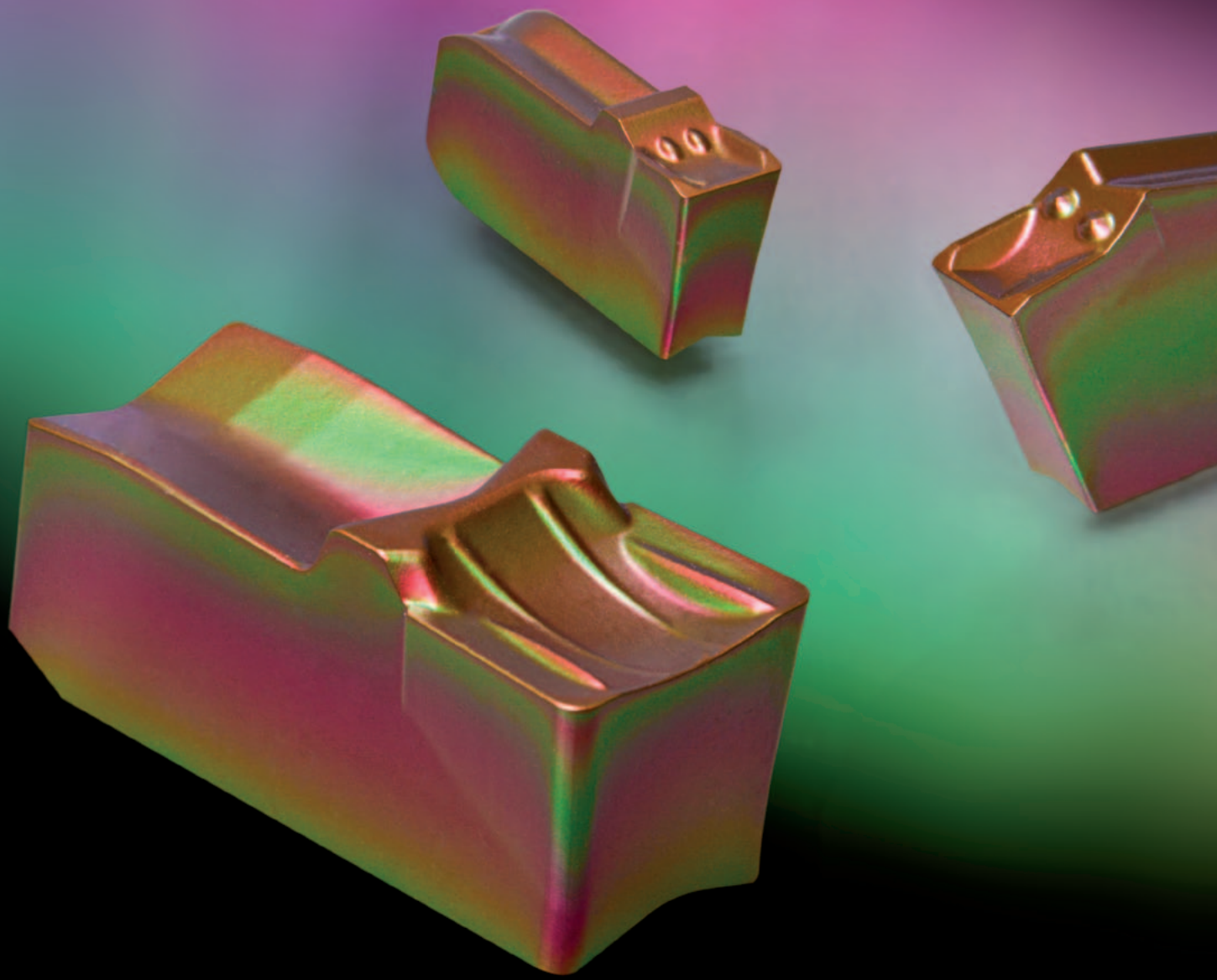
CERATIZIT

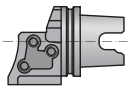
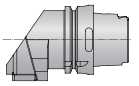
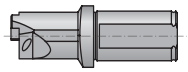
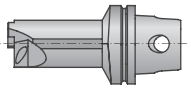
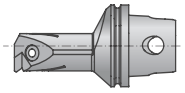
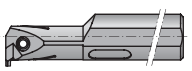
hard material matters

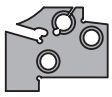
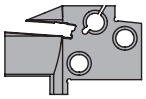
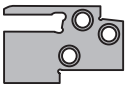
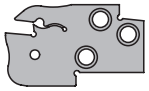
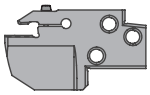
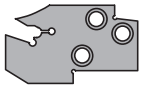
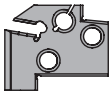


Contents

CERATIZIT designation system

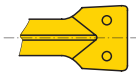
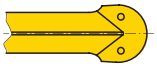
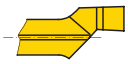
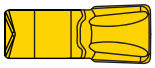
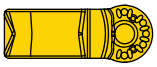
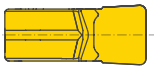
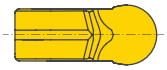
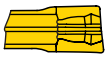
Tool holders

	Systems UTS, HSK-T	System assembly size		MSS system		E = external / I = internal	Assembly size	Hand	Approach angle	Parting and grooving depth		Shank section, type		Shank length		Insert system
				MSS	-	E	25	R	00		-	2525	-	L		
				MSS	-	E	25	R	00		-	AD				
	UT	40	-	MSS	-	E	25	R	00							
	HSK	T63	-	MSS	-	E	32	L	90							
						E	16	R	00	21	-	1616	-	K	-	GX24-1
				MC	-		05	R			-	1010	-	K		
						E	12	R	00		-	1212			-	TC16
				MSS	-	I	25	R	90		-	1.5D				
	UT	40	-	MSS	-	I	32	R	90		-	2D				
	UT	40	-	MSS	-	I	32	R	90		-	2D			-	TC16
						I	12	R	90		-	2.5D			-	GX09

	MSS system		E = external / I = internal	Assembly size	Hand	Max. parting and grooving depth		Insert system	Insert size, cutting width		Width class	Axial diameter range D_{min} - D_{max}
	MSS	-	E	25	R	12	-	GX	16	-	2	
	MSS	-	E	25	R	15	-	GX	24	-	3	A 70-100
	MSS	-	E	25	R	10	-	AX	10			
	MSS	-	E	25	R	25	-	SX	3			
	MSS	-	E	32	N	45	-	LX				
	MSS	-	E	25	R	20	-	FX	3.1			
	MSS	-	E	25	R		-	TC	16	-	2	
	MSS	-	I	25	R	06	-	GX	09	-	1	
	MSS	-	I	32	R		-	TC	16	-	2	

CERATIZIT designation system

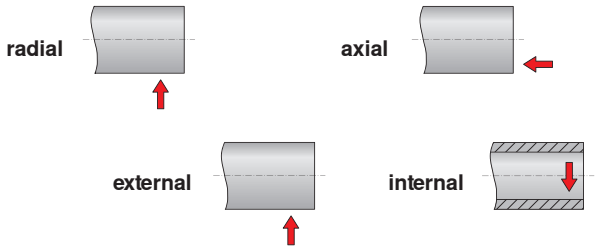
Inserts

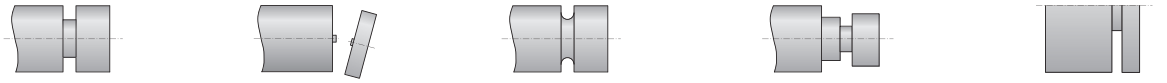
	Insert system	Insert size		Number of cutting edges		Width class	Insert shape, application	Cutting width, pitch	Hand, thread standard	Corner radius, angle		Minimum axial grooving diameter		Chip groove code
	GX	16			-	2	E	3.00	N	0.30			-	Code
	GX	16			-	2	R	1.50	N					Code
	GX	16			-	2	S	1.00	R					
	AX	10					E	3.00	N	0.30	-	20	-	Code
	SX						E	2.00	N	0.20			-	Code
	SX						R	1.50	N				-	Code
	LX						E	8.00	N	0.80			-	Code
	LX						R	4.00	N				-	Code
	FX							3.10	N	0.20			-	Code
	PX	20			-	2	E	1.50	L	05			-	Code
	MC	05	-	5	-			1.00	N	0.10			-	Code
	TC	16			-	1	E	1.50	ISO				-	Code

Parting and grooving covers a diverse range of applications and demands, advanced technology and intelligent tool design.

Diverse range of applications

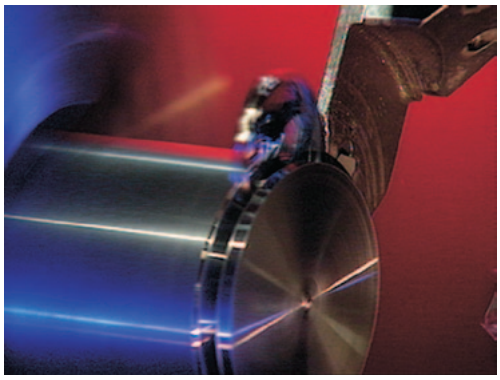
> Radial, axial grooving
> External/internal parting and grooving
> Grooving
> Part-off
> Profile grooving
> Parting, grooving and turning
> Deep grooving





Grooving | Part-off | Profile grooving | Parting, grooving and turning | Deep grooving

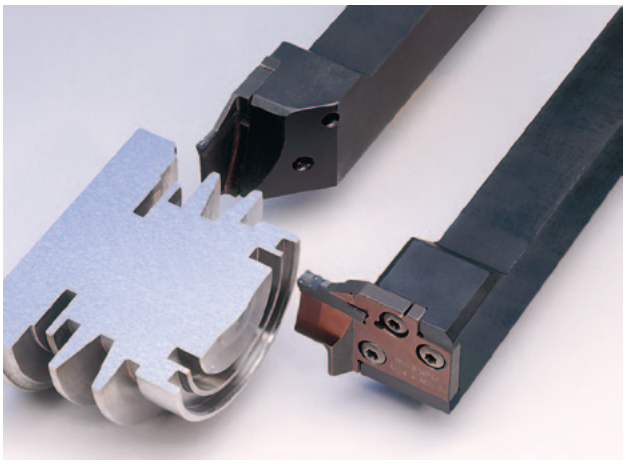
Advanced technology



> Chip formation
> Chip evacuation
> Parallel - flat parting and grooving surface
> Surface finish
> Formation of burrs when parting off tubes
> Formation of pips in part-off operations
> v_c = 0 in the centre
> Entire main cutting edge applied

Intelligent tool design

> Narrow, long overhang
> Insert clamping
> Rigidity
> Resistant against breakage
> Easy handling
> Economy



MSS - The modular parting, grooving and threading system

In order to be able to meet all demands, up-to-date tools have a modular structure.

System features

> Separate shank and tool holder
> Same interface for all parting, grooving and threading applications
> Stable, precise connection
> ([WHQGDEOH WKURXJK QHZ P RGXOHV·
> Easy handling
> Clamping features optimized for the various applications

Flexibility

> Adaptable to machining task
> One system only for all parting, grooving and threading operations
> Particularly well-suited for semi-standard tools

Precision

> High accuracy and repeatability when changing the module
> Reduced set-up time
> High-quality work pieces

Stability

> Application security
> Parting, grooving and longitudinal turning possible

Simplicity

> Quick module change in case of tool breakage, short downtime

Economy

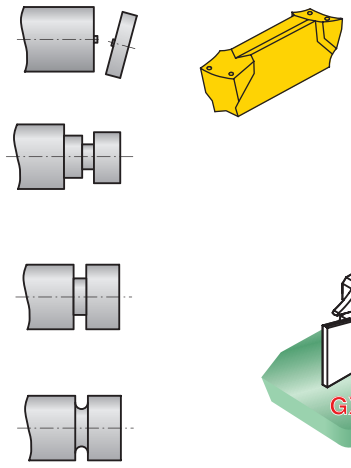
> Low stock inventory provides a large variety of combination possibilities
> In case of tool breakage only change module

Completeness

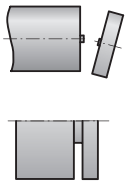
> Components for all work pieces and materials

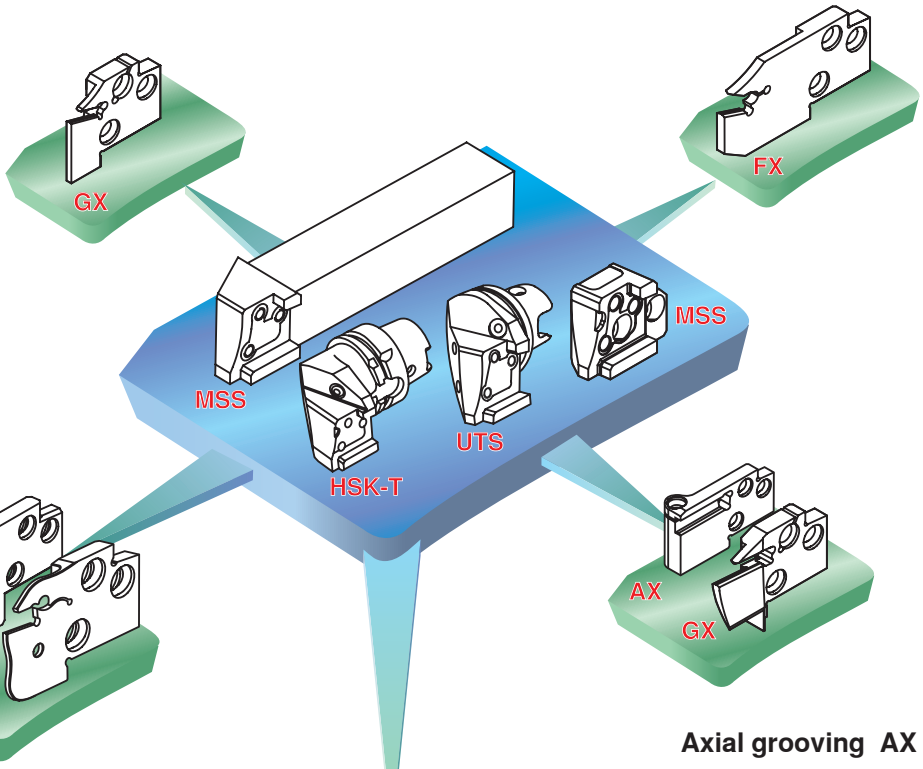
MSS - system components

Parting, grooving and turning GX

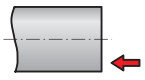


Parting and grooving FX

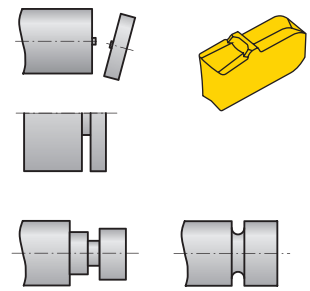


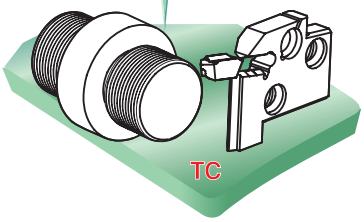


Axial grooving AX + GX

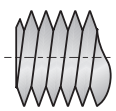


Parting, grooving and turning LX + SX



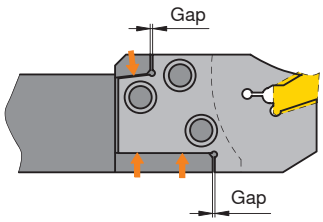


Thread turning TC



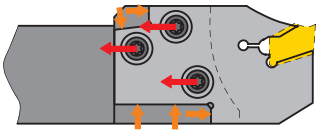
The strong connection

Unclamped module:



> Gap between module and location face for axial clamping

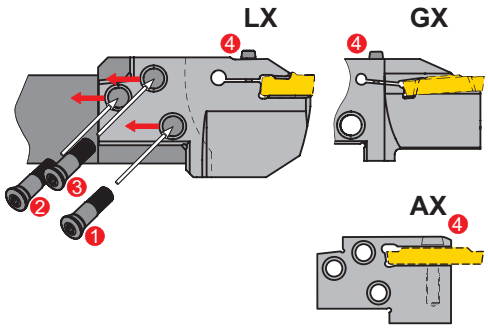
Clamped module:



> Axial clamping with location face
> Connection without clearance, therefore highest stability

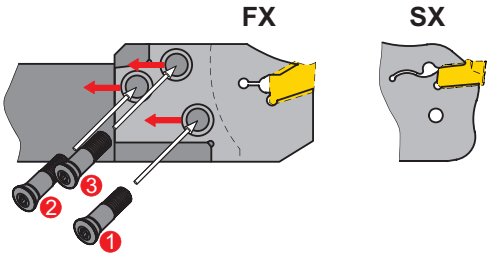
Clamping features

LX / GX / AX:
active insert clamping



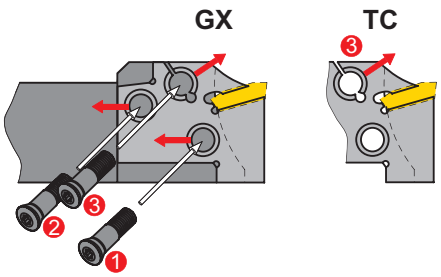
Screws 1, 2 and 3 are used to clamp the module. The insert is self-clamping.
The insert is clamped through the elastic deformation of the module through the additional screw 4.

FX / SX:
Self-clamping inserts



Screws 1, 2 and 3 are used to clamp the module. The insert is self-clamping.

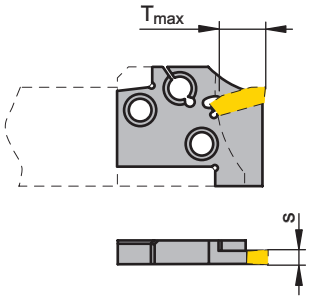
GX / TC:
Active insert clamping



Screws 1, 2 and 3 are used to clamp the module.
Important: clamp the module with screw 1, then screw 2. Afterwards the insert is clamped by means of screw 3.

Parting, grooving, longitudinal turning, axial grooving

GX external

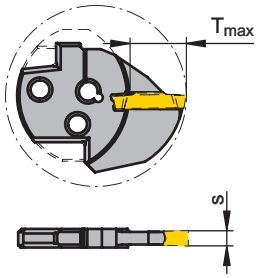


T_{max} = 7 - 21 mm
s = 2.0 - 8.0 mm

Circlip grooves:
T_{max} = .75 - 4.0 mm
s = .6 - 5.25 mm

O-ring grooves:
T_{max} = 1.78 - 2.58 mm
s = 1.6 - 2.4 mm

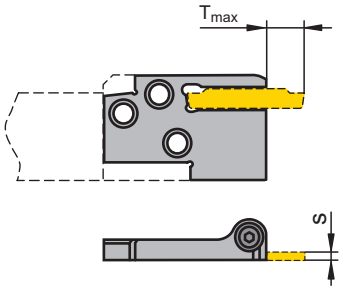
GX internal



T_{max} = 4 - 19 mm
s = 2.0 - 6.0 mm

Axial grooving

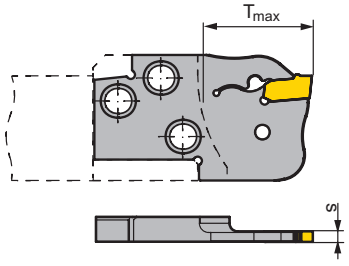
AX



T_{max} = 5 - 15 mm
s = 3 mm

Parting, grooving, longitudinal turning

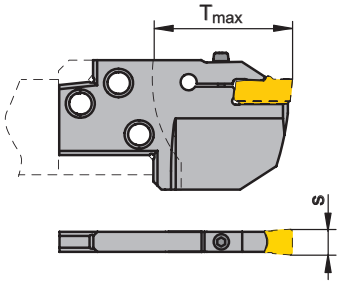
SX



T_{max} = 20 - 35 mm
s = 2 - 4 mm

Parting, grooving, longitudinal turning, axial grooving

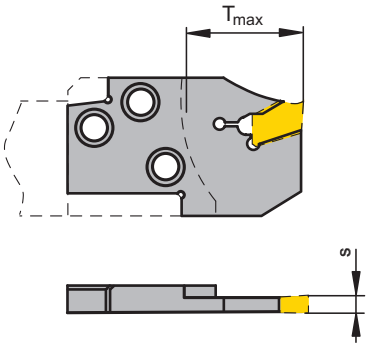
LX



T_{max} = 25 - 45 mm
s = 8.0 - 10.0 mm

Parting, grooving

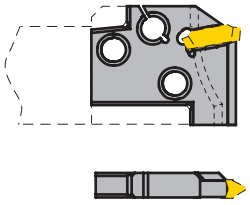
FX



T_{max} 20 = 45 mm
s = 2.2 - 6.5 mm

Thread turning and milling

TC



Pitch:
ISO .5 - 5.0 mm
BSW 28 - 5 TPI

System characteristics

> Modules made of tempered steel with high strength
> Locating surfaces for MSS interface ground with highest precision
> Ground insert seat

Benefits

> Long tool life, high rigidity
> Accurate repeatability
> Secure and precise insert clamping

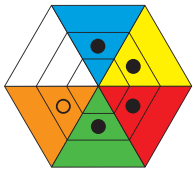
The inserts

Systems GX / AX / SX / LX

Parting, grooving, longitudinal turning, axial grooving

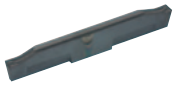
GX

Insert size	s	r	s	r	
09	0,6 - 3,25	0,8 - 1,2	2,0 - 3,5	1,0 - 1,2	Upon request
16	0,6 - 5,25	0,8 - 1,2	2,0 - 6,0	1,5 - 3,0	
24			2,0 - 6,0	1,50 - 3,0	

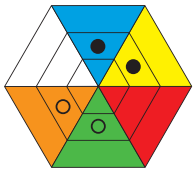


Axial grooving

AX



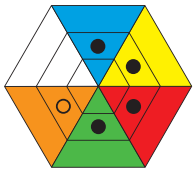
s
3,0



Parting, grooving, longitudinal turning

SX

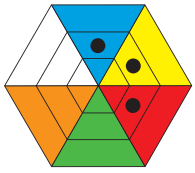
R	s	s	s
1,5 - 3,0	2,0 - 6,0 N	2,0 - 4,0 L	R



Parting, grooving, longitudinal turning, axial grooving

LX

r	s
4,0	8,0 - 10,0

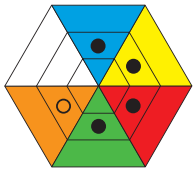


> According to the respective application either precision ground or sintered
> Optimized geometries for all important materials
> Security through ideal combination of substrate and coating
> All inserts for aluminium machining are microfinished

Parting, grooving

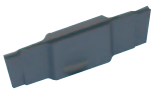
FX

N	L	R
2,2 - 9,7	2,2 - 6,5	

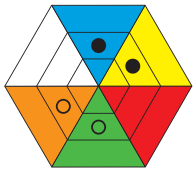


Parting, grooving

PX



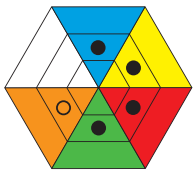
N	L	R
1,0 - 2,0	1,0 - 2,0	



Parting, grooving, longitudinal turning

MC

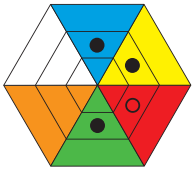
N	L	R
1,0 - 2,5	1,0 - 2,5	



Thread turning and milling

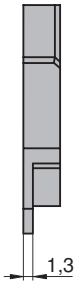
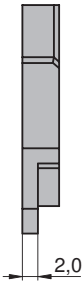
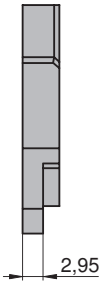
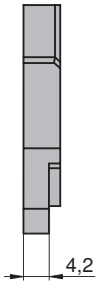
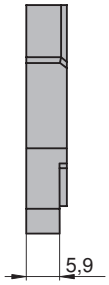
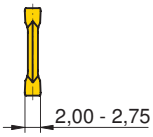
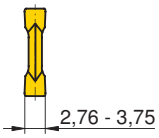
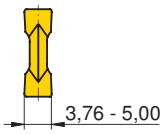
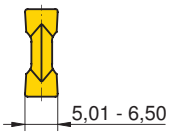
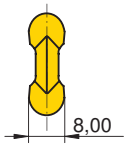
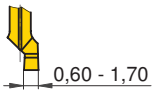
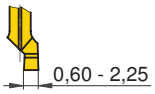
TC

,62	%6:
Full and partial profile external, internal	Full and partial profile external, internal
Pitch .5 - 5.0 mm	48 - 5 TPI



The width classes

System GX

Width classes	1	2	3	4	5
Parting and grooving modules					
Parting and grooving inserts					
Inserts for circlip grooves					

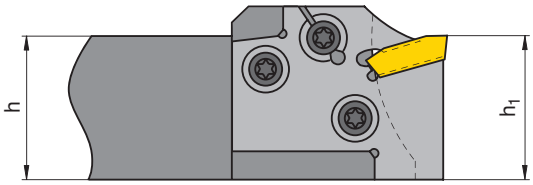
Module designation:
MSS-E20R12-GX16-**2**

Insert designation:
GX16-**2**E3.00N0.30

Width class [1)]

The parting and grooving widths of the MSS system are divided into width classes. Every width class represents a certain range of cutting widths.

1) Ideally the module and the insert have the same width class. This combination results in the best possible application security.



The assembly size is determined by the shank dimensions of the MSS tool holders. In this manner the correct tool holder can be assigned to the correct module size and vice versa.
The following tables will give you an overview of the width classes and insert sizes for the available assembly sizes.

Tool designation:
MSS-**E25**R00-2525L

Module designation:
MSS-**E25**R25-GX16-2

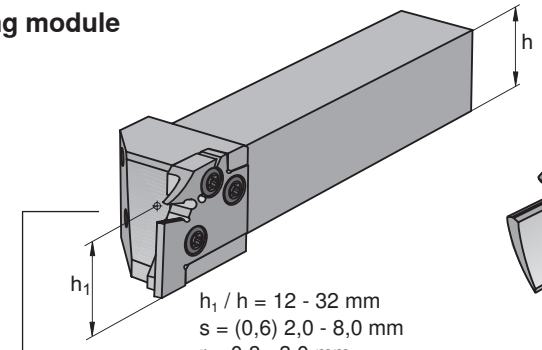
Assembly size (h)

Assembly size (h)	GX external				GX internal			
	Width class							
	1	2	3	4	1	2	3	4
10								
12								
16								
20								
25								
32								
40								

Assembly size (h)	GX Insert size					
	09		16		24	
10	○					
12	○	○	○			
16	○	○	○	○	○	
20		○	○	○	○	
25		○	○	○	○	
32			○	○	○	○
40				○		○

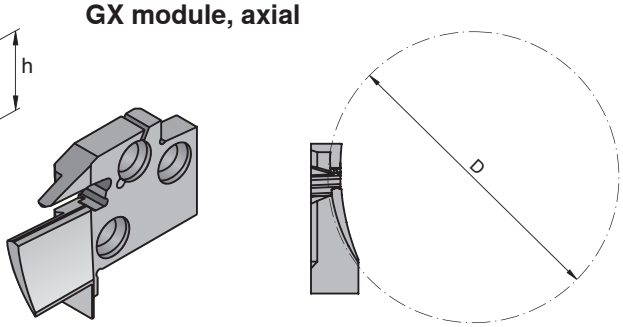
System GX is characterized by a double-ended insert with numerous application possibilities. It is mostly applied for radial grooving and turning. Thanks to special modules the system can easily be adapted for axial and circlip grooving.
For GX inserts a range of modules and boring bars for internal grooving is available.

Tool shank with GX grooving module



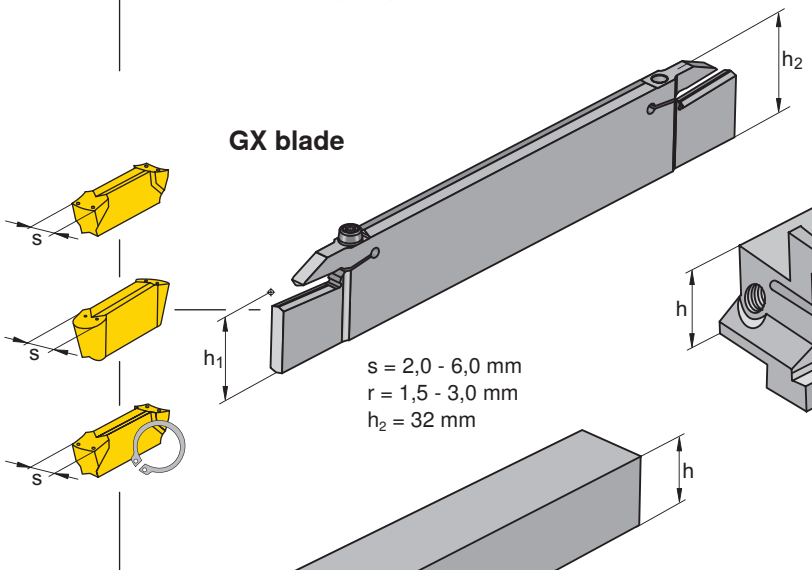
h_1 / h = 12 - 32 mm
s = (0,6) 2,0 - 8,0 mm
r = 0,8 - 3,0 mm

GX module, axial



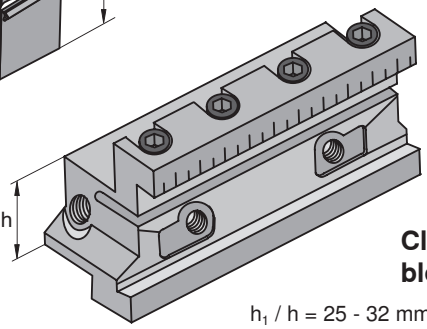
h_1= 25 - 32 mm
s = 3,0 - 6,0 mm
r = 1,5 - 3,0 mm
D = 50 - 900 mm

GX blade



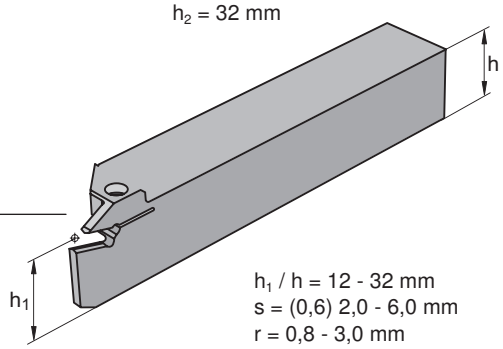
s = 2,0 - 6,0 mm
r = 1,5 - 3,0 mm
h_2 = 32 mm

Clamping block



h_1 / h = 25 - 32 mm

Monobloc tool



h_1 / h = 12 - 32 mm
s = (0,6) 2,0 - 6,0 mm
r = 0,8 - 3,0 mm

System characteristics

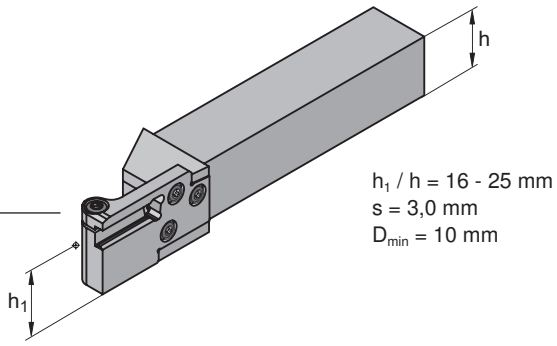
> Double-ended insert
> Ground and directly pressed inserts

Benefits

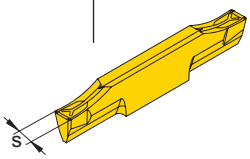
> Good economy
> Optimum solution for all situations

System AX is for axial grooving with small diameters. A special characteristic of the design is that the insert needs no support in the cutting area.

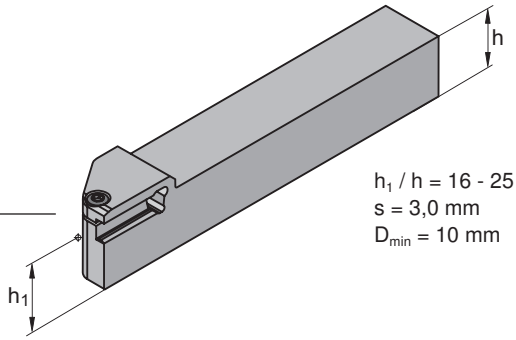
Tool shank with AX parting and grooving module



h_1 / h = 16 - 25 mm
s = 3,0 mm
D_{min} = 10 mm



Monobloc tool



h_1 / h = 16 - 25 mm
s = 3,0 mm
D_{min} = 10 mm

System characteristics

> Neutral insert

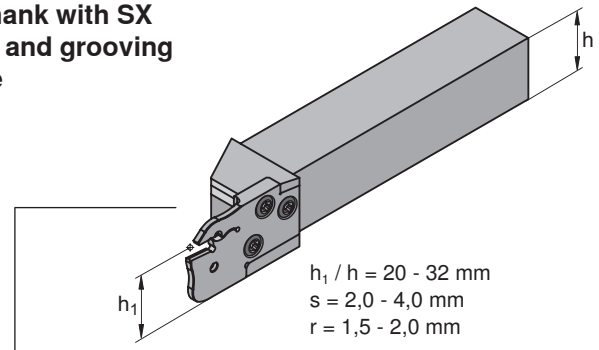
> Monobloc and modular tools

Benefits

> May be applied in left-hand and right-hand tools
> Optimum solution in terms of costs for every application

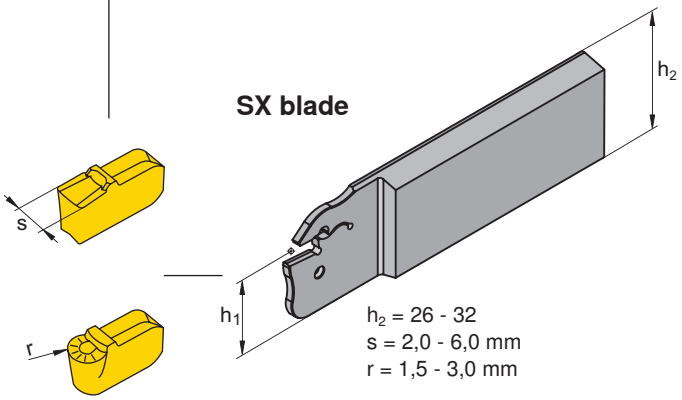
In system SX the insert is self-clamping and fixed with maximum clamping force in the insert seat. Precise cutting edge positioning and easy handling are guaranteed.

Tool shank with SX parting and grooving module

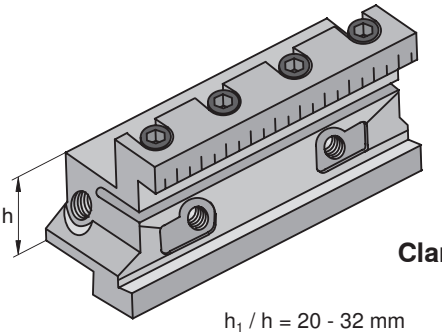


h_1 / h = 20 - 32 mm
s = 2,0 - 4,0 mm
r = 1,5 - 2,0 mm

SX blade

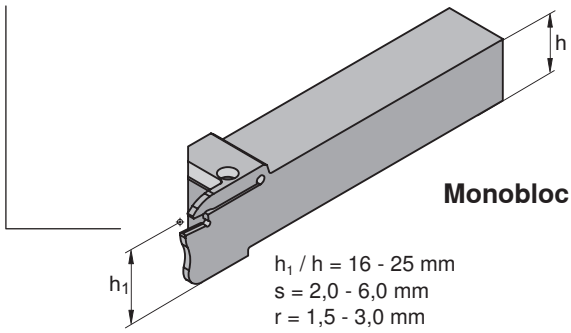


h_2 = 26 - 32
s = 2,0 - 6,0 mm
r = 1,5 - 3,0 mm



Clamping block

h_1 / h = 20 - 32 mm



Monobloc tool

h_1 / h = 16 - 25 mm
s = 2,0 - 6,0 mm
r = 1,5 - 3,0 mm

System characteristics

> Active clamping
> Insert seat with fixed stop
> Easy handling

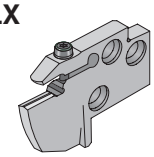
> FEM optimized tool

Benefits

> Inserts will not pull out of the cutting blade
> Exact positioning of the cutting edge
> Quick insert change
> Maximum stability also when longitudinal turning

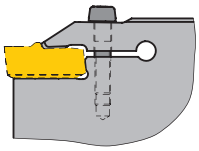
System LX is characterized by high strength and stability. It is most suitable for the production of wide and deep grooves as well as for parting off large bar diameters.

Parting and grooving module LX

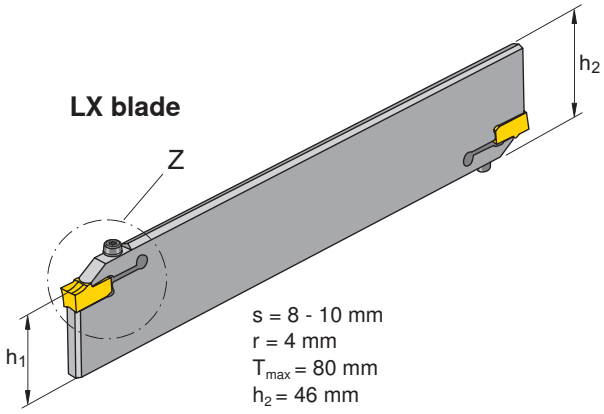


s = 8 - 10 mm
r = 4 mm
T_{max} = 25 / 32 / 45 mm

Detail Z
Active insert clamping

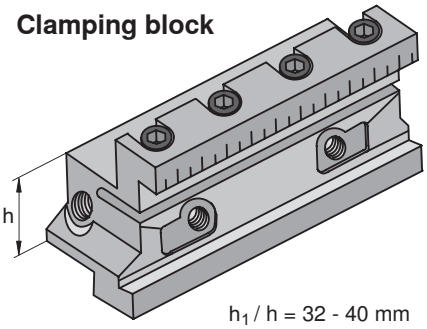


LX blade



s = 8 - 10 mm
r = 4 mm
T_{max} = 80 mm
h_2 = 46 mm

Clamping block



h_1 / h = 32 - 40 mm

Application of LX modules

> Part-off
> Grooving and turning
> Axial grooving with D > 500 mm
> Internal grooving and turning with D > 200 mm

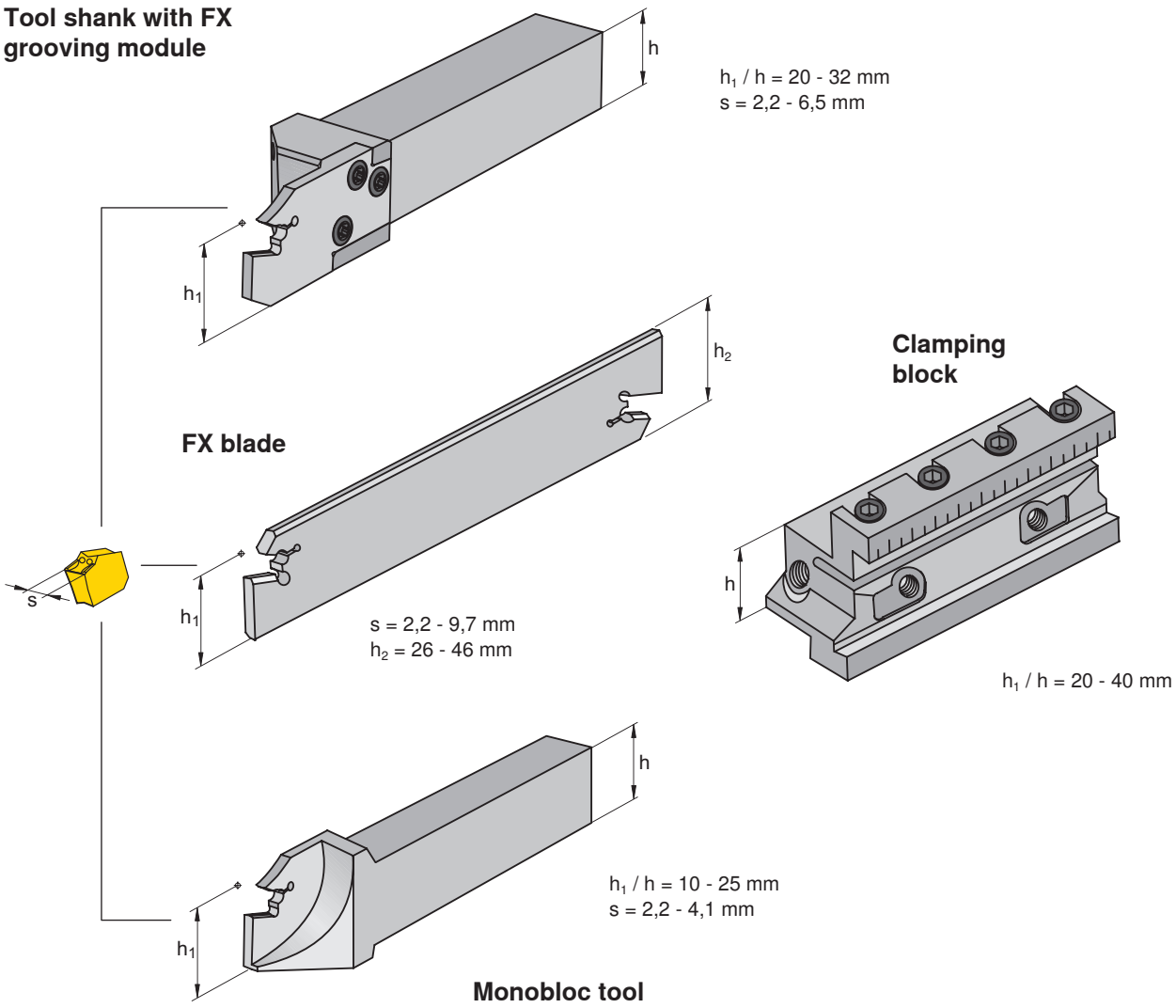
System characteristics

> Robust construction
> Active insert clamping
> Insert with full radius

Benefits

> Application security, high strength and stability
> Well-suited for copy turning

System FX is characterized by a self-clamping single blade insert for deep grooving of large diameters. FX is directly integrated in the MSS system by means of the respective modules. Additionally the tried and tested block/blade solutions and monobloc tools are available.



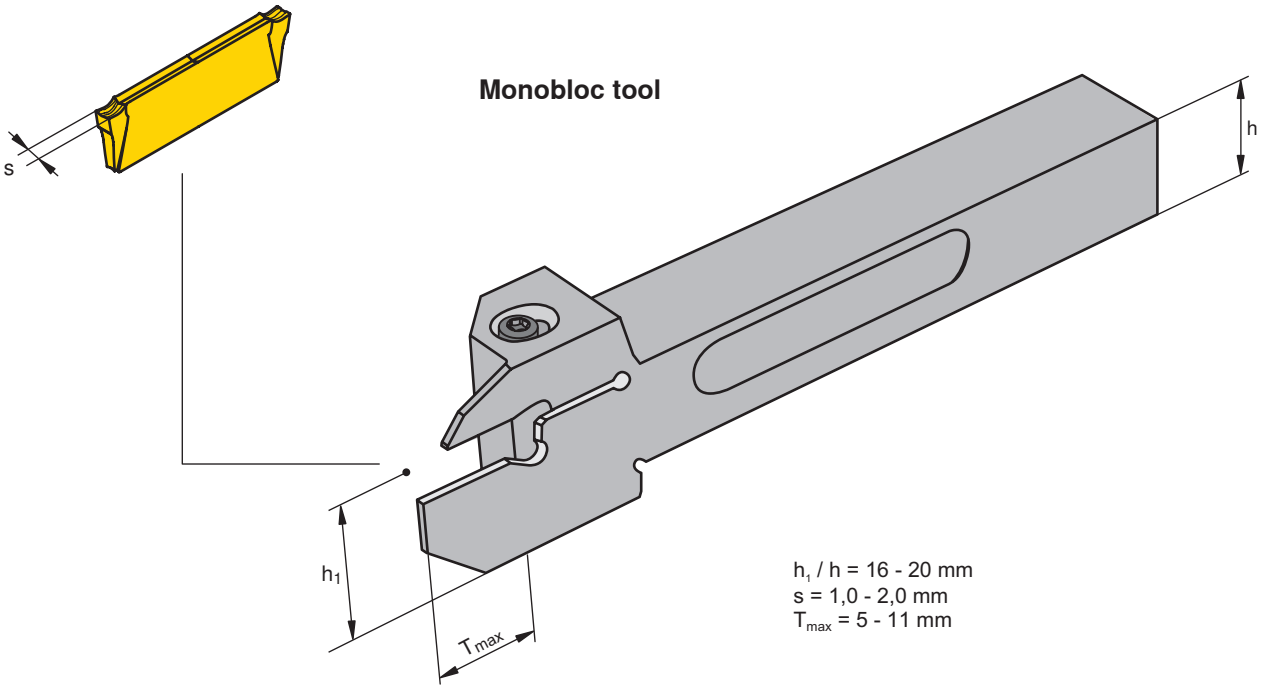
System characteristics

> Self-clamping insert
> Adjustable blade
> Single-blade insert, directly pressed

Benefits

> Easy handling, no clamping parts
> Parting and grooving depth, overhang optimally adjustable
> Economic for deep parting and grooving

This system is the first choice for small parting and grooving widths when maximum flexiblity, repeatability and stability are required in high volume production.



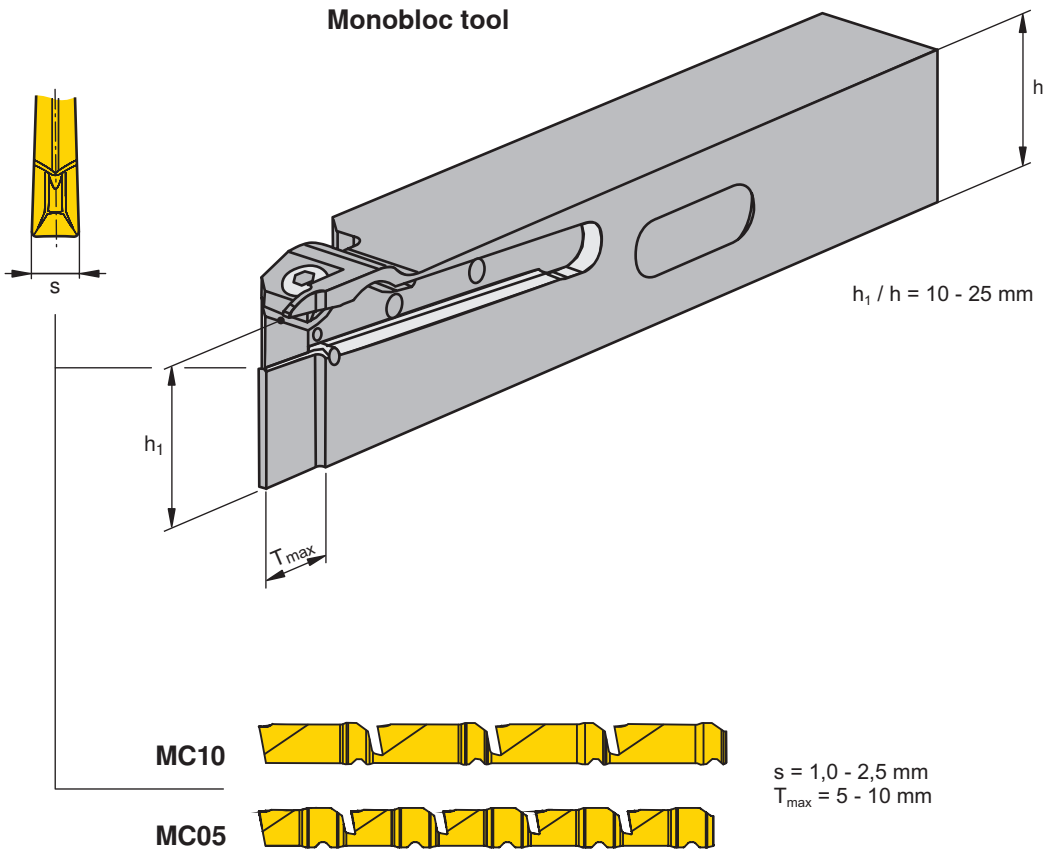
System characteristics

> Maximum precision of the cutting edge when mounted
> Flexible cutting widths possible

Benefits

> Close tolerances on the work piece
> Less material wastage

MaxiClick is characterized by a cutting insert consisting of 4 or 5 cutting elements. The worn cutting edge is broken off towards the side, like a snap-off knife.



System characteristics

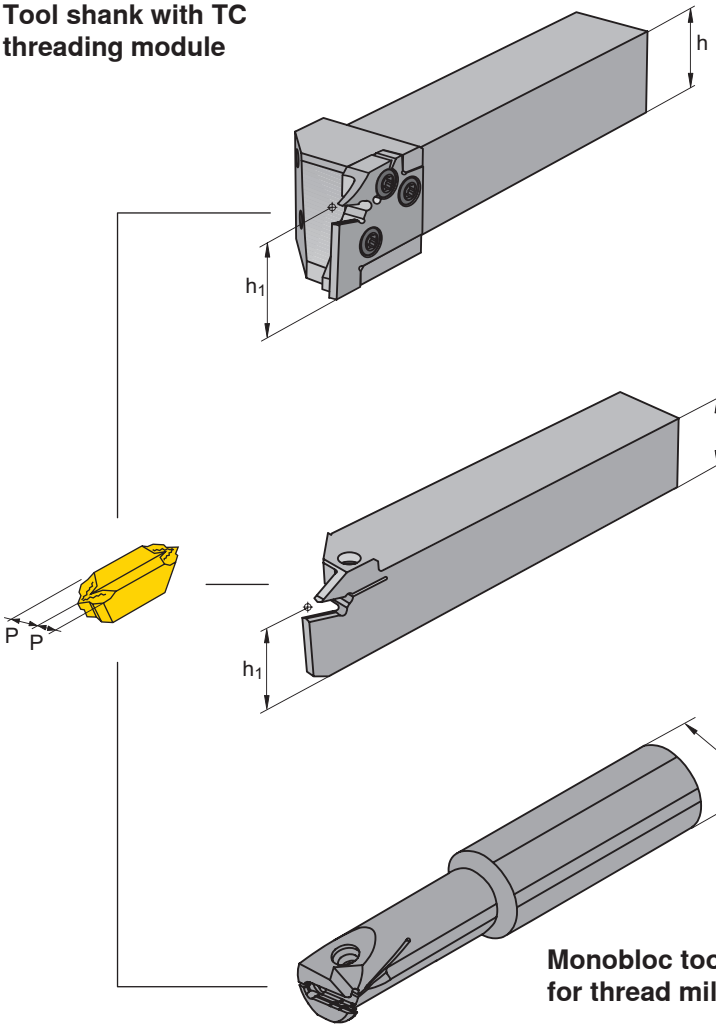
> Extremely narrow part-off and grooving widths are possible
> Excellent surface quality can be achieved
> Multiple part-off operations are possible

Benefits

> Less material wastage
> No additional finishing work necessary
> Reduction of machining costs

With system TC the same insert can be used to produce threads by turning or milling. TC offers numerous advantages which are of decisive importance for many threading applications.

Tool shank with TC threading module



h_1 / h = 20 - 25 mm

Pitch
P = .5 - 5.0 mm
P = 48 - 5 TPI

Monobloc tool

h_1 / h = 12 mm
Pitch

P = .5 - 3.0 mm
P = 48 - 8 TPI

Monobloc tool for thread milling

d_1 = 25 - 32 mm

Pitch
P = .5 - 5.0 mm
P = 48 - 5 TPI

System characteristics

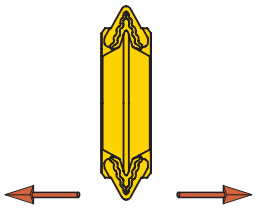
> Turning and milling with the same insert
> Neutral configuration of insert

Benefits

> Flexibility, reduced variety and costs
> Right-hand and left-hand threads possible using one insert only
> Reduced storage

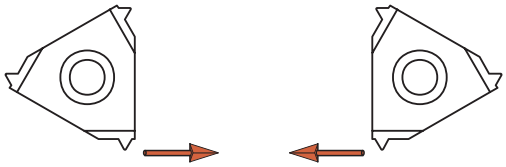
System TC for thread turning is an integrated part of the MSS system. Compared to traditional systems TC offers a series of advantages which are of decisive importance for many threading applications.

System TC

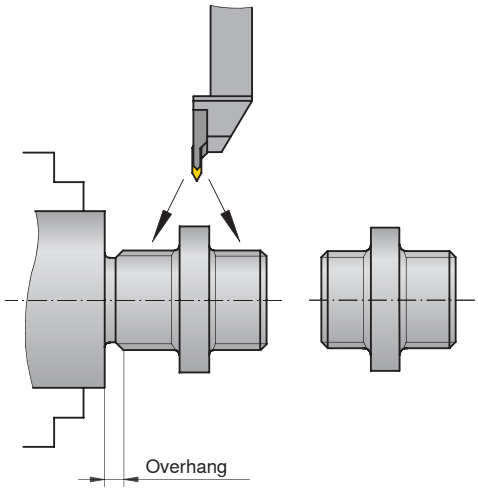


> Neutral configuration of insert makes operation in both directions possible
> Only one threading insert per pitch for partial profile and Whitworth thread; only two threading inserts (internal - external) per pitch for ISO threads
> Reduced storage
> Good chip formation through chip groove with UDN-HDQJHO

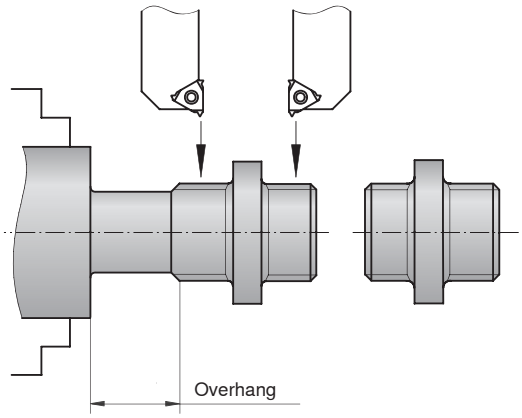
Conventional system



> Right-hand and left-hand version of insert, therefore operation only in one direction
> For every pitch 4 threading inserts are necessary (right-hand - left-hand, internal - external)

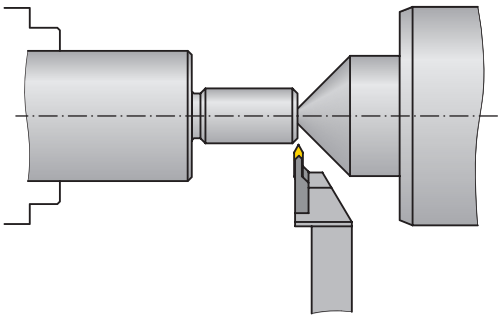


Enhanced economy through
> Reduced machining time
> Fewer tool changes
> Improved stability, small overhang
> Material saving
> Thread turning between shoulders possible
> Fewer tools and inserts



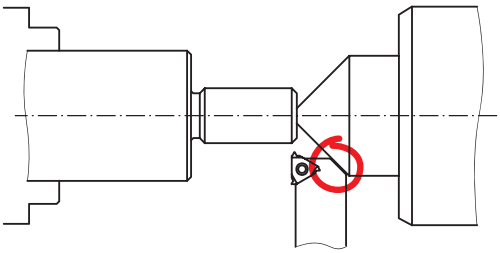
> For this machining method 2 tools are necessary
> Additional loss of stability and material caused by large overhangs

System TC

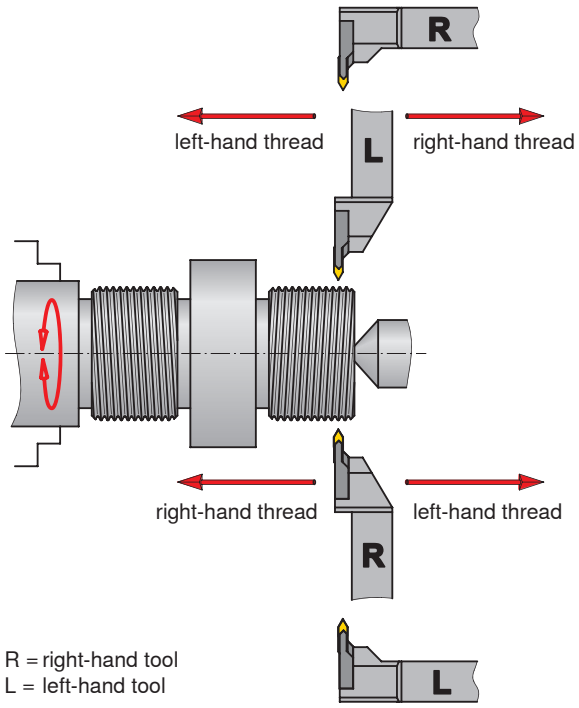


> Easy access to work piece therefore use of tailstock also possible with small thread diameters

Conventional system

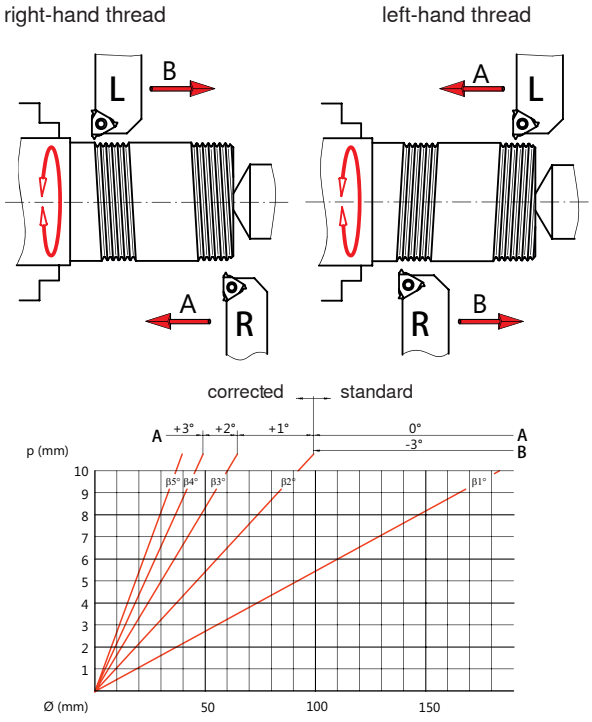


> Difficult component access
> Danger of collision



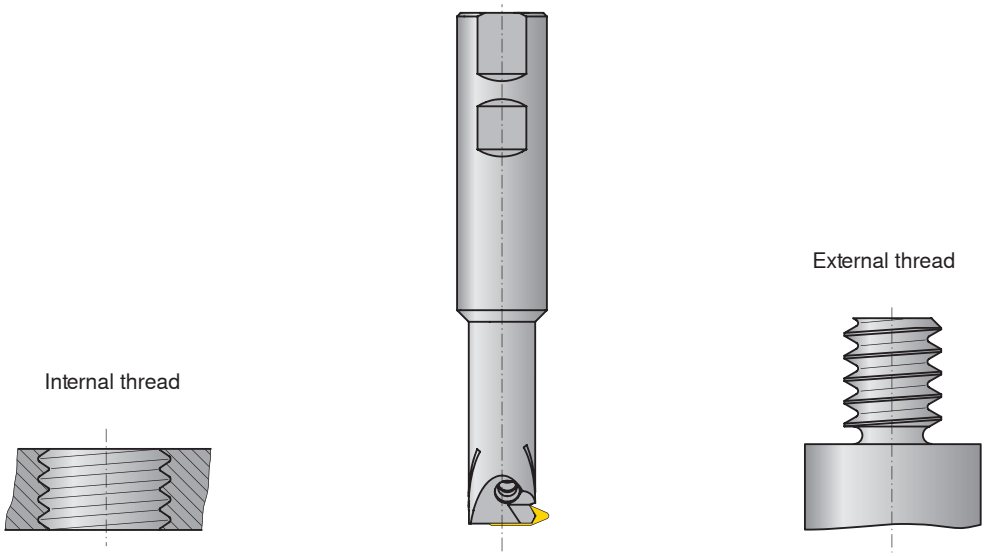
R = right-hand tool
L = left-hand tool

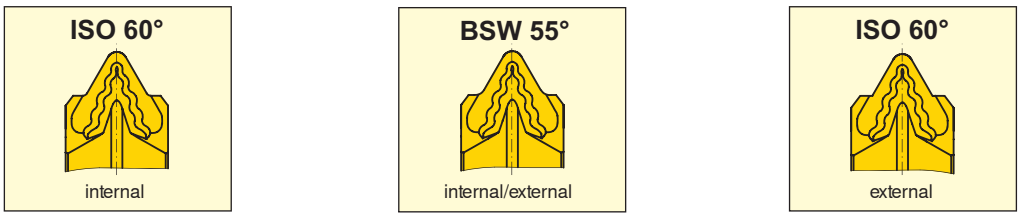
> Easy to apply as the tools can be used in both directions without correcting the helix angle



> Correction of helix angle necessary, therefore high degree of application know-how required
> Can only be operated in one direction

For thread milling and turning the same inserts are applied. With special tool shanks, which are characterized by compact and modular construction, **external as well as internal threads** can be produced on all up-to-date machining centres.





System characteristics

> Turning and milling with the same insert
> Single-tooth thread milling

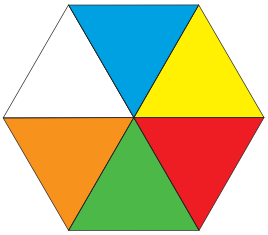
> Thread is cut in one pass

Benefits

> Flexibility, reduced variety and costs

> Low machining forces, large overhang possible, high cutting data (v_c and f), easy programming
> No interruptions or steps in the thread

Material



%DVHG RQ 9' , & (5 7,=,7·V 0 DVWHU XLGHOLQHV PDWHULDO FODVVLILFDWLRQ six main groups (P, M, K, N, S, H).
Each is given a colour, according to the system partly adopted in ISO 513.

Blue: steel
Machining, cementation, tempered and constructional steels

Yellow: stainless steel
Ferritic Cr-steels, austenitic CrNi-steels, martensitic Cr-steels, duplex steels

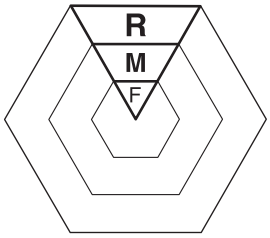
Red: cast iron
Cast iron, grey cast iron, tempered iron, spheroidal cast iron, CGI, sintered iron

Green: non ferrous metals and non metals
Al wrought and Al cast alloys, copper, copper alloys, non metal materials

Orange: heat resistant alloys / titanium
Ni/Co-base alloys, Ti alloys

White: hard materials
Hardened steels (≥ 45 HRC), chilled castings, hard cast irons

Machining application type



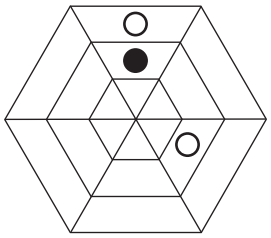
Each coloured segment is divided into three sections, and each section indicates the relevant machining application type:

R = rough machining

M = medium machining

F = fine machining

Application

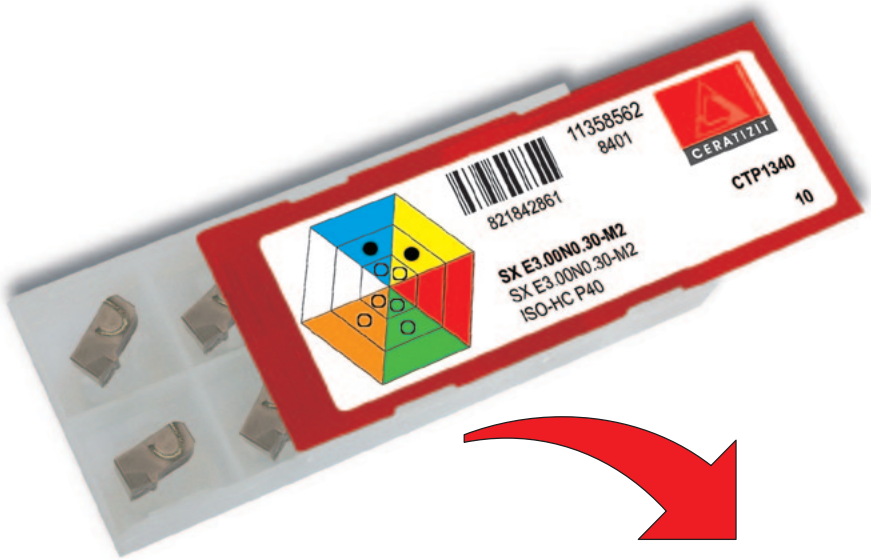


The ideal application area for the insert is indicated by a black circle. Extended applications are indicated by an open circle. The CERATIZIT MasterGuide provides you with an easily understandable structure for choosing a product and enables you to reduce grade and geometry stocks.

● **Main application**

○ **Extended application**

The right indexable insert at a glance



Main application:
Medium machining of steel and stainless steel.

Extended application:
Finish machining of steel and stainless steel.
Medium and finish machining of non ferrous metals and non metals, heat resistant alloys/titanium.

CTC P335

Manufacturer: CERATIZIT

Cutting material

W Uncoated carbide
C CVD coated carbide
P PVD coated carbide
T Uncoated cermet
E Coated cermet
N Uncoated silicon nitride
M Coated silicon nitride
S Mixed ceramic
I Sialon
D PCD
B CBN
L CBN coated
H Sintered HSS

ISO 513 Application range

For example:
05 ISO K05/P05
10
15
25-

Main application (material) Variant 1: number

1 Steel
2 Stainless steel
3 Cast iron
4 Light and non ferrous metals, non metals
5 Heat resistant alloys, titanium
6 Hard materials
7 Universal grade for a variety of applications

Main application (machining method)

1 Turning
2 Milling
3 Parting and grooving
4 Drilling
5 Threading
6 Others
7 Universal grade for a variety of applications

Main application (material) Variant 2: ISO letter

P Steel
M Stainless steel
K Cast iron
N Light and non ferrous metals, non metals
S Heat resistant alloys, titanium
H Hard materials
X Universal grade for a variety of applications

Grade overview - parting and grooving

Grade designation	Standard designation	*Cutting material	Application range (01 05 10 15 20 25 30 35 40 45 50)	P Steel	M Stainless	K Cast iron	N Non ferrous metals	S Heat resistant	H Hard materials
CTC1325	HC-P25	C		●					
	HC-M20	C			○				
	HC-K30	C				●			
CTCP335	HC-P35	C		●					
	HC-M30	C			○				
	HC-K35	C				●			
CTP1340	HC-P30	P		●					
	HC-M25	P			●			●	
	HC-K30	P				●	○		
CTPP345	HC-P45	P		●					
	HC-M40	P			●				
	HC-S40	P						○	
CTW7120	HW-M20	W			○				
	HW-K20	W					●	○	
GM127	HC-P30	C		●					
	HC-M25	C			○				
H216T	HW-K15	W				●	●		
S40T	HW-P40	W		●					
	HW-M40	W			●				
SR127	HC-P25	C		●					
	HC-M20	C			○				
	HC-K30	C				●			
TSM20	HW-K15	W				●	●	●	

● Main application

○ Extended application

*Type of cutting material

C29

** to be discontinued

Grade designation	Standard designation	*Cutting material	Application range	P Steel	M Stainless	K Cast iron	N Non ferrous metals	S Heat resistant	H Hard materials
GM213	HC-P20	C		●					
	HC-M15	C			●				
	HC-K25	C				●			
GM240	HC-P35	C		●					
	HC-M25	C			●				
H216T	HW-K15	W				●	●		

Application range: 01 05 10 15 20 25 30 35 40 45 50

● Main application

○ Extended application

*Type of cutting material

C29

Carbide

Reference	Carbide group
HW	Uncoated carbide, consisting mainly of tungsten carbide (WC)
HT[1)]	Uncoated carbide, consisting mainly of titanium carbide (TiC) or titanium nitride (TiN) or both
HC	Carbides as above, but coated

Ceramic

Reference	Ceramic group
CA	Oxide ceramic, consisting mainly of aluminium oxide (Al_2O_3)
CM	Mixed ceramic, based on aluminium oxide (Al_2O_3), but with different oxide components
CN	Nitride ceramic, consisting mainly of silicon nitride (Si_3N_4)
CC	Ceramics as above, but uncoated

Diamond

Reference	Diamond group
DP	Polycrystalline diamond[2)]

[2]) Polycrystalline diamond and polycrystalline boron nitride are also called ultra-hard cutting materials.

Boron nitride

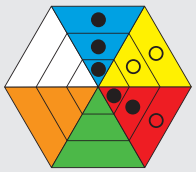
Reference	Boron nitride group
BN	Cubic crystalline boron nitride (polycrystalline boron nitride) [2)]

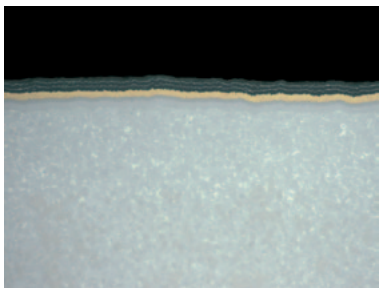
[1]) 7KH PHFKDQLFDO SURSHUWLHV RI FDUELGH PDWHULDOV FDQ EH LQIOXHQFHG

[2]) Polycrystalline diamond and polycrystalline boron nitride are also called ultra-hard cutting materials.

