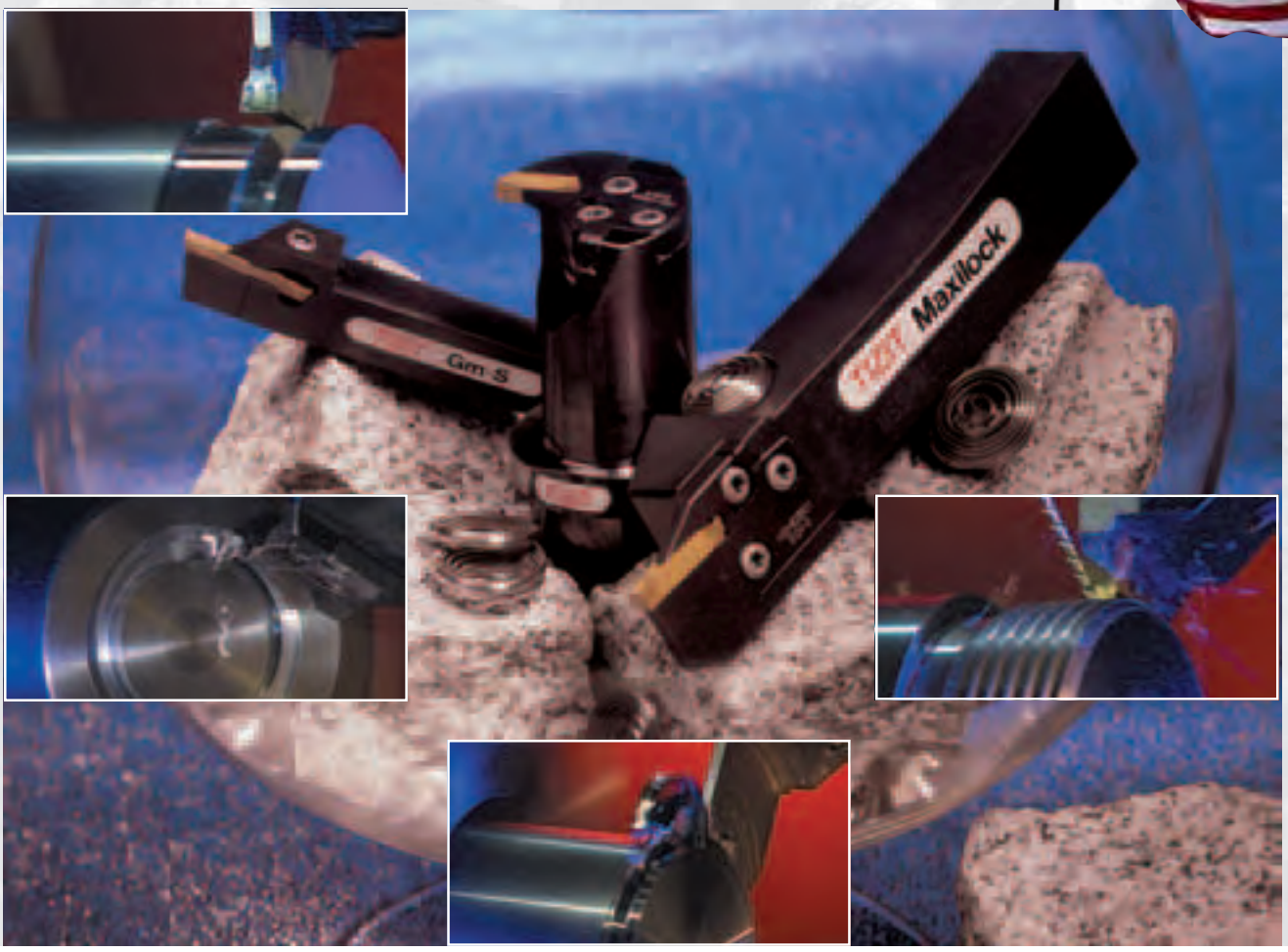
MSS
the modular parting, grooving and threading system



Flexible, precise, complete

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PLANSEE worldwide

Modern technologies make high demands on the materials used. Implementing new technical ideas therefore often means that material problems must be solved.
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"high tech" at the TIZIT sintering department

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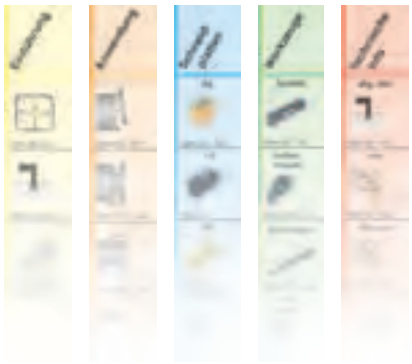
Contents

“Easy Choice“

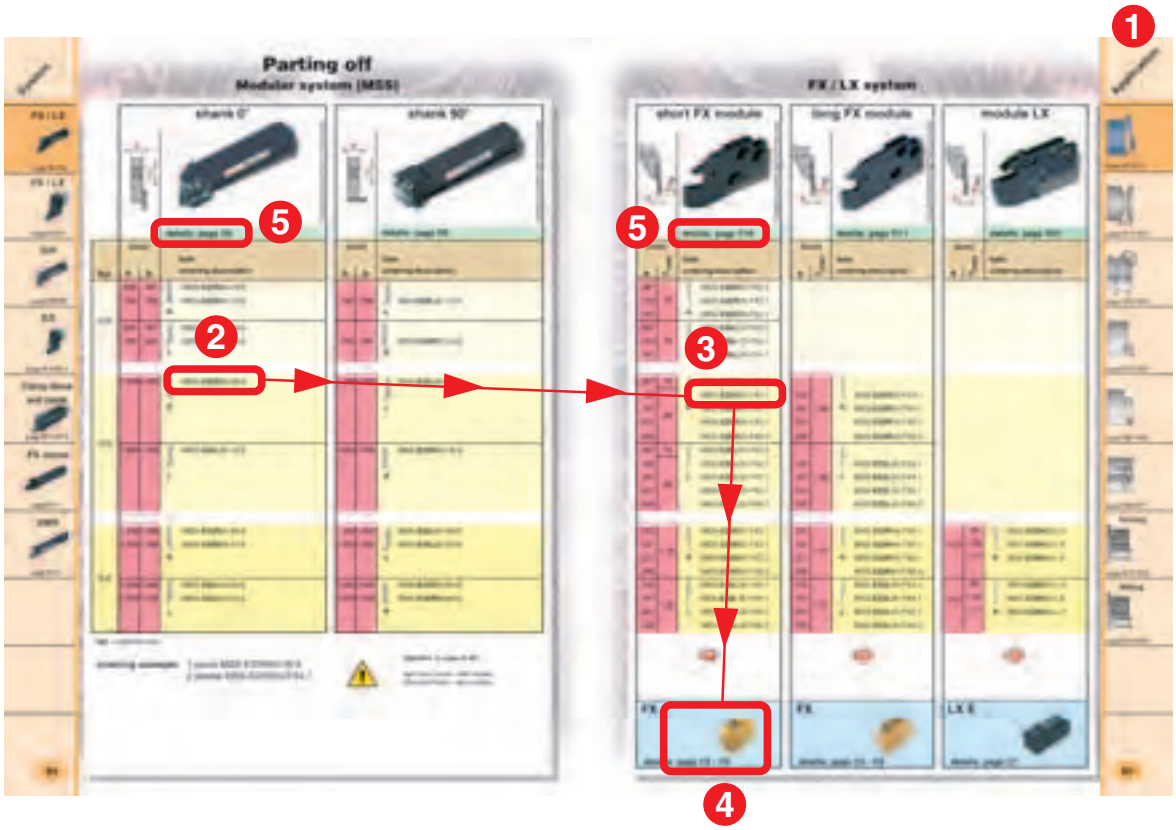
Selection has never been so easy!

The MSS catalog has been divided into 5 chapters.

The different colors of the navigation bars on the right hand side of the catalog make a first quick orientation concerning the single chapters possible.
(see picture on the right)



Tool selection via the chapter “Application“



1. Look for the machining method of your choice using the right navigation bar.

2. In the left hand bar you will find detailed information concerning the respective chapter. Here you can choose the adequate shank type and size.

3. All the modules that are suitable for the chosen shank are visualized on the right side at the same height. Choose the parting and grooving depth and width according to your parameters and your tool is complete.

4. At the bottom of the page you will receive information about where to find the suitable inserts.

5. Please find detailed information about the tool/module selected on the pages which are listed here.

“Easy Choice“

Selection has never been so easy!

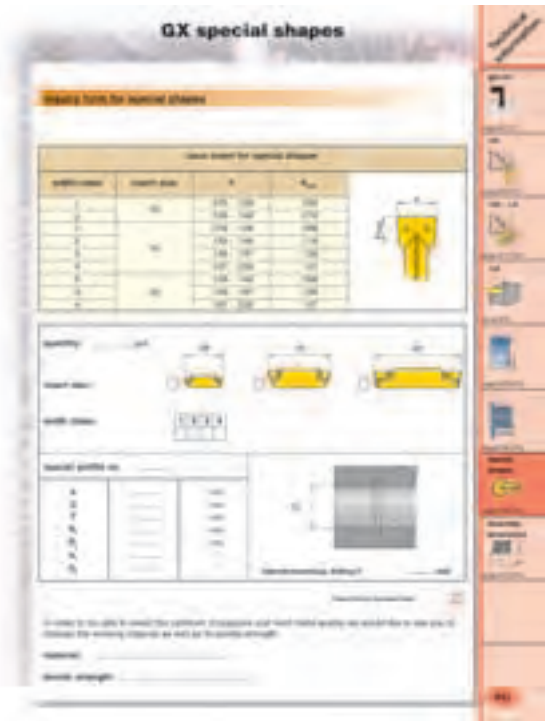
Chapter “Inserts“

In this bar you will find a description of the possible applications of these inserts.

All the inserts on this page are suitable for the tools and modules listed here.

Chapter “Tools“

Chapter “Technical information“

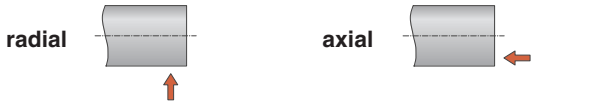


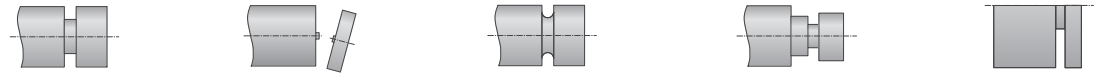
Parting and grooving

Both parting and grooving are characterized by a large variety of variations, demanding technology and a complex tool design.

large variety of variations

⇒ external / internal grooving
⇒ radial, axial grooving
⇒ grooving
⇒ parting
⇒ profile grooving
⇒ parting, grooving and turning
⇒ deep grooving





Grooving | **Parting** | **Profile grooving** | **Parting, grooving and turning** | **Deep grooving**

demanding technology

⇒ chip formation
⇒ chip evacuation
⇒ parallel / flat parting surface
⇒ surface finish
⇒ formation of burrs when parting tubes
⇒ pip formation when parting off
⇒ $v_c = 0$ in the center
⇒ entire main cutting edge applied

complex tool design

⇒ narrow, long overhang
⇒ insert clamping
⇒ rigidity
⇒ resistant against breakage
⇒ easy handling
⇒ economy

The solution !

MSS - the modular parting, grooving and threading system

In order to be able to meet all demands, state-of-the-art tools have a modular structure.

system functions

⇒ separate shank and module
⇒ same interface for all parting, grooving and threading applications
⇒ stable, precise connection
⇒ extendable through new “modules“
⇒ easy handling
⇒ clamping functions optimized for respective application

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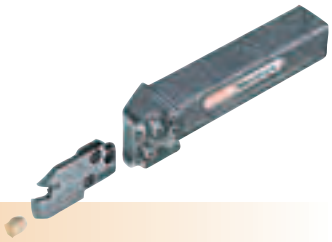
MSS benefits

MSS - **the modular parting, grooving and threading system**



Flexibility

⇒ adaptable to machining task
⇒ a system for all parting, grooving and threading methods
⇒ well-suited for semi-standard tools

Precision

⇒ accurate repeatability for change of module
⇒ reduced set-up times
⇒ high quality parts

Stability

⇒ machining safety
⇒ parting, grooving and longitudinal turning possible

Simplicity

⇒ quick module change in case of tool breakage, low down-times
⇒ easy handling

Economy

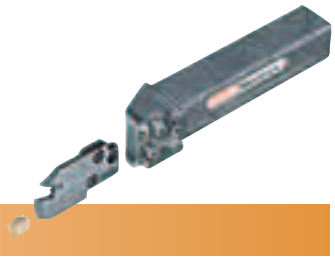
⇒ few products in stock make large variety of combinations possible
⇒ in case of tool breakage only change module

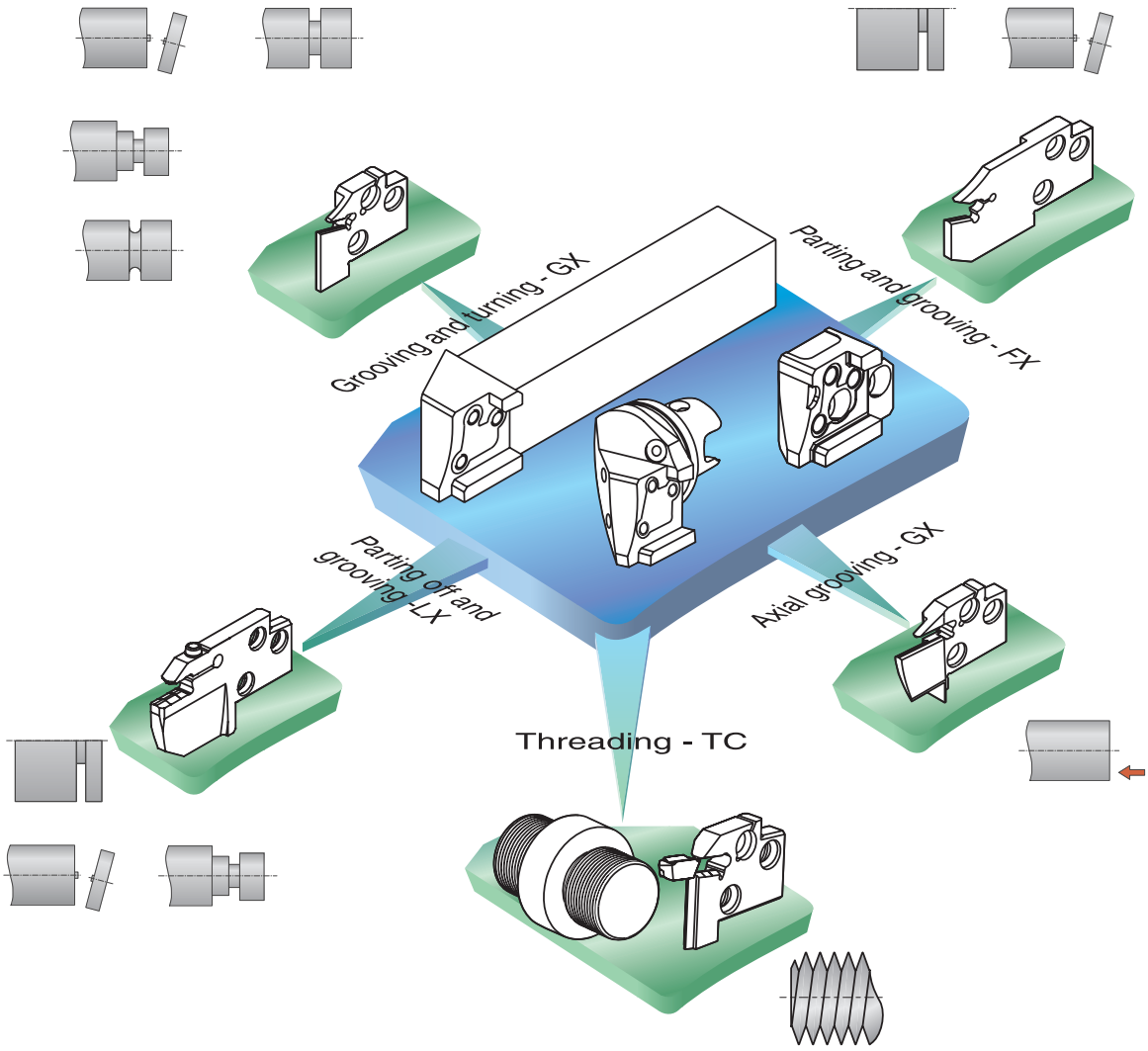
Completeness

⇒ components for all work pieces and materials

MSS
system components

MSS - the modular parting, grooving and threading system





Shanks with □ < .47 inch and boring bars ∅ ≤ .63 inch are available as compact tools.

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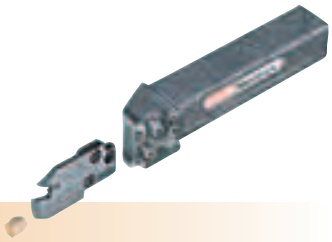
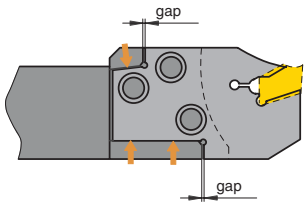
The interface

MSS - the modular parting, grooving and threading system



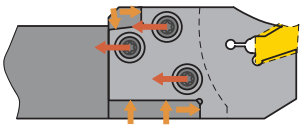
the strong connection

module unclamped:



⇒ gap between module and face abutment for axial clamping

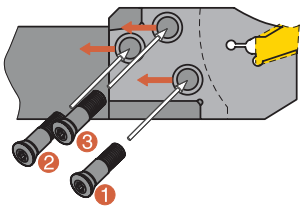
module clamped:



⇒ axial clamping with face abutment
⇒ connection free from play therefore highest stability

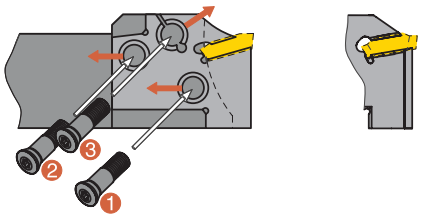
clamping functions

FX / GX:
self-clamping indexable inserts



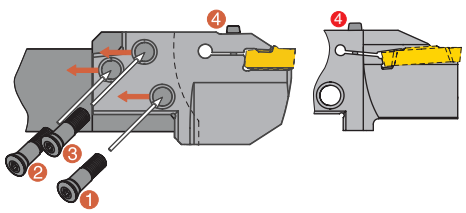
Screws 1, 2 and 3 are used to clamp the module. The insert is self-clamping.

GX / TC:
active insert clamping



Screws 1 and 2 are used to clamp the modules.
Important: primary and secondary clamping necessary for screws 1 and 2.
Subsequently the insert is clamped by means of screw 3.

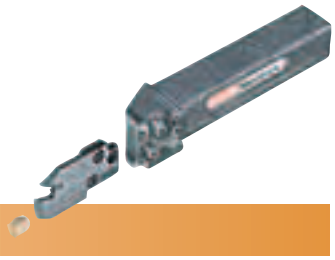
LX:
active insert clamping



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

The modules

MSS - the modular parting, grooving and threading system



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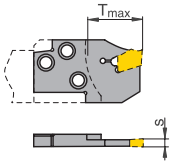
Grooving / parting

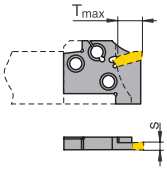
FX



T_{max} = 1.77 inch [1)]
s = .086 - .256 inch

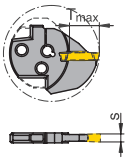
Grooving / parting / longitudinal turning / axial grooving

GX external



T_{max} = .83 inch [1)]
s = (.024) .079 - .315 inch

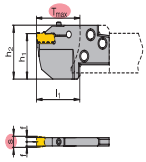
GX internal



T_{max} = .75 inch [1)]
s = (.024) .079 - .256 inch

Grooving / parting / longitudinal turning / axial grooving

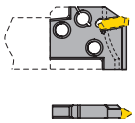
LX



T_{max} = 1.77 inch
s = .315 inch

Thread turning and milling

TC



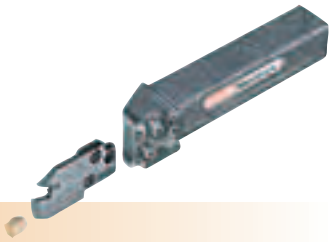
Pitch : ISO 0,5 - 5,0 mm
BSW 28 - 5 T.P.I.

[1)] **Details see pages D10 - D21!**

system characteristics	benefit
⇒ precision investment castings made of tempered steel with high strength	⇒ long tool life / high rigidity
⇒ locating surfaces for MSS interface ground with highest precision	⇒ accurate repeatability
⇒ ground chip pocket	⇒ safe and precise insert clamping

Indexable inserts

MSS - the modular parting, grooving and threading system

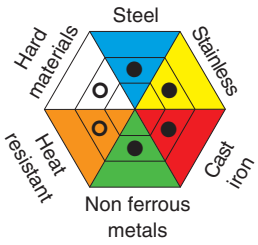


Grooving / parting

FX

s	s L	s R
.087 - .381	.087 - .256	

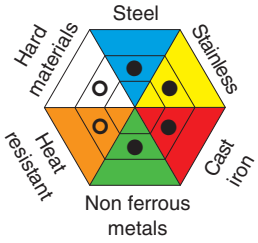
Grades / geometry for:



Grooving / parting / longitudinal turning / axial grooving

GX

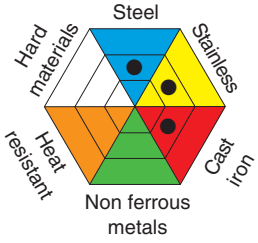
insert size	s	r	s	
09	.024 - .128	.031 - .047	.079 - .138	upon request
16	.024 - .207	.031 - .118	.079 - .236	
24		.118 - .157	.118 - .236	



Grooving / parting / longitudinal turning / axial grooving

LX

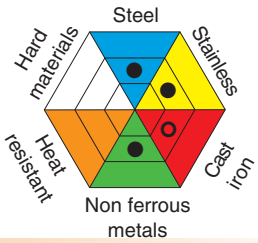
r	s
.157	. 315



Thread turning and milling

TC

ISO 60°	BSW 55°
Full and partial profile external / internal	Full and partial profile external / internal
pitch 0,5 - 5,0 mm	28 - 5 T.P.I.



O = extended application

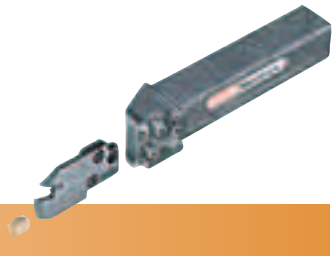
● = main application

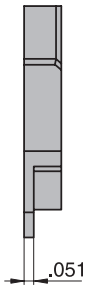
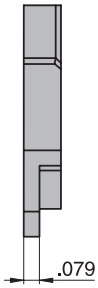
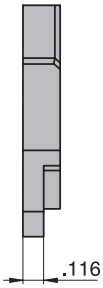
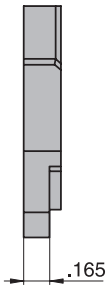
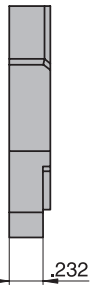
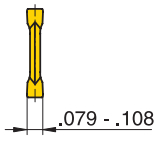
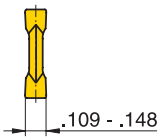
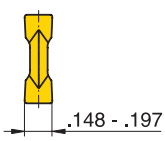
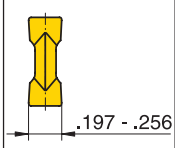
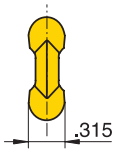
⇒ according to the respective application either precision ground or sintered
⇒ optimized geometries for all important materials
⇒ safety through ideal combination of substrate and coating
⇒ all indexable inserts for aluminum machining are microfinished

The width classes

(GX system)

MSS - the modular parting, grooving and threading system



Width class	-1	-2	-3	-4	-5
Parting and grooving modules	 .051	 .079	 .116	 .165	 .232
Parting and grooving inserts	 .079 - .108	 .109 - .148	 .148 - .197	 .197 - .256	 .315

Module description:
MSS-E20R12-GX16-2

Insert description:
GX16-2E3.00N0.30

Width class 1)

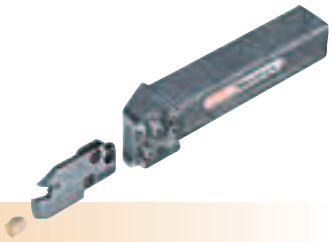
The parting and grooving widths of the MSS system are divided into width classes. Every width class represents a certain range of parting and grooving widths. The appropriate module can be assigned to the selected grooving width by means of the width class.

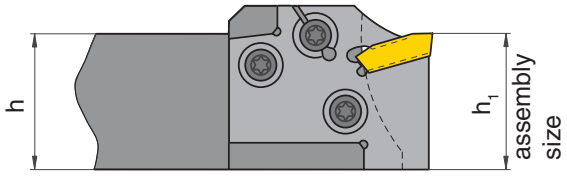
1) Ideally the module and the insert have the same width class. This combination results in the best possible machining safety.

Assembly size

(GX system)

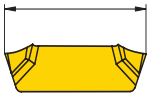
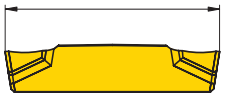
MSS - the modular parting, grooving and threading system





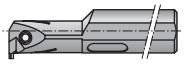
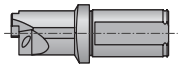
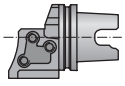
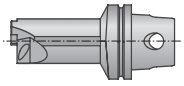
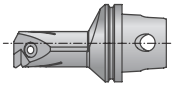
The assembly size is determined by the shank dimensions of the MSS basic holders.
In this manner the right basic holder can be assigned to the correct module size and vice versa. The following tables will give you an overview of the width classes and insert sizes which are available for the respective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

Assembly size	GX							
								
	Width class							
	1	2	3	4	1	2	3	4
10								
12								
16								
20								
25								
32								
40								

Assembly size	GX					
	Insert size					
	09 		16 		24 	
						
10	●					
12	●	●				
16	●	●				
20		●	●		●	
25		●	●		●	
32			●	●	●	
40				●		●

MSS - the modular parting, grooving and threading system

basic holder designations

	UTS system	UTS assembly size		MSS system		E = external / I = internal	Assembly size	Execution	Approach angle		Shank section / execution		Shank length / insert system
						E	10	R	00	-	06		
						I	12	R	90	-	2,5D	-	GX09
						E	12	R	00	-	08	-	TC16
				MSS	-	E	25	R	00	-	16		
				MSS	-	E	25	R	00	-	AD		
				MSS	-	I	25	R	90	-	1,5D		
	UT	40	-	MSS	-	E	25	R	00				
	UT	40	-	MSS	-	I	32	R	90	-	2D		
	UT	40	-	MSS	-	I	32	R	90	-	2D	-	TC16

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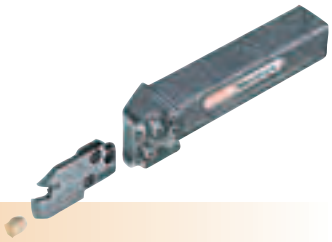
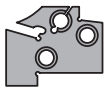
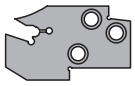
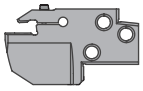
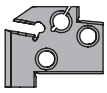
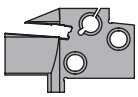
System description

MSS - the modular parting, grooving and threading system

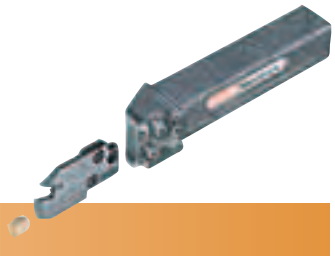


module designations

	MSS system		E = external / I = internal	Assembly size	Execution	Maximum grooving depth		Insert system	Insert size / grooving width		Width class	Diameter range D_{min} - D_{max}
	MSS	-	E	25	R	12	-	GX	16	-	2	
	MSS	-	I	25	R	06	-	GX	09	-	1	
	MSS	-	E	25	R	20	-	FX	3.1			
	MSS	-	E	32	N	45	-	LX				
	MSS	-	E	25	R		-	TC	16	-	2	
	MSS	-	I	32	R		-	TC	16	-	2	
	MSS	-	E	25	R	15	-	GX	24	-	3	A 70-100

System description

MSS - the modular parting, grooving and threading system



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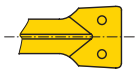
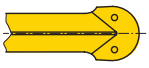
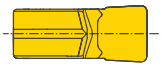
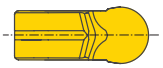
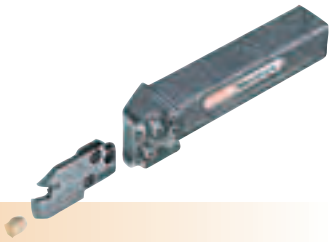
insert designations

	Insert system	Insert size		Width class	Insert shape / application	Width / pitch	Execution / thread standard	Corner radius / angle		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			
	FX					3.10	N	0.20	-	Code
	FX					3.10	R	5	-	Code
	LX		-		E	8.00	N	0.8	-	Code
	LX		-		R	4.00	N		-	Code
	TC	16	-	1	E	1.50	ISO		-	Code
	TC	16	-	2	EI	14	W		-	Code

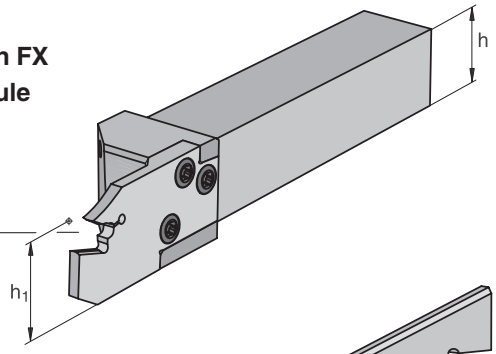
FX system

MSS - the modular parting, grooving and threading system



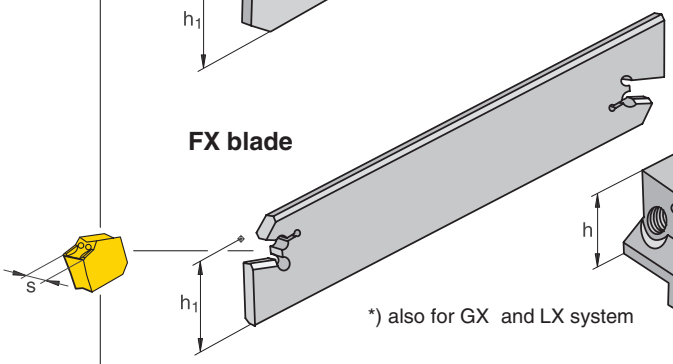
The FX system is characterized by a self-clamping single blade insert for deep grooving of large diameters. FX is directly integrated in the MSS system by means of the respective modules. Additionally the proven block / blade solutions and monobloc tools are available.

shank tool with FX grooving module

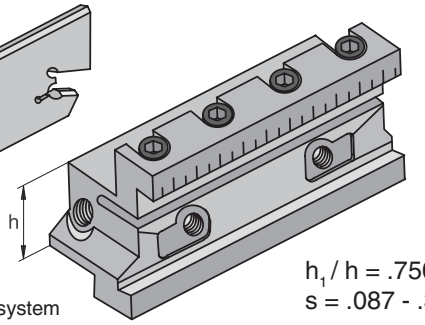


h_1 / h = .750 - 1.250 inch
s = .087 - .256 inch

FX blade

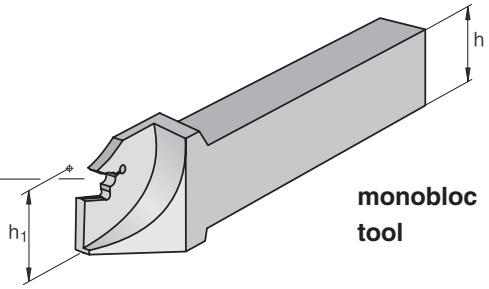


*) also for GX and LX system



clamp block*

h_1 / h = .750 - 1.500 inch
s = .087 - .382 inch



monobloc tool

h_1 / h = .375 - 1.000 inch
s = .087 - . 161 inch

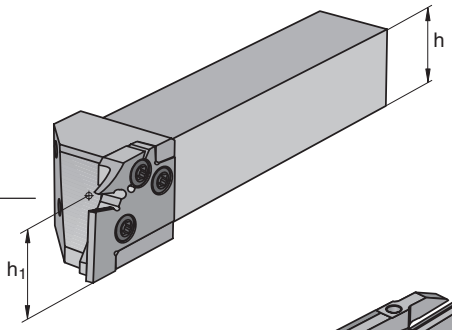
system characteristics	benefit
⇒ self-clamping parting and grooving insert	⇒ easy handling, no clamping parts
⇒ adjustable blade	⇒ grooving depth, overhang optimally adjustable
⇒ single-blade, directly pressed insert	⇒ economical for deep grooving and parting

GX system

MSS - the modular parting, grooving and threading system

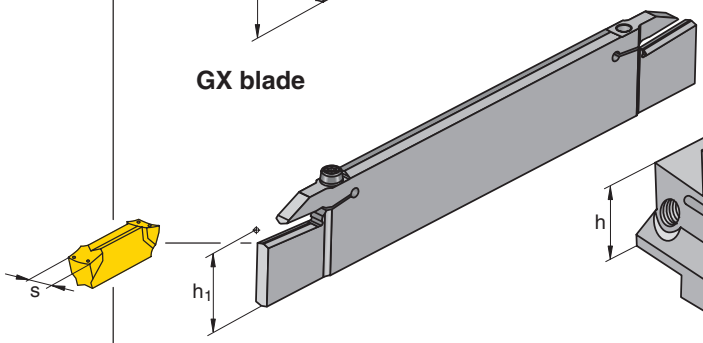
The GX system is characterized by a double-ended insert with numerous application possibilities. It is mostly applied for **radial grooving and turning**. Due to special modules the system can easily be adapted for **axial and circlip grooving**. For GX indexable inserts a range of modules and boring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

shank tool with GX grooving module

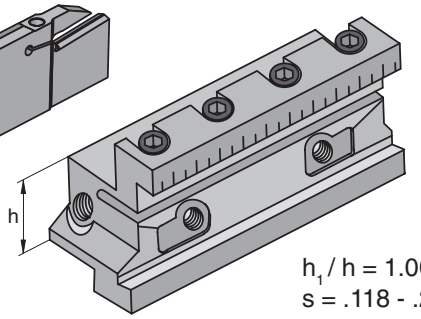


h_1 / h = .500 - 1.250 inch
s = (.024) .079 - .315 inch

GX blade

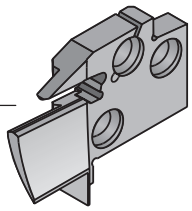


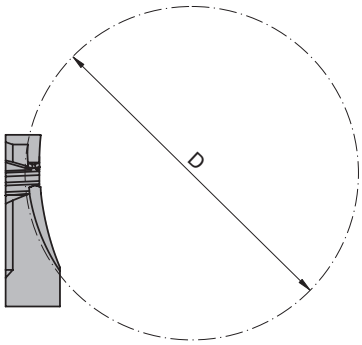
clamp block



h_1 / h = 1.000 - 1.250 inch
s = .118 - .236 inch

GX axial module





s = .118 - .236 inch
D = 1.97 - 35. 43 inch

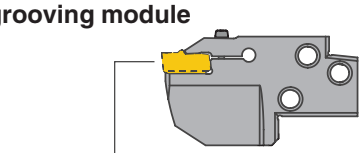
system characteristics	benefit
⇒ double-blade insert ⇒ ground and directly pressed indexable inserts	⇒ good economy ⇒ optimum solution for all situations

LX system

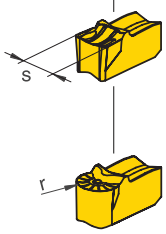
MSS - the modular parting, grooving and threading system

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

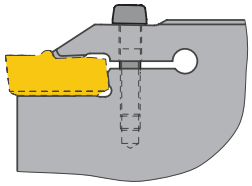
LX parting and grooving module



s = .315 inch
r = .157 inch
T_{max} = .98 / 1.26 / 1.77 inch



detail Z



active insert clamping

s = .315 inch
r = .157 inch
T_{max} = 3.15 inch

LX blade

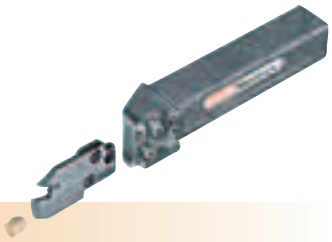
application of LX modules

⇒ parting
⇒ grooving and turning
⇒ axial grooving with D > 19.68 inch
⇒ internal grooving and turning with D > 7.87 inch

system characteristics	benefit
⇒ robust construction ⇒ active insert clamping ⇒ indexable insert with full radius	⇒ high machining safety and resistance ⇒ well-suited for copy turning

TC system - thread milling

MSS - the modular parting, grooving and threading system



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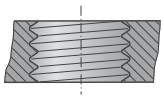
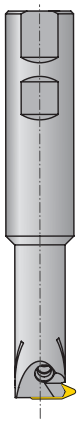
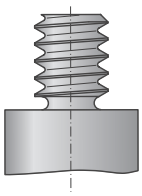
For thread milling and turning the same inserts are applied. With special tool shanks, which are characterized by compact and modular construction, **external as well as internal threads** can be produced on all state-of-the-art machining centers.



internal thread





external thread

ISO 60°	BSW 55°	ISO 60°
		
internal	internal / external	external

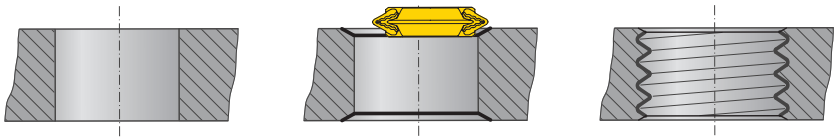
3 steps of threading

MSS - TC

1 drilling core hole

2 chamfering

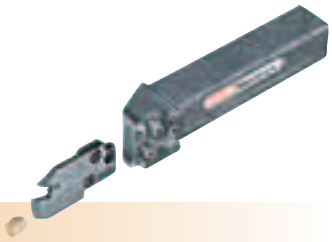
3 thread cutting



system characteristics	benefit
⇒ turning and milling with the same indexable insert	⇒ flexibility, reduced variety and costs
⇒ single-tooth thread milling	⇒ low machining forces, large overhang possible, high cutting data (v_c und f), easy programming
⇒ thread is cut in one pass	⇒ no interruptions or steps in thread

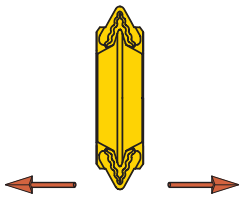
TC system - thread turning

MSS - the modular parting, grooving and threading system

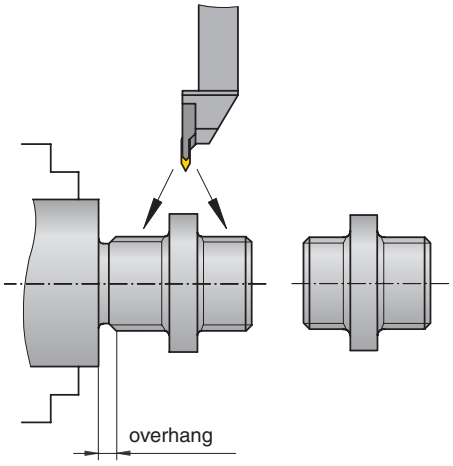


The TC system for thread turning is an integrated part of the MSS system. Compared to traditional systems TC offers a series of advantages which are of crucial importance for many threading applications.

TC system

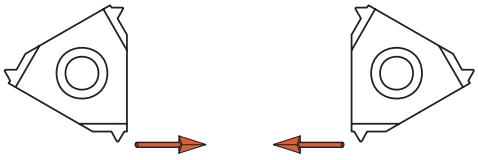


⇒ neutral configuration of insert makes operation in both directions possible
⇒ only one threading insert per pitch for partial profile and Whitworth thread; only two threading inserts (internal - external) per pitch for ISO threads
⇒ reduced stock holding
⇒ good chip formation through chip groove with rake angle +10°

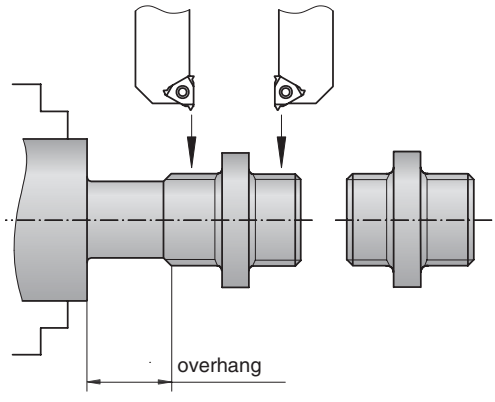


better economy through
⇒ reduced machining times
⇒ less tool changing
⇒ improved stability, small overhang
⇒ material savings
⇒ thread turning between shoulders possible
⇒ fewer tools and indexable inserts

conventional system



⇒ right and left execution of indexable insert, therefore operation only in one direction
⇒ for every pitch 4 threading inserts are necessary (right - left, internal - external)



⇒ for this machining method 2 tools are necessary
⇒ additional loss of stability and material through large overhangs

TC system - thread turning

MSS - the modular parting, grooving and threading system

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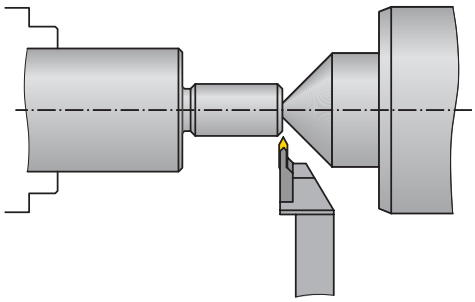
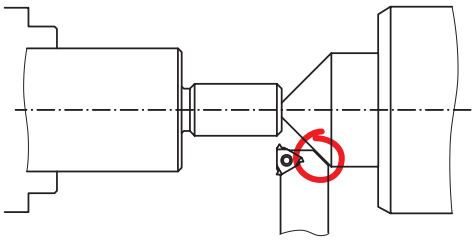
TC system

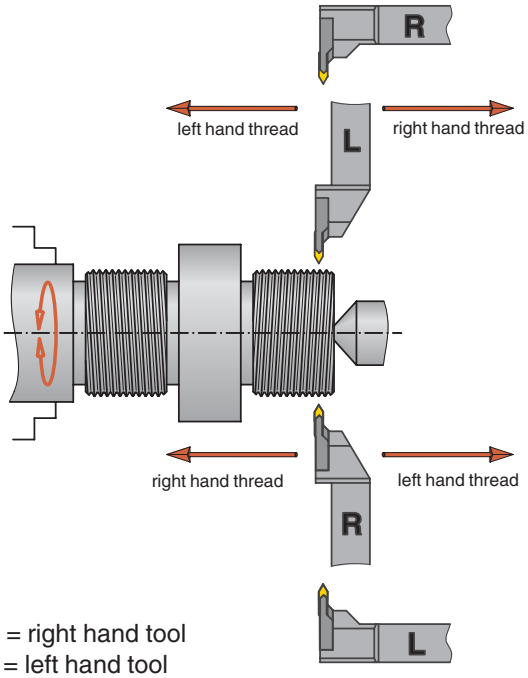


⇒ easy access to work piece
therefore use of tailstock also
possible with small thread diameters

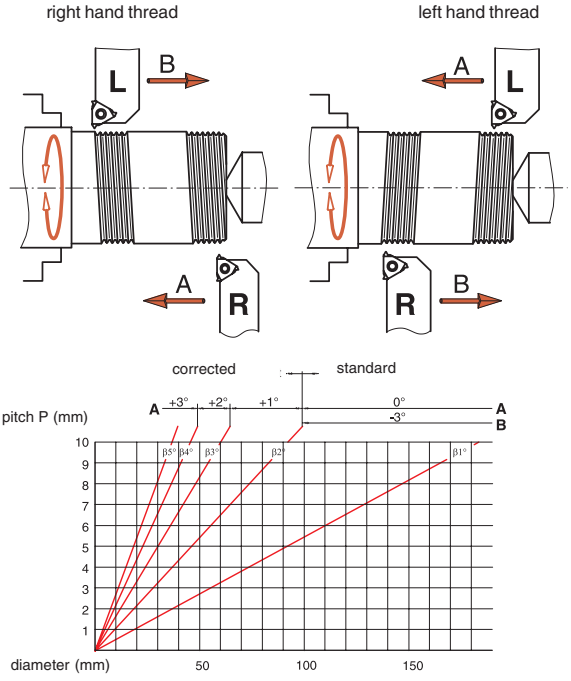
conventional system



⇒ difficult component access
⇒ danger of collision



R = right hand tool
L = left hand tool



⇒ easy to apply as the tools can be used without correcting helix angle in both directions

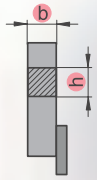
⇒ correction of helix angle necessary, therefore high degree of application know-how necessary
⇒ can only be operated in one direction

Applications
Overview

						Turning	Milling
FX / LX  page B4-B5	GX09  page B18-B19	GX09...  page B27	GX24  page B52-B55	GX16  page B62-B63	GX09...  page B69	TC16  page B81	TC16  page B96
FX / LX  page B6-B7	GX / LX  page B20-B21	GX ...  page B28-B33	GX24  page B56-B59	GX16  page B64-B65	GX...  page B70-B73	TC16  page B82-B83	TC16  page B97
GX  page B8-B9	GX / LX  page B22-B23	GX ...  page B34-B35			GX...  page B74-B77	TC16  page B84-B85	TC16  page B98
GX  page B10-B11		GX09  page B37				TC16  page B87	TC16  page B99
Clamp block and blade  page B12-B13		GX...  page B38-B43				TC16  page B88-B89	
FX mono  page B14		GX...  page B44-B49				TC16  page B91	
GMS  page B15						TC16  page B92-B93	

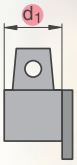
Parting off

Overview



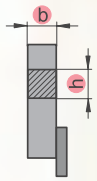
shank 0°

h / b
.625/.787 - 1.250/1.250



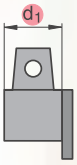
UTS 0°

d_1
40 - 63 mm



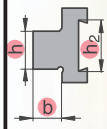
shank 0°

h / b
.625/.787 - 1.250/1.250



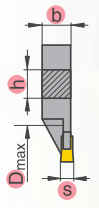
UTS 0°

d_1
40 - 63 mm

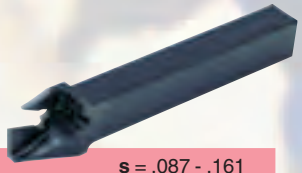


clamp block

h / b
.750/.700 - 1.500/1.450

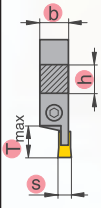


shank 0°

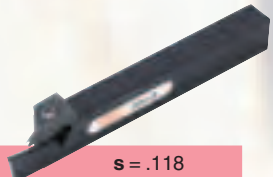


h / b
.375/.375 - 1.000/.750

s = .087 - .161
D_{max} = 1.18 - 1.97

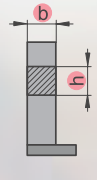


shank 0°



h / b
.630 /.472

s = .118
T_{max} = .55

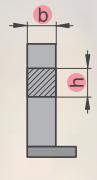


shank 90°

h / b
.750/.750 - 1.250/1.250

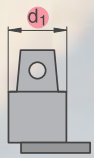
UTS 90°

d_1
40 - 63 mm



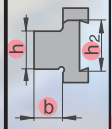
shank 90°

h / b
.750/.750 - 1.250/1.250



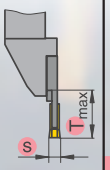
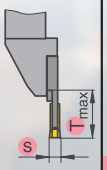
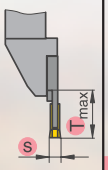
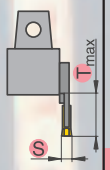
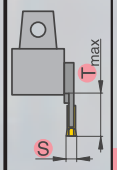
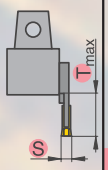
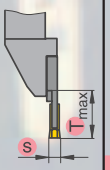
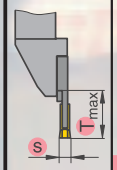
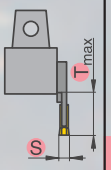
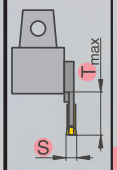
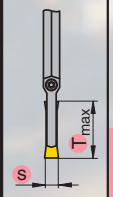
UTS 90°

d_1
40 - 63 mm



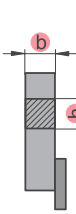
split clamp block

h / b
.750/.700 - 1.250/1.200

	**module FX short**  s = .087 - .256 T_{max} = .79 - 1.26		**module FX long**  s = .122 - .256 T_{max} = 1.38 - 1.77		**module LX**  s = .315 T_{max} = .98 - 1.77
	**module FX short**  s = .087 - .256 T_{max} = .79 - 1.26		**module FX long**  s = .122 - .256 T_{max} = 1.38 - 1.77		**module LX**  s = .315 T_{max} = .98 - 1.77
	**module GX16**  s = .087 - .256 T_{max} = .47		**module GX24**  s = .118 - .236 T_{max} = .83		
	**module GX16**  s = .087 - .256 T_{max} = .47		**module GX24**  s = .118 - .236 T_{max} = .83		
	**blade FX**  s = .087 - .382 T_{max} = .98 - 3.15		**blade GX**  s = .118 - .236 T_{max} = .83		**blade LX**  s = .315 T_{max} = 3.15

Parting off
Modular system (MSS)

shank 0°

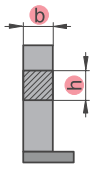


drawing illustrates right hand execution

details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description	
E20	.625	.787	MSS-**E20R**00-10-E	R
	.750	.750	MSS-**E20R**00-12-E	R
	.625	.787	MSS-**E20L**00-10-E	L
	.750	.750	MSS-**E20L**00-12-E	L
E25	1.000	1.000	MSS-**E25R**00-16-E	R
	1.000	1.000	MSS-**E25L**00-16-E	L
E32	1.250	1.000	MSS-**E32R**00-85-E	R
	1.250	1.250	MSS-**E32R**00-20-E	R
	1.250	1.000	MSS-**E32L**00-85-E	L
	1.250	1.250	MSS-**E32L**00-20-E	L

shank 90°



drawing illustrates right hand execution

details: page D3

[inch] h	[inch] b	type, ordering description	
.750	.750	MSS-**E20L**90-12-E	L
.750	.750	MSS-**E20R**90-12-E	R
1.000	1.000	MSS-**E25L**90-16-E	L
1.000	1.000	MSS-**E25R**90-16-E	R
1.250	1.000	MSS-**E32L**90-85-E	L
1.250	1.250	MSS-**E32L**90-20-E	L
1.250	1.000	MSS-**E32R**90-85-E	R
1.250	1.250	MSS-**E32R**90-20-E	R

Bgr. = assembly size

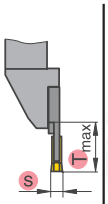
ordering example: 1 piece MSS-E25R00-16-E
2 pieces MSS-E25R25-FX4.1

attention in case of 90°:

right hand shank – left module
left hand shank – right module

FX / LX system

short FX module



drawing illustrates right hand execution

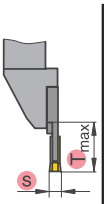
details: page D10

[inch] s	Tmax		type, ordering description
.087	.79		MSS-**E20R**20-FX2.2
.122			MSS-**E20R**20-FX3.1
.161		R	MSS-**E20R**20-FX4.1
.087	.79		MSS-**E20L**20-FX2.2
.122			MSS-**E20L**20-FX3.1
.161		L	MSS-**E20L**20-FX4.1
.087	.79		MSS-**E25R**20-FX2.2
.122	.98		MSS-**E25R**25-FX3.1
.161		R	MSS-**E25R**25-FX4.1
.201			MSS-**E25R**25-FX5.1
.256			MSS-**E25R**25-FX6.5
.087	.79		MSS-**E25L**20-FX2.2
.122	.98		MSS-**E25L**25-FX3.1
.161		L	MSS-**E25L**25-FX4.1
.201			MSS-**E25L**25-FX5.1
.256			MSS-**E25L**25-FX6.5
.122	1.26		MSS-**E32R**32-FX3.1
.161			MSS-**E32R**32-FX4.1
.201		R	MSS-**E32R**32-FX5.1
.256			MSS-**E32R**32-FX6.5
.122	1.26		MSS-**E32L**32-FX3.1
.161			MSS-**E32L**32-FX4.1
.201		L	MSS-**E32L**32-FX5.1
.256			MSS-**E32L**32-FX6.5

FX

details: page C2 - C6

long FX module



drawing illustrates right hand execution

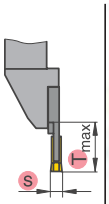
details: page D11

[inch] s	Tmax		type, ordering description
.122	1.38		MSS-**E25R**35-FX3.1
.161		R	MSS-**E25R**35-FX4.1
.201			MSS-**E25R**35-FX5.1
.256			MSS-**E25R**35-FX6.5
.122	1.38		MSS-**E25L**35-FX3.1
.161		L	MSS-**E25L**35-FX4.1
.201			MSS-**E25L**35-FX5.1
.256			MSS-**E25L**35-FX6.5
.122	1.77		MSS-**E32R**45-FX3.1
.161			MSS-**E32R**45-FX4.1
.201		R	MSS-**E32R**45-FX5.1
.256			MSS-**E32R**45-FX6.5
.122	1.77		MSS-**E32L**45-FX3.1
.161			MSS-**E32L**45-FX4.1
.201		L	MSS-**E32L**45-FX5.1
.256			MSS-**E32L**45-FX6.5

