR12L						30									
Figure-5	Y-GTTR12SOH	12	12	70	—	0	20	1.6	—	0.30 ⟆ 3.00		—	—	—	LR-S-4* 10PW	CLR-15S (B)

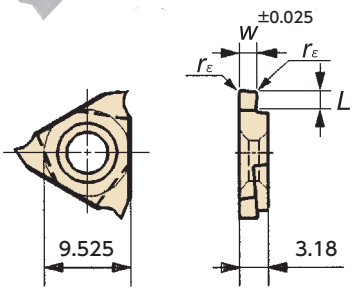
*NGTA Right hand holders require Left hand clamps, Left hand holders require Right hand clamps.
*NGTA in rechter Ausführung erfordern linke Klemmpratze. Linke Ausführung erfordert rechte Klemmpratze.

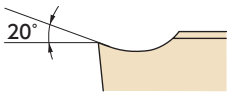
Inserts . Schneidplatten

GTMH32

Tolerance of groove width $w^{\pm 0.025}$
Breiten-Toleranz ±0.025



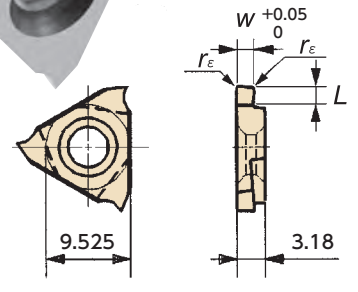


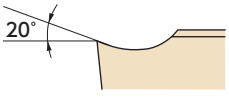


● Right-hand shown.
● Rechte Ausführung.

Insert	Dimensions (mm) w	L	rε	Maximum machining depth	ISO	Grade
	0.33	0.6	0.03	0.3	GTMH32033R/LE	ZM3
	0.43	1.2	0.03	0.9	GTMH32043R/LE	ZM3
	0.53	1.2	0.05	0.9	GTMH32053R/LE	ZM3
	0.75	2.0	0.05	1.6	GTMH32075R/LE	ZM3
	0.95	2.0	0.05	1.6	GTMH32095R/LE	ZM3
	1.00	2.0	0.05	1.6	GTMH32100R/LE	ZM3
	1.20	2.0	0.05	1.6	GTMH32120R/LE	ZM3
	1.40	2.0	0.05	1.6	GTMH32140R/LE	ZM3
	1.50	3.0	0.05	2.7	GTMH32150R/LE	ZM3
	1.80	3.0	0.05	2.7	GTMH32180R/LE	ZM3
	2.00	3.0	0.05	2.7	GTMH32200R/LE	ZM3
	2.25	3.0	0.05	2.7	GTMH32225R/LE	ZM3
	2.50	3.0	0.05	2.7	GTMH32250R/LE	ZM3
	2.75	3.0	0.05	2.7	GTMH32275R/LE	ZM3
	3.00	3.0	0.05	2.7	GTMH32300R/LE	ZM3
	1.00	2.0	0.1	1.6	GTMH32100R/LE01	ZM3
	1.20	2.0	0.1	1.6	GTMH32120R/LE01	ZM3
	1.50	3.0	0.1	2.7	GTMH32150R/LE01	ZM3
	2.00	3.0	0.1	2.7	GTMH32200R/LE01	ZM3

Tolerance of groove width $w^{+0.05}_{0}$
Breiten-Toleranz 0-+0.05





● Right-hand shown.
● Rechte Ausführung.

	0.30	0.6	0.03	0.3	GTMH32030R/LU	ZM3
	0.50	1.2	0.05	0.9	GTMH32050R/LU	ZM3
	0.75	2.0	0.05	1.6	GTMH32075R/LU	ZM3
	0.95	2.0	0.05	1.6	GTMH32095R/LU	ZM3
	1.00	2.0	0.05	1.6	GTMH32100R/LU	ZM3
	1.03	2.0	0.05	1.6	GTMH32103RU	ZM3
	1.25	2.0	0.05	1.6	GTMH32125R/LU	ZM3
	1.45	3.0	0.05	2.7	GTMH32145R/LU	ZM3
	1.50	3.0	0.05	2.7	GTMH32150R/LU	ZM3
	1.75	3.0	0.05	2.7	GTMH32175R/LU	ZM3
	2.00	3.0	0.05	2.7	GTMH32200R/LU	ZM3
	2.50	3.0	0.05	2.7	GTMH32250R/LU	ZM3

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NTK CUTTING TOOLS

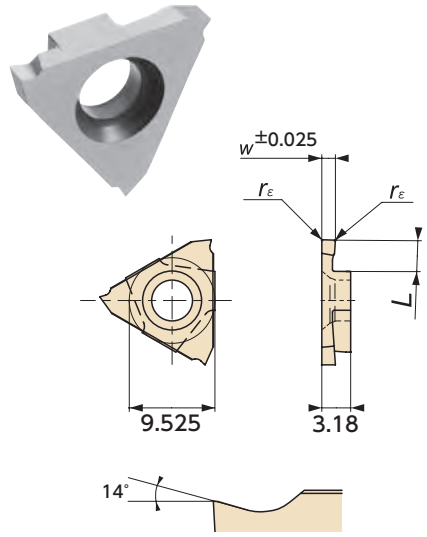
● Inserts . Schneidplatten

GTMX32

Insert

Groove and side turn
Stechen und seitliches Drehen

Cost effective



● Right-hand shown.
● Rechte Ausführung.

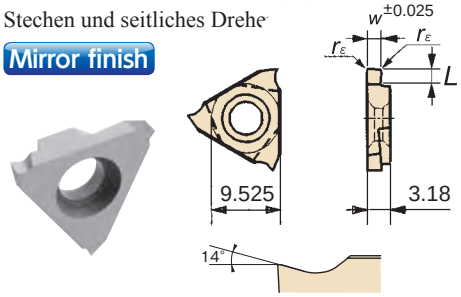
Dimensions (mm)				ISO	Grade
w	L	rε	Maximum machining depth		
0.30	0.6	0.05	0.25	GTMX32030RT	DT4, QM3
0.33	0.6	0.05	0.25	GTMX32033RT	QM3
0.43	1.2	0.05	0.9	GTMX32043RT	DT4, QM3
0.50	1.2	0.05	0.9	GTMX32050RT	DT4, QM3
0.53	1.2	0.05	0.9	GTMX32053RT	QM3
0.65	1.2	0.05	0.9	GTMX32065RT	DT4, QM3
0.75	2.0	0.05	1.6	GTMX32075R/LT	DT4, QM3
0.80	2.0	0.05	1.6	GTMX32080RT	DT4, QM3
0.95	2.0	0.05	1.6	GTMX32095R/LT	DT4, QM3
1.00	2.0	0.05	1.6	GTMX32100RT	DT4, QM3
1.10	2.0	0.05	1.6	GTMX32110RT	QM3
1.20	2.0	0.05	1.6	GTMX32120RT	DT4, QM3
1.25	2.0	0.05	1.6	GTMX32125RT	DT4, QM3
1.30	2.0	0.05	1.6	GTMX32130RT	DT4, QM3
1.40	2.0	0.05	1.6	GTMX32140RT	DT4, QM3
1.45	3.0	0.05	2.7	GTMX32145RT	QM3
1.50	3.0	0.05	2.7	GTMX32150R/LT	DT4, QM3
1.60	3.0	0.05	2.7	GTMX32160RT	DT4, QM3
1.75	3.0	0.05	2.7	GTMX32175RT	DT4, QM3
1.80	3.0	0.05	2.7	GTMX32180RT	DT4, QM3
2.00	3.0	0.05	2.7	GTMX32200R/LT	DT4, QM3
2.50	3.0	0.05	2.7	GTMX32250R/LT	DT4, QM3
3.00	3.0	0.05	2.7	GTMX32300RT	DT4, QM3
1.00	2.0	0.1	1.6	GTMX32100RT01	DT4, QM3
1.20	3.0	0.1	1.6	GTMX32120RT01	DT4, QM3
1.50	3.0	0.1	2.7	GTMX32150RT01	DT4, QM3
2.00	3.0	0.1	2.7	GTMX32200R/LT01	DT4, QM3
2.50	3.0	0.1	2.7	GTMX32250RT01	DT4, QM3
1.50	3.0	0.2	2.7	GTMX32150RT02	DT4, QM3
2.00	3.0	0.2	2.7	GTMX32200RT02	DT4, QM3
2.50	3.0	0.2	2.7	GTMX32250RT02	DT4, QM3
3.00	3.0	0.2	2.7	GTMX32300RT02	DT4, QM3

GTMH32-VT

Insert

Groove and side turn
Stechen und seitliches Drehe

Mirror finish



● Right-hand shown.
● Rechte Ausführung.

Dimensions (mm)				ISO	Grade
w	L	rε	Maximum machining depth		
0.33	0.6	0.0	0.25	GTMH32033RVT	VM1
0.43	1.2	0.0	0.9	GTMH32043RVT	VM1
0.53	2.0	0.0	1.6	GTMH32053RVT	VM1
0.65	2.0	0.0	1.6	GTMH32065RVT	VM1
0.75	2.0	0.0	1.6	GTMH32075RVT	VM1
0.80	2.0	0.0	1.6	GTMH32080RVT	VM1
0.85	2.0	0.0	1.6	GTMH32085RVT	VM1
0.95	2.0	0.0	1.6	GTMH32095RVT	VM1
1.00	2.0	0.0	1.6	GTMH32100RVT	VM1
1.10	2.0	0.0	1.6	GTMH32110RVT	VM1
1.20	2.0	0.0	1.6	GTMH32120RVT	VM1
1.30	2.0	0.0	1.6	GTMH32130RVT	VM1
1.40	2.0	0.0	1.6	GTMH32140RVT	VM1
1.50	3.0	0.0	2.7	GTMH32150RVT	VM1
2.00	3.0	0.0	2.7	GTMH32200RVT	VM1

■Recommended feed rate for side turning
Empfohlene Vorschub für das seitliche drehen

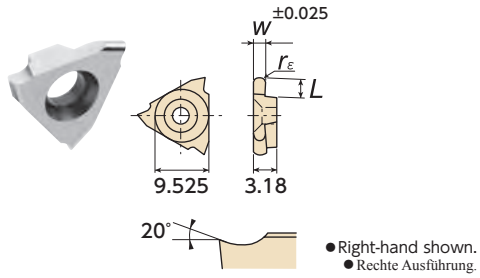
①Maximum feed rate for side turning with maximum machining depth is 0.03mm/rev.
Maximaler Vorschub bei maximaler Stechtiefe beträgt 0.03mm/U

②If higher feed (maximum 0.1mm/rev) is required, Please make at least 2 grooving before side turning to make rooms for chip evacuation.
Wenn ein höherer Vorschub notwendig ist (max 0.1mm) sollten zwei Einstiche zur besseren Spanabfuhr erstellt werden.

● Inserts . Schneidplatten

GTMH32

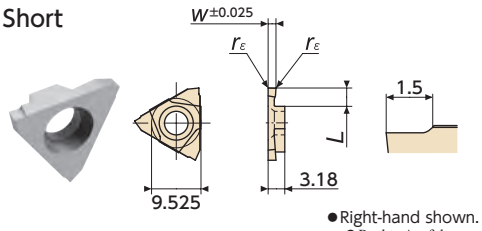
Insert	Dimensions (mm) w	L	r_ε	Maximum machining depth	ISO	Grade
Full radius Vollradius Tolerance of groove width w$^{\pm 0.025}$ Breiten-Toleranz ±0.025	0.50	1.2	0.25	0.9	GTMH32050RE025	ZM3
	0.70	2.0	0.35	1.6	GTMH32070RE035	ZM3
	1.00	2.0	0.50	1.6	GTMH32100RE05	ZM3
	2.00	3.0	1.00	2.7	GTMH32200RE10	ZM3
	3.00	3.0	1.50	2.7	GTMH32300RE15	ZM3



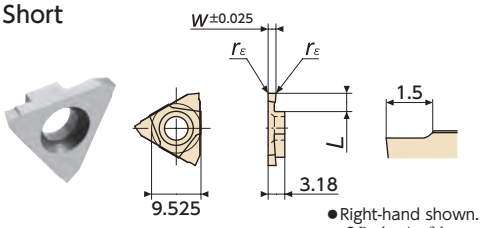
● Right-hand shown.
● Rechte Ausführung.

GTMH and GTMX32
Step-chipbreaker

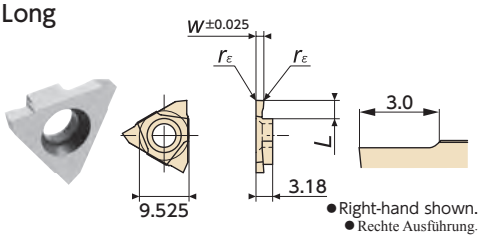
Insert	Dimensions (mm) w	L	r_ε	Maximum machining depth	ISO	Grade
Short	1.00	2.0	0.05	1.6	GTMH32100RSSH	KM1
	1.50	2.0	0.05	1.6	GTMH32150RSSH	KM1
	2.00	3.0	0.05	2.7	GTMH32200RSSH	KM1
Short	1.00	2.0	0.05	1.6	GTMX32100RSS	ZM3
	1.50	3.0	0.05	2.7	GTMX32150RSS	ZM3
	2.00	3.0	0.05	2.7	GTMX32200RSS	ZM3
Long	1.00	2.0	0.05	1.6	GTMX32100RLS	ZM3
	1.50	3.0	0.05	2.7	GTMX32150RLS	ZM3
	2.00	3.0	0.05	2.7	GTMX32200RLS	ZM3



● Right-hand shown.
● Rechte Ausführung.



● Right-hand shown.
● Rechte Ausführung.



● Right-hand shown.
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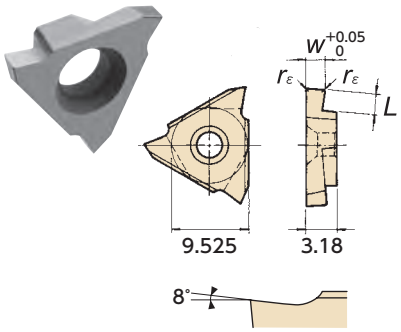
Inserts . Schneidplatten

GTM32
Moulded chipbreaker



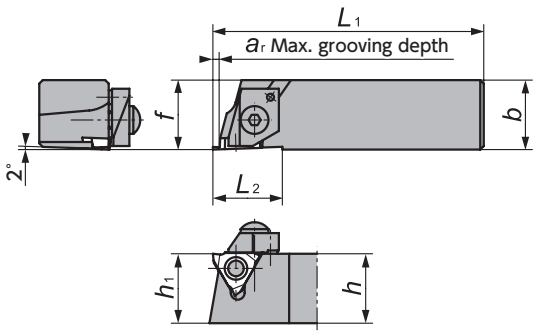
● Right-hand shown.
● Rechte Ausführung.

Insert	Dimensions (mm)				ISO	Grade
	w	*L*	r_ε	Maximum machining depth		
	1.00	2.0	0.1	1.6	GTM32100R01	N40
	1.00	2.0	0.2	1.6	GTM32100R	N40
	1.45	3.0	0.2	2.7	GTM32145R	N40
	1.50	3.0	0.2	2.7	GTM32150R/L	N40
	2.00	3.0	0.2	2.7	GTM32200R/L	N40
	2.30	3.0	0.2	2.7	GTM32230R	N40
	2.50	3.0	0.2	2.7	GTM32250R	N40
	3.00	3.0	0.2	2.7	GTM32300R	N40

Note) The effective machining depths indicated are for grooving on work pieces having a diameter of 120 or less.
Hinweis) Die Angaben der Stechtiefen beziehen sich auf Bearbeitungsdurchmesser max. 120mm oder kleiner.

NGTN

Without offset



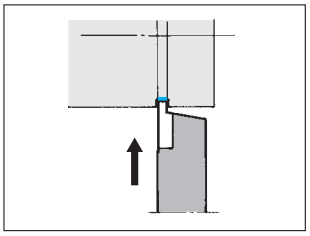
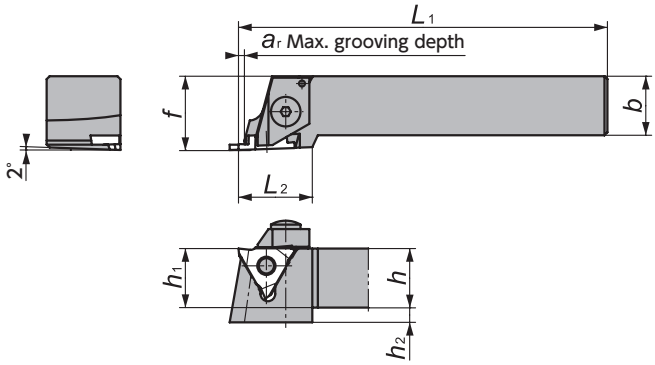


Figure-1

● Right-hand shown.
● Rechte Ausführung.

NGTB

With offset



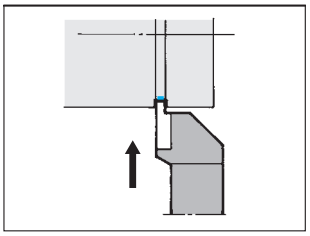


Figure-2

● Right-hand shown.
● Rechte Ausführung.

Holders . Halter

Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	f	L_2	a_r	h_2	Width of groove (mm) w	Insert	Parts: Clamp	Clamping bolt	Spring	Wrench
															
Figure-1	NGTN R/L 161643-20	16	16	78	16	16	20	4.5	9	2.00~3.49	GTM43 GTMA43 GTMT43 **G149**	CPR/L5S	AOS-5*20	ASG-5	LW-2.5
	NGTN R/L 161643-35									3.50~5.50					
Figure-2	NGTB R/L 161643-00S	16	16	100	16	20	25	3.0	9	1.45~2.49	GTM43 GTMA43 GTMT43 **G149**	CPR/L5	AOS-5*25	ASG-5	LW-2.5
	NGTB R/L 161643-20S							4.5		2.00~3.49					
	NGTB R/L 161643-35S									3.50~5.50					
	NGTB R/L 202043-00S	20	20	125	20	25		3.0	5	1.45~2.49	GTM43 GTMA43 GTMT43 **G149**	CPR/L6	AOS-6*30	ASG-6	LW-3
	NGTB R/L 202043-20S							4.5		2.00~3.49					
	NGTB R/L 202043-35S									3.50~5.50					
	NGTB R/L 252543-00S	25	25	150	25	30		3.5	0	1.45~2.49					
	NGTB R/L 252543-20S							5.5		2.00~3.49					
	NGTB R/L 252543-35S									3.50~5.50					
	NGTB R/L 322543-20S	32		170	32					2.00~3.49					
	NGTB R/L 322543-35S									3.50~5.50					

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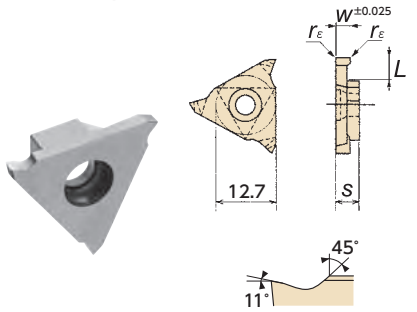
● Inserts . Schneidplatten

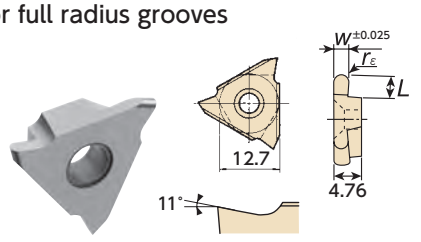
GTMT43 • GTMA43
Insert

Dimensions (mm)

w	L	r_ε	s	Maximum machining depth	ISO	Grade
Moulded chipbreaker						
1.45	3.5	0.2	4.76	3.0	GTMT43145R/L	DM4, QM3
1.50	3.5	0.2	4.76	3.0	GTMT43150R/L	DM4, QM3
1.75	3.5	0.2	4.76	3.0	GTMT43175R/L	DM4, QM3
1.85	3.5	0.2	4.76	3.0	GTMT43185R/L	DM4, QM3
2.00	3.5	0.2	4.76	3.0	GTMT43200R/L	DM4, QM3
2.30	3.5	0.2	4.76	3.0	GTMT43230R/L	DM4, QM3
2.50	5.5	0.3	4.76	4.3	GTMT43250R	DM4, QM3
2.65	5.5	0.3	4.76	4.3	GTMT43265R	DM4, QM3
2.80	5.5	0.3	4.76	4.3	GTMT43280R/L	DM4, QM3
3.00	5.5	0.3	4.76	4.3	GTMT43300R/L	DM4, QM3
3.30	5.5	0.3	4.76	4.3	GTMT43330R/L	QM3
3.50	5.5	0.3	4.76	4.3	GTMT43350R/L	DM4, QM3
4.00	5.5	0.4	4.76	4.3	GTMT43400R/L	DM4, QM3
4.50	5.5	0.4	4.76	4.3	GTMT43450R/L	DM4, QM3
5.00	5.5	0.4	5.76	4.3	GTMT43500R/L	DM4, QM3
5.50	5.5	0.4	5.76	4.3	GTMT43550R/L	DM4, QM3
For full radius grooves						
2.00	3.5	R1.0	—	3.0	GTMA43200R/L10R	
3.00	5.5	R1.5	—	4.5	GTMA43300R/L15R	
4.00	5.5	R2.0	—	4.5	GTMA43400R/L20R	



● Right-hand shown.
● Rechte Ausführung.



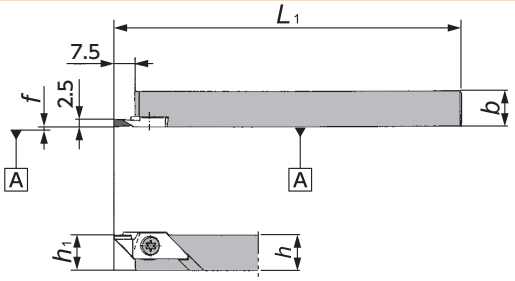
● Right-hand shown.
● Rechte Ausführung.

Grooving

● Multi-functional tools for machining of aluminum . Vielseitiges Werkzeug für die Aluminiumzerspanung

GTPA

Screw accessible from both sides
Schraube von beiden Seiten montierbar



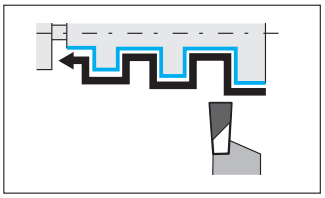


Figure-1

● Right-hand shown.
● Rechte Ausführung.

Y-GTPA

Screw accessible from both sides
Y-axis holder
Schraube von beiden Seiten montierbar

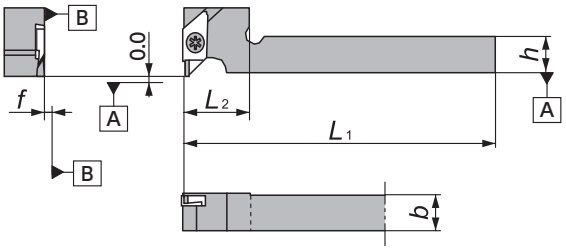


Figure-2

● Right-hand shown.
● Rechte Ausführung.

Y-GTPA-OH

Screw accessible from both sides
Y-axis with high-pressure coolant
Schraube von beiden Seiten montierbar
Y-Achsen Typ hohem Kühlmitteldruck

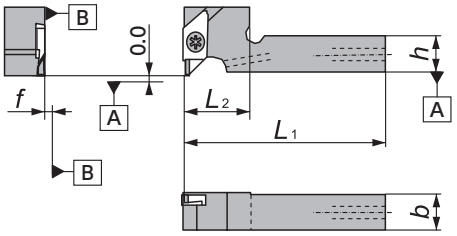
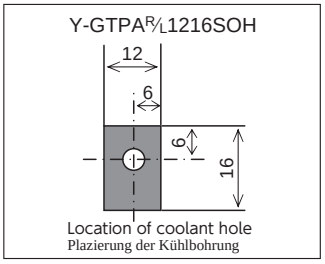


Figure-3

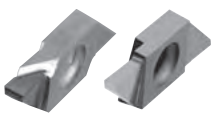


Holders . Halter

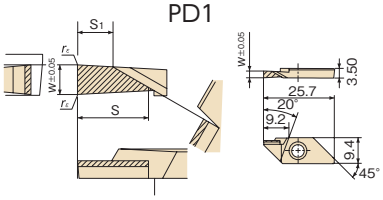
Shape	Toolholder	Dimensions (mm) h	b	L_1	h_1	f	a_r	Width of groove (mm) w	Insert	Parts Clamp	Wrench
Figure-1	**GTPAR1010**	10	10	120	10	0.1	—	2.0	GTPA	LRIS-4＊10PW	CLR-15S
	GTPAR1212	12	12		12						
Figure-2	**Y-GTPAR1216**	12	16	120	—	0.1	20	⟆		LRIS-4＊12PW	CLR-15S
Figure-3	**Y-GTPAR1216SOH**	12	16	70	—	0.1	20	2.5		LRIS-4＊12PW	CLR-15S
	Y-GTPAR1616OH	16	16				25				

● Inserts . Schneidplatten

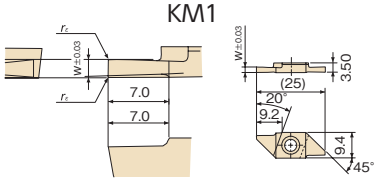
GTPA

Insert	Dimensions (mm) w	s	s_1	r_ε	Maximum machining depth	ISO	Grade
	2.0	6.0	4.0	0.1以下	5.0	**GTPA20FRN01**	**PD1**
	2.0	—	—	0.1以下	6.0	**GTPA20FRN01**	**KM1**
	2.0	4.0	2.0	0.1以下	3.0	**GTPA20FRN01-082**	**PD1**
	2.5	6.0	3.0	0.1以下	5.0	**GTPA25FRN01**	**PD1**
	2.5	—	—	0.1以下	6.0	**GTPA25FRN01**	**KM1**
	2.5	4.0	1.0	0.1以下	3.0	**GTPA25FRN01-081**	**PD1**

PD1



KM1



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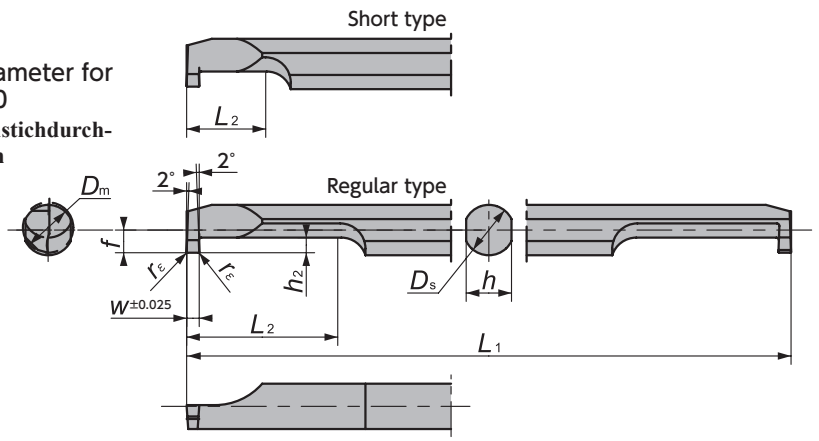
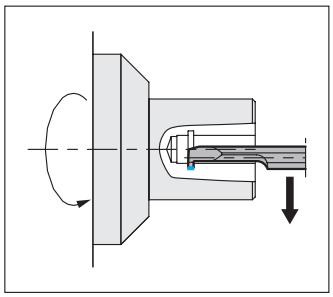
NTK CUTTING TOOLS

STICK DUO

SBG

Minimum diameter for grooving: 3.0
Minimaler Einstichdurchmesser: 3.0mm





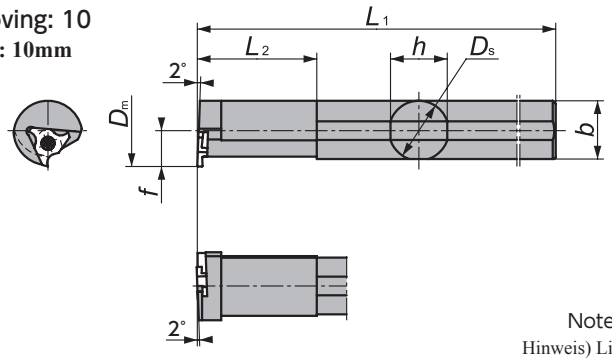
Type	Part No.	Chip-breaker	Dimensions (mm)									Grade
			Min. diameter for grooving D_m	w	D_s	L_1	L_2	f	h	h_2	r_ε	
Short type	SBG030050RB-S	Yes	3	0.50	3.0	50	4.5	1.3	2.7	0.8	0.05	ZM3
	SBG030075RB-S		3	0.75	3.0	50	4.5	1.3	2.7	0.8	0.05	ZM3
	SBG030100RB-S		3	1.00	3.0	50	4.5	1.3	2.7	0.8	0.05	ZM3
	SBG030150RB-S		3	1.50	3.0	50	4.5	1.3	2.7	0.8	0.05	ZM3
	SBG040050RB-S		4	0.50	4.0	60	6	1.8	3.6	1.0	0.05	ZM3
	SBG040075RB-S		4	0.75	4.0	60	6	1.8	3.6	1.0	0.05	ZM3
	SBG040100RB-S		4	1.00	4.0	60	6	1.8	3.6	1.0	0.05	ZM3
	SBG040150RB-S		4	1.50	4.0	60	6	1.8	3.6	1.0	0.05	ZM3
	SBG050050RB-S		5	0.50	5.0	70	7.5	2.3	4.5	1.2	0.05	ZM3
	SBG050100RB-S		5	1.00	5.0	70	7.5	2.3	4.5	1.2	0.05	ZM3
	SBG050150RB-S		5	1.50	5.0	70	7.5	2.3	4.5	1.2	0.05	ZM3
	SBG050200RB-S		5	2.00	5.0	70	7.5	2.3	4.5	1.2	0.05	ZM3
	SBG060100RB-S		6	1.00	6.0	80	7.5	2.8	5.4	1.8	0.05	ZM3
	SBG060150RB-S		6	1.50	6.0	80	7.5	2.8	5.4	1.8	0.05	ZM3
	SBG060200RB-S		6	2.00	6.0	80	7.5	2.8	5.4	1.8	0.05	ZM3
	SBG080100RB-S		8	1.00	8.0	80	8.5	3.8	7.3	2.2	0.05	ZM3
	SBG080150RB-S		8	1.50	8.0	80	8.5	3.8	7.3	2.2	0.05	ZM3
	SBG080200RB-S		8	2.00	8.0	80	8.5	3.8	7.3	2.2	0.05	ZM3
Regular type	SBG030050RB	Yes	3	0.50	3.0	50	9	1.3	2.7	0.8	0.05	ZM3
	SBG030075RB		3	0.75	3.0	50	9	1.3	2.7	0.8	0.05	ZM3
	SBG030100RB		3	1.00	3.0	50	9	1.3	2.7	0.8	0.05	ZM3
	SBG040050RB		4	0.50	4.0	60	12	1.8	3.6	1.0	0.05	ZM3
	SBG040075RB		4	0.75	4.0	60	12	1.8	3.6	1.0	0.05	ZM3
	SBG040100RB		4	1.00	4.0	60	12	1.8	3.6	1.0	0.05	ZM3
	SBG050050RB		5	0.50	5.0	70	20	2.3	4.5	1.2	0.05	ZM3
	SBG050100RB		5	1.00	5.0	70	20	2.3	4.5	1.2	0.05	ZM3
	SBG050150RB		5	1.50	5.0	70	20	2.3	4.5	1.2	0.05	ZM3
	SBG060100RB		6	1.00	6.0	80	20	2.8	5.4	1.8	0.05	ZM3
	SBG060150RB		6	1.50	6.0	80	20	2.8	5.4	1.8	0.05	ZM3
	SBG060200RB		6	2.00	6.0	80	20	2.8	5.4	1.8	0.05	ZM3
	SBG080100RB		8	1.00	8.0	80	20	3.8	7.3	2.2	0.05	ZM3
	SBG080150RB		8	1.50	8.0	80	20	3.8	7.3	2.2	0.05	ZM3
	SBG080200RB		8	2.00	8.0	80	20	3.8	7.3	2.2	0.05	ZM3

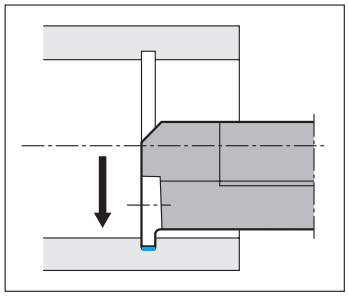
Note) For sleeves, please refer to pages H168.
Hinweis) Für Spannbüchsen bitte nachschlagen auf Seite H168.

NTK CUTTING TOOLS

BG

Minimum diameter for grooving: 10
Minimaler Einstichdurchmesser: 10mm





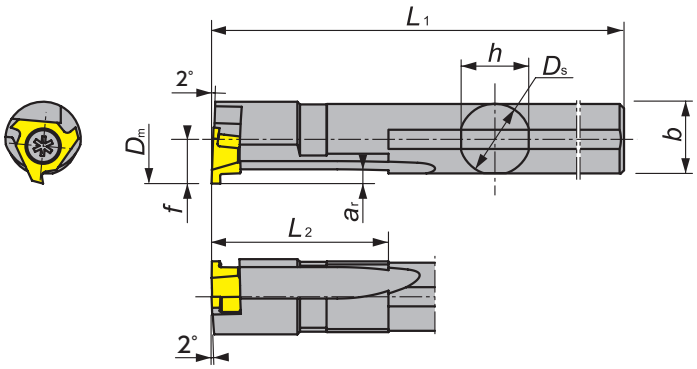
● Right-hand shown.
● Rechte Ausführung.
Note) Use L-hand inserts for R-hand holders.
Hinweis) Linke Schneidplatte mit rechtem Halter verwenden.