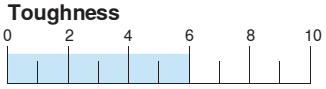
CTC1325

HC-P25
HC-M20
HC-K30





Toughness



Wear resistance

Composition:
Co 7.0%; composite carbides 8.0%; WC balance

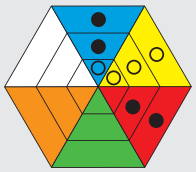
Grain size:
1 - 2 µm

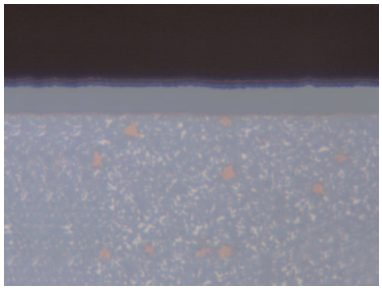
Hardness:
HV_{30} 1450

Coating specification:
CVD
Ti(C,N) + Ti(C,N) + TiN + Al_2O_3; 12 µm

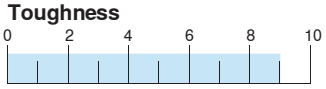
CTCP335

HC-P35
HC-M30
HC-K35

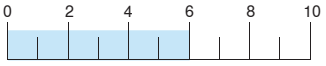




Toughness



Wear resistance



Composition:
Co 10.5%; mixed carbides 2.0%; WC balance

Grain size:
1 - 2 µm

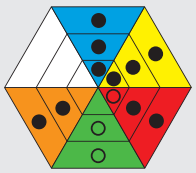
Hardness:
HV_{30} 1400

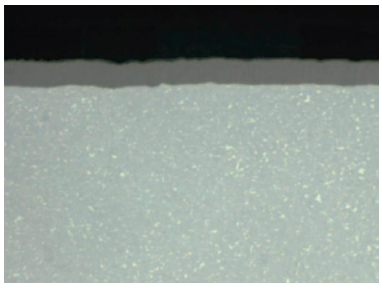
Coating specification:
Ti(C,N) + Al_2O_3; 7.5 µm

Properties, application:
- Excellent wear resistance
- Good resistance to oxidation
- High toughness
- Good heat resistance

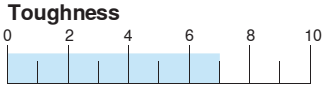
CTP1340

HC-P30
HC-M25
HC-K30

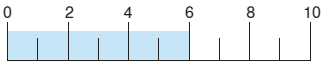




Toughness



Wear resistance



Composition:
Co 9.0%; WC balance

Grain size:
.7 - 1 µm

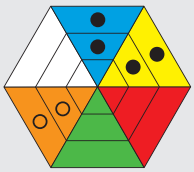
Hardness:
HV_{30} 1590

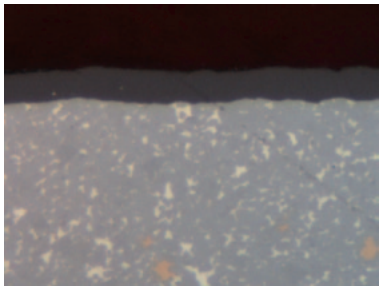
Coating specification:
PVD
TiAlN; 4 µm

Properties, application:
- Excellent suitability for universal application
- Ideal for stainless steels
- High cutting edge stability

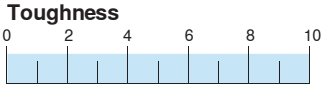
CTPP345

HC-P45
HC-M40
HC-S40

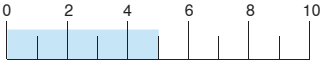




Toughness



Wear resistance



Composition:
Co 12.5%; mixed carbides 2.0%; WC balance

Grain size:
1 - 1.5 µm

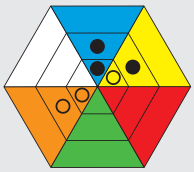
Hardness:
HV_{30} 1380

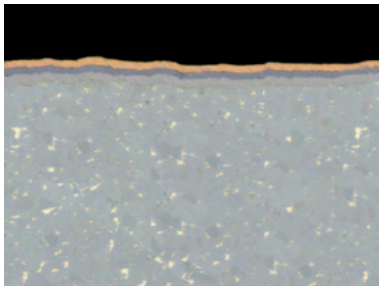
Coating specification:
TiAlN; 7 µm

Properties, application:
- For universal application
- Excellent toughness
- Good wear resistance
- High application security

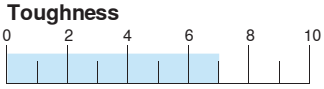
GM127

HC-P30
HC-M25

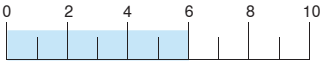




Toughness



Wear resistance



Composition:
Co 6.0%; composite carbides .6%; WC balance

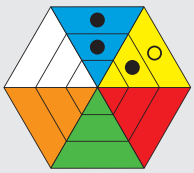
Grain size:
2 µm

Hardness:
HV_{30} 1460

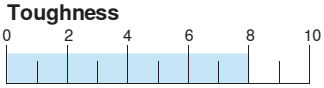
Coating specification:
CVD
TiC + Ti(C,N) + TiN; 5 µm

S40T

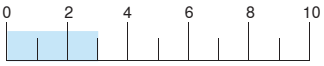
HW-P40
HW-M40



Toughness



Wear resistance



Composition:
Co 11.0%; mixed carbides 12.0%; WC balance

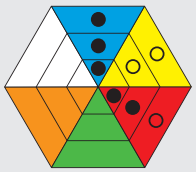
Grain size:
1 - 2 µm

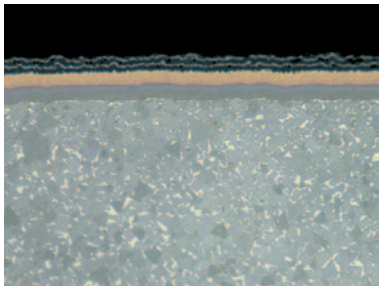
Hardness:
HV_{30} 1420

Properties, application:
- High toughness
- Medium to low cutting speed
- For universal application on steel

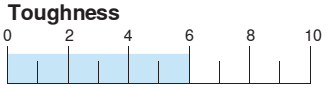
SR127

HC-P25
HC-M20
HC-K30





Toughness



Wear resistance

Composition:
Co 6.0%; composite carbides .6%; WC balance

Grain size:
2 μm

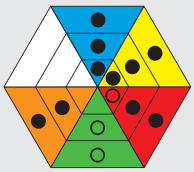
Hardness:
HV_{30} 1460

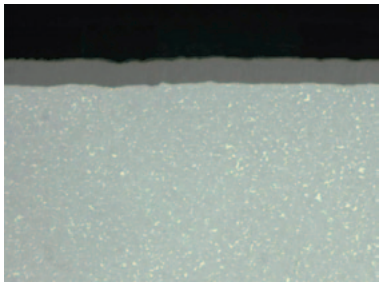
Coating specification:
CVD
Ti(C,N) + TiN + Al_2O_3; 12 μm

Properties, application:
- Wide range of applications (steel and cast iron)
- Excellent resistance to oxidation
- Good toughness
- High wear resistance

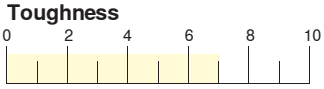
CTP1340

HC-P30
HC-M25
HC-K30

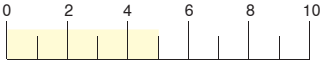




Toughness



Wear resistance



Composition:
Co 9.0%; WC balance

Grain size:
.7 - 1 µm

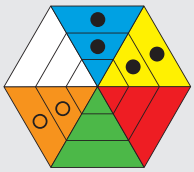
Hardness:
HV_{30} 1590

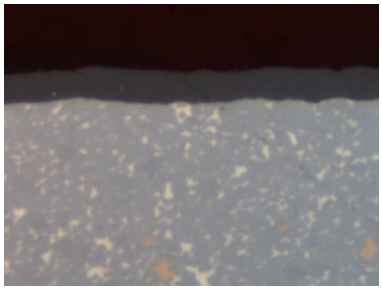
Coating specification:
PVD
TiAlN; 4 µm

Properties, application:
- Excellent suitability for universal application
- Ideal for stainless steels
- High cutting edge stability

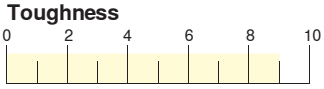
CTPP345

HC-P45
HC-M40
HC-S40

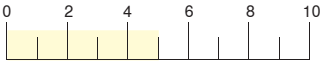




Toughness



Wear resistance



Composition:
Co 12.5%; mixed carbides 2.0%; WC balance

Grain size:
1 - 1.5 µm

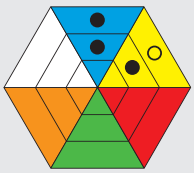
Hardness:
HV_{30} 1380

Coating specification:
TiAlN; 7 µm

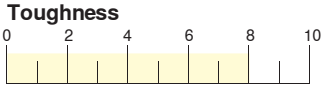
Properties, application:
- For universal application
- Excellent toughness
- Good wear resistance
- High application security

S40T

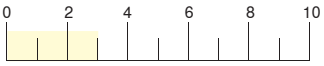
HW-P40
HW-M40



Toughness



Wear resistance



Composition:
Co 11.0%; mixed carbides 12.0%; WC balance

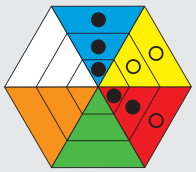
Grain size:
1 - 2 µm

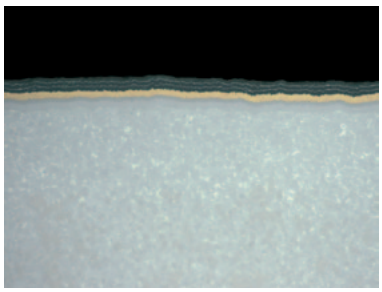
Hardness:
HV_{30} 1420

Properties, application:
- High toughness
- Medium to low cutting speed
- For universal application on steel

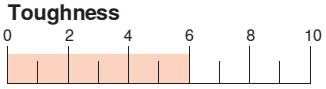
CTC1325

HC-P25
HC-M20
HC-K30

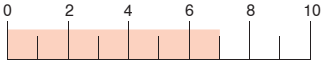




Toughness



Wear resistance



Composition:
Co 7.0%; composite carbides 8.0%; WC balance

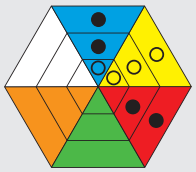
Grain size:
1 - 2 μm

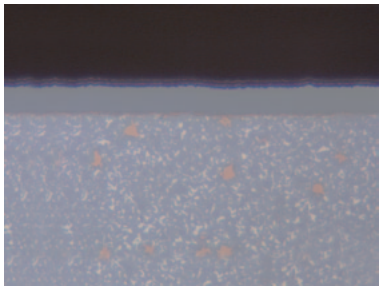
Hardness:
HV_{30} 1450

Coating specification:
CVD
Ti(C,N) + Ti(C,N) + TiN + Al_2O_3; 12 μm

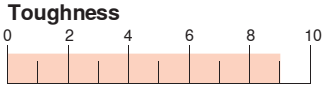
CTCP335

HC-P35
HC-M30
HC-K35

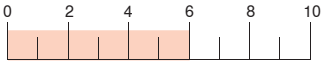




Toughness



Wear resistance



Composition:
Co 10.5%; mixed carbides 2.0%; WC balance

Grain size:
1 - 2 μm

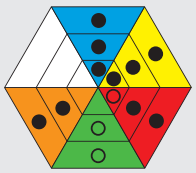
Hardness:
HV_{30} 1400

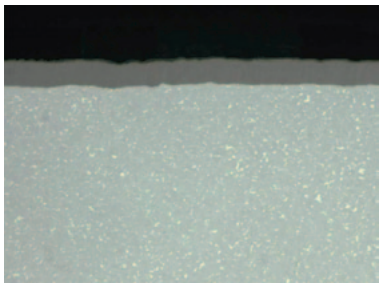
Coating specification:
Ti(C,N) + Al_2O_3; 7.5 μm

Properties, application:
- Excellent wear resistance
- Good resistance to oxidation
- High toughness
- Good heat resistance

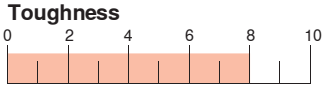
CTP1340

HC-P30
HC-M25
HC-K30

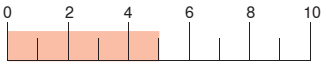




Toughness



Wear resistance



Composition:
Co 9.0%; WC balance

Grain size:
.7 - 1 μm

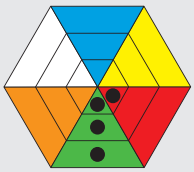
Hardness:
HV_{30} 1590

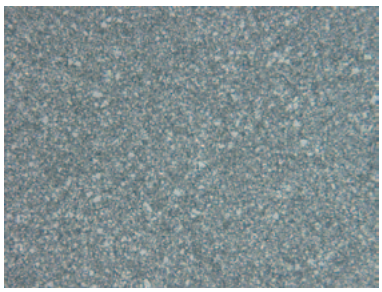
Coating specification:
PVD
TiAlN; 4 μm

Properties, application:
- Excellent suitability for universal application
- Ideal for stainless steels
- High cutting edge stability

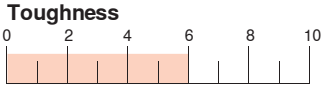
H216T

HW-K15

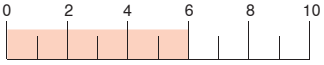




Toughness



Wear resistance



Composition:
Co 6.0%; WC balance

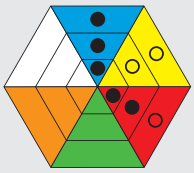
Grain size:
1 μm

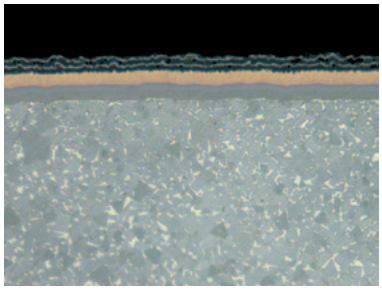
Hardness:
HV_{30} 1630

Properties, application:
- Optimally suitable for aluminium
- High wear resistance
- High heat resistance
- Low tendency to adhesion

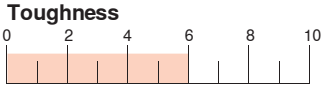
SR127

HC-P25
HC-M20
HC-K30

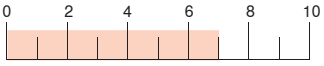




Toughness



Wear resistance



Composition:
Co 6.0%; composite carbides .6%; WC balance

Grain size:
2 μm

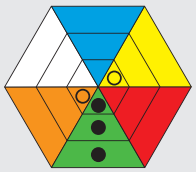
Hardness:
HV_{30} 1460

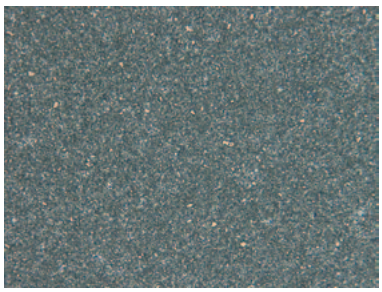
Coating specification:
CVD
Ti(C,N) + TiN + Al_2O_3; 12 μm

Properties, application:
- Wide range of applications (steel and cast iron)
- Excellent resistance to oxidation
- Good toughness
- High wear resistance

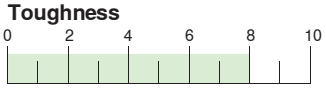
CTW7120

HW-M20
HW-K20





Toughness



Wear resistance

Composition:
Co 10.0%; WC balance

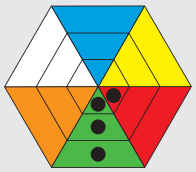
Grain size:
.7 μm (submicron grade)

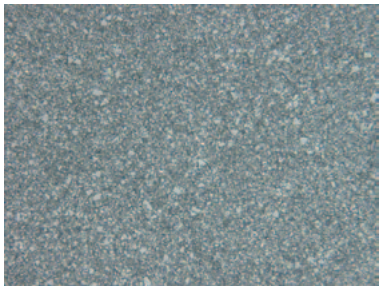
Hardness:
HV_{30} 1550

Properties, application:
- Ideal for non ferrous metals
- Substrate for PVD coatings

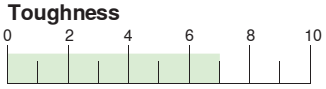
H216T

HW-K15





Toughness



Wear resistance

Composition:
Co 6.0%; WC balance

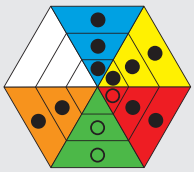
Grain size:
1 μm

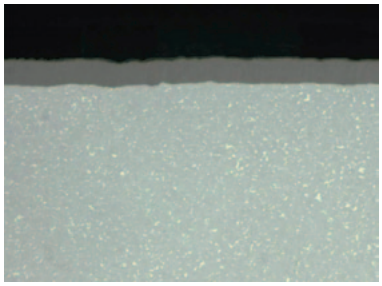
Hardness:
HV_{30} 1630

Properties, application:
- Optimally suitable for aluminium
- High wear resistance
- High heat resistance
- Low tendency to adhesion

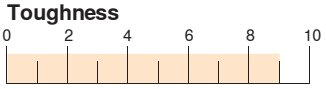
CTP1340

HC-P30
HC-M25
HC-K30

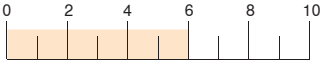




Toughness



Wear resistance



Composition:
Co 9.0%; WC balance

Grain size:
.7 - 1 μm

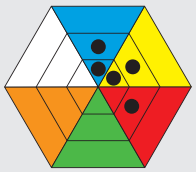
Hardness:
HV_{30} 1590

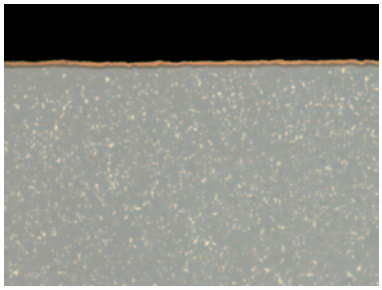
Coating specification:
PVD
TiAlN; 4 μm

Properties, application:
- Excellent suitability for universal application
- Ideal for stainless steels
- High cutting edge stability

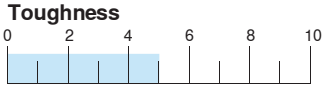
GM213

HC-P20
HC-M15
HC-K25

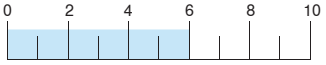




Toughness



Wear resistance



Composition:
Co 6.0%; WC balance

Grain size:
1 μm

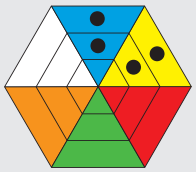
Hardness:
HV_{30} 1630

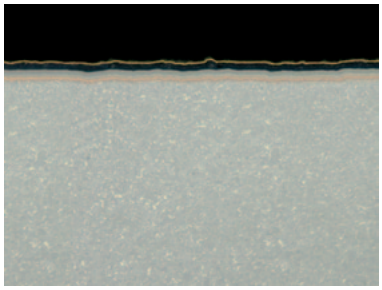
Coating specification:
CVD
TiC + TiN; 3 μm

Properties, application:
- Suitable for high cutting speed
- Good heat resistance
- Good wear resistance

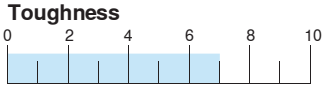
GM240

HC-P35
HC-M25

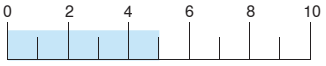




Toughness



Wear resistance



Composition:
Co 10.0%; composite carbides .6%; WC balance

Grain size:
.7 μm

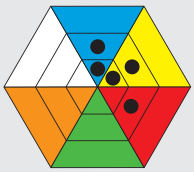
Hardness:
HV_{30} 1590

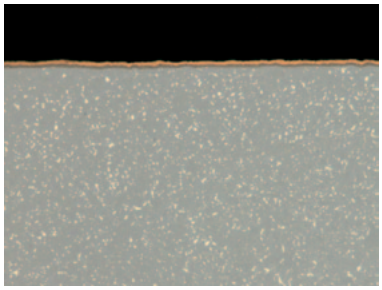
Coating specification:
CVD
TiC + Ti(C,N) + Al_2O_3 + Ti(N,B); 6 μm

Properties, application:
- For universal application
- High toughness
- Good wear resistance
- Low tendency to adhesion

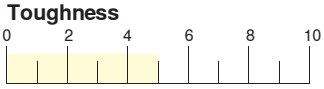
GM213

HC-P20
HC-M15
HC-K25





Toughness



Wear resistance

Composition:
Co 6.0%; WC balance

Grain size:
1 μm

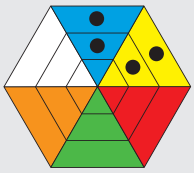
Hardness:
HV_{30} 1630

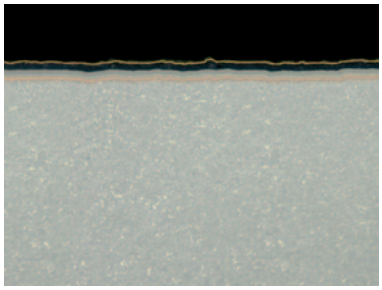
Coating specification:
CVD
TiC + TiN; 3 μm

Properties, application:
- Suitable for high cutting speed
- Good heat resistance
- Good wear resistance

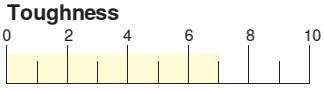
GM240

HC-P35
HC-M25

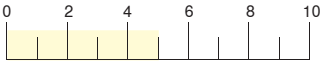




Toughness



Wear resistance



Composition:
Co 10.0%; composite carbides .6%; WC balance

Grain size:
.7 μm

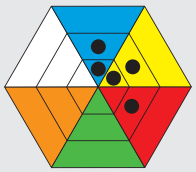
Hardness:
HV_{30} 1590

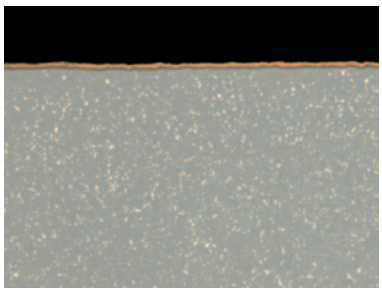
Coating specification:
CVD
TiC + Ti(C,N) + Al_2O_3 + Ti(N,B); 6 μm

Properties, application:
- For universal application
- High toughness
- Good wear resistance
- Low tendency to adhesion

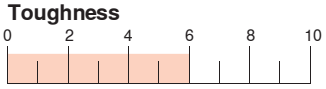
GM213

HC-P20
HC-M15
HC-K25

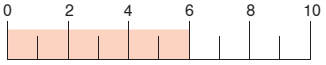




Toughness



Wear resistance



Composition:
Co 6.0%; WC balance

Grain size:
1 μm

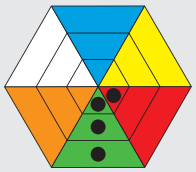
Hardness:
HV_{30} 1630

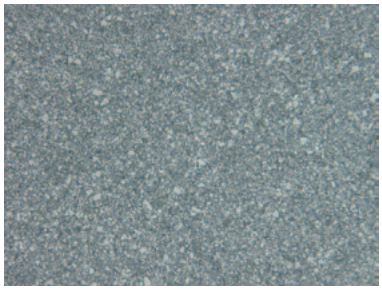
Coating specification:
CVD
TiC + TiN; 3 μm

Properties, application:
- Suitable for high cutting speed
- Good heat resistance
- Good wear resistance

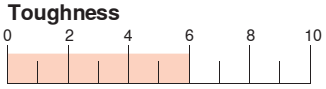
H216T

HW-K15

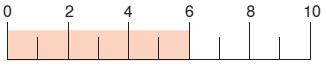




Toughness



Wear resistance



Composition:
Co 6.0%; WC balance

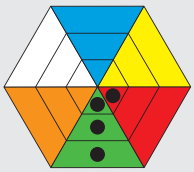
Grain size:
1 μm

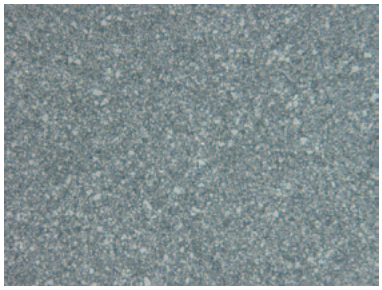
Hardness:
HV_{30} 1630

Properties, application:
- Optimally suitable for aluminium
- High wear resistance
- High heat resistance
- Low tendency to adhesion

H216T

HW-K15





Toughness

Wear resistance

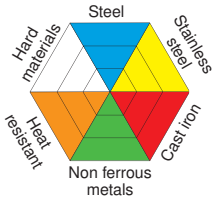
Composition:
Co 6.0%; WC balance

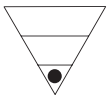
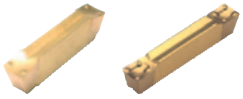
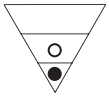
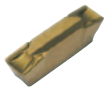
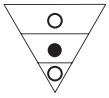
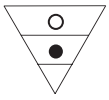
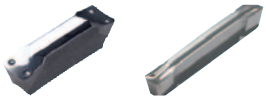
Grain size:
1 μm

Hardness:
HV_{30} 1630

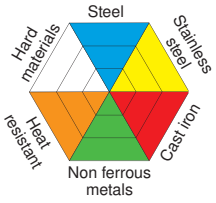
Properties, application:
- Optimally suitable for aluminium
- High wear resistance
- High heat resistance
- Low tendency to adhesion

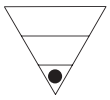
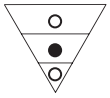
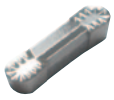
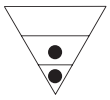
Part-off, grooving, turning



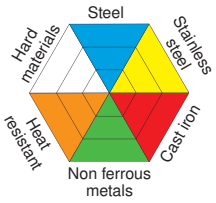
Chip groove	Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
-F2			CTC1325	CTC1325 / CTP1340	CTPP345
			CTP1340	CTP1340 / CTPP345	CTPP345
			CTC1325	CTC1325 / CTP1340	2
			2	2	2
			2	2	2
Standard			CTC1325	CTC1325 / CTP1340	CTCP335
			CTP1340	CTP1340	CTP1340
			CTC1325	CTC1325 / CTP1340	CTP1340
			2	2	2
			2	2	2
-M40			CTC1325	CTC1325 / CTP1340	CTP1340 / CTPP345
			CTP1340	CTP1340 / CTPP345	CTPP345
			CTC1325	CTC1325	CTP1340
			2	2	2
			CTP1340	CTP1340	CTP1340 / CTPP345
-M1			CTC1325	CTC1325 / CTP1340	CTPP345
			CTP1340	CTP1340 / CTPP345	CTPP345
			CTC1325	CTC1325 / CTP1340	CTP1340
			2	2	2
			CTP1340	CTP1340	CTP1340 / CTPP345
-27P			2	2	2
			2	2	2
			2	2	2
			H216T	H216T	H216T
			2	2	2

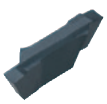
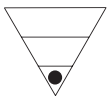
Radius grooves, copy turning



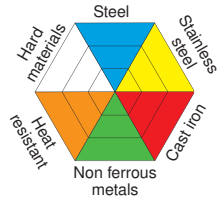
Chip groove	Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
R/L	 	●	CTC1325	CTC1325	2
		○	CTC1325	CTC1325	2
		●	CTC1325	CTC1325	2
			2	2	2
			2	2	2
Standard/ -M3	  	●	CTC1325	CTC1325 / CTP1340	CTP1340 / CTCP335
		○	CTC1325 / GM127	CTP1340	CTP1340
		●	CTC1325	CTC1325	CTCP335
			2	2	2
			2	2	2
-27P	  		2	2	2
			2	2	2
			2	2	2
		●	H216T	H216T	H216T
			2	2	2

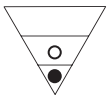
Circlip grooves



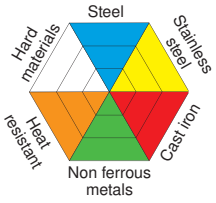
Chip groove	Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
L/N/R	  	●	CTP1340	CTP1340	2
		●	CTP1340	CTP1340	2
		○	CTP1340	CTP1340	2
		○	CTP1340	CTP1340	2
		○	CTP1340	CTP1340	2

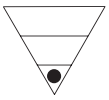
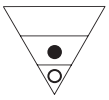
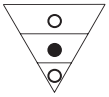
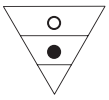
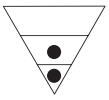
Axial grooving



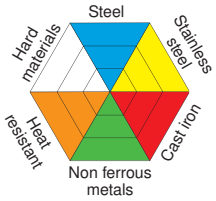
Chip groove	Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
-F50			CTP1340	CTP1340	2
			CTP1340	CTP1340	2
			CTP1340	CTP1340	2
			CTP1340	CTP1340	2
			CTP1340	CTP1340	2

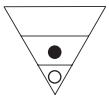
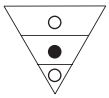
Part-off, grooving, turning



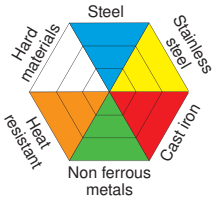
Chip groove		Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
-F2			●	CTC1325	CTC1325 / CTP1340	CTPP345
			●	CTP1340	CTP1340 / CTPP345	CTPP345
			○	CTC1325	CTC1325 / CTCP335	2
				2	2	2
			○	CTP1340	CTP1340 / CTPP345	2
-M2			●	CTC1325	CTC1325 / CTP1340	CTCP335
			○	CTP1340	CTP1340 / CTPP345	CTCP335
			●	CTC1325	CTC1325 / CTP1340	CTCP335
				2	2	2
			○	CTP1340	CTP1340	CTP1340 / CTPP345
-M3			●	CTP1340	CTP1340 / CTCP335	CTP1340 / CTCP335
			●	CTP1340	CTP1340	CTP1340 / CTCP335
				CTP1340	CTCP335	CTCP335
			○	CTP1340	CTP1340	CTP1340
			○	CTP1340	CTP1340	CTP1340
-M1			●	CTC1325	CTP1340 / CTCP335	CTCP335 / CTPP345
			○	CTP1340	CTP1340 / CTPP345	CTPP345
			●	CTC1325	CTC1325	CTCP335
				2	2	2
			○	CTP1340	CTP1340	CTP1340 / CTPP345
-27P				2	2	2
				2	2	2
				2	2	2
			●	H216T	H216T	H216T
				2	2	2

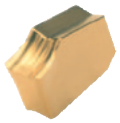
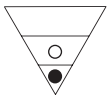
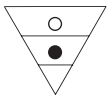
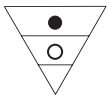
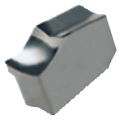
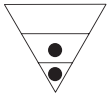
Part-off, grooving, turning



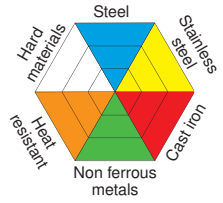
Chip groove	Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
-M2			CTC1325	CTC1325 / CTCP335	CTCP335
			CTCP335	CTCP335	CTCP335
			CTC1325	CTC1325	CTCP335
			2	2	2
			2	2	2
-M3			CTC1325	CTC1325 / CTCP335	CTCP335
			CTCP335	CTCP335	CTCP335
			CTC1325	CTC1325	CTCP335
			2	2	2
			2	2	2

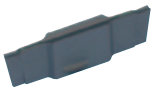
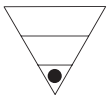
Part-off, grooving



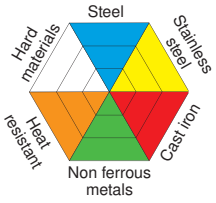
Chip groove	Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
-F1			CTC1325	CTC1325 / CTP1340	CTPP345
			CTP1340	CTP1340 / CTPP345	CTPP345
			CTC1325	CTC1325 / CTP1340	2
			2	2	2
			2	2	2
-M1			CTC1325	CTP1340 / CTCP335	CTCP335 / CTPP345
			CTP1340	CTP1340 / CTPP345	CTPP345
			CTC1325	CTC1325	CTCP335
			2	2	2
			CTP1340	CTP1340	CTP1340 / CTPP345
-R2			CTC1325	CTC1325 / CTP1340	CTPP345
			CTP1340	CTP1340 / CTPP345	CTPP345
			CTC1325	CTC1325	CTP1340
			2	2	2
			CTP1340	CTP1340	CTP1340 / CTPP345
-27P			2	2	2
			2	2	2
			2	2	2
			H216T	H216T	H216T
			2	2	2

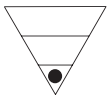
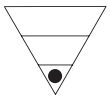
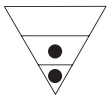
Part-off, grooving



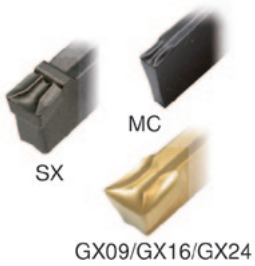
Chip groove	Machining type	Material	Consistent cutting depth 	Inconsistent cutting depth 	Interrupted cut 
-F3	 	●	CTP1340	CTP1340	2
		●	CTP1340	CTP1340	2
		○	CTP1340	CTP1340	2
			2	2	2
		○	CTP1340	CTP1340	2

Part-off, grooving

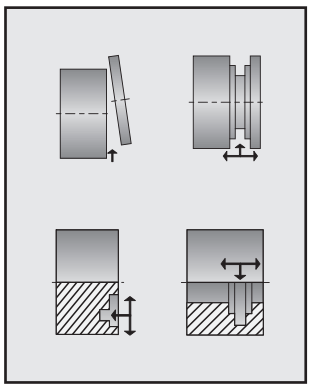


Chip groove	Machining type	Material	Consistent cutting depth	Inconsistent cutting depth	Interrupted cut
-F2			CTP1340	CTP1340	CTP1340
			CTP1340	CTP1340	CTP1340
			CTP1340	CTP1340	CTP1340
			2	2	2
			CTP1340	CTP1340	2
-F3			CTP1340	CTP1340	2
			CTP1340	CTP1340	2
			CTP1340	CTP1340	2
			2	2	2
			CTP1340	CTP1340	2
-27P			2	2	2
			2	2	2
			2	2	2
			CTW7120	CTW7120	CTW7120
			2	2	2

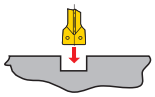
-F2



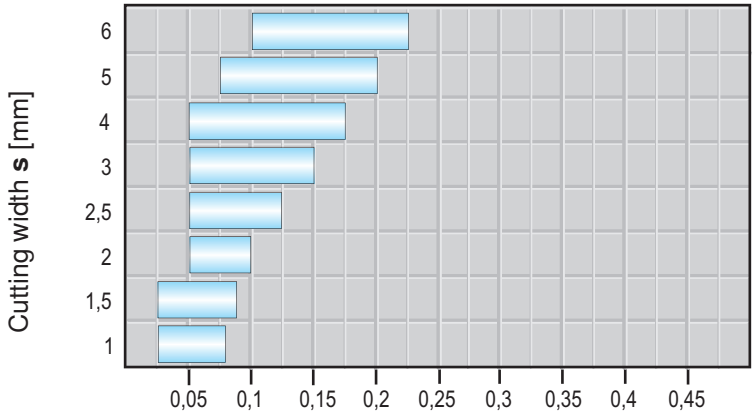
Application:



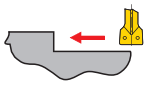
- For steels in general, particularly suitable for **stainless materials**
- Insert with ground periphery
- 7RXJKQHVV GHSHQGV RQ WKH DSSOLFDWLRQ
- Suitable also for parting off tubes and thin-walled materials
- Special profiles (SX, GX) possible



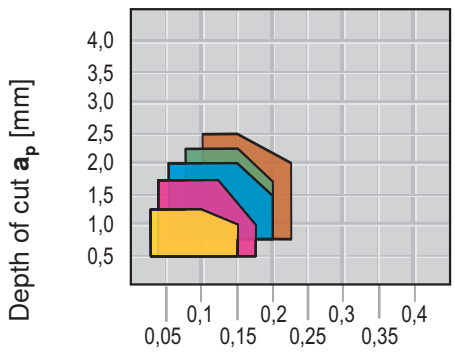
Feed rate for parting and grooving



Feed rate **f** [mm/rev]



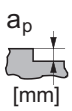
Feed rate for longitudinal turning



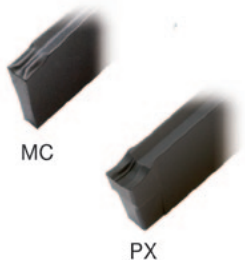
Cutting width **s**:

- = 6 mm
- = 5 mm
- = 4 mm
- = 3 mm
- = 2 mm

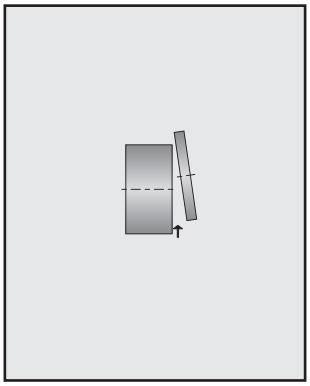
Feed rate **f** [mm/rev]



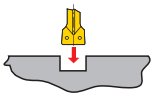
-F3



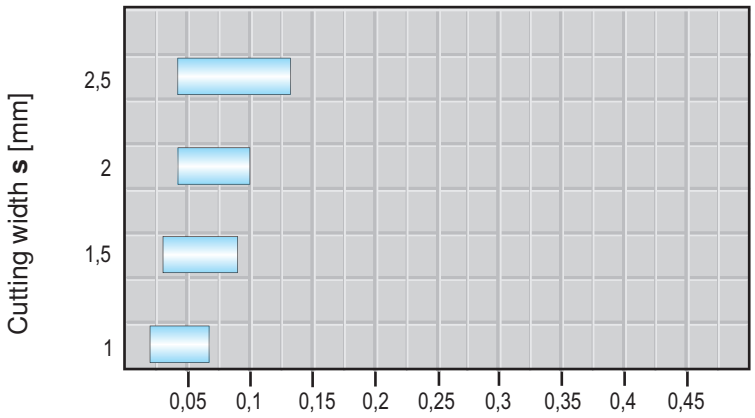
Application:



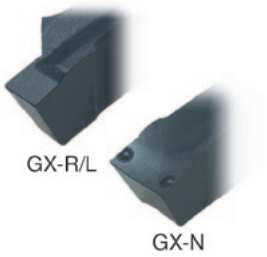
- Particularly suitable also for parting off tubes and thin-walled materials
- For steels in general, particularly suitable for stainless materials
- Special profiles (PX) possible

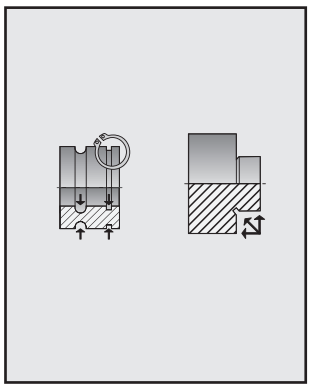


Feed rate for parting and grooving



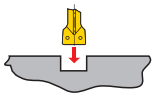
Circlip grooves L/N/R



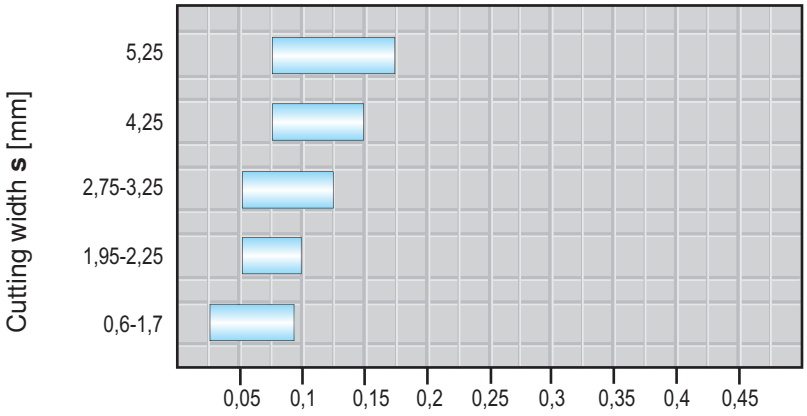


> Insert for circlip grooves according to DIN 471-472
> For internal and external machining

Application:



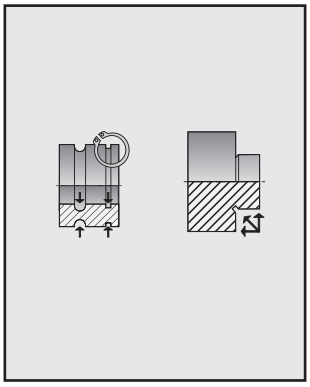
Feed rate for grooving operations



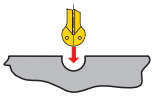
Radius grooves R/L

GX R/L

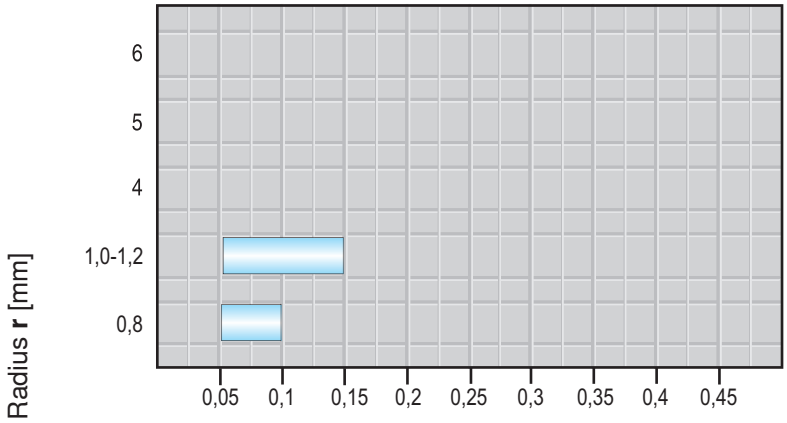
Application:



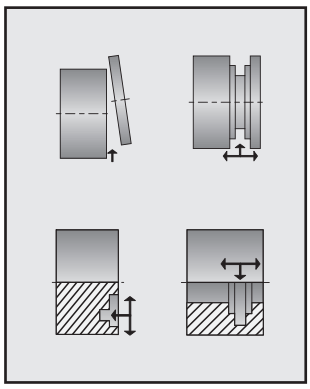
> Inserts for radius grooves and copy turning
> For all steel materials
> For internal and external machining



Feed rate for grooving operations

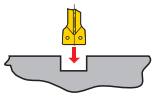


Standard

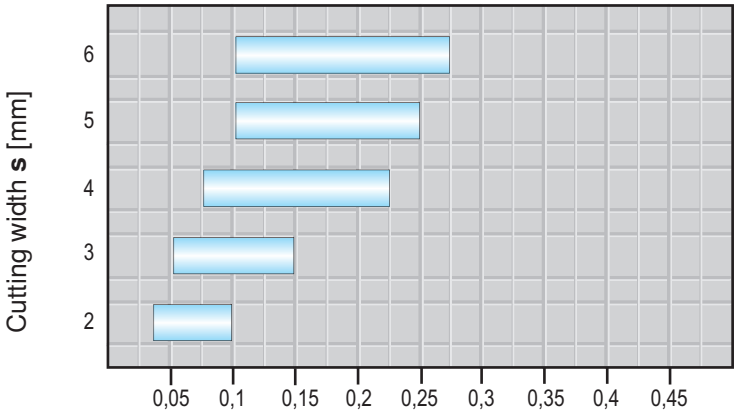


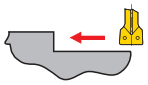
> For all steel materials
> For universal application
> Wide application range

Application:

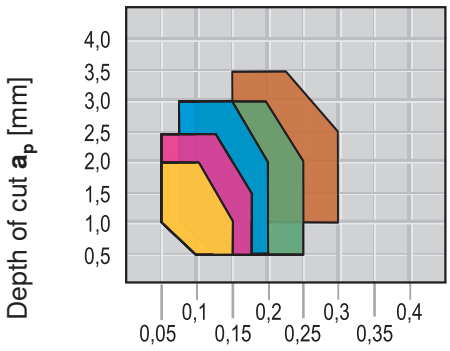


Feed rate for parting and grooving



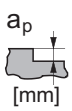


Feed rate for longitudinal turning



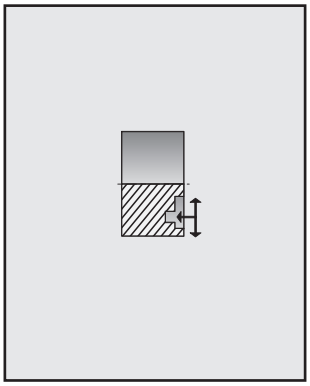
Cutting width **s**:

- = 6 mm
- = 5 mm
- = 4 mm
- = 3 mm
- = 2 mm

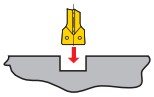


-F50

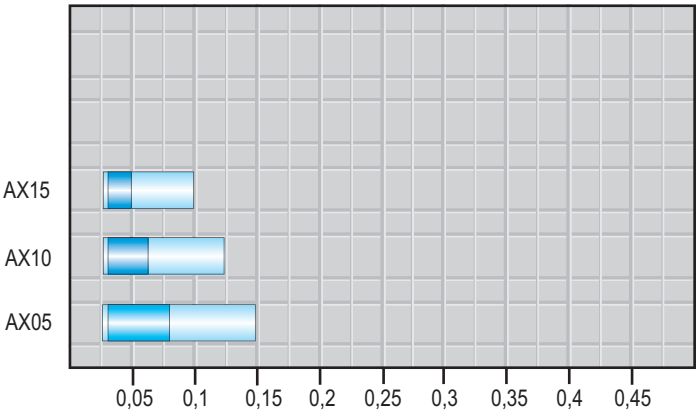
Application:



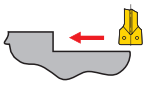
> Universal geometry for:
> - **Steel**
> - **Stainless steel**
> - Cast iron
> - Non ferrous metals
> Insert with ground periphery
> 7RXJKQHVVFRQWURO[LQJ[[[[[[P P



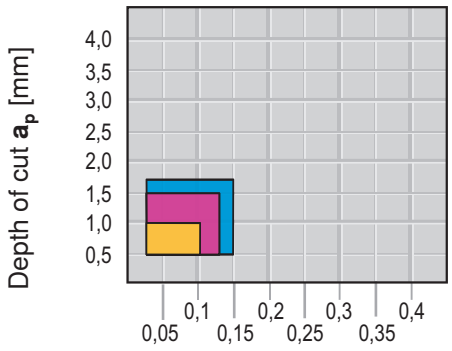
Feed rate axial grooving



Feed rate **f** [mm/rev]



Feed rate face turning

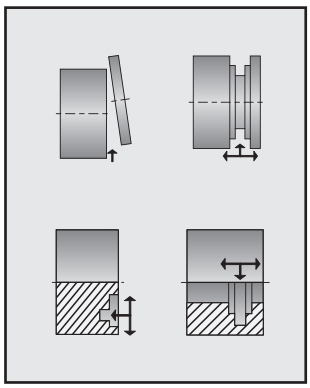


Feed rate **f** [mm/rev]

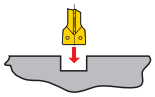
-M2

SX/LX

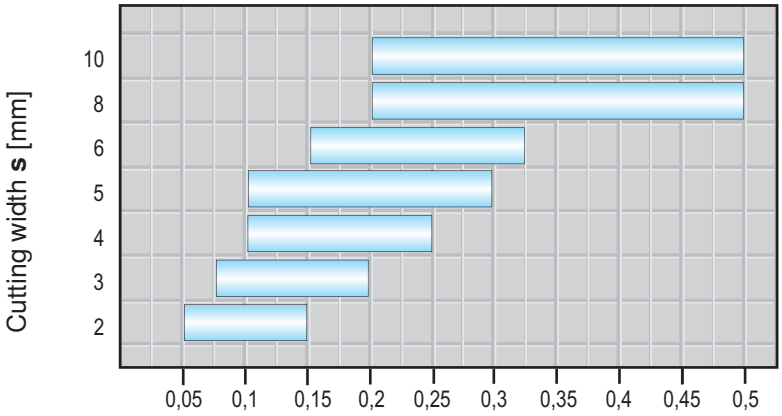
Application:

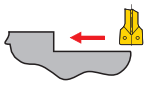


> For grooving and turning
> Suitable for all steel and cast iron materials
> Very good chip control

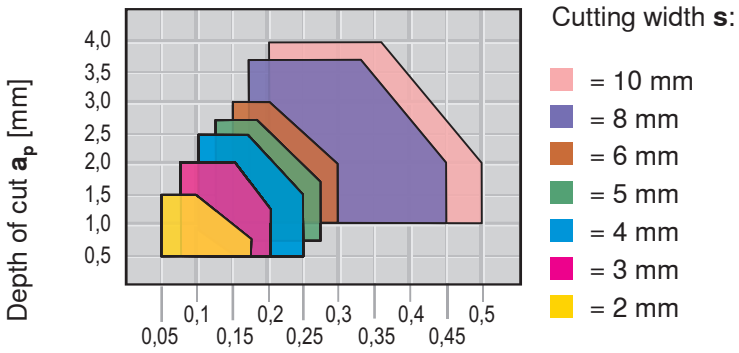


Feed rate for parting and grooving





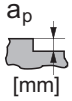
Feed rate for longitudinal turning



Cutting width **s**:

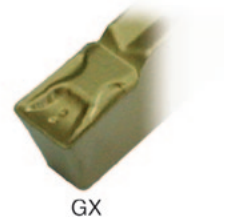
- = 10 mm
- = 8 mm
- = 6 mm
- = 5 mm
- = 4 mm
- = 3 mm
- = 2 mm

a_p



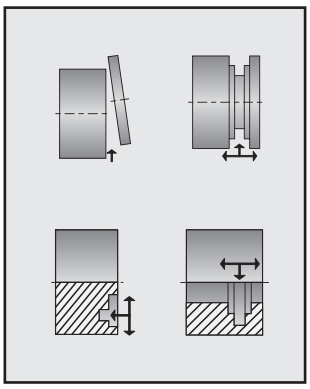
[mm]

-M40

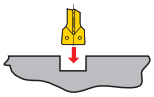


GX

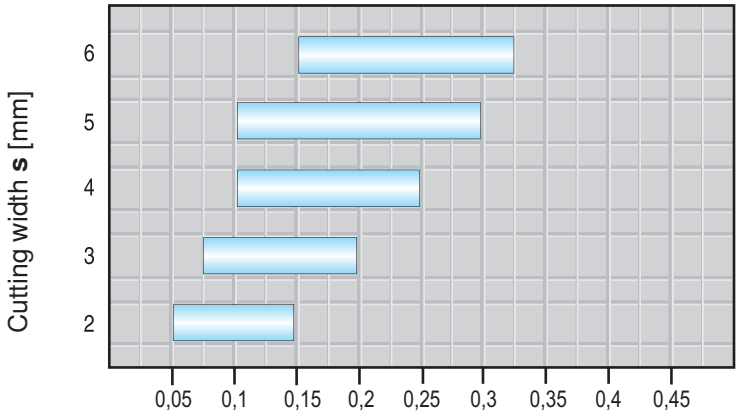
Application:



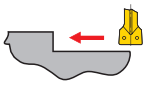
- For grooving and turning
- Suitable for all steel materials
- Very good chip control
- 7RRUDCFHIFXWWQ ZLGW P P



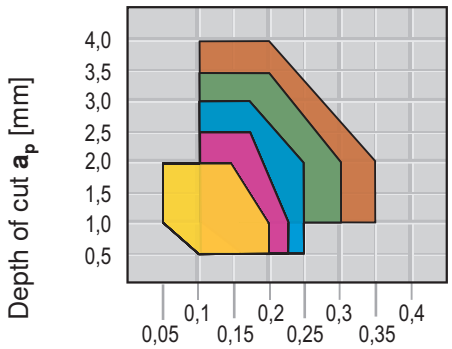
Feed rate for parting and grooving



Feed rate **f** [mm/rev]



Feed rate for longitudinal turning

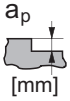


Cutting width **s**:

- = 6 mm
- = 5 mm
- = 4 mm
- = 3 mm
- = 2 mm

Feed rate **f** [mm/rev]

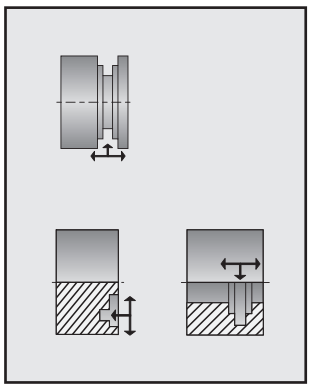
a_p



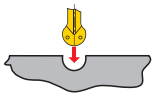
[mm]

-M3

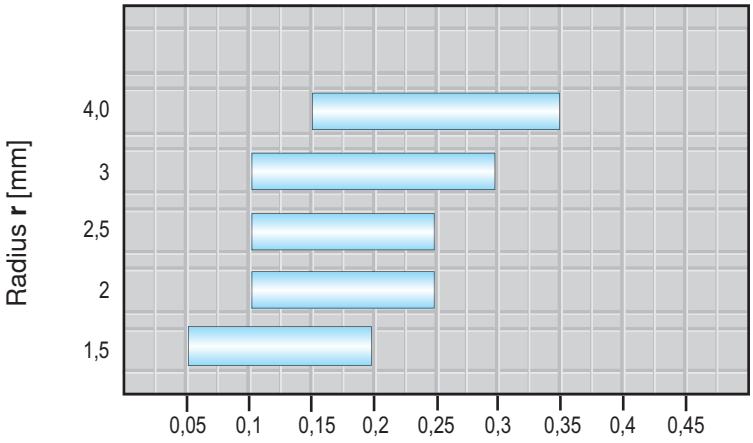
Application:

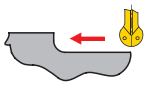


- > Insert for radius grooves and copy turning
- > For all steel materials
- > For internal and external machining

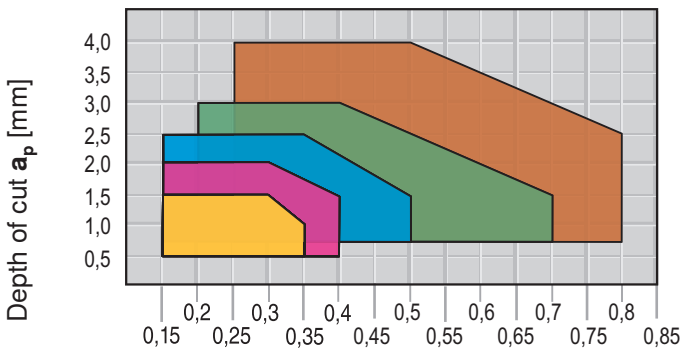


Feed rate for parting and grooving





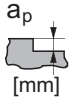
Feed rate for longitudinal turning



Radius **r**:

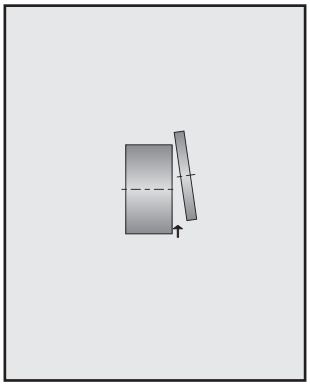
- = radius 4.0 mm
- = radius 3.0 mm
- = radius 2.5 mm
- = radius 2.0 mm
- = radius 1.5 mm

a_p [mm]

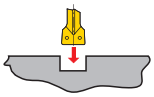


-M1

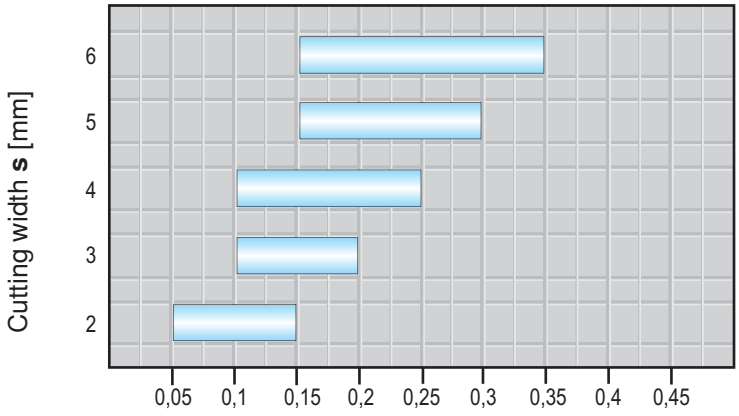
Application:



- > Insert with narrow negative chamfer
- > Suitable for all steel materials with high strength
- > Universally applicable grade
- > For steel and grey cast iron

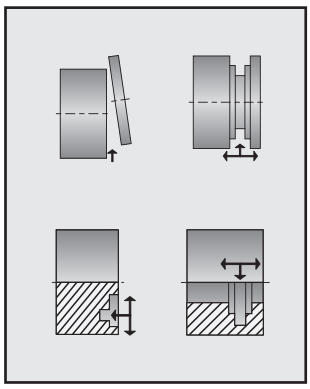


Feed rate for parting and grooving

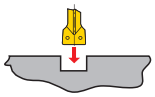


-27P

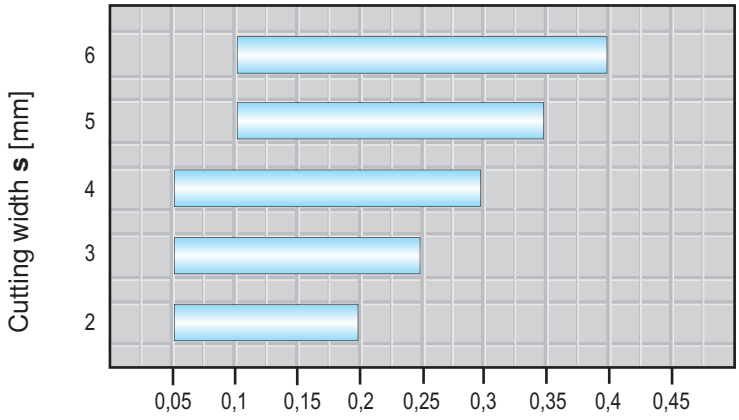
Application:

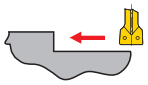


- Particularly suitable for **aluminium and non ferrous metals**
- Insert with highly positive cutting geometry and sharp cutting edge
- Insert with ground periphery
- 7RODUDCFHIFXWWQJZLGWK
- ([WDVPRRWKUDNHIDFHWKURXJK P LFURKLQVK

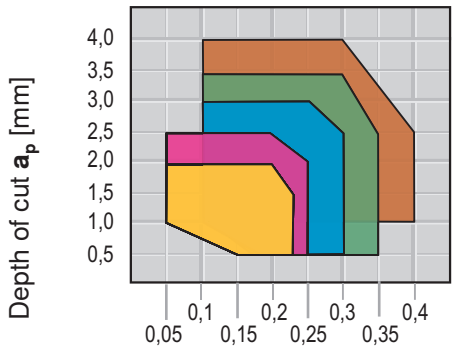


Feed rate for parting and grooving





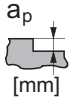
Feed rate for longitudinal turning



Cutting width **s**:

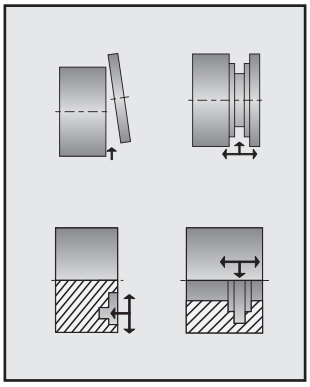
- = 6 mm
- = 5 mm
- = 4 mm
- = 3 mm
- = 2 mm

a_p [mm]

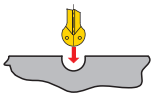


-27P

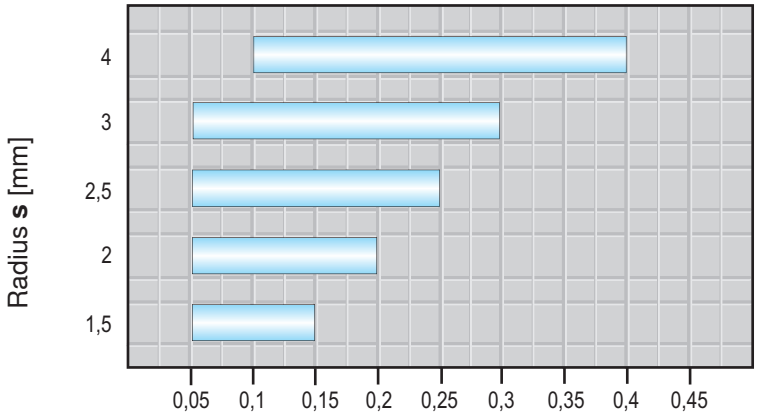
Application:

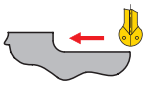


> Particularly suitable for **aluminium and non ferrous metals**
> Insert with highly positive cutting geometry and sharp cutting edge
> Insert with ground periphery
> 7RXJKQHVV YDOXH 1 P
> ([WHQGHG YDULDQWHW IRU JURXS PLFURPLQLK

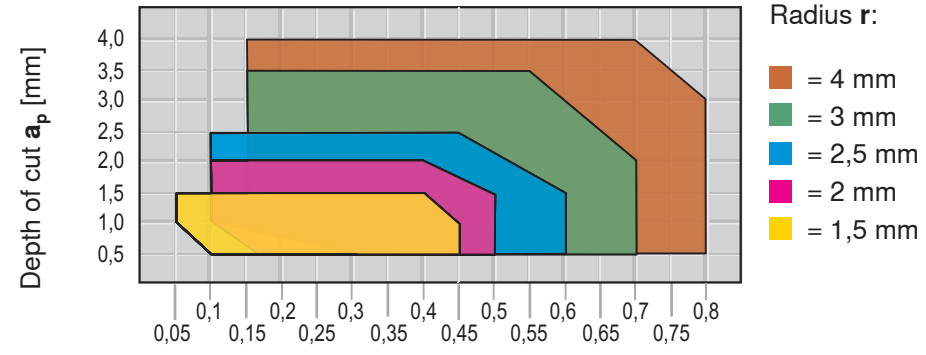


Feed rate for parting and grooving

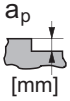




Feed rate for longitudinal turning



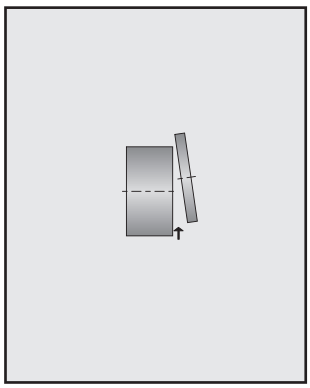
a_p [mm]



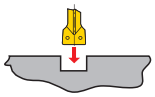
-F1


FX

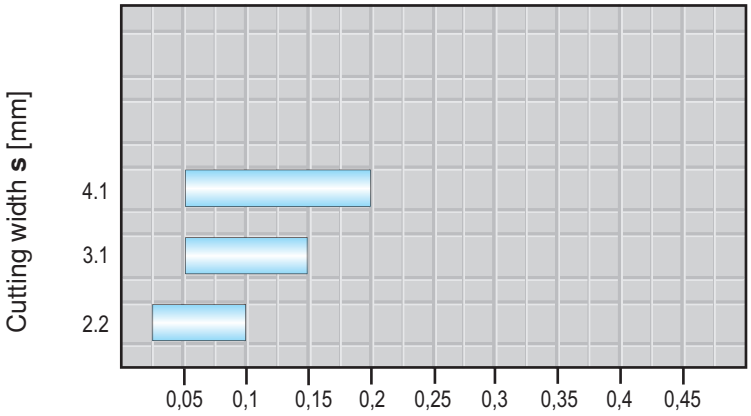
Application:



- Excellent cutting geometry with low cutting forces
- For low or medium strength materials
- Particularly suitable for parting off tubes and thin-walled work pieces
- Excellent swarf control also with low feed
- Reduced built-up edge



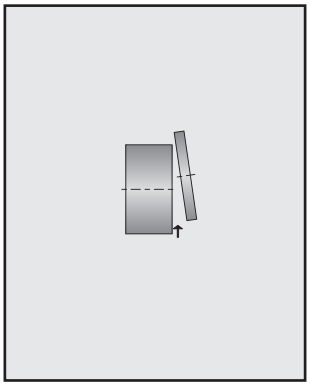
Feed rate for parting and grooving



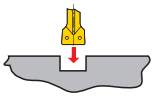
-M1

FX

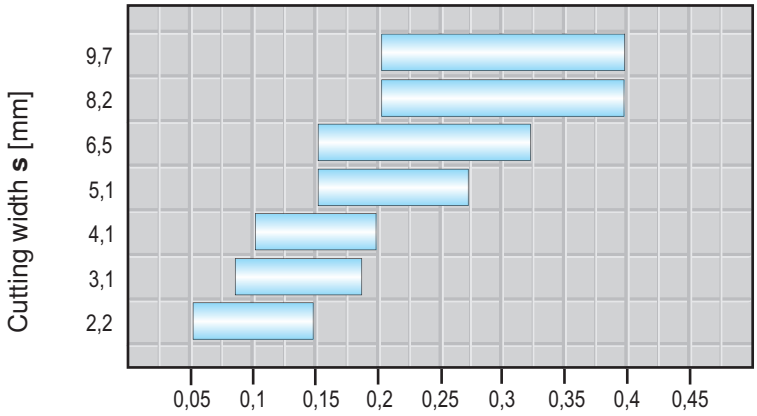
Application:



- > Insert with narrow negative chamfer
- > Suitable for all steel materials with high strength
- > Universal application
- > For steel and grey cast iron

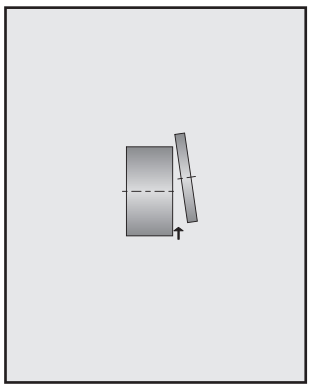


Feed rate for parting and grooving



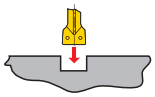
-R2

FX

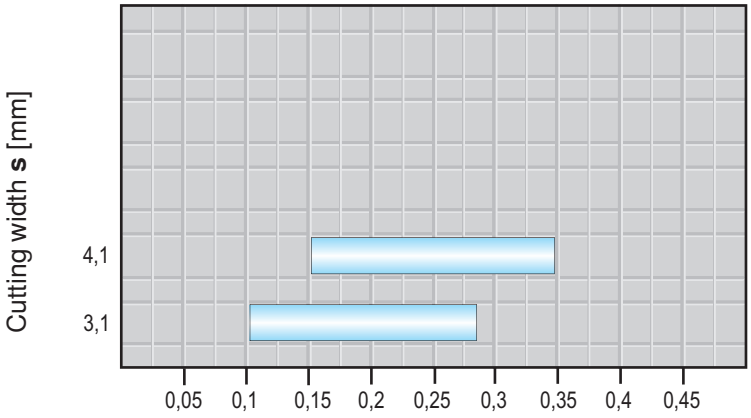


- > Insert with excellent chip formation for a wide feed range
- > Very stable cutting edge
- > Particularly suitable for economic parting when rather intensive formation of burrs and pips does not cause any problems

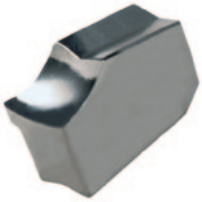
Application:



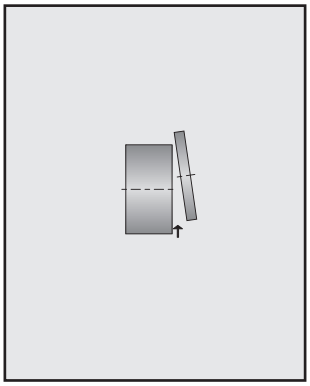
Feed rate for parting and grooving



-27P

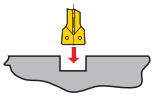


FX

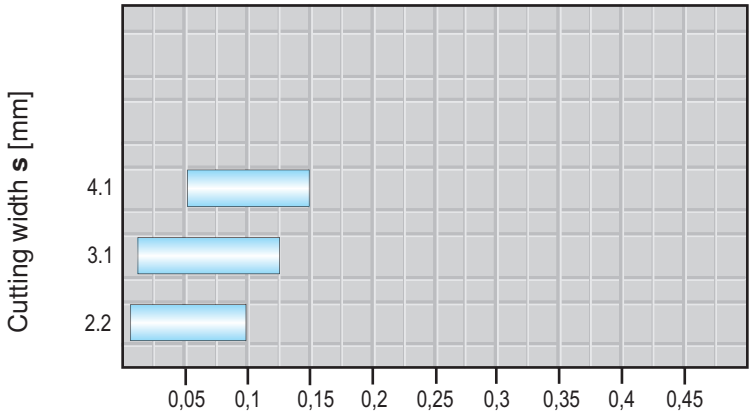


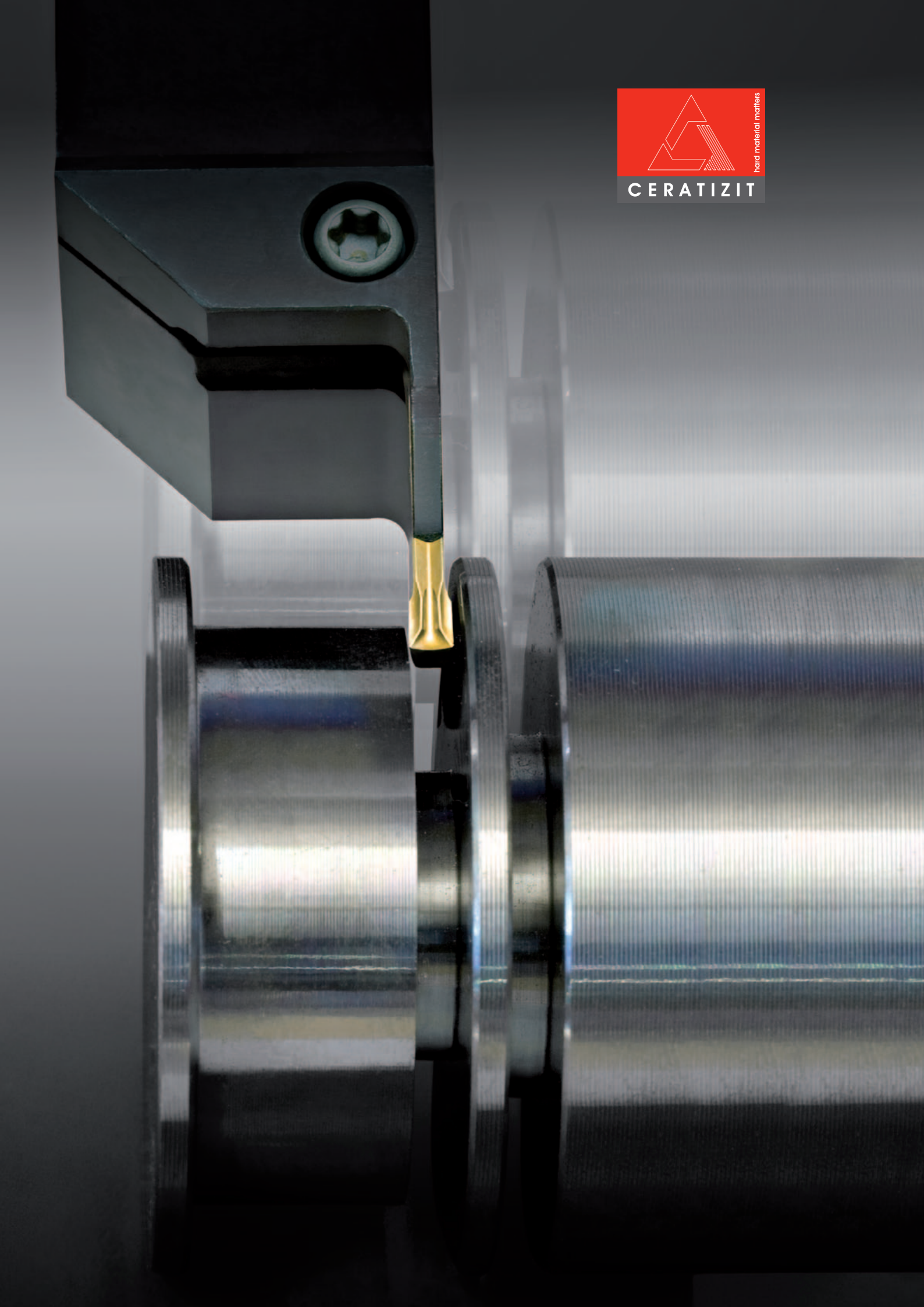
- Particularly suitable for **aluminium and non ferrous metals**
- Insert with highly positive cutting geometry and sharp cutting edge
- ([WD VPRPWKUDN-IDFHWKURXJK P LFURLQVK
- Reduced built-up edge

Application:

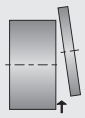


Feed rate for parting and grooving




hard material matters
CERATIZIT

Overview



GX / SX / LX / FX

C76-C81

GX / SX / LX / FX

C78-C81

GX / SX / LX / FX

C80-C81

GX / SX / LX / FX

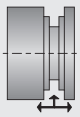
C82-C84

GX / SX / FX / PX

C86-C89

MaxiClick

C90



GX / SX / LX

C96-C100

GX / SX / LX

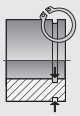
C99-C100

GX / SX / LX

C100

GX / SX

C101-C102



GX

C106-C110

GX

C109-C110

GX

C110

GX

C111-C112

GX

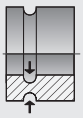
C113-C117

GX

C116-C117

GX

C118-C119



GX / SX / LX

C124-C129

GX / SX / LX

C127-C129

GX

C128-C129

GX

C130-C131

GX / SX

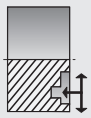
C132-C136

GX / SX

C135-C136

GX

C138-C139



GX / AX

C142-C147

GX / AX

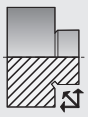
C144-C147

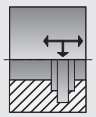
GX

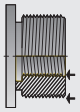
C147

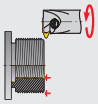
AX

C148









GX

C152-C155

GX

C158-C162

TC16

C166-C167

TC16

C174+C176

GX

C154-C155

GX

C161-C162

TC16

C167

TC16

C175+C177

GX

C163

TC16

C168

TC16

C169

TC16

C169

TC16

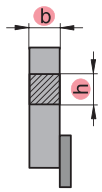
C170

TC16

C170

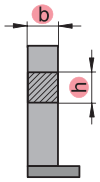
Part-off

2 YHUYLHZ ² P RGXODU VWDKFWXUH



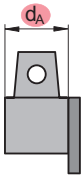
6 KDQNV

h / b
16/16 - 32/32



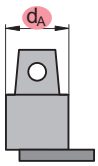
6 KDQNV

h / b
20/20 - 32/32



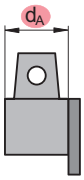
8 76

d_A = 40 - 63



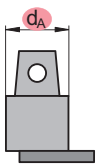
8 76

d_A = 40 - 63



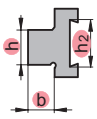
+6. 7

d_A = 63 - 100



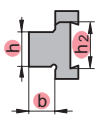
+6. 7

d_A = 63 - 100



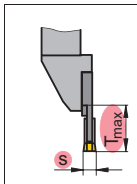
Clamping blocks

h / b
20/20 - 40/37



Split clamping blocks

h / b
20/20 - 32/29

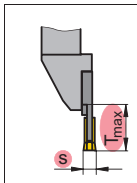


GX16

s = 2,0 - 6,5
T_{max} = 12

GX24

s = 2,0 - 5,0
T_{max} = 21

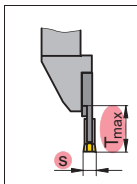


SX

s = 2,0 - 4,0
T_{max} = 20 - 35

LX

s = 8,0 - 10,0
T_{max} = 25 - 45

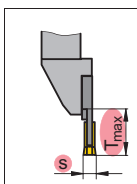


FX short

s = 2,2 - 6,5
T_{max} = 20 - 32

FX long

s = 3,1 - 6,5
T_{max} = 35 - 45

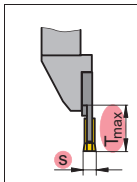


GX16

s = 2,0 - 6,5
T_{max} = 12

GX24

s = 2,0 - 5,0
T_{max} = 21

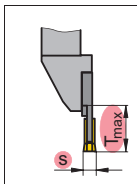


SX

s = 2,0 - 4,0
T_{max} = 20 - 35

LX

s = 8,0 - 10,0
T_{max} = 25 - 45

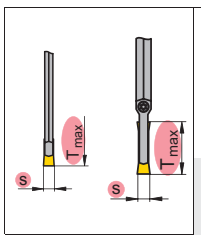


FX short

s = 2,2 - 6,5
T_{max} = 20 - 32

FX long

s = 3,1 - 4,5
T_{max} = 35 - 45



GX

s = 2,0 - 6,5
T_{max} = 21

SX

s = 2,0 - 6,0
T_{max} = 25 - 60

LX

s = 8,0 - 10,0
T_{max} = 80

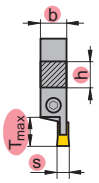
FX

s = 2,2 - 9,7
T_{max} = 25 - 80

Part-off

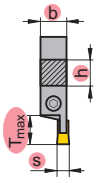
Overview - monobloc tools

GX16 monobloc tool holders



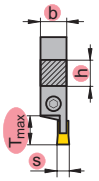
h / b
12/12 - 25/25
s = 2,0 - 5,0
T_{max} = 12

GX24 monobloc tool holders



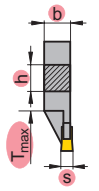
h / b
16/16 - 32/25
s = 2,0 - 6,5
T_{max} = 21

SX monobloc tool holders

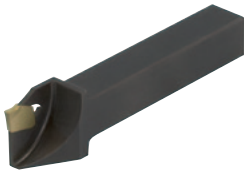


h / b
16/16 - 25/25
s = 2,0 - 6,0
T_{max} = 16 - 32

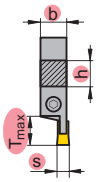
FX monobloc tool holders



h / b
10/10 - 25/20
s = 2,2 - 4,1
D_{max} = 30 - 50

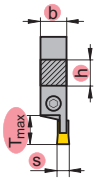


PX monobloc tool holders



h / b
16/16 - 20/20
s = 1,0 - 2,0
D_{max} = 52 - 62

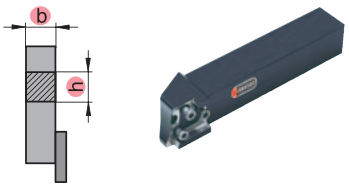
MaxiClick



h / b
10/10 - 25/25
s = 1,0 - 2,5
T_{max} = 5 - 10


hard material matters
CERATIZIT
CERATIZIT
MSS-E25R00-2525L
CERATIZIT
MSS-E25R35
FX4.1
MSS-E25R
TC16-1
CERATIZIT
XLCFR 2608

BGR E20



C196

b [mm]	h [mm]		Type, description	
20	16	R	MSS-E20R00-1620G	■
	20		MSS-E20R00-2020J	■
	16	L	MSS-E20L00-1620G	●
	20		MSS-E20L00-2020J	●

C197

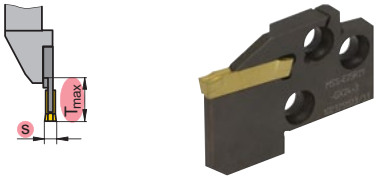
b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R90-2020J	●
		L	MSS-E20L90-2020J	■

GX16

C201
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.00	2.75	12	R	MSS-E20R12-GX16-1	GX16-1..
■	2.76	3.75			MSS-E20R12-GX16-2	GX16-2..
■	3.76	5.00			MSS-E20R12-GX16-3	GX16-3..
●	2.00	2.75		L	MSS-E20L12-GX16-1	GX16-1..
●	2.76	3.75			MSS-E20L12-GX16-2	GX16-2..
●	3.76	5.00			MSS-E20L12-GX16-3	GX16-3..

GX24



C202
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.00	2.75	21	R	MSS-E20R21-GX24-1	GX24-1..
■	2.76	3.75			MSS-E20R21-GX24-2	GX24-2..
■	3.76	5.00			MSS-E20R21-GX24-3	GX24-3..
●	2.00	2.75		L	MSS-E20L21-GX24-1	GX24-1..
●	2.76	3.75			MSS-E20L21-GX24-2	GX24-2..
●	3.76	5.00			MSS-E20L21-GX24-3	GX24-3..

SX

C209
C185

	s [mm]	T_{max} [mm]		L R	Type, description	
■	2.0	20		R	MSS-E20R20-SX2	SX2
■	3.0				MSS-E20R20-SX3	SX3
●	2.0			L	MSS-E20L20-SX2	SX2
●	3.0				MSS-E20L20-SX3	SX3

BGR E20

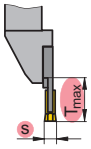
C196

b [mm]	h [mm]		Type, description	
20	16	R	MSS-E20R00-1620G	■
	20		MSS-E20R00-2020J	■
	16	L	MSS-E20L00-1620G	●
	20		MSS-E20L00-2020J	●

C197

b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R90-2020J	●
		L	MSS-E20L90-2020J	■

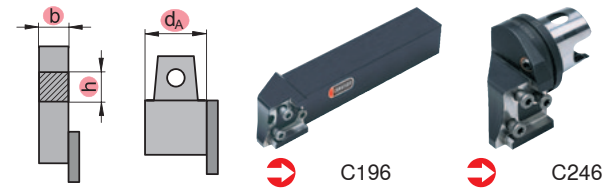
) ²VKRUW



C211
C187

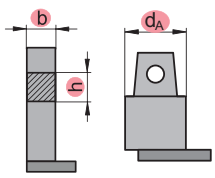
	s [mm]	T_{max} [mm]	L R	Type, description	
■	2.2	20	R	MSS-E20R20-FX2.2	FX 2.2..
■	3.1			MSS-E20R20-FX3.1	FX 3.1..
■	4.1			MSS-E20R20-FX4.1	FX 4.1..
●	2.2		L	MSS-E20L20-FX2.2	FX 2.2..
●	3.1			MSS-E20L20-FX3.1	FX 3.1..
●	4.1			MSS-E20L20-FX4.1	FX 4.1..

BGR E25



C196 C246

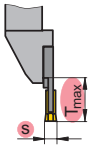
b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●



C197 C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

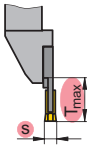
GX16



C201
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.00	2.75	12	R	MSS-E25R12-GX16-1	GX16-1..
■	2.76	3.75			MSS-E25R12-GX16-2	GX16-2..
■	3.76	5.00			MSS-E25R12-GX16-3	GX16-3..
●	2.00	2.75		L	MSS-E25L12-GX16-1	GX16-1..
●	2.76	3.75			MSS-E25L12-GX16-2	GX16-2..
●	3.76	5.00			MSS-E25L12-GX16-3	GX16-3..

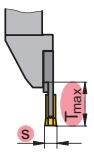
GX24



C202
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.00	2.75	21	R	MSS-E25R21-GX24-1	GX24-1..
■	2.76	3.75			MSS-E25R21-GX24-2	GX24-2..
■	3.76	5.00			MSS-E25R21-GX24-3	GX24-3..
●	2.00	2.75		L	MSS-E25L21-GX24-1	GX24-1..
●	2.76	3.75			MSS-E25L21-GX24-2	GX24-2..
●	3.76	5.00			MSS-E25L21-GX24-3	GX24-3..