FX

details: page C2 - C6

module LX



details: page D21

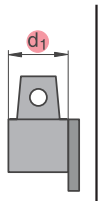
[inch] s	Tmax		type, ordering description
.315	.98		MSS-**E32N**25-LX
	1.26		MSS-**E32N**32-LX
	1.77	N	MSS-**E32N**45-LX
.315	.98		MSS-**E32N**25-LX
	1.26		MSS-**E32N**32-LX
	1.77	N	MSS-**E32N**45-LX

LX E

details: page C7

Parting off

UTS 0°

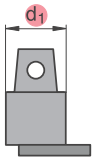


drawing illustrates right hand execution

details: page D36

Bgr.	[mm] d_1	type, ordering description
E25	40 50 63	UT40-MSS-**E25R**00 UT50-MSS-**E25R**00 UT63-MSS-**E25R**00 **R**
	40 50 63	UT40-MSS-**E25L**00 UT50-MSS-**E25L**00 UT63-MSS-**E25L**00 **L**
E32	50 63	UT50-MSS-**E32R**00 UT63-MSS-**E32R**00 **R**
	50 63	UT50-MSS-**E32L**00 UT63-MSS-**E32L**00 **L**

UTS 90°



drawing illustrates right hand execution

details: page D37

[mm] d_1	type, ordering description
40 50	UT40-MSS-**E25L**90 UT50-MSS-**E25L**90 **L**
40 50	UT40-MSS-**E25R**90 UT50-MSS-**E25R**90 **R**
63	UT63-MSS-**E32L**90 **L**
63	UT63-MSS-**E32R**90 **R**

Bgr. = assembly size

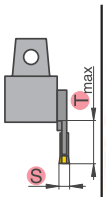
ordering example: 1 piece UT40-MSS-E25L00
2 pieces MSS-E25L25-FX4.1

attention in case of 90°:

right hand shank UTS holder – left module
left hand UTS holder – right module

FX / LX system

short FX module



drawing illustrates right hand execution

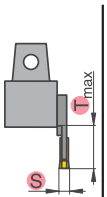
details:page D10

[inch] s	[inch] Tmax		type, ordering description
.087	.79		MSS-**E25R**20-FX2.2
.122	.98		MSS-**E25R**25-FX3.1
.161		R	MSS-**E25R**25-FX4.1
.201			MSS-**E25R**25-FX5.1
.256			MSS-**E25R**25-FX6.5
.087	.79		MSS-**E25L**20-FX2.2
.122	.98		MSS-**E25L**25-FX3.1
.161		L	MSS-**E25L**25-FX4.1
.201			MSS-**E25L**25-FX5.1
.256			MSS-**E25L**25-FX6.5
.122	1.26		MSS-**E32R**32-FX3.1
.161			MSS-**E32R**32-FX4.1
.201		R	MSS-**E32R**32-FX5.1
.256			MSS-**E32R**32-FX6.5
.122	1.26		MSS-**E32L**32-FX3.1
.161			MSS-**E32L**32-FX4.1
.201		L	MSS-**E32L**32-FX5.1
.256			MSS-**E32L**32-FX6.5

FX

details: page C2 - C5

long FX module



drawing illustrates right hand execution

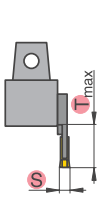
details: page D11

[inch] s	[inch] Tmax		type, ordering description
.122	1.38		MSS-**E25R**35-FX3.1
.161			MSS-**E25R**35-FX4.1
.201		R	MSS-**E25R**35-FX5.1
.256			MSS-**E25R**35-FX6.5
.122	1.38		MSS-**E25L**35-FX3.1
.161			MSS-**E25L**35-FX4.1
.201		L	MSS-**E25L**35-FX5.1
.256			MSS-**E25L**35-FX6.5
.122	1.77		MSS-**E32R**45-FX3.1
.161			MSS-**E32R**45-FX4.1
.201		R	MSS-**E32R**45-FX5.1
.256			MSS-**E32R**45-FX6.5
.122	1.77		MSS-**E32L**45-FX3.1
.161			MSS-**E32L**45-FX4.1
.201		L	MSS-**E32L**45-FX5.1
.256			MSS-**E32L**45-FX6.5

FX

details: page C3 - C5

module LX



details: page D21

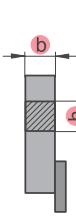
[inch] s	[inch] Tmax		type, ordering description
.315	.98		MSS-**E32N**25-LX
	1.26		MSS-**E32N**32-LX
	1.77	N	MSS-**E32N**45-LX
.315	.98		MSS-**E32N**25-LX
	1.26		MSS-**E32N**32-LX
	1.77	N	MSS-**E32N**45-LX

LX E

details: page C7

Parting off
Modular system (MSS)

shank 0°

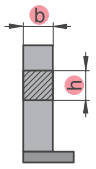


drawing illustrates right hand execution

details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description	
E20	.625	.787	MSS-**E20R**00-10-E	R
	.750	.750	MSS-**E20R**00-12-E	R
	.625	.787	MSS-**E20L**00-10-E	L
	.750	.750	MSS-**E20L**00-12-E	L
E25	1.000	1.000	MSS-**E25R**00-16-E	R
	1.000	1.000	MSS-**E25L**00-16-E	L
E32	1.250	1.000	MSS-**E32R**00-85-E	R
	1.250	1.250	MSS-**E32R**00-20-E	R
	1.250	.984	MSS-**E32L**00-85-E	L
	1.250	1.250	MSS-**E32L**00-20-E	L

shank 90°



drawing illustrates right hand execution

details: page D3

[inch] h	[inch] b	type, ordering description	
.750	.750	MSS-**E20L**90-12-E	L
.750	.750	MSS-**E20R**90-12-E	R
1.000	1.000	MSS-**E25L**90-16-E	L
1.000	1.000	MSS-**E25R**90-16-E	R
1.250	1.000	MSS-**E32L**90-85-E	L
1.250	1.250	MSS-**E32L**90-20-E	L
1.250	1.000	MSS-**E32R**90-85-E	R
1.250	1.250	MSS-**E32R**90-20-E	R

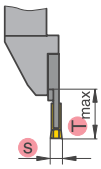
Bgr. = assembly size

ordering example: 1 piece MSS-E25R00-16-E
2 pieces MSS-E25R12-GX16-2

attention in case of 90°:

right hand shank – left module
left hand shank – right module

module GX16



drawing illustrates right hand execution

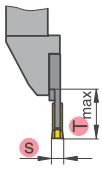
details: page D15

[inch] s	Tmax	type, ordering description
.079 - .108		MSS-**E20R**12-GX16-1
.109 - .148	.47	MSS-**E20R**12-GX16-2
.148 - .197		R MSS-**E20R**12-GX16-3
.079 - .108		MSS-**E20L**12-GX16-1
.109 - .148	.47	MSS-**E20L**12-GX16-2
.148 - .197		L MSS-**E20L**12-GX16-3
.079 - .108		MSS-**E25R**12-GX16-1
.109 - .148	.47	MSS-**E25R**12-GX16-2
.148 - .197		R MSS-**E25R**12-GX16-3
.197 - .256		MSS-**E25R**12-GX16-4
.079 - .108		MSS-**E25L**12-GX16-1
.109 - .148	.47	MSS-**E25L**12-GX16-2
.148 - .197		L MSS-**E25L**12-GX16-3
.197 - .256		MSS-**E25L**12-GX16-4
.109 - .148		MSS-**E32R**12-GX16-2
.148 - .197	.47	MSS-**E32R**12-GX16-3
.197 - .256		R MSS-**E32R**12-GX16-4
.109 - .148		MSS-**E32L**12-GX16-2
.148 - .197	.47	MSS-**E32L**12-GX16-3
.197 - .256		L MSS-**E32L**12-GX16-4

GX16

details: page C9 - C10

module GX24



drawing illustrates right hand execution

details: page D16

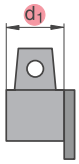
[inch] s	Tmax	type, ordering description
.109 - .148	.83	MSS-**E20R**21-GX24-2
.148 - .197		R MSS-**E20R**21-GX24-3
.109 - .148	.83	MSS-**E20L**21-GX24-2
.148 - .197		L MSS-**E20L**21-GX24-3
.109 - .148		MSS-**E25R**21-GX24-2
.148 - .197	.83	MSS-**E25R**21-GX24-3
.197 - .256		R MSS-**E25R**21-GX24-4
.109 - .148		MSS-**E25L**21-GX24-2
.148 - .197	.83	MSS-**E25L**21-GX24-3
.197 - .256		L MSS-**E25L**21-GX24-4
.109 - .148		MSS-**E32R**21-GX24-2
.148 - .197	.83	MSS-**E32R**21-GX24-3
.197 - .256		R MSS-**E32R**21-GX24-4
.109 - .148		MSS-**E32L**21-GX24-2
.148 - .197	.83	MSS-**E32L**21-GX24-3
.197 - .256		L MSS-**E32L**21-GX24-4

GX24

details: page C11

Parting off
UTS (MSS)

UTS 0°

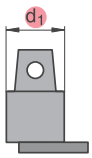


drawing illustrates right hand execution

details: page D36

Bgr.	[mm] d_1	type, ordering description
E25	40 50 63	 R UT40-MSS-**E25R**00 UT50-MSS-**E25R**00 UT63-MSS-**E25R**00
	40 50 63	 L UT40-MSS-**E25L**00 UT50-MSS-**E25L**00 UT63-MSS-**E25L**00
E32	50 63	 R UT50-MSS-**E32R**00 UT63-MSS-**E32R**00
	50 63	 L UT50-MSS-**E32L**00 UT63-MSS-**E32L**00

UTS 90°



drawing illustrates right hand execution

details: page D37

[mm] d_1	type, ordering description
40 50	 L UT40-MSS-**E25L**90 UT50-MSS-**E25L**90
40 50	 R UT40-MSS-**E25R**90 UT50-MSS-**E25R**90
63	 L UT63-MSS-**E32L**90
63	 R UT63-MSS-**E32R**90

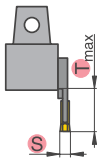
Bgr. = assembly size

ordering example: 1 piece UT40-MSS-E25L00
2 pieces MSS-E25L21-GX24-3

attention in case of 90°:

right hand shank UTS holder – left module
left hand UTS holder – right module

module GX16



drawing illustrates right hand execution

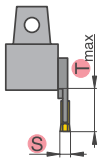
details: page D15

[inch] s	T max		type, ordering description
.079 - .108			MSS-**E25R**12-GX16-1
.109 - .148			MSS-**E25R**12-GX16-2
.148 - .197	.47	R	MSS-**E25R**12-GX16-3
.197 - .256			MSS-**E25R**12-GX16-4
.079 - .108			MSS-**E25L**12-GX16-1
.109 - .148			MSS-**E25L**12-GX16-2
.148 - .197	.47	L	MSS-**E25L**12-GX16-3
.197 - .256			MSS-**E25L**12-GX16-4
.109 - .148			MSS-**E32R**12-GX16-2
.148 - .197	.47		MSS-**E32R**12-GX16-3
.197 - .256		R	MSS-**E32R**12-GX16-4
.109 - .148			MSS-**E32L**12-GX16-2
.148 - .197	.47		MSS-**E32L**12-GX16-3
.197 - .256		L	MSS-**E32L**12-GX16-4

GX16

details: page C9 - C10

module GX24



drawing illustrates right hand execution

details: page D16

[inch] s	T max		type, ordering description
.109 - .148			MSS-**E25R**21-GX24-2
.148 - .197	.83		MSS-**E25R**21-GX24-3
.197 - .256		R	MSS-**E25R**21-GX24-4
.109 - .148			MSS-**E25L**21-GX24-2
.148 - .197	.83		MSS-**E25L**21-GX24-3
.197 - .256		L	MSS-**E25L**21-GX24-4
.109 - .148			MSS-**E32R**21-GX24-2
.148 - .197	.83		MSS-**E32R**21-GX24-3
.197 - .256		R	MSS-**E32R**21-GX24-4
.109 - .148			MSS-**E32L**21-GX24-2
.148 - .197	.83		MSS-**E32L**21-GX24-3
.197 - .256		L	MSS-**E32L**21-GX24-4

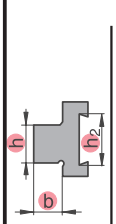
GX24

details: page C11

Parting off

Clamp block and blade

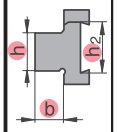
clamp block



details: page D44

h_2	[inch] h	b	type, ordering description
1.024	.750	.700	SBN 12-26K-E
1.260	1.000	.950	SBN 16-32K-E
	1.250	1.200	SBN 20-32K-E
1.811	1.250	1.200	SBN 20-46K-E
	1.500	1.450	SBN 24-46K-E

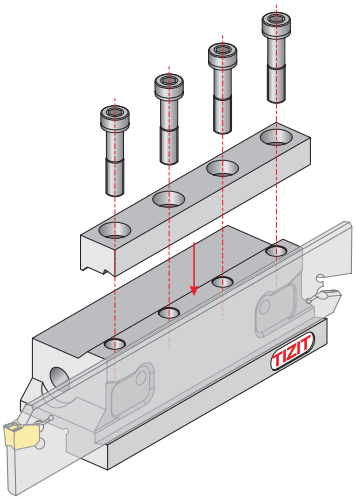
split clampblock



details: page D45

[inch] h	b	type, ordering description
.750	.700	SBN 12-26KS-E
1.000	.950	SBN 16-32KS-E
1.250	1.200	SBN 20-32KS-E

ordering example: 1 piece SBN 20-32K-E
2 pieces XLCFN 3204 M41 FX

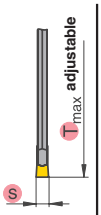


split clamp block

For wedge clamp systems or restricted areas.

FX / GX24 / LX system

blade FX



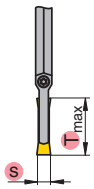
details: page D41

[inch] s	[inch] Tmax	type, ordering description
.087	.98	XLCEN **26**02 J22 FX
.122	1.38	XLCFN **26**03 J31 FX
.161	1.57	XLCFN **26**04 J41 FX
.087	1.18	XLCEN **32**02 M22 FX
.122	1.97	XLCFN **32**03 M31 FX
.161		XLCFN **32**04 M41 FX
.201	2.16	XLCFN **32**05 M51 FX
.256		XLCFN **32**06 M65 FX
.323	3.15	XLCEN **46**08 S82 FX
.382		XLCEN **46**09 S97 FX

FX

details: page C2 - C6

blade GX24



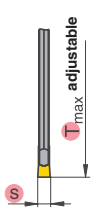
details: page D42

[inch] s	[inch] Tmax	type, ordering description
.109-.148	.83	XLCFN **32**03-GX24-2S
.148-.197		XLCFN **32**04-GX24-3S
.197-.256		XLCFN **32**06-GX24-4S

GX24

details: page C11

blade LX



details: page D43

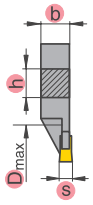
[inch] s	[inch] Tmax	type, ordering description
.315	3.15	XLCEN **46**08 LX

LX E

details: page C7

Parting off
Monobloc tool FX

monobloc holder 0°



drawing illustrates right hand execution

details: page D8 - D9

[inch] s	h	b	D_{max}	type, ordering description
.087	.375	.375	1.18	XLCER 06 M22 FX-E
	.500	.500		XLCER 08 F22 FX-E
	.500	.500		R XLCER 08 M22 FX-E
	.563	.563		XLCER 09 M22 FX-E
	.625	.625		XLCER 10 H22 FX-E
.122	.625	.625	1.18	XLCFR 10 H31 FX-E
	.750	.750	1.57	XLCFR 12 K31 FX-E
	1.000	.750	1.97	XLCFR 64 M31 FX-E
.161	.750	.750	1.57	XLCFR 12 K41 FX-E
	1.000	.750	1.97	XLCFR 64 M41 FX-E
.087	.375	.375	1.18	XLCEL 06 M22 FX-E
	.500	.500		XLCEL 08 F22 FX-E
	.500	.500		L XLCEL 08 M22 FX-E
	.563	.563		XLCEL 09 M22 FX-E
	.625	.625		XLCEL 10 H22 FX-E
.122	.625	.625	1.18	XLCFL 10 H31 FX-E
	.750	.750	1.57	XLCFL 12 K31 FX-E
	1.000	.750	1.97	XLCFL 64 M31 FX-E
.161	.750	.750	1.57	XLCFL 12 K41 FX-E
	1.000	.750	1.97	XLCFL 64 M41 FX-E

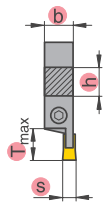
ordering example: 1 piece XLCFR 64 M41 FX-E

FX

details: page C2 - C6

Parting off
GMS system

GMS - monobloc holder 0°



drawing illustrates right hand execution

details: page D7

[inch] h	b	s	Tmax	type, ordering description
.630	.472	.118	.55	CLCDR 1612 K30 R
.630	.472	.118	.55	CLCDL 1612 K30 L

ordering example: 1 piece CLCDR 1612 K30

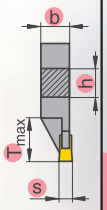
GMS-insert (= Goldmaster coated HSS parting insert)

details: page C23

Grooving and turning (external)

Overview

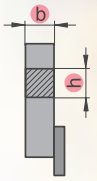
monobloc holder 0°



h / b
.375/.375

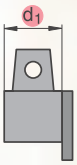
s = .079 - .148
T_{max} = .27

shank 0°



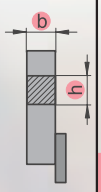
h / b
.625/.787 - 1.250/1.250

UTS 0°



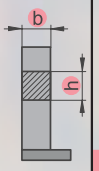
d_1
40 - 63 mm

shank 0°



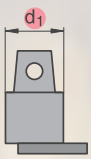
h / b
.500/.500 - .625/.625

shank 90°

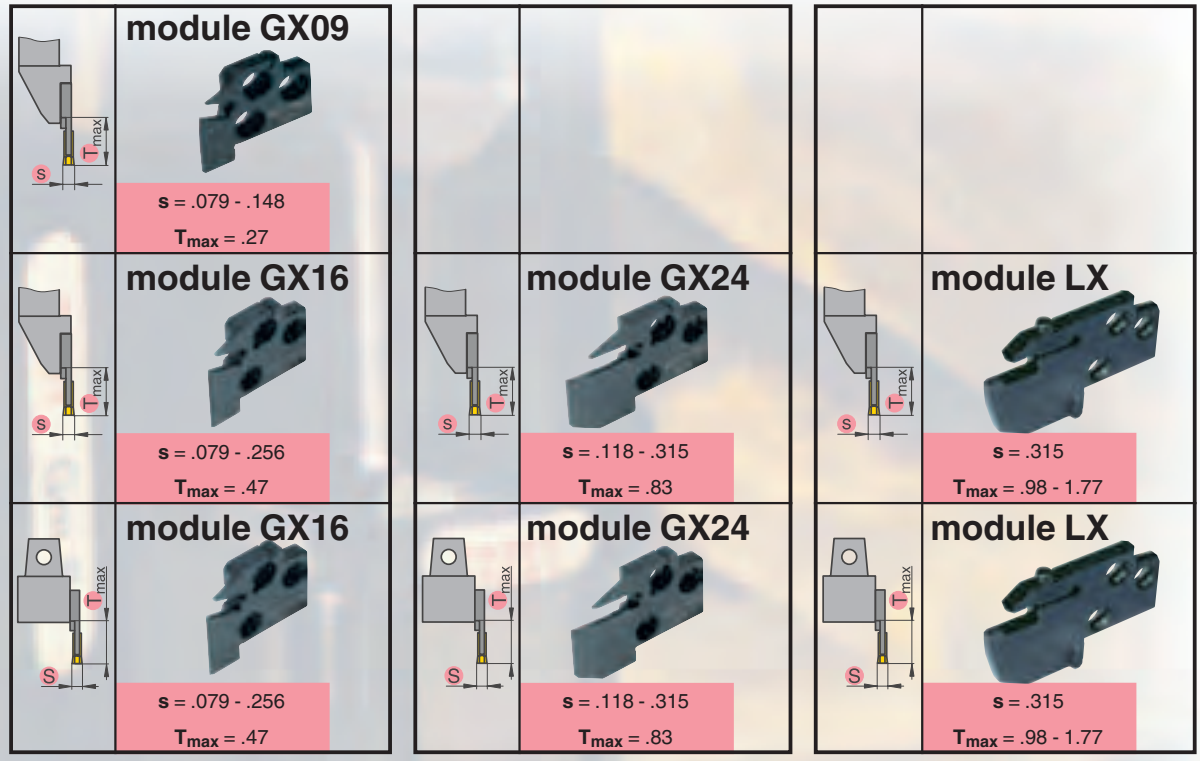


h / b
.750/.750 - 1.250/1.250

UTS 90°



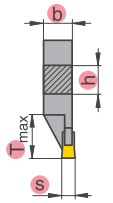
d_1
40 - 63 mm



Grooving and turning (external)

Monobloc tool

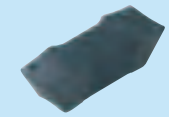
monobloc holder 0°



drawing illustrates right hand execution

details: page D6

Bgr.	[inch] h	b	s	T_{max}	type, ordering description
E10	.375	.375	.77 - .138	.27	**E10R**00-06-E R
	.375	.375	.77 - .138	.27	**E10L**00-06-E L



GX09

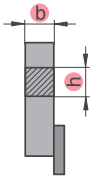
details: page C8

GX09R

details: page C12

Modular system (MSS)

shank 0°



drawing illustrates right hand execution

details: page D2

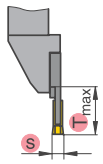
Bgr.	[inch] h	b	type, ordering description
E12	.500	.500	MSS-**E12R**00-08-E R
	.500	.500	MSS-**E12L**00-08-E L
E16	.625	.625	MSS-**E16R**00-10-E R
	.625	.625	MSS-**E16L**00-10-E L

Bgr. = assembly size

ordering example:

1 piece MSS-E12R00-08-E
2 pieces MSS-E12R07-GX09-2

module GX09

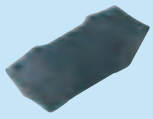


drawing illustrates right hand execution

details: page D14

[inch] s	[inch] T_{max}	type, ordering description	
.079 - .108 .109 - .148	.27	MSS-**E12R**07-GX09-1 MSS-**E12R**07-GX09-2	**R**
.079 - .108 .109 - .148	.27	MSS-**E12L**07-GX09-1 MSS-**E12L**07-GX09-2	**L**
.079 - .108 .109 - .148	.27	MSS-**E16R**07-GX09-1 MSS-**E16R**07-GX09-2	**R**
.079 - .108 .109 - .148	.27	MSS-**E16L**07-GX09-1 MSS-**E16L**07-GX09-2	**L**

GX09



details: page C8

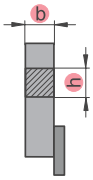
GX09R

details: page C12

Grooving and turning (external)

Modular system (MSS)

shank 0°

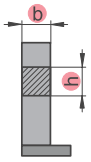


drawing illustrates right hand execution

details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description	
E20	.625	.787	MSS-**E20R**00-10-E	R
	.750	.750	MSS-**E20R**00-12-E	R
	.625	.787	MSS-**E20L**00-10-E	L
	.750	.750	MSS-**E20L**00-12-E	L
E25	1.000	1.000	MSS-**E25R**00-16-E	R
	1.000	1.000	MSS-**E25L**00-16-E	L
E32	1.250	1.000	MSS-**E32R**00-85-E	R
	1.250	1.250	MSS-**E32R**00-20-E	R
	1.250	1.000	MSS-**E32L**00-85-E	L
	1.250	1.250	MSS-**E32L**00-20-E	L

shank 90°



drawing illustrates right hand execution

details: page D3

[inch] h	[inch] b	type, ordering description	
.750	.750	MSS-**E20L**90-12-E	L
.750	.750	MSS-**E20R**90-12-E	R
1.000	1.000	MSS-**E25L**90-16-E	L
1.000	1.000	MSS-**E25R**90-16-E	R
1.250	1.000	MSS-**E32L**90-85-E	L
1.250	1.250	MSS-**E32L**90-20-E	L
1.250	1.000	MSS-**E32R**90-85-E	R
1.250	1.250	MSS-**E32R**90-20-E	R

Bgr. = assembly size

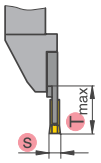
ordering example: 1 piece MSS-E20L00-12-E
2 pieces MSS-E20L21-GX24-2

attention in case of 90°:

right hand shank – left module
left hand shank – right module

GX16 / GX24 / LX system

module GX16



drawing illustrates right hand execution

details: page D15

[inch] s	Tmax		type, ordering description
.079 - .108	.47		MSS-**E20R**12-GX16-1
.109 - .148			MSS-**E20R**12-GX16-2
.148 - .197		R	MSS-**E20R**12-GX16-3
.079 - .108	.47		MSS-**E20L**12-GX16-1
.109 - .148			MSS-**E20L**12-GX16-2
.148 - .197		L	MSS-**E20L**12-GX16-3
.079 - .108	.47		MSS-**E25R**12-GX16-1
.109 - .148			MSS-**E25R**12-GX16-2
.148 - .197		R	MSS-**E25R**12-GX16-3
.197 - .256			MSS-**E25R**12-GX16-4
.079 - .108	.47		MSS-**E25L**12-GX16-1
.109 - .148			MSS-**E25L**12-GX16-2
.148 - .197		L	MSS-**E25L**12-GX16-3
.197 - .256			MSS-**E25L**12-GX16-4
.109 - .148	.47		MSS-**E32R**12-GX16-2
.148 - .197			MSS-**E32R**12-GX16-3
.197 - .256		R	MSS-**E32R**12-GX16-4
.109 - .148	.47		MSS-**E32L**12-GX16-2
.148 - .197			MSS-**E32L**12-GX16-3
.197 - .256		L	MSS-**E32L**12-GX16-4

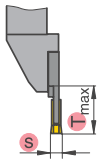
GX16

page C9 - C10

GX16R

page C13

module GX24



drawing illustrates right hand execution

details: page D16

[inch] s	Tmax		type, ordering description
.109 - .148	.83		MSS-**E20R**21-GX24-2
.148 - .197		R	MSS-**E20R**21-GX24-3
.109 - .148	.83		MSS-**E20L**21-GX24-2
.148 - .197		L	MSS-**E20L**21-GX24-3
.109 - .148	.83		MSS-**E25R**21-GX24-2
.148 - .197			MSS-**E25R**21-GX24-3
.197 - .256		R	MSS-**E25R**21-GX24-4
.315			MSS-**E25R**21-GX24-5
.109 - .148	.83		MSS-**E25L**21-GX24-2
.148 - .197			MSS-**E25L**21-GX24-3
.197 - .256		L	MSS-**E25L**21-GX24-4
.315			MSS-**E25L**21-GX24-5
.109 - .148	.83		MSS-**E32R**21-GX24-2
.148 - .197			MSS-**E32R**21-GX24-3
.197 - .256		R	MSS-**E32R**21-GX24-4
.109 - .148	.83		MSS-**E32L**21-GX24-2
.148 - .197			MSS-**E32L**21-GX24-3
.197 - .256		L	MSS-**E32L**21-GX24-4

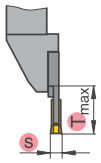
GX24E

page C11

GX24R

page C14

module LX



details: page D21

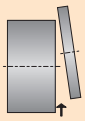
[inch] s	Tmax		type, ordering description
.315	.98		MSS-**E32N**25-LX
	1.26		MSS-**E32N**32-LX
	1.77	N	MSS-**E32N**45-LX
.315	.98		MSS-**E32N**25-LX
	1.26		MSS-**E32N**32-LX
	1.77	N	MSS-**E32N**45-LX

LX E

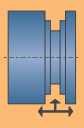
page C7

LX R

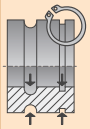
page C7



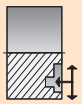
page B2-B15



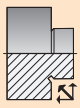
page B16-B23



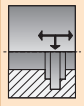
page B24-B49



page B50-B59

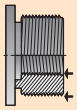


page B60-B65



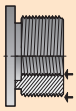
page B66-B77

Turning



page B78-B93

Milling

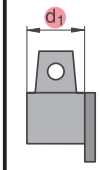


page B94-B99

Grooving and turning (external)

UTS (MSS)

UTS 0°

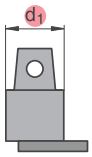


drawing illustrates right hand execution

details: page D36

Bgr.	[mm] d_1	type, ordering description
E25	40 50 63	UT40-MSS-**E25R**00 UT50-MSS-**E25R**00 UT63-MSS-**E25R**00 **R**
	40 50 63	UT40-MSS-**E25L**00 UT50-MSS-**E25L**00 UT63-MSS-**E25L**00 **L**
E32	50 63	UT50-MSS-**E32R**00 UT63-MSS-**E32R**00 **R**
	50 63	UT50-MSS-**E32L**00 UT63-MSS-**E32L**00 **L**

UTS 90°



drawing illustrates right hand execution

details: page D37

[mm] d_1	type, ordering description
40 50	UT40-MSS-**E25L**90 UT50-MSS-**E25L**90 **L**
40 50	UT40-MSS-**E25R**90 UT50-MSS-**E25R**90 **R**
63	UT63-MSS-**E32L**90 **L**
63	UT63-MSS-**E32R**90 **R**

Bgr. = assembly size

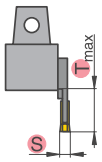
ordering example: 1 piece UT50-MSS-E25R90
2 pieces MSS-E25L12-GX16-2

attention in case of 90°:

right hand shank UTS holder – left module
left hand UTS holder – right module

GX16 / GX24 / LX system

module GX16



drawing illustrates right hand execution

details: page D15

[inch] s	Tmax		type, ordering description
.079 - .108	.47	R	MSS-**E25R**12-GX16-1
.109 - .148			MSS-**E25R**12-GX16-2
.148 - .197			MSS-**E25R**12-GX16-3
.197 - .256			MSS-**E25R**12-GX16-4
.079 - .108	.47	L	MSS-**E25L**12-GX16-1
.109 - .148			MSS-**E25L**12-GX16-2
.148 - .197			MSS-**E25L**12-GX16-3
.197 - .256			MSS-**E25L**12-GX16-4
.109 - .148	.47	R	MSS-**E32R**12-GX16-2
.148 - .197			MSS-**E32R**12-GX16-3
.197 - .256			MSS-**E32R**12-GX16-4
.109 - .148	.47	L	MSS-**E32L**12-GX16-2
.148 - .197			MSS-**E32L**12-GX16-3
.197 - .256			MSS-**E32L**12-GX16-4

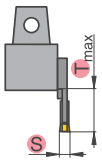
GX16

page C9 - C10

GX16R

page C13

module GX24



drawing illustrates right hand execution

details: page D16

[inch] s	Tmax		type, ordering description
.109 - .148	.83	R	MSS-**E25R**21-GX24-2
.148 - .197			MSS-**E25R**21-GX24-3
.197 - .256			MSS-**E25R**21-GX24-4
.315			MSS-**E25R**21-GX24-5
.109 - .148	.83	L	MSS-**E25L**21-GX24-2
.148 - .197			MSS-**E25L**21-GX24-3
.197 - .256			MSS-**E25L**21-GX24-4
.315			MSS-**E25L**21-GX24-5
.109 - .148	.83	R	MSS-**E32R**21-GX24-2
.148 - .197			MSS-**E32R**21-GX24-3
.197 - .256			MSS-**E32R**21-GX24-4
.109 - .148	.83	L	MSS-**E32L**21-GX24-2
.148 - .197			MSS-**E32L**21-GX24-3
.197 - .256			MSS-**E32L**21-GX24-4

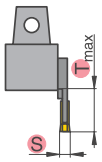
GX24E

page C11

GX24R

page C14

module LX



details: page D21

[inch] s	Tmax		type, ordering description
.315	.98	N	MSS-**E32N**25-LX
	1.26		MSS-**E32N**32-LX
	1.77		MSS-**E32N**45-LX
.315	.98	N	MSS-**E32N**25-LX
	1.26		MSS-**E32N**32-LX
	1.77		MSS-**E32N**45-LX

LX E

page C7

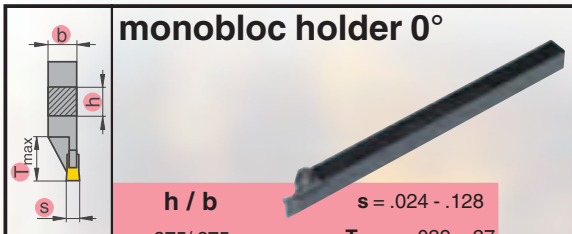
LX R

page C7

Circlip and O-ring grooves

Overview

monobloc holder 0°



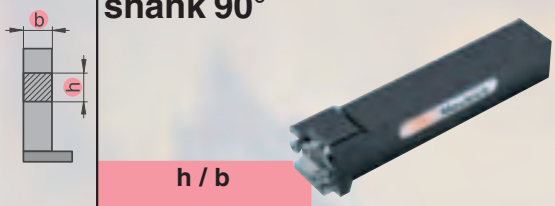
h / b
.375/.375

s = .024 - .128
T_{max} = .029 - .27

shank 0°

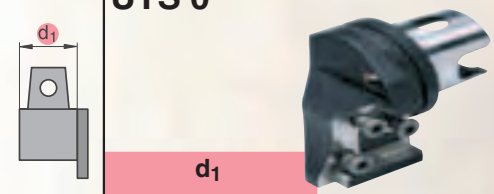
h / b
.500/.500 - 1.250/1.250

shank 90°



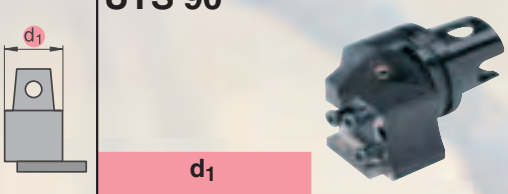
h / b
.750/.750 - 1.250/1.250

UTS 0°



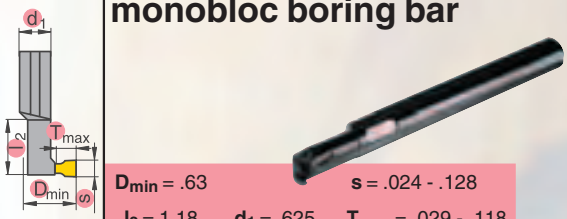
d_1
40 - 63 mm

UTS 90°



d_1
40 - 63 mm

monobloc boring bar



D_{min} = .63
s = .024 - .128
l_2 = 1.18
d_1 = .625
T_{max} = .029 - .118

boring bar 1.5D

d_1 = .750 - 1.500
l_2 = .94 - 2.36

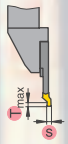
boring bar 2.5D

d_1 = .750 - 2.000
l_2 = 1.57 - 3.94

UTS boring bar

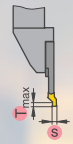
d_1 = 40 - 63 mm
l_2 = 1.26 - 3.15

module GX09



s = .024 - .128
T_{max} = .029 - .27

module GX16

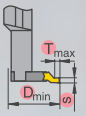


s = .024 - .207
T_{max} = .029 -.47

module GX16

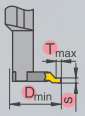
s = .024 - .207
T_{max} = .029 -.47

module GX09



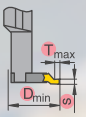
s = .024 - .128
T_{max} = .029 - 2.36
D_{min} = .79 - 1.26

module GX16



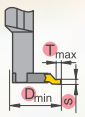
s = .024 - .207
T_{max} = .029 - .39
D_{min} = 1.57 - 1.97

module GX09



s = .024 - .128
T_{max} = .029 - 2.36
D_{min} = .79 - 1.26

module GX16

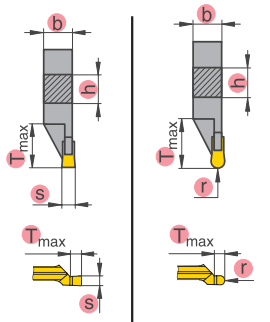


s = .024 - .207
T_{max} = .029 - .39
D_{min} = 1.57 - 1.97

Circlip and O-ring grooves (external)

Modular system (MSS)

monobloc holder 0°



drawing illustrates right hand execution

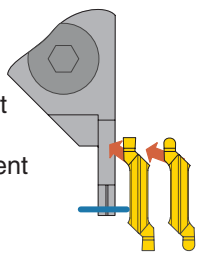
details: page D6

Bgr.	[inch] h	b	s	T_{max}	r	T_{max}	type, ordering description
E10	.375	.375	.024	.029	.031	.070	**E10R**00-06-E **R**
			.031	.037			
			.035	.041			
			.039	.045			
			.047	.053			
			.055	.060			
			.067	.072			
			.077	.27	.039	.27	
			.088	.27	.047	.27	
			.108	.27			
			.128	.27			
	.375	.375	.024	.029	.031	.070	**E10L**00-06-E **L**
			.031	.037			
			.035	.041			
			.039	.045			
			.047	.053			
			.055	.060			
			.067	.072			
			.077	.27	.039	.27	
			.088	.27	.047	.27	
			.108	.27			
			.128	.27			

Bgr. = assembly size

ordering example: 1 piece E10R00-06-E

attention: When using rh or lh insert, the insert support seat requires modification to prevent damage to insert.

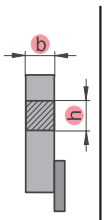


GX09-1S...R/L	GX09-.S...N	GX09-1R...R/L	GX09-.R...N
			
details: page C16	details: page C17	details: page C20	details: page C20

Circlip and O-ring grooves (external)

Modular system (MSS)

shank 0°



drawing illustrates right hand execution

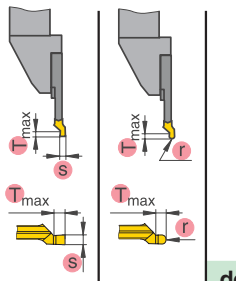
details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description
E12	.500	.500	MSS-**E12R**00-08-E **R**
	.500	.500	MSS-**E12L**00-08-E **L**
E16	.625	.625	MSS-**E16R**00-10-E **R**
	.625	.625	MSS-**E16L**00-10-E **L**

Bgr. = assembly size

ordering example: 1 piece MSS-E16L00-10-E
2 pieces MSS-E16L02-GX09-1

module GX09



drawing illustrates right hand execution

details: page D12

s	Tmax	r	Tmax	type, ordering description
.024 .031 .035 .039 .047 .055 .067	.029 .037 .041 .045 .053 .060 .072	.031	.070	MSS-**E12R**02-GX09-1 R
.024 .031 .035 .039 .047 .055 .067	.029 .037 .041 .045 .053 .060 .072	.031	.070	MSS-**E12L**02-GX09-1 L
.024 .031 .035 .039 .047 .055 .067	.029 .037 .041 .045 .053 .060 .072	.031	.070	MSS-**E16R**02-GX09-1 R
.024 .031 .035 .039 .047 .055 .067	.029 .037 .041 .045 .053 .060 .072	.031	.070	MSS-**E16L**02-GX09-1 L

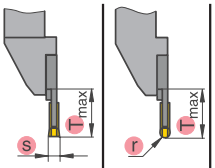
GX09-1S...R/L

details: page C16

GX09-1R...R/L

details: page C20

module GX09

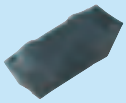


drawing illustrates right hand execution

details: page D14

s	Tmax	r	Tmax	type, ordering description
.077 .088 .108 .128	.27	.039 .047	.27	MSS-**E12R**07-GX09-1 R
.108 .128	.27			MSS-**E12R**07-GX09-2
.077 .088 .108 .128	.27	.039 .047	.27	MSS-**E12L**07-GX09-1 L
.108 .128	.27			MSS-**E12L**07-GX09-2
.077 .088 .108 .128	.27	.039 .047	.27	MSS-**E16R**07-GX09-1 R
.108 .128	.27			MSS-**E16R**07-GX09-2
.077 .088 .108 .128	.27	.039 .047	.27	MSS-**E16L**07-GX09-1 L
.108 .128	.27			MSS-**E16L**07-GX09-2

GX09-.S...N



details: page C17

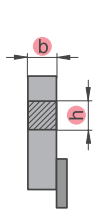
GX09-.R...N

details: page C20

Circlip and O-ring grooves (external)

Modular system (MSS)

shank 0°

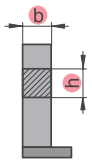


drawing illustrates right hand execution

details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description
E20	.625 .750	.787 .750	MSS-**E20R**00-10-E MSS-**E20R**00-12-E **R**
E20	.625 .750	.787 .750	MSS-**E20L**00-10-E MSS-**E20L**00-12-E **L**
E25	1.000	1.000	MSS-**E25R**00-16-E **R**
E25	1.000	1.000	MSS-**E25L**00-16-E **L**

shank 90°



drawing illustrates right hand execution

details: page D3

[inch] h	[inch] b	type, ordering description
.750	.750	MSS-**E20L**90-12-E **L**
.750	.750	MSS-**E20R**90-12-E **R**
1.000	1.000	MSS-**E25L**90-16-E **L**
1.000	1.000	MSS-**E25R**90-16-E **R**

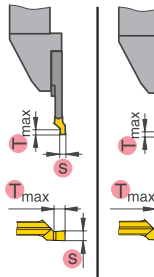
Bgr. = assembly size

ordering example: 1 piece MSS-E25R00-16-E
2 pieces MSS-E25R12-GX16-3

attention in case of 90°:

right hand shank – left module
left hand shank – right module

module GX16



drawing illustrates right hand execution

details: page D13

s	T_{max}	r	T_{max}	type, ordering description
.024 .031 .035 .039 .047 .055 .067 .077 .088	.029 .037 .041 .045 .053 .060 .072 .081 .093	.031 .039 .047	.070 .086 .101	MSS-**E20R**03-GX16-2 **R**
.024 ↓ .088	.029 ↓ .093	.031 .039 .047	.070 .086 .101	MSS-**E20L**03-GX16-2 **L**
.024 ↓ .088	.029 ↓ .093	.031 .039 .047	.070 .086 .101	MSS-**E25R**03-GX16-2 **R**
.024 ↓ .088	.029 ↓ .093	.031 .039 .047	.070 .086 .101	MSS-**E25L**03-GX16-2 **L**

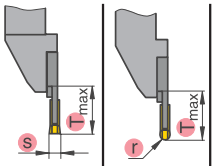
GX16-2S...R/L

details: page C18

GX16-2R...R/L

details: page C21

module GX16

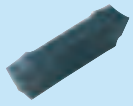


drawing illustrates right hand execution

details: page D15

s	T_{max}	r	T_{max}	type, ordering description
.108 .128 .167 .207	.47	.059	.47	MSS-**E20R**12-GX16-2 **R**
.167 .207	.47	.079 .098	.47	MSS-**E20R**12-GX16-3
.108 .128 .167 .207	.47	.059	.47	MSS-**E20L**12-GX16-2 **L**
.167 .207	.47	.079 .098	.47	MSS-**E20L**12-GX16-3
.108 .128 .167 .207	.47	.059	.47	MSS-**E25R**12-GX16-2 **R**
.167 .207	.47	.079 .098	.47	MSS-**E25R**12-GX16-3
.207	.47	.118	.47	MSS-**E25R**12-GX16-4
.108 .128 .167 .207	.47	.059	.47	MSS-**E25L**12-GX16-2 **L**
.167 .207	.47	.079 .098	.47	MSS-**E25L**12-GX16-3
.207	.47	.118	.47	MSS-**E25L**12-GX16-4

GX16-.S...N



details: page C19

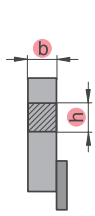
GX16-.R...N

details: page C21

Circlip and O-ring grooves (external)

Modular system (MSS)

shank 0°

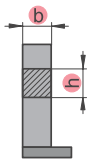


drawing illustrates right hand execution

details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description
E32	1.250	1.000	MSS-**E32R**00-85-E
	1.250	1.250	MSS-**E32R**00-20-E
			R
	1.250	1.000	MSS-**E32L**00-85-E
	1.250	1.250	MSS-**E32L**00-20-E
			L

shank 90°



drawing illustrates right hand execution

details: page D3

[inch] h	[inch] b	type, ordering description
1.250	1.000	MSS-**E32L**90-85-E
1.250	1.250	MSS-**E32L**90-20-E
		L
1.250	1.000	MSS-**E32R**90-85-E
1.250	1.250	MSS-**E32R**90-20-E
		R

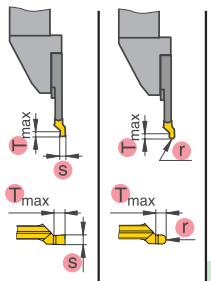
Bgr. = assembly size

ordering example: 1 piece MSS-E32R00-85-E
2 pieces MSS-E32R03-GX16-2

attention in case of 90°:

right hand shank – left module
left hand shank – right module

module GX16

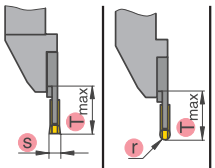


drawing illustrates right hand execution

details: page D13

s	Tmax	r	Tmax	type, ordering description
.024 .031 .035 .039 .047 .055 .067 .077 .088	.029 .037 .041 .045 .053 .060 .072 .081 .093	.031 .039 .047	.070 .086 .101	MSS-**E32**R03-GX16-2 **R**
.024 .031 .035 .039 .047 .055 .067 .077 .088	.029 .037 .041 .045 .053 .060 .072 .081 .093	.031 .039 .047	.070 .086 .101	MSS-**E32L**03-GX16-2 **L**

module GX16



drawing illustrates right hand execution

details: page D15

s	Tmax	r	Tmax	type, ordering description
.108 .128 .167 .207	.47	.059	.47	MSS-**E32R**12-GX16-2 **R**
.167 .207	.47	.079 .098	.47	MSS-**E32R**12-GX16-3
.207	.47	.118	.47	MSS-**E32R**12-GX16-4
.108 .128 .167 .207	.47	.059	.47	MSS-**E32L**12-GX16-2 **L**
.167 .207	.47	.079 .098	.47	MSS-**E32L**12-GX16-3
.207	.47	.118	.47	MSS-**E32L**12-GX16-4

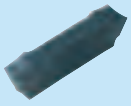
GX16-2S...R/L

details: page C18

GX16-2R...R/L

details: page C21

GX16-.S...N



details: page C19

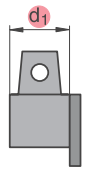
GX16-.R...N

details: page C21

Circlip and O-ring grooves (external)

UTS (MSS)

UTS 0°

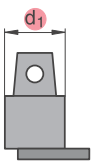


drawing illustrates right hand execution

details: page D36

Bgr.	[mm] d_1	type, ordering description
E25	40 50 63	UT40-MSS-**E25R**00 UT50-MSS-**E25R**00 **R** UT63-MSS-**E25R**00
	40 50 63	UT40-MSS-**E25L**00 UT50-MSS-**E25L**00 **L** UT63-MSS-**E25L**00
E32	50 63	UT50-MSS-**E32R**00 UT63-MSS-**E32R**00 **R**
	50 63	UT50-MSS-**E32L**00 UT63-MSS-**E32L**00 **L**

UTS 90°



drawing illustrates right hand execution

details: page D37

[mm] d_1	type, ordering description
40 50	UT40-MSS-**E25L**90 UT50-MSS-**E25L**90 **L**
40 50	UT40-MSS-**E25R**90 UT50-MSS-**E25R**90 **R**
63	UT63-MSS-**E32L**90 **L**
63	UT63-MSS-**E32R**90 **R**

Bgr. = assembly size

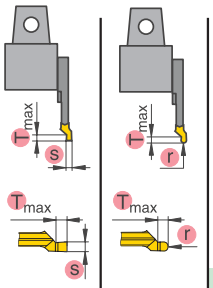
ordering example: 1 piece UT50-MSS-E25L00
2 pieces MSS-E20L03-GX16-2

attention in case of 90°:

right hand shank UTS holder – left module
left hand UTS holder – right module

GX16 system

module GX16



drawing illustrates right hand execution

details: page D13

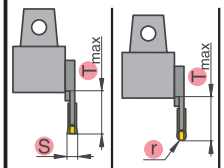
s	Tmax	r	Tmax	type, ordering description
.024 .031 .035 .039 .047 .055 .067 .077 .088	.029 .037 .041 .045 .053 .060 .072 .081 .093	.031 .039 .047	.070 .086 .101 .070	MSS-**E25R**03-GX16-2 R
.024 ↓ .088	.029 ↓ .093	.031 .039 .047	.086 .101 .070	MSS-**E25L**03-GX16-2 L
.024 ↓ .088	.029 ↓ .093	.031 .039 .047	.086 .101 .070	MSS-**E32R**03-GX16-2 R
.024 ↓ .088	.029 ↓ .093	.031 .039 .047	.086 .101 .070	MSS-**E32L**03-GX16-2 L

GX16-2S...R/L → **GX16-2R...R/L**

details: page C18

details: page C21

module GX16

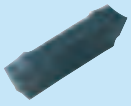


drawing illustrates right hand execution

details: page D15

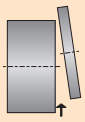
s	Tmax	r	Tmax	type, ordering description
.108 .128 .167 .207	.47	.059	.47	MSS-**E25R**12-GX16-2 R
.167 .207	.47	.079 .098	.47	MSS-**E25R**12-GX16-3
.207	.47	.118	.47	MSS-**E25R**12-GX16-4
.108 .128 .167 .207	.47	.059	.47	MSS-**E25L**12-GX16-2 L
.167 .207	.47	.079 .098	.47	MSS-**E25L**12-GX16-3
.207	.47	.118	.47	MSS-**E25L**12-GX16-4
.108 .128 .167 .207	.47	.059	.47	MSS-**E32R**12-GX16-2 R
.167 .207	.47	.079 .098	.47	MSS-**E32R**12-GX16-3
.207	.47	.118	.47	MSS-**E32R**12-GX16-4
.108 .128 .167 .207	.47	.059	.47	MSS-**E32L**12-GX16-2 L
.167 .207	.47	.079 .098	.47	MSS-**E32L**12-GX16-3
.207	.47	.118	.47	MSS-**E32L**12-GX16-4

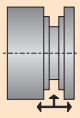
GX16-.S...N → **GX16-.R...N**

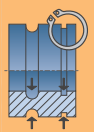


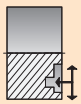
details: page C19

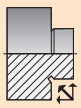
details: page C21

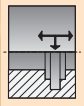

page B2-B15


page B16-B23

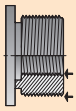

page B24-B49


page B50-B59

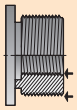

page B60-B65


page B66-B77

Turning


page B78-B93

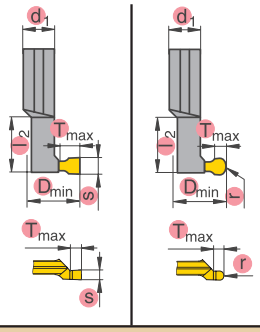
Milling


pagp B78-B93

Circlip and O-ring grooves (internal)
Modular system (MSS)

page B2-B15
page B16-B23
page B24-B49
page B50-B59
page B60-B65
page B66-B77
Turning
page B78-B93
Milling
page B94-B99

monobloc boring bar



drawing illustrates right hand execution

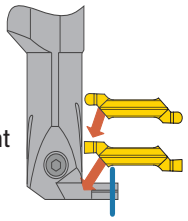
details: page D23

Bgr.	[inch] D_{min}	l_2	d_1	s	T_{max}	r	T_{max}	type, ordering description
I12	.63	1.18	.625	.024	.029	.031	.070	**I12R**90-2.5D-GX09-E **R**
				.031	.037			
				.035	.041			
				.039	.045			
				.047	.053			
				.055	.060			
				.067	.072			
				.077	.118	.039	.118	
				.088	.118	.047	.118	
				.108	.118			
				.128	.118			
	.63	1.18	.625	.024	.029	.031	.070	**I12L**90-2.5D-GX09-E **L**
				.031	.037			
				.035	.041			
				.039	.045			
				.047	.053			
				.055	.060			
				.067	.072			
				.077	.118	.039	.118	
				.088	.118	.047	.118	
				.108	.118			
				.128	.118			

Bgr. = assembly size

ordering example:
1 piece I12R90-2.5D-GX09-E

attention: When using rh or lh insert, the insert support seat requires modification to prevent damage to insert.