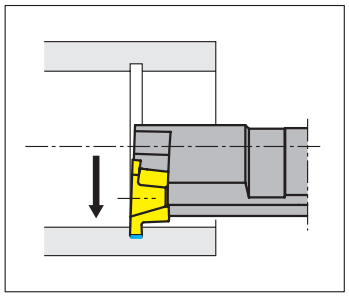
Holders . Halter

Toolholder	Min. diameter for grooving (mm) D_m	Dimensions (mm) D_s	h	b	L_1	f	L_2	Width of groove (mm) w	Insert	Parts: Clamp screw	Parts: Wrench
BGR08-00S	10.0	8	7.0	7.5	125	5.0	20	0.50 ~ 1.00	GTG10	LR-S-2.5*6.8	CLR-15S (A)
BGR08-10S								1.00 ~ 2.00			
BGR10-00S	12.0	10	9.0	9.5	150	6.0	25	0.50 ~ 1.00			
BGR10-10S								1.00 ~ 2.00			
BGR12-00S	14.0	12	11.0	11.5	180	7.0	30	1.00	GTG14	LR-S-3*7.8	RLR-20S (B)
BGR12-12S								1.45 ~ 2.00			
BGR14-00S	16.0	14	13.0	13.5	180	8.0	35	1.00			
BGR14-12S								1.45 ~ 2.00			
BGR16	20.0	16	15.0	15.5	200	10.0	40	1.50 ~ 2.00	GTG20	LR-S-3*7.8	RLR-20S (B)
BGR20	25.0	20	19.0	19.5	200	12.0	40				

S-BG

Steel shank





● Right-hand shown.
● Rechte Ausführung.
Note) Use a L-hand insert for R-hand holder.
Hinweis) Linke Schneidplatte für rechten halter verwenden.

Holders . Halter

Toolholder	Min. bore Dia. D_m	Available grooving depth a_r	Dimensions (mm) D_s	h	b	L_1	f	L_2	Insert	Spare parts: Clamp screw	Spare parts: Wrench
S08H-BGR10D10	10	1.0	8.0	7.7	7.9	120	5.0	20	GTG10	LR-S-2.5*6.8	CLR-15S
S10K-BGR10D12	12		10.0	9.6	9.8	120	6.0	25			

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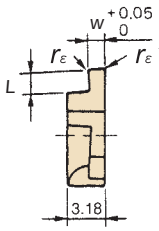
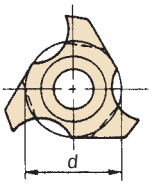
Inserts . Schneidplatten

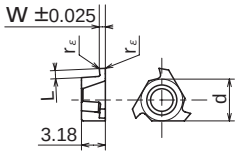
GTG





● Left-hand shown.
● Linke Ausführung.

Insert	Dimensions (mm) w	L	r_ε	d	ISO	Grade
	0.50	1.2	0.05	5.56	GTG10050FL00	ZM3
	0.65	1.2	0.05	5.56	GTG10065FL00	ZM3
	0.75	1.2	0.05	5.56	GTG10075FL00	ZM3
	1.00	1.2	0.05	5.56	GTG10100FL00	ZM3
	1.25	1.2	0.2	5.56	GTG10125L	C7X
	1.50	1.2	0.05	5.56	GTG10150FL00	ZM3
	2.00	1.2	0.1	5.56	GTG10200FL01	ZM3
	1.00	2.2	0.05	7.94	GTG14100FL00	ZM3
	1.45	2.2	0.2	7.94	GTG14145L	C7X
	1.50	2.2	0.05	7.94	GTG14150FL00	ZM3
	1.75	2.2	0.2	7.94	GTG14175L	C7X
	2.00	2.2	0.1	7.94	GTG14200FL01	ZM3
	1.50	3.2	0.2	9.525	GTG20150FL	QM3
	1.75	3.2	0.2	9.525	GTG20175L	C7X
	2.00	3.2	0.2	9.525	GTG20200L	C7X
	2.00	3.2	0.2	9.525	GTG20200FL	QM3



● Left-hand shown.
● Linke Ausführung.

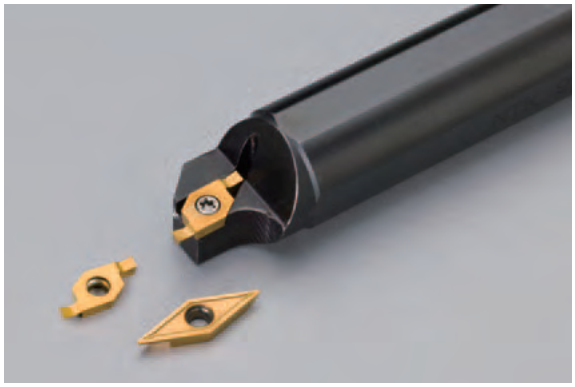
	0.50	1.2	0.05	5.56	GTG10050FL005	TM4
	0.75	1.2	0.05	5.56	GTG10075FL005	TM4
	1.00	1.2	0.05	5.56	GTG10100FL005	TM4
	1.50	1.2	0.05	5.56	GTG10150FL005	TM4
	2.00	1.2	0.05	5.56	GTG10200FL005	TM4

Recommended cutting conditions . Empfohlene Schnittwerte

Work material		Cutting speed V_c (m/min)	Feed f (mm/rev) Width (mm) 0.25 ~ 0.5	0.5 ~ 1.0	1.0 ~ 2.0	2.0 ~
Free cutting steels		50 100 200	0.005 ~ 0.03	0.02 ~ 0.07	0.02 ~ 0.06	0.03 ~ 0.2
Carbon steels	Carbide	50 90 150				
Alloy steels	Cermet	120 150 250		0.03 ~ 0.08	0.03 ~ 0.07	
Free cutting stainless steels		50 90 180				
Hard-cut stainless steels		40 70 100				
Non ferrous metal		50 100 200		0.02 ~ 0.07	0.03 ~ 0.08	0.05 ~ 0.25

NTK CUTTING TOOLS

SCRUM DUO Series SATURN DUO



Features - Merkmale

- FGV type for face grooving and FBV type for face machining
  FGV-Typ für Axial-Stechen und FBV-Typ für Plan-Drehen
- Economical double-corner specification
  Wirtschaftliche Doppel Schneide
- Improved tool rigidity by optimizing the overhang and holder shape
  Verbessert die Werkzeugstabilität durch Optimierung des Überhangs und der Halter-Form
- Gang-type, front-gang-type and sleeve holder types available
  Verfügbar für Langdreher, Mehrspindler und Revolverdrehmaschinen

Recommended Cutting Condition for FGV Style Tooling (for Face Grooving)

Empfohlene Schnittwerte für FGV Werkzeuge

			Steel (Carbon Steel, Alloy Steel)	Stainless Steel (Excluding 303 SS)	Free Cutting Steel (Including 303 SS)	Non-ferrous Metals (Brass, Aluminum, Copper)
Speed (m/min)			50 (30 ~ 100)	40 (30 ~ 100)	60 (30 ~ 100)	80 (50 ~ 120)
Feed Rate (mm/rev)	Groove Depth (mm)	1.0	0.03 (0.01 ~ 0.05)	0.02 (0.01 ~ 0.04)	0.04 (0.01 ~ 0.06)	0.04 (0.01 ~ 0.06)
		1.5	0.02 (0.01 ~ 0.04)	0.01 (0.005 ~ 0.03)	0.03 (0.01 ~ 0.05)	0.03 (0.01 ~ 0.05)
		2.0	0.01 (0.005 ~ 0.03)	0.01 (0.005 ~ 0.03)	0.02 (0.01 ~ 0.04)	0.02 (0.01 ~ 0.04)

☆Tips for Successful Face Grooving / Tipps für das erfolgreiche Planstechen

①Run multiple passes for turn wider grooves.
Make sure to groove from outer diameter to inner diameter to avoid any interference.
Mehrere Schnitte bei breiteren Nuten anwenden
Immer vom gößeren zum kleineren Durchmesser arbeiten um Beeinträchtigung zu vermeiden

②If lines appear on the boss section (as shown at right), slow down feed rate on retracting the tool.
Bei auftretenden Rillen an der Planfäche Vorschub verringern.

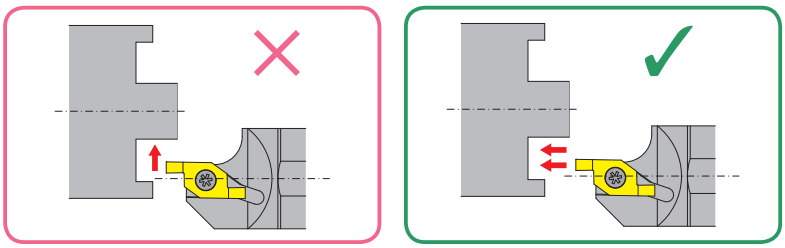
③If scratch appears at the end of the boss, slow down feed rate.
Bei Beschädigungen am Ende der Planfläche Vorschub verringern.

④If groove surface looks torn, either slow down feed rate or increase speed.
Bei Ausbrüchen an der Einstichfläche entweder Vorschub verringern oder Drehzahl erhöhen

⑤If groove bottom looks torn under slow speed and feed condition, increase speed.
Bei Ausbrüchen am Einstichgrund Drehzahl erhöhen

☆Note

Side turning cannot be performed with FGV style tooling
Seitliches Drehen ist mit FGV werkzeug nicht möglich



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Recommended cutting conditions for FBV tools (Face turning)
Empfohlene Schnittwerte für FBV Werkzeuge

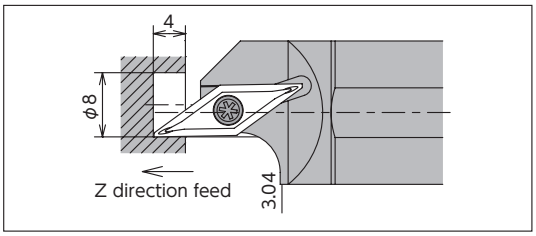
Minimum machining diameter: ϕ8 WET
Kleinster Bearbeitungsdurchmesser: ϕ 8mm WET

			General steel (carbon steel, alloy steel)	Stainless steel (excluding SUS303)	Free-cutting steel (including SUS303)	Nonferrous metal (Brass, aluminum, copper, etc.)
Cutting speed (m/min)			50 (30 ~ 70)	40 (30 ~ 60)	60 (30 ~ 80)	80 (50 ~ 100)
Feed rate Longitudinal/ cross (mm /rev)	Depth of machining (mm)	1.0	Z: 0.015 / X: 0.06	Z: 0.015 / X: 0.06	Z: 0.03 / X: 0.06	Z: 0.03 / X: 0.06
		2.0	Z: 0.01 / X: 0.04	*	Z: 0.015 / X: 0.03	Z: 0.015 / X: 0.03
		3.0	*	*	Z: 0.015 / X: 0.03	Z: 0.015 / X: 0.03
		4.0	*	*	Z: 0.015 / X: 0.03	Z: 0.015 / X: 0.03

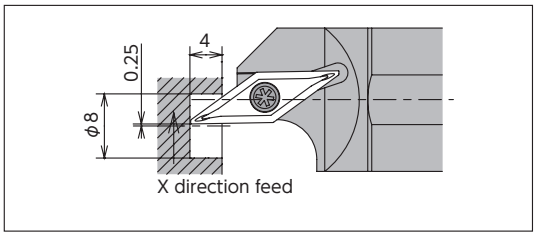
*When machining difficult materials for chip control (such as SUS304), it is recommended to perform in several passes.
*Bei schwierig zu zerspanenden Werkstoffen werden mehrere Schnittvorgänge empfohlen.

☆Machining process / Bearbeitungsprozess

- For materials with good machinability, it is possible to machine up to 4mm deep at a low feed rate in a single pass for both longitudinal feed and cross feed.
  Bei gut zerspanbaren Werkstoffen ist seitliches Drehen mit Schnitttiefen bis zu 4mm möglich.



Cutting in Z direction
Schnittbewegung in Z-Richtung



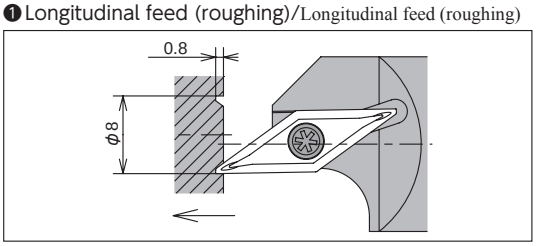
Cutting in X direction
Schnittbewegung in X-Richtung

☆Useful tips for machining / Nützliche Bearbeituns-Tipps

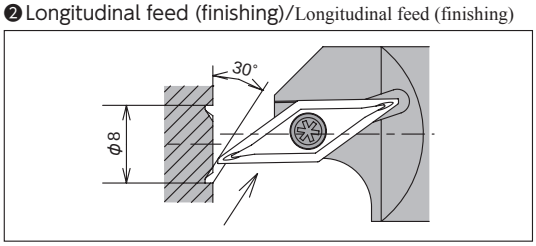
- When burrs occur on ID surface, it is recommended to perform cutting in 2 passes, one for roughing and one for finishing as shown in the following procedure:
  Bei Gratbildung an der Innendrehfläche wird eine zweifache Bearbeitung empfohlen . Eine Schrupp und eine Fertigbearbeitung. Siehe folgende Prozedur:

☆Example of 2-pass machining: Leane 0.2mm on roughing then run a finish cut.
Beispiel einer zweifachen Bearbeitung: Aufmass von 0.2mm für Schlichtprozess.

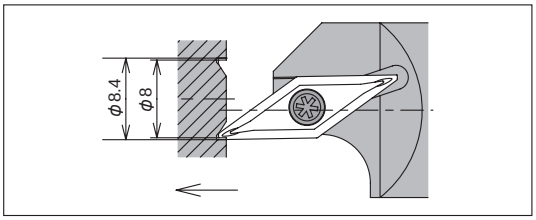
❶Longitudinal feed (roughing)/Longitudinal feed (roughing)



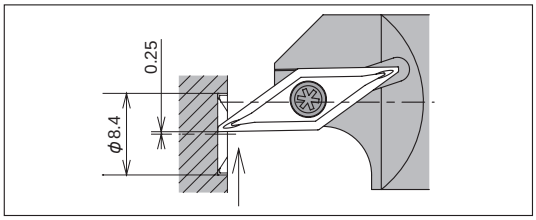
❷Longitudinal feed (finishing)/Longitudinal feed (finishing)



❸Slant machining (roughing)/Slant machining (roughing)



❹Cross feed (finishing)/Cross feed (finishing)



CH-FGV

For front gang type tool post
Für Drehmaschinen mit Gang Type System

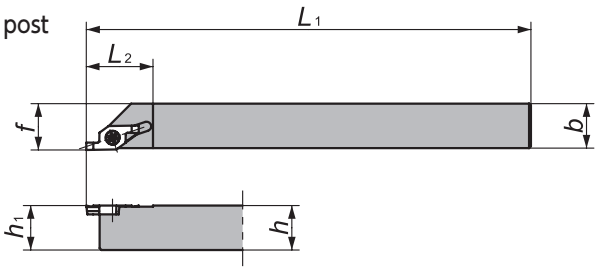
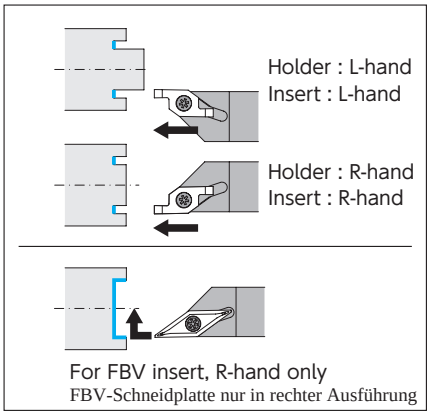


Figure-1

● Right-hand shown.
● Rechte Ausführung.



For FBV insert, R-hand only
FBV-Schneidplatte nur in rechter Ausführung

FGV

For gang type tool post
Für Drehmaschinen mit Gang Type System

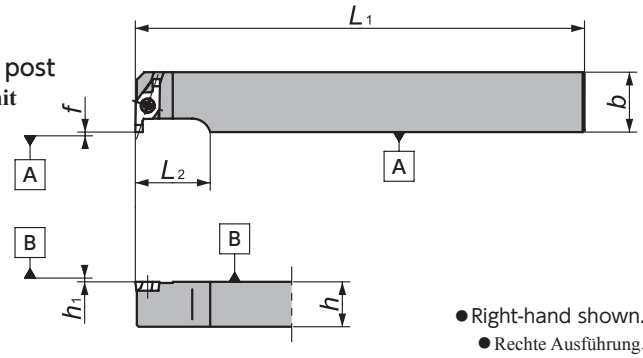
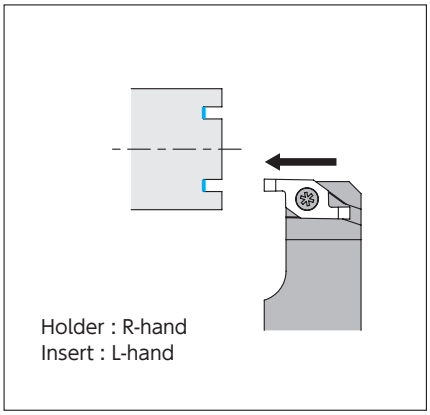


Figure-2

● Right-hand shown.
● Rechte Ausführung.

Note) Use L-hand inserts for R-hand holders.
Hinweis) Linke Schneidplatte mit rechtem Halter verwenden.



DS-FGV

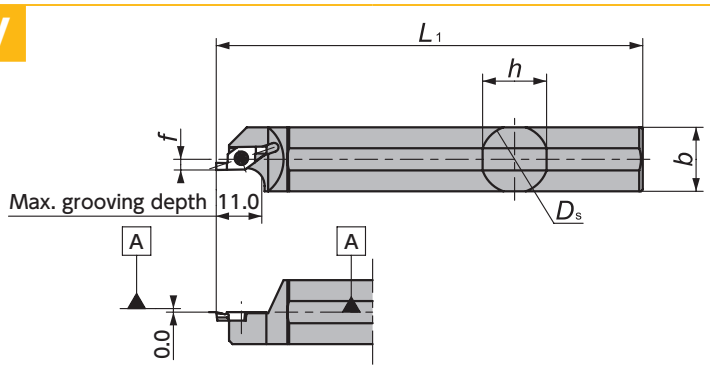
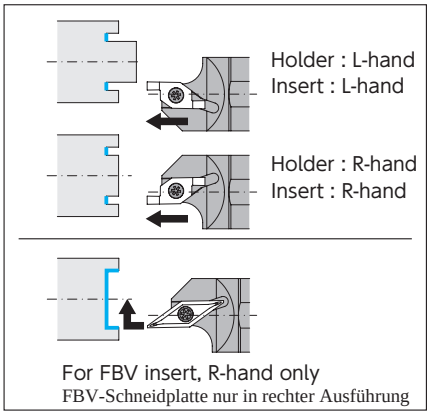


Figure-3

● Right-hand shown.
● Rechte Ausführung.



For FBV insert, R-hand only
FBV-Schneidplatte nur in rechter Ausführung

Holders . Halter

Shape	Toolholder	Dimensions (mm) Ds	h	b	L1	h1	f	L2	Insert	Parts: Clamp	Parts: Wrench
											
Figure-1	CH-FGVR/L1010	—	10	10	120	10	10.5	18	FGV FBV	LRIS-2.5＊7	CLR-15S
	CH-FGVR/L1212	—	12	12		12	12.5				
	CH-FGVR/L1616	—	16	16		16	16.5				
Figure-2	FGVR1016	—	10	16	120	0.0	0.0	20	FGV□□□L	LRIS-2.5＊7	CLR-15S
	FGVR1216	—	12								
	FGVR1616	—	16								
Figure-3	DS-FGVL16-012	16	15	15	80	—	3.0	—	FGV FBV	LRIS-2.5＊7	CLR-15S
	DS-FGVR/L19	19.05	18	18	120						
	DS-FGVR/L20	20	19	19							
	DS-FGVR/L22	22	21	21							
	DS-FGVR/L25	25.4	24.5	24.5							

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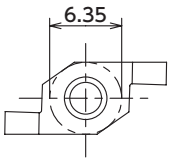
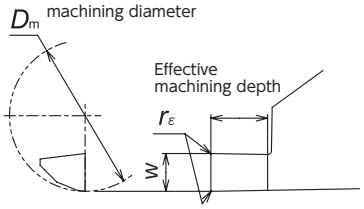
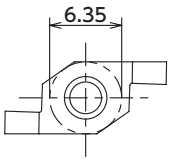
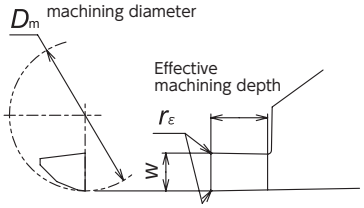
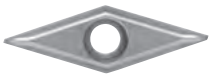
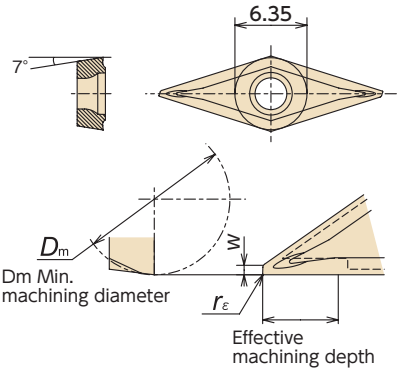
● Inserts . Schneidplatten

FGV

Insert	Min. machining dia	Dimensions (mm) Thickness	W	r_ε	Effective machining depth	ISO	Grade
   ● Right-hand shown. ● Rechte Ausführung.	6.0	2.38	1.0	0.00	1.5	FGV100RB00D6	TM4
	6.0	2.38	1.0	0.05	1.5	FGV100RB05D6	TM4
	6.0	2.38	1.5	0.00	2.0	FGV150RB00D6	TM4
	6.0	2.38	1.5	0.05	2.0	FGV150RB05D6	TM4
	6.0	2.38	2.0	0.00	3.0	FGV200RB00D6	TM4
	6.0	2.38	2.0	0.05	3.0	FGV200RB05D6	TM4
   ● Left-hand shown. ● Linke Ausführung.	6.0	2.38	1.0	0.00	1.5	FGV100LB00D6	TM4
	6.0	2.38	1.0	0.05	1.5	FGV100LB05D6	TM4
	6.0	2.38	1.5	0.00	2.0	FGV150LB00D6	TM4
	6.0	2.38	1.5	0.05	2.0	FGV150LB05D6	TM4
	6.0	2.38	2.0	0.00	3.0	FGV200LB00D6	TM4
	6.0	2.38	2.0	0.05	3.0	FGV200LB05D6	TM4

FBV

Insert	Min. machining dia	Dimensions (mm) Thickness	W	r_ε	Effective machining depth	ISO	Grade
  ● Right-hand shown. ● Rechte Ausführung.	8.0	2.58	0.5	0.05	4.0	FBV40R05D8AM3	TM4
	6.0	2.58	0.5	0.15	4.0	FBV40R15D8AM3	TM4

Note) The FBV inserts are applicable only for right-hand holders of CH-FGVR and DS-FGVR; Not applicable for left-hand and FGV R/L holders.

Hinweis) FBV-Schneidplatte nur in rechten Haltertyp CH-FGVR und DS-FGVR einsetzbar.

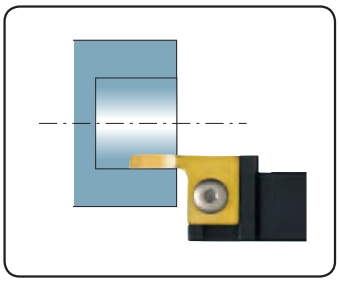
MEMO

Boring Tools
Innen-Drehwerkzeuge

H

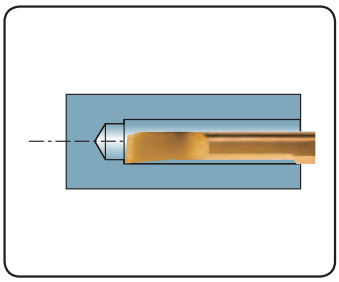
Selection guide for boring tools . Auswahlhilfe für Innen-Drehwerkzeuge

Minimum boring diameter ϕ1.0 ~ 3.0 Solid type (Single edge)

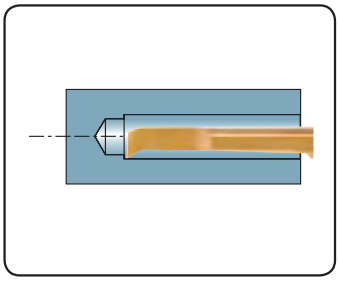


LBMA/LBMA-5	CH-LBM	DS-LBMB
		
➡H162	➡H162	➡H162
Min. machining dia. : ϕ1.0~ϕ2.3	Min. machining dia. : ϕ1.0~ϕ3.0	Min. machining dia. : ϕ1.0~ϕ3.0

Minimum boring diameter ϕ2.2 ~ 8.2 Solid type (Double edge)



STICK DUO Hyper	STICK DUO
SHFS (Carbide solid bar)	SBFS (Carbide solid bar)
	
➡H166	➡H170
Min. machining dia. : ϕ2.2 ~ ϕ8.2	Min. machining dia. : ϕ2.2 ~ ϕ8.2



STICK DUO Hyper	STICK DUO
SHFB (Carbide solid bar)	SBFB (Carbide solid bar)
	
➡H166	➡H170
Min. machining dia. : ϕ2.2 ~ ϕ6.2	Min. machining dia. : ϕ2.2 ~ ϕ6.2

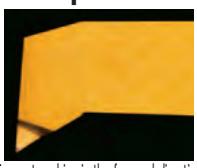
S chipbreaker

Excellent cutting performance
Hervorragende Schnittleistung

H No chipbreaker

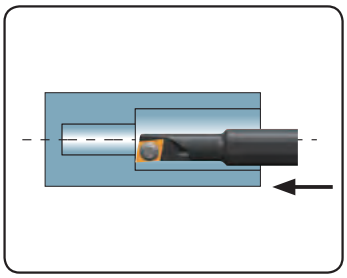
Mirror-like honing
Polierte Spanfläche

F chipbreaker

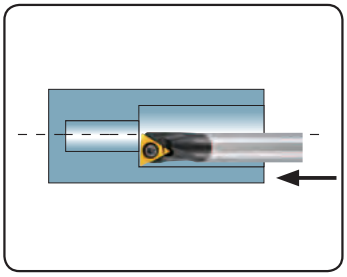


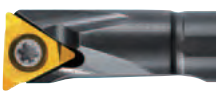
Evacuates chips in the forward direction
Rückseitige Spanabfuhr

Minimum machining diameter from ϕ5.0 Insert type MOGUL BAR NEW



C-MBR (Carbide shank)	S-MBR (Steel shank)	C-SEXR (Carbide shank)	S-SEXR (Steel shank)
			
➡H172	➡H172	➡H174	➡H174
Min. machining dia. : ϕ5.0	Min. machining dia. : ϕ5.0	Min. machining dia. : ϕ6.0	Min. machining dia. : ϕ6.0



C-STUC/P (Carbide shank)	S-STUC/P (Steel shank)	C-SCLP (Carbide shank)	S-SCLP (Steel shank)
			
➡H177	➡H177	➡H176	➡H176
Min. machining dia. : ϕ8.0 ~ ϕ22.0	Min. machining dia. : ϕ8.0 ~ ϕ32.0	Min. machining dia. : ϕ8.0 ~ ϕ20.0	Min. machining dia. : ϕ8.0 ~ ϕ32.0

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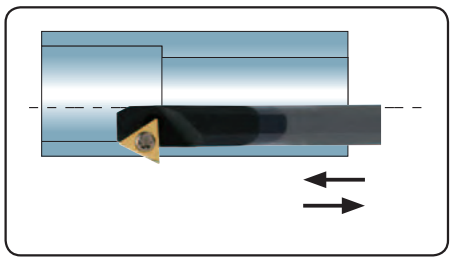
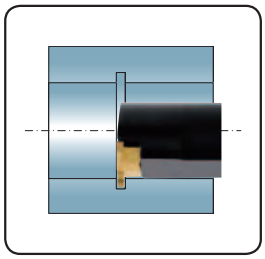
I.D back turning series



C-MSBR (Carbide shank)	C-STZ (Carbide shank)
	
➡H173	➡H178
Min. machining dia. : ϕ5.7and ϕ7.7	Min. machining dia. : ϕ 10.0～ϕ 17.5

I.D grooving series



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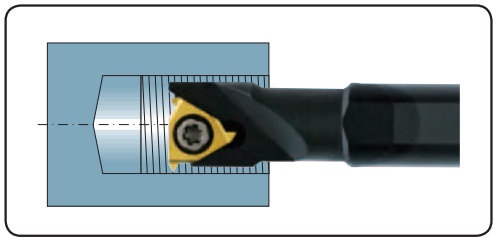
SBG	BG/S-BG
	
➡G151	➡G152

I.D threading series



STICK DUO

TGC : Carbide shank HN59 : Steel shank	SBT
	
➡I194	➡I192

Minimum machining diameter / Minimaler Bearbeitungsdurchmesser : ϕ1.0 – ϕ3.0

LBMA/LBMA-S

LBMAR□□-S

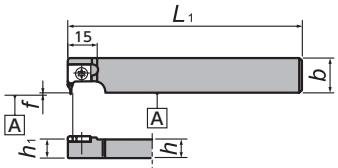


Figure-1

LBMAR□□

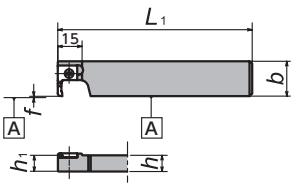


Figure-2

LBMAR□□-F

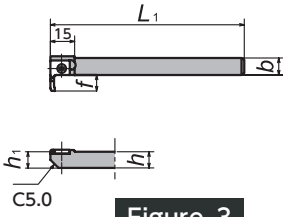


Figure-3

● Right-hand shown.
● Rechte Ausführung.

CH-LBM

For front gang type tool post
Für Drehmaschinen mit Gang Type System

LBM_1/LBM_2 : 12.75mm
LBM_3 : 12.35mm

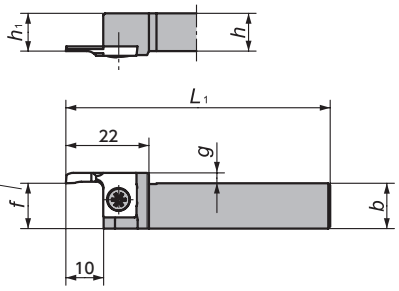
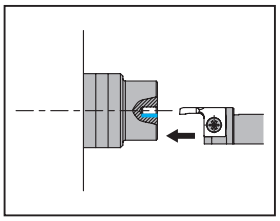


Figure-4



● Left-hand shown.
● Linke Ausführung.

DS-LBMB

DS holder

LBM_1/LBM_2 : 6.75mm
LBM_3 : 6.35mm

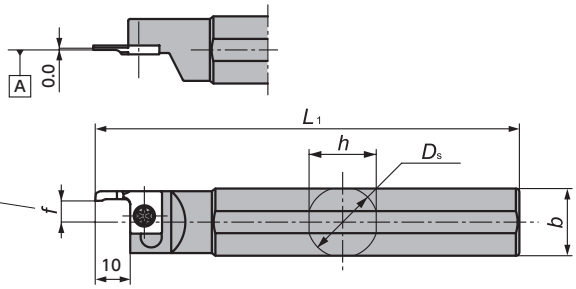
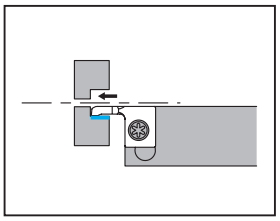


Figure-5



● Left-hand shown.
● Linke Ausführung.

Holder . Halter

Shape	Toolholder	Dimensions (mm) Ds	h	b	L1	h1	f	Insert	Parts: Clamping screw	Parts: Wrench
									 (A) (B)	 (A) (B)
Figure-1	**LBMAR10SGX**	—	10	18	85	10	0.0	Short type **H163**	LRIS-4＊10PW (B)	CLR-15S (A)
	LBMAR10S	—	10		120	10				
	LBMAR12S	—	12		120	12			LRIS-4＊12PW (B)	
Figure-2	**LBMAR08**	—	8	21.5	120	8	0.0	Long type **H163**	LRIS-4＊10 (A)	LLR-25S (B)
	LBMAR10	—	10			10			LRIS-4＊10PW (B)	CLR-15S (A)
	LBMAR12	—	12			12				
	LBMAR16	—	16			16			LRIS-4＊12PW (B)	
Figure-3	**LBMAR10-F**	—	10	140	10.0	120	10			
Figure-4	**CH-LBML1012H**	—	10	12	100	10	*1	Short type **H163**	LRIS-4＊10PW (B)	CLR-15S (A)
	CH-LBML1212H	—	12			12				
Figure-5	**DS-LBMBL14F**	14.000	13	13	80*3	—	*2	Long type **H163**	LRIS-4＊10PW (B)	CLR-15S (A)
	DS-LBMBL15H	15.875	15	15	100*3	—				
	DS-LBMBL16X	16.000			95*3	—				
	DS-LBMBL19	19.050	18	18	120*3	—				
	DS-LBMBL20	20.000	19	19		—				
	DS-LBMBL22	22.000	21	21		—				
	DS-LBMBL25-MET	25.000	24	24		—				
	DS-LBMBL25	25.400			150*3	—				

*1*2 See above pictures.
*1*2 Siehe obige Fotos.

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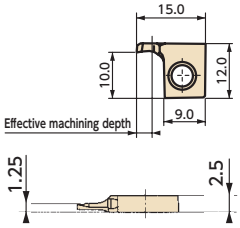
Inserts . Schneidplatten

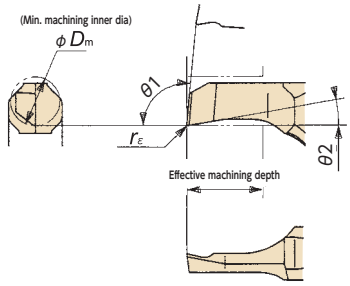
LBMD-S

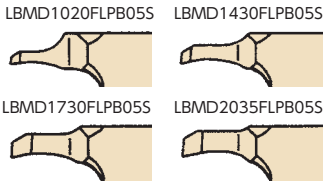
short type

Mirror finish

Enlarged photo of the cutting edge







*LBMD2335FLPB05S is shown here.

