

High Efficiency and High Precision Shoulder Milling
Cutter with Tangential Inserts

SEC-Sumi Dual Mill **TSX** Series

Rev.6

Realises good machined surface
quality and excellent cutting edge
strength with a high-precision
tangentially-mounted insert



4-Cornered
Ground Type Insert

Expansion Next-Generation Coated
Carbide Grades for Milling

XCU2500/XCK2000
now available for **TSX** Series



Repeaters



Features

- **Excellent Machined Surface Quality**
Adopts ground type insert for high accuracy to realise excellent machined surface quality.
- **Cutting Edge Designed for High Cutting Edge Strength and Sharpness**
Adopts tangential insert and optimised cutting edge shape to achieve both high cutting edge strength and sharpness.
- **Wide Ranging Product Lineup**
An enhanced lineup of grades is available in addition to 2 types of insert sizes and 3 types of chipbreakers. Can be used for a wide variety of machining applications.
- **Applicable to Various Work Materials**
In addition to the general-purpose grade ACU2500, the new-generation coated carbide grades XCU2500/XCK2000 are now available. Applicable to various work materials such as steel, stainless steel, cast iron, and exotic alloys.

Product Range (Face Mills)

Type	Cat. No.	Description	Dia. (mm)													Shape		
			ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250		ø315	
Shell	TSX 08000RS/LS	Standard Pitch					4	5	6	7								
	TSX 08000R/L <small>Inch</small>	Standard Pitch								7								
	TSXF 08000RS/LS	Extra Fine Pitch					6	8	10	11								
	TSXF 08000R/L <small>Inch</small>	Extra Fine Pitch								11								
	TSX 13000RS/LS	Standard Pitch					3	4	5	5	6	7	8	12	14	16		
	TSX 13000R/L <small>Inch</small>	Standard Pitch								5	6	7	8	12	14	16		
	TSXM 13000RS/LS	Fine Pitch					4	5	6	7	8	10	12	16	20	24		
	TSXM 13000R/L <small>Inch</small>	Fine Pitch								7	8	10	12	16	20	24		
	TSXF 13000RS/LS	Extra Fine Pitch					5	6	7	8	10	14	16					
	TSXF 13000R/L <small>Inch</small>	Extra Fine Pitch								8	10	14	16					
Shank	TSX 08000E	Standard Pitch	2	2*	3*	3*	4	5	6	7								
	TSXF 08000E	Extra Fine Pitch		3	4	5	6	8	10	11								
	TSX 13000E	Standard Pitch			2	2	3	4	5	5								
	TSXM 13000E	Fine Pitch				3	4	5	6	7								
	TSXF 13000E	Extra Fine Pitch					5	6	7	8								

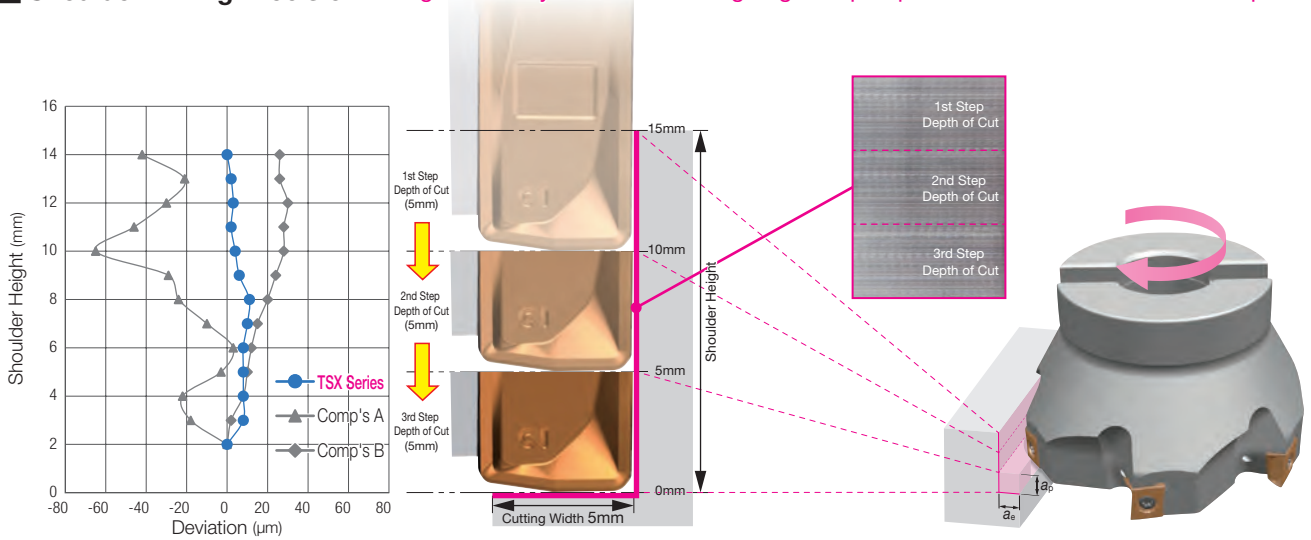
Number in ● shows the number of teeth Inch Bore * mark: Different-diameter shanks in stock

Product Range (Repeaters)

Type	Cat. No.	Dia. (mm)									Shape			
		ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125				
Shell	TSXR 08000RS			2	3	3	4	5						
	TSXR 13000RS				2	3	3	4	4	5	5	6	7	
Shank	TSXR 08000E	1	2	2	3									
	TSXR 13000E				2	3								

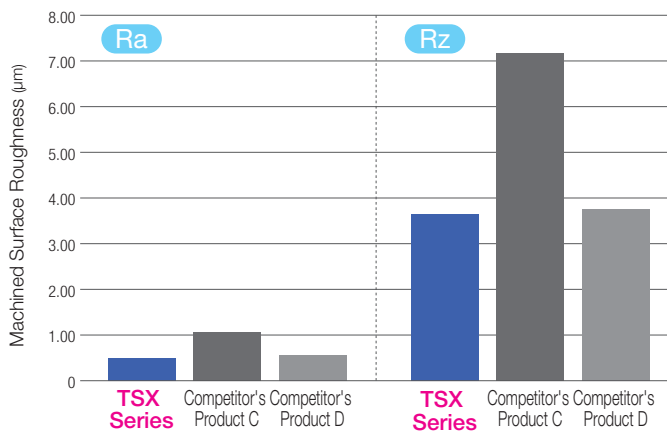
Number in ● shows the number of teeth

Shoulder Milling Precision High accuracy insert and cutting edge shape optimised to realise excellent wall precision



Machine : Vertical Machining Centre BT50, Work Material: S50C
 Tool : TSX 13100R, Insert: LNX 130608PNER-G (ACP200)
 Cutting Conditions : $v_c = 200\text{m/min}$, $f_z = 0.2\text{mm/t}$, $a_p = 5\text{mm} \times 3$ Passes, $a_e = 5\text{mm}$, Dry

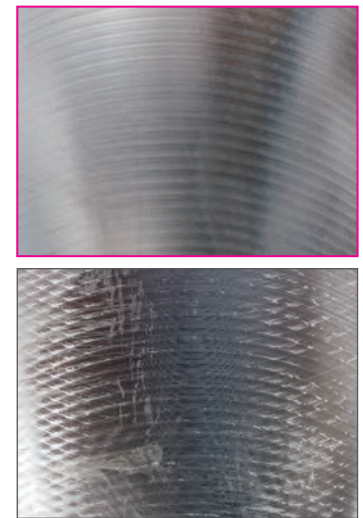
Machined Surface Roughness Cutting edge shape optimised to realise excellent machined surface roughness



Machined Surface Comparison

TSX Series
 Without
 Cloudiness

Competitor's
 Product
 Cloudy



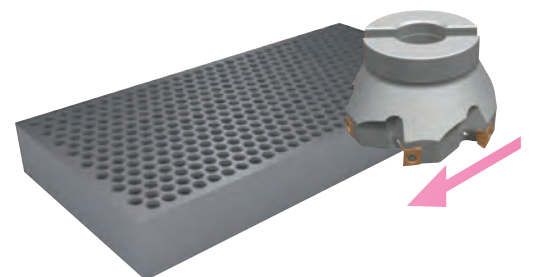
Machine : Vertical Machining Centre BT50, Work Material: S50C
 Tool : TSX 13100R, Insert: LNX 130608PNER-G (ACP200)
 Cutting Conditions : $v_c = 200\text{m/min}$, $f_z = 0.2\text{mm/t}$, $a_p = 3\text{mm}$, $a_e = 60\text{mm}$, Dry

Cutting Edge Strength TSX Series has high cutting edge strength and enables high-efficiency machining

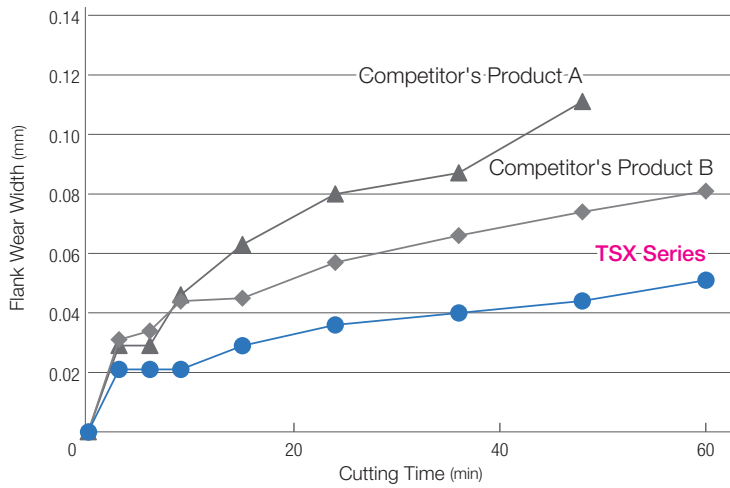
1 Pass = 300mm

Cutting Length	4 Passes	8 Passes	12 Passes
TSX Series	Continued Machining Possible		
Competitor's Product E	Damage		
Competitor's Product F	Damage		

Machine : Vertical Machining Centre BT50, Work Material: S50C
 Tool : TSX 13100R, Insert: LNX 130608PNER-G (ACP200)
 Cutting Conditions : $v_c = 150\text{m/min}$, $f_z = 0.6\text{mm/t}$ (Accelerating)
 $a_p = 3\text{mm}$, $a_e = 40\text{mm}$, Dry

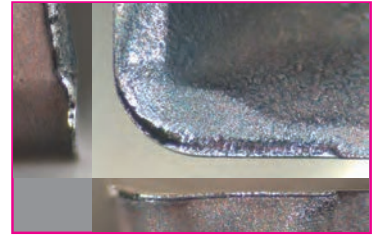


Tool Life Excellent wear resistance realises stable tool life

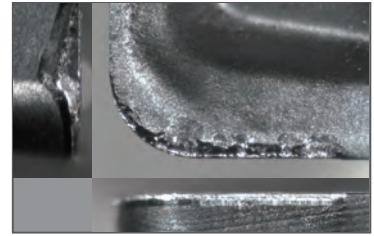


Machine : Vertical Machining Centre BT50, Work Material: S50C
 Tool : TSX 08025E, Insert: LNE X 080408PNER-G (ACP200)
 Cutting Conditions : $v_c = 200\text{m/min}$, $f_z = 0.1\text{mm/t}$, $a_p = 2\text{mm}$, $a_o = 5\text{mm}$, Dry

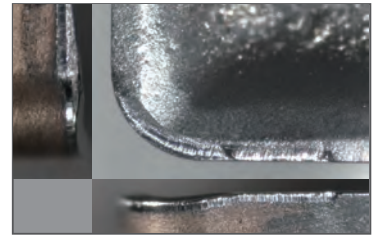
TSX Series
 (After cutting for 60 minutes)



Competitor's Product A
 (After cutting for 48 minutes)

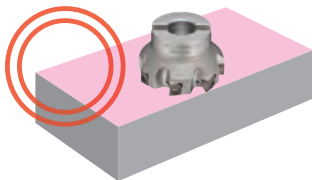


Competitor's Product B
 (After cutting for 60 minutes)