6 2 ULJKWKDQG



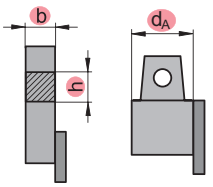
C209
C185

	s [mm]	T_{max} [mm]		L R	Type, description	
■	2.0	20		R	MSS-E25R20-SX2	SX2
■	3.0	25			MSS-E25R25-SX3	SX3
■	3.0	35			MSS-E25R35-SX3	SX3
■	4.0	25			MSS-E25R25-SX4	SX4
■	4.0	35			MSS-E25R35-SX4	SX4

6 2 OHIWKDQG

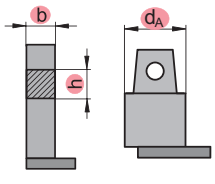
	s [mm]	T_{max} [mm]		L R	Type, description	
●	2.0	20		L	MSS-E25L20-SX2	SX2
●	3.0	25			MSS-E25L25-SX3	SX3
●	3.0	35			MSS-E25L35-SX3	SX3
●	4.0	25			MSS-E25L25-SX4	SX4
●	4.0	35			MSS-E25L35-SX4	SX4

BGR E25




C196 C246

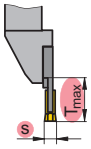
b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●




C197 C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

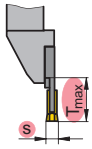
) 2 VKRUW



C211
C187

	s [mm]	T_{max} [mm]	L R	Type, description	
■	2.2	20	R	MSS-E25R20-FX2.2	FX 2.2..
■	3.1	25		MSS-E25R25-FX3.1	FX 3.1..
■	4.1			MSS-E25R25-FX4.1	FX 4.1..
■	5.1			MSS-E25R25-FX5.1	FX 5.1..
■	6.5			MSS-E25R25-FX6.5	FX 6.5..
●	2.2	20	L	MSS-E25L20-FX2.2	FX 2.2..
●	3.1	25		MSS-E25L25-FX3.1	FX 3.1..
●	4.1			MSS-E25L25-FX4.1	FX 4.1..
●	5.1			MSS-E25L25-FX5.1	FX 5.1..
●	6.5			MSS-E25L25-FX6.5	FX 6.5..

) 2 GRQJ



C212
C187

	s [mm]	T_{max} [mm]	L R	Type, description	
■	3.1	35	R	MSS-E25R35-FX3.1	FX 3.1..
■	4.1			MSS-E25R35-FX4.1	FX 4.1..
■	5.1			MSS-E25R35-FX5.1	FX 5.1..
■	6.5			MSS-E25R35-FX6.5	FX 6.5..
●	3.1		L	MSS-E25L35-FX3.1	FX 3.1..
●	4.1			MSS-E25L35-FX4.1	FX 4.1..
●	5.1			MSS-E25L35-FX5.1	FX 5.1..
●	6.5			MSS-E25L35-FX6.5	FX 6.5..

Part-off

6 KDQNV² 8 7 6 + 6 . 7² * ; 6 ;

BGR E32

C196 C246+C250

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R00-3225N	■
32	32			MSS-E32R00-3232Q	■
		50		UT50-MSS-E32R00	■
		63		UT63-MSS-E32R00	■
		63		HSK-T63-MSS-E32R00	■
		100		HSK-T100-MSS-E32R00	■
25	32		L	MSS-E32L00-3225N	●
32	32			MSS-E32L00-3232Q	●
		50		UT50-MSS-E32L00	●
		63		UT63-MSS-E32L00	●
		63		HSK-T63-MSS-E32L00	●
		100		HSK-T100-MSS-E32L00	●

C197 C247+C251

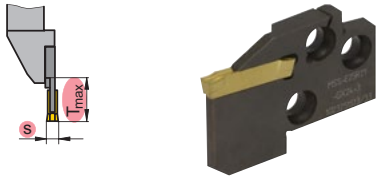
b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R90-3225N	●
32	32			MSS-E32R90-3232R	●
		63		UT63-MSS-E32R90	●
		63		HSK-T63-MSS-E32R90	●
		100		HSK-T100-MSS-E32R90	●
25	32		L	MSS-E32L90-3225N	■
32	32			MSS-E32L90-3232R	■
		63		UT63-MSS-E32L90	■
		63		HSK-T63-MSS-E32L90	■
		100		HSK-T100-MSS-E32L90	■

GX16

C201
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.76	3.75	12	R	MSS-E32R12-GX16-2	GX16-2..
■	3.76	5.00			MSS-E32R12-GX16-3	GX16-3..
●	2.76	3.75		L	MSS-E32L12-GX16-2	GX16-2..
●	3.76	5.00			MSS-E32L12-GX16-3	GX16-3..

GX24



C202
C180-C181

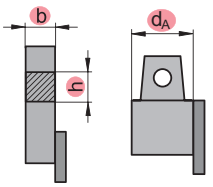
	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.76	3.75	21	R	MSS-E32R21-GX24-2	GX24-2..
■	3.76	5.00			MSS-E32R21-GX24-3	GX24-3..
●	2.76	3.75		L	MSS-E32L21-GX24-2	GX24-2..
●	3.76	5.00			MSS-E32L21-GX24-3	GX24-3..

SX

C209
C185

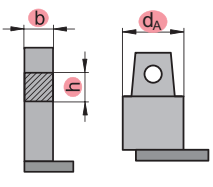
	s [mm]	T_{max} [mm]		L R	Type, description	
■	3.0	35		R	MSS-E32R35-SX3	SX3
■	4.0				MSS-E32R35-SX4	SX4
●	3.0			L	MSS-E32L35-SX3	SX3
●	4.0				MSS-E32L35-SX4	SX4

BGR E32




C196 C246+C250

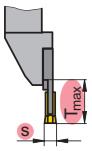
b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R00-3225N	■
32	32			MSS-E32R00-3232Q	■
		50		UT50-MSS-E32R00	■
		63		UT63-MSS-E32R00	■
		63		HSK-T63-MSS-E32R00	■
		100		HSK-T100-MSS-E32R00	■
25	32		L	MSS-E32L00-3225N	●
32	32			MSS-E32L00-3232Q	●
		50		UT50-MSS-E32L00	●
		63		UT63-MSS-E32L00	●
		63		HSK-T63-MSS-E32L00	●
		100		HSK-T100-MSS-E32L00	●




C197 C247+C251

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R90-3225N	●
32	32			MSS-E32R90-3232R	●
		63		UT63-MSS-E32R90	●
		63		HSK-T63-MSS-E32R90	●
		100		HSK-T100-MSS-E32R90	●
25	32		L	MSS-E32L90-3225N	■
32	32			MSS-E32L90-3232R	■
		63		UT63-MSS-E32L90	■
		63		HSK-T63-MSS-E32L90	■
		100		HSK-T100-MSS-E32L90	■

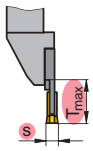
) 2 VKRUW



C211
C187

	s [mm]	T_{max} [mm]	L R	Type, description	
■	3.1	32	R	MSS-E32R32-FX3.1	FX 3.1..
■	4.1			MSS-E32R32-FX4.1	FX 4.1..
■	5.1			MSS-E32R32-FX5.1	FX 5.1..
■	6.5			MSS-E32R32-FX6.5	FX 6.5..
●	3.1		L	MSS-E32L32-FX3.1	FX 3.1..
●	4.1			MSS-E32L32-FX4.1	FX 4.1..
●	5.1			MSS-E32L32-FX5.1	FX 5.1..
●	6.5			MSS-E32L32-FX6.5	FX 6.5..

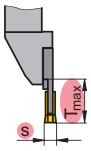
) 2 GRQJ



C212
C187

	s [mm]	T_{max} [mm]	L R	Type, description	
■	3.1	45	R	MSS-E32R45-FX3.1	FX 3.1..
■	4.1			MSS-E32R45-FX4.1	FX 4.1..
■	5.1			MSS-E32R45-FX5.1	FX 5.1..
■	6.5			MSS-E32R45-FX6.5	FX 6.5..
●	3.1		L	MSS-E32L45-FX3.1	FX 3.1..
●	4.1			MSS-E32L45-FX4.1	FX 4.1..
●	5.1			MSS-E32L45-FX5.1	FX 5.1..
●	6.5			MSS-E32L45-FX6.5	FX 6.5..

LX

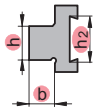


C210
C186

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■ ●	8.00	10.00	25	N	MSS-E32N25-LX	LX-..
■ ●			32		MSS-E32N32-LX	LX-..
■ ●			45		MSS-E32N45-LX	LX-..

H26

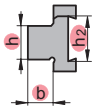
Clamping blocks



C229

h_2 [mm]	b [mm]	$h=h_1$ [mm]	Type, description	
26	20	20	SBN 2020-26 K	■

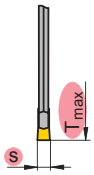
Split clamping blocks



C230

h_2 [mm]	b [mm]	$h=h_1$ [mm]	Type, description	
26	20	20	SBN 2020-26 KS	■

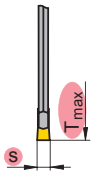
SX



C224
C185

	s [mm]	T_{max} [mm]	L/N/R	Type, description	
■	2.0	25	R	XLCFR 2602-SX2	SX2
■	3.0	35	N	XLCFN 2603-SX3	SX3
■	4.0	40		XLCFN 2604-SX4	SX4
■	2.0	25	L	XLCFL 2602-SX2	SX2

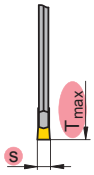
6 ²UHLQIRUFHG



C225
C185

	s [mm]	T_{max} [mm]	L/N/R	Type, description	
■	2.0	22	R	XLCFR 2608-SX2	SX2
■	3.0			XLCFR 2608-SX3	SX3
■	2.0		L	XLCFL 2608-SX2	SX2
■	3.0			XLCFL 2608-SX3	SX3

FX

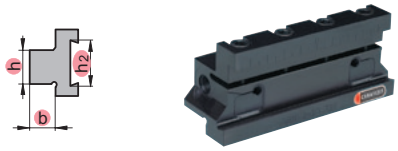


C228
C187

	s [mm]	T_{max} [mm]	L/N/R	Type, description	
■	2.2	25	N	XLCEN 2602 J22 FX	FX 2.2..
■	3.1	35		XLCFN 2603 J31 FX	FX 3.1..
■	4.1	40		XLCFN 2604 J41 FX	FX 4.1..

H32

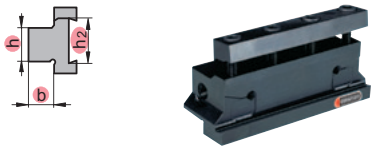
Clamping blocks



C229

h_2 [mm]	b [mm]	$h=h_1$ [mm]	Type, description	
32	20	25	SBN 2520-32 K	■
32	29	32	SBN 3229-32 K	■

Split clamping blocks



C230

h_2 [mm]	b [mm]	$h=h_1$ [mm]	Type, description	
32	20	25	SBN 2520-32 KS	■
32	29	32	SBN 3229-32 KS	■

GX24

C223
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L/N/R	Type, description	
■	2.00	2.75	21	N	XLCFN 3202-GX24-1S	GX24-1..
■	2.76	3.75			XLCFN 3203 GX24-2S	GX24-2..
■	3.76	5.00			XLCFN 3204 GX24-3S	GX24-3..
■	5.01	6.50			XLCFN 3206 GX24-4S	GX24-4..

SX

C224
C185

	s [mm]	T_{max} [mm]	L/N/R	Type, description	
■	2.0	25	R	XLCFR 3202-SX2	SX2
■	3.0	50	N	XLCFN 3203-SX3	SX3
■	4.0			XLCFN 3204-SX4	SX4
■	5.0	55		XLCFN 3205-SX5	SX5
■	6.0	60		XLCFN 3206-SX6	SX6
■	2.0	25	L	XLCFL 3202-SX2	SX2

6 ²UHLQIRUFHG

C226
C185

	s [mm]	T_{max} [mm]	L/N/R	Type, description	
■	3.0	33	R	XLCFR 3208-SX3	SX3
■	4.0			XLCFR 3208-SX4	SX4
■	3.0		L	XLCFL 3208-SX3	SX3
■	4.0			XLCFL 3208-SX4	SX4

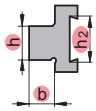
FX

C228
C187

	s [mm]	T_{max} [mm]	L/N/R	Type, description	
■	2.2	30	N	XLCEN 3202 M22 FX	FX 2.2..
■	3.1	50		XLCFN 3203 M31 FX	FX 3.1..
■	4.1			XLCFN 3204 M41 FX	FX 4.1..
■	5.1	55		XLCFN 3205 M51 FX	FX 5.1..
■	6.5			XLCFN 3206 M65 FX	FX 6.5..

H46

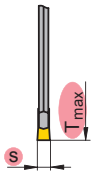
Clamping blocks



C229

h_2 [mm]	b [mm]	$h=h_1$ [mm]	Type, description	
46	29	32	SBN 3229-46 K	■
	37	40	SBN 4037-46 K	■

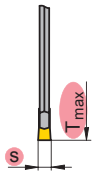
FX



C228
C187

	s [mm]	T_{max} [mm]	L/N/R	Type, description	
■	8.2	80	N	XLCEN 4608 S82 FX	FX 8.2..
■	9.7			XLCEN 4609 S97 FX	FX 9.7..

LX

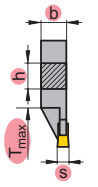


C227
C186

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L/N/R	Type, description	
■	8.00	10.00	80	N	XLCEN 4608 LX	LX-..


hard material matters
CERATIZIT
MSS-E25R35
FX4.1
MSS-E25R21
GX24-3
MSS-E25R25
SX3
MSS-E25R21
GX24-3 ASEC-TC
MSS-I32R09
GX16-2

* 2 ULJKWKDQG



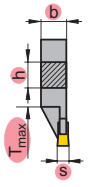
C214 C180-C181

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
12	12	2.00	2.75	12	R	E12R0012-1212K-GX16-1	GX16-1..
		0.60	3.75			E12R0012-1212K-GX16-2	GX16-2..
16	16	2.00	2.75			E16R0012-1616K-GX16-1	GX16-1..
		0.60	3.75			E16R0012-1616K-GX16-2	GX16-2..
		3.76	5.00			E16R0012-1616K-GX16-3	GX16-3..
20	20	2.00	2.75			E20R0012-2020K-GX16-1	GX16-1..
		0.60	3.75			E20R0012-2020K-GX16-2	GX16-2..
		3.76	5.00			E20R0012-2020K-GX16-3	GX16-3..
25	25	0.60	3.75			E25R0012-2525M-GX16-2	GX16-2..
		3.76	5.00			E25R0012-2525M-GX16-3	GX16-3..

* 2 GH WKDQG

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
12	12	2.00	2.75	12	L	E12L0012-1212K-GX16-1	GX16-1..
		0.60	3.75			E12L0012-1212K-GX16-2	GX16-2..
16	16	2.00	2.75			E16L0012-1616K-GX16-1	GX16-1..
		0.60	3.75			E16L0012-1616K-GX16-2	GX16-2..
		3.76	5.00			E16L0012-1616K-GX16-3	GX16-3..
20	20	2.00	2.75			E20L0012-2020K-GX16-1	GX16-1..
		0.60	3.75			E20L0012-2020K-GX16-2	GX16-2..
		3.76	5.00			E20L0012-2020K-GX16-3	GX16-3..
25	25	0.60	3.75			E25L0012-2525M-GX16-2	GX16-2..
		3.76	5.00			E25L0012-2525M-GX16-3	GX16-3..

* 2 ULJKWKDQG



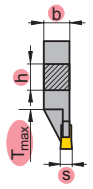
C215 C180-C181

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
16	16	2.00	2.75	21	R	E16R0021-1616K-GX24-1	GX24-1..
		2.76	3.75			E16R0021-1616K-GX24-2	GX24-2..
20	20	2.00	2.75			E20R0021-2020K-GX24-1	GX24-1..
		2.76	3.75			E20R0021-2020K-GX24-2	GX24-2..
		3.76	5.00			E20R0021-2020K-GX24-3	GX24-3..
25	25	2.76	3.75			E25R0021-2525M-GX24-2	GX24-2..
		3.76	5.00			E25R0021-2525M-GX24-3	GX24-3..
	32	2.76	3.75			E32R0021-3225P-GX24-2	GX24-2..
		3.76	5.00			E32R0021-3225P-GX24-3	GX24-3..

* 2 GH WKDQG

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
16	16	2.00	2.75	21	L	E16L0021-1616K-GX24-1	GX24-1..
		2.76	3.75			E16L0021-1616K-GX24-2	GX24-2..
20	20	2.00	2.75			E20L0021-2020K-GX24-1	GX24-1..
		2.76	3.75			E20L0021-2020K-GX24-2	GX24-2..
		3.76	5.00			E20L0021-2020K-GX24-3	GX24-3..
25	25	2.76	3.75			E25L0021-2525M-GX24-2	GX24-2..
		3.76	5.00			E25L0021-2525M-GX24-3	GX24-3..
	32	2.76	3.75			E32L0021-3225P-GX24-2	GX24-2..
		3.76	5.00			E32L0021-3225P-GX24-3	GX24-3..

6 2 ULJKWKDQG



C218 C185

s [mm]	h [mm]	b [mm]	T_{max} [mm]	L R	Type, description	
2.0	16	16	16		E16R0016-1616K-SX2	SX2
	20	20			E20R0016-2020K-SX2	SX2
3.0	16	16	20		E16R0020-1616K-SX3	SX3
	20	20			E20R0020-2020K-SX3	SX3
	25	25		R	E25R0020-2525M-SX3	SX3
4.0	25	25	25		E25R0025-2525M-SX4	SX4
	20	20			E20R0025-2020K-SX4	SX4
5.0	25	25			E25R0025-2525M-SX5	SX5
6.0	25	25	32		E25R0032-2525M-SX6	SX6

6 2 CHWKDQG

s [mm]	h [mm]	b [mm]	T_{max} [mm]	L R	Type, description	
2.0	16	16	16		E16L0016-1616K-SX2	SX2
	20	20			E20L0016-2020K-SX2	SX2
3.0	16	16	20		E16L0020-1616K-SX3	SX3
	20	20			E20L0020-2020K-SX3	SX3
	25	25		L	E25L0020-2525M-SX3	SX3
4.0	25	25	25		E25L0025-2525M-SX4	SX4
	20	20			E20L0025-2020K-SX4	SX4
5.0	25	25			E25L0025-2525M-SX5	SX5
6.0	25	25	32		E25L0032-2525M-SX6	SX6

Part-off

0 RQRECRF VWRQV) ;

) ² ULJKWKDQG

C219

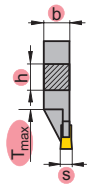
C187

s [mm]	h [mm]	b [mm]	D_{max} [mm]	L R	Type, description	
2.2	10	10	30	R	XLCER 1010 M22 FX	FX 2.2..
	12	12			XLCER 1212 F22 FX	FX 2.2..
	12	12			XLCER 1212 M22 FX	FX 2.2..
	14	14			XLCER 1414 M22 FX	FX 2.2..
	16	12			XLCER 1612 H22 FX	FX 2.2..
3.1	16	12	35		XLCFR 1612 H31 FX	FX 3.1..
	20	16	40		XLCFR 2016 K31 FX	FX 3.1..
	25	20	50		XLCFR 2520 M31 FX	FX 3.1..
4.1	20	16	40		XLCFR 2016 K41 FX	FX 4.1..
	25	20	50		XLCFR 2520 M41 FX	FX 4.1..

) ² GHI WKDQG

s [mm]	h [mm]	b [mm]	D_{max} [mm]	L R	Type, description	
2.2	10	10	30	L	XLCEL 1010 M22 FX	FX 2.2..
	12	12			XLCEL 1212 F22 FX	FX 2.2..
	12	12			XLCEL 1212 M22 FX	FX 2.2..
	14	14			XLCEL 1414 M22 FX	FX 2.2..
	16	12			XLCEL 1612 H22 FX	FX 2.2..
3.1	16	12	35		XLCFL 1612 H31 FX	FX 3.1..
	20	16	40		XLCFL 2016 K31 FX	FX 3.1..
	25	20	50		XLCFL 2520 M31 FX	FX 3.1..
4.1	20	16	40		XLCFL 2016 K41 FX	FX 4.1..
	25	20	50		XLCFL 2520 M41 FX	FX 4.1..

3 2 ULJKWKDQG



C220 C188

s [mm]	h [mm]	b [mm]	T_{max} [mm]	L R	Type, description	
1.0	16	16	5	R	E16R0005-1616K-PX20-1	PX20-1..
1.5			10		E16R0010-1616K-PX20-2	PX20-2..
2.0					E16R0010-1616K-PX20-3	PX20-3..
1.0	20	20	5		E20R0005-2020L-PX20-1	PX20-1..
1.5			11		E20R0011-2020L-PX20-2	PX20-2..
2.0					E20R0011-2020L-PX20-3	PX20-3..

3 2 OHIWKDQG

s [mm]	h [mm]	b [mm]	T_{max} [mm]	L R	Type, description	
1.0	16	16	5	L	E16L0005-1616K-PX20-1	PX20-1..
1.5			10		E16L0010-1616K-PX20-2	PX20-2..
2.0					E16L0010-1616K-PX20-3	PX20-3..
1.0	20	20	5		E20L0005-2020L-PX20-1	PX20-1..
1.5			11		E20L0011-2020L-PX20-2	PX20-2..
2.0					E20L0011-2020L-PX20-3	PX20-3..

Part-off

0 RQRECRF WRRQ²0 D[L&CFN

0 &²UJKWKDQG

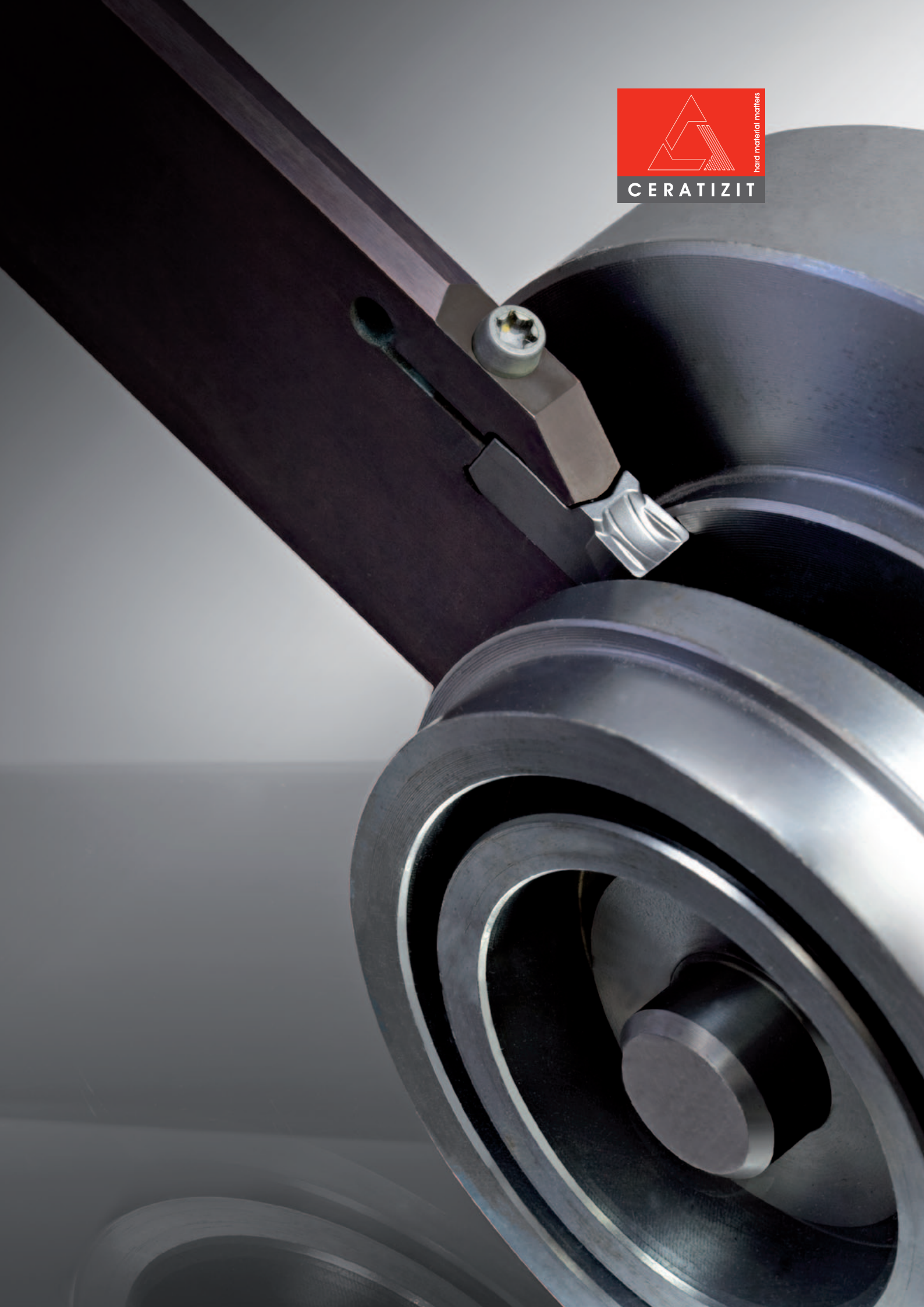
C221-C222

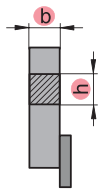
C189

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
10	10	1.00	1.50	5	R	MC05R-1010K	MC 05..
12	12					MC05R-1212K	MC 05..
16	16					MC05R-1616K	MC 05..
20	20					MC05R-2020K	MC 05..
25	25					MC05R-2525M	MC 05..
10	10	1.50	2.50	10		MC10R-1010K	MC 10..
10	10					MC10R-1010K-S	MC 10..
12	12					MC10R-1212K	MC 10..
12	12					MC10R-1212K-S	MC 10..
16	16					MC10R-1616K	MC 10..
20	20					MC10R-2020K	MC 10..
25	25					MC10R-2525M	MC 10..

0 &²OHIWKDQG

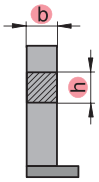
b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
10	10	1.00	1.50	5	L	MC05L-1010K	MC 05..
12	12					MC05L-1212K	MC 05..
16	16					MC05L-1616K	MC 05..
20	20					MC05L-2020K	MC 05..
25	25					MC05L-2525M	MC 05..
10	10	1.50	2.50	10		MC10L-1010K	MC 10..
12	12					MC10L-1212K	MC 10..
16	16					MC10L-1616K	MC 10..
20	20					MC10L-2020K	MC 10..
25	25					MC10L-2525M	MC 10..
10	10					MC10L-1010K-S	MC 10..
12	12					MC10L-1212K-S	MC 10..


hard material matters
CERATIZIT



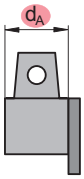
6KDQNV

h / b
12/12 - 32/32



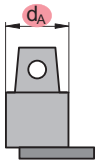
6KDQNV

h / b
20/20 - 32/32



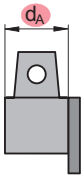
876

d_A = 40 - 63



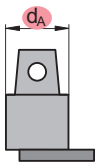
876

d_A = 40 - 63



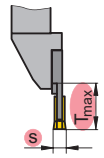
+6. 7

d_A = 63 - 100



+6. 7

d_A = 63 - 100



GX09

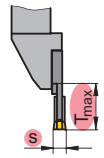
s = 2,0 - 3,75
T_{max} = 7,0

GX16

s = 2,0 - 6,5
T_{max} = 12

GX24

s = 2,76 - 8,0
T_{max} = 21

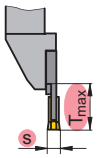


SX

s = 2,0 - 4,0
T_{max} = 20 - 35

LX

s = 8,0 - 10,0
T_{max} = 25 - 45



GX16

s = 2,0 - 6,5
T_{max} = 12

GX24

s = 2,76 - 8,0
T_{max} = 21

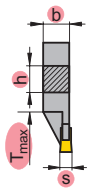
SX

s = 2,0 - 4,0
T_{max} = 20 - 35

LX

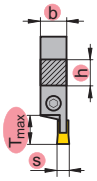
s = 8,0 - 10,0
T_{max} = 25 - 45

GX09 monobloc tool holders



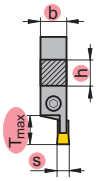
h / b
10/10
s = 2,0
T_{max} = 7

GX16 monobloc tool holders



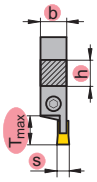
h / b
12/12 - 25/25
s = 2,0 - 5,0
T_{max} = 12

GX24 monobloc tool holders



h / b
16/16 - 32/25
s = 2,0 - 6,5
T_{max} = 21

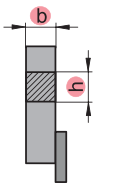
SX monobloc tool holders



h / b
16/16 - 25/25
s = 2,0 - 6,0
T_{max} = 16 - 32


hard material matters
CERATIZIT

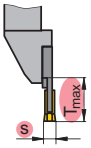
BGR E12



C196

b [mm]	h [mm]			Type, description	
12	12		R	MSS-E12R00-1212E	■
			L	MSS-E12L00-1212E	●

GX09

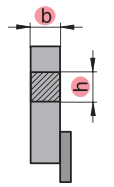


C200

C180

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.00	2.75	7	R	MSS-E12R07-GX09-1	GX09-1..
■	2.76	3.75			MSS-E12R07-GX09-2	GX09-2..
●	2.00	2.75		L	MSS-E12L07-GX09-1	GX09-1..
●	2.76	3.75			MSS-E12L07-GX09-2	GX09-2..

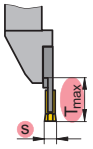
BGR E16



C196

b [mm]	h [mm]			Type, description	
16	16		R	MSS-E16R00-1616G	■
			L	MSS-E16L00-1616G	●

GX09



C200
C180

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.00	2.75	7	R	MSS-E16R07-GX09-1	GX09-1..
■	2.76	3.75			MSS-E16R07-GX09-2	GX09-2..
●	2.00	2.75		L	MSS-E16L07-GX09-1	GX09-1..
●	2.76	3.75			MSS-E16L07-GX09-2	GX09-2..

BGR E20

C196

b [mm]	h [mm]		Type, description	
20	16	R	MSS-E20R00-1620G	■
	20		MSS-E20R00-2020J	■
	16	L	MSS-E20L00-1620G	●
	20		MSS-E20L00-2020J	●

C197

b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R90-2020J	●
		L	MSS-E20L90-2020J	■

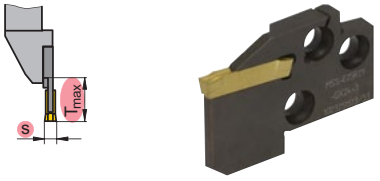
GX16

C201

C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.00	2.75	12	R	MSS-E20R12-GX16-1	GX16-1..
■	2.76	3.75			MSS-E20R12-GX16-2	GX16-2..
■	3.76	5.00			MSS-E20R12-GX16-3	GX16-3..
●	2.00	2.75		L	MSS-E20L12-GX16-1	GX16-1..
●	2.76	3.75			MSS-E20L12-GX16-2	GX16-2..
●	3.76	5.00			MSS-E20L12-GX16-3	GX16-3..

GX24



C202

C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.76	3.75	21	R	MSS-E20R21-GX24-2	GX24-2..
■	3.76	5.00			MSS-E20R21-GX24-3	GX24-3..
●	2.76	3.75		L	MSS-E20L21-GX24-2	GX24-2..
●	3.76	5.00			MSS-E20L21-GX24-3	GX24-3..

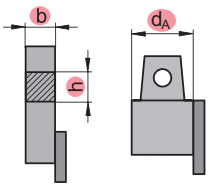
SX

C209

C185

	s [mm]	T_{max} [mm]		L R	Type, description	
■	2.0	20		R	MSS-E20R20-SX2	SX2
■	3.0				MSS-E20R20-SX3	SX3
●	2.0			L	MSS-E20L20-SX2	SX2
●	3.0				MSS-E20L20-SX3	SX3

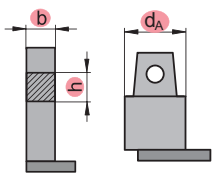
BGR E25




C196

C246

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●

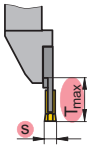



C197

C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

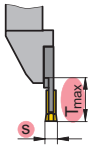
GX16




C201
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.00	2.75	12	R	MSS-E25R12-GX16-1	GX16-1..
■	2.76	3.75			MSS-E25R12-GX16-2	GX16-2..
■	3.76	5.00			MSS-E25R12-GX16-3	GX16-3..
■	5.01	6.50			MSS-E25R12-GX16-4	GX16-4..
●	2.00	2.75		L	MSS-E25L12-GX16-1	GX16-1..
●	2.76	3.75			MSS-E25L12-GX16-2	GX16-2..
●	3.76	5.00			MSS-E25L12-GX16-3	GX16-3..
●	5.01	6.50			MSS-E25L12-GX16-4	GX16-4..

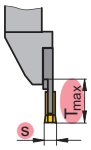
GX24




C202
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.76	3.75	21	R	MSS-E25R21-GX24-2	GX24-2..
■	3.76	5.00			MSS-E25R21-GX24-3	GX24-3..
■	5.01	6.50			MSS-E25R21-GX24-4	GX24-4..
■	8.00	8.00			MSS-E25R21-GX24-5	GX24-5..
●	2.76	3.75		L	MSS-E25L21-GX24-2	GX24-2..
●	3.76	5.00			MSS-E25L21-GX24-3	GX24-3..
●	5.01	6.50			MSS-E25L21-GX24-4	GX24-4..
●	8.00	8.00			MSS-E25L21-GX24-5	GX24-5..

6 ² LJKWKDQG



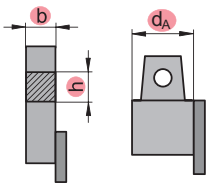

C209
C185

	s [mm]	T_{max} [mm]		L R	Type, description	
■	2.0	20		R	MSS-E25R20-SX2	SX2
■	3.0	25			MSS-E25R25-SX3	SX3
■	3.0	35			MSS-E25R35-SX3	SX3
■	4.0	25			MSS-E25R25-SX4	SX4
■	4.0	35			MSS-E25R35-SX4	SX4

6 ² OHIWKDQG

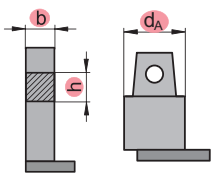
	s [mm]	T_{max} [mm]		L R	Type, description	
●	2.0	20		L	MSS-E25L20-SX2	SX2
●	3.0	25			MSS-E25L25-SX3	SX3
●	3.0	35			MSS-E25L35-SX3	SX3
●	4.0	25			MSS-E25L25-SX4	SX4
●	4.0	35			MSS-E25L35-SX4	SX4

BGR E32



C196 C246+C250

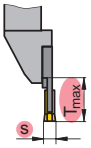
b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R00-3225N	■
32	32			MSS-E32R00-3232Q	■
		63		UT63-MSS-E32R00	■
		63		HSK-T63-MSS-E32R00	■
		100		HSK-T100-MSS-E32R00	■
25	32		L	MSS-E32L00-3225N	●
32	32			MSS-E32L00-3232Q	●
		63		UT63-MSS-E32L00	●
		63		HSK-T63-MSS-E32L00	●
		100		HSK-T100-MSS-E32L00	●



C197 C247+C251

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R90-3225N	●
32	32			MSS-E32R90-3232R	●
		63		UT63-MSS-E32R90	●
		63		HSK-T63-MSS-E32R90	●
		100		HSK-T100-MSS-E32R90	●
25	32		L	MSS-E32L90-3225N	■
32	32			MSS-E32L90-3232R	■
		63		UT63-MSS-E32L90	■
		63		HSK-T63-MSS-E32L90	■
		100		HSK-T100-MSS-E32L90	■

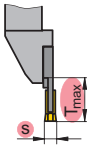
GX16



C201
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.76	3.75	12	R	MSS-E32R12-GX16-2	GX16-2..
■	3.76	5.00			MSS-E32R12-GX16-3	GX16-3..
■	5.01	6.50			MSS-E32R12-GX16-4	GX16-4..
●	2.76	3.75		L	MSS-E32L12-GX16-2	GX16-2..
●	3.76	5.00			MSS-E32L12-GX16-3	GX16-3..
●	5.01	6.50			MSS-E32L12-GX16-4	GX16-4..

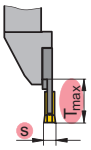
GX24



C202
C180-C181

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	2.76	3.75	21	R	MSS-E32R21-GX24-2	GX24-2..
■	3.76	5.00			MSS-E32R21-GX24-3	GX24-3..
■	5.01	6.50			MSS-E32R21-GX24-4	GX24-4..
●	2.76	3.75		L	MSS-E32L21-GX24-2	GX24-2..
●	3.76	5.00			MSS-E32L21-GX24-3	GX24-3..
●	5.01	6.50			MSS-E32L21-GX24-4	GX24-4..

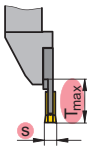
SX



C209
C185

	s [mm]	T_{max} [mm]		L R	Type, description	
■	3.0	35		R	MSS-E32R35-SX3	SX3
■	4.0				MSS-E32R35-SX4	SX4
●	3.0			L	MSS-E32L35-SX3	SX3
●	4.0				MSS-E32L35-SX4	SX4

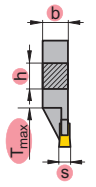
LX



C210
C186

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■ ●	8.00	10.00	25	N	MSS-E32N25-LX	LX-..
■ ●			32		MSS-E32N32-LX	LX-..
■ ●			45		MSS-E32N45-LX	LX-..

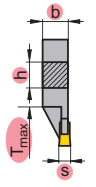
GX09



C213 C180

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
10	10	0.60	3.75	7	R	E10R00-1010M-GX09	GX09..
					L	E10L00-1010M-GX09	GX09..

* ² ULJKWKDQG



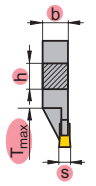
C214 C180-C181

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
12	12	2.00	2.75	12	R	E12R0012-1212K-GX16-1	GX16-1..
		0.60	3.75			E12R0012-1212K-GX16-2	GX16-2..
16	16	2.00	2.75			E16R0012-1616K-GX16-1	GX16-1..
		0.60	3.75			E16R0012-1616K-GX16-2	GX16-2..
		3.76	5.00			E16R0012-1616K-GX16-3	GX16-3..
20	20	2.00	2.75			E20R0012-2020K-GX16-1	GX16-1..
		0.60	3.75			E20R0012-2020K-GX16-2	GX16-2..
		3.76	5.00			E20R0012-2020K-GX16-3	GX16-3..
25	25	0.60	3.75			E25R0012-2525M-GX16-2	GX16-2..
		3.76	5.00			E25R0012-2525M-GX16-3	GX16-3..

* ² GH WKDQG

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
12	12	2.00	2.75	12	L	E12L0012-1212K-GX16-1	GX16-1..
		0.60	3.75			E12L0012-1212K-GX16-2	GX16-2..
16	16	2.00	2.75			E16L0012-1616K-GX16-1	GX16-1..
		0.60	3.75			E16L0012-1616K-GX16-2	GX16-2..
		3.76	5.00			E16L0012-1616K-GX16-3	GX16-3..
20	20	2.00	2.75			E20L0012-2020K-GX16-1	GX16-1..
		0.60	3.75			E20L0012-2020K-GX16-2	GX16-2..
		3.76	5.00			E20L0012-2020K-GX16-3	GX16-3..
25	25	0.60	3.75			E25L0012-2525M-GX16-2	GX16-2..
		3.76	5.00			E25L0012-2525M-GX16-3	GX16-3..

* ² ULJKWKDQG



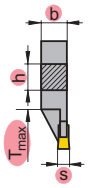
C215 C180-C181

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
16	16	2.00	2.75	21	R	E16R0021-1616K-GX24-1	GX24-1..
		2.76	3.75			E16R0021-1616K-GX24-2	GX24-2..
20	20	2.00	2.75			E20R0021-2020K-GX24-1	GX24-1..
		2.76	3.75			E20R0021-2020K-GX24-2	GX24-2..
		3.76	5.00			E20R0021-2020K-GX24-3	GX24-3..
25	25	2.76	3.75			E25R0021-2525M-GX24-2	GX24-2..
		3.76	5.00			E25R0021-2525M-GX24-3	GX24-3..
		5.01	6.50			E25R0021-2525M-GX24-4	GX24-4..
	32	2.76	3.75			E32R0021-3225P-GX24-2	GX24-2..
		3.76	5.00			E32R0021-3225P-GX24-3	GX24-3..
		5.01	6.50			E32R0021-3225P-GX24-4	GX24-4..

* ² GH WKDQG

b [mm]	h [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
16	16	2.00	2.75	21	L	E16L0021-1616K-GX24-1	GX24-1..
		2.76	3.75			E16L0021-1616K-GX24-2	GX24-2..
20	20	2.00	2.75			E20L0021-2020K-GX24-1	GX24-1..
		2.76	3.75			E20L0021-2020K-GX24-2	GX24-2..
		3.76	5.00			E20L0021-2020K-GX24-3	GX24-3..
25	25	2.76	3.75			E25L0021-2525M-GX24-2	GX24-2..
		3.76	5.00			E25L0021-2525M-GX24-3	GX24-3..
		5.01	6.50			E25L0021-2525M-GX24-4	GX24-4..
	32	2.76	3.75			E32L0021-3225P-GX24-2	GX24-2..
		3.76	5.00			E32L0021-3225P-GX24-3	GX24-3..
		5.01	6.50			E32L0021-3225P-GX24-4	GX24-4..

6 ² ULJKW KDQG



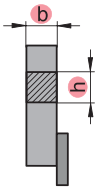
C218 C185

s [mm]	h [mm]	b [mm]	T_{max} [mm]	L R	Type, description	
2.0	16	16	16	R	E16R0016-1616K-SX2	SX2
	20	20			E20R0016-2020K-SX2	SX2
3.0	16	16	20		E16R0020-1616K-SX3	SX3
	20	20			E20R0020-2020K-SX3	SX3
	25	25			E25R0020-2525M-SX3	SX3
4.0	25	25	25		E25R0025-2525M-SX4	SX4
	20	20			E20R0025-2020K-SX4	SX4
5.0	25	25			E25R0025-2525M-SX5	SX5
6.0	25	25	32		E25R0032-2525M-SX6	SX6

6 ² CHI WKDQG

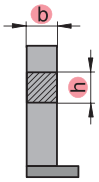
s [mm]	h [mm]	b [mm]	T_{max} [mm]	L R	Type, description	
2.0	16	16	16	L	E16L0016-1616K-SX2	SX2
	20	20			E20L0016-2020K-SX2	SX2
3.0	16	16	20		E16L0020-1616K-SX3	SX3
	20	20			E20L0020-2020K-SX3	SX3
	25	25			E25L0020-2525M-SX3	SX3
4.0	25	25	25		E25L0025-2525M-SX4	SX4
	20	20			E20L0025-2020K-SX4	SX4
5.0	25	25			E25L0025-2525M-SX5	SX5
6.0	25	25	32		E25L0032-2525M-SX6	SX6


hard material matters
CERATIZIT
CERATIZIT
CERATIZIT
3203-SX3
XLCFN 3206-SX6



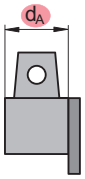
6KDQNV

h / b
12/12 - 32/32



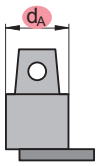
6KDQNV

h / b
20/20 - 32/32



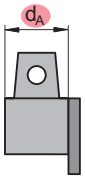
876

d_A = 40 - 63



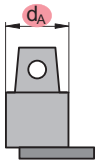
876

d_A = 40 - 63



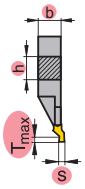
+6.7

d_A = 63 - 100



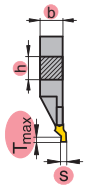
+6.7

d_A = 63 - 100



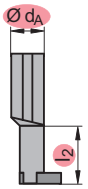
GX09 monobloc tool holders

h / b
10/10
s = 0,6 - 3,25
T_{max} = 0,75 - 7



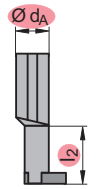
GX16 monobloc tool holders

h / b
12/12 - 25/25
s = 0,6 - 4,25
T_{max} = 0,75 - 12



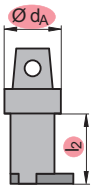
Boring bars 1.5D

d_A = 20 - 40
l_2 = 24 - 60



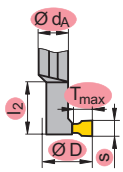
Boring bars 2.5D

d_A = 20 - 50
l_2 = 40 - 100



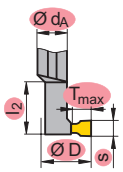
UTS boring bars

d_A = 40 - 63
l_2 = 64 - 80



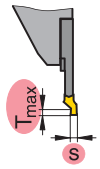
GX09 monobloc boring bars

D = 16,0
l_2 = 30
d_A = 16
s = 0,6 - 3,25
T_{max} = 0,75 - 3,0



GX16 monobloc boring bars

D = 20,5 - 42
l_2 = 32 - 64
d_A = 16 - 32
s = 0,6 - 4,25
T_{max} = 0,75 - 12

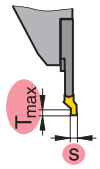


GX09

s = 0,6 - 3,25
T_{max} = 0,75 - 7,0

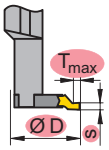
GX16

s = 0,6 - 5,25
T_{max} = 0,75 - 12



GX16

s = 0,6 - 5,25
T_{max} = 0,75 - 12

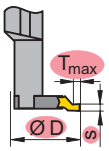


GX09

s = 0,6 - 3,25
T_{max} = 0,75 - 7,0
D = 20 - 32

GX16

s = 0,6 - 5,25
T_{max} = 0,75 - 12
D = 40 - 50



GX09

s = 0,6 - 3,25
T_{max} = 0,75 - 7,0
D = 20 - 32

GX16

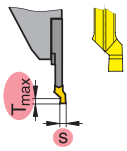
s = 0,6 - 5,25
T_{max} = 0,75 - 12
D = 40 - 50

BGR E12

C196

b [mm]	h [mm]		Type, description	
12	12	R	MSS-E12R00-1212E	■
		L	MSS-E12L00-1212E	●

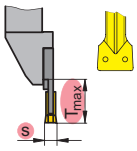
GX09



C203
C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	0.60	0.75	R	MSS-E12R02-GX09-1	GX09-1.. R/L
■	0.80	0.94		MSS-E12R02-GX09-1	GX09-1.. R/L
■	0.90	1.04		MSS-E12R02-GX09-1	GX09-1.. R/L
■	1.00	1.14		MSS-E12R02-GX09-1	GX09-1.. R/L
■	1.20	1.34		MSS-E12R02-GX09-1	GX09-1.. R/L
■	1.40	1.53		MSS-E12R02-GX09-1	GX09-1.. R/L
■	1.70	1.82		MSS-E12R02-GX09-1	GX09-1.. R/L
●	0.60	0.75	L	MSS-E12L02-GX09-1	GX09-1.. R/L
●	0.80	0.94		MSS-E12L02-GX09-1	GX09-1.. R/L
●	0.90	1.04		MSS-E12L02-GX09-1	GX09-1.. R/L
●	1.00	1.14		MSS-E12L02-GX09-1	GX09-1.. R/L
●	1.20	1.34		MSS-E12L02-GX09-1	GX09-1.. R/L
●	1.40	1.53		MSS-E12L02-GX09-1	GX09-1.. R/L
●	1.70	1.82		MSS-E12L02-GX09-1	GX09-1.. R/L

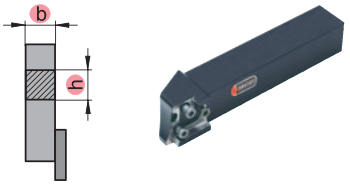
GX09



C200
C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	1.95	7.00	R	MSS-E12R07-GX09-1	GX09-1..
■	2.25			MSS-E12R07-GX09-1	GX09-1..
■	2.75			MSS-E12R07-GX09-2	GX09-2..
■	3.25			MSS-E12R07-GX09-2	GX09-2..
●	1.95		L	MSS-E12L07-GX09-1	GX09-1..
●	2.25			MSS-E12L07-GX09-1	GX09-1..
●	2.75			MSS-E12L07-GX09-2	GX09-2..
●	3.25			MSS-E12L07-GX09-2	GX09-2..

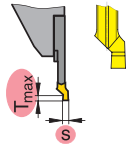
BGR E16



C196

b [mm]	h [mm]		Type, description	
16	16	R	MSS-E16R00-1616G	■
		L	MSS-E16L00-1616G	●

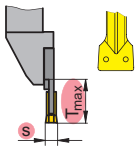
GX09



C203
C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	0.60	0.75	R	MSS-E16R02-GX09-1	GX09-1.. R/L
■	0.80	0.94		MSS-E16R02-GX09-1	GX09-1.. R/L
■	0.90	1.04		MSS-E16R02-GX09-1	GX09-1.. R/L
■	1.00	1.14		MSS-E16R02-GX09-1	GX09-1.. R/L
■	1.20	1.34		MSS-E16R02-GX09-1	GX09-1.. R/L
■	1.40	1.53		MSS-E16R02-GX09-1	GX09-1.. R/L
■	1.70	1.82		MSS-E16R02-GX09-1	GX09-1.. R/L
●	0.60	0.75	L	MSS-E16L02-GX09-1	GX09-1.. R/L
●	0.80	0.94		MSS-E16L02-GX09-1	GX09-1.. R/L
●	0.90	1.04		MSS-E16L02-GX09-1	GX09-1.. R/L
●	1.00	1.14		MSS-E16L02-GX09-1	GX09-1.. R/L
●	1.20	1.34		MSS-E16L02-GX09-1	GX09-1.. R/L
●	1.40	1.53		MSS-E16L02-GX09-1	GX09-1.. R/L
●	1.70	1.82		MSS-E16L02-GX09-1	GX09-1.. R/L

GX09



C200
C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	1.95	7.00	R	MSS-E16R07-GX09-1	GX09-1..
■	2.25			MSS-E16R07-GX09-1	GX09-1..
■	2.75			MSS-E16R07-GX09-2	GX09-2..
■	3.25			MSS-E16R07-GX09-2	GX09-2..
●	1.95		L	MSS-E16L07-GX09-1	GX09-1..
●	2.25			MSS-E16L07-GX09-1	GX09-1..
●	2.75			MSS-E16L07-GX09-2	GX09-2..
●	3.25			MSS-E16L07-GX09-2	GX09-2..

BGR E20

C196

b [mm]	h [mm]		Type, description	
20	16	R	MSS-E20R00-1620G	■
	20		MSS-E20R00-2020J	■
	16	L	MSS-E20L00-1620G	●
	20		MSS-E20L00-2020J	●

C197

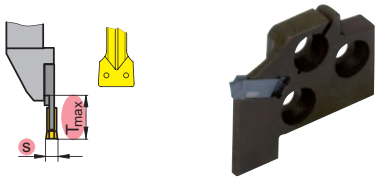
b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R90-2020J	●
		L	MSS-E20L90-2020J	■

GX16

C204
C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	0.60	0.75	R	MSS-E20R03-GX16-2	GX16-2.. R/L
■	0.80	0.94		MSS-E20R03-GX16-2	GX16-2.. R/L
■	0.90	1.04		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.00	1.14		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.20	1.34		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.40	1.53		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.70	1.82		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.95	2.07		MSS-E20R03-GX16-2	GX16-2.. R/L
■	2.25	2.36		MSS-E20R03-GX16-2	GX16-2.. R/L
●	0.60	0.75	L	MSS-E20L03-GX16-2	GX16-2.. R/L
●	0.80	0.94		MSS-E20L03-GX16-2	GX16-2.. R/L
●	0.90	1.04		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.00	1.14		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.20	1.34		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.40	1.53		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.70	1.82		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.95	2.07		MSS-E20L03-GX16-2	GX16-2.. R/L
●	2.25	2.36		MSS-E20L03-GX16-2	GX16-2.. R/L

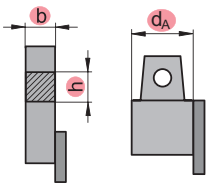
GX16



C201
C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	2.75	12.00	R	MSS-E20R12-GX16-2	GX16-2..
■	3.25			MSS-E20R12-GX16-2	GX16-2..
■	4.25			MSS-E20R12-GX16-3	GX16-3..
●	2.75		L	MSS-E20L12-GX16-2	GX16-2..
●	3.25			MSS-E20L12-GX16-2	GX16-2..
●	4.25			MSS-E20L12-GX16-3	GX16-3..

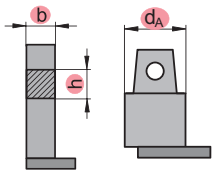
BGR E25



C196

C246

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●

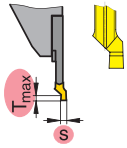


C197

C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

GX16

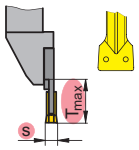


C204

C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	0.60	0.75	R	MSS-E25R03-GX16-2	GX16-2.. R/L
■	0.80	0.94		MSS-E25R03-GX16-2	GX16-2.. R/L
■	0.90	1.04		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.00	1.14		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.20	1.34		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.40	1.53		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.70	1.82		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.95	2.07		MSS-E25R03-GX16-2	GX16-2.. R/L
■	2.25	2.36		MSS-E25R03-GX16-2	GX16-2.. R/L
●	0.60	0.75	L	MSS-E25L03-GX16-2	GX16-2.. R/L
●	0.80	0.94		MSS-E25L03-GX16-2	GX16-2.. R/L
●	0.90	1.04		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.00	1.14		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.20	1.34		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.40	1.53		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.70	1.82		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.95	2.07		MSS-E25L03-GX16-2	GX16-2.. R/L
●	2.25	2.36		MSS-E25L03-GX16-2	GX16-2.. R/L

GX16

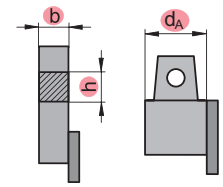


C201

C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	2.75	12.00	R	MSS-E25R12-GX16-2	GX16-2..
■	3.25			MSS-E25R12-GX16-2	GX16-2..
■	4.25			MSS-E25R12-GX16-3	GX16-3..
■	5.25			MSS-E25R12-GX16-4	GX16-4..
●	2.75		L	MSS-E25L12-GX16-2	GX16-2..
●	3.25			MSS-E25L12-GX16-2	GX16-2..
●	4.25			MSS-E25L12-GX16-3	GX16-3..
●	5.25			MSS-E25L12-GX16-4	GX16-4..

BGR E32



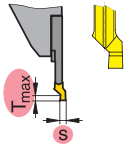
C196 C246+C250

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R00-3225N	■
32	32			MSS-E32R00-3232Q	■
		50		UT50-MSS-E32R00	■
		63		UT63-MSS-E32R00	■
		63		HSK-T63-MSS-E32R00	■
		100		HSK-T100-MSS-E32R00	■
25	32		L	MSS-E32L00-3225N	●
32	32			MSS-E32L00-3232Q	●
		50		UT50-MSS-E32L00	●
		63		UT63-MSS-E32L00	●
		63		HSK-T63-MSS-E32L00	●
		100		HSK-T100-MSS-E32L00	●

C197 C247+C251

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R90-3225N	●
32	32			MSS-E32R90-3232R	●
		63		UT63-MSS-E32R90	●
		63		HSK-T63-MSS-E32R90	●
		100		HSK-T100-MSS-E32R90	●
25	32		L	MSS-E32L90-3225N	■
32	32			MSS-E32L90-3232R	■
		63		UT63-MSS-E32L90	■
		63		HSK-T63-MSS-E32L90	■
		100		HSK-T100-MSS-E32L90	■

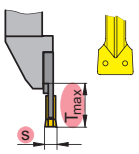
GX16



C204
C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	0.60	0.75	R	MSS-E32R03-GX16-2	GX16-2.. R/L
■	0.80	0.94		MSS-E32R03-GX16-2	GX16-2.. R/L
■	0.90	1.04		MSS-E32R03-GX16-2	GX16-2.. R/L
■	1.00	1.14		MSS-E32R03-GX16-2	GX16-2.. R/L
■	1.20	1.34		MSS-E32R03-GX16-2	GX16-2.. R/L
■	1.40	1.53		MSS-E32R03-GX16-2	GX16-2.. R/L
■	1.70	1.82		MSS-E32R03-GX16-2	GX16-2.. R/L
■	1.95	2.07		MSS-E32R03-GX16-2	GX16-2.. R/L
■	2.25	2.36		MSS-E32R03-GX16-2	GX16-2.. R/L
●	0.60	0.75	L	MSS-E32L03-GX16-2	GX16-2.. R/L
●	0.80	0.94		MSS-E32L03-GX16-2	GX16-2.. R/L
●	0.90	1.04		MSS-E32L03-GX16-2	GX16-2.. R/L
●	1.00	1.14		MSS-E32L03-GX16-2	GX16-2.. R/L
●	1.20	1.34		MSS-E32L03-GX16-2	GX16-2.. R/L
●	1.40	1.53		MSS-E32L03-GX16-2	GX16-2.. R/L
●	1.70	1.82		MSS-E32L03-GX16-2	GX16-2.. R/L
●	1.95	2.07		MSS-E32L03-GX16-2	GX16-2.. R/L
●	2.25	2.36		MSS-E32L03-GX16-2	GX16-2.. R/L

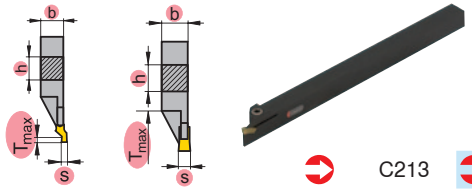
GX16



C201
C182

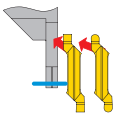
	s [mm]	T_{max} [mm]	L R	Type, description	
■	2.75	12.00	R	MSS-E32R12-GX16-2	GX16-2..
■	3.25			MSS-E32R12-GX16-2	GX16-2..
■	4.25			MSS-E32R12-GX16-3	GX16-3..
■	5.25			MSS-E32R12-GX16-4	GX16-4..
●	2.75		L	MSS-E32L12-GX16-2	GX16-2..
●	3.25			MSS-E32L12-GX16-2	GX16-2..
●	4.25			MSS-E32L12-GX16-3	GX16-3..
●	5.25			MSS-E32L12-GX16-4	GX16-4..

* 2 UJKWKDQG



C213 C182

b [mm]	h [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
10	10	0.60	0.75	R	E10R00-1010M-GX09	GX09..
		0.80	0.94		E10R00-1010M-GX09	GX09..
		0.90	1.04		E10R00-1010M-GX09	GX09..
		1.00	1.14		E10R00-1010M-GX09	GX09..
		1.20	1.34		E10R00-1010M-GX09	GX09..
		1.40	1.53		E10R00-1010M-GX09	GX09..
		1.70	1.82		E10R00-1010M-GX09	GX09..
		1.95	7.00		E10R00-1010M-GX09	GX09..
		2.25	7.00		E10R00-1010M-GX09	GX09..
		2.75	7.00		E10R00-1010M-GX09	GX09..
		3.25	7.00		E10R00-1010M-GX09	GX09..
		0.60	0.75	L	E10L00-1010M-GX09	GX09..
		0.80	0.94		E10L00-1010M-GX09	GX09..
		0.90	1.04		E10L00-1010M-GX09	GX09..
		1.00	1.14		E10L00-1010M-GX09	GX09..
		1.20	1.34		E10L00-1010M-GX09	GX09..
		1.40	1.53		E10L00-1010M-GX09	GX09..
		1.70	1.82		E10L00-1010M-GX09	GX09..
		1.95	7.00		E10L00-1010M-GX09	GX09..
		2.25	7.00		E10L00-1010M-GX09	GX09..
		2.75	7.00		E10L00-1010M-GX09	GX09..
		3.25	7.00		E10L00-1010M-GX09	GX09..



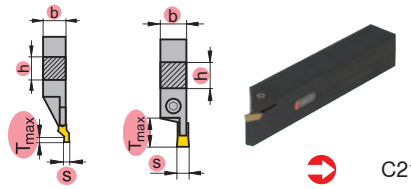
Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

CERATIZIT hard material matters

&LLFOS JURRYLQJ ²H[WHUQDO

0 RQRE OFWVRRV ²* ;

* ²ULJKWKDQG

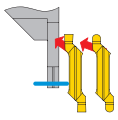


C214 C182

b [mm]	h [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
12	12	0.60	0.75		E12R0012-1212K-GX16-2	GX16-2..
		0.80	0.94		E12R0012-1212K-GX16-2	GX16-2..
		0.90	1.04		E12R0012-1212K-GX16-2	GX16-2..
		1.00	1.14		E12R0012-1212K-GX16-2	GX16-2..
		1.20	1.34		E12R0012-1212K-GX16-2	GX16-2..
		2.75	12.00		E12R0012-1212K-GX16-2	GX16-2..
		1.40	1.53		E12R0012-1212K-GX16-2	GX16-2..
		1.70	1.82		E12R0012-1212K-GX16-2	GX16-2..
		1.95	2.07		E12R0012-1212K-GX16-2	GX16-2..
		2.25	2.36		E12R0012-1212K-GX16-2	GX16-2..
		3.25	12.00		E12R0012-1212K-GX16-2	GX16-2..
16	16	0.60	0.75		E16R0012-1616K-GX16-2	GX16-2..
		0.80	0.94		E16R0012-1616K-GX16-2	GX16-2..
		0.90	1.04		E16R0012-1616K-GX16-2	GX16-2..
		1.00	1.14		E16R0012-1616K-GX16-2	GX16-2..
		1.20	1.34		E16R0012-1616K-GX16-2	GX16-2..
		1.40	1.53		E16R0012-1616K-GX16-2	GX16-2..
		1.70	1.82		E16R0012-1616K-GX16-2	GX16-2..
		1.95	2.07		E16R0012-1616K-GX16-2	GX16-2..
		2.25	2.36		E16R0012-1616K-GX16-2	GX16-2..
		2.75	12.00		E16R0012-1616K-GX16-2	GX16-2..
		3.25	12.00		E16R0012-1616K-GX16-2	GX16-2..
		4.25	12.00		E16R0012-1616K-GX16-3	GX16-3..
20	20	0.60	0.75	R	E20R0012-2020K-GX16-2	GX16-2..
		0.80	0.94		E20R0012-2020K-GX16-2	GX16-2..
		0.90	1.04		E20R0012-2020K-GX16-2	GX16-2..
		1.00	1.14		E20R0012-2020K-GX16-2	GX16-2..
		1.20	1.34		E20R0012-2020K-GX16-2	GX16-2..
		1.40	1.53		E20R0012-2020K-GX16-2	GX16-2..
		1.70	1.82		E20R0012-2020K-GX16-2	GX16-2..
		1.95	2.07		E20R0012-2020K-GX16-2	GX16-2..
		2.25	2.36		E20R0012-2020K-GX16-2	GX16-2..
		2.75	12.00		E20R0012-2020K-GX16-2	GX16-2..
		3.25	12.00		E20R0012-2020K-GX16-2	GX16-2..
		4.25	12.00		E20R0012-2020K-GX16-3	GX16-3..
25	25	0.60	0.75		E25R0012-2525M-GX16-2	GX16-2..
		0.80	0.94		E25R0012-2525M-GX16-2	GX16-2..
		0.90	1.04		E25R0012-2525M-GX16-2	GX16-2..
		1.00	1.14		E25R0012-2525M-GX16-2	GX16-2..
		1.20	1.34		E25R0012-2525M-GX16-2	GX16-2..
		1.40	1.53		E25R0012-2525M-GX16-2	GX16-2..
		1.70	1.82		E25R0012-2525M-GX16-2	GX16-2..
		1.95	2.07		E25R0012-2525M-GX16-2	GX16-2..
		2.25	2.36		E25R0012-2525M-GX16-2	GX16-2..
		2.75	12.00		E25R0012-2525M-GX16-2	GX16-2..
		3.25	12.00		E25R0012-2525M-GX16-2	GX16-2..
		4.25	12.00		E25R0012-2525M-GX16-3	GX16-3..

* ²GHWWKDQG

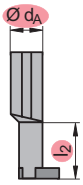
b [mm]	h [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
12	12	0.60	0.75		E12L0012-1212K-GX16-2	GX16-2..
		0.80	0.94		E12L0012-1212K-GX16-2	GX16-2..
		0.90	1.04		E12L0012-1212K-GX16-2	GX16-2..
		1.00	1.14		E12L0012-1212K-GX16-2	GX16-2..
		1.20	1.34		E12L0012-1212K-GX16-2	GX16-2..
		1.40	1.53		E12L0012-1212K-GX16-2	GX16-2..
		1.70	1.82		E12L0012-1212K-GX16-2	GX16-2..
		1.95	2.07		E12L0012-1212K-GX16-2	GX16-2..
		2.25	2.36		E12L0012-1212K-GX16-2	GX16-2..
		2.75	12.00		E12L0012-1212K-GX16-2	GX16-2..
		3.25	12.00		E12L0012-1212K-GX16-2	GX16-2..
16	16	0.60	0.75		E16L0012-1616K-GX16-2	GX16-2..
		0.80	0.94		E16L0012-1616K-GX16-2	GX16-2..
		0.90	1.04		E16L0012-1616K-GX16-2	GX16-2..
		1.00	1.14		E16L0012-1616K-GX16-2	GX16-2..
		1.20	1.34		E16L0012-1616K-GX16-2	GX16-2..
		1.40	1.53		E16L0012-1616K-GX16-2	GX16-2..
		1.70	1.82		E16L0012-1616K-GX16-2	GX16-2..
		1.95	2.07		E16L0012-1616K-GX16-2	GX16-2..
		2.25	2.36		E16L0012-1616K-GX16-2	GX16-2..
		2.75	12.00		E16L0012-1616K-GX16-2	GX16-2..
		3.25	12.00		E16L0012-1616K-GX16-2	GX16-2..
		4.25	12.00		E16L0012-1616K-GX16-3	GX16-3..
20	20	0.60	0.75	L	E20L0012-2020K-GX16-2	GX16-2..
		0.80	0.94		E20L0012-2020K-GX16-2	GX16-2..
		0.90	1.04		E20L0012-2020K-GX16-2	GX16-2..
		1.00	1.14		E20L0012-2020K-GX16-2	GX16-2..
		1.20	1.34		E20L0012-2020K-GX16-2	GX16-2..
		1.40	1.53		E20L0012-2020K-GX16-2	GX16-2..
		1.70	1.82		E20L0012-2020K-GX16-2	GX16-2..
		1.95	2.07		E20L0012-2020K-GX16-2	GX16-2..
		2.25	2.36		E20L0012-2020K-GX16-2	GX16-2..
		2.75	12.00		E20L0012-2020K-GX16-2	GX16-2..
		3.25	12.00		E20L0012-2020K-GX16-2	GX16-2..
		4.25	12.00		E20L0012-2020K-GX16-3	GX16-3..
25	25	0.60	0.75		E25L0012-2525M-GX16-2	GX16-2..
		0.80	0.94		E25L0012-2525M-GX16-2	GX16-2..
		0.90	1.04		E25L0012-2525M-GX16-2	GX16-2..
		1.00	1.14		E25L0012-2525M-GX16-2	GX16-2..
		1.20	1.34		E25L0012-2525M-GX16-2	GX16-2..
		1.40	1.53		E25L0012-2525M-GX16-2	GX16-2..
		1.70	1.82		E25L0012-2525M-GX16-2	GX16-2..
		1.95	2.07		E25L0012-2525M-GX16-2	GX16-2..
		2.25	2.36		E25L0012-2525M-GX16-2	GX16-2..
		2.75	12.00		E25L0012-2525M-GX16-2	GX16-2..
		3.25	12.00		E25L0012-2525M-GX16-2	GX16-2..
		4.25	12.00		E25L0012-2525M-GX16-3	GX16-3..



Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

BGR I16

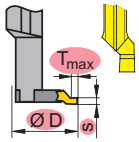
GX09



C231-C232

l_2 [mm]	d_A [mm]		Type, description	
24	20	R	MSS-I16R90-1.5D-N	●
40	20		MSS-I16R90-2.5D-N	●
24	20	L	MSS-I16L90-1.5D-N	■
40	20		MSS-I16L90-2.5D-N	■

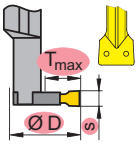
GX09



C235
C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	20	0.60	0.75	R	MSS-I16R02-GX09-1	GX09-1.. R/L
■		0.80	0.94		MSS-I16R02-GX09-1	GX09-1.. R/L
■		0.90	1.04		MSS-I16R02-GX09-1	GX09-1.. R/L
■		1.00	1.14		MSS-I16R02-GX09-1	GX09-1.. R/L
■		1.20	1.34		MSS-I16R02-GX09-1	GX09-1.. R/L
■		1.40	1.53		MSS-I16R02-GX09-1	GX09-1.. R/L
■		1.70	1.82		MSS-I16R02-GX09-1	GX09-1.. R/L
●		0.60	0.75	L	MSS-I16L02-GX09-1	GX09-1.. R/L
●		0.80	0.94		MSS-I16L02-GX09-1	GX09-1.. R/L
●		0.90	1.04		MSS-I16L02-GX09-1	GX09-1.. R/L
●		1.00	1.14		MSS-I16L02-GX09-1	GX09-1.. R/L
●		1.20	1.34		MSS-I16L02-GX09-1	GX09-1.. R/L
●		1.40	1.53		MSS-I16L02-GX09-1	GX09-1.. R/L
●		1.70	1.82		MSS-I16L02-GX09-1	GX09-1.. R/L

GX09



C233
C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	20	1.95	7.00	R	MSS-I16R04-GX09-1	GX09-1..
■		2.25			MSS-I16R04-GX09-1	GX09-1..
■		2.75			MSS-I16R04-GX09-2	GX09-2..
■		3.25			MSS-I16R04-GX09-2	GX09-2..
●		1.95		L	MSS-I16L04-GX09-1	GX09-1..
●		2.25			MSS-I16L04-GX09-1	GX09-1..
●		2.75			MSS-I16L04-GX09-2	GX09-2..
●		3.25			MSS-I16L04-GX09-2	GX09-2..

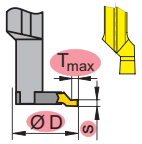
BGR I20

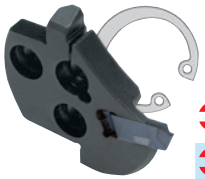
GX09

C231-C232

l_2 [mm]	d_A [mm]		Type, description	
30	20	R	MSS-I20R90-1.5D-N	●
50	25		MSS-I20R90-2.5D-N	●
30	20	L	MSS-I20L90-1.5D-N	■
50	25		MSS-I20L90-2.5D-N	■

GX09

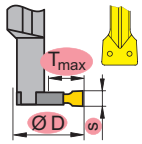




C235
C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	25	0.60	0.75	R	MSS-I20R02-GX09-1	GX09-1.. R/L
■		0.80	0.94		MSS-I20R02-GX09-1	GX09-1.. R/L
■		0.90	1.04		MSS-I20R02-GX09-1	GX09-1.. R/L
■		1.00	1.14		MSS-I20R02-GX09-1	GX09-1.. R/L
■		1.20	1.34		MSS-I20R02-GX09-1	GX09-1.. R/L
■		1.40	1.53		MSS-I20R02-GX09-1	GX09-1.. R/L
■		1.70	1.82		MSS-I20R02-GX09-1	GX09-1.. R/L
●		0.60	0.75	L	MSS-I20L02-GX09-1	GX09-1.. R/L
●		0.80	0.94		MSS-I20L02-GX09-1	GX09-1.. R/L
●		0.90	1.04		MSS-I20L02-GX09-1	GX09-1.. R/L
●		1.00	1.14		MSS-I20L02-GX09-1	GX09-1.. R/L
●		1.20	1.34		MSS-I20L02-GX09-1	GX09-1.. R/L
●		1.40	1.53		MSS-I20L02-GX09-1	GX09-1.. R/L
●		1.70	1.82		MSS-I20L02-GX09-1	GX09-1.. R/L

GX09

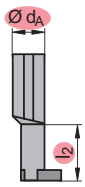


C233
C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	25	1.95	7.00	R	MSS-I20R05-GX09-1	GX09-1..
■		2.25			MSS-I20R05-GX09-1	GX09-1..
■		2.75			MSS-I20R05-GX09-2	GX09-2..
■		3.25			MSS-I20R05-GX09-2	GX09-2..
●		1.95		L	MSS-I20L05-GX09-1	GX09-1..
●		2.25			MSS-I20L05-GX09-1	GX09-1..
●		2.75			MSS-I20L05-GX09-2	GX09-2..
●		3.25			MSS-I20L05-GX09-2	GX09-2..

BGR I25

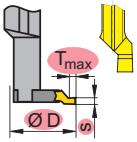
GX09



C231-C232

l_2 [mm]	d_A [mm]		Type, description	
38	25	R	MSS-I25R90-1.5D-N	●
63	32		MSS-I25R90-2.5D-N	●
38	25	L	MSS-I25L90-1.5D-N	■
63	32		MSS-I25L90-2.5D-N	■

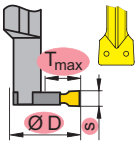
GX09



C235
C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	32	0.60	0.75	R	MSS-I25R02-GX09-1	GX09-1.. R/L
■		0.80	0.94		MSS-I25R02-GX09-1	GX09-1.. R/L
■		0.90	1.04		MSS-I25R02-GX09-1	GX09-1.. R/L
■		1.00	1.14		MSS-I25R02-GX09-1	GX09-1.. R/L
■		1.20	1.34		MSS-I25R02-GX09-1	GX09-1.. R/L
■		1.40	1.53		MSS-I25R02-GX09-1	GX09-1.. R/L
■		1.70	1.82		MSS-I25R02-GX09-1	GX09-1.. R/L
●		0.60	0.75	L	MSS-I25L02-GX09-1	GX09-1.. R/L
●		0.80	0.94		MSS-I25L02-GX09-1	GX09-1.. R/L
●		0.90	1.04		MSS-I25L02-GX09-1	GX09-1.. R/L
●		1.00	1.14		MSS-I25L02-GX09-1	GX09-1.. R/L
●		1.20	1.34		MSS-I25L02-GX09-1	GX09-1.. R/L
●		1.40	1.53		MSS-I25L02-GX09-1	GX09-1.. R/L
●		1.70	1.82		MSS-I25L02-GX09-1	GX09-1.. R/L

GX09

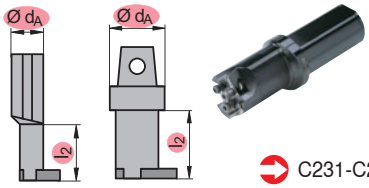


C233
C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	32	1.95	7.00	R	MSS-I25R06-GX09-1	GX09-1..
■		2.25			MSS-I25R06-GX09-1	GX09-1..
■		2.75			MSS-I25R06-GX09-2	GX09-2..
■		3.25			MSS-I25R06-GX09-2	GX09-2..
●		1.95		L	MSS-I25L06-GX09-1	GX09-1..
●		2.25			MSS-I25L06-GX09-1	GX09-1..
●		2.75			MSS-I25L06-GX09-2	GX09-2..
●		3.25			MSS-I25L06-GX09-2	GX09-2..

BGR I32

* 2 ULJKWKDQG



C231-C232

C249

l_2 [mm]	d_A [mm]		Type, description	
48	32	R	MSS-I32R90-1.5D-N	●
80	40	R	MSS-I32R90-2.5D-N	●
64	40	R	UT40-MSS-I32R90-2D	●

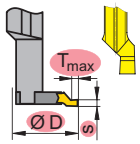
* 2 GH WKDQG

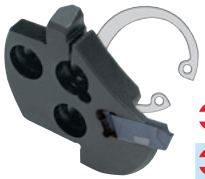
l_2 [mm]	d_A [mm]		Type, description	
48	32	L	MSS-I32L90-1.5D-N	■
80	40	L	MSS-I32L90-2.5D-N	■
64	50	L	UT50-MSS-I32L90-2D	■

Application

Tools and inserts for parting and grooving

GX16



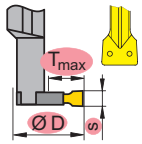


C236

C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	40	0.60	0.75	R	MSS-I32R03-GX16-2	GX16-2.. R/L
■		0.80	0.94		MSS-I32R03-GX16-2	GX16-2.. R/L
■		0.90	1.04		MSS-I32R03-GX16-2	GX16-2.. R/L
■		1.00	1.14		MSS-I32R03-GX16-2	GX16-2.. R/L
■		1.20	1.34		MSS-I32R03-GX16-2	GX16-2.. R/L
■		1.40	1.53		MSS-I32R03-GX16-2	GX16-2.. R/L
■		1.70	1.82		MSS-I32R03-GX16-2	GX16-2.. R/L
■		1.95	2.07		MSS-I32R03-GX16-2	GX16-2.. R/L
■		2.25	2.36		MSS-I32R03-GX16-2	GX16-2.. R/L
●		0.60	0.75	L	MSS-I32L03-GX16-2	GX16-2.. R/L
●		0.80	0.94		MSS-I32L03-GX16-2	GX16-2.. R/L
●		0.90	1.04		MSS-I32L03-GX16-2	GX16-2.. R/L
●		1.00	1.14		MSS-I32L03-GX16-2	GX16-2.. R/L
●		1.20	1.34		MSS-I32L03-GX16-2	GX16-2.. R/L
●		1.40	1.53		MSS-I32L03-GX16-2	GX16-2.. R/L
●		1.70	1.82		MSS-I32L03-GX16-2	GX16-2.. R/L
●		1.95	2.07		MSS-I32L03-GX16-2	GX16-2.. R/L
●		2.25	2.36		MSS-I32L03-GX16-2	GX16-2.. R/L

GX16



C234

C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	40	2.75	12.00	R	MSS-I32R09-GX16-2	GX16-2..
■		3.25			MSS-I32R09-GX16-2	GX16-2..
■		4.25			MSS-I32R09-GX16-3	GX16-3..
■		5.25			MSS-I32R09-GX16-4	GX16-4..
●		2.75		L	MSS-I32L09-GX16-2	GX16-2..
●		3.25			MSS-I32L09-GX16-2	GX16-2..
●		4.25			MSS-I32L09-GX16-3	GX16-3..
●		5.25			MSS-I32L09-GX16-4	GX16-4..