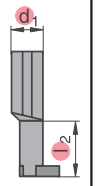


GX09-1S...R/L	GX09-.S...N	GX09-1R...R/L	GX09-.R...N
			
details: page C16	details: page C17	details: page C20	details: page C20

Circlip and O-ring grooves (internal)

Modular system (MSS)

boring bar 1.5D

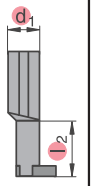


drawing illustrates right hand execution

details: page D24

Bgr.	[inch] l_2	[inch] d_1	type, ordering description
I16	.94	.750	MSS-**I16R**90-1.5D-E **R**
	.94	.750	MSS-**I16L**90-1.5D-E **L**
I20	1.18	.750	MSS-**I20R**90-1.5D-E **R**
	1.18	.750	MSS-**I20L**90-1.5D-E **L**

boring bar 2. 5D



drawing illustrates right hand execution

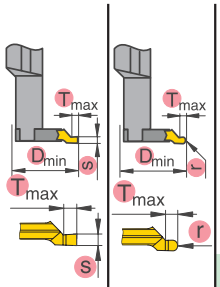
details: page D25

[inch] l_2	[inch] d_1	type, ordering description
1.57	.750	MSS-**I16R**90-2.5D-E **R**
1.57	.750	MSS-**I16L**90-2.5D-E **L**
1.97	1.000	MSS-**I20R**90-2.5D-E **R**
1.97	1.000	MSS-**I20L**90-2.5D-E **L**

Bgr. = assembly size

ordering example: 1 piece MSS-I20R90-2.5D-E
2 pieces MSS-I20R02-GX09-1

module GX09



drawing illustrates right hand execution

details: page D26

[inch]					
D_{min}	s	T_{max}	r	T_{max}	type, ordering description
.79	.024 .031 .035 .039 .047 .055 .067	.029 .037 .041 .045 .053 .060 .072	.031	.070	MSS-**I16R**02-GX09-1 **R**
.79	.024 ↓ .067	.029 ↓ .072	.031	.070	MSS-**I16L**02-GX09-1 **L**
.98	.024 ↓ .067	.029 ↓ .072	.031	.070	MSS-**I20R**02-GX09-1 **R**
.98	.024 ↓ .067	.029 ↓ .072	.031	.070	MSS-**I20L**02-GX09-1 **L**

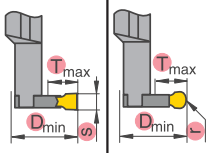
GX09-1S...R/L

details: page C16

GX09-1R...R/L

details: page C20

module GX09

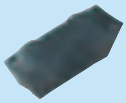


drawing illustrates right hand execution

details: page D28

[inch]					
D_{min}	s	T_{max}	r	T_{max}	type, ordering description
.79	.077 .088 .108 .128	.157	.039 .047	.157	MSS-**I16R**04-GX09-1 **R**
	.108 .128	.157			MSS-**I16R**04-GX09-2
.79	.077 .088 .108 .128	.157	.039 .047	.157	MSS-**I16L**04-GX09-1 **L**
	.108 .128	.157			MSS-**I16L**04-GX09-2
.98	.077 .088 .108 .128	.197	.039 .047	.197	MSS-**I20R**05-GX09-1 **R**
	.108 .128	.197			MSS-**I20R**05-GX09-2
.98	.077 .088 .108 .128	.197	.039 .047	.197	MSS-**I20L**05-GX09-1 **L**
	.108 .128	.197			MSS-**I20L**05-GX09-2

GX09-.S...N



details: page C17

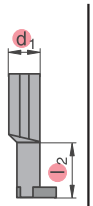
GX09-.R...N

details: page C20

Circlip and O-ring grooves (internal)

Modular system (MSS)

boring bar 1.5D

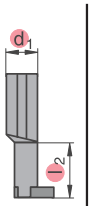


drawing illustrates right hand execution

details: page D24

Bgr.	[inch] l_2	[inch] d_1	type, ordering description
I25	1.50	1.000	MSS-**I25R**90-1.5D-E **R**
	1.50	1.000	MSS-**I25L**90-1.5D-E **L**

boring bar 2.5D



drawing illustrates right hand execution

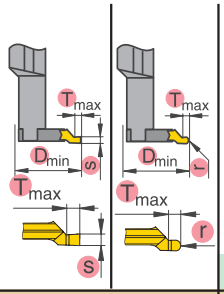
details: page D25

[inch] l_2	[inch] d_1	type, ordering description
2.48	1.250	MSS-**I25R**90-2.5D-E **R**
2.48	1.250	MSS-**I25L**90-2.5D-E **L**

Bgr. = assembly size

ordering example: 1 piece MSS-I25R90-2.5D-E
2 pieces MSS-I25R02-GX09-1

module GX09

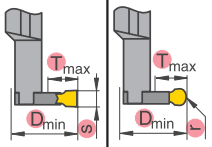


drawing illustrates right hand execution

details: page D26

[inch] Dmin	s	Tmax	r	Tmax	type, ordering description
1.26	.024 .031 .035 .039 .047 .055 .067	.029 .037 .041 .045 .053 .060 .072	.031	.070	MSS-**I25R**02-GX09-1 R
1.26	.024 ↓ .067	.029 ↓ .072	.031	.070	MSS-**I25L**02-GX09-1 L

module GX09



drawing illustrates right hand execution

details: page D28

[inch] Dmin	s	Tmax	r	Tmax	type, ordering description
1.26	.077 .088 .108 .128	.236	.039 .047	.236	MSS-**I25R**06-GX09-1 R
1.26	.108 .128	.236			MSS-**I25R**06-GX09-2
1.26	.077 .088 .108 .128	.236	.039 .047	.236	MSS-**I25L**06-GX09-1 L
1.26	.108 .128	.236			MSS-**I25L**06-GX09-2

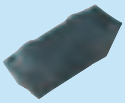
GX09-1S...R/L

details: page C16

GX09-1R...R/L

details: page C20

GX09-.S...N



details: page C17

GX09-.R...N

details: page C20

Circlip and O-ring grooves (internal)

Modular system (MSS)

boring bar 1.5D

drawing illustrates right hand execution

details: page D24

Bgr.	[inch] l_2	[inch] d_1	type, ordering description
I32	1.89	1.250	MSS-**I32R**90-1.5D-E **R**
	1.89	1.250	MSS-**I32L**90-1.5D-E **L**
I40	2.36	1.500	MSS-**I40R**90-1.5D-E **R**
	2.36	1.500	MSS-**I40L**90-1.5D-E **L**

boring bar 2. 5D

drawing illustrates right hand execution

details: page D25

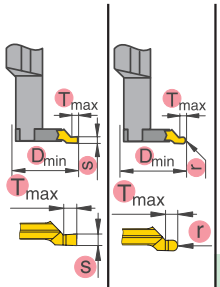
[inch] l_2	[inch] d_1	type, ordering description
3.15	1.500	MSS-**I32R**90-2.5D-E **R**
3.15	1.500	MSS-**I32L**90-2.5D-E **L**
3.94	2.000	MSS-**I40R**90-2.5D-E **R**
3.94	2.000	MSS-**I40L**90-2.5D-E **L**

Bgr. = assembly size

ordering example: 1 piece MSS-I32L90-2.5D-E
2 pieces MSS-I40R03-GX16-2

GX16 system

module GX16



drawing illustrates right hand execution

details: page D27

[inch]					
D_{min}	s	T_{max}	r	T_{max}	type, ordering description
	.024	.029	.031	.070	MSS-**I32R**03-GX16-2
	.031	.037	.039	.086	
	.035	.041	.047	.101	**R**
	.039	.045			
1.57	.047	.053			
	.055	.060			
	.067	.072			
	.077	.081			
	.088	.093			
	.024	.029	.031	.070	MSS-**I32L**03-GX16-2
1.57	↓	↓	.039	.086	
	.088	.093	.047	.101	**L**
	.024	.029	.031	.070	MSS-**I40R**03-GX16-2
1.97	↓	↓	.039	.086	
	.088	.093	.047	.101	**R**
	.024	.029	.031	.070	MSS-**I40L**03-GX16-2
1.97	↓	↓	.039	.086	
	.088	.093	.047	.101	**L**

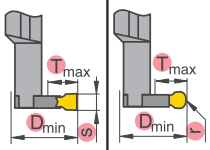
GX16-2S...R/L

details: page C18

GX16-2R...R/L

details: page C21

module GX16

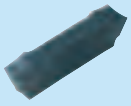


drawing illustrates right hand execution

details: page D29

[inch]					
D_{min}	s	T_{max}	r	T_{max}	type, ordering description
	.108		.059	.354	MSS-**I32R**09-GX16-2
	.128				
	.167	.354			**R**
	.207				
1.57					
	.167	.354	.079	.354	MSS-**I32R**09-GX16-3
	.207		.098		
	.207	.354	.118	.354	MSS-**I32R**09-GX16-4
	.108		.059	.354	MSS-**I32L**09-GX16-2
	.128	.354			
	.167				**L**
1.57	.207				
	.167	.354	.079	.354	MSS-**I32L**09-GX16-3
	.207		.098		
	.207	.354	.118	.354	MSS-**I32L**09-GX16-4
	.108		.059	.394	MSS-**I40R**10-GX16-2
	.128	.394			
	.167				**R**
1.97	.207				
	.167	.394	.079	.394	MSS-**I40R**10-GX16-3
	.207		.098		
	.207	.394	.118	.394	MSS-**I40R**10-GX16-4
	.108		.059	.394	MSS-**I40L**10-GX16-2
	.128	.394			
	.167				**L**
1.97	.207				
	.167	.394	.079	.394	MSS-**I40L**10-GX16-3
	.207		.098		
	.207	.394	.118	.394	MSS-**I40L**10-GX16-4

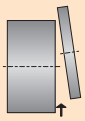
GX16-.S...N

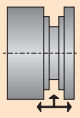


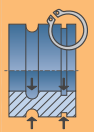
details: page C19

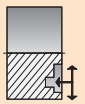
GX16-.R...N

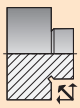
details: page C21

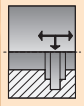

page B2-B15


page B16-B23

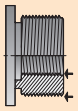

page B24-B49


page B50-B59

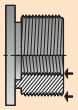

page B60-B65


page B66-B77

Turning

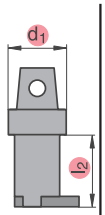

page B78-B93

Milling


pagp B78-B93

Circlip and O-ring grooves (internal)
UTS (MSS)

UTS - boring bar



drawing illustrates right hand execution

details: page D39

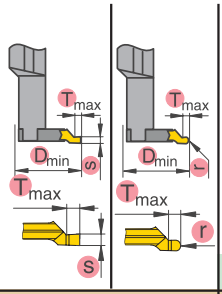
Bgr.	[inch] l_2	[mm] d_1	type, ordering description
I16	1.26	40	UT40-MSS-**I16R**90-2D **R**
	1.26	40	UT40-MSS-**I16L**90-2D **L**
I20	1.57	40	UT40-MSS-**I20R**90-2D **R**
	1.57	40	UT40-MSS-**I20L**90-2D **L**

Bgr. = assembly size

ordering example: 1 piece UT50-MSS-I16L90-2D
2 pieces MSS-I16L04-GX09-1

GX09 system

module GX09



drawing illustrates right hand execution

details: page D26

[inch] Dmin	s	Tmax	r	Tmax	type, ordering description
.79	.024 .031 .035 .039 .047 .055 .067	.029 .037 .041 .045 .053 .060 .072	.031	.070	MSS-**I16R**02-GX09-1 **R**
.79	.024 ↓ .067	.029 ↓ .072	.031	.070	MSS-**I16L**02-GX09-1 **L**
.98	.024 ↓ .067	.029 ↓ .072	.031	.070	MSS-**I20R**02-GX09-1 **R**
.98	.024 ↓ .067	.029 ↓ .072	.031	.070	MSS-**I20L**02-GX09-1 **L**

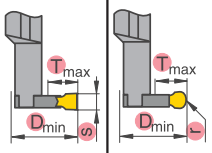
GX09-1S...R/L

details: page C16

GX09-1R...R/L

details: page C20

module GX09

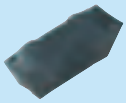


drawing illustrates right hand execution

details: page D28

[inch] Dmin	s	Tmax	r	Tmax	type, ordering description
.79	.077 .088 .108 .128	.157	.039 .047	.157	MSS-**I16R**04-GX09-1 **R**
	.108 .128	.157			MSS-**I16R**04-GX09-2
.79	.077 .088 .108 .128	.157	.039 .047	.157	MSS-**I16L**04-GX09-1 **L**
	.108 .128	.157			MSS-**I16L**04-GX09-2
.98	.077 .088 .108 .128	.197	.039 .047	.197	MSS-**I20R**05-GX09-1 **R**
	.108 .128	.197			MSS-**I20R**05-GX09-2
.98	.077 .088 .108 .128	.197	.039 .047	.197	MSS-**I20L**05-GX09-1 **L**
	.108 .128	.197			MSS-**I20L**05-GX09-2

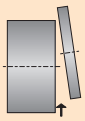
GX09-.S...N

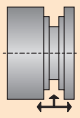


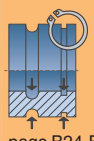
details: page C17

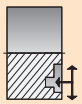
GX09-.R...N

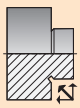
details: page C20

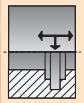

page B2-B15


page B16-B23

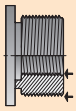

page B24-B49


page B50-B59

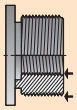

page B60-B65


page B66-B77

Turning


page B78-B93

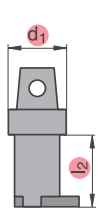
Milling


pagp B78-B93

Circlip and O-ring grooves (internal)

UTS (MSS)

UTS boring bar



drawing illustrates right hand execution

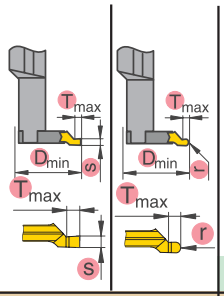
details: page D39

Bgr.	[inch] l_2	[mm] d_1	type, ordering description
l25	1.97	40 50	UT40-MSS-**l25R**-2D UT50-MSS-**l25R**-2D **R**
	1.97	40 50	UT40-MSS-**l25L**-2D UT50-MSS-**l25L**-2D **L**

Bgr. = assembly size

ordering example: 1 piece UT50-MSS-I25R-2D
2 pieces MSS-I25R02-GX09-1

module GX09



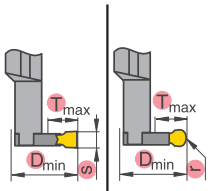
drawing illustrates right hand execution

details: page D26

[inch]

D_{min}	s	T_{max}	r	T_{max}	type, ordering description
1.26	.024 .031 .035 .039 .047 .055 .067	.029 .037 .041 .045 .053 .060 .072	.031	.070	MSS-**I25R**02-GX09-1 **R**
1.26	.024 ↓ .067	.029 ↓ .072	.031	.070	MSS-**I25L**02-GX09-1 **L**

module GX09



drawing illustrates right hand execution

details: page D28

[inch]

D_{min}	s	T_{max}	r	T_{max}	type, ordering description
32	.077 .088 .108 .128	.236	.039 .047	.236	MSS-**I25R**06-GX09-1 **R**
32	.108 .128	.236			MSS-**I25R**06-GX09-2
32	.077 .088 .108 .128	.236	.039 .047	.236	MSS-**I25L**06-GX09-1 **L**
32	.108 .128	.236			MSS-**I25L**06-GX09-2

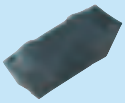
GX09-1S...R/L

details: page C16

GX09-1R...R/L

details: page C20

GX09-.S...N



details: page C17

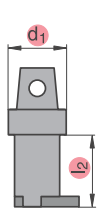
GX09-.R...N

details: page C20

Circlip and O-ring grooves (internal)

UTS (MSS)

UTS boring bar



drawing illustrates right hand execution

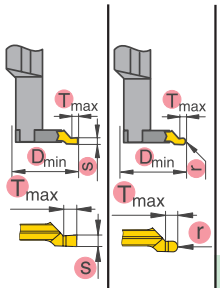
details: page D39

Bgr.	[inch] l_2	[mm] d_1	type, ordering description
I32	2.52	40	UT40-MSS-**I32R**90-2D
		50	UT50-MSS-**I32R**90-2D
		63	**R** UT63-MSS-**I32R**90-2D
	2.52	40	UT40-MSS-**I32L**90-2D
		50	UT50-MSS-**I32L**90-2D
		63	**L** UT63-MSS-**I32L**90-2D
I40	3.15	40	UT40-MSS-**I40R**90-2D
		50	UT50-MSS-**I40R**90-2D
		63	**R** UT63-MSS-**I40R**90-2D
	3.15	40	UT40-MSS-**I40L**90-2D
		50	UT50-MSS-**I40L**90-2D
		63	**L** UT63-MSS-**I40L**90-2D

Bgr. = assembly size

ordering example: 1 piece UT40-MSS-**I40R**90-2D
2 pieces MSS-I40R03-GX16-2

module GX16



drawing illustrates right hand execution

details: page D27

[inch]

D_{min}	s	T_{max}	r	T_{max}	type, ordering description
	.024	.029	.031	.070	MSS-**I32R**03-GX16-2
	.031	.037	.039	.086	
	.035	.041	.047	.101	**R**
	.039	.045			
1.57	.047	.053			
	.055	.060			
	.067	.072			
	.077	.081			
	.088	.093			
	.024	.029	.031	.070	MSS-**I32L**03-GX16-2
1.57	↓	↓	.039	.086	
	.088	.093	.047	.101	**L**
	.024	.029	.031	.070	MSS-**I40R**03-GX16-2
1.97	↓	↓	.039	.086	
	.088	.093	.047	.101	**R**
	.024	.029	.031	.070	MSS-**I40L**03-GX16-2
1.97	↓	↓	.039	.086	
	.088	.093	.047	.101	**L**

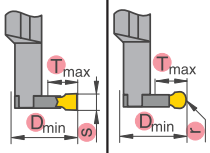
GX16-2S...R/L

details: page C18

GX16-2R...R/L

details: page C21

module GX16



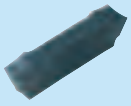
drawing illustrates right hand execution

details: page D29

[inch]

D_{min}	s	T_{max}	r	T_{max}	type, ordering description
	.108		.059	.354	MSS-**I32R**09-GX16-2
	.128				
	.167	.354			**R**
	.207				
1.57					
	.167	.354	.079	.354	MSS-**I32R**09-GX16-3
	.207		.098		
	.207	.354	.118	.354	MSS-**I32R**09-GX16-4
	.108		.059	.354	MSS-**I32L**09-GX16-2
	.128	.354			
	.167				**L**
1.57	.207				
	.167	.354	.079	.354	MSS-**I32L**09-GX16-3
	.207		.098		
	.207	.354	.118	.354	MSS-**I32L**09-GX16-4
	.108		.059	.394	MSS-**I40R**10-GX16-2
	.128	.394			
	.167				**R**
1.97	.207				
	.167	.394	.079	.394	MSS-**I40R**10-GX16-3
	.207		.098		
	.207	.394	.118	.394	MSS-**I40R**10-GX16-4
	.108		.059	.394	MSS-**I40L**10-GX16-2
	.128	.394			
	.167				**L**
1.97	.207				
	.167	.394	.079	.394	MSS-**I40L**10-GX16-3
	.207		.098		
	.207	.394	.118	.394	MSS-**I40L**10-GX16-4

GX16-.S...N



details: page C19

GX16-.R...N

details: page C21

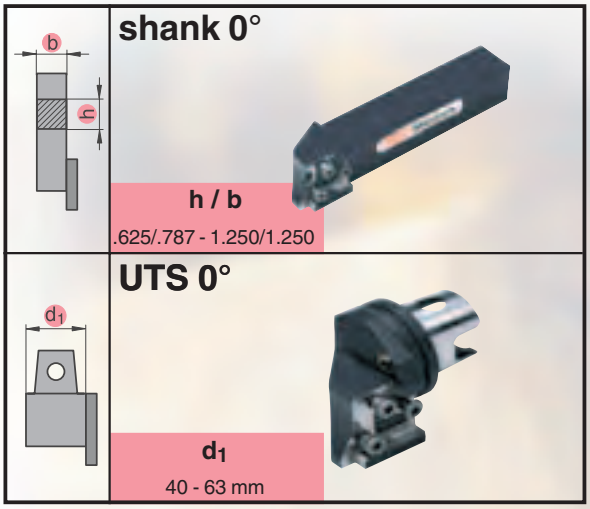
GX24

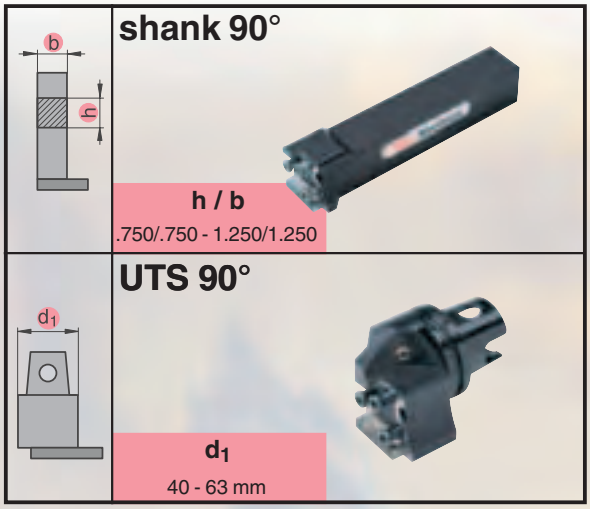
page B52-B55

GX24

page B56-B59

Axial grooving
Overview





short axial GX module

s = .118 - .236
T_{max} = .59
D = 1.97 - 35.43

long axial GX module

s = .157 - .236
T_{max} = .98
D = 2.75 - 11.81

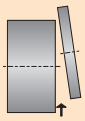
short axial GX module

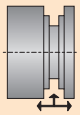
s = .118 - .236
T_{max} = .59
D = 1.97 - 35.43

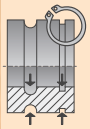
long axial GX module

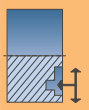
s = .157 - .236
T_{max} = .98
D = 2.75 - 11.81

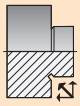
D > 19.68 inch see pages D21 and E25!

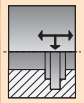

page B2-B15


page B16-B23

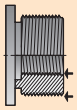

page B24-B49


page B50-B59

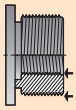

page B60-B65


page B66-B77

Turning


page B78-B93

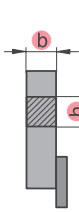
Milling


page B94-B99

Axial grooving

Modular system (MSS)

shank 0°

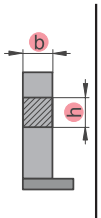


drawing illustrates right hand execution

details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description
E20	.625 .750	.787 .750	MSS-**E20R**00-10-E MSS-**E20R**00-12-E **R**
	.625 .750	.787 .750	MSS-**E20L**00-10-E MSS-**E20L**00-12-E **L**
E25	1.000	1.000	MSS-**E25R**00-16-E **R**
	1.000	1.000	MSS-**E25L**00-16-E **L**

shank 90°



drawing illustrates right hand execution

details: page D3

[inch] h	[inch] b	type, ordering description
.750	.750	MSS-**E20L**90-12-E **L**
.750	.750	MSS-**E20R**90-12-E **R**
1.000	1.000	MSS-**E25L**90-16-E **L**
1.000	1.000	MSS-**E25R**90-16-E **R**

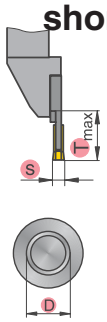
Bgr. = assembly size

ordering example: 1 piece MSS-E20L00-12-E
2 pieces MSS-E20R14-GX24-2 A70-100

attention in case of 90°:

right hand shank – left module
left hand shank– right module

short axial GX module



drawing illustrates right hand execution

details: page D17 - D18

[inch] s	T_{max}	D		type, ordering description
.109 - .148	.55	1.97 - 2.76		MSS-**E20R**14-GX24-2 A50-70
		2.76 - 3.94		MSS-**E20R**14-GX24-2 A70-100
		3.94 - 5.91	R	MSS-**E20R**14-GX24-2A100-150
.109 - .148	.55	1.97 - 2.76		MSS-**E20L**14-GX24-2 A50-70
		2.76 - 3.94		MSS-**E20L**14-GX24-2 A70-100
		3.94 - 5.91	L	MSS-**E20L**14-GX24-2A100-150
.109 - .148	.59	1.97 - 2.76		MSS-**E25R**15-GX24-2 A50-70
		2.76 - 3.94		MSS-**E25R**15-GX24-2 A70-100
		3.94 - 5.91	R	MSS-**E25R**15-GX24-2 A100-150
.148 - .197	.59	1.97 - 2.76		MSS-**E25R**15-GX24-3 A50-70
		2.76 - 3.94		MSS-**E25R**15-GX24-3 A70-100
		3.94 - 5.91		MSS-**E25R**15-GX24-3 A100-150
		5.91-11.81		MSS-**E25R**15-GX24-3 A150-300
.197 - .256	.59	1.97 - 2.76		MSS-**E25R**15-GX24-4 A50-70
		2.76 - 3.94		MSS-**E25R**15-GX24-4 A70-100
		3.94 - 5.91		MSS-**E25R**15-GX24-4 A100-150
		5.91-11.81		MSS-**E25R**15-GX24-4 A150-300
.109 - .148	.59	1.97 - 2.76		MSS-**E25L**15-GX24-2 A50-70
		2.76 - 3.94		MSS-**E25L**15-GX24-2 A70-100
		3.94 - 5.91	L	MSS-**E25L**15-GX24-2 A100-150
.148 - .197	.59	1.97 - 2.76		MSS-**E25L**15-GX24-3 A50-70
		2.76 - 3.94		MSS-**E25L**15-GX24-3 A70-100
		3.94 - 5.91		MSS-**E25L**15-GX24-3 A100-150
		5.91-11.81		MSS-**E25L**15-GX24-3 A150-300
.197 - .256	.59	1.97 - 2.76		MSS-**E25L**15-GX24-4 A50-70
		2.76 - 3.94		MSS-**E25L**15-GX24-4 A70-100
		3.94 - 5.91		MSS-**E25L**15-GX24-4 A100-150
		5.91-11.81		MSS-**E25L**15-GX24-4 A150-300

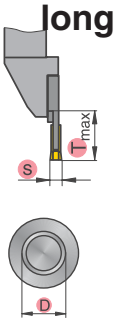
GX24E

details: page C11

GX24R

details: page C14

long axial GX module



drawing illustrates right hand execution

details: page D19

[inch] s	T_{max}	D		type, ordering description
.148 - .197	.83	1.97 - 2.76		MSS-**E25R**21-GX24-3 AS50-70
		2.76 - 3.94		MSS-**E25R**21-GX24-3 AS70-100
		3.94 - 5.91		MSS-**E25R**21-GX24-3 AS100-150
		5.91-11.81	R	MSS-**E25R**21-GX24-3 AS150-300
.197 - .256	.98	1.97 - 2.76		MSS-**E25R**25-GX24-4 AS50-70
		2.76 - 3.94		MSS-**E25R**25-GX24-4 AS70-100
		3.94 - 5.91		MSS-**E25R**25-GX24-4 AS100-150
		5.91-11.81		MSS-**E25R**25-GX24-4 AS150-300
.148 - .197	.83	1.97 - 2.76		MSS-**E25L**21-GX24-3 AS50-70
		2.76 - 3.94		MSS-**E25L**21-GX24-3 AS70-100
		3.94 - 5.91		MSS-**E25L**21-GX24-3 AS100-150
		5.91-11.81	L	MSS-**E25L**21-GX24-3 AS150-300
.197 - .256	.98	1.97 - 2.76		MSS-**E25L**25-GX24-4 AS50-70
		2.76 - 3.94		MSS-**E25L**25-GX24-4 AS70-100
		3.94 - 5.91		MSS-**E25L**25-GX24-4 AS100-150
		5.91-11.81		MSS-**E25L**25-GX24-4 AS150-300

GX24E

details: page C11

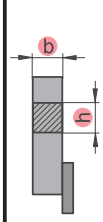
GX24R

details: page C14

Axial grooving

Modular system (MSS)

shank 0°

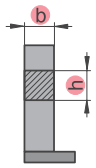


drawing illustrates right hand execution

details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description
E32	1.250	1.000	MSS-**E32R**00-85-E
	1.250	1.250	MSS-**E32R**00-20-E
			R
	1.250	1.000	MSS-**E32L**00-85-E
	1.250	1.250	MSS-**E32L**00-20-E
			L

shank 90°



drawing illustrates right hand execution

details: page D3

h [inch]	b [inch]	type, ordering description
1.250	1.000	MSS-**E32L**90-85-E
1.250	1.250	MSS-**E32L**90-20-E
		L
1.250	1.000	MSS-**E32R**90-85-E
1.250	1.250	MSS-**E32R**90-20-E
		R

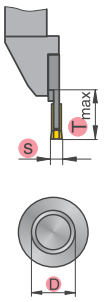
Bgr. = assembly size

ordering example: 1 piece MSS-E32L00-85-E
2 pieces MSS-E32L15-GX24-4 A100-150

attention in case of 90°:

right hand shank– left module
left hand shank – right module

short axial GX module



drawing illustrates right hand execution

details: page D20

[inch] s	[inch] T max	[inch] D		type, ordering description
.148 .197	.59	2.76 - 3.94		MSS-**E32R**15-GX24-3 A70-100
		3.94 - 5.91		MSS-**E32R**15-GX24-3 A100-150
		5.91-11.81	R	MSS-**E32R**15-GX24-3 A150-300
.197 - .256		2.76 -3.94		MSS-**E32R**15-GX24-4 A70-100
		3.94 - 5.91		MSS-**E32R**15-GX24-4 A100-150
		5.91-11.81		MSS-**E32R**15-GX24-4 A150-300
		11.81-35.43		MSS-**E32R**15-GX24-4 A300-900
.148 .197	.59	2.76 - 3.94		MSS-**E32L**15-GX24-3 A70-100
		3.94 - 5.91		MSS-**E32L**15-GX24-3 A100-150
		5.91-11.81	L	MSS-**E32L**15-GX24-3 A150-300
.197 - .256	.59	2.76 -3.94		MSS-**E32L**15-GX24-4 A70-100
		3.94 - 5.91		MSS-**E32L**15-GX24-4 A100-150
		5.91-11.81		MSS-**E32L**15-GX24-4 A150-300
		11.81-35.43		MSS-**E32L**15-GX24-4 A300-900

GX24E

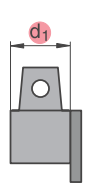
details: page C11

GX24R

details: page C14

Axial grooving
UTS (MSS)

UTS 0°

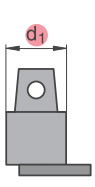


drawing illustrates right hand execution

details: page D10

Bgr.	[mm] d_1	type, ordering description
E25	40 50 63	UT40-MSS-**E25R**00 UT50-MSS-**E25R**00 UT63-MSS-**E25R**00
	40 50 63	UT40-MSS-**E25L**00 UT50-MSS-**E25L**00 UT63-MSS-**E25L**00

UTS 90°



drawing illustrates right hand execution

details: page D11

[mm] d_1	type, ordering description
40 50	UT40-MSS-**E25L**90 UT50-MSS-**E25L**90
40 50	UT40-MSS-**E25R**90 UT50-MSS-**E25R**90

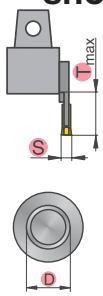
Bgr. = assembly size

ordering example: 1 piece UT40-MSS-E25L00
2 pieces MSS-E25L15-GX24-2 A50-70

attention in case of 90°:

right hand UTS holder – left module
left hand UTS holder – right module

short axial GX module



drawing illustrates right hand execution

details: page D18

[inch] s	Tmax	D	type, ordering description
.109 - .148	.59	1.97 - 2.76	MSS-**E25R**15-GX24-2 A50-70
		2.76 - 3.94	MSS-**E25R**15-GX24-2 A70-100
		3.94 - 5.91	R MSS-**E25R**15-GX24-2 A100-150
.148/ .197	.59	1.97 - 2.76	MSS-**E25R**15-GX24-3 A50-70
		2.76 - 3.94	MSS-**E25R**15-GX24-3 A70-100
		3.94 - 5.91	MSS-**E25R**15-GX24-3 A100-150
		5.91-11.81	MSS-**E25R**15-GX24-3 A150-300
.197 - .256	.59	1.97 - 2.76	MSS-**E25R**15-GX24-4 A50-70
		2.76 - 3.94	MSS-**E25R**15-GX24-4 A70-100
		3.94 - 5.91	MSS-**E25R**15-GX24-4 A100-150
		5.91-11.81	MSS-**E25R**15-GX24-4 A150-300
.109 - .148	.59	1.97 - 2.76	MSS-**E25L**15-GX24-2 A50-70
		2.76 - 3.94	MSS-**E25L**15-GX24-2 A70-100
		3.94 - 5.91	L MSS-**E25L**15-GX24-2 A100-150
.148/ .197	.59	1.97 - 2.76	MSS-**E25L**15-GX24-3 A50-70
		2.76 - 3.94	MSS-**E25L**15-GX24-3 A70-100
		3.94 - 5.91	MSS-**E25L**15-GX24-3 A100-150
		5.91-11.81	MSS-**E25L**15-GX24-3 A150-300
.197 - .256	.59	1.97 - 2.76	MSS-**E25L**15-GX24-4 A50-70
		2.76 - 3.94	MSS-**E25L**15-GX24-4 A70-100
		3.94 - 5.91	MSS-**E25L**15-GX24-4 A100-150
		5.91-11.81	MSS-**E25L**15-GX24-4 A150-300

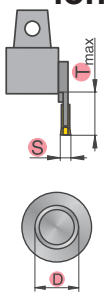
GX24E

details: page C11

GX24R

details: page C14

long axial GX module



drawing illustrates right hand execution

details: page D19

[inch] s	Tmax	D	type, ordering description
.148/ .197	.83	1.97 - 2.76	MSS-**E25R**21-GX24-3 AS50-70
		2.76 - 3.94	MSS-**E25R**21-GX24-3 AS70-100
		3.94 - 5.91	MSS-**E25R**21-GX24-3 AS100-150
		5.91-11.81	R MSS-**E25R**21-GX24-3 AS150-300
.197 - .256	.98	1.97 - 2.76	MSS-**E25R**25-GX24-4 AS50-70
		2.76 - 3.94	MSS-**E25R**25-GX24-4 AS70-100
		3.94 - 5.91	MSS-**E25R**25-GX24-4 AS100-150
		5.91-11.81	MSS-**E25R**25-GX24-4 AS150-300
.148/ .197	.83	1.97 - 2.76	MSS-**E25L**21-GX24-3 AS50-70
		2.76 - 3.94	MSS-**E25L**21-GX24-3 AS70-100
		3.94 - 5.91	MSS-**E25L**21-GX24-3 AS100-150
		5.91-11.81	L MSS-**E25L**21-GX24-3 AS150-300
.197 - .256	.98	1.97 - 2.76	MSS-**E25L**25-GX24-4 AS50-70
		2.76 - 3.94	MSS-**E25L**25-GX24-4 AS70-100
		3.94 - 5.91	MSS-**E25L**25-GX24-4 AS100-150
		5.91-11.81	MSS-**E25L**25-GX24-4 AS150-300

GX24E

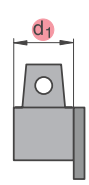
details: page C11

GX24R

details: page C14

Axial grooving
UTS (MSS)

UTS 0°

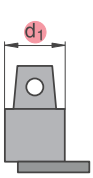


drawing illustrates right hand execution

details: page D10

Bgr.	[mm] d_1	type, ordering description
E32	50 63	UT50-MSS-**E32R**00 UT63-MSS-**E32R**00 **R**
	50 63	UT50-MSS-**E32L**00 UT63-MSS-**E32L**00 **L**

UTS 90°



drawing illustrates right hand execution

details: page D11

[mm] d_1	type, ordering description
63	UT63-MSS-**E32L**90 **L**
63	UT63-MSS-**E32R**90 **R**

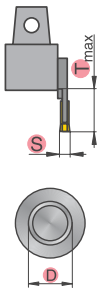
Bgr. = assembly size

ordering example: 1 piece UT63-MSS-E32L90
2 pieces MSS-E32R15-GX24-4 A100-150

attention in case of 90°:

right hand UTS holder – left module
left hand UTS holder – right module

short axial GX module



drawing illustrates right hand execution

details: page D20

[inch] s	[inch] T_{max}	[inch] D		type, ordering description
.148/ .197	.59	2.76 - 3.94		MSS-**E32R**15-GX24-3 A70-100
		3.94 - 5.91		MSS-**E32R**15-GX24-3 A100-150
		5.91-11.81	**R**	MSS-**E32R**15-GX24-3 A150-300
.197 - .256	.59	2.76 - 3.94		MSS-**E32R**15-GX24-4 A70-100
		3.94 - 5.91		MSS-**E32R**15-GX24-4 A100-150
		5.91-11.81		MSS-**E32R**15-GX24-4 A150-300
		11.81-35.43		MSS-**E32R**15-GX24-4 A300-900
.148/ .197	.59	2.76 - 3.94		MSS-**E32L**15-GX24-3 A70-100
		3.94 - 5.91		MSS-**E32L**15-GX24-3 A100-150
		5.91-11.81	**L**	MSS-**E32L**15-GX24-3 A150-300
.197 - .256	.59	2.76 - 3.94		MSS-**E32L**15-GX24-4 A70-100
		3.94 - 5.91		MSS-**E32L**15-GX24-4 A100-150
		5.91-11.81		MSS-**E32L**15-GX24-4 A150-300
		11.81-35.43		MSS-**E32L**15-GX24-4 A300-900

GX24E

details: page C11

GX24R

details: page C14

GX16

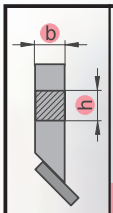
page B62-B63

GX16

page B64-B65

External recessing

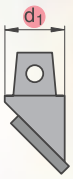
Overview



shank 45°

h / b

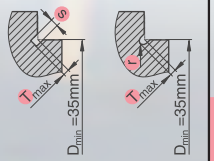
.750/.750 - 1.000/1.000



UTS 45°

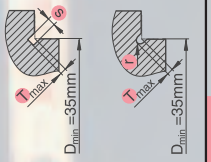
d_1

40 mm



module GX16

s = .039 - .236
T_{max} = .045 - .079
r = .031 - .118

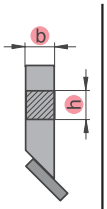


module GX16

s = .039 - .236
T_{max} = .045 - .079
r = .031 - .118

External recessing
Modular system (MSS)

shank 45°



drawing illustrates right hand execution

details: page D4

Bgr.	[inch] h	[inch] b	type, ordering description
E20	.750	.750	 R MSS-**E20R**45-12-E
	.750	.750	 L MSS-**E20L**45-12-E
E25	1.000	1.000	 R MSS-**E25R**45-16-E
	1.000	1.000	 L MSS-**E25L**45-16-E

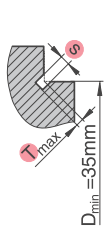
Bgr. = assembly size

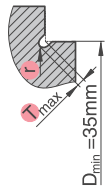
ordering example: 1 piece MSS-E25L45-16-E
2 pieces MSS-E25R03-GX16-2

attention in case of 45°:

right hand shank – left module
left hand shank – right module

module GX16





drawing illustrates right hand execution

details: page D13

[inch] s	T_{max}	r	T_{max}	type, ordering description
.039 .047 .055 .067 .077 .088	.045 .053 .060 .072 .079 .079	.031 .039 .047	.070 .079 .079	MSS-**E20L**03-GX16-2 **L**
.039 ↓ .088	.045 ↓ .079	.031 .039 .047	.070 .079 .079	MSS-**E20R**03-GX16-2 **R**
.039 ↓ .088	.045 ↓ .079	.031 .039 .047	.070 .086 .101	MSS-**E25L**03-GX16-2 **L**
.039 ↓ .088	.045 ↓ .079	.031 .039 .047	.070 .086 .101	MSS-**E25R**03-GX16-2 **R**

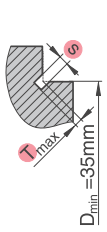
GX16-2S...R/L

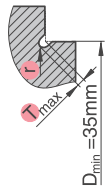
details: page C18

GX16-2R...R/L

details: page C21

module GX16



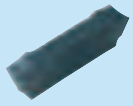


drawing illustrates right hand execution

details: page D13

[inch] s	T_{max}	r	T_{max}	type, ordering description
.118 .128 .138 .157 .167 .177 .197	.079	.059 .079 .098	.079	MSS-**E20L**03-GX16-2 **L**
.118 ↓ .197	.079	.059 .079 .098	.079	MSS-**E20R**03-GX16-2 **R**
.118 ↓ .197 .207 .236	.079 .079	.059 .079 .098 .118	.079	MSS-**E25L**03-GX16-2 **L**
.118 ↓ .197 .207 .236	.079 .079	.059 .079 .098 .118	.079	MSS-**E25R**03-GX16-2 **R**

GX16...N



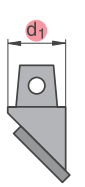
details: page C19

GX16-.R...N

details: page C21

External recessing
UTS (MSS)

UTS 45°



drawing illustrates right hand execution

details: page D38

Bgr.	[mm] d_1	type, ordering description
E25	40	UT40-MSS-**E25R**45 **R**
	40	UT40-MSS-**E25L**45 **L**

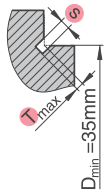
Bgr. = assembly size

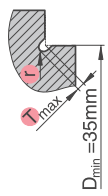
ordering example: 1 piece UT50-MSS-E25L45
2 pieces MSS-E25R03-GX16-2

attention in case of 45°:

right hand UTS holder – left module
left hand UTS holder – right module

module GX16





drawing illustrates right hand execution

details: page D13

[inch]

s	T_{max}	r	T_{max}	type, ordering description
.039 .047 .055 .067 .077 .088	.045 .053 .060 .072 .079 .079	.031 .039 .047	.070 .079 .079	MSS-**E25L**03-GX16-2 **L**
.039 .047 .055 .067 .077 .088	.045 .053 .060 .072 .079 .079	.031 .039 .047	.070 .079 .079	MSS-**E25R**03-GX16-2 **R**

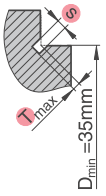
GX16-2S...R/L

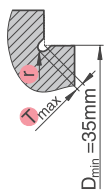
details: page C18

GX16-2R...R/L

details: page C21

module GX16





drawing illustrates right hand execution

details: page D13

[inch]

s	T_{max}	r	T_{max}	type, ordering description
.118 .128 .138 .157 .167 .177 .197 .207 .236	.079 .079	.059 .079 .098 .118	.079 .079 .079 .079	MSS-**E25L**03-GX16-2 **L**
.118 .128 .138 .157 .167 .177 .197 .207 .236	.079 .079	.059 .079 .098 .118	.079 .079 .079 .079	MSS-**E25R**03-GX16-2 **R**

GX16...N

details: page C19

GX16-.R...N

details: page C21

Grooving and turning (internal)

Overview

GX09...

page B69

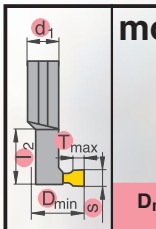
GX...

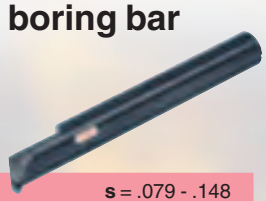
page B70-B73

GX...

page B74-B77

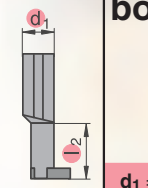
monobloc boring bar





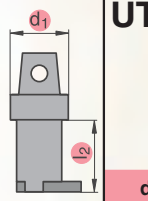
D_{min} = .63 | s = .079 - .148
l_2 = 1.18 | d_1 = .625 | T_{max} = .118

boring bar 1.5D



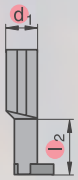
d_1 = .750 - 1.500
l_2 = .94 - 2.36

UTS boring bar

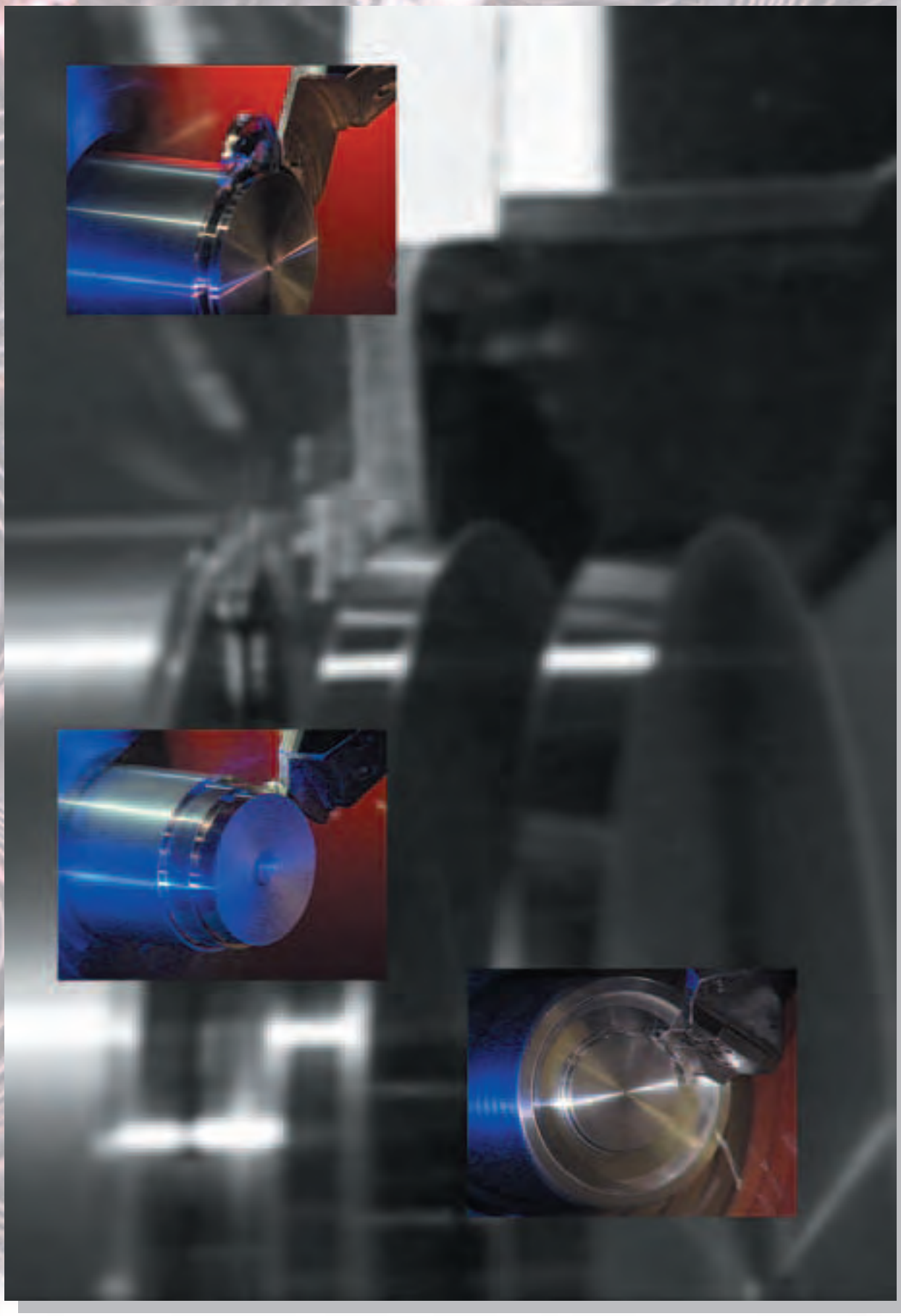


d_1 = 40 - 63 mm
l_2 = 1.26 - 3.15 inch

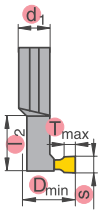
boring bar 2.5D



d_1 = .750 - 2.000
l_2 = 1.57 - 3.94



monobloc boring bar



drawing illustrates right hand execution

details: page D23

Bgr.	[inch] D_{min}	l_2	d_1	s	T_{max}	type, ordering description
I12	.63	1.18	.625	.079 - .148	.118	**I12R**90-2.5D-GX09-E R
	.63	1.18	.625	.079 - .148	.118	**I12L**90-2.5D-GX09-E L

Bgr. = assembly size

ordering example: 1 piece I12R90-2.5D-GX09-E

GX09E

details: page C8

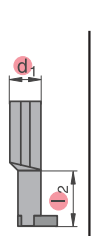
GX09R

details: page C12

Grooving and turning (internal)

Modular system (MSS)

boring bar 1.5D

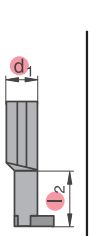


drawing illustrates right hand execution

details: page D24

Bgr.	[inch] l_2	[inch] d_1	type, ordering description
I16	.94	.750	MSS-**I16R**90-1.5D-E **R**
	.94	.750	MSS-**I16L**90-1.5D-E **L**
I20	1.18	.750	MSS-**I20R**90-1.5D-E **R**
	1.18	.750	MSS-**I20L**90-1.5D-E **L**
I25	1.50	1.000	MSS-**I25R**90-1.5D-E **R**
	1.50	1.000	MSS-**I25L**90-1.5D-E **L**

boring bar 2.5D



drawing illustrates right hand execution

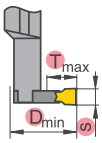
details: page D25

l_2 [inch]	d_1 [inch]	type, ordering description
1.57	.750	MSS-**I16R**90-2.5D-E **R**
1.57	.750	MSS-**I16L**90-2.5D-E **L**
1.97	1.000	MSS-**I20R**90-2.5D-E **R**
1.97	1.000	MSS-**I20L**90-2.5D-E **L**
2.48	1.250	MSS-**I25R**90-2.5D-E **R**
2.48	1.250	MSS-**I25L**90-2.5D-E **L**

Bgr. = assembly size

ordering example: 1 piece MSS-I25R90-1.5D-E
2 pieces MSS-I25R06-GX09-2

module GX09

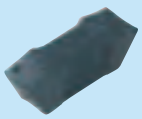


drawing illustrates right hand execution

details: page D28

[inch] D_{min}	s	T_{max}	type, ordering description
.79	.079 - .108 .109 - .148	.157	MSS-**I16R**04-GX09-1 MSS-**I16R**04-GX09-2 **R**
.79	.079 - .108 .109 - .148	.157	MSS-**I16L**04-GX09-1 MSS-**I16L**04-GX09-2 **L**
.98	.079 - .108 .109 - .148	.197	MSS-**I20R**05-GX09-1 MSS-**I20R**05-GX09-2 **R**
.98	.079 - .108 .109 - .148	.197	MSS-**I20L**05-GX09-1 MSS-**I20L**05-GX09-2 **L**
1.26	.079 - .108 .109 - .148	.236	MSS-**I25R**06-GX09-1 MSS-**I25R**06-GX09-2 **R**
1.26	.079 - .108 .109 - .148	.236	MSS-**I25L**06-GX09-1 MSS-**I25L**06-GX09-2 **L**

GX09



details: page C8

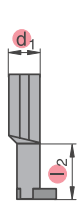
GX09R

details: page C12

Grooving and turning (internal)

Modular system (MSS)

boring bar 1.5D

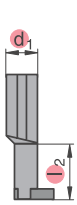


drawing illustrates right hand execution

details: page D24

Bgr.	l_2	d_1	type, ordering description
I32	1.89	1.250	MSS-**I32R**90-1.5D-E R
	1.89	1.250	MSS-**I32L**90-1.5D-E L
I40	2.36	1.500	MSS-**I40R**90-1.5D-E R
	2.36	1.500	MSS-**I40L**90-1.5D-E L

boring bar 2.5D



drawing illustrates right hand execution

details: page D25

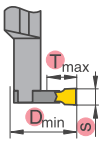
l_2	d_1	type, ordering description
3.15	1.500	MSS-**I32R**90-2.5D-E R
3.15	1.500	MSS-**I32L**90-2.5D-E L
3.94	2.000	MSS-**I40R**90-2.5D-E R
3.94	2.000	MSS-**I40L**90-2.5D-E L

Bgr. = assembly size

ordering example: 1 piece MSS-I32L90-1.5D-E
2 pieces MSS-I32L09-GX16-2

GX16 / GX24 system

module GX16



drawing illustrates right hand execution

details: page D29

D_{min}	s	T_{max}	type, ordering description
1.57	.079 - .108	.354	MSS-**I32R**09-GX16-1
	.109 - .148		MSS-**I32R**09-GX16-2
	.148 - .197		R MSS-**I32R**09-GX16-3
	.197 - .256		MSS-**I32R**09-GX16-4
	.079 - .108	.354	MSS-**I32L**09-GX16-1
	.109 - .148		MSS-**I32L**09-GX16-2
	.148 - .197		L MSS-**I32L**09-GX16-3
	.197 - .256		MSS-**I32L**09-GX16-4
1.97	.079 - .108	.394	MSS-**I40R**10-GX16-1
	.109 - .148		MSS-**I40R**10-GX16-2
	.148 - .197		R MSS-**I40R**10-GX16-3
	.197 - .256		MSS-**I40R**10-GX16-4
	.079 - .108	.394	MSS-**I40L**10-GX16-1
	.109 - .148		MSS-**I40L**10-GX16-2
	.148 - .197		L MSS-**I40L**10-GX16-3
	.197 - .256		MSS-**I40L**10-GX16-4

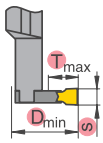
GX16

details: page C9 - C10

GX16R

details: page C13

module GX24



details: page D29

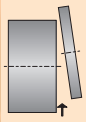
D_{min}	s	T_{max}	type, ordering description
2.36	.109 - .148	.748	MSS-**I40N**19-GX24-2
	.148 - .197		MSS-**I40N**19-GX24-3
	.197 - .256		N MSS-**I40N**19-GX24-4
	.109 - .148	.748	MSS-**I40N**19-GX24-2
	.148 - .197		MSS-**I40N**19-GX24-3
	.197 - .256		N MSS-**I40N**19-GX24-4