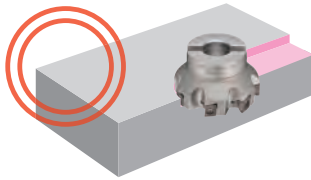


Applications

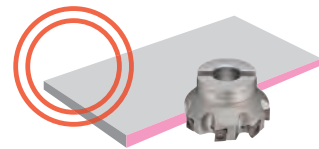
Face Milling



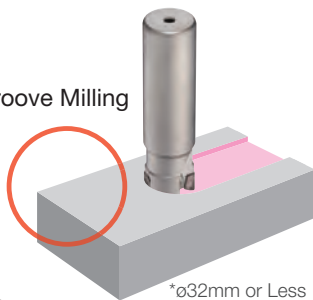
Shoulder Milling



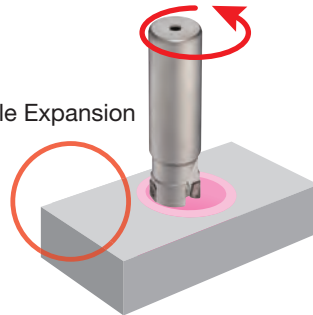
Side Milling



Groove Milling

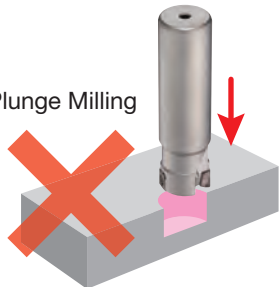


Hole Expansion

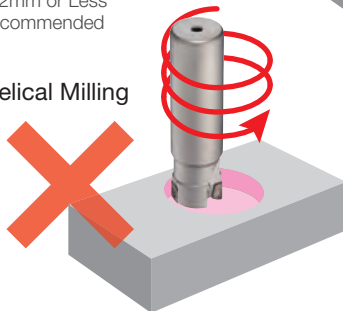


* $\phi 32\text{mm}$ or Less Recommended

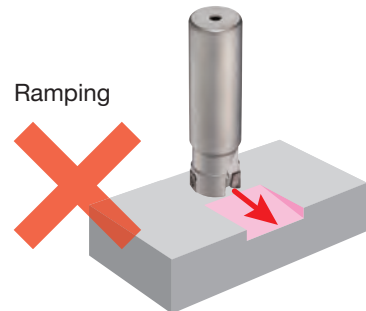
Plunge Milling



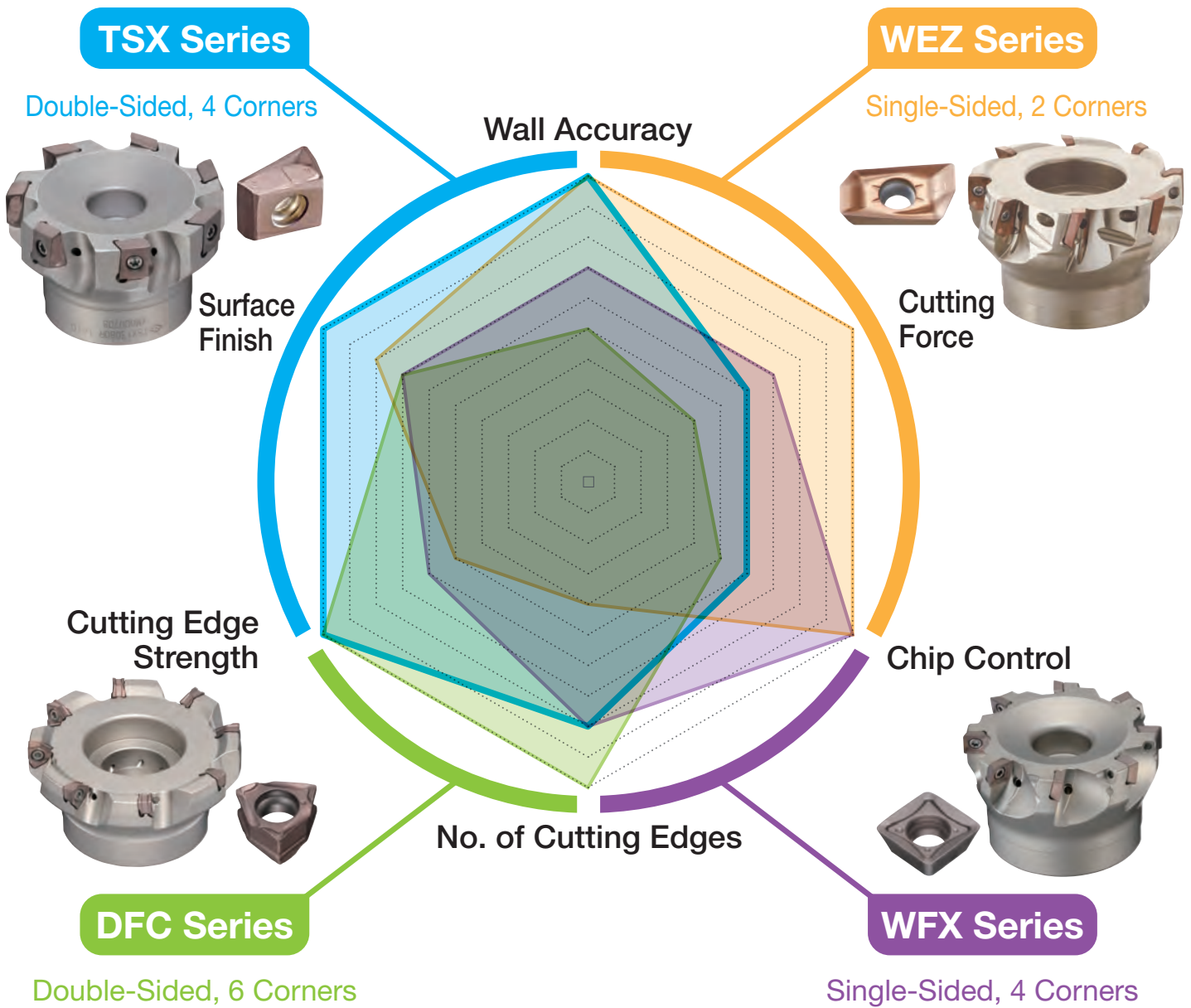
Helical Milling



Ramping



Shoulder Milling Selection Guide



★★★: 1st Recommendation

	Surface Finish	Wall Accuracy	Cutting Force	Chip Control	No. of Cutting Edges	Cutting Edge Strength
WEZ Series	★★★	★★★	★★★	★★★	★	★★★
TSX Series	★★★	★★★	★★	★★★	★★	★★★
DFC Series	★★★	★	★	★★★	★★★	★★★
WFX Series	★★★	★★	★★	★★★	★★	★★

* For the details of each product, see the WEZ series (Tooling News No. 528), DFC series (Tooling News No. 513), and WFX series (Tooling News No. 491).

Grade Application Range

New-generation coated carbide grades **XCU2500/XCK2000** now available!
Lineup includes coated grades applicable to various work materials such as steel, stainless steel, and cast iron.

Work Material	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
Steel	ACU2500 XCU2500 ACP100		
		ACP200	ACP300
	ACU2500 XCU2500 ACM200		
		ACM300	
Stainless Steel	ACU2500 XCU2500 ACM200		
		ACM300	
	ACU2500 XCU2500 XCK2000 ACK200		
		ACK300	
Cast Iron	ACU2500 XCU2500 XCK2000 ACK200		
		ACK300	
	ACU2500 ACM200		
		ACM300	
Exotic Alloy	ACU2500 ACM200		
		ACM300	

The letters "C" and "P" at the end of each grade indicate the coating type. ▽ : CVD ▲ : PVD

Grade Features

New coating technology that realises absolute stability **ABSOTECH™** (Absolute Technology)

ABSOTECH

PVD

New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Coating adhesion significantly increased for twice or more the conventional chipping resistance

Applicable Grades: **ACU2500**

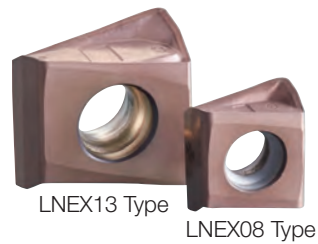
ABSOTECH

CVD

Pure Cubic Crystal AlTiN with High Al Content
With proprietary structural control technology, differently composed layers of AlTiN are stacked at the nanometre level. With a high-Al composition containing over 80% Al on average, it also maintains a cubic crystalline structure to achieve excellent thermal resistance and high hardness. Vastly improved wear resistance.

Special Surface Treatment
Proprietary surface treatment introduces high compression stress to the coating, suppressing the development of cracks. Greatly improved fracture and thermal crack resistance.

Applicable Grades: **XCU2500, XCK2000**



ACP200/ACP300/ACK300/ACM300

NEW SUPER ZX COAT





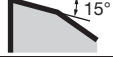
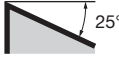

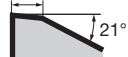
Realises superb stability due to a carbide substrate optimised for steel, cast iron, and stainless steel with a highly chipping-resistant coating.

ACP100/ACK200/ACM200

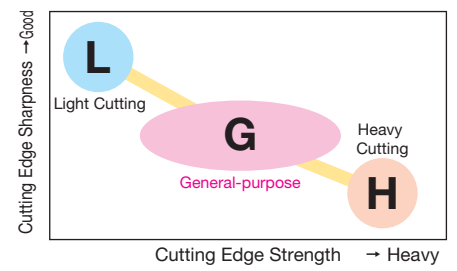
SUPER FF COAT

Realises superb stability in high-efficiency machining due to a carbide substrate optimised for steel, cast iron, and stainless steel with a highly wear-resistant coating.

Chipbreaker Selection Guide

Work Material	P M K S		
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	General-purpose to Interrupted Milling	Heavy Cutting, Heavy Cross Section Machining and Hardened Steel Milling
Features	Low Cutting Force	General-purpose Type	High Strength Type
Chipbreaker	L Type	G Type	H Type
			
LNEX08 Type Cross Section			Not Available
LNEX13 Type Cross Section			

Chipbreaker Selection



Product Range

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804○○PNER/L-L	●	●	●	●	—	—	—
LNEX 0804○○PNER/L-G	●	●	●	●	—	—	—
LNEX 1306○○PNER/L-L	●	●	●	●	●	●	●
LNEX 1306○○PNER/L-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●

Rake Angle	Radial	-20°	8mm	90°
	Axial	-6°		

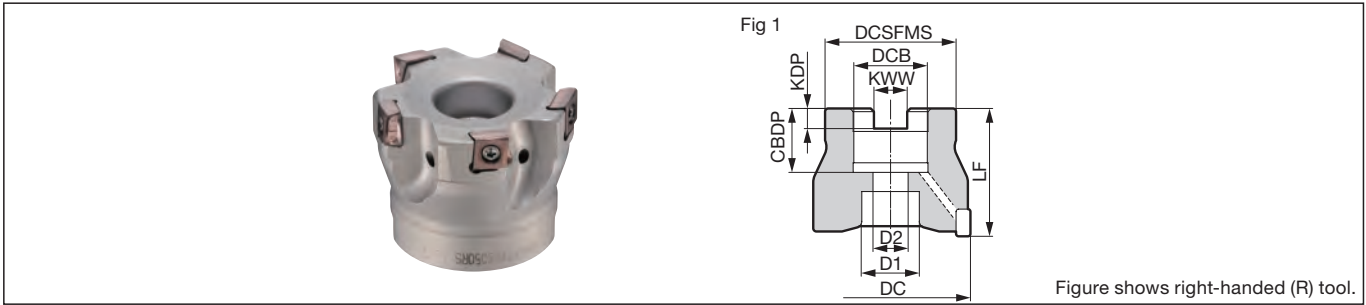


Figure shows right-handed (R) tool.

Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock		Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
		R	L												
Metric	TSX 08040RS/LS	●		40	33	40	16	8.4	5.6	18	14	9	4	0.21	1
	08050RS/LS	●		50	41	40	22	10.4	6.3	20	18	11	5	0.30	1
	08063RS/LS	●		63	50	40	22	10.4	6.3	20	18	11	6	0.53	1
	08080RS/LS	●		80	55	50	27	12.4	7.0	22	20	14	7	0.99	1
Inch	TSX 08080R/L	●		80	55	50	25.4	9.5	6.0	25	20	14	7	1.00	1

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

For mounting the ø80mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock		Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
		R	L												
Metric	TSXF 08040RS/LS	●		40	33	40	16	8.4	5.6	18	14	9	6	0.21	1
	08050RS/LS	●		50	41	40	22	10.4	6.3	20	18	11	8	0.31	1
	08063RS/LS	●		63	50	40	22	10.4	6.3	20	18	11	10	0.54	1
	08080RS/LS	●		80	55	50	27	12.4	7.0	22	20	14	11	0.97	1
Inch	TSXF 08080R/L	●		80	55	50	25.4	9.5	6.0	25	20	14	11	0.98	1

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

For mounting the ø80mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Identification Code

TSX F 08 050 R S

Series Extra Fine Pitch Insert Size Dia. R: Right-Hand Metric L: Left-Hand Bore

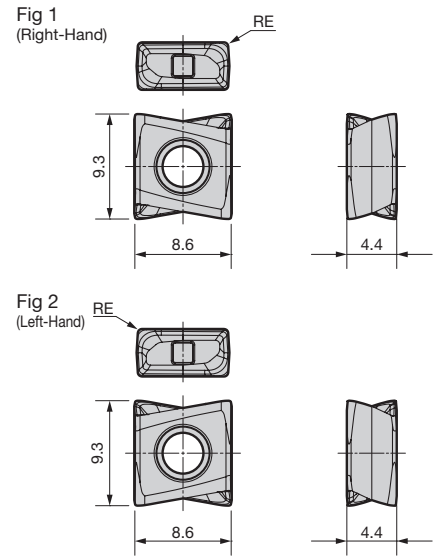
Parts

Flat Insert Screw	Wrench	Anti-seizure Cream
BFTX0308IP	2.0	TRDR08IP SUMI-P

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Corner Radius RE	Fig	
Process	High-speed/Light Medium Cutting Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300		
LNEX	080404PNER-L	●			●	●		●	●	●	●	0.4	1
	080408PNER-L	●			●	●		●	●	●	●	0.8	1
	080412PNER-L	●			●	●		●	●	●	●	1.2	1
	080416PNER-L	●			●	●		●	●	●	●	1.6	1
LNEX	080404PNER-G	●	●	●	●	●	●	●	●	●	●	0.4	1
	080408PNER-G	●	●	●	●	●	●	●	●	●	●	0.8	1
	080412PNER-G	●	●	●	●	●	●	●	●	●	●	1.2	1
	080416PNER-G	●	●	●	●	●	●	●	●	●	●	1.6	1
LNEX	080404PNEL-L				●				●			0.4	2
	080408PNEL-L				●				●			0.8	2
	080412PNEL-L				●				●			1.2	2
	080416PNEL-L				●				●			1.6	2
LNEX	080404PNEL-G				●			●	●		●	0.4	2
	080408PNEL-G				●			●	●		●	0.8	2
	080412PNEL-G				●			●	●		●	1.2	2
	080416PNEL-G				●			●	●		●	1.6	2

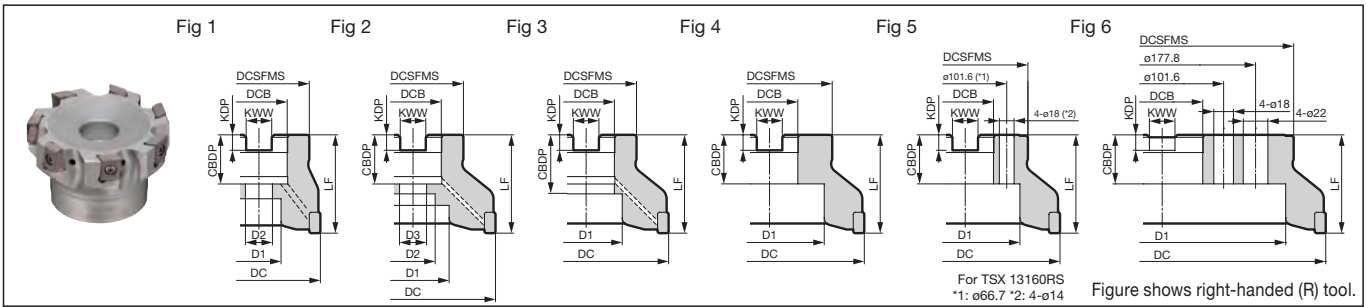


Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - 225 - 300	0.08 - 0.20 - 0.30	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - 150 - 230	0.08 - 0.20 - 0.30	
	Alloy Steel	180 to 280 HB	100 - 175 - 250	0.08 - 0.15 - 0.25	
M	Stainless Steel	220 to 280 HB	90 - 135 - 180	0.08 - 0.15 - 0.25	ACU2500 ACM200 ACM300
		> 280HB	75 - 125 - 170	0.08 - 0.15 - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - 175 - 250	0.08 - 0.20 - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.05 - 0.10 - 0.15	ACU2500 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
· The above figures are guidelines for use with BT40 machine tools.

Rake Angle	Radial	-23° to -15°	12mm	90°
	Axial	-6°		



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock		Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CDBP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
		R	L													
Metric	TSX 13040RS/LS	●		40	33	40	16	8.4	5.6	18.0	14	9	—	3	0.20	1
	13050RS/LS	●		50	41	40	22	10.4	6.3	20.0	18	11	—	4	0.30	1
	13063RS/LS	●		63	50	40	22	10.4	6.3	20.0	18	11	—	5	0.50	1
	13080RS/LS	●		80	55	50	27	12.4	7.0	22.0	20	14	—	5	0.92	1
	13100RS/LS	●		100	70	50	32	14.4	8.0	32.0	46	—	—	6	1.35	3
	13125RS/LS	●		125	80	63	40	16.4	9.0	29.0	52	29	—	7	2.55	1
	13160RS/LS	●		160	130	63	40	16.4	9.0	29.0	90	—	—	8	4.97	5 ¹ ₂
	13200RS/LS	●		200	160	63	60	25.7	14.0	35.0	135	—	—	12	6.20	5
	13250RS/LS	●		250	180	63	60	25.7	14.0	35.0	160	—	—	14	9.35	5
13315RS/LS	●		315	240	63	60	25.7	14.0	35.0	230	—	—	16	16.42	6	
Inch	TSX 13080R/L	●		80	55	50	25.4	9.5	6.0	25.0	20	14	—	5	0.93	1
	13100R/L	●		100	70	63	31.75	12.7	8.0	32.0	46	27	18	6	1.88	2
	13125R/L	●		125	80	63	38.1	15.9	10.0	35.5	55	30	—	7	2.61	1
	13160R/L	●		160	100	63	50.8	19.1	11.0	38.0	72	—	—	8	4.18	4
	13200R/L	●		200	160	63	47.625	25.4	14.0	35.0	135	—	—	12	6.36	5
	13250R/L	●		250	180	63	47.625	25.4	14.0	35.0	160	—	—	14	9.60	5
	13315R/L	●		315	240	63	47.625	25.4	14.0	35.0	230	—	—	16	16.68	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX 13 100 R S

Series Insert Size Dia. R: Right-Hand Metric
 L: Left-Hand Bore

Parts

Applicable Cutter	Shim	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream						
					Handle Grip	Bit							
TSX 13040RS/LS	—	BFTX03510IP	3.0	TRDR15IP	—	—	SUMI-P						
TSX 13050RS/LS													
TSX 13063RS/LS													
TSX 13080RS/LS													
TSX 13100RS/LS													
TSX 13125RS/LS													
TSX 13160RS/LS													
TSX 13200RS/LS	TSXS13R/L	BFTX03510IP	3.0	TRDR15IP	—	—	SUMI-P						
TSX 13250RS/LS													
TSX 13315RS/LS													
TSX 13080R/L	—							BFTX03510IP	3.0	TRDR15IP	—	—	SUMI-P
TSX 13100R/L													
TSX 13125R/L													
TSX 13160R/L													
TSX 13200R/L													
TSX 13250R/L													
TSX 13315R/L													

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Corner Radius RE	Fig	
Process	High-speed/Light Medium Cutting Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX	130604PNER-L	●			●	●		●	●	●	●	0.4	1
	130608PNER-L	●			●	●		●	●	●	●	0.8	1
	130612PNER-L	●			●	●		●	●	●	●	1.2	1
	130616PNER-L	●			●	●		●	●	●	●	1.6	1
	130620PNER-L	●			●	●		●	●	●	●	2.0	1
	130624PNER-L	●			●	●		●	●	●	●	2.4	1
	130632PNER-L	●			●	●		●	●	●	●	3.2	1
LNEX	130604PNER-G	●	●	●	●	●	●	●	●	●	●	0.4	1
	130608PNER-G	●	●	●	●	●	●	●	●	●	●	0.8	1
	130612PNER-G	●	●	●	●	●	●	●	●	●	●	1.2	1
	130616PNER-G	●	●	●	●	●	●	●	●	●	●	1.6	1
	130620PNER-G	●	●	●	●	●	●	●	●	●	●	2.0	1
	130624PNER-G	●	●	●	●	●	●	●	●	●	●	2.4	1
	130632PNER-G	●	●	●	●	●	●	●	●	●	●	3.2	1
LNEX	130604PNER-H	●			●	●		●	●			0.4	1
	130608PNER-H	●	●		●	●	●	●	●			0.8	1
	130612PNER-H	●			●	●		●	●			1.2	1
	130616PNER-H	●			●	●		●	●			1.6	1
	130620PNER-H	●			●	●		●	●			2.0	1
	130624PNER-H	●			●	●		●	●			2.4	1
	130632PNER-H	●			●	●		●	●			3.2	1
LNEX	130604PNEL-L				●	●			●			0.4	2
	130608PNEL-L				●	●			●			0.8	2
	130612PNEL-L				●	●			●			1.2	2
	130616PNEL-L				●	●			●			1.6	2
	130620PNEL-L				●	●			●			2.0	2
	130624PNEL-L				●	●			●			2.4	2
	130632PNEL-L				●	●			●			3.2	2
LNEX	130604PNEL-G				●	●		●	●		●	0.4	2
	130608PNEL-G				●	●		●	●		●	0.8	2
	130612PNEL-G				●	●		●	●			1.2	2
	130616PNEL-G				●	●		●	●			1.6	2
	130620PNEL-G				●	●		●	●			2.0	2
	130624PNEL-G				●	●		●	●			2.4	2
	130632PNEL-G				●	●		●	●			3.2	2

Fig 1 (Right-Hand)

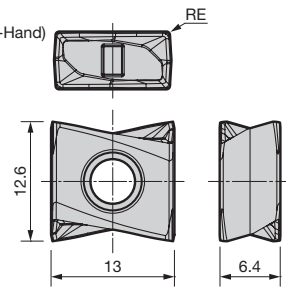
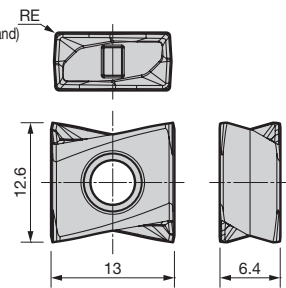


Fig 2 (Left-Hand)

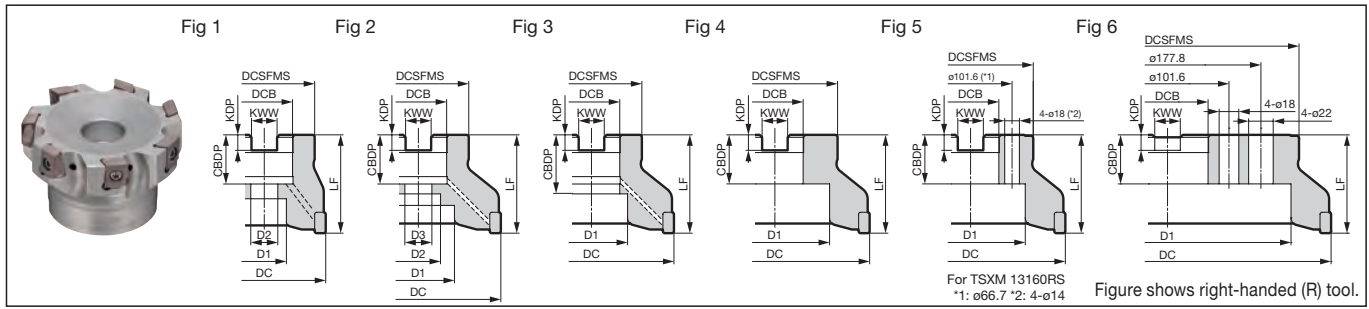


Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_2 (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - 225 - 300	0.10 - 0.30 - 0.40	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - 150 - 230	0.10 - 0.30 - 0.40	
M	Stainless Steel	180 to 280 HB	100 - 175 - 250	0.10 - 0.25 - 0.35	ACU2500 ACM200 ACM300
		> 280HB	75 - 125 - 170	0.10 - 0.20 - 0.30	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - 175 - 250	0.10 - 0.30 - 0.40	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.10 - 0.15 - 0.20	ACU2500 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
· The above figures are guidelines for use with BT50 machine tools.