BGR I40

* ² ULJKWKDQG

C231-C232 C249

l_2 [mm]	d_A [mm]		Type, description	
60	40	R	MSS-I40R90-1.5D-N	●
100	50	R	MSS-I40R90-2.5D-N	●
80	40	R	UT40-MSS-I40R90-2D	●
80	63	R	UT63-MSS-I40R90-2D	●

* ² GH WKDQG

l_2 [mm]	d_A [mm]		Type, description	
60	40	L	MSS-I40L90-1.5D-N	■
100	50	L	MSS-I40L90-2.5D-N	■
80	40	L	UT40-MSS-I40L90-2D	■

GX16

C236
C182

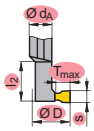
	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	50	0.60	0.75	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■		0.80	0.94	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■		0.90	1.04	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■		1.00	1.14	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■		1.20	1.34	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■		1.40	1.53	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■		1.70	1.82	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■		1.95	2.07	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■		2.25	2.36	R	MSS-I40R03-GX16-2	GX16-2.. R/L
●		0.60	0.75	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●		0.80	0.94	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●		0.90	1.04	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●		1.00	1.14	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●		1.20	1.34	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●		1.40	1.53	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●		1.70	1.82	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●		1.95	2.07	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●		2.25	2.36	L	MSS-I40L03-GX16-2	GX16-2.. R/L

GX16

C234
C182

	D_{min} [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
■	50	2.75	12.00	R	MSS-I40R10-GX16-2	GX16-2..
■		3.25		R	MSS-I40R10-GX16-2	GX16-2..
■		4.25		R	MSS-I40R10-GX16-3	GX16-3..
■		5.25		R	MSS-I40R10-GX16-4	GX16-4..
●		2.75		L	MSS-I40L10-GX16-2	GX16-2..
●		3.25		L	MSS-I40L10-GX16-2	GX16-2..
●		4.25		L	MSS-I40L10-GX16-3	GX16-3..
●		5.25		L	MSS-I40L10-GX16-4	GX16-4..

* ULJKW-HAND

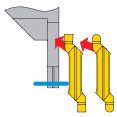


C237 C182

d_A [mm]	l_2 [mm]	D [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
16	30	16	0.60	3	R	I12R90-2.5D-GX09	GX09..
			0.80			I12R90-2.5D-GX09	GX09..
			0.90			I12R90-2.5D-GX09	GX09..
			1.00			I12R90-2.5D-GX09	GX09..
			1.20			I12R90-2.5D-GX09	GX09..
			1.40			I12R90-2.5D-GX09	GX09..
			1.70			I12R90-2.5D-GX09	GX09..
			1.95			I12R90-2.5D-GX09	GX09..
			2.25			I12R90-2.5D-GX09	GX09..
			2.75			I12R90-2.5D-GX09	GX09..
			3.25			I12R90-2.5D-GX09	GX09..

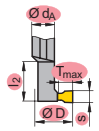
* LEFT-HAND

d_A [mm]	l_2 [mm]	D [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
16	30	16	0.60	3	L	I12L90-2.5D-GX09	GX09..
			0.80			I12L90-2.5D-GX09	GX09..
			0.90			I12L90-2.5D-GX09	GX09..
			1.00			I12L90-2.5D-GX09	GX09..
			1.20			I12L90-2.5D-GX09	GX09..
			1.40			I12L90-2.5D-GX09	GX09..
			1.70			I12L90-2.5D-GX09	GX09..
			1.95			I12L90-2.5D-GX09	GX09..
			2.25			I12L90-2.5D-GX09	GX09..
			2.75			I12L90-2.5D-GX09	GX09..
			3.25			I12L90-2.5D-GX09	GX09..



Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

* ULJKWKDQG

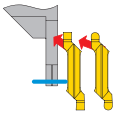


C238 C182

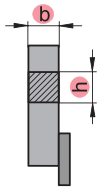
d_A [mm]	l_2 [mm]	D [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
16	32	20.5	0.60	0.75	R	I16R90-2.0D-GX16-2	GX16-2..
			0.80	0.94		I16R90-2.0D-GX16-2	GX16-2..
			0.90	1.04		I16R90-2.0D-GX16-2	GX16-2..
			1.00	1.14		I16R90-2.0D-GX16-2	GX16-2..
			1.20	1.34		I16R90-2.0D-GX16-2	GX16-2..
			1.40	1.53		I16R90-2.0D-GX16-2	GX16-2..
			1.70	1.82		I16R90-2.0D-GX16-2	GX16-2..
			1.95	2.07		I16R90-2.0D-GX16-2	GX16-2..
			2.25	2.36		I16R90-2.0D-GX16-2	GX16-2..
			2.75	12.00		I16R90-2.0D-GX16-2	GX16-2..
			3.25	12.00		I16R90-2.0D-GX16-2	GX16-2..
20	40	25.0	0.60	0.75		I20R90-2.0D-GX16-2	GX16-2..
			0.80	0.94		I20R90-2.0D-GX16-2	GX16-2..
			0.90	1.04		I20R90-2.0D-GX16-2	GX16-2..
			1.00	1.14		I20R90-2.0D-GX16-2	GX16-2..
			1.20	1.34		I20R90-2.0D-GX16-2	GX16-2..
			1.40	1.53		I20R90-2.0D-GX16-2	GX16-2..
			1.70	1.82		I20R90-2.0D-GX16-2	GX16-2..
			1.95	2.07		I20R90-2.0D-GX16-2	GX16-2..
			2.25	2.36		I20R90-2.0D-GX16-2	GX16-2..
			2.75	12.00		I20R90-2.0D-GX16-2	GX16-2..
			3.25	12.00		I20R90-2.0D-GX16-2	GX16-2..
25	50	32.0	0.60	0.75		I25R90-2.0D-GX16-2	GX16-2..
			0.80	0.94		I25R90-2.0D-GX16-2	GX16-2..
			0.90	1.04		I25R90-2.0D-GX16-2	GX16-2..
			1.00	1.14		I25R90-2.0D-GX16-2	GX16-2..
			1.20	1.34		I25R90-2.0D-GX16-2	GX16-2..
			1.40	1.53		I25R90-2.0D-GX16-2	GX16-2..
			1.70	1.82		I25R90-2.0D-GX16-2	GX16-2..
			1.95	2.07		I25R90-2.0D-GX16-2	GX16-2..
			2.25	2.36		I25R90-2.0D-GX16-2	GX16-2..
			2.75	12.00		I25R90-2.0D-GX16-2	GX16-2..
			3.25	12.00		I25R90-2.0D-GX16-2	GX16-2..
			4.25	12.00		I25R90-2.0D-GX16-3	GX16-3..
32	64	42.0	0.60	0.75		I32R90-2.0D-GX16-2	GX16-2..
			0.80	0.94		I32R90-2.0D-GX16-2	GX16-2..
			0.90	1.04		I32R90-2.0D-GX16-2	GX16-2..
			1.00	1.14		I32R90-2.0D-GX16-2	GX16-2..
			1.20	1.34		I32R90-2.0D-GX16-2	GX16-2..
			1.40	1.53		I32R90-2.0D-GX16-2	GX16-2..
			1.70	1.82		I32R90-2.0D-GX16-2	GX16-2..
			1.95	2.07		I32R90-2.0D-GX16-2	GX16-2..
			2.25	2.36		I32R90-2.0D-GX16-2	GX16-2..
			2.75	12.00		I32R90-2.0D-GX16-2	GX16-2..
			3.25	12.00		I32R90-2.0D-GX16-2	GX16-2..
			4.25	12.00		I32R90-2.0D-GX16-3	GX16-3..

* GH WKDQG

d_A [mm]	l_2 [mm]	D [mm]	s [mm]	T_{max} [mm]	L R	Type, description	
16	32	20.5	0.60	0.75	L	I16L90-2.0D-GX16-2	GX16-2..
			0.80	0.94		I16L90-2.0D-GX16-2	GX16-2..
			0.90	1.04		I16L90-2.0D-GX16-2	GX16-2..
			1.00	1.14		I16L90-2.0D-GX16-2	GX16-2..
			1.20	1.34		I16L90-2.0D-GX16-2	GX16-2..
			1.40	1.53		I16L90-2.0D-GX16-2	GX16-2..
			1.70	1.82		I16L90-2.0D-GX16-2	GX16-2..
			1.95	2.07		I16L90-2.0D-GX16-2	GX16-2..
			2.25	2.36		I16L90-2.0D-GX16-2	GX16-2..
			2.75	12.00		I16L90-2.0D-GX16-2	GX16-2..
			3.25	12.00		I16L90-2.0D-GX16-2	GX16-2..
20	40	25.0	0.60	0.75		I20L90-2.0D-GX16-2	GX16-2..
			0.80	0.94		I20L90-2.0D-GX16-2	GX16-2..
			0.90	1.04		I20L90-2.0D-GX16-2	GX16-2..
			1.00	1.14		I20L90-2.0D-GX16-2	GX16-2..
			1.20	1.34		I20L90-2.0D-GX16-2	GX16-2..
			1.40	1.53		I20L90-2.0D-GX16-2	GX16-2..
			1.70	1.82		I20L90-2.0D-GX16-2	GX16-2..
			1.95	2.07		I20L90-2.0D-GX16-2	GX16-2..
			2.25	2.36		I20L90-2.0D-GX16-2	GX16-2..
			2.75	12.00		I20L90-2.0D-GX16-2	GX16-2..
			3.25	12.00		I20L90-2.0D-GX16-2	GX16-2..
25	50	32.0	0.60	0.75		I25L90-2.0D-GX16-2	GX16-2..
			0.80	0.94		I25L90-2.0D-GX16-2	GX16-2..
			0.90	1.04		I25L90-2.0D-GX16-2	GX16-2..
			1.00	1.14		I25L90-2.0D-GX16-2	GX16-2..
			1.20	1.34		I25L90-2.0D-GX16-2	GX16-2..
			1.40	1.53		I25L90-2.0D-GX16-2	GX16-2..
			1.70	1.82		I25L90-2.0D-GX16-2	GX16-2..
			1.95	2.07		I25L90-2.0D-GX16-2	GX16-2..
			2.25	2.36		I25L90-2.0D-GX16-2	GX16-2..
			2.75	12.00		I25L90-2.0D-GX16-2	GX16-2..
			3.25	12.00		I25L90-2.0D-GX16-2	GX16-2..
			4.25	12.00		I25L90-2.0D-GX16-3	GX16-3..
32	64	42.0	0.60	0.75		I32L90-2.0D-GX16-2	GX16-2..
			0.80	0.94		I32L90-2.0D-GX16-2	GX16-2..
			0.90	1.04		I32L90-2.0D-GX16-2	GX16-2..
			1.00	1.14		I32L90-2.0D-GX16-2	GX16-2..
			1.20	1.34		I32L90-2.0D-GX16-2	GX16-2..
			1.40	1.53		I32L90-2.0D-GX16-2	GX16-2..
			1.70	1.82		I32L90-2.0D-GX16-2	GX16-2..
			1.95	2.07		I32L90-2.0D-GX16-2	GX16-2..
			2.25	2.36		I32L90-2.0D-GX16-2	GX16-2..
			2.75	12.00		I32L90-2.0D-GX16-2	GX16-2..
			3.25	12.00		I32L90-2.0D-GX16-2	GX16-2..
			4.25	12.00		I32L90-2.0D-GX16-3	GX16-3..

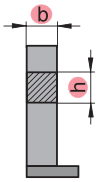


Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.



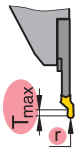
6 KDQNV

h / b
12/12 - 32/32



6 KDQNV

h / b
20/20 - 32/32

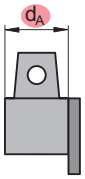


SX

r = 1.5 - 2.0
T_{max} = 20 - 35

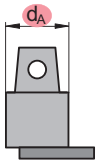
LX

r = 4
T_{max} = 25 - 45



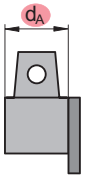
8 76

d_A = 40 - 63



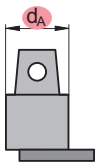
8 76

d_A = 40 - 63



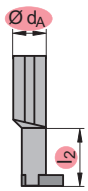
+6. 7

d_A = 63 - 100



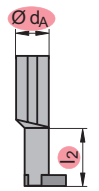
+6. 7

d_A = 63 - 100



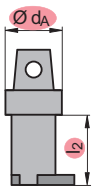
Boring bars 1.5D

d_A = 20 - 40
l_2 = 24 - 60



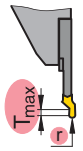
Boring bars 2.5D

d_A = 20 - 50
l_2 = 40 - 100



UTS boring bars

d_A = 40 - 63
l_2 = 64 - 80



GX09

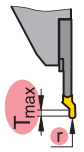
r = 0,8 - 1,2
T_{max} = 1,78 - 7

GX16

r = 0,8 - 3,0
T_{max} = 1,78 - 12

GX24

r = 1,5 - 3
T_{max} = 21



GX16

r = 0,8 - 3,0
T_{max} = 1,78 - 12

GX24

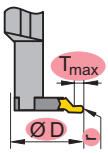
r = 1,5 - 3
T_{max} = 21

SX

r = 1,5 - 2,0
T_{max} = 20 - 35

LX

r = 4
T_{max} = 25 - 45



GX09

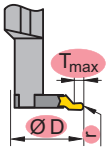
r = 0,8 - 1,2
T_{max} = 1,78 - 6
D = 20 - 32

GX16

r = 0,8 - 3,0
T_{max} = 1,78 - 10
D = 40 - 50

GX24

r = 1,5 - 3,0
T_{max} = 19
D = 60



GX09

r = 0,8 - 1,2
T_{max} = 1,78 - 6
D = 20 - 32

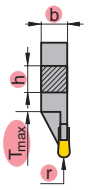
GX16

r = 0,8 - 3,0
T_{max} = 1,78 - 10
D = 40 - 50

GX24

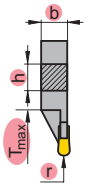
r = 1,5 - 3,0
T_{max} = 19
D = 60

GX09 monobloc tool holders



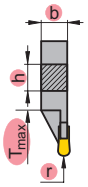
h / b
10/10
r = 0,8 - 1,2
T_{max} = 1,78 - 7

GX16 monobloc tool holders



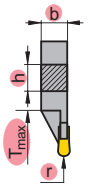
h / b
12/12 - 25/25
r = 0,8 - 2,5
T_{max} = 1,78 - 12

GX24 monobloc tool holders



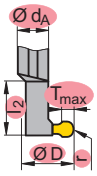
h / b
16/16 - 32/25
r = 1,5 - 3,0
T_{max} = 21

SX monobloc tool holders



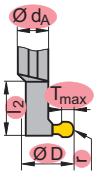
h / b
16/16 - 25/25
r = 1,5 - 3,0
T_{max} = 20 - 32

GX09 monobloc boring bars



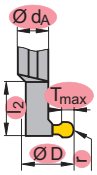
D = 16,0
l_2 = 30
d_A = 16
r = 0,8 - 1,2
T_{max} = 1,78 - 3

GX16 monobloc boring bars



D = 20,5 - 42
l_2 = 32 - 64
d_A = 16 - 32
r = 0,8 - 3
T_{max} = 2,5 - 11

GX24 monobloc boring bars



D = 42 - 57
l_2 = 64 - 80
d_A = 32 - 40
r = 1,5 - 3
T_{max} = 11 - 17,5

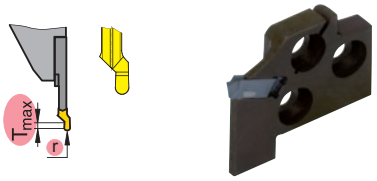

hard material matters
CERATIZIT

BGR E12

C196

b [mm]	h [mm]		Type, description	
12	12	R	MSS-E12R00-1212E	■
		L	MSS-E12L00-1212E	●

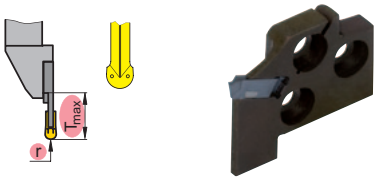
GX09



C203
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	0.80	1.78	R	MSS-E12R02-GX09-1	GX09-1.. R/L
●			L	MSS-E12L02-GX09-1	GX09-1.. R/L

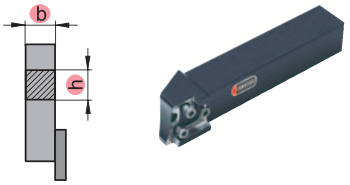
GX09



C200
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.00	7.00	R	MSS-E12R07-GX09-1	GX09-1..
■	1.20			MSS-E12R07-GX09-1	GX09-1..
●	1.00		L	MSS-E12L07-GX09-1	GX09-1..
●	1.20			MSS-E12L07-GX09-1	GX09-1..

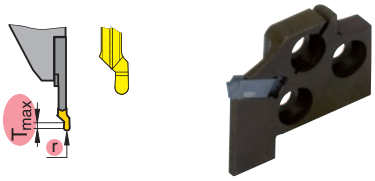
BGR E16



C196

b [mm]	h [mm]		Type, description	
16	16	R	MSS-E16R00-1616G	■
		L	MSS-E16L00-1616G	●

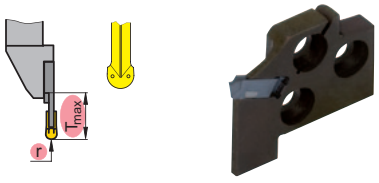
GX09



C203
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	0.80	1.78	R	MSS-E16R02-GX09-1	GX09-1.. R/L
●		1.78	L	MSS-E16L02-GX09-1	GX09-1.. R/L

GX09



C200
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.00	7.00	R	MSS-E16R07-GX09-1	GX09-1..
■	1.20			MSS-E16R07-GX09-1	GX09-1..
●	1.00		L	MSS-E16L07-GX09-1	GX09-1..
●	1.20			MSS-E16L07-GX09-1	GX09-1..

BGR E20

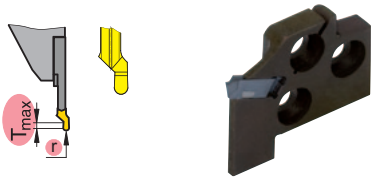
C196

b [mm]	h [mm]		Type, description	
20	16	R	MSS-E20R00-1620G	■
	20		MSS-E20R00-2020J	■
	16	L	MSS-E20L00-1620G	●
	20		MSS-E20L00-2020J	●

C197

b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R90-2020J	●
		L	MSS-E20L90-2020J	■

GX16

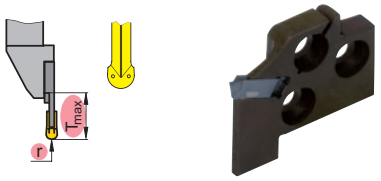


C204

C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	0.80	1.78	R	MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.00	2.18		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.20	2.58		MSS-E20R03-GX16-2	GX16-2.. R/L
●	0.80	1.78	L	MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.00	2.18		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.20	2.58		MSS-E20L03-GX16-2	GX16-2.. R/L

GX16

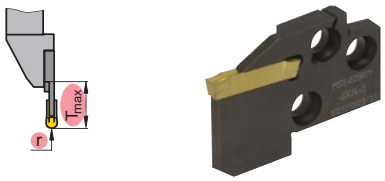


C201

C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	12.00	R	MSS-E20R12-GX16-2	GX16-2..
■	2.00			MSS-E20R12-GX16-3	GX16-3..
■	2.50			MSS-E20R12-GX16-3	GX16-3..
●	1.50		L	MSS-E20L12-GX16-2	GX16-2..
●	2.00			MSS-E20L12-GX16-3	GX16-3..
●	2.50			MSS-E20L12-GX16-3	GX16-3..

GX24



C202

C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	21.00	R	MSS-E20R21-GX24-2	GX24-2..
■	2.00			MSS-E20R21-GX24-3	GX24-3..
■	2.50			MSS-E20R21-GX24-3	GX24-3..
●	1.50		L	MSS-E20L21-GX24-2	GX24-2..
●	2.00			MSS-E20L21-GX24-3	GX24-3..
●	2.50			MSS-E20L21-GX24-3	GX24-3..

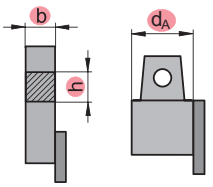
SX

C209

C185

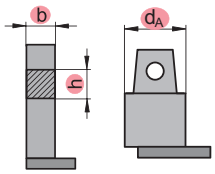
	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	20	L	MSS-E20L20-SX3	SX3
●			R	MSS-E20R20-SX3	SX3

BGR E25




C196 C246

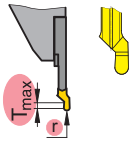
b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●




C197 C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

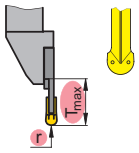
GX16



C204
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	0.80	1.78	R	MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.00	2.18		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.20	2.58		MSS-E25R03-GX16-2	GX16-2.. R/L
●	0.80	1.78	L	MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.00	2.18		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.20	2.58		MSS-E25L03-GX16-2	GX16-2.. R/L

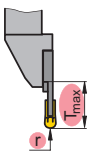
GX16



C201
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	12.00	R	MSS-E25R12-GX16-2	GX16-2..
■	2.00			MSS-E25R12-GX16-3	GX16-3..
■	2.50			MSS-E25R12-GX16-3	GX16-3..
■	3.00			MSS-E25R12-GX16-4	GX16-4..
●	1.50		L	MSS-E25L12-GX16-2	GX16-2..
●	2.00			MSS-E25L12-GX16-3	GX16-3..
●	2.50			MSS-E25L12-GX16-3	GX16-3..
●	3.00			MSS-E25L12-GX16-4	GX16-4..

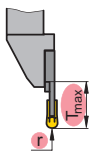
GX24



C202
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	21.00	R	MSS-E25R21-GX24-2	GX24-2..
■	2.00			MSS-E25R21-GX24-3	GX24-3..
■	2.50			MSS-E25R21-GX24-3	GX24-3..
■	3.00			MSS-E25R21-GX24-4	GX24-4..
●	1.50		L	MSS-E25L21-GX24-2	GX24-2..
●	2.00			MSS-E25L21-GX24-3	GX24-3..
●	2.50			MSS-E25L21-GX24-3	GX24-3..
●	3.00			MSS-E25L21-GX24-4	GX24-4..

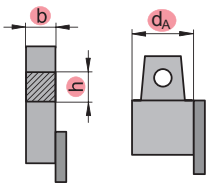
SX



C209
C185

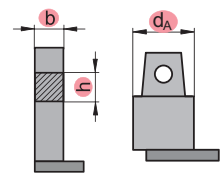
	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	25	R	MSS-E25R25-SX3	SX3
■	2.00			MSS-E25R25-SX4	SX4
■	1.50	35		MSS-E25R35-SX3	SX3
■	2.00			MSS-E25R35-SX4	SX4
●	1.50	25	L	MSS-E25L25-SX3	SX3
●	2.00			MSS-E25L25-SX4	SX4
●	1.50	35		MSS-E25L35-SX3	SX3
●	2.00			MSS-E25L35-SX4	SX4

BGR E32



C196 C246+C250

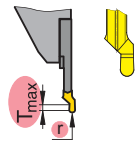
b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R00-3225N	■
32	32			MSS-E32R00-3232Q	■
		50		UT50-MSS-E32R00	■
		63		UT63-MSS-E32R00	■
		63		HSK-T63-MSS-E32R00	■
		100		HSK-T100-MSS-E32R00	■
25	32		L	MSS-E32L00-3225N	●
32	32			MSS-E32L00-3232Q	●
		50		UT50-MSS-E32L00	●
		63		UT63-MSS-E32L00	●
		63		HSK-T63-MSS-E32L00	●
		100		HSK-T100-MSS-E32L00	●



C197 C247+C251

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R90-3225N	●
32	32			MSS-E32R90-3232R	●
		63		UT63-MSS-E32R90	●
		63		HSK-T63-MSS-E32R90	●
		100		HSK-T100-MSS-E32R90	●
25	32		L	MSS-E32L90-3225N	■
32	32			MSS-E32L90-3232R	■
		63		UT63-MSS-E32L90	■
		63		HSK-T63-MSS-E32L90	■
		100		HSK-T100-MSS-E32L90	■

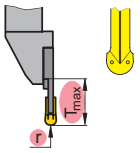
GX16



C204
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	0.80	1.78	R	MSS-E32R03-GX16-2	GX16-2.. R/L
■	1.00	2.18		MSS-E32R03-GX16-2	GX16-2.. R/L
■	1.20	2.58		MSS-E32R03-GX16-2	GX16-2.. R/L
●	0.80	1.78	L	MSS-E32L03-GX16-2	GX16-2.. R/L
●	1.00	2.18		MSS-E32L03-GX16-2	GX16-2.. R/L
●	1.20	2.58		MSS-E32L03-GX16-2	GX16-2.. R/L

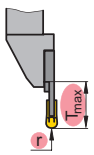
GX16



C201
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	12.00	R	MSS-E32R12-GX16-2	GX16-2..
■	2.00			MSS-E32R12-GX16-3	GX16-3..
■	2.50			MSS-E32R12-GX16-3	GX16-3..
■	3.00			MSS-E32R12-GX16-4	GX16-4..
●	1.50		L	MSS-E32L12-GX16-2	GX16-2..
●	2.00			MSS-E32L12-GX16-3	GX16-3..
●	2.50			MSS-E32L12-GX16-3	GX16-3..
●	3.00			MSS-E32L12-GX16-4	GX16-4..

GX24



C202
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	21.00	R	MSS-E32R21-GX24-2	GX24-2..
■	2.00			MSS-E32R21-GX24-3	GX24-3..
■	2.50			MSS-E32R21-GX24-3	GX24-3..
■	3.00			MSS-E32R21-GX24-4	GX24-4..
●	1.50		L	MSS-E32L21-GX24-2	GX24-2..
●	2.00			MSS-E32L21-GX24-3	GX24-3..
●	2.50			MSS-E32L21-GX24-3	GX24-3..
●	3.00			MSS-E32L21-GX24-4	GX24-4..

BGR E32

C196 C246+C250

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R00-3225N	■
32	32			MSS-E32R00-3232Q	■
		50		UT50-MSS-E32R00	■
		63		UT63-MSS-E32R00	■
		63		HSK-T63-MSS-E32R00	■
		100		HSK-T100-MSS-E32R00	■
25	32		L	MSS-E32L00-3225N	●
32	32			MSS-E32L00-3232Q	●
		50		UT50-MSS-E32L00	●
		63		UT63-MSS-E32L00	●
		63		HSK-T63-MSS-E32L00	●
		100		HSK-T100-MSS-E32L00	●

C197 C247+C251

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R90-3225N	●
32	32			MSS-E32R90-3232R	●
		63		UT63-MSS-E32R90	●
		63		HSK-T63-MSS-E32R90	●
		100		HSK-T100-MSS-E32R90	●
25	32		L	MSS-E32L90-3225N	■
32	32			MSS-E32L90-3232R	■
		63		UT63-MSS-E32L90	■
		63		HSK-T63-MSS-E32L90	■
		100		HSK-T100-MSS-E32L90	■

SX

C209
C185

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	35	R	MSS-E32R35-SX3	SX3
■	2.00			MSS-E32R35-SX4	SX4
●	1.50		L	MSS-E32L35-SX3	SX3
●	2.00			MSS-E32L35-SX4	SX4

LX

C210
C186

	r [mm]	T_{max} [mm]	L R	Type, description	
■ ●	4.00	25	N	MSS-E32N25-LX	LX-..
■ ●		32		MSS-E32N32-LX	LX-..
■ ●		45		MSS-E32N45-LX	LX-..

* ² ULJKW KDQG

C213 C183

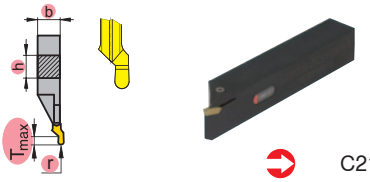
b [mm]	h [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
10	10	0.80	1.78	R	E10R00-1010M-GX09	GX09..
				L	E10L00-1010M-GX09	GX09..

* ² ULJKW KDQG

C213 C183

b [mm]	h [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
10	10	1.00	7.00	R	E10R00-1010M-GX09	GX09..
		1.20		R	E10R00-1010M-GX09	GX09..
		1.00		L	E10L00-1010M-GX09	GX09..
		1.20		L	E10L00-1010M-GX09	GX09..

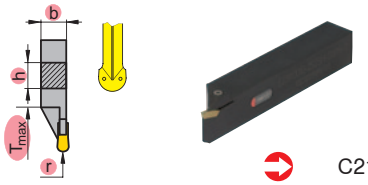
GX16



C214 C183

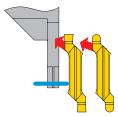
b [mm]	h [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
12	12	0.80	1.78	R	E12R0012-1212K-GX16-2	GX16-2..
16	16				E16R0012-1616K-GX16-2	GX16-2..
16	16	1.00	2.18		E16R0012-1616K-GX16-2	GX16-2..
16	16	1.20	2.58		E16R0012-1616K-GX16-2	GX16-2..
20	20	0.80	1.78		E20R0012-2020K-GX16-2	GX16-2..
20	20	1.00	2.18		E20R0012-2020K-GX16-2	GX16-2..
20	20	1.20	2.58		E20R0012-2020K-GX16-2	GX16-2..
25	25	0.80	1.78		E25R0012-2525M-GX16-2	GX16-2..
25	25	1.00	2.18		E25R0012-2525M-GX16-2	GX16-2..
25	25	1.20	2.58		E25R0012-2525M-GX16-2	GX16-2..
12	12	0.80	1.78	L	E12L0012-1212K-GX16-2	GX16-2..
16	16				E16L0012-1616K-GX16-2	GX16-2..
16	16	1.00	2.18		E16L0012-1616K-GX16-2	GX16-2..
16	16	1.20	2.58		E16L0012-1616K-GX16-2	GX16-2..
20	20	0.80	1.78		E20L0012-2020K-GX16-2	GX16-2..
20	20	1.00	2.18		E20L0012-2020K-GX16-2	GX16-2..
20	20	1.20	2.58		E20L0012-2020K-GX16-2	GX16-2..
25	25	0.80	1.78		E25L0012-2525M-GX16-2	GX16-2..
25	25	1.20	2.58		E25L0012-2525M-GX16-2	GX16-2..

GX16



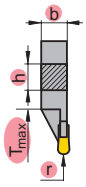
C214 C183

b [mm]	h [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
16	16	1.50	12.00	R	E16R0012-1616K-GX16-2	GX16-2..
		2.00	12.00		E16R0012-1616K-GX16-3	GX16-3..
		2.50	12.00		E16R0012-1616K-GX16-3	GX16-3..
20	20	1.50	12.00		E20R0012-2020K-GX16-2	GX16-2..
		2.00	12.00		E20R0012-2020K-GX16-3	GX16-3..
		2.50	12.00		E20R0012-2020K-GX16-3	GX16-3..
25	25	2.50	12.00		E25R0012-2525M-GX16-3	GX16-3..
		2.00	12.00		E25R0012-2525M-GX16-3	GX16-3..
		1.50	12.00		E25R0012-2525M-GX16-2	GX16-2..
16	16	1.50	12.00	L	E16L0012-1616K-GX16-2	GX16-2..
		2.00	12.00		E16L0012-1616K-GX16-3	GX16-3..
		2.50	12.00		E16L0012-1616K-GX16-3	GX16-3..
20	20	1.50	12.00		E20L0012-2020K-GX16-2	GX16-2..
		2.00	12.00		E20L0012-2020K-GX16-3	GX16-3..
		2.50	12.00		E20L0012-2020K-GX16-3	GX16-3..
25	25	1.50	12.00		E25L0012-2525M-GX16-2	GX16-2..
		2.00	12.00		E25L0012-2525M-GX16-3	GX16-3..
		2.50	12.00		E25L0012-2525M-GX16-3	GX16-3..



Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

* UJKWKDQG



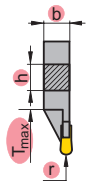
C215 C183

b [mm]	h [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
16	16	1.50	21.00	R	E16R0021-1616K-GX24-2	GX24-2..
20	20	1.50			E20R0021-2020K-GX24-2	GX24-2..
		2.00			E20R0021-2020K-GX24-3	GX24-3..
		2.50			E20R0021-2020K-GX24-3	GX24-3..
25	25	1.50			E25R0021-2525M-GX24-2	GX24-2..
		2.00			E25R0021-2525M-GX24-3	GX24-3..
		2.50			E25R0021-2525M-GX24-3	GX24-3..
		3.00			E25R0021-2525M-GX24-4	GX24-4..
	32	1.50			E32R0021-3225P-GX24-2	GX24-2..
		2.00			E32R0021-3225P-GX24-3	GX24-3..
		2.50			E32R0021-3225P-GX24-3	GX24-3..
		3.00			E32R0021-3225P-GX24-4	GX24-4..

* GHI WKDQG

b [mm]	h [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
16	16	1.50	21.00	L	E16L0021-1616K-GX24-2	GX24-2..
20	20	1.50			E20L0021-2020K-GX24-2	GX24-2..
		2.00			E20L0021-2020K-GX24-3	GX24-3..
		2.50			E20L0021-2020K-GX24-3	GX24-3..
25	25	1.50			E25L0021-2525M-GX24-2	GX24-2..
		2.00			E25L0021-2525M-GX24-3	GX24-3..
		2.50			E25L0021-2525M-GX24-3	GX24-3..
		3.00			E25L0021-2525M-GX24-4	GX24-4..
	32	1.50			E32L0021-3225P-GX24-2	GX24-2..
		2.00			E32L0021-3225P-GX24-3	GX24-3..
		2.50			E32L0021-3225P-GX24-3	GX24-3..
		3.00			E32L0021-3225P-GX24-4	GX24-4..

6 UJKWKDQG



C218 C185

s [mm]	h [mm]	b [mm]	T_{max} [mm]	L R	Type, description	
3.0	16	16	20	R	E16R0020-1616K-SX3	SX3
	20	20			E20R0020-2020K-SX3	SX3
	25	25			E25R0020-2525M-SX3	SX3
4.0	25	25	25		E25R0025-2525M-SX4	SX4
	20	20			E20R0025-2020K-SX4	SX4
5.0	25	25			E25R0025-2525M-SX5	SX5
6.0	25	25	32		E25R0032-2525M-SX6	SX6

6 GHI WKDQG

s [mm]	h [mm]	b [mm]	T_{max} [mm]	L R	Type, description	
3.0	16	16	20	L	E16L0020-1616K-SX3	SX3
	20	20			E20L0020-2020K-SX3	SX3
	25	25			E25L0020-2525M-SX3	SX3
4.0	25	25	25		E25L0025-2525M-SX4	SX4
	20	20			E20L0025-2020K-SX4	SX4
5.0	25	25			E25L0025-2525M-SX5	SX5
6.0	25	25	32		E25L0032-2525M-SX6	SX6

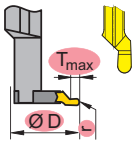
BGR I16

GX09

C231-C232

l_2 [mm]	d_A [mm]		Type, description	
24	20	R	MSS-I16R90-1.5D-N	●
40	20		MSS-I16R90-2.5D-N	●
24	20	L	MSS-I16L90-1.5D-N	■
40	20		MSS-I16L90-2.5D-N	■

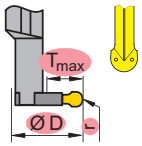
GX09



C235
C183

	D_{min} [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
■	20	0.80	1.78	R	MSS-I16R02-GX09-1	GX09-1.. R/L
●				L	MSS-I16L02-GX09-1	GX09-1.. R/L

GX09

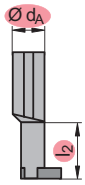


C233
C183

	D_{min} [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
■	20	1.00	4	R	MSS-I16R04-GX09-1	GX09-1..
■		1.20	4		MSS-I16R04-GX09-1	GX09-1..
●		1.00	4	L	MSS-I16L04-GX09-1	GX09-1..
●		1.20	4		MSS-I16L04-GX09-1	GX09-1..

BGR I20

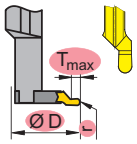
GX09



C231-C232

l_2 [mm]	d_A [mm]		Type, description	
30	20	R	MSS-I20R90-1.5D-N	●
50	25		MSS-I20R90-2.5D-N	●
30	20	L	MSS-I20L90-1.5D-N	■
50	25		MSS-I20L90-2.5D-N	■

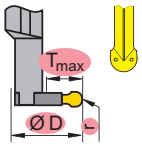
GX09



C235
C183

	D_{min} [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
■	25	0.80	1.78	R	MSS-I20R02-GX09-1	GX09-1.. R/L
●				L	MSS-I20L02-GX09-1	GX09-1.. R/L

GX09



C233
C183

	D_{min} [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
■	25	1.00	5	R	MSS-I20R05-GX09-1	GX09-1..
■		1.20	5		MSS-I20R05-GX09-1	GX09-1..
●		1.00	5	L	MSS-I20L05-GX09-1	GX09-1..
●		1.20	5		MSS-I20L05-GX09-1	GX09-1..

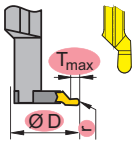
BGR I25

GX09

C231-C232

l_2 [mm]	d_A [mm]		Type, description	
38	25	R	MSS-I25R90-1.5D-N	●
63	32		MSS-I25R90-2.5D-N	●
38	25	L	MSS-I25L90-1.5D-N	■
63	32		MSS-I25L90-2.5D-N	■

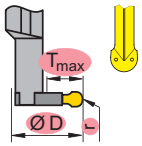
GX09



C235
C183

	D_{min} [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
■	32	0.80	1.78	R	MSS-I25R02-GX09-1	GX09-1.. R/L
●			1.78	L	MSS-I25L02-GX09-1	GX09-1.. R/L

GX09



C233
C183

	D_{min} [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
■	32	1.00	6	R	MSS-I25R06-GX09-1	GX09-1..
■		1.20	6		MSS-I25R06-GX09-1	GX09-1..
●		1.00	6	L	MSS-I25L06-GX09-1	GX09-1..
●		1.20	6		MSS-I25L06-GX09-1	GX09-1..

BGR I32

* ² LJKWKDQG

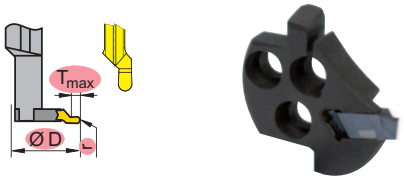
C231-C232 C249

l2 [mm]	dA [mm]		Type, description	
48	32	R	MSS-I32R90-1.5D-N	●
80	40		MSS-I32R90-2.5D-N	●
64	40		UT40-MSS-I32R90-2D	●

* ² HIWKDQG

l2 [mm]	dA [mm]		Type, description	
48	32	L	MSS-I32L90-1.5D-N	■
80	40		MSS-I32L90-2.5D-N	■
64	50		UT50-MSS-I32L90-2D	■

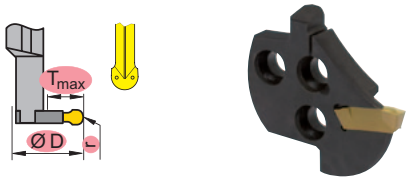
GX16



C236
C183

	Dmin [mm]	r [mm]	Tmax [mm]	L R	Type, description	
■	40	0.80	1.78	R	MSS-I32R03-GX16-2	GX16-2.. R/L
■		1.00	2.18		MSS-I32R03-GX16-2	GX16-2.. R/L
■		1.20	2.58		MSS-I32R03-GX16-2	GX16-2.. R/L
●		0.80	1.78	L	MSS-I32L03-GX16-2	GX16-2.. R/L
●		1.00	2.18		MSS-I32L03-GX16-2	GX16-2.. R/L
●		1.20	2.58		MSS-I32L03-GX16-2	GX16-2.. R/L

GX16



C234
C183

	Dmin [mm]	r [mm]	Tmax [mm]	L R	Type, description	
■	40	1.50	9	R	MSS-I32R09-GX16-2	GX16-2..
■		2.00	9		MSS-I32R09-GX16-3	GX16-3..
■		2.50	9		MSS-I32R09-GX16-3	GX16-3..
■		3.00	9		MSS-I32R09-GX16-4	GX16-4..
●		1.50	9	L	MSS-I32L09-GX16-2	GX16-2..
●		2.00	9		MSS-I32L09-GX16-3	GX16-3..
●		2.50	9		MSS-I32L09-GX16-3	GX16-3..
●		3.00	9		MSS-I32L09-GX16-4	GX16-4..

BGR I40

* ² ULJKWKDQG

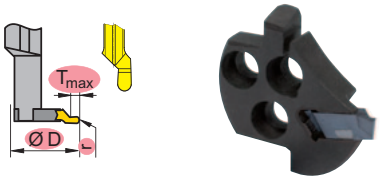
C231-C232
C249

l2 [mm]	dA [mm]		Type, description	
60	40	R	MSS-I40R90-1.5D-N	●
100	50	R	MSS-I40R90-2.5D-N	●
80	40	R	UT40-MSS-I40R90-2D	●
80	63	R	UT63-MSS-I40R90-2D	●

* ² OHIWKDQG

l2 [mm]	dA [mm]		Type, description	
60	40	L	MSS-I40L90-1.5D-N	■
100	50	L	MSS-I40L90-2.5D-N	■
80	40	L	UT40-MSS-I40L90-2D	■

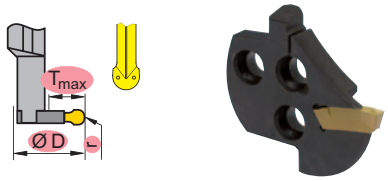
GX16



C236
C183

	Dmin [mm]	r [mm]	Tmax [mm]	L R	Type, description	
■	50	0.80	1.78	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■	50	1.00	2.18	R	MSS-I40R03-GX16-2	GX16-2.. R/L
■	50	1.20	2.58	R	MSS-I40R03-GX16-2	GX16-2.. R/L
●	50	0.80	1.78	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●	50	1.00	2.18	L	MSS-I40L03-GX16-2	GX16-2.. R/L
●	50	1.20	2.58	L	MSS-I40L03-GX16-2	GX16-2.. R/L

GX16



C234
C183

	Dmin [mm]	r [mm]	Tmax [mm]	L R	Type, description	
■	50	1.50	10	R	MSS-I40R10-GX16-2	GX16-2..
■	50	2.00	10	R	MSS-I40R10-GX16-3	GX16-3..
■	50	2.50	10	R	MSS-I40R10-GX16-3	GX16-3..
■	50	3.00	10	R	MSS-I40R10-GX16-4	GX16-4..
●	50	1.50	10	L	MSS-I40L10-GX16-2	GX16-2..
●	50	2.00	10	L	MSS-I40L10-GX16-3	GX16-3..
●	50	2.50	10	L	MSS-I40L10-GX16-3	GX16-3..
●	50	3.00	10	L	MSS-I40L10-GX16-4	GX16-4..

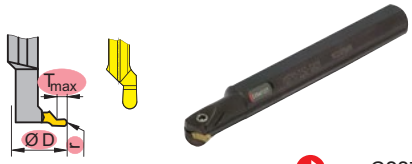
GX24

C234
C183

	Dmin [mm]	r [mm]	Tmax [mm]	L R	Type, description	
■ ●	60	1.50	19	N	MSS-I40N19-GX24-2	GX24-2..
■ ●	60	2.00	19	N	MSS-I40N19-GX24-3	GX24-3..
■ ●	60	2.50	19	N	MSS-I40N19-GX24-3	GX24-3..
■ ●	60	3.00	19	N	MSS-I40N19-GX24-4	GX24-4..


hard material matters
CERATIZIT

GX09



C237 C183

D [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
16	0.80	1.78	R	I12R90-2.5D-GX09	GX09..
	0.80	1.78	L	I12L90-2.5D-GX09	GX09..

GX09

C237 C183

D [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
16	1.00	3	R	I12R90-2.5D-GX09	GX09..
	1.20	3		I12R90-2.5D-GX09	GX09..
	1.00	3	L	I12L90-2.5D-GX09	GX09..
	1.20	3		I12L90-2.5D-GX09	GX09..

GX16

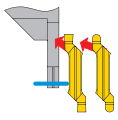
C238 C183

D [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
20.5	0.80	1.78	R	I16R90-2.0D-GX16-2	GX16-2..
	1.00	2.18		I16R90-2.0D-GX16-2	GX16-2..
	1.20	2.58		I16R90-2.0D-GX16-2	GX16-2..
	0.80	1.78	L	I16L90-2.0D-GX16-2	GX16-2..
	1.00	2.18		I16L90-2.0D-GX16-2	GX16-2..
	1.20	2.58		I16L90-2.0D-GX16-2	GX16-2..
25.0	0.80	1.78	R	I20R90-2.0D-GX16-2	GX16-2..
	1.00	2.18		I20R90-2.0D-GX16-2	GX16-2..
	1.20	2.58		I20R90-2.0D-GX16-2	GX16-2..
	0.80	1.78	L	I20L90-2.0D-GX16-2	GX16-2..
	1.00	2.18		I20L90-2.0D-GX16-2	GX16-2..
	1.20	2.58		I20L90-2.0D-GX16-2	GX16-2..
32.0	0.80	1.78	L	I25L90-2.0D-GX16-2	GX16-2..
	1.00	2.18		I25L90-2.0D-GX16-2	GX16-2..
	1.20	2.58		I25L90-2.0D-GX16-2	GX16-2..
	0.80	1.78	R	I25R90-2.0D-GX16-2	GX16-2..
	1.00	2.18		I25R90-2.0D-GX16-2	GX16-2..
	1.20	2.58		I25R90-2.0D-GX16-2	GX16-2..
42.0	0.80	1.78	R	I32R90-2.0D-GX16-2	GX16-2..
	1.00	2.18		I32R90-2.0D-GX16-2	GX16-2..
	1.20	2.58		I32R90-2.0D-GX16-2	GX16-2..
	0.80	1.78	L	I32L90-2.0D-GX16-2	GX16-2..
	1.00	2.18		I32L90-2.0D-GX16-2	GX16-2..
	1.20	2.58		I32L90-2.0D-GX16-2	GX16-2..

GX16

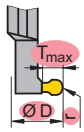
C238 C183

D [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
20.5	1.50	5.5	R	I16R90-2.0D-GX16-2	GX16-2..
	1.50	5.5	L	I16L90-2.0D-GX16-2	GX16-2..
25.0	1.50	5.5	R	I20R90-2.0D-GX16-2	GX16-2..
	1.50	5.5	L	I20L90-2.0D-GX16-2	GX16-2..
32.0	2.50	10.0	R	I25R90-2.0D-GX16-3	GX16-3..
	2.00	10.0		I25R90-2.0D-GX16-3	GX16-3..
	1.50	8.0		I25R90-2.0D-GX16-2	GX16-2..
	1.50	8.0	L	I25L90-2.0D-GX16-2	GX16-2..
	2.00	10.0		I25L90-2.0D-GX16-3	GX16-3..
	2.50	10.0		I25L90-2.0D-GX16-3	GX16-3..
42.0	2.50	11.0	R	I32R90-2.0D-GX16-3	GX16-3..
	2.00	11.0		I32R90-2.0D-GX16-3	GX16-3..
	1.50	11.0		I32R90-2.0D-GX16-2	GX16-2..
	1.50	11.0	L	I32L90-2.0D-GX16-2	GX16-2..
	2.00	11.0		I32L90-2.0D-GX16-3	GX16-3..
	2.50	11.0		I32L90-2.0D-GX16-3	GX16-3..



Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

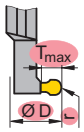
GX24



C239 C183

D [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
42	1.50	11.0	R	I32R90-2.0D-GX24-2	GX24-2..
42	2.00			I32R90-2.0D-GX24-3	GX24-3..
42	2.50			I32R90-2.0D-GX24-3	GX24-3..
47	3.00	17.5		I32R90-2.0D-GX24-4	GX24-4..
42	1.50	11.0	L	I32L90-2.0D-GX24-2	GX24-2..
42	2.00			I32L90-2.0D-GX24-3	GX24-3..
42	2.50			I32L90-2.0D-GX24-3	GX24-3..
47	3.00	17.5		I32L90-2.0D-GX24-4	GX24-4..

GX24

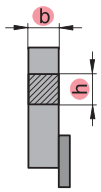


C239 C183

D [mm]	r [mm]	T_{max} [mm]	L R	Type, description	
53	2.00	12.0	R	I40R90-2.0D-GX24-3	GX24-3..
53	2.50			I40R90-2.0D-GX24-3	GX24-3..
57	3.00	17.5		I40R90-2.0D-GX24-4	GX24-4..
53	2.00	12.0	L	I40L90-2.0D-GX24-3	GX24-3..
53	2.50			I40L90-2.0D-GX24-3	GX24-3..
57	3.00	17.5		I40L90-2.0D-GX24-4	GX24-4..

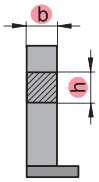
Axial grooving

2 YHUYLHZ ² P RGXODUVWXFWXUH



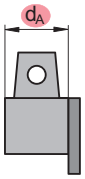
6KDQNV

h / b
16/16 - 32/32



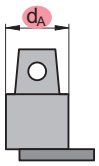
6KDQNV

h / b
20/20 - 32/32



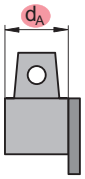
876

d_A = 40 - 63



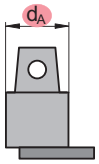
876

d_A = 40 - 63



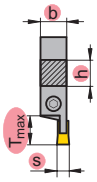
+6.7

d_A = 63 - 100



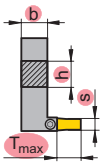
+6.7

d_A = 63 - 100



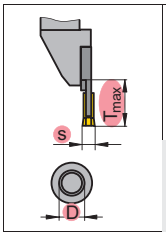
P RQRE

h / b
16/16 - 25/25
s = 3
T_{max} = 5 - 15



P RQRE

h / b
16/16 - 25/25
s = 3
T_{max} = 5 - 15



GX axial short

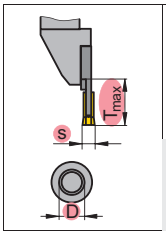
s = 2,76 - 6,5
T_{max} = 14 - 15
D = 50 - 900

GX axial long

s = 3.76 - 6.5
T_{max} = 21 - 25
D = 50 - 300

AX

s = 3
T_{max} = 5 - 15



GX axial short

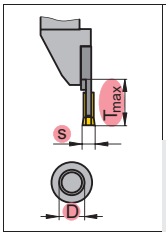
s = 2,76 - 6,5
T_{max} = 14 - 15
D = 50 - 900

GX axial long

s = 3.76 - 6.5
T_{max} = 21 - 25
D = 50 - 300

AX

s = 3
T_{max} = 5 - 15



GX axial short

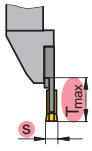
s = 2,76 - 6,5
T_{max} = 14 - 15
D = 50 - 900

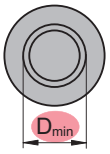
BGR E16

C196

b [mm]	h [mm]		Type, description	
16	16	R	MSS-E16R00-1616G	■
		L	MSS-E16L00-1616G	●

AX





C208
C184

	s [mm]	D_{min} [mm]	T_{max} [mm]			L R	Type, description	
■	3.0	10	5			R	MSS-E16R05-AX05	AX05..
●						L	MSS-E16L05-AX05	AX05..

BGR E20

□

C196

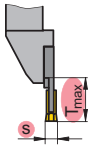
b [mm]	h [mm]		Type, description	
20	16	R	MSS-E20R00-1620G	■
	20		MSS-E20R00-2020J	■
	16	L	MSS-E20L00-1620G	●
	20		MSS-E20L00-2020J	●

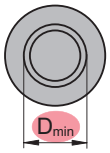
□ □

C197

b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R90-2020J	●
		L	MSS-E20L90-2020J	■

GX24 axial short

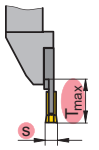


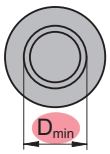


C205
C180-C183

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	D_{min} [mm]	D_{max} [mm]	L R	Type, description	
■	2.76	3.75	14	50	70	R	MSS-E20R14-GX24-2 A50-70	GX24-2..
■				70	100		MSS-E20R14-GX24-2 A70-100	GX24-2..
■				100	150		MSS-E20R14-GX24-2 A100-150	GX24-2..
●				50	70	L	MSS-E20L14-GX24-2 A50-70	GX24-2..
●				70	100		MSS-E20L14-GX24-2 A70-100	GX24-2..
●				100	150		MSS-E20L14-GX24-2 A100-150	GX24-2..

AX





C208
C184

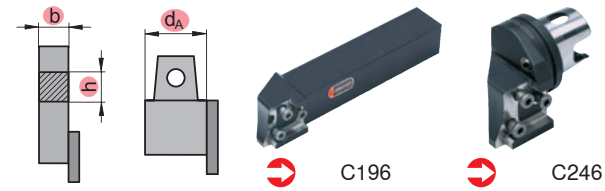
	s [mm]	D_{min} [mm]	T_{max} [mm]			L R	Type, description	
■	3.0	10	5			R	MSS-E20R05-AX05	AX05..
■		20	10				MSS-E20R10-AX10	AX10..
■		30	15				MSS-E20R15-AX15	AX15..
●		10	5			L	MSS-E20L05-AX05	AX05..
●		20	10				MSS-E20L10-AX10	AX10..
●		30	15				MSS-E20L15-AX15	AX15..

CERATIZIT hard material matters

Axial grooving

6 KDQNV 2 8 7 6 2 * ;

BGR E25



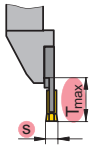
C196 C246

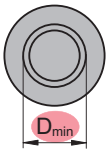
b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●

C197 C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

GX24 axial short



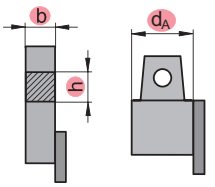


C205-C206

C180-C183

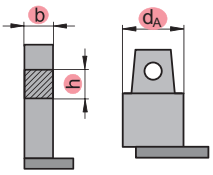
	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	D_{min} [mm]	D_{max} [mm]	L R	Type, description	
■	2.76	3.75	15	50	70	R	MSS-E25R15-GX24-2 A50-70	GX24-2..
■	2.76	3.75		70	100		MSS-E25R15-GX24-2 A70-100	GX24-2..
■	2.76	3.75		100	150		MSS-E25R15-GX24-2 A100-150	GX24-2..
■	3.76	5.00		50	70		MSS-E25R15-GX24-3 A50-70	GX24-3..
■	3.76	5.00		70	100		MSS-E25R15-GX24-3 A70-100	GX24-3..
■	3.76	5.00		100	150		MSS-E25R15-GX24-3 A100-150	GX24-3..
■	3.76	5.00		150	300		MSS-E25R15-GX24-3 A150-300	GX24-3..
■	5.01	6.50		50	70		MSS-E25R15-GX24-4 A50-70	GX24-4..
■	5.01	6.50		70	100		MSS-E25R15-GX24-4 A70-100	GX24-4..
■	5.01	6.50		100	150		MSS-E25R15-GX24-4 A100-150	GX24-4..
■	5.01	6.50		150	300		MSS-E25R15-GX24-4 A150-300	GX24-4..
●	2.76	3.75		50	70	L	MSS-E25L15-GX24-2 A50-70	GX24-2..
●	2.76	3.75		70	100		MSS-E25L15-GX24-2 A70-100	GX24-2..
●	2.76	3.75		100	150		MSS-E25L15-GX24-2 A100-150	GX24-2..
●	3.76	5.00		50	70		MSS-E25L15-GX24-3 A50-70	GX24-3..
●	3.76	5.00		70	100		MSS-E25L15-GX24-3 A70-100	GX24-3..
●	3.76	5.00		100	150		MSS-E25L15-GX24-3 A100-150	GX24-3..
●	3.76	5.00		150	300		MSS-E25L15-GX24-3 A150-300	GX24-3..
●	5.01	6.50		50	70		MSS-E25L15-GX24-4 A50-70	GX24-4..
●	5.01	6.50		70	100		MSS-E25L15-GX24-4 A70-100	GX24-4..
●	5.01	6.50		100	150		MSS-E25L15-GX24-4 A100-150	GX24-4..
●	5.01	6.50		150	300		MSS-E25L15-GX24-4 A150-300	GX24-4..

BGR E25



C196 C246

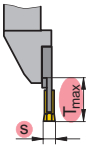
b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●

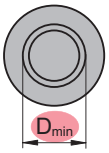


C197 C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

GX24 axial long

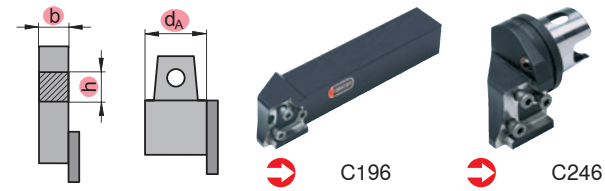




C207
C180-C183

	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	D_{min} [mm]	D_{max} [mm]	L R	Type, description	
■	3.76	5.00	21	50	70	R	MSS-E25R21-GX24-3 AS50-70	GX24-3..
■	3.76	5.00		70	100		MSS-E25R21-GX24-3 AS70-100	GX24-3..
■	3.76	5.00		100	150		MSS-E25R21-GX24-3 AS100-150	GX24-3..
■	3.76	5.00		150	300		MSS-E25R21-GX24-3 AS150-300	GX24-3..
■	5.01	6.50	25	50	70		MSS-E25R25-GX24-4 AS50-70	GX24-4..
■	5.01	6.50		70	100		MSS-E25R25-GX24-4 AS70-100	GX24-4..
■	5.01	6.50		100	150		MSS-E25R25-GX24-4 AS100-150	GX24-4..
■	5.01	6.50		150	300		MSS-E25R25-GX24-4 AS150-300	GX24-4..
●	3.76	5.00	21	50	70	L	MSS-E25L21-GX24-3 AS50-70	GX24-3..
●	3.76	5.00		70	100		MSS-E25L21-GX24-3 AS70-100	GX24-3..
●	3.76	5.00		100	150		MSS-E25L21-GX24-3 AS100-150	GX24-3..
●	3.76	5.00		150	300		MSS-E25L21-GX24-3 AS150-300	GX24-3..
●	5.01	6.50	25	50	70		MSS-E25L25-GX24-4 AS50-70	GX24-4..
●	5.01	6.50		70	100		MSS-E25L25-GX24-4 AS70-100	GX24-4..
●	5.01	6.50		100	150		MSS-E25L25-GX24-4 AS100-150	GX24-4..
●	5.01	6.50		150	300		MSS-E25L25-GX24-4 AS150-300	GX24-4..

BGR E25



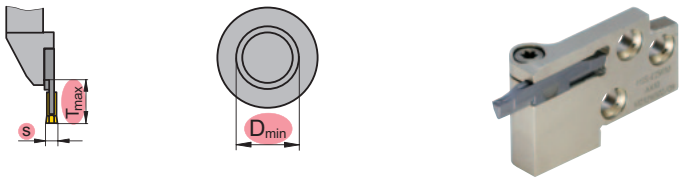
C196 C246

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●

C197 C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

AX

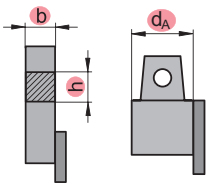


C208

C184

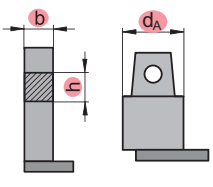
	s [mm]	D_{min} [mm]	T_{max} [mm]			L R	Type, description	
■	3.0	10	5			R	MSS-E25R05-AX05	AX05..
■		20	10				MSS-E25R10-AX10	AX10..
■		30	15				MSS-E25R15-AX15	AX15..
●		10	5			L	MSS-E25L05-AX05	AX05..
●		20	10				MSS-E25L10-AX10	AX10..
●		30	15				MSS-E25L15-AX15	AX15..

BGR E32



C196 C246+C250

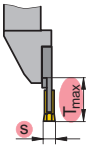
b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R00-3225N	■
32	32			MSS-E32R00-3232Q	■
		50		UT50-MSS-E32R00	■
		63		UT63-MSS-E32R00	■
		63		HSK-T63-MSS-E32R00	■
		100		HSK-T100-MSS-E32R00	■
25	32		L	MSS-E32L00-3225N	●
32	32			MSS-E32L00-3232Q	●
		50		UT50-MSS-E32L00	●
		63		UT63-MSS-E32L00	●
		63		HSK-T63-MSS-E32L00	●
		100		HSK-T100-MSS-E32L00	●

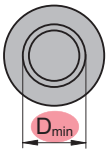


C197 C247+C251

b [mm]	h [mm]	d_A [mm]		Type, description	
25	32		R	MSS-E32R90-3225N	●
32	32			MSS-E32R90-3232R	●
		63		UT63-MSS-E32R90	●
		63		HSK-T63-MSS-E32R90	●
		100		HSK-T100-MSS-E32R90	●
25	32		L	MSS-E32L90-3225N	■
32	32			MSS-E32L90-3232R	■
		63		UT63-MSS-E32L90	■
		63		HSK-T63-MSS-E32L90	■
		100		HSK-T100-MSS-E32L90	■

GX24 axial short





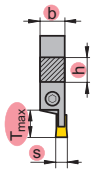
C206
C180-C183

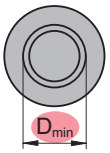
	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	D_{min} [mm]	D_{max} [mm]	L R	Type, description	
■	3.76	5.00	15	70	100	R	MSS-E32R15-GX24-3 A70-100	GX24-3..
■	3.76	5.00		100	150		MSS-E32R15-GX24-3 A100-150	GX24-3..
■	3.76	5.00		150	300		MSS-E32R15-GX24-3 A150-300	GX24-3..
■	5.01	6.50		70	100		MSS-E32R15-GX24-4 A70-100	GX24-4..
■	5.01	6.50		100	150		MSS-E32R15-GX24-4 A100-150	GX24-4..
■	5.01	6.50		150	300		MSS-E32R15-GX24-4 A150-300	GX24-4..
■	5.01	6.50		300	900		MSS-E32R15-GX24-4 A300-900	GX24-4..
●	3.76	5.00		70	100	L	MSS-E32L15-GX24-3 A70-100	GX24-3..
●	3.76	5.00		100	150		MSS-E32L15-GX24-3 A100-150	GX24-3..
●	3.76	5.00		150	300		MSS-E32L15-GX24-3 A150-300	GX24-3..
●	5.01	6.50		70	100		MSS-E32L15-GX24-4 A70-100	GX24-4..
●	5.01	6.50		100	150		MSS-E32L15-GX24-4 A100-150	GX24-4..
●	5.01	6.50		150	300		MSS-E32L15-GX24-4 A150-300	GX24-4..
●	5.01	6.50		300	900		MSS-E32L15-GX24-4 A300-900	GX24-4..

Axial grooving

0 RQRECRF VRRQV 2 ;

2

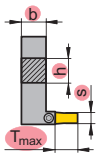


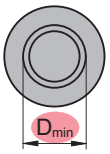


C216
C184

b [mm]	h [mm]	s [mm]	D_{min} [mm]	T_{max} [mm]		L R	Type, description	
16	16	3.0	10	5		R	E16R0005-1616L-AX05	AX05..
			20	10			E16R0010-1616L-AX10	AX10..
			10	5		L	E16L0005-1616L-AX05	AX05..
			20	10			E16L0010-1616L-AX10	AX10..
20	20		10	5		R	E20R0005-2020L-AX05	AX05..
			20	10			E20R0010-2020L-AX10	AX10..
			30	15			E20R0015-2020L-AX15	AX15..
			10	5		L	E20L0005-2020L-AX05	AX05..
			20	10			E20L0010-2020L-AX10	AX10..
			30	15			E20L0015-2020L-AX15	AX15..
25	25		10	5		R	E25R0005-2525N-AX05	AX05..
			20	10			E25R0010-2525N-AX10	AX10..
			30	15			E25R0015-2525N-AX15	AX15..
			10	5		L	E25L0005-2525N-AX05	AX05..
			20	10			E25L0010-2525N-AX10	AX10..
			30	15			E25L0015-2525N-AX15	AX15..

2





C217
C184

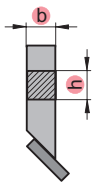
b [mm]	h [mm]	s [mm]	D_{min} [mm]	T_{max} [mm]		L R	Type, description	
16	16	3.0	10	5		R	E16R9005-1616J-AX05	AX05..
			20	10			E16R9010-1616J-AX10	AX10..
			10	5		L	E16L9005-1616J-AX05	AX05..
			20	10			E16L9010-1616J-AX10	AX10..
20	20		10	5		R	E20R9005-2020J-AX05	AX05..
			20	10			E20R9010-2020J-AX10	AX10..
			30	15			E20R9015-2020J-AX15	AX15..
			10	5		L	E20L9005-2020J-AX05	AX05..
			20	10			E20L9010-2020J-AX10	AX10..
			30	15			E20L9015-2020J-AX15	AX15..
25	25		10	5		R	E25R9005-2525L-AX05	AX05..
			20	10			E25R9010-2525J-AX10	AX10..
			30	15			E25R9015-2525L-AX15	AX15..
			10	5		L	E25L9005-2525L-AX05	AX05..
			20	10			E25L9010-2525J-AX10	AX10..
			30	15			E25L9015-2525L-AX15	AX15..


hard material matters
CERATIZIT
MSS-E25R03
-GX16-2
1023251513/27

External recessing

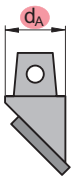
Overview – modular structure

Shanks 45°

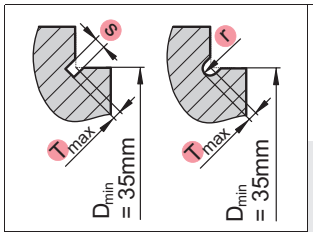


h / b
20/20 - 25/25

UTS 45°

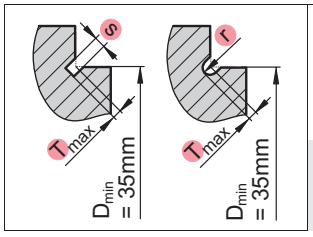


d_A = 40



GX16

s = 1,0 - 6,0
r = 0,8 - 3,0
T_{max} = 1,14 - 3,0

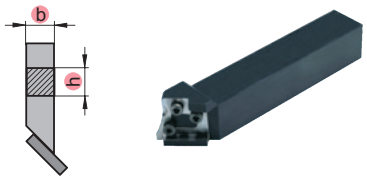


GX16

s = 1,0 - 6,0
r = 0,8 - 3,0
T_{max} = 1,14 - 3,0

BGR E20

▯▯



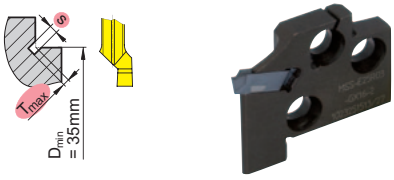
C198

b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R45-2020J	●
		L	MSS-E20L45-2020J	■

Application

Tools and inserts for parting and grooving

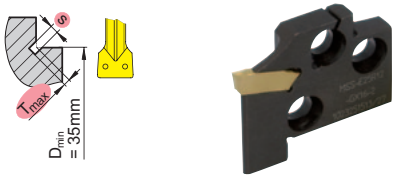
GX16



C204
C182

	s [mm]	T max [mm]	L R	Type, description	
■	1.00	1.14	R	MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.20	1.34		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.40	1.53		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.70	1.82		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.95	2.07		MSS-E20R03-GX16-2	GX16-2.. R/L
■	2.25	2.36		MSS-E20R03-GX16-2	GX16-2.. R/L
●	1.00	1.14	L	MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.20	1.34		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.40	1.53		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.70	1.82		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.95	2.07		MSS-E20L03-GX16-2	GX16-2.. R/L
●	2.25	2.36		MSS-E20L03-GX16-2	GX16-2.. R/L

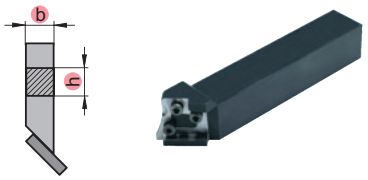
GX16



C201
C182

	s [mm]	T max [mm]	L R	Type, description	
■	3.00	3	L	MSS-E20L03-GX16-2	GX16-2..
■	3.25			MSS-E20L03-GX16-2	GX16-2..
■	3.50			MSS-E20L03-GX16-2	GX16-2..
■	4.00			MSS-E20L03-GX16-2	GX16-2..
■	4.25			MSS-E20L03-GX16-2	GX16-2..
■	4.50			MSS-E20L03-GX16-2	GX16-2..
■	5.00			MSS-E20L03-GX16-2	GX16-2..
●	3.00		R	MSS-E20R03-GX16-2	GX16-2..
●	3.25			MSS-E20R03-GX16-2	GX16-2..
●	3.50			MSS-E20R03-GX16-2	GX16-2..
●	4.00			MSS-E20R03-GX16-2	GX16-2..
●	4.25			MSS-E20R03-GX16-2	GX16-2..
●	4.50			MSS-E20R03-GX16-2	GX16-2..
●	5.00			MSS-E20R03-GX16-2	GX16-2..

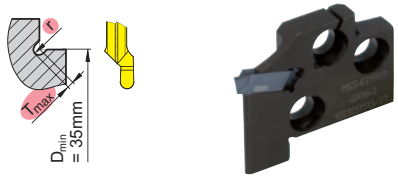
BGR E20



C198

b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R45-2020J	●
		L	MSS-E20L45-2020J	■

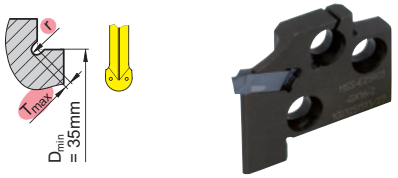
GX16



C204
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	0.80	1.78	R	MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.00	2.18		MSS-E20R03-GX16-2	GX16-2.. R/L
■	1.20	2.58		MSS-E20R03-GX16-2	GX16-2.. R/L
●	0.80	1.78	L	MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.00	2.18		MSS-E20L03-GX16-2	GX16-2.. R/L
●	1.20	2.58		MSS-E20L03-GX16-2	GX16-2.. R/L

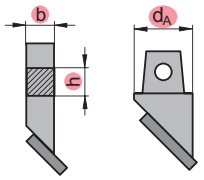
GX16



C201
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	12.00	R	MSS-E20R03-GX16-2	GX16-2..
■	2.00	12.00		MSS-E20R03-GX16-2	GX16-2..
■	2.50	12.00		MSS-E20R03-GX16-2	GX16-2..
●	1.50	12.00	L	MSS-E20L03-GX16-2	GX16-2..
●	2.00	12.00		MSS-E20L03-GX16-2	GX16-2..
●	2.50	12.00		MSS-E20L03-GX16-2	GX16-2..

BGR E25



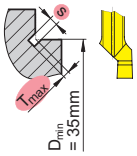
C198 C248

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R45-2525L	●
25	25		L	MSS-E25L45-2525L	■
		40		UT40-MSS-E25L45	■

Application

Tools and inserts for parting and grooving

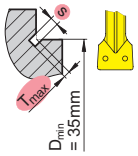
GX16



C204 C182

	s [mm]	T_{max} [mm]	L R	Type, description	
■	1.00	1.14	R	MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.20	1.34		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.40	1.53		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.70	1.82		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.95	2.07		MSS-E25R03-GX16-2	GX16-2.. R/L
■	2.25	2.36		MSS-E25R03-GX16-2	GX16-2.. R/L
●	1.00	1.14	L	MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.20	1.34		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.40	1.53		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.70	1.82		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.95	2.07		MSS-E25L03-GX16-2	GX16-2.. R/L
●	2.25	2.36		MSS-E25L03-GX16-2	GX16-2.. R/L

GX16



C201 C182

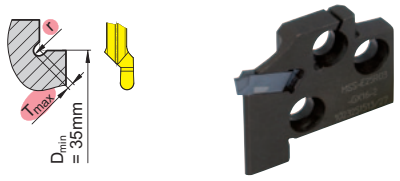
	s [mm]	T_{max} [mm]	L R	Type, description	
■	3.00	3	R	MSS-E25R03-GX16-2	GX16-2..
■	3.25			MSS-E25R03-GX16-2	GX16-2..
■	3.50			MSS-E25R03-GX16-2	GX16-2..
■	4.00			MSS-E25R03-GX16-2	GX16-2..
■	4.25			MSS-E25R03-GX16-2	GX16-2..
■	4.50			MSS-E25R03-GX16-2	GX16-2..
■	5.00			MSS-E25R03-GX16-2	GX16-2..
■	5.25			MSS-E25R03-GX16-2	GX16-2..
■	6.00			MSS-E25R03-GX16-2	GX16-2..
●	3.00		L	MSS-E25L03-GX16-2	GX16-2..
●	3.25			MSS-E25L03-GX16-2	GX16-2..
●	3.50			MSS-E25L03-GX16-2	GX16-2..
●	4.00			MSS-E25L03-GX16-2	GX16-2..
●	4.25			MSS-E25L03-GX16-2	GX16-2..
●	4.50			MSS-E25L03-GX16-2	GX16-2..
●	5.00			MSS-E25L03-GX16-2	GX16-2..
●	5.25			MSS-E25L03-GX16-2	GX16-2..
●	6.00			MSS-E25L03-GX16-2	GX16-2..

BGR E25

C198 C248

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R45-2525L	●
25	25		L	MSS-E25L45-2525L	■
		40		UT40-MSS-E25L45	■

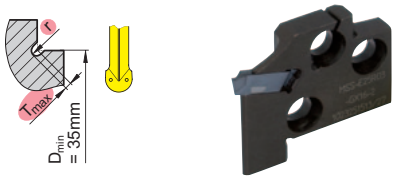
GX16



C204
C183

	r [mm]	T_{max} [mm]	L R	Type, description	
■	0.80	1.78	R	MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.00	2.18		MSS-E25R03-GX16-2	GX16-2.. R/L
■	1.20	2.58		MSS-E25R03-GX16-2	GX16-2.. R/L
●	0.80	1.78	L	MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.00	2.18		MSS-E25L03-GX16-2	GX16-2.. R/L
●	1.20	2.58		MSS-E25L03-GX16-2	GX16-2.. R/L

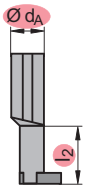
GX16



C201
C183

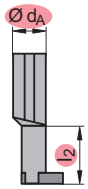
	r [mm]	T_{max} [mm]	L R	Type, description	
■	1.50	3	R	MSS-E25R03-GX16-2	GX16-2..
■	2.00			MSS-E25R03-GX16-2	GX16-2..
■	2.50			MSS-E25R03-GX16-2	GX16-2..
■	3.00			MSS-E25R03-GX16-2	GX16-2..
●	1.50		L	MSS-E25L03-GX16-2	GX16-2..
●	2.00			MSS-E25L03-GX16-2	GX16-2..
●	2.50			MSS-E25L03-GX16-2	GX16-2..
●	3.00			MSS-E25L03-GX16-2	GX16-2..

Boring bars 1.5D



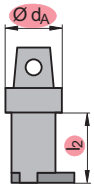
d_A = 20 - 40
l_2 = 24 - 60

Boring bars 2.5D



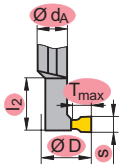
d_A = 20 - 50
l_2 = 40 - 100

UTS boring bars



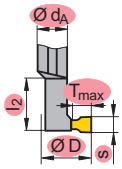
d_A = 40 - 63
l_2 = 64 - 80

GX09 monobloc boring bars



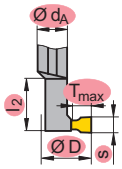
D = 16,0
l_2 = 30
d_A = 16
s = 2,0 - 3,75
T_{max} = 3,0

GX16 monobloc boring bars

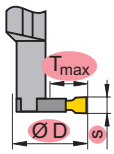
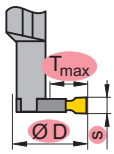


D = 20,5 - 42
l_2 = 32 - 64
d_A = 16 - 32
s = 2,0 - 5,0
T_{max} = 5,5 - 11

GX24 monobloc boring bars

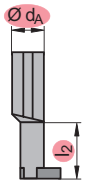


D = 42 - 57
l_2 = 64 - 80
d_A = 32 - 40
s = 2,76 - 6,5
T_{max} = 11 - 17,5

	**GX09** D = 20 - 32 s = 2,0 - 3,75 T_{max} = 4 - 6 	**GX16** D = 40 - 50 s = 2,0 - 6,5 T_{max} = 9 - 10 	**GX24** D = 60 s = 3,0 - 6,0 T_{max} = 19 
	**GX09** D = 20 - 32 s = 2,0 - 3,75 T_{max} = 4 - 6 	**GX16** D = 40 - 50 s = 2,0 - 6,5 T_{max} = 9 - 10 	**GX24** D = 60 s = 3,0 - 6,0 T_{max} = 19 

BGR I16

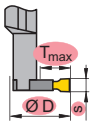
GX09



C231-C232

l_2 [mm]	d_A [mm]		Type, description	
24	20	R	MSS-I16R90-1.5D-N	●
40	20		MSS-I16R90-2.5D-N	●
24	20	L	MSS-I16L90-1.5D-N	■
40	20		MSS-I16L90-2.5D-N	■

GX09



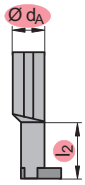
C233

C180

	D_{min} [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	20	2.00	2.75	4	R	MSS-I16R04-GX09-1	GX09-1..
■		2.76	3.75			MSS-I16R04-GX09-2	GX09-2..
●		2.00	2.75		L	MSS-I16L04-GX09-1	GX09-1..
●		2.76	3.75			MSS-I16L04-GX09-2	GX09-2..