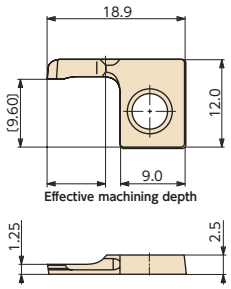
Insert	Chipbreaker	Dimensions (mm) Effective machining depth	ϕDm	θ1	θ2	rε	ISO	Grade
	Yes	2.0	ϕ1.0	95°	10°	0.00	LBMD1020FLVB	VM1
	Yes	2.0	ϕ1.0	95°	10°	0.05	LBMD1020FLPB05S	VM1
	Yes	3.0	ϕ1.4	95°	10°	0.00	LBMD1430FLVBS	VM1
	Yes	3.0	ϕ1.4	95°	10°	0.05	LBMD1430FLPB05S	VM1
	Yes	3.0	ϕ1.7	95°	10°	0.00	LBMD1730FLVBS	VM1
	Yes	3.0	ϕ1.7	95°	10°	0.05	LBMD1730FLPB05S	VM1
	Yes	3.5	ϕ2.0	95°	10°	0.00	LBMD2035FLVBS	VM1
	Yes	3.5	ϕ2.0	95°	10°	0.05	LBMD2035FLPB05S	VM1
	Yes	3.5	ϕ2.3	95°	10°	0.00	LBMD2335FLVBS	VM1
	Yes	3.5	ϕ2.3	95°	10°	0.05	LBMD2335FLPB05S	VM1

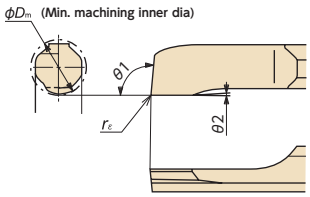
LBM

Long type

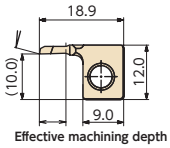
Mirror finish

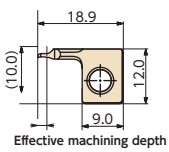
Enlarged photo of the cutting edge





<Min. machining inner dia. : ϕ2.0 >



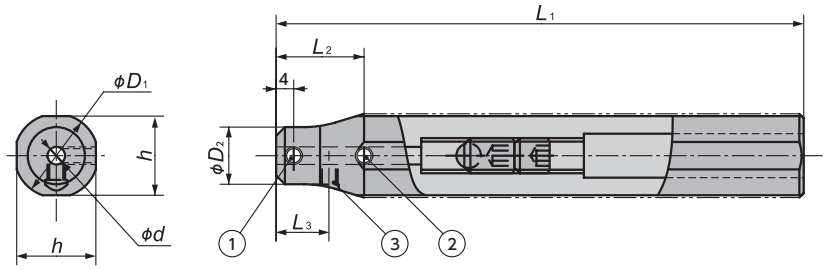


Insert	Chipbreaker	Dimensions (mm) Effective machining depth	ϕDm	θ1	θ2	rε	ISO	Grade
	Yes	2.0	ϕ1.0	95°	10°	0.00	LBMD1020FLVB	VM1
	Yes	2.0	ϕ1.0	95°	10°	0.05	LBMD1020FLPB05	VM1
	Yes	6.0	ϕ2.0	95°	10°	0.00	LBMD2060FLVB	VM1
	Yes	6.0	ϕ2.0	95°	10°	0.05	LBMD2060FLPB05	VM1
	No	6.0	ϕ2.0	105°	2°	0.00	LBME2060FLV	VM1
	No	6.0	ϕ2.0	105°	2°	0.05	LBME2060FLP05	VM1
	Yes	6.0	ϕ2.0	105°	2°	0.00	LBME2060FLVB	VM1
	Yes	6.0	ϕ2.0	105°	2°	0.05	LBME2060FLPB05	VM1
	No	8.0	ϕ3.0	95°	2°	0.00	LBMC3080FLV	ZM3, VM1
	No	8.0	ϕ3.0	95°	2°	0.05	LBMC3080FLP05	ZM3, VM1
	Yes	8.0	ϕ3.0	90°	2°	0.00	LBM3080FLVB	VM1
	Yes	8.0	ϕ3.0	90°	2°	0.05	LBM3080FLPB05	VM1
	Yes	8.0	ϕ3.0	95°	2°	0.00	LBMC3080FLVB	ZM3, VM1
	Yes	8.0	ϕ3.0	95°	2°	0.05	LBMC3080FLPB05	ZM3, VM1

NEW STICK DUO Hyper®

Shank diameter / Schaft Durchmesser : ϕ16 – ϕ25.4

HY-NBH



Holder . Halter

Toolholder	Dimensions (mm)							Parts Clamping screw		
	ϕd	ϕD1	ϕD2	h1	L1	L2	L3	①	②	③
HY-NBH02016H	2.0	16	11	16	100	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02516H	2.5		11.5							
HY-NBH03016H	3.0		12							
HY-NBH03516H	3.5		12.5			20	12		SS0404F	
HY-NBH04016H	4.0		13							
HY-NBH05016H	5.0		14							
HY-NBH02019K	2.0	19.05	11	19.05	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02519K	2.5		11.5							
HY-NBH03019K	3.0		12							
HY-NBH03519K	3.5		12.5			20	12			
HY-NBH04019K	4.0		13							
HY-NBH05019K	5.0		14							
HY-NBH02020K	2.0	20	11	20	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02520K	2.5		11.5							
HY-NBH03020K	3.0		12							
HY-NBH03520K	3.5		12.5			20	12			
HY-NBH04020K	4.0		13							
HY-NBH05020K	5.0		14							
HY-NBH02022K	2.0	22	11	22	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02522K	2.5		11.5							
HY-NBH03022K	3.0		12							
HY-NBH03522K	3.5		12.5			20	12			
HY-NBH04022K	4.0		13							
HY-NBH05022K	5.0		14							
HY-NBH02025K-MET	2.0	25	11	25	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K-MET	2.5		11.5							
HY-NBH03025K-MET	3.0		12							
HY-NBH03525K-MET	3.5		12.5			20	12			
HY-NBH04025K-MET	4.0		13							
HY-NBH05025K-MET	5.0		14							
HY-NBH02025K	2.0	25.4	11	25.4	125	15	9.5	SS04045FS	SS0406F	SS0404F
HY-NBH02525K	2.5		11.5							
HY-NBH03025K	3.0		12							
HY-NBH03525K	3.5		12.5			20	12			
HY-NBH04025K	4.0		13							
HY-NBH05025K	5.0		14							

Spare Parts

Item Description	Item Number
Overhang Adjustment Ball Screw	**SS0812R**
Ball Screw Fixture	**SS0808F**
Clamp Screw Wrench	**LW-2**

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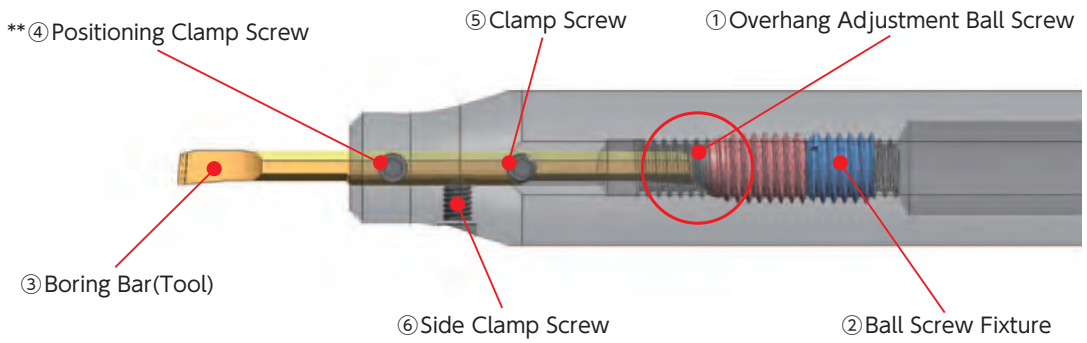
Installation Procedure for STICK DUO Hyper
Montage Anleitung für Stick Duo Hyper

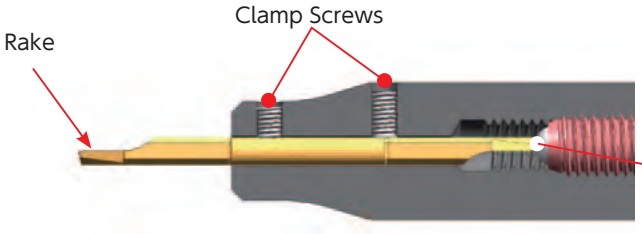
▶Erläuterungen in deutscher Sprache entnehmen Sie bitte Seite A21

Boring Tool Clamping Procedure . Einbau der Bohrstange



①Position the overhang adjustment ball screw to determine overhang amount
②Slide the ball screw fixture to secure the ball screw location
③Insert a boring bar (tool)

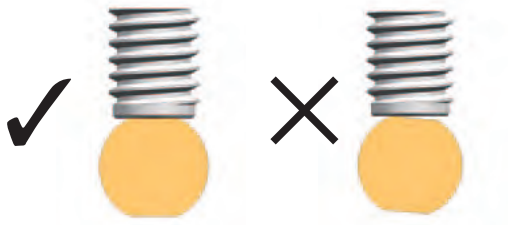
Note: Make sure to insert the boring bar correctly so that the rake faces toward the side where clamp screws are located



Caution: Improper installation dramatically increases the chance of chipping cutting edge

④Secure the boring bar by tightening the positioning clamp screw ▶Recommended Clamping Torque:2.0 N·m

** Make sure to clamp the boring bar so that flat surface of the bar makes proper contacts with clamp screws



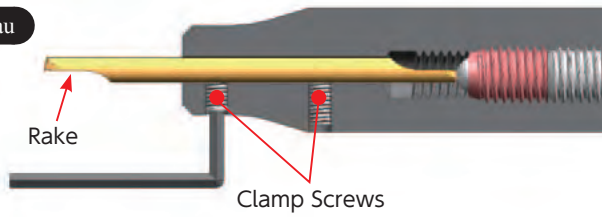
Improper clamping of boring bar causes unstable centerline height and offset

⑤Secure the boring bar by tightening the remaining clamp screws ▶Recommended Clamping Torque:2.0 N·m
⑥Even if 4 and 5 cannot be applied due to tool clearance and layout, the tool can be used only by using side clamp

Once the initial setup is complete, repeat the above procedures 3 thru 5 for each index

When tool is installed upside down . Hinweise zum Überkopf-Einbau

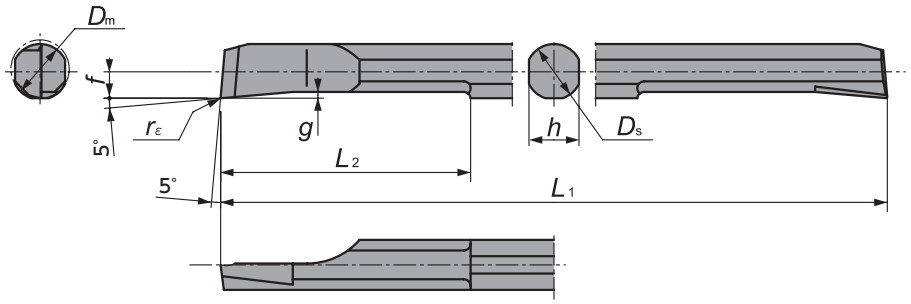
Toolholder must be installed so that clamp screws and rake of the tool face toward the same side



STICK DUO Hyper®

Minimum machining diameter / Minimaler Bearbeitungsdurchmesser : ϕ2.2 – ϕ5.2

SHFS-S



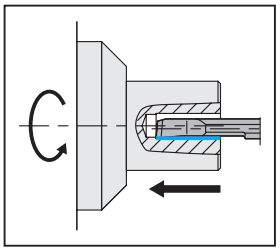
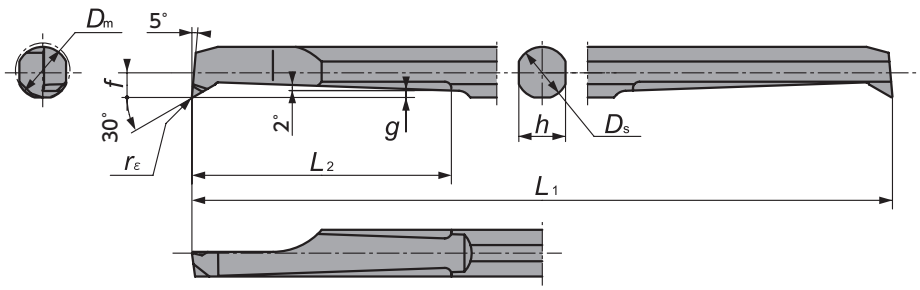


Figure-1

SHFB-F



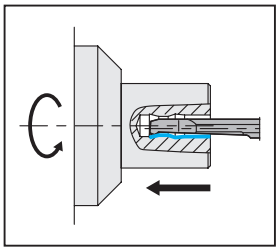
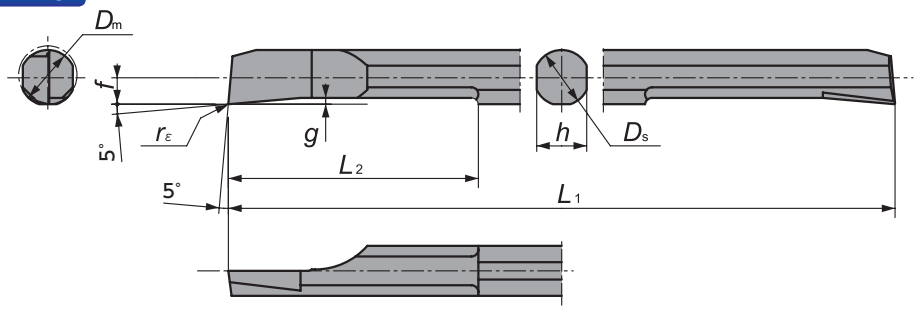


Figure-2

SHFS-H

Mirror finish



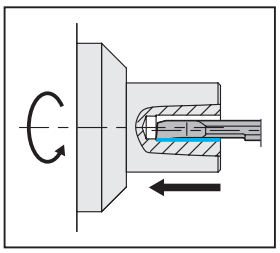


Figure-3

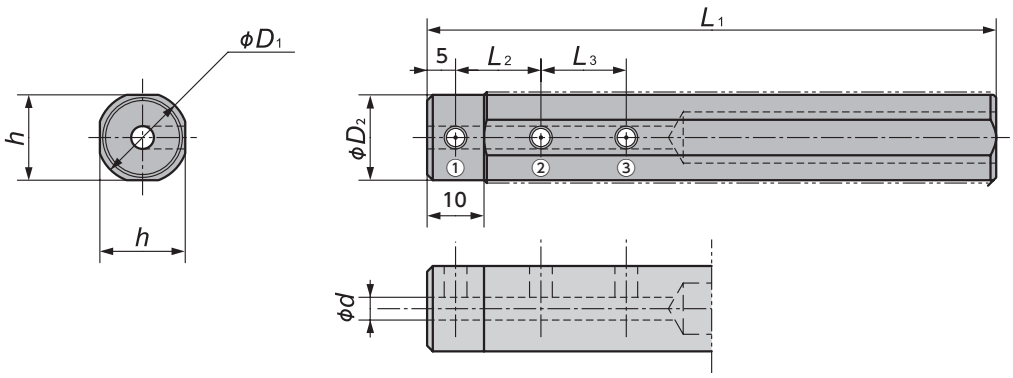
Dimensions

Shape	Part No.	Chip-breaker	Dimensions (mm)								Grade
			Min. machining dia. ϕD_m	D_s	L_1	L_2	f	h_1	g	r_ε	
Figure-1	SHFS020R005S	Yes	2.2	2	50	10	0.9	1.8	0.25	0.05	TM4
	SHFS025R005S		2.7	2.5	50	12.5	1.15	2.3	0.30	0.05	TM4
	SHFS025R015S									0.15	TM4
	SHFS030R005S		3.2	3	50	15	1.4	2.7	0.40	0.05	TM4
	SHFS030R015S									0.15	TM4
	SHFS035R005S		3.7	3.5	60	17.5	1.65	3.2	0.40	0.05	TM4
	SHFS035R015S									0.15	TM4
	SHFS040R005S		4.2	4	60	20	1.9	3.6	0.45	0.05	TM4
	SHFS040R015S									0.15	TM4
	SHFS050R005S		5.2	5	70	25	2.4	4.5	0.50	0.05	TM4
	SHFS050R015S									0.15	TM4
Figure-2	SHFB020R005F	Yes	2.2	2	50	8	0.95	1.8	0.25	0.05	TM4
	SHFB025R005F		2.7	2.5	50	12.5	1.2	2.3	0.30	0.05	TM4
	SHFB025R015F									0.15	TM4
	SHFB030R005F		3.2	3	50	15	1.4	2.7	0.45	0.05	TM4
	SHFB030R015F									0.15	TM4
	SHFB035R005F		3.7	3.5	60	17.5	1.65	3.2	0.50	0.05	TM4
	SHFB035R015F									0.15	TM4
	SHFB040R005F		4.2	4	60	20	1.9	3.6	0.50	0.05	TM4
	SHFB040R015F									0.15	TM4
	SHFB050R005F		5.2	5	70	25	2.4	4.5	0.70	0.05	TM4
	SHFB050R015F									0.15	TM4
Figure-3	SHFS020R005H	No	2.2	2	50	10	0.9	1.8	0.25	0.05	TM4
	SHFS025R005H		2.7	2.5	50	12.5	1.15	2.3	0.30	0.05	TM4
	SHFS025R015H									0.15	TM4
	SHFS030R005H		3.2	3	50	15	1.4	2.7	0.40	0.05	TM4
	SHFS030R015H									0.15	TM4
	SHFS035R005H		3.7	3.5	60	17.5	1.65	3.2	0.40	0.05	TM4
	SHFS035R015H									0.15	TM4
	SHFS040R005H		4.2	4	60	20	1.9	3.6	0.45	0.05	TM4
	SHFS040R015H									0.15	TM4
	SHFS050R005H		5.2	5	70	25	2.4	4.5	0.50	0.05	TM4
	SHFS050R015H									0.15	TM4

STICK DUO®

Shank diameter / Schaft Durchmesser : ϕ15.875 – ϕ19.05

NBH



Holder . Halter

Toolholder	Dimensions (mm)							Parts			
								Clamping screw			Wrench
	ϕd	ϕD1	ϕD2	h1	L1	L2	L3	①	②	③	
NBH02015H	2.0	15.875	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02515H	2.5										
NBH03015H	3.0						10	SS0404F	SS0404F	SS0404F	
NBH03515H	3.5										
NBH04015H	4.0					15	15				
NBH04515H	4.5										
NBH05015H	5.0										
NBH06015H	6.0					20	20				
NBH08015H	8.0							SS0403F	SS0403F	SS0403F	
NBH02016H	2.0	16	15	15	100	10	—	SS0406F	SS0406F	—	LW-2
NBH02516H	2.5										
NBH03016H	3.0						10	SS0404F	SS0404F	SS0404F	
NBH03516H	3.5										
NBH04016H	4.0					15	15				
NBH04516H	4.5										
NBH05016H	5.0										
NBH06016H	6.0					20	20				
NBH07016H	7.0							SS0403F			
NBH08016H	8.0								SS0403F	SS0403F	
NBH02019K	2.0	19.05	18	18	125	10	—	SS0408F	SS0408F	—	LW-2
NBH02519K	2.5										
NBH03019K	3.0						10	SS0406F	SS0406F	SS0406F	
NBH03519K	3.5										
NBH04019K	4.0					15	15				
NBH04519K	4.5										
NBH05019K	5.0										
NBH06019K	6.0					20	20				
NBH07019K	7.0							SS0404F	SS0404F	SS0404F	
NBH08019K	8.0										
NBH10019K	10.0							SS0403F			

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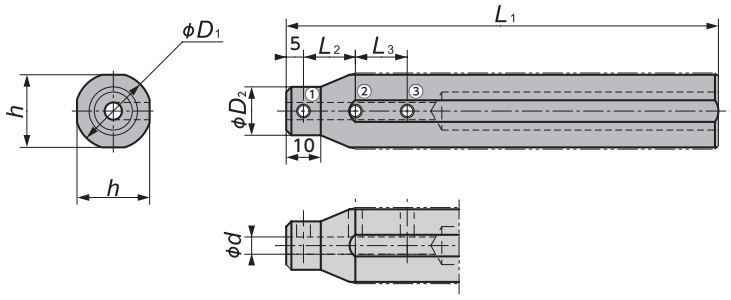
Shank diameter / Schaft Durchmesser : ϕ20 – ϕ25.4

NBH



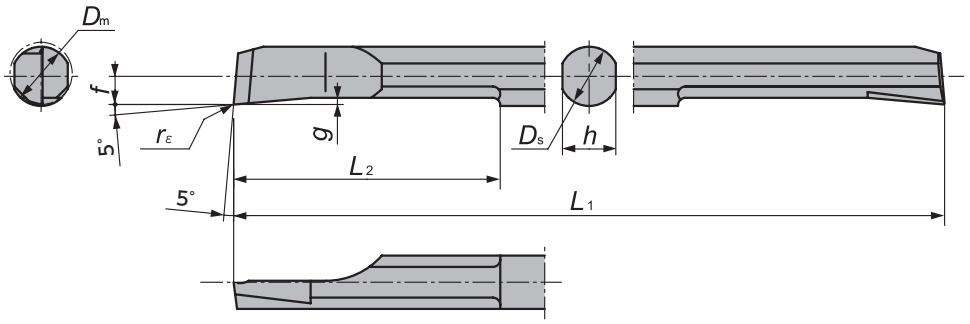
Holder . Halter

Toolholder	Dimensions (mm)							Parts			
								Clamping screw			Wrench
	ϕd	ϕD_1	ϕD_2	h_1	L_1	L_2	L_3	①	②	③	
NBH02020K	2.0	20	11	19	125	10	—	SS0404F	SS0404F	—	LW-2
NBH02520K	2.5										
NBH03020K	3.0		12				10			SS0406F	
NBH03520K	3.5										
NBH04020K	4.0		13			15	15		SS0406F		
NBH04520K	4.5										
NBH05020K	5.0		14								
NBH06020K	6.0		15			20	20				
NBH07020K	7.0		16								
NBH08020K	8.0		17						SS0404F	SS0404F	
NBH10020K	10.0		19								
NBH02022K	2.0	22	11	21	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02522K	2.5										
NBH03022K	3.0		12				10			SS0408F	
NBH03522K	3.5										
NBH04022K	4.0		13			15	15			SS0406F	
NBH04522K	4.5										
NBH05022K	5.0		14								
NBH06022K	6.0		15			20	20				
NBH07022K	7.0		16								
NBH08022K	8.0		17								
NBH10022K	10.0		19						SS0404F	SS0404F	
NBH12022K	12.0		21			25	25				
NBH02023K	2.0	23	11	21	125	10	10	SS0404F	SS0406F	—	LW-2
NBH02523K	2.5										
NBH03023K	3.0		12							SS0408F	
NBH03523K	3.5										
NBH04023K	4.0		13			15	15			SS0406F	
NBH04523K	4.5										
NBH05023K	5.0		14								
NBH06023K	6.0		15			20	20				
NBH08023K	8.0		17								
NBH10023K	10.0		19						SS0404F	SS0404F	
NBH12023K	12.0		21			25	25				
NBH02025K-MET	2.0	25	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K-MET	2.5										
NBH03025K-MET	3.0		12				10			SS0408F	
NBH03525K-MET	3.5										
NBH04025K-MET	4.0		13			15	15		SS0408F		
NBH04525K-MET	4.5										
NBH05025K-MET	5.0		14								
NBH06025K-MET	6.0		15			20	20				
NBH07025K-MET	7.0		16								
NBH08025K-MET	8.0		17						SS0406F	SS0406F	
NBH10025K-MET	10.0		19								
NBH12025K-MET	12.0		21			25	25		SS0404F	SS0404F	
NBH02025K	2.0	25.4	11	24	125	10	—	SS0404F	SS0406F	—	LW-2
NBH02525K	2.5										
NBH03025K	3.0		12				10			SS0408F	
NBH03525K	3.5										
NBH04025K	4.0		13			15	15		SS0408F		
NBH04525K	4.5										
NBH05025K	5.0		14								
NBH06025K	6.0		15			20	20				
NBH07025K	7.0		16								
NBH08025K	8.0		17						SS0406F	SS0406F	
NBH10025K	10.0		19								
NBH12025K	12.0		21			25	25		SS0404F	SS0404F	

STICK DUO®

Shank diameter / Schaft Durchmesser : ϕ 2.2 – ϕ 8.2

SBFS-S



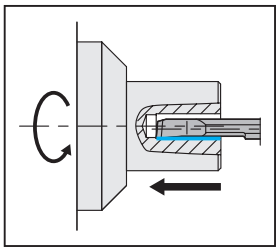
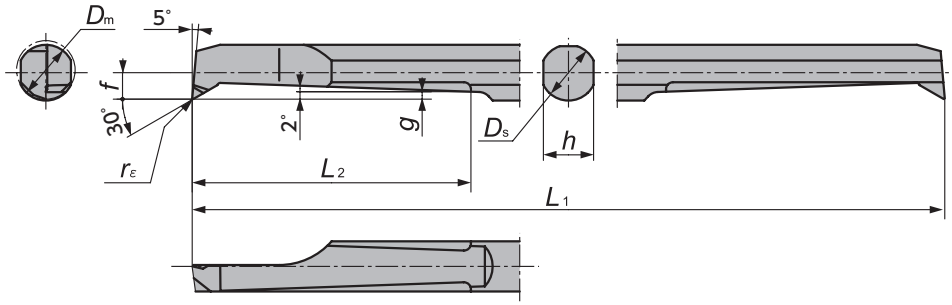


Figure-1

SBFB-F



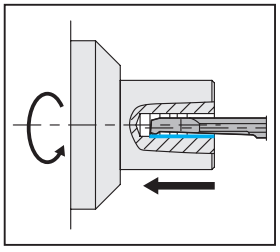
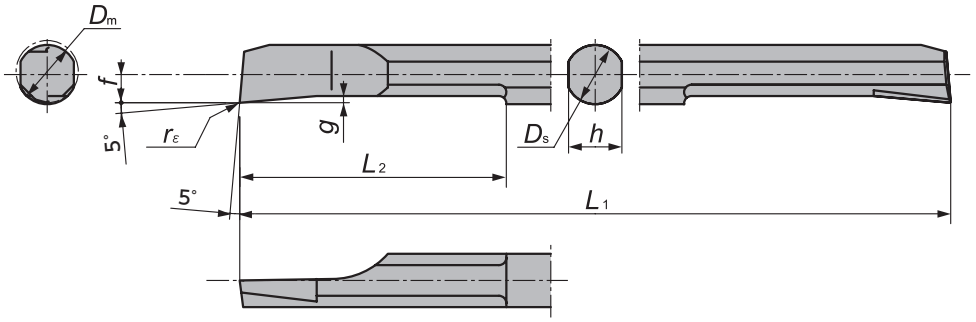


Figure-2

SBFS-H

Mirror finish



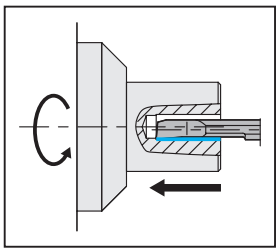


Figure-3

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Dimensions

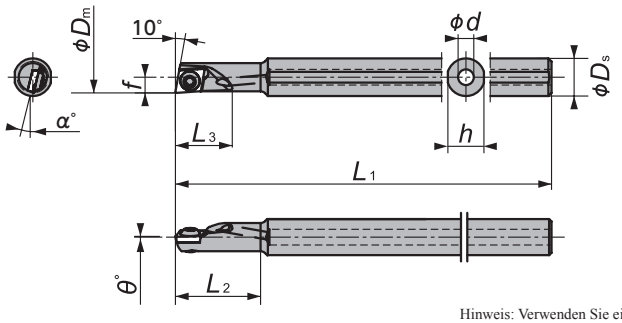
Shape	Part No.	Chip-breaker	Dimensions (mm)								Grade
			Min. machining dia. ϕD_m	D_s	L_1	L_2	f	h_1	g	r_ε	
Figure-1	SBFS020R005S	Yes	2.2	2	50	10	0.9	1.8	0.25	0.05	DT4, ZM3
	SBFS025R005S		2.7	2.5	50	12.5	1.15	2.3	0.30	0.05	DT4, ZM3
	SBFS025R015S									0.15	DT4, ZM3
	SBFS030R005S		3.2	3	50	15	1.4	2.7	0.40	0.05	DT4, ZM3
	SBFS030R015S									0.15	DT4, ZM3
	SBFS035R005S		3.7	3.5	60	17.5	1.65	3.2	0.40	0.05	DT4, ZM3
	SBFS035R015S									0.15	DT4, ZM3
	SBFS040R005S		4.2	4	60	20	1.9	3.6	0.45	0.05	DT4, ZM3
	SBFS040R015S									0.15	DT4, ZM3
	SBFS050R005S		5.2	5	70	25	2.4	4.5	0.50	0.05	DT4, ZM3
	SBFS050R015S									0.15	DT4, ZM3
	SBFS060R005S		6.2	6	80	30	2.9	5.4	0.60	0.05	DT4, ZM3
	SBFS060R015S									0.15	DT4, ZM3
Figure-2	SBFB020R005F	Yes	2.2	2	50	8	0.95	1.8	0.25	0.05	DT4, ZM3
	SBFB025R005F		2.7	2.5	50	12.5	1.2	2.3	0.30	0.05	DT4, ZM3
	SBFB025R015F									0.15	DT4, ZM3
	SBFB030R005F		3.2	3	50	15	1.4	2.7	0.45	0.05	DT4, ZM3
	SBFB030R015F									0.15	DT4, ZM3
	SBFB035R005F		3.7	3.5	60	17.5	1.65	3.2	0.50	0.05	DT4, ZM3
	SBFB035R015F									0.15	DT4, ZM3
	SBFB040R005F		4.2	4	60	20	1.9	3.6	0.50	0.05	DT4, ZM3
	SBFB040R015F									0.15	DT4, ZM3
	SBFB050R005F		5.2	5	70	25	2.4	4.5	0.70	0.05	DT4, ZM3
	SBFB050R015F									0.15	DT4, ZM3
	SBFB060R005F		6.2	6	80	30	2.9	5.4	0.90	0.05	DT4, ZM3
	SBFB060R015F									0.15	DT4, ZM3
Figure-3	SBFS020R005H	No	2.2	2	50	10	0.9	1.8	0.25	0.05	ZM3
	SBFS025R005H		2.7	2.5	50	12.5	1.15	2.3	0.30	0.05	ZM3
	SBFS025R015H									0.15	ZM3
	SBFS030R005H		3.2	3	50	15	1.4	2.7	0.40	0.05	ZM3
	SBFS030R015H									0.15	ZM3
	SBFS035R005H		3.7	3.5	60	17.5	1.65	3.2	0.40	0.05	ZM3
	SBFS035R015H									0.15	ZM3
	SBFS040R005H		4.2	4	60	20	1.9	3.6	0.45	0.05	ZM3
	SBFS040R015H									0.15	ZM3
	SBFS050R005H		5.2	5	70	25	2.4	4.5	0.50	0.05	ZM3
	SBFS050R015H									0.15	ZM3
	SBFS060R005H		6.2	6	80	30	2.9	5.4	0.60	0.05	ZM3
	SBFS060R015H									0.15	ZM3
	SBFS080R005H		8.2	8	80	30	3.9	7.3	0.80	0.05	ZM3
	SBFS080R015H									0.15	ZM3

NEW MOGUL BAR

Minimum machining diameter / Minimaler Bearbeitungsdurchmesser : ϕ5

S-MBR

Steel shank



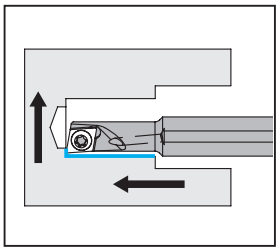
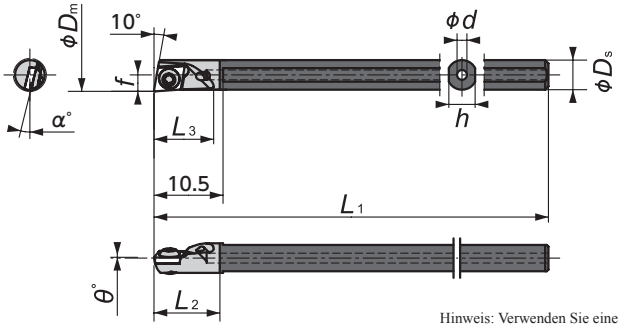


Figure-1

●Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

C-MBR

Carbide shank



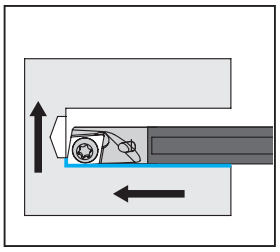
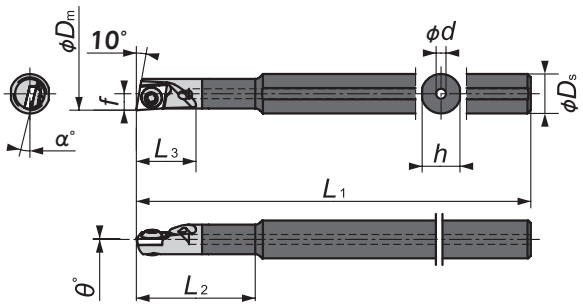


Figure-2

●Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

C-MBR

Carbide shank



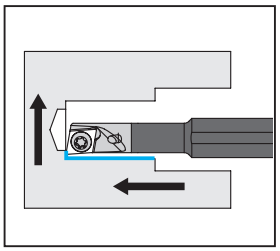


Figure-3

●Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

Holder . Halter

Shape		Toolholder	Dimensions (mm)												Insert	Parts	
			Min. machining dia. ϕD_m	ϕD_s	h_1	L_1	f	L_2	L_3	f	ϕd	θ	α	Standard nose radius $r_{\varepsilon 1}$		Clamping screw	Wrench
Steel shank	Figure-1	S06F-MBRD05-OH	5.0	6.0	5.7	80	2.5	13.5	9.0	–	2.5	0°	−13°	0.15	MBL H173	LR-S-2*3.5	CLR-13S
Carbide shank	Figure-2	C045F-MBRD05-OH		4.5	4.0			–			1.5						
	Figure-3	C06F-MBRD05-OH		6.0	5.7			18									

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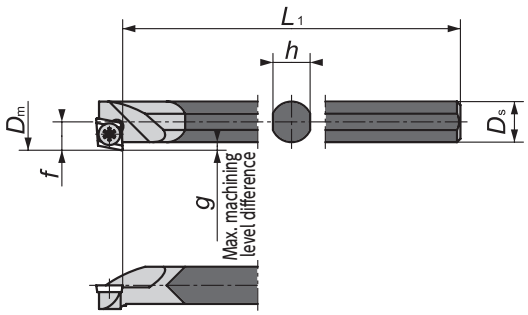
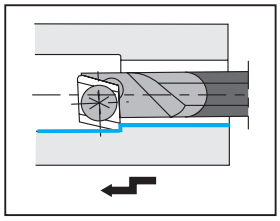
Minimum machining diameter / Minimaler Bearbeitungsdurchmesser : ϕ5 ~ 7.7

C-MSBR

Steel shank





● Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

Holder . Halter

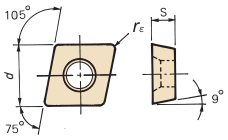
Shape	Toolholder	Dimensions (mm)							Insert	Parts	
		Min. machining dia. ϕD_m	Min. machining dia. ϕg	D_s	h	L_1	f	L_2		Clamping screw	Wrench
Carbide shank	C04J-MSBR	5.7	1.0	4.0	3.5	110	3.2	—	MBL	LR-S-2*3.5	CLR-13S
	C06J-MSBR	7.7		6.0	5.5		4.2	—			

Inserts . Schneidplatten

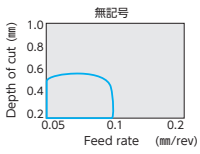
MBL

Shape	Dimensions (mm)			ISO	Grade
	d	s	$r_{\varepsilon 1}$		
	3.6	1.0	0.05	MBL005FL	ZM3, TM4
	3.6	1.0	0.15	MBL015FL	ZM3, TM4

L-hand shown

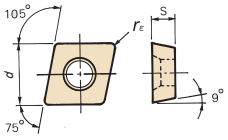


● Left-hand shown. / Linke Ausführung.