Rake Angle	Radial	-23° to 15°	12mm 90°
	Axial	-6°	



Body (Fine Pitch)

Cat. No.		Stock	Dia.	Boss	Height	Hole Dia.	Keyway Width	Keyway Depth	Mounting Depth	Bolt	Bolt	Bolt	Number	Weight	Fig
		R L	DC	DCSFMS	LF	DCB	KWW	KDP	CBDP	D1	D2	D3	of Teeth	(kg)	
Metric	TSXM 13040RS/LS	●	40	33	40	16	8.4	5.6	18.0	14	9	—	4	0.19	1
	13050RS/LS	●	50	41	40	22	10.4	6.3	20.0	18	11	—	5	0.28	1
	13063RS/LS	●	63	50	40	22	10.4	6.3	20.0	18	11	—	6	0.50	1
	13080RS/LS	●	80	55	50	27	12.4	7.0	22.0	20	14	—	7	0.92	1
	13100RS/LS	●	100	70	50	32	14.4	8.0	32.0	46	—	—	8	1.36	3
	13125RS/LS	●	125	80	63	40	16.4	9.0	29.0	52	29	—	10	2.57	1
	13160RS/LS	●	160	130	63	40	16.4	9.0	29.0	90	—	—	12	5.02	5 ¹ ₂
	13200RS/LS	●	200	160	63	60	25.7	14.0	35.0	135	—	—	16	6.32	5
	13250RS/LS	●	250	180	63	60	25.7	14.0	35.0	160	—	—	20	9.42	5
13315RS/LS	●	315	240	63	60	25.7	14.0	35.0	230	—	—	24	16.37	6	
Inch	TSXM 13080R/L	●	80	55	50	25.4	9.5	6.0	25.0	20	14	—	7	0.93	1
	13100R/L	●	100	70	63	31.75	12.7	8.0	32.0	46	27	18	8	1.90	2
	13125R/L	●	125	80	63	38.1	15.9	10.0	35.5	55	30	—	10	2.62	1
	13160R/L	●	160	100	63	50.8	19.1	11.0	38.0	72	—	—	12	4.22	4
	13200R/L	●	200	160	63	47.625	25.4	14.0	35.0	135	—	—	16	6.48	5
	13250R/L	●	250	180	63	47.625	25.4	14.0	35.0	160	—	—	20	9.68	5
	13315R/L	●	315	240	63	47.625	25.4	14.0	35.0	230	—	—	24	16.63	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX M 13 100 R S

Series Fine Pitch Insert Size Dia. R: Right-Hand Metric Bore
L: Left-Hand Bore

Parts

Applicable Cutter	Shim	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
					Handle Grip	Bit	
TSXM 13040RS/LS	—	BFTX03510IP	3.0				SUMI-P
TSXM 13050RS/LS							
TSXM 13063RS/LS							
TSXM 13080RS/LS							
TSXM 13100RS/LS							
TSXM 13125RS/LS	TSXS13R/L	BFTX03510IP	3.0				SUMI-P
TSXM 13160RS/LS							
TSXM 13200RS/LS							
TSXM 13250RS/LS							
TSXM 13315RS/LS							
TSXM 13080R/L							
TSXM 13100R/L							
TSXM 13125R/L							
TSXM 13160R/L	TSXS13R/L	BFTX03510IP	3.0				SUMI-P
TSXM 13200R/L							
TSXM 13250R/L							
TSXM 13315R/L	—	—	—				—

Recommended Tightening Torque (N·m) ● mark: Standard stocked item Blank: Made-to-order item

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Corner Radius RE	Fig	
Process	High-speed/Light Medium Cutting Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX	130604PNER-L	●			●	●		●	●	●	●	0.4	1
	130608PNER-L	●			●	●		●	●	●	●	0.8	1
	130612PNER-L	●			●	●		●	●	●	●	1.2	1
	130616PNER-L	●			●	●		●	●	●	●	1.6	1
	130620PNER-L	●			●	●		●	●	●	●	2.0	1
	130624PNER-L	●			●	●		●	●	●	●	2.4	1
	130632PNER-L	●			●	●		●	●	●	●	3.2	1
LNEX	130604PNER-G	●	●	●	●	●	●	●	●	●	●	0.4	1
	130608PNER-G	●	●	●	●	●	●	●	●	●	●	0.8	1
	130612PNER-G	●	●	●	●	●	●	●	●	●	●	1.2	1
	130616PNER-G	●	●	●	●	●	●	●	●	●	●	1.6	1
	130620PNER-G	●	●	●	●	●	●	●	●	●	●	2.0	1
	130624PNER-G	●	●	●	●	●	●	●	●	●	●	2.4	1
	130632PNER-G	●	●	●	●	●	●	●	●	●	●	3.2	1
LNEX	130604PNER-H	●			●	●		●	●			0.4	1
	130608PNER-H	●	●		●	●	●	●	●			0.8	1
	130612PNER-H	●			●	●		●	●			1.2	1
	130616PNER-H	●			●	●		●	●			1.6	1
	130620PNER-H	●			●	●		●	●			2.0	1
	130624PNER-H	●			●	●		●	●			2.4	1
	130632PNER-H	●			●	●		●	●			3.2	1
LNEX	130604PNEL-L				●	●			●			0.4	2
	130608PNEL-L				●	●			●			0.8	2
	130612PNEL-L				●	●			●			1.2	2
	130616PNEL-L				●	●			●			1.6	2
	130620PNEL-L				●	●			●			2.0	2
	130624PNEL-L				●	●			●			2.4	2
	130632PNEL-L				●	●			●			3.2	2
LNEX	130604PNEL-G				●	●		●	●		●	0.4	2
	130608PNEL-G				●	●		●	●		●	0.8	2
	130612PNEL-G				●	●		●	●			1.2	2
	130616PNEL-G				●	●		●	●			1.6	2
	130620PNEL-G				●	●		●	●			2.0	2
	130624PNEL-G				●	●		●	●			2.4	2
	130632PNEL-G				●	●		●	●			3.2	2

Fig 1 (Right-Hand)

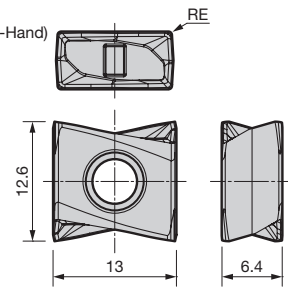
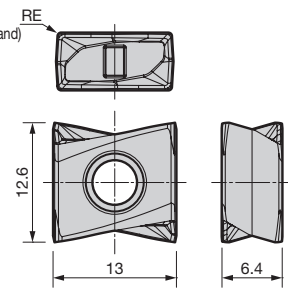


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - 225 - 300	0.10 - 0.30 - 0.40	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - 150 - 230	0.10 - 0.30 - 0.40	
M	Stainless Steel	180 to 280 HB	100 - 175 - 250	0.10 - 0.25 - 0.35	ACU2500
		> 280HB	75 - 125 - 170	0.10 - 0.20 - 0.30	ACM200 ACM300
K	Cast Iron/ Ductile Cast Iron	250HB	150 - 175 - 250	0.10 - 0.30 - 0.40	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.10 - 0.15 - 0.20	ACU2500 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
· The above figures are guidelines for use with BT50 machine tools.

Rake Angle	Radial	-23 to -15°	12mm	90°
	Axial	-6°		

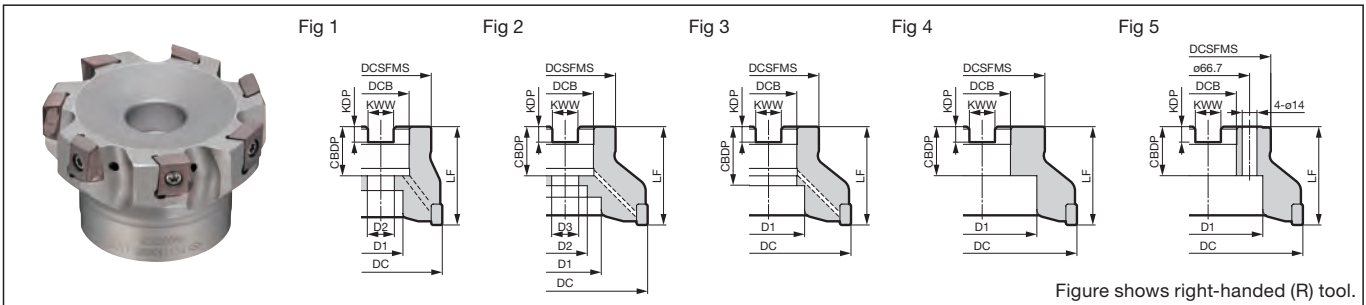


Figure shows right-handed (R) tool.

Body (Extra Fine Pitch)

Dimensions (mm)

Cat. No.	Stock		Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CDBP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
	R	L													
Metric	TSXF 13040RS/LS	●	40	33	40	16	8.4	5.6	18.0	14	9	—	5	0.18	1
	13050RS/LS	●	50	41	40	22	10.4	6.3	20.0	18	11	—	6	0.29	1
	13063RS/LS	●	63	50	40	22	10.4	6.3	20.0	18	11	—	7	0.50	1
	13080RS/LS	●	80	55	50	27	12.4	7.0	22.0	20	14	—	8	0.92	1
	13100RS/LS	●	100	70	50	32	14.4	8.0	32.0	46	—	—	10	1.34	3
	13125RS/LS	●	125	80	63	40	16.4	9.0	29.0	52	29	—	14	2.58	1
	13160RS/LS	●	160	130	63	40	16.4	9.0	29.0	90	—	—	16	5.08	5
Inch	TSXF 13080R/L	●	80	55	50	25.4	9.5	6.0	25.0	20	14	—	8	0.93	1
	13100R/L	●	100	70	63	31.75	12.7	8.0	32.0	46	27	18	10	1.88	2
	13125R/L	●	125	80	63	38.1	15.9	10.0	35.5	55	30	—	14	2.60	1
	13160R/L	●	160	100	63	50.8	19.1	11.0	38.0	72	—	—	16	4.28	4

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX F 13 100 R S

Series Extra Fine Pitch Insert Size Dia. R: Right-Hand Metric L: Left-Hand Bore

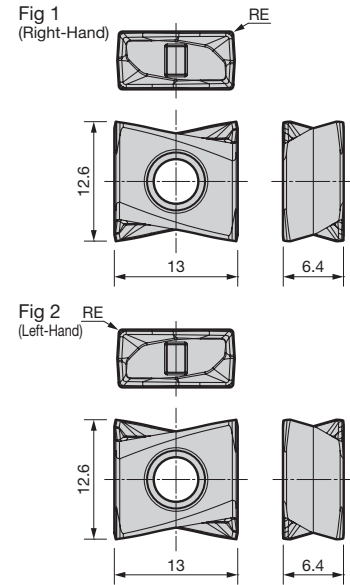
Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
	Flat Insert Screw	Integrated Wrench		Handle Grip	Bit	
TSXF 13040RS/LS TSXF 13050RS/LS TSXF 13063RS/LS TSXF 13080RS/LS TSXF 13100RS/LS TSXF 13125RS/LS TSXF 13160RS/LS	BFTX03510IP	3.0				
TSXF 13080R/L TSXF 13100R/L TSXF 13125R/L TSXF 13160R/L						