BGR I20

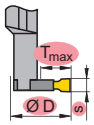
GX09



C231-C232

l_2 [mm]	d_A [mm]		Type, description	
30	20	R	MSS-I20R90-1.5D-N	●
50	25		MSS-I20R90-2.5D-N	●
30	20	L	MSS-I20L90-1.5D-N	■
50	25		MSS-I20L90-2.5D-N	■

GX09

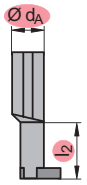


C233
C180

	D_{min} [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	25	2.00	2.75	5	R	MSS-I20R05-GX09-1	GX09-1..
■		2.76	3.75			MSS-I20R05-GX09-2	GX09-2..
●		2.00	2.75		L	MSS-I20L05-GX09-1	GX09-1..
●		2.76	3.75			MSS-I20L05-GX09-2	GX09-2..

BGR I25

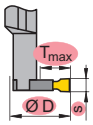
GX09



C231-C232

l_2 [mm]	d_A [mm]		Type, description	
38	25	R	MSS-I25R90-1.5D-N	●
63	32		MSS-I25R90-2.5D-N	●
38	25	L	MSS-I25L90-1.5D-N	■
63	32		MSS-I25L90-2.5D-N	■

GX09



C233
C180

	D_{min} [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	32	2.00	2.75	6	R	MSS-I25R06-GX09-1	GX09-1..
■		2.76	3.75			MSS-I25R06-GX09-2	GX09-2..
●		2.00	2.75		L	MSS-I25L06-GX09-1	GX09-1..
●		2.76	3.75			MSS-I25L06-GX09-2	GX09-2..

BGR I32

* ² ULJKW KDQG

C231-C232 C249

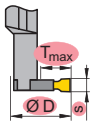
l_2 [mm]	d_A [mm]		Type, description	
48	32	R	MSS-I32R90-1.5D-N	●
80	40		MSS-I32R90-2.5D-N	●
64	40		UT40-MSS-I32R90-2D	●

* ² OHIW KDQG

C231-C232 C249

l_2 [mm]	d_A [mm]		Type, description	
48	32	L	MSS-I32L90-1.5D-N	■
80	40		MSS-I32L90-2.5D-N	■
64	50		UT50-MSS-I32L90-2D	■

GX16



C234
C180-C181

	D_{min} [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	L R	Type, description	
■	40	2.00	2.75	9	R	MSS-I32R09-GX16-1	GX16-1..
■		2.76	3.75			MSS-I32R09-GX16-2	GX16-2..
■		3.76	5.00			MSS-I32R09-GX16-3	GX16-3..
■		5.01	6.50			MSS-I32R09-GX16-4	GX16-4..
●		2.00	2.75		L	MSS-I32L09-GX16-1	GX16-1..
●		2.76	3.75			MSS-I32L09-GX16-2	GX16-2..
●		3.76	5.00			MSS-I32L09-GX16-3	GX16-3..
●		5.01	6.50			MSS-I32L09-GX16-4	GX16-4..

BGR I40

* ² ULJKWKDQG

C231-C232 C249

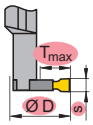
l2 [mm]	dA [mm]		Type, description	
60	40	R	MSS-I40R90-1.5D-N	●
100	50		MSS-I40R90-2.5D-N	●
80	40		UT40-MSS-I40R90-2D	●
80	63		UT63-MSS-I40R90-2D	●

* ² HIWKDQG

C231-C232 C249

l2 [mm]	dA [mm]		Type, description	
60	40	L	MSS-I40L90-1.5D-N	■
100	50		MSS-I40L90-2.5D-N	■
80	40		UT40-MSS-I40L90-2D	■

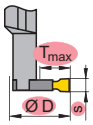
GX16

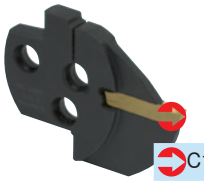


C234
C180-C181

	Dmin [mm]	smin [mm]	smax [mm]	Tmax [mm]	L R	Type, description	
■	50	2.00	2.75	10	R	MSS-I40R10-GX16-1	GX16-1..
■		2.76	3.75			MSS-I40R10-GX16-2	GX16-2..
■		3.76	5.00			MSS-I40R10-GX16-3	GX16-3..
■		5.01	6.50			MSS-I40R10-GX16-4	GX16-4..
●		2.00	2.75		L	MSS-I40L10-GX16-1	GX16-1..
●		2.76	3.75			MSS-I40L10-GX16-2	GX16-2..
●		3.76	5.00			MSS-I40L10-GX16-3	GX16-3..
●		5.01	6.50			MSS-I40L10-GX16-4	GX16-4..

GX24

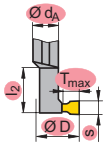




C234
C180-C181

	Dmin [mm]	smin [mm]	smax [mm]	Tmax [mm]	L/N/R	Type, description	
■ ●	60	2.76	3.75	19	N	MSS-I40N19-GX24-2	GX24-2..
■ ●		3.76	5.00			MSS-I40N19-GX24-3	GX24-3..
■ ●		5.01	6.50			MSS-I40N19-GX24-4	GX24-4..

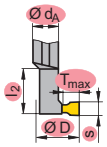
GX09 monobloc boring bars



C237 C180

d_A [mm]	l_2 [mm]	D [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]		L R	Type, description	
16	30	16	0.60	3.75	3		R	I12R90-2.5D-GX09	GX09..
							L	I12L90-2.5D-GX09	GX09..

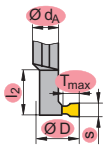
GX16 monobloc boring bars



C238 C180-C181

d_A [mm]	l_2 [mm]	D [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]		L R	Type, description	
16	32	20.5	2.00	2.75	5.5		R	I16R90-2.0D-GX16-1	GX16-1..
16	32	20.5	0.60	3.75	5.5			I16R90-2.0D-GX16-2	GX16-2..
20	40	25.0	0.60	3.75	5.5			I20R90-2.0D-GX16-2	GX16-2..
25	50	32.0	0.60	3.75	8.0			I25R90-2.0D-GX16-2	GX16-2..
25	50	32.0	3.76	5.00	10.0			I25R90-2.0D-GX16-3	GX16-3..
32	64	42.0	0.60	3.75	11.0			I32R90-2.0D-GX16-2	GX16-2..
32	64	42.0	3.76	5.00	11.0			I32R90-2.0D-GX16-3	GX16-3..
16	32	20.5	2.00	2.75	5.5		L	I16L90-2.0D-GX16-1	GX16-1..
16	32	20.5	0.60	3.75	5.5			I16L90-2.0D-GX16-2	GX16-2..
20	40	25.0	0.60	3.75	5.5			I20L90-2.0D-GX16-2	GX16-2..
25	50	32.0	0.60	3.75	8.0			I25L90-2.0D-GX16-2	GX16-2..
25	50	32.0	3.76	5.00	10.0			I25L90-2.0D-GX16-3	GX16-3..
32	64	42.0	0.60	3.75	11.0			I32L90-2.0D-GX16-2	GX16-2..
32	64	42.0	3.76	5.00	11.0			I32L90-2.0D-GX16-3	GX16-3..

GX24 monobloc boring bars



C239 C180-C181

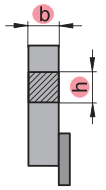
d_A [mm]	l_2 [mm]	D [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]		L R	Type, description	
32	64	42	2.76	3.75	11.0		R	I32R90-2.0D-GX24-2	GX24-2..
32	64	42	3.76	5.00	11.0			I32R90-2.0D-GX24-3	GX24-3..
32	64	47	5.01	6.50	17.5			I32R90-2.0D-GX24-4	GX24-4..
40	80	53	3.76	5.00	12.0			I40R90-2.0D-GX24-3	GX24-3..
40	80	57	5.01	6.50	17.5			I40R90-2.0D-GX24-4	GX24-4..
32	64	42	2.76	3.75	11.0		L	I32L90-2.0D-GX24-2	GX24-2..
32	64	42	3.76	5.00	11.0			I32L90-2.0D-GX24-3	GX24-3..
32	64	47	5.01	6.50	17.5			I32L90-2.0D-GX24-4	GX24-4..
40	80	53	3.76	5.00	12.0			I40L90-2.0D-GX24-3	GX24-3..
40	80	57	5.01	6.50	17.5			I40L90-2.0D-GX24-4	GX24-4..

CERATIZIT hard material matters

Thread turning

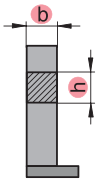
Overview – modular structure

Shanks 0°



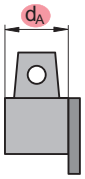
h / b
16/20 - 25/25

Shanks 90°



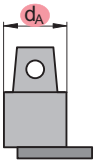
h / b
20/20 - 25/25

UTS 0°



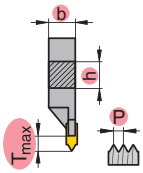
d_A = 40 - 63

UTS 90°



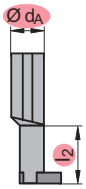
d_A = 40 - 50

Monobloc tool holders 0°



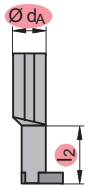
h / b
12/12
P = .5 - 3.0
P = 48 - 8 TPI
T_{max} = 10

Boring bars 1.5D



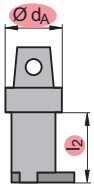
d_A = 32
l_2 = 48

Boring bars 2.5D



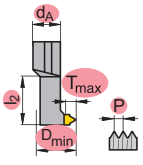
d_A = 40
l_2 = 80

UTS boring bars



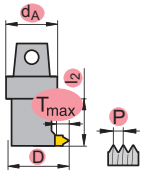
d_A = 40 - 50
l_2 = 64

Monobloc boring bars

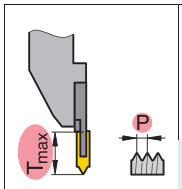


d_A = 20 - 32
l_2 = 32 - 50
D = 20 - 32
T_{max} = 4,0 - 6,0
P = .5 - 5.0mm
P = 48 - 5 TPI

UTS monobloc boring bars

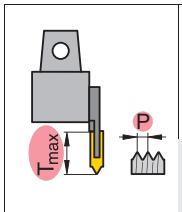


d_A = 40
l_2 = 32 - 50
D = 20 - 32
T_{max} = 4.0 - 6.0
P = .5 - 5.0mm
P = 48 - 5 TPI



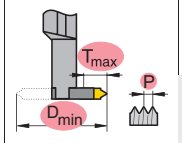
TC16

P = .5 - 5.0mm
P = 48 - 5 TPI
T_{max} = 8.0 - 12



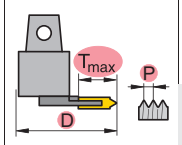
TC16

P = .5 - 5.0mm
P = 48 - 5 TPI
T_{max} = 8.0 - 12



TC16

D = 40
P = .5 - 5.0mm
P = 48 - 5 TPI
T_{max} = 7.0



TC16

D = 40
P = .5 - 5.0mm
P = 48 - 5 TPI
T_{max} = 7.0

BGR E20

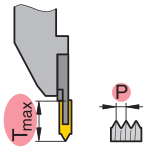
C196

b [mm]	h [mm]		Type, description	
20	16	R	MSS-E20R00-1620G	■
	20		MSS-E20R00-2020J	■
	16	L	MSS-E20L00-1620G	●
	20		MSS-E20L00-2020J	●

C197

b [mm]	h [mm]		Type, description	
20	20	R	MSS-E20R90-2020J	●
		L	MSS-E20L90-2020J	■

TC16



C240

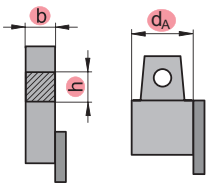
C190-C193

	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	T_{max} [mm]	L/N/R	Type, description	
■	0.50	1.50	48	16	8	R	MSS-E20R-TC16-1	TC16-1..
■ ●	1.75	3.00	14	8	12	N	MSS-E20N-TC16-2	TC16-2..
●	0.50	1.50	48	16	8	L	MSS-E20L-TC16-1	TC16-1..

Thread turning

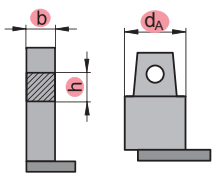
C278-C282

BGR E25




C196 C246

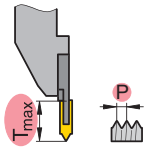
b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R00-2525L	■
		40		UT40-MSS-E25R00	■
		50		UT50-MSS-E25R00	■
		63		UT63-MSS-E25R00	■
25	25		L	MSS-E25L00-2525L	●
		40		UT40-MSS-E25L00	●
		50		UT50-MSS-E25L00	●
		63		UT63-MSS-E25L00	●




C197 C247

b [mm]	h [mm]	d_A [mm]		Type, description	
25	25		R	MSS-E25R90-2525L	●
		40		UT40-MSS-E25R90	●
		50		UT50-MSS-E25R90	●
25	25		L	MSS-E25L90-2525L	■
		40		UT40-MSS-E25L90	■
		50		UT50-MSS-E25L90	■

TC16



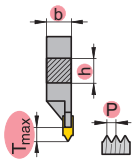
C240
C190-C193

	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	T_{max} [mm]	L/N/R	Type, description	
■	0.50	1.50	48	16	8	R	MSS-E25R-TC16-1	TC16-1..
■	1.75	3.00	14	8	10		MSS-E25R-TC16-2	TC16-2..
■ ●	3.50	5.00	7	5	12	N	MSS-E25N-TC16-3	TC16-3..
●	0.50	1.50	48	16	8	L	MSS-E25L-TC16-1	TC16-1..
●	1.75	3.00	14	8	10		MSS-E25L-TC16-2	TC16-2..

Thread turning

C278-C282

TC16



C241 C190-C193

h [mm]	b [mm]	T_{max} [mm]	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	L R	Type, description	
12	12	10	0.50	3.00	48	8	R	E12R00-1212-TC16	TC16-1/2..
							L	E12L00-1212-TC16	TC16-1/2..

Thread turning

C278-C282

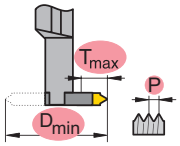
BGR I32

TC16

C231-C232 C249

l_2 [mm]	d_A [mm]		Type, description	
48	32	R	MSS-I32R90-1.5D-N	●
80	40		MSS-I32R90-2.5D-N	●
64	40		UT40-MSS-I32R90-2D	●
48	32	L	MSS-I32L90-1.5D-N	■
80	40		MSS-I32L90-2.5D-N	■
64	50		UT50-MSS-I32L90-2D	■

TC16



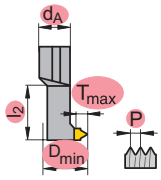
C242
C190-C193

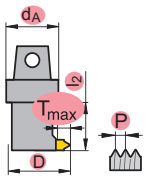
	D_{min} [mm]	T_{max} [mm]	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	L/N/R	Type, description	
■	40	7	0.50	1.50	48	16	R	MSS-I32R-TC16-1	TC16-1..
■			1.75	3.00	14	8		MSS-I32R-TC16-2	TC16-2..
■ ●			3.50	5.00	7	5	N	MSS-I32N-TC16-3	TC16-3..
●			0.50	1.50	48	16	L	MSS-I32L-TC16-1	TC16-1..
●			1.75	3.00	14	8		MSS-I32L-TC16-2	TC16-2..

Thread turning

C278-C282

TC16





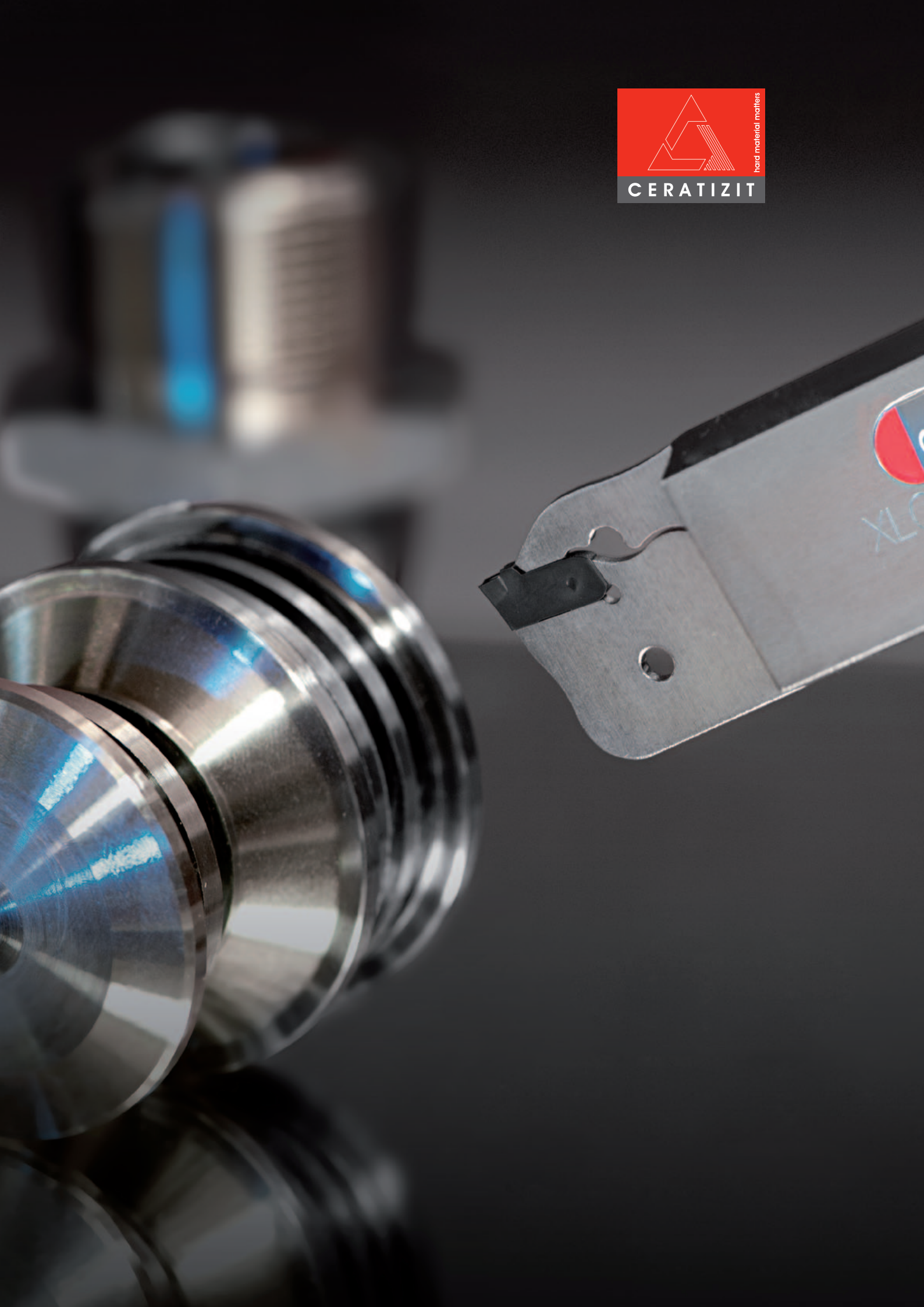
C243 C190-C193

C245 C190-C193

D_{min} [mm]	l_2 [mm]	d_A [mm]	T_{max} [mm]	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	L R	Type, description	
20	32	20	4	0.50	3.00	48	8	R	I16R90-2D-TC16	TC16-1/2..
	32	20	4	0.50	3.00	48	8	L	I16L90-2D-TC16	TC16-1/2..
25	40	25	5	0.50	5.00	48	5	R	I20R90-2D-TC16	TC16-..
	40	25	5	0.50	5.00	48	5	L	I20L90-2D-TC16	TC16-..
32	50	32	6	0.50	5.00	48	5	R	I25R90-2D-TC16	TC16-..
	50	32	6	0.50	5.00	48	5	L	I25L90-2D-TC16	TC16-..
20	32	40	4	0.50	3.50	48	8	R	UT40-MSS-I16R90-2D-TC16	TC16-1/2..
25	40	40	5	0.50	5.00	48	5	R	UT40-MSS-I20R90-2D-TC16	TC16-..
32	50	40	6	0.50	5.00	48	5	R	UT40-MSS-I25R90-2D-TC16	TC16-..
	50	40	6	0.50	5.00	48	5	L	UT40-MSS-I25L90-2D-TC16	TC16-..

Thread turning

C278-C282

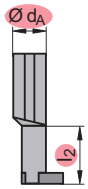

hard material matters
CERATIZIT

CERATIZIT hard material matters

Thread milling

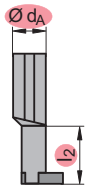
2 YHUYLHZ ² P RGXODUVWXFWXUH

Boring bars 1.5D



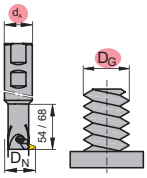
d_A = 32
l_2 = 48

Boring bars 2.5D



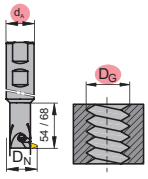
d_A = 40
l_2 = 80

TC milling cutters

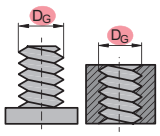


d_A = 25 - 32
DG = M16 - M80
DG = $R^5/_8$
- $R1^3/_4$

TC milling cutters



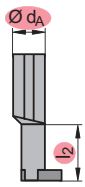
d_A = 25 - 32
DG = M27 - M80
DG = $R1^1/_4$
- $R2^1/_2$



TC16

DG = M82
- M300
DG = R2 3/4 - R6

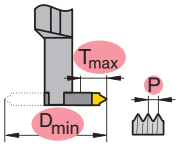
BGR I32



C231-C232

d_A [mm]	l_2 [mm]			Type, description	
32	48		R	MSS-I32R90-1.5D-N	■
40	80			MSS-I32R90-2.5D-N	■

TC16



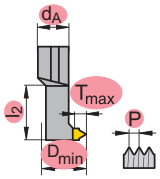
C242

C190-C193

	D_{min} [mm]	T_{max} [mm]	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	L/N/R	Type, description	
■	44	7	1.75	3.00	14	8	R	MSS-I32R-TC16-2	TC16-2..
■			3.50	5.00	7	5	N	MSS-I32N-TC16-3	TC16-3..
■	59		1.75	3.00	14	8	R	MSS-I32R-TC16-2	TC16-2..
■			3.50	5.00	7	5	N	MSS-I32N-TC16-3	TC16-3..

For further information on thread milling see

C283-C289



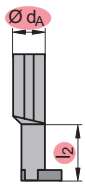
C244 C190-C193

D_N [mm]	l_2 [mm]	d_A [mm]	T_{max} [mm]	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	L R	Type, description	
25	54	25	3.0	0.50	5.00	28	5	R	I25R90-2D-TC16-W	TC16-..
32	68	32	3.5						I32R90-2D-TC16-W	TC16-..

For further information on thread milling see

C283-C289

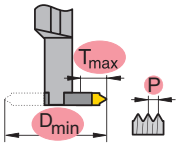
BGR E32



C231-C232

d_A [mm]	l_2 [mm]			Type, description	
32	48		R	MSS-I32R90-1.5D-N	■
40	80			MSS-I32R90-2.5D-N	■

TC16



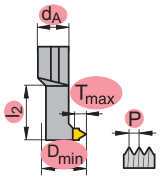
C242

C190-C193

	D_{min} [mm]	T_{max} [mm]	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	L/N/R	Type, description	
■	44	7	1.75	3.00	14	8	R	MSS-I32R-TC16-2	TC16-2..
■			3.50	5.00	7	5	N	MSS-I32N-TC16-3	TC16-3..
■	59		1.75	3.00	14	8	R	MSS-I32R-TC16-2	TC16-2..
■			3.50	5.00	7	5	N	MSS-I32N-TC16-3	TC16-3..

For further information on thread milling see

C283-C289



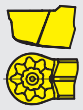
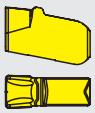
C244 C190-C193

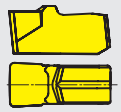
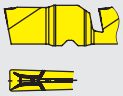
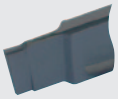
D_N [mm]	l_2 [mm]	d_A [mm]	T_{max} [mm]	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	L R	Type, description	
25	54	25	3.0	0.50	5.00	28	5	R	I25R90-2D-TC16-W	TC16-..
32	68	32	3.5						I32R90-2D-TC16-W	TC16-..

For further information on thread milling see

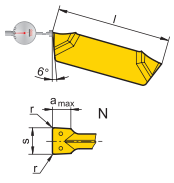
C283-C289

Overview

GX..E	GX..S	GX..R	AX	SX
				
V□ □□ □□ □² □□ □□	V□ □□ □□ □² □□ □□ □	V□ □□ □□ □² □□ □□	s = 3,0	V□ □□ □□ □² □□ □□
				
C180-C181	C182	C183	C184	C185

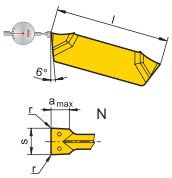
LX	FX	PX	MC	TC
				
V	V	V	V	**Partial profile**
				
C186	C187	C188	C189	C190
				Partial profile
				
				C191
				Full profile
				
				C192
				Full profile
				
				C193

			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	l [mm]	r [mm]	a_{max} [mm]
		P				●	●	●	●	●	●	●						
		M			○	●	○	○	○	●	○	●						
		K	●				●	●		●	●							
		N	●	○	●					○			●					
		S		●	○					●		○						
		H																
-F2		GX09-1E2.00N0.20-F2					●			●				N	2.00	9.0	0.20	2.0
		GX09-1E2.50N0.20-F2					●			●				N	2.50	9.0	0.20	2.0
		GX09-2E3.00N0.30-F2					●			●				N	3.00	9.0	0.30	2.5
		GX16-1E2.00N0.20-F2					●			●				N	2.00	16.0	0.20	2.0
		GX16-2E3.00N0.30-F2					●			●				N	3.00	16.0	0.30	2.5
		GX16-3E4.00N0.40-F2					●			●				N	4.00	16.0	0.40	3.0
		GX16-3E5.00N0.40-F2					●			●				N	5.00	16.0	0.40	3.0
		GX24-2E3.00N0.30-F2					●			●		●		N	3.00	24.0	0.30	2.5
		GX24-2E3.50N0.30-F2						●				●		N	3.50	24.0	0.30	2.5
		GX24-3E4.00N0.40-F2					●	●		●		●		N	4.00	24.0	0.40	3.0
		GX24-3E5.00N0.40-F2					●	●		●		●		N	5.00	24.0	0.40	3.0
		GX24-4E6.00N0.50-F2					●	●		●		●		N	6.00	24.0	0.50	3.5
EN		GX09-1E2.00N0.20					●	●	●	●				N	2.00	9.0	0.20	1.5
		GX09-1E2.50N0.20					●	●	●	●				N	2.50	9.0	0.20	1.5
		GX09-2E3.00N0.30					●	●	●	●				N	3.00	9.0	0.30	2.0
		GX09-2E3.50N0.30					●	●	●					N	3.50	9.0	0.30	2.0
		GX16-1E2.00N0.20					●	●	●	●	●			N	2.00	16.0	0.20	2.0
		GX16-1E2.50N0.20					●	●	●	●	●			N	2.50	16.0	0.20	2.0
		GX16-2E3.00N0.30					●	●	●	●	●			N	3.00	16.0	0.30	2.5
		GX16-2E3.00N0.50					●	●						N	3.00	16.0	0.50	2.5
		GX16-2E3.50N0.30					●	●	●	●	●			N	3.50	16.0	0.30	2.5
		GX16-3E4.00N0.40					●	●	●	●	●			N	4.00	16.0	0.40	3.0
		GX16-3E4.00N0.60					●							N	4.00	16.0	0.60	3.0
		GX16-3E4.50N0.40					●	●						N	4.50	16.0	0.40	3.0
		GX16-3E5.00N0.40					●	●	●	●	●			N	5.00	16.0	0.40	3.0
		GX16-3E5.00N0.60					●	●						N	5.00	16.0	0.60	3.0
		GX16-4E6.00N0.50					●	●	●	●				N	6.00	16.0	0.50	3.5
		GX16-4E6.00N0.80					●	●						N	6.00	16.0	0.80	3.5
		GX24-2E3.00N0.30					●	●		●	●			N	3.00	24.0	0.30	2.5
		GX24-3E4.00N0.40					●	●		●	●			N	4.00	24.0	0.40	3.0
		GX24-3E5.00N0.40					●	●		●	●			N	5.00	24.0	0.40	3.0
		GX24-4E6.00N0.50					●	●		●	●			N	6.00	24.0	0.50	3.5
-M40		GX09-1E2.00N0.20-M40					●	●		●		●		N	2.00	9.0	0.20	1.5
		GX09-2E3.00N0.30-M40					●	●		●		●		N	3.00	9.0	0.30	2.0
		GX16-1E2.00N0.20-M40					●	●		●		●		N	2.00	16.0	0.20	2.0
		GX16-2E3.00N0.30-M40					●	●		●		●		N	3.00	16.0	0.30	3.0
		GX16-3E4.00N0.40-M40					●	●		●		●		N	4.00	16.0	0.40	3.5
		GX16-3E5.00N0.40-M40					●	●		●		●		N	5.00	16.0	0.40	3.5
		GX16-4E6.00N0.50-M40					●	●		●		●		N	6.00	16.0	0.50	4.0
		GX24-2E3.00N0.30-M40					●			●		●		N	3.00	24.0	0.30	3.5
		GX24-3E4.00N0.40-M40					●			●		●		N	4.00	24.0	0.40	4.0
		GX24-3E5.00N0.40-M40					●			●		●		N	5.00	24.0	0.40	4.0
		GX24-4E6.00N0.50-M40					●			●		●		N	6.00	24.0	0.50	4.0
			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s	l	r	a_{max}



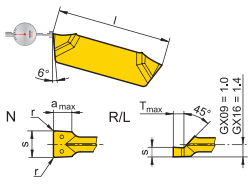
C53-C68 C70-C71 C268-C271 C255 C200-C202 C205-C207 C213-C215 C223 C233-C234 C237-C239

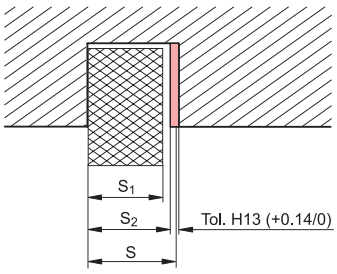
			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	l [mm]	r [mm]	a_{max} [mm]
P						●	●	●	●	●	●	●						
M					O	●	O	O	O	●	O	●						
K			●				●	●		●	●							
N			●	O	●					O			●					
S				●	O					●		O						
H																		
-M1		GX16-1E2.00N0.20-M1					●			●				N	2.00	16.0	0.20	2.0
		GX16-2E3.00N0.20-M1					●			●				N	3.00	16.0	0.20	2.5
		GX16-3E4.00N0.30-M1					●			●				N	4.00	16.0	0.30	3.0
		GX24-1E2.00N0.20-M1					●			●		●		N	2.00	24.0	0.20	2.5
		GX24-2E3.00N0.20-M1					●			●		●		N	3.00	24.0	0.20	2.5
		GX24-3E4.00N0.30-M1					●			●		●		N	4.00	24.0	0.30	3.0
-27P		GX16-1E2.00N0.20-27P	●											N	2.00	16.0	0.20	2.0
		GX16-2E3.00N0.30-27P	●											N	3.00	16.0	0.30	2.5
		GX16-3E4.00N0.40-27P	●											N	4.00	16.0	0.40	3.0
		GX16-4E6.00N0.50-27P	●											N	6.00	16.0	0.50	3.5
		GX24-2E3.00N0.30-27P	●											N	3.00	24.0	0.30	2.5
		GX24-3E4.00N0.40-27P	●											N	4.00	24.0	0.40	3.0
		GX24-3E5.00N0.40-27P	●											N	5.00	24.0	0.40	3.0
		GX24-4E6.00N0.50-27P	●											N	6.00	24.0	0.50	3.5
			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s	l	r	a_{max}



C53-C68 C70-C71 C268-C271 C255 GX C200-C202 GX-A C205-C207 GX C213-C215 GX C223 GX C233-C234 GX C237-C239

			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	s_1 [mm]	s_2 [mm]	l [mm]	r [mm]	T_{max} [mm]	a_{max} [mm]
P					●	●	●	●	●	●	●										
M				○	●	○	○	○	●	○	●										
K	●				●	●		●	●												
N	●	○	●					○			●										
S		●	○					●		○											
H																					
ER-EL		GX09-1S0.60L						●		●				L	0.60	0.4	0.5	9.0		0.75	
		GX09-1S0.60R						●		●				R	0.60	0.4	0.5	9.0		0.75	
		GX09-1S0.80L						●		●				L	0.80	0.6	0.7	9.0		0.94	
		GX09-1S0.80R						●		●				R	0.80	0.6	0.7	9.0		0.94	
		GX09-1S0.90L						●		●				L	0.90	0.7	0.8	9.0		1.04	
		GX09-1S0.90R						●		●				R	0.90	0.7	0.8	9.0		1.04	
		GX09-1S1.00L						●		●				L	1.00	0.8	0.9	9.0		1.14	
		GX09-1S1.00R						●		●				R	1.00	0.8	0.9	9.0		1.14	
		GX09-1S1.20L						●		●				L	1.20	1.0	1.1	9.0		1.34	
		GX09-1S1.20R						●		●				R	1.20	1.0	1.1	9.0		1.34	
		GX09-1S1.40L						●		●				L	1.40	1.2	1.3	9.0		1.53	
		GX09-1S1.40R						●		●				R	1.40	1.2	1.3	9.0		1.53	
		GX09-1S1.70L						●		●				L	1.70	1.5	1.6	9.0		1.82	
		GX09-1S1.70R						●		●				R	1.70	1.5	1.6	9.0		1.82	
		GX16-2S0.60L						●		●				L	0.60	0.40	0.50	16.0		0.75	
		GX16-2S0.60R						●		●				R	0.60	0.40	0.50	16.0		0.75	
		GX16-2S0.80L						●		●				L	0.80	0.60	0.70	16.0		0.94	
		GX16-2S0.80R						●		●				R	0.80	0.60	0.70	16.0		0.94	
		GX16-2S0.90L						●		●				L	0.90	0.70	0.80	16.0		1.04	
		GX16-2S0.90R						●		●				R	0.90	0.70	0.80	16.0		1.04	
		GX16-2S1.00L						●		●				L	1.00	0.80	0.90	16.0		1.14	
		GX16-2S1.00R						●		●				R	1.00	0.80	0.90	16.0		1.14	
		GX16-2S1.20L						●		●				L	1.20	1.00	1.10	16.0		1.34	
		GX16-2S1.20R						●		●				R	1.20	1.00	1.10	16.0		1.34	
		GX16-2S1.40L						●		●				L	1.40	1.20	1.30	16.0		1.53	
		GX16-2S1.40R						●		●				R	1.40	1.20	1.30	16.0		1.53	
		GX16-2S1.70L						●		●				L	1.70	1.50	1.60	16.0		1.82	
		GX16-2S1.70R						●		●				R	1.70	1.50	1.60	16.0		1.82	
		GX16-2S1.95L						●		●				L	1.95	1.75	1.85	16.0		2.07	
		GX16-2S1.95R						●		●				R	1.95	1.75	1.85	16.0		2.07	
		GX16-2S2.25L						●		●				L	2.25	2.00	2.15	16.0		2.36	
		GX16-2S2.25R						●		●				R	2.25	2.00	2.15	16.0		2.36	
EN		GX09-1S1.95N						●		●				N	1.95	1.75	1.85	9.0	0.10	7.00	2.0
		GX09-1S2.25N						●		●				N	2.25	2.00	2.15	9.0	0.10	7.00	2.0
		GX09-2S2.75N						●		●				N	2.75	2.50	2.65	9.0	0.10	7.00	2.0
		GX09-2S3.25N						●		●				N	3.25	3.00	3.15	9.0	0.10	7.00	2.0
		GX16-2S2.75N						●		●				N	2.75	2.50	2.65	16.0	0.10	12.00	3.0
		GX16-2S3.25N						●		●				N	3.25	3.00	3.15	16.0	0.10	12.00	3.0
		GX16-3S4.25N						●		●				N	4.25	4.00	4.15	16.0	0.20	12.00	3.5
		GX16-4S5.25N						●		●				N	5.25	5.00	5.15	16.0	0.20	12.00	4.0
			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s	s_1	s_2	l	r	T_{max}	a_{max}





DIN 471 - 472: DIN standard for circlip grooves

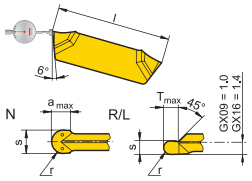
s: insert width

s_1: circlip width

s_2: standard groove width H13 (+0.14/0)

C53-C68 C70-C71 C268-C271 C255 C203-C204 C213-C214 C235-C236 C237-C238

			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	l [mm]	r [mm]	T_{max} [mm]	a_{max} [mm]
P						●	●	●	●	●	●	●							
M					○	●	○	○	○	●	○	●							
K			●				●	●		●	●								
N			●	○	●					○			●						
S				●	○					●		○							
H																			
ER-EL		GX09-1R0.80L					●	●						L	1.60	9.0	0.80	1.78	
		GX09-1R0.80R					●	●						R	1.60	9.0	0.80	1.78	
		GX16-2R0.80L					●	●						L	1.60	16.0	0.80	1.78	
		GX16-2R0.80R					●	●						R	1.60	16.0	0.80	1.78	
		GX16-2R1.00L					●	●						L	2.00	16.0	1.00	2.18	
		GX16-2R1.00R					●	●						R	2.00	16.0	1.00	2.18	
		GX16-2R1.20L					●	●						L	2.40	16.0	1.20	2.58	
		GX16-2R1.20R					●	●						R	2.40	16.0	1.20	2.58	
EN		GX09-1R1.00N					●	●	●					N	2.00	9.0	1.00	7.00	1.0
		GX09-1R1.20N					●	●	●					N	2.40	9.0	1.20	7.00	1.2
		GX16-2R1.50N					●	●	●	●				N	6.00	16.0	1.50	12.00	1.5
		GX16-3R2.00N					●	●	●	●				N	6.00	16.0	2.00	12.00	2.0
		GX16-3R2.50N					●	●	●	●				N	5.00	16.0	2.50	12.00	2.5
		GX16-4R3.00N					●	●	●	●				N	6.00	16.0	3.00	12.00	3.0
-M3		GX24-2R1.50N-M3					●	●			●			N	3.00	24.4	1.50	21.00	1.5
		GX24-3R2.00N-M3					●	●			●			N	4.00	24.4	2.00	21.00	2.5
		GX24-3R2.50N-M3					●	●			●			N	5.00	24.4	2.50	21.00	3.0
		GX24-4R3.00N-M3					●	●			●			N	6.00	24.4	3.00	21.00	4.0
-27P		GX16-2R1.50N-27P	●											N	3.00	16.0	1.50	12.00	1.5
		GX16-3R2.00N-27P	●											N	4.00	16.0	2.00	12.00	2.0
		GX16-3R2.50N-27P	●											N	5.00	16.0	2.50	12.00	2.5
		GX24-4R3.00N-27P		●										N	6.00	25.3	3.00	21.00	4.0
			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s	l	r	T_{max}	a_{max}



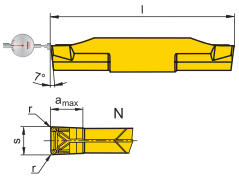
C53-C68 C70-C71 C268-C271 C255 C202-C204 C205-C207 C213-C215 C223 C234-C236 C237-C239

Inserts

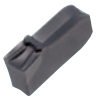
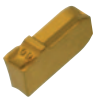
Tools and inserts for parting and grooving

System AX

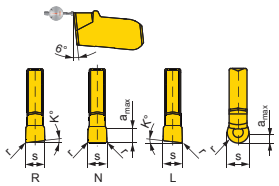
	H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	l [mm]	r [mm]	a_{max} [mm]
P				●	●	●	●	●	●	●						
M			O	●	O	O	O	●	O	●						
K	●				●	●		●	●							
N	●	O	●					O			●					
S		●	O					●		O						
H																
-F50																
AX05-E3.00N0.30-10-F50								●				N	3.00	24.0	0.30	5.0
AX10-E3.00N0.30-20-F50								●				N	3.00	34.0	0.30	10.0
AX15-E3.00N0.30-30-F50								●				N	3.00	44.0	0.30	15.0



C53-C68 C70-C71 C268-C271 C255 AX C208 AX C216-C217

		H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	r [mm]	a_{max} [mm]	K >
P					●	●	●	●	●	●	●						
M				O	●	O	O	O	●	O	●						
K		●				●	●		●	●							
N		●	O	●					O			●					
S			●	O					●		O						
H																	
-F2																	
	SX E2.00N0.20-F2					●			●				N	2.00	0.20	1.5	
	SX E3.00N0.30-F2					●			●	●	●		N	3.00	0.30	2.0	
	SX E4.00N0.40-F2					●			●				N	4.00	0.40	2.5	
-M2																	
	SX E2.00N0.20-M2					●			●	●	●		N	2.00	0.20	1.5	
	SX E3.00N0.30-M2					●			●	●	●		N	3.00	0.30	2.0	
	SX E4.00N0.40-M2					●			●	●	●		N	4.00	0.40	2.5	
	SX E5.00N0.40-M2					●			●				N	5.00	0.40	2.7	
	SX E6.00N0.50-M2					●			●				N	6.00	0.50	3.0	
-M3																	
	SX R1.50N-M3								●	●			N	3.00	1.50	1.5	
	SX R2.00N-M3								●	●			N	4.00	2.00	2.0	
	SX R2.50N-M3								●	●			N	5.00	2.50	2.5	
	SX R3.00N-M3								●				N	6.00	3.00	3.0	
-M1																	
	SX E2.00L6-M1					●			●				L	2.00	0.20		6
	SX E2.00N0.20-M1					●			●		●		N	2.00	0.20		
	SX E2.00R6-M1					●			●				R	2.00	0.20		6
	SX E3.00L6-M1					●			●				L	3.00	0.20		6
	SX E3.00N0.20-M1					●			●	●	●		N	3.00	0.20		
	SX E3.00R6-M1					●			●				R	3.00	0.20		6
	SX E4.00L6-M1					●			●				L	4.00	0.30		6
	SX E4.00N0.30-M1					●			●	●	●		N	4.00	0.30		
	SX E4.00R6-M1					●			●				R	4.00	0.30		6
	SX E5.00N0.30-M1					●			●				N	5.00	0.30		
	SX E6.00N0.40-M1					●			●				N	6.00	0.40		
-27P																	
	SX E2.00N0.20-27P	●											N	2.00	0.20	2.0	
	SX E3.00N0.30-27P	●											N	3.00	0.30	2.5	
	SX E4.00N0.40-27P	●											N	4.00	0.40	3.0	

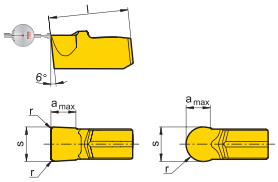
	H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s	r	a_{max}	K



C53-C68 C70-C71 C268-C271 C255 C209 C218 C224-C226

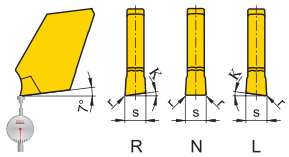
System LX

	H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	l [mm]	r [mm]	a_{max} [mm]
P				●	●	●	●	●	●	●						
M			O	●	O	O	O	●	O	●						
K	●				●	●		●	●							
N	●	O	●					O			●					
S		●	O					●		O						
H																
-M2		LX E10.00N0.80-M2				●	●			●			N	10.00	19.0	0.80	5.0
		LX E8.00N0.80-M2				●	●			●			N	8.00	19.0	0.80	5.0
-M3		LX R4.00N-M3				●	●			●			N	8.00	19.0	4.00	5.0



C53-C68 C70-C71 C268-C271 C255 C210 C227

			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	r [mm]	K >
		P				●	●	●	●	●	●	●					
		M			○	●	○	○	○	●	○	●					
		K	●				●	●		●	●						
		N	●	○	●					○			●				
		S		●	○					●		○					
		H															
-F1		FX 2.2L5-F1								●		●		L	2.20	0.15	5
		FX 2.2N0.15-F1					●	●		●		●		N	2.20	0.15	
		FX 2.2R5-F1								●		●		R	2.20	0.15	5
		FX 3.1L5-F1								●		●		L	3.10	0.20	5
		FX 3.1L8-F1										●		L	3.10	0.20	8
		FX 3.1N0.20-F1					●	●		●		●		N	3.10	0.20	
		FX 3.1N0.40-F1					●	●		●		●		N	3.10	0.40	
		FX 3.1R5-F1								●		●		R	3.10	0.20	5
		FX 3.1R8-F1										●		R	3.10	0.20	8
		FX 4.1N0.20-F1					●	●		●		●		N	4.10	0.20	
		FX 4.1N0.50-F1						●				●		N	4.10	0.50	
-M1		FX 2.2L4-M1				●	●	●		●	●			L	2.20	0.10	4
		FX 2.2N0.10-M1				●	●	●		●	●	●		N	2.20	0.10	
		FX 2.2R4-M1				●	●	●		●	●			R	2.20	0.10	4
		FX 3.1L6-M1				●	●	●		●	●			L	3.10	0.15	6
		FX 3.1N0.15-M1				●	●	●		●	●	●		N	3.10	0.15	
		FX 3.1R6-M1				●	●	●		●	●			R	3.10	0.15	6
		FX 4.1L6-M1					●	●		●	●			L	4.10	0.20	6
		FX 4.1N0.20-M1				●	●	●		●	●	●		N	4.10	0.20	
		FX 4.1R6-M1					●	●		●	●			R	4.10	0.20	6
		FX 5.1L6-M1					●	●						L	5.10	0.25	6
		FX 5.1N0.25-M1				●	●	●		●	●	●		N	5.10	0.25	
		FX 5.1R6-M1										●		R	5.10	0.25	6
		FX 6.5L6-M1					●	●						L	6.50	0.30	6
		FX 6.5N0.30-M1					●	●		●	●			N	6.50	0.30	
		FX 8.2N0.40-M1				●	●	●		●	●			N	8.20	0.40	
		FX 9.7N0.40-M1					●	●		●	●			N	9.70	0.40	
-R2		FX 3.1N0.40-R2					●	●		●		●		N	3.10	0.40	
		FX 4.1N0.50-R2					●	●		●		●		N	4.10	0.50	
-27P		FX 2.2N0.10-27P	●											N	2.20	0.10	
		FX 3.1N0.15-27P	●											N	3.10	0.15	
		FX 4.1N0.15-27P	●											N	4.10	0.20	
			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s	r	K

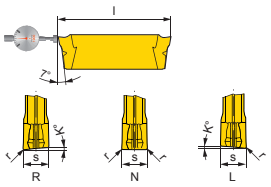


C53-C68 C70-C71 C268-C271 C255 FX C211-C212 FX C219 FX C228

	H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110
P				●	●	●	●	●	●	●	
M			O	●	O	O	O	●	O	●	
K	●				●	●		●	●		
N	●	O	●					O			●
S		●	O					●		O	
H											

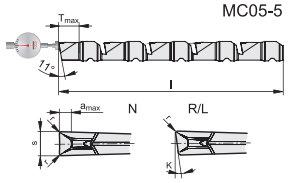
			LNR	s [mm]	l [mm]	r [mm]	K >
-F3		PX20-1E1.00L05-F3	L	1.00	20.0	0.08	5
		PX20-1E1.00N0.10-F3	N	1.00	20.0	0.10	
		PX20-1E1.00R05-F3	R	1.00	20.0	0.08	5
		PX20-2E1.50L05-F3	L	1.50	20.3	0.08	5
		PX20-2E1.50N0.10-F3	N	1.50	20.3	0.10	
		PX20-2E1.50R05-F3	R	1.50	20.3	0.08	5
		PX20-3E2.00L05-F3	L	2.00	20.3	0.08	5
		PX20-3E2.00N0.15-F3	N	2.00	20.3	0.15	
		PX20-3E2.00R05-F3	R	2.00	20.3	0.08	5

	H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s	l	r	K

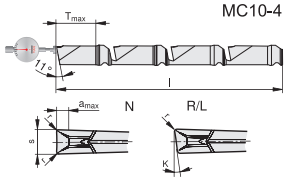


			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s [mm]	l [mm]	r [mm]	a_{max} [mm]	T_{max} [mm]	K >
P						●	●	●	●	●	●	●								
M					O	●	O	O	O	●	O	●								
K			●				●	●		●	●									
N			●	O	●					O			●							
S				●	O					●		O								
H																				
-F2		MC 05-5-1.00L07-F2								●				L	1.00	59.2	0.10		5.00	7
		MC 05-5-1.00N0.10-F2								●				N	1.00	59.2	0.10	0.5	5.00	
		MC 05-5-1.00R07-F2								●				R	1.00	59.2	0.10		5.00	7
		MC 05-5-1.50L07-F2								●				L	1.50	59.2	0.10		5.00	7
		MC 05-5-1.50N0.10-F2								●				N	1.50	59.2	0.10	0.7	5.00	
		MC 05-5-1.50R07-F2								●				R	1.50	59.2	0.10		5.00	7
		MC 10-4-1.50L07-F2								●				L	1.50	59.2	0.10		10.00	7
		MC 10-4-1.50N0.10-F2								●				N	1.50	59.2	0.10	1.0	10.00	
		MC 10-4-1.50R07-F2								●				R	1.50	59.2	0.10		10.00	7
		MC 10-4-2.00L07-F2								●				L	2.00	59.2	0.10		10.00	7
		MC 10-4-2.00N0.10-F2								●				N	2.00	59.2	0.10	1.2	10.00	
		MC 10-4-2.00R07-F2								●				R	2.00	59.2	0.10		10.00	7
		MC 10-4-2.50L07-F2								●				L	2.50	59.2	0.10		10.00	7
		MC 10-4-2.50N0.10-F2								●				N	2.50	59.2	0.10	1.5	10.00	
		MC 10-4-2.50R07-F2								●				R	2.50	59.2	0.10		10.00	7
-F3		MC 10-4-1.50L12-F3								●				L	1.50	59.2	0.10		10.00	12
		MC 10-4-1.50R12-F3								●				R	1.50	59.2	0.10		10.00	12
		MC 10-4-2.00L12-F3								●				L	2.00	59.2	0.10		10.00	12
		MC 10-4-2.00R12-F3								●				R	2.00	59.2	0.10		10.00	12
		MC 10-4-2.50L12-F3								●				L	2.50	59.2	0.10		10.00	12
		MC 10-4-2.50R12-F3								●				R	2.50	59.2	0.10		10.00	12
-27P		MC 10-4-1.50N0.10-27P			●									N	1.50	59.2	0.10	1.0	10.00	
		MC 10-4-2.00N0.10-27P			●									N	2.00	59.2	0.10	1.2	10.00	
		MC 10-4-2.50N0.10-27P			●									N	2.50	59.2	0.10	1.5	10.00	
			H216T	TSM20	CTW7120	S40T	CTC1325	SR127	GM127	CTP1340	CTCP335	CTPP345	CTD4110	LNR	s	l	r	a_{max}	T_{max}	K

MC05-5

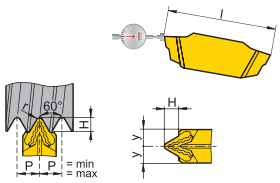


MC10-4

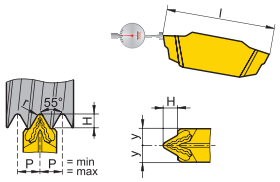


C53-C68 C70-C71 C268-C271 C255 C221-C222

			P	M	K	N	S	H	H216T	GM213	GM240	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	l [mm]	r [mm]	H [mm]	y [mm]
-27P		TC16-1 EI-A60-27P		●	●				●			0.50	1.50	16	48	16.0	0.05	1.28	1.05
		TC16-2 EI-AG60-27P		●	●				●			0.50	3.00	8	48	16.0	0.05	2.58	2.15
		TC16-2 EI-G60-27P		●	●				●			1.75	3.00	8	14	16.0	0.15	2.49	2.15
		TC16-3 EI-N60-27P		●	●				●			3.50	5.00	5	7	16.0	0.25	4.11	3.10
EN		TC16-1 EI-A60		●	●					●	●	0.50	1.50	16	48	16.0	0.05	1.28	1.05
		TC16-2 EI-AG60		●	●					●	●	0.50	3.00	8	48	16.0	0.05	2.58	2.15
		TC16-2 EI-G60		●	●					●	●	1.75	3.00	8	14	16.0	0.15	2.49	2.15
		TC16-3 EI-N60		●	●					●	●	3.50	5.00	5	7	16.0	0.25	4.11	3.10
									H216T	GM213	GM240	P_{min}	P_{max}	P_{min}	P_{max}	l	r	H	y

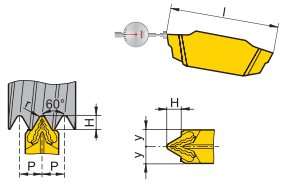


			H216T	GM213	GM240	P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	l [mm]	r [mm]	H [mm]	y [mm]
EN		TC16-1 EI-A55		●	●	0.50	1.50	16	48	16.0	0.12	1.39	1.05
		TC16-2 EI-AG55		●	●	0.50	3.00	8	48	16.0	0.12	2.92	2.15
		TC16-2 EI-G55		●	●	1.75	3.00	8	14	16.0	0.23	2.78	2.15
		TC16-3 EI-N55		●	●	3.50	5.00	5	7	16.0	0.46	4.34	3.10
			H216T	GM213	GM240	P_{min}	P_{max}	P_{min}	P_{max}	l	r	H	y



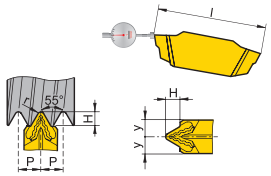
C164-C177 C280-C291 C255 TC C240 TC C241 TC C242 TC C243 TC-F C244 UTS-TC C245

			P	M	K	N	S	H	P_{min}	l	r	H	y
			H216T	GM213	GM240				[mm]	[mm]	[mm]	[mm]	[mm]
-27P		TC16-1 E 0,5 ISO-27P	●						0.50	16.0	0.05	0.33	1.05
		TC16-1 E 0,75 ISO-27P	●						0.75	16.0	0.08	0.49	1.05
		TC16-1 E 1,0 ISO-27P	●						1.00	16.0	0.12	0.64	1.05
		TC16-1 E 1,25 ISO-27P	●						1.25	16.0	0.15	0.80	1.05
		TC16-1 E 1,5 ISO-27P	●						1.50	16.0	0.18	0.96	1.05
		TC16-1 I 1,0 ISO-27P	●						1.00	16.0	0.05	0.60	1.05
		TC16-1 I 1,5 ISO-27P	●						1.50	16.0	0.08	0.89	1.05
		TC16-2 E 1,75 ISO-27P	●						1.75	16.0	0.22	1.11	2.15
		TC16-2 E 2,0 ISO-27P	●						2.00	16.0	0.25	1.27	2.15
		TC16-2 E 2,5 ISO-27P	●						2.50	16.0	0.31	1.58	2.15
		TC16-2 E 3,0 ISO-27P	●						3.00	16.0	0.38	1.90	2.15
		TC16-2 I 2,0 ISO-27P	●						2.00	16.0	0.12	1.18	2.15
		TC16-2 I 3,0 ISO-27P	●						3.00	16.0	0.19	1.76	2.15
EN		TC16-1 E 0,5 ISO		●	●				0.50	16.0	0.05	0.33	1.05
		TC16-1 E 0,75 ISO		●	●				0.75	16.0	0.08	0.49	1.05
		TC16-1 E 1,0 ISO		●	●				1.00	16.0	0.12	0.64	1.05
		TC16-1 E 1,25 ISO		●	●				1.25	16.0	0.15	0.80	1.05
		TC16-1 E 1,5 ISO		●	●				1.50	16.0	0.18	0.96	1.05
		TC16-1 I 0,5 ISO		●	●				0.50	16.0	0.02	0.30	1.05
		TC16-1 I 0,75 ISO		●	●				0.75	16.0	0.04	0.45	1.05
		TC16-1 I 1,0 ISO		●	●				1.00	16.0	0.05	0.60	1.05
		TC16-1 I 1,25 ISO		●	●				1.25	16.0	0.07	0.75	1.05
		TC16-1 I 1,5 ISO		●	●				1.50	16.0	0.08	0.89	1.05
		TC16-2 E 1,75 ISO		●	●				1.75	16.0	0.22	1.11	2.15
		TC16-2 E 2,0 ISO		●	●				2.00	16.0	0.25	1.27	2.15
		TC16-2 E 2,5 ISO		●	●				2.50	16.0	0.31	1.58	2.15
		TC16-2 E 3,0 ISO		●	●				3.00	16.0	0.38	1.90	2.15
		TC16-2 I 1,75 ISO		●	●				1.75	16.0	0.11	1.03	2.15
		TC16-2 I 2,0 ISO		●	●				2.00	16.0	0.12	1.18	2.15
		TC16-2 I 2,5 ISO		●	●				2.50	16.0	0.16	1.47	2.15
		TC16-2 I 3,0 ISO		●	●				3.00	16.0	0.19	1.76	2.15
		TC16-3 E 3,5 ISO		●	●				3.50	16.0	0.44	2.22	3.10
		TC16-3 E 4,0 ISO		●	●				4.00	16.0	0.50	2.53	3.10
		TC16-3 E 4,5 ISO		●	●				4.50	16.0	0.56	2.85	3.10
		TC16-3 E 5,0 ISO		●	●				5.00	16.0	0.63	3.16	3.10
		TC16-3 I 3,5 ISO		●	●				3.50	16.0	0.22	2.06	3.10
		TC16-3 I 4,0 ISO		●	●				4.00	16.0	0.25	2.35	3.10
		TC16-3 I 4,5 ISO		●	●				4.50	16.0	0.28	2.64	3.10
		TC16-3 I 5,0 ISO		●	●				5.00	16.0	0.31	2.94	3.10
			H216T	GM213	GM240				P_{min}	l	r	H	y



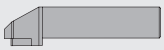
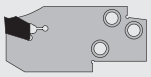
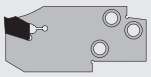
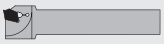
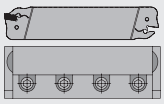
C164-C177 C280-C291 C255 TC C240 TC C241 TC C242 TC C243 TC-F C244 UTS-TC C245

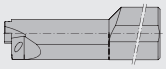
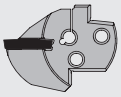
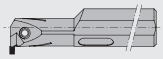
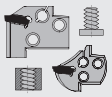
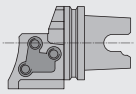
			P	M	K	N	S	H	H216T	GM213	GM240	P_{min} [TPI]	l [mm]	r [mm]	H [mm]	y [mm]
-27P		TC16-1 EI 19 W-27P	●	●	●	●			●			19	16.0	0.17	0.89	1.05
		TC16-2 EI 11 W-27P	●	●	●	●			●			11	16.0	0.29	1.54	2.15
		TC16-2 EI 14 W-27P	●	●	●	●			●			14	16.0	0.23	1.21	2.15
EN		TC16-1 EI 16 W	●	●	●	●				●	●	16	16.0	0.20	1.06	1.05
		TC16-1 EI 18 W	●	●	●	●				●	●	18	16.0	0.18	0.94	1.05
		TC16-1 EI 19 W	●	●	●	●				●	●	19	16.0	0.17	0.89	1.05
		TC16-1 EI 20 W	●	●	●	●				●	●	20	16.0	0.16	0.84	1.05
		TC16-1 EI 24 W	●	●	●	●				●	●	24	16.0	0.13	0.70	1.05
		TC16-1 EI 26 W	●	●	●	●				●	●	26	16.0	0.12	0.65	1.05
		TC16-1 EI 28 W	●	●	●	●				●	●	28	16.0	0.12	0.60	1.05
		TC16-2 EI 10 W	●	●	●	●				●	●	10	16.0	0.32	1.69	2.15
		TC16-2 EI 11 W	●	●	●	●				●	●	11	16.0	0.29	1.54	2.15
		TC16-2 EI 12 W	●	●	●	●				●	●	12	16.0	0.27	1.41	2.15
		TC16-2 EI 14 W	●	●	●	●				●	●	14	16.0	0.23	1.21	2.15
		TC16-2 EI 8 W	●	●	●	●				●	●	8	16.0	0.40	2.11	2.15
		TC16-2 EI 9 W	●	●	●	●				●	●	9	16.0	0.36	1.88	2.15
		TC16-3 EI 5 W	●	●	●	●				●	●	5	16.0	0.64	3.38	3.10
		TC16-3 EI 6 W	●	●	●	●				●		6	16.0	0.54	2.82	3.10
		TC16-3 EI 7 W	●	●	●	●				●	●	7	16.0	0.46	2.41	3.10
									H216T	GM213	GM240	P_{min}	l	r	H	y

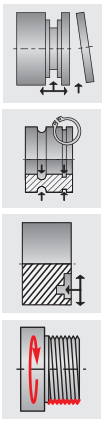


C164-C177 C280-C291 C255 TC C240 TC C241 TC C242 TC C243 TC-F C244 UTS-TC C245

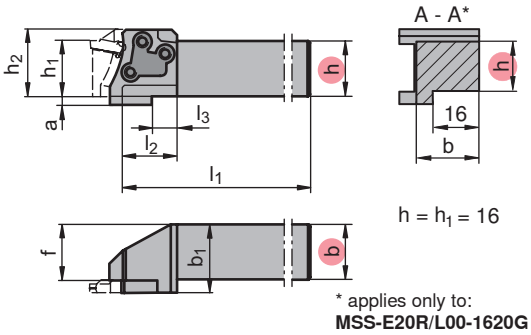
Overview

Shanks	Modules - external	Modules - external	Monobloc - external	Blocks/ blades
				
0 66▯▯  C196	**GX09**  C200	**SX**  C209	**GX09**  C213	**GX**  C223
0 66▯▯ ▯  C197	**GX16**  C201	**LX**  C210	**GX16**  C214	**SX**  C224
0 66▯▯ ▯  C198	**GX24**  C202	**FX**  C211	**GX24**  C215	**SX reinforced**  C225-C226
Adapters  C199	**GX09**  C203	**FX long**  C212	**▯▯ ▯▯ ▯**  C216-C217	**LX**  C227
	GX16  C204		**SX**  C218	**FX**  C228
	GX24 axial  C205-C206		**FX**  C219	**SBN...K**  C229
	GX axial long  C207		**PX**  C220	**SBN...KS**  C230
	AX  C208		**MC**  C221-C222	

Boring bars	Modules - internal	Monobloc - internal	Threading	UTS/HSK-T
				
1,5 x D	**GX09**	**GX09**	**TC16**	**876**
 C231	 C233	 C237	 C240	 C246
2,5 x D	**GX16**	**GX16**	**TC monobloc**	**876**
 C232	 C234	 C238	 C241	 C247
	GX24	**GX24**	**TC16**	**876**
	 C234	 C239	 C242	 C248
	GX09		**TC monobloc**	**UTS**
	 C235		 C243	 C249
	GX16		**TC milling**	**+6.**
	 C236		 C244	 C250
			TC monobloc UTS	**+6.**
			 C245	 C251



6 KDQNV



Picture shows right-hand version

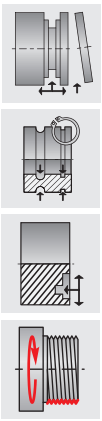
Bgr.	Type, description	L N R	h [mm]	b [mm]	h_1 [mm]	h_2 [mm]	b_1 [mm]	l_1 [mm]	l_2 [mm]	l_3 [mm]	f [mm]	a [mm]	
12	MSS-E12R00-1212E	R	12	12	12	14.5	15.25	70	12		11.75		MSS-E12R..
	MSS-E12L00-1212E	L	12	12	12	14.5	15.25	70	12		11.75		MSS-E12L..
16	MSS-E16R00-1616G	R	16	16	16	19.5	19.25	90	16		15.75		MSS-E16R..
	MSS-E16L00-1616G	L	16	16	16	19.5	19.25	90	16		15.75		MSS-E16L..
20	MSS-E20R00-1620G	R	16	20	16	24.0	24.25	90	20		20.15		MSS-E20R..
	MSS-E20R00-2020J	R	20	20	20	24.0	24.25	110	20		20.15		MSS-E20R..
	MSS-E20L00-1620G	L	16	20	16	24.0	24.25	90	20		20.15		MSS-E20L..
	MSS-E20L00-2020J	L	20	20	20	24.0	24.25	110	20		20.15		MSS-E20L..
25	MSS-E25R00-2525L	R	25	25	25	30.0	31.00	140	25		25.50		MSS-E25R..
	MSS-E25L00-2525L	L	25	25	25	30.0	31.00	140	25		25.50		MSS-E25L..
32	MSS-E32R00-3225N	R	32	25	32	38.0	31.00	160	32		25.50		MSS-E32R..
	MSS-E32R00-3232Q	R	32	32	32	38.8	38.00	180	32	16.0	32.50	3.00	MSS-E32R..
	MSS-E32L00-3225N	L	32	25	32	38.0	31.00	160	32		25.50		MSS-E32L..
	MSS-E32L00-3232Q	L	32	32	32	38.8	38.00	180	32	16.0	32.50	3.00	MSS-E32L..

Ordering example: 1 piece MSS-E12R00-1212E

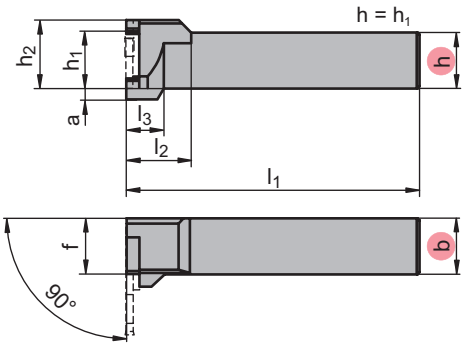
Bgr. = assembly size

Bgr.			
12	7897200/M2,5X10/T08		7724106/TORX T08
16	7897202/M3,5X12,5/T15	7897208/TORX T15 T	
20	7897203/M4,0X14/T15	7897208/TORX T15 T	
25	7897205/M5,0X18/T20	7897207/TORX T20 T	
32	7897206/M6,0X20/T25	7883304/TORX T25 T	

GX C200-C202 **GX** C203-C204 **GX-A** C205-C207 **AX** C208 **SX** C209 **LX** C210 **FX** C211-C212 **TC** C240



6 KDQNV□□ □



Picture shows right-hand version

Bgr.	Type, description	L N R	h [mm]	b [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	l_3 [mm]	f [mm]	a [mm]		
20	MSS-E20R90-2020J	R	20	20	24.0	110	20		20.00			MSS-E20L..
	MSS-E20L90-2020J	L	20	20	24.0	110	20		20.00			MSS-E20R..
25	MSS-E25R90-2525L	R	25	25	30.0	140	28		25.00			MSS-E25L..
	MSS-E25L90-2525L	L	25	25	30.0	140	28		25.00			MSS-E25R..
32	MSS-E32R90-3225N	R	32	25	38.0	160	34		32.00			MSS-E32L..
	MSS-E32R90-3232R	R	32	32	38.8	200	34	19.2	32.00	3.00		MSS-E32L..
	MSS-E32L90-3225N	L	32	25	38.0	160	34		32.00			MSS-E32R..
	MSS-E32L90-3232R	L	32	32	38.8	200	34	19.2	32.00	3.00		MSS-E32R..

Ordering example: 1 piece MSS-E20R90-2020J

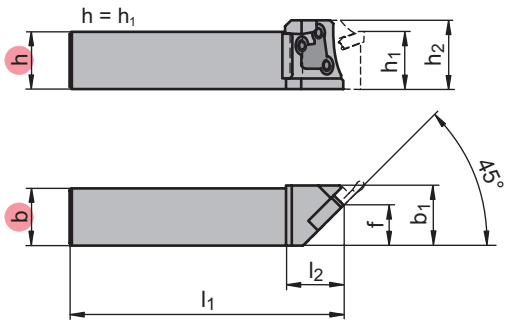
Bgr. = assembly size

In case of 90deg please note:
Right-hand shank - left-hand module
Left-hand shank - right-hand module

Bgr.			
20	7897203/M4,0X14/T15	7897208/TORX T15 T	
25	7897205/M5,0X18/T20	7897207/TORX T20 T	
32	7897206/M6,0X20/T25	7883304/TORX T25 T	

GX C201-C202 **GX** C204 **GX-A** C205-C207 **AX** C208 **SX** C209 **LX** C210 **FX** C211-C212 **TC** C240

6 KDQNV□□ □



Picture shows right-hand version

Bgr.	Type, description	L N R	h [mm]	b [mm]	h_2 [mm]	b_1 [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
20	MSS-E20R45-2020J	R	20	20	24.0	21.50	110	20	14.50		MSS-E20L..
	MSS-E20L45-2020J	L	20	20	24.0	21.50	110	20	14.50		MSS-E20R..
25	MSS-E25R45-2525L	R	25	25	30.0	26.00	140	25	18.00		MSS-E25L..
	MSS-E25L45-2525L	L	25	25	30.0	26.00	140	25	18.00		MSS-E25R..

Ordering example: 1 piece MSS-E20R45-2020J

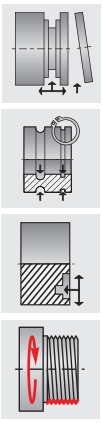
Bgr. = assembly size

In case of 45deg please note:
Right-hand shank - left-hand module
Left-hand shank - right-hand module

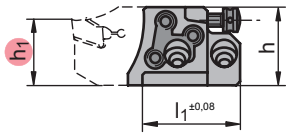
Bgr.			
20	7897203/M4,0X14/T15	7897209/M4,0X11/T15	7897208/TORX T15 T
25	7897205/M5,0X18/T20	7897210/M5,0X13,5/T20	7897207/TORX T20 T

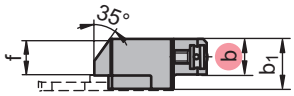
GX

C204



Adapters





Picture shows right-hand version

Bgr.	Type, description	L N R	h_1 [mm]	b [mm]	h [mm]	b_1 [mm]	l_1 [mm]	f [mm]			
20	MSS-E20R00-AD		20	10.7	24	15.3	30	11.2			MSS-E20R..
	MSS-E20L00-AD		20	10.7	24	15.3	30	11.2			MSS-E20L..
25	MSS-E25R00-AD		25	12.6	30	18.6	37	13.1			MSS-E25R..
	MSS-E25L00-AD		25	12.6	30	18.6	37	13.1			MSS-E25L..
32	MSS-E32R00-AD		32	14.6	38	20.6	46	15.1			MSS-E32R..
	MSS-E32L00-AD		32	14.6	38	20.6	46	15.1			MSS-E32L..

Ordering example: 1 piece MSS-E20R00-AD

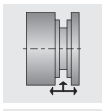
Bgr. = assembly size

For additional assembly dimensions see

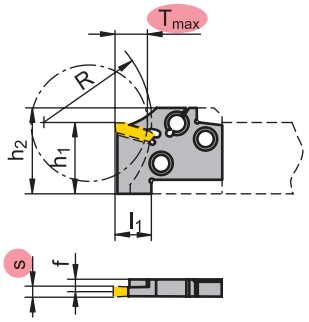
C298-C299

Bgr.			
20	7897203/M4,0X14/T15	7897211/M4X12 DIN 912 - 12.9	7897208/TORX T15 T
25	7897205/M5,0X18/T20	7818319/M5,0X16,0/DIN912-12.9	7897207/TORX T20 T
32	7897206/M6,0X20/T25	7897213/M6X20 12.9 DIN 912	7883304/TORX T25 T

GX C201-C202 **GX** C204 **GX-A** C205-C207 **AX** C208 **SX** C209 **LX** C210 **FX** C211-C212 **TC** C240



GX09



Picture shows right-hand version

Bgr.	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	R [mm]	
12	MSS-E12R07-GX09-1	R	2.00	2.75	7	12	14.5	8	3.15	18	GX09-1..
	MSS-E12R07-GX09-2		2.76	3.75	7	12	14.5	8	3.15	18	GX09-2..
	MSS-E12L07-GX09-1	L	2.00	2.75	7	12	14.5	8	3.15	18	GX09-1..
	MSS-E12L07-GX09-2		2.76	3.75	7	12	14.5	8	3.15	18	GX09-2..
16	MSS-E16R07-GX09-1	R	2.00	2.75	7	16	19.5	8	3.15	24	GX09-1..
	MSS-E16R07-GX09-2		2.76	3.75	7	16	19.5	8	3.15	24	GX09-2..
	MSS-E16L07-GX09-1	L	2.00	2.75	7	16	19.5	8	3.15	24	GX09-1..
	MSS-E16L07-GX09-2		2.76	3.75	7	16	19.5	8	3.15	24	GX09-2..

Ordering example: 1 piece MSS-E12R07-GX09-1

Bgr. = assembly size

GX-E

C180

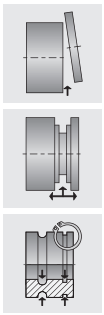
GX-S

C182

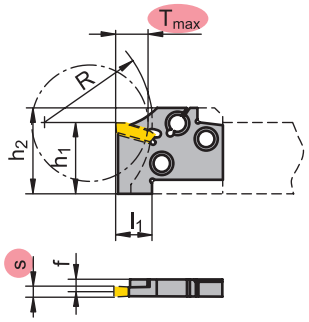
GX-R

C183


C196



GX16



Picture shows right-hand version

Bgr.	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	R [mm]	
20	MSS-E20R12-GX16-1	R	2.00	2.75	12	20	24	13	3.75	30	GX16-1..
	MSS-E20R12-GX16-2		2.76	3.75	12	20	24	13	3.40	30	GX16-2..
	MSS-E20R12-GX16-3		3.76	5.00	12	20	24	13	2.93	30	GX16-3..
	MSS-E20L12-GX16-1	L	2.00	2.75	12	20	24	13	3.75	30	GX16-1..
	MSS-E20L12-GX16-2		2.76	3.75	12	20	24	13	3.40	30	GX16-2..
	MSS-E20L12-GX16-3		3.76	5.00	12	20	24	13	2.93	30	GX16-3..
25	MSS-E25R12-GX16-1	R	2.00	2.75	12	25	30	13	5.25	37.5	GX16-1..
	MSS-E25R12-GX16-2		2.76	3.75	12	25	30	13	4.90	37.5	GX16-2..
	MSS-E25R12-GX16-3		3.76	5.00	12	25	30	13	4.43	37.5	GX16-3..
	MSS-E25R12-GX16-4		5.01	6.50	12	25	30	13	3.80	37.5	GX16-4..
	MSS-E25L12-GX16-1	L	2.00	2.75	12	25	30	13	5.25	37.5	GX16-1..
	MSS-E25L12-GX16-2		2.76	3.75	12	25	30	13	4.90	37.5	GX16-2..
	MSS-E25L12-GX16-3		3.76	5.00	12	25	30	13	4.43	37.5	GX16-3..
	MSS-E25L12-GX16-4		5.01	6.50	12	25	30	13	3.80	37.5	GX16-4..
32	MSS-E32R12-GX16-2	R	2.76	3.75	12	32	38	13	4.90	48	GX16-2..
	MSS-E32R12-GX16-3		3.76	5.00	12	32	38	13	4.43	48	GX16-3..
	MSS-E32R12-GX16-4		5.01	6.50	12	32	38	13	3.80	48	GX16-4..
	MSS-E32L12-GX16-2	L	2.76	3.75	12	32	38	13	4.90	48	GX16-2..
	MSS-E32L12-GX16-3		3.76	5.00	12	32	38	13	4.43	48	GX16-3..
	MSS-E32L12-GX16-4		5.01	6.50	12	32	38	13	3.80	48	GX16-4..