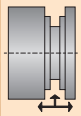
GX24E

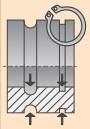
details: page C11

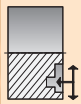
GX24R

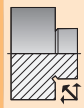
details: page C14

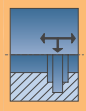

page B2-B15


page B16-B23

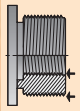

page B24-B49


page B50-B59

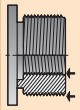

page B60-B65


page B66-B77

Turning

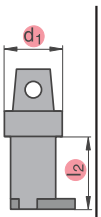

page B78-B93

Milling


pagp B78-B93

Grooving and turning (internal)
UTS (MSS)

UTS boring bar



drawing illustrates right hand execution

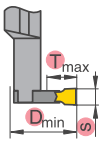
details: page D39

Bgr.	[inch] l_2	[mm] d_1	type, ordering description
I16	1.26	40	UT40-MSS-**I16R**90-2D **R**
	1.26	40	UT40-MSS-**I16L**90-2D **L**
I20	1.57	40	UT40-MSS-**I20R**90-2D **R**
	1.57	40	UT40-MSS-**I20L**90-2D **L**
I25	1.97	40 50	UT40-MSS-**I25R**90-2D UT50-MSS-**I25R**90-2D **R**
	1.97	40 50	UT40-MSS-**I25L**90-2D UT50-MSS-**I25L**90-2D **L**

Bgr. = assembly size

ordering example: 1 piece UT40-MSS-I20R90-2D
2 pieces MSS-I20R05-GX09-1

module GX09

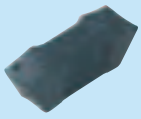


drawing illustrates right hand execution

details: page D28

[inch] D_{min}	s	T_{max}	type, ordering description
.79	.079 - .108 .109 - .148	.157	MSS-**I16R**04-GX09-1 MSS-**I16R**04-GX09-2 **R**
	.079 - .108 .109 - .148	.157	MSS-**I16L**04-GX09-1 MSS-**I16L**04-GX09-2 **L**
.98	.079 - .108 .109 - .148	.197	MSS-**I20R**05-GX09-1 MSS-**I20R**05-GX09-2 **R**
	.079 - .108 .109 - .148	.197	MSS-**I20L**05-GX09-1 MSS-**I20L**05-GX09-2 **L**
1.26	.079 - .108 .109 - .148	.236	MSS-**I25R**06-GX09-1 MSS-**I25R**06-GX09-2 **R**
	.079 - .108 .109 - .148	.236	MSS-**I25L**06-GX09-1 MSS-**I25L**06-GX09-2 **L**

GX09



details: page C8

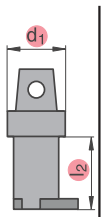
GX09R

details: page C12

Grooving and turning (internal)

UTS (MSS)

UTS boring bar



drawing illustrates right hand execution

details: page D39

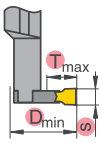
Bgr.	[inch] l_2	[mm] d_1	type, ordering description
I32	2.52	40	UT40-MSS-**I32R**90-2D
		50	UT50-MSS-**I32R**90-2D
		63	**R** UT63-MSS-**I32R**90-2D
	2.52	40	UT40-MSS-**I32L**90-2D
		50	UT50-MSS-**I32L**90-2D
		63	**L** UT63-MSS-**I32L**90-2D
I40	3.15	40	UT40-MSS-**I40R**90-2D
		50	UT50-MSS-**I40R**90-2D
		63	**R** UT63-MSS-**I40R**90-2D
	3.15	40	UT40-MSS-**I40L**90-2D
		50	UT50-MSS-**I40L**90-2D
		63	**L** UT63-MSS-**I40L**90-2D

Bgr. = assembly size

ordering example: 1 piece UT40-MSS-I40R90-2D
2 pieces MSS-I40N19-GX24-3

GX16 / GX24 system

module GX16



drawing illustrates right hand execution

details: page D29

[inch] D_{min}	s	T_{max}	type, ordering description	
1.57	.079 - .108	.354		MSS-**I32R**09-GX16-1
	.109 - .148			MSS-**I32R**09-GX16-2
	.148 - .197		R	MSS-**I32R**09-GX16-3
	.197 - .256			MSS-**I32R**09-GX16-4
	.079 - .108	.354		MSS-**I32L**09-GX16-1
	.109 - .148			MSS-**I32L**09-GX16-2
	.148 - .197		L	MSS-**I32L**09-GX16-3
	.197 - .256			MSS-**I32L**09-GX16-4
1.97	.079 - .108	.394		MSS-**I40R**10-GX16-1
	.109 - .148			MSS-**I40R**10-GX16-2
	.148 - .197		R	MSS-**I40R**10-GX16-3
	.197 - .256			MSS-**I40R**10-GX16-4
	.079 - .108	.394		MSS-**I40L**10-GX16-1
	.109 - .148			MSS-**I40L**10-GX16-2
	.148 - .197		L	MSS-**I40L**10-GX16-3
	.197 - .256			MSS-**I40L**10-GX16-4

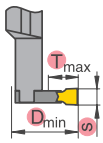
GX16

details: page C9 - C10

GX16R

details: page C13

module GX24



details: page D29

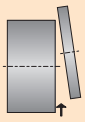
[inch] D_{min}	s	T_{max}	type, ordering description	
2.36	.109 - .148	.748		MSS-**I40N**19-GX24-2
	.148 - .197			MSS-**I40N**19-GX24-3
	.197 - .256		N	MSS-**I40N**19-GX24-4
	.109 - .148	.748		MSS-**I40N**19-GX24-2
	.148 - .197			MSS-**I40N**19-GX24-3
	.197 - .256		N	MSS-**I40N**19-GX24-4

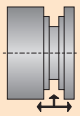
GX24E

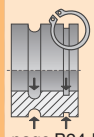
details: page C11

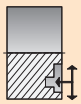
GX24R

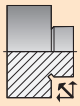
details: page C14

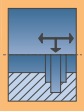

page B2-B15


page B16-B23

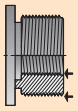

page B24-B49


page B50-B59

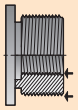

page B60-B65


page B66-B77

Turning


page B78-B93

Milling


pagp B78-B93

Thread turning
Overview

TC16

page B81

TC16

page B82-B83

TC16

page B84-B85

TC16

page B87

TC16

page B88-B89

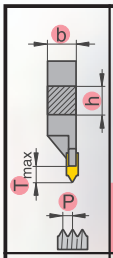
TC16

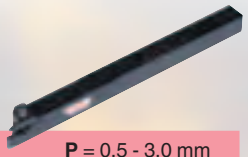
page B91

TC16

page B92-B93

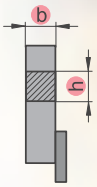
monobloc holder 0°





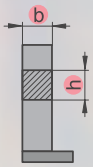
h / b
.500/.500 **T_{max}** = .394 **P** = 0.5 - 3.0 mm **P** = 48 - 8 TPI

shank 0°



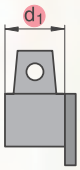
h / b
.625/.787 - 1.000/1.000

shank 90°



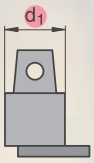
h / b
.750/.750 - 1.000/1.000

UTS 0°



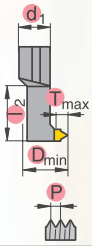
d_1
40 - 63 mm

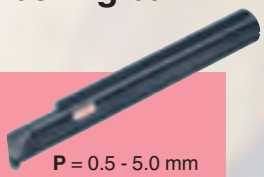
UTS 90°



d_1
40 - 50 mm

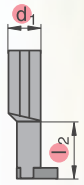
monobloc boring bar





d_1 = .750 - 1.250
l_2 = 1.26 - 1.97
D_{min} = .79 - 1.26 **P** = 0.5 - 5.0 mm
T_{max} = .157 - .236 **P** = 48 - 5 TPI

boring bar 1.5D

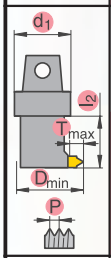


d_1 = 1.250
l_2 = 1.89

boring bar 2.5D

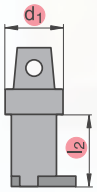
d_1 = 1.500
l_2 = 3.15

UTS TC monobloc boring bar

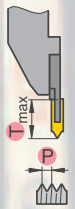
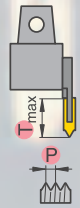
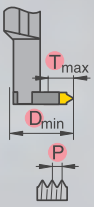
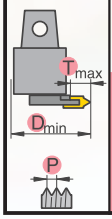


d_1 = 40 - 50 mm
l_2 = 1.26 - 1.97
D_{min} = .79 - 1.26 **P** = 0.5 - 5.0 mm
T_{max} = .157 - .236 **P** = 48 - 5 TPI

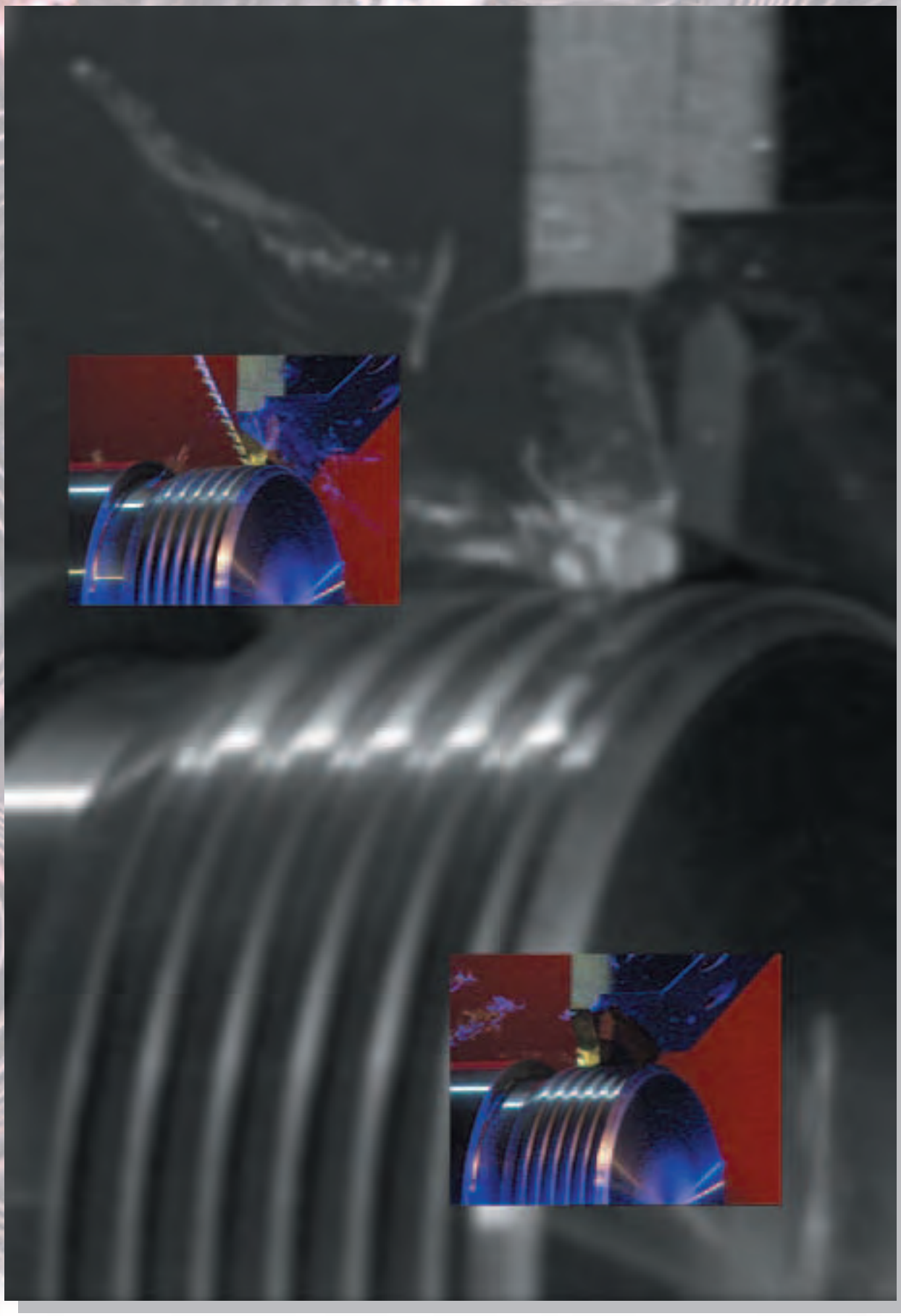
UTS boring bar



d_1 = 40 - 50 mm
l_2 = 2.52

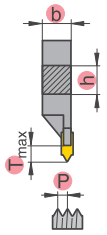
	**module TC16** **P** = 0.5 - 5.0 mm **P** = 48 - 5 TPI T_{max} = .315 - .472 
	**module TC16** **P** = 0.5 - 5.0 mm **P** = 48 - 5 TPI T_{max} = .315 - .472 
	**module TC16** D_{min} = 1.57 T_{max} = .275 **P** = 0.5 - 5.0 mm **P** = 48 - 5 TPI 
	**module TC16** D_{min} = 1.57 T_{max} = .275 **P** = 0.5 - 5.0 mm **P** = 48 - 5 TPI 

System



Thread turning (external)
Modular system (MSS)

monobloc holder 0°



drawing illustrates right hand execution

details: page D30

Bgr.	[inch] h	b	T_{max}	pitch "P" mm	T.P.I.	type, ordering description
E12	.500	.500	.394	0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	**E12R**00-08-TC16-E **R**
	.500	.500	.394	0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	**E12L**00-08-TC16-E **L**

ordering example: 1 piece E12R00-08-TC16-E

60° partial profile (external & internal) details: page C24

ISO 60° (external) details: page C26

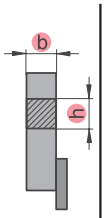
ISO 60° (internal) details: page C27

Whitworth 55° (external & internal) details: page C28

Thread turning (external)

Modular system (MSS)

shank 0°

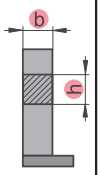


drawing illustrates right hand execution

details: page D2

Bgr.	[inch] h	[inch] b	type, ordering description
E20	.625 .750	.787 .750	MSS-**E20R**00-10-E MSS-**E20R**00-12-E **R**
	.625 .750	.787 .750	MSS-**E20L**00-10-E MSS-**E20L**00-12-E **L**
E25	1.000	1.000	MSS-**E25R**00-16-E **R**
	1.000	1.000	MSS-**E25L**00-16-E **L**

shank 90°



drawing illustrates right hand execution

details: page D3

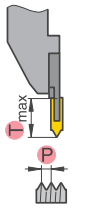
[inch] h	[inch] b	type, ordering description
.750	.750	MSS-**E20L**90-12-E **L**
.750	.750	MSS-**E20R**90-12-E **R**
1.000	1.000	MSS-**E25L**90-16-E **L**
1.000	1.000	MSS-**E25R**90-16-E **R**

ordering example: 1 piece MSS-E20R00-12-E
2 pieces MSS-E20N-TC16-2

attention in case of 90°:

right hand shank – left module
left hand shank – right module

module TC 16



drawing illustrates right hand execution

details: page D32

pitch „P“ mm	pitch „P“ T.P.I.	T_{max}	type, ordering description
0,5 - 1,5	48 - 16	.315	MSS-**E20R**-TC16-1 **R**
1,75 - 3,0	14 - 8	.472	MSS-**E20N**-TC16-2 **N**
0,5 - 1,5	48 - 16	.315	MSS-**E20L**-TC16-1 **L**
1,75 - 3,0	14 - 8	.472	MSS-**E20N**-TC16-2 **N**
0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	.315 .394	MSS-**E25R**-TC16-1 MSS-**E25R**-TC16-2 **R**
3,5 - 5,0	7 - 5	.472	MSS-**E25N**-TC16-3 **N**
0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	.315 .394	MSS-**E25L**-TC16-1 MSS-**E25L**-TC16-2 **L**
3,5 - 5,0	7 - 5	.472	MSS-**E25N**-TC16-3 **N**

60° partial profile (external & internal)

details: page C24

55° partial profile (external & internal)

details: page C25

ISO 60° (external)

details: page C26

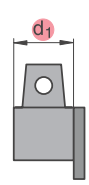
Whitworth 55° (external & internal)

details: page C28

Thread turning (external)

UTS (MSS)

UTS 0°

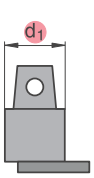


drawing illustrates right hand execution

details: page D36

Bgr.	[mm] d_1	type, ordering description
E25	40 50 63	UT40-MSS-**E25R**00 UT50-MSS-**E25R**00 R UT63-MSS-**E25R**00
	40 50 63	UT40-MSS-**E25L**00 UT50-MSS-**E25L**00 L UT50-MSS-**E25L**00

UTS 90°



drawing illustrates right hand execution

details: page D37

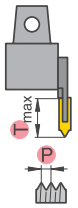
[mm] d_1	type, ordering description
40 50	UT40-MSS-**E25L**90 UT50-MSS-**E25L**90 L
40 50	UT40-MSS-**E25R**90 UT50-MSS-**E25R**90 R

ordering example: 1 piece UT50-MSS-E25R90
2 pieces MSS-E25N-TC16-3

attention in case of 90°:

right hand UTS holder – left module
left hand UTS holder – right module

module TC16



drawing illustrates right hand execution

details: page D31

pitch „P“ mm	pitch „P“ T.P.I.	T_{max}	type, ordering description
0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	.315 .394	MSS-**E25R**-TC16-1 MSS-**E25R**-TC16-2 **R**
3,5 - 5,0	7 - 5	.472	MSS-**E25N**-TC16-3 **N**
0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	.315 .394	MSS-**E25L**-TC16-1 MSS-**E25L**-TC16-2 **L**
3,5 - 5,0	7 - 5	.472	MSS-**E25N**-TC16-3 **N**

60° partial profile (external & internal)	55° partial profile (external & internal)	ISO 60° (external)	Whitworth 55° (external & internal)
details: page C24	details: page C25	details: page C26	details: page C28

page B2-B15
page B16-B23
page B24-B49
page B50-B59
page B60-B65
page B66-B77
Turning
page B78-B93
Milling
pagp B78-B93

System

TC16

page B81

TC16

page B82-B83

TC16

page B84-B85

TC16

page B87

TC16

page B88-B89

TC16

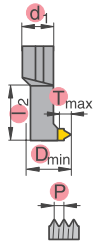
page B91

TC16

page B92-B93

Thread turning (internal)
Modular system (MSS)

monobloc boring bar



drawing illustrates right hand execution

details: page D32

Bgr.	[inch] D_{min}	l_2	d_1	T_{max}	pitch "P" mm	T.P.I.	type, ordering description
16	.79	1.26	.750	.157	0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	**I16R**90-2D-TC16-E **R**
	.79	1.26	.750	.157	0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	**I16L**90-2D-TC16-E **L**
20	.98	1.57	1.000	.197	0,5 - 1,5 1,75 - 3,0 3,5 - 5,0	48 - 16 14 - 8 7 - 5	**I20R**90-2D-TC16-E **R**
	.98	1.57	1.000	.197	0,5 - 1,5 1,75 - 3,0 3,5 - 5,0	48 - 16 14 - 8 7 - 5	**I20L**90-2D-TC16-E **L**
25	1.26	1.97	1.250	.236	0,5 - 1,5 1,75 - 3,0 3,5 - 5,0	48 - 16 14 - 8 7 - 5	**I25R**90-2D-TC16-E **R**
	1.26	1.97	1.250	.236	0,5 - 1,5 1,75 - 3,0 3,5 - 5,0	48 - 16 14 - 8 7 - 5	**I25L**90-2D-TC16-E **L**

Bgr. = assembly size

ordering example: 1 piece I25R90-2D-TC16-E

60° partial profile (external & internal) details: page C24

55° partial profile (external & internal) details: page C25

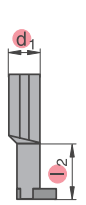
ISO 60° (internal) details: page C27

Whitworth 55° (external & internal) details: page C28

Thread turning (internal)

Modular system (MSS)

boring bar 1.5D

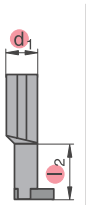


drawing illustrates right hand execution

details: page D24

Bgr.	[inch] l_2	[inch] d_1	type, ordering description
I32	1.89	1.250	MSS-I32R90-1.5D-E R
	1.89	1.250	MSS-I32L90-1.5D-E L

boring bar 2.5D



drawing illustrates right hand execution

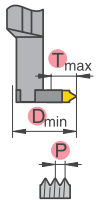
details: page D25

[inch] l_2	[inch] d_1	type, ordering description
3.15	1.500	MSS-I32R90-2.5D-E R
3.15	1.500	MSS-I32L90-2.5D-E L

Bgr. = assembly size

ordering example: 1 piece MSS-I32R90-1.5D-E
2 pieces MSS-I32R-TC16-1

module TC16



drawing illustrates right hand execution

details: page D33

[inch] D_{min}	[inch] T_{max}	pitch "P" mm	pitch "P" T.P.I.	type, ordering description
1.57	.275	0,5 - 1,5 1,75 - 3,0	48 - 16 14 - 8	MSS-**I32R**-TC16-1 MSS-**I32R**-TC16-2 **R**
		3,5 - 5,0	7 - 5	MSS-**I32N**-TC16-3 **N**
1.57	.275	0,5 - 1,5 1,75 - 3,0	4 8 - 16 14 - 8	MSS-**I32L**-TC16-1 MSS-**I32L**-TC16-2 **L**
		3,5 - 5,0	7 - 5	MSS-**I32N**-TC16-3 **N**

60° partial profile (external & internal)	55° partial profile (external & internal)	ISO 60° (internal)	Whitworth 55° (external & internal)
details: page C24	details: page C25	details: page C27	details: page C28

System

TC16

page B81

TC16

page B82-B83

TC16

page B84-B85

TC16

page B87

TC16

page B88-B89

TC16

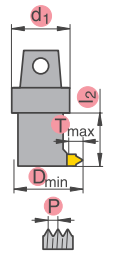
page B91

TC16

page B92-B93

Thread turning (internal)
UTS (MSS)

UTS TC monobloc boring bar



drawing illustrates right hand execution

details: page D40

Bgr.	[inch] D_{min}	l_2	d_1 mm	T_{max}	pitch "P" mm	T.P.I.	type, ordering description
I16	.79	1.26	40	.157	0.5 - 1.5 1.75 - 3.0	48 - 16 14 - 8	UT40-MSS-**I16R**90-2D-TC16 **R**
	.79	1.26	40	.157	0.5 - 1.5 1.75 - 3.0	48 - 16 14 - 8	UT40-MSS-**I16L**90-2D-TC16 **L**
I20	.98	1.57	40	.197	0.5 - 1.5 1.75 - 3.0 3.5 - 5.0	48 - 16 14 - 8 7 - 5	UT40-MSS-**I20R**90-2D-TC16 **R**
	.98	1.57	40	.197	0.5 - 1.5 1.75 - 3.0 3.5 - 5.0	48 - 16 14 - 8 7 - 5	UT40-MSS-**I20L**90-2D-TC16 **L**
I25	1.26	1.97	40	.236	0.5 - 1.5 1.75 - 3.0 3.5 - 5.0	48 - 16 14 - 8 7 - 5	UT40-MSS-**I25R**90-2D-TC16 **R**
	1.26	1.97	40	.236	0.5 - 1.5 1.75 - 3.0 3.5 - 5.0	48 - 16 14 - 8 7 - 5	UT40-MSS-**I25L**90-2D-TC16 **L**

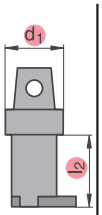
Bgr. = assembly size

ordering example: 1 piece UT40-MSS-I16L90-2D-TC16

60° partial profile (external & internal)	55° partial profile (external & internal)	ISO 60° (internal)	Whitworth 55° (external & internal)
details: page C24	details: page C25	details: page C27	details: page C28

Thread turning (internal)
UTS (MSS)

UTS boring bar



drawing illustrates right hand execution

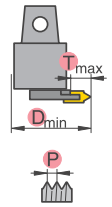
details: page D39

Bgr.	[inch] l_2	[mm] d_1	type, ordering description
I32	2.52	40 50	UT40-MSS-**I32R**90-2D UT50-MSS-**I32R**90-2D **R**
	2.52	40 50	UT40-MSS-**I32L**90-2D UT50-MSS-**I32L**90-2D **L**

Bgr. = assembly size

ordering example: 1 piece UT40-MSS-I32L90-2D
2 pieces MSS-I32L-TC16-2

module TC16



drawing illustrates right hand execution

details: page D33

[inch] D_{min}	[inch] T_{max}	pitch "P" mm		type, ordering description
1.57	.275	0.5 - 1.5 1.75 - 3.0	48 - 16 14 - 8	MSS-**I32R**-TC16-1 MSS-**I32R**-TC16-2 **R**
		3.5 - 5.0	7 - 5	MSS-**I32N**-TC16-3 **N**
1.57	.275	0.5 - 1.5 1.75 - 3.0	48 - 16 14 - 8	MSS-**I32L**-TC16-1 MSS-**I32L**-TC16-2 **L**
		3.5 - 5.0	7 - 5	MSS-**I32N**-TC16-3 **N**

60° partial profile (external & internal)

details: page C24

55° partial profile (external & internal)

details: page C25

ISO 60° (internal)

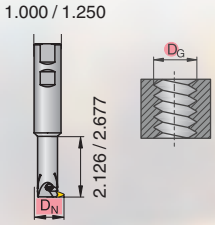
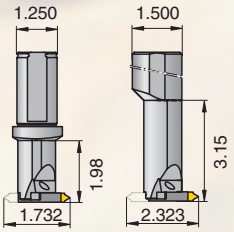
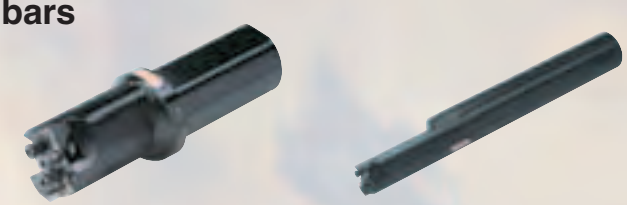
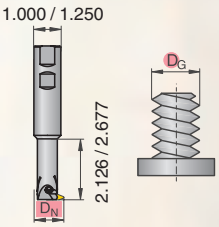
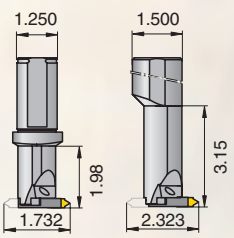
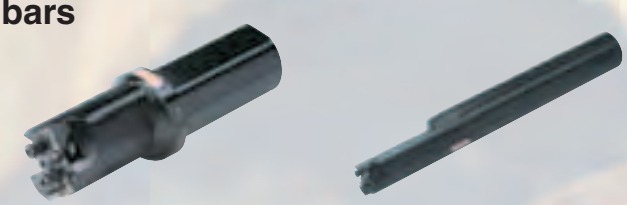
details: page C27

Whitworth 55° (external & internal)

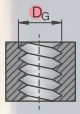
details: page C28

TC16
page B96
TC16
page B97
TC16
page B98
TC16
page B99

Thread milling
Overview

internal		**milling cutter** D_N = .98 - 1.26 D_G = M27-M80 [mm] D_G = R1¼-R2½ [inch] 
		**boring bars** 
external		**milling cutter** D_N = .98 - 1.26 D_G = M16-M80 [mm] D_G = R⅝-R1¾ [inch] 
		**boring bars** 

Details chamfering see pages C29 and E36!

	**module TC16**  D_G = M82-M300 [mm] D_G = R2¾-R6 [inch]
	**module TC16**  D_G = M82-M300 [mm] D_G = R2¾-R6 [inch]

Thread milling (internal)

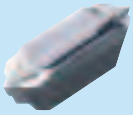
Milling cutter system MSS-TC

D_N	type, ordering description	D_G [mm]	full profile metric ISO 60° 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	TC16-2 I 2,0 ISO	TC16-2 I 2,5 ISO	TC16-2 I 3,0 ISO	TC16-3 I 3,5 ISO	TC16-3 I 4,0 ISO	TC16-3 I 4,5 ISO	TC16-3 I 5,0 ISO	D_G [inch]	full profile Whitworth 55° 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
.98	**I25R**90-2D-TC16-W-E Ø 1.000 2.126	M27	x	x																			
		M28	x	x	x																		
		M30	x	x	x	x																	
		M32	x	x	x	x	x							R1¼			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		x			1½								x	
		M39	x	x	x	x	x		x		x												
		M40	x	x	x	x	x		x		x			R1½			x						
		M42	x	x	x	x	x		x		x	x		1⅝									x
		M45	x	x	x	x	x		x		x	x		1¾									x
		M48	x	x	x	x	x		x		x		x										
1.26	**I32R**90-2D-TC16-W-E Ø 1.250 2.677	**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			R2¼			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			R2½			x						
		M76		x	x	x	x		x		x												
		M78		x	x	x	x		x		x												
		M80		x	x	x	x		x		x												

DN = nominal milling Ø

= standart thread

ISO 60° (internal)

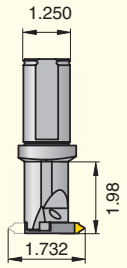


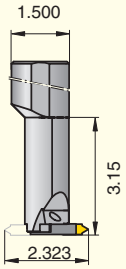
details: page C27

Whitworth 55°

details: page C28

Bgr.	boring bar 1.5D type, ordering description	boring bar 2.5D type, ordering description
32	MSS-**I32R**90-1.5D-E	MSS-**I32R**90-2.5D-E





Bgr. = assembly size

full profile metric ISO 60°			
module	MSS-**I32R**-TC16-2		MSS-**I32N**-TC16-3
D_G [mm]	TC16-2**I2,0**ISO	TC16-2**I3,0**ISO	TC16-3**I4,0**ISO
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
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

ISO 60° (internal)

details: page C27

full profile Whitworth 55°	
module	MSS-**I32R**-TC16-2
D_G [inch]	TC16-2 **EI 11W**
R2¾	x
R3	x
R3¼	x
R3½	x
R3¾	x
R4	x
R4½	x
R5	x
R5½	x
R6	x

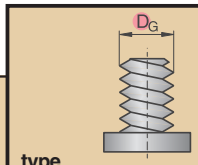
Whitworth 55°

details: page C28

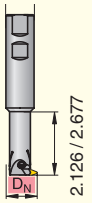
Thread milling (external)

Milling cutter system MSS-TC

D_N	type, ordering description
.98	**I25R**90-2D-TC16-W-E
1.26	**I32R**90-2D-TC16-W-E



Ø 1.000 / Ø 1.250



DN = nominal milling Ø

full profile metric ISO 60°

D_G [mm]	TC16-1 **E 0,5** ISO	TC16-1 **E 0,75** ISO	TC16-1 **E 1,0** ISO	TC16-1 **E 1,5** ISO	TC16-2 **E 2,0** ISO	TC16-2 **E 2,5** ISO	TC16-2 **E 3,0** ISO	TC16-3 **E 3,5** ISO	TC16-3 **E 4,0** ISO	TC16-3 **E 4,5** ISO	TC16-3 **E 5,0** ISO
	TC - threading inserts										
↓											
M16											
↓											
↓											
↓											
↓											
M80											

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.

ISO 60° external

details: page C26

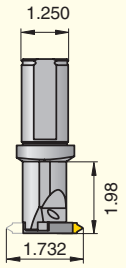
full profile whitworth 55°

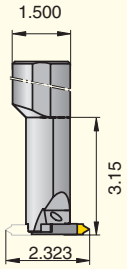
D_G [inch]	TC16-2 **EI 14W**	TC16-2 **EI 12W**	TC16-2 **EI 11W**	TC16-2 **EI 10W**	TC16-2 **EI 9W**	TC16-2 **EI 8W**	TC16-3 **EI 7W**	TC16-3 **EI 6W**	TC16-3 **EI 5W**
	TC - threading inserts								
↓									
$^5/_8$			x						
$^3/_4$				x					
$^7/_8$					x				
1						x			
$1^1/_8$							x		
$1^3/_8$								x	
$1^1/_2$								x	
$1^5/_8$									x
$1^3/_4$									x

Whitworth 55°

details: page C28

Bgr.	boring bar 1.5D type, ordering description	boring bar 2.5D type, ordering description
32	MSS-**I32R**90-1.5D-E	MSS-**I32R**90-2.5D-E



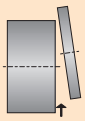


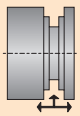
Bgr. = assembly size

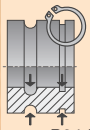
module	full profile metric ISO 60°		
	MSS-**I32R**-TC16-2		MSS-**I32N**-TC16-3
D_G [mm]	TC16-2**E2,0**ISO	TC16-2**E3,0**ISO	TC16-3**E4,0**ISO
M82	x	x	x
M85	x	x	x
M90	x	x	x
M95	x	x	x
M100	x	x	x
M105	x	x	x
M110	x	x	x
M115	x	x	x
M120	x	x	x
M125	x	x	x
M130	x	x	x
M135	x	x	x
M140	x	x	x
M145	x	x	x
M150	x	x	x
M155		x	x
M160		x	x
M165		x	x
M170		x	x
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

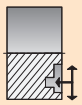
ISO 60° (external)

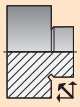
details: page C26

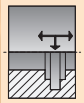

page B2-B15

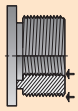

page B16-B23

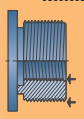

page B24-B49


page B50-B59


page B60-B65

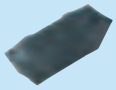
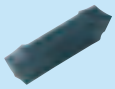

page B66-B77


page B78-B93


page B94-B99


Maxilock

Inserts
Overview

FX	LX	GX	GX	GX	GMS	TC
						
s = .087  page C2	**s = .315**  page C7	**s = .077 - .138**  page C8	**s = .024 - .067**  page C16	**s = .063 - .094**  page C20	**s = .118**  page C23	**Partial profile 60°** external and internal page C24
s = .122  page C3		**s = .079 - .138**  page C9	**s = .077 - .128**  page C17	**s = .063 - .197**  page C21		**Partial profile 55°** external and internal page C25
s = .161  page C4		**s = .157 - .236**  page C10	**s = .024 - .088**  page C18	**s = .118 - .315**  page C22		**Full profile metr. 60°** external page C26
s = .201 - .256  page C5		**s = .118 - .236**  page C11	**s = .108 - .207**  page C19			**Full profile metr. 60°** internal page C27
s = .323 - .382  page C6		**s = .079 - .094**  page C12				**Full profile** external and internal page C28
		s = .118 - .236  page C13				**Chamfering insert** external and internal page C29
		s = .118 - .315  page C14				

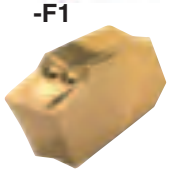
Parting inserts
FX system

Application									

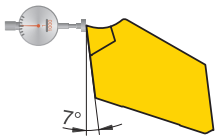
parting width .087 inch

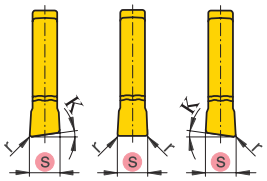

-F1


-F9


-M1


-27P



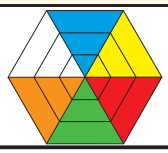


R N L

= repeatability (x) see below

s	type, ordering description		designation up to now	K [°]	r [inch]	hardness ← → toughness: H216 T	SR127	SR735	GM40	S40 T	GM740	SM80
.087	N	FX 2.2N0.15-F1		0	.006		●	●			●	
		FX 2.2N0.10-F9	LEMX 22FN		.004							●
		FX 2.2N0.10-M1	LEMX 22SN-FX		.004		●	●	●	●	●	
		FX 2.2N0.10-27P	LEMX 22FN-FX-27P		.004	●						
	L	FX 2.2L5-F1		5	.006			●			●	
		FX 2.2L4-F9	LEMX 22FL	4	.004							●
		FX 2.2L4-M1	LEMX 22SL-FX	4	.004		●	●	●	●		
	R	FX 2.2R5-F1		5	.006			●			●	
		FX 2.2R4-F9	LEMX 22FR	4	.004							●
		FX 2.2R4-M1	LEMX 22SR-FX	4	.004		●	●	●	●		

width 2,2	x	s	r
-F1 / -27P	±.0051	-.0039	±.0020
-M1 / -F9	±.0051	-.0039	±.0020



	H216 T	SR127	SR735	GM40	S40 T	GM740	SM80
Steel		●	●	●	●	●	●
Stainless		○		○		●	●
Cast iron	○	●					
Non ferrous metals	●						○

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces FX 2.2N0.10-27P H 216 T

You can find application recommendations on page E8 - E13!

tools / modules	FX	FX	FX					
								
see page	D8/9	D10/11	D41					

Parting inserts
FX system

Application									

parting width .122 inch

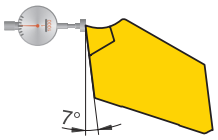

-F1

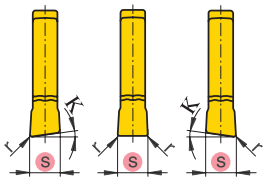

-M1


-F9


-R2


-27P



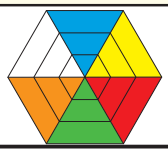


R N L

= repeatability (x) see below

S	type, ordering description		designation up to now	K [°]	r [inch]	hardness → toughness: H216 T	SR127	SR735	GM40	S40 T	GM740	SM80		
.122	N	FX 3.1N0.20-F1		0	.008		●	●			●			
		FX 3.1N0.40-F1			.016		●	●			●			
		FX 3.1N0.15-F9	LFMX 31FN		.006							●		
		FX 3.1N0.15-M1	LFMX 31SN-FX		.006		●	●	●	●	●			
		FX 3.1N0.40-R2			.016		●	●			●			
		FX 3.1N0.15-27P	LFMX 31FN-FX-27P		.006	●								
	L	FX 3.1L5-F1		5	.008			●			●			
		FX 3.1L8-F1		8	.008						●			
		FX 3.1L6-F9	LFMX 31FL	6	.006							●		
		FX 3.1L6-M1	LFMX 31SL-FX	6	.006		●	●	●	●				
	R	FX 3.1R5-F1		5	.008			●			●			
		FX 3.1R8-F1		8	.008						●			
		FX 3.1R6-F9	LFMX 31FR	6	.006							●		
		FX 3.1R6-M1	LFMX 31SR-FX	6	.006		●	●	●	●				

width 3,1	tolerances x	s	r
-F1 / -27P / -F9	±.0051	-.0039	±.0020
-M1 / -R2	±.0051	-.0039	±.0020



	H216 T	SR127	SR735	GM40	S40 T	GM740	SM80		
Steel		●	●	●	●	●	●		
Stainless		○		○		●	●		
Cast iron	○	●							
Non ferrous metals	●						○		

You can find application recommendations on page E8 - E13!

tools / modules	FX	FX	FX					
								
see page	D8/9	D10/11	D41					

Parting inserts

FX System

Application									

parting width .161 inch

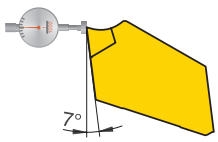

-F1

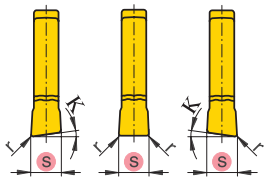

-M1


-R1


-R2


-27P



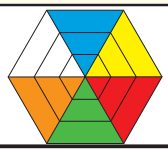


R N L


= repeatability (x) see below

s	type, ordering description		designation up to now	K [°]	r [inch]	hardness ← → toughness: H216 T	SR127	SR735	GM40	S40 T	GM740	SM80		
.161	N	FX 4.1N0.20-F1		0	.008		●	●			●			
		FX 4.1N0.50-F1			.020		●	●			●			
		FX 4.1N0.20-M1	LFMX 41SN-FX		.008		●	●	●	●	●			
		FX 4.1N0.20-R1			.008				●					
		FX 4.1N0.50-R2			.020		●	●			●			
		FX 4.1N0.15-27P	LFMX 41FN-FX-27P		.006	●								
	L	FX 4.1L5-F1		5	.008			●			●			
		FX 4.1L8-F1		8	.008						●			
		FX 4.1L6-M1	LFMX 41SL-FX	6	.008		●	●	●					
	R	FX 4.1R5-F1		5	.008			●			●			
		FX 4.1R8-F1		8	.008						●			
		FX 4.1R6-M1	LFMX 41SR-FX	6	.008		●	●	●					

width 4,1	tolerances x	s	r
-F1 / -27P / -F9	±.0051	-.0039	±.0020
-M1 / -R1 / -R2	±.0051	-.0039	±.0020



Steel	●	●	●	●	●	●	●			
Stainless		○		○		●	●			
Cast iron	○	●								
Non ferrous metals	●						○			

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces FX 4.1R5-F1 Sr735

You can find application recommendations on page E8 - E13!

tools / modules	FX	FX	FX					
								
see page	D8/9	D10/11	D41					

Parting inserts

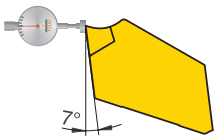
FX System

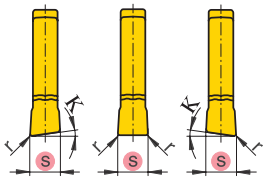
Application									

parting width .201 / .256 inch

-M1

-R1

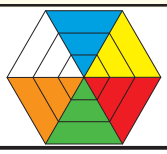




= repeatability (x) see below

s	type, ordering description		designation up to now	K [°]	r [inch]	hardness → toughness: H216 T	SR127	SR735	GM40	S40 T	GM740	SM80
.201	N	FX 5.1N0.25-M1	LFMX 51SN-FX	0	.010		●	●	●	●	●	
	L	FX 5.1L6-M1	LFMX 51SL-FX	6	.010		●	●				
.256	N	FX 6.5N0.30-M1	LFMX 65SN-FX	0	.012		●	●	●		●	
		FX 6.5N0.30-R1			.012				●			
		FX 6.5N0.50-R1			.012						●	
		FX 6.5N0.80-R1			.031				●			
	L	FX 6.5L6-M1	LFMX 65SL-FX	6	.012		●					
	R	FX 6.5R4-R1		4	.020						●	

width 5,1 / 6,5	tolerances x	s	r
-M1	±.0051	-.0059	±.0020
-R1	±.0051	-.0059	±.0039



	Steel	Stainless	Cast iron	Non ferrous metals
hardness → toughness: H216 T			○	●
SR127	●	○	●	
SR735	●			
GM40	●	○		
S40 T	●			
GM740	●	●		
SM80	●	●		○

You can find application recommendations on page E8 - E13!

tools / modules	FX	FX						
								
see page	D10/11	D41						

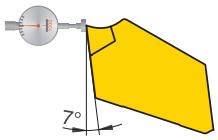
Parting inserts

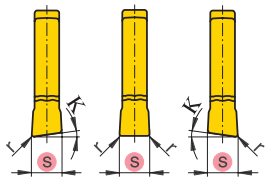
FX system

Application									

parting width .323 / .382 inch

-M1



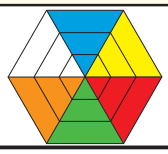


R N L

= repeatability (x) see below

s	type, ordering description	designation up to now	K [°]	r [inch]	H216T	SR127	SR735	GM40	S40T	GM740	SM80
					hardness ←						→ toughness
.323	N FX 8.2N0.40-M1	LEMX 82SN-FX	0	.016		●	●		●		
.382	N FX 9.7N0.40-M1	LEMX 97SN-FX	0	.016		●	●				

tolerances width 8,2 / 9,7	x	s	r
-M1	±.0059	-.0079	±.0039



	H216T	SR127	SR735	GM40	S40T	GM740	SM80
Steel		●	●	●	●	●	●
Stainless		○		○		●	●
Cast iron	○	●					
Non ferrous metals	●						○

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces FX 8.2N0.40-M1 Sr 127

You can find application recommendations on page E8 - E13!

tools / modules	FX							
see page	D41							

Parting and grooving inserts

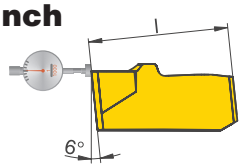
LX system

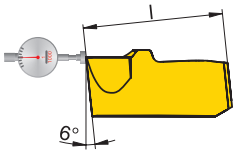
Application									

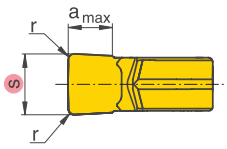
parting and grooving width .315 inch

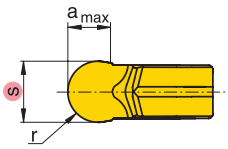
-M2

-M3





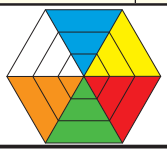




= repeatability (x) see below

s	type, ordering description	l [inch]	r [inch]	a_{max} [inch]	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
.315	LX E8.00N0.80-M2	.75	.031	.197				●		●		
.315	LX R4.00N-M3	.75	.157	.197				●		●		

tolerances	x	s	r
LX	±.0059	±.0031	±.0039



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	○			●	●	●	●	●
Stainless	○			○	○		○	●
Cast iron		○	○	●				
Non ferrous metals	●	●	●					

You can find application recommendations on page E24!

tools / modules	LX	LX						
								
see page	D21	D43						

Grooving inserts
GX09 system

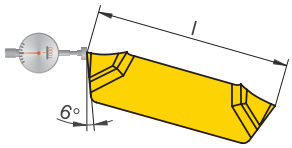
Application									

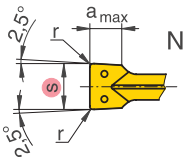
grooving width .077 - .138 inch

standard

circlip

-M4

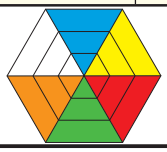




= repeatability (x) see below

s	type, ordering description		l	r	a_{max}	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
				[inch]									
.077	N	GX09-1S1.95N	.354	.004	.060				●				
.079		GX09-1E2.00N0.20		.008	.060				●	●			
		GX09-1E2.00N0.20-M4		.008	.060				●		●		●
.088		GX09-1S2.25N		.004	.060				●				
.098		GX09-1E2.50N0.20		.008	.060				●	●			
.108		GX09-2S2.75N		.004	.079				●				
.118		GX09-2E3.00N0.30		.012	.079				●	●			
		GX09-2E3.00N0.30-M4		.012	.079				●		●		●
.128		GX09-2S3.25N		.004	.079				●				
.138		GX09-2E3.50N0.30		.012	.079				●	●			

tolerances	x	s	r
GX09-.E / S / -27P	±.0008	±.0008	±.0020
-M4	±.0039	±.0020	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	○			●	●	●	●	●
Stainless	○			○	○		○	●
Cast iron		○	○	●				
Non ferrous metals	●	●	●					

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces GX09-2E3.00N0.30 Gm 127

You can find application recommendations on page E14 - E23!

tools / modules	GX09	GX09	GX09	GX09				
								
see page	D14	D6	D28	D23				

Grooving inserts
GX16 system

Application									

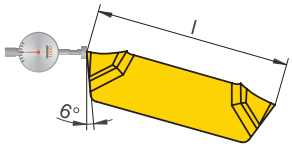
parting and grooving width .079 - .138 inch

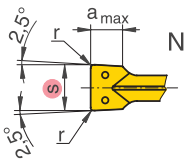

standard


circlip


-M4


-27P

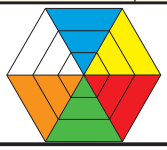




= repeatability (x) see below

s	type, ordering description		l	r	a_{max}	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
.079	N	GX16-1E2.00N0.20	.63	.008	.098				●	●			
		GX16-1E2.00N0.20-M4		.008	.098				●		●		●
		GX16-1E2.00N0.20-27P		.008	.098		●						
.098		GX16-1E2.50N0.20		.008	.098				●	●			
.108		GX16-2S2.75N		.004	.118				●				
.118		GX16-2E3.00N0.30		.012	.118				●	●			
		GX16-2E3.00N0.50		.020	.118				●				
		GX16-2E3.00N0.30-M4		.012	.118				●		●		●
		GX16-2E3.00N0.30-27P		.012	.118		●						
.128		GX16-2S3.25N		.004	.118				●				
.138		GX16-2E3.50N0.30		.012	.118				●	●			

tolerances	x	s	r
GX16-.E / S / -27P	±.0008	±.0008	±.0020
-M4	±.0059	±.0020	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	O			●	●	●	●	●
Stainless	O			O	O		O	●
Cast iron		O	O	●				
Non ferrous metals	●	●	●					

You can find application recommendations on page E14 - E23!

tools / modules	GX16	GX16						
see page	D15	D29						

Parting and grooving inserts
GX16 system

Application									

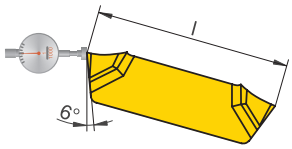
parting and grooving width .157 - .236 inch

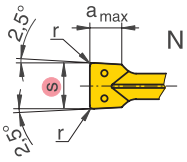

standard


circlip


-M4


-27P

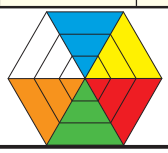




= repeatability (x) see below

s	type, ordering description		l	r	a_{max}	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
.157	N	GX16-3E4.00N0.40	.63	.016	.138				●	●			
		GX16-3E4.00N0.60		.024	.138				●				
		GX16-3E4.00N0.40-M4		.016	.157				●		●		●
		GX16-3E4.00N0.40-27P		.016	.138		●						
.167		GX16-3S4.25N		.008	.138				●				
.177		GX16-3E4.50N0.40		.016	.138				●				
.197		GX16-3E5.00N0.40		.016	.138				●	●			
		GX16-3E5.00N0.60		.024	.138				●				
		GX16-3E5.00N0.40-M4		.016	.157				●		●		●
.207		GX16-4S5.25N		.008	.157				●				
.236		GX16-4E6.00N0.50		.020	.157				●	●			
		GX16-4E6.00N0.80		.031	.157				●				
		GX16-4E6.00N0.50-M4		.020	.177				●		●		●
		GX16-4E6.00N0.50-27P		.020	.157		●						

tolerances	x	s	r
GX16-.S / E / -27P	±.0008	±.0008	±.0020
-M4	±.0059	±.0020	±.0020



	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	○			●	●	●	●	●
Stainless	○			○	○		○	●
Cast iron		○	○	●				
Non ferrous metals	●	●	●					

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces GX16-E6.00N0.80 Sr 127

You can find application recommendations on page E14 - E23!

tools / modules	GX16	GX16						
								
see page	D15	D29						

Parting and grooving inserts
GX24 system

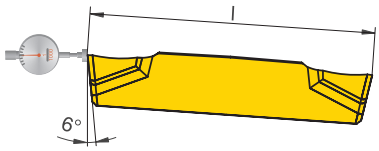
Application									

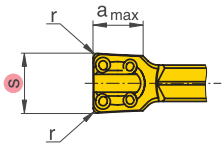
parting and grooving width .118 - .236 inch

standard

-F2

-27P

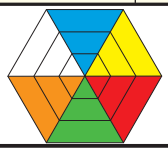




= repeatability (x) see below

s	type, ordering description		l	r	a_{max}	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
				[inch]									
.118	N	GX24-2E3.00N0.30	.94	.012	.098				●			●	
		GX24-2E3.00N0.30-F2		.012	.098				●		●		●
		GX24-2E3.00N0.30-27P		.012	.098		●						
.138		GX24-2E3.50N0.30-F2		.012	.098				●		●		●
.157		GX24-3E4.00N0.40		.016	.118				●			●	
		GX24-3E4.00N0.40-F2		.016	.118				●		●		●
		GX24-3E4.00N0.40-27P		.016	.118		●						
.177		GX24-3E4.50N0.40-F2		.016	.118				●		●		●
.197		GX24-3E5.00N0.40		.016	.118				●			●	
		GX24-3E5.00N0.40-F2		.016	.138				●		●		●
		GX24-3E5.00N0.40-27P		.016	.138		●						
.236		GX24-4E6.00N0.50		.020	.138				●			●	
		GX24-4E6.00N0.50-F2		.020	.157				●		●		●
		GX24-4E6.00N0.50-27P		.020	.157		●						

tolerances	x	s	r
GX24-.E...	±.0071	±.0020	±.0020
-F2 / -27P	±.0008	±.0008	±.0020



Steel	○			●	●	●	●	●	
Stainless	○			○	○		○	●	
Cast iron		○	○	●					
Non ferrous metals	●	●	●						

You can find application recommendations on page E14 - E23!

tools / modules	GX24	GX24 axial	GX24	GX24				
see page	D16	D17-20	D42	D29				

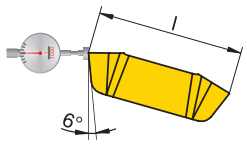
Grooving inserts

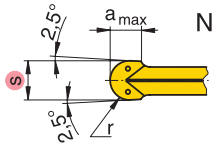
GX09 system - radius inserts

Application									

grooving width .079 / .094 inch

standard





= repeatability (x) see below

s	type, ordering description		l	r	a_{max}	hardness → toughness: AMZ	H216T	TSM 20	SR127	GM127	SR735	GM40	GM740
.079	N	GX09-1R1.00N	.354	.039	.039				●	●			
.094		GX09-1R1.20N		.047	.047				●	●			
Steel						○			●	●	●	●	●
Stainless						○			○	○		○	●
Cast iron							○	○	●				
Non ferrous metals						●	●	●					

tolerances	x	s	r
GX09-1R...	±.0008	±.0008	±.0020

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces GX09-1R1.00N Sr 127

You can find application recommendations on page E14 - E23!

tools / modules	GX09	GX09	GX09	GX09				
see page	D14	D6	D28	D23				

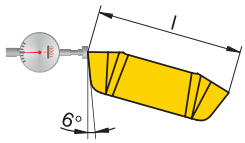
Grooving inserts
GX16 system - radius inserts

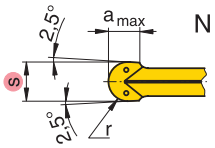
Application									

grooving width .118 - .236 inch

standard

-27P

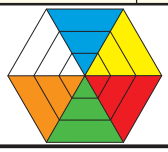




= repeatability (x) see below

s	type, ordering description		l	r	a_{max}	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740	
.118	N	GX16-2R1.50N	.63	.059	.059				●	●				
		GX16-2R1.50N-27P		.059	.059		●							
.157		GX16-3R2.00N		.079	.079				●	●				
		GX16-3R2.00N-27P		.079	.079		●							
.197		GX16-3R2.50N		.098	.098				●	●				
		GX16-3R2.50N-27P		.098	.098		●							
.236		GX16-4R3.00N		.118	.118				●	●				

tolerances	x	s	r
GX16-.R / -27P	±.0008	±.0008	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740	
Steel	○			●	●	●	●	●	
Stainless	○			○	○		○	●	
Cast iron		○	○	●					
Non ferrous metals	●	●	●						

You can find application recommendations on page E14 - E23!

tools / modules	GX16	GX16						
see page	D15	D29						

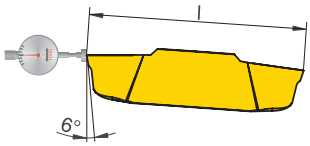
Grooving inserts
GX24 system - radius inserts

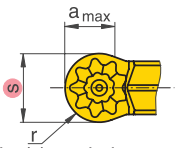
Application									

grooving width .118 - .315 inch

-M3

-27P

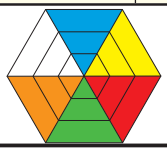




= repeatability (x) see below

s	type, ordering description		l	r	a_{max}	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
.118	N	GX24-2R1.50N-M3	.94	.059	.059				●		●		
.157		GX24-3R2.00N-M3		.079	.098				●		●		
.197		GX24-3R2.50N-M3		.098	.118				●		●		
.236		GX24-4R3.00N-M3		.118	.138				●		●		
.236		GX24-4R3.00N-27P	1.01	.118	.157			●					
.315		GX24-5R4.00N-27P		.157	.197			●					

tolerances	x	s	r
-27P	±.0008	±.0008	±.0020
-M3	±.0071	±.0020	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	○			●	●	●	●	●
Stainless	○			○	○		○	●
Cast iron		○	○	●				
Non ferrous metals	●	●	●					

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces GX24-4R3.00N-27P TSM 20

You can find application recommendations on page E14 - E23!