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Corner Radius RE	Fig
Process	High-speed/Light Medium Cutting Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300		
LNEX	130604PNER-L	●			●	●		●	●	●	●	0.4	1
	130608PNER-L	●			●	●		●	●	●	●	0.8	1
	130612PNER-L	●			●	●		●	●	●	●	1.2	1
	130616PNER-L	●			●	●		●	●	●	●	1.6	1
	130620PNER-L	●			●	●		●	●	●	●	2.0	1
	130624PNER-L	●			●	●		●	●	●	●	2.4	1
	130632PNER-L	●			●	●		●	●	●	●	3.2	1
LNEX	130604PNER-G	●	●	●	●	●	●	●	●	●	●	0.4	1
	130608PNER-G	●	●	●	●	●	●	●	●	●	●	0.8	1
	130612PNER-G	●	●	●	●	●	●	●	●	●	●	1.2	1
	130616PNER-G	●	●	●	●	●	●	●	●	●	●	1.6	1
	130620PNER-G	●	●	●	●	●	●	●	●	●	●	2.0	1
	130624PNER-G	●	●	●	●	●	●	●	●	●	●	2.4	1
	130632PNER-G	●	●	●	●	●	●	●	●	●	●	3.2	1
LNEX	130604PNER-H	●			●	●		●	●			0.4	1
	130608PNER-H	●	●		●	●	●	●	●			0.8	1
	130612PNER-H	●			●	●		●	●			1.2	1
	130616PNER-H	●			●	●		●	●			1.6	1
	130620PNER-H	●			●	●		●	●			2.0	1
	130624PNER-H	●			●	●		●	●			2.4	1
	130632PNER-H	●			●	●		●	●			3.2	1
LNEX	130604PNEL-L				●	●		●	●			0.4	2
	130608PNEL-L				●	●		●	●			0.8	2
	130612PNEL-L				●	●		●	●			1.2	2
	130616PNEL-L				●	●		●	●			1.6	2
	130620PNEL-L				●	●		●	●			2.0	2
	130624PNEL-L				●	●		●	●			2.4	2
	130632PNEL-L				●	●		●	●			3.2	2
LNEX	130604PNEL-G				●	●		●	●		●	0.4	2
	130608PNEL-G				●	●		●	●		●	0.8	2
	130612PNEL-G				●	●		●	●			1.2	2
	130616PNEL-G				●	●		●	●			1.6	2
	130620PNEL-G				●	●		●	●			2.0	2
	130624PNEL-G				●	●		●	●			2.4	2
	130632PNEL-G				●	●		●	●			3.2	2

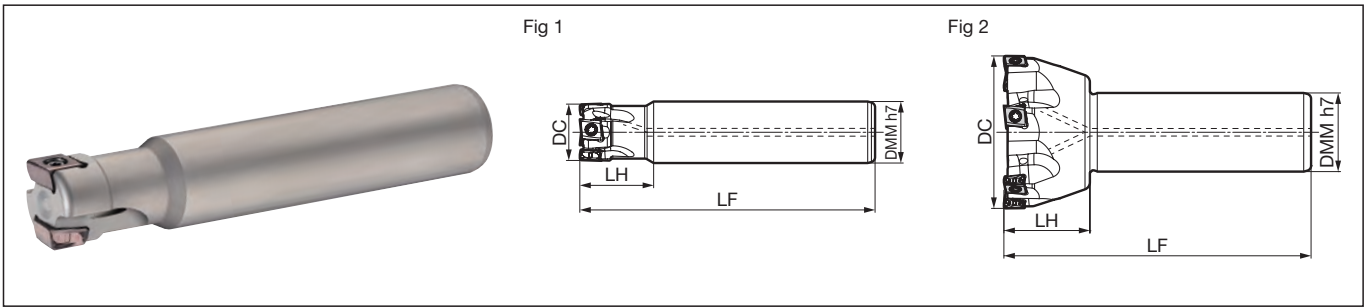


Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - 225 - 300	0.10 - 0.30 - 0.40	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - 150 - 230	0.10 - 0.30 - 0.40	
M	Stainless Steel	180 to 280 HB	100 - 175 - 250	0.10 - 0.25 - 0.35	ACU2500 ACM200 ACM300
		> 280HB	75 - 125 - 170	0.10 - 0.20 - 0.30	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - 175 - 250	0.10 - 0.30 - 0.40	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.10 - 0.15 - 0.20	ACU2500 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
· The above figures are guidelines for use with BT50 machine tools.

Rake Angle	Radial	-36 to -20°	8mm	90°
	Axial	-6°		



Body (Standard Pitch)

Dimensions (mm)

Metric	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
		TSX 08016E	●	16	16	25	100	2	0.13
	08020E	●	20	20	30	110	2	0.22	1
	08020E-16	●	20	16	30	110	2	0.15	2
	08025E	●	25	25	30	120	3	0.40	1
	08025E-20	●	25	20	30	120	3	0.26	2
	08032E	●	32	32	30	120	3	0.67	1
	08032E-25	●	32	25	30	120	3	0.43	2
	08040E	●	40	32	30	120	4	0.72	2
	08050E	●	50	32	30	120	5	0.85	2
	08063E	●	63	32	35	125	6	1.09	2
	08080E	●	80	32	35	125	7	1.44	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

Metric	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
		TSXF 08020E	●	20	20	30	110	3	0.22
	08025E	●	25	25	30	120	4	0.40	1
	08032E	●	32	32	30	120	5	0.67	1
	08040E	●	40	32	30	120	6	0.73	2
	08050E	●	50	32	30	120	8	0.85	2
	08063E	●	63	32	35	125	10	1.10	2
	08080E	●	80	32	35	125	11	1.42	2

Inserts are sold separately.

Identification Code

TSX F 08 032 E (-25)

Series Extra Insert Size Dia. Shank Shank Dia.
 Fine Pitch Type

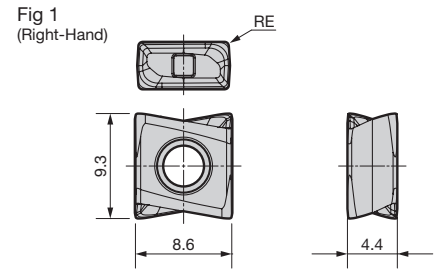
Parts

Applicable Cutter	Flat Insert Screw	Wrench	Anti-seizure Cream
	TSX 08016E, TSX 08020E, TSXF 08020E TSX 08025E to 80E, TSXF 08025E to 80E	 BFTX0306IP BFTX0308IP	 2.0 TRDR08IP

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Corner Radius RE	Fig
Process	High-speed/Light Medium Cutting Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300		
LNEX	080404PNER-L	●			●	●		●	●	●	●	0.4	1
	080408PNER-L	●			●	●		●	●	●	●	0.8	1
	080412PNER-L	●			●	●		●	●	●	●	1.2	1
	080416PNER-L	●			●	●		●	●	●	●	1.6	1
LNEX	080404PNER-G	●	●	●	●	●	●	●	●	●	●	0.4	1
	080408PNER-G	●	●	●	●	●	●	●	●	●	●	0.8	1
	080412PNER-G	●		●	●	●		●	●	●	●	1.2	1
	080416PNER-G	●		●	●	●		●	●	●	●	1.6	1

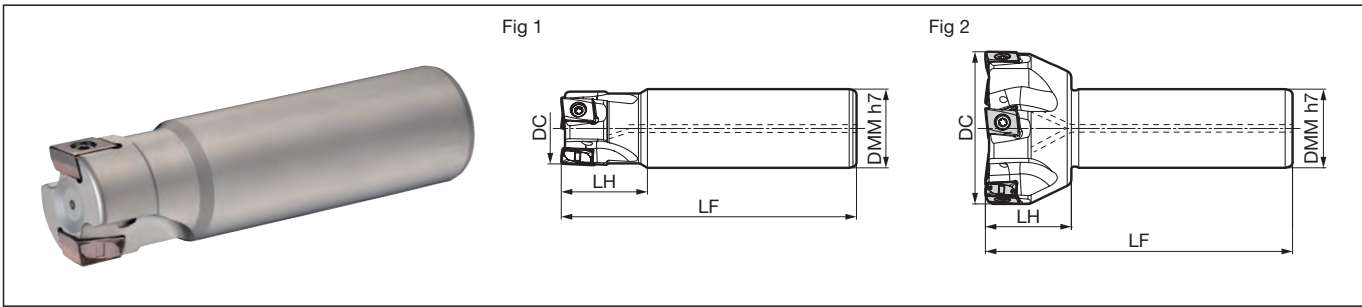


Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed V_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - 225 - 300	0.08 - 0.20 - 0.30	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - 150 - 230	0.08 - 0.20 - 0.30	
	Alloy Steel	180 to 280 HB	100 - 175 - 250	0.08 - 0.15 - 0.25	
M	Stainless Steel	220 to 280 HB	90 - 135 - 180	0.08 - 0.15 - 0.25	ACU2500 ACM200 ACM300
		> 280HB	75 - 125 - 170	0.08 - 0.15 - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - 175 - 250	0.08 - 0.20 - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.05 - 0.10 - 0.15	ACU2500 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
 · The above figures are guidelines for use with BT40 machine tools.

Rake Angle	Radial	-31 to -15°	12mm	90°
	Axial	-6°		



■ Body (Standard Pitch)

Cat. No.		Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	TSX 13025E	●	25	25	35	120	2	0.38	1
	13032E	●	32	32	35	120	2	0.66	1
	13040E	●	40	32	30	120	3	0.71	2
	13050E	●	50	32	30	120	4	0.81	2
	13063E	●	63	32	35	125	5	1.08	2
	13080E	●	80	32	35	125	5	1.40	2

Inserts are sold separately.

■ Body (Fine Pitch)

Cat. No.		Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	TSXM 13032E	●	32	32	35	120	3	0.65	1
	13040E	●	40	32	30	120	4	0.71	2
	13050E	●	50	32	30	120	5	0.80	2
	13063E	●	63	32	35	125	6	1.07	2
	13080E	●	80	32	35	125	7	1.41	2

Inserts are sold separately.

■ Body (Extra Fine Pitch)

Cat. No.		Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	TSXF 13040E	●	40	32	30	120	5	0.70	2
	13050E	●	50	32	30	120	6	0.80	2
	13063E	●	63	32	35	125	7	1.07	2
	13080E	●	80	32	35	125	8	1.42	2

Inserts are sold separately.