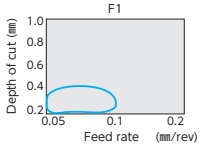


Shape	Dimensions (mm)			ISO	Grade
	d	s	$r_{\varepsilon 1}$		
	3.6	1.0	0.05	MBL005FRF1	TM4
	3.6	1.0	0.15	MBL015FRF1	TM4

F1*
R-hand shown



● Left-hand shown. / Linke Ausführung.



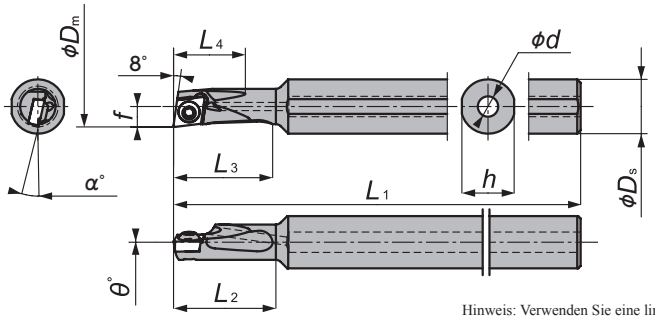
*For F1 chipbreaker, use a R-hand insert for a R-hand holder.
*Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

NEW MOGUL BAR

Minimum machining diameter / Minimaler Bearbeitungsdurchmesser : ϕ6

S-SEXR

Steel shank



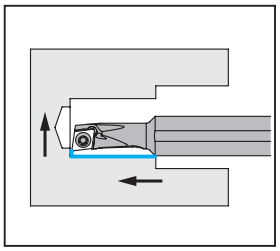
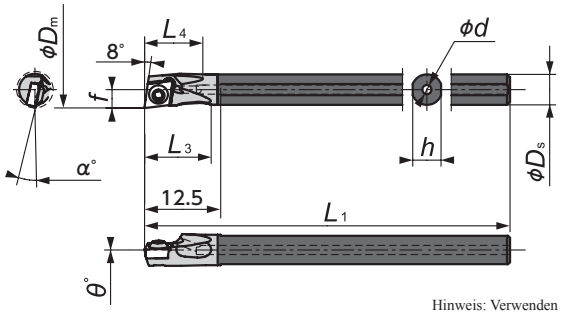


Figure-1

●Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

C-SEXR

Carbide shank



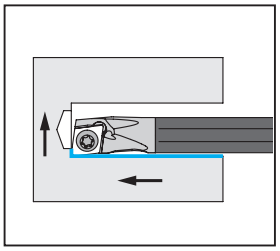
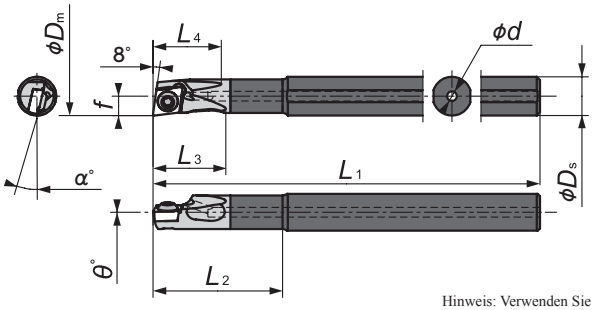


Figure-2

●Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

C-SEXR

Carbide shank



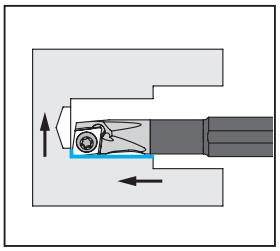


Figure-3

●Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

Holder . Halter

Shape		Toolholder	Dimensions (mm)												Insert	Parts	
			Min. machining dia. ϕD_m	ϕD_s	h_1	L_1	f	L_2	L_3	f	ϕd	θ	α	Standard nose radius $r_{\varepsilon 1}$		Clamping screw	Wrench
Steel shank	Figure-1	S08G-SEXRRT3D06-OHV	6.0	8.0	7.7	90	3.0	15	15	10	3.0	0°	−13°	0.2	ERGHT301 **C70** **H175**	LR-S-2∗3.7	CLR-13S
Carbide shank	Figure-2	C05G-SEXR$^{R}_{L}$T3D06-OH		5.0	4.0			–	11		1.5						
	Figure-3	C06G-SEXR$^{R}_{L}$T3D06-OH		6.0	5.7			20									

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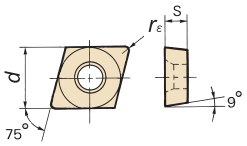
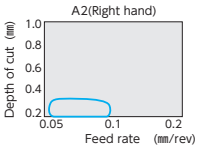
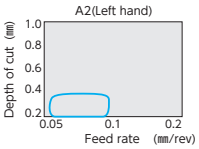
Inserts . Schneidplatten

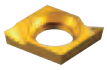
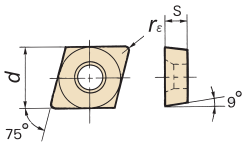
ERGH

Shape	Dimensions (mm) d	s	$r_{\varepsilon 1}$	ISO	Grade
 A2* 	3.97	1.6	0.2	ERGHT30102FR/LA2	ZM3,VM1 TM4,T15, C7X
	3.97	1.6	0.4	ERGHT30104FR/LA2	ZM3(L), TM4(R)

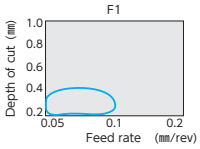
●Right-hand shown. / Rechte Ausführung.





 F1* 	3.97	1.6	0.1	ERGHT30101FRF1	TM4
	3.97	1.6	0.2	ERGHT30102FRF1	TM4
	3.97	1.6	0.4	ERGHT30104FRF1	TM4

●Right-hand shown. / Rechte Ausführung.



*For F1 chipbreaker, use a R-hand insert for a R-hand holder.
*Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

NTK CUTTING TOOLS

NEW MOGUL BAR

Minimum machining diameter / Minimaler Bearbeitungsdurchmesser : ϕ7 ~ 18

S-SCLP(C)

Steel shank

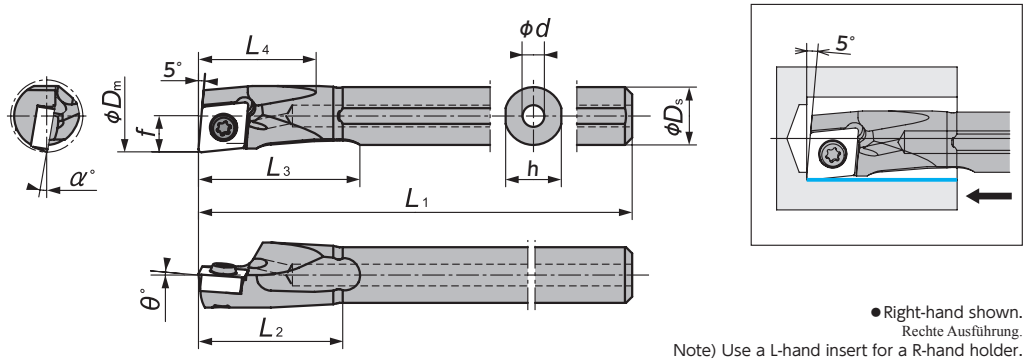


Figure-1

●Right-hand shown.
Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.

C-SCLP(C)

Carbide shank

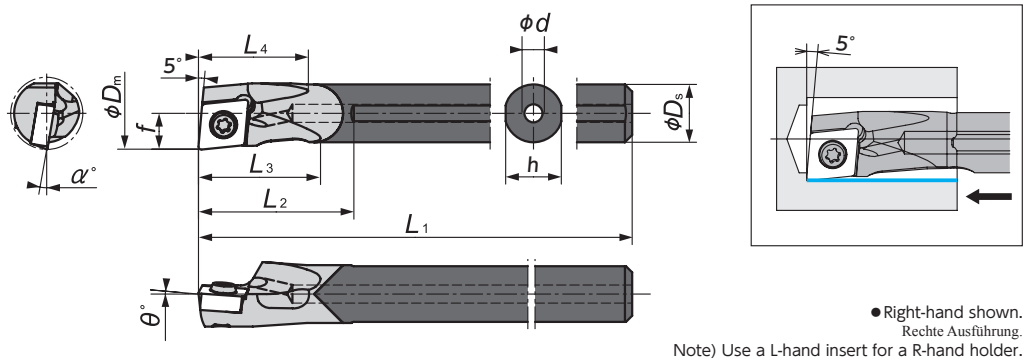
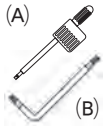


Figure-2

●Right-hand shown.
Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.

Holder . Halter

Shape		Toolholder	Dimensions (mm)												Insert	Parts	
																Clamping screw	Wrench
			Min. machining dia. ϕD_m	ϕD_s	h_1	L_1	f	L_2	L_3	f	ϕd	θ	α	Standard nose radius $r_{\varepsilon 1}$			 (A) (B)
Steel shank	Figure-1	S06F-SCLPR04D07-OH	7.0	6.0	5.75	80	3.5	14	17	12	2.5	+5°	−9°	0.2	CP○○0401 **C66**	LR-S-2*3.7	CLR-13S (A)
		S07G-SCLPR04D08-OH	8.0	7.0	6.75	90	4.0	16	19.5	13.5	3.0		−7°				
		S08H-SCLPR06D10-OH	10.0	8.0	7.7	100	5.0	20	22	16	3.0		−10°	0.4	CP○○0602 **C66**	LR-S-2.5*6	CLR-15S (A)
		S08H-SCLCR06D10-OH	10.0	8.0	7.7	100	5.0	20	22	16	3.0	0°	−13°	0.4	CC○○0602 **C63·C65**	LRIS-2.5*5	CLR-15S (A)
		S10K-SCLCR06D12-OH	12.0	10.0	9.6	125	6.0	24	27.5	20	3.5		−11°				
		S12M-SCLCR06D14-OH	14.0	12.0	11.5	150	7.0	28	32.5	23	4.0		−9°				
		S16Q-SCLCR09D18-OH	18.0	16.0	15.4	180	9.0	36	42.5	30	5.0		−10°		CC○○09T3 **C63·C65**	LRIS-4*8	LLR-25S (B)
Carbide shank	Figure-2	C06H-SCLP$^{R}_{L}$04D07-OH	7.0	6.0	5.75	100	3.5	15.5	11.5	12	2.0	+5°	−9°	0.2	CP○○0401 **C66**	LR-S-2*3.7	CLR-13S (A)
		C07J-SCLPR04D08-OH	8.0	7.0	6.75	110	4.0	17.5	13	13.5	2.0		−7°				
		C08K-SCLP$^{R}_{L}$06D10-OH	10.0	8.0	7.7	125	5.0	21.5	16.5	15	2.5		−10°	0.4	CP○○0602 **C66**	LR-S-2.5*6	CLR-15S (A)
		C08K-SCLCR06D10-OH	10.0	8.0	7.7	125	5.0	21.5	16.5	15	2.5	0°	−13°	0.4	CC○○0602 **C63·C65**	LRIS-2.5*5	CLR-15S (A)
		C10M-SCLC$^{R}_{L}$06D12-OH	12.0	10.0	9.6	150	6.0	25	20	19.5	2.5		−11°				
		C12M-SCLCR06D14-OH	14.0	12.0	11.5	150	7.0	29	23.5	22.5	3.0		−9°				

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NTK CUTTING TOOLS

NEW MOGUL BAR

Minimum machining diameter / Minimaler Bearbeitungsdurchmesser : ϕ8 ~ 18

S-STUC(P)

Steel shank

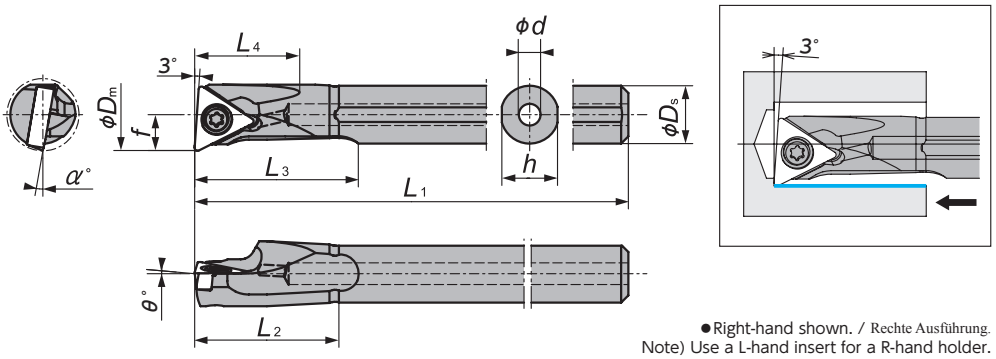


Figure-1

●Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

C-STUC(P)

Carbide shank

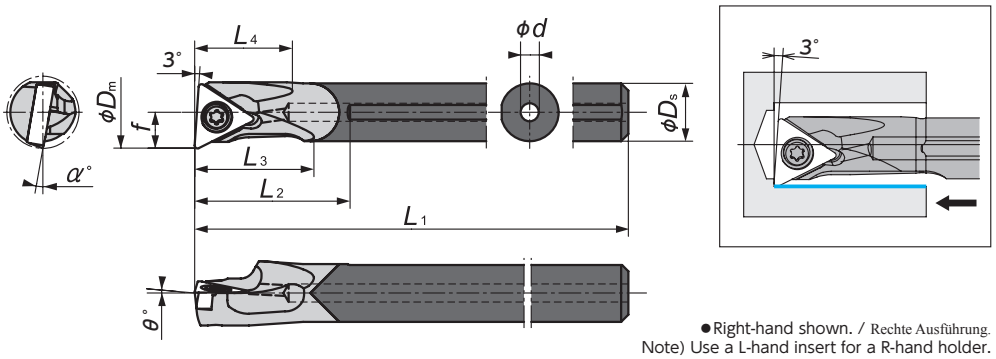
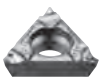
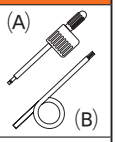


Figure-2

●Right-hand shown. / Rechte Ausführung.
Note) Use a L-hand insert for a R-hand holder.
Hinweis: Verwenden Sie eine linke Wendeschneidplatte mit einem rechten Werkzeughalter.
Note) For F1 chipbreaker, use a R-hand insert for a R-hand holder.
Hinweis: Beim F1 Spanbrecher, rechte Wendeschneidplatte mit rechtem Werkzeughalter verwenden.

Holder . Halter

Shape		Toolholder	Dimensions (mm)											Insert	Parts	
			Min. machining dia. ϕD_m	ϕD_s	h_1	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Standard nose radius $r_{\varepsilon 1}$		Clamping screw 	Wrench 
Steel shank	Figure-1	S07G-STUCR06D08-OH	8.0	7.0	6.75	90	4.0	16.0	19.5	12.5	2.5	0°	−11°	0.2	TC○○0601 **C71**	LR-S-2*4.4	CLR-13S (A)
		S08H-STUPR09D10-OH	10.0	8.0	7.7	100	5.0	20.0	22.5	14.5	3.0	+5°	−10°	0.4	TP○○0902 **C73**	LR-S-2.5*4.8	CLR-15S (A)
		S10K-STUPR11D12-OH	12.0	10.0	9.6	125	6.0	24.0	27.5	18.5	3.5		−7.5°		TP○○1103 **C73**	LR-S-3*5.8	RLR-20S (B)
		S12M-STUPR11D14-OH	14.0	12.0	11.5	150	7.0	28.0	32.5	22	4.0		−5°				
		S16Q-STUPR11D18-OH	18.0	16.0	15.4	180	9.0	32.0	42.5	28.5	5.0		−3°				
Carbide shank	Figure-2	C07J-STUC$^{R}/_{L}$06D08-OH	8.0	7.0	6.75	110	4.0	17.5	13.0	12.5	2.0	0°	−11°	0.2	TC○○0601 **C71**	LR-S-2*4.4	CLR-13S (A)
		C08K-STUP$^{R}/_{L}$09D10-OH	10.0	8.0	7.7	125	5.0	21.5	16.5	14.5	2.5	+5°	−10°	0.4	TP○○0902 **C73**	LR-S-2.5*4.8	CLR-15S (A)
		C10M-STUP$^{R}/_{L}$11D12-OH	12.0	10.0	9.6	150	6.0	25.0	20.0	17.5	2.5		−7.5°		TP○○1103 **C73**	LR-S-3*5.8	RLR-20S (B)
		C12M-STUPR11D14-OH	14.0	12.0	11.5	150	7.0	29.0	23.0	21.5	3.0		−5°				
		C16Q-STUPR11D18-OH	18.0	16.0	15.4	180	9.0	37.0	29.0	28.0	4.0		−3°				

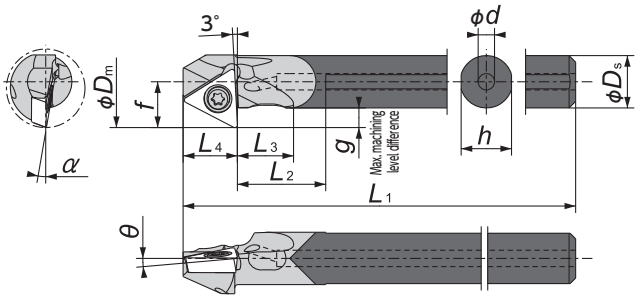
NTK CUTTING TOOLS

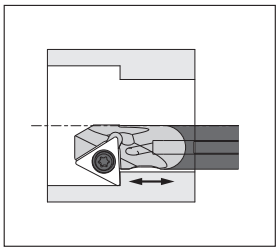
NEW MOGUL BAR

Minimum machining diameter / Minimaler Bearbeitungsdurchmesser : ϕ10 ~ 17.5

C-STZP(C)

Carbide shank
Coolant hole
(internal coolant)





● Right-hand shown. / Rechte Ausführung.
Note) When using R-hand toolholder, use R-hand for machining in this direction (→)
use L-hand for machining in this direction (←)
Hinweis: Bei Verwendung von rechten Haltern rechte Platten einsetzen um diese Bearbeitungsrichtung zu gewährleisten (→)
Bei Verwendung von rechten Haltern Linke Platten einsetzen um diese Bearbeitungsrichtung zu gewährleisten (←)

Holder . Halter

Toolholder	Dimensions (mm)												Insert	Parts	
	Min. machining dia. ϕD_m	Max. depth of cut L_4	ϕD_s	h	L_1	f	L_2	L_3	L_4	ϕd	θ	α	Standard nose radius $r_{\varepsilon 1}$		Clamping screw	Wrench
C06H-STZCR06D10-OH	10.0	2.5	6.0	5.75	100	5.5	10.5	6.0	6.0	2.0	0°	-10°	0.2	TC○○0601 **C71**	LR-S-2*4	CLR-13S
C08K-STZPR09D12-OH	12.0	3.0	8.0	7.7	125	7.0	13.5	8.5	8.3	2.5	+5°	-10°	0.4	TP○○0902 **C73**	LR-S-2.5*4.8	CLR-15S
C10M-STZPR09D14-OH	14.0		10.0	9.6	150	8.0	18.5	12.0	8.3	2.5		-7°				
C12M-STZPR11D175-OH*	17.5	4.5	12.0	11.5	150	10.5	22.0	14.5	9.6	3.0		-5°		TC○○1103 **C71**	LR-S-3*5.8	RLR-20S

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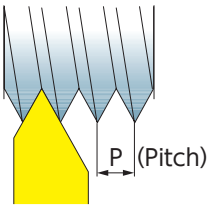
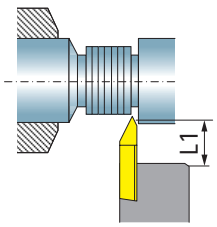
Threading
Gewinde-Werkzeuge

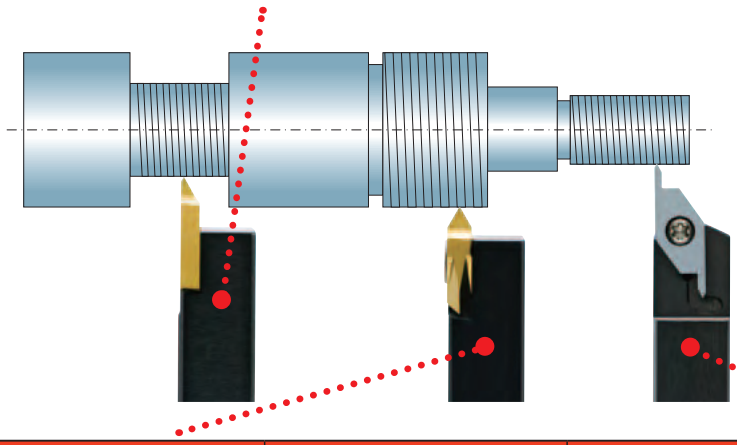
Selection guide for threading tools
Auswahlhilfe für Gewinde-Werkzeuge

OD threading

TTP	DS-TTP
	
➡ I184	➡ I184
Pitch : 0.2-2.0	
L1 : 5.5	
Shank size : □8-□20	Shank dia. : ϕ14-ϕ25.4
Inserts : TTP□□FR/L	







Thread whirling

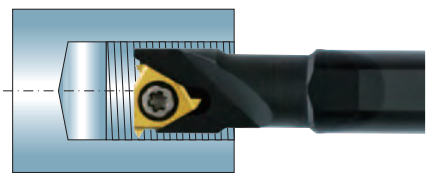
➡ I196
Inserts: Special

STTN	DS-STT	NTTB
		
➡ I188	➡ I188	➡ I188
Pitch : 0.8-3.0		
L1 : 4.0	L1 : 3.0	L1 : 4.0
Shank size : □10, □12	Shank dia. : ϕ14-ϕ16	Shank size : □16, □20
Inserts : TTMH32		

CSV

➡ I182
Pitch : 0.2-0.5
L1 : 3.0
Shank size : □7-□12
Inserts : CSVT11FR

Internal threading



TCG: Carbide shank HN59: Steel shank

➡ I194
Pitch : 0.2-1.5
L1 : 0.7-1.0
Shank dia. : ϕ6.0-ϕ10.0
Inserts : TMN

SBT

➡ I192
Pitch : 0.5-1.75
L1 : 0.8-1.8
Shank dia. : ϕ0.8-ϕ1.8
Solid bar

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Recommended thread pitch and available range
Klassifikation der Gewindeschneidplatten

Insert	Dimensions (mm)		
	Edge radius	Recommended threading pitch	Machining pitch range
TTP(S)60FR/L4A TTP(S)60FR/L4B	0.05 Max. flat	0.3	0.2-0.75
TTP(S)60FR/L8A TTP(S)60FR/L8B	0.05	0.4	0.4-1.25
TTP(S)60FR/L-N	0.1	1.0	1.0-1.5
TTP60FR/L-N02	0.2	1.5	1.5-2.0
TTP55FR/L8A TTP55FR/L8B	0.05		16-48 threads/inch
TTMH3260R/L010	0.1	1.0	0.8-3.0
TTMH3260R/L015	0.15	1.5	1.0-3.0
TTMH3260R/L020	0.2	2.0	1.5-3.0
TTMH3260R/L025	0.25	2.5	1.75-3.0
CSVT11FR/LP60-035A CSVT11FR/LP60-035B	0.03Max	0.3	0.2-0.5
TTMA4360R015	0.15	1.5	1.0-4.0
TTMA4360R020	0.20	2.0	1.5-4.0

Range of thread pitch
Übersicht der Gewindesteigungen bezogen auf Durchmesser

Metric thread (60˚)
Metrisches Gewinde (60°)

Available area

Pitch	Effective diameter of thread																							
	1	2	4	5	6	7	8	9	10	15	20	25	30	35	40	45	50	60	70	80	90	100	125	150
0.20	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.25		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.30		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.35		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.40		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.45		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.50			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.60			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.70			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.75			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.80			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.00				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.25					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.50						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.75							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.00								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.50										■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3.00											■	■	■	■	■	■	■	■	■	■	■	■	■	■
3.50												■	■	■	■	■	■	■	■	■	■	■	■	■
4.00												■	■	■	■	■	■	■	■	■	■	■	■	■

55˚ thread (Whitworth screw threads, parallel threads for pipes)
55°thread (Whitworth Gewinde)

Available area

Pitch	No. of threads	Effective diameter of thread																							
		1	2	4	5	6	7	8	9	10	15	20	25	30	35	40	45	50	60	70	80	90	100	125	150
0.5292	48		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.6048	42		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.7056	36		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.7938	32		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
0.9071	28		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.0583	24		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.2700	20				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.3368	19				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.5875	16					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
1.8143	14						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.1167	12							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.3091	11								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.5400	10								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2.8222	9								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3.1750	8								■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

CSV

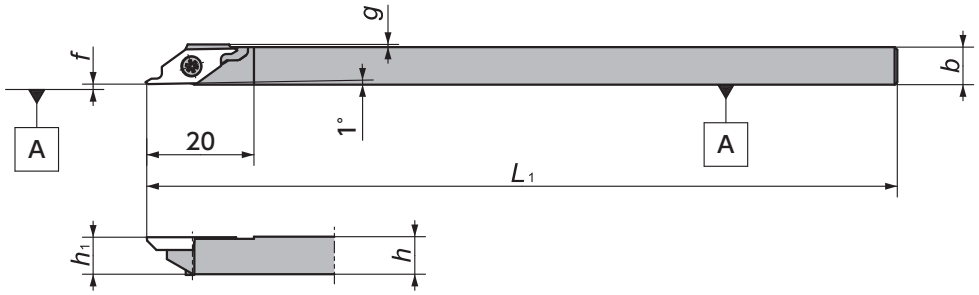


Figure-1

● Right-hand shown.
● Rechte Ausführung

CSV-NC/CSV-NC-F

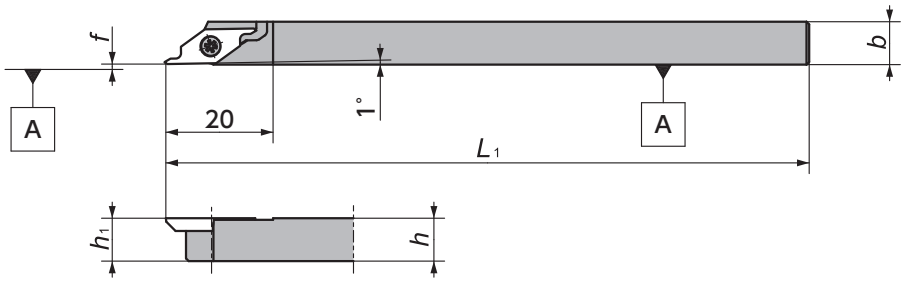
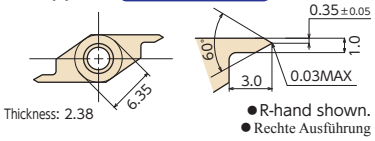
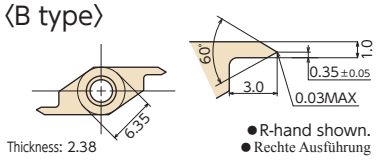


Figure-2

● Right-hand shown.
● Rechte Ausführung
● "f" dimension of CSV□08NC-F is very small
● Sehr kleines Versatz-Maß (f) bei Ausführung CSVR/L08NC-F

■ Holder . Halter ➔ D82

● inserts . Schneidplatten

CSVT Shape	Chip-breaker	Dimensions (mm) r_ε	Applicable thread Pitch	ISO	Grade
⟨A type⟩ Mirror finish  ● R-hand shown. ● Rechte Ausführung	No	R0.03MAX	**0.2-0.5**	**CSVT11F$^{R}_{L}$P60-035A**	**VM1**
⟨B type⟩  ● R-hand shown. ● Rechte Ausführung	No	R0.03MAX	**0.2-0.5**	**CSVT11F$^{R}_{L}$P60-035B**	**VM1**

☆All angles shown are obtained when insert is set on the holder.
☆Dargestellter Winkel bezieht sich auf eingebauter Schneidplatte.

CSVT

▶For applicable holders and inserts, please refer to page I182.
▶Geeignete Halter und Schneidplatten finden Sie auf Seite I 182.

Metric Threads / Fine and Coarse
Metrisches Gewinde (Fein und Grob)

	Pitch (mm)				
	0.50	0.40	0.35	0.25	0.20
M1				Coarse	Fine
M2		Coarse		Fine	
M3	Coarse		Fine		
M4	Fine				
M5					

Unified Standard (UN, UNF, UNC) Threads
Unified Gewinde (UN, UNF, UNC)

	Thread Type		Pitch (mm)
	No. 1	No. 2	
Coarse		No.1-64 UNC	0.3969
	No.2-56 UNC		0.4536
Fine	No.0-80 UNF		0.3175
		No.1-72 UNF	0.3528
	No.2-64 UNF		0.3969
		No.3-56 UNF	0.4536

Recommended Depth of Cut (DOC) for Each Pass (mm)
Zuordnung Schnitttiefe und Anzahl der Schnitte

TTP, TTPS, TTMH, TTMA, CSVT Partial profile 60 degree inserts

Thread Type		Pitch (mm)	Total DOC (mm)	Number of pass	1	2	3	4	5	6	7	8	9	10
Metric (60°)	male thread	0.20	0.20	4	0.08	0.06	0.04	0.02						
		0.25	0.24	4	0.10	0.08	0.04	0.02						
		0.30	0.28	5	0.08	0.07	0.07	0.04	0.02					
		0.35	0.32	5	0.10	0.09	0.07	0.04	0.02					
		0.40	0.35	5	0.12	0.10	0.07	0.04	0.02					
		0.45	0.39	5	0.16	0.10	0.07	0.04	0.02					
		0.50	0.33	5	0.10	0.10	0.07	0.04	0.02					
		0.60	0.40	6	0.10	0.10	0.08	0.06	0.04	0.02				
		0.70	0.48	6	0.10	0.10	0.10	0.10	0.06	0.02				
		0.75	0.52	7	0.10	0.10	0.10	0.08	0.07	0.05	0.02			
		0.80	0.56	7	0.10	0.10	0.10	0.10	0.08	0.06	0.02			
		1.00	0.71	8	0.15	0.15	0.12	0.10	0.08	0.06	0.03	0.02		
		1.25	0.90	9	0.20	0.18	0.13	0.10	0.10	0.07	0.05	0.05	0.02	
		1.50	1.09	10	0.22	0.20	0.15	0.12	0.10	0.10	0.08	0.05	0.05	0.02

TTP

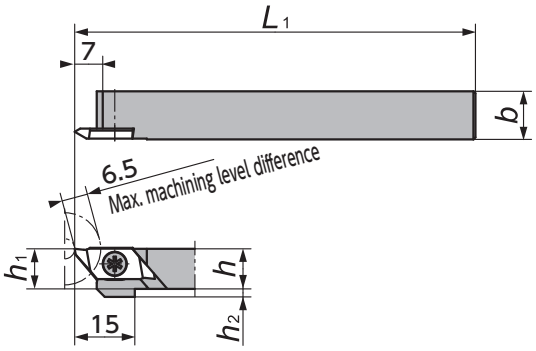
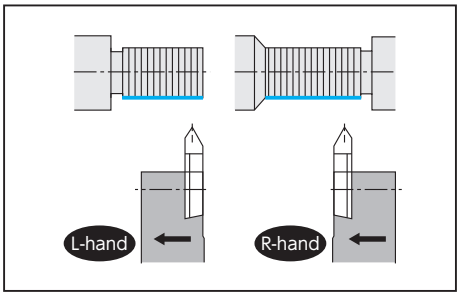


Figure-1



● Right-hand shown.
● Rechte Ausführung

DS-TTP

DS Holder

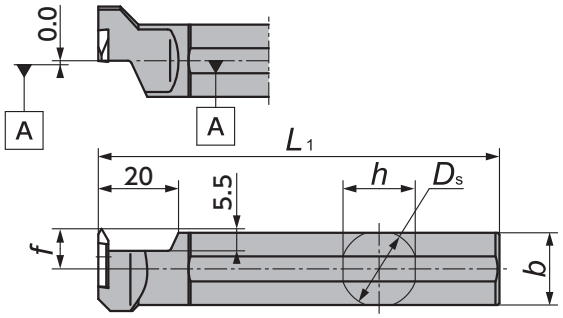
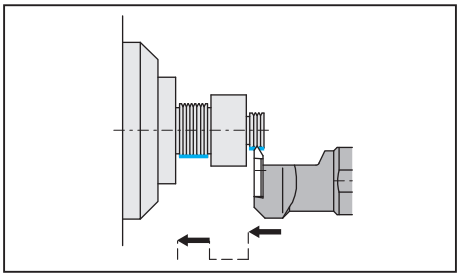
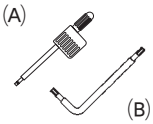


Figure-2



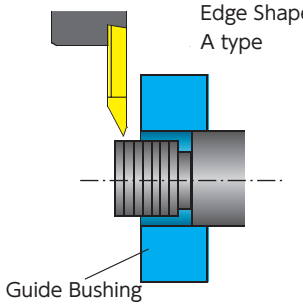
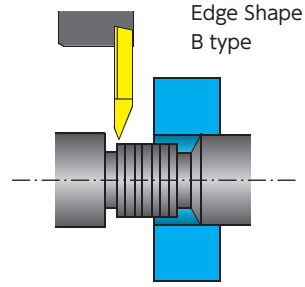
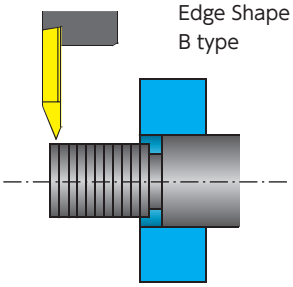
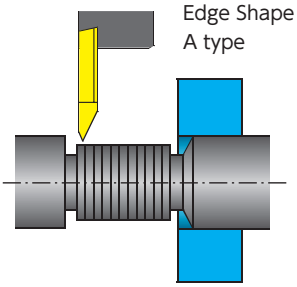
● Right-hand shown.
● Rechte Ausführung
☆Use R-hand inserts for L-hand holders.
☆Rechte Schneidplatte für linke halter verwenden.