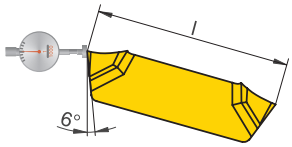
tools / modules	GX24	GX24 axial	GX24	GX24				
								
see page	D16	D17-20	D42	D29				

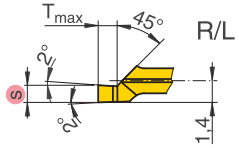
Grooving inserts
GX09 system circlip R / L

Application									

groove width .024 - .067 inch

circlip R/L

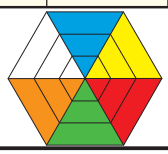




= repeatability (x) see below

s	DIN 471-472 s_1	DIN 471-472 s_2	type, ordering description		l	r	T_{max}	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
.024	.016	.020		GX09-1S0.60R	.35	—	.029				●				
.031	.024	.027		GX09-1S0.80R			.037				●				
.035	.027	.031		GX09-1S0.90R			.041				●				
.039	.031	.035	R	GX09-1S1.00R			.045				●				
.047	.039	.043		GX09-1S1.20R			.053				●				
.055	.047	.051		GX09-1S1.40R			.060				●				
.067	.059	.063		GX09-1S1.70R			.072				●				
.024	.016	.020		GX09-1S0.60L			.029				●				
.031	.024	.027		GX09-1S0.80L			.037				●				
.035	.027	.031		GX09-1S0.90L			.041				●				
.039	.031	.035	L	GX09-1S1.00L			.045				●				
.047	.039	.043		GX09-1S1.20L			.053				●				
.055	.047	.051		GX09-1S1.40L			.060				●				
.067	.059	.063		GX09-1S1.70L			.072				●				

tolerances	x	s	r
GX09-1S	±.0008	±.0008	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	○			●	●	●	●	●
Stainless	○			○	○		○	●
Cast iron		○	○	●				
Non ferrous metals	●	●	●					

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces GX09-1S1.40L Sr 127

You can find application recommendations on page E14 - E23!

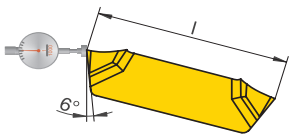
tools / modules	GX09	GX09	GX09	GX09				
see page	D12	D6	D26	D23				

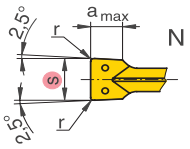
Grooving inserts
GX09 system circlip N

Application									

groove width .077 - .128 inch

circlip N

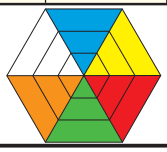




= repeatability (x) see below

s	DIN 471- 472 s_1	DIN 471- 472 s_2	type, ordering description	l	r	a_{max}	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
				[inch]			hardness ←							→ toughness
.077	.069	.073	N GX09-1S1.95N	.35	.004	.079				●				
.088	.079	.085	GX09-1S2.25N							●				
.108	.098	.104	GX09-2S2.75N							●				
.128	.118	.124	GX09-2S3.25N							●				

tolerances	x	s	r
GX09 S	±.0008	±.0008	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	O			●	●	●	●	●
Stainless	O			O	O		O	●
Cast iron		O	O	●				
Non ferrous metals	●	●	●					

DIN 471 - 472: DIN standard for circlip grooves
s: width of grooving inserts
s_1: circlip width
s_2: standard groove width H13 (+0,14 / 0)

You can find application recommendations on page E14 - E23!

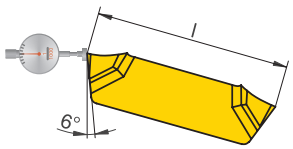
tools / modules	GX09	GX09	GX09	GX09				
see page	D14	D6	D28	D23				

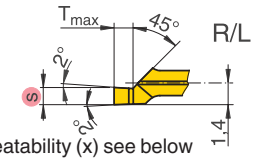
Grooving inserts
GX16 system circlip R / L

Application									

grooving width .024 - .088 inch

circlip R / L

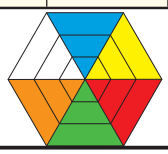




= repeatability (x) see below

s	DIN 471- 472 s_1	DIN 471- 472 s_2	type, ordering description	l [inch]	r [inch]	T_{max} [inch]	hardness / toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
.024	.016	.020	GX16-2S0.60R			.029				●				
.031	.024	.027	GX16-2S0.80R			.037				●				
.035	.027	.031	GX16-2S0.90R			.041				●				
.039	.031	.035	GX16-2S1.00R			.045				●				
.047	.039	.043	R GX16-2S1.20R			.053				●				
.055	.047	.051	GX16-2S1.40R			.060				●				
.067	.059	.063	GX16-2S1.70R			.072				●				
.077	.069	.073	GX16-2S1.95R			.081				●				
.088	.079	.085	GX16-2S2.25R	.63	—	.093				●				
.024	.016	.020	GX16-2S0.60L			.029				●				
.031	.024	.027	GX16-2S0.80L			.037				●				
.035	.027	.031	GX16-2S0.90L			.041				●				
.039	.031	.035	GX16-2S1.00L			.045				●				
.047	.039	.043	L GX16-2S1.20L			.053				●				
.055	.047	.051	GX16-2S1.40L			.060				●				
.067	.059	.063	GX16-2S1.70L			.072				●				
.077	.069	.073	GX16-2S1.95L			.081				●				
.088	.079	.085	GX16-2S2.25L			.093				●				

tolerances	x	s	r
GX 16	±.0008	±.0008	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	○			●	●	●	●	●
Stainless	○			○	○		○	●
Cast iron		○	○	●				
Non ferrous metals	●	●	●					

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces GX16-2S1.20L Sr 127

You can find application recommendations on page E14 - E23!

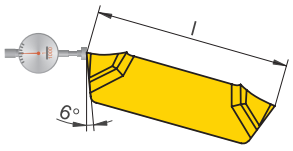
tools / modules	GX16	GX16
		
see page	D13	D27

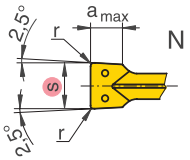
Parting and grooving inserts
GX16 system circlip N

Application									

parting and grooving width .108 - .207 inch

circlip N

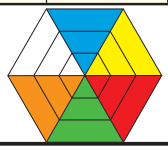




= repeatability (x) see below

s	DIN 471- 472 s_1	DIN 471- 472 s_2	type, ordering description	l [inch]	r [inch]	a_{max} [inch]	AMZ	H216T	TSM20	SR127	GM127	SR735	GM740	GM740
hardness →														toughness →
.108	.098	.104	N GX16-2S2.75N	.63	.004	.118				●				
.128	.118	.124	N GX16-2S3.25N	.63	.004	.118				●				
.167	.157	.163	N GX16-3S4.25N	.63	.008	.138				●				
.207	.197	.203	N GX16-4S5.25N	.63	.008	.157				●				

tolerances	x	s	r
GX 16	±.0008	±.0008	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM740	GM740
Steel	○			●	●	●	●	●
Stainless	○			○	○		○	●
Cast iron		○	○	●				
Non ferrous metals	●	●	●					

You can find application recommendations on page E14 - E23!

tools / modules	GX16	GX16						
see page	D15	D29						

Grooving inserts

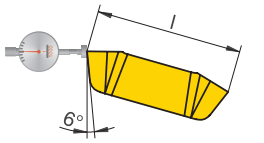
GX09 system radius inserts R / L / N

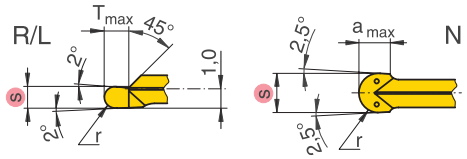
Application									

grooving width .063 - .094 inch

radius insert R

radius insert N

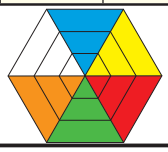




= repeatability (x) see below

s	type, ordering description		l	r	T_{max}	a_{max}	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
				[inch]			hardness →							toughness →
.063	R	GX09-1R0.80R	.35	.031	.070					●				
.063	L	GX09-1R0.80L		.031	.070					●				
.079	N	GX09-1R1.00N		.039		.039				●	●			
.094	N	GX09-1R1.20N		.047		.047				●	●			
Steel							○			●	●	●	●	●
Stainless							○			○	○		○	●
Cast iron								○	○	●				
Non ferrous metals							●	●	●					

tolerances	x	s	r
GX 09 R	±.0008	±.0008	±.0020



● = International TIZIT range, for present availability see price list

ordering example: 30 pieces GX09-1R1.00N Gm 127

You can find application recommendations on page E14 - E23!

tools / modules	GX09	GX09	GX09	GX09				
								
see page	D 12/14	D26/28	D6	D23				

Grooving inserts

GX16 system radius inserts R / L / N

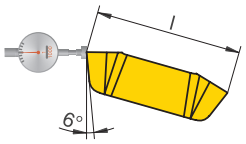
Application									

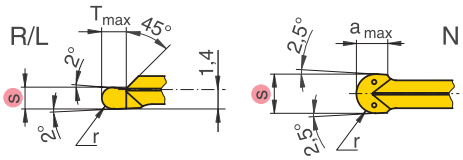
grooving width .063 - .197 inch

radius insert R

radius insert N

radius insert -27P

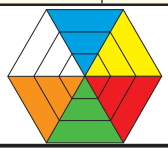




= repeatability (x) see below

s	type, ordering description		l	r	T_{max}	a_{max}	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
			[inch]				hardness ←							→ toughness
.063	R	GX16-2R0.80R	.63	.031	.070					●				
.079	R	GX16-2R1.00R		.039	.086					●				
.094	R	GX16-2R1.20R		.047	.101					●				
.063	L	GX16-2R0.80L		.031	.070					●				
.079	L	GX16-2R1.00L		.039	.086					●				
.094	L	GX16-2R1.20L		.047	.101					●				
.118	N	GX16-2R1.50N		.059		.059				●	●			
.118	N	GX16-2R1.50N-27P		.059		.059		●						
.157	N	GX16-3R2.00N		.079		.079				●	●			
.157	N	GX16-3R2.00N-27P		.079		.079		●						
.197	N	GX16-3R2.50N		.098		.098				●	●			
.197	N	GX16-3R2.50N-27P		.098		.098		●						

tolerances	x	s	r
GX16 R / -27P	±.0008	±.0008	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	O			●	●	●	●	●
Stainless	O			O	O		O	●
Cast iron		O	O	●				
Non ferrous metals	●	●	●					

You can find application recommendations on page E14 - E23!

tools / modules	GX16	GX16						
see page	D 13/15	D27/29						

Grooving inserts

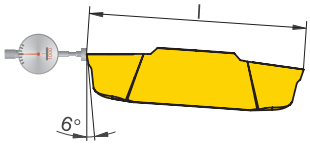
GX24 system radius inserts N

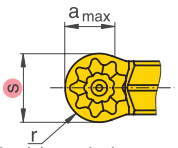
Application									

grooving width .118 - .315 inch

-M3

-27P



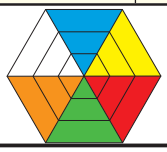


= repeatability (x) see below

s	type, ordering description	l	r	a_{max}	hardness → toughness: AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
.118	GX24-2R1.50N-M3	.94	.059	.059				●		●		
.157	GX24-3R2.00N-M3		.079	.098				●		●		
.197	GX24-3R2.50N-M3		.098	.118				●		●		
.236	GX24-4R3.00N-M3		.118	.138				●		●		
.236	GX24-4R3.00N-27P	1.01	.118	.157			●					
.315	GX24-5R4.00N-27P		.157	.197			●					

N

tolerances	x	s	r
-27P	±.0008	±.0008	±.0020
-M3	±.0071	±.0020	±.0020



	AMZ	H216T	TSM20	SR127	GM127	SR735	GM40	GM740
Steel	○			●	●	●	●	●
Stainless	○			○	○		○	●
Cast iron		○	○	●				
Non ferrous metals	●	●	●					

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces GX24-4R3.00N-27P TSM 20

You can find application recommendations on page E14 - E23!

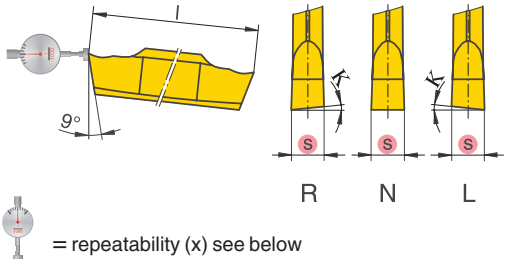
tools / modules	GX24	GX24 axial	GX24	GX24				
								
see page	D16	D18-20	D42	D29				

Parting inserts
GMS system

Application									

parting width .118 inch

standard

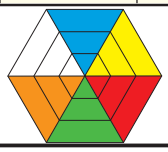


= repeatability (x) see below

s	type, ordering description	l [inch]	K [°]	r [inch]	H216T	TSM20	SR127	GM127	SR735	GM40	GM740	GMS
.118	LDMX 30FN	1.087	0	-								●
.118	LDMX 30FR		7	-								●
.118	LDMX 30FL		7	-								●

hardness ← → toughness

tolerances	x	s
LDMX	±.0039	+.0039



	H216T	TSM20	SR127	GM127	SR735	GM40	GM740	GMS
Steel			●	●	●	●	●	●
Stainless			○	○		○	●	●
Cast iron	○	○	●					
Non ferrous metals	●	●					○	○

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces LDMX 30 FN GmS

tools / modules	GmS							
see page	D7							

Threading inserts TC

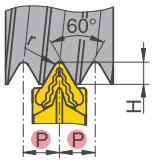
Partial profile 60° (external and internal)

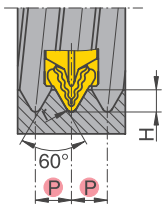
Application	Turning

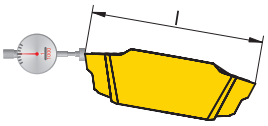
pitch P: 0.5 - 5.0 mm
48 - 5 T.P.I.

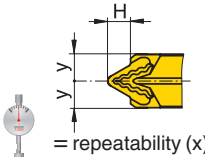
standard

-27P





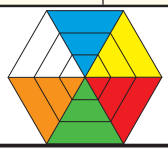




= repeatability (x) see below

pitch P mm	pitch P T.P.I.	type, ordering description	[inch] l	H	r	y	H216T	GM213	GM240
0.5 - 1.5	48 - 16	TC16-1 EI-A60	.63	.050	.0012	.041		●	●
		TC16-1 EI-A60-27P					●		
1.75 - 3.0	14 - 8	TC16-2 EI-G60		.098	.0043	.085		●	●
		TC16-2 EI-G60-27P					●		
0.5 - 3.0	48 - 8	TC16-2 EI-AG60		.010	.0012			●	●
		TC16-2 EI-AG60-27P					●		
3.5 - 5.0	7 - 5	TC16-3 EI-N60		.162	.0087	.122		●	●
		TC16-3 EI-N60-27P					●		

tolerances	x
TC16...	±.0008



	H216T	GM213	GM240
Steel		●	●
Stainless		○	●
Cast iron	○	○	
Non ferrous metals	●		

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces TC16-3 EI-N60-27P H 216 T

tools / modules	TC	TC	TC	TC	UTS TC			
								
see page	D30	D31	D33	D32	D40			

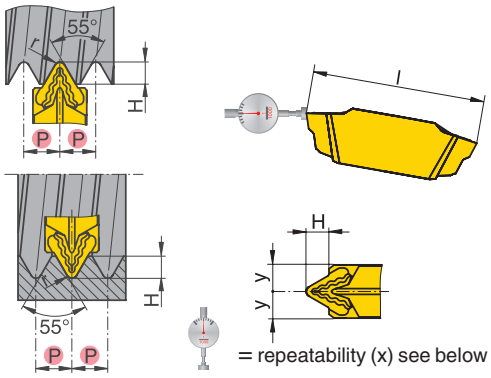
Threading inserts TC

Partial profile 55° (external and internal)

Application	Turning

pitch P: 0.5 - 5.0 mm
48 - 5 T.P.I.

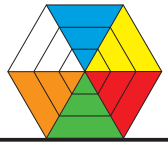
standard



= repeatability (x) see below

pitch P mm	pitch P T.P.I.	type, ordering description	[inch] l	H	r	y	H216T	GM213	GM240
0.5 - 1.5	48 - 16	TC16-1 EI-A55	.63	.055	.005	.041		●	●
1.75 - 3.00	14 - 8,0	TC16-2 EI-G55		.109	.009	.085		●	●
0.5 - 3.0	48 - 8,0	TC16-2 EI-AG55		.114	.005	.085		●	●
3.5 - 5.0	7 - 5	TC16-3 EI-N55		.171	.018	.122		●	●

tolerances	x
TC16...	±.0008



Steel	●	●	●
Stainless		○	●
Cast iron	○	○	
Non ferrous metals	●		

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces TC16-1 EI-A55 Gm 240

tools / modules	TC	TC	TC	TC	UTS TC			
see page	D30	D31	D33	D32	D40			

Threading inserts TC

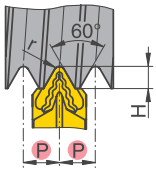
Full profile metric ISO 60° (external)

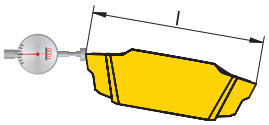
Application	Turning	Milling							
									

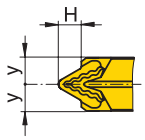
pitch P: 0.5 - 5.0 mm

standard

-27P



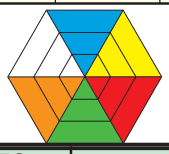




 = repeatability (x) see below

pitch P mm	type, ordering description	[inch] l	H	r	y	H216T	GM213	GM240
0.5	TC16-1 E 0,5 ISO	.63	.012	.002	.041		●	●
	TC16-1 E 0,5 ISO-27P					●		
0.75	TC16-1 E 0,75 ISO		.019	.003			●	●
	TC16-1 E 0,75 ISO-27P					●		
1.0	TC16-1 E 1,0 ISO		.025	.005			●	●
	TC16-1 E 1,0 ISO-27P					●		
1.25	TC16-1 E 1,25 ISO		.031	.006			●	●
	TC16-1 E 1,25 ISO-27P					●		
1.5	TC16-1 E 1,5 ISO		.037	.007			●	●
	TC16-1 E 1,5 ISO-27P					●		
1.75	TC16-2 E 1,75 ISO		.043	.009	.085		●	●
	TC16-2 E 1,75 ISO-27P					●		
2.0	TC16-2 E 2,0 ISO		.050	.010			●	●
	TC16-2 E 2,0 ISO-27P					●		
2.5	TC16-2 E 2,5 ISO		.062	.012			●	●
	TC16-2 E 2,5 ISO-27P					●		
3.0	TC16-2 E 3,0 ISO		.074	.015			●	●
	TC16-2 E 3,0 ISO-27P					●		
3.5	TC16-3 E 3,5 ISO		.087	.017	.122		●	●
4.0	TC16-3 E 4,0 ISO		.100	.020			●	●
4.5	TC16-3 E 4,5 ISO		.112	.022			●	●
5.0	TC16-3 E 5,0 ISO		.124	.025			●	●

tolerances	x
TC16...	±.0008



Steel		●	●
Stainless		○	●
Cast iron	○	○	
Non ferrous metals	●		

tools / modules	TC	TC	TC milling					
								
see page	D30	D31	D35					

Threading inserts TC

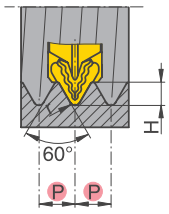
Full profile metric ISO 60° (internal)

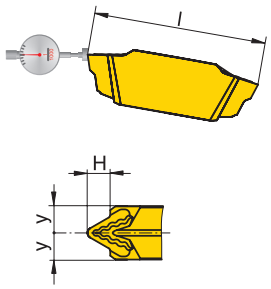
Application	Turning	Milling							

pitch P: 0.5 - 5.0 mm

standard

-27P

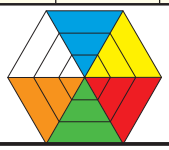




= repeatability (x) see below

pitch P mm	type, ordering description	[inch] l	H	r	y	H216T	GM213	GM240
0.5	TC16-1 I 0.5 ISO	.63	.012	.001	.041		●	●
0.75	TC16-1 I 0.75 ISO		.018	.001			●	●
1.0	TC16-1 I 1.0 ISO		.023	.002			●	●
	TC16-1 I 1.0 ISO-27P					●		
1.25	TC16-1 I 1.25 ISO		.029	.003			●	●
1.5	TC16-1 I 1.5 ISO		.035	.003			●	●
1.5	TC16-1 I 1.5 ISO-27P					●		
1.75	TC16-2 I 1.75 ISO		.040	.004	.085		●	●
.2.0	TC16-2 I 2.0 ISO		.046	.005			●	●
	TC16-2 I 2.0 ISO-27P					●		
2.5	TC16-2 I 2.5 ISO		.057	.006			●	●
.3.0	TC16-2 I 3.0 ISO		.069	.007			●	●
	TC16-2 I 3.0 ISO-27P					●		
3.5	TC16-3 I 3.5 ISO		.081	.009	.122		●	●
4.0	TC16-3 I 4.0 ISO		.092	.010			●	●
4.5	TC16-3 I 4.5 ISO		.104	.011			●	●
5.0	TC16-3 I 5.0 ISO		.115	.012			●	●

tolerances	x		
TC16....	±.0008		



	H216T	GM213	GM240
Steel		●	●
Stainless		○	●
Cast iron	○	○	
Non ferrous metals	●		

● = International TIZIT range, for present availability see price list

ordering example: 30 pieces TC16-3 I 5,0 ISO Gm 213

tools / modules	TC	TC	TC milling	UTS TC				
								
see page	D33	D32	D35	D40				

Threading inserts TC

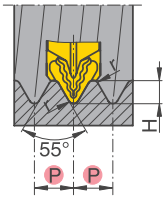
Full profile whitworth 55° (external and internal)

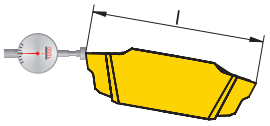
Application	Turning	Milling							

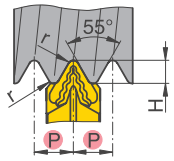
pitch P: 0.5 - 5.0 mm
28 - 5 T.P.I.

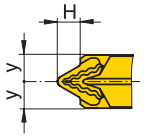
standard

-27P





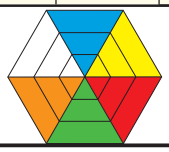




= repeatability (x) see below

pitch P T.P.I.	type, ordering description	[inch] l	H	r	y	H216T	GM213	GM240
28	TC16-1 EI 28 W	.63	.024	.005	.041		●	●
26	TC16-1 EI 26 W		.025	.005			●	●
24	TC16-1 EI 24 W		.027	.005			●	●
20	TC16-1 EI 20 W		.033	.007			●	●
19	TC16-1 EI 19 W-27P		.035	.007		●		
	TC16-1 EI 19 W		.035	.007			●	●
18	TC16-1 EI 18 W		.037	.007			●	●
16	TC16-1 EI 16 W		.041	.008			●	●
14	TC16-2 EI 14 W-27P		.047	.009	.085	●		
14	TC16-2 EI 14 W						●	●
12	TC16-2 EI 12 W		.055	.011			●	●
11	TC16-2 EI 11 W-27P		.060	.012		●		
	TC16-2 EI 11 W						●	●
10	TC16-2 EI 10 W		.066	.013			●	●
9	TC16-2 EI 9 W		.074	.014			●	●
8	TC16-2 EI 8 W		.083	.016			●	●
7	TC16-3 EI 7 W		.095	.018	.122		●	●
6	TC16-3 EI 6 W		.111	.021			●	●
5	TC16-3 EI 5 W		.133	.025			●	●

tolerances	x		
TC16...	±.0008		



	H216T	GM213	GM240
Steel		●	●
Stainless		○	●
Cast iron	○	○	
Non ferrous metals	●		

● = International TIZIT range, for present availability see price list

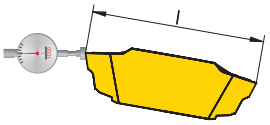
ordering example: 30 pieces TC16-2EI14W-27P H 216 T

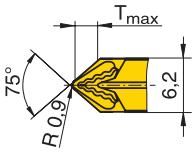
tools / modules	TC	TC	TC	TC	TC milling	UTS TC		
								
see page	D30	D31	D33	D32	D35	D40		

Chamfering insert

Application	Turning	Milling							

chamfering insert

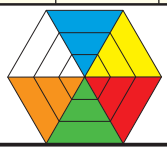




= repeatability (x) see below

type, ordering description	[inch] l	s	R	T_{max}	H216T	GM213	GM240
TC 16-3-75	.64	.244	.035	.098		●	

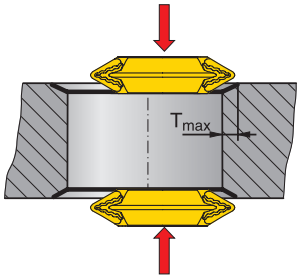
tolerances	x	s	r
TC16...	±.0059	-	±.0020



	H216T	GM213	GM240
Steel		●	●
Stainless		○	●
Cast iron	○	○	
Non ferrous metals	●		

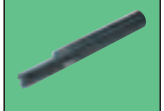
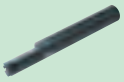
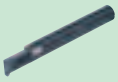
● = International TIZIT range, for present availability see price list

ordering example: 30 pieces TC16-3-75 GM213



tools / modules	TC	TC	TC	TC	TC milling	UTS TC		
see page	D30	D31	D33	D32	D35	D40		

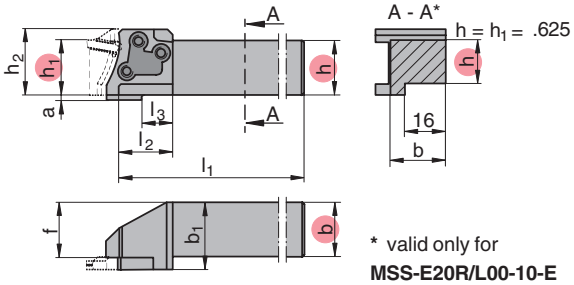
Tools
Overview

						
MSS 0°	**FX short**	**GX mono**	**GX09**	**TC mono**	**UTS 0°**	**FX**
 page D2	 page D10	 page D23	 page D26	 page D30	 page D36	 page D41
MSS 90°	**FX long**	**1.5 x D**	**GX16**	**TC16**	**UTS 90°**	**GX**
 page D3	 page D11	 page D24	 page D27	 page D31	 page D37	 page D42
MSS 45°	**GX09**	**2.5 x D**	**GX09**	**TC mono**	**UTS 45°**	**LX**
 page D4	 page D12	 page D25	 page D28	 page D32	 page D38	 page D43
Adapter	**GX16**		**GX16 / 24**	**TC16**	**UTS GX**	**SBN...K**
 page D5	 page D13		 page D29	 page D33	 page D39	 page D44
GX mono	**GX09**			**TC milling**	**UTS TC**	**SBN...KS**
 page D6	 page D14			 page D35	 page D40	 page D45
GMS	**GX16**					
 page D7	 page D15					
FX mono	**GX24**					
 page D8 - D9	 page D16					
	GX axial					
	 page D17 - D20					
	LX					
	 page D21					

Tools
Modular system (MSS)

Application					Turning				

shank 0°



drawing illustrates right hand execution

* valid only for **MSS-E20R/L00-10-E**

Bgr.	h=h1	b		type, ordering description	f	b1	h2	l1	l2	l3	a	modules
				[inch]								
E12	.500	.500	R	MSS-**E12R**00-08-E	.512	.650	.598	3.00	.47	–	–	MSS-**E12R**...
E16	.625	.625		MSS-**E16R**00-10-E	.650	.787	.763	3.50	.63	–	–	MSS-**E16R**...
E20	.625	.750		MSS-**E20R**00-10-E*	.793	.955	.945	3.50	.79	–	–	MSS-**E20R**...
	.750	.750		MSS-**E20R**00-12-E	.793	.955	.907	4.50	.79	.394	.077	MSS-**E20R**...
E25	1.000	1.000		MSS-**E25R**00-16-E	1.020	1.236	1.197	5.50	.98	–	–	MSS-**E25R**...
E32	1.250	1.000		MSS-**E32R**00-85-E	1.020	1.236	1.486	6.50	1.26	–	–	MSS-**E32R**...
	1.250	1.250		MSS-**E32R**00-20-E	1.279	1.496	1.527	7.00	1.26	.630	.118	MSS-**E32R**...
E12	.500	.500	L	MSS-**E12L**00-08-E	.512	.650	.598	3.00	.47	–	–	MSS-**E12L**...
E16	.625	.625		MSS-**E16L**00-10-E	.650	.787	.763	3.50	.63	–	–	MSS-**E16L**...
E20	.625	.750		MSS-**E20L**00-10-E*	.793	.955	.945	3.50	.79	–	–	MSS-**E20L**...
	.750	.750		MSS-**E20L**00-12-E	.793	.955	.907	4.50	.79	.394	.077	MSS-**E20L**...
E25	1.000	1.000		MSS-**E25L**00-16-E	1.020	1.236	1.197	5.50	.98	–	–	MSS-**E25L**...
E32	1.250	1.000		MSS-**E32L**00-85-E	1.020	1.236	1.486	6.50	1.26	–	–	MSS-**E32L**...
	1.250	1.250		MSS-**E32L**00-20-E	1.279	1.496	1.527	7.00	1.26	.630	.118	MSS-**E32L**...

Bgr. = assembly size

ordering example: 1 piece MSS-E20R00-12-E

spare parts and accessories	clamping screw	key	T-key
MSS-E12R/L00-08-E	78 97 200 (M2,5 x 10 - T08)	77 24 106 (T08)	—
MSS-E16R/L00-10-E	78 97 202 (M3,5 x 12,5 - T15)	—	78 97 208 (T15)
MSS-E20R/L00-10-E	78 97 203 (M4 x 14 - T15)	—	78 97 208 (T15)
MSS-E20R/L00-12-E	78 97 203 (M4 x 14 - T15)	—	78 97 208 (T15)
MSS-E25R/L00-16-E	78 97 205 (M5 x 18 - T20)	—	78 97 207 (T20)
MSS-E32R/L00-85-E	78 97 206 (M6 x 20 - T25)	—	78 83 304 (T25)
MSS-E32R/L00-20-E	78 97 206 (M6 x 20 - T25)	—	78 83 304 (T25)

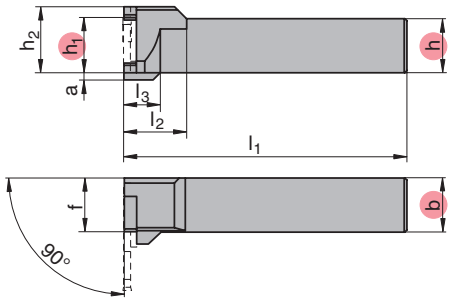
tools / modules	FX	GX09	GX16	GX09/16	GX24	GX24 axial	LX	TC
see page	D10/11	D12	D13	D14/15	D16	D17-D20	D21	D31

Tools
Modular system (MSS)

Application					Turning				

shank 90°

drawing illustrates right hand execution



Bgr.	h=h1	b		type, ordering description	f	h2	l1	l2	l3	a	modules
					[inch]						
E20	.750	.750	R	MSS-**E20R**90-12-E	.787	.922	4.50	.787	.287	.077	MSS-**E20L**...
E25	1.000	1.000		MSS-**E25R**90-16-E	1.000	1.197	5.50	1.102	–	–	MSS-**E25L**...
E32	1.250	1.000		MSS-**E32R**90-85-E	1.260	1.486	6.50	1.338	–	–	MSS-**E32L**...
	1.250	1.250		MSS-**E32R**90-20-E	1.260	1.527	8.00	1.338	.756	.118	MSS-**E32L**...
E20	.750	.750	L	MSS-**E20L**90-12-E	.787	.922	4.50	.787	.287	.077	MSS-**E20R**...
E25	1.000	1.000		MSS-**E25L**90-16-E	1.000	1.197	5.50	1.102	–	–	MSS-**E25R**...
E32	1.250	1.000		MSS-**E32L**90-85-E	1.260	1.486	6.50	1.338	–	–	MSS-**E32R**...
	1.250	1.250		MSS-**E32L**90-20-E	1.260	1.527	8.00	1.338	.756	.118	MSS-**E32R**...

Bgr. = assembly size

ordering example: 1 piece MSS-E20R90-12-E

Attention in case of 90°
right hand shank - left module
left hand shank - right module

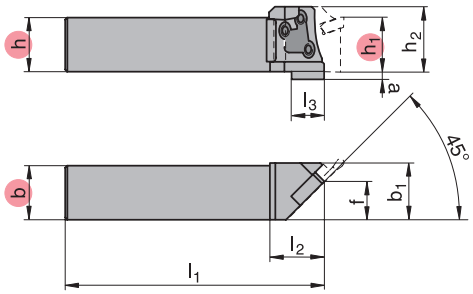
spare parts and accessories	clamping screw	key	T-key
MSS-E20R/L90-12-E	78 97 203 (M4 x 14 - T15)	—	78 97 208 (T15)
MSS-E25R/L90-16-E	78 97 205 (M5 x 18 - T20)	—	78 97 207 (T20)
MSS-E32R/L90-85-E	78 97 206 (M6 x 20 - T25)	—	78 83 304 (T25)
MSS-E32R/L90-20-E	78 97 206 (M6 x 20 - T25)	—	78 83 304 (T25)

tools / modules	FX	GX16	GX16	GX24	GX24 axial	LX	TC	
see page	D10/11	D13	D14/15	D16	D17-D20	D21	D31	

Tools
Modular system (MSS)

Application

shank 45°



drawing illustrates right hand execution

[inch]

Bgr.	h=h1	b		type, ordering description	f	b1	h2	l1	l2	l3	a	modules
E20	.750	.750	R	MSS-**E20R**45-12-E	.571	.846	.907	4.50	.79	.421	.077	MSS-**E20L**...
E25	1.000	1.000	R	MSS-**E25R**45-16-E	.709	1.024	1.197	5.50	.98	.421	.077	MSS-**E25L**...
E20	.750	.750	L	MSS-**E20L**45-12-E	.650	1.240	.907	4.50	.79	.421	.077	MSS-**E20R**...
E25	1.000	1.000	L	MSS-**E25L**45-16-E	.709	1.024	1.197	5.50	.98	.421	.077	MSS-**E25R**...

Bgr. = assembly size

ordering example: 1 piece MSS-E20R45-12-E

Attention in case of 45°
right hand shank - left module
left hand shank - right module

spare parts and accessories	clamping screw	clamping screw short	T-key
MSS-E20R/L45-12-E	78 97 203 (M4 x 14 - T15)	78 97 209 (M4 x 11 - T15)	78 97 208 (T15)
MSS-E25R/L45-16-E	78 97 205 (M5 x 18 - T20)	78 97 210 (M5 x 13,5 - T20)	78 97 207 (T20)

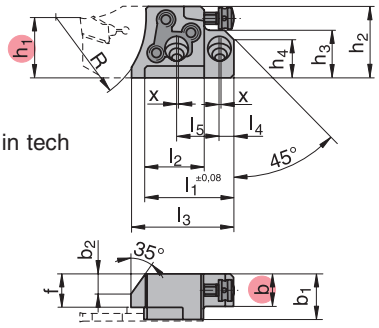
tools / modules	GX16
see page	D13

Application					turning				

adapter

Assembly dimensions details are in tech chapter E42 and E43.

drawing illustrates right hand execution



Bgr.	h_1	b	type, ordering description		f	b_1	b_2	h_2	h_3	h_4	l_1	modules
							[inch]					
E20	.787	.421	**R**	MSS-**E20R**00-AD	.441	.602	.275	.944	.630	.512	1.18	MSS-**E20R**...
			L	MSS-**E20L**00-AD								MSS-**E20L**...
E25	.984	.496	**R**	MSS-**E25R**00-AD	.516	.732	.334	1.181	.787	.630	1.46	MSS-**E25R**...
			L	MSS-**E25L**00-AD								MSS-**E25L**...
E32	1.260	.575	**R**	MSS-**E32R**00-AD	.594	.811	.452	1.496	1.024	.866	1.81	MSS-**E32R**...
			L	MSS-**E32L**00-AD								MSS-**E32L**...

Bgr.	h_1	b	type, ordering description		l_2	l_3	l_4	l_5	R	x [mm]	modules
							[inch]				
E20	.787	.421	**R**	MSS-**E20R**00-AD	.79	1.358	.197	.561	1.200	0,5	MSS-**E20R**...
			L	MSS-**E20L**00-AD							MSS-**E20L**...
E25	.984	.496	**R**	MSS-**E25R**00-AD	.98	1.673	.256	.709	1.496	1,0	MSS-**E25R**...
			L	MSS-**E25L**00-AD							MSS-**E25L**...
E32	1.260	.575	**R**	MSS-**E32R**00-AD	1.26	2.106	.295	.925	1.917	1,0	MSS-**E32R**...
			L	MSS-**E32L**00-AD							MSS-**E32L**...

Bgr. = assembly size

spare parts and accessories	clamping screw	clamp bolt	T-key	adjustment screw
MSS-E20R/L00-AD	78 97 203 (M4 x 14 - T15)	78 97 211 (M4 x 12 - 12.9DIN912)	78 97 208 (T15)	78 97 215 (M4 x 10)
MSS-E25R/L00-AD	78 97 205 (M5 x 18 - T20)	78 97 212 (M5 x 16 - 12.9DIN912)	78 97 207 (T20)	78 97 217 (M5 x 12)
MSS-E32R/L00-AD	78 97 206 (M6 x 20 - T25)	78 97 213 (M6 x 20 - 12.9DIN912)	78 83 304 (T25)	78 97 216 (M6 x 16)

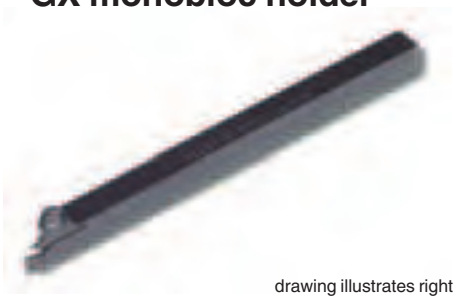
ordering example: 1 piece MSS-E32R00-AD

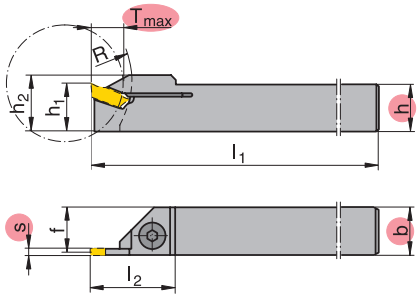
tools / modules	FX	GX16	GX16	GX24	GX24 axial	LX	TC	
see page	D10/11	D13	D14/15	D16	D17-D20	D21	D31	

Tools
Monobloc holder GX09 system

Application									

GX monobloc holder





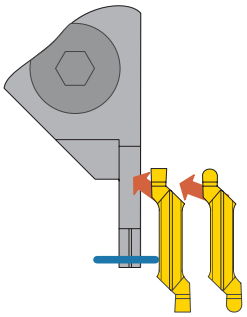
drawing illustrates right hand execution

h=h1	b	s	Tmax	type, ordering description		[inch] f	h2	l1	l2	R	grooving inserts	page
.375	.375	.079-.148	.27	R	E10R00-06-E	.349	.472	6.00	.709	.590	GX09 ...	C8/12/16/17
				L	E10L00-06-E							

ordering example: 1 piece E10R00-06-E

spare parts and accessories	clamping screw	T-key
10R/L00-06-E	78 97 209 (M4 x 11 - T15)	78 97 208 (T15)

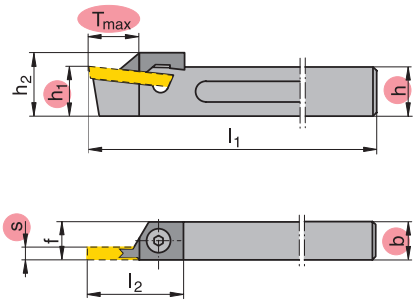
attention: When using rh or lh insert, the insert support seat requires modification to prevent damage to insert.



tools / modules								
see page								

Application									

GMS monobloc holder



drawing illustrates right hand execution

h=h1	b	s	Tmax	[inch] type, ordering description	f	h2	l1	l2	parting inserts	page
.630	.472	.118	.55	R CLCDR 1612 K30	.472	.827	4.92	1.220	LDMX 30F.	C23
				L CLCDL 1612 K30						

ordering example: 1 piece CLCDR 1612 K30

spare parts and accessories	clamp	clamping screw
CLCDR 1616K30	78 02 211	78 02 212
CLCDL 1616K30	78 02 210	

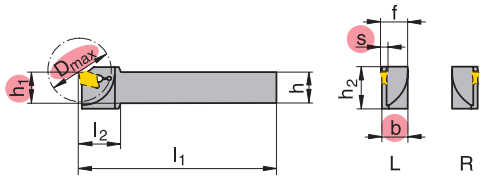
tools / modules								
see page								

Tools
Monobloc holder FX system

Application

right FX monobloc holder

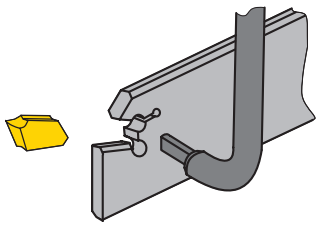
drawing illustrates right hand execution



h=h_1	b	s	D_{max}		type, ordering description	[inch] f	h_2	l_1	l_2	parting inserts	page
.375	.375	.087	1.18	R	XLCER 06 M**22 FX-E**	.386	.768	6.00	.75	**FX 2.2**...	C2
.500	.500	.087	1.18		XLCER 08 F**22 FX-E**	.511	.768	3.00	.75	**FX 2.2**...	C2
.500	.500	.087	1.18		XLCER 08 M**22 FX-E**	.511	.768	6.00	.75	**FX 2.2**...	C2
.562	.563	.087	1.18		XLCER 09 M**22 FX-E**	.573	.768	6.00	.75	**FX 2.2**...	C2
.625	.625	.087	1.18		XLCER 10 H**22 FX-E**	..636	.768	4.00	.75	**FX 2.2**...	C2
.625	.625	.122	1.38		XLCFR 10 H**31 FX-E**	.639	.886	4.00	.88	**FX 3.1**...	C3
.750	.750	.122	1.57		XLCFR 12 K**31 FX-E**	.764	1.024	5.00	1.03	**FX 3.1**...	C3
1.000	.750	.122	1.97		XLCFR 64 M**31 FX-E**	.764	1.256	6.00	1.27	**FX 3.1**...	C3
.750	.750	.161	1.97		XLCFR 12 K**41 FX-E**	.768	1.024	5.00	1.03	**FX 4.1**...	C4
1.000	.750	.161	1.97		XLCFR 64 M**41 FX-E**	.768	1.256	6.00	1.27	**FX 4.1**...	C4

ordering example: 1 piece XLCFR 64 M31 FX-E

spare parts and accessories	ejector
XLCER 06 M22 FX-E	78 02 180
XLCER 08 F22 FX-E	
XLCER 08 M22 FX-E	
XLCER 09 M22 FX-E	
XLCER 10 H22 FX-E	
XLCFR 10 H31 FX-E	78 02 181
XLCFR 12 K31 FX-E	
XLCFR 64 M31 FX-E	
XLCFR 12 K41 FX-E	
XLCFR 64 M41 FX-E	



ejector for change of inserts

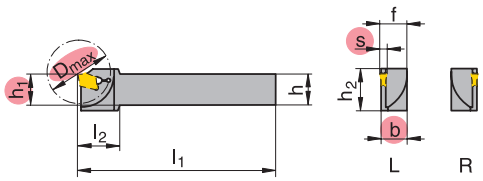
tools / modules

see page

Application									

left FX monobloc holder

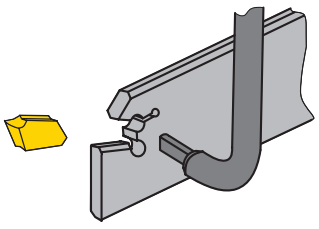
drawing illustrates left hand execution



$h=h_1$	b	s	D_{max}		type, ordering description	[inch] f	h_2	l_1	l_2	parting inserts	page
.375	.375	.087	1.18		XLCEL 06 M**22 FX-E**	.386	.768	6.00	.75	**FX 2.2**...	C2
.500	.500	.087	1.18		XLCEL 08 F**22 FX-E**	.512	.768	3.00	.75	**FX 2.2**...	C2
.500	.500	.087	1.18		XLCEL 08 M**22 FX-E**	.512	.768	6.00	.75	**FX 2.2**...	C2
.562	.563	.087	1.18		XLCEL 09 M**22 FX-E**	.573	.768	6.00	.75	**FX 2.2**...	C2
.625	.625	.087	1.18	L	XLCEL 10 H**22 FX-E**	..636	.768	4.00	.75	**FX 2.2**...	C2
.625	.625	.122	1.38		XLCFL 10 H**31 FX-E**	.639	.886	4.00	.88	**FX 3.1**...	C3
.750	.750	.122	1.57		XLCFL 12 K**31 FX-E**	.764	1.024	5.00	1.03	**FX 3.1**...	C3
1.000	.750	.122	1.97		XLCFL 64 M**31 FX-E**	.764	1.256	6.00	1.27	**FX 3.1**...	C3
.750	.750	.161	1.97		XLCFL 12 K**41 FX-E**	.768	1.024	5.00	1.03	**FX 4.1**...	C4
1.000	.750	.161	1.97		XLCFL 64 M**41 FX-E**	.768	1.256	6.00	1.27	**FX 4.1**...	C4

ordering example: 1 piece XLCFL 10 H31 FX-E

spare parts and accessories	ejector
XLCEL 06 M22 FX-E	78 02 180
XLCEL 08 F22 FX-E	
XLCEL 08 M22 FX-E	
XLCEL 09 M22 FX-E	
XLCEL 10 H22 FX-E	
XLCFL 10 H31 FX-E	78 02 181
XLCFL 12 K31 FX-E	
XLCFL 64 M31 FX-E	
XLCFL 12 K41 FX-E	
XLCFL 64 M41 FX-E	



ejector for change of inserts

tools / modules see page								

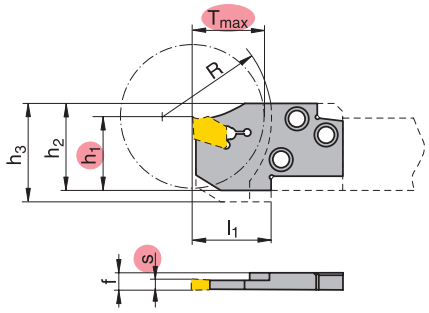
MSS modules (external)

Parting off FX system

Application									

FX short

drawing illustrates right hand execution



Bgr.	s	T_{max}.		type, ordering description	f	l_1	h_1	h_2	h_3	R	parting inserts	page
					[inch]							
E20	.087	.79	R	MSS-**E20R**20-FX2.2	.184	.86	.787	.945	1.063	1.181	FX 2.2..	C2
	.122			MSS-**E20R**20-FX3.1	.187						FX 3.1..	C3
	.161			MSS-**E20R**20-FX4.1	.191						FX 4.1..	C4
	.087		L	MSS-**E20L**20-FX2.2	.184	.86	.787	.945	1.063	1.181	FX 2.2..	C2
	.122			MSS-**E20L**20-FX3.1	.187						FX 3.1..	C3
	.161			MSS-**E20L**20-FX4.1	.191						FX 4.1..	C4
E25	.087	.79	R	MSS-**E25R**20-FX2.2	.243	.86	.984	1.181	—	1.476	FX 2.2..	C2
	.122	.98		MSS-**E25R**25-FX3.1	.246	1.06					FX 3.1..	C3
	.161			MSS-**E25R**25-FX4.1	.250						FX 4.1..	C4
	.201			MSS-**E25R**25-FX5.1	.254						FX 5.1..	C4
	.256			MSS-**E25R**25-FX6.5	.258						FX 6.5..	C5
	.087	.79	L	MSS-**E25L**20-FX2.2	.243	.86	.984	1.181	—	1.476	FX 2.2..	C2
	.122	.98		MSS-**E25L**25-FX3.1	.246	1.06					FX 3.1..	C3
	.161			MSS-**E25L**25-FX4.1	.250						FX 4.1..	C4
	.201			MSS-**E25L**25-FX5.1	.254						FX 5.1..	C4
	.256			MSS-**E25L**25-FX6.5	.258						FX 6.5..	C5
E32	.122	1.26	R	MSS-**E32R**32-FX3.1	.246	1.34	1.260	1.496	—	1.890	FX 3.1..	C3
	.161			MSS-**E32R**32-FX4.1	.250						FX 4.1..	C4
	.201			MSS-**E32R**32-FX5.1	.254						FX 5.1..	C4
	.256			MSS-**E32R**32-FX6.5	.258						FX 6.5..	C5
	.122		L	MSS-**E32L**32-FX3.1	.246	1.34	1.260	1.496	—	1.890	FX 3.1..	C3
	.161			MSS-**E32L**32-FX4.1	.250						FX 4.1..	C4
	.201			MSS-**E32L**32-FX5.1	.254						FX 5.1..	C4
	.256			MSS-**E32L**32-FX6.5	.258						FX 6.5..	C5

Bgr. = assembly size

ordering example: 1 piece MSS-E32R32 FX5.1

tools	0°	90°	UTS 0°	UTS 90°	adapter			
see page	D2	D3	D36	D37	D5			

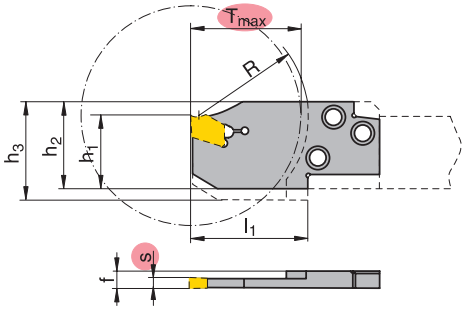
MSS modules (external)

Parting off FX system

Application									

FX long

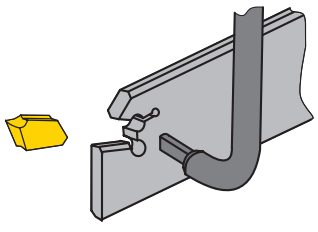
drawing illustrates right hand execution



Bgr.	s	T_{max}.		type, ordering description [inch]	f	l_1	h_1	h_2	h_3	R	parting inserts	page
E25	.122	1.38	R	MSS-**E25R**35-FX3.1	.246	1.46	.984	1.181	—	1.476	FX 3.1..	C 3
	.161			MSS-**E25R**35-FX4.1	.250						FX 4.1..	C 4
	.201			MSS-**E25R**35-FX5.1	.254						FX 5.1..	C 4
	.256			MSS-**E25R**35-FX6.5	.258						FX 6.5..	C 6
	.122		L	MSS-**E25L**35-FX3.1	.246	1.46	.984	1.181	—	1.476	FX 3.1..	C 3
	.161			MSS-**E25L**35-FX4.1	.250						FX 4.1..	C 4
	.201			MSS-**E25L**35-FX5.1	.254						FX 5.1..	C 4
	.256			MSS-**E25L**35-FX6.5	.258						FX 6.5..	C 6
E32	.122	1.77	R	MSS-**E32R**45-FX3.1	.246	1.85	1.260	1.496	—	1.890	FX 3.1..	C 3
	.161			MSS-**E32R**45-FX4.1	.250						FX 4.1..	C 4
	.201			MSS-**E32R**45-FX5.1	.254						FX 5.1..	C 4
	.256			MSS-**E32R**45-FX6.5	.258						FX 6.5..	C 6
	.122		L	MSS-**E32L**45-FX3.1	.246	1.85	1.260	1.496	—	1.890	FX 3.1..	C 3
	.161			MSS-**E32L**45-FX4.1	.250						FX 4.1..	C 4
	.201			MSS-**E32L**45-FX5.1	.254						FX 5.1..	C 4
	.256			MSS-**E32L**45-FX6.5	.258						FX 6.5..	C 6

Bgr. = assembly size

spare parts and accessories	ejector
MSS-E .. -FX 2.2	78 02 180
MSS-E .. -FX 3.1	78 02 181
MSS-E .. -FX 4.1	
MSS-E .. -FX 5.1	
MSS-E .. -FX 6.5	



ejector for change of inserts

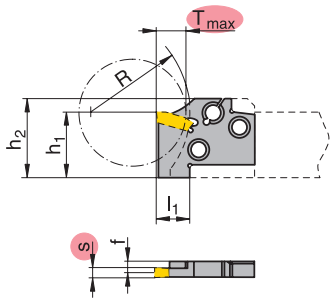
tools	0°	90°	UTS 0°	UTS 90°	adapter			
see page	D2	D3	D36	D37	D5			

MSS modules external

Circlip and O - ring grooves GX09 system

Application									

GX09



drawing illustrates right hand execution

Bgr.	s	T_{max}	type, ordering description		f	l_1	h_1	h_2	R	grooving inserts	page
E12	< .077	.08	MSS-**E12R**02-GX09-1	R	.124	.31	.472	.571	.709	GX09-1...R/L	C16/20
			MSS-**E12L**02-GX09-1	L						GX09-1...R/L	
E16			MSS-**E16R**02-GX09-1	R			.630	.768	.945	GX09-1...R/L	
			MSS-**E16L**02-GX09-1	L						GX09-1...R/L	

[inch]

Bgr. = assembly size

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

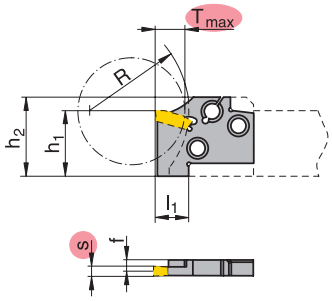
tools	0°							
see page	D2							

MSS modules external

Circlip and O - ring grooves GX16 system

Application									

GX16



drawing illustrates right hand execution

Bgr.	s	T_{max}	type, ordering description		f	l_1	h_1	h_2	R	grooving inserts	page
					[inch]						
E20	< .108	.118	R	MSS-**E20R**03-GX16-2	.134	.51	.787	.945	1.181	GX16-2...R/L	C18 C21
			L	MSS-**E20L**03-GX16-2						GX16-2...R/L	
E25			R	MSS-**E25R**03-GX16-2	.193		.984	1.181	1.476	GX16-2...R/L	
			L	MSS-**E25L**03-GX16-2						GX16-2...R/L	
E32			R	MSS-**E32R**03-GX16-2			1.260	1.496	1.890	GX16-2...R/L	
			L	MSS-**E32L**03-GX16-2						GX16-2...R/L	

Bgr. = assembly size

ordering example: 1 piece MSS-E32R03-GX16-2

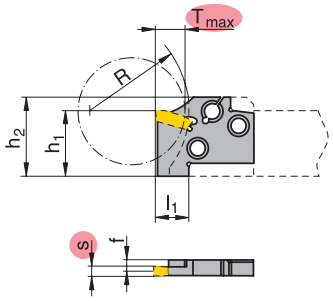
tools	0°	90°	45°	UTS 0°	UTS 90°	UTS 45°	adapter	
see page	D2	D3	D4	D36	D37	D38	D5	

MSS modules (external)
Grooving and turning GX09 system

Application									

GX09

drawing illustrates right hand execution



Bgr.	s	T_{max}	type, ordering description	f	l_1	h_1	h_2	R	grooving inserts	page
				[inch]						
E12	.079 - .108	.275	R MSS-**E12R**07-GX09-1	.124	.315	.472	.571	.709	GX09-1...	C8/12
	.109 - .148		R MSS-**E12R**07-GX09-2	.110					GX09-2...	
	.079 - .108		L MSS-**E12L**07-GX09-1	.124					GX09-1...	
	.109 - .148		L MSS-**E12L**07-GX09-2	.110					GX09-2...	
E16	.079 - .108		R MSS-**E16R**07-GX09-1	.124		.630	.768	.945	GX09-1...	C17/20
	.109 - .148		R MSS-**E16R**07-GX09-2	.110					GX09-2...	
	.079 - .108		L MSS-**E16L**07-GX09-1	.124					GX09-1...	
	.109 - .148		L MSS-**E16L**07-GX09-2	.110					GX09-2...	