■ Identification Code

TSX M 13 050 E

Series M : Fine Pitch F : Extra Fine Pitch
 Insert Size
 Dia.
 Shank Type

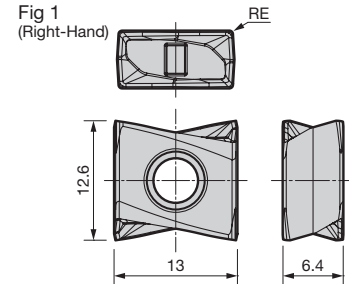
■ Parts

Flat Insert Screw	Wrench	Anti-seizure Cream
BFTX03510IP	3.0 TRDR15IP	SUMI-P

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Corner Radius RE	Fig
Process	High-speed/Light												
	Medium Cutting												
	Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300		
LNEX	130604PNER-L	●			●	●		●	●	●	●	0.4	1
	130608PNER-L	●			●	●		●	●	●	●	0.8	1
	130612PNER-L	●			●	●		●	●	●	●	1.2	1
	130616PNER-L	●			●	●		●	●	●	●	1.6	1
	130620PNER-L	●			●	●		●	●	●	●	2.0	1
	130624PNER-L	●			●	●		●	●	●	●	2.4	1
LNEX	130632PNER-L	●			●	●		●	●	●	●	3.2	1
	130604PNER-G	●	●	●	●	●	●	●	●	●	●	0.4	1
	130608PNER-G	●	●	●	●	●	●	●	●	●	●	0.8	1
	130612PNER-G	●	●	●	●	●	●	●	●	●	●	1.2	1
	130616PNER-G	●	●	●	●	●	●	●	●	●	●	1.6	1
	130620PNER-G	●	●	●	●	●	●	●	●	●	●	2.0	1
LNEX	130624PNER-G	●	●	●	●	●	●	●	●	●	●	2.4	1
	130632PNER-G	●	●	●	●	●	●	●	●	●	●	3.2	1
	130604PNER-H	●			●	●		●	●			0.4	1
	130608PNER-H	●	●		●	●	●	●	●			0.8	1
	130612PNER-H	●			●	●		●	●			1.2	1
	130616PNER-H	●			●	●		●	●			1.6	1
LNEX	130620PNER-H	●			●	●		●	●			2.0	1
	130624PNER-H	●			●	●		●	●			2.4	1
	130632PNER-H	●			●	●		●	●			3.2	1

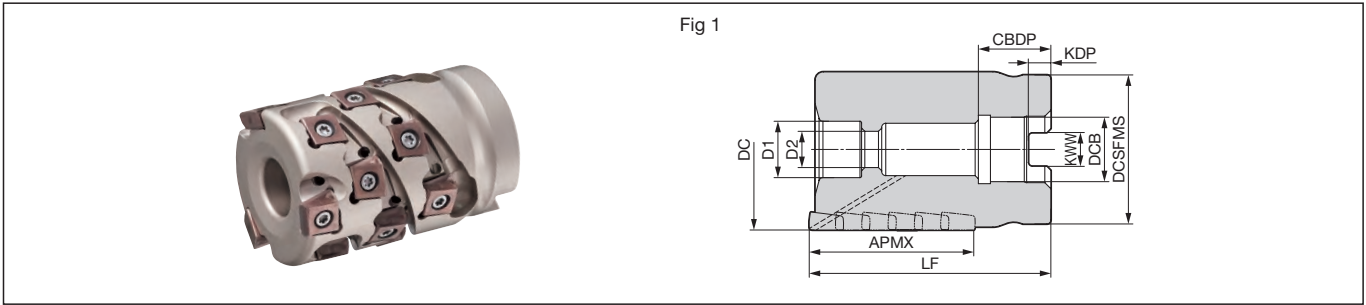


Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - 225 - 300	0.08 - 0.20 - 0.30	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - 150 - 230	0.08 - 0.20 - 0.30	
M	Stainless Steel	180 to 280 HB	100 - 175 - 250	0.08 - 0.15 - 0.25	ACU2500 ACM200 ACM300
		> 280HB	75 - 125 - 170	0.08 - 0.15 - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - 175 - 250	0.08 - 0.20 - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.05 - 0.10 - 0.15	ACU2500 ACM200 ACM300

Note : The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
 - The above figures are guidelines for use with BT50 machine tools.

Rake Angle	Radial	-20 to -15°	34 to 60 mm 90°
	Axial	-6 to -3°	



Body

														Dimensions (mm)			
Cat. No.		Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	TSXR 08032RS3416Z02	●	32	34	33	55	16	8.4	5.6	18.0	14	9	10	5	2	0.17	1
	08040RS4016Z03	●	40	40	37	60	16	8.4	5.6	18.0	14	9	18	6	3	0.32	1
	08050RS5422Z03	●	50	54	47	75	22	10.4	6.3	20.0	18	11	24	8	3	0.70	1
	08050RS5422Z04	●	50	54	47	75	22	10.4	6.3	20.0	18	11	32	8	4	0.68	1
	08063RS6027Z05	●	63	60	60	80	27	12.4	7.0	22.0	20	14	45	9	5	1.25	1

Inserts are sold separately.

Identification Code

TSXR 08 050 R S 54 22 Z03

Series Insert Size Dia. Right-Hand Metric Bore Max. Depth of Cut Mounting Hole Dia. Effective No. of Teeth

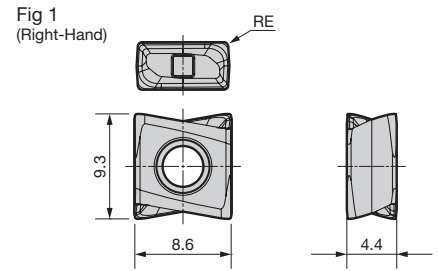
Parts

Applicable Cutter	Flat Insert Screw	Wrench	Bolt	Anti-seizure Cream
TSXR 08032RS3416Z02	BFTX0308IP	TRDR08IP	BX0845	SUMI-P
TSXR 08040RS4016Z03			BX0850	
TSXR 08050RS5422Z03			BX1060	
TSXR 08050RS5422Z04			BX1060	
TSXR 08063RS6027Z05			BX1265	

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Corner Radius RE	Fig
Process	High-speed/Light Medium Cutting Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300		
LNEX 080404PNER-L		●			●	●		●	●	●	●	0.4	1
080408PNER-L		●			●	●		●	●	●	●	0.8	1
080412PNER-L		●			●	●		●	●	●	●	1.2	1
080416PNER-L		●			●	●		●	●	●	●	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
080408PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
080412PNER-G		●		●	●	●		●	●	●	●	1.2	1
080416PNER-G		●		●	●	●		●	●	●	●	1.6	1



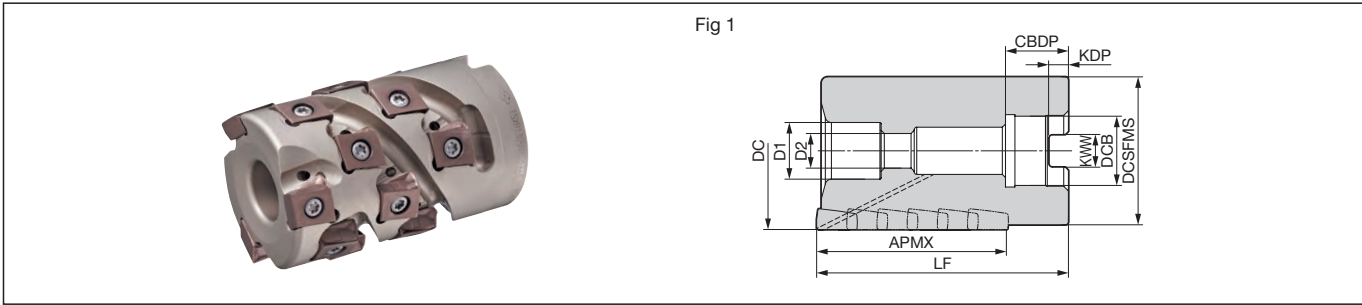
Use peripheral inserts with RE of 0.8mm or less from the second step and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - 225 - 300	0.08 - 0.20 - 0.30	ACU2500 ACP100
		> 280HB	75 - 150 - 230	0.08 - 0.20 - 0.30	ACP200 ACP300 XCU2500
M	Stainless Steel	220 to 280 HB	90 - 135 - 180	0.08 - 0.15 - 0.25	ACU2500 ACM200 ACM300
		> 280HB	75 - 125 - 170	0.08 - 0.15 - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - 175 - 250	0.08 - 0.20 - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.05 - 0.10 - 0.15	ACU2500 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
 · The above figures are guidelines for use with BT50 machine tools.
 · The above are the recommended cutting conditions for a_e = diameter DC 20% or less.

Rake Angle	Radial	-23 to -15°	41 to 60 mm 90°
	Axial	-6 to -3°	



Body

Cat. No.	Stock	Dimensions (mm)														
		Dia. DC	Max. Depth of Cut APMX	Boss Dia. DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CDBP	Bolt Dia. D1	Bolt Dia. D2	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
TSXR 13040RS4116Z02	●	40	41	37	60	16	8.4	5.6	18.0	14	9	8	4	2	0.31	1
13050RS6022Z03	●	50	60	47	80	22	10.4	6.3	20.0	18	11	18	6	3	0.66	1
13063RS5027Z03	●	63	50	60	75	27	12.4	7.0	22.0	20	14	15	5	3	1.12	1
13063RS6027Z04	●	63	60	60	80	27	12.4	7.0	22.0	20	14	24	6	4	1.15	1
13080RS6032Z04	●	80	60	77	80	32	14.4	8.0	26.0	25	18	24	6	4	2.06	1
13080RS6032Z05	●	80	60	77	80	32	14.4	8.0	26.0	25	18	30	6	5	2.04	1
13100RS6040Z05	●	100	60	88	85	40	16.4	9.0	29.0	32	21	30	6	5	3.45	1
13100RS6040Z06	●	100	60	88	85	40	16.4	9.0	29.0	32	21	36	6	6	3.44	1
13125RS6040Z07	●	125	60	100	85	40	16.4	9.0	29.0	32	21	42	6	7	5.63	1

Inserts are sold separately.

Identification Code

TSXR 13 050 R S 60 22 Z03

Series Insert Size Dia. Right-Hand Metric Bore Max. Depth of Cut Mounting Hole Dia. Effective No. of Teeth

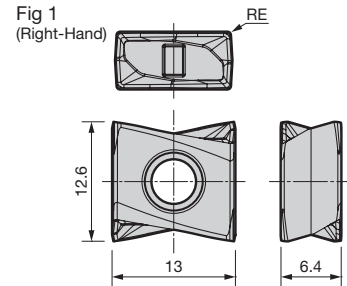
Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Bolt	Anti-seizure Cream	
	Flat Insert Screw	N-m	Handle Grip	Bit				
TSXR 13040RS4116Z02	BFTX03510IP	3.0	—	HPS1015	TRB15IP	BX0850	SUMI-P	
TSXR 13050RS6022Z03						BX1060		
TSXR 13063RS5027Z03						BX1260		
TSXR 13063RS6027Z04						BX1265		
TSXR 13080RS6032Z04			TRDR15IP	—	—	—		BX1660
TSXR 13080RS6032Z05								BX2065
TSXR 13100RS6040Z05								
TSXR 13100RS6040Z06								
TSXR 13125RS6040Z07								

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Corner Radius RE	Fig
Process	High-speed/Light												
	Medium Cutting												
	Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300		
LNEX 130604PNER-L		●			●	●		●	●	●	●	0.4	1
130608PNER-L		●			●	●		●	●	●	●	0.8	1
130612PNER-L		●			●	●		●	●	●	●	1.2	1
130616PNER-L		●			●	●		●	●	●	●	1.6	1
130620PNER-L		●			●	●		●	●	●	●	2.0	1
130624PNER-L		●			●	●		●	●	●	●	2.4	1
130632PNER-L		●			●	●		●	●	●	●	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
130608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
130612PNER-G		●		●	●	●		●	●	●	●	1.2	1
130616PNER-G		●		●	●	●		●	●	●	●	1.6	1
130620PNER-G		●		●	●	●		●	●	●	●	2.0	1
130624PNER-G		●		●	●	●		●	●	●	●	2.4	1
130632PNER-G		●		●	●	●		●	●	●	●	3.2	1
LNEX 130604PNER-H		●			●	●		●	●			0.4	1
130608PNER-H		●	●		●	●	●	●	●			0.8	1
130612PNER-H		●			●	●		●	●			1.2	1
130616PNER-H		●			●	●		●	●			1.6	1
130620PNER-H		●			●	●		●	●			2.0	1
130624PNER-H		●			●	●		●	●			2.4	1
130632PNER-H		●			●	●		●	●			3.2	1



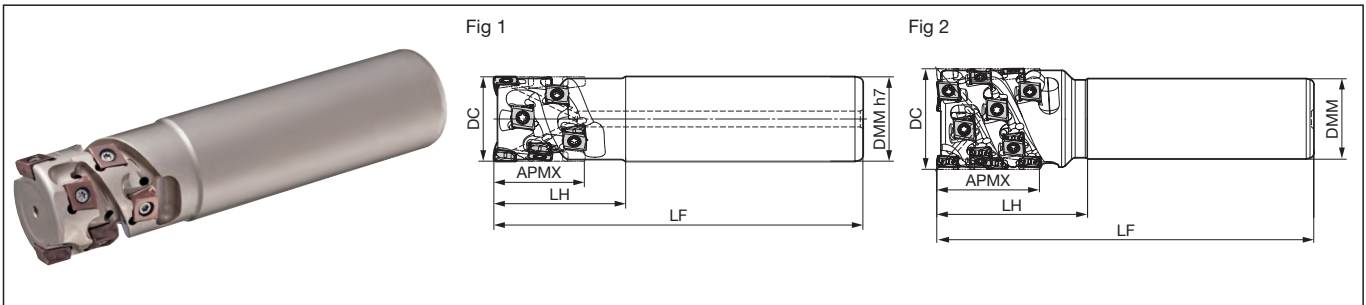
Use peripheral inserts with RE of 0.8mm or less from the second step and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - 200 - 280	0.10 - 0.20 - 0.30	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	70 - 135 - 200	0.10 - 0.20 - 0.30	
M	Stainless Steel	220 to 280 HB	90 - 135 - 180	0.10 - 0.15 - 0.25	ACU2500 ACM200 ACM300
		> 280HB	70 - 115 - 160	0.10 - 0.15 - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - 175 - 225	0.10 - 0.20 - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.05 - 0.10 - 0.15	ACU2500 ACM200 ACM300

- Note**
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
 - The above figures are guidelines for use with BT50 machine tools.
 - The above are the recommended cutting conditions for $a_e =$ diameter DC 20% or less.