Holder . Halter

Shape	Toolholder	Dimensions (mm) Ds	h	b	L1	h1	f	h2	Insert	Parts: Clamping screw	Parts: Wrench
										 (A) (B)	 (A) (B)
Figure-1	TTPR/L08	–	8	10	120	8	–	4	TTP I185	LRIS-4*10PW (A)	CLR-15S (A)
	TTPR/L10		10			10		2			
	TTPR/L12GX		12	12	85	12		0		LRIS-4*12PW (A)	
	TTPR/L12				120						
	TTPR/L16H		16	16	100	16					
	TTPR/L16				120						
	TTPR/L20F		20	20	80	20					
Figure-2	DS-TTPL16F	16.00	15	15	80	–	10.0	–		LRIS-4*10 (B)	LLR-25S-20*65 (B)
	DS-TTPL19	19.05	18	18	120						
	DS-TTPL20	20.00	19	19							
	DS-TTPL22	22.00	21	21							
	DS-TTPL25	25.40	24	24	150						

How to use insert A and B

Anwendungs-Hinweise zu Typ A und B

Right Hand Toolholders				Left Hand Toolholders			
 Edge Shape : A type Guide Bushing		 Edge Shape : B type		 Edge Shape : B type		 Edge Shape : A type	
Toolholder	TTPR	Toolholder	TTPR	Toolholder	TTPL	Toolholder	TTPL
Insert	TTP..FR..A	Insert	TTP..FR..B	Insert	TTP..FL..B	Insert	TTP..FL..A

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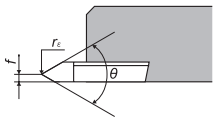
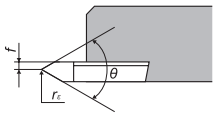
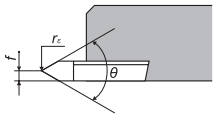
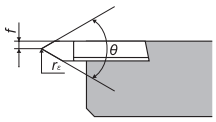
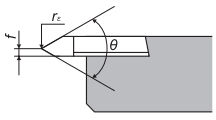
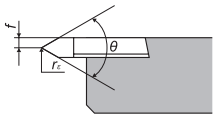
● inserts . Schneidplatten

TTP Shape	Dimensions (mm) θ	f	r_ε	Applicable screw Pitch	No. of threads/ inch	ISO	Grade
A type 	60°	0.4	0.05 MAX flat	**0.2-0.75**	–	**TTP60FR4A**	**ZM3, QM3**
	60°	0.4	0.05 MAX flat	**0.2-0.75**	–	**TTP60FR4AS** Ⓜ	**KM1**
	60°	0.8	R0.05	**0.4-1.25**	–	**TTP60FR8A**	**ZM3, QM3**
	60°	0.8	R0.05	**0.4-1.25**	–	**TTP60FR8AS** Ⓜ	**KM1**
	55°	0.8	R0.05	**0.2-0.75**	48-16	**TTP55FR8A**	**ZM3**
B type 	60°	0.4	0.05 MAX flat	**0.2-0.75**	–	**TTP60FR4B**	**ZM3, QM3**
	60°	0.4	0.05 MAX flat	**0.2-0.75**	–	**TTP60FR4BS** Ⓜ	**KM1**
	60°	0.8	R0.05	**0.4-1.25**	–	**TTP60FR8B**	**ZM3, QM3**
	60°	0.8	R0.05	**0.4-1.25**	–	**TTP60FR8BS** Ⓜ	**KM1**
	55°	0.8	R0.05	**0.2-0.75**	48-16	**TTP55FR8B**	**ZM3**
N type  ●R-hand shown.	60°	1.25	R0.1	**1.0-1.5**	–	**TTP60FR-N**	**ZM3, QM3**
	60°	1.25	R0.1	**1.0-1.5**	–	**TTP60FR-NS**	**KM1**
	60°	1.25	R0.2	**1.5-2.0**	–	**TTP60FR-N02**	**ZM3, QM3**
A type 	60°	0.4	0.05 MAX flat	**0.2-0.75**	–	**TTP60FL4A**	**ZM3, QM3**
	60°	0.4	0.05 MAX flat	**0.2-0.75**	–	**TTP60FL4AS** Ⓜ	**KM1**
	60°	0.8	R0.05	**0.4-1.25**	–	**TTP60FL8A**	**ZM3, QM3**
	60°	0.8	R0.05	**0.4-1.25**	–	**TTP60FL8AS** Ⓜ	**KM1**
	55°	0.8	R0.05	**0.2-0.75**	48-16	**TTP55FL8A**	**ZM3**
B type 	60°	0.4	0.05 MAX flat	**0.2-0.75**	–	**TTP60FL4B**	**ZM3, QM3**
	60°	0.4	0.05 MAX flat	**0.2-0.75**	–	**TTP60FL4BS** Ⓜ	**KM1**
	60°	0.8	R0.05	**0.4-1.25**	–	**TTP60FL8B**	**ZM3, QM3**
	60°	0.8	R0.05	**0.4-1.25**	–	**TTP60FL8BS** Ⓜ	**KM1**
	55°	0.8	R0.05	**0.2-0.75**	48-16	**TTP55FL8B**	**ZM3**
N type  ●L-hand shown.	60°	1.25	R0.1	**1.0-1.5**	–	**TTP60FL-N**	**ZM3, QM3**
	60°	1.25	R0.1	**1.0-1.5**	–	**TTP60FL-NS**	**KM1**
	60°	1.25	R0.2	**1.5-2.0**	–	**TTP60FL-N02**	**ZM3, QM3**

NTK CUTTING TOOLS

TTP

▶For applicable holders and inserts, please refer to pages I184 and I185.
▶Geeignete Halter und Schneidplatten finden Sie auf Seite I 184 und I 185.

[Covered Thread Pitch Range (㎜)]

Inserts	Pitch (㎜)
TTP60FR/L4A,AS(B,BS)	0.2-0.75
TTP60FR/L8A,AS(B,BS)	0.4-1.25
TTP60FR/L-N(S)	1.0-1.5
TTP60FR/L-N02	1.5-2.0

TTP60FR/L-N02 can be used up to M150 when the pitch is 2.0 ㎜
TTP60F-N02 kann bis M150x2 verwendet werden

Metric Threads / Fine and Coarse . Metrisches Gewinde (Fein und Grob)

Thread Type			Pitch (㎜)										
			2.00	1.50	1.25	1.00	0.80	0.75	0.70	0.50	0.40	0.35	0.25	0.20
M1													Coarse	Fine
M2											Coarse		Fine	
M3										Coarse		Fine		
M4									Coarse	Fine				
M5							Coarse							
M6						Coarse		Fine						
	M7													
M8					Coarse	Fine								
		M9												
M10				Coarse	Fine									
		M11												
M12				Fine	Fine									
	M14		Coarse											
		M15												
M16			Coarse											
		M17												
	M18		Fine	Fine										
M20														
	M22													
M24														
		M25												
		M26												
	M27		Fine			Fine								
		M28												
M30														
		M32												

Unified Standard (UN, UNF, UNC) Threads . Unified Gewinde (UN, UNF, UNC)

	Thread Type		Pitch (㎜)	Applicable Inserts
Coarse (UNC)		No.1-64 UNC	0.3969	TTP60FR/L4A, AS(B, BS)
	No.2-56 UNC		0.4536	TTP60FR/L4A, AS(B, BS) TTP60FR/L8A, AS(B, BS)
		No.3-48 UNC	0.5292	
	No.4-40 UNC		0.6350	
	No.5-40 UNC		0.6350	
	No.6-32 UNC		0.7938	TTP60FR/L8A, AS(B, BS)
	No.8-32 UNC		0.7938	
	No.10-24 UNC		1.0583	TTP60FR/L8A, AS(B, BS) TTP60FR/L-N(S)
		No.12-24 UNC	1.0583	
	1/4-20 UNC		1.2700	
	5/16-18 UNC		1.4111	TTP60FR/L-N(S)
	3/8-16 UNC		1.5875	TTP60FR/L-N02
	7/16-14 UNC		1.8143	
	1/2-13 UNC		1.9538	

	Thread Type		Pitch (㎜)	Applicable Inserts
Fine (UNF)	No.0-80 UNF		0.3175	TTP60FR/L4A, AS(B, BS)
		No.1-72 UNF	0.3528	
	No.2-64 UNF		0.3969	
		No.3-56 UNF	0.4536	TTP60FR/L4A, AS(B, BS) TTP60FR/L8A, AS(B, BS)
	No.4-48 UNF		0.5292	
	No.5-44 UNF		0.5773	
	No.6-40 UNF		0.6350	
	No.8-36 UNF		0.7056	
	No.10-32 UNF		0.7938	TTP60FR/L8A, AS(B, BS)
		No.12-28 UNF	0.9071	
	1/4-28 UNF		0.9071	
	5/16-24 UNF		1.0583	TTP60FR/L8A, AS(B, BS) TTP60FR/L-N(S)
	3/8-24 UNF		1.0583	
	7/16-20 UNF		1.2700	TTP60FR/L-N(S)
	1/2-20 UNF		1.2700	
	9/16-18 UNF		1.4111	
	5/8-18 UNF		1.4111	
	3/4-16 UNF		1.5875	TTP60FR/L-N02
	7/8-14 UNF		1.8143	

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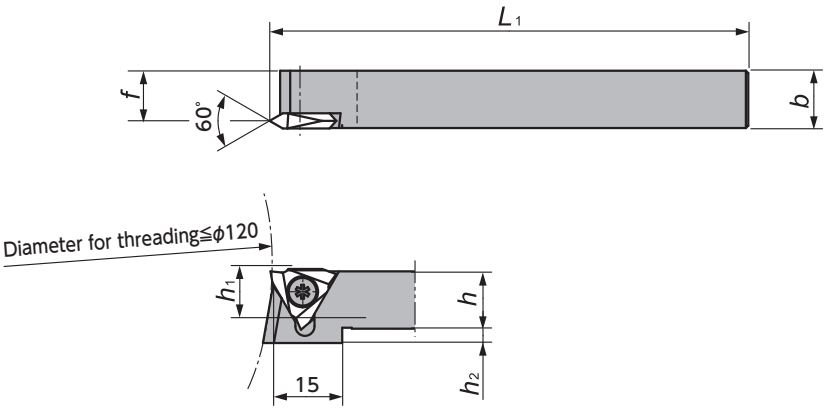
MEMO

STTN



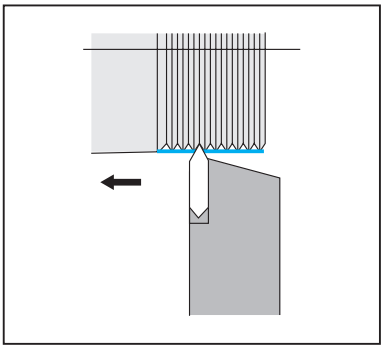
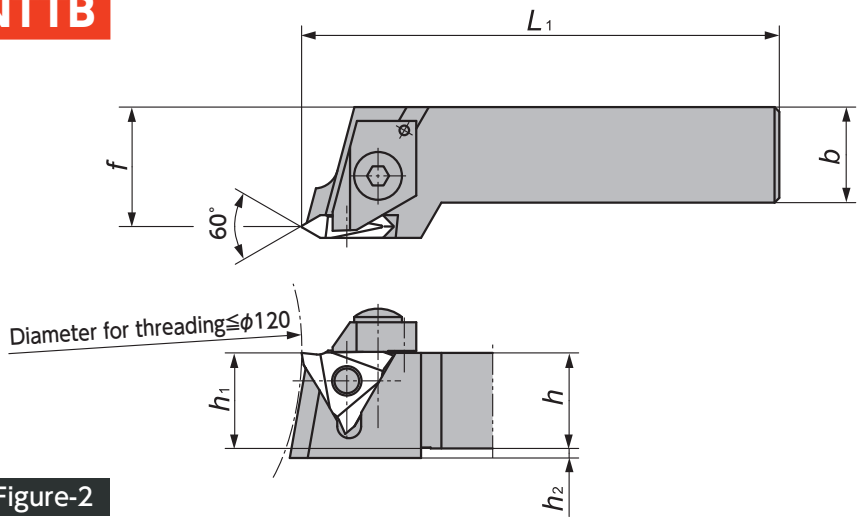


Figure-1

● Right-hand shown.
● Rechte Ausführung

NTTB



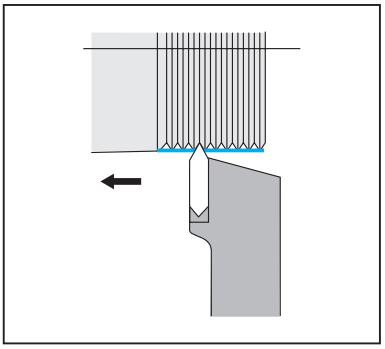
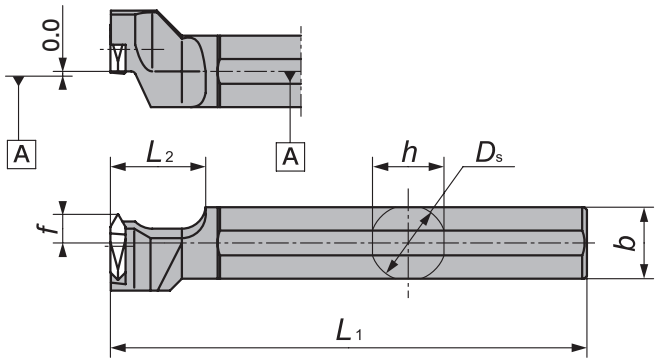


Figure-2

● Right-hand shown.
● Rechte Ausführung

DS-STT



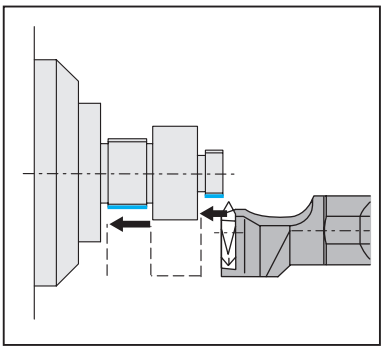


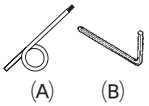
Figure-3

● Left-hand shown.
● Linke Ausführung

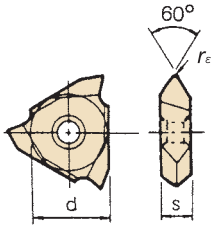
☆Use R-hand inserts for Left-hand holders.
☆Rechte Schneidplatte für linke halter verwenden.

Threading

Holder . Halter

Shape	Toolholder	Dimensions (mm) D_s	h	b	L_1	h_1	f	h_2	Insert	Parts: Clamp	Clamping bolt	Spring	Clamping screw	Wrench
														 (A) (B)
Figure-1	**STTNR101032**	–	10	10	80	10	8.5	5.0	TTMH3260	–	–	–	LR-S-4*9	RLR-20S (A)
	STTNR121232		12	12		12	10.5							
	STTNR121232-K				125									
Figure-2	**NTTBR161632**	–	16	16	120	16	20.0	4.0	TTMH3260	CPR/L5	AOS-5*25	ASG-5	–	LW-2.5 (B)
	NTTBR202032		20	20	140	20	25.0	0.0						
	NTTBR/L252543		25	25	160	25	30.0	0.0	TTMA4360	CPR/L6	AOS-6*30	ASG-6		LW-3 (B)
Figure-3	**DS-STTL14F**	14.000	13	13	80	–	6.0	–	TTMH3260	–	–	–	LR-S-4*9	RLR-20S (A)
	DS-STTL15H	15.875	15	15	100									
	DS-STTL16X	16.000			85									

inserts . Schneidplatten

TTMH / TTMA Shape	Dimensions (mm) d	s	r_ε	Applicable screw Pitch	ISO	Grade
  	9.525	3.18	0.10	**0.8-3.0**	**TTMH3260R010**	**C7X, ZM3**
			0.15	**1.0-3.0**	**TTMH3260R015**	**C7X, ZM3**
			0.20	**1.5-3.0**	**TTMH3260R020**	**ZM3**
			0.25	**1.75-3.0**	**TTMH3260R025**	**C7X**
	12.70	4.76	0.15	**1.0-4.0**	**TTMA4360R015**	**C7X**
			0.20	**1.5-4.0**	**TTMA4360R020**	**C7X**

● Right-hand shown.
● Rechte Ausführung

TTMH

▶For applicable holders and inserts, please refer to pages I188 and I189.
▶Geeignete Halter und Schneidplatten finden Sie auf Seite I 188 und I 189.

[Machining pitch range]

Part No.	Pitch
TTMH3260R010	0.8-3.0
TTMH3260R015	1.0-3.0
TTMH3260R020	1.5-3.0
TTMH3260R025	1.75-3.0

Metric Threads / Fine and Coarse . Metrisches Gewinde (Fein und Grob)

Thread type			Pitch							
No. 1	No. 2	No. 3	3.00	2.50	2.00	1.75	1.50	1.25	1.00	0.80
M5										Coarse
M6									Coarse	
	M7									
M8								Coarse	Fine	
		M9								
M10							Coarse	Fine		
		M11								
M12						Coarse	Fine	Fine		
	M14				Coarse					
		M15								
M16					Coarse					
		M17								
	M18			Coarse	Fine					
M20										
	M22									
M24			Coarse							
		M25								
		M26								
	M27		Coarse		Fine					
		M28								
M30			Fine							
		M32								
	M33		Fine							
		M35								
M36			Fine		Fine					
		M38								
	M39		Fine		Fine					
		M40								

Unified standard (UN, UNF, UNC) Threads . Unified Gewinde (UN, UNF, UNC)

	Thread type		Pitch	Applicable insert
	No. 1	No. 2	(Reference)	
Coarse	No.10-24 UNC		1.0583	TTMH3260R010 TTMH3260R015
		No.12-24 UNC	1.0583	
	1/4-20 UNC		1.2700	
	5/16-18 UNC		1.4111	
	3/8-16 UNC		1.5875	TTMH3260R010,R015 TTMH3260R020
	7/16-14 UNC		1.8143	TTMH3260R010,R015 TTMH3260R020,R025
	1/2-13 UNC		1.9538	
	9/16-12 UNC		2.1167	
	5/8-11 UNC		2.3091	
	3/4-10 UNC		2.5400	
	7/8-9 UNC		2.8222	

	Thread type		Pitch	Applicable insert
	No. 1	No. 2	(Reference)	
Fine		No.12-28 UNF	0.9071	TTMH3260R010
	1/4-28 UNF		0.9071	
	5/16-24 UNF		1.0583	TTMH3260R010 TTMH3260R015
	3/8-24 UNF		1.0583	
	7/16-20 UNF		1.2700	
	1/2-20 UNF		1.2700	
	9/16-18 UNF		1.4111	
	5/8-18 UNF		1.4111	
	3/4-16 UNF		1.5875	TTMH3260R010,R015 TTMH3260R020
	7/8-14 UNF		1.8143	TTMH3260R010,R015 TTMH3260R020,R025
	1-12 UNF		2.1167	
	1 1/8-12 UNF		2.1167	
	1 1/4-12 UNF		2.1167	
	1 3/8-12 UNF		2.1167	
	1 1/2-12 UNF		2.1167	

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TTMA

▶For applicable holders and inserts, please refer to pages I188 and I189.
▶Geeignete Halter und Schneidplatten finden Sie auf Seite I 188 und I 189.

[Machining pitch range]

Part No.	Pitch
TTMA4360R015	1.0-4.0
TTMA4360R020	1.5-4.0

Metric Threads / Fine and Coarse . Metrisches Gewinde (Fein und Grob)

Thread type			Pitch								
No. 1	No. 2	No. 3	4.00	3.50	3.00	2.50	2.00	1.75	1.50	1.25	1.00
M6											Coarse
	M7										
M8										Coarse	Fine
		M9									
M10									Coarse	Fine	
		M11									
M12								Coarse	Fine		
	M14						Coarse				
		M15									
M16							Coarse				
		M17									
	M18					Coarse	Fine				
M20											
	M22										
M24					Coarse						
		M25									
		M26									
	M27				Coarse		Fine		Fine		
		M28									
M30				Coarse	Fine						
		M32									
	M33			Coarse	Fine						
		M35									
M36			Coarse		Fine		Fine				
		M38									
	M39		Coarse		Fine		Fine				
		M40									
M42			Fine		Fine		Fine				
	M45										
M48											
		M50									

Unified standard (UN, UNF, UNC) Threads . Unified Gewinde (UN, UNF, UNC)

	Nominal dia. of thread		Pitch	Applicable insert
	No. 1	No. 2	(Reference)	
Coarse	No.10-24 UNC		1.0583	TTMA4360R015
		No.12-24 UNC	1.0583	
	1/4-20 UNC		1.2700	
	5/16-18 UNC		1.4111	
	3/8-16 UNC		1.5875	TTMA4360R015 TTMA4360R020
	7/16-14 UNC		1.8143	
	1/2-13 UNC		1.9538	
	9/16-12 UNC		2.1167	
	5/8-11 UNC		2.3091	
	3/4-10 UNC		2.5400	
	7/8-9 UNC		2.8222	
	1-8 UNC		3.1750	
	1 1/8-7 UNC		3.6286	
	1 1/4-7 UNC		3.6286	

	Nominal dia. of thread		Pitch	Applicable insert
	No. 1	No. 2	(Reference)	
Fine	5/16-24 UNF		1.0583	TTMA4360R015
	3/8-24 UNF		1.0583	
	7/16-20 UNF		1.2700	
	1/2-20 UNF		1.2700	
	9/16-18 UNF		1.4111	
	5/8-18 UNF		1.4111	
	3/4-16 UNF		1.5875	TTMA4360R015 TTMA4360R020
	7/8-14 UNF		1.8143	
	1-12 UNF		2.1167	
	1 1/8-12 UNF		2.1167	
	1 1/4-12 UNF		2.1167	
	1 3/8-12 UNF		2.1167	
	1 1/2-12 UNF		2.1167	

STICK DUO

SBT

(Eccentric taper)

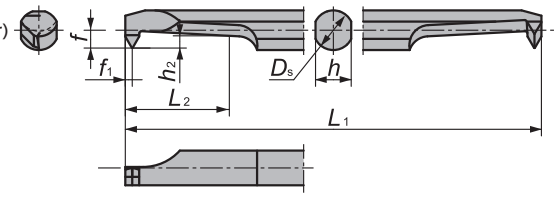


Figure-1

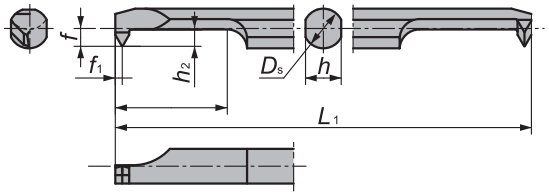
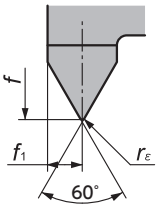
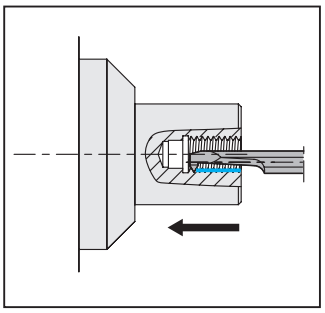


Figure-2





● Right-hand shown.
● Rechte Ausführung

Shape	Part No.	Min. machining dia	Chipbreaker	Dimensions (mm)								Applicable thread				General recommendations for screw selection		Grade
												Metric		Unified		Metric	Unified	
				D_s	L_2	h_2	L_1	f	f	h	r_ε	Size	Pitch (mm)	Size	No. of threads/inch	Size		
Figure-1	SBT025M3R	2.5	No	2.5	5.4	0.6	50	1.1	0.4	2.3	0.05 max flat	M3	0.5	—	—	M3×0.5	—	ZM3
	SBT030M4R	3.0		3.0	7.5	0.8	50	1.3	0.5	2.7	0.05 max flat	M4 and larger or bigger	0.5-0.8	No.8-32UNC and larger or bigger	36-32	M4×0.7	No.8-32UNC	ZM3
	SBT030M4RB	3.0	Yes	3.0	7.5	0.8	50	1.30	0.50	2.7	0.05 max flat	M4 and larger or bigger	0.5-0.8	No.8-32UNC and larger or bigger	36-32	M4×0.7	No.8-32UNC	ZM3
	SBT035M5RB	3.5		3.5	8.5	1.0	60	1.55	0.55	3.2	0.05 max flat	M4.5 and larger or bigger	0.5-1.0	No.10-24UNC and larger or bigger	32-24	M5×0.8	No.10-24UNC No.12-24UNC	ZM3
	SBT040M6RB	4.0		4.0	10.5	1.2	60	1.80	0.70	3.6	R0.05	M5.5 and larger or bigger	0.75-1.25	No.12-24UNC and larger or bigger	28-20	M6×1.0	1/4-20UNC	ZM3
Figure-2	SBT050M8RB	5.0	Yes	5.0	15.8	1.5	70	2.30	0.80	4.5	R0.05	M7 and larger or bigger	0.75-1.5	1/4-28UNF and larger or bigger	28-18	M8×1.25	5/16-18UNC	ZM3
	SBT060M10RB	6.0		6.0	18.4	1.8	80	2.80	0.95	5.4	R0.05	M8 and larger or bigger	0.75-1.75	5/16-24UNF and larger or bigger	28-16	M10×1.5	3/8-16UNC	ZM3

▶ For cutting conditions, please refer to page I 193.
▶ Geeignete Halter und Schneidplatten finden Sie auf Seite I 193.
▶ For sleeves, please refer to page H168 and H169.
▶ Hülsen finden Sie auf der Seite H168 und H169.

SBT (for internal threading / Für die Innengewinde-Bearbeitung)

STICK DUO

Metric Threads / Fine and Coarse . Metrisches Gewinde (Fein und Grob)

No. 1	No. 2	No. 3	Pitch (Feed) 2.0	1.75	1.5	1.25	1.0	0.8	0.75	0.7	0.5
M3	–	–	–	–	–	–	–	–	–	–	Coarse (ϕ2.5) SBT025M3R
M4	–	–	–	–	–	–	–	–	–	Coarse (ϕ3.3) SBT030M4R(B)	Fine (ϕ3.5) SBT030M4R(B)
–	M4.5	–	–	–	–	–	–	–	Coarse (ϕ3.75) SBT035M5RB	–	Fine (ϕ4) SBT035M5RB
M5	–	–	–	–	–	–	–	Coarse (ϕ4.2) SBT035M5RB	–	–	Fine (ϕ4.5) SBT035M5RB
–	–	M5.5	–	–	–	–	–	–	–	–	Fine (ϕ5) SBT035M5RB
M6	–	–	–	–	–	–	Coarse (ϕ5) SBT040M6RB	–	Fine (ϕ5.25) SBT040M6RB	–	–
–	M7	–	–	–	–	–	Coarse (ϕ6) SBT050M8RB	–	Fine (ϕ6.25) SBT050M8RB	–	–
M8	–	–	–	–	–	Coarse (ϕ6.75) SBT050M8RB	Fine (ϕ7) SBT050M8RB	–	Fine (ϕ7.25) SBT050M8RB	–	–
–	–	M9	–	–	–	Coarse (ϕ7.75) SBT060M10RB	Fine (ϕ8) SBT060M10RB	–	Fine (ϕ8.25) SBT060M10RB	–	–
M10	–	–	–	–	Coarse (ϕ8.5) SBT060M10RB	Fine (ϕ8.75) SBT060M10RB	Fine (ϕ9) SBT060M10RB	–	Fine (ϕ9.25) SBT060M10RB	–	–
–	–	M11	–	–	Coarse (ϕ9.5) SBT060M10RB	–	Fine (ϕ10) SBT060M10RB	–	Fine (ϕ10.25) SBT060M10RB	–	–
M12	–	–	–	Coarse (ϕ10.25) SBT060M10RB	Fine (ϕ10.5) SBT060M10RB	Fine (ϕ10.75) SBT060M10RB	Fine (ϕ11) SBT060M10RB	–	–	–	–
–	M14	–	Coarse ×	–	Fine (ϕ12.5) SBT060M10RB	Fine (ϕ12.6) SBT060M10RB	Fine (ϕ13) SBT060M10RB	–	–	–	–
–	–	M15	–	–	Fine (ϕ13.5) SBT060M10RB	–	Fine (ϕ14) SBT060M10RB	–	–	–	–

Unified standard (UN, UNF, UNC) Threads . Unified Gewinde (UN, UNF, UNC)

	Nominal call No. 1	No. 2	(Reference)	Recommended pilot hole (mm) (Reference)	Pitch (Reference)	Recommended insert
Coarse	No.8-32UNC	–	0.1640-32UNC	ϕ3.42	0.7938	SBT030M4R(B)
	No.10-24UNC	–	0.1900-24UNC	ϕ3.83	1.0583	SBT035M5RB
	–	No.12-24UNC	0.2160-24UNC	ϕ4.47	1.0583	
	1/4-20UNC	–	0.2500-20UNC	ϕ5.12	1.2700	SBT040M6RB
	5/16-18UNC	–	0.3125-18UNC	ϕ6.57	1.4111	SBT050M8RB
	3/8-16UNC	–	0.3750-16UNC	ϕ7.98	1.5875	SBT060M10RB
Fine	No.8-36UNF	–	0.1640-36UNF	ϕ3.51	0.7056	SBT030M4RB
	No.10-32UNF	–	0.19000-32UNF	ϕ4.07	0.7938	SBT035M5RB
	–	No.12-28UNF	0.2160-28UNF	ϕ4.61	0.9071	SBT040M6RB
	1/4-28UNF	–	0.2500-28UNF	ϕ5.47	0.9071	
	5/16-24UNF	–	0.3125-24UNF	ϕ6.91	1.0583	SBT050M8RB
	3/8-24UNF	–	0.3750-24UNF	ϕ8.51	1.0583	SBT060M10RB
	7/16-20UNF	–	0.4375-20UNF	ϕ9.88	1.2700	
	1/2-20UNF	–	0.5000-20UNF	ϕ11.47	1.2700	
	9/16-18UNF	–	0.5625-18UNF	ϕ12.9	1.4111	
	5/8-18UNF	–	0.6250-18UNF	ϕ14.5	1.4111	
	3/4-16UNF	–	0.7500-16UNF	ϕ17.5	1.5875	

Cutting conditions (For 600 - 1500 RPM Recommend Depth of Cut for each pass

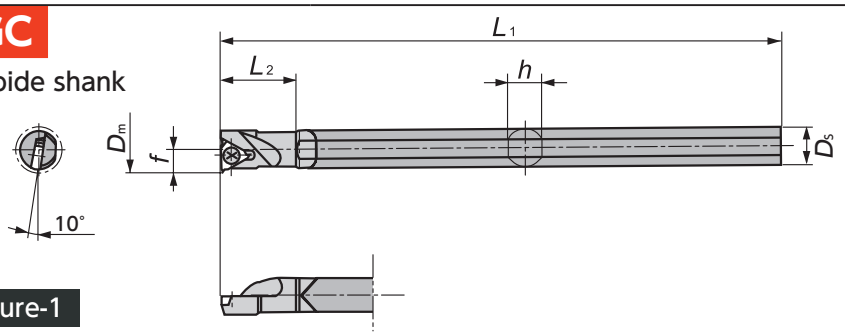
Metric thread pitch (mm)	Total depth of cut (mm)	Number of pass 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
0.5	0.3	0.06	0.05	0.05	0.04	0.04	0.03	0.02	0.01	–	–	–	–	–	–	–	–	–	–	–	–	–
0.7	0.43	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.02	0.01	–	–	–	–	–	–	–	–	–	–	–
0.75	0.46	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.02	0.01	–	–	–	–	–	–	–	–	–	–
0.8	0.49	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	–	–	–	–	–	–	–	–	–
1.0	0.62	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	–	–	–	–	–	–	–
1.25	0.76	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.03	0.03	0.02	0.01	–	–	–	–	–	–
1.5	0.92	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	–	–	–
1.75	1.09	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01

Unified thread No. of threads/inch	Total depth of cut (mm)	Number of pass 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
36	0.43	0.06	0.05	0.05	0.05	0.04	0.05	0.04	0.03	0.02	0.01	–	–	–	–	–	–	–	–	–
32	0.49	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	–	–	–	–	–	–	–
28	0.56	0.07	0.06	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	–	–	–	–	–	–
24	0.66	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.01	–	–	–	–
20	0.78	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01	–	–	–
18	0.87	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.03	0.03	0.02	0.01	–	–
16	0.98	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.02	0.01

Minimum machining diameter: ϕ8 . Minimaler Bearbeitungsdurchmesser: φ8 mm

TGC

Carbide shank



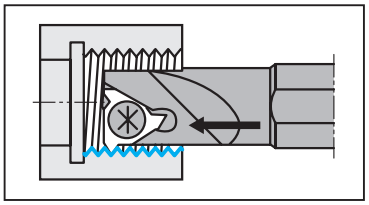
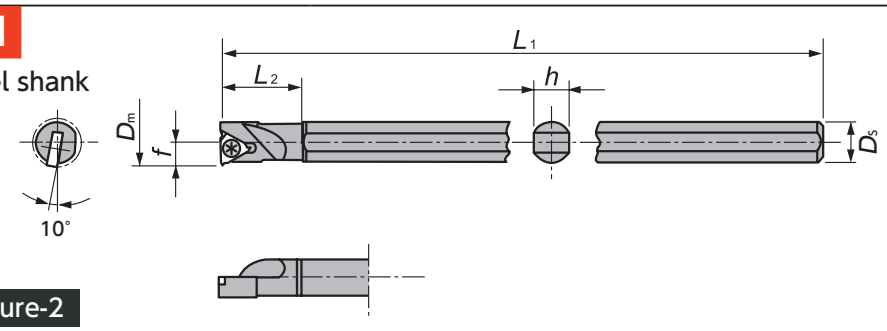


Figure-1

● Right-hand shown.
● Rechte Ausführung

HN

Steel shank



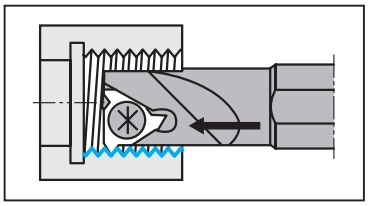


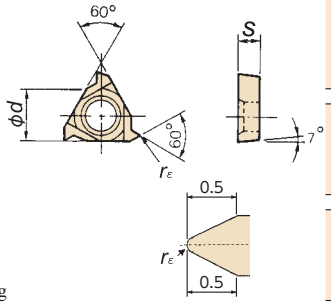
Figure-2

● Right-hand shown.
● Rechte Ausführung

Holder . Halter

Shape	Toolholder	Min. Machining dia (mm) D_m	Dimensions (mm) D_s	h_1	L_1	f	L_2	Insert	Parts: Clamping screw	Parts: Wrench
										
Figure-1	**TGC10T06H161R**	**8.0**	6	5.5	100	3.8	13.0	TMN06	LR-S-2＊4.4	CLR-13S
	TGC10T08K162R	**10.0**	8	7.0	125	4.7	17.0	TMN08	LR-S-2＊5.5	
	TGC10T10M163R	**12.0**	10	9.0	150	6.0	20.0	TMN09	LRIS-2.2＊6	
Figure-2	**HN59Z-0028**	**8.0**	6	5.5	100	3.8	13.0	TMN06	LR-S-2＊4.4	CLR-13S
	HN59Z-0029	**10.0**	8	7.0	125	4.7	17.0	TMN08	LR-S-2＊5.5	
	HN59Z-0030	**12.0**	10	9.0	150	6.0	20.0	TMN09	LRIS-2.2＊6	

inserts . Schneidplatten

TMN Shape	Dimensions (mm) ϕd	s	r_ε	Applicable screw: Recommended pitch for machining	Applicable screw: Machining pitch range	ISO	Grade
 	3.97	1.59	0.03	0.5	**0.4-0.75**	**TMN06FR03**	**ZM3**
	4.76	2.38	0.03	0.5	**0.4-0.75**	**TMN08FR03**	**ZM3**
	5.56	2.38	0.03	0.5	**0.4-0.75**	**TMN09FR03**	**ZM3**

● R-hand shown.
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TMN

▶For applicable holders, please refer to page I194.
▶Geeignete Halter und Schneidplatten finden Sie auf Seite I 194.