Bgr. = assembly size

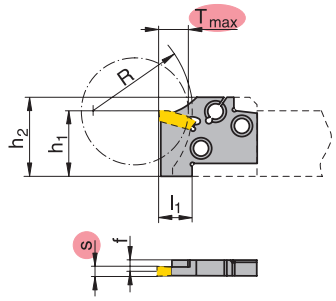
ordering example: 1 piece MSS-E16L07-GX09-2

tools	0°							
see page	D2							

MSS modules (external)
Grooving and turning GX16 system

Application									

GX16



drawing illustrates right hand execution

Bgr.	s	T_{max}	type, ordering description	f	l_1	h_1	h_2	R	grooving inserts	page
				[inch]						
E20	.079 - .108	12	R MSS-**E20R**12-GX16-1	.148	.51	.787	.945	1.181	GX16-1...	C9/10/13 C19/21
	.109 - .148		R MSS-**E20R**12-GX16-2	.134					GX16-2...	
	.148 - .197		R MSS-**E20R**12-GX16-3	.115					GX16-3...	
	.079 - .108		L MSS-**E20L**12-GX16-1	.148					GX16-1...	
	.109 - .148		L MSS-**E20L**12-GX16-2	.134					GX16-2...	
	.148 - .197		L MSS-**E20L**12-GX16-3	.115					GX16-3...	
E25	.079 - .108		R MSS-**E25R**12-GX16-1	.207		.984	1.181	1.476	GX16-1...	
	.109 - .148		R MSS-**E25R**12-GX16-2	.193					GX16-2...	
	.148 - .197		R MSS-**E25R**12-GX16-3	.174					GX16-3...	
	.197 - .256		R MSS-**E25R**12-GX16-4	.150					GX16-4...	
	.079 - .108		L MSS-**E25L**12-GX16-1	.207					GX16-1...	
	.109 - .148		L MSS-**E25L**12-GX16-2	.193					GX16-2...	
	.148 - .197		L MSS-**E25L**12-GX16-3	.174					GX16-3...	
	.197 - .256		L MSS-**E25L**12-GX16-4	.150					GX16-4...	
E32	.109 - .148		R MSS-**E32R**12-GX16-2	.193		1.260	1.496	1.890	GX16-2...	
	.148 - .197		R MSS-**E32R**12-GX16-3	.174					GX16-3...	
	.197 - .256		R MSS-**E32R**12-GX16-4	.150					GX16-4...	
	.109 - .148		L MSS-**E32L**12-GX16-2	.193					GX16-2...	
	.148 - .197		L MSS-**E32L**12-GX16-3	.174					GX16-3...	
	.197 - .256		L MSS-**E32L**12-GX16-4	.150					GX16-4...	

Bgr. = assembly size

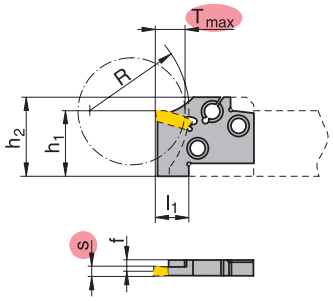
ordering example: 1 piece MSS-E32L12-GX16-4

tools	0°	90°	UTS 0°	UTS 90°	adapter			
see page	D2	D3	D36	D37	D5			

MSS modules (external)
Grooving and turning GX24 system

Application									

GX24



drawing illustrates right hand execution

Bgr.	s	T_{max}	type, ordering description		f	l_1	h_1	h_2	R	grooving inserts	page
					[inch]						
E20	.109 - .148	.827	MSS-**E20R**21-GX24-2	R	.134	.87	.787	.945	30,0	GX24-2...	C11/14
	.148 - .197		MSS-**E20R**21-GX24-3		.115					GX24-3...	
	.109 - .148		MSS-**E20L**21-GX24-2	L	.134					GX24-2...	
	.148 - .197		MSS-**E20L**21-GX24-3		.115					GX24-3...	
E25	.109 - .148		MSS-**E25R**21-GX24-2	R	.116		.984	1.181	37,5	GX24-2...	
	.148 - .197		MSS-**E25R**21-GX24-3		.174					GX24-3...	
	.197 - .256		MSS-**E25R**21-GX24-4*		.150					GX24-4...	
	.315		MSS-**E25R**21-GX24-5*		.116					GX24-5...	
	.109 - .148		MSS-**E25L**21-GX24-2	L	.193					GX24-2...	
	.148 - .197		MSS-**E25L**21-GX24-3		.174					GX24-3...	
	.197 - .256		MSS-**E25L**21-GX24-4*		.150					GX24-4...	
	.315		MSS-**E25L**21-GX24-5*		.116					GX24-5...	
E32	.109 - .148		MSS-**E32R**21-GX24-2	R	.116		1.260	1.496	1.890	GX24-2...	
	.148 - .197		MSS-**E32R**21-GX24-3		.174					GX24-3...	
	.197 - .256		MSS-**E32R**21-GX24-4*		.150					GX24-4...	
	.109 - .148		MSS-**E32L**21-GX24-2	L	.116					GX24-2...	
	.148 - .197		MSS-**E32L**21-GX24-3		.174					GX24-3...	
	.197 - .256		MSS-**E32L**21-GX24-4*		.150					GX24-4...	

***when using the radius insert l_1 = 23mm**

Bgr. = assembly size

ordering example: 1 piece MSS-E20R21GX24-2

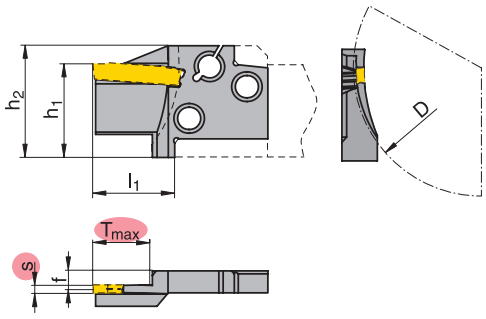
tools	0°	90°	UTS 0°	UTS 90°	adapter			
see page	D2	D3	D36	D37	D5			

MSS modules (external)
Axial grooves GX24 system

Application									

GX24 axial

drawing illustrates right hand execution



Bgr.	s	T_{max}	D		type, ordering description	f	l_1	h_1	h_2	grooving inserts	page
E20	.109 - .148	.551	2.75 - 3.94	R	MSS-**E20R**14-GX24-2 A50-70	.134	.87	.787	.945	GX24-2...	C11/14
			2.75 - 3.94		MSS-**E20R**14-GX24-2 A70-100						
			3.94 - 5.90		MSS-**E20R**14-GX24-2 A100-150						
			2.75 - 3.94	L	MSS-**E20L**14-GX24-2 A50-70						
			2.75 - 3.94		MSS-**E20L**14-GX24-2 A70-100						
			3.94 - 5.90		MSS-**E20L**14-GX24-2 A100-150						

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

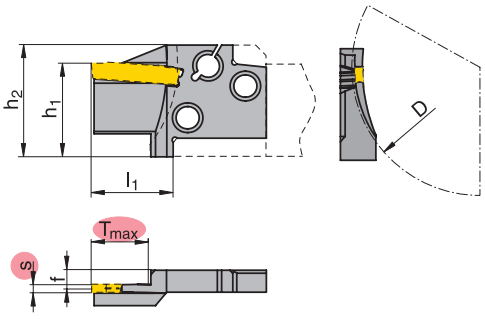
tools	0°	90°	adapter					
see page	D2	D3	D5					

MSS modules (external)
Axial grooving GX24 system

Application									

GX24 axial

drawing illustrates right hand execution



Bgr.	s	T_{max}	D	type, ordering description	f	l_1	h_1	h_2	grooving inserts	page
					[inch]					
E25	.109 - .148	.59	1.97 - 2.75	R MSS-**E25R**15-GX24-2 A50-70	.193	.866	.984	.1.181	GX24-2...	C11/14
			2.75 - 3.94	R MSS-**E25R**15-GX24-2 A70-100					GX24-2...	
			3.94 - 5.90	R MSS-**E25R**15-GX24-2 A100-150					GX24-2...	
	.148 - .197		1.97 - 2.75	R MSS-**E25R**15-GX24-3 A50-70	.174				GX24-3...	
			2.75 - 3.94	R MSS-**E25R**15-GX24-3 A70-100					GX24-3...	
			3.94 - 5.90	R MSS-**E25R**15-GX24-3 A100-150					GX24-3...	
			5.90 - 11.81	R MSS-**E25R**15-GX24-3 A150-300					GX24-3...	
	.197 - .256		1.97 - 2.75	R MSS-**E25R**15-GX24-4 A50-70	.150				GX24-4...	
			2.75 - 3.94	R MSS-**E25R**15-GX24-4 A70-100					GX24-4...	
			3.94 - 5.90	R MSS-**E25R**15-GX24-4 A100-150					GX24-4...	
			5.90 - 11.81	R MSS-**E25R**15-GX24-4 A150-300					GX24-4...	
	.109 - .148		1.97 - 2.75	L MSS-**E25L**15-GX24-2 A50-70	.193				GX24-2...	
			2.75 - 3.94	L MSS-**E25L**15-GX24-2 A70-100					GX24-2...	
			3.94 - 5.90	L MSS-**E25L**15-GX24-2 A100-150					GX24-2...	
	.148 - .197		1.97 - 2.75	L MSS-**E25L**15-GX24-3 A50-70	.174				GX24-3...	
			2.75 - 3.94	L MSS-**E25L**15-GX24-3 A70-100					GX24-3...	
			3.94 - 5.90	L MSS-**E25L**15-GX24-3 A100-150					GX24-3...	
			5.90 - 11.81	L MSS-**E25L**15-GX24-3 A150-300					GX24-3...	
	.197 - .256		1.97 - 2.75	L MSS-**E25L**15-GX24-4 A50-70	.150				GX24-4...	
			2.75 - 3.94	L MSS-**E25L**15-GX24-4 A70-100					GX24-4...	
			3.94 - 5.90	L MSS-**E25L**15-GX24-4 A100-150					GX24-4...	
			5.90 - 11.81	L MSS-**E25L**15-GX24-4 A150-300					GX24-4...	

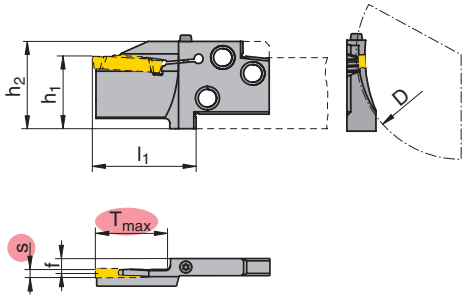
ordering example: 1 piece MSS-E25L15-GX24-4 A150-300

tools	0°	90°	UTS 0°	UTS 90°	adapter			
see page	D2	D3	D36	D37	D5			

MSS modules (external)
Axial grooving GX24 system

Application									

GX24 axial long



drawing illustrates right hand execution

Bgr.	s	T_{max}	D		type, ordering description	f	l_1	h_1	h_2	grooving inserts	page
						[inch]					
E25	.148 - .197	.83	1.97 - 2.75	R	MSS-**E25R**21-GX24-3 AS50-70	.180	1.38	.984	1.181	GX24-3...	C11/14
			2.75 - 3.94		MSS-**E25R**21-GX24-3 AS70-100					GX24-3...	
			3.94 - 5.90		MSS-**E25R**21-GX24-3 AS100-150					GX24-3...	
			5.90- 11.81		MSS-**E25R**21-GX24-3 AS150-300					GX24-3...	
	.197 - .256	.98	1.97 - 2.75		MSS-**E25R**25-GX24-4 AS50-70	.155				GX24-4...	
			2.75 - 3.94		MSS-**E25R**25-GX24-4 AS70-100					GX24-4...	
			3.94 - 5.90		MSS-**E25R**25-GX24-4 AS100-150					GX24-4...	
			5.90- 11.81		MSS-**E25R**25-GX24-4 AS150-300					GX24-4...	
	.148 - .197	.83	1.97 - 2.75	L	MSS-**E25L**21-GX24-3 AS50-70	.180				GX24-3...	
			2.75 - 3.94		MSS-**E25L**21-GX24-3 AS70-100					GX24-3...	
			3.94 - 5.90		MSS-**E25L**21-GX24-3 AS100-150					GX24-3...	
			5.90- 11.81		MSS-**E25L**21-GX24-3 AS150-300					GX24-3...	
	.197 - .256	.98	1.97 - 2.75		MSS-**E25L**25-GX24-4 AS50-70	.155				GX24-4...	
			2.75 - 3.94		MSS-**E25L**25-GX24-4 AS70-100					GX24-4...	
			3.94 - 5.90		MSS-**E25L**25-GX24-4 AS100-150					GX24-4...	
			5.90- 11.81		MSS-**E25L**25-GX24-4 AS150-300					GX24-4...	

ordering example: 1 piece MSS-E25L25-GX24-4 AS150-300

spare parts and accessories	clamping screw	T-key	Nm (inlbs)
MSS-E25R/L25...	78 97 221 (M3,5 x 14 - T15)	78 97 208 (T15)	≤ 3,3 (29)

Axial modules as long execution can be clamped on both sides!

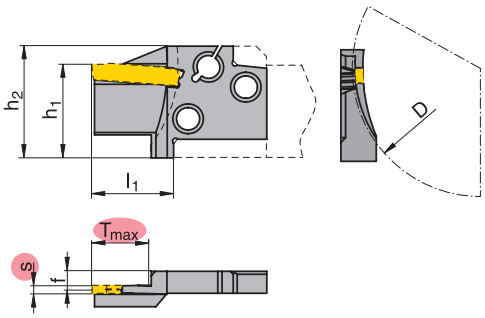
tools	0°	90°	UTS 0°	UTS 90°	adapter			
see page	D2	D3	D36	D37	D5			

MSS modules (external)

Axial grooves GX24 system

Application									

GX24 axial



drawing illustrates right hand execution

Bgr.	s	T_{max}	D	type, ordering description	f [inch]	l_1 [inch]	h_1 [inch]	h_2 [inch]	grooving inserts	page
E32	.148 - .197	.59	2.75 - 3.94	R MSS-**E32R**15-GX24-3 A70-100	.174	.87	1.26	1.496	GX24-3...	C11/14
			3.94 - 5.90	MSS-**E32R**15-GX24-3 A100-150						
			5.9 - 11.81	MSS-**E32R**15-GX24-3 A150-300						
	.197 - .256		2.75 - 3.94	MSS-**E32R**15-GX24-4 A70-100	.150				GX24-4...	
			3.94 - 5.90	MSS-**E32R**15-GX24-4 A100-150						
			5.9 - 11.81	MSS-**E32R**15-GX24-4 A150-300						
			11.81 - 35.43	MSS-**E32R**15-GX24-4 A300-900						
	.148 - .197		2.75 - 3.94	L MSS-**E32L**15-GX24-3 A70-100	.174				GX24-3...	
			3.94 - 5.90	MSS-**E32L**15-GX24-3 A100-150						
			5.9 - 11.81	MSS-**E32L**15-GX24-3 A150-300						
	.197 - .256		2.75 - 3.94	MSS-**E32L**15-GX24-4 A70-100	.150				GX24-4...	
			3.94 - 5.90	MSS-**E32L**15-GX24-4 A100-150						
			5.9 - 11.81	MSS-**E32L**15-GX24-4 A150-300						
			11.81 - 35.43	MSS-**E32L**15-GX24-4 A300-900						

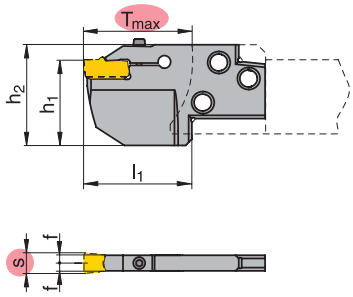
ordering example: 1 piece MSS-E32L15-GX24-4 A150-300

tools	0°	90°	UTS 0°	UTS 90°	adapter			
see page	D2	D3	D36	D37	D5			

MSS modules (external)
Grooving and turning LX system

Application									

LX system



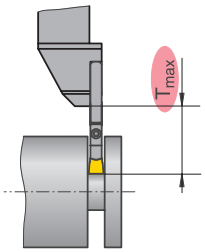
Bgr.	s	$T_{max.}$		type, ordering description	f	l_1	h_1	h_2	grooving inserts	page
				[inch]						
32	.315	.98	N	MSS-E32N25-LX	.134	1.06	1.260	1.732	LX	C7
32	.315	1.26	N	MSS-E32N32-LX	.134	1.34	1.260	1.732	LX	C7
32	.315	1.77	N	MSS-E32N45-LX	.134	1.85	1.260	1.732	LX	C7

Bgr. = assembly size

ordering example: 1 piece MSS-E32N32-LX

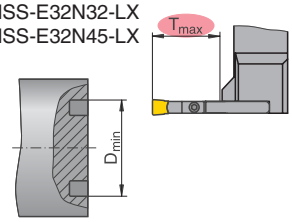
spare parts and accessories	clamping screw	T-key	Nm (inlbs)
MSS-E32N25-LX	78 97 218 (M4 x 18 - T20)	78 97 207 (T20)	≤ 4,0 (35,4)
MSS-E32N32-LX			
MSS-E32N45-LX			

radial grooving



axial grooving

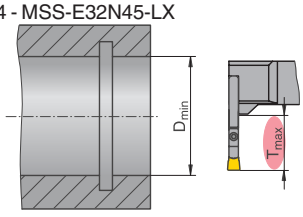
T_{max}:
.75 - MSS-E32N25-LX
1.02 - MSS-E32N32-LX
1.54 - MSS-E32N45-LX



D_{min} > 19.68 inch

internal grooving

T_{max}:
.55 - MSS-E32N25-LX
.83 - MSS-E32N32-LX
1.34 - MSS-E32N45-LX



D_{min} > 7.87 inch

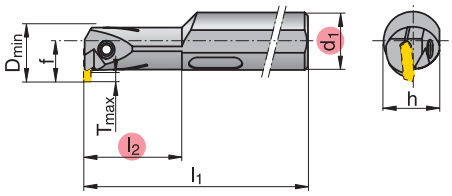
See also page E25!

tools	0°	90°	UTS 0°	UTS 90°	adapter			
see page	D2	D3	D36	D37	D5			

Application									

GX monobloc boring bar

drawing illustrates right hand execution



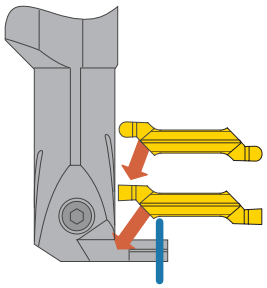
Bgr.	l_2	d_1		type, ordering description [inch]	f	h	l_1	T_{max}	D_{min}	grooving inserts	page
I12	1.18	.625	R	I12R90-2.5D-GX09-E	.433	.600	6.00	.12	.63	GX09...	C8/12/16 C17/20
I12	1.18	.625	L	I12L90-2.5D-GX09-E	.433	.600	6.00	.12	.63	GX09...	

Bgr. = assembly size

ordering example: 1 piece I12R90-2,5D-GX09-E

spare parts and accessories	clamping screw	key	T-key
I12R90-2.5D-GX09-E	78 97 202 (M3,5 x 12,5 - T15)	—	78 97 208 (T15)
I12L90-2.5D-GX09-E			

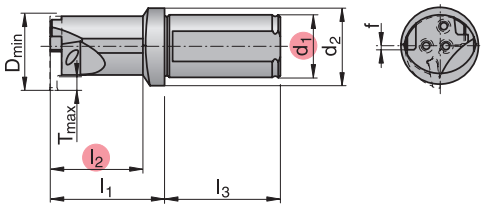
attention: When using rh or lh insert, the insert support seat requires modification to prevent damage to insert.



Tools
Boring bar MSS system

Application			Turning	Milling					

boring bar 1.5D



drawing illustrates right hand execution

[inch]

Bgr.	l_2	d_1		type, ordering description	d_2	f	l_1	l_3	T_{max}	D_{min}	modules
I16	.94	.750	R	MSS-**I16R**90-1.5D-E	.984	.039	1.26	2.000	.16	.79	MSS-**I16R**...
I20	1.18	.750		MSS-**I20R**90-1.5D-E	.984	.039	1.46	2.000	.20	.98	MSS-**I20R**...
I25	1.50	1.000		MSS-**I25R**90-1.5D-E	1.260	.059	1.81	2.250	.24	1.26	MSS-**I25R**...
I32	1.89	1.250		MSS-**I32R**90-1.5D-E	1.575	.079	2.32	2.500	.35	1.57	MSS-**I32R**...
I40	2.36	1.500		MSS-**I40R**90-1.5D-E	1.986	.098	2.83	3.000	.39	1.97	MSS-**I40R**... GX16...
									.75	2.36	MSS-**I40N...** GX24...
I16	.98	.750	L	MSS-**I16L**90-1.5D-E	.984	.039	1.26	2.000	.16	.79	MSS-**I16L**...
I20	1.18	.750		MSS-**I20L**90-1.5D-E	.984	.039	1.46	2.000	.20	.98	MSS-**I20L**...
I25	1.50	1.000		MSS-**I25L**90-1.5D-E	1.260	.059	1.81	2.250	.24	1.26	MSS-**I25L**...
I32	1.89	1.250		MSS-**I32L**90-1.5D-E	1.575	.079	2.32	2.500	.35	1.57	MSS-**I32L**...
I40	2.36	1.500		MSS-**I40L**90-1.5D-E	1.986	.098	2.83	3.000	.39	1.97	MSS-**I40L**... GX16...
									.75	2.36	MSS-**I40N...** GX24...

Bgr. = assembly size

ordering example: 1 piece MSS-I20L90-1.5D-E

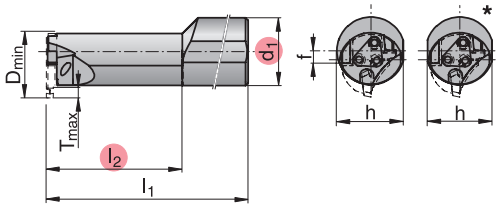
spare parts and accessories	clamping screw	key	T-key
MSS-I16R/L90-1.5D-E	78 97 200 (M2,5 x 10 - T08)	77 24 106 (T08)	—
MSS-I20R/L90-1.5D-E	78 97 201 (M3 x 11 - T10)	78 82 306 (T10)	—
MSS-I25R/L90-1.5D-E	78 97 202 (M3,5 x 12,5 - T15)	—	78 97 208 (T15)
MSS-I32R/L90-1.5D-E	78 97 204 (M4,5 x 17 - T20)	—	78 97 207 (T20)
MSS-I40R/L90-1.5D-E	78 97 205 (M5 x 18 - T20)	—	78 97 207 (T20)

tools / modules	GX09	GX16	GX24	TC				
see page	D26/28	D27/29	D29	D33				

Tools
Boring bar MSS system

Application			Turning	Milling					

boring bar 2.5D



drawing illustrates right hand execution

[inch]

Bgr.	l_2	d_1		type, ordering description	f	h	l_1	T_{max}	D_{min}	modules
I16	1.57	.750	R	MSS-**I16R**90-2.5D-E	.177	.728	7.00	.16	.79	MSS-**I16R**...
I20	1.97	1.000		MSS-**I20R**90-2.5D-E	.236	.953	8.00	.20	.98	MSS-**I20R**...
I25	2.48	1.250		MSS-**I25R**90-2.5D-E	.275	1.216	10.00	.24	1.26	MSS-**I25R**...
I32	3.15	1.500		MSS-**I32R**90-2.5D-E *)	.374	1.425	12.00	.35	1.57	MSS-**I32R**...
I40	3.94	2.000		MSS-**I40R**90-2.5D-E	.433	1.941	14.00	.39	1.97	MSS-**I40R**... GX16...
								.75	2.36	MSS-**I40N**... GX24...
I16	1.57	.750	L	MSS-**I16L**90-2.5D-E	.177	.728	7.00	.16	.79	MSS-**I16L**...
I20	1.97	1.000		MSS-**I20L**90-2.5D-E	.236	.953	8.00	.20	.98	MSS-**I20L**...
I25	2.48	1.250		MSS-**I25L**90-2.5D-E	.275	1.216	10.00	.24	1.26	MSS-**I25L**...
I32	3.15	1.500		MSS-**I32L**90-2.5D-E *)	.374	1.425	12.00	.35	1.57	MSS-**I32L**...
I40	3.94	2.000		MSS-**I40L**90-2.5D-E	.453	1.941	14.00	.39	1.97	MSS-**I40L**... GX16...
								.75	2.36	MSS-**I40N**... GX24...

Bgr. = assembly size

ordering example: 1 piece MSS-I20L90-2.5D-E

***) 2 clamping faces valid only for MSS-I32R/L90-2.5D-E**

spare parts and accessories	clamping screw	key	T-key
MSS-I16R/L90-2.5D-E	78 97 200 (M2,5 x 10 - T08)	77 24 106 (T08)	—
MSS-I20R/L90-2.5D-E	78 97 201 (M3 x 11 - T10)	78 83 306 (T10)	—
MSS-I25R/L90-2.5D-E	78 97 202 (M3,5 x 12,5 - T15)	—	78 97 208 (T15)
MSS-I32R/L90-2.5D-E	78 97 204 (M4,5 x 17 - T20)	—	78 97 207 (T20)
MSS-I40R/L90-2.5D-E	78 97 205 (M5 x 18 - T20)	—	78 97 207 (T20)

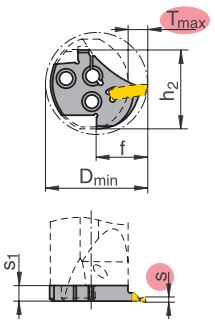
tools / modules	GX09	GX16	GX24	TC
see page	D26/28	D27/29	D29	D33

MSS modules (internal)

Circlip and O - ring grooves GX09 system

Application									

GX09



drawing illustrates right hand execution

Bgr.	s	T_{max}	type, ordering description [inch]	f	s_1	h_2	D_{min}	grooving inserts	page
I16	< .077	.08	R MSS-**I16R**02-GX09-1	.394	.150	.646	.79	GX09-1...R/L	C16 C20
			L MSS-**I16L**02-GX09-1					GX09-1...R/L	
I20			R MSS-**I20R**02-GX09-1	.472		.800	.98	GX09-1...R/L	
			L MSS-**I20L**02-GX09-1					GX09-1...R/L	
I25			R MSS-**I25R**02-GX09-1	.610		.980	1.26	GX09-1...R/L	
			L MSS-**I25L**02-GX09-1					GX09-1...R/L	

Bgr. = assembly size

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

tools / modules	1,5D	2,5D	UTS					
see page	D24	D25	D39					

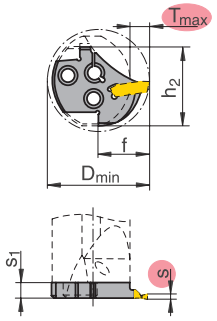
MSS modules (internal)

Circlip and O - ring grooves GX16 system

Application									

GX16

drawing illustrates right hand execution



Bgr.	s	T_{max}	type, ordering description		f	s_1	h_2	D_{min}	grooving inserts	page
					[inch]					
I32	< .108	.12	R	MSS-**I32R**03-GX16-2	.787	.232	1.268	1.57	GX16-2...R/L	C18
			L	MSS-**I32L**03-GX16-2					GX16-2...R/L	
I40			R	MSS-**I40R**03-GX16-2	.964	.232	1.560	1.97	GX16-2...R/L	C21
			L	MSS-**I40L**03-GX16-2					GX16-2...R/L	

Bgr. = assembly size

ordering example: 1 piece MSS-I40R03-GX16-2

tools / modules		2,5D	UTS					
see page	D24	D25	D39					

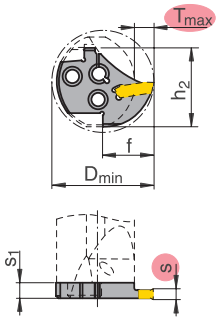
MSS modules (internal)

Grooving and turning GX09 system

Application									

GX09

drawing illustrates right hand execution



Bgr.	s	T_{max}	type, ordering description		f	s_1	h_2	D_{min}	grooving inserts	page
				[inch]						
I16	.079 - .108	.16	R	MSS-**I16R**04-GX09-1	.394	.150	.646	.79	GX09-1...	C8/12 C17/20
	.108 - .148			MSS-**I16R**04-GX09-2					GX09-2...	
	.079 - .108		L	MSS-**I16L**04-GX09-1					GX09-1...	
	.108 - .148			MSS-**I16L**04-GX09-2					GX09-2...	
I20	.079 - .108	.20	R	MSS-**I20R**05-GX09-1	.472		.800	.98	GX09-1...	
	.108 - .148			MSS-**I20R**05-GX09-2					GX09-2...	
	.079 - .108		L	MSS-**I20L**05-GX09-1					GX09-1...	
	.108 - .148			MSS-**I20L**05-GX09-2					GX09-2...	
I25	.079 - .108	.24	R	MSS-**I25R**06-GX09-1	.610		.980	1.26	GX09-1...	
	.108 - .148			MSS-**I25R**06-GX09-2					GX09-2...	
	.079 - .108		L	MSS-**I25L**06-GX09-1					GX09-1...	
	.108 - .148			MSS-**I25L**06-GX09-2					GX09-2...	

Bgr. = assembly size

ordering example: 1 piece MSS-I20L05-GX09-2

tools / modules	1,5D	2,5D	UTS					
see page	D24	D25	D39					

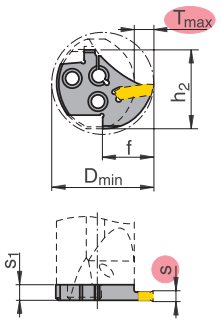
MSS modules (internal)

Grooving and turning GX16/24 system

Application									

GX16 / 24

drawing illustrates right hand execution



Bgr.	s	T_{max}	type, ordering description		f	s_1	h_2	D_{min}	grooving inserts	page
	.079 - .108		MSS-**I32R**09-GX16-1						GX16-1...	
	.108 - .148		MSS-**I32R**09-GX16-2	R					GX16-2...	
	.148 - .197		MSS-**I32R**09-GX16-3						GX16-3...	
	.197 - .256		MSS-**I32R**09-GX16-4						GX16-4...	
I32	.079 - .108	.35	MSS-**I32L**09-GX16-1		.787	.232	1.268	1.57	GX16-1...	
	.108 - .148		MSS-**I32L**09-GX16-2	L					GX16-2...	
	.148 - .197		MSS-**I32L**09-GX16-3						GX16-3...	
	.197 - .256		MSS-**I32L**09-GX16-4						GX16-4...	
	.079 - .108	.39	MSS-**I40R**10-GX16-1		.964	.232	1.560	1.97	GX16-1...	C9/10/11
	.108 - .148	.39	MSS-**I40R**10-GX16-2		.964	.232	1.560	1.97	GX16-2...	C13/14
	.108 - .148	.75	MSS-**I40N**19-GX24-2		1.319	.244	1.602	2.36	GX24-2...	C19/21
	.148 - .197	.39	MSS-**I40R**10-GX16-3	R	.964	.232	1.560	1.97	GX16-3...	
	.148 - .197	.75	MSS-**I40N**19-GX24-3		1.319	.244	1.602	2.36	GX24-3...	
	.197 - .256	.39	MSS-**I40R**10-GX16-4		.964	.232	1.560	1.97	GX16-4...	
	.197 - .256	.75	MSS-**I40N**19-GX24-4		1.319	.244	1.602	2.36	GX24-4...	
I40	.079 - .108	.39	MSS-**I40L**10-GX16-1		.964	.232	1.560	1.97	GX16-1...	
	.108 - .148	.39	MSS-**I40L**10-GX16-2		.964	.232	1.560	1.97	GX16-2...	
	.108 - .148	.75	MSS-**I40N**19-GX24-2		1.319	.244	1.602	2.36	GX24-2...	
	.148 - .197	.39	MSS-**I40L**10-GX16-3	L	.964	.232	1.560	1.97	GX16-3...	
	.148 - .197	.75	MSS-**I40N**19-GX24-3		1.319	.244	1.602	2.36	GX24-3...	
	.197 - .256	.39	MSS-**I40L**10-GX16-4		.964	.232	1.560	1.97	GX16-4...	
	.197 - .256	.75	MSS-**I40N**19-GX24-4		1.319	.244	1.602	2.36	GX24-4...	

Bgr. = assembly size

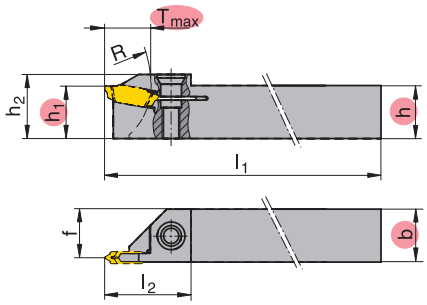
ordering example: 1 piece MSS-I40L10-GX16-4

tools / modules	1,5D	2,5D	UTS					
see page	D24	D25	D39					

Tools
Monobloc boring bar TC system - threading

Application	Turning

TC monobloc holder



drawing illustrates right hand execution

h=h1	b	pitch mm	pitch T.P.I.	Tmax	type, ordering description	[inch] f	h2	l1	l2	R	threading inserts	page
.500	.500	0.5 - 3.0	48 - 8	.39	R E12R00-08-TC16-E	.461	.598	6.00	.77	.590	TC16-1/2 ...	C24-C26
.500	.500	0.5 - 3.0	48 - 8	.39	L E12L00-08-TC16-E	.461	.598	6.00	.77	.590	TC16-1/2 ...	C28

ordering example: 1 piece E12R00-1212-TC16

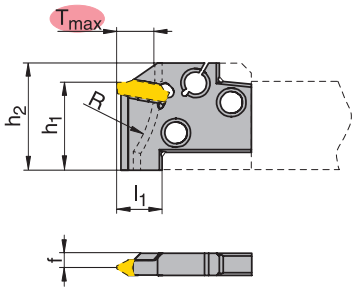
spare parts and accessories	clamping screw	T-key
E12R00-08-TC16-E E12L00-08-TC16-E	78 97 209 (M4x11-T15)	78 97 208 (T15)

tools / modules see page								

MSS modules (external)
Thread turning TC system

Application	Turning

TC16



drawing illustrates right hand execution

Bgr.	pitch mm	pitch T.P.I.	T_{max}	type, ordering description		f	h_1	l_1	h_2	R	threading inserts	page
E20	0.5 - 1.5	48 - 16	.31	R	MSS-**E20R**-TC16-1	.136	.512	.79	.945	1.181	TC16-1...	
	1.75 - 3.0	14 - 8	.47		MSS-**E20N**-TC16-2	.087	.512	.79	.945	—	TC16-2...	
	0.5 - 1.5	48 - 16	.31	L	MSS-**E20L**-TC16-1	.136	.512	.79	.945	1.181	TC16-1...	
	1.75 - 3.0	14 - 8	.47		MSS-**E20N**-TC16-2	.087	.512	.79	.945	—	TC16-2...	
E25	0.5 - 1.5	48 - 16	.31	R	MSS-**E25R**-TC16-1	.205	.512	.98	1.181	1.476	TC16-1...	C24-C26
	1.75 - 3.0	14 - 8	.39		MSS-**E25R**-TC16-2	.161	.512	.98	1.181	1.476	TC16-2...	C28
	3.5 - 5.0	7 - 5	.47		MSS-**E25N**-TC16-3	.122	.512	.98	1.181	—	TC16-3...	
	0.5 - 1.5	48 - 16	.31	L	MSS-**E25L**-TC16-1	.205	.512	.98	1.181	1.476	TC16-1...	
	1.75 - 3.0	14 - 8	.39		MSS-**E25L**-TC16-2	.161	.512	.98	1.181	1.476	TC16-2...	
	3.5 - 5.0	7 - 5	.47		MSS-**E25N**-TC16-3	.122	.512	.98	1.181	—	TC16-3...	

Bgr. = assembly size

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

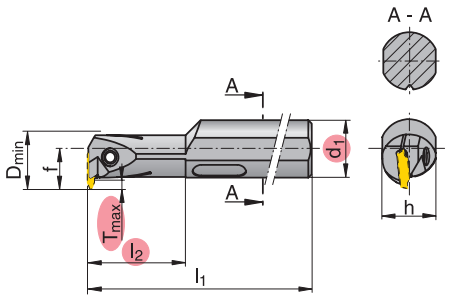
tools / modules	0°	90°	UTS 0°	UTS 90°	adapter
see page	D2	D3	D36	D37	D5

Tools

TC - monobloc boring bar

Application	Turning

TC monobloc boring bar



drawing illustrates right hand execution

Bgr.	l_2	d_1	type, ordering description		[inch] f	h	l_1	T_{max}	D_{min}	threading inserts	page
I16	1.26	.750		I16R90-2D-TC16-E	.551	.670	7.00	.16	.79	TC16-1/2 ...	
I20	1.57	1.000	R	I20R90-2D-TC16-E	.689	.905	8.00	.20	.98	TC16- ...	
I25	1.97	1.250		I25R90-2D-TC16-E	.866	1.181	10.00	.24	1.26	TC16- ...	C24/C25
I16	1.26	.750		I16L90-2D-TC16-E	.551	.670	7.00	.16	.79	TC16-1/2 ...	C27/C28
I20	1.57	1.000	L	I20L90-2D-TC16-E	.689	.905	8.00	.20	.98	TC16- ...	
I25	1.97	1.250		I25L90-2D-TC16-E	.866	1.181	10.00	.24	1.26	TC16- ...	

Bgr. = assembly size

spare parts and accessories	clamping screw	T-key
I16R90-2D-TC16-E I16L90-2D-TC16-E	78 97 203 (M4x14-T15)	78 97 208 (T15)
I20R90-2D-TC16-E I20L90-2D-TC16-E	78 97 205 (M5x18-T20)	78 97 207 (T20)
I25R90-2D-TC16-E I25L90-2D-TC16-E	78 97 206 (M6x20-T25)	78 83 304 (T25)

ordering example: 1 piece I16R90-2D-TC16-E

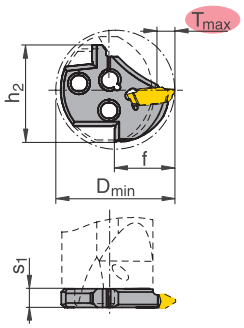
tools / modules see page								

MSS modules (internal)
Threading module

Application	Turning

TC16

drawing illustrates right hand execution

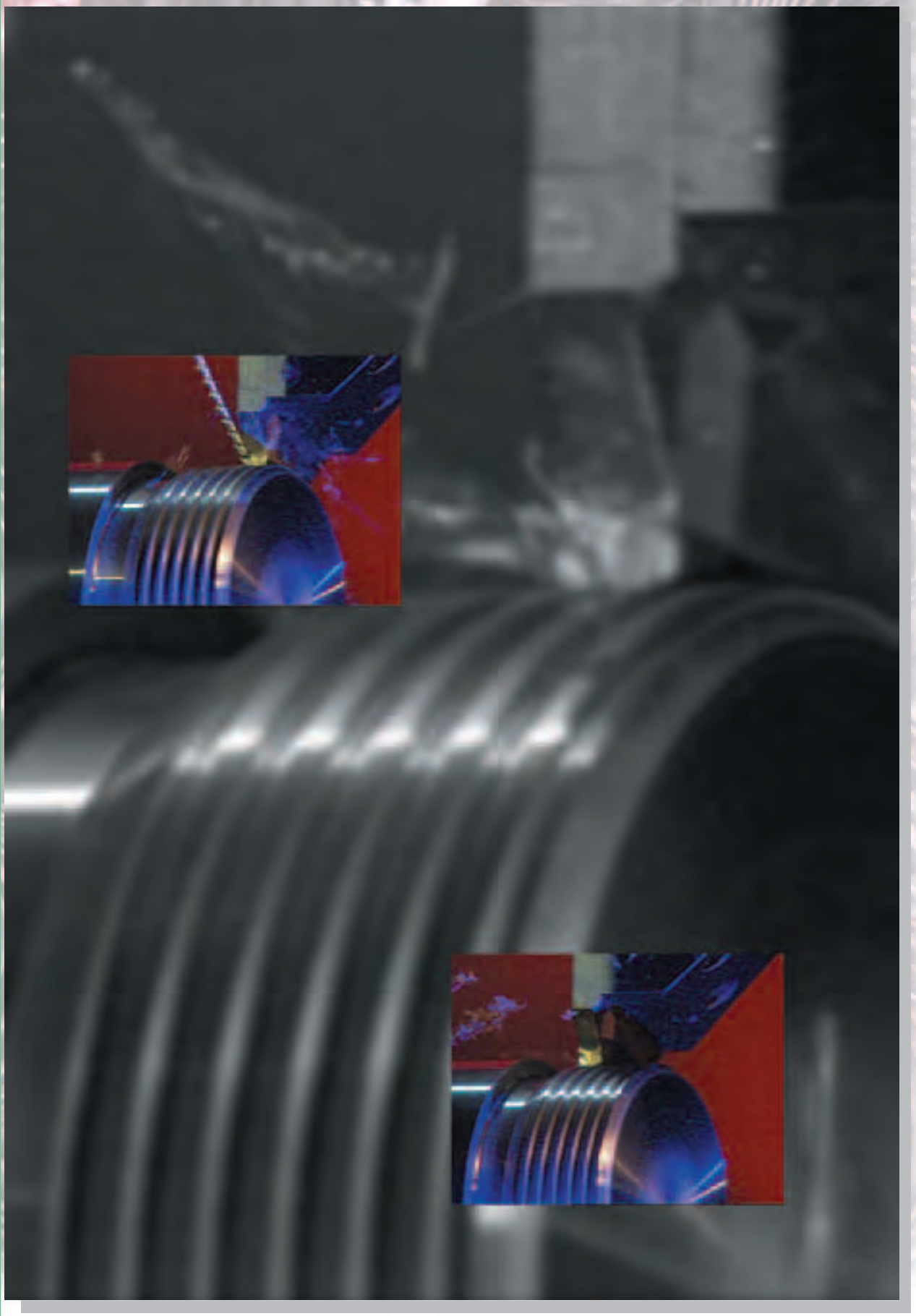


Bgr.	pitch mm	pitch T.P.I.	T_{max}	type, ordering description		f	s_1	h_2	D_{min}	threading inserts	page
I32	0.5 - 1.5	48 - 16	.27	R	MSS-**I32R**-TC16-1	.787	.244	1.268	1.57	TC16-1	C24/C25
	1.75 - 3.0	14 - 8			MSS-**I32R**-TC16-2					TC16-2	
	3.5 - 5.0	7 - 5			MSS-**I32N**-TC16-3					TC16-3	
	0.5 - 1.5	48 - 16	.27	L	MSS-**I32L**-TC16-1	.787	.244	1.268	1.57	TC16-1	C27/C28
	1.75 - 3.0	14 - 8			MSS-**I32L**-TC16-2					TC16-2	
	3.5 - 5.0	7 - 5			MSS-**I32N**-TC16-3					TC16-3	

Bgr. = assembly size

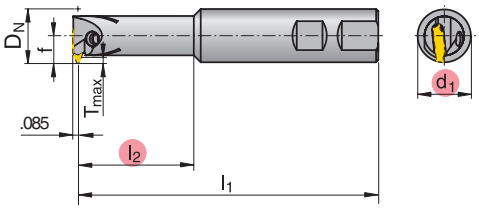
ordering example: 1 piece MSS-I32R-TC16-1

tools / modules	1,5D	2,5D	UTS
see page	D24	D25	D39



Application	Milling	Turning							

TC milling cutter



drawing illustrates right hand execution

D_N	l_2	d_1		type, ordering description	f	l_1	T_{max}	threading inserts	page
				[mm]					
.98	2.13	1.000	R	I25R90-2D-**TC16**-W-E	.492	5.50	.12	TC16- ...	C26-C29
1.26	2.68	1.250		I32R90-2D-**TC16**-W-E	.630	6.50	.14	TC16- ...	

ordering example: 1 piece I25R90-2D-TC16-W-E

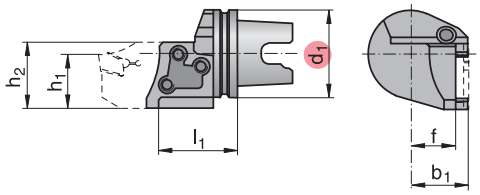
spare parts and accessories	clamping screw	T-key
I25R90-2D-TC16-W-E	78 97 204 (M4,5x17-T20)	78 97 207 (T20)
I32R90-2D-TC16-W-E	78 97 206 (M6x20-T25)	78 83 304 (T25)

tools / modules								
see page								

Tools
Modular system (MSS)

Application					Turning				

UTS 0°



drawing illustrates right hand execution

Bgr.	[mm] d_1		type, ordering description	[inch] f	b_1	h_1	h_2	l_1	modules
E25	40	R	UT40-MSS-**E25R**00	.807	1.039	.984	1.181	1.42	MSS-**E25R**...
	50		UT50-MSS-**E25R**00	1.004	1.236	.984	1.181	1.653	MSS-**E25R**...
	63		UT63-MSS-**E25R**00	1.240	1.472	.984	1.181	1.97	MSS-**E25R...**
E32	50		UT50-MSS-**E32R**00	1.004	1.236	1.378	1.646	1.929	MSS-**E32R**...
	63		UT63-MSS-**E32R**00	1.240	1.472	1.378	1.646	1.97	MSS-**E32R**...
E25	40	L	UT40-MSS-**E25L**00	.807	1.039	.984	1.181	1.42	MSS-**E25L**...
	50		UT50-MSS-**E25L**00	1.004	1.236	.984	1.181	1.653	MSS-**E25L**...
	63		UT63-MSS-**E25L**00	1.240	1.472	.984	1.181	1.97	MSS-**E25L...**
E32	50		UT50-MSS-**E32L**00	1.004	1.236	1.378	1.646	1.929	MSS-**E32L...**
	63		UT63-MSS-**E32L**00	1.240	1.472	1.378	1.646	1.97	MSS-**E32L**...

Bgr. = assembly size

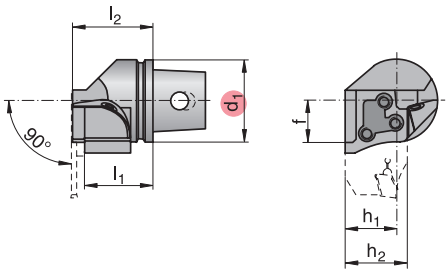
ordering example: 1 piece UT50-MSS-E25R00

spare parts and accessories	clamping screw	T-key	O-ring
UT40-MSS-E25R00	78 97 205 (M5 x 18 - T20)	78 97 207 (T20)	78 96 900
UT40-MSS-E25L00			
UT50-MSS-E25R00			78 96 940
UT50-MSS-E25L00			
UT63-MSS-E25R00			78 96 941
UT63-MSS-E25L00			
UT63-MSS-E32R00	78 97 206 (M6 x 20 - T25)	78 83 304 (T25)	
UT63-MSS-E32L00			

tools / modules	FX	GX16	GX16	GX24		LX	TC	
see page	D 10/11	D13	D14/15	D16	D17-D20	D21	D31	

Application					Turning				

UTS 90°



drawing illustrates right hand execution

Bgr.	[mm] d_1		type, ordering description	f	h_1	h_2	l_1	l_2	modules
				[inch]					
E25	40	R	UT40-MSS-**E25R**90	.787	.984	1.181	33,5	1.535	MSS-**E25L**...
	50		UT50-MSS-**E25R**90	.984	.984	1.181	43,5	1.929	MSS-**E25L**...
E32	63		UT63-MSS-**E32R**90	1.063	1.260	1.496	53,5	2.323	MSS-**E32L**...
E25	40	L	UT40-MSS-**E25L**90	.787	.984	1.181	33,5	1.535	MSS-**E25R**...
	50		UT50-MSS-**E25L**90	.984	.984	1.181	43,5	1.929	MSS-**E25R**...
E32	63		UT63-MSS-**E32L**90	1.063	1.260	1.496	53,5	2.323	MSS-**E32R**...