Rake Angle	Radial	-33 to -18°	21 to 40 mm 90°
	Axial	-6° to -3°	



Body

												Dimensions (mm)	
	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig	
Metric	TSXR 08020E2120Z01	●	20	21	20	30	110	3	3	1	0.22	1	
	08025E2725Z02	●	25	27	25	35	125	8	4	2	0.39	1	
	08032E3432Z02	●	32	34	32	50	140	10	5	2	0.74	1	
	08040E4032Z03	●	40	40	32	60	150	18	6	3	0.92	2	

Inserts are sold separately.

Identification Code

TSXR 08 025 E 27 25 Z02

Series Insert Size Dia. Shank Type Max. Depth of Cut Shank Dia. Effective No. of Teeth

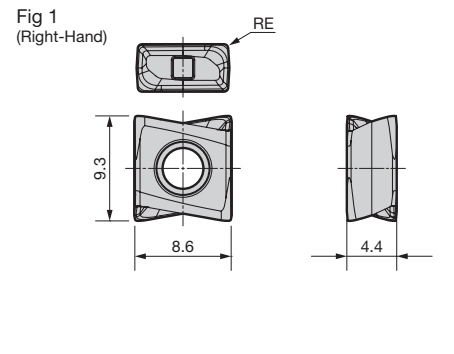
Parts

Flat Insert Screw	Wrench	Anti-seizure Cream
BFTX0308IP	2.0	TRDR08IP SUMI-P

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Corner Radius RE	Fig
Process	High-speed/Light Medium Cutting Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300		
LNEX 080404PNER-L		●			●	●		●	●	●	●	0.4	1
080408PNER-L		●			●	●		●	●	●	●	0.8	1
080412PNER-L		●			●	●		●	●	●	●	1.2	1
080416PNER-L		●			●	●		●	●	●	●	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
080408PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
080412PNER-G		●		●	●	●		●	●	●	●	1.2	1
080416PNER-G		●		●	●	●		●	●	●	●	1.6	1



Use peripheral inserts with RE of 0.8mm or less from the second step and above.

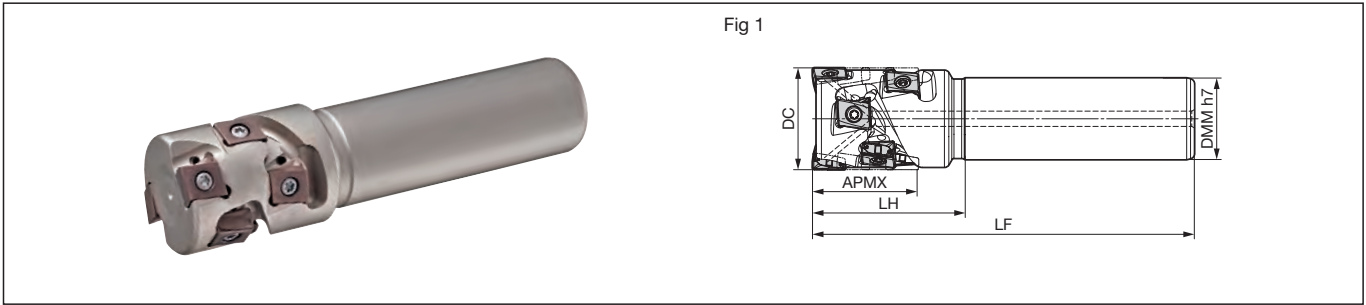
Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - 200 - 280	0.10 - 0.20 - 0.30	ACU2500 ACP100
		> 280HB	70 - 135 - 200	0.10 - 0.20 - 0.30	ACP200 ACP300
M	Stainless Steel	220 to 280 HB	90 - 135 - 180	0.10 - 0.15 - 0.25	ACU2500 ACM200
		> 280HB	70 - 115 - 160	0.10 - 0.15 - 0.25	ACM300
K	Cast Iron/ Ductile Cast Iron	250HB	125 - 175 - 225	0.10 - 0.20 - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.05 - 0.10 - 0.15	ACU2500 ACM200 ACM300

Note

- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for a_e = diameter DC 20% or less.

Rake Angle	Radial	-23 to -18°	41 to 60 mm	90°
	Axial	-6° to -3°		



Body

											Dimensions (mm)	
	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	TSXR 13040E4132Z02	●	40	41	32	60	150	8	4	2	0.91	1
	13050E6042Z03	●	50	60	42	80	170	18	6	3	1.74	1

Inserts are sold separately.

Identification Code

TSXR 13 050 E 60 42 Z03

Series Insert Size Dia. Shank Type Max. Depth of Cut Shank Dia. Effective No. of Teeth

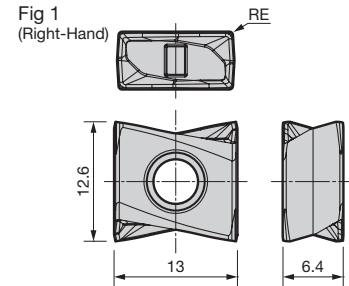
Parts

Flat Insert Screw	Wrench	Anti-seizure Cream
BFTX03510IP	3.0	TRDR15IP SUMI-P

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Corner Radius RE	Fig
Process	High-speed/Light												
	Medium Cutting												
	Roughing												
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300		
LNEX 130604PNER-L		●			●	●		●	●	●	●	0.4	1
130608PNER-L		●			●	●		●	●	●	●	0.8	1
130612PNER-L		●			●	●		●	●	●	●	1.2	1
130616PNER-L		●			●	●		●	●	●	●	1.6	1
130620PNER-L		●			●	●		●	●	●	●	2.0	1
130624PNER-L		●			●	●		●	●	●	●	2.4	1
130632PNER-L		●			●	●		●	●	●	●	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
130608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
130612PNER-G		●		●	●	●		●	●	●	●	1.2	1
130616PNER-G		●		●	●	●		●	●	●	●	1.6	1
130620PNER-G		●		●	●	●		●	●	●	●	2.0	1
130624PNER-G		●		●	●	●		●	●	●	●	2.4	1
130632PNER-G		●		●	●	●		●	●	●	●	3.2	1
LNEX 130604PNER-H		●			●	●		●	●			0.4	1
130608PNER-H		●	●		●	●	●	●	●			0.8	1
130612PNER-H		●			●	●		●	●			1.2	1
130616PNER-H		●			●	●		●	●			1.6	1
130620PNER-H		●			●	●		●	●			2.0	1
130624PNER-H		●			●	●		●	●			2.4	1
130632PNER-H		●			●	●		●	●			3.2	1



Use peripheral inserts with RE of 0.8mm or less from the second step and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - 200 - 280	0.10 - 0.20 - 0.30	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	70 - 135 - 200	0.10 - 0.20 - 0.30	
M	Stainless Steel	220 to 280 HB	90 - 135 - 180	0.10 - 0.15 - 0.25	ACU2500 ACM200 ACM300
		> 280HB	70 - 115 - 160	0.10 - 0.15 - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - 175 - 225	0.10 - 0.20 - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - 60 - 90	0.05 - 0.10 - 0.15	ACU2500 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
 · The above figures are guidelines for use with BT50 machine tools.
 · The above are the recommended cutting conditions for a_e = diameter DC 20% or less.

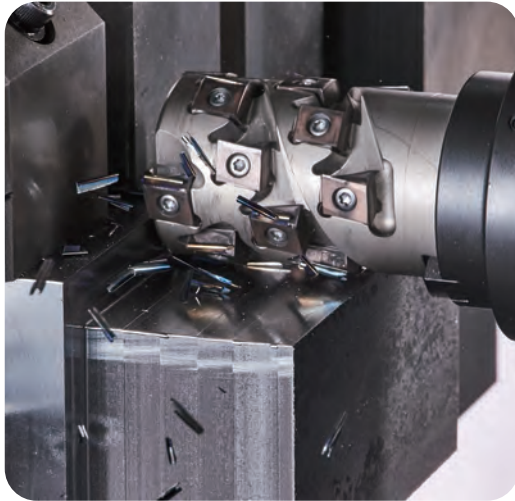
SEC-Sumi Dual Mill TSX Series Repeater Made-To-Order Request Sheet (1)

Select a cutter design and enter the dimensions in .

After completion, send the sheet to our nearest sales office or distributor.

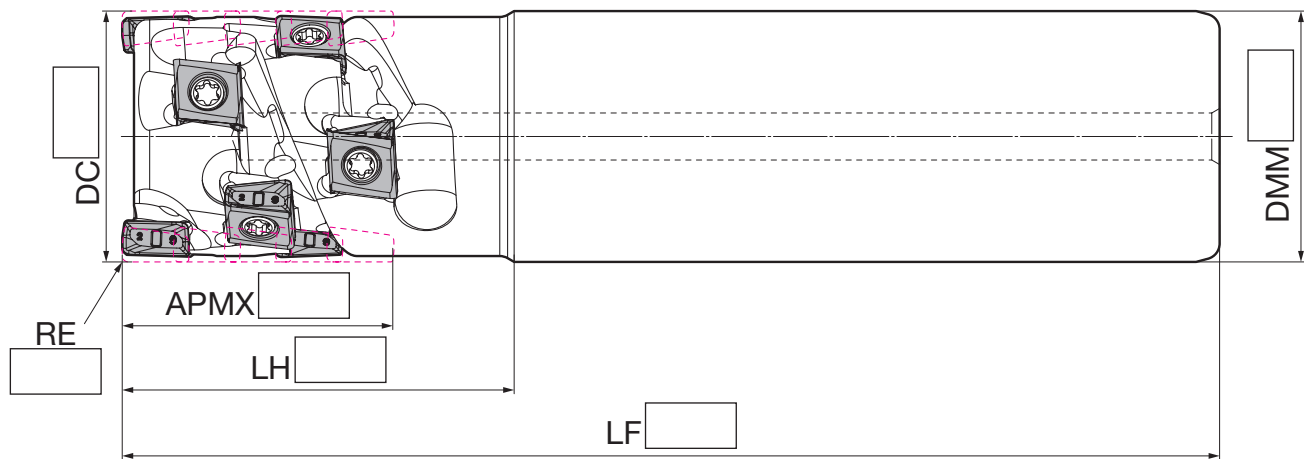
Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact






Reference Specifications							
Applicable Inserts	Dia. (mm)	Max. Depth of Cut (mm)	Total No. of Teeth	Steps	Max. Effective No. of Teeth	Specifications	
	DC	APMX				Shell Type	Shank Type
LNEX08 (Refer to P21)	20	21	3	3	1		○
	25	27	8	4	2		○
	32	34	10	5	2	○	○
	40	40	18	6	3	○	○
	50	54	32	8	4	○	
	63	60	45	9	5	○	
LNEX13 (Refer to P23)	40	41	8	4	2	○	○
	50	60	18	6	3	○	○
	63	60	24	6	4	○	
	80	60	30	6	5	○	
	100	60	36	6	6	○	
	125	60	42	6	7	○	

Shank Type Refer to the reference specifications above when completing.



Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

· The tip insert corner radius (RE) can be selected.
 (Applicable size: Refer to P7 ■ Product Range)
 Other inserts are all RE = 0.8mm or less.