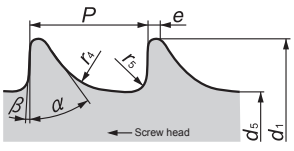
Metric threads / Fine and Coarse (ϕ～ : Recommend Pilot diameter)
Metrisches Gewinde (Fein und Grob) (φ- : Empfohlener Kerndurchmesser)

Thread type			Pitch		
No. 1	No. 2	No. 3	0.75	0.50	0.40
		M9	Fine (ϕ8.25)		
M10			Fine (ϕ9.25)		
		M11	Fine (ϕ10.25)		

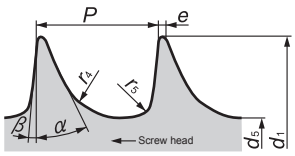
THREAD WHIRLING

Standard thread whirling inserts for ISO style threads
Standard Gewinde-Wirbel-Einsätze für ISO-Ausführungen

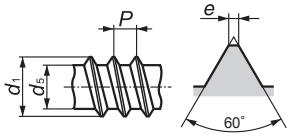
(Note: Must be used with thread whirling cutters with 12㎜ ϕDm dimension. See next page to find ϕDm for each cutter.)
Hinweis: Muss mit Ø12mm-Einsätzen verwendet werden. Siehe nächste Seite für weitere Ausführungen



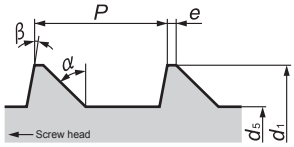
ISO5835 HA



ISO5835 HB



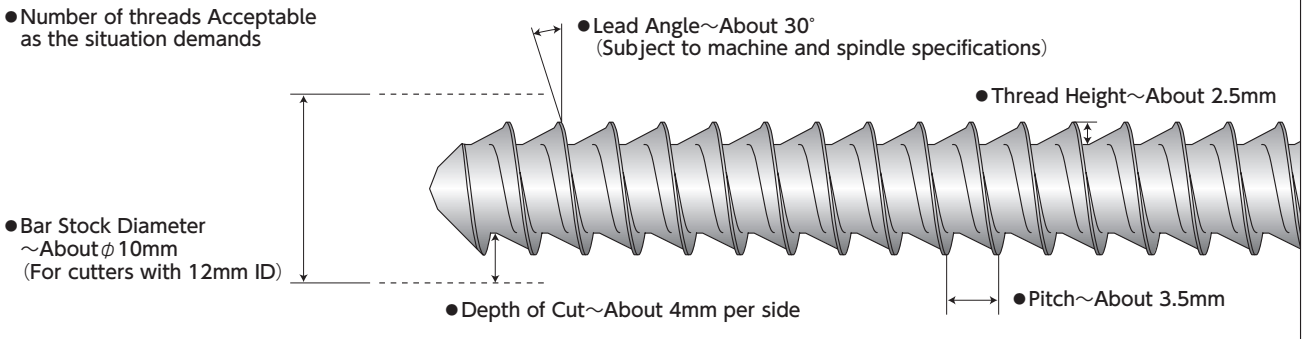
ISO9268 HC



ISO9268 HD

Item number	d_1	d_5	e	P	r_4	r_5	α	β	Thread type	Callout	Grade
TW5835-HA1.5-D12	$1.5^{0}_{-0.15}$	$1.1^{0}_{-0.1}$	0.1	0.5	0.3	0.1	35°	3°	HA1.5	ISO5835	**ZM3**
TW5835-HA2.0-D12	$2.0^{0}_{-0.15}$	$1.3^{0}_{-0.1}$	0.1	0.6	0.4	0.1	35°	3°	HA2.0		**ZM3**
TW5835-HA2.7-D12	$2.7^{0}_{-0.15}$	$1.9^{0}_{-0.15}$	0.1	1	0.6	0.2	35°	3°	HA2.7		**ZM3**
TW5835-HA3.5-D12	$3.5^{0}_{-0.15}$	$2.4^{0}_{-0.15}$	0.1	1.25	0.8	0.2	35°	3°	HA3.5		**ZM3**
TW5835-HA4.0-D12	$4.0^{0}_{-0.15}$	$2.9^{0}_{-0.15}$	0.1	1.5	0.8	0.2	35°	3°	HA4.0		**ZM3**
TW5835-HA4.5-D12	$4.5^{0}_{-0.15}$	$3.0^{0}_{-0.15}$	0.1	1.75	1	0.3	35°	3°	HA4.5		**ZM3**
TW5835-HA5.0-D12	$5.0^{0}_{-0.15}$	$3.5^{0}_{-0.15}$	0.1	1.75	1	0.3	35°	3°	HA5.0		**ZM3**
TW5835-HB4.0-D12	$4.0^{0}_{-0.15}$	$1.9^{0}_{-0.15}$	0.1	1.75	0.8	0.3	25°	5°	HB4.0		**ZM3**
TW5835-HB6.5-D12	$6.5^{0}_{-0.15}$	$3.0^{0}_{-0.15}$	0.2	2.75	1.2	0.8	25°	5°	HB6.5		**ZM3**

Applicable Thread Geometry (Approximated) - Mögliche Gewinde-Ausführungen (ca.)



The geometries shown above are approximated and could vary by actual applications
Die Abbildung zeigt nur ein Beispiel. Ausführungen sind Kundenspezifisch

Recommended Cutting Conditions - Empfohlene Schnittwerte

Whirling cutter RPM	Main spindle RPM	Feed Rate
1,000-4,000 ㎜⁻¹	10-30 ㎜⁻¹	Same as thread pitch (for single-lead threads)

Typical applications - Typische Anwendungen

Diameter	Work Materials
ϕ3.0 to ϕ10㎜ (For cutters with 12㎜ ID)	Titanium, Titanium alloy, 316 Stainless

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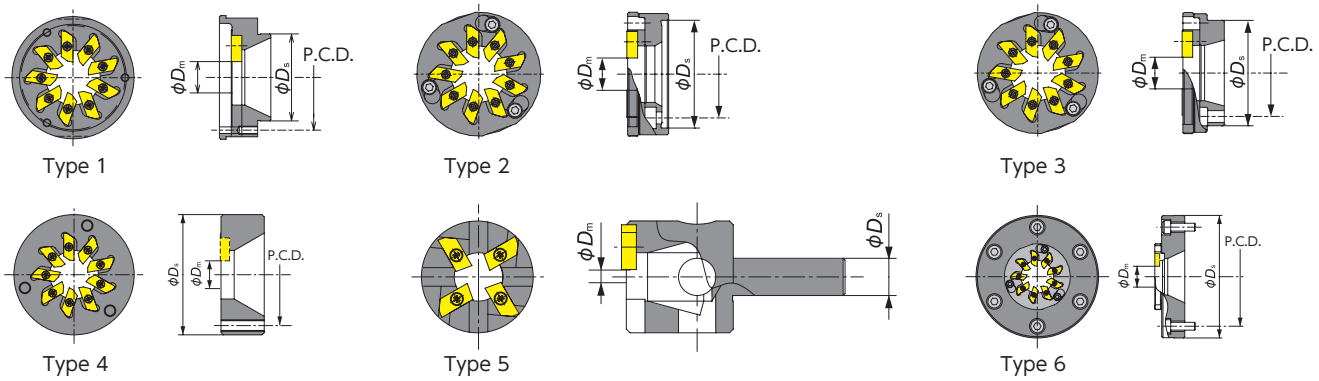
Thread Whiring System



Machine make	Model	Location	Spindle make	Spindle model	Lead angle	NTK Thread whirling system	Type	No. of tooth	ϕD_m (mm)	Mount adapter bolt
CITIZEN	L20E/L20X	Gang	CITIZEN	BTW-3000	0° – 15°	TWC9C0746HP1	1	9	ϕ12	M3
	A20	Gang	CITIZEN	BTW-2000	±25°	TWC9C1040HP1 TWC6C1040HP1 TWC9C1040HP1-D16	1	9 6 9	ϕ12 ϕ12 ϕ16	M3 (Provided with spindle)
	M$_4$32				0° – 25°					
	C32			BTW-1000	±25°					
	L20									
	M20				+20° – –25°					
	M$_3$32				±25°					
	C12/16	Gang	CITIZEN	LTR0170	±15°	TWC9C1037P2	2	9	ϕ12	CS0310 (M3)
	M12/16	Turret		LTR0168						
	M12/16			MSW105						
	M20/32			KSW110						
	L20	Gang		LTR0183	±15°	TWC9J1040P2	2	9	ϕ12	H-M4 × 12
	M20/32									
	M20/32	Turret		LTR0169						
	K16	Attachment	PCM	GSW-101	±15°	TWC6P1620HP1-D9	1	6	ϕ9	M4 (Provided with spindle)
	L20	Gang		LSW-101-L20	±10°	TWC9P1340P2	2	9	ϕ12	M4 (Provided with spindle)
STAR	ECAS-12/20	Attachment	STAR	54178	±10°	TWC9S1640P2	3	9	ϕ12	CS04148S (M4)
	SR-20J/20RⅢ			54172	–20° – 0° (*)					
	ECAS-20T	Turret		59172	±20°					
	ECAS-32T			58171	±10°					
	ST-38			43156	±10°					
	SV-12			45172	±10°					
	SV-20			42173	±10°					
	SV-32			43172	±10°					
TSUGAMI	BH20/BH38	Turret	TSUGAMI	3263-Y481	±10°	TWC9TS2252P2	3	9	ϕ12	CS0515 (M5)
	BS20	Attachment		3214-Y1371	±10°	TWC9TS20550P2	3	9	ϕ16	CS0515 (M5)
	S205 S206 B0205	Attachment		3281-Y451 (S205・S206) 3220-Y6541 (B0205)	0° – 10°	TWC9TS2244HP1	4	9	ϕ12	CS0520 (M5)
					0° – 20°	TWC9TS1944HP1	4	9	ϕ12	CS0520 (M5)
					0° – 25°	TWC9TS1644HP1	4	9	ϕ12	CS0515 (M5)
					0° – 30°	TWC9TS1044HP1	4	9	ϕ12	CS0515 (M5)
	SS20/SS26 SS32			3268-Y451	0° – 10°	TWC9TS1952P2BK	4	9	ϕ12	CS0515 (M5)
					0° – 20°	TWC9TS1652P2BK	4	9	ϕ12	CS0515 (M5)
	SS207	—		—	0° – 15°	TWC4TS3010HP1	5	4	ϕ7	For single-corner inserts only
TORNOS	DECO 10/10a	Attachment	TORNOS	224-1900	±15°	TWC6TO11542HP1	4	6	ϕ12	CS0410 (M4)
	Evo DECO 10/10			242-1900						
	DECO 13a/13e			226-1900	±15°	TWC9TO10540P2	3	9	ϕ12	CS0410 (M4)
	Evo DECO 16/10			243-1900						
	DECO 20a			223-1900						
	DECO 26a			225-1900						
	Sigma 20			234-2750	± 25°	TWC9TO12050P2-D18	3	9	ϕ18	CS0410 (M4)
	Sigma 32			236-2750						
HASEGAWA	JS-1W	—	HASEGAWA	—	0° – 20°	TWC9HA22594P2	6	9	ϕ16	CS0620 (M6)

* : May not work for over 15 deg. Lead angle . Nicht Einsetzbar bei Flankenwinkel grösser 15°

Spare Insert Holder (Cartridge)

Item number	No. of tooth	ϕD_m (mm)	Compatible cutters
TWC6HP2	6	12	For Type 2 and Type 3*
TWC9HP2	9	12	For Type 2 and Type 3*
TWC9HP2-D16	9	12	For Type 6

Note: Insert holder comes with insert screws and wrench
Insert holder mouting bolt is not included
*Cannot be used for TWC9TS20550P2 and TWC9TO12050P2-D18
Hinweis:Schneideinsatz-Halter wird mit Schneidplatten-Schraube und Schlüssel geliefert.
Befestigungsbolzen wird nicht mitgeliefert. (kann nicht eingesetzt werden für TWC9TS20550P2 und TWC9TO12050P2-D18)

Spare Parts

Description		Item number
Insert Screw	For 4mm thick inserts	FSI17-2.2×6.0
	For 6.5mm thick inserts	FSI24-2.2×7.9
Wrench		T-07
Insert Holder Mounting Bolt		CS0309-TW

MEMO

Throw-Away End Mill
Schaftfräser mit Wendeplatten

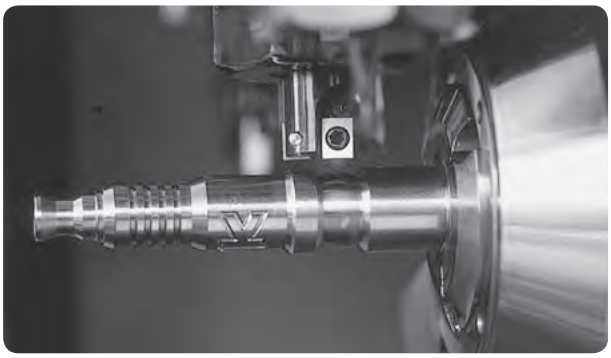
J

Small diameter throw-away end mill

Schaftfräser mit Wendeplatten

Features - Merkmale

- ***Achievable maximum 5 times better productiviy by using PVD coated micro grain carbide compared with using HSS.***
  PVD beschichtetes Feinstkorn erhöht die Produktivität auf das 3 bis 5 Fache gegenüber HSS-Schneidstoffen
- ***90 degree shoulder cut is possible.***
  90 Grad Schulterfräsen
- ***Excellent surface finish, Rz 5μm with normal radius and 1μm with insert with wiper flat.***
  Excellente Oberfläche, Rz5 mit normalem Eckenradius und Rz1 mit Wiper-Technologie
- ***Plange and Ramping cuts are possible by using insert with center blade.***
  Einstechen und Rampen ist mit entsprechenden Schneideinsätzen möglich



Work material : SUS304
Work diameter : ϕ8.0 and ϕ12.0
Depth of cut : 1.0 mm
Insert : CZH0402CFR-070 ZM3
Holder : REZ100CZR141

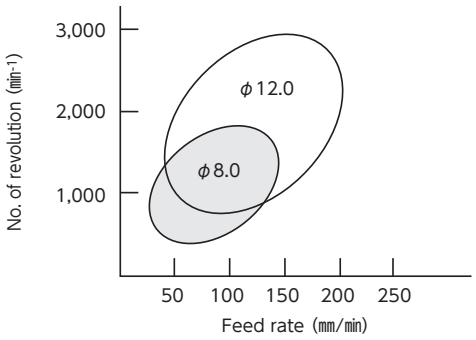
Note) It would be more possibility for chattering as the work diameter gets smaller, adjust rpm and feed to prevent chatter.

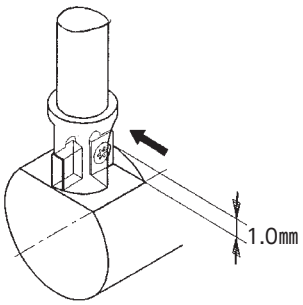
Hinweis : Je kleiner der Werstückdurchmesser, desto eher können Vibrationen auftreten. Hierbei bitte Drehzahl und Vorschub reduzieren.

Recommended Cutting Conditions - Empfohlene Schnittwerte

Work material	Cutting speed (m/min)	Axial feed rate (mm / t)	Cross-feed rate (mm / t)	Depth of cut (mm)
General steel Allgemeine Stahlsorten	80-120	-0.03	-0.05	-3.0
Stainless steel Edelstähle	40-60	-0.02	-0.04	-2.0

Recommended cutting conditions (SUS304) - Empfohlene Schnittwerte (SUS304)





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● Small diameter throw-away end milling tools .

REZ

D cutting = lead angle 90 type end milling tool

●Right-hand shown.
Rechte Ausführung

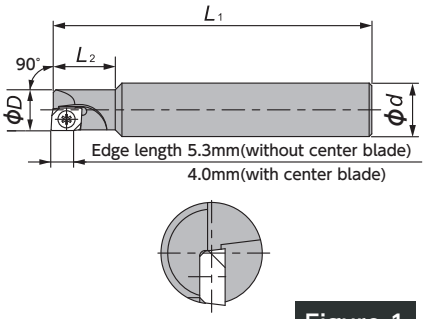


Figure-1

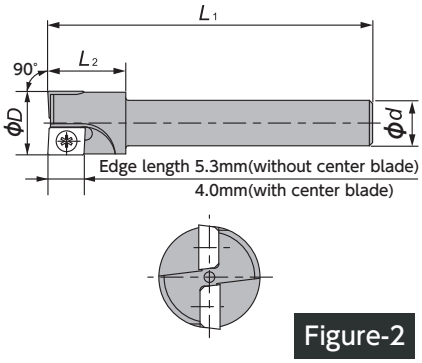


Figure-2

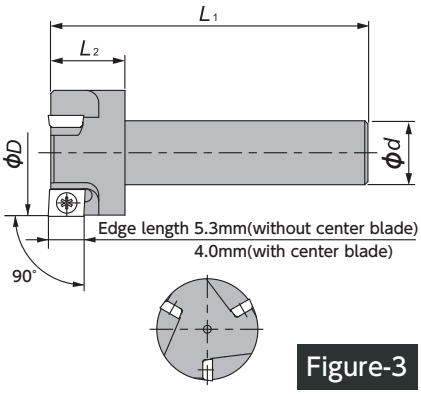


Figure-3

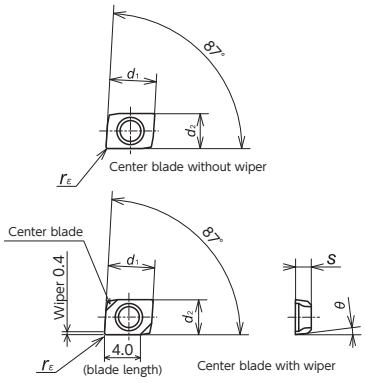
■ Holder . Halter

Shape	Toolholder	No. of blades	Dimensions (mm) ϕD	ϕd	L_1	L_2	Insert	Parts: Clamping screw	Parts: Wrench
Figure-1	**REZ080C1R212**	1	8	10	60	12	CZH04□□CFR□□□	FSI02-2.2*4.0	T-07
	REZ100C1R218		10		75		CZH05□□CFR□□□	FSI02-2.2*4.0	
Figure-2	**REZ100B2R329**	2	10	5	40	10	CZH04□□CFR□□□	FSI02-2.2*4.3	T-07
	REZ100C2R133			6	50	12			
	REZ100C2R132			7					
	REZ100C2R141			10					
	REZ120C2R141		12						
	REZ140C2R141		14						
Figure-3	**REZ150B3R330**	3	15	5	40	10	CZH04□□CFR□□□	FSI02-2.2*4.3	T-07
	REZ200M3R319		20	7	50	12			
	REZ200M3R320			10					

Note) Please use new clamping screws if the screws are worn out.
Hinweis : Auf korrekte Klemmschrauben achten. Bei Beschädigungen frühzeitig austauschen.

● Inserts . Schneidplatten

CZH Insert



Dimensions (mm) d_1	d_2	s	θ	r_ε	Center cutting edge	Wiper	ISO	Grade
5.56	4.20	1.88	7°	0.2	Yes	No	**CZH0402CFR-BL**	**TM4**
5.56	4.20	1.88	7°	0.05	Yes	No	**CZH04005CFR-BL**	**TM4**
5.56	4.20	1.88	7°	0.2	Yes	Yes	**CZH0402CFR-140**	**ZM3, DT4**
5.56	4.20	1.88	7°	0.05	Yes	Yes	**CZH04005CFR-140**	**ZM3, DT4**
5.56	4.20	1.88	7°	0.2	No	No	**CZH0402CFR-070**	**ZM3, DT4**
5.56	4.20	1.88	7°	0.05	No	No	**CZH04005CFR-070**	**ZM3, DT4**
5.28	5.56	2.18	10°	0.2	Yes	Yes	**CZH0502CFR-141**	**ZM3**
5.28	5.56	2.18	10°	0.05	Yes	Yes	**CZH05005CFR-141**	**ZM3**

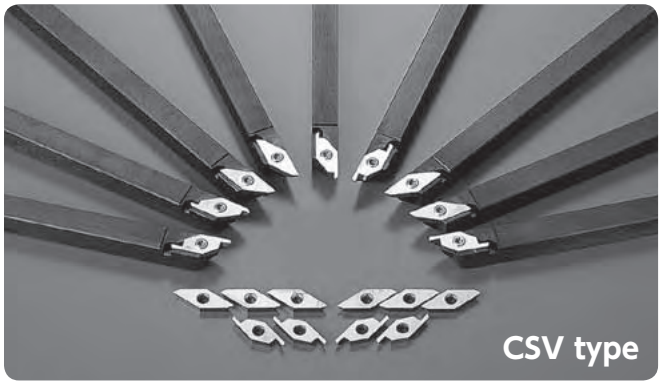
MEMO

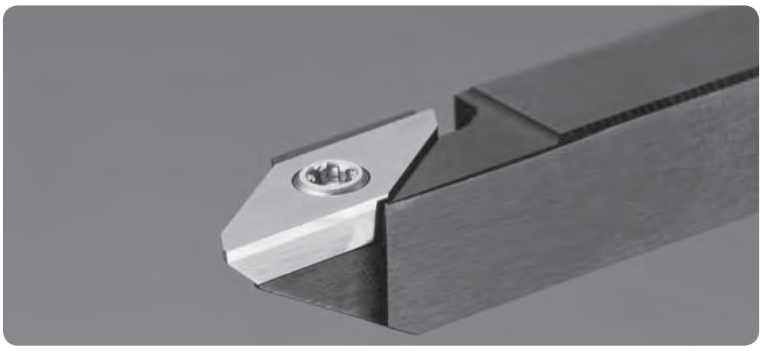
NTK Original Series
NTK Präzisionswerkzeuge

CSV Series
CSV-Serie

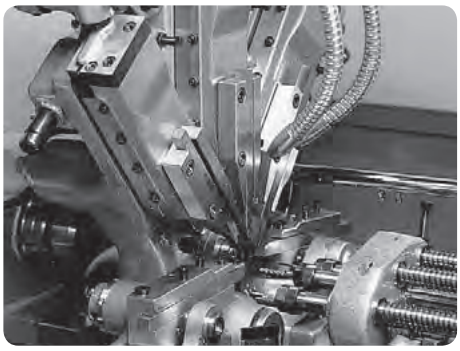
Features - Merkmale

- ***Best tools for very small diameter parts such as less than 5mm.***
  Spezielle Werkzeuge für kleine Durchmesser kleiner als 5mm
- ***One tool holder fits 5 different inserts (Front turning, Back turning, Cut-off, Grooving, and Threading)***
  Ein Werkzeughalter für 5 verschiedene Schneideinsätze (Längsdrehen, Hinterbunddrehen Abstechen, Aussenstechen und Gewinde)





NTK Original precise ground edges for small diameter parts
NTK Präzisionswerkzeuge mit geschliffener Schneide für schmale Durchmesser

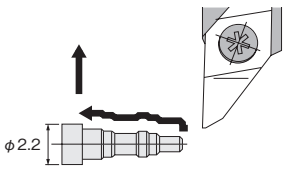


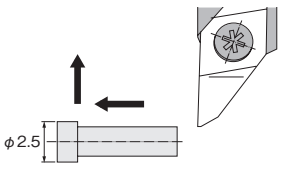
Available for Cam style automatic lathes

Front turning	Back turning	Cut-off	Grooving	Threading
CSVF ➡D83	CSVB ➡E107	CSVC ➡F121	CSVG ➡G139	CSVT ➡I182

Test reports

Watch part / Work material : SK4		Rivets / Work material : SUS630	
Cutting speed (m/min)	: 15	Cutting speed (m/min)	: 20
Feed rate (mm/rev)	: 0.007	Feed rate (mm/rev)	: 0.015
Depth of cut (mm)	: 0.03	Depth of cut (mm)	: 0.3
Coolant	: WET	Coolant	: WET
NTK : VM1	40,000 pcs.	NTK : VM1	70,000 pcs.
Brazed tool	20,000 pcs.	Brazed tool	10,000 pcs.





Original Series

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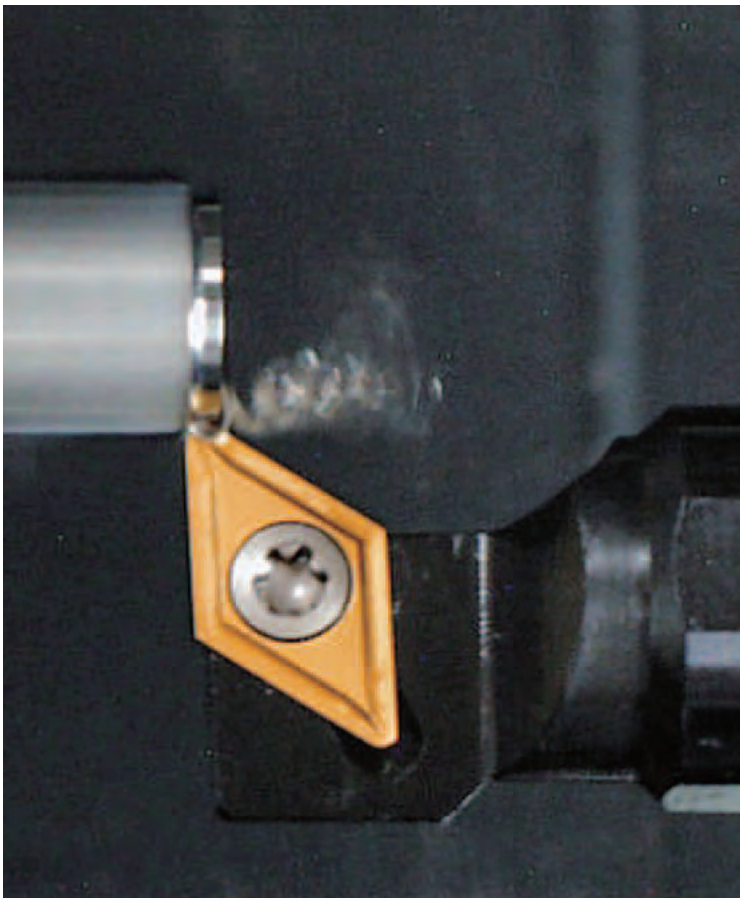
NTK CUTTING TOOLS

For making the most of vacant drill sleeves

optimal geeignet für freie Boh3büchsen

DS / DS-ACH Toolholders

Industry Proven Concept



Features - Merkmale

- Available shank size range: from 14mm to 25.4mm

  Mögliche Schathöhe 14mm bis 25.4mm

- NTK DS toolholders are useful when additional tool position are required

  NTK DS Werkzeughalter sind sehr gut geeignet wenn zusätzliche Werkzeuge benötigt werden

- Five types of tools are available: Front turning, Back turning, Grooving, Threading, and Small boring which fit into the machines' vacant drill sleeves

  5 verschiedene Werkzeugtypen sind verfügbar. Längsdrehen, Hinterbunddrehen, Stechen, Gewinde und kleine Bohrwekzeuge

- DS Series toolholders can be used with both Swiss or non-Swiss type CNC lathes

  DS Serie sind einsetzbar in Präzisionsdrehmaschinen und Standard CNC-Maschinen

Go to **A27** for DS-ACH details

NTK CUTTING TOOLS

Eliminate chip control problems

Verhindert Spanprobleme

Y-axis Toolholders

Unique Concept

NTK's Y-axis toolholder offers a completely new concept to help achieve better chip control. This tool allows cutting in the Y axis which allows chips to fall freely from the cutting area.

The Y-axis control toolholders are available front turning, grooving, and back turning by controling Y-axis

NTK's Y-Achsen Werkzeughalter ist ein komplett neues Konzept zur besseren Spankontrolle. Dieses Werkzeug ermöglicht eine ungehinderte Spanabfuhr bei der Bearbeitung mit der Y-Achse.

Y-Achsen Halter ermöglichen Länsdrehen, Stechen, und Hinterbunddrehen durch Y-Achsensteuerung

Features - Merkmale

- Chip drops down to the bed of the machine due to gravity, and chip control problem is solved

  Späne fallen nach unten und beheben etwaige Spanprobleme

- Front turning, grooving, and back turning operations can be perfomed by utilizing Y-axis control

  Länsdrehen, Stechen und Hinterbunddrehen kann durch den Einsatz der Y-Achse angewendet werden

- Eliminates chips from interfering with other tools

  Verhindert Spanprobleme durch Nachbarwerkzeuge

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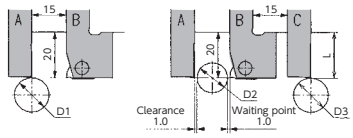
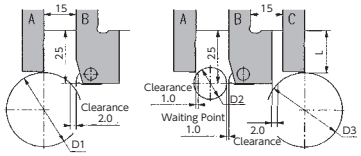
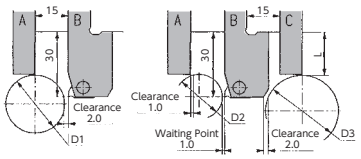
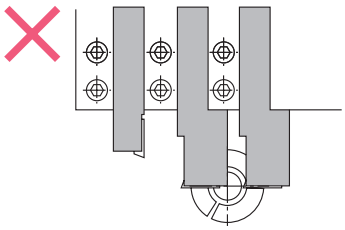
Machinable OD Dimensions - Herstellbare Aussendurchmesser

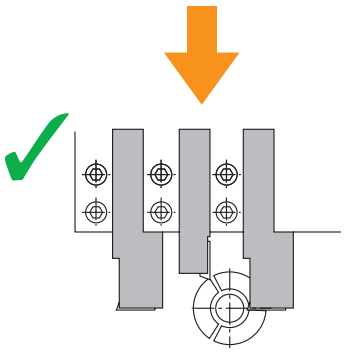
Y-axis Holder Overhang	Tool Layout	Situation	Overhang Amount (L)		
			20mm	22mm	25mm
20mm		D1 Max machinable OD with Holder A	No limitation	No limitation	No limitation
		D2 Max machinable OD with Holder B	13mm	13mm	13mm
		D3 Max machinable OD with Holder C	No limitation	No limitation	No limitation
25mm		D1 Max machinable OD with Holder A	38mm	58mm	No limitation
		D2 Max machinable OD with Holder B	14.9mm	13.6mm	13mm
		D3 Max machinable OD with Holder C	38mm	58mm	No limitation
30mm		D1 Max machinable OD with Holder A	26.8mm	29mm	38.5mm
		D2 Max machinable OD with Holder B	20.6mm	17.9mm	14.9mm
		D3 Max machinable OD with Holder C	33mm (26.8mm for TBP style)	37mm (29mm for TBP style)	51.5mm (38.5mm for TBP style)

Important Notes for Using Y-axis Toolholders- Wichtige Hinweise für Y-Achsenhalter



To avoid interference, two Y-axis toolholders should not be set next to each other

Um Beeinträchtigung zu verhindern, sollten keine Y-Achsenhalter nebeneinander montiert werden.