Bgr. = assembly size

ordering example: 1 piece UT50-MSS-E25R90

attention in case of 90°
right hand shank - left module
left hand shank - right module

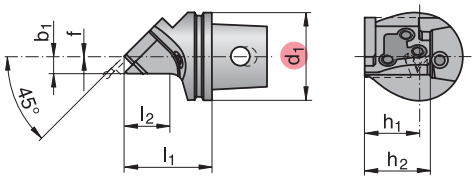
spare parts and accessories	clamping screw	T-key	O-ring
UT40-MSS-E25L00	78 97 205 (M5 x 18 - T20)	78 97 207 (T20)	78 96 900
UT40-MSS-E25R00			
UT50-MSS-E25R00			78 96 940
UT50-MSS-E25L00			
UT63-MSS-E32R00	78 97 206 (M6 x 20 - T25)	78 83 304 (T25)	78 96 941
UT63-MSS-E32L00			

tools / modules	FX	GX16	GX16	GX24		LX	TC	
see page	D 10/11	D13	D14/15	D16	D17-D20	D21	D31	

Tools
Modular system (MSS)

Application									

UTS 45°



drawing illustrates left hand execution

Bgr.	[mm] d_1		type, ordering description	[inch] f	b_1	h_1	h_2	l_1	l_2	modules
E25	40	R	UT40-MSS-**E25R**45	.0	.315	.984	1.181	1.57	.83	MSS-**E25L**...
	40	L	UT40-MSS-**E25L**45	.0	.315	.984	1.181	1.57	.83	MSS-**E25R**...

Bgr. = assembly size

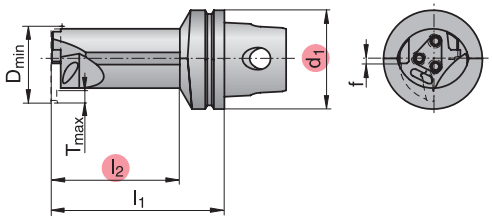
ordering example: 1 piece UT40-MSS-E25R45

spare parts and accessories	clamping screw	clamping screw short	T-key	O-ring
UT40-MSS-E25L45	78 97 205 (M5 x 18 - T20)	78 97 210 (M5 x 13,5 - T20)	78 97 207 (T20)	78 96 900
UT40-MSS-E25R45				

tools / modules	GX16								
see page	D13								

Application			Turning	Milling					

UTS boring bar



drawing illustrates right hand execution

[inch]

Bgr.	l_2	d_1 [mm]		type, ordering description	f	l_1	D_{min}	T_{max}	modules
I16	1.34	40	R	UT40-MSS-**I16R**90-2D	.039	2.16	.79	.16	MSS-**I16R**...
I20	1.57	40	R	UT40-MSS-**I20R**90-2D	.039	2.36	.98	.20	MSS-**I20R**...
I25	1.97	40	R	UT40-MSS-**I25R**90-2D	.059	2.75	1.26	.24	MSS-**I25R**...
		50	R	UT50-MSS-**I25R**90-2D		2.95			
I32	2.52	40	R	UT40-MSS-**I32R**90-2D	.079	3.15	1.57	.35	MSS-**I32R**...
		50	R	UT50-MSS-**I32R**90-2D		3.54			
		63	R	UT63-MSS-**I32R**90-2D		3.74			
I40	3.15	40	R	UT40-MSS-**I40R**90-2D	.098	3.62	1.97	.39	MSS-**I40R**...GX16..
							2.36	.75	MSS-**I40R**...GX24..
		50	R	UT50-MSS-**I40R**90-2D	.098	4.13	1.97	.39	MSS-**I40R**...GX16..
							2.36	.75	MSS-**I40R**...GX24..
		63	R	UT63-MSS-**I40R**90-2D	.098	4.33	1.97	.39	MSS-**I40R**...GX16..
							2.36	.79	MSS-**I40R**...GX24..
I16	1.34	40	L	UT40-MSS-**I16L**90-2D	.039	2.16	.79	.16	MSS-**I16L**...
I20	1.57	40	L	UT40-MSS-**I20L**90-2D	.039	2.36	.98	.20	MSS-**I20L**...
I25	1.97	40	L	UT40-MSS-**I25L**90-2D	.059	2.75	1.26	.24	MSS-**I25L**...
		50	L	UT50-MSS-**I25L**90-2D		2.95			
I32	2.52	40	L	UT40-MSS-**I32L**90-2D	.079	3.15	1.57	.35	MSS-**I32L**...
		50	L	UT50-MSS-**I32L**90-2D		3.54			
		63	L	UT63-MSS-**I32L**90-2D		3.74			
I40	3.15	40	L	UT40-MSS-**I40L**90-2D	.098	3.62	1.97	.39	MSS-**I40L**...GX16..
							2.36	.79	MSS-**I40L**...GX24..
		50	L	UT50-MSS-**I40L**90-2D	.098	4.13	1.97	.39	MSS-**I40L**...GX16..
							2.36	.79	MSS-**I40L**...GX24..
		63	L	UT63-MSS-**I40L**90-2D	.098	4.33	1.97	.39	MSS-**I40L**...GX16..
							2.36	.79	MSS-**I40L**...GX24..

Bgr. = assembly size

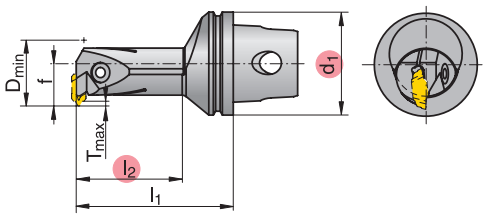
ordering example: 1 piece UT40-MSS-I16R90-2D

tools / modules	GX09	GX16	GX24	TC				
see page	D26/D28	D27/D29	D29	D33				

Tools
UTS MSS TC monobloc boring bar

Application	Turning

TC monobloc boring bars



drawing illustrates right hand execution

Bgr.	l_2	d_1 [mm]		type, ordering description	f [mm]	l_1 [mm]	D_{min} [mm]	T_{max} [mm]	threading inserts	page
16	1.42	40	R	UT40-MSS-**I16R**90-2D-TC16	.551	2.16	.79	.16	TC16-1/2 ...	C24 - C28
20	1.57	40		UT40-MSS-**I20R**90-2D-TC16	.689	2.36	.98	.20	TC16- ...	
25	2.13	40		UT40-MSS-**I25R**90-2D-TC16	.866	2.75	1.26	.24	TC16- ...	
16	1.42	40	L	UT40-MSS-**I16L**90-2D-TC16	.551	2.16	.79	.16	TC16-1/2 ...	
20	1.57	40		UT40-MSS-**I20L**90-2D-TC16	.689	2.36	.98	.20	TC16- ...	
25	2.13	40		UT40-MSS-**I25L**90-2D-TC16	.866	2.75	1.26	.24	TC16- ...	

Bgr. = assembly size

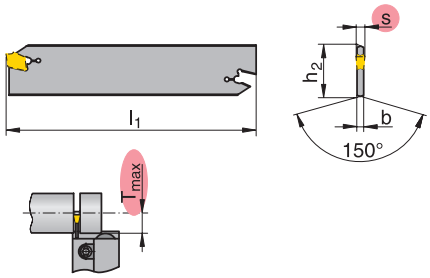
ordering example: 1 piece UT40-MSS-I16R90-2D-TC16

spare parts and accessories	clamping screw	T-key
UT40-MSS-I16R90-2D-TC16	78 97 203 (M4 x 14 - T15)	78 97 208 (T15)
UT40-MSS-I16L90-2D-TC16		
UT40-MSS-I20R90-2D-TC16	78 97 205 (M5 x 18 - T20)	78 97 207 (T20)
UT40-MSS-I20L90-2D-TC16		
UT40-MSS-I25R90-2D-TC16	78 97 206 (M6 x 20 - T25)	78 83 304 (T25)
UT40-MSS-I25L90-2D-TC16		

tools / modules	
see page	

Application									

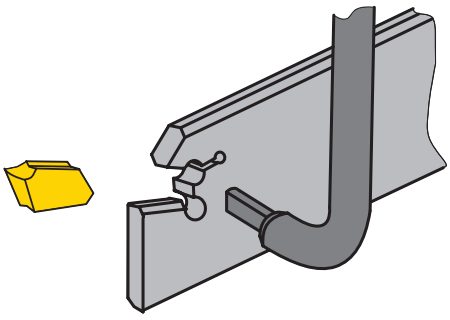
FX blade



h_2	s	T_{max}	type, ordering description	[inch] l_1	b	parting inserts	page
1.024	.087	.98	XLCEN **26**02 J22 FX	4.33	.065	FX 2.2...	C2 - C6
	.122	1.38	XLCFN **26**03 J31 FX		.094	FX 3.1...	
	.161	1.57	XLCFN **26**04 J41 FX		.126	FX 4.1...	
1.260	.087	1.18	XLCEN **32**02 M22 FX	5.90	.065	FX 2.2...	
	.122	1.97	XLCFN **32**03 M31 FX		.094	FX 3.1...	
	.161		XLCFN **32**04 M41 FX		.126	FX 4.1...	
	.201	2.16	XLCFN **32**05 M51 FX		.157	FX 5.1...	
	.256		XLCFN **32**06 M65 FX		.205	FX 6.5...	
1.811	.323	3.15	XLCEN **46**08 S82 FX	9.84	.268	FX 8.2...	
	.382		XLCEN **46**09 S97 FX		.315	FX 9.7...	

ordering example: 1 piece XLCEN 2602 J22 FX

spare parts and accessories	ejector
XLCEN 2602 J22 FX	78 02 180
XLCEN 3202 M22 FX	
XLCFN 2603 J31 FX	78 02 181
XLCFN 2604 J41 FX	
XLCFN 3203 M31 FX	
XLCFN 3204 M41 FX	
XLCFN 3204 M51 FX	
XLCFN 3206 M65 FX	
XLCEN 4608 S82 FX	78 02 182
XLCEN 4609 S97 FX	



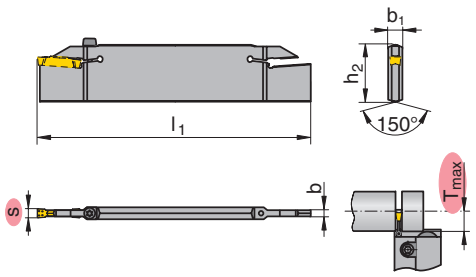
ejector for change of inserts

tools / modules	SBN...K	SBN...KS						
see page	D44	D45						

Tools
Blade GX system

Application									

GX blade



h_2	s	T_{max}	[inch] type, ordering description	l_1	b	b_1	inserts	page
1.260	.109 - .148	.83	XLCFN **32**03-GX24-2S	7.09	.083	.244	GX24-2...	C11/14
	.148 - .197		XLCFN **32**04-GX24-3S		.120		GX24-3...	
	.197 - .256		XLCFN **32**06-GX24-4S		.165		GX24-4...	

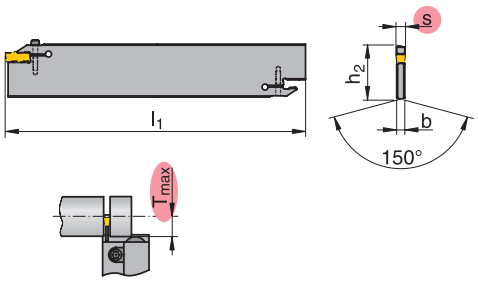
ordering example: 1 piece XLCFN 3203 GX24-2

spare parts and accessories	clamping screw	T-key	Nm (inlbs)
XLCFN 3203-GX24-2S	78 97 221 (M3,5 x 14 - T15)	78 97 208 (T15)	≤ 3,3 (29)
XLCFN 3204-GX24-3S			
XLCFN 3206-GX24-4S			

tools / modules	SBN...K	SBN...KS						
see page	D44	D45						

Application									

LX blade



h2	s	Tmax	type, ordering description [inch]	l1	b	inserts	page
1.811	.315	3.15	XLCEN **46**08 LX	9.84	.268	LX	C7

ordering example: 1 piece XLCEN 4608 LX

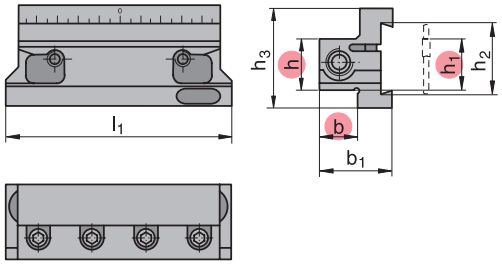
spare parts and accessories	clamping screw	T-key	Nm (inlbs)
XLCEN 4608 LX	78 97 218 (M4 x 18 - T20)	78 97 207 (T20)	≤ 4,0 (35,4)

tools / modules	SBN...K								
see page	D44								

Tools
Clamp block

Application									

clamp block



h_2	$h = h_1$	b	type, ordering description	h_3	b_1	l_1	blades
			[inch]				
1.024	.750	.700	SBN 12-**26** K-E	1.535	1.369	3.54	XLC.N **26**...
1.260	1.000	.950	SBN 16-**32** K-E	1.890	1.647	4.33	XLC.N **32**...
	1.250	1.200	SBN 20-**32** K-E		1.909	4.72	
1.811	1.250	1.200	SBN 20-**46** K-E	2.756	2.105	5.90	XLC.N **46**...
	1.500	1.450	SBN 24-**46** K-E		2.362		

ordering example: 1 piece SBN 2020-26 K-E

spare parts and accessories	key	clamping screw	coolant set
SBN 12-26 K-E	7812301	7802115	7802148
SBN 16-32 K-E			
SBN 20-32 K-E			
SBN 20-46 K-E	7812302	7802133	7802143

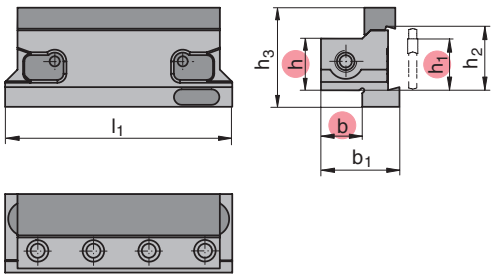
The blocks are delivered without coolant set. When applying integrated coolant supply kindly order the additional coolant set separately.

tools / modules	FX	GX	LX					
see page	D41	D42	D43					

Tools
Split clamp block

Application									

split clamp block



h_2	$h = h_1$	b	type, ordering description	h_3	b_1	l_1	blades
			[inch]				
1.024	.750	.700	SBN 12-**26** KS-E	1.688	1.369	3.54	XLC.N **26**...
1.260	1.000	.950	SBN 16-**32** KS-E	1.929	1.647	4.33	XLC.N **32**...
	1.250	1.200	SBN 20-**32** KS-E	2.044	1.909	4.72	

ordering example: 1 piece SBN 2020-26 KS

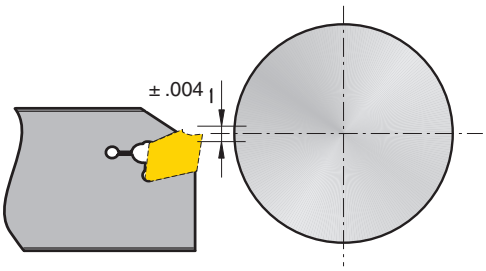
spare parts and accessories	key	clamping screw	coolant set
SBN 12-26 KS-E	7812301	7802115	7802148
SBN 16-32 KS-E			
SBN 20-32 KS-E			

The blocks are delivered without coolant set. When applying integrated coolant supply kindly order the additional coolant set separately.

tools / modules	FX	GX						
see page	D41	D42						

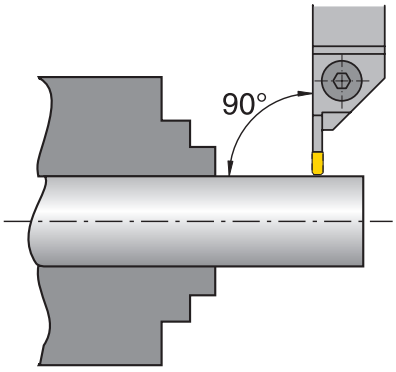
Tool setting
Application recommendations

center height



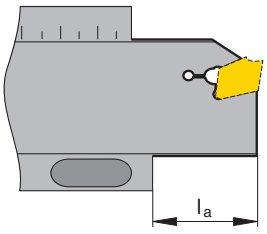
The center height should be set within a tolerance of ± .004 inch to the work piece axis. This is especially important when parting to center.

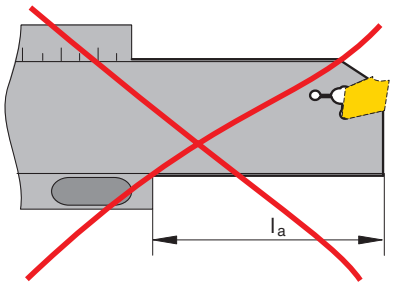
tool setting



The parting and grooving tool must be mounted with a 90° angle to the axis of the work piece.

tool overhang

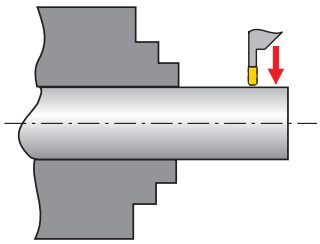


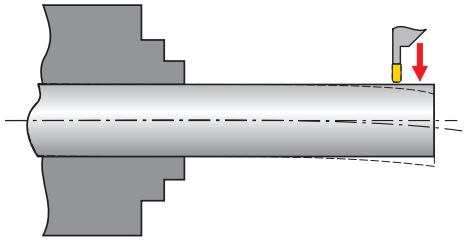


For optimum stability the tool overhang has to be kept as short as possible. The following rule can be applied: overhang l_a should not be larger than 8 x s (grooving width).

Tool setting
Application recommendations

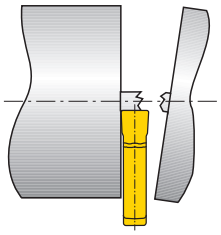
work piece overhang





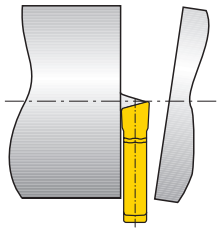
In order to avoid vibrations the work piece should be clamped with the minimum overhang possible.

parting guidance



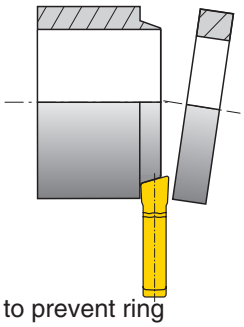
From Ø .20 inch on, reduce feed " f " by approx. 50%.

No parting across centre (risk of breakage).



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

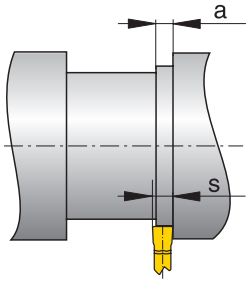
In order to minimize lateral deflection reduce feed by approx. 20 - 50%.



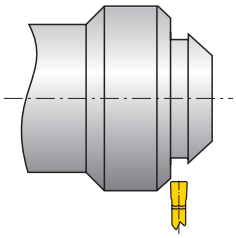
In order to prevent ring formation, use R or L inserts.

Reduce feed " f " because of lateral deflection by approx. 20 % - 50%.

grooving guidance

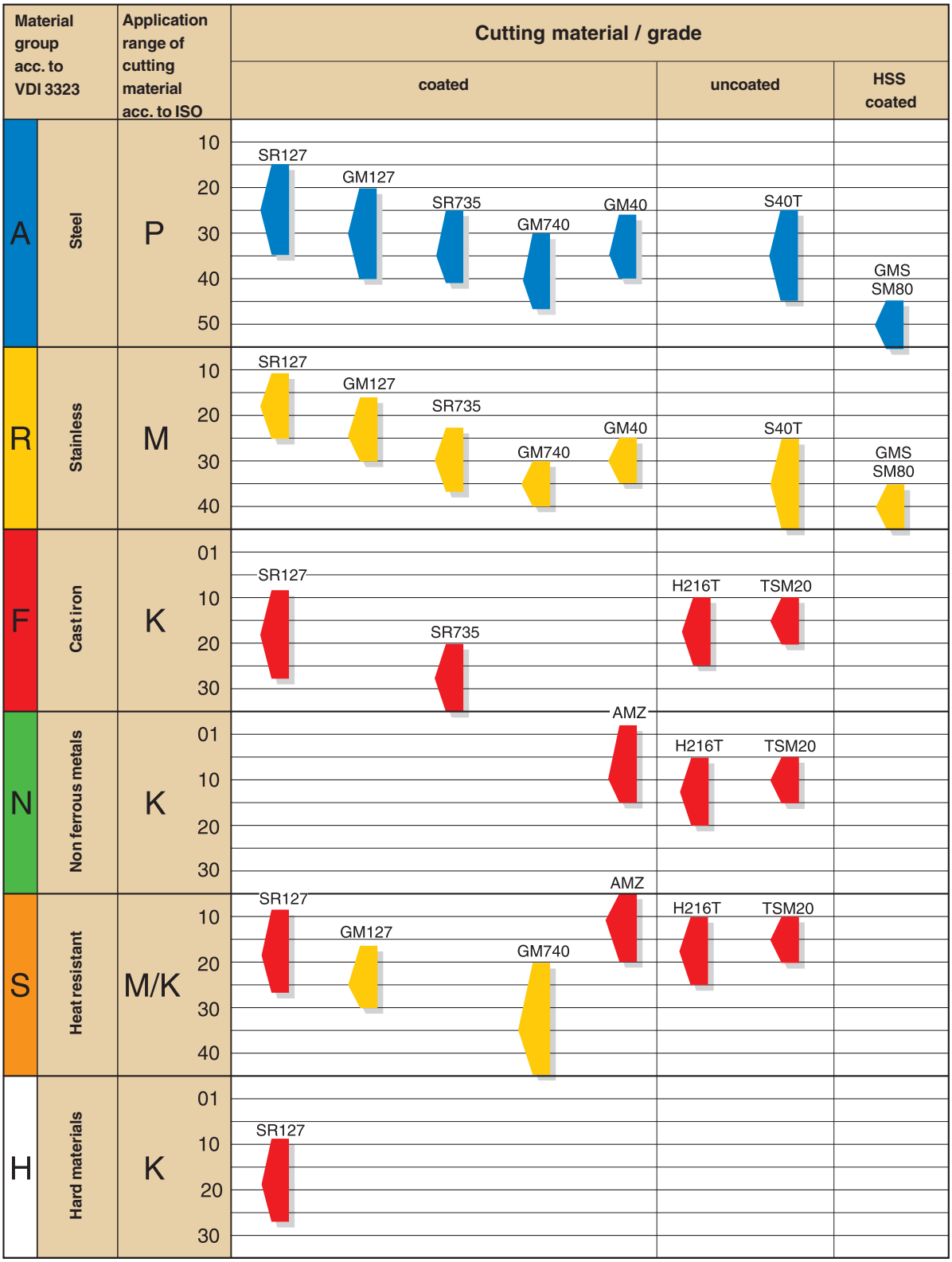


When grooving with an axial displacement the width "a" should amount to at least 70% of the grooving width "s" .



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

Grade overview parting and grooving



Measures in case of problems

FX parting and grooving system

Problem type											
wear type				work piece problems				swarf control			
edge break out	built up edge	wear on clearance face	plastic deformation	vibrations	formation of pips and burrs	chattered surface	surface finish	chip too long (snarl chip)	chip too short (fragmented chip)	**Remedy measures**	
	↑	↓	↓	↓			↑	↓		cutting speed	cutting values
↓		~	↓	↑		↓	↓	↑	↓	feed	cutting values
↓		↓	↓		↓	↓	↓			feed - centre area	cutting values
↑	↓		~	~	↓	↓	↓	↓	↑	chipgroove (↓ -R -M -F ↑)	selection of indexable inserts
					●					R / L execution	selection of indexable inserts
↑		↑	↑	↓	↓	↓	↑			corner radius (larger ↓ ↑ smaller)	selection of indexable inserts
↓		↑	↑							cutting material (wear resistance ↓ ↑ toughness)	selection of indexable inserts
				↓		↑	↑			grooving width	selection of indexable inserts
~				~		~	~			clamping tool	general criteria
~				~		~	~			clamping tool	general criteria
~				~			↓			overhang	general criteria
~		~		~	~		~			top 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

Cutting data values

work piece material		type of treatment / alloy		hardness HB	SR127 v_c [sfpm]	GM127 v_c [sfpm]
A	non alloyed steel	annealed	≤ 0,15% C	125	492 - 918	492 - 918
		annealed	0,15% - 0,45% C	150-250	426 - 787	426 - 787
		tempered	≥ 0,45% C	300	328 - 656	328 - 656
	low alloy steel	annealed		180	459 - 722	459 - 722
		tempered		250-300	426 - 590	426 - 590
		tempered		350	328 - 525	328 - 525
	high alloy steel	annealed		200	394 - 558	394 - 558
		tempered		350	328 - 492	328 - 492
	corrosion resistant steel	annealed	ferritic	200	492 - 820	492 - 820
		tempered	martensitic	325	197 - 328	197 - 328
R	stainless steel	annealed	ferritic/martensitic	200	459 - 722	459 - 722
		quenched	austenitic	180	394 - 656	394 - 656
		quenched	duplex	230-260	262 - 427	262 - 427
		hardened	ferritic/austenitic	330	197 - 328	197 - 328
F	grey cast iron		perlitic / ferritic	180	394 - 656	—
			perlitic / martensitic	260	328 - 525	—
	SG iron / spheroidal cast iron		ferritic	160	426 - 656	—
			perlitic	250	328 - 525	—
	tempered iron		ferritic	130	394 - 754	—
			perlitic	230	295 - 590	—
N	malleable aluminum alloys	not hardenable		60	—	—
		hardenable		100	—	—
	cast aluminum alloys	not hardenable	< 12% Si	80	—	—
		hardenable	< 12% Si	90	—	—
		not hardenable	> 12% Si	130	—	—
	copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)		—	—
			brass, red bronze	90	—	—
			bronze	100	—	—
			lead-free copper and electrolytic copper	100	—	—
	non metal materials		thermosetting plastics		—	—
			fibre-reinforced plastics		—	—
			hard rubber		—	—
S	heat resistant alloys	annealed	Fe-base	200	82 - 148	82 - 148
		hardened	Fe-base	280	65 - 131	65 - 131
		annealed	Ni- or Co-base	250	49 - 82	49 - 82
		hardened	Ni- or Co-base	350	33 - 65	33 - 65
		cast	Ni- or Co-base	320	33 - 65	33 - 65
	titanium alloys		pure titanium	R_m 400*	—	—
			alpha + beta alloys	R_m1050*	—	—
H	hardened steel	hardened and tempered		55 HRC	33 - 65	—
		cast		60 HRC	—	—
	hard castings			400	33 - 65	—
	hardened cast iron	hardened and tempered		55 HRC	33 - 65	—

*** R_m = maximum strength, measured in Mpa**

Cutting data values

SR735 v_c [sfpm]	GM40 v_c [sfpm]	GM740 v_c [sfpm]	AMZ v_c [sfpm]	S40T v_c [sfpm]	H216T v_c [sfpm]	TSM20 v_c [sfpm]	SM80 GMS v_c [fpm]
426 - 722	426 - 722	361 - 492	361 - 525	328 - 525	—	—	
361 - 459	361 - 459	262 - 394	—	230 - 492	—	—	98 - 262
230 - 492	230 - 492	230 - 361	262 - 394	197 - 328	—	—	98 - 230
394 - 623	394 - 623	230 - 328	295 - 426	197 - 361	—	—	—
361 - 492	361 - 492	230 - 295	262 - 394	197 - 295	—	—	98 - 230
230 - 426	230 - 426	197 - 295	230 - 295	197 - 262	—	—	—
295 - 459	295 - 459	197 - 262	295 - 459	197 - 262	—	—	—
230 - 426	230 - 426	197 - 262	230 - 295	197 - 262	—	—	—
394 - 656	394 - 656	295 - 426	525 - 722	262 - 426	—	—	—
197 - 262	197 - 262	197 - 262	230 - 361	197 - 328	—	—	98 - 262
—	394 - 656	328 - 590	525 - 722	—	—	—	—
—	328 - 558	262 - 495	361 - 525	—	—	—	98 - 262
—	230 - 361	230 - 361	—	—	—	—	98 - 262
—	197 - 295	197 - 295	230 - 361	—	— —		—
—	—	—	590 - 722	—	361 - 590	328 - 590	—
—	—	—	459 - 590	—	295 - 492	295 - 492	—
—	—	—	525 - 656	—	361 - 590	328 - 558	—
—	—	—	394 - 590	—	262 - 459	230 - 426	—
—	—	—	590 - 787	—	328 - 656	295 - 590	—
—	—	—	525 - 656	—	230 - 525	230 - 492	—
—	—	—	328 - 3280	—	328 - 3040	328 - 3040	—
—	—	—	328 - 2624	—	262 - 3040	262 - 3040	98 - 984
—	—	—	328 - 1640	—	262 - 1640	262 - 3040	262 - 3040
—	—	—	328 - 1640	—	—	—	262 - 3040
—	—	—	328 - 1640	—	—	—	—
— —	— —	— —	262 - 984	—	262 - 984	262 - 984	98 - 656
—	—	—	—	—	656 - 1968	492 - 1968	
—	—	—	—	—	492 - 1520	328 - 984	164 - 394
—	—	—	—	—	328 - 984	262 - 984	164 - 328
—	—	—	262 - 1640	—	262 - 1640	262 - 1640	
—	—	—	262 - 656	—	197 - 492	164 - 492	262 - 1640
—	—	—	—	—	328 - 820	328 - 820	—
—			98 - 164	—	—	98 - 131	164 - 492
—	—	65 - 131	82 - 115	—	—	82 - 115	—
—	—	65 - 98	49 - 82	—	—	49 - 82	—
—	—	—	33 - 65	—	—	33 - 65	—
—	—	—	33 - 82	—	—	33 - 65	—
—	—	—	—	—	295 - 459	328 - 459	—
—	—	—	—	—	98 - 197	131 - 197	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

The easy way to success
Application recommendations

-F1
page E8
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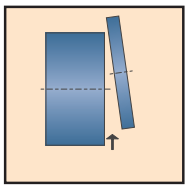
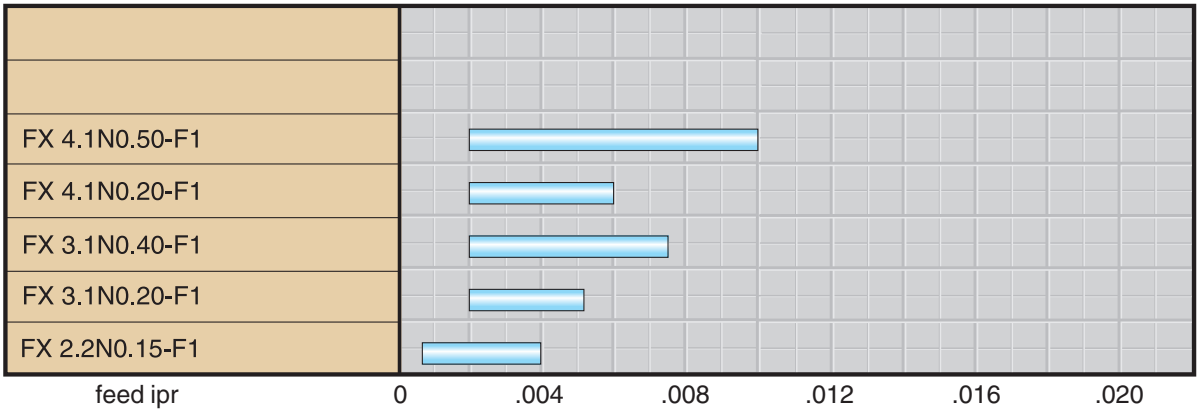
FX ...-F1



⇒ 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
⇒ low built up edge

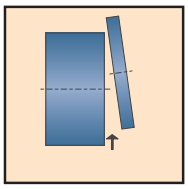
application:



Attention: reduce feed by 20%-50% for R/L execution!

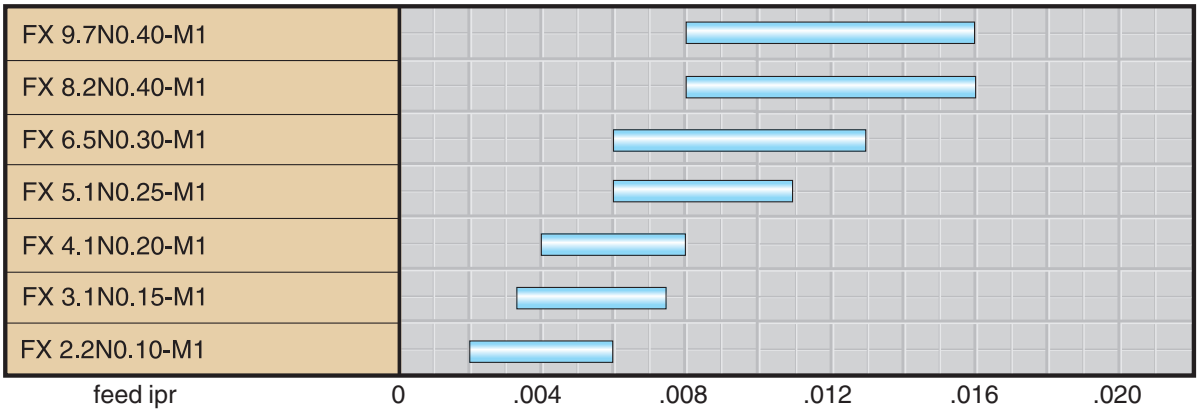
	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SR127 / SR735 GM740	SR735 / GM740	—	SR127 / SR735 GM740	—
Stainless	SR735 / GM740	SR735 / GM740	—	SR735 / GM740	—
Cast iron	SR127	SR127	—	SR127	—
Non ferrous metals	—	—	—	—	—
Heat resistant	—	—	—	—	—
Hard materials	—	—	—	—	—

FX ...-M1



⇒ insert with narrow negative chamfer
⇒ suitable for all steel materials with high strength
⇒ suitable for all applications
⇒ for steel and grey cast iron

application:



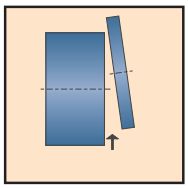
Attention: reduce feed by 20%-50% for R/L execution!

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SR127 / SR735	SR127 / GM40 SR735 / GM740	GM740	SR127 / SR735 GM40	—
Stainless	SR735 / GM740	SR735 / GM740	GM740	SR735 / GM740	—
Cast iron	SR127	SR127	SR735	SR127	—
Non ferrous metals	—	—	—	—	—
Heat resistant	GM740	GM740	—	GM740	—
Hard materials	—	—	—	SR127	—

The easy way to success!

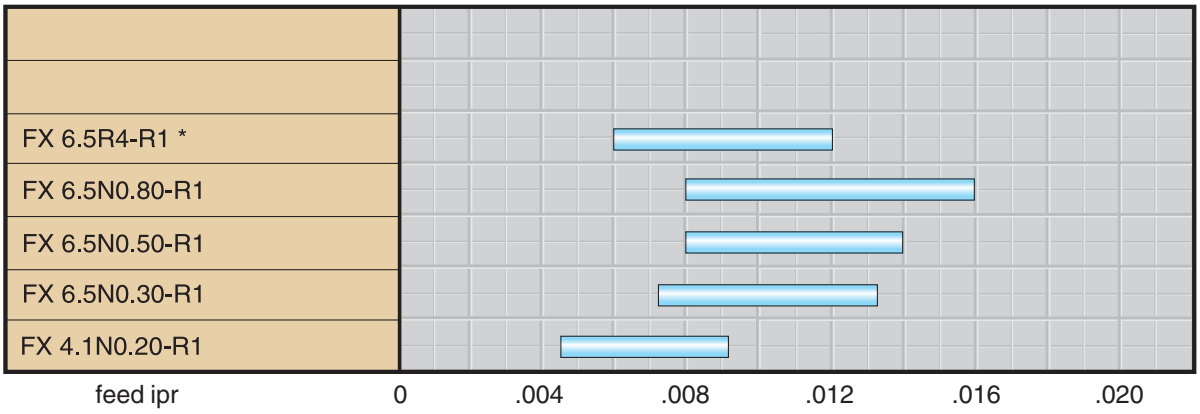
Application recommendations

FX ...-R1



⇒ insert with **very stable cutting edge** for roughing
⇒ when using inserts with large corner radii high feeds are possible
⇒ particularly suitable for parting off thick-walled tubes
⇒ for medium or high strength steels

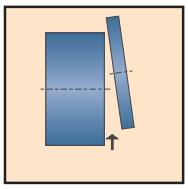
application:



*** R4 = right insert 4°**

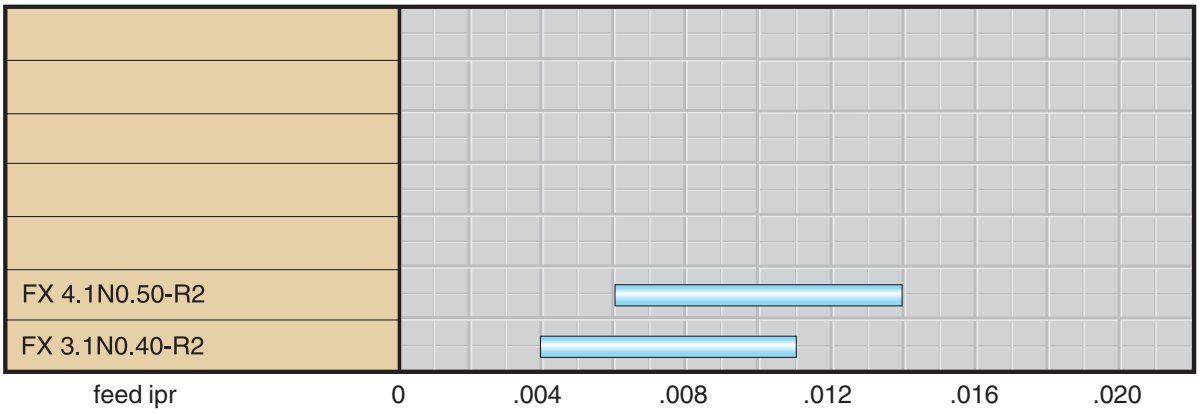
	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	GM740 / GM40	GM740 / GM40	GM740	GM740 / GM40	—
Stainless	GM740	GM740	GM740	GM740	—
Cast iron	—	—	—	—	—
Non ferrous metals	—	—	—	—	—
Heat resistant	GM740	GM740	GM740	GM740	—
Hard materials	—	—	—	—	—

FX ...-R2



⇒ 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 disturbances

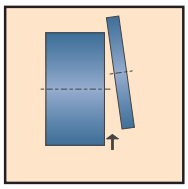
application:



	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SR127 / SR735 GM740	SR735 / GM740	GM740	SR127 / SR735 GM740	—
Stainless	GM740	GM740	GM740	SR735 / GM740	—
Cast iron	SR127	SR127	SR127	SR127	—
Non ferrous metals	—	—	—	—	—
Heat resistant	GM740	GM740	GM740	GM740	—
Hard materials	—	—	—	—	—

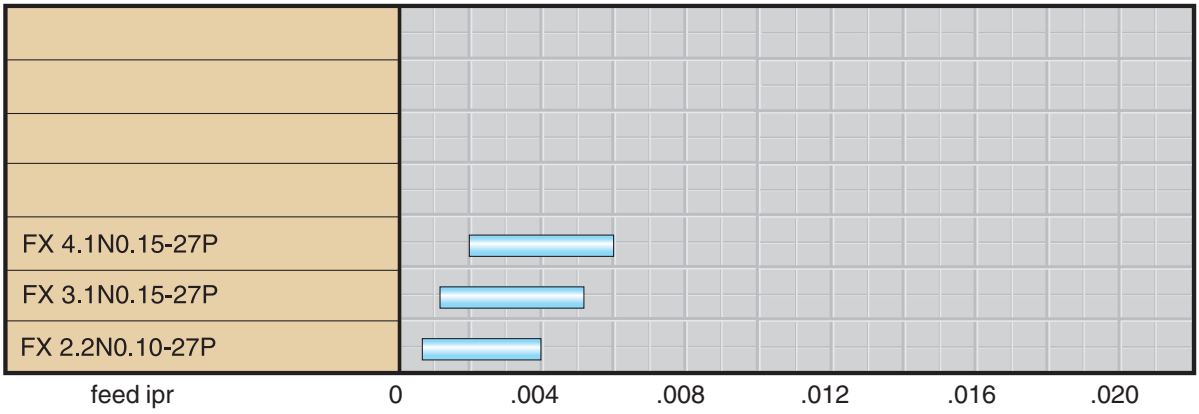
The easy way to success
Application recommendations

FX ...-27P



⇒ particularly suitable for **aluminum and non ferrous metals**
⇒ insert with highly positive cutting geometry and sharp cutting edge
⇒ extra-smooth rake face through “microfinish“
⇒ reduced built up edge

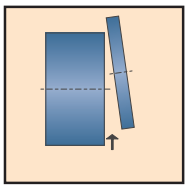
application:



	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	—	—	—	—	—
Stainless	—	—	—	—	—
Cast iron	—	—	—	—	—
Non ferrous metals	H216T	H216T	H216T	H216T	—
Heat resistant	—	—	—	—	—
Hard materials	—	—	—	—	—

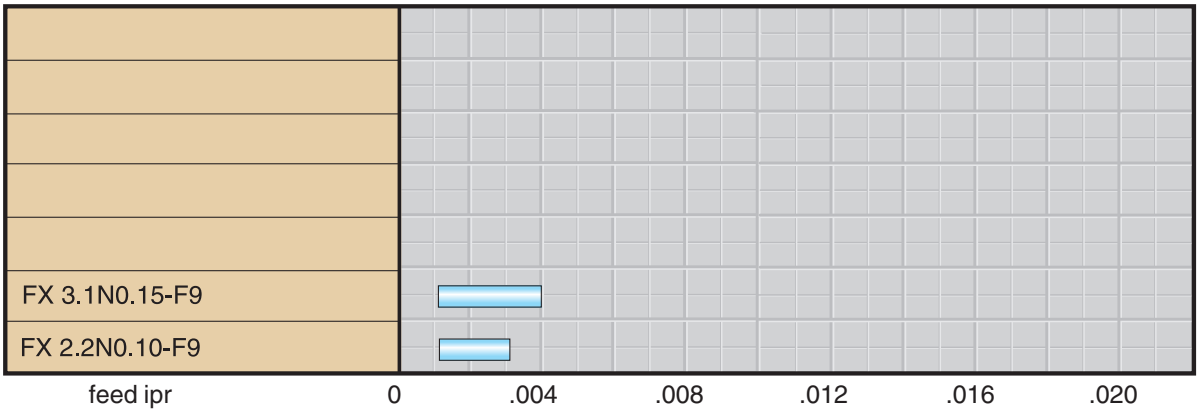
The easy way to success
Application recommendations

FX ...-F9



⇒ coated HSS insert (SM80)
⇒ only applicable with **low cutting speeds** (steel materials vc = 80 - 180 fpm)
⇒ **wet machining only!**
⇒ for all steel materials < 230 HB
⇒ problem solver for materials which tend to extreme built up edge

application:

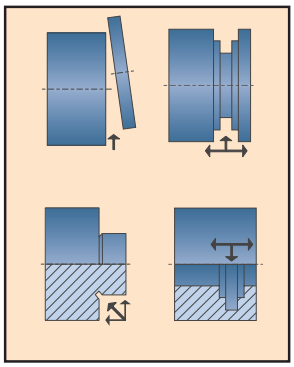


Attention: reduce feed by 20-50% for R/L executions!

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SM80	SM80	SM80	SM80	—
Stainless	SM80	SM80	SM80	SM80	—
Cast iron	—	—	—	—	—
Non ferrous metals	—	—	—	—	—
Heat resistant	SM80	SM80	—	SM80	—
Hard materials	—	—	—	—	—

The easy way to success
Application recommendations

GX09 / 16... standard



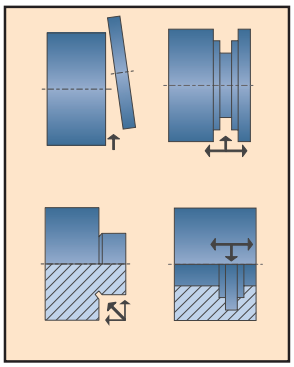
- ⇒ peripherally ground insert
- ⇒ tolerance **parting and grooving width ± .0008 inch**
- ⇒ for all steel materials
- ⇒ also suitable for parting off thin-walled work pieces
- ⇒ special shapes possible

application:

type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
GX16-4E(5.01-6.50)N..			.157
GX16-3E(3.76-5.00)N..			.138
GX16-2E(2.76-3.75)N..			.118
GX16-1E(2.00-2.75)N			.079
GX09-2E(2.76-3.75)N..			.079
GX09-1E(2.00-2.75)N..			.059
feed ipr	0 .004 .008 .012 .016 .020	0 .008 .016 .024 .031 .039	

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SR127 / GM127	—	—	SR127 / GM127	SR127 / GM127
Stainless	GM127	—	—	GM127	GM127
Cast iron	SR127	—	—	SR127	SR127
Non ferrous metals	—	—	—	—	—
Heat resistant	—	—	—	—	—
Hard materials	—	—	—	—	—

GX09 / 16...-M4



⇒ for grooving and turning
⇒ suitable for all steel materials
⇒ very good swarf control
⇒ tolerance grooving width ± .0020 inch

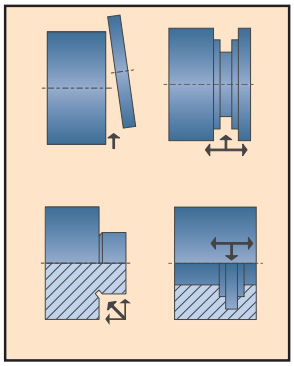
application:

type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
GX16-4E6.0N0.50-M4			.157
GX16-3E5.0N0.40-M4			.138
GX16-3E4.0N0.40-M4			.118
GX16-2E3.0N0.30-M4			.118
GX16-1E2.0N0.20-M4			.079
GX09-2E3.0N0.30-M4			.079
GX09-1E2.0N0.20-M4			.059
feed ipr	0 .004 .008 .012 .016 .020	0 .008 .016 .024 .031 .039	

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SR735 / GM740	—	—	SR127 / SR735 GM740	SR735 / GM740
Stainless	GM740	—	—	GM740	GM740
Cast iron	SR127	—	—	SR127	SR127
Non ferrous metals	—	—	—	—	—
Heat resistant	GM740	—	—	GM740	GM740
Hard materials	—	—	—	—	—

The easy way to success
Application recommendations

GX16...-27P



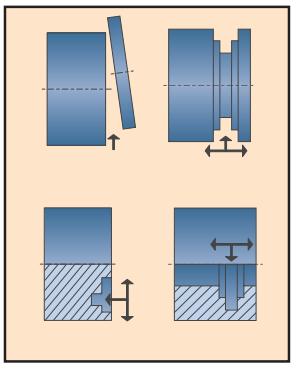
application:

⇒ particularly suitable for **aluminum and non ferrous metals**
⇒ insert with highly positive cutting geometry and sharp cutting edge
⇒ peripherally ground
⇒ tolerance grooving width ± .0008 inch
⇒ extra-smooth rake face through “microfinish“

type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
			.157
			.118
GX16-3R2.5N-27P			.098
GX16-3R2.0N-27P			.079
GX16-2R1.5N-27P			.059
GX16-4E6.00N0.50-27P			.157
GX16-3E4.00N0.40-27P			.138
GX16-2E3.00N0.30-27P			.118
GX16-1E2.00N0.20-27P			.079
feed ipr	0 .004 .008 .012 .016 .020	0 .008 .016 .024 .031 .039	

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	—	—	—	—	—
Stainless	—	—	—	—	—
Cast iron	—	—	—	—	—
Non ferrous metals	H216T	—	—	H216T	H216T
Heat resistant	H216T	—	—	H216T	H216T
Hard materials	—	—	—	—	—

GX24...-27P



⇒ for all steel materials
⇒ suitable for all applications
⇒ wide application range
- parting T_{max} = .83 inch
- grooving and turning
- axial grooving
- internal grooving T_{max} = .75 inch

application:

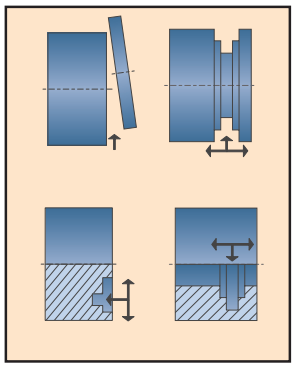
type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
GX24-5R4.00N-27P			.157
GX24-4R3.00N-27P			.118
GX24-4E6.00N0.50-27P			.157
GX24-3E5.00N0.40-27P			.138
GX24-3E4.00N0.40-27P			.118
GX24-2E3.00N0.30-27P			.098

feed ipr 0 .004 .008 .012 .016 .020 0 .008 .016 .024 .031 .039

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	—	—	—	—	—
Stainless	—	—	—	—	—
Cast iron	—	—	—	—	—
Non ferrous metals	H216T / TSM20	—	—	H216T / TSM20	H216T / TSM20
Heat resistant	H216T / TSM20	—	—	H216T / TSM20	H216T / TSM20
Hard materials	—	—	—	—	—

The easy way to success
Application recommendations

GX24... standard



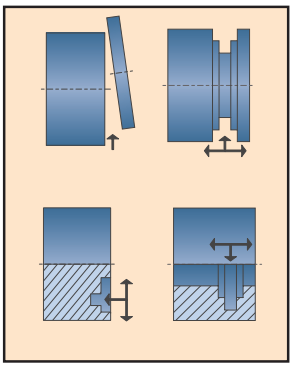
application:

⇒ for all steel materials
⇒ suitable for all applications
⇒ wide application range
- parting T_{max} = . 83 inch
- grooving and turning
- axial grooving
- internal grooving T_{max} = .75 inch

type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
GX24-4E6.00N0.50			.138
GX24-3E5.00N0.40			.118
GX24-3E4.00N0.40			.118
GX24-2E3.00N0.30			.098
feed ipr	0 .004 .008 .012 .016 .020	0 .008 .016 .024 .031 .039	

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SR127 / GM40	GM40	—	SR127 / GM40	SR127 / GM40
Stainless	GM40	GM40	—	GM40	GM40
Cast iron	SR127	SR127	—	SR127	SR127
Non ferrous metals	—	—	—	—	—
Heat resistant	—	—	—	—	—
Hard materials	—	—	—	—	—

GX 24...-F2



- ⇒ For steels in general, particularly suitable for **stainless materials**
- ⇒ Insert with ground periphery
- ⇒ Tolerance parting and grooving width ± .0008 inch
- ⇒ Suitable also for parting off tubes and thin-walled materials
- ⇒ Special profiles possible

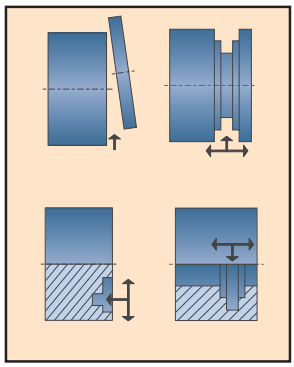
application:

type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
GX24-4E6.00N0.50-F2			.157
GX24-3E5.00N0.40-F2			.138
GX24-3E4.50N0.40-F2			.118
GX24-3E4.00N0.40-F2			.118
GX24-2E3.50N0.30-F2			.098
GX24-2E3.00N0.30-F2			.098
feed ipr	0 .004 .008 .012 .016 .020	0 .008 .016 .024 .031 .039	

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SR735 / GM740	SR735 / GM740	—	SR127 / SR735 GM740	SR735 / GM740
Stainless	GM740	GM740	—	GM740	GM740
Cast iron	SR127	SR127	—	SR127	SR127
Non ferrous metals	—	—	—	—	—
Heat resistant	GM740	—	—	GM740	GM740
Hard materials	—	—	—	—	—

The easy way to success
Application recommendations

GX24...-M3



- ⇒ Inserts for **full radius grooves** and for copy turning
- ⇒ For all steel materials
- ⇒ For internal and external machining

application:

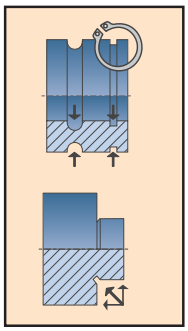
type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
GX24-4R3.00N-M3			.138
GX24-3R2.00N-M3			.098
GX24-3R2.50N-M3			.118
GX24-2R1.50N-M3			.059

feed ipr 0 .004 .008 .012 .016 .020 0 .008 .016 .024 .031 .039

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	—	—	—	SR127 / SR735	SR127 / SR735
Stainless	—	—	—	SR735	SR735
Cast iron	—	—	—	SR127	SR127
Non ferrous metals	—	—	—	—	—
Heat resistant	—	—	—	—	—
Hard materials	—	—	—	—	—

The easy way to success
Application recommendations

GX09 / 16...S...