Ordering example: 1 piece MSS-E20R12-GX16-1

Bgr. = assembly size

GX-E

C180-C181

GX-S

C182

GX-R

C183


C196


C197

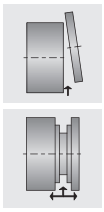

C199


C246

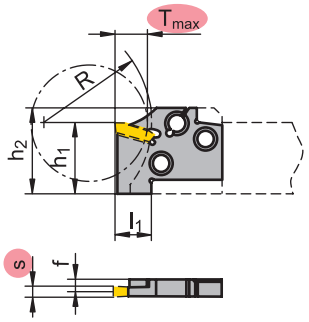

C247


C250


C251



GX24



Picture shows right-hand version

Bgr.	Type, description	LNR	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	R [mm]	
20	MSS-E20R21-GX24-1	R	2.00	2.75	21	20	24	22	3.65	30	GX24-1..
	MSS-E20R21-GX24-2		2.76	3.75	21	20	24	22	3.40	30	GX24-2..
	MSS-E20R21-GX24-3		3.76	5.00	21	20	24	22	3.00	30	GX24-3..
	MSS-E20L21-GX24-1	L	2.00	2.75	21	20	24	22	3.65	30	GX24-1..
	MSS-E20L21-GX24-2		2.76	3.75	21	20	24	22	3.40	30	GX24-2..
	MSS-E20L21-GX24-3		3.76	5.00	21	20	24	22	3.00	30	GX24-3..
25	MSS-E25R21-GX24-1	R	2.00	2.75	21	25	30	22	5.15	37.5	GX24-1..
	MSS-E25R21-GX24-2		2.76	3.75	21	25	30	22	4.90	37.5	GX24-2..
	MSS-E25R21-GX24-3		3.76	5.00	21	25	30	22	4.43	37.5	GX24-3..
	MSS-E25R21-GX24-4		5.01	6.50	21	25	30	22	3.80	37.5	GX24-4..
	MSS-E25R21-GX24-5		8.00	8.00	21	25	30	23	2.95	37.5	GX24-5..
	MSS-E25L21-GX24-1	L	2.00	2.75	21	25	30	22	5.15	37.5	GX24-1..
	MSS-E25L21-GX24-2		2.76	3.75	21	25	30	22	4.90	37.5	GX24-2..
	MSS-E25L21-GX24-3		3.76	5.00	21	25	30	22	4.43	37.5	GX24-3..
	MSS-E25L21-GX24-4		5.01	6.50	21	25	30	22	3.80	37.5	GX24-4..
	MSS-E25L21-GX24-5		8.00	8.00	21	25	30	23	2.95	37.5	GX24-5..
32	MSS-E32R21-GX24-2	R	2.76	3.75	21	32	38	22	4.95	48	GX24-2..
	MSS-E32R21-GX24-3		3.76	5.00	21	32	38	22	4.43	48	GX24-3..
	MSS-E32R21-GX24-4		5.01	6.50	21	32	38	22	3.80	48	GX24-4..
	MSS-E32L21-GX24-2	L	2.76	3.75	21	32	38	22	4.95	48	GX24-2..
	MSS-E32L21-GX24-3		3.76	5.00	21	32	38	22	4.43	48	GX24-3..
	MSS-E32L21-GX24-4		5.01	6.50	21	32	38	22	3.80	48	GX24-4..

Ordering example: 1 piece MSS-E20R21-GX24-1

Bgr. = assembly size

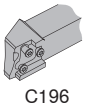
When using the radius insert
GX24-4/GX24-5 l_1 = 23 mm

GX-E

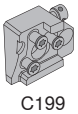
C180-C181

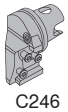
GX-R

C183

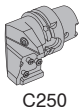

C196

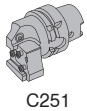

C197

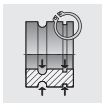

C199


C246

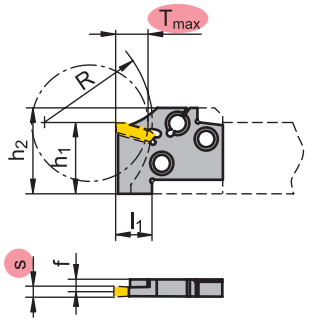

C247


C250


C251



GX09



Picture shows right-hand version

Bgr.	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	R [mm]	
12	MSS-E12R02-GX09-1	R	0.60	1.95	2	12	14.5	8	3.15	18	GX09-1.. R/L
	MSS-E12L02-GX09-1	L	0.60	1.95	2	12	14.5	8	3.15	18	GX09-1.. R/L
16	MSS-E16R02-GX09-1	R	0.60	1.95	2	16	19.5	8	3.15	24	GX09-1.. R/L
	MSS-E16L02-GX09-1	L	0.60	1.95	2	16	19.5	8	3.15	24	GX09-1.. R/L

Ordering example: 1 piece MSS-E12R02-GX09-1

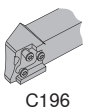
Bgr. = assembly size

GX-S

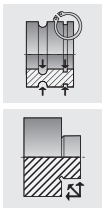
C182

GX-R

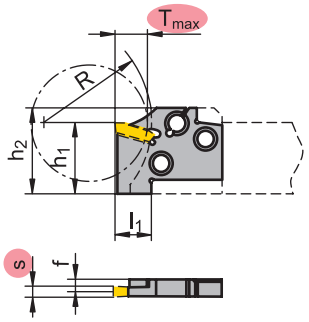
C183



C196



GX16



Picture shows right-hand version

Bgr.	Type, description	LNR	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	R [mm]	
20	MSS-E20R03-GX16-2	R	0.60	2.75	3	20	24	13	3.40	30	GX16-2.. R/L
	MSS-E20L03-GX16-2	L	0.60	2.75	3	20	24	13	3.40	30	GX16-2.. R/L
25	MSS-E25R03-GX16-2	R	0.60	2.75	3	25	30	13	4.90	37.5	GX16-2.. R/L
	MSS-E25L03-GX16-2	L	0.60	2.75	3	25	30	13	4.90	37.5	GX16-2.. R/L
32	MSS-E32R03-GX16-2	R	0.60	2.75	3	32	38	13	4.90	48	GX16-2.. R/L
	MSS-E32L03-GX16-2	L	0.60	2.75	3	32	38	13	4.90	48	GX16-2.. R/L

Ordering example: 1 piece MSS-E20R03-GX16-2

Bgr. = assembly size

GX-S C182

GX-R C183

C196-C198

C199

C246

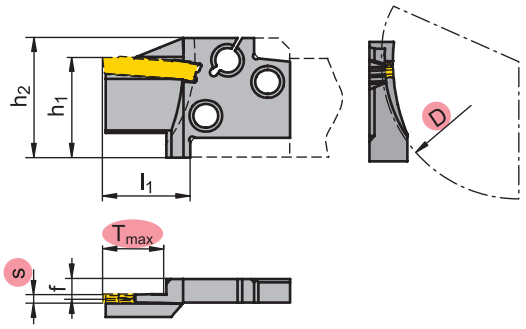
C247

C248

C250

C251

GX24 axial



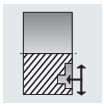
Picture shows right-hand version

Bgr.	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	D_{min} [mm]	D_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	
20	MSS-E20R14-GX24-2 A50-70	R	2.76	3.75	14	50	70	20	24	22	3.40	GX24-2..
	MSS-E20R14-GX24-2 A70-100		2.76	3.75	14	70	100	20	24	22	3.40	GX24-2..
	MSS-E20R14-GX24-2 A100-150		2.76	3.75	14	100	150	20	24	22	3.40	GX24-2..
	MSS-E20L14-GX24-2 A50-70	L	2.76	3.75	14	50	70	20	24	22	3.40	GX24-2..
	MSS-E20L14-GX24-2 A70-100		2.76	3.75	14	70	100	20	24	22	3.40	GX24-2..
	MSS-E20L14-GX24-2 A100-150		2.76	3.75	14	100	150	20	24	22	3.40	GX24-2..
25	MSS-E25R15-GX24-2 A50-70	R	2.76	3.75	15	50	70	25	30	22	4.90	GX24-2..
	MSS-E25R15-GX24-2 A70-100		2.76	3.75	15	70	100	25	30	22	4.90	GX24-2..
	MSS-E25R15-GX24-2 A100-150		2.76	3.75	15	100	150	25	30	22	4.90	GX24-2..
	MSS-E25R15-GX24-3 A50-70		3.76	5.00	15	50	70	25	30	22	4.43	GX24-3..
	MSS-E25R15-GX24-3 A70-100		3.76	5.00	15	70	100	25	30	22	4.43	GX24-3..
	MSS-E25R15-GX24-3 A100-150		3.76	5.00	15	100	150	25	30	22	4.43	GX24-3..
	MSS-E25R15-GX24-3 A150-300		3.76	5.00	15	150	300	25	30	22	4.43	GX24-3..
	MSS-E25R15-GX24-4 A50-70		5.01	6.50	15	50	70	25	30	22	3.80	GX24-4..
	MSS-E25R15-GX24-4 A70-100		5.01	6.50	15	70	100	25	30	22	3.80	GX24-4..
	MSS-E25R15-GX24-4 A100-150		5.01	6.50	15	100	150	25	30	22	3.80	GX24-4..
	MSS-E25R15-GX24-4 A150-300		5.01	6.50	15	150	300	25	30	22	3.80	GX24-4..
	MSS-E25L15-GX24-2 A50-70	L	2.76	3.75	15	50	70	25	30	22	4.90	GX24-2..
	MSS-E25L15-GX24-2 A70-100		2.76	3.75	15	70	100	25	30	22	4.90	GX24-2..
	MSS-E25L15-GX24-2 A100-150		2.76	3.75	15	100	150	25	30	22	4.90	GX24-2..
	MSS-E25L15-GX24-3 A50-70		3.76	5.00	15	50	70	25	30	22	4.43	GX24-3..
	MSS-E25L15-GX24-3 A70-100		3.76	5.00	15	70	100	25	30	22	4.43	GX24-3..
	MSS-E25L15-GX24-3 A100-150		3.76	5.00	15	100	150	25	30	22	4.43	GX24-3..
	MSS-E25L15-GX24-3 A150-300		3.76	5.00	15	150	300	25	30	22	4.43	GX24-3..
	MSS-E25L15-GX24-4 A50-70		5.01	6.50	15	50	70	25	30	22	3.80	GX24-4..
	MSS-E25L15-GX24-4 A70-100		5.01	6.50	15	70	100	25	30	22	3.80	GX24-4..
	MSS-E25L15-GX24-4 A100-150		5.01	6.50	15	100	150	25	30	22	3.80	GX24-4..
	MSS-E25L15-GX24-4 A150-300		5.01	6.50	15	150	300	25	30	22	3.80	GX24-4..

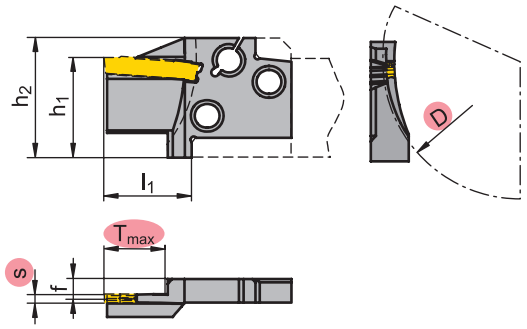
Ordering example: 1 piece MSS-E20R14-GX24-2 A50-70

Bgr. = assembly size

GX-E C180-C181 **GX-R** C183 C196 C197 C199 C246 C247



GX24 axial



Picture shows right-hand version

Bgr.	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	D_{min} [mm]	D_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	
32	MSS-E32R15-GX24-3 A70-100	R	3.76	5.00	15	70	100	32	38	22	4.43	GX24-3..
	MSS-E32R15-GX24-3 A100-150		3.76	5.00	15	100	150	32	38	22	4.43	GX24-3..
	MSS-E32R15-GX24-3 A150-300		3.76	5.00	15	150	300	32	38	22	4.43	GX24-3..
	MSS-E32R15-GX24-4 A70-100		5.01	6.50	15	70	100	32	38	22	3.80	GX24-4..
	MSS-E32R15-GX24-4 A100-150		5.01	6.50	15	100	150	32	38	22	4.43	GX24-4..
	MSS-E32R15-GX24-4 A150-300		5.01	6.50	15	150	300	32	38	22	3.80	GX24-4..
	MSS-E32R15-GX24-4 A300-900		5.01	6.50	15	300	900	32	38	22	3.80	GX24-4..
	MSS-E32L15-GX24-3 A70-100	L	3.76	5.00	15	70	100	32	38	22	4.43	GX24-3..
	MSS-E32L15-GX24-3 A100-150		3.76	5.00	15	100	150	32	38	22	4.43	GX24-3..
	MSS-E32L15-GX24-3 A150-300		3.76	5.00	15	150	300	32	38	22	4.43	GX24-3..
	MSS-E32L15-GX24-4 A70-100		5.01	6.50	15	70	100	32	38	22	3.80	GX24-4..
	MSS-E32L15-GX24-4 A100-150		5.01	6.50	15	100	150	32	38	22	3.80	GX24-4..
	MSS-E32L15-GX24-4 A150-300		5.01	6.50	15	150	300	32	38	22	3.80	GX24-4..
	MSS-E32L15-GX24-4 A300-900		5.01	6.50	15	300	900	32	38	22	3.80	GX24-4..

Ordering example: 1 piece MSS-E32R15-GX24-3 A70-100

Bgr. = assembly size

GX-E C180-C181

GX-R C183

C196

C197

C199

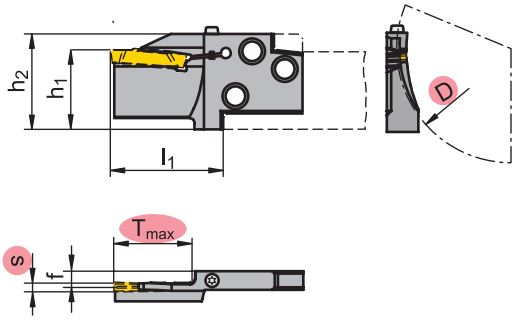
C246

C247

C250

C251

GX24 axial long



Picture shows right-hand version

Bgr.	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	D_{min} [mm]	D_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	
25	MSS-E25R21-GX24-3 AS50-70	R	3.76	5.00	21	50	70	25	30	35	4.43	GX24-3..
	MSS-E25R21-GX24-3 AS70-100		3.76	5.00	21	70	100	25	30	35	4.43	GX24-3..
	MSS-E25R21-GX24-3 AS100-150		3.76	5.00	21	100	150	25	30	35	4.43	GX24-3..
	MSS-E25R21-GX24-3 AS150-300		3.76	5.00	21	150	300	25	30	35	4.43	GX24-3..
	MSS-E25R25-GX24-4 AS50-70		5.01	6.50	25	50	70	25	30	35	3.80	GX24-4..
	MSS-E25R25-GX24-4 AS70-100		5.01	6.50	25	70	100	25	30	35	3.80	GX24-4..
	MSS-E25R25-GX24-4 AS100-150		5.01	6.50	25	100	150	25	30	35	3.80	GX24-4..
	MSS-E25R25-GX24-4 AS150-300		5.01	6.50	25	150	300	25	30	35	3.80	GX24-4..
	MSS-E25L21-GX24-3 AS50-70	L	3.76	5.00	21	50	70	25	30	35	4.43	GX24-3..
	MSS-E25L21-GX24-3 AS70-100		3.76	5.00	21	70	100	25	30	35	4.43	GX24-3..
	MSS-E25L21-GX24-3 AS100-150		3.76	5.00	21	100	150	25	30	35	4.43	GX24-3..
	MSS-E25L21-GX24-3 AS150-300		3.76	5.00	21	150	300	25	30	35	4.43	GX24-3..
	MSS-E25L25-GX24-4 AS50-70		5.01	6.50	25	50	70	25	30	35	3.80	GX24-4..
	MSS-E25L25-GX24-4 AS70-100		5.01	6.50	25	70	100	25	30	35	3.80	GX24-4..
	MSS-E25L25-GX24-4 AS100-150		5.01	6.50	25	100	150	25	30	35	3.80	GX24-4..
	MSS-E25L25-GX24-4 AS150-300		5.01	6.50	25	150	300	25	30	35	3.80	GX24-4..

Ordering example: 1 piece MSS-E25R21-GX24-3 AS50-70

Bgr. = assembly size

Axial modules in long version can be clamped from either side.

C272-C275

Bgr.			
25	7897221/M3,5X14,0/T15	7897208/TORX T15 T	DMSD 3,2Nm/SORT T15

GX-E

C180-C181

GX-R

C183

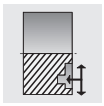
C196

C197

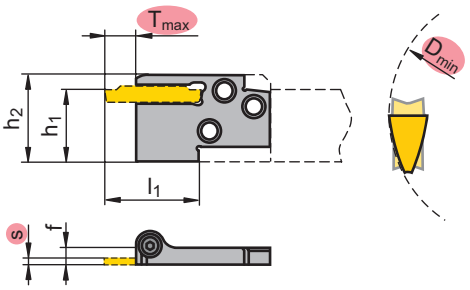
C199

C246

C247



AX



Picture shows right-hand version

Bgr.	Type, description	LNR	s [mm]	D_{min} [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]		
16	MSS-E16R05-AX05	R	3.0	10	5	16	20.5	24	2.50		AX05..
	MSS-E16L05-AX05	L	3.0	10	5	16	20.5	24	2.50		AX05..
20	MSS-E20R05-AX05	R	3.0	10	5	20	25	28	3.10		AX05..
	MSS-E20R10-AX10		3.0	20	10	20	25	33	3.10		AX10..
	MSS-E20R15-AX15		3.0	30	15	20	25	44	3.10		AX15..
	MSS-E20L05-AX05	L	3.0	10	5	20	25	28	3.10		AX05..
	MSS-E20L10-AX10		3.0	20	10	20	25	33	3.10		AX10..
	MSS-E20L15-AX15		3.0	30	15	20	25	44	3.10		AX15..
25	MSS-E25R05-AX05	R	3.0	10	5	25	30	27.5	4.60		AX05..
	MSS-E25R10-AX10		3.0	20	10	25	30	32.5	4.60		AX10..
	MSS-E25R15-AX15		3.0	30	15	25	30	43.5	4.60		AX15..
	MSS-E25L05-AX05	L	3.0	10	5	25	30	27.5	4.60		AX05..
	MSS-E25L10-AX10		3.0	20	10	25	30	32.5	4.60		AX10..
	MSS-E25L15-AX15		3.0	30	15	25	30	43.5	4.60		AX15..

Ordering example: 1 piece MSS-E16R05-AX05

Bgr. = assembly size

Bgr.			
16	7897202/M3,5X12,5/T15	7897208/TORX T15 T	
20	7897203/M4,0X14/T15	7897208/TORX T15 T	
25	7897205/M5,0X18/T20	7897207/TORX T20 T	

AX


C184

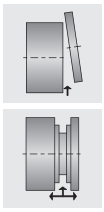

C196


C197

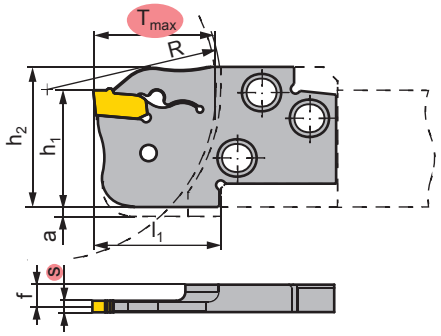

C199


C246


C247



SX



Picture shows right-hand version

Bgr.	Type, description	L N R	s [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	a [mm]	R [mm]	
20	MSS-E20R20-SX2	R	2.0	20	20	24	22	3.57	3.00	30	SX2
	MSS-E20R20-SX3		3.0	20	20	24	22	3.20	3.00	30	SX3
	MSS-E20L20-SX2	L	2.0	20	20	24	22	3.57	3.00	30	SX2
	MSS-E20L20-SX3		3.0	20	20	24	22	3.20	3.00	30	SX3
25	MSS-E25R20-SX2	R	2.0	20	25	30	22	5.07		37.5	SX2
	MSS-E25R25-SX3		3.0	25	25	30	27	4.70		37.5	SX3
	MSS-E25R35-SX3		3.0	35	25	30	37	4.70		37.5	SX3
	MSS-E25R25-SX4		4.0	25	25	30	27	4.30		37.5	SX4
	MSS-E25R35-SX4		4.0	35	25	30	37	4.30		37.5	SX4
	MSS-E25L20-SX2	L	2.0	20	25	30	22	5.07		37.5	SX2
	MSS-E25L25-SX3		3.0	25	25	30	27	4.70		37.5	SX3
	MSS-E25L35-SX3		3.0	35	25	30	37	4.70		37.5	SX3
	MSS-E25L25-SX4		4.0	25	25	30	27	4.30		37.5	SX4
	MSS-E25L35-SX4		4.0	35	25	30	37	4.30		37.5	SX4
32	MSS-E32R35-SX3	R	3.0	35	32	38	37	4.70		48	SX3
	MSS-E32R35-SX4		4.0	35	32	38	37	4.30		48	SX4
	MSS-E32L35-SX3	L	3.0	35	32	38	37	4.70		48	SX3
	MSS-E32L35-SX4		4.0	35	32	38	37	4.30		48	SX4

Ordering example: 1 piece MSS-E20R20-SX2

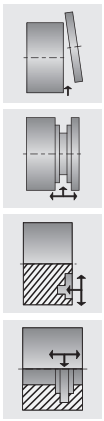
Bgr. = assembly size

	s [mm]			
SX2	**2.0**	10005884/S12-3		
SX3	**3.0**	10005884/S12-3		
SX4	**4.0**	10001365/S15-4		

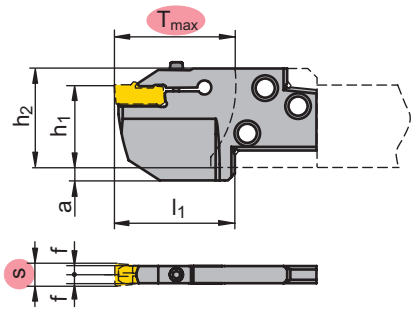
SX-E C185

SX-R C185

C196 C197 C199 C246 C247 C250 C251



System LX



Bgr.	Type, description	LNR	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	a [mm]	
32	MSS-E32N25-LX	N	8.00	10.00	25	32	38.75	27	3.40	5.25	LX-..
	MSS-E32N32-LX		8.00	10.00	32	32	38.75	34	3.40	5.25	
	MSS-E32N45-LX		8.00	10.00	45	32	38.75	47	3.40	5.25	

Ordering example: 1 piece MSS-E32N25-LX

Bgr. = assembly size

			
LX-..	7897218/M4,0X18/T20	7897207/TORX T20 T	DMSD 4,0Nm/SORT T20

LX-E

C186

LX-R

C186


C196


C197

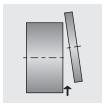

C199


C246

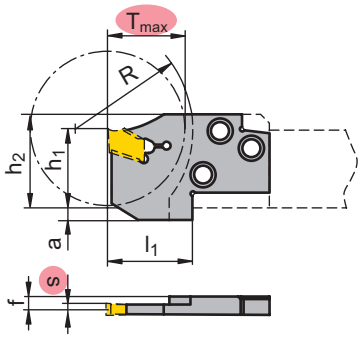

C247


C250


C251



FX short



Picture shows right-hand version

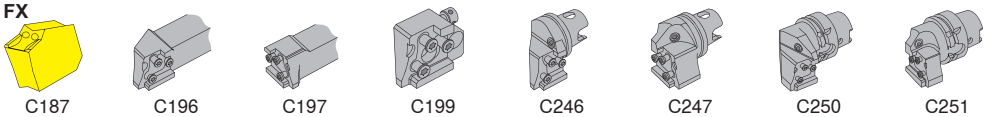
Bgr.	Type, description	L N R	s [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	a [mm]	R [mm]	
20	MSS-E20R20-FX2.2	R	2.2	20	20	24	22	3.58	3.00	30	FX 2.2..
	MSS-E20R20-FX3.1		3.1	20	20	24	22	3.20	3.00	30	FX 3.1..
	MSS-E20R20-FX4.1		4.1	20	20	24	22	2.80	3.00	30	FX 4.1..
	MSS-E20L20-FX2.2	L	2.2	20	20	24	22	3.58	3.00	30	FX 2.2..
	MSS-E20L20-FX3.1		3.1	20	20	24	22	3.20	3.00	30	FX 3.1..
	MSS-E20L20-FX4.1		4.1	20	20	24	22	2.80	3.00	30	FX 4.1..
25	MSS-E25R20-FX2.2	R	2.2	20	25	30	22	5.08		37.5	FX 2.2..
	MSS-E25R25-FX3.1		3.1	25	25	30	27	4.70		37.5	FX 3.1..
	MSS-E25R25-FX4.1		4.1	25	25	30	27	4.30		37.5	FX 4.1..
	MSS-E25R25-FX5.1		5.1	25	25	30	27	3.90		37.5	FX 5.1..
	MSS-E25R25-FX6.5		6.5	25	25	30	27	3.30		37.5	FX 6.5..
	MSS-E25L20-FX2.2	L	2.2	20	25	30	22	5.08		37.5	FX 2.2..
	MSS-E25L25-FX3.1		3.1	25	25	30	27	4.70		37.5	FX 3.1..
	MSS-E25L25-FX4.1		4.1	25	25	30	27	4.30		37.5	FX 4.1..
	MSS-E25L25-FX5.1		5.1	25	25	30	27	3.90		37.5	FX 5.1..
	MSS-E25L25-FX6.5		6.5	25	25	30	27	3.30		37.5	FX 6.5..
32	MSS-E32R32-FX3.1	R	3.1	32	32	38	34	4.70		48	FX 3.1..
	MSS-E32R32-FX4.1		4.1	32	32	38	34	4.30		48	FX 4.1..
	MSS-E32R32-FX5.1		5.1	32	32	38	34	3.90		48	FX 5.1..
	MSS-E32R32-FX6.5		6.5	32	32	38	34	3.30		48	FX 6.5..
	MSS-E32L32-FX3.1	L	3.1	32	32	38	34	4.70		48	FX 3.1..
	MSS-E32L32-FX4.1		4.1	32	32	38	34	4.30		48	FX 4.1..
	MSS-E32L32-FX5.1		5.1	32	32	38	34	3.90		48	FX 5.1..
	MSS-E32L32-FX6.5		6.5	32	32	38	34	3.30		48	FX 6.5..

Ordering example: 1 piece MSS-E20R20-FX2.2

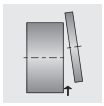
Bgr. = assembly size

FX 2.2..	7802180/A 2,2		
FX 3.1..	7802181/A 3,1		
FX 4.1..	7802181/A 3,1		
FX 5.1..	7802181/A 3,1		
FX 6.5..	7802181/A 3,1		

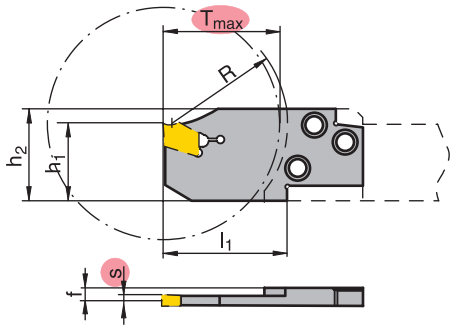
FX



C187 C196 C197 C199 C246 C247 C250 C251



FX long



Picture shows right-hand version

Bgr.	Type, description	L N R	s [mm]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	R [mm]		
25	MSS-E25R35-FX3.1	R	3.1	35	25	30	37	4.70	37.5		FX 3.1..
	MSS-E25R35-FX4.1		4.1	35	25	30	37	4.30	37.5		FX 4.1..
	MSS-E25R35-FX5.1		5.1	35	25	30	37	3.90	37.5		FX 5.1..
	MSS-E25R35-FX6.5		6.5	35	25	30	37	3.30	37.5		FX 6.5..
	MSS-E25L35-FX3.1	L	3.1	35	25	30	37	4.70	37.5		FX 3.1..
	MSS-E25L35-FX4.1		4.1	35	25	30	37	4.30	37.5		FX 4.1..
	MSS-E25L35-FX5.1		5.1	35	25	30	37	3.90	37.5		FX 5.1..
	MSS-E25L35-FX6.5		6.5	35	25	30	37	3.30	37.5		FX 6.5..
32	MSS-E32R45-FX3.1	R	3.1	45	32	38	47	4.70	48		FX 3.1..
	MSS-E32R45-FX4.1		4.1	45	32	38	47	4.30	48		FX 4.1..
	MSS-E32R45-FX5.1		5.1	45	32	38	47	3.90	48		FX 5.1..
	MSS-E32R45-FX6.5		6.5	45	32	38	47	3.30	48		FX 6.5..
	MSS-E32L45-FX3.1	L	3.1	45	32	38	47	4.70	48		FX 3.1..
	MSS-E32L45-FX4.1		4.1	45	32	38	47	4.30	48		FX 4.1..
	MSS-E32L45-FX5.1		5.1	45	32	38	47	3.90	48		FX 5.1..
	MSS-E32L45-FX6.5		6.5	45	32	38	47	3.30	48		FX 6.5..

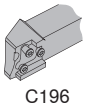
Ordering example: 1 piece MSS-E25R35-FX3.1

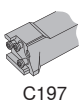
Bgr. = assembly size

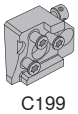
FX 3.1..	7802181/A 3,1		
FX 4.1..	7802181/A 3,1		
FX 5.1..	7802181/A 3,1		
FX 6.5..	7802181/A 3,1		

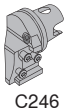
FX


C187

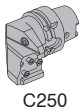

C196

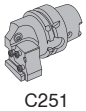

C197

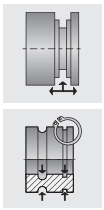

C199


C246

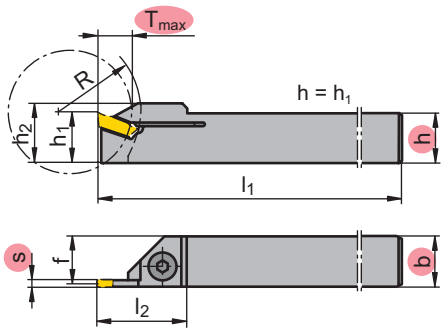

C247


C250


C251



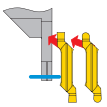
GX monobloc tool holders



Picture shows right-hand version

Type, description	L N R	h [mm]	b [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	f [mm]	R [mm]		
E10R00-1010M-GX09	R	10	10	0.60	3.75	7	12.0	150	18	9.35	15		GX09..
E10L00-1010M-GX09	L												

Ordering example: 1 piece E10R00-1010M-GX09



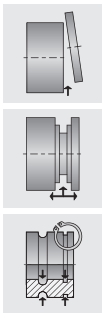
Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

h [mm]			
10	7897209/M4,0X11/T15	7897208/TORX T15 T	

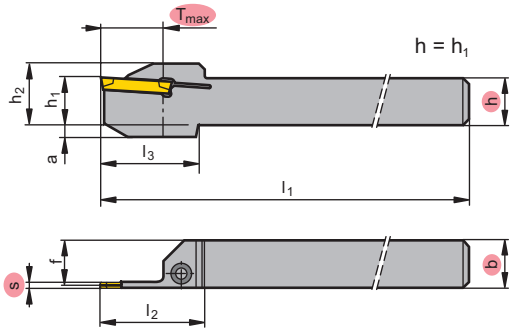
GX-E C180

GX-S C182

GX-R C183



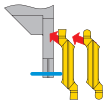
GX monobloc tool holders



Picture shows right-hand version

Type, description	L N R	h [mm]	b [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	l_3 [mm]	f [mm]	a [mm]	
E12R0012-1212K-GX16-1	R	12	12	2.00	2.75	12	17.0	125	26	24.0	11.35	4.00	GX16-1..
E12R0012-1212K-GX16-2			12	0.60	3.75	12	17.0	125	26	24.0	11.00	4.00	GX16-2..
E12L0012-1212K-GX16-1	L		12	2.00	2.75	12	17.0	125	26	24.0	11.35	4.00	GX16-1..
E12L0012-1212K-GX16-2			12	0.60	3.75	12	17.0	125	26	24.0	11.00	4.00	GX16-2..
E16R0012-1616K-GX16-1	R	16	16	2.00	2.75	12	21.0	125	26	24.0	15.35	4.00	GX16-1..
E16R0012-1616K-GX16-2			16	0.60	3.75	12	21.0	125	26	24.0	15.00	4.00	GX16-2..
E16R0012-1616K-GX16-3			16	3.76	5.00	12	21.0	125	26	24.0	14.53	4.00	GX16-3..
E16L0012-1616K-GX16-1	L		16	2.00	2.75	12	21.0	125	26	24.0	15.35	4.00	GX16-1..
E16L0012-1616K-GX16-2			16	0.60	3.75	12	21.0	125	26	24.0	15.00	4.00	GX16-2..
E16L0012-1616K-GX16-3			16	3.76	5.00	12	21.0	125	26	24.0	14.53	4.00	GX16-3..
E20R0012-2020K-GX16-1	R	20	20	2.00	2.75	12	25.0	125	26		19.35		GX16-1..
E20R0012-2020K-GX16-2			20	0.60	3.75	12	25.0	125	26		19.00		GX16-2..
E20R0012-2020K-GX16-3			20	3.76	5.00	12	25.0	125	26		18.53		GX16-3..
E20L0012-2020K-GX16-1	L		20	2.00	2.75	12	25.0	125	26		19.35		GX16-1..
E20L0012-2020K-GX16-2			20	0.60	3.75	12	25.0	125	26		19.00		GX16-2..
E20L0012-2020K-GX16-3			20	3.76	5.00	12	25.0	125	26		18.53		GX16-3..
E25R0012-2525M-GX16-2	R	25	25	0.60	3.75	12	30.0	150	26		24.00		GX16-2..
E25R0012-2525M-GX16-3			25	3.76	5.00	12	30.0	150	26		23.53		GX16-3..
E25L0012-2525M-GX16-2	L		25	0.60	3.75	12	30.0	150	26		24.00		GX16-2..
E25L0012-2525M-GX16-3			25	3.76	5.00	12	30.0	150	26		23.53		GX16-3..

Ordering example: 1 piece E12R0012-1212K-GX16-1



Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

h [mm]			
12 - 25	7897221/M3,5X14,0/T15	7897208/TORX T15 T	

GX-E

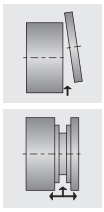
C180-C181

GX-S

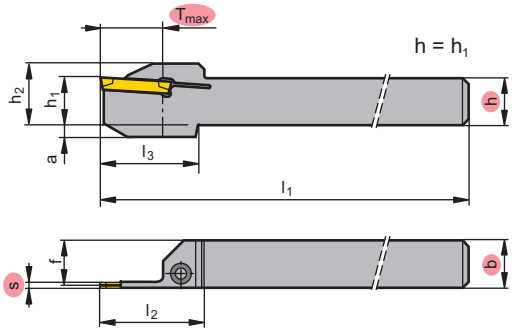
C182

GX-R

C183



GX monobloc tool holders



Picture shows right-hand version

Type, description	LNR	h [mm]	b [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	l_3 [mm]	f [mm]	a [mm]	
E16R0021-1616K-GX24-1	R	16	16	2.00	2.75	21	21.0	125	35	32.0	15.20	4.00	GX24-1..
E16R0021-1616K-GX24-2			16	2.76	3.75	21	21.0	125	35	32.0	15.00	4.00	GX24-2..
E16L0021-1616K-GX24-1	L		16	2.00	2.75	21	21.0	125	35	32.0	15.20	4.00	GX24-1..
E16L0021-1616K-GX24-2			16	2.76	3.75	21	21.0	125	35	32.0	15.00	4.00	GX24-2..
E20R0021-2020K-GX24-1	R	20	20	2.00	2.75	21	25.0	125	35		19.20		GX24-1..
E20R0021-2020K-GX24-2			20	2.76	3.75	21	25.0	125	35		19.00		GX24-2..
E20R0021-2020K-GX24-3			20	3.76	5.00	21	25.0	125	35		18.53		GX24-3..
E20L0021-2020K-GX24-1	L		20	2.00	2.75	21	25.0	125	35		19.20		GX24-1..
E20L0021-2020K-GX24-2			20	2.76	3.75	21	25.0	125	35		19.00		GX24-2..
E20L0021-2020K-GX24-3			20	3.76	5.00	21	25.0	125	35		18.53		GX24-3..
E25R0021-2525M-GX24-2	R	25	25	2.76	3.75	21	30.0	150	35		24.00		GX24-2..
E25R0021-2525M-GX24-3			25	3.76	5.00	21	30.0	150	35		23.53		GX24-3..
E25R0021-2525M-GX24-4			25	5.01	6.50	21	30.0	150	35		22.90		GX24-4..
E25L0021-2525M-GX24-2	L		25	2.76	3.75	21	30.0	150	35		24.00		GX24-2..
E25L0021-2525M-GX24-3			25	3.76	5.00	21	30.0	150	35		23.53		GX24-3..
E25L0021-2525M-GX24-4			25	5.01	6.50	21	30.0	150	35		22.90		GX24-4..
E32R0021-3225P-GX24-2	R	32	25	2.76	3.75	21	37.0	170	35		24.00		GX24-2..
E32R0021-3225P-GX24-3			25	3.76	5.00	21	37.0	170	35		23.53		GX24-3..
E32R0021-3225P-GX24-4			25	5.01	6.50	21	37.0	170	35		22.90		GX24-4..
E32L0021-3225P-GX24-2	L		25	2.76	3.75	21	37.0	170	35		24.00		GX24-2..
E32L0021-3225P-GX24-3			25	3.76	5.00	21	37.0	170	35		23.53		GX24-3..
E32L0021-3225P-GX24-4			25	5.01	6.50	21	37.0	170	35		22.90		GX24-4..

Ordering example: 1 piece E16R0021-1616K-GX24-1

 h [mm]			
16 - 32	7897218/M4,0X18/T20	7897207/TORX T20 T	

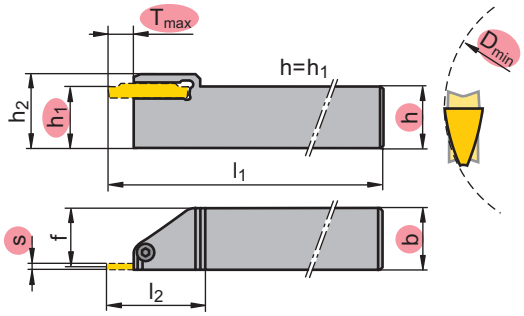
GX-E

C180-C181

GX-R

C183

AX monobloc tool
KRCGHUV



Picture shows right-hand version

Type, description	L N R	h [mm]	b [mm]	s [mm]	D_{min} [mm]	T_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	f [mm]	
E16R0005-1616L-AX05	R	16	16	3.0	10	5	21.0	140	28	14.70	AX05..
E16R0010-1616L-AX10			16	3.0	20	10	21.0	140	38	14.70	AX10..
E16L0005-1616L-AX05	L		16	3.0	10	5	21.0	140	28	14.70	AX05..
E16L0010-1616L-AX10			16	3.0	20	10	21.0	140	38	14.70	AX10..
E20R0005-2020L-AX05	R	20	20	3.0	10	5	25.0	140	28	18.70	AX05..
E20R0010-2020L-AX10			20	3.0	20	10	25.0	140	38	18.70	AX10..
E20R0015-2020L-AX15			20	3.0	30	15	25.0	140	49	18.70	AX15..
E20L0005-2020L-AX05	L		20	3.0	10	5	25.0	140	28	18.70	AX05..
E20L0010-2020L-AX10			20	3.0	20	10	25.0	140	38	18.70	AX10..
E20L0015-2020L-AX15			20	3.0	30	15	25.0	140	49	18.70	AX15..
E25R0005-2525N-AX05	R	25	25	3.0	10	5	30.0	160	28	23.70	AX05..
E25R0010-2525N-AX10			25	3.0	20	10	30.0	160	38	23.70	AX10..
E25R0015-2525N-AX15			25	3.0	30	15	30.0	160	49	23.70	AX15..
E25L0005-2525N-AX05	L		25	3.0	10	5	30.0	160	28	23.70	AX05..
E25L0010-2525N-AX10			25	3.0	20	10	30.0	160	38	23.70	AX10..
E25L0015-2525N-AX15			25	3.0	30	15	30.0	160	49	23.70	AX15..

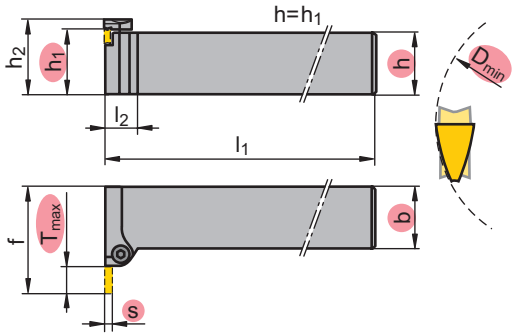
Ordering example: 1 piece E16R0005-1616L-AX05

	h [mm]			
AX05..	**16**	7897203/M4,0X14/T15	7897208/TORX T15 T	
AX05..	**20 - 25**	7897205/M5,0X18/T20	7897207/TORX T20 T	
AX10..	**16**	7897203/M4,0X14/T15	7897208/TORX T15 T	
AX10..	**20 - 25**	7897205/M5,0X18/T20	7897207/TORX T20 T	
AX15..	**20 - 25**	7897205/M5,0X18/T20	7897207/TORX T20 T	

AX

C184

AX monobloc tool
KRGHUV



Picture shows right-hand version

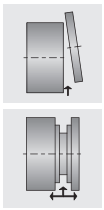
Type, description	L N R	h [mm]	b [mm]	s [mm]	D_{min} [mm]	T_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
E16R9005-1616J-AX05	R	16	16	3.0	10	5	21.0	110	13.5	28.00		AX05..
E16R9010-1616J-AX10	R		16	3.0	20	10	21.0	110	13.0	38.00		AX10..
E16L9005-1616J-AX05	L		16	3.0	10	5	21.0	110	13.5	28.00		AX05..
E16L9010-1616J-AX10	L		16	3.0	20	10	21.0	110	13.0	38.00		AX10..
E20R9005-2020J-AX05	R	20	20	3.0	10	5	25.0	110	12.0	28.00		AX05..
E20R9010-2020J-AX10	R		20	3.0	20	10	25.0	110	13.0	38.00		AX10..
E20R9015-2020J-AX15	R		20	3.0	30	15	25.0	110	13.0	49.00		AX15..
E20L9005-2020J-AX05	L		20	3.0	10	5	25.0	110	12.0	28.00		AX05..
E20L9010-2020J-AX10	L		20	3.0	20	10	25.0	110	13.0	38.00		AX10..
E20L9015-2020J-AX15	L		20	3.0	30	15	25.0	110	13.0	49.00		AX15..
E25R9005-2525L-AX05	R	25	25	3.0	10	5	30.0	140	12.0	33.00		AX05..
E25R9010-2525J-AX10	R		25	3.0	20	10	30.0	110	13.0	43.00		AX10..
E25R9015-2525L-AX15	R		25	3.0	30	15	30.0	140	13.0	49.00		AX15..
E25L9005-2525L-AX05	L		25	3.0	10	5	30.0	140	12.0	33.00		AX05..
E25L9010-2525J-AX10	L		25	3.0	20	10	30.0	110	13.0	43.00		AX10..
E25L9015-2525L-AX15	L		25	3.0	30	15	30.0	140	13.0	49.00		AX15..

Ordering example: 1 piece E16R9005-1616J-AX05

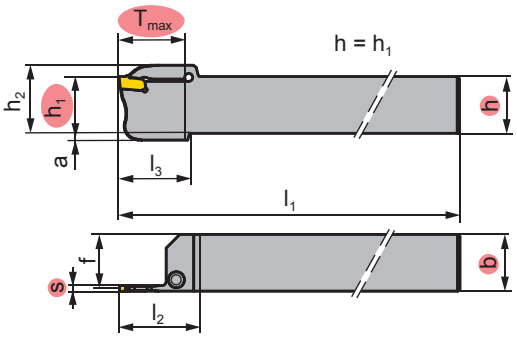
	h [mm]			
AX05..	**16 - 25**	7897203/M4,0X14/T15	7897208/TORX T15 T	
AX10..	**16**	7897203/M4,0X14/T15	7897208/TORX T15 T	
AX10..	**20 - 25**	7897205/M5,0X18/T20	7897207/TORX T20 T	
AX15..	**20 - 25**	7897205/M5,0X18/T20	7897207/TORX T20 T	

AX

C184



SX monobloc tool holders



Picture shows right-hand version

Type, description	L N R	h [mm]	b [mm]	s [mm]	T_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	l_3 [mm]	f [mm]	a [mm]	
E16R0016-1616K-SX2	R	16	16	2.0	16	21.0	125	31	26.0	15.20	7.00	SX2
E16R0020-1616K-SX3	R	16	16	3.0	20	21.0	125	36	30.0	14.75	7.00	SX3
E16L0016-1616K-SX2	L	16	16	2.0	16	21.0	125	31	26.0	15.20	7.00	SX2
E16L0020-1616K-SX3	L	16	16	3.0	20	21.0	125	36	30.0	14.75	7.00	SX3
E20R0016-2020K-SX2	R	20	20	2.0	16	25.0	125	31	26.0	19.20	5.00	SX2
E20R0020-2020K-SX3	R	20	20	3.0	20	25.0	125	38	30.0	18.75	5.00	SX3
E20R0025-2020K-SX4	R	20	20	4.0	25	27.0	125	44	35.0	18.35	5.00	SX4
E20L0016-2020K-SX2	L	20	20	2.0	16	25.0	125	31	26.0	19.20	5.00	SX2
E20L0020-2020K-SX3	L	20	20	3.0	20	25.0	125	38	30.0	18.75	5.00	SX3
E20L0025-2020K-SX4	L	20	20	4.0	25	27.0	125	44	35.0	18.35	5.00	SX4
E25R0020-2525M-SX3	R	25	25	3.0	20	30.0	150	40	30.0	23.75	5.00	SX3
E25R0025-2525M-SX4	R	25	25	4.0	25	32.0	150	46	35.0	23.35	5.00	SX4
E25R0025-2525M-SX5	R	25	25	5.0	25	32.0	150	46	35.0	22.85	5.00	SX5
E25R0032-2525M-SX6	R	25	25	6.0	32	33.0	150	54	43.0	22.40	6.00	SX6
E25L0020-2525M-SX3	L	25	25	3.0	20	30.0	150	40	30.0	23.75	5.00	SX3
E25L0025-2525M-SX4	L	25	25	4.0	25	32.0	150	46	35.0	23.35	5.00	SX4
E25L0025-2525M-SX5	L	25	25	5.0	25	32.0	150	46	35.0	22.85	5.00	SX5
E25L0032-2525M-SX6	L	25	25	6.0	32	33.0	150	54	43.0	22.40	6.00	SX6

Ordering example: 1 piece E16R0016-1616K-SX2

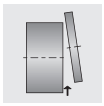
 h [mm]			
16 - 25	7897218/M4,0X18/T20	7897207/TORX T20 T	

SX-E

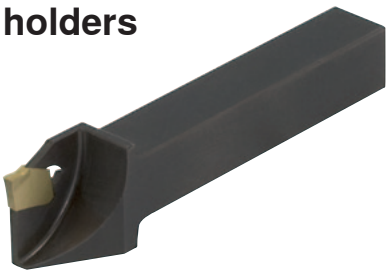
C185

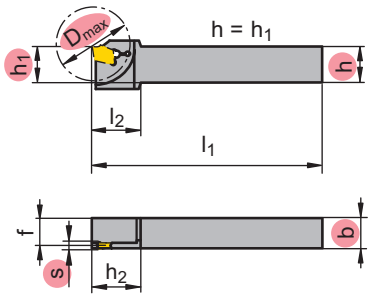
SX-R

C185



FX monobloc tool holders





Picture shows left-hand version

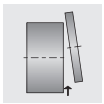
Type, description	LNR	h [mm]	b [mm]	s [mm]	D_{max} [mm]		h_2 [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
XLCER 1010 M22 FX	R	10	10	2.2	30		19.5	150	19	9.18		FX 2.2..
XLCEL 1010 M22 FX	L		10	2.2	30		19.5	150	19	9.18		FX 2.2..
XLCER 1212 F22 FX	R	12	12	2.2	30		19.5	80	19	11.18		FX 2.2..
XLCER 1212 M22 FX	R		12	2.2	30		19.5	150	19	11.18		FX 2.2..
XLCEL 1212 F22 FX	L		12	2.2	30		19.5	80	19	11.18		FX 2.2..
XLCEL 1212 M22 FX	L		12	2.2	30		19.5	150	19	11.18		FX 2.2..
XLCER 1414 M22 FX	R	14	14	2.2	30		19.5	150	19	13.18		FX 2.2..
XLCEL 1414 M22 FX	L		14	2.2	30		19.5	150	19	13.18		FX 2.2..
XLCER 1612 H22 FX	R	16	12	2.2	30		19.5	100	19	11.18		FX 2.2..
XLCFR 1612 H31 FX	R		12	3.1	35		22.5	100	22	10.80		FX 3.1..
XLCEL 1612 H22 FX	L		12	2.2	30		19.5	100	19	11.18		FX 2.2..
XLCFL 1612 H31 FX	L		12	3.1	35		22.5	100	22	10.80		FX 3.1..
XLCFR 2016 K31 FX	R	20	16	3.1	40		26.0	125	26	14.80		FX 3.1..
XLCFR 2016 K41 FX	R		16	4.1	40		26.0	125	26	14.40		FX 4.1..
XLCFL 2016 K31 FX	L		16	3.1	40		26.0	125	26	14.80		FX 3.1..
XLCFL 2016 K41 FX	L		16	4.1	40		26.0	125	26	14.40		FX 4.1..
XLCFR 2520 M31 FX	R	25	20	3.1	50		31.5	150	32	18.80		FX 3.1..
XLCFR 2520 M41 FX	R		20	4.1	50		31.5	150	32	18.40		FX 4.1..
XLCFL 2520 M31 FX	L		20	3.1	50		31.5	150	32	18.80		FX 3.1..
XLCFL 2520 M41 FX	L		20	4.1	50		31.5	150	32	18.40		FX 4.1..

Ordering example: 1 piece XLCER 1010 M22 FX

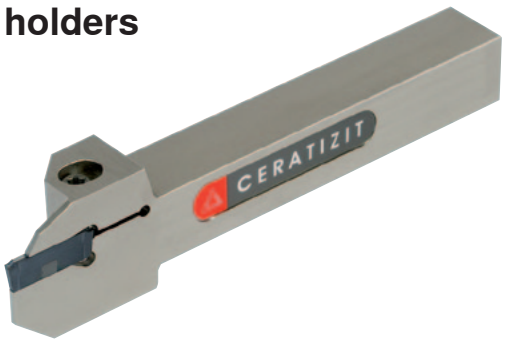
s [mm]			
2.2	7802180/A 2,2		
3.1	7802181/A 3,1		
4.1	7802181/A 3,1		

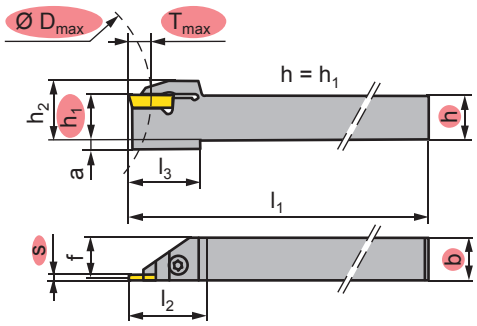
FX

C187



PX monobloc tool holders





Picture shows right-hand version

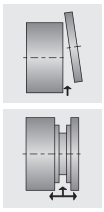
Type, description	L N R	h [mm]	b [mm]	s [mm]	T_{max} [mm]	D_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	l_3 [mm]	f [mm]	a [mm]	
E16R0005-1616K-PX20-1	R	16	16	1.0	5	52	23.0	125	31	32.0	15.00	4.00	PX20-1..
E16R0010-1616K-PX20-2			16	1.5	10	52	23.0	125	31	32.0	15.40	4.00	PX20-2..
E16R0010-1616K-PX20-3			16	2.0	10	52	23.0	125	31	32.0	15.20	4.00	PX20-3..
E16L0005-1616K-PX20-1	L		16	1.0	5	52	23.0	125	31	32.0	15.00	4.00	PX20-1..
E16L0010-1616K-PX20-2			16	1.5	10	52	23.0	125	31	32.0	15.40	4.00	PX20-2..
E16L0010-1616K-PX20-3			16	2.0	10	52	23.0	125	31	32.0	15.20	4.00	PX20-3..
E20R0005-2020L-PX20-1	R	20	20	1.0	5	62	27.0	140	34		19.00		PX20-1..
E20R0011-2020L-PX20-2			20	1.5	11	62	27.0	140	34		19.40		PX20-2..
E20R0011-2020L-PX20-3			20	2.0	11	62	27.0	140	34		19.20		PX20-3..
E20L0005-2020L-PX20-1	L		20	1.0	5	62	27.0	140	34		19.00		PX20-1..
E20L0011-2020L-PX20-2			20	1.5	11	62	27.0	140	34		19.40		PX20-2..
E20L0011-2020L-PX20-3			20	2.0	11	62	27.0	140	34		19.20		PX20-3..

Ordering example: 1 piece E16R0005-1616K-PX20-1

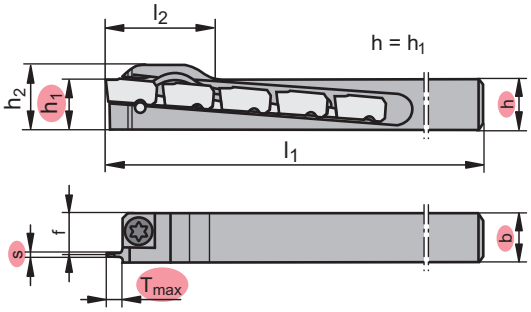
h [mm]			
16	7897218/M4,0X18/T20	7897207/TORX T20 T	10008867/GS-M4.0
20	7897218/M4,0X18/T20	7883304/TORX T25 T	10008868/GS-M5.0

PX

C188



MaxiClick 05



Picture shows right-hand version

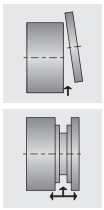
Type, description	LNR	h [mm]	b [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	f [mm]		
MC05R-1010K	R	10	10	1.00	1.50	5	13.0	125	23	8.50		MC 05..
MC05L-1010K	L		10	1.00	1.50	5	13.0	125	23	8.50		
MC05R-1212K	R	12	12	1.00	1.50	5	15.0	125	23	10.50		
MC05L-1212K	L		12	1.00	1.50	5	15.0	125	23	10.50		
MC05R-1616K	R	16	16	1.00	1.50	5	19.0	125	23	14.50		
MC05L-1616K	L		16	1.00	1.50	5	19.0	125	23	14.50		
MC05R-2020K	R	20	20	1.00	1.50	5	23.0	125	23	18.50		
MC05L-2020K	L		20	1.00	1.50	5	23.0	125	23	18.80		
MC05R-2525M	R	25	25	1.00	1.50	5	28.0	150	23	23.50		
MC05L-2525M	L		25	1.00	1.50	5	28.0	150	23	23.50		

Ordering example: 1 piece MC05R-1010K

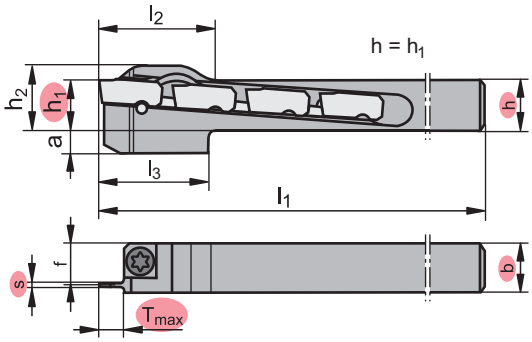
 h [mm]			
10 - 25	7818429/M4,0X11/T15	7897208/TORX T15 T	

MaxiClick

C189



MaxiClick 10



Picture shows right-hand version

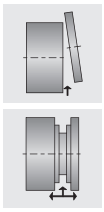
Type, description	L N R	h [mm]	b [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	l_3 [mm]	f [mm]	a [mm]	
MC10R-1010K	R	10	10	1.50	2.50	10	13.0	125	28		8.50		MC 10..
MC10R-1010K-S	R		10	1.50	2.50	10	19.0	125	28	27.0	8.50	6.00	
MC10L-1010K	L		10	1.50	2.50	10	13.0	125	28		8.50		
MC10L-1010K-S	L		10	1.50	2.50	10	19.0	125	28	27.0	8.50	6.00	
MC10R-1212K	R	12	12	1.50	2.50	10	15.0	125	28		10.50		
MC10R-1212K-S	R		12	1.50	2.50	10	19.0	125	28	27.0	10.50	4.00	
MC10L-1212K	L		12	1.50	2.50	10	15.0	125	28		10.50		
MC10L-1212K-S	L		12	1.50	2.50	10	19.0	125	28	27.0	10.50	4.00	
MC10R-1616K	R	16	16	1.50	2.50	10	19.0	125	28		14.50		
MC10L-1616K	L		16	1.50	2.50	10	19.0	125	28		14.50		
MC10R-2020K	R	20	20	1.50	2.50	10	23.0	125	28		18.50		
MC10L-2020K	L		20	1.50	2.50	10	23.0	125	28		18.50		
MC10R-2525M	R	25	25	1.50	2.50	10	28.0	152	28		23.50		
MC10L-2525M	L		25	1.50	2.50	10	28.0	152	28		23.50		

Ordering example: 1 piece MC10R-1010K

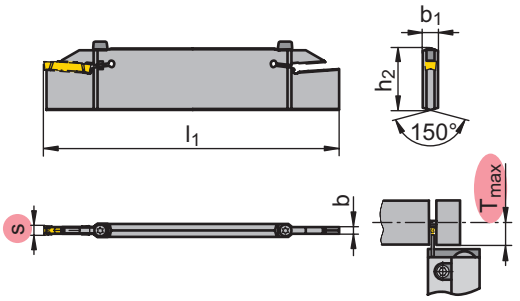
 h [mm]			
10 - 25	7818429/M4,0X11/T15	7897208/TORX T15 T	

MaxiClick

C189



GX blades



h_2 [mm]	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	b [mm]	b_1 [mm]	l_1 [mm]	
32	XLCFN 3202-GX24-1S	N	2.00	2.75	21	1.60	6.2	180	GX24-1..
	XLCFN 3203 GX24-2S		2.76	3.75	21	2.10	6.2	180	GX24-2..
	XLCFN 3204 GX24-3S		3.76	5.00	21	3.05	6.2	180	GX24-3..
	XLCFN 3206 GX24-4S		5.01	6.50	21	4.20	6.2	180	GX24-4..

Ordering example: 1 piece XLCFN 3202-GX24-1S

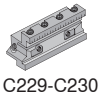
 h_2 [mm]			
32	7897221/M3,5X14,0/T15	7897208/TORX T15 T	DMSD 3,2Nm/SORT T15

GX-E

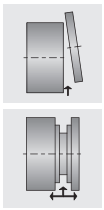
C180

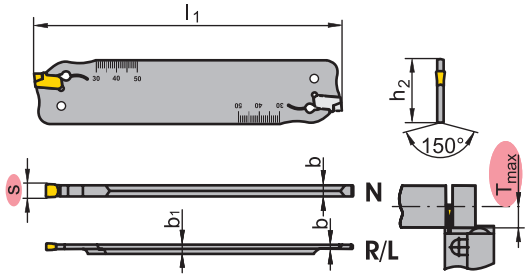
GX-R

C183



C229-C230





h_2 [mm]	Type, description	L N R	s [mm]	T_{max} [mm]		b [mm]	b_1 [mm]	l_1 [mm]	
26	XLCFR 2602-SX2	R	2.0	25		1.50	2.4	110	SX2
	XLCFL 2602-SX2	L	2.0	25		1.50	2.4	110	SX2
	XLCFN 2603-SX3	N	3.0	35		2.40		110	SX3
	XLCFN 2604-SX4	N	4.0	40		3.20		110	SX4
32	XLCFR 3202-SX2	R	2.0	25		1.50	2.4	150	SX2
	XLCFL 3202-SX2	L	2.0	25		1.50	2.4	150	SX2
	XLCFN 3203-SX3	N	3.0	50		2.40		150	SX3
	XLCFN 3204-SX4	N	4.0	50		3.20		150	SX4
	XLCFN 3205-SX5	N	5.0	55		4.20		150	SX5
	XLCFN 3206-SX6	N	6.0	60		5.20		150	SX6

Ordering example: 1 piece XLCFR 2602-SX2

	s [mm]			
SX2	**2.0**	10005884/S12-3		
SX3	**3.0**	10005884/S12-3		
SX4	**4.0**	10001365/S15-4		
SX5	**5.0**	10001365/S15-4		
SX6	**6.0**	10001365/S15-4		

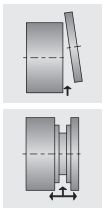
SX-E

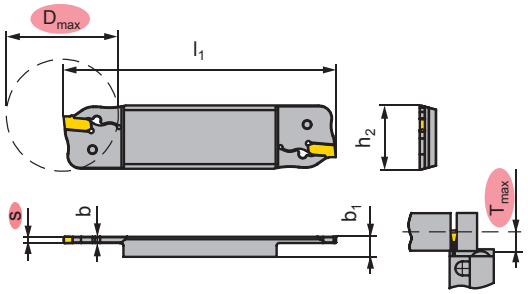
C185

SX-R

C185

C229-C230





Picture shows right-hand version

h_2 [mm]	Type, description	L N R	s [mm]	T_{max} [mm]	D_{max} [mm]	b [mm]	b_1 [mm]	l_1 [mm]	
26	XLCFR 2608-SX2	R	2.0	22	44	1.50	8.0	110	SX2
	XLCFR 2608-SX3		3.0	22	44	2.50	8.0	110	SX3
	XLCFL 2608-SX2	L	2.0	22	44	1.50	8.0	110	SX2
	XLCFL 2608-SX3		3.0	22	44	2.50	8.0	110	SX3

Ordering example: 1 piece XLCFR 2608-SX2

	s [mm]			
SX2	**2.0**	10005884/S12-3		
SX3	**3.0**	10005884/S12-3		

SX-E

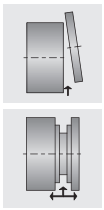
C185

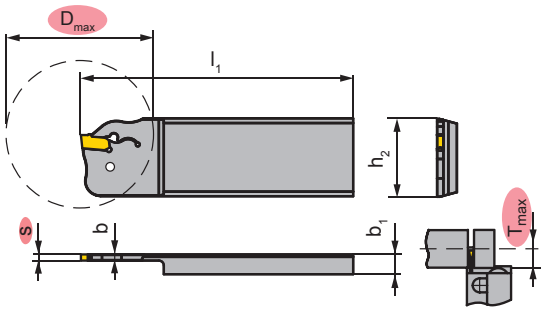
SX-R

C185

C229-C230

Blades SX, reinforced blade





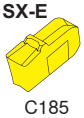
Picture shows right-hand version

h_2 [mm]	Type, description	L N R	s [mm]	T_{max} [mm]	D_{max} [mm]	b [mm]	b_1 [mm]	l_1 [mm]	
32	XLCFR 3208-SX3	R	3.0	33	66	2.50	8.0	110	SX3
	XLCFR 3208-SX4		4.0	33	66	3.40	8.0	110	SX4
	XLCFL 3208-SX3	L	3.0	33	66	2.50	8.0	110	SX3
	XLCFL 3208-SX4		4.0	33	66	3.40	8.0	110	SX4

Ordering example: 1 piece XLCFR 3208-SX3

	s [mm]			
SX3	**3.0**	10005884/S12-3		
SX4	**4.0**	10001365/S15-4		

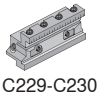
SX-E



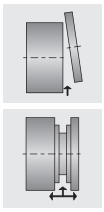
C185

SX-R

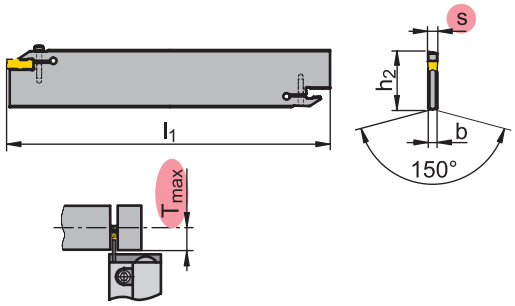
C185



C229-C230



LX blades



h2 [mm]	Type, description	LNR	smin [mm]	smax [mm]	Tmax [mm]	b [mm]	l1 [mm]		
46	XLCEN 4608 LX	N	8.00	10.00	80	6.80	250		LX-..

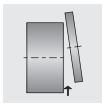
Ordering example: 1 piece XLCEN 4608 LX

h2 [mm]			
46	7897218/M4,0X18/T20	7897207/TORX T20 T	DMSD 4,0Nm/SORT T20

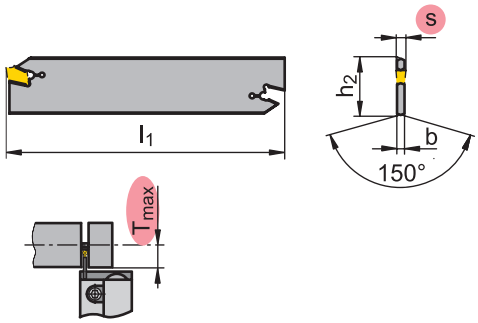
LX-E
C186

LX-R
C186

C229



FX blades



h_2 [mm]	Type, description	L N R	s [mm]	T_{max} [mm]		b [mm]	l_1 [mm]		
26	XLCEN 2602 J22 FX	N	2.2	25		1.65	110		FX 2.2..
	XLCFN 2603 J31 FX		3.1	35		2.40	110		FX 3.1..
	XLCFN 2604 J41 FX		4.1	40		3.20	110		FX 4.1..
32	XLCEN 3202 M22 FX		2.2	30		1.65	150		FX 2.2..
	XLCFN 3203 M31 FX		3.1	50		2.40	150		FX 3.1..
	XLCFN 3204 M41 FX		4.1	50		3.20	150		FX 4.1..
	XLCFN 3205 M51 FX		5.1	55		4.00	150		FX 5.1..
	XLCFN 3206 M65 FX		6.5	55		5.20	150		FX 6.5..
46	XLCEN 4608 S82 FX		8.2	80		6.80	250		FX 8.2..
	XLCEN 4609 S97 FX		9.7	80		8.00	250		FX 9.7..

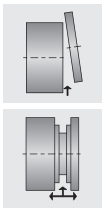
Ordering example: 1 piece XLCEN 2602 J22 FX

FX 2.2..	7802180/A 2,2		
FX 3.1..	7802181/A 3,1		
FX 8.2..	7802182/A 8,2		

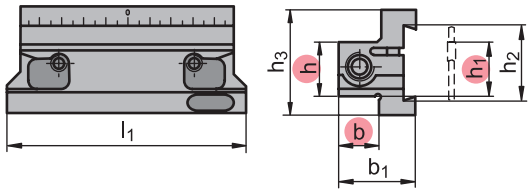
FX

C187

C229-C230



Clamping blocks



h_2 [mm]	Type, description	$h=h_1$ [mm]	b [mm]		l_1 [mm]	b_1 [mm]	h_3 [mm]		
26	SBN 2020-26 K	20	20		90	33.0	39		XLC.. 26..
32	SBN 2520-32 K	25	20		110	36.0	48		XLC.. 32..
	SBN 3229-32 K	32	29		120	44.5	48		XLC.. 32..
46	SBN 3229-46 K	32	29		150	52.0	70		XLC.. 46..
	SBN 4037-46 K	40	37		150	60.0	70		XLC.. 46..

Ordering example: 1 piece SBN 2020-26 K

The blocks are delivered without coolant set.
When applying through-tool coolant, order the additional coolant set separately.

 h_2 [mm]			
26	7802115/M6X25 DIN 912	7812301/SW 5	7802148/R1/8"/SORT
32	7802115/M6X25 DIN 912	7812301/SW 5	7802148/R1/8"/SORT
46	7802133/M8X35 DIN 912	7812302/SW 6	7802143/R1/4" SET

GX

C223

SX

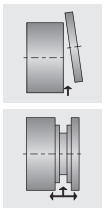
C224-C226

LX

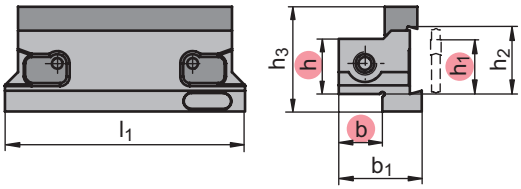
C227

FX

C228



Split clamping blocks



h_2 [mm]	Type, description	$h=h_1$ [mm]	b [mm]		h_3 [mm]	b_1 [mm]	l_1 [mm]		
26	SBN 2020-26 KS	20	20		43	37	90		XLC.. 26..
32	SBN 2520-32 KS	25	20		49	38	110		XLC.. 32..
32	SBN 3229-32 KS	32	29		52	47	120		XLC.. 32..

Ordering example: 1 piece SBN 2020-26 KS

The blocks are delivered without coolant set.
When applying through-tool coolant, order the additional coolant set separately.

 h_2 [mm]			
26	7802115/M6X25 DIN 912	7812301/SW 5	7802148/R1/8"/SORT
32	7802115/M6X25 DIN 912	7812301/SW 5	7802148/R1/8"/SORT

GX

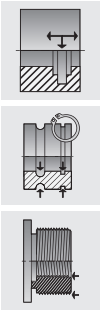
C223

SX

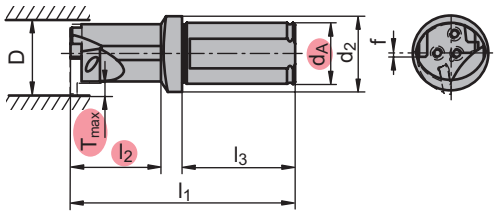
C224-C226

FX

C228



Boring bars 1.5D

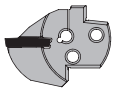


Picture shows right-hand version

Bgr.	Type, description	L N R	d_A [mm]	l_2 [mm]	T_{max} [mm]	D [mm]	d_2 [mm]	l_1 [mm]	l_3 [mm]	f [mm]	
16	MSS-I16R90-1.5D-N	R	20	24	4	20	25	82	50	1.00	MSS-I16R..
	MSS-I16L90-1.5D-N	L	20	24	4	20	25	82	50	1.00	MSS-I16L..
20	MSS-I20R90-1.5D-N	R	20	30	5	25	25	87	50	1.00	MSS-I20R..
	MSS-I20L90-1.5D-N	L	20	30	5	25	25	87	50	1.00	MSS-I20L..
25	MSS-I25R90-1.5D-N	R	25	38	6	32	32	102	56	1.50	MSS-I25R..
	MSS-I25L90-1.5D-N	L	25	38	6	32	32	102	56	1.50	MSS-I25L..
32	MSS-I32R90-1.5D-N	R	32	48	9	40	40	119	60	2.00	MSS-I32R..
	MSS-I32L90-1.5D-N	L	32	48	9	40	40	119	60	2.00	MSS-I32L..
40	MSS-I40R90-1.5D-N	R	40	60	10	50	50	142	70	2.50	MSS-I40R..
	MSS-I40L90-1.5D-N	L	40	60	10	50	50	142	70	2.50	MSS-I40L..

Ordering example: 1 piece MSS-I16R90-1.5D-N

Bgr. = assembly size



When using module
MSS-I40N19-GX24.. the following applies:

GX24:
T_{max} = +9 mm
D = +10 mm

C234

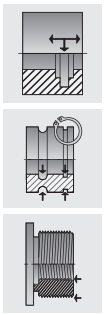
Bgr.			
16	7897200/M2,5X10/T08	7724106/TORX T08	
20	7897201/M3,0X11/T10	7883306/TORX T10	
25	7897202/M3,5X12,5/T15		7897208/TORX T15 T
32	7897204/M4,5X17/T20		7897207/TORX T20 T
40	7897205/M5,0X18/T20		7897207/TORX T20 T

GX

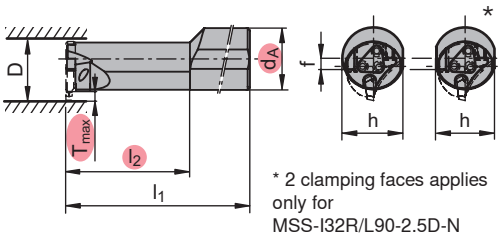
C233-C236

TC

C242



Boring bars 2.5D



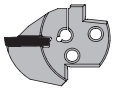
* 2 clamping faces applies only for MSS-I32R/L90-2.5D-N

Picture shows right-hand version

Bgr.	Type, description	L N R	d_A [mm]	l_2 [mm]	T_{max} [mm]	h [mm]	l_1 [mm]	D [mm]	f [mm]	
16	MSS-I16R90-2.5D-N	R	20	40	4	19	180	20	4.50	MSS-I16R..
	MSS-I16L90-2.5D-N	L	20	40	4	19	180	20	4.50	MSS-I16L..
20	MSS-I20R90-2.5D-N	R	25	50	5	24	200	25	6.00	MSS-I20R..
	MSS-I20L90-2.5D-N	L	25	50	5	24	200	25	6.00	MSS-I20L..
25	MSS-I25R90-2.5D-N	R	32	63	6	31	250	32	7.00	MSS-I25R..
	MSS-I25L90-2.5D-N	L	32	63	6	31	250	32	7.00	MSS-I25L..
32	MSS-I32R90-2.5D-N	R	40	80	9	38	300	40	9.50	MSS-I32R..
	MSS-I32L90-2.5D-N	L	40	80	9	38	300	40	9.50	MSS-I32L..
40	MSS-I40R90-2.5D-N	R	50	100	10	48.5	350	50	11.00	MSS-I40R..
	MSS-I40L90-2.5D-N	L	50	100	10	48.5	350	50	11.00	MSS-I40L..

Ordering example: 1 piece MSS-I16R90-2.5D-N

Bgr. = assembly size



When using module MSS-I40N19-GX24.. the following applies:

GX24:
T_{max} = +9 mm
D = +10 mm

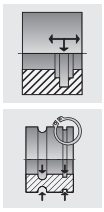
Bgr.			
16	7897200/M2,5X10/T08	7724106/TORX T08	
20	7897201/M3,0X11/T10	7883306/TORX T10	
25	7897202/M3,5X12,5/T15		7897208/TORX T15 T
32	7897204/M4,5X17/T20		7897207/TORX T20 T
40	7897205/M5,0X18/T20		7897207/TORX T20 T

GX

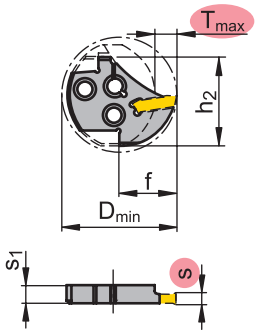
C233-C236

TC

C242



GX09



Picture shows right-hand version

Bgr.	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	D_{min} [mm]	f [mm]	s_1 [mm]		
16	MSS-I16R04-GX09-1	R	2.00	2.75	4	16.4	20	10.00	3.8		GX09-1..
	MSS-I16R04-GX09-2		2.76	3.75	4	16.4	20	10.00	3.8		GX09-2..
	MSS-I16L04-GX09-1	L	2.00	2.75	4	16.4	20	10.00	3.8		GX09-1..
	MSS-I16L04-GX09-2		2.76	3.75	4	16.4	20	10.00	3.8		GX09-2..
20	MSS-I20R05-GX09-1	R	2.00	2.75	5	20.3	25	12.00	3.8		GX09-1..
	MSS-I20R05-GX09-2		2.76	3.75	5	20.3	25	12.00	3.8		GX09-2..
	MSS-I20L05-GX09-1	L	2.00	2.75	5	20.3	25	12.00	3.8		GX09-1..
	MSS-I20L05-GX09-2		2.76	3.75	5	20.3	25	12.00	3.8		GX09-2..
25	MSS-I25R06-GX09-1	R	2.00	2.75	6	24.9	32	15.50	3.8		GX09-1..
	MSS-I25R06-GX09-2		2.76	3.75	6	24.9	32	15.50	3.8		GX09-2..
	MSS-I25L06-GX09-1	L	2.00	2.75	6	24.9	32	15.50	3.8		GX09-1..
	MSS-I25L06-GX09-2		2.76	3.75	6	24.9	32	15.50	3.8		GX09-2..