· Effective No. of Teeth Desired:

· Coolant Hole: Yes No

SEC-Sumi Dual Mill TSX Series Repeater Made-To-Order Request Sheet (2)

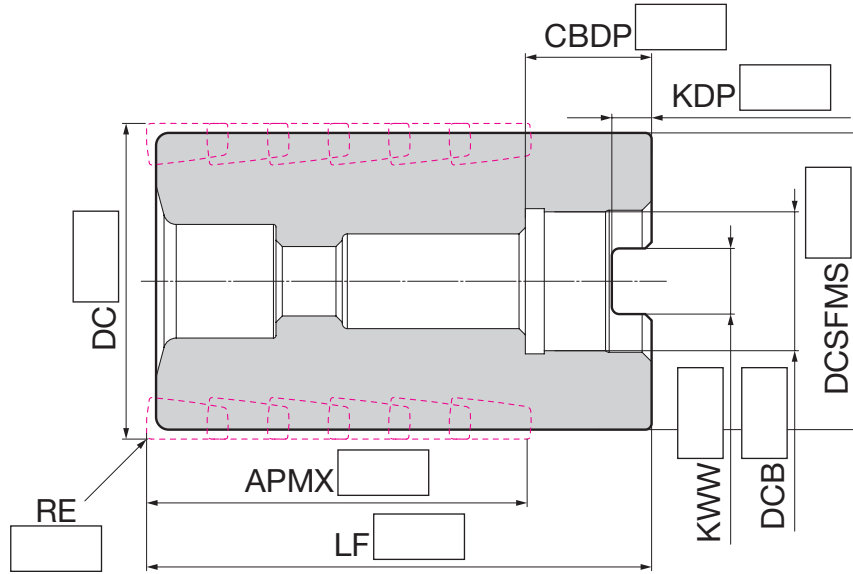
Select a cutter design and enter the dimensions in .

After completion, send the sheet to our nearest sales office or distributor.

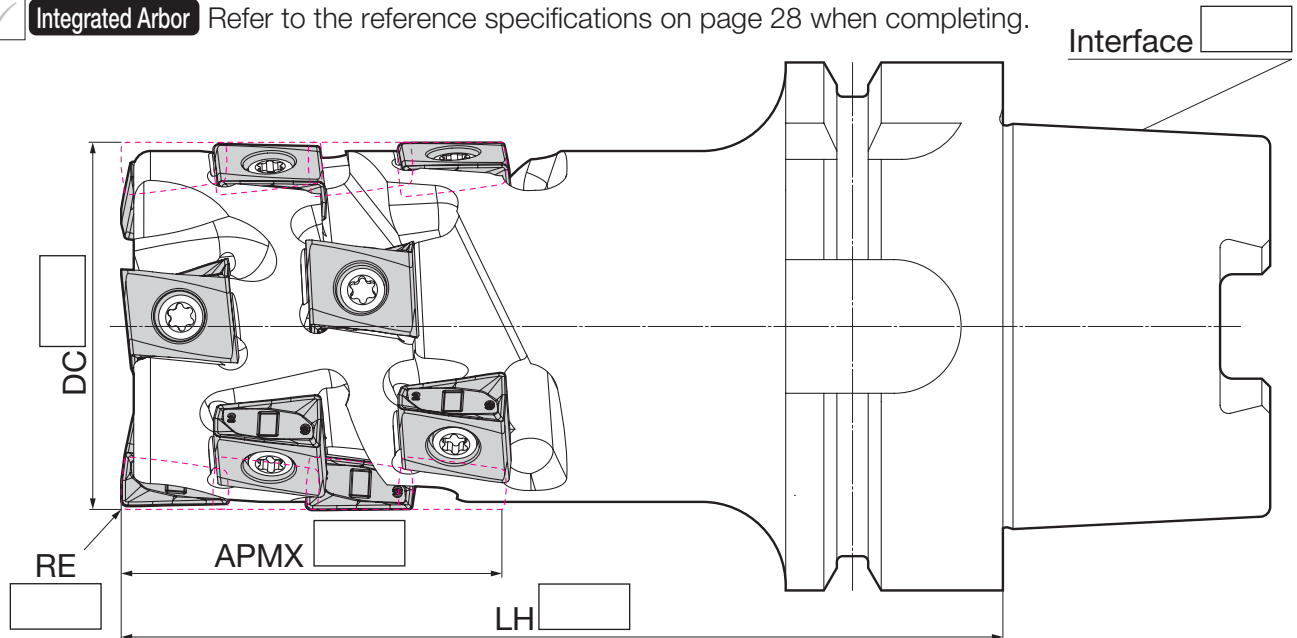
Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact





Shell Type Refer to the reference specifications on page 28 when completing.



Integrated Arbor Refer to the reference specifications on page 28 when completing.



Accessories

Flat Insert Screw	Wrench	Bolt	Anti-seizure Cream
			
		<small>*Shell Type Only</small>	

· The tip insert corner radius (RE) can be selected.
 (Applicable size: Refer to P7 ■ Product Range)
 Other inserts are all RE = 0.8mm or less.

· Effective No. of Teeth Desired:

· Coolant Hole: Yes No

SEC-Sumi Dual Mill TSX Series Side Cutter Made-To-Order Sheet

Select a cutter design and enter the dimensions in .

After completion, send the sheet to our nearest sales office or distributor.

Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

Insert Series Configuration

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804 \circ OPNER/L-L	●	●	●	●	—	—	—
LNEX 0804 \circ OPNER/L-G	●	●	●	●	—	—	—
LNEX 1306 \circ OPNER/L-L	●	●	●	●	●	●	●
LNEX 1306 \circ OPNER/L-G	●	●	●	●	●	●	●
LNEX 1306 \circ OPNER-H	●	●	●	●	●	●	●

— mark: Not available

[Insert Special Orders]

LNEX08 has Corner Radius (RE) = 0.4 to 1.6mm

LNEX13 has Corner Radius (RE) = 0.4 to 3.2mm. Both right-hand and left-hand types are supported.

(Radius shape after machining may differ from the mounted insert corner radius RE size.)




LNEX1306 \circ OPNEL-H (left-handed H Type chipbreaker) is not available.

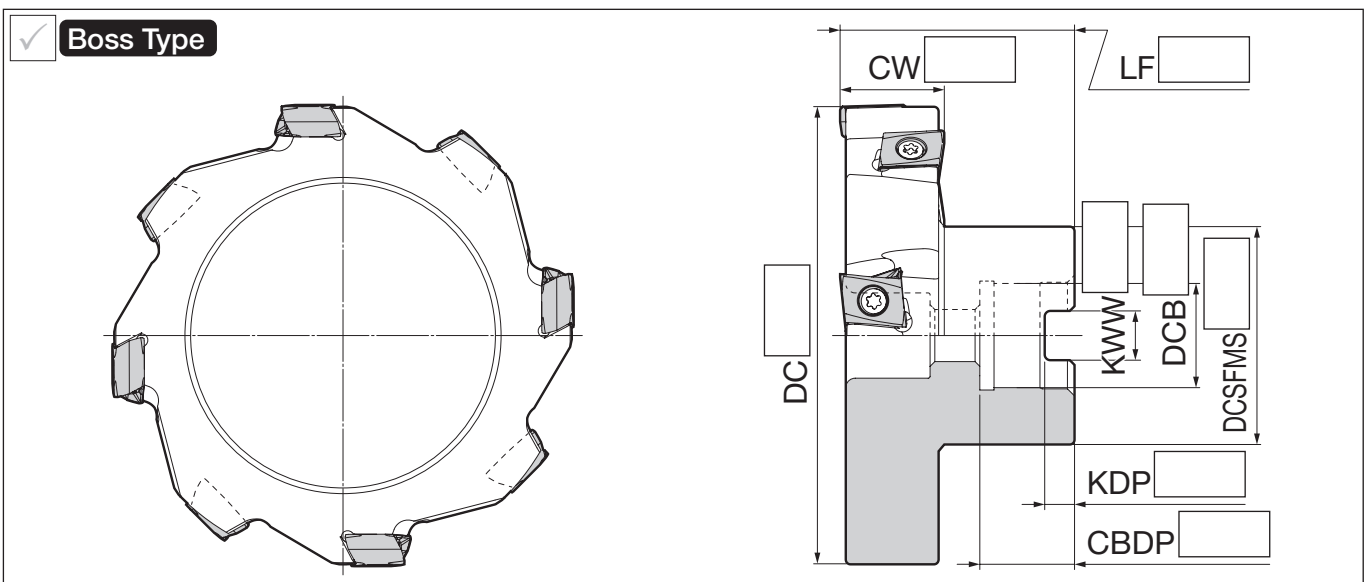
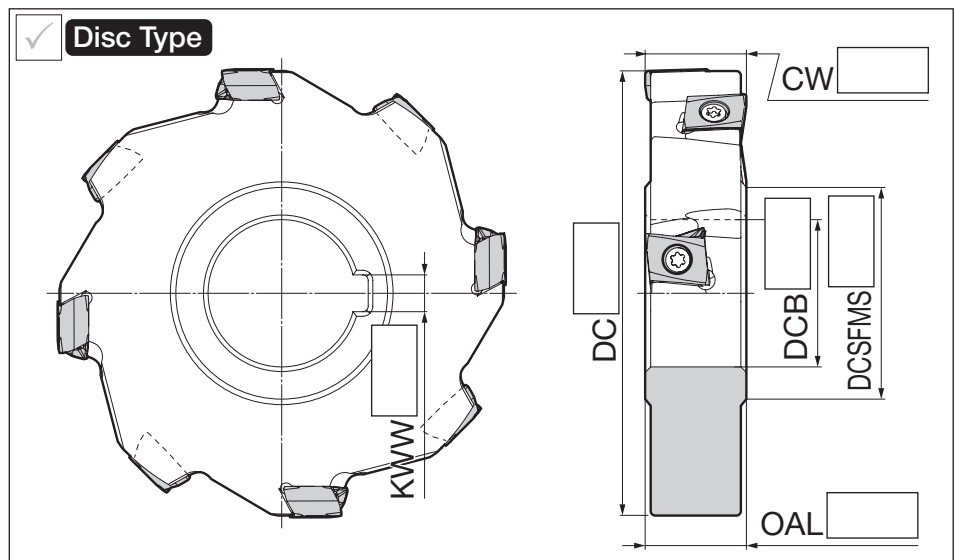
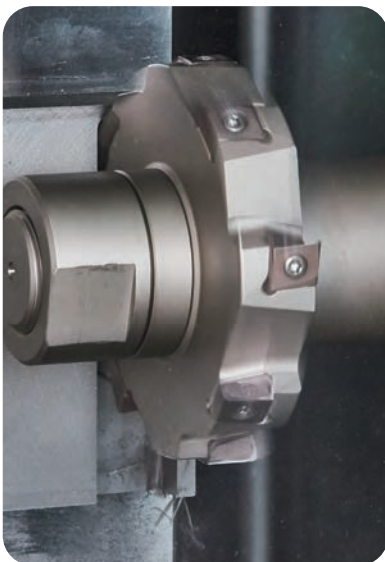
CW Size Reference Specification

14mm	LNEX08 (Refer to P21)
18 to 22mm	LNEX13 (Refer to P23)

A multi-step design is required if the CW size exceeds the above.

Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		



Effective No. of Teeth Desired:

SEC-Sumi Dual Mill TSX Series Made-To-Order Request Sheet

Select a cutter design and enter the dimensions in .

After completion, send the sheet to our nearest sales office or distributor.

Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

Insert Series Configuration

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804 \circ OPNER/L-L	●	●	●	●	—	—	—
LNEX 0804 \circ OPNER/L-G	●	●	●	●	—	—	—
LNEX 1306 \circ OPNER/L-L	●	●	●	●	●	●	●
LNEX 1306 \circ OPNER/L-G	●	●	●	●	●	●	●
LNEX 1306 \circ OPNER-H	●	●	●	●	●	●	●

— mark: Not available

[Insert Special Orders]

LNEX08 has Corner Radius (RE) = 0.4 to 1.6mm

LNEX13 has Corner Radius (RE) = 0.4 to 3.2mm. Both right-hand and left-hand types are supported.

(Radius shape after machining may differ from the mounted insert corner radius RE size.)




LNEX1306 \circ OPNEL-H (left-handed H Type chipbreaker) is not available.

CW Size Reference Specification