⇒ inserts for **circlip grooves** according to DIN 471-472

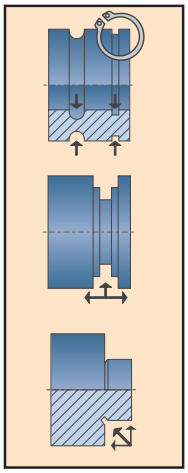
⇒ for internal and external grooves

application:

type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
GX16-4S5.25N			
GX16-3S4.25N			
GX16-2S(2.75/3.25)N			
GX16-2S(0.60-2.25)R/L			
GX09-2S(2.75/3.25)N			
GX09-1S(1.95/2.25)N			
GX09-1S(0.60-1.70)R/L			
feed ipr	0 .004 .008 .012 .016 .020	0 .008 .016 .024 .031 .039	

	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	—	—	—	SR127	—
Stainless	—	—	—	SR127	—
Cast iron	—	—	—	SR127	—
Non ferrous metals	—	—	—	SR127	—
Heat resistant	—	—	—	SR127	—
Hard materials	—	—	—	—	—

GX 09 / 16...R...



⇒ inserts for **full radius grooves** and for copy turning
⇒ for all steel materials
⇒ for internal and external machining

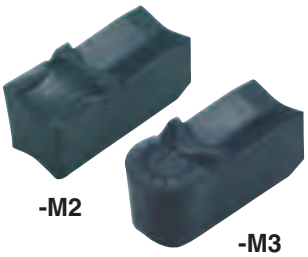
application:

type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
GX16-4R3.00N			.118
GX16-3R2.50N			.098
GX16-3R2.00N			.079
GX16-2R1.50N			.059
GX16-2R(0.8-1.2)R/L			.047
GX09-1R(1.0/1.2)N			.039
GX09-1R0.8R/L			
feed ipr	0 .004 .008 .012 .016 .020	0 .008 .016 .024 .031 .039	

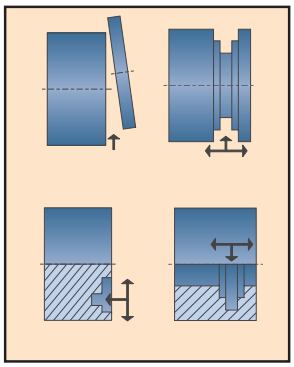
	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	—	—	—	SR127	SR127
Stainless	—	—	—	SR127	SR127
Cast iron	—	—	—	SR127	SR127
Non ferrous metals	—	—	—	SR127	SR127
Heat resistant	—	—	—	SR127	SR127
Hard materials	—	—	—	—	—

The easy way to success
Application recommendations

LX ... -M2 / -M3



application:



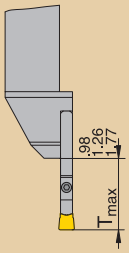
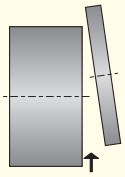
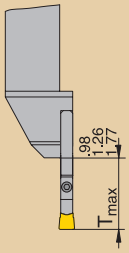
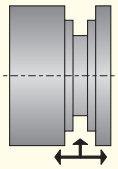
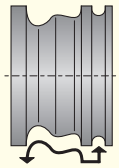
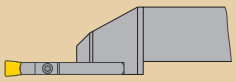
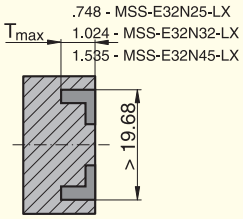
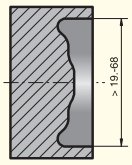
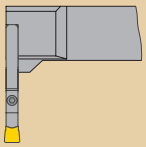
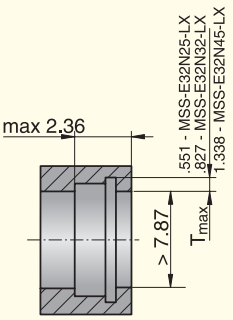
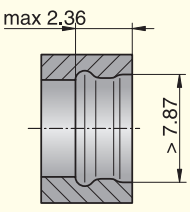
⇒ grooving width .315 inch
⇒ the system can be applied universally for
- parting off
- grooving and turning
- axial grooving from ø 19.68 inch up
- internal grooving and turning, from ø 7.87 inch up

⇒ suitable for all steel materials

type, ordering description	f [ipr]	f [ipr]	a_{max} [Inch]
LX R4.00N-M3			.157
LX E8.00N0.80-M2			.197
feed ipr	0 .004 .008 .012 .016 .020	0 .008 .016 .024 .031 .039	

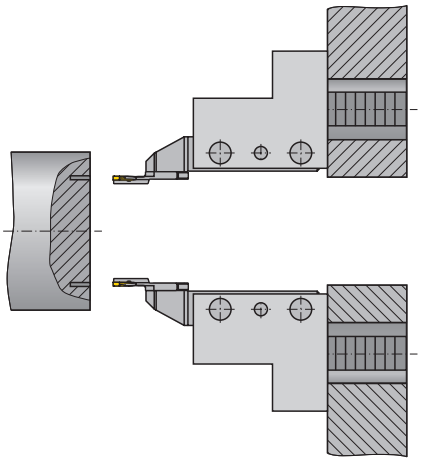
	parting			grooving	grooving and turning
	tubes	bars	difficult conditions		
Steel	SR127 / SR735	SR127 / SR735	SR735	SR127 / SR735	SR127 / SR735
Stainless	SR735	SR735	SR735	SR735	SR735
Cast iron	SR127	SR127	SR127	SR127	SR127
Non ferrous metals	—	—	—	—	—
Heat resistant	—	—	—	—	—
Hard materials	—	—	—	—	—

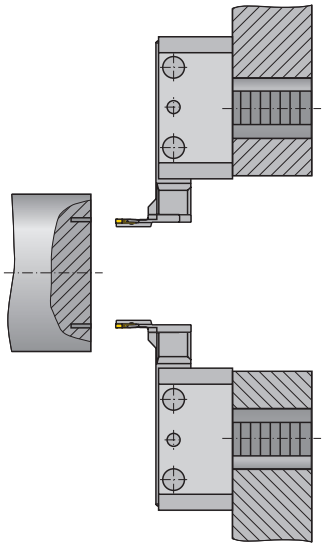
LX application possibilities

application \ insert	.315	R .157
parting 		
grooving / turning 		
axial grooving 		
internal grooving / turning  for this type of internal machining the external tool MSS-E32R/L90-3225N is used		

Application possibilities

tool configuration





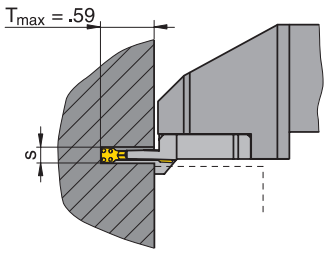
MSS tool 0°

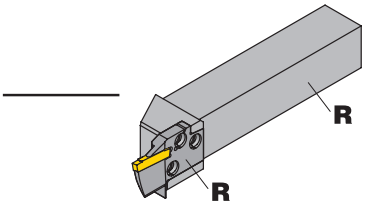
⇒ large overhang
⇒ danger of collision
⇒ special VDI shank necessary

MSS tool 90°

⇒ short overhang
⇒ increased stability
⇒ normal clamping in VDI shank possible

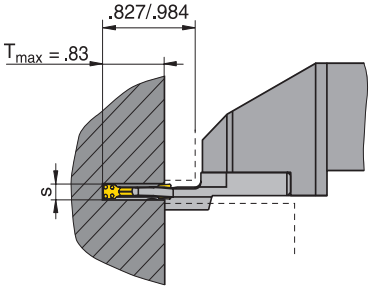
grooving depths

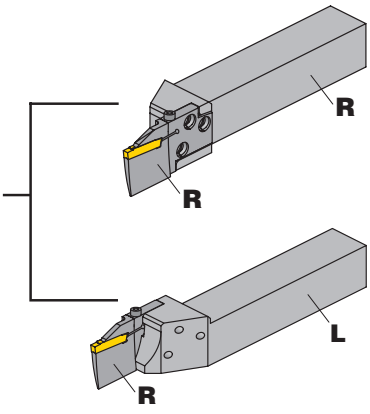




short axial module

⇒ can be clamped on one side only
⇒ maximum grooving depth .59 inch



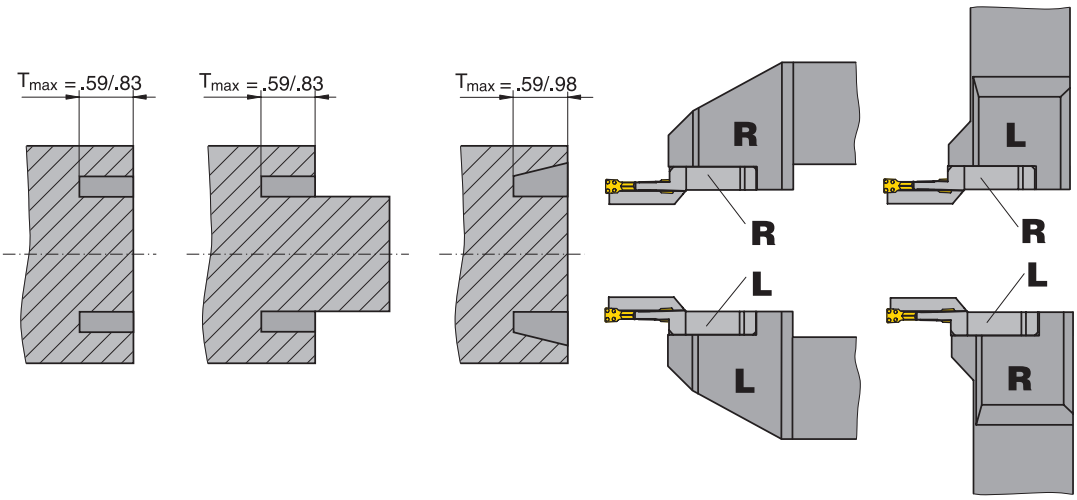


long axial module

⇒ can be clamped on both sides
⇒ maximum grooving depth .83 inch

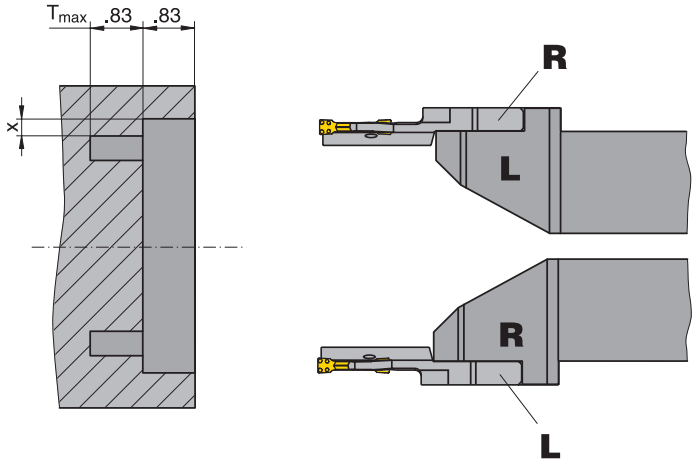
Application possibilities

machining possiblities with short/long axial module

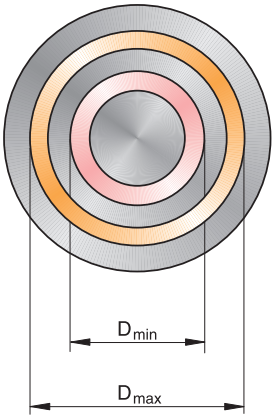


machining possibilities with long axial module only

Depending on the diameter range or width class an axial displacement (dimension “x“) might be necessary when producing the second groove. The “x“ dimension depends on the groove diameter and shank height.



Machining guidance

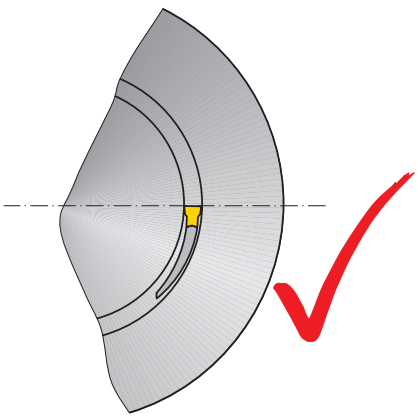


diameter range (D_{min} - D_{max})
1.97 - 2.75 inch
2.75 - 3.94 inch
3.94 - 5.90 inch
5.90 - 11.81 inch
11.81 - 35.43 inch

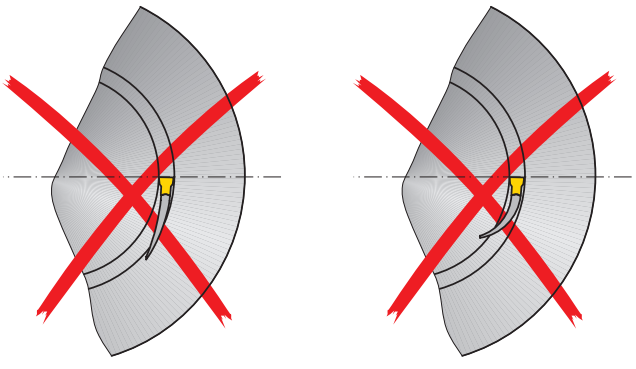
Important: The indicated diameters refer to the external groove diameter.

diameter range	MSS assembly size							
	20	25					32	
	grooving width	grooving width					grooving width	
		short module			long module			
	.1087 - .1476	.1087 - .1476	.1480 - .197	.1972 - .256	.1480 - .197	.1972 - .256	.1480 - .197	.1972 - .256
1.97 - 2.75	●	●	●	●				
2.75 - 3.94	●	●	●	●	●	●	●	●
3.94 - 5.90	●	●	●	●	●	●	●	●
5.90 - 11.81			●	●	●	●	●	●
11.81 - 35.43								●
maximum grooving depth	.551	.590			.827		.590	

Attention: The diameter of face grooves must lie within the diameter range indicated on the module. Otherwise the tool can be damaged or destroyed.

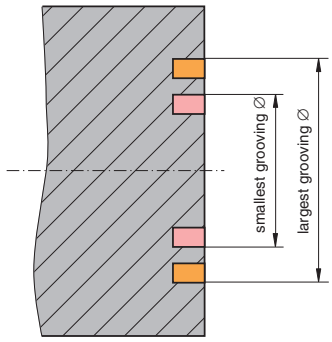


correct axial grooving module



incorrect axial grooving module

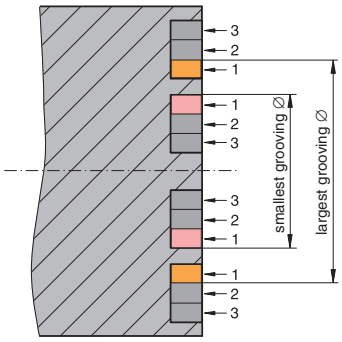
application guidance for axial grooving and face turning



Axial grooving

Is only possible with modules within the fixed diameter range (e.g. 1.97 - 2.75 inch).

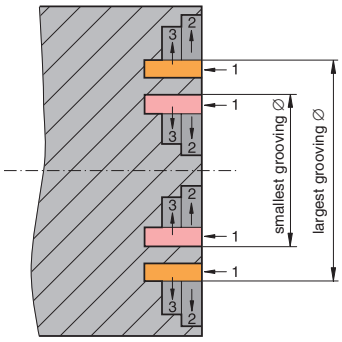
Important: The indicated diameter range is always valid for the external diameter of the groove!



Axial grooving - groove widening

Groove widening is possible above and below the diameter range indicated on the module.

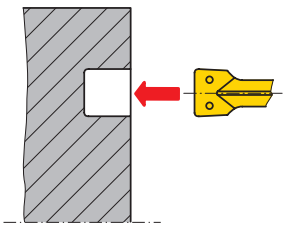
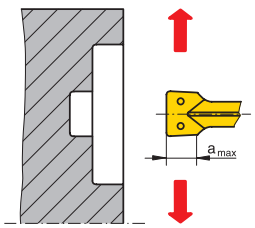
Important: Only the first groove must lie within the diameter range of the module. The depth of the widening groove must not be larger than the depth of the original groove.



Axial grooving and face turning

In case of face turning it is possible to widen the the groove above and below the diameter range indicated on the module.

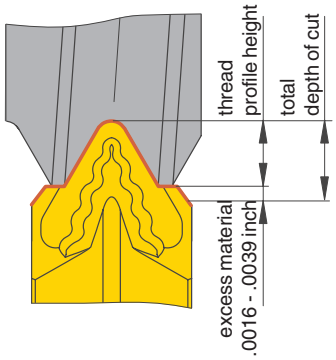
Important: Only the first groove must lie within the diameter range of the module.

axial grooving and face turning			
designation	 **f [ipr]**	 **a_{max} [inch]**	**f [ipr]**
GX24-2E3.00N0.30	.0020 - .0059	.098	.0020 - .0079
GX24-3E4.00N0.40	.0020 - .0059	.118	.0020 - .0100
GX24-3E5.00N0.40	.0020 - .0059	.118	.0039 - .0100
GX24-4E6.00N0.50	.0020 - .0079	.138	.0039 - .0120
GX24-2E3.00N0.30-F2	.0010 - .0050	.098	.0020 - .0059
GX24-2E3.50N0.30-F2	.0010 - .0050	.098	.0020 - .0059
GX24-3E4.00N0.40-F2	.0020 - .0059	.118	.0039 - .0079
GX24-3E4.50N0.40-F2	.0020 - .0059	.118	.0039 - .0079
GX24-3E5.00N0.40-F2	.0030 - .0079	.138	.0039 - .0079
GX24-4E6.00N0.50-F2	.0039 - .0100	.157	.0039 - .0100

TC threads
Basics for threading

differences between full and partial profile inserts

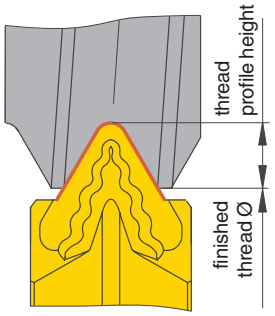
full profile insert



\+ the entire thread profile including the external Ø is machined (excess material .0016 - .0039 inch over finished diameter)
\+ high profile precision
\+ increased tool life due to larger point radii
\+ burr-free thread

– one insert per pitch

partial profile insert

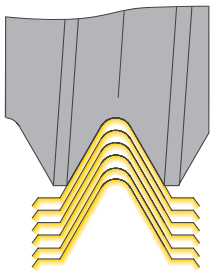


\+ one insert for several pitches

– therefore thread profile does not exactly meet standard
– the external Ø (or the core Ø in case of internal threads) is not machined

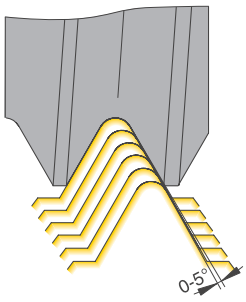
approach selection

radial approach



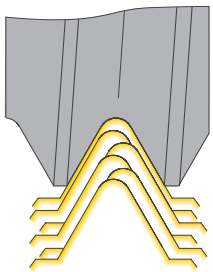
\+ conventional turning lathes
\+ with pitches > 12 tpi
\+ with short chipping materials
– reduced swarf control

flank approach



\+ preferred approach on CNC-machines
\+ with pitches from 6 - 12 tpi
\+ long chipping materials
\+ good swarf control

alternating approach



\+ with pitches < 6 tpi
\+ long chipping materials
\+ even insert wear
\+ long tool life
\+ good swarf control

– difficult NC programming

Measures in case of thread problems

MSS TC thread turning

type of problem											measures, remedy	
wear type				work piece				chip control				
clearance face wear	edge break out	plastic deformation	built up edge	burr formation at external thread Ø	profile precision	surface finish	chatter marks, vibrations	chip cross section too large	chip cross section too small	chip shape (snarl chip)		
↓		↓	↑			↑	↓				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
↑	↓	↓		↓	↓	↓	↓	↓	↑	~	feed motion (cutting depth)	cutting values
↓	↑	↑		~	~	↑	~	↑	↓	↓	number of passes	cutting values
				●	●	●					finish cut (idle cut)	cutting values
			●			●	●			●	chipgroove	insert selection
↑	↓	↑									cutting material ↓ wear resistance toughness ↑	insert selection
				●	●	●					full profile	insert selection
											partial profile	insert selection
	~					~	~				tool / insert stability	misc. criteria
	~					~	~				work piece stability	misc. criteria
	↓					↓	↓				overhang	misc. criteria
~	~	~			~	~	~				top height	misc. criteria
●	●	●	●	●		●					cooling lubricant	misc. criteria

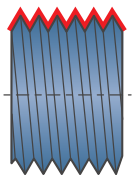
↑ raise, increase large influence
↓ avoid, reduce large influence
~ check, optimize
↑ raise, increase low influence
↓ avoid, reduce low influence
● use

TC thread turning

Recommended values for depth and number of cuts

Full profile

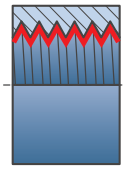
Metric ISO 60° external threads



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
[inch]	.020	.029	.039	.049	.059	.069	.079	.098	.118	.138	.157	.177	.197
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 [mm]	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
[inch]	.012	.019	.025	.031	.037	.043	.050	.062	.074	.087	.100	.112	.124

these are recommended values for steel machining

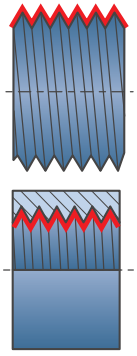
Metric ISO 60° internal threads



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
[inch]	.020	.029	.039	.049	.059	.069	.079	.098	.118	.138	.157	.177	.197
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 [mm]	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
[inch]	.012	.018	.023	.029	.035	.040	.046	.057	.069	.079	.092	.104	.115

these are recommended values for steel machining

Whitworth 55° external and internal thread



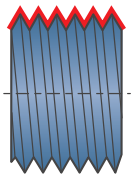
pitch [passes/inch]	28	26	24	20	19	18	16	14	12	11	10	9	8	7	6	5
number of cuts	5 ↓ 8	5 ↓ 8	5 ↓ 9	5 ↓ 9	6 ↓ 10	6 ↓ 10	7 ↓ 11	8 ↓ 12	9 ↓ 14	9 ↓ 14	10 ↓ 17	10 ↓ 18	10 ↓ 18	12 ↓ 20	12 ↓ 20	12 ↓ 20
thread profile height [mm]	0,60	0,65	0,70	0,84	0,88	0,93	1,05	1,20	1,40	1,53	1,68	1,87	2,11	2,41	2,81	3,37
[inch]	.024	.025	.027	.033	.035	.037	.041	.047	.055	.060	.066	.074	.083	.095	.111	.133

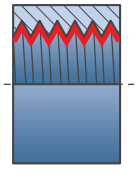
these are recommended values for steel machining

Partial profile

60° external and internal threads

thread 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
[inch]	.020	.029	.039	.049	.059	.069	.079	.098	.118	.069	.079	.098	.118	.138	.157	.177	.197
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 [mm]	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
[inch]	.013	.020	.028	.035	.043	.050	.058	.072	.087	.048	.056	.070	.085	.096	.111	.126	.141
thread profile height internal [mm]	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	2,40	2,72	3,05
[inch]	.011	.017	.024	.030	.036	.043	.049	.062	.075	.041	.047	.060	.073	.081	.094	.107	.120

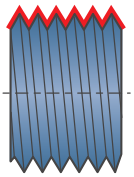




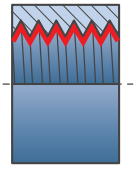
these are recommended values for steel machining

55° external and internal threads

thread 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 [mm]	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
[inch]	.026	.028	.031	.037	.040	.042	.048	.055	.064	.070	.077	.087	.098



thread 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 [mm]	1,22	1,46	1,56	1,80	2,03	2,31	2,40	2,89	3,56
[inch]	.048	.057	.061	.071	.080	.091	.094	.114	.140



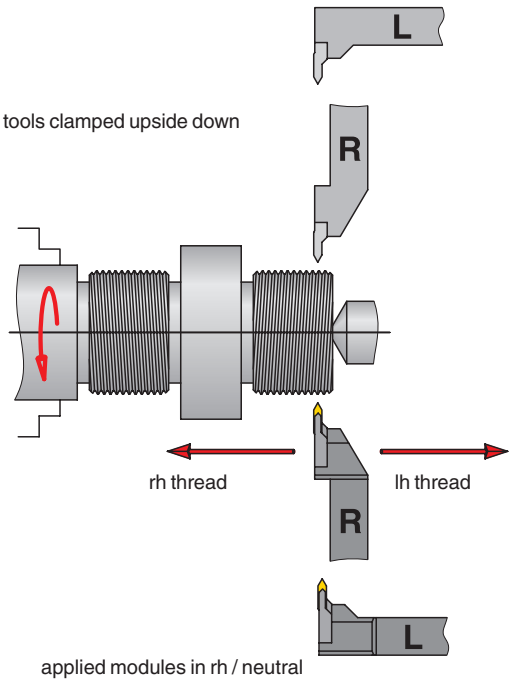
these are recommended values for steel machining

gen.inf.
page E2-E7
-FX
page E8-E13
-GX / -LX
page E14-E24
-LX
page E25
page E26-E29
page E30-E39
Special shapes
page E40-E41
Assembly dimensions
page E42-E43

MSS - TC

Machining method thread turning

application methods for external machining

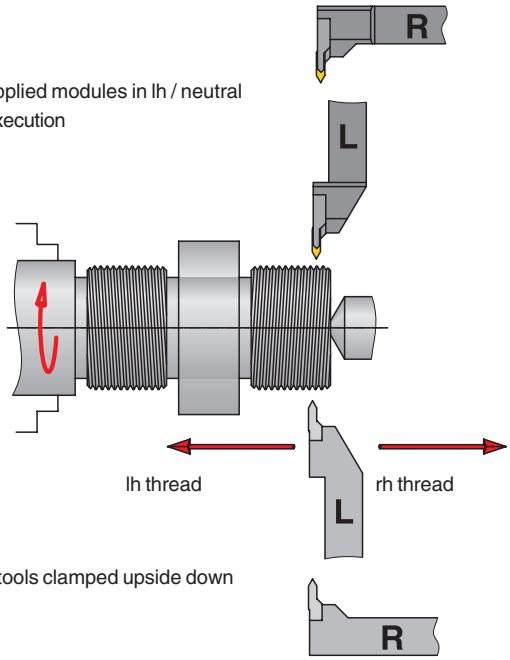


tools clamped upside down

rh thread

lh thread

applied modules in rh / neutral execution



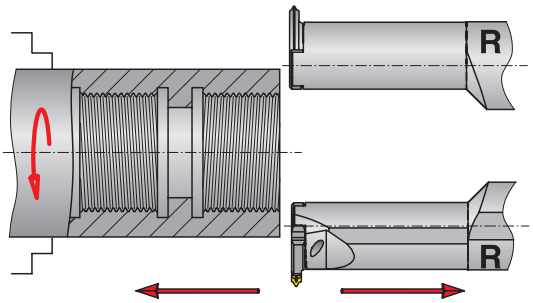
applied modules in lh / neutral execution

lh thread

rh thread

tools clamped upside down

application methods for internal machining

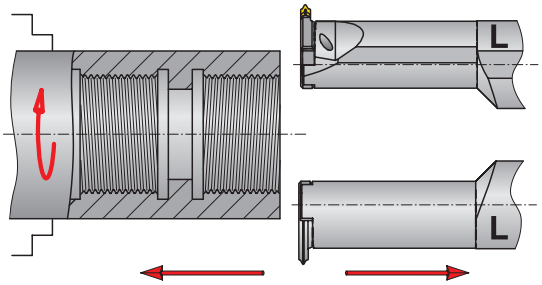


tools clamped upside down

rh thread

lh thread

applied modules in rh / neutral execution



applied modules in lh / neutral execution

lh thread

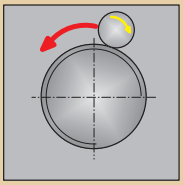
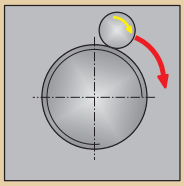
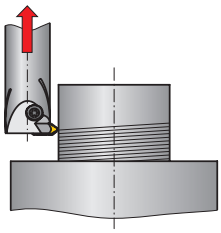
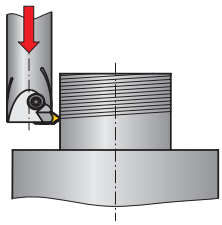
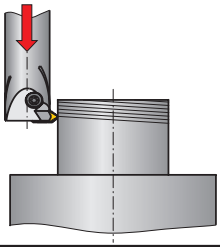
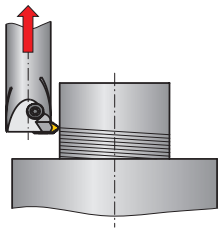
rh thread

tools clamped upside down

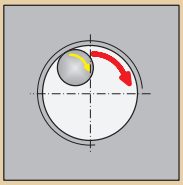
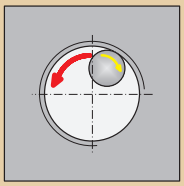
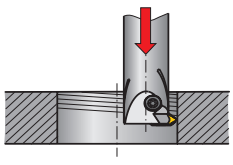
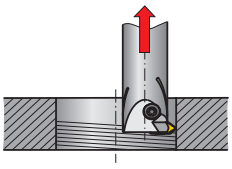
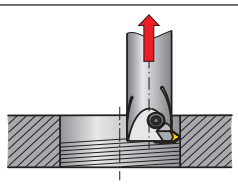
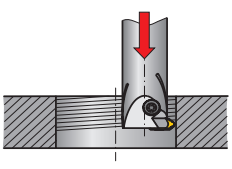
MSS - TC

Machining method thread turning

external threads

	conventional milling	climb milling
		
right hand thread		
left hand thread		

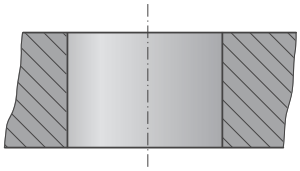
internal threads

	conventional milling	climb milling
		
right hand thread		
left hand thread		

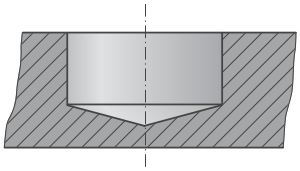
TC thread milling
3 steps of threading

1. drilling

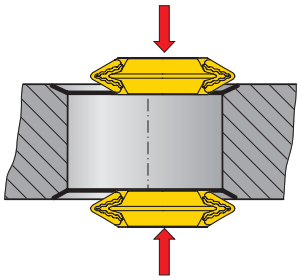
through hole thread

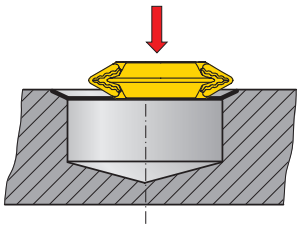


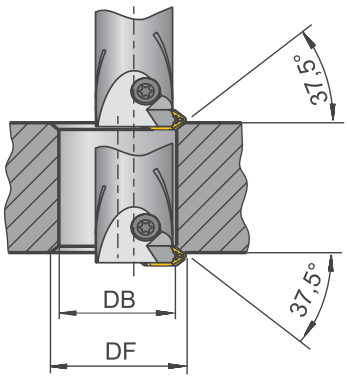
bottom hole thread

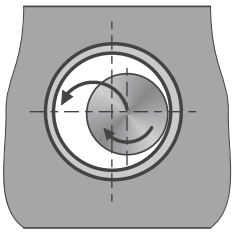


2. chamfering









DB = thread drilling ø
DF = chamfer ø

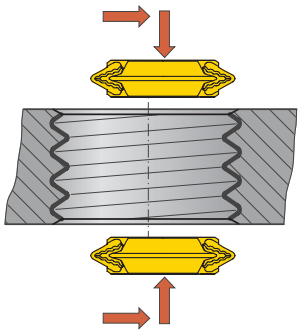
TC thread milling cutters also for chamfering

⇒ use standard TC milling cutters + TC chamfering insert
⇒ applicable for front and back chamfer
⇒ very good component access
⇒ for drilling depths of 2xD (3xD)

tool	insert	DB_{min}	DF
I25R90-2D-TC16-W	TC16-3-75	1.063	DF = thread nominal ø +.020 - .059 inch
I32R90-2D-TC16-W		1.338	
MSS-I32R90-1,5D +Modul MSS-I32N-TC16-3		1.968	
MSS-I32R90-2,5D +Modul MSS-I32N-TC16-3		3.150	

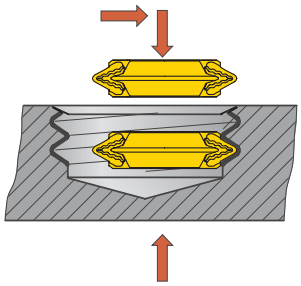
3. threading

through hole thread



no radial plunging necessary
radial approach above or below work piece
+ spiral movement

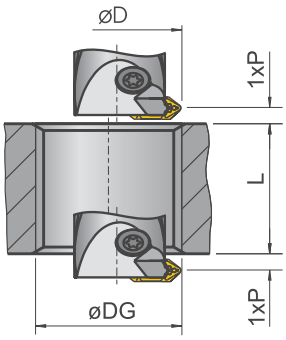
bottom hole thread

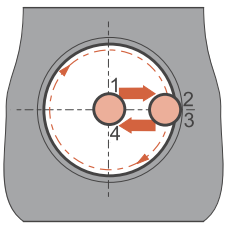


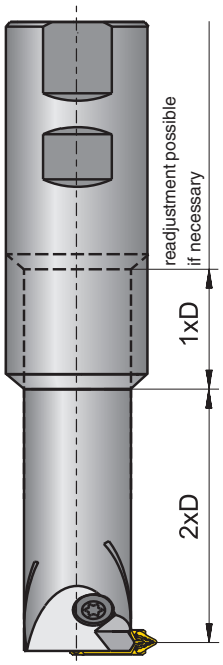
radial approach until total profile depth
+ spiral movement

radial plunging
+ spiral movement

advantages compared to multi-tooth threading insert







I25R90-2D-TC16-W
I32R90-2D-TC16-W

⇒ same insert for thread turning and milling
⇒ considerably lower costs of TC insert
⇒ thread is cut continuously from outside towards inside or vice versa, therefore no interruption (step) in thread
⇒ low cutting forces through single-tooth thread milling create stable conditions
⇒ larger overhang possible
standard = 2xD – readjustment up to 3xD possible
⇒ higher cutting values (v_c + f)
in this manner machining times are similar to multi-tooth insert machining
⇒ easy programming

Cutting data values

	work piece material	type of treatment / alloy		hardness HB	GM213 v_c [sfpm]	GM240 v_c [sfpm]	H216T v_c [sfpm]
A	non alloyed steel	annealed	≤ 0,15% C	125	495 - 820	394 - 590	—
		annealed	0,15% - 0,45% C	150-250	361 - 590	295 - 492	—
		tempered	≥ 0,45% C	300	295 - 525	230 - 394	—
	low alloy steel	annealed		180	328 - 558	246 - 426	—
		tempered		250-300	262 - 492	230 - 361	—
		tempered		350	230 - 394	230 - 259	—
	high alloy steel	annealed		200	295 - 426	213 - 279	—
		tempered		350	230 - 361	197 - 262	—
	corrosion resistant steel	annealed	ferritic	200	361 - 558	328 - 492	—
		tempered	martensitic	325	295 - 459	262 - 394	—
R	stainless steel	annealed	ferritic / martensitic	200	361 - 590	328 - 492	—
		quenched	austenitic	180	262 - 459	230 - 361	—
		quenched	duplex	230-260	230 - 328	180 - 279	—
		hardened	martensitic / austenitic	330	230 - 394	197 - 295	—
F	grey cast iron		perlitic / ferritic	180	394 - 525	—	—
			perlitic / martensitic	260	328 - 426	—	—
	SG iron / spheroidal graphite		ferritic	160	525 - 656	—	—
			perlitic	250	295 - 459	—	—
	tempered cast iron		ferritic	130	394 - 459	—	—
			perlitic	230	295 - 426	—	—
N	malleable aluminum alloys	not hardenable		60	—	—	328 - 3040
		hardenable		100	—	—	328 - 3040
	cast aluminum alloys	not hardenable	< 12% Si	80	—	—	328 - 1640
		hardenable	< 12% Si	90	—	—	328 - 1640
		not hardenable	> 12% Si	130	—	—	328 - 1148
	copper and copper alloys (bronze, brass)		machining alloy stock (1% Pb)		—	—	240 - 984
			brass, red bronze	90	—	—	240 - 1640
			bronze	100	—	—	240 - 1640
			lead-free copper and electrolytic copper	100	—	—	240 - 1640
	non metal materials		thermosetting plastics		—	—	240 - 1640
			fibre-reinforced plastics		—	—	240 - 1640
			hard rubber		—	—	240 - 1640
S	heat resistant alloys	annealed	Fe-base	200	98 - 164	65 - 131	—
		hardened	Fe-base	280	82 - 115	65 - 98	—
		annealed	Ni- or Co-base	250	49 - 82	33 - 65	—
		hardened	Ni- or Co-base	350	33 - 66	33 - 65	—
		cast	Ni- or Co-base	320	33 - 82	33 - 65	—
	titanium alloys		pure titanium	R_m 400*	328 - 492	230 - 328	—
			alpha + beta alloys	R_m1050*	131 - 197	82 - 148	—
H	hardened steel	hardened and tempered		55 HRC	115 - 148	—	98 - 131
		hardened and tempered		60 HRC	—	—	—
	hard castings	cast		400	33 - 66	—	16 - 49
	hardened cast irons	hardened and tempered		55 HRC	115 - 148	—	98 - 131

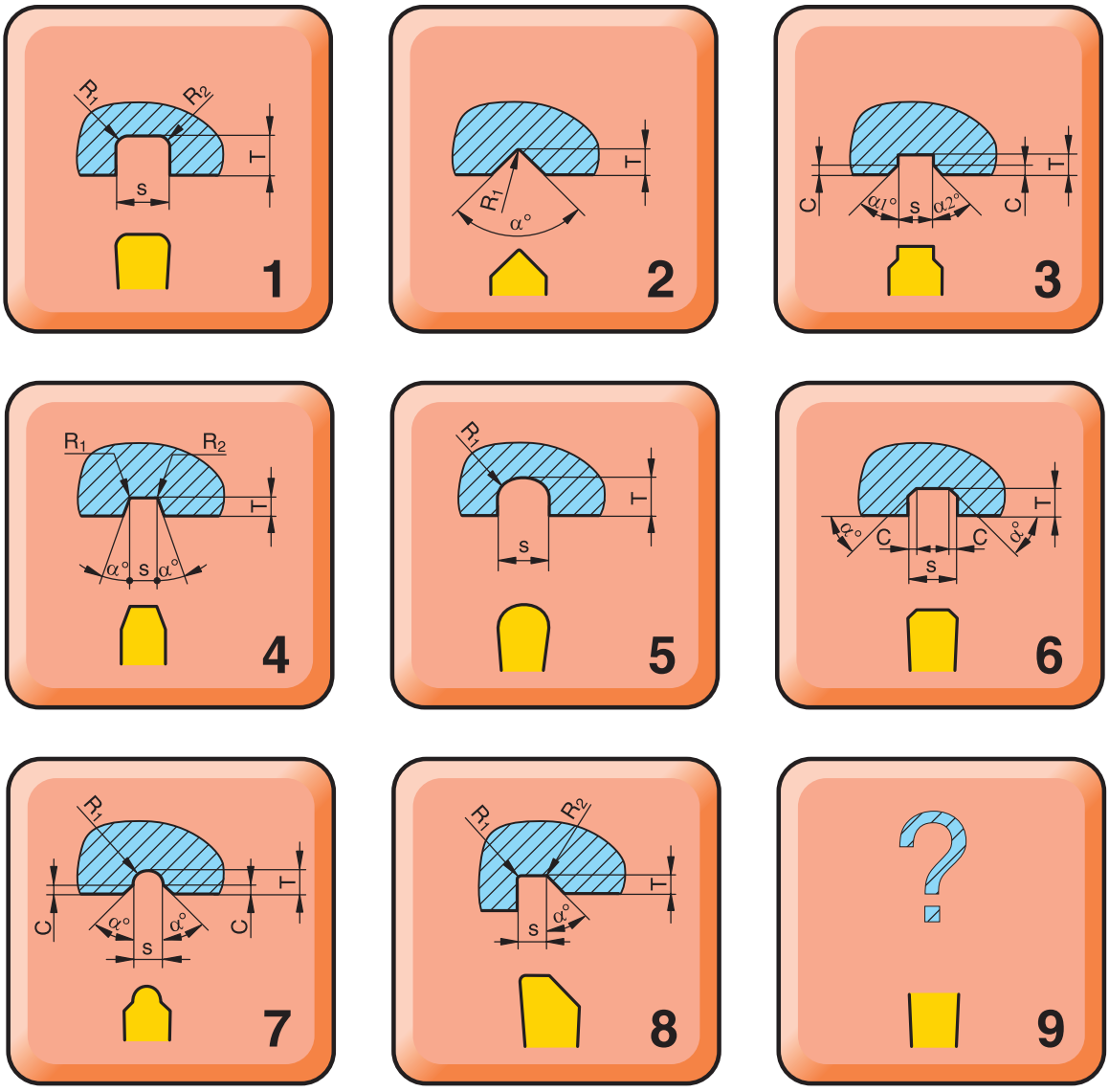
*** R_m = maximum tensile strength, measured in Mpa**

Grade overview TC threads

material group acc. to VDI 3323		application range cutting mat. acc. to ISO		cutting material / grade: coated	cutting material / grade: uncoated
A	Steel	P	10	GM213	
			20		
			30	GM240	
			40		
			50		
R	Stainless	M	10	GM213	
			20		
			30	GM240	
			40		
F	Cast iron	K	01		
			10	GM213	
			20		
			30		
N	Non ferrous metals	K	01		
			10		H216T
			20		
			30		
S	Heat resistant	M/K	10		
			20		
			30	GM240	
			40		
H	Hard materials	K	01	GM213	
			10		H216T
			20		
			30		

GX special shapes

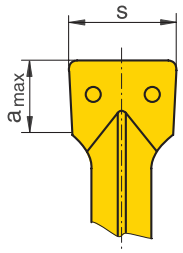
GX indexable inserts are available in special shapes upon request. In the following overview you will find the most important ones. The indicated dimensions show the details which are necessary for ordering the special shapes.
Important: indicate dimensions and tolerances of work piece!



For inquiries kindly use the form on the next page indicating the respective special shape number and the requested main dimensions.

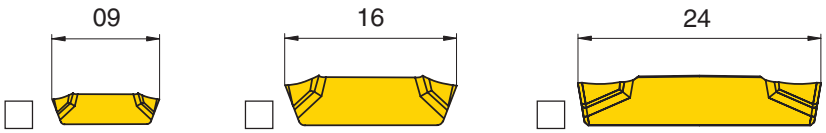
GX special shapes

inquiry form for special shapes

base insert for special shapes				
width class	**insert size**	**s**	**a_{max}**	
1	09	.079 - .108	.059	
2		.109 - .148	.079	
1	16	.079 - .108	.098	
2		.109 - .148	.118	
3		.148 - .197	.138	
4		.197 - .256	.157	
2	24	.109 - .148	.098	
3		.148 - .197	.138	
4		.197 - .256	.157	

quantity: ..... pcs.

insert size: ☐ 09 ☐ 16 ☐ 24

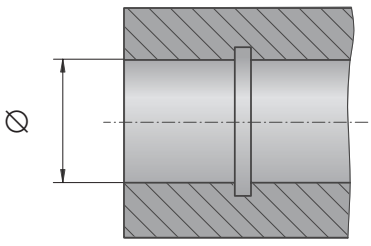


width class:

1	2	3	4

special profile no. .....

s	.....	inch
C	.....	inch
T	.....	inch
R_1	.....	inch
R_2	.....	inch
α_1	.....	°
α_2	.....	°



internal machining - drilling Ø ..... **inch**

Please tick the requested fields. ☒

In order to be able to select the optimum chipgroove and hard metal quality we would like to ask you to indicate the working material as well as its tensile strength.

material: .....

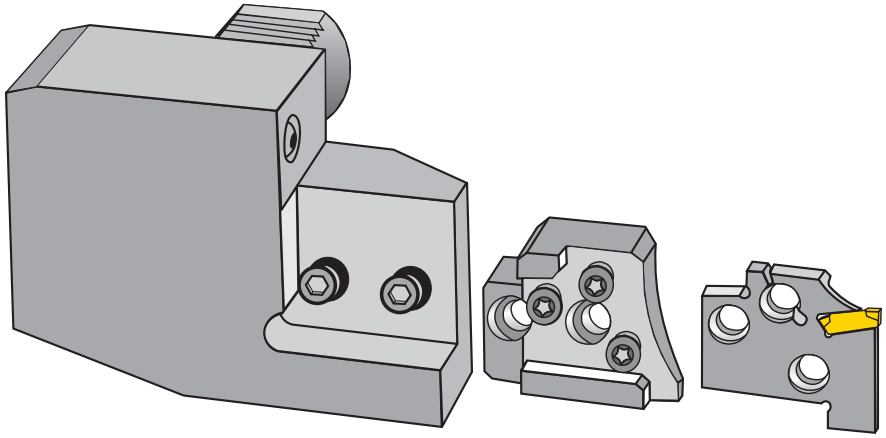
tensile strength: .....

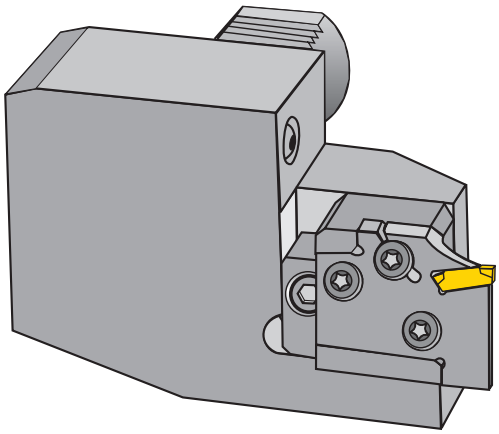
Application possibilities

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 can not be used.

E.g in case of
⇒ special solutions of all kinds
⇒ special tools and shanks
⇒ rotating tools for circular milling
⇒ special machines
⇒ limited space





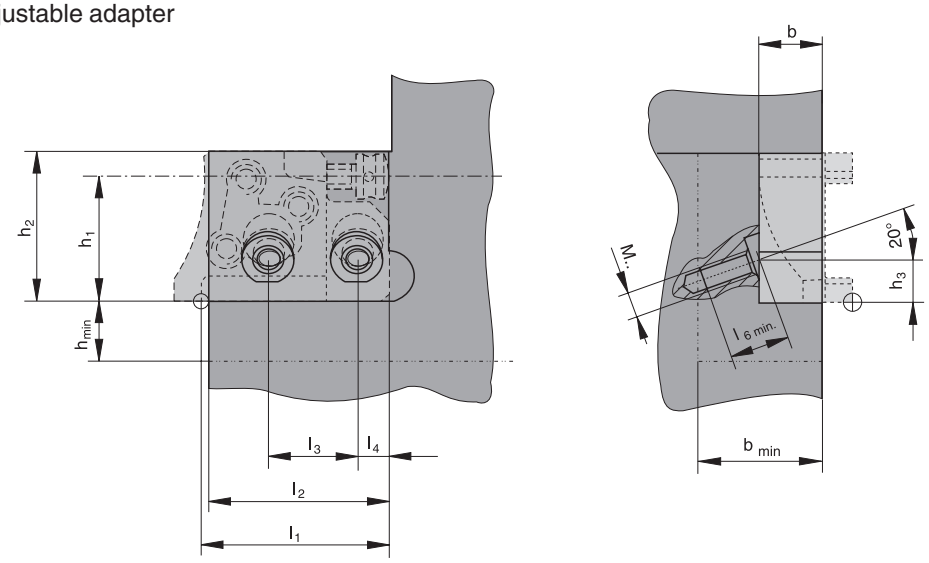
Assembly example:
adapter in combination with VDI shank

Assembly dimensions for MSS adapter

assembly variation A:

⇒ for low or medium loads

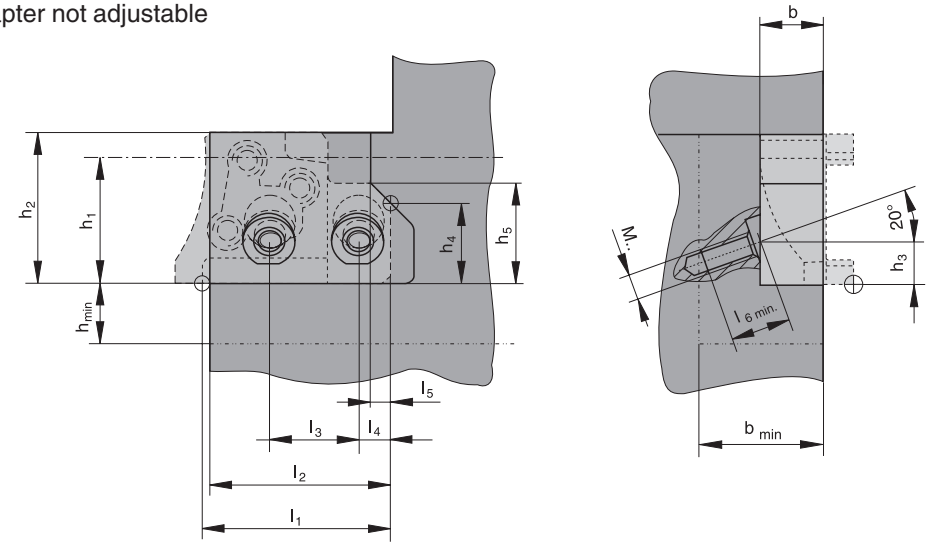
⇒ adjustable adapter



assembly variation B:

⇒ for heavy machining (large parting and grooving depths)

⇒ adapter not adjustable



Shank for:	Dimensions in inch														
	h_1	h_2	$h_3^{\pm.004}$	h_4	h_5	$h_{min.}$	b	$b_{min.}$	l_1	l_2	l_3	l_4	l_5	$l_{6min.}$	M..*
MSS-E20R00-AD MSS-E20L00-AD	.787	.945	.236	.512	.630	.394	.421	.748	1.18	1.14	.561	.197	.118	.315	M4
MSS-E25R00-AD MSS-E25L00-AD	.984	1.181	.335	.630	.787	.472	.496	.984	1.46	1.42	.709	.256	.157	.472	M5
MSS-E32R00-AD MSS-E32L00-AD	1.260	1.496	.531	.867	1.024	.630	.575	1.181	1.81	1.75	.925	.295	.157	.590	M6

* ISO metric thread

Parent company
PLANSEE TIZIT Aktiengesellschaft
A-6600 Reutte/Tirol
Tel.: +43 (5672) 600-0
Fax: +43 (5672) 600-502 *Cutting Tools*
+43 (5672) 600-503 *Wear Parts*
E-Mail: tool.at@plansee.at *Cutting Tools*
E-Mail: wear.at@plansee.at *Wear Parts*
http://www.plansee.com

Austria
PLANSEE TIZIT Aktiengesellschaft
A-6600 Reutte/Tirol
Tel.: +43 (5672) 600-0
Fax: +43 (5672) 600-505
E-Mail: zerspanung.at@plansee.at
= *Sales Cutting Tools*

Bulgaria
INSTRUMENT AG
Boulevard Stoletov 157
BG-5301 Gabrovo
Tel.: +359 (66) 438-11
Fax: +359 (66) 437-42
E-Mail: instrument@eda.bg
= *Sales Cutting Tools*

Germany
PLANSEE TIZIT GmbH
Schützenstraße 29
D-72574 Bad Urach
Tel.: +49 (7125) 1501-0
Fax: +49 (7125) 8594
E-Mail: tool.de@plansee.de
= *Sales Cutting Tools*

France
Société PLANSEE TIZIT S.A.R.L.
20, Rue Lavoisier
F-95300 Pontoise
Tel.: +33 (1) 3433-3180
Fax: +33 (1) 3030-9339
E-Mail: tool.f@plansee.at
= *Sales Cutting Tools*

Great Britain
PLANSEE TIZIT (UK) Ltd.
Cliff Lane
Grappenhall
Warrington WA4 3JX
Tel.: +44 (1925) 261-161
Fax: +44 (1925) 267-933
E-Mail: tool.uk@plansee.at
= *Sales Cutting Tools*

China
PLANSEE TIZIT Hong Kong Ltd.
Room 1201-1202
Hollywood Centre
233 Hollywood Rd., Sheung Wan
Hong Kong
Tel.: (+852) 2542-1838
Fax: (+852) 2854-3777
E-Mail: tool.hk@plansee-hk.com
= *Sales Cutting Tools*

India
Siel TIZIT Limited
58, Motilal Gupta Road
Barisha
IN-700 008 Calcutta
Tel.: +91 (33) 447-5435
Fax: +91 (33) 447-6472
Telex: 021 8142 ihm in
E-Mail: positiz@cal.vsnl.net.in
= *Sales Cutting Tools*

Italy
TIZIT S.p.A
Piazza F. Martelli, 7
I-20162 Milano
Tel.: +39 (02) 6441-111
Fax: +39 (02) 6611-6040
E-Mail: tool.i@plansee.at
= *Sales Cutting Tools*

Spain
PLANSEE TIZIT
Vía de las Dos Castillas, 9c
Portal 2, Bajo B
E-28224 Pozuelo (Madrid)
Tel.: +34 (91) 351-0609
Fax: +34 (91) 351-2813
E-Mail: tool.e@plansee.at
= *Sales Cutting Tools*

USA
SCHWARZKOPF
TECHNOLOGIES Corporation
115 Constitution Boulevard
Franklin, MA 02038
Tel.: +1 (508) 553-3800
Fax: +1 (508) 553-3823
E-Mail: tool.usa@stc-ma.com
= *Sales Cutting Tools*

PLANSEE TIZIT