Ordering example: 1 piece MSS-I16R04-GX09-1

Bgr. = assembly size

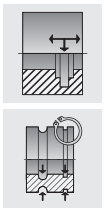
GX-E C180

GX-S C182

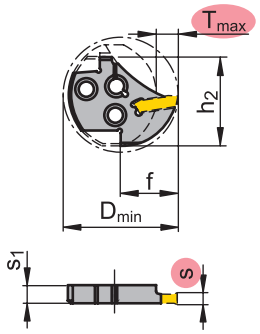
GX-R C183

1.5D C231

2.5D C232



GX16/24



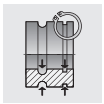
Picture shows right-hand version

Bgr.	Type, description	LNR	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	D_{min} [mm]	f [mm]	s_1 [mm]		
32	MSS-I32R09-GX16-1	R	2.00	2.75	9	32.2	40	20.00	5.9		GX16-1..
	MSS-I32R09-GX16-2		2.76	3.75	9	32.2	40	20.00	5.9		GX16-2..
	MSS-I32R09-GX16-3		3.76	5.00	9	32.2	40	20.00	5.9		GX16-3..
	MSS-I32R09-GX16-4		5.01	6.50	9	32.2	40	20.00	5.9		GX16-4..
	MSS-I32L09-GX16-1	L	2.00	2.75	9	32.2	40	20.00	5.9		GX16-1..
	MSS-I32L09-GX16-2		2.76	3.75	9	32.2	40	20.00	5.9		GX16-2..
	MSS-I32L09-GX16-3		3.76	5.00	9	32.2	40	20.00	5.9		GX16-3..
	MSS-I32L09-GX16-4		5.01	6.50	9	32.2	40	20.00	5.9		GX16-4..
40	MSS-I40R10-GX16-1	R	2.00	2.75	10	39.6	50	24.50	5.9		GX16-1..
	MSS-I40R10-GX16-2		2.76	3.75	10	39.6	50	24.50	5.9		GX16-2..
	MSS-I40R10-GX16-3		3.76	5.00	10	39.6	50	24.50	5.9		GX16-3..
	MSS-I40R10-GX16-4		5.01	6.50	10	39.6	50	24.50	5.9		GX16-4..
	MSS-I40L10-GX16-1	L	2.00	2.75	10	39.6	50	24.50	5.9		GX16-1..
	MSS-I40L10-GX16-2		2.76	3.75	10	39.6	50	24.50	5.9		GX16-2..
	MSS-I40L10-GX16-3		3.76	5.00	10	39.6	50	24.50	5.9		GX16-3..
	MSS-I40L10-GX16-4		5.01	6.50	10	39.6	50	24.50	5.9		GX16-4..
	MSS-I40N19-GX24-2	N	2.76	3.75	19	40.7	60	33.50	6.2		GX24-2..
	MSS-I40N19-GX24-3		3.76	5.00	19	40.7	60	33.50	6.2		GX24-3..
	MSS-I40N19-GX24-4		5.01	6.50	19	40.7	60	33.50	6.2		GX24-4..

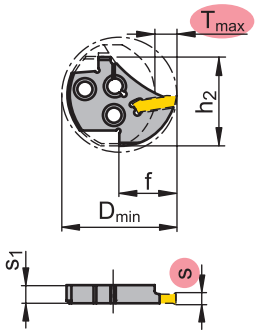
Ordering example: 1 piece MSS-I32R09-GX16-1

Bgr. = assembly size

GX-E C180-C181 **GX-S** C182 **GX-R** C183 **1.5D** C231 **2.5D** C232 **UTS** C249



GX09



Picture shows right-hand version

Bgr.	Type, description	L N R	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	D_{min} [mm]	f [mm]	s_1 [mm]		
16	MSS-I16R02-GX09-1	R	0.60	1.95	2	16.45	20	10.00	3.8		GX09-1.. R/L
	MSS-I16L02-GX09-1	L	0.60	1.95	2	16.45	20	10.00	3.8		
20	MSS-I20R02-GX09-1	R	0.60	1.95	2	20.35	25	12.00	3.8		
	MSS-I20L02-GX09-1	L	0.60	1.95	2	20.35	25	12.00	3.8		
25	MSS-I25R02-GX09-1	R	0.60	1.95	2	24.95	32	15.50	3.8		
	MSS-I25L02-GX09-1	L	0.60	1.95	2	24.95	32	15.50	3.8		

Ordering example: 1 piece MSS-I16R02-GX09-1

Bgr. = assembly size

GX-S

C182

GX-R

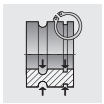
C183

1.5D

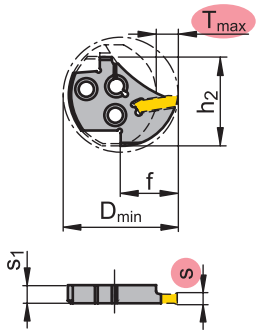
C231

2.5D

C232



GX16



Picture shows right-hand version

Bgr.	Type, description	LNR	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h_2 [mm]	D_{min} [mm]	f [mm]	s_1 [mm]		
32	MSS-I32R03-GX16-2	R	0.60	2.75	3	32.2	40	20.00	5.9		GX16-2.. R/L
	MSS-I32L03-GX16-2	L	0.60	2.75	3	32.2	40	20.00	5.9		
40	MSS-I40R03-GX16-2	R	0.60	2.75	3	39.6	50	24.50	5.9		
	MSS-I40L03-GX16-2	L	0.60	2.75	3	39.6	50	24.50	5.9		

Ordering example: 1 piece MSS-I32R03-GX16-2

Bgr. = assembly size

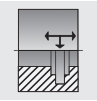
GX-S C182

GX-R C183

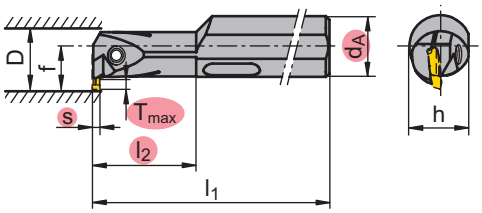
1.5D C231

2.5D C232

UTS C249



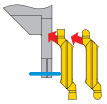

GX monobloc boring bars



Picture shows right-hand version

Type, description	LNR	d_A [mm]	l_2 [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h [mm]	l_1 [mm]	D [mm]	f [mm]		
I12R90-2.5D-GX09	R	16	30	0.60	3.75	3	15.25	150	16	11		GX09..
I12L90-2.5D-GX09	L											

Ordering example: 1 piece I12R90-2.5D-GX09



Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

			
16	7897202/M3,5X12,5/T15	7897208/TORX T15 T	

GX-E

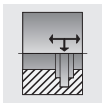
C180

GX-S

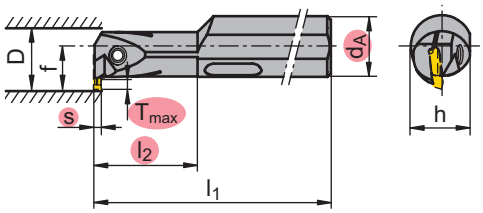
C182

GX-R

C183



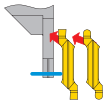
GX monobloc boring bars



Picture shows right-hand version

Type, description	L N R	d_A [mm]	l_2 [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h [mm]	l_1 [mm]	D [mm]	f [mm]	
I16R90-2.0D-GX16-1	R	16	32	2.00	2.75	5.5	15.25	150	20.5	13.5	GX16-1..
I16R90-2.0D-GX16-2			32	0.60	3.75	5.5	15.25	150	20.5	13.5	GX16-2..
I16L90-2.0D-GX16-1	L		32	2.00	2.75	5.5	15.25	150	20.5	13.5	GX16-1..
I16L90-2.0D-GX16-2			32	0.60	3.75	5.5	15.25	150	20.5	13.5	GX16-2..
I20R90-2.0D-GX16-2	R	20	40	0.60	3.75	5.5	19	180	25.0	15.5	GX16-2..
I20L90-2.0D-GX16-2	L		40	0.60	3.75	5.5	19	180	25.0	15.5	GX16-2..
I25R90-2.0D-GX16-2	R	25	50	0.60	3.75	8.0	24	200	32.0	20.5	GX16-2..
I25R90-2.0D-GX16-3			50	3.76	5.00	10.0	24	200	32.0	22.5	GX16-3..
I25L90-2.0D-GX16-2	L		50	0.60	3.75	8.0	24	200	32.0	20.5	GX16-2..
I25L90-2.0D-GX16-3			50	3.76	5.00	10.0	24	200	32.0	22.5	GX16-3..
I32R90-2.0D-GX16-2	R	32	64	0.60	3.75	11.0	31	250	42.0	27.5	GX16-2..
I32R90-2.0D-GX16-3			64	3.76	5.00	11.0	31	250	42.0	27.5	GX16-3..
I32L90-2.0D-GX16-2	L		64	0.60	3.75	11.0	31	250	42.0	27.5	GX16-2..
I32L90-2.0D-GX16-3			64	3.76	5.00	11.0	31	250	42.0	27.5	GX16-3..

Ordering example: 1 piece I16R90-2.0D-GX16-1



Attention:
When using right-hand or left-hand inserts, the tool requires modification to prevent the insert fouling.

d_A [mm]			
16 - 32	7897203/M4,0X14/T15	7897208/TORX T15 T	

GX-E

C180-C181

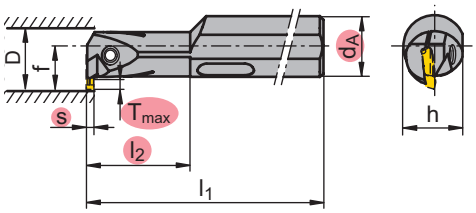
GX-S

C182

GX-R

C183

GX monobloc boring bars



Picture shows right-hand version

Type, description	L N R	d_A [mm]	l_2 [mm]	s_{min} [mm]	s_{max} [mm]	T_{max} [mm]	h [mm]	l_1 [mm]	D [mm]	f [mm]		
I32R90-2.0D-GX24-2	R	32	64	2.76	3.75	11.0	31.0	250	42	27.5		GX24-2..
I32R90-2.0D-GX24-3			64	3.76	5.00	11.0	31.0	250	42	27.5		GX24-3..
I32R90-2.0D-GX24-4			64	5.01	6.50	17.5	31.0	250	47	30.4		GX24-4..
I32L90-2.0D-GX24-2	L		64	2.76	3.75	11.0	31	250	42	27.5		GX24-2..
I32L90-2.0D-GX24-3			64	3.76	5.00	11.0	31.0	250	42	27.5		GX24-3..
I32L90-2.0D-GX24-4			64	5.01	6.50	17.5	31.0	250	47	30.4		GX24-4..
I40R90-2.0D-GX24-3	R	40	80	3.76	5.00	12.0	38.5	300	53	32.5		GX24-3..
I40R90-2.0D-GX24-4			80	5.01	6.50	17.5	38.5	300	57	34.4		GX24-4..
I40L90-2.0D-GX24-3	L		80	3.76	5.00	12.0	38.5	300	53	32.5		GX24-3..
I40L90-2.0D-GX24-4			80	5.01	6.50	17.5	38.5	300	57	34.4		GX24-4..

Ordering example: 1 piece I32R90-2.0D-GX24-2

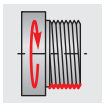
 d_A [mm]			
32 - 40	7897205/M5,0X18/T20	7897207/TORX T20 T	

GX-E

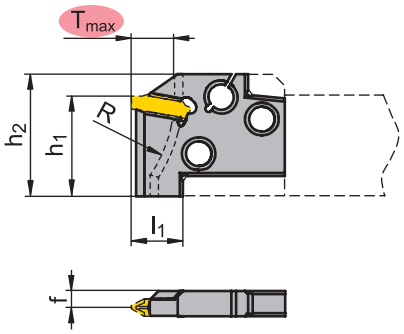
C180-C181

GX-R

C183



TC16



Picture shows right-hand version

Bgr.	Type, description	L N R	Pitch P					h_1 [mm]	h_2 [mm]	l_1 [mm]	f [mm]	R [mm]	
			P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	T_{max} [mm]						
20	MSS-E20R-TC16-1	R	0.50	1.50	48	16	8	20	24	20	3.45	30	TC16-1..
	MSS-E20N-TC16-2	N	1.75	3.00	14	8	12	20	24	20	2.20		TC16-2..
	MSS-E20L-TC16-1	L	0.50	1.50	48	16	8	20	24	20	3.45	30	TC16-1..
25	MSS-E25R-TC16-1	R	0.50	1.50	48	16	8	25	30	25	5.20	37.5	TC16-1..
	MSS-E25R-TC16-2	R	1.75	3.00	14	8	10	25	30	25	4.10	37.5	TC16-2..
	MSS-E25N-TC16-3	N	3.50	5.00	7	5	12	25	30	25	3.10		TC16-3..
	MSS-E25L-TC16-1	L	0.50	1.50	48	16	8	25	30	25	5.20	37.5	TC16-1..
	MSS-E25L-TC16-2	L	1.75	3.00	14	8	10	25	30	25	4.10	37.5	TC16-2..

Ordering example: 1 piece MSS-E20R-TC16-1

Bgr. = assembly size

TC 60°

C190+C192

TC 55°

C191+C193

C196

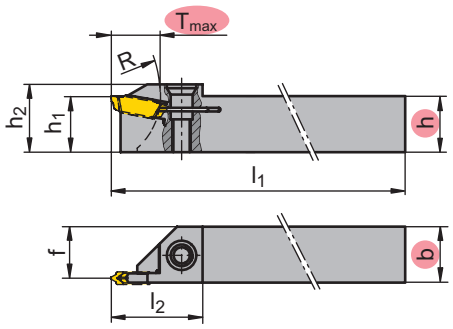
C197

C199

C246

C247

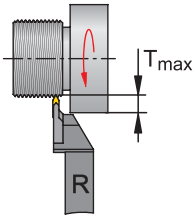
TC monobloc tool holders



Picture shows right-hand version

Type, description	L N R	h [mm]	b [mm]	Pitch P P_{min} [mm]	P_{max} [mm]	P_{min} [TPI]	P_{max} [TPI]	T_{max} [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	f [mm]	R [mm]	
E12R00-1212-TC16	R	12	12	0.50	3.00	48	8	10	12	14.5	150	20	11	15	TC16-1/2..
E12L00-1212-TC16	L														

Ordering example: 1 piece E12R00-1212-TC16



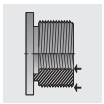
h [mm]			
12	7897209/M4,0X11/T15	7897208/TORX T15 T	

TC 60°

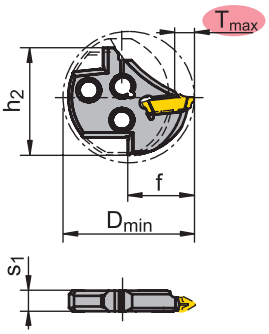
C190+C192

TC 55°

C191+C193



TC16



Picture shows right-hand version

Bgr.	Type, description	L N R	Pitch P: P min [mm]	P max [mm]	P min [TPI]	P max [TPI]	T max [mm]	h2 [mm]	f [mm]	D min [mm]	s1 [mm]	
32	MSS-I32R-TC16-1	R	0.50	1.50	48	16	7	32.2	20.00	40	6.2	TC16-1..
	MSS-I32R-TC16-2		1.75	3.00	14	8	7	32.2	20.00	40	6.2	TC16-2..
	MSS-I32N-TC16-3	N	3.50	5.00	7	5	7	32.2	20.00	40	6.2	TC16-3..
	MSS-I32L-TC16-1	L	0.50	1.50	48	16	7	32.2	20.00	40	6.2	TC16-1..
	MSS-I32L-TC16-2		1.75	3.00	14	8	7	32.2	20.00	40	6.2	TC16-2..

Ordering example: 1 piece MSS-I32R-TC16-1

Bgr. = assembly size

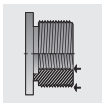
TC 60° C190+C192

TC 55° C191+C193

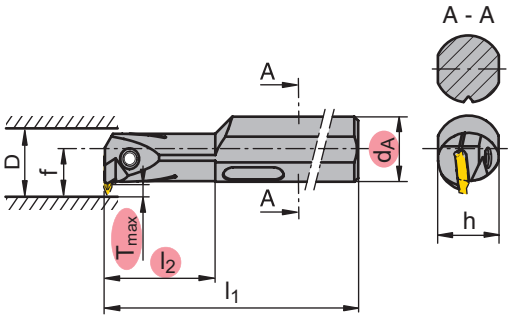
1.5D C231

2.5D C232

UTS C249



TC monobloc boring bars



Picture shows right-hand version

Type, description	L N R	d_A [mm]	l_2 [mm]	Pitch P P_{min} [mm]	Pitch P P_{max} [mm]	Pitch P P_{min} [TPI]	Pitch P P_{max} [TPI]	T_{max} [mm]	h [mm]	l_1 [mm]	D_{min} [mm]	f [mm]			
I16R90-2D-TC16	R	20	32	0.50	3.00	48	8	4	18	181	20	14.00			TC16-1/2..
I16L90-2D-TC16	L		32	0.50	3.00	48	8	4	18	181	20	14.00			TC16-1/2..
I20R90-2D-TC16	R	25	40	0.50	5.00	48	5	5	23	200	25	17.50			TC16-..
I20L90-2D-TC16	L		40	0.50	5.00	48	5	5	23	200	25	17.50			TC16-..
I25R90-2D-TC16	R	32	50	0.50	5.00	48	5	6	30	250	32	22.00			TC16-..
I25L90-2D-TC16	L		50	0.50	5.00	48	5	6	30	250	32	22.00			TC16-..

Ordering example: 1 piece I16R90-2D-TC16

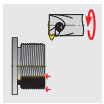
 d_A [mm]			
20	7897203/M4,0X14/T15	7897208/TORX T15 T	
25	7897205/M5,0X18/T20	7897207/TORX T20 T	
32	7897206/M6,0X20/T25	7883304/TORX T25 T	

TC 60°

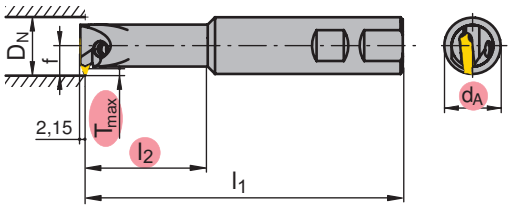
C190+C192

TC 55°

C191+C193



TC milling cutters



Picture shows right-hand version

Type, description	L N R	d_A [mm]	l_2 [mm]	T_{max} [mm]			l_1 [mm]	D_N [mm]	f [mm]			
I25R90-2D-TC16-W	R	25	54	3.0			140	25	12.5			TC16-..
I32R90-2D-TC16-W		32	68	3.5			166	32	16.0			

Ordering example: 1 piece I25R90-2D-TC16-W

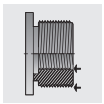
 d_A [mm]			
25	7897207/TORX T20 T	7897204/M4,5X17/T20	
32	7883304/TORX T25 T	7897206/M6,0X20/T25	

TC 60°

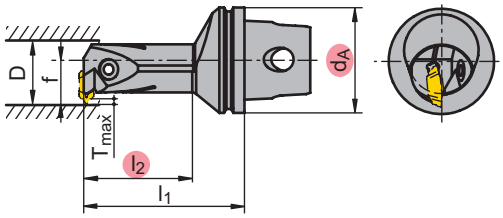
C190+C192

TC 55°

C191+C193



TC monobloc boring bars



Picture shows right-hand version

Type, description	LNR	d_A [mm]	l_2 [mm]	l_1 [mm]	D_{min} [mm]	f [mm]	T_{max} [mm]		
UT40-MSS-I16R90-2D-TC16	R	40	32	50	20	14	4		TC16-1/2..
UT40-MSS-I20R90-2D-TC16	R	40	40	60	25	17.5	5		TC16-..
UT40-MSS-I25R90-2D-TC16	R	40	50	70	32	22	6		TC16-..
UT40-MSS-I25L90-2D-TC16	L	40	50	70	32	22	6		TC16-..

Ordering example: 1 piece UT40-MSS-I16R90-2D-TC16

d_A [mm]	Bgr.				
40	16	7897203/M4,0X14/T15	7897208/TORX T15 T	7896900/O-RING 40	
40	20	7897205/M5,0X18/T20	7897207/TORX T20 T	7896900/O-RING 40	
40	25	7897206/M6,0X20/T25	7883304/TORX T25 T	7896900/O-RING 40	

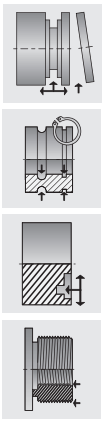
TC 60°

C190+C192

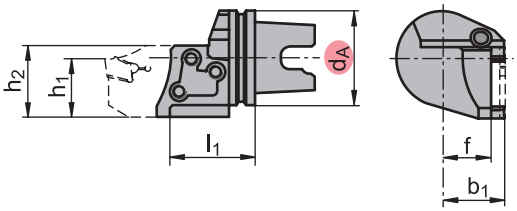
TC 55°

C191+C193

Modular system (MSS) - UTS



876



Picture shows right-hand version

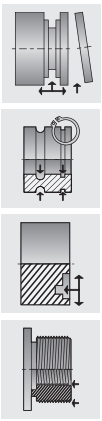
Bgr.	Type, description	L N R	d_A [mm]	h_1 [mm]	h_2 [mm]	b_1 [mm]	l_1 [mm]	f [mm]	
25	UT40-MSS-E25R00	R	40	25	30.0	26.40	36	20.50	MSS-E25R..
	UT50-MSS-E25R00		50	25	30.0	31.40	42	25.50	MSS-E25R..
	UT63-MSS-E25R00		63	25	30.0	37.40	50	31.50	MSS-E25R..
	UT40-MSS-E25L00	L	40	25	30.0	26.40	36	20.50	MSS-E25L..
	UT50-MSS-E25L00		50	25	30.0	31.40	42	25.50	MSS-E25L..
	UT63-MSS-E25L00		63	25	30.0	37.40	50	31.50	MSS-E25L..
32	UT50-MSS-E32R00	R	50	35	41.8	31.40	49	25.50	MSS-E32R..
	UT63-MSS-E32R00		63	35	41.8	37.40	50	31.50	MSS-E32R..
	UT50-MSS-E32L00	L	50	35	41.8	31.40	49	25.50	MSS-E32L..
	UT63-MSS-E32L00		63	35	41.8	37.40	50	31.50	MSS-E32L..

Ordering example: 1 piece UT40-MSS-E25R00

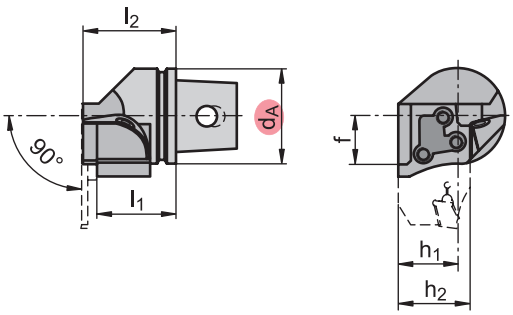
Bgr. = assembly size

d_A [mm]	Bgr.				
40	25	7897205/M5,0X18/T20	7897207/TORX T20 T	7896900/O-RING 40	7896904/SD 8X6
50	25	7897205/M5,0X18/T20	7897207/TORX T20 T	7896940/O-RING 50	7896904/SD 8X6
63	25	7897205/M5,0X18/T20	7897207/TORX T20 T	7896941/O-RING 63	7896944/SD 12X8
50	32	7897206/M6,0X20/T25	7883304/TORX T25 T	7896940/O-RING 50	7896904/SD 8X6
63	32	7897206/M6,0X20/T25	7883304/TORX T25 T	7896941/O-RING 63	7896944/SD 12X8

GX C201-C202 | GX C204 | GX-A C205-C207 | AX C208 | SX C209 | LX C210 | FX C211-C212 | TC C240



876 ▯▯ ▯



Picture shows right-hand version

Bgr.	Type, description	L N R	d_A [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	f [mm]	
25	UT40-MSS-E25R90	R	40	25	30.0	33.5	39	20.00	MSS-E25L..
	UT50-MSS-E25R90	R	50	25	30.0	43.5	49	25.00	MSS-E25L..
	UT40-MSS-E25L90	L	40	25	30.0	33.5	39	20.00	MSS-E25R..
	UT50-MSS-E25L90	L	50	25	30.0	43.5	49	25.00	MSS-E25R..
32	UT63-MSS-E32R90	R	63	32	38.0	53.5	59	27.00	MSS-E32L..
	UT63-MSS-E32L90	L	63	32	38.0	53.5	59	27.00	MSS-E32R..

Ordering example: 1 piece UT40-MSS-E25R90

Bgr. = assembly size

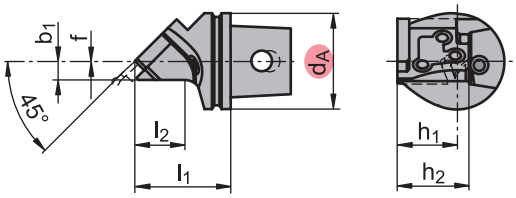
In case of 90deg please note:
Right-hand shank - left-hand module
Left-hand shank - right-hand module

d_A [mm]	Bgr.				
40	25	7897205/M5,0X18/T20	7897207/TORX T20 T	7896900/O-RING 40	7896904/SD 8X6
50	25	7897205/M5,0X18/T20	7897207/TORX T20 T	7896940/O-RING 50	7896904/SD 8X6
63	32	7897206/M6,0X20/T25	7883304/TORX T25 T	7896941/O-RING 63	7896944/SD 12X8

GX C201-C202 **GX** C204 **GX-A** C205-C207 **AX** C208 **SX** C209 **LX** C210 **FX** C211-C212 **TC** C240

Modular system (MSS) - UTS

8 76 ▯▯ ▯



Picture shows left-hand version

Bgr.	Type, description	L N R	d_A [mm]	h_1 [mm]	h_2 [mm]	b_1 [mm]	l_1 [mm]	l_2 [mm]	f [mm]	
25	UT40-MSS-E25L45	L	40	25	30.0	8.00	40	21	0.00	MSS-E25R..

Ordering example: 1 piece UT40-MSS-E25L45

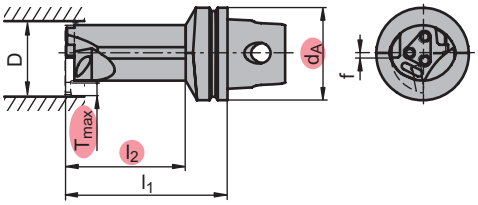
Bgr. = assembly size

 Bgr.				
25	7897210/M5,0X13,5/T20	7897205/M5,0X18/T20	7897207/TORX T20 T	7896904/SD 8X6

GX

C204

UTS boring bars

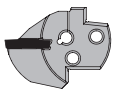


Picture shows right-hand version

Bgr.	Type, description	L N R	d_A [mm]	l_2 [mm]	T_{max} [mm]	l_1 [mm]	D_{min} [mm]	f [mm]			
32	UT40-MSS-I32R90-2D	R	40	64	9	80	40	2.00			MSS-I32R..
	UT50-MSS-I32L90-2D	L	50	64	9	90	40	2.00			MSS-I32L..
40	UT40-MSS-I40R90-2D	R	40	80	10	92	50	2.50			MSS-I40R..
	UT63-MSS-I40R90-2D	R	63	80	10	110	50	2.50			MSS-I40R..
	UT40-MSS-I40L90-2D	L	40	80	10	92	50	2.50			MSS-I40L..

Ordering example: 1 piece UT40-MSS-I32R90-2D

Bgr. = assembly size



When using module MSS-I40N19-GX24.. the following applies:

GX24:
T_{max} = +9 mm
D = +10 mm

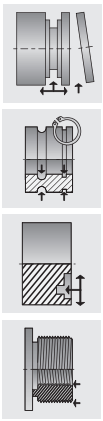
Bgr.			
32	7897204/M4,5X17/T20	7897207/TORX T20 T	
40	7897205/M5,0X18/T20	7897207/TORX T20 T	

GX

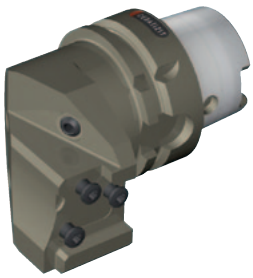
C234+C236

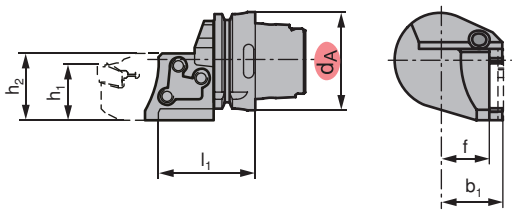
TC

C242



+6. 7





Picture shows right-hand version

Bgr.	Type, description	L N R	d_A [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	b_1 [mm]	f [mm]	
32	HSK-T63-MSS-E32R00	R	63	35	41.0	74	44.20	38.70	MSS-E32R..
	HSK-T100-MSS-E32R00		100	43.8	49.8	77	54.20	48.70	MSS-E32R..
	HSK-T63-MSS-E32L00	L	63	35	41.0	74	44.20	38.70	MSS-E32L..
	HSK-T100-MSS-E32L00		100	43.8	49.8	77	54.20	48.70	MSS-E32L..

Ordering example: 1 piece HSK-T63-MSS-E32R00

Bgr. = assembly size

d_A [mm]	Bgr.				
63 - 100	32	7897206/M6,0X20/T25	7883304/TORX T25 T	7896944/SD 12X8	

GX C201-C202

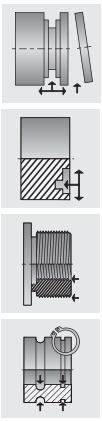
GX C204

GX-A C205-C207

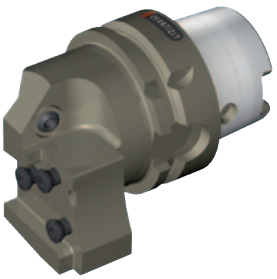
SX C209

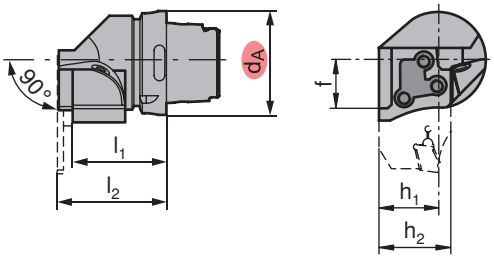
LX C210

FX C211-C212



+6. 7





Picture shows right-hand version

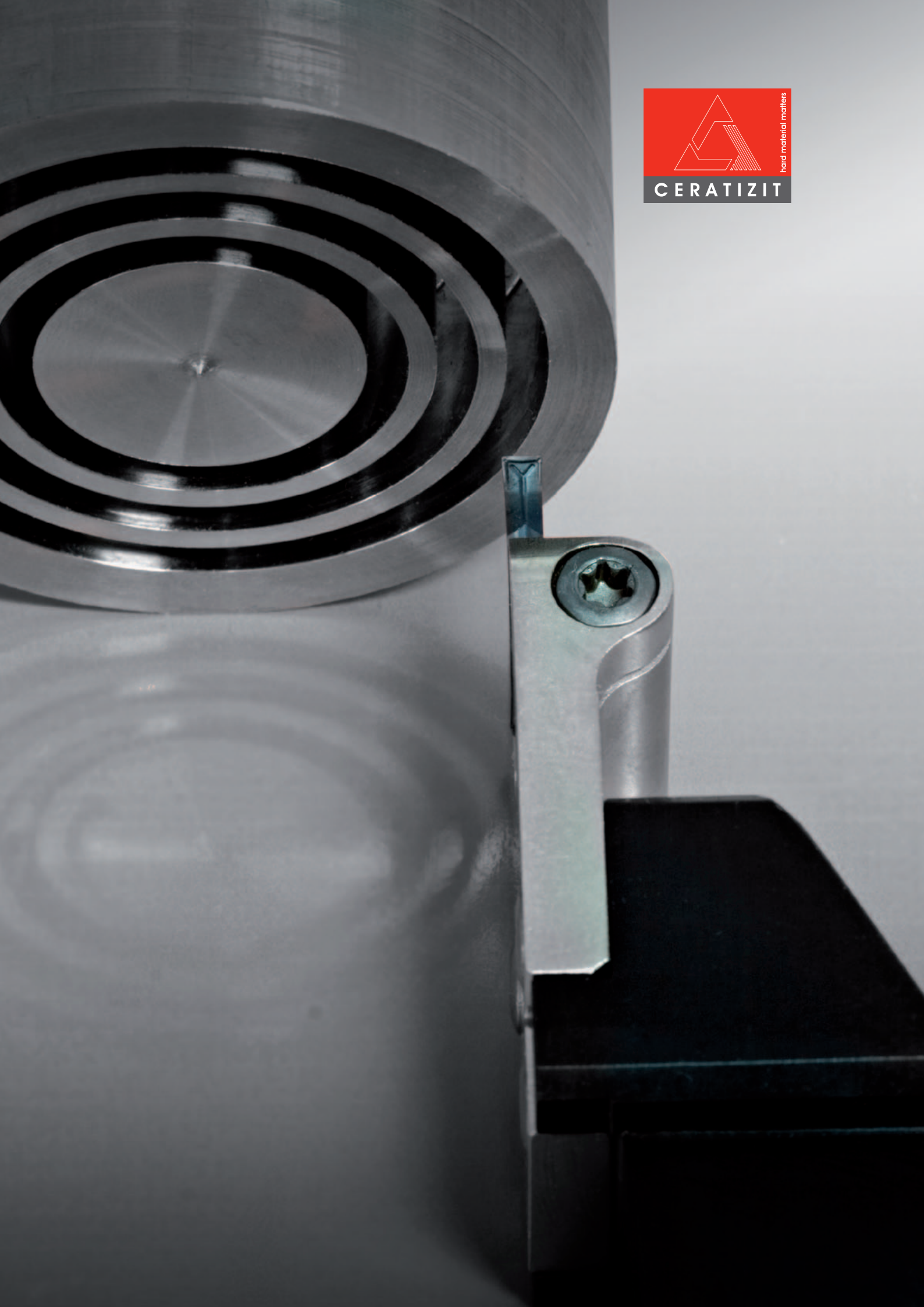
Bgr.	Type, description	L N R	d_A [mm]	h_1 [mm]	h_2 [mm]	l_1 [mm]	l_2 [mm]	f [mm]	
32	HSK-T63-MSS-E32R90	R	63	34.8	40.9	63.7	69.2	31.50	MSS-E32L..
	HSK-T100-MSS-E32R90		100	43.8	49.8	73.7	79.2	50.00	MSS-E32L..
	HSK-T63-MSS-E32L90	L	63	34.8	40.9	63.7	69.2	31.50	MSS-E32R..
	HSK-T100-MSS-E32L90		100	43.8	49.8	73.7	79.2	50.00	MSS-E32R..

Ordering example: 1 piece HSK-T63-MSS-E32R90

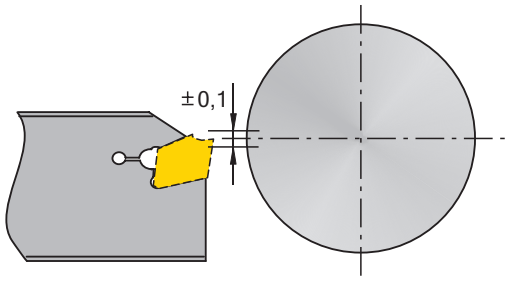
Bgr. = assembly size

d_A [mm]	Bgr.				
63 - 100	32	7897206/M6,0X20/T25	7883304/TORX T25 T	7896944/SD 12X8	

GX C201-C202 **GX** C204 **GX-A** C205-C207 **SX** C209 **LX** C210 **FX** C211-C212

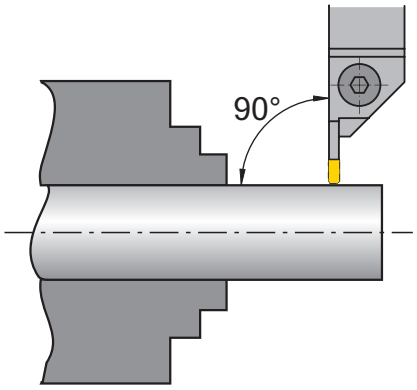

hard material matters
CERATIZIT

Centre height



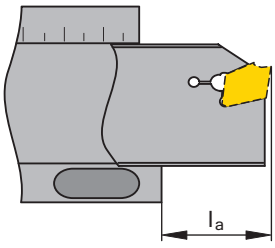
The centre height should be set within a
WROHUDQFH RI PP WR WKH ZRUNSLHFH GLDPHWHU
This is especially important when parting into centre.

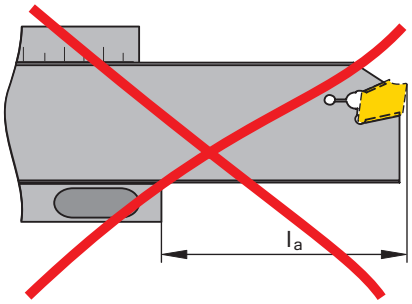
Tool setting



The parting and grooving tool must be
P RXQWHG ZLWK D DQJOH WR WKH GLDPHWHU RI WKH work piece.

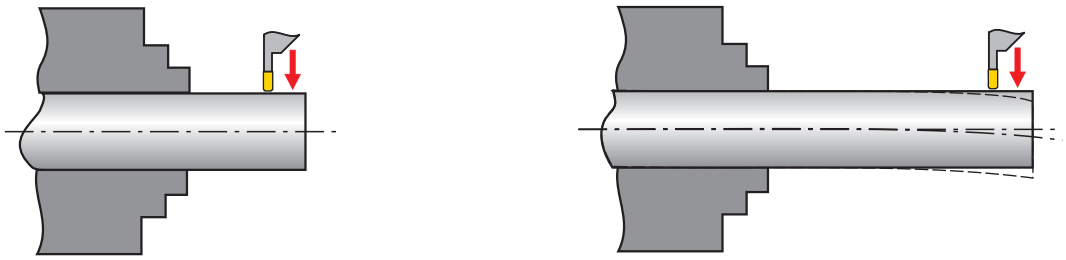
Tool overhang





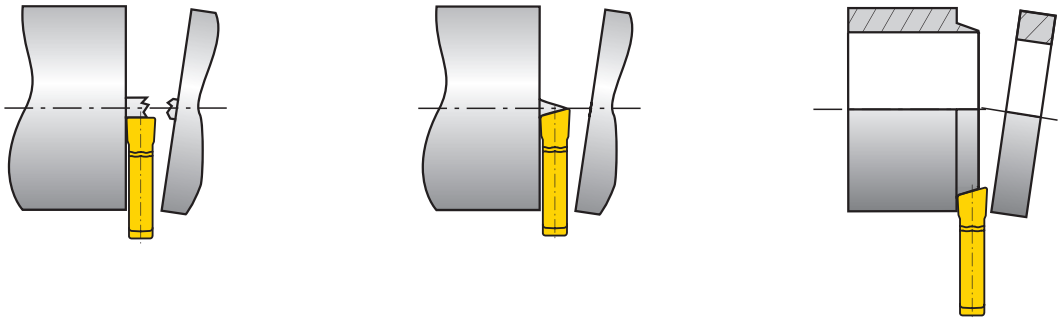
For optimum stability the tool overhang has to be kept as short as possible. The following rule can be applied: overhang l_a should not be larger than 8 x s (cutting width).

Work piece overhang



In order to avoid vibration the work piece should be clamped with the minimum overhang possible.

Advice for part-off operations



From dia. 5 mm on, reduce IHHG UDWH I·E DSSURI[

No part-off across centre (risk of breakage).

For parting pip-free, use R or L inserts.

Because of lateral deflection UHGXFH IHHG UDWH I·E DSSURI[20% - 50%.

In order to prevent ring formation, use R or L inserts.

Because of lateral deflection UHGXFH IHHG UDWH I·E DSSURI[20% - 50%.

Advice for grooving operations

When grooving with an axial GLVSODFHPHQW WH ZLGWK D VKRXOG be at least 70% of the cutting width V

When grooving inclined surfaces the feed should be reduced by approx. 20% - 50% at the beginning.

GX09-S / GX16-S

Chip groove	Tolerances (mm) x	s	r
R/L			2
N			

GX09-R

Chip groove	Tolerances (mm) x	s	r
2			

GX16-R

Chip groove	Tolerances (mm) x	s	r
-27P			
2			

GX24-R

Chip groove	Tolerances (mm) x	s	r
-27P			
-M3			

GX09-E

Chip groove	Tolerances (mm) x	s	r
-F2			
2			
-M40			

GX16-E

Chip groove	Tolerances (mm) x	s	r
-27P			
-F2			
2			
-M1			
-M40			

GX24-E

Chip groove	Tolerances (mm) x	s	r
-27P			
-F2			
2			
-M40			
-M1			

AX

Chip groove	Tolerances (mm) x	s	r
-F50			

SX

Chip groove	Tolerances (mm) x	s	r
-27P			
-F2			
-M1			
-M2			
-M3			

LX

Chip groove	Tolerances (mm) x	s	r
-M2			
-M3			

FX

Chip groove	Width	Tolerances (mm) x	s	r
-27P	2,2 - 4,1			
-F1	2,2 - 4,1			
-M1	2,2 - 4,1		-0,1	
	5,1 - 6,5		-0,15	
	8,2 - 9,7		-0,2	
-R2	3,1 - 4,1			

PX

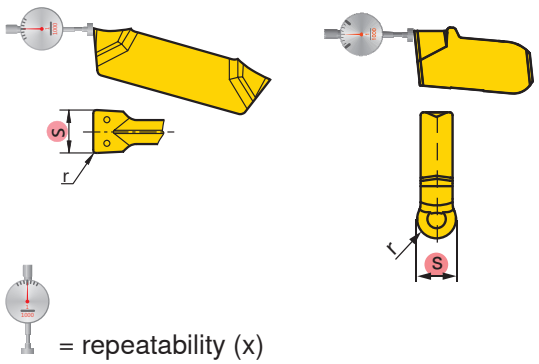
Chip groove	Tolerances (mm) x	s	r
-F3			

MaxiClick

Chip groove	Tolerances (mm) x	s	r
-27P			
-F2			2
-F3			

TC

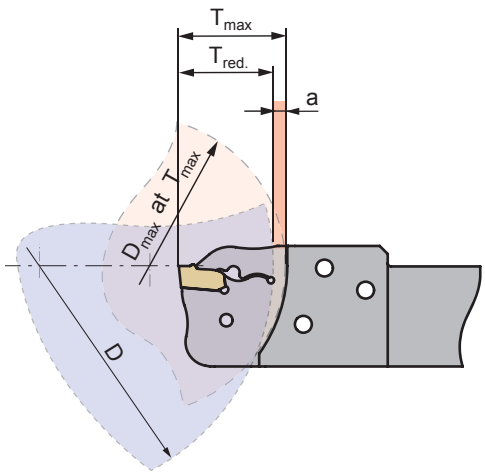
Chip groove	Tolerances (mm) x	s	r
-27P		2	2
2			



= repeatability (x)

Reduced parting and grooving depth:

The MSS parting and grooving modules are selected by size to suit a certain work piece diameter (D_{max}). If the diameter of the work piece is bigger than D_{max} of the module, then the achievable parting and grooving depth is reduced E GLP HQVBQ D 7KH H[WHQW RI WKH UHGXFWLRQ LV HVWDEOLVKHG E UHIHUHQFH WR WKH following table.



T_{max} = maximum grooving depth
D_{max} = maximum work piece diameter with full grooving depth T_{max} (a = 0)
a = reduction of grooving depth

$$T_{red.} = T_{max} - 2 \cdot D$$

Assembly size	Work piece diameter (mm)																
E12	**35**	40	45	60	75	115	>250										
E16	**50**	55	60	70	80	100	130	200	>420								
E20	**60**	65	70	75	85	95	110	130	165	220	>330						
E25	**75**	80	85	90	100	110	125	140	160	190	240	320	>500				
E32	**95**	100	105	110	120	125	135	145	160	180	200	225	270	320	400	530	>800
		0,5	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**	**4,5**	**5,0**	**5,5**	**6,0**	**6,5**	**7,0**	**7,5**	**8,0**
	Reduction of the maximum grooving depth a (mm)																

**Maximum work piece diameter (D_{max})
in case of full parting and grooving depth (T_{max}) in mm**

Calculation example: module

MSS-**E25**R**21**-GX24-3

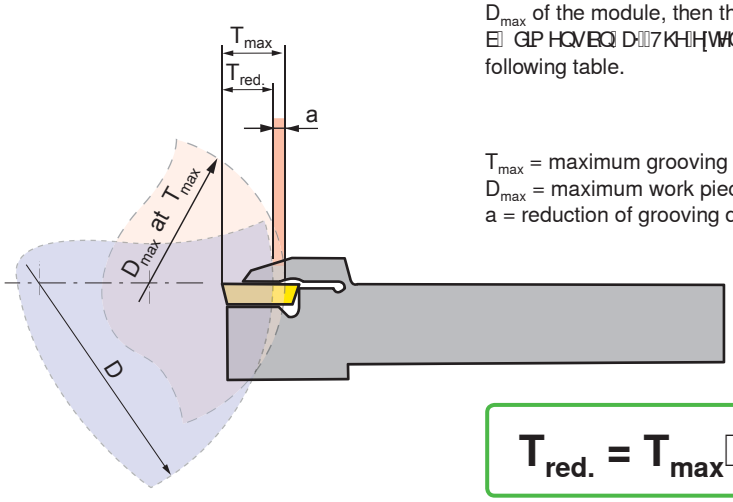
assembly size 25 — T_{max} P P P P

P P P P P P

=> T_{max} - a = $T_{red.}$
21 - 2 = **19 mm**

Reduced parting and grooving depth:

The MSS parting and grooving modules are selected by size to suit a certain work piece diameter (D_{max}). If the diameter of the work piece is bigger than D_{max} of the module, then the achievable parting and grooving depth is reduced E GLP HQVBQ D 7KH HWWQWRI WH UHGXFWRQ LV WDEXODWHG EHORZ UHIHUHQFH WR WH following table.



T_{max} = maximum grooving depth
D_{max} = maximum work piece diameter with full grooving depth T_{max} (a = 0)
a = reduction of grooving depth

$$T_{red.} = T_{max} \square^2 \square D$$

Assembly size	T_{max}	Work piece diameter (mm)																
E16...PX20-1	5	**52**	64	74	74	88	108	144	214	428	∞							
E16...PX20-2 E16...PX20-3	10	**52**	55	58	62	68	74	83	93	108	128	159	211	316	630	∞		
E20...PX20-1	5	**62**	68	77	89	106	131	174	259	518	∞							
E20...PX20-2 E20...PX20-3	11	**62**	66	72	79	88	99	115	136	170	225	337	672	∞				
			0,5	**1,0**	**1,5**	**2,0**	**2,5**	**3,0**	**3,5**	**4,0**	**4,5**	**5,0**	**5,5**	**6,0**	**6,5**	**7,0**	**7,5**	**8,0**
		Reduction of the maximum grooving depth a (mm)																

**Maximum work piece diameter (D_{max})
in case of full parting and grooving depth (T_{max}) in mm**

Calculation example: system PX

E20R00**11**-2020L-PX20-2

assembly size 20

T_{max} P P P‘ P P

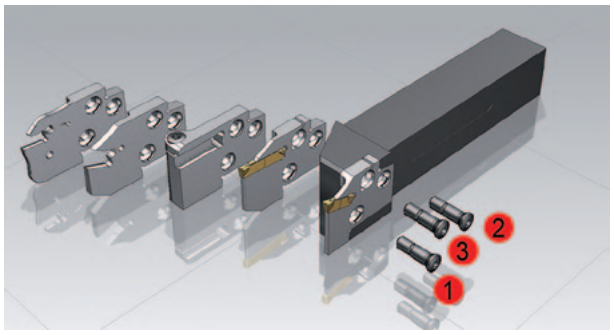
P P‘ P P

=> T_{max} - a = $T_{red.}$
11 - 3 = **8 mm**

Torque moments

MSS module clamping screws

MSS tool shanks

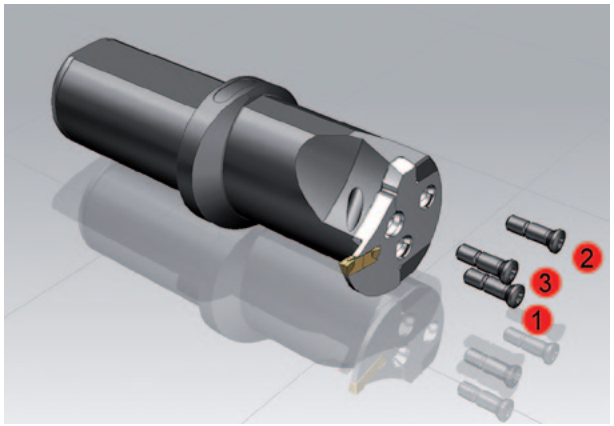


Note the order in which screws must be clamped!

C9

MSS tool shanks	Screw	Torx	Torque moments	
			Nm	in.lbs
0 66▯(▯▯	7897200/M2,5x10/T08	T08	1,2	10,6
0 66▯(▯▯	7897202/M3,5x12,5/T15	T15	3,2	28,3
0 66▯(▯▯	7897203/M4x14/T15	T15	4	35,4
0 66▯(▯▯	7897205/M5x18/T20	T20	5	44,3
0 66▯(▯▯	7897206/M6x20/T25	T25	6	53,1

MSS boring bars



Note the order in which screws must be clamped!

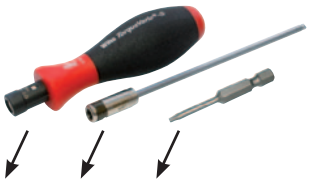
C9

MSS boring bars	Screw	Torx	Torque moments	
			Nm	in.lbs
0 66▯,▯▯	7897200/M2,5x10/T08	T08	1,2	10,6
0 66▯,▯▯	7897201/M3x11/T10	T10	2	17,7
0 66▯,▯▯	7897202/M3,5x12,5/T15	T15	3,2	28,3
0 66▯,▯▯	7897204/M4,5x17/T20	T20	4	35,4
0 66▯,▯▯	7897205/M5x18/T20	T20	5	44,3

Recommended torque moments

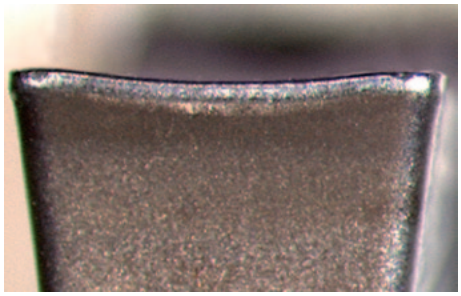
Tool	Screw	Torx	Torque moments	
			Nm	in.lbs
SX 	7897218/M4,0X18/T20	T20	4,0	35,4
PX 	7897218/M4,0X18/T20	T20	4,0	35,4
AX 	7897202/M3,5X12,5/T15 7897203/M4,0X14/T15 7897205/M5,0X18/T20	T15 T15 T20	3,2 4,0 5,0	28,3 35,4 44,3

Torque key (inserts/bits)

 **1 + 1 + 5 pcs. (incl. in delivery)**	DMSD 1,2Nm/SORT T08 DMSD 2,0Nm/SORT T10 DMSD 3,2Nm/SORT T15 DMSD 4,0Nm/SORT T15 DMSD 4,0Nm/SORT T20 DMSD 5,0Nm/SORT T20 DMSD 6,0Nm/SORT T25	Torque moment set to: 1.2 - 6.0 Nm
 **1 + 1 piece (incl. in delivery)**	DMSD 1-5Nm/SORT	Torque moment can be adjusted flexibly: 1.0-5.0 Nm
	DMSD 2-8Nm/SORT	Torque moment can be adjusted flexibly: 2.0-8.0 Nm
	DMSD-B T08-50MM DMSD-B T10-50MM DMSD-B T15-50MM DMSD-B T20-50MM DMSD-B T25-50MM	

Types of wear

Flank wear

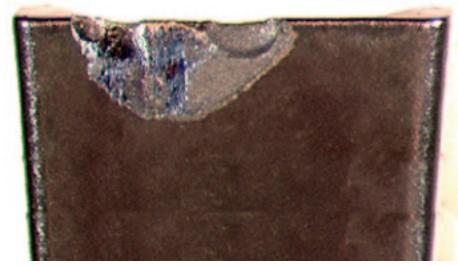


Abrasion on the flank, normal wear after a certain machining time.

Reasons:
> Cutting speed too high
> Carbide grade with insufficient wear resistance
> Insufficient amount of cooling lubricant

Remedies:
> Reduce cutting speed
> Select more wear resistant carbide grade
> Improve coolant supply

Edge chipping



Through excessive mechanical stress at the cutting edge fracture and chipping can take place.

Reasons:
> Grade with too high wear resistance
> Vibration
> Feed rate too high or excessive depth of cut
> Swarf damage

Remedies:
> Use tougher grade
> Use negative cutting edge geometry with chip groove
> Reduce overhang; check centre height
> Increase stability of cutting edge

Cratering

The hot chip which is being evacuated causes cratering at the rake face of the cutting edge.

Reasons:
> Cutting speed and / or feed rate too high
> Rake angle too shallow
> Grade with insufficient wear resistance
> Incorrect coolant supply

Remedies:
> Reduce cutting speed and / or feed rate
> Increase coolant quantity and / or pressure, optimize coolant supply
> Use grade which is more resistant to cratering

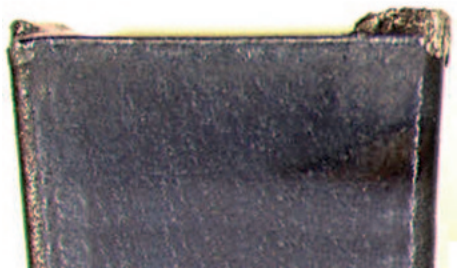
Plastic deformation

High machining temperature and simultaneous mechanical stress may lead to plastic deformation.

Reasons:
> Too high machining temperature resulting in softening of substrate
> Wear / heat resistance of carbide grade too low
> Insufficient coolant supply

Remedies:
> Reduce cutting speed
> Choose carbide grade with higher wear resistance
> Provide cooling

Built-up edge

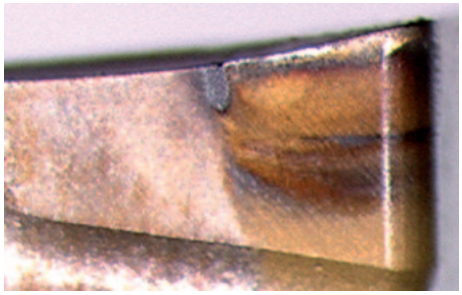


Built-up edge occurs when the chip is not evacuated properly due to insufficient cutting temperature.

Reasons:
> Cutting speed too low
> Rake angle too small
> Wrong cutting material
> Lack of cooling / lubrication

Remedies:
> Increase cutting speed
> Enlarge rake angle
> Apply TiN-coating
> Use emulsion with higher concentration

Notching



Notch at the maximum depth of cut

Reasons:
> Oxidation of the cutting edge
> Excessive heat on the cutting edge

Remedies:
> Use various depths of cut
> Reduce cutting speed
> Improve coolant supply

CERATIZIT hard material matters

Measures for parting and grooving problems

Type of problem

Type of wear				Work piece problems				Swarf control		Corrective measures	
Edge chipping	Built-up edge	Flank wear	Plastic deformation	Vibration	Formation of pips and burrs	Chattered surface	Surface quality	Chip too long (tangled swarf)	Chip too short (fragmented chip)		
	↑	↓	↓	↓			↑	↓		Cutting speed	Cutting values
↓		~	↓	↑		↓	↓	↑	↓	Feed rate	
↓		↓	↓		↓	↓	↓			Feed - centre area	
↑	↓		~	~	↓	↓	↓	↓	↑	Chip groove (↓ -R -M -F ↑)	Selection of inserts
					●					R / L - right-hand / left-hand version	
↑		↑	↑	↓	↓	↓	↑			Corner radius (larger ↓ ↑ smaller)	
↓		↑	↑							Cutting material (wear resistance ↓ ↑ toughness)	
				↓		↑	↑			Cutting width	
~				~		~	~			Clamping of tool	General criteria
~				~		~	~			Clamping of work piece	
~				~			↓			Overhang	
~		~		~	~		~			Tip height	
	●	●	●		●		●	●		Cooling lubricant	

↑ raise, increase, large influence

↓ avoid, reduce large influence

~ check, optimize

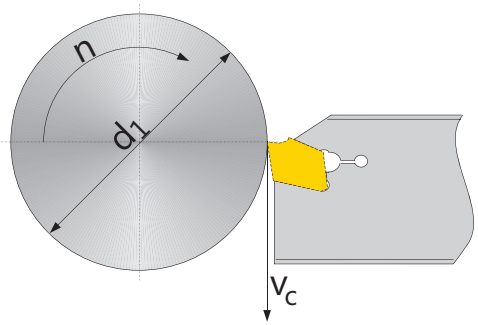
↑ raise, increase low influence

↓ avoid, reduce low influence

● use

Cutting speed (v_c)

$$v_c = \frac{d_1 \cdot \pi \cdot n}{1000} \quad [m/min]$$



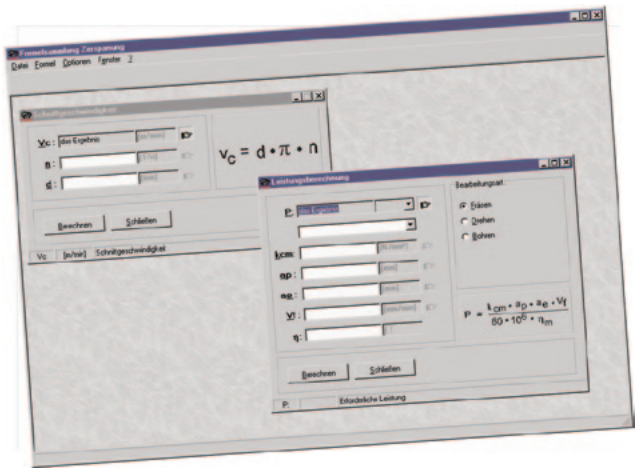
Revolutions per minute (n)

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \quad [rev./min]$$

Feed rate (v_f)

$$v_f = f \cdot n \quad [mm/min]$$

The CERATIZIT formula collection CT-CALC



> PC - aided calculation of machining parameters:
  - cutting speed
  - chip removal rate
  - power consumption
  - medium chip thickness
> Languages: DE, EN, FR, IT, ES, DA, SE, FI
> Free of charge download from **www.ceratizit.com**

CERATIZIT hard material matters

Hardness values

Comparison table

Tensile strength 1 P P	Vickers HV	Brinell HB	Rockwell HRC	Shore C
575	180	171		
595	185	176		
610	190	181		
625	195	185		
640	200	190	12,0	
660	205	195	13,0	
675	210	199	14,0	
690	215	204	15,0	
705	220	209	15,5	28
720	225	214	16,0	
740	230	219	17,0	29
755	235	223	18,0	
770	240	228	20,3	30
785	245	233	21,3	
800	250	238	22,2	31
820	255	242	23,1	32
835	260	247	24,0	33
850	265	252	24,8	
865	270	257	25,6	
880	275	261	26,4	34
900	280	268	27,1	
915	285	271	27,8	35
930	290	276	28,5	
950	295	280	29,2	36
965	300	285	29,8	37
995	310	295	31,0	38
1030	320	304	32,2	39
1060	330	314	33,3	40
1095	340	323	34,3	41
1125	350	333	35,5	42
1155	360	342	36,6	43
1190	370	352	37,7	44
1220	380	361	38,8	45
1255	390	371	39,8	46
1290	400	380	40,8	47
1320	410	390	41,8	48
1350	420	399	42,7	
1385	430	409	43,6	49
1420	440	418	44,5	
1455	450	428	45,3	51
1485	460	437	46,1	52
1520	470	447	46,9	53
1555	480	465	47,7	54
1595	490	466	48,4	
1630	500	475	49,1	57
1665	510	485	49,8	58
1700	520	494	50,5	59
1740	530	504	51,1	60

Tensile strength 1 P P	Vickers HV	Brinell HB	Rockwell HRC	Shore C
1775	540	513	51,7	61
1810	550	523	52,3	62
1845	560	532	53,0	63
1880	570	542	53,6	64
1920	580	551	54,1	65
1955	590	561	54,7	66
1995	600	570	55,2	67
2030	610	580	55,7	68
2070	620	589	56,3	69
2105	630	599	56,8	70
2145	640	608	57,3	71
2180	650	618	57,8	72
2210	660	628	58,3	73
2240	665	633	58,8	74
2280	670	638	59,3	
2310	675	643	59,8	75
2350	680	648	60,3	76
2380	685	653	61,1	77
2410	690	658	61,3	78
2450	695	663	61,7	79
2480	710	668	62,2	80
2520	720	678	62,6	81
2550	730	683	63,1	82
2590	740	693	63,5	
2630	750	703	63,9	83
2660	760	708	64,3	84
2700	770	718	64,7	85
2730	780	723	65,1	
2770	790	733	65,5	86
2800	800	738	65,9	
2840	810	748	66,3	87
2870	820	753	66,7	88
2910	830	763	67,0	
2940	840	768	67,4	89
2980	850		67,7	
3010	860		68,1	90
3050	870		68,4	
3080	880		68,7	91
3120	890		69,0	
3150	900		69,3	92
3190	910		69,6	
3220	920		69,9	
3260	930		70,1	

The figures given are approximate according to DIN EN ISO18265 (02-2004)

Germany DIN	Mat. no.	United Kingdom BS	France AFNOR	Sweden SS	United States AISI	Japan JIS	$K_{c1.1}$ N/mm²	m_c	VDI 3323 group
10 SPb 20	1.0722		10 PbF 2		11 L 08		1350	.21	1
100 Cr 6	1.2067	BL 3	Y 100 C 6		L 3	SUJ2	1775	.24	6/9
105 WCr 6	1.2419		105 WC 13			SKS31	1775	.24	6/9
12 CrMo 9 10	1.7380	1501-622 Gr. 31; 45	10 CD 9.10	2218	A 182-F22	SPVA,SCMV4	1675	.24	6/7
12 Ni 19	1.5680		Z 18 N 5		2515		2450	.23	10/11
13 CrMo 4 4	1.7335	1501-620 Gr. 27	15 CD 3.5	2216	A 182-F11; F12	SPVAF12	1675	.24	6/7
14 MoV 6 3	1.7715	1503-660-440					1675	.24	6/7
14 Ni 6	1.5622		16 N 6		A 350-LF 5		1675	.24	6/7
14 NiCr 10	1.5732		14 NC 11		3415	SNC415(H)	1675	.24	6/7
14 NiCr 14	1.5752	655 M 13	12 NC 15		3310; 9314	SNC815(H)	1675	.24	6/7
14 NiCrMo 13 4	1.6657						1675	.24	6/7
15 Cr 3	1.7015	523 M 15	12 C 3		5015		1675	.24	6/7
15 CrMo 5	1.7262		12 CD 4			SCM415(H)	1675	.24	6/7
15 Mo 3	1.5415	1501-240	15 D 3	2912	A 204 Gr. A		1675	.24	6/7
16 MnCr 5	1.7131	527 M 17	16 MC 5	2511	5115	SCR415	1675	.24	6/7
16 Mo 5	1.5423	1503-245-420			4520	SB450M	1675	.24	6/7
17 CrNiMo 6	1.6587	820 A 16	18 NCD 6				1675	.24	6/7
21 NiCrMo 2	1.6523	805 M 20	20 NCD 2	2506	8620	SNCM220(H)	1725	.24	6/8
25 CrMo 4	1.7218	1717 CDS 110	25 CD 4 S	2225	4130	SM420;SCM430	1725	.24	6/8
28 Mn 6	1.1170	150 M 28	20 M 5		1330		1500	.22	2
32 CrMo 12	1.7361	722 M 24	30 CD 12	2240			1775	.24	6/9
34 Cr 4	1.7033	530 A 32	32 C 4		5132	SCR430(H)	1725	.24	6/8
34 CrMo 4	1.7220	708 A 37	35 CD 4	2234	4135; 4137	SCM432;SCCRM3	1775	.24	6/9
34 CrNiMo 6	1.6582	817 M 40	35 NCD 6	2541	4340	SNCM447	1775	.24	6/9
35 S 20	1.0726	212 M 36	35 MF 4	1957	1140		1525	.22	2/3
36 CrNiMo 4	1.6511	816 M 40	40 NCD 3		9840	SNCM447	1775	.24	6/9
36 Mn 5	1.1167						1525	.22	2/3
36 NiCr 6	1.5710	640 A 35	35 NC 6		3135	SNC236	1800	.24	3/9
38 MnSi 4	1.5120						1800	.24	3/9
39 CrMoV 13 9	1.8523	897 M 39					1775	.24	6/9
40 Mn 4	1.1157	150 M 36	35 M 5		1039		1525	.22	2/3
40 NiCrMo 2 2	1.6546	311-Type 7	40 NCD 2		8740	SNCM240	1775	.24	6/9
41 Cr 4	1.7035	530 M 40	42 C 4		5140	SCR440(H)	1775	.24	6/9
41 CrAlMo 7	1.8509	905 M 39	40 CAD 6.12	2940	A 355 Cl. A	SACM645	1775	.24	6/9
41 CrMo 4	1.7223	708 M 40	42 CD 4 TS	2244	4142; 4140	SCM440	1775	.24	6/9
42 Cr 4	1.7045	530 A 40	42 C 4 TS	2245	5140	SCr440	1775	.24	6/9
42 CrMo 4	1.7225	708 M 40	42 CD 4	2244	4142; 4140	SCM440(H)	1775	.24	6/9
45 WCrV 7	1.2542	BS 1		2710	S 1		1775	.24	6/9
50 CrV 4	1.8159	735 A 50	50 CV 4	2230	6150	SUP10	1775	.24	6/9
55 Cr 3	1.7176	527 A 60	55 C 3	2253	5155	SUP9(A)	1775	.24	6/9
55 NiCrMoV 6	1.2713		55 NCDV 7		L 6	SKH1;SKT4	1775	.24	6/9
55 Si 7	1.0904	250 A 53	55 S 7	2085; 2090	9255		1775	.24	6/9
58 CrV 4	1.8161						1775	.24	6/9
60 SiCr 7	1.0961		60 SC 7		9262		1775	.24	6/9
9 SMn 28	1.0715	230 M 07	S 250	1912	1213	SUM22	1350	.21	1
9 SMn 36	1.0736	240 M 07	S 300		1215		1350	.21	1
9 SMnPb 28	1.0718		S 250 Pb	1914	12 L 13	SUM22L	1350	.21	1
9 SMnPb 36	1.0737		S 300 Pb	1926	12 L 14		1350	.21	1
Al99	3.0205						700	.25	21
AlCuMg1	3.1325						700	.25	22

CERATIZIT hard material matters

Comparison of materials

Germany DIN	Mat. no.	United Kingdom BS	France AFNOR	Sweden SS	United States AISI	Japan JIS	$K_{c1.1}$ N/mm²	m_c	VDI 3323 group
AlMg1	3.3315						700	.25	21
AlMgSi1	3.2315						700	.25	22
C 105 W1	1.1545		Y1 105	1880	W 110	SK3	1675	.24	3
C 125 W	1.1663		Y2 120		W 112		1675	.24	3
C 15	1.0401	080 M 15	AF3 7 C 12; XC 18	1350	1015	S15C	1350	.21	1
C 22	1.0402	050 A 20	AF 42 C 20	1450	1020	S20C, S22C	1350	.21	1
C 35	1.0501	060 A 35	AF 55 C 35	1550	1035	S35C	1525	.22	2/3
C 45	1.0503	080 M 46	AF 65 C 45	1650	1045	S45C	1525	.22	2/3
C 55	1.0535	070 M 55		1655	1055	S55C	1675	.24	3
C 60	1.0601	080 A 62	CC 55		1060	S60C	1675	.24	3
Cf 35	1.1183					S35C	1525	.22	2/3
Cf 53	1.1213					S50C	1525	.22	2/3
Ck 101	1.1274	060 A 96		1870	1095		1675	.24	3
Ck 15	1.1141	080 M 15	XC 15; XC 18	1370	1015	S15C	1350	.21	1
Ck 55	1.1203	070 M 55	XC 55		1055	S55C	1675	.24	3
Ck 60	1.1221	080 A 62	XC 60	1665; 1678	1060	S58C	1675	.24	3
CoCr20W15Ni	2.4764						3300	.24	35
CuZn15	2.0240						700	.27	27
CuZn36Pb3	2.0375						700	.27	26
E-Cu57	2.0060						700	.27	28
G-AlSi10Mg	3.2381						700	.25	24
G-AlSi12	3.2581						700	.25	23
G-AlSi9Cu3	3.2163						700	.25	23
G-CuSn5ZnPb	2.1096						700	.27	26
G-CuZn40Fe	2.0590						700	.27	28
G-X 120 Mn 12	1.3401	Z 120 M 12	Z 120 M 12		A 128 (A)		3300	.24	35
G-X 20 Cr 14	1.4027	420 C 29	Z 20 C 13 M			SCS2	1875	.21	12/13
G-X 40 NiCrSi 38 18	1.4865	330 C 40					2600	.24	31
G-X 45 CrSi 9 3	1.4718	401 S 45	Z 45 CS 9		HNV 3		2450	.23	10/11
G-X 5 CrNi 13 4	1.4313	425 C 11	Z 5 CN 13.4	2385	CA 6-NM		1875	.21	12/13
G-X 5 CrNiMoNb 18 10	1.4581	318 C 17	Z 4 CNDNb 18.12 M				2150	.2	14
G-X 6 CrNi 18 9	1.4308	304 C 15	Z 6 CN 18.10 M	2333	CF-8		2150	.2	14
G-X 6 CrNiMo 18 10	1.4408						2150	.2	14
G-X 7 Cr 13	1.4001						1875	.21	12/13
GG-10	.6010		Ft 10 D	01 10-00	A48-20 B	FC100	1150	.2	15
GG-15	.6015	Grade 150	Ft 15 D	01 15-00	A48-25 B	FC150	1150	.2	15
GG-20	.6020	Grade 220	Ft 20 D	01 20-00	A48-30 B	FC200	1150	.2	15
GG-25	.6025	Grade 260	Ft 25 D	01 25-00	A48-40 B	FC250	1250	.24	15/16
GG-30	.6030	Grade 300	Ft 30 D	01 30-00	A48-45 B	FC300	1350	.28	16
GG-35	.6035	Grade 350	Ft 35 D	01 35-00	A48-50 B	FC350	1350	.28	16
GG-40	.6040	Grade 400	Ft 40 D	01 40-00	A48-60 B	FC400	1350	.28	16
GGG-35.3	.7033					FCD350	1225	.25	17
GGG-40	.7040	SNG 420/12	FGS 400-12	0717-02	60-40-18	FCD400	1225	.25	17
GGG-40.3	.7043	SNG 370/17	FGS 370-17	0717-15		FCD400	1225	.25	17
GGG-50	.7050	SNG 500/7	FGS 500-7	0727-02	65-45-12	FCD500	1350	.28	18
GGG-60	.7060	SNG 600/3	FGS 600-3	0732-03	80-55-06	FCD600	1350	.28	18
GGG-70	.7070	SNG 700/2	FGS 700-2	0737-01	100-70-03	FCD700	1350	.28	18
GGG-NiCr 20 2	.7660	S-NiCr 20 2	S-NC 20 2		A 439 Type D-2		1350	.28	18
GGG-NiMn 13 7	.7652	S-NiMn 13 7	S-NM 13 7				1350	.28	18
GS-Ck 45	1.1191	080 M 46	XC 42	1672	1045	S45C	1525	.22	2/3

Germany DIN	Mat. no.	United Kingdom BS	France AFNOR	Sweden SS	United States AISI	Japan JIS	$K_{c1.1}$ N/mm²	m_c	VDI 3323 group
GTS-35-10	.8135	B 340/12	MN 35-10				1225	.25	19
GTS-45-06	.8145	P 440/7					1420	.3	20
GTS-55-04	.8155	P 510/4	MP 50-5				1420	.3	20
GTS-65-02	.8165	P 570/3	MP 60-3				1420	.3	20
GTS-70-02	.8170	P 690/2	IP 70-2				1420	.3	20
NiCr20TiAl	2.4631	HR 401; 601	Nimonic 80 A				3300	.24	33
NiCr22Mo9Nb	2.4856		Inconel 625				3300	.24	33
NiCu30Al	2.4375		Monel K 500				3300	.24	34
NiFe25Cr20NbTi	2.4955						3300	.24	34
S 18-0-1	1.3355	BT 1	Z 80 WCV 18-04-01		T 1		2450	.23	10/11
S 18-1-2-5	1.3255	BT 4	Z 80 WKCV 18-05-04-0		T 4		2450	.23	10/11
S 2-9-2	1.3348		Z 100 DCWV 09-04-02-	2782	M 7		2450	.23	10/11
S 6-5-2	1.3343	BM 2	Z 85 WDCV 06-05-04-0	2722	M 2	SKH9; SKH51	2450	.23	10/11
S 6-5-2-5	1.3243		Z 85 WDKCV 06-05-05-	2723		SKH55	2450	.23	10/11
TiAl6V4	3.7165	TA 10 bis TA 13	T-A 6 V				2110	.22	37
X 10 Cr 13	1.4006	410 S 21	Z 12 C 13	2302	410; CA-15	SUS410	1875	.21	12/13
X 10 CrNiMoNb 18 12	1.4583				318		2150	.2	14
X 10 CrNiS 18 9	1.4305	303 S 21	Z 10 CNF 18.09	2346	303		2150	.2	14
X 100 CrMoV 5 1	1.2363	BA 2	Z 100 CDV 5	2260	A 2		2450	.23	10/11
X 12 CrMoS 17	1.4104		Z 10 CF 17	2383	430 F	SUS430F	1875	.21	12/13
X 12 CrNi 17 7	1.4310	301 S 21	Z 12 CN 17.07		301		2150	.2	14
X 12 CrNi 22 12	1.4829					SUS301	1350	.28	16
X 12 CrNi 25 21	1.4845	310 S24	Z 12 CN 25.20	2361	310 S	SUH310; SUS310S	2150	.2	14
X 12 CrNiTi 18 9	1.4878	321 S 20	Z 6 CNT 18.12 (B)	2337	321		2150	.2	14
X 12 NiCrSi 36 16	1.4864	NA 17	Z 12 NCS 37.18		330	SUH330	2600	.24	31
X 15 CrNiSi 20 12	1.4828	309 S 24	Z 15 CNS 20.12		309	SUH309	1350	.28	16
X 165 CrMoV 12	1.2601			2310			2450	.23	10/11
X 2 CrNiMo 18 13	1.4440						2150	.2	14
X 2 CrNiMoN 17 13 3	1.4429	316 S 62	Z 2 CND 17.13 Az	2375	316 LN	SUS316LN	2150	.2	14
X 2 CrNiN 18 10	1.4311	304 S 62	Z 2 CN 18 .10	2371	304 LN	SUS304LN	2150	.2	14
X 20 CrNi 17 2	1.4057	431 S 29	Z 15 CN 16.02	2321	431	SUS431	1875	.21	12/13
X 210 Cr 12	1.2080	BD 3	Z 200 C 12		D 3		2450	.23	10/11
X 210 CrW 12	1.2436			2312			2450	.23	10/11
X 30 WCrV 9 3	1.2581	BH 21	Z 30 WCV 9		H 21	SKD5	2450	.23	10/11
X 40 CrMoV 5 1	1.2344	BH 13	Z 40 CDV 5	2242	H 13	SKD61	2450	.23	10/11
X 46 Cr 13	1.4034	420 S 45	Z 40 C 14				1875	.21	12/13
X 5 CrNi 18 9	1.4301	304 S 15	Z 6 CN 18.09	2332; 2333	304; 304 H	SUS304	2150	.2	14
X 5 CrNiMo 17 13 3	1.4436	316 S 16	Z 6 CND 17.12	2343	316	SUS316	2150	.2	14
X 5 CrNiMo 18 10	1.4401	316 S 16	Z 6 CND 17.11	2347	316	SUS316	2150	.2	14
X 53 CrMnNiN 21 9	1.4871	349 S 54	Z 52 CMN 21.09		EV 8		1875	.21	12/13
X 6 Cr 13	1.4000	403 S 17	Z 6 C 13	2301	403	SUS403	1875	.21	12/13
X 6 Cr 17	1.4016	430 S 15	Z 8 C 17	2320	430	SUS430	1875	.21	12/13
X 6 CrMo 17	1.4113	434 S 17	Z 8 CD 17.01	2325	434	SUS434	1875	.21	12/13
X 6 CrNiMoTi 17 12 2	1.4571	320 S 31	Z 6 CNT 17.12	2350	316 Ti		2150	.2	14
X 6 CrNiNb 18 10	1.4550	347 S 17	Z 6 CNNb 18.10	2338	347		2150	.2	14
X 6 CrNiTi 18 10	1.4541	321 S 12	Z 6 CNT 18.10	2337	321		2150	.2	14
X2 CrNi 18-8	1.4317						2150	.2	14

$k_{c1.1}$ value = specific cutting force at a cutting rake angle of 0 degrees. For positive rake angles the $k_{c1.1}$ value has to be reduced (increased for negative rake angles) by 1% per degree of rake angle. The m_c value is the exponent for the conversion of the $k_{c1.1}$ value.