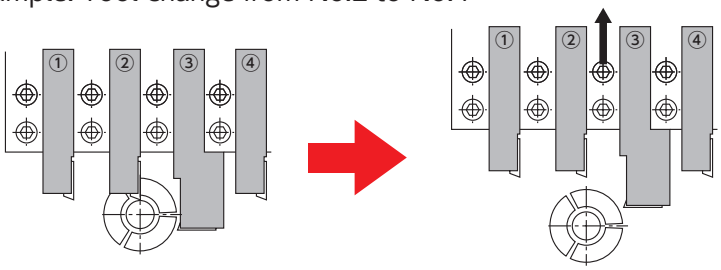
Install a standard toolholder between the two Y-axis toolholders

Montieren Sie einen Standardhalter zwischen zwei Y-Achsenhalter

For tool change, determine a retract point based on the overhang of the Y-axis toolholder

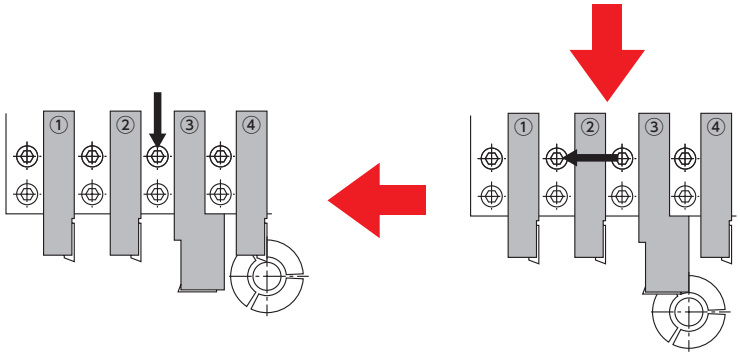
Für einen Werkzeugwechsel stellen Sie eine Position in Abhängigkeit der Y-Achsenhalter ein

● Example: Tool change from No.2 to No.4



Retract the tool station based on the cutting edge location on the Y-axis toolholder

Rückzug der Werkzeugstation baisierend der Werkzeugschneidenposition des Y-Achsenhalters



MEMO

Technical Information
Technische Informationen

NTK CUTTING TOOLS

Conversions on Brinell Hardness of Steel . Umrechnungstabelle für Brinell-Härte bei Stahl .

Brinell recess diameter (mm) Brinell-Eindruck-durchmesser	Brinell hardness 10mm balls, 3000kgf load Brinell-Härte, 10-mm-Kugeln, 3000 kp Belastung			Vickers hardness Vickers-Härte	Rockwell hardness Rockwell-Härte				Special Rockwell hardness Special brale indenter Spezielle Rockwell-Härte, Spezieller Diamantkegel als Prüfkörper			Shore hardness Shore-Härte	Tensile strength kgf/mm² [N/mm²] Approximate value (1) Zugfestigkeit kp/mm² [N/mm²] Näherungswert (1)
	Standard ball Standard-Prüfkugel	Hultgren ball Hultgren-Prüfkugel	Tungsten carbide ball Wolfram-karbidkugel		Scale A Load: 60 kgf brale indenter Skala A Belastung: 60 kp Diamantkegel-Prüfkörper	Scale B Load: 100 kgf Diameter: 1/16" indenter Skala B Belastung: 100 kp Durchmesser: 1/16"-Eindringkörper	Scale C Load: 150 kgf brale indenter Skala C Belastung: 150 kp Diamantkegel-Prüfkörper	Scale D Load: 100 kgf brale indenter Skala D Belastung: 100 kp Diamantkegel-Prüfkörper	15-N scale Load:15 kgf 15-N-Skala Belastung:15 kp	30-N scale Load:30 kgf 30-N-Skala Belastung:30 kp	45-N scale Load:45 kgf 45-N-Skala Belastung:45 kp		
-	-	-	-	940	85.6	-	68.0	76.9	93.2	84.4	75.4	97	-
-	-	-	-	920	85.3	-	67.5	76.5	93.0	84.0	74.8	96	-
-	-	-	-	900	85.0	-	67.0	76.1	92.9	83.6	74.2	95	-
-	-	-	767	880	84.7	-	66.4	75.7	92.7	83.1	73.6	93	-
-	-	-	757	860	84.4	-	65.9	75.3	92.5	82.7	73.1	92	-
2.25	-	-	745	840	84.1	-	65.3	74.8	92.3	82.2	72.2	91	-
-	-	-	733	820	83.8	-	64.7	74.3	92.1	81.7	71.8	90	-
-	-	-	722	800	83.4	-	64.0	73.8	91.8	81.1	71.0	88	-
2.30	-	-	712		-	-	-	-	-	-	-	-	-
-	-	-	710	780	83.0	-	63.3	73.3	91.5	80.4	70.2	87	-
-	-	-	698	760	82.6	-	62.5	72.6	91.2	79.7	69.4	86	-
-	-	-	684	740	82.2	-	61.8	72.1	91.0	79.1	68.6	-	-
2.35	-	-	682	737	82.2	-	61.7	72.0	91.0	79.0	68.5	84	-
-	-	-	670	720	81.8	-	61.0	71.5	90.7	78.4	67.7	83	-
-	-	-	656	700	81.3	-	60.1	70.8	90.3	77.6	66.7	-	-
2.40	-	-	653	697	81.2	-	60.0	70.7	90.2	77.5	66.5	81	-
-	-	-	674	690	81.1	-	59.7	70.5	90.1	77.2	66.2	-	-
-	-	-	638	680	80.8	-	59.2	70.1	89.8	76.8	65.7	80	-
-	-	-	630	670	80.6	-	58.8	69.8	89.7	76.4	65.3	-	-
2.45	-	-	627	667	80.5	-	58.7	69.7	89.6	76.3	65.1	79	-
2.50	-	601	-	677	80.7	-	59.1	70.0	89.8	76.8	65.7	-	-
	-	-	601	640	79.8	-	57.3	68.7	89.0	75.1	63.5	77	-
2.55	-	578	-	640	79.8	-	57.3	68.7	89.0	75.1	63.5	-	-
	-	-	578	615	79.1	-	56.0	67.7	88.4	73.9	62.1	75	-
2.60	-	555	-	607	78.8	-	55.6	67.4	88.1	73.5	61.6	-	-
	-	-	555	591	78.4	-	54.7	66.7	87.8	72.7	60.6	73	210 {2095}
2.65	-	534	-	579	78.0	-	54.0	66.1	87.5	72.0	59.8	-	205 {2010}
	-	-	534	569	77.8	-	53.5	65.8	87.2	71.6	59.2	71	202 {1981}
2.70	-	514	-	553	77.1	-	52.5	65.0	86.7	70.7	58.0	-	195 {1912}
	-	-	514	547	76.9	-	52.1	64.7	86.5	70.3	57.6	70	193 {1893}
	495	-	-	539	76.7	-	51.6	64.3	86.3	69.9	56.9	-	189 {1854}
2.75	-	495	-	530	76.4	-	51.1	63.9	86.0	69.5	56.2	-	186 {1824}
	-	-	495	528	76.3	-	51.0	63.8	85.9	69.4	56.1	68	186 {1824}
	477	-	-	516	75.9	-	50.3	63.2	85.6	68.7	55.2	-	181 {1775}
2.80	-	477	-	508	75.6	-	49.6	62.7	85.3	68.2	54.5	-	177 {1736}
	-	-	477	508	75.6	-	49.6	62.7	85.3	68.2	54.5	66	177 {1736}
	461	-	-	495	75.1	-	48.8	61.9	84.9	67.4	53.5	-	172 {1687}
2.85	-	461	-	491	74.9	-	48.5	61.7	84.7	67.2	53.2	-	170 {1667}
	-	-	461	491	74.9	-	48.5	61.7	84.7	67.2	53.2	65	170 {1667}
	444	-	-	474	74.3	-	47.2	61.0	84.1	66.0	51.7	-	162 {1589}
2.90	-	444	-	472	74.2	-	47.1	60.8	84.0	66.8	51.5	-	162 {1589}
	-	-	444	472	74.2	-	47.1	60.8	84.0	65.8	51.5	63	162 {1589}
2.95	429	429	429	455	73.4	-	45.7	59.7	83.4	64.6	49.9	61	154 {1510}
3.00	415	415	415	440	72.8	-	44.5	58.8	82.8	63.5	48.4	59	149 {1461}
3.05	401	401	401	425	72.0	-	43.1	57.8	82.0	62.3	46.9	58	142 {1392}
3.10	388	388	388	410	71.4	-	41.8	56.8	81.4	61.1	45.3	56	136 {1334}
3.15	375	375	375	396	70.6	-	40.4	55.7	80.6	59.9	43.6	54	129 {1265}
3.20	363	363	363	383	70.0	-	39.1	54.6	80.0	58.7	42.0	52	124 {1216}
3.25	352	352	352	372	69.3	(110.0)	37.9	53.8	79.3	57.6	40.5	51	120 {1177}
3.30	341	341	341	360	68.7	(109.0)	36.6	52.8	78.6	56.4	39.1	50	115 {1128}

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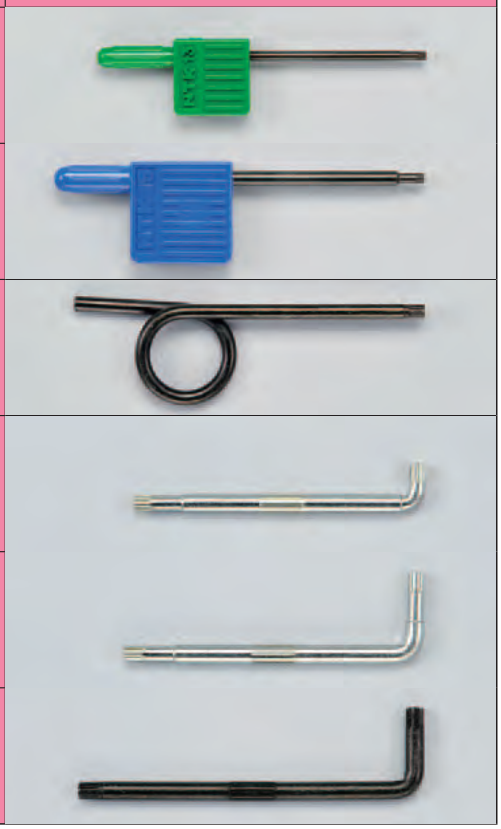
Brinell recess diameter (mm) Brinell-Eindruck-durchmesser	Brinell hardness 10mm balls, 3000kgf load Brinell-Härte, 10-mm-Kugeln, 3000 kp Belastung			Vickers hardness Vickers-Härte	Rockwell hardness Rockwell-Härte				Special Rockwell hardness Special brale indenter Spezielle Rockwell-Härte, Spezieller Diamantkegel als Prüfkörper			Shore hardness Shore-Härte	Tensile strength kgf/mm² [N/mm²] Approximate value (1) Zugfestigkeit kp/mm² [N/mm²] Näherungswert (1)
	Standard ball Standard-Prüfkugel	Hultgren ball Hultgren-Prüfkugel	Tungsten carbide ball Wolfram-karbidkugel		Scale A Load: 60 kgf brale indenter Skala A Belastung: 60 kp Diamantkegel-Prüfkörper	Scale B Load: 100 kgf Diameter: 1/16"" indenter Skala B Belastung: 100 kp Durchmesser: 1/16""-Eindringkörper	Scale C Load: 150 kgf brale indenter Skala C Belastung: 150 kp Diamantkegel-Prüfkörper	Scale D Load: 100 kgf brale indenter Skala D Belastung: 100 kp Diamantkegel-Prüfkörper	15-N scale Load:15 kgf 15-N-Skala Belastung:15 kp	30-N scale Load:30 kgf 30-N-Skala Belastung:30 kp	45-N scale Load:45 kgf 45-N-Skala Belastung:45 kp		
3.35	331	331	331	350	68.1	(108.5)	35.5	51.9	78.0	55.4	37.8	48	112 {1098}
3.40	321	321	321	339	67.5	(108.0)	34.3	51.0	77.3	54.3	36.4	47	108 {1059}
3.45	311	311	311	328	66.9	(107.5)	33.1	50.0	76.7	53.3	34.4	46	105 {1030}
3.50	302	302	302	319	66.3	(107.0)	32.1	49.3	76.1	52.2	33.8	45	103 {1010}
3.55	293	293	293	309	65.7	(106.0)	30.9	48.3	75.5	51.2	32.4	43	99 {971}
3.60	285	285	285	301	65.3	(105.5)	29.9	47.6	75.0	50.3	31.2		97 {951}
3.65	277	277	277	292	64.6	(104.5)	28.8	46.7	74.4	49.3	29.9	41	94 {922}
3.70	269	269	269	284	64.1	(104.0)	27.6	45.9	73.7	48.3	28.5	40	91 {892}
3.75	262	262	262	276	63.6	(103.0)	26.6	45.0	73.1	47.3	27.3	39	89 {873}
3.80	255	255	255	269	63.0	(102.0)	25.4	44.2	72.5	46.2	26.0	38	86 {843}
3.85	248	248	248	261	62.5	(101.0)	24.2	43.2	71.7	45.1	24.5	37	84 {824}
3.90	241	241	241	253	61.8	100.0	22.8	42.0	70.9	43.9	22.8	36	82 {804}
3.95	235	235	235	247	61.4	99.0	21.7	41.4	70.3	42.9	21.5	35	80 {785}
4.00	229	229	229	241	60.8	98.2	20.5	40.5	69.7	41.9	20.1	34	78 {765}
4.05	223	223	223	234	-	97.3	(18.8)	-	-	-	-	-	-
4.10	217	217	217	228	-	96.4	(17.5)	-	-	-	-	33	74 {726}
4.15	212	212	212	222	-	95.5	(16.0)	-	-	-	-	-	72 {706}
4.20	207	207	207	218	-	94.6	(15.2)	-	-	-	-	32	70 {686}
4.25	201	201	201	212	-	93.8	(13.8)	-	-	-	-	31	69 {677}
4.30	197	197	197	207	-	92.8	(12.7)	-	-	-	-	30	67 {657}
4.35	192	192	192	202	-	91.9	(11.5)	-	-	-	-	29	65 {637}
4.40	187	187	187	196	-	90.7	(10.0)	-	-	-	-	-	63 {618}
4.45	183	183	183	192	-	90.0	(9.0)	-	-	-	-	28	63 {618}
4.50	179	179	179	188	-	89.0	(8.0)	-	-	-	-	27	61 {598}
4.55	174	174	174	182	-	87.8	(6.4)	-	-	-	-	-	60 {588}
4.60	170	170	170	178	-	86.8	(5.4)	-	-	-	-	26	58 {569}
4.65	167	167	167	175	-	86.0	(4.4)	-	-	-	-	-	57 {559}
4.70	163	163	163	171	-	85.0	(3.3)	-	-	-	-	25	56 {549}
4.80	156	156	156	163	-	82.9	(0.9)	-	-	-	-	-	53 {520}
4.90	149	149	149	156	-	80.8	-	-	-	-	-	23	51 {500}
5.00	143	143	143	150	-	78.7	-	-	-	-	-	22	50 {490}
5.10	137	137	137	143	-	76.4	-	-	-	-	-	21	47 {461}
5.20	131	131	131	137	-	74.0	-	-	-	-	-	-	46 {451}
5.30	126	126	126	132	-	72.0	-	-	-	-	-	20	44 {431}
5.40	121	121	121	127	-	69.8	-	-	-	-	-	19	42 {412}
5.50	116	116	116	122	-	67.6	-	-	-	-	-	18	41 {402}
5.60	111	111	111	117	-	65.7	-	-	-	-	-	15	39 {382}

Notes:1. The numerals parenthesized in this table are usually not used.
2. The units and values enclosed in braces ({ }) in this table are based on SI units and are shown for reference only. (1 N/mm² = 1 MPa)
3. This table is an excerpt from the JIS Iron and Steel Handbook.

Hinweise:1. Die Werte in runden Klammern in dieser Tabelle sind nicht gebräuchlich.
2. Die Maßeinheiten und Werte in geschweiften Klammern ({ }) in dieser Tabelle basieren auf den SI-Einheiten und dienen nur als Bezug. (1 N/mm2 = 1 MPa)
3. Diese Tabelle ist ein Auszug aus dem "JIS Iron and Steel Handbook".

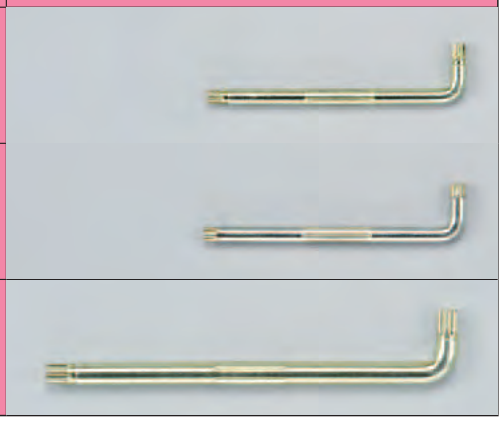
Wrench specifications
Übersicht der Steckschlüssel

Standard items
Standart

Part No.	Shape
CLR-13S	
CLR-15S	
RLR-20S	
LLR-25S	
LLR-25S-20＊65	
LLR-28S	

Optional items
Optional

〈 LLR type 〉

Part No.	Shape
LLR-13S	
LLR-15S	
LLR-20S	

◆ To improve your operation, screwdriver-type wrenches are also available.
Zusätzliche Schraubendreher zur besseren Handhabung

Part No.	Magnetic handle
XX2815-04	

Part No.	Replaceable bits
HLR-13S	
HLR-15S	
HLR-20S	
HLR-25S	

〈 Set of handle and bit . Komplett Set (Griff und Wechsel-Bit) 〉

Part No.	Description
XX2815-04-13S	XX2815-04 and HLR-13S Handle with bit
XX2815-04-15S	XX2815-04 and HLR-15S Handle with bit
XX2815-04-20S	XX2815-04 and HLR-20S Handle with bit
XX2815-04-25S	XX2815-04 and HLR-25S Handle with bit

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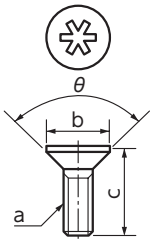
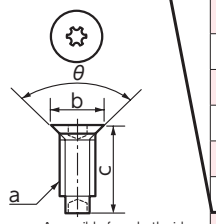
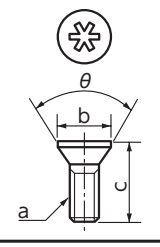
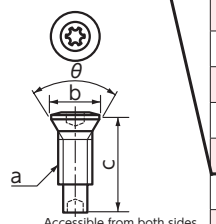
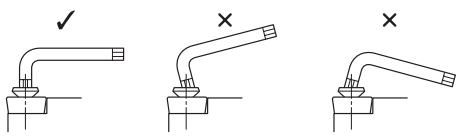
Clamp screw specifications
Schrauben Übersicht

Clamp screw		Dimensions (mm)			Angle (degrees) (°)	Standard wrench	
Shape	Part No.	a	b	c	θ	Code	Part No.
	**LR-S-2*3.5**	M2×P0.4	3.1	3.5	82	5681994	**CLR-13S**
	LR-S-2*3.7	M2×P0.4	3.1	3.7	82		
	LR-S-2*4.4	M2×P0.4	3.1	4.4	82		
	LR-S-2*5.5	M2×P0.4	3.0	5.5	90		
	LR-S-2.5*4.8	M2.5×P0.45	3.6	4.8	82	5681978	**CLR-15S**
	LR-S-2.5*5.5	M2.5×P0.45	3.6	5.5	82		
	LR-S-2.5*6	M2.5×P0.45	3.5	6.0	90		
	LR-S-2.5*6.8	M2.5×P0.45	3.5	6.8	90		
 Accessible from both side	**LR-S-3*5.8**	M3×P0.5	4.1	5.8	90	5485164	**RLR-20S**
	LR-S-3*6.2	M3×P0.5	5.2	6.2	82		
	LR-S-3*7.8	M3×P0.5	4.0	7.8	90		
	LR-S-4*5.8	M4×P0.7	5.8	6.0	82		
	LR-S-4*9	M4×P0.7	5.8	9.0	82		
	LR-S-4*10PW	M4×P0.7	5.8	10.0	90	5681978	**CLR-15S**
	**LRIS-2*6**	M2×P0.4	2.6	6.0	60	5681994	**CLR-13S**
	LRIS-2.2*6	M2.2×P0.45	3.15	6.0	60		
	LRIS-2.5*5	M2.5×P0.45	3.6	5.0	60	5681978	**CLR-15S**
	LRIS-2.5*7	M2.5×P0.45	3.6	7.0	60		
	LRIS-3*6	M3×P0.5	4.0	6.0	60	5485164	**RLR-20S**
	LRIS-3*8	M3×P0.5	4.2	8.0	60		
	LRIS-4*5	M4×P0.7	5.85	5.0	60	5364930 5794698	**LLR-25S** **LLR-25S-20*65**
	LRIS-4*6	M4×P0.7	5.85	6.0	60		
	LRIS-4*8	M4×P0.7	5.85	8.0	60		
	LRIS-4*10	M4×P0.7	5.85	10.0	60		
	LRIS-4*12	M4×P0.7	5.85	12.0	60		
 Accessible from both sides	**LRIS-5*10**	M5×P0.8	7.0	9.5	60	5364948	**LLR-28S**
	LRIS-4*10PW	M4×P0.7	5.7	10.0	60	5681978	**CLR-15S**
	LRIS-4*12PW	M4×P0.7	5.7	12.0	60		

Attention: When tightening screws
Achtung: Befestigungshinweise

- Make sure that wrench tip and wrench hole are neither deformed nor stripped.
  Bitte stellen Sie sicher, das der Schraubenkopf vor der Verwendung des Schraubendrehers, gereinigt ist.
- Apply wrench straight to screw hole.
  Achten Sie auf den korrekten Sitz des Schraubendrehers



- Do not apply more torque than the recommended amount (as shown to the right)
  Bitte den vorgeschriebenen Drehmoment beachten (siehe Tabelle)

Recommend tightening torque
Empfohlener Anzugs-Drehmoment

Wrench/bit P/N	Guaranteed tightening torque (N • m)
CLR LLR HLR 13S	0.7
〃 15S	1.4
RLR LLR HLR 20S	3.0
LLR HLR 25S	5.0
〃 28S	7.0

Note: Wrenches and bits come in a pack of five Clamp screws come in a pack of ten.
Anmerkung: Steckschlüssel und Bits in 5 VPE Schrauben in 10 VPE

Competitor's Grade Comparison Tables
Schneidstoffsorten-Vergleichstabelle

PVD-coated carbide . PVD-Beschichtetes Hartmetall

Classification	NTK	Sumitomo	Tungalloy	Mitsubishi materials	Kyocera	Sandvik
P (for steel) (Stahl)	VM1 DT4 ZM3 QM3 DM4 TM4	AC530U ACP200 ACP300	AH710 GH330 AH730 AH140 AH120 AH740	VP10MF VP20MF VP15TF VP20RT VP30RT	PR915 PR1005 PR930 PR1025 PR1115 PR830	GC1010 GC1020 GC2145 GC1025 GC1030 GC1125
M (for stainless steel) (Rostfreie Stähle)	VM1 DT4 ZM3 QM3 DM4 TM4	AC510U AC520U AC530U ACP200 ACP300	AH710 GH330 GH730 SH730 AH730 AH120 AH140	VP10MF VP20MF VP15TF VP20RT VP30RT	PR915 PR1025 PR930 PR660 PR1125	GC1005 GC1105 GC1020 GC2030 GC1025 GC4125 GC1030 GC1125 GC2035 GC2145
K (for cast iron) (Gusseisen)	QM3 DM4	EH10Z EH20Z ACZ310 AC510U AC520U ACK300	AH110 GH110 DS1100 DS1200 AH120	VP15TF VP20RT	PR905	GC1020 GC1030

CVD-coated carbide . CVD-Beschichtetes Hartmetall

Classification	NTK	Sumitomo	Tungalloy	Mitsubishi materials	Kyocera	Sandvik
P (for steel) (Stahl)	CP7	AC700G AC820P AC2000 AC830P AC3000 AC630M ACP100	T9005 T9015 T9025 T9035 T3030 T3130	UE6005 UE6110 UE6010 UC6010 UE6020 F7030 UH6400 UE6035 US735	CA5505 CA5515 CA5025 CA5525 CR9025 CA5535	GC4205 GC4215 GC3115 GC4225 GC4220 GC2015 GC1515 GC1515 GC4235 GC4230 GC2025 GC2135 GC235
M (for stainless steel) (Rostfreie Stähle)		AC610M AC630M	T9015 T3130 T6020 T9025 T6030 T3030	US7020 F7030 US735	CA6515 CA6525	GC2015 GC2025 GC2040 GC2135 GC235
K (for cast iron) (Gusseisen)	CP1	AC410K AC700G ACK200	T5010 T5105 T5020 T1015 T5115 T5125	UC5105 UC5115 F5010 F5020	CA4010 CA5505 CA4115 CA4120	GC3205 GC3210 GC3205 GC3210 GC3115 GC3215 K20W K20D K15W GC3040

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Cermet . Cermet

Classification	NTK	Sumitomo	Tungalloy	Mitsubishi materials	Kyocera
P (for cast iron) (Gusseisen)	T15 Q15	T110A T2000Z	NS520 GT720 NS710 NS720		TN30 PV30
		T1200A		NX2525 AP25N	TN60 TN6020 PV60 PV7020
	C7X C7Z	T3000Z	NS730 NS530 GT530 GT730	NX3035 UP35N	TN90 TN100M PV90
	N40	T250A	NS740	NX4545 VP45N	
M (for cast iron) (Gusseisen)	T15	T110A T2000Z	NS520 GT720 GT730	NX2525	TN60 TN6020 PV60 PV7020
	C7X	T1200A	NS530 NS730	NX3035	TN90 TN100M PV90
	N40	T3000Z T250A	NS740	NX4545	
K (for cast iron) (Gusseisen)	T15	T110A T2000Z T1200A T3000Z	NS520 NS530 GT720 NS710 NS720 NS730 GT730	NX2525 AP25N	TN30 PV30 TN60 TN6020 PV60 PV7020

Note: The data is based on estimations from the competitor's catalogues and not approved by competitors.
Anmerkung: Die Schneidstoffsorten anderer Hersteller wurden der Fachliteratur entnommen und können von den Herstellerangaben abweichen

Material Cross Reference List
Werkstoff-Querverweisliste

Carbon Steel
Kohlenstoffstahl

DIN	ISO	JIS
C10E / C10R	C10	S10C
C15E / C15R	C15E4 / C15M2	S15C
C22 / C22E / C22R	-	S20C
C25 / C25E / C25R	C25 / C25E4 / C25M2	S25C
C30 / C30E / C30R	C30 / C30E4 / C30M2	S30C
C35 / C35E / C35R	C35 / C35E4 / C35M2	S35C
C40 / C40E / C40R	C40 / C40E4 / C40M2	S40C
C45 / C45E / C45R	C45 / C45E4 / C45M2	S45C
C50 / C50E / C50R	C50 / C50E4 / C50M2	S50C
C55 / C55E / C55R	C55 / C55E4 / C55M2	S55C
C60 / C60E / C60R	C60 / C60E4 / C60M2	S58C

Cast Iron
Gusseisen

DIN	ISO	JIS
EN-GJL-100	100	FC100
EN-GJL-150	150	FC150
EN-GJL-200	200	FC200
EN-GJL-250	250	FC250
EN-GJL-300	300	FC300
EN-GJL-350	350	FC350
EN-GJL-400	400	FC400

Ductile Cast Iron
Sphäroguss

DIN	ISO	JIS
EN-GJS-350	350-22	FCD350
EN-GJS-400	400-15	FCD400
EN-GJS-450	450-10	FCD450
EN-GJS-500	500-7	FCD500
EN-GJS-600	600-3	FCD600
EN-GJS-700	700-2	FCD700

Heat Resistant Alloy
Wärmebeständige Legierung

DIN	ISO	JIS
X53CrMnNi21-9		SUH36
CrNi2520		SUH310
CrAl1205		SUH21
X6CrTi12	X6CrTi12	SUH409
	X2CrTi12	SUH409L
X45CrSi9-3		SUH1

High Alloy Steel
Hochlegierter Stahl

DIN	ISO	JIS
	C70U	SK70
	HS18-0-1	SKH2
	HS6-5-3-8	SKH40
	HS1-8-1	SKH50
S6-5-2	HS6-5-2	SKH51
-	HS6-6-2	SKH52
S6-5-3	HS6-5-3	SKH53
-	HS6-5-4	SKH54
S5-5-2-5	HS6-5-2-5	SKH55
S10-4-3-10	HS10-4-3-10	SKH57
	HS2-9-2	SKH58
	HS2-9-1-8	SKH59
	105V	SKS3
105WCr6	105WCr1	SKS31
X210Cr12	210Cr12	SKD1
	100CrMoV5	SKD12
X30WCrV9	X30WCrV9-3	SKD5
	X37CrMoV5-1	SKD6
X40CrMoV5	X40CrMoV5-1	SKD61
	X35CrWMoV5	SKD62
	32CrMoV12-28	SKD7
	55NiCrMoV7	SKT4

Low Alloy Steel
Niedriglegierter Stahl

DIN	ISO	JIS
17Cr3	-	SCr415
17CrS3	-	SCr415
-	20Cr4(H)	SCr420(H)
-	20CrS4	SCr420
34Cr4	34Cr4	SCr430
34CrS4	34CrS4	SCr430
37Cr4	37Cr4	SCr435
37CrS4	37CrS4	SCr435
41Cr4	41Cr4	SCr440
41CrS4	41CrS4	SCr440
18CrMo4	18CrMo4	SCM418
18CrMoS4	18CrMoS4	SCM418
34CrMo4	34CrMo4	SCM435
34CrMoS4	34CrMoS4	SCM435
42CrMo4	42CrMo4	SCM440
42CrMoS4	42CrMoS4	SCM440
-	22Mn6	SMn420
-	36mN6	SMn438
-	42Mn6	SMn443
	41CrAlMo74	SACM645

Stainless Steels (Austenitic)
Rostfreie Stähle (Austenit)

DIN	ISO	JIS
X12CrNi17-7	X10CrNi18-8	SUS301
X2CrNiN18-7	X2CrNiN18-7	SUS301L
X10CrNiS18-9	X10CrNiS18-9	SUS303
X5CrNi18-10	X5CrNi18-9	SUS304
X2CrNi19-11	X2CrNi19-11	SUS304L
X2CrNiN18-10	X2CrNiN18-9	SUS304LN
X5CrNi18-12	X6CrNi18-12	SUS305
	X6CrNi25-20	SUS310S
X5CrNiMo17-12-2	X5CrNiMo17-12-2	SUS316
X2CrNiMo17-13-2	X2CrNiMo17-12-2	SUS316L
X2CrNiMoN17-12-2	X2CrNiMoN17-11-2	SUS316LN
X6CrNiMoTi17-12-2	X6CrNiMoTi17-12-2	SUS316Ti
X2CrNiMo18-16-4	X2CrNiMo19-14-4	SUS317L
	X2CrNiMoN18-12-4	SUS317LN
	X1CrNiMoCu25-20-5	SUS890L
X6CrNiTi18-10	X6CrNiTi18-10	SUS321
X6CrNiNb18-10	X6CrNiNb18-10	SUS347
	X3NiCr18-16	SUS384
	X3CrNiCu18-9-4	SUSXM7

Stainless Steels (ferritic/tensitic)
Rostfreie Stähle (ferritisch, tensitisch)

DIN	ISO	JIS
X6CrA113	X6CrA113	SUS405
X6Cr17	X6Cr17	SUS430
X7CrS18	X7CrS17	SUS430F
X6CrTi17	X3CrTi17	SUS430LX
X6CrNb17	X2CrTi17	SUS430J1L
X6CrMo17-1	X6CrMo17-1	SUS434
	X1CrMoTi16-1	SUS436L
	X2CrMoTi18-2	SUS444
X10Cr13	X12Cr13	SUS410
X6Cr13	X6Cr13	SUS410S
	X12CrS13	SUS416
X20Cr13	X20Cr13	SUS420J1
X30Cr13	X30Cr13	SUS420J2
	X29CrS13	SUS420F
X20CrNi17-2	X19CrNi16-2	SUS431
	X70CrMo15	SUS440A
	X105CrMo17	SUS440C

Titanium Alloys
Titanlegierungen

DIN	ISO	JIS
TiAl5Sn2.5		
TiAl6V4		
TiAl6V4ELl		
TiAl4Mo4Sn4Si0.5		

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MEMO

List for CNC automatic lathes (Citizen Machinery Miyano Co., Ltd.)

Übersicht CNC Drehmaschinen (Citizen Machinery Miyano Co., Ltd.)