CERATIZIT hard material matters

Cutting data

	Work piece material	Type of treatment / alloy		VDI 3323 group	Hard-ness HB
A	Non alloyed steel	annealed	≤ .15% C	1	125
		annealed	.15% - .45% C	2	150 - 250
		tempered	≥ .45% C	3	300
	Low alloyed steel	annealed		6	180
		tempered		7 / 8	250 - 300
		tempered		9	350
	High alloyed steel	annealed		10	200
		tempered		11	350
	Corrosion resistant steel	annealed	ferritic	12	200
		tempered	martensitic	13	325
R	Stainless steel	annealed	ferritic / martensitic	14	200
		quenched	austenitic	14	180
		quenched	duplex	14	230 - 260
		hardened	martensitic / austenitic	14	330
F	Grey cast iron		pearlitic / ferritic	15	180
			pearlitic / martensitic	16	260
	Spheroidal cast iron		ferritic	17	160
			pearlitic	18	2
	Malleable cast iron		ferritic	19	130
			pearlitic	20	230
N	Aluminium wrought alloys	non hardened		21	60
		hardened		22	100
	Aluminium cast alloys	non hardened	< 12% Si	23	80
		hardened	< 12% Si	24	90
		non hardened	> 12% Si	25	130
	Copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)	26	2
			brass, red bronze	27	90
			bronze	28	100
			lead-free copper and electrolytic copper	29	100
	Non-metallic materials		thermosetting plastics	29	2
			fibre-reinforced plastics	29	2
			hard rubber	30	2
S	Heat resistant alloys	annealed	Fe-base	31	200
		hardened	Fe-base	32	280
		annealed	Ni or Co-base	33	250
		hardened	Ni or Co-base 30 - 58 HRC	34	2
		cast	1 LRU& RIEDVH P P	35	2
	Titanium alloys		pure titanium	36	R_m 440*
			alpha + beta alloys	37	R_m 1050*
H	Tempered steel	hardened and tempered		38	55 HRC
		hardened and tempered		39	60 HRC
	Chilled castings	cast		40	400
	Tempered cast iron	hardened and tempered		40	55 HRC

* R_m = ultimate tensile strength, measured in MPa

Uncoated carbide		
H216T v_c [m/min]	**CTW7120** v_c [m/min]	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
2	2	
120 - 160	2	
90 - 140	2	
130 - 170	2	
90 - 130	2	
140 - 200	2	
120 - 160	2	
300 - 2500	100 - 500	
200 - 2000	100 - 300	
400 - 1500	100 - 500	
400 - 1500	100 - 300	
200 - 800	100 - 300	
250 - 600	100 - 500	
200 - 600	100 - 500	
150 - 400	100 - 300	
150 - 300	100 - 300	
80 - 180	80 - 180	
60 - 150	60 - 150	
100 - 250	100 - 250	
30 - 45	2	
20 - 35	2	
20 - 35	2	
18 - 30	2	
15 - 25	2	
60 - 120	50 - 120	
30 - 80	30 - 50	
2	2	
2	2	
2	2	
2	2	

CERATIZIT hard material matters

Cutting data

	Work piece material	Type of treatment / alloy		VDI 3323 group	Hard-ness HB
A	Non alloyed steel	annealed	≤ .15% C	1	125
		annealed	.15% - .45% C	2	150 - 250
		tempered	≥ .45% C	3	300
	Low alloyed steel	annealed		6	180
		tempered		7 / 8	250 - 300
		tempered		9	350
	High alloyed steel	annealed		10	200
		tempered		11	350
	Corrosion resistant steel	annealed	ferritic	12	200
		tempered	martensitic	13	325
R	Stainless steel	annealed	ferritic / martensitic	14	200
		quenched	austenitic	14	180
		quenched	duplex	14	230 - 260
		hardened	martensitic / austenitic	14	330
F	Grey cast iron		pearlitic / ferritic	15	180
			pearlitic / martensitic	16	260
	Spheroidal cast iron		ferritic	17	160
			pearlitic	18	2
	Malleable cast iron		ferritic	19	130
			pearlitic	20	230
N	Aluminium wrought alloys	non hardened		21	60
		hardened		22	100
	Aluminium cast alloys	non hardened	< 12% Si	23	80
		hardened	< 12% Si	24	90
		non hardened	> 12% Si	25	130
	Copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)	26	2
			brass, red bronze	27	90
			bronze	28	100
			lead-free copper and electrolytic copper	29	100
	Non-metallic materials		thermosetting plastics	29	2
			fibre-reinforced plastics	29	2
			hard rubber	30	2
S	Heat resistant alloys	annealed	Fe-base	31	200
		hardened	Fe-base	32	280
		annealed	Ni or Co-base	33	250
		hardened	Ni or Co-base 30 - 58 HRC	34	2
		cast	1 LRU& RIEDVH	35	2
	Titanium alloys		pure titanium	36	R_m 440*
			alpha + beta alloys	37	R_m 1050*
H	Tempered steel	hardened and tempered		38	55 HRC
		hardened and tempered		39	60 HRC
	Chilled castings	cast		40	400
	Tempered cast iron	hardened and tempered		40	55 HRC

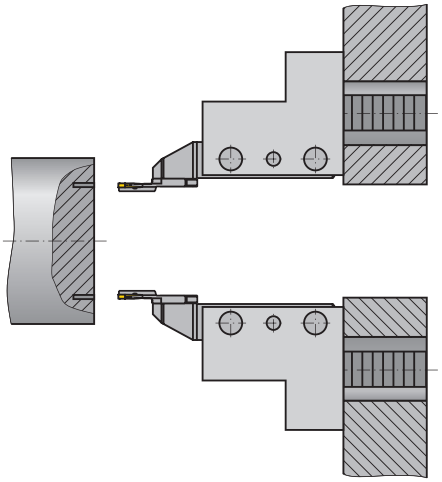
* R_m = ultimate tensile strength, measured in MPa

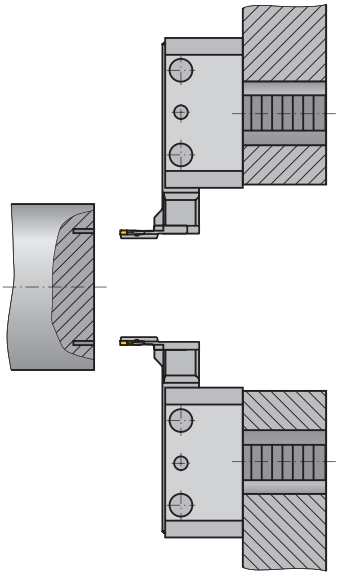
Coated carbide					
CTC1325 v_c [m/min]	**SR127** v_c [m/min]	**GM127** v_c [m/min]	**CTP1340** v_c [m/min]	**CTCP335** v_c [m/min]	**CTPP345** v_c [m/min]
150 - 280	150 - 280	150 - 280	120 - 250	130 - 250	110 - 190
130 - 240	130 - 240	130 - 240	80 - 180	110 - 190	80 - 150
100 - 200	100 - 200	100 - 200	60 - 150	70 - 170	70 - 140
140 - 220	140 - 220	140 - 220	80 - 180	120 - 200	70 - 140
130 - 180	130 - 180	130 - 180	60 - 150	110 - 180	70 - 120
100 - 160	100 - 160	100 - 160	60 - 120	70 - 150	60 - 120
120 - 170	120 - 170	120 - 170	80 - 160	90 - 170	60 - 100
100 - 150	100 - 150	100 - 150	50 - 120	70 - 160	60 - 100
150 - 250	150 - 250	150 - 250	50 - 200	120 - 200	90 - 160
60 -100	60 -100	60 - 100	50 - 150	60 - 100	60 - 100
140 - 220	140 - 220	140 - 220	50 - 200	120 - 200	100 - 180
120 - 200	120 - 200	120 - 200	50 - 180	100 - 170	80 - 150
80 - 130	80 - 130	80 - 130	50 - 100	70 - 110	70 - 110
60 - 100	60 - 100	60 - 100	50 - 80	60 - 90	60 - 90
120 - 220	120 - 220	2	100 - 200	90 - 180	2
100 - 200	100 - 200	2	90 - 160	80 - 150	2
130 - 190	130 - 190	2	100 - 180	100 - 160	2
100 - 190	100 - 190	2	80 - 160	70 - 140	2
140 - 280	140 - 280	2	110 - 230	100 - 200	2
90 - 190	90 - 190	2	80 - 160	80 - 150	2
2	2	2	100 - 500	2	2
2	2	2	100 - 300	2	2
2	2	2	100 - 500	2	2
2	2	2	100 - 300	2	2
2	2	2	100 - 200	2	2
2	2	2	100 - 500	2	2
2	2	2	100 - 500	2	2
2	2	2	100 - 300	2	2
2	2	2	100 - 300	2	2
2	2	2	80 - 180	2	2
2	2	2	60 - 150	2	2
2	2	2	100 - 250	2	2
25 - 45	25 - 45	25 - 45	20 - 50	2	2
20 - 40	20 - 40	20 - 40	20 - 40	2	20 - 40
15 - 25	15 - 25	15 - 25	15 - 25	2	20 - 30
10 - 20	10 - 20	10 - 20	10 - 20	2	2
10 - 20	10 - 20	10 - 20	10 - 20	2	2
2	2	2	50 - 120	2	2
2	2	2	30 - 50	2	2
10 - 20	10 - 20	2	2	2	2
2	2	2	2	2	2
10 - 20	10 - 20	2	2	2	2
10 - 20	10 - 20	2	2	2	2

Application possibilities

System GX

Tool configuration





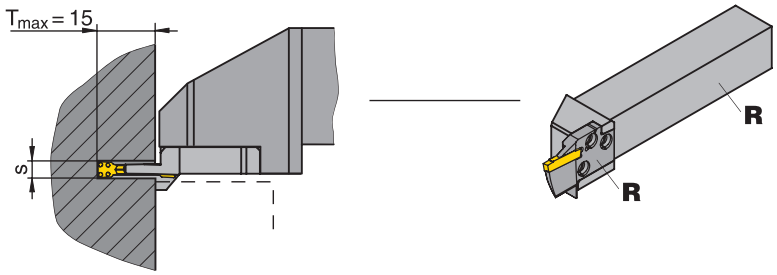
0 66 [illegible]

> Large overhang
> Danger of collision
> Special VDI adapter necessary

0 66 [illegible]

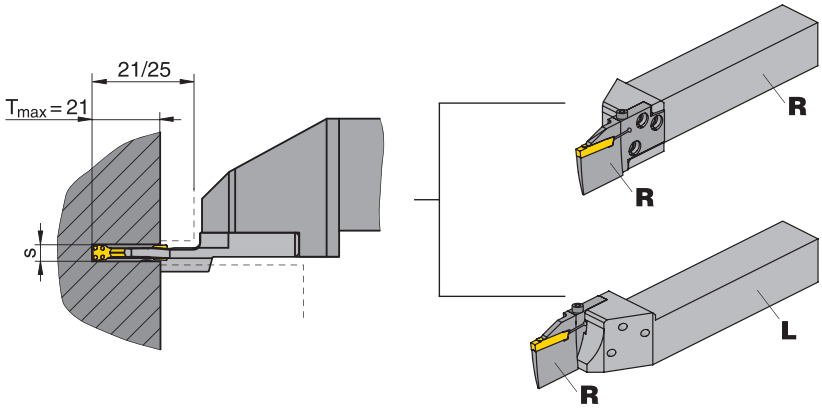
> Short overhang
> Increased stability
> Normal clamping in VDI shank possible

Parting and grooving depth



Short axial module

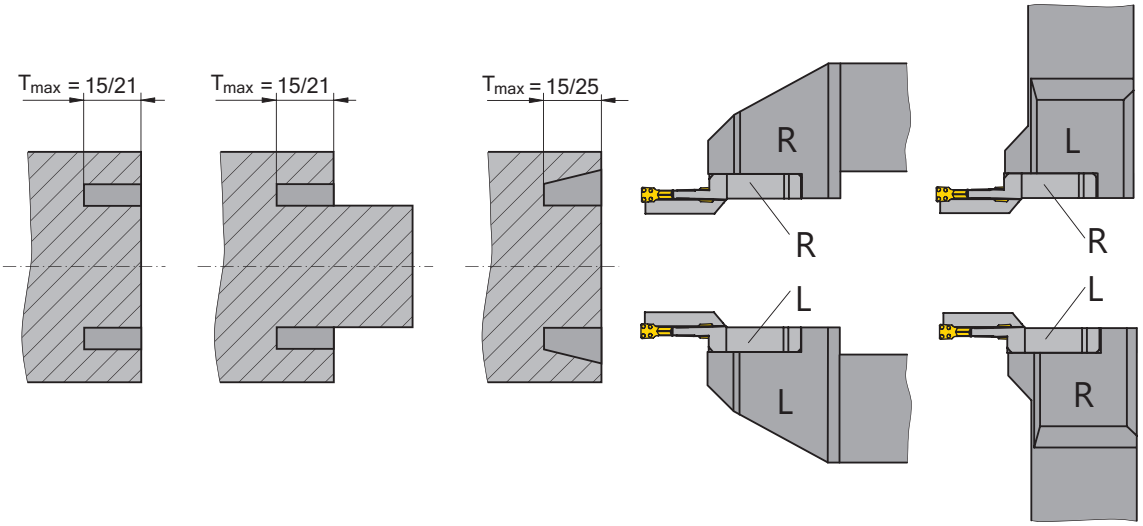
> Can be clamped on one side only
> Parting and grooving depth max. 15 mm



Long axial module

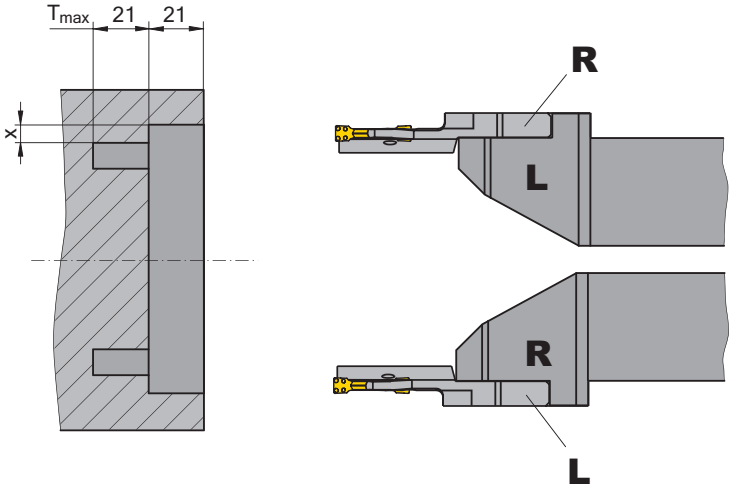
> Can be clamped from either side
> Parting and grooving depth max. 21 mm

Machining possibilities with short/long axial module

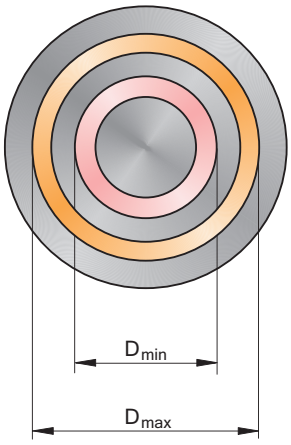


Machining possibilities with long axial module only

Depending on the diameter range or width class an axial GLVSODFHPHQWGLPHQVLRQ [·ÀPP LJKWW be necessary when producing the second groove.
7KHGLPHQVLRQ [·ÀGHSHQGVRQWKH groove diameter and shank height.



Axial grooving and face turning

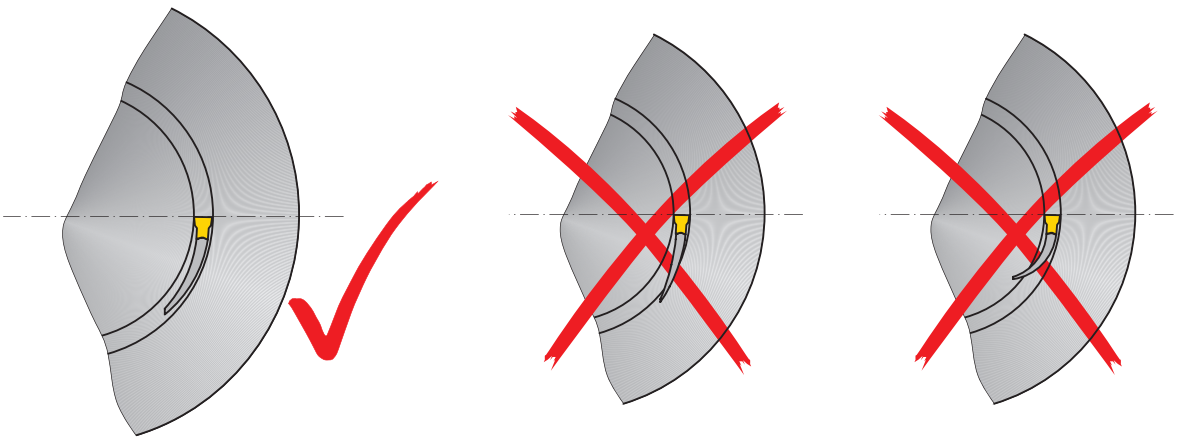


Diameter range (D_{min} - D_{max})
50 - 70 mm
70 - 100 mm
100 - 150 mm
150 - 300 mm
300 - 900 mm

Important: the indicated diameter refers to the outside diameter of the groove.

	MSS assembly size							
	20	25					32	
	Cutting width	Cutting width					Cutting width	
		Short module			Long module			
Diameter range	2,76 - 3,75	2,76 - 3,75	3,76 - 5,00	5,01 - 6,50	3,76 - 5,00	5,01 - 6,50	3,76 - 5,00	5,01 - 6,50
50 - 70	●	●	●	●				
70 - 100	●	●	●	●	●	●	●	●
100 - 150	●	●	●	●	●	●	●	●
150 - 300			●	●	●	●	●	●
300 - 900								●
max. grooving depth	14	15			21		15	

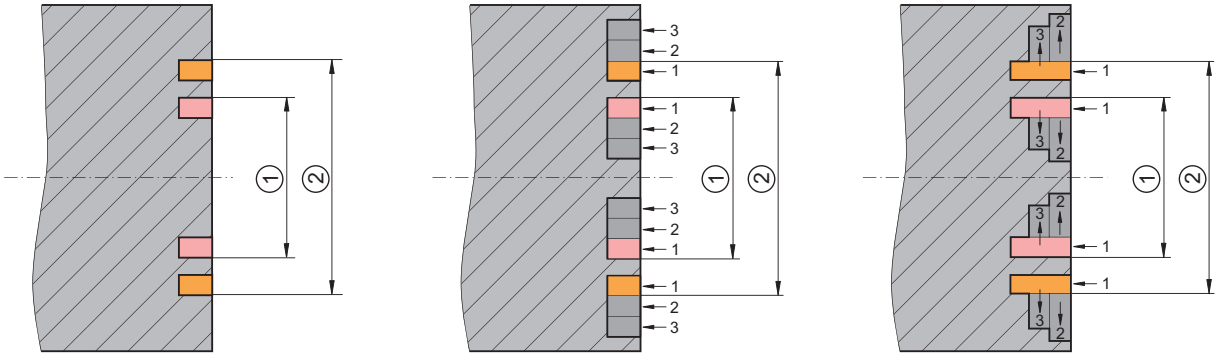
Please note: the diameter of face grooves must lie within the diameter range indicated on the module. Otherwise the tool may be damaged or destroyed.



Correct axial grooving module

Incorrect axial grooving module

Application advice for axial grooving and face turning



① Minimum grooving diameter
② Maximum grooving diameter

Axial grooving

is only possible within the diameter range for that module (e.g. 50 - 70 mm) - see page E24.

Please note: the indicated diameter range refers to the outside diameter of the groove.

Axial grooving - groove widening

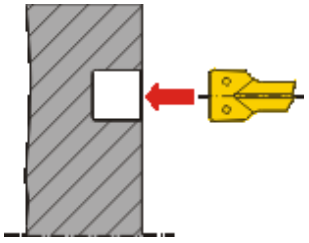
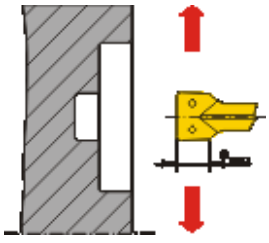
Groove widening is possible above and below the diameter range indicated on the module.

Please note: only the first groove must lie within the diameter range of the module. The depth of the widening groove must not be larger than the depth of the original groove.

Axial grooving and face turning

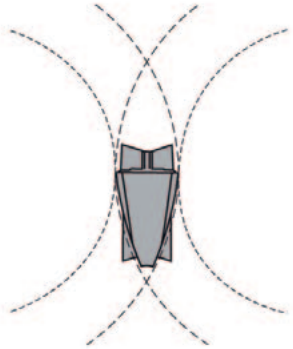
When face turning it is possible to widen the groove above and below the diameter range indicated on the module.

Please note: only the first groove must lie within the diameter range of the module.

Axial grooving and face turning			
			
Designation	**f [mm/rev]**	**a_{max} [mm]**	**f [mm/rev]**
GX24-2E3.00N0.30	0,05 - 0,15	2,5	0,05 - 0,20
GX24-3E4.00N0.40	0,05 - 0,15	3,0	0,05 - 0,25
GX24-3E5.00N0.40	0,05 - 0,15	3,0	0,10 - 0,25
GX24-4E6.00N0.50	0,05 - 0,20	3,5	0,10 - 0,30
GX24-2E3.00N0.30-F2	0,025 - 0,125	2,5	0,05 - 0,15
GX24-2E3.50N0.30-F2	0,025 - 0,125	2,5	0,05 - 0,15
GX24-3E4.00N0.40-F2	0,05 - 0,15	3,0	0,10 - 0,20
GX24-3E4.50N0.40-F2	0,05 - 0,15	3,0	0,10 - 0,20
GX24-3E5.00N0.40-F2	0,075 - 0,20	3,5	0,10 - 0,20
GX24-4E6.00N0.50-F2	0,05 - 0,15	4,0	0,10 - 0,25

MSS-AX

Product characteristics, customer benefits



Neutral insert

- May be applied in left-hand and right-hand tools
- Application is indenpent on the groove diameter (tool position is possible in x+ or x-)
- Only limited by D_{min} for first grooving operation

Geometry -F50

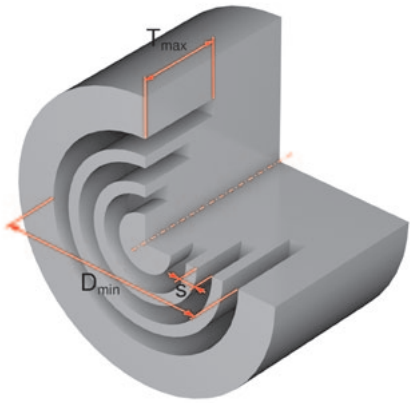
- Universal application, suitable for all materials
- Suitable for grooving and turning

7RRO SURYLGHG Z LWK KDUG VXEJUDGH FRDWLQJ

- Maximum wear protection
- Maximum corrosion resistance

Monobloc and modular tools

- High flexibility
- Cost-optimized solution for every application



System GX

D_{min} … D_{max} \ T_{max}	15 [mm]	21 [mm]
50 - 70	x	x
70 - 100	x	x
100 - 150	x	x
150 - 300	x	x
300 - 900	x	
S [mm]	2,76 - 6,5	3,76 - 6,5

System AX

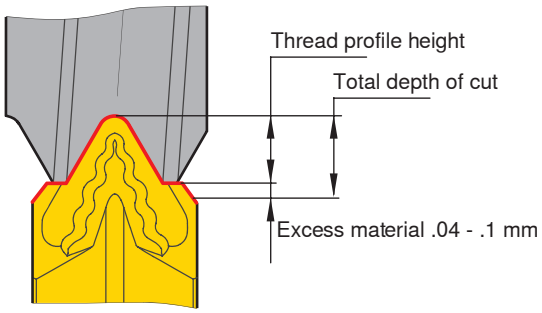
D_{min} … D_{max} \ T_{max}	AX05	AX10	AX15
D_{min} … D_{max}	…	…	…
T_{max}	5,0	10,0	15,0
S [mm]	3,0	3,0	3,0

System LX

D_{min} … D_{max} \ T_{max}	E32N25	E32N32	E32N45
D_{min} … D_{max}	…	…	…
T_{max}	19	26	39
S [mm]	8 - 10	8 - 10	8 - 10

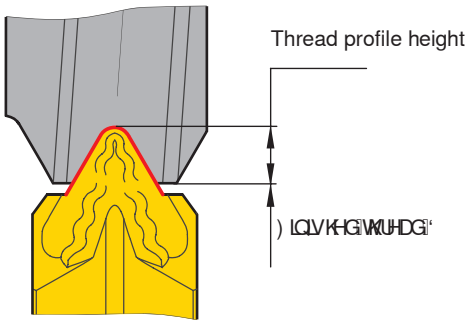
Differences between full and partial profile inserts

Full profile insert



+ The entire thread profile including the external dia. is machined (excess material .04 - .1 mm over finished diameter) + high profile precision
+ Incresaed tool life thanks to larger point radii
+ Burr-free thread
- One insert per pitch

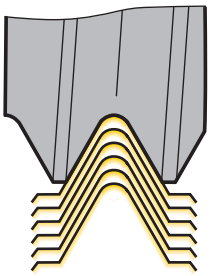
Partial profile insert



+ One insert for several pitches
- Therefore the thread profile does not exactly meet the standard
- The external dia. (or the core dia. in case of internal threads) is not machined

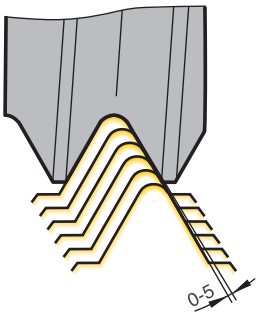
Approach selection

Radial approach



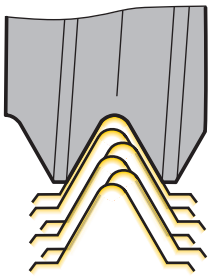
+ Conventional lathes
+ With pitches < 2 mm
+ With short chipping materials
- Reduced swarf control

Flank approach



+ Preferred approach on CNC-machines
+ With pitches from 2 to 4 mm
+ Long chipping materials
+ Good swarf control

Alternating approach



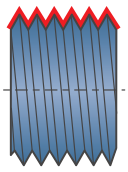
+ With pitches > 4 mm
+ Long chipping materials
+ Uniform insert wear
+ Long tool life
+ Good swarf control
- More complex NC programming

Type of problem												
Type of wear				Work piece problems				Swarf control			Corrective measures	
Flank wear	Edge chipping	Plastic deformation	Built-up edge	%XUUIRUP DUHDGLQJ	Profile precision	Surface quality	Chatter marks, vibration	Chip cross section too large	Chip cross section too small	Chip shape (tangled swarf)		
↓		↓	↑			↑	↓				Cutting speed	Cutting values
a,b	a,b		a,b	a,b		a,b	a,b	a,b		a,b	Feed motion a) via the flanks b) alternating via the flanks	Cutting values
↑	↓	↓		↓	↓	↓	↓	↓	↑	~	Approach (depth of cut)	Cutting values
↓	↑	↑		~	~	↑	~	↑	↓	↓	Number of passes	Cutting values
				●	●	●					Finish cut (idle cut)	Cutting values
			●			●	●			●	Chip groove	Selection of inserts
↑	↓	↑									Cutting material ↓ wear resistance ↑ toughness	Selection of inserts
				●	●	●					Full profile	Selection of inserts
											Partial profile	Selection of inserts
	~					~	~				Stability tool - insert	General criteria
	~					~	~				Stability - work piece	General criteria
	↓					↓	↓				Overhang	General criteria
~	~	~			~	~	~				Tip height	General criteria
●	●	●	●	●		●					Cooling lubricant	General criteria

↑ raise, increase, large influence
↓ avoid, reduce large influence
~ check, optimize
↑ raise, increase low influence
↓ avoid, reduce low influence
● use

Full profile

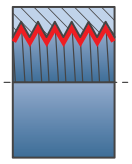
0 HWULF ,62 H[WHUQDOWKUHDGV



Pitch [mm]	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0
Number of cuts	4 ↓ 6	4 ↓ 7	5 ↓ 8	5 ↓ 9	6 ↓ 10	7 ↓ 11	8 ↓ 12	9 ↓ 14	10 ↓ 18	10 ↓ 18	12 ↓ 20	12 ↓ 20	12 ↓ 20
Thread profile height	0,32	0,48	0,64	0,80	0,95	1,10	1,26	1,58	1,89	2,21	2,53	2,84	3,16

These are recommended values for steel machining

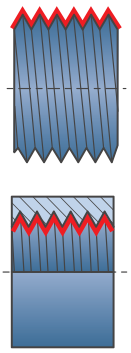
0 HWULF ,62 LQWHUQDOWKUHDGV



Pitch [mm]	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0
Number of cuts	4 ↓ 6	4 ↓ 7	5 ↓ 8	5 ↓ 9	6 ↓ 10	7 ↓ 11	8 ↓ 12	9 ↓ 14	10 ↓ 18	10 ↓ 18	12 ↓ 20	12 ↓ 20	12 ↓ 20
Thread profile height	0,30	0,45	0,59	0,74	0,89	1,02	1,17	1,46	1,76	2,02	2,35	2,64	2,93

These are recommended values for steel machining

: KLWZ RUWK H[WHUQDODQG LQWHUQDOWKUHDGV

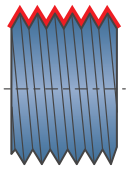


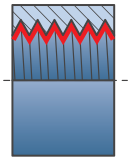
Pitch [passes/inch]	28	26	24	20	19	18	16	14	12	11	10	9	8	7	6	5
Number of cuts	5 ↓ 8	5 ↓ 8	5 ↓ 9	5 ↓ 9	6 ↓ 10	6 ↓ 10	7 ↓ 11	8 ↓ 12	9 ↓ 14	9 ↓ 14	10 ↓ 17	10 ↓ 18	10 ↓ 18	12 ↓ 20	12 ↓ 20	12 ↓ 20
Thread profile height	0,60	0,65	0,70	0,84	0,88	0,93	1,05	1,20	1,40	1,53	1,68	1,87	2,11	2,41	2,81	3,37

These are recommended values for steel machining

Partial profile

H[WMLQDOQG LQMLQDOWKUHDGV

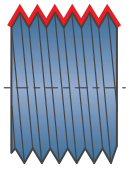




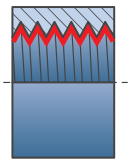
Threading insert	TC16-2EI-AG60									TC16-2EI-G60				TC16-3EI-N60			
	TC16-1EI-A60																
Pitch [mm]	0,5	0,75	1,0	1,25	1,5	1,75	2,0	2,5	3,0	1,75	2,0	2,5	3,0	3,5	4,0	4,5	5,0
Number of cuts	4 ↓ 6	4 ↓ 7	5 ↓ 9	6 ↓ 10	7 ↓ 11	8 ↓ 12	9 ↓ 14	10 ↓ 15	12 ↓ 19	8 ↓ 12	9 ↓ 14	10 ↓ 15	12 ↓ 20	12 ↓ 20	13 ↓ 21	14 ↓ 22	14 ↓ 22
Thread profile height external	0,33	0,52	0,71	0,90	1,09	1,28	1,47	1,84	2,22	1,23	1,42	1,79	2,17	2,45	2,83	3,21	3,59
Thread profile height internal	0,27	0,44	0,60	0,76	0,92	1,09	1,25	1,57	1,90	1,04	1,20	1,52	1,85	2,07	2,4	2,72	3,05

These are recommended values for steel machining

H[WMLQDOQG LQMLQDOWKUHDGV



Threading insert	TC16-2EI-AG55												
	TC16-1EI-A55												
Pitch [passes/inch]	28	26	24	20	19	18	16	14	12	11	10	9	8
Number of cuts	5 ↓ 8	5 ↓ 8	6 - 9	6 ↓ 9	7 ↓ 12	7 ↓ 12	8 ↓ 14	9 ↓ 14	10 ↓ 16	10 ↓ 16	11 ↓ 18	12 ↓ 20	12 ↓ 20
Thread profile height	0,66	0,72	0,79	0,95	1,01	1,07	1,21	1,39	1,63	1,79	1,97	2,20	2,48

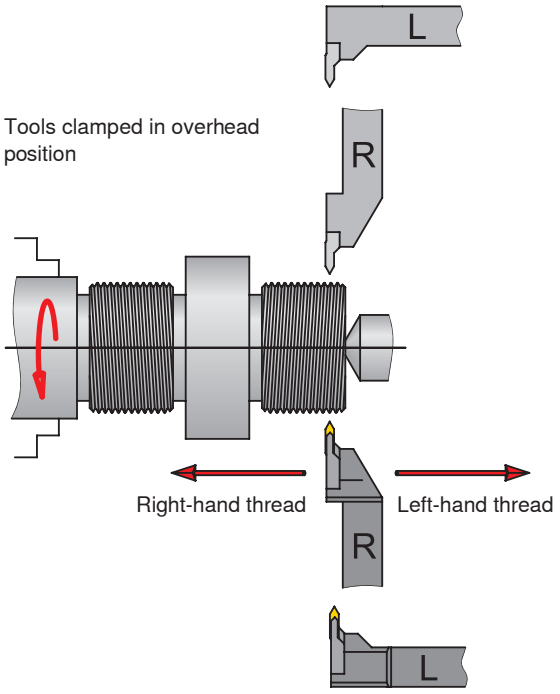


Threading insert	TC16-2EI-G55						TC16-3EI-N55		
Pitch [passes/inch]	14	12	11	10	9	8	7	6	5
Number of cuts	8 ↓ 12	9 ↓ 14	10 ↓ 15	11 ↓ 18	12 ↓ 20	12 ↓ 20	12 ↓ 20	12 ↓ 20	14 ↓ 22
Thread profile height	1,22	1,46	1,56	1,80	2,03	2,31	2,40	2,89	3,56

These are recommended values for steel machining

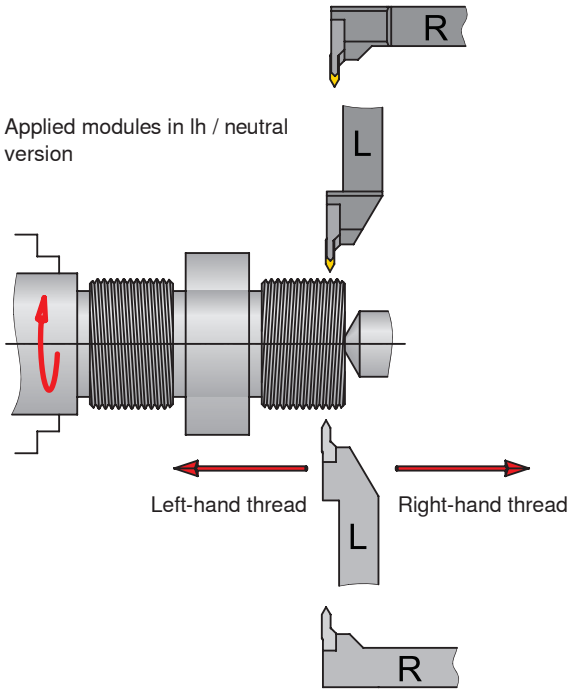
Application methods for external machining

Tools clamped in overhead position



Applied modules in rh / neutral version

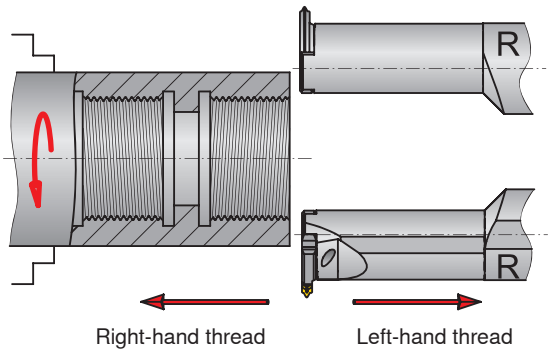
Applied modules in lh / neutral version



Tools clamped in overhead position

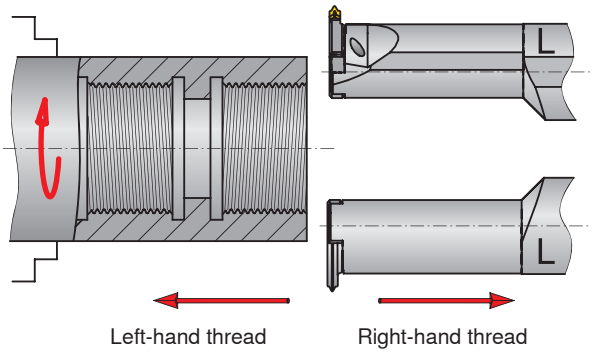
Application methods for internal machining

Tools clamped in overhead position



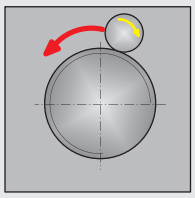
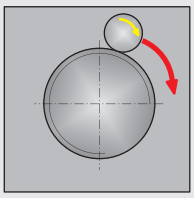
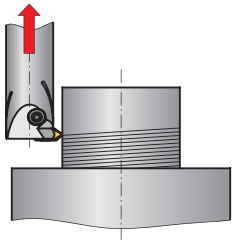
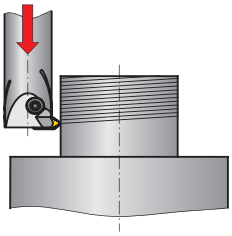
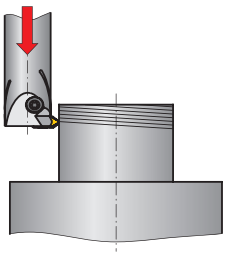
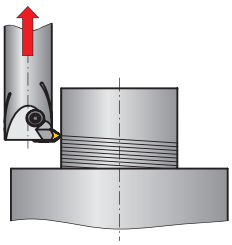
Applied modules in rh / neutral version

Applied modules in lh / neutral version

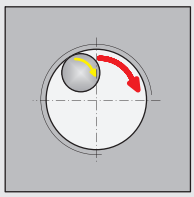
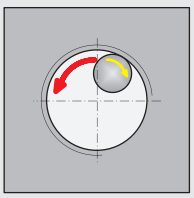
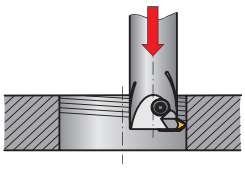
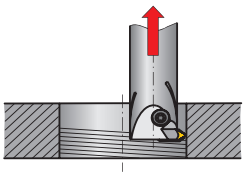
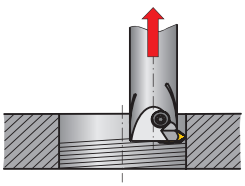
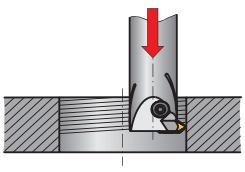


Tools clamped in overhead position

External thread

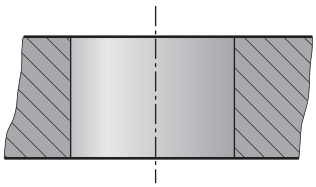
	Conventional milling	Climb milling
		
Right-hand thread		
Left-hand thread		

Internal thread

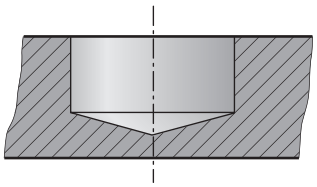
	Conventional milling	Climb milling
		
Right-hand thread		
Left-hand thread		

Drilling

Through-hole thread

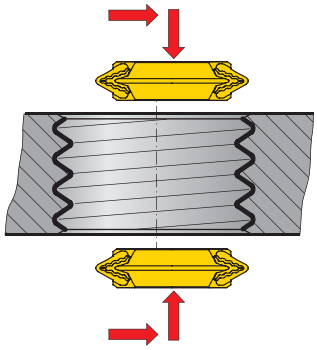


Bottom hole thread



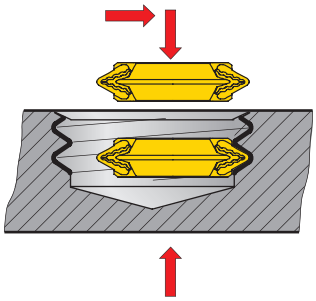
Threading

Through-hole thread



No radial plunging necessary, radial approach above or below work piece + spiral movement

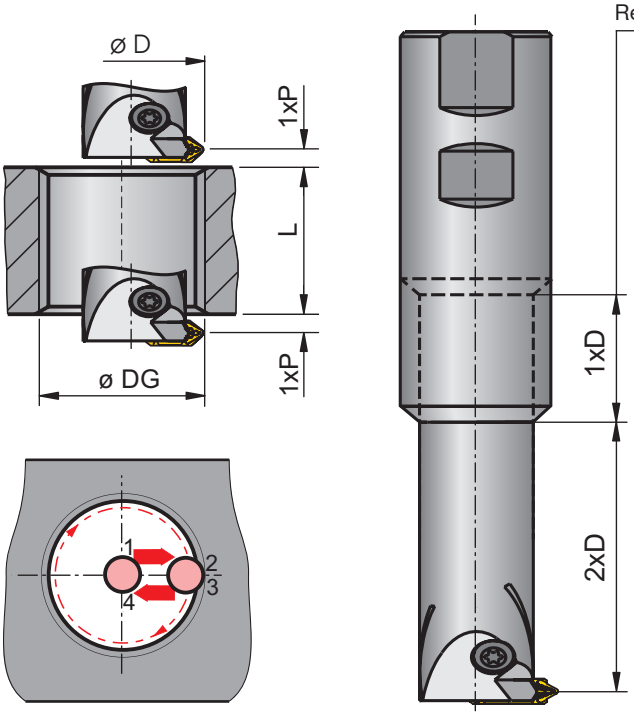
Bottom hole thread



Radial approach until total profile depth + spiral movement

Radial plunging + spiral movement

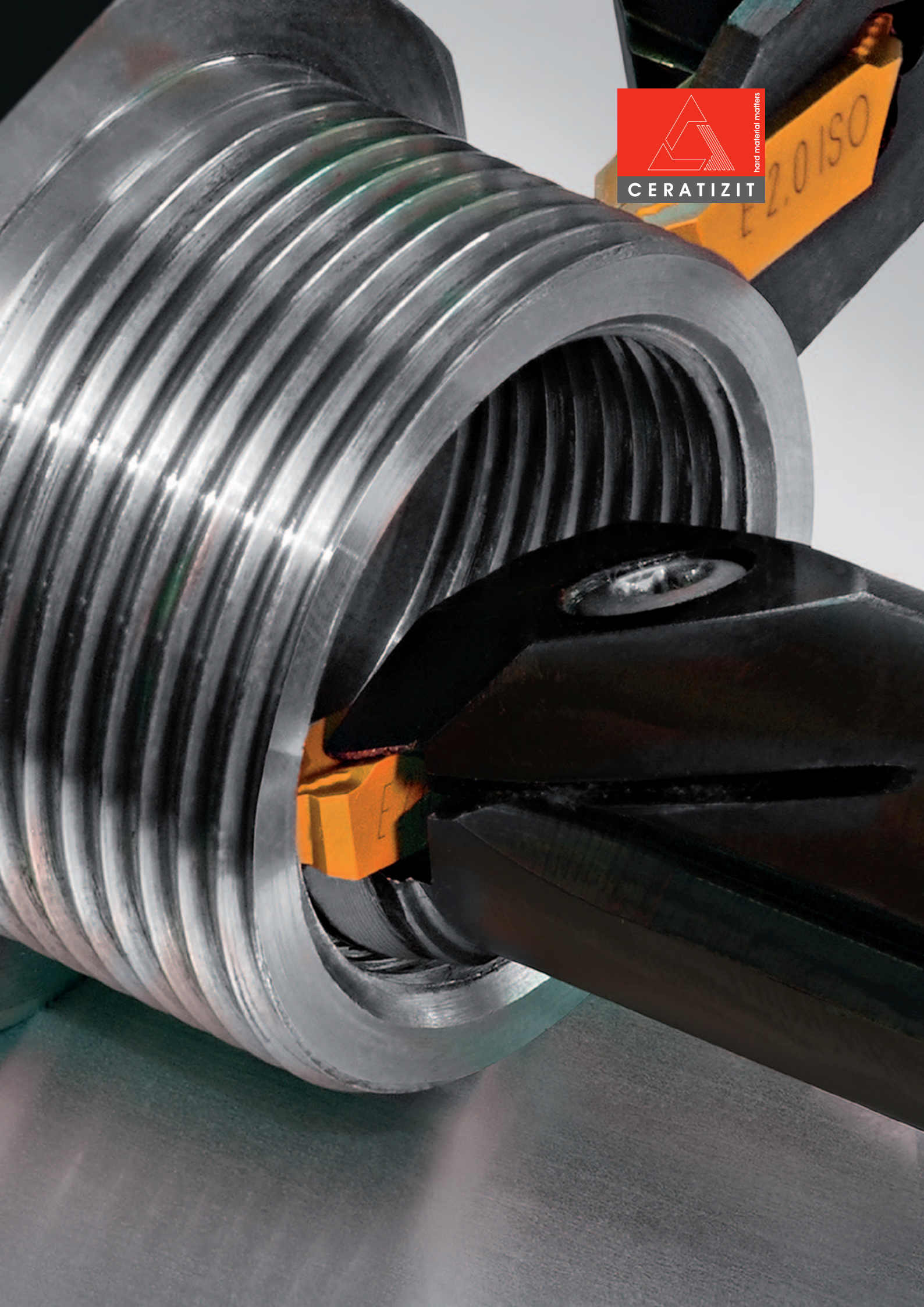
Advantages compared to multi-tooth threading inserts

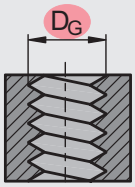


Readjustment possible when necessary

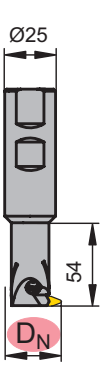
I25R90-2D-TC16-W
I32R90-2D-TC16W

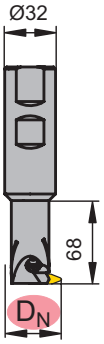
- > Same insert for thread turning and milling
- > Considerably lower cost of TC inserts
- > Thread is cut in a single feed from outside inwards or vice versa, so no step in the thread
- > Low cutting forces possible through single-tooth thread milling
- > Stable conditions
- > Standard reach is 2xD. Tools may be modified up to 3xD.
- > Higher cutting values (vc + f) in this manner machining times are similar to multi-tooth insert machining
- > Easy programming


CERATIZIT
hard material matters



D_N	Type, description	D_G [mm]	Full profile P HWLF,62 TC threading inserts: TC16-1 I 0,5 ISO	TC16-1 I 0,75 ISO	TC16-1 I 1,0 ISO	TC16-1 I 1,5 ISO	TC16-1 I 2,0 ISO	TC16-1 I 2,5 ISO	TC16-1 I 3,0 ISO	TC16-1 I 3,5 ISO	TC16-1 I 4,0 ISO	TC16-1 I 4,5 ISO	TC16-1 I 5,0 ISO	D_G [inch]	Full profile : KLVZ RUK TC threading inserts: TC16-2 EI 14W	TC16-2 EI 12W	TC16-2 EI 11W	TC16-2 EI 10W	TC16-2 EI 9W	TC16-2 EI 8W	TC16-3 EI 7W	TC16-3 EI 6W	TC16-3 EI 5W
25	**I25**R90-2D-TC16-W	M27	x	x																			
		M28	x	x	x																		
		M30	x	x	x	x																	
		M32	x	x	x	x	x							R 1 1/4			x						
		M33	x	x	x	x	x																
		M34	x	x	x	x	x		x														
		M35	x	x	x	x	x		x														
		M36	x	x	x	x	x		x		x												
		M38	x	x	x	x	x		x					1 1/2								x	
		M39	x	x	x	x	x		x		x												
		M40	x	x	x	x	x		x		x			R 1 1/2			x						
		M42	x	x	x	x	x		x		x	x		1 5/8									x
		M45	x	x	x	x	x		x		x	x		1 3/4									x
		M48	x	x	x	x	x		x		x		x										
32	**I32**R90-2D-TC16-W	**M36**	x	x	x																		
		M38	x	x	x	x																	
		M39	x	x	x	x	x																
		M40	x	x	x	x	x																
		M42	x	x	x	x	x		x														
		M45	x	x	x	x	x		x														
		M48	x	x	x	x	x		x		x												
		M50	x	x	x	x	x		x		x			R2			x						
		M52		x	x	x	x		x		x		x										
		M55		x	x	x	x		x		x												
		M56		x	x	x	x		x		x												
		M58		x	x	x	x		x		x												
		M60		x	x	x	x		x		x												
		M62		x	x	x	x		x		x												
		M64		x	x	x	x		x		x												
		M65		x	x	x	x		x		x			R2 1/4			x						
		M68		x	x	x	x		x		x												
		M70		x	x	x	x		x		x												
		M72		x	x	x	x		x		x												
		M75		x	x	x	x		x		x			R2 1/2			x						
		M76		x	x	x	x		x		x												
		M78		x	x	x	x		x		x												
		M80		x	x	x	x		x		x												



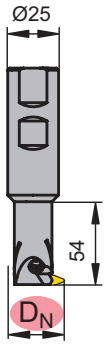
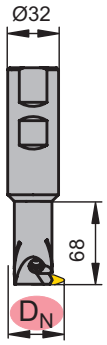


D_N = QRP LQGLFDWHV LQVHUW

= standard thread

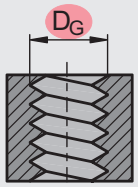
Bgr.	Type, description	D_G [mm]	Full profile P HWF,62 ISO: MSS-I32R-TC16-2 TC16-2 I 2,0 ISO	MSS-I32R-TC16-2 TC16-2 I 3,0 ISO	MSS-I32N-TC16-3 TC16-3 I 4,0 ISO	D_G [inch]	Full profile : KVZ RUK: MSS-I32R-TC16-2 TC16-2 EI 11W
32	**1.5D** MSS-**I32R**90-1.5D	M82	x	x	x	R 2 3/4	x
		M85	x	x	x		
		M90	x	x	x	R3	x
		M95	x	x	x	R3 1/4	x
		M100	x	x	x	R3 1/2	x
		M105	x	x	x	R3 3/4	x
		M110	x	x	x	R4	x
		M115	x	x	x		
		M120	x	x	x		
		M125	x	x	x	R4 1/2	x
		M130	x	x	x		
		M135	x	x	x		
		M140	x	x	x	R5	x
		M145	x	x	x		
		M150	x	x	x	R5 1/2	x
		M155		x	x		
		M160		x	x		
		M165		x	x	R6	x
		M170		x	x		
	2.5D MSS-**I32R**90-2.5D	M175		x	x		
		M180		x	x		
		M185		x	x		
		M190		x	x		
		M195		x	x		
		M200		x	x		
		M205		x	x		
		M210		x	x		
		M215		x	x		
		M220		x	x		
		M225		x	x		
		M230		x	x		
		M235		x	x		
		M240		x	x		
		M245		x	x		
		M250		x	x		
		↓		↓	↓		
		M300		x	x		

Bgr. = assembly size

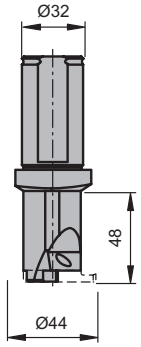
D_N	Type, description	D_G [mm]	Full profile P HWMF ,62 TC threading inserts: TC16-1 I 0,5 ISO	TC16-1 I 0,75 ISO	TC16-1 I 1,0 ISO	TC16-1 I 1,5 ISO	TC16-1 I 2,0 ISO	TC16-1 I 2,5 ISO	TC16-1 I 3,0 ISO	TC16-1 I 3,5 ISO	TC16-1 I 4,0 ISO	TC16-1 I 4,5 ISO	TC16-1 I 5,0 ISO
25	**I25**R90-2D-TC16-W 	↓ M16 ↓	External threads in the range between M16 and M80 can be milled with both tools, I25... or I32.... Choose the adequate threading inserts with the required pitch.										
32	**I32**R90-2D-TC16-W 	↓ ↓ M80											

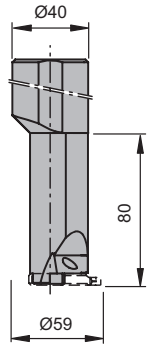
D_G [inch]	Full profile : KLVZ RUK TC threading inserts: TC16-2 EI 14W	TC16-2 EI 12W	TC16-2 EI 11W	TC16-2 EI 10W	TC16-2 EI 9W	TC16-2 EI 8W	TC16-3 EI 7W	TC16-3 EI 6W	TC16-3 EI 5W
↓									
5/8			x						
3/4				x					
7/8					x				
1						x			
1 1/8							x		
1 3/8								x	
1 1/2								x	
1 5/8									x
1 3/4									x

D_N = ORP LODOP LOOQJ



Bgr.	Type, description	D_G [mm]	Full profile MSS-**I32R**-TC16-2 TC16-2 I**2,0** ISO	Full profile MSS-**I32R**-TC16-2 TC16-2 I**3,0** ISO	Full profile MSS-**I32N**-TC16-3 TC16-3 I**4,0** ISO
32	**1.5D** MSS-**I32R**90-1.5D	M82	x	x	x
		M85	x	x	x
		M90	x	x	x
		M95	x	x	x
		M100	x	x	x
		M105	x	x	x
		M110	x	x	x
		M115	x	x	x
		M120	x	x	x
		M125	x	x	x
		M130	x	x	x
		M135	x	x	x
		M140	x	x	x
		M145	x	x	x
		M150	x	x	x
		M155		x	x
		M160		x	x
		M165		x	x
		M170		x	x
	2.5D MSS-**I32R**90-2.5D	M175		x	x
		M180		x	x
		M185		x	x
		M190		x	x
		M195		x	x
		M200		x	x
		M205		x	x
		M210		x	x
		M215		x	x
		M220		x	x
		M225		x	x
		M230		x	x
		M235		x	x
		M240		x	x
		M245		x	x
		M250		x	x
		↓		↓	↓
		M300		x	x





Bgr. = assembly size

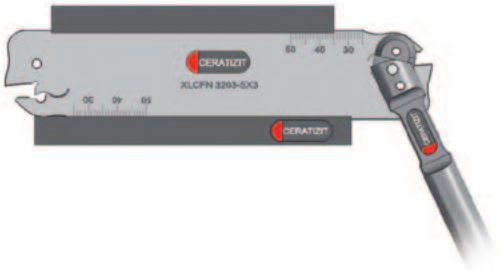
Work piece material		Type of treatment / alloy		VDI 3323 group	Hard-ness HB
A	Non alloyed steel	annealed	≤ .15% C	1	125
		annealed	.15% - .45% C	2	150 - 250
		tempered	≥ .45% C	3	300
	Low alloyed steel	annealed		6	180
		tempered		7 / 8	250 - 300
		tempered		9	350
	High alloyed steel	annealed		10	200
		tempered		11	350
	Corrosion resistant steel	annealed	ferritic	12	200
		tempered	martensitic	13	325
R	Stainless steel	annealed	ferritic / martensitic	14	200
		quenched	austenitic	14	180
		quenched	duplex	14	230 - 260
		hardened	martensitic / austenitic	14	330
F	Grey cast iron		pearlitic / ferritic	15	180
			pearlitic / martensitic	16	260
	Spheroidal cast iron		ferritic	17	160
			pearlitic	18	2
	Malleable cast iron		ferritic	19	130
			pearlitic	20	230
N	Aluminium wrought alloys	non hardened		21	60
		hardened		22	100
	Aluminium cast alloys	non hardened	< 12% Si	23	80
		hardened	< 12% Si	24	90
		non hardened	> 12% Si	25	130
	Copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)	26	2
			brass, red bronze	27	90
			bronze	28	100
			lead-free copper and electrolytic copper	29	100
	Non-metallic materials		thermosetting plastics	29	2
			fibre-reinforced plastics	29	2
			hard rubber	30	2
S	Heat resistant alloys	annealed	Fe-base	31	200
		hardened	Fe-base	32	280
		annealed	Ni or Co-base	33	250
		hardened	Ni or Co-base 30 - 58 HRC	34	2
		cast	1 LRU& R EDVH	35	2
	Titanium alloys		pure titanium	36	R_m 440*
			alpha + beta alloys	37	R_m 1050*
H	Tempered steel	hardened and tempered		38	55 HRC
		hardened and tempered		39	60 HRC
	Chilled castings	cast		40	400
	Tempered cast iron	hardened and tempered		40	55 HRC

* R_m = ultimate tensile strength, measured in MPa

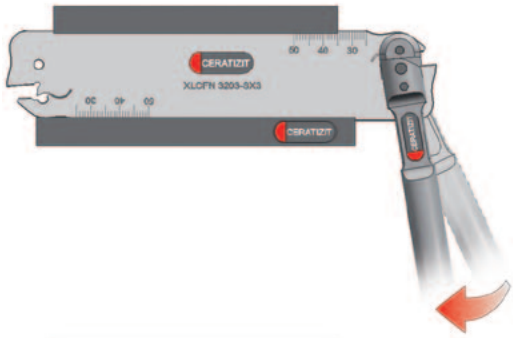
Coated carbide			Uncoated carbide		
GM213 v_c [m/min]	**GM240** v_c [m/min]		**H216T** v_c [m/min]		
150 - 250	200 - 270		2		
110 - 180	180 - 230		2		
90 - 160	140 - 190		2		
100 - 170	180 - 240		2		
80 - 150	120 - 190		2		
70 - 120	120 - 160		2		
90 - 130	140 - 200		2		
70 - 110	100 -160		2		
110 - 170	170 - 230		2		
90 - 140	130 - 190		2		
110 - 180	150 - 200		2		
80 - 140	2		2		
70 - 100	2		2		
70 - 120	2		2		
120 - 160	130 - 200		2		
100 - 130	120 - 180		2		
160 - 200	120 - 170		2		
90 - 140	120 - 190		2		
120 - 140	150 - 230		2		
90 - 130	120 - 170		2		
2	2		100 - 800		
2	2		100 - 800		
2	2		100 - 500		
2	2		100 - 500		
2	2		100 - 350		
2	2		80 - 300		
2	2		80 - 500		
2	2		80 - 500		
2	2		80 - 500		
2	2		80 - 500		
2	2		80 - 500		
2	2		80 - 500		
30 - 50	20 - 40		2		
25 - 35	20 - 30		2		
15 - 25	10 - 20		2		
10 - 20	10 - 20		2		
10 - 25	10 - 20		2		
100 - 150	70 - 100		2		
40 - 60	25 - 45		2		
35 - 45	2		30 - 40		
2	2		2		
10 - 20	2		5 - 15		
35 - 45	2		30 - 40		

MSS-SX

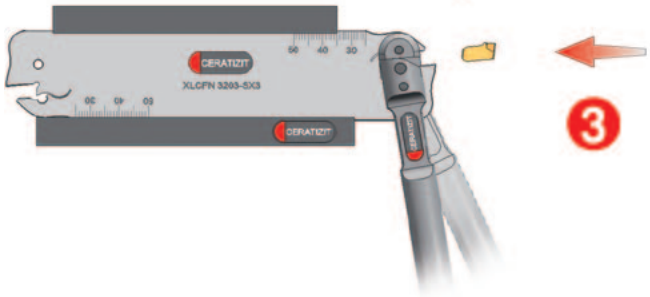
How to use the system



1. Insert mounting key with handle towards the front into the 2 tool location points.

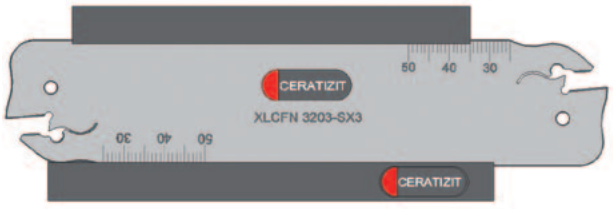


2. When moving the mounting key in the direction of the arrows the insert seat is opened.

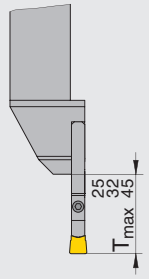
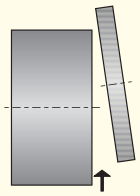
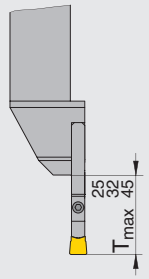
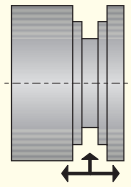
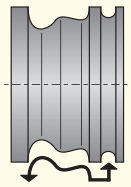
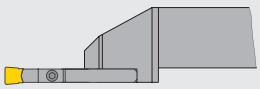
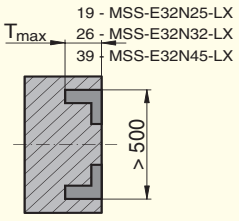
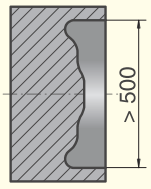
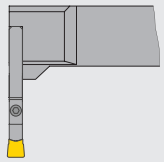
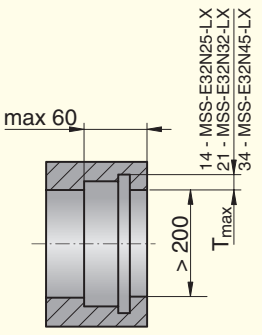
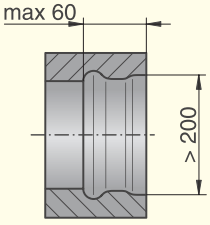


3. Position the insert pressing it against the location face.

4. Moving the mounting key forward the insert seat locks and the insert is clamped securely.

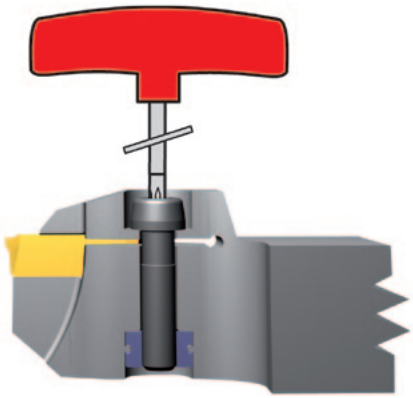


The clamping system is designed in such a way that the mounting key can be inserted into the blade from either side.

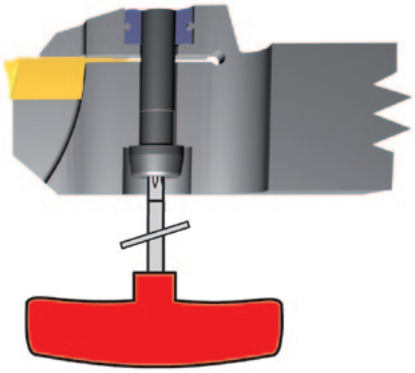
Application \ Insert	8-10	R 4
Part-off 		
Grooving and turning 		
Axial grooving 		
Internal grooving and turning  For this type of internal machining the external tool MSS-E32R/L90-3225N or MSS-E32R/L90-3232R is used		

Can be clamped from either above or below

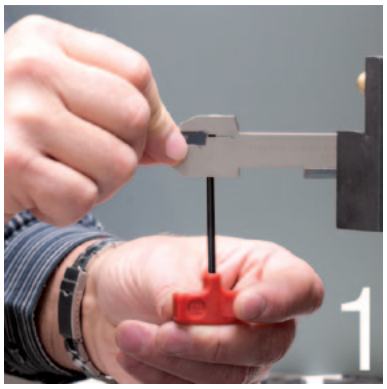
Threaded bush on bottom



Threaded bush on top

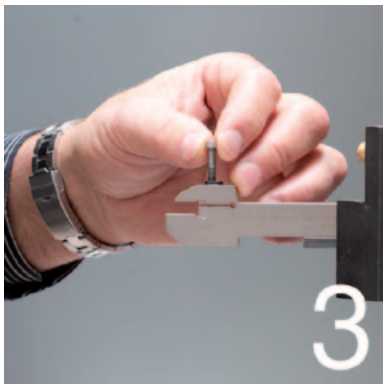


Change of threaded bush

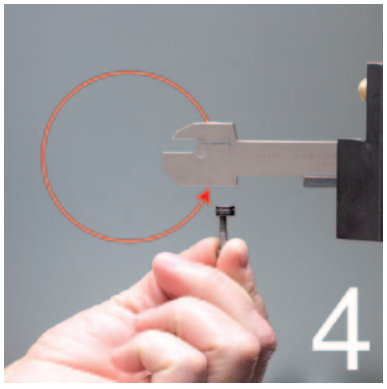


Loosen the clamping screw and remove the insert ...

... fully unscrew the clamping screw and remove it ...

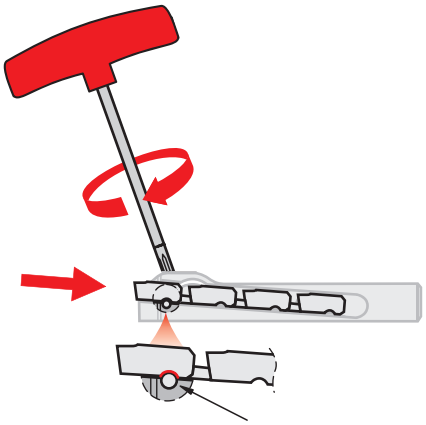


... draw out the threaded bush using the clamping screw ...

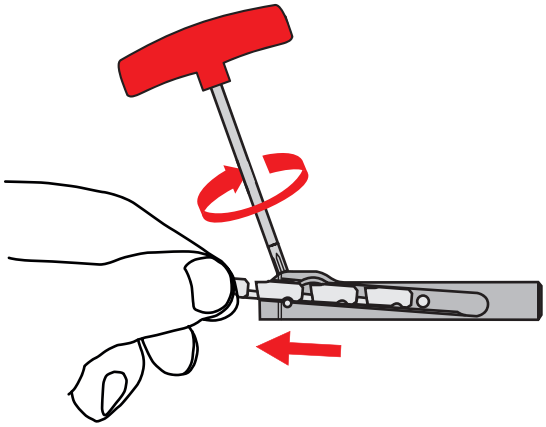


...press the threaded bush onto the milled recess on the opposite side ...

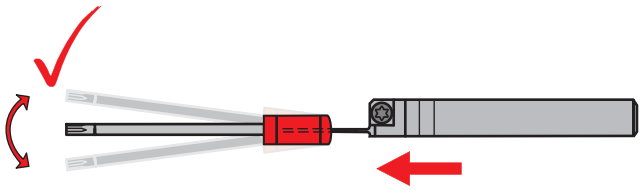
... push the insert onto the contact faces to the stop and fix it in place with the clamping screw.

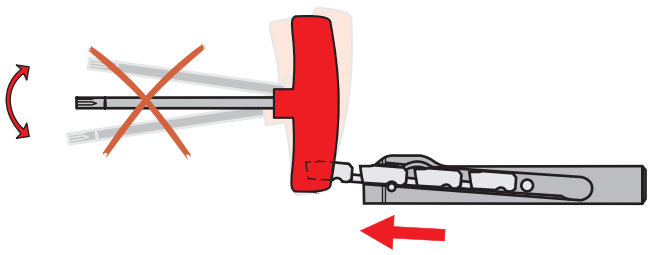


Important: ensure insert is correctly located on pin.

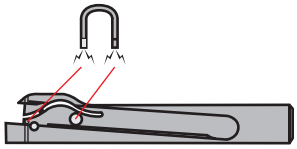


To change to the next cutting edge draw the insert forward.





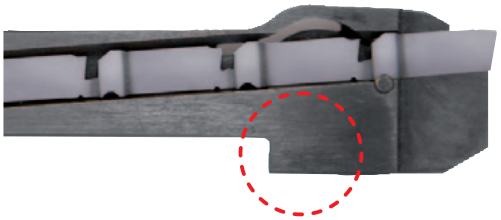
Worn cutting edge must be broken off to left or right



Information: during the positioning procedure, the magnets prevent the cutting inserts from falling out of the tool holder

MaxiClick

Product characteristics

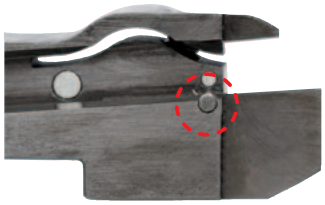


Reinforced tool head for additional stability

Microfinish -27P to avoid the formation of built-up edge

without burrs

line



Carbide positioning pin for accurate repeatability

You can download the form below at our website www.ceratizit.com ->Download ->Forms or using the QR code.

Kunde: Kunden-Nr.:

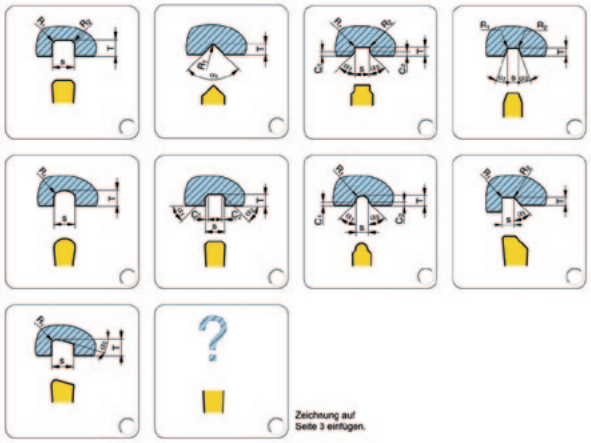
Ansprechpartner: Datum:

E-Mail: Tel.:

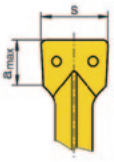
Stückzahl: Werkzeug / Modul:

Werkstoff: Festigkeit: [N/mm²]

GX-Stechwendeplatten sind auf Wunsch auch in verschiedenen Sonderformen lieferbar. In der folgenden Übersicht sind die Wichtigsten angeführt. Die eingetragenen Maße zeigen welche Mindestangaben zur Definition der Sonderformen erforderlich sind.
Wichtig: Maße und Toleranzen des Werkstückes anführen!



Rohlingstypen für Sonderformen			
Breitenklasse	WSP-Größe	s	a_{max}
1	09	2,00 - 2,75	1,5
2	09	2,76 - 3,75	2,0
1	16	2,00 - 2,75	2,5
2	16	2,76 - 3,75	3,0
3	16	3,76 - 5,00	3,5
4	16	5,01 - 6,50	4,0
1	24	2,00 - 2,75	2,5
2	24	2,76 - 3,75	2,5
3	24	3,76 - 5,00	3,5
4	24	5,01 - 6,50	4,0



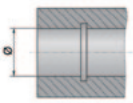
Wendeplattengröße: 09 16 24

Breitenklasse:

Maße:

	Maß	Toleranz	
s			[mm]
T			[mm]
R_1			[mm]
R_2			[mm]
C_1			[mm]
C_2			[mm]
α_1			[°]
α_2			[°]

Innenbearbeitung - Bohrung Ø [mm]

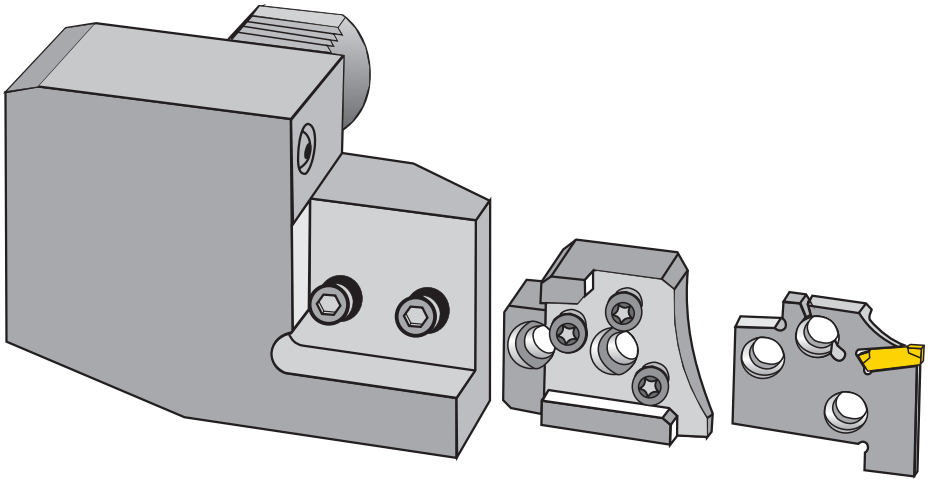


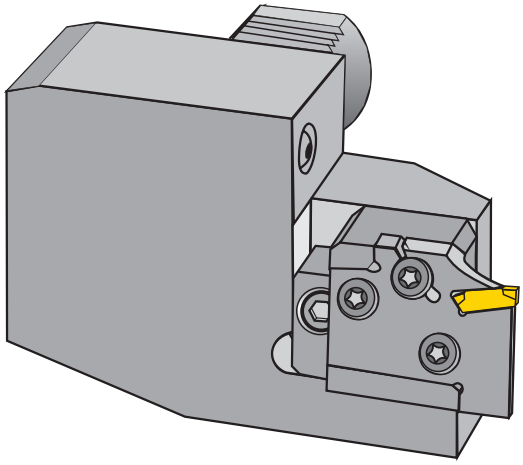
Ihre Anmerkungen:

Application possibilities for MSS adapters:

MSS adapters offer the possibility to apply the modular parting and grooving system where conventional tool shanks or Maxiflex UTS tool heads cannot be used.

For example in case of:
> Special solutions of all kinds
> Special tools and shanks
> Rotating tools for circular milling
> Special machines
> Limited space

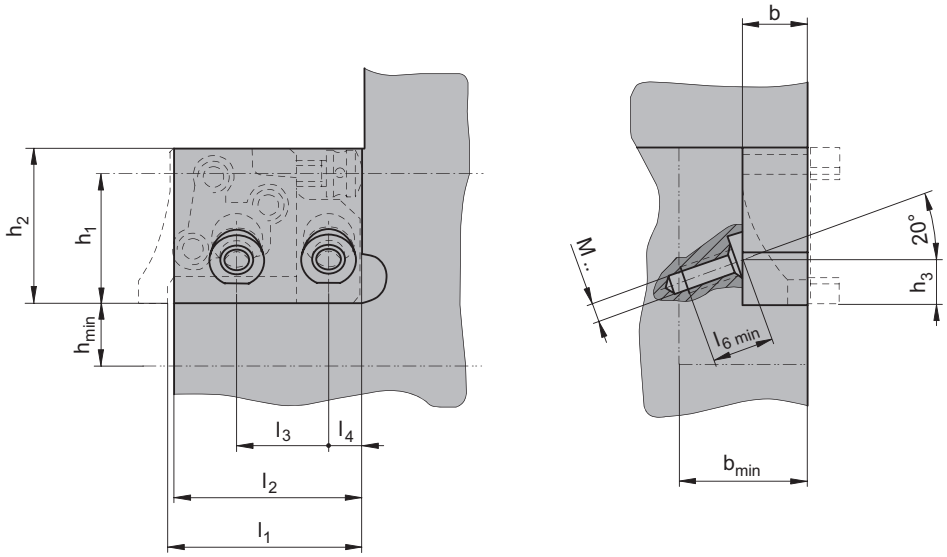




Assembly example:
Adapters in combination with VDI shank

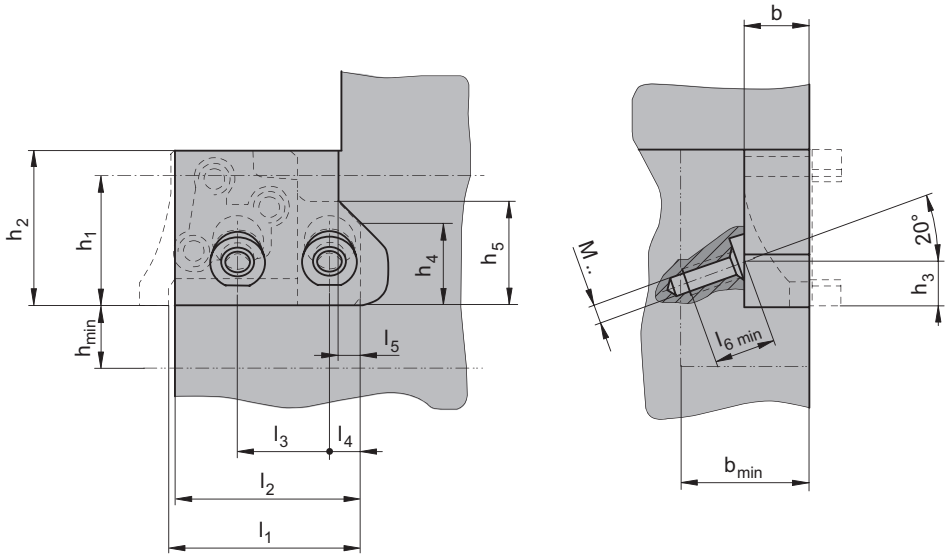
Assembly type A:

> For low or medium loads
> Adjustable adapter



Assembly type B:

> For heavy machining (large parting and grooving depths)
> Adapter not adjustable



Adapters for:	Dimensions in mm														
	h_1	h_2	h_3	h_4	h_5	$h_{min.}$	b	$b_{min.}$	l_1	l_2	l_3	l_4	l_5	$l_{6\ min.}$	M..
MSS-E20R00-AD MSS-E20L00-AD	20	24	6,0	13	16	10	10,7	19	30	29,0	14,25	5,0	3	8	M4
MSS-E25R00-AD MSS-E25L00-AD	25	30	8,5	16	20	12	12,6	25	37	36,0	18,00	6,5	4	12	M5
MSS-E32R00-AD MSS-E32L00-AD	32	38	13,5	22	26	16	14,6	30	46	44,5	23,50	7,5	4	15	M6