〈Cincom〉

Machine name	Cutting tool shank (Gang) (Height × width × length)	No. of tools	Cutting tool shank (Turret) (Height × width × length)	No. of tools	Type of hand	Diameter of sleeve	Max. work diameter
A12	10×10×100	5			R	φ19.05/φ20	φ12
A16	10×10×100	5			R	φ19.05/φ20	φ16
A20	12(13)×12(13)×120*1	5～7			R	φ25.4	φ20
A25	12(13)×12(13)×120	5/6			R	φ25.4	φ25
A32	16×16×150				R	φ25.4	φ32
B12	10×10×100	5			R	φ19.05/φ20	φ12
B20	12(13)×12(13)×120	6			R	φ19.05/φ20	φ20
BL12	10×10×60～120	5			R	φ20(φ19.05)	φ12
BL20	12(13)×12(13)×120	7			R	φ20(φ19.05)	φ20
BL25	12(13)×12(13)×120	7			R	φ20(φ19.05)	φ25
C12	10×10×120	6			R	φ19.05	φ12
C16	10×10×120	6			R	φ19.05	φ16
C32	16×16×130	5			R	φ25.4	φ32
E32			16(19)×16(13)×90	20	R	φ25.4	φ32
F10			10×10×60	10	R	φ19.05	φ10
F12			10×10×60	10	R	φ19.05	φ12
F16			10×10×60	10	R	φ19.05	φ16
F20			16(19)×16(13)×90	10	R	φ25.4	φ20
F25			16(19)×16(13)×90	10	R	φ25.4	φ25
FL25			16×16×90	12	R	φ16	φ25
FL42			16×16×90	12	R	φ16	φ42
G10			10×10×60	8	R	–	φ10
G16			10×10×60	8	R	–	φ16
G32			16(19)×16(13)×90	10	R	–	φ32
K12,K12E	10×10×100	7			R	φ20	φ12
K16,K16E	12×12×100	6			R	φ20	φ16
L10	8×8×100～130	5			R	φ15.875	φ10
L16,L16E	12(10)×12(10)×130	7			R	φ19.05	φ16
L20,L20E	12×12×130	7			R	φ19.05	φ20
L25	16×16×130	5			R	φ25.4	φ25
L32	16×16×130	5			R	φ25.4	φ32
M²12,M³12	10×10×120	5	10×10×60	10	R	φ19.05	φ12
M²16,M³16	10×10×120	5	10×10×60	10	R	φ19.05	φ16
M²20,M³20	12×12×130	5	16×16×90	10	R	φ25.4	φ20
M²32,M³32	16×16×130	5	16×16×90	10	R	φ25.4	φ32
M20	13(12)×13(12)×150		10×10×60	10	R	φ19.05	φ20
MSL12	10×10×120				R	–	φ12
R04	8×8×120	7			R	φ15.875	φ4
R07	8×8×120	5			R	φ15.875	φ7
RL02	16×16×60～150	max6*2			L	φ16/φ20	φ25
RL21	10(12)×10(12)×90				R	φ19.05	φ35

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〈Miyano〉

Machine name	Cutting tool shank (Turret) (Height × width × length)	No. of tools Upper/Lower	Type of hand	Diameter of sleeve	Max. work diameter
ABX-51TH3	20×20×100	12+12/12	R	ϕ25	ϕ51
ABX-64TH3	20×20×100	12+12/12	R	ϕ25	ϕ64
ABX-51THY	20×20×100	12+12/12	R	ϕ20、25、40	ϕ51
ABX-64THY	20×20×100	12+12/12	R	ϕ20、25、40	ϕ64
ABX-51SYY	20×20×100	12/12	R	ϕ20、25、40	ϕ51
ABX-64SYY	20×20×100	12/12	R	ϕ20、25、40	ϕ64
ABX-51SY	20×20×100	12/12	R	ϕ25	ϕ51
ABX-64SY	20×20×100	12/12	R	ϕ25	ϕ64
BNA-34C	20×20×100	8(16)/−	R	ϕ25	ϕ34
BNA-42C	20×20×100	8(16)/−	R	ϕ25	ϕ42
BNA-34S	20×20×100	8(16)/−	R	ϕ25	ϕ34
BNA-42S	20×20×100	8(16)/−	R	ϕ25	ϕ42
BNA-34DHY	20×20×100	8(16)/6	R	ϕ25	ϕ34
BNA-42DHY	20×20×100	8(16)/6	R	ϕ25	ϕ42
BNC-34C5	20×20×100	8/−	R	ϕ25	ϕ34
BNC-34S6	20×20×100	8/−	R	ϕ25	ϕ34
BNC-42C5	20×20×100	8/−	R	ϕ25	ϕ42
BNC-42S6	20×20×100	8/−	R	ϕ25	ϕ42
BND-51C2	20×20×100	12/−	R	ϕ25	ϕ51
BND-51S2	20×20×100	12/−	R	ϕ25	ϕ51
BND-51SY2	20×20×100	12/−	R	ϕ25	ϕ51
BNE-34S5	20×20×100	12/12	R	ϕ25	ϕ34
BNE-34SY5	20×20×100	12/12	R	ϕ25	ϕ34
BNE-51S5	20×20×100	12/12	R	ϕ25	ϕ51
BNE-51SY5	20×20×100	12/12	R	ϕ25	ϕ51
BNJ-34S3	20×20×100	12/6	R	ϕ25	ϕ34
BNJ-34SY3	20×20×100	12/6	R	ϕ25	ϕ34
BNJ-42S3	20×20×100	12/6	R	ϕ25	ϕ42
BNJ-42SY3	20×20×100	12/6	R	ϕ25	ϕ42
BNJ-51SY3	20×20×100	12/6	R	ϕ25	ϕ51
BNX-42SY	20×20×100	12/−	R	ϕ25	ϕ42
BX-20S	16×16×100	8/−	R	ϕ20	ϕ20
BX-26S	16×16×100	10/−	R	ϕ20	ϕ26
BX-26T	16×16×100	8/−	R	ϕ20	ϕ26

〈Ocean Cincom〉

Machine name	Cutting tool shank (Turret) (Height × width × length)	No. of tools Upper/Lower	Type of hand	Diameter of sleeve	Max. work diameter
RL01	10×10×60 ～ 120	4※1	L	ϕ16/ϕ20	ϕ12
RL03	10×10×100※2 12×12×100 16×16×100	max5	L	ϕ20	Collet chuck Stationary ϕ35 Pull type ϕ40
GN-3200	10×10×100※2 12×12×100 16×16×101	max5	L	ϕ20	Collet chuck Stationary ϕ35 Pull type ϕ40
GN-3200W	10×10×100※2 12×12×100 16×16×102	max10	L	ϕ20	Collet chuck Stationary ϕ35 Pull type ϕ40
GN-4200	10×10×100※2 12×12×100 16×16×103	max6	L	ϕ20	Collet chuck Stationary ϕ35 Pull type ϕ40

Star Micronics Co., Ltd.

Machine name	Cutting tool shank (Gang) (Height × width × length)	No. of tools	Cutting tool shank (Turret) (Height × width × length)	No. of tools	Type of hand	Diameter of sleeve	Max. work diameter
ECAS-12	10×10×95～150	6			R	φ22	φ13
ECAS-20	12(16)×12(16)×80～144	6			R	φ22	φ20
ECAS-20T			12(16)×12(16)×80	8stations×3turrets (max.3tools per station)	R	φ22	φ20
ECAS-32T	16×16×80～120	4	16×16×60～78	10stations×turrets (max.2tools per station)	R	φ22/32	φ32
JNC-10			8×8×65	6	L	–	φ10
JNC-16			10×10×80	6	L	–	φ16
JNC-25/32			16×16×78～120	10stations	R	φ22	φ25/φ32
KJR-16B/25B			16×16×78	12stations/16stations	R	φ22	φ16/φ25
KNC-16/20			16×16×68	16stations	R	φ22	φ16/φ20
KNC-25II/32II			16×16×78	20stations	R	φ22/32	φ25/φ32
RNC-10/16	10×10×80～120	5			R	φ22	φ10/φ16
RNC-16II/16BII	10×10×80～120	5			R	φ22	φ16
SA-16R	10×10×95～120	6			R	φ22	φ16
SB-12II/16II	12(10)×12(10)×95～130	6(7)			R	φ22	φ12/φ16
SB-16	12×12×95～130	6			R	φ22	φ16
SB-20	12×12×95～130	6			R	φ22	φ20
SR-20J	12×12×100～135	6			R	φ22	φ20
SC-20	12×12×95～130	6			R	φ22	φ20
SE-12/12B・16/16B	10×10×95～120	5			R	φ22	φ13/φ16
SF-25			16×16×73～98	10stations (max.2tools per station)	R	φ22/32	φ25
SG-42			16(20)×16(20)×84～88	10stations (max.2tools per station)	R	φ22/32	φ42
SH-7	8×8×95～120	5			R	φ22	φ7
SH-12/16	10×10×95～120	5			R	φ22	φ13/φ16
SI-12/12C	10×10×80～130	6			R	φ22	φ13
SR-16/20	12×12×95～120	5			R	φ22	φ16/φ20
SR-32	16×16×100～135	6			R	φ22	φ32
SR-20R/20RII/20RIII	12×12×100～135	6			R	φ22	φ20
SR-10J	8× 8×67～110	6			R	φ16	φ10
SR-25J/32J	16×16×95～155	6			R	φ22/32	φ25/φ32
SST-16	12×12×95～115	5			R	φ22	φ16
ST-38			16×16×85	10stations×3turrets (max.2tools per station)	R	φ22/32	φ38
SV-12/20	12×12×95～135	4	12×12×70～78	8stations (max.3tools per station)	R	φ22	φ13/φ20
	16×16×95～135	5	16×16×65～70	8stations	R		
SV-32	16×16×95～135	4	16×16×80～88	10stations (max.2tools per station)	R	φ22/32	φ32
SV-32J/32JII	16×16×95～135	4	16×16×65～70	8stations	R	φ22/32	φ32
SW-7	8×8×80～120	6			R		φ7
VNC-12			10×10×65	12stations	R	φ22	φ13
VNC-20			16×16×78	12stations	R	φ22	φ20
VNC-32			16×16×78	12stations	R	φ22/32	φ32

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Tsugami Corporation

Machine name	Cutting tool shank (Gang) (Height × width × length)	No. of tools	Cutting tool shank (Turret) (Height × width × length)	No. of tools	Type of hand	Diameter of sleeve	Max. work diameter
P013H/P014H	8×8×100～120	6	–	–	R	φ16	φ1
P033H/P034H	8×8×100～120	6	–	–	R	φ16	φ3
B007-Ⅲ	7(8)(10)×7(8)(10)×85	8	–	–	R	φ25	φ7
B074/B07-V	8×8×85	9	–	–	R	φ20	φ7
B0123/B0124/B0125	12×12×85	9	–	–	R	φ20	φ12
B012F/B012-V/BE12-V	12×12×85	9	–	–	R	φ20	φ12
B016MF	12×12×85	9	–	–	R	φ20	φ16
B018-Ⅲ	12×12×85	9	–	–	R	φ20	φ18
B0203/B0204/B0205	12×12×85	9	–	–	R	φ20	φ20
B020F/B020-V/BE20-V	12×12×85	9	–	–	R	φ20	φ20
B026-V	12(16)×12(16)×85	6	–	–	R	φ25	φ26
B0385/B0385L	16×16×125	8	–	–	R	φ32	φ38
BA20-Ⅲ	12×12×85	6	–	–	R	φ25	φ20
BA26-Ⅲ	12(16)×12(16)×85	6	–	–	R	φ25	φ26
BC18	12×12×85	10	–	–	R	φ25	φ18
BC25	12×12×85	10	–	–	R	φ10/φ25	φ25
BE18	12×12×85	9	–	–	R	φ20	φ18
BH20/BH20Z	12×12×85	4	12×12×85	12stations	R	φ25/φ32	φ20
BH38	16×16×125	7	20×20×125	12stations	R	φ25/φ32	φ38
BM07	8×8×85	9	–	–	R	φ20	φ7
BM163/BM164/BM165	12×12×85	9	–	–	R	φ20	φ16
BM20-V	12×12×85	9	–	–	R	φ20	φ20
BN12-Ⅲ	12×12×85	7	–	–	R	φ20	φ12
BN20-Ⅲ	12(16)×12(16)×85	7	–	–	R	φ20	φ20
BS12-V	12×12×85	8or12	–	–	R	φ20/φ25	φ12
BS18-Ⅲ	12×12×85	7or10	–	–	R	φ14/φ25	φ18
BS20-V	12×12×85	8or12	–	–	R	φ20/φ25	φ20
BS26（ABC)-V	16×16×100	7or10	–	–	R	φ16/φ25	φ26
BS32C-V	16×16×100	6	–	–	R	φ16/φ25	φ32
BU12	12×12×85	4	12×12×80	8stations	R	φ20	φ51
BU20	12×12×85	4	12×12×80	8stations	R	φ20	φ20
BU26	16×16×100	7	20×20×80	8stations	R※	φ20/φ32	φ26
BU38	16×16×100	7	20×20×80	8stations	R※	φ20/φ32	φ38
BW07-Ⅲ	12×12×85	7	–	–	R	φ20	φ7
BW12-Ⅲ	12×12×85	7	–	–	R	φ20	φ12
BW20-Ⅲ	12(16)×12(16)×85	7	–	–	R	φ20	φ20
C004-Ⅲ	13×13×60～100	6～8	–	–	R/L	～φ10	φ120
C150	10×10×60～100	4～6	–	–	R/L	～φ8	φ80
C180	12×12×60～100	4～6	–	–	R/L	～φ10	φ120
C220	13×13×60～100	6～8	–	–	R/L	～φ10	φ120
C300-Ⅲ	16×16×100～130	6～10	–	–	R/L	～φ14	φ170
CH154	12×12×60～100	～16	–	–	R/L	～φ10	φ15
M34J	–	–	20×20×125	12stations	R	φ20/φ32	φ34
M42J/M42D/M42SD	–	–	20×20×125	12stations	R	φ25/φ32	φ42
M50SY-Ⅲ	–	–	20×20×100	12stations	R	φ32	φ51
M50J	–	–	20×20×100	12stations	R	φ20/φ32	φ51
MB25	–	–	20×20×80	2×8stations	R	φ20/φ32	φ25
MB35-Ⅲ	–	–	20×20×80	2×8stations	R	φ20/φ32	φ35
MB38-Ⅲ	–	–	20×20×80	2×8stations	R※	φ20/φ32	φ38
MB50-Ⅲ	–	–	20×20×80	2×8stations	R	φ20/φ32	φ50
MU26	–	–	20×20×80	2×8stations	R	φ20/φ32	φ26
MU38	–	–	20×20×80	2×8stations	R	φ20/φ32	φ38
NU50-Ⅲ	–	–	20×20×100	12stations	R	φ20/φ32	φ51
S205/S206	12(16)×12(16)×100	8	–	–	R	φ20/φ22	φ20
SS20	16×16×100	8	–	–	R	φ20/φ22	φ20
SS207	12(16)×12(16)×100	8	–	–	R	φ20/φ22	φ20
SS26	16×16×100	7	–	–	R	φ20/φ22	φ26
SS32/SS32L	16×16×100	7	–	–	R	φ20/φ22	φ32
TMB2	–	–	20×20×125	16stations	R	φ32	φ51
TMU1	–	–	20×20×125	16stations	R	φ32	φ38

Safety Notice

We make a particular effort to manufacture safe products. However cutting tools may be subject to breakage under sudden increase in load or excessive wear which could possibly cause injury to operators. To protect operators from any such accidents please note the following.

WARNING

- Install adequate machine guards and wear protective clothing and safety glasses.
- Do not touch the insert cutting edge with unprotected hands.
- Only use genuine NTK parts.
- Check the insert condition and index at an early stage if neccessary.

We do not recommend you to grind cutting tools because grinding may cause cracks and improper finishing, possibly resulting in breakage of the tool.

Sicherheitshinweise

Es kann jedoch möglich sein, daß auf Grund plötzlich erhöhter Schnittbelastung oder erhöhtem Werkzeugverschleiß, Schneidwerkzeuge brechen können, was möglicherweise Verletzungen des Anwenders verursachen kann.

VORSICHT

- Achten Sie auf Schutzabdeckungen und tragen Sie Schutzkleidung und Schutzbrillen.
- Wegen der Gefahr von Schnittverletzungen keinesfalls die Schneidkante mit der bloßen Hand berühren.
- Benutzen Sie Original-NTK-Produkte als Ersatzeile.
- Prüfen Sie die Schärfe und ersetzen Sie bei Bedarf rechtzeitig das Werkzeug.

Wir empfehlen, die Schneidwerkzeuge nicht nachzuschleifen. Durch Schleifen können Risse entstehen, was auf Grund unsachgemäßer Bearbeitung wiederum zu Werkzeugbruch führen kann.

TÜV CERT
DIN EN ISO 9001:2000
JIS Q 9001:2000
Certificate:09 100 5656

TÜV CERT
DIN EN ISO 14001
JIS Q 14001
Certificate:09 104 8237

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For safe use of the Extra Hard Tool Product
Produktsicherheit bei Anwendung von extraharten Werkzeugen

1. To use extra hard tool products
Zum Gebrauch extraharter Werkzeugprodukte

In accordance with Product Liability Law (PL law) that has been in effect since July 1, 1995, we affix warning labels or caution labels to the packages of the products which are covered by the law. However, we do not affix specific caution labels onto the tool itself. Therefore, please read this leaflet before using extra hard tool products and extra hard tool materials. In addition, we would like to ask you to inform your operators of the content of this leaflet as part of your safety training.

Gemäß den Bestimmungen des Produkthaftungsgesetzes, das seit dem 1. Juli 1995 in Kraft ist, versehen wir die Verpackungen unserer Produkte, die unter dieses Gesetz fallen, mit entsprechenden Vorsichts- und Achtungshinweisen. Allerdings tragen die Werkzeuge selbst keine spezifischen Warnaufkleber. Machen Sie sich daher vor dem Gebrauch extraharter Werkzeugprodukte und extraharter Werkzeugmaterialien unbedingt mit dem Inhalt dieses Merkblatts vertraut. Außerdem bitten wir Sie, den Inhalt dieses Merkblatts im Rahmen Ihrer Sicherheitsschulung den Maschinenbedienern mitzuteilen.

2. Basic features of extra hard tool materials
Grundmerkmale extraharter Werkzeugmaterialien

2-1. Meaning and usage of terms in this leaflet
Bedeutung und Verwendung der Fachausdrücke in diesem Merkblatt

Extra hard tool material : Generic name for tool materials such as extra hard alloys, cermet, ceramic, CBN sintering material and diamond sintering material.
Extra hard alloy : Tool material which is mainly made of WC (Carbonized tungsten)
Extra hard : Abbreviation for extra hard tool materials, or the abbreviation for extra hard alloy in the narrow sense.
Extra hard tool : Generic name of tools which are made of extra hard tool material.

Extrahartes Werkzeugmaterial: Oberbegriff für Werkzeugmaterialien wie extraharte Legierungen, Cermet, Keramik, CBN- und Diamant-Sintermaterial.
Extraharte Legierung: Werkzeugmaterial, das hauptsächlich aus Wolframkarbid (einsatzgehärtetem Wolfram) besteht.
Extrahart: Kürzel für extraharte Werkzeugmaterialien oder für extraharte Legierungen in engerem Sinn.
Extrahartes Werkzeug: Oberbegriff für Werkzeuge, die aus extrahartem Werkzeugmaterial bestehen.

2-2. Physical characteristics
Physikalische Kenndaten

Appearance: Each material is different. Example : Grey, black, gold color, etc. Odor : None
Hardness : Extra hard cermet : HV500 to 3000kg/mm^2, Ceramic : HV1000 to 4000kg/mm^2
Hardness : CBN sintering material : HV 2000 to 5000 kg/mm^2, Diamond sintering material : HV8000 to 12000kg/mm^2
Gravity : Extra hard : 9 to 16, cermet : 5 to 9, cerami : 2 to 7, CBN and diamond sintering material : 3 to 5

Äußere Erscheinung: Unterschiedlich bei den einzelnen Materialien. Beispiel: grau, schwarz, goldfarben usw. Geruch: geruchlos.
Härte; extra hartes Cermet - HV 500 bis 3000 kp/mm^2, Keramik - HV 1000 bis 4000 kp/mm^2
Härte; CBN-Sintermaterial - HV 2000 bis 5000 kp/mm^2, Diamant-Sintermaterial - HV 8000 bis 12000 kp/mm^2.
Dichte: extrahart - 9 bis 16, Cermet - 5 bis 9, Keramik - 2 bis 7, CBN- und Diamant-Sintermaterial 3 bis 5.

2-3. Component
Bestandteile

Carbide, nitride, carbonitride, oxide such as W, Ti, Al, Si, Ta, B, and materials that contain Co, Ni, Cr, Mo, etc. in addition to those compounds.

Karbide, Nitride, Karbonitride, Oxide von z. B. W, Ti, Al, Si, Ta und B sowie Materialien mit Co, Ni, Cr, Mo usw. zusätzlich zu solchen Verbindungen.

3. Cautions for handling extra hard tool materials
Vorsichtsmaßnahmen beim Umschlag mit extraharten Werkzeugmaterialien

- Extra hard materials can sometimes be quite fragile, although they are normally very hard. The materials may be damaged by sharp impact or excessive tightening.
- Since extra hard materials have high specific gravity, care should be taken when handling large products or large amounts of the products which are made of those materials.
- Extra hard materials have different thermal expansion ratios from other metallic materials. Therefore, cracks may occur in the product after shrinkage fit or cold shrinkage fit because the temperature for use is significantly higher or lower than the specification temperature.
- If the extra hard material has corrosion due to contact with liquid for grinding, lubricant or water, etc., the strength of the material will be deteriorated significantly. Be sure to store the material where it will not come in contact with liquids or water.

- Extraharte Materialien sind u. U, ziemlich zerbrechlich, auch wenn sie gewöhnlich sehr hart sind. Sie können durch heftigen Stoß oder übermäßiges Anziehen beschädigt werden.
- Da extraharte Materialien einen hohe Dichte aufweisen, ist bei der Handhabung großer Produkte oder großer Mengen von Produkten aus solchen Materialien entsprechende Sorgfalt angebracht.
- Extraharte Materialien haben andere Wärmedehnungskoeffizienten als anderer metallische Werkstoffe. Daher sind nach einem Pressverband durch Schrumpfen oder Aufschrumpfen Risse im Produkt möglich, denn die Temperatur bei Gebrauch ist wesentlich höher oder niedriger als die Spezifikationstemperatur.
- Korrodiert extrahartes Material aufgrund der Einwirkung von Flüssigkeit beim Schleifen, Schmiermitteln oder Wasser usw., so kommt es zu einer erheblichen Beeinträchtigung der Materialfestigkeit. Das Material ist unbedingt an Orten zu lagern, wo es nicht mit Wasser oder anderen Flüssigkeiten in Berührung kommen kann.

4. Cautions for machining extra hard tools
Vorsichtsmaßnahmen bei der Bearbeitung extraharter Werkzeuge

- Extra hard tools may lose strength significantly depending on the surface condition. Be sure to use diamonds for grinding.
- Extra hard tools may generate dust during grinding. If you inhale a great deal of the dust, it may affect your health. Please make sure to have equipment for disposal and wear protective devices such as a mask, etc. If the dust comes in contact with your bare skin gets into your eyes, wash thoroughly with water.
- When grinding the extra hard material or soldered material, heavy metal component will be included in the waste fluid. So, make sure to dispose of the waste fluid properly.
- When regrinding extra hard tools, do a post check to be sure that no cracks have occurred.
- If you use a laser or electric pen, etc. to mark the extra hard material or products, it may cause cracks. Do not make markings at places where stress will be applied.
- If electric discharge machining is conducted on the extra hard material, remnant cracks may occur on the surface which cause the material to weaken. Be sure to remove any cracks by grinding, if necessary.
- When soldering the extra hard materials, if the material temperature is much lower or higher than the melting temperature of the soldering material, it may cause defluxion or breakage of the product. Be careful about the temperature.

- Extraharte Werkzeuge erleiden je nach Oberflächenbeschaffenheit u. U. erhebliche Festigkeitseinbußen. Zum Schleifen unbedingt Diamanten verwenden.
- Extraharte Werkzeuge können beim Schleifen Staub entwickeln. Beim Einatmen solchen Staubs in großer Menge droht u. U. eine Gefährdung der Gesundheit. Bitte unbedingt Gerät zur Staubentsorgung bereithalten und Schutzausrüstung wie etwa Atemschutzmasken tragen. Kommt der Schleifstaub mit der bloßen Haut in Kontakt oder gerät er in die Augen, die betroffenen Stellen gründlich mit Wasser abspülen.
- Beim Schleifen extraharten oder hartgelöteten Materials, enthält die anfallende Restflüssigkeit Schwermetallbestandteile. Daher ist diese Restflüssigkeit unbedingt vorschriftsmäßig zu entsorgen.
- Beim Nachschleifen extraharter Werkzeug ist anschließend durch eine Prüfung sicherzustellen, dass keine Risse entstanden sind.
- Bei Markieren von extraharten Materialien oder Produkten z. B. mit Laser oder elektrischem Stift ist Rissbildung möglich. Keinesfalls Stellen markieren, auf die Druck einwirkt.
- Bei elektro-erosiver Bearbeitung von extrahartem Material können u. U. Risse in der Oberfläche zurückbleiben, die zu Materialermüdung führen. Gegebenenfalls etwaige Risse unbedingt durch Schleifen beseitigen.
- Ist beim Löten extraharter Materialien die Materialtemperatur erheblich niedriger oder höher als die Schmelztemperatur des Lötmetalls, so drohen Abfließen oder Produktbruch. Daher der Temperatur entsprechend Beachtung schenken.

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Cautions for using cutting tools
Sicherheitshinweise für die Anwendung von Schneidwerkzeugen

Objective product Produktanwendung	Danger Gefahr	Countermeasure Gegenmaßnahme
Cutting tools in general **Schneidwerkzeuge im Allgemeinen**	◎This type of tool may have sharp edges. If you touch it directly, you may be injured. ◎Diese Werkzeuge haben sehr scharfe Schneiden. Wenn Sie diese direkt berühren, können Sie sich dabei verletzen.	＊Wear protective gear, such as protective gloves, etc., especially when taking out the product from the case or attaching the tool to a machine. ＊Tragen Sie Schutzkleidung, wie zum Beispiel Schutzhandschuhe etc.,besonders beim Herausnehmen der Produkte aus der Verpackung oder beim Befestigen des Werkzeugs in der Maschine.
	◎If you use it improperly or if the conditions for use are inappropriate, it may cause breakage or shattering of the tool, which may result in injury. ◎Bei unsachgemäßer Anwendung oder wenn die Bedingungen nicht angepasst sind, kann es zum Bruch oder zu Vibrationen führen, was wiederum zu Verletzungen führen kann.	＊Wear protective gear such as safety covers or protective glasses. ＊Use within the recommended purpose of usage. Refer to the operation manual, catalogue, etc. ＊Verwenden Sie zur Sicherheit entsprechende Schutzabdeckung oder Schutzbrille. ＊Benützen Sie die empfohIenen Gebrauchshinweise. Hingewiesen wird hier auf Funktionsbeschreibungen, Katalog,etc.
	◎Sudden increase of cutting resistance due to a mixture of impact and burden or excessive abrasion may cause breakage or shattering of the tool, which may result in injury. ◎Plötzlicher verstärkter Schnittdruck, möglich resultierend auf Grund von erhöhtem Verschleiß, kann Vibrationen am Werkzeug oder einen Bruch zur FoIge haben, was wiederum eine Verletzungsgefahr mit sich bringen kann.	＊Wear protective gear such as safety cover or protective glasses. ＊Stop the machine, wear the protective gloves and use tools such as nipper or clipper, etc. to remove cutting chips. ＊Verwenden Sie zur Sicherheit entsprechende Schutzabdeckung oder Schutzbrille. ＊Tauschen Sie, wenn notwendig, das Werkzeug rechtzeitig aus.
	◎Tools or workpieces will be very hot while cutting. Therefore, if you touch them immediately after the machining, you may suffer burn injury. ◎Sehr heiße Späne oder sehr lange Späne können wirr herumfliegen, diese können ebenfalls zu Verletzungen oder zu Verbrennungen führen.	＊Wear protective gear such as protective gloves. ＊Verwenden Sie zur Sicherheit entsprechende Schutzkleidung.
	◎Sparks, heat generated due to breakage while cutting, cutting chips can also cause a fire. ◎Werkzeuge oder Werkstücke werden während der Bearbeitung sehr heiß. Deshalb können Sie während oder nach der Bearbeitung durch Berühren Brandverletzungen bekommen.	＊Do not use the tool where there is a possibility of fire or explosion. ＊If you use insoluble cutting lubricant, be sure to have antifire provisions. ＊Verwenden Sie die Werkzeuge nicht, solange eine Möglichkeit von Feuer oder Explosion besteht. ＊Wenn Sie lösungshaltiges Schneidöl verwenden, sorgen Sie vorher für einen entsprechenden Feuerschutz.
	◎When using the tool at high speed rotation if the whole machine including the holder is not well balanced, the tool may be broken due to tremor or vibration, which may result in injury. ◎Bei der Bearbeitung mit hohen Schnittgeschwindigkeiten, und wenn die ganze Maschine inkl. Werkzeughalter nicht optimal stabilisiert ist, können Werkzeuge durch Schläge und Vibrationen brechen, was wiederum zu Verletzungen führen kann.	＊Wear protective gear such as safety cover or protective glasses. ＊Make sure to have a trial operation in advance in order to confirm that there is no vibration or abnormal sound. ＊Verwenden Sie zur Sicherheit entsprechende Schutzabdeckung oder Schutzbrille. ＊Klären Sie vorab den Zustand mit einem Testversuch und stellen Sie sicher, dass keine Vibrationen oder unnormale Geräusche bestehen.
	◎Touching burrs on the machined product directly may result in injury. ◎Direktes Berühren von Schnittgeräten kann ebenso zu Verletzungen führen.	＊Do not touch with bare hands. ＊Berühren Sie nichts mit bloßen Händen.

Objective product Produktanwendung	Danger Gefahr	Countermeasure Gegenmaßnahme
Throw-away type Indexable type **Einmalanwendung (Typ Wechselschneide) Werkzeuge generell**	◎If parts are not clamped securely, they may fall down or scatter while cutting, which may cause injury. ◎Verletzungen können entstehen, wenn Teile oder Werkstücke nicht sicher eingespannt sind, und diese dann umherfallen oder umherfliegen.	＊Clean the surface for attachment of an insert or the part for fixture of the insert completely before attaching the insert. ＊Make sure that the insert or the part is clamped securely using a spanner provided with the product before attachment. Also, do not use any inserts or parts other than the ones provided with the products. ＊Reinigen Sie die Oberflächen und Befestigungsteile bevor Sie eine Wendeplatte einsetzen. ＊Stellen Sie sicher, dass zur Befestigung der Wendeplatte und ebenso für die Befestigungsteile ein zum Produkt empfohlener Schraubenschlüssel verwendet wird. Verwenden Sie ebenso keine Wendeplatten oder TeiIe, welche nicht für die Produkte empfohlen wurden.
	◎If the tool is tightened too tightly using a pipe, etc., the tool may shatter while cutting. This is dangerous. ◎Wenn das Werkzeug zu fest angezogen wird, so ähnlich wie bei einem Rohr etc.,können während der Bearbeitung Teile oder auch das Werkzeug umherfliegen oder zerbrechen.Dies ist gefährlich.	＊Do not use a tool such as a pipe. Use the spanner which is provided with the product. ＊Verwenden Sie keine Steckschlüssel.Benützen Sie Schraubenschlüssel, welche für die Produkte empfohlen wurden.
	◎When using the tool at high speed rotation, a part or chip may be thrown out by centrifugal force, which is very dangerous. Be careful about handling the tool safely. ◎Bei Werkzeuganwendungen mit hoher Drehzahl, können durch Zentrifugalkraft Teile oder Späne nach außen fliegen, was sehr gefährlich ist. Achten Sie auf eine sichere Werkzeughandhabung.	＊Use the tools only for the recommended purposes. Refer to the operation manual, catalog, or other source of information. ＊Setzen Sie die Werkzeuge ausschließlich für die empfohlene Anwendung ein. Beziehen Sie sich auf Funktionsbeschreibung, Katalog, oder andere Informationsquellen.
Cutters and other tools that are rotated for use **Fräser und andere Werkzeuge in rotierender Anwendung**	◎The sharp cutter blades may cause injury if you touch them directly with your hands. ◎Die scharfen Schneidkanten können bei direktem Berühren mit der Hand Verletzungen verursachen.	＊Wear protective gear such as protective gloves, etc. ＊Verwenden Sie zur Sicherheit entsprechende Schutzhandschuhe.
	◎The tool may be deflected due to eccentric rotation or bad balance that will cause vibration, breakage or scattering of the tool, which may result in injury. ◎Werkzeuge können sich durch exzentrische Bewegungen oder durch schlechtes Spannen lösen, dies wiederum kann zu Vibrationen, Bruch oder Herumfliegen des Werkzeugs führen, was zu Verletzungen führen kann.	＊Use the tool within the recommended rotation speed. ＊Check and adjust the accuracy of rotating section or balance periodically so that eccentric rotation or deflection does not occur due to abrasion of the bearings, etc. ＊Halten Sie die für das Produkt empfohlenen Schnittwerte ein. ＊Prüfen und passen Sie die Genauigkeit der rotierenden Teile an, und gleichen Sie diese regelmäßig so ab, dass exzentrische Drehungen oder Abweichungen nicht zum Verschleiß der Lager etc. führen.
Soldering tool **Gelötete Werkzeuge**	◎You may get injured due to defluxion or breakage of the chips, etc. ◎Sie können Verletzungen bekommen auf Grund von Umlenkungen und von Brechen von Spänen etc..	＊Confirm that the soldering is secure before use. ＊Do not use under conditions which may cause the tool to reach high temperatures. ＊Klären Sie ab ob gelötete TeiIe auf Sicherheit geprüft sind. ＊Setzen Sie das Werkzeug nicht unter Bedingungen ein, wo das Werkzeug zu überhöhten Temperaturen kommen kann.
Others **Sonstige**	◎Repeating soldering many times may cause the chip to be broken easily. This is dangerous. ◎Wiederholtes Löten führt sehr oft zu leichtem Bruch. Das ist gefährlich.	＊Do not use the chip which has been soldered many times because the strength will be lower. ＊Verwenden Sie keine Produkte, welche mehrmals gelötet wurden, weil die Stabilität immer mehr nachlässt.
	◎Using the tool for other than its intended purposes may cause breakage of the machine or tool. This is very dangerous. ◎Werkzeuganwendungen außerhalb des zugedachten Zwecks kann zu Bruch an der Maschine oder am Werkzeug führen.Dies ist sehr gefährlich.	＊Use the tools only as specified. ＊Setzen Sie die Werkzeuge nur entsprechend den Empfehlungen ein.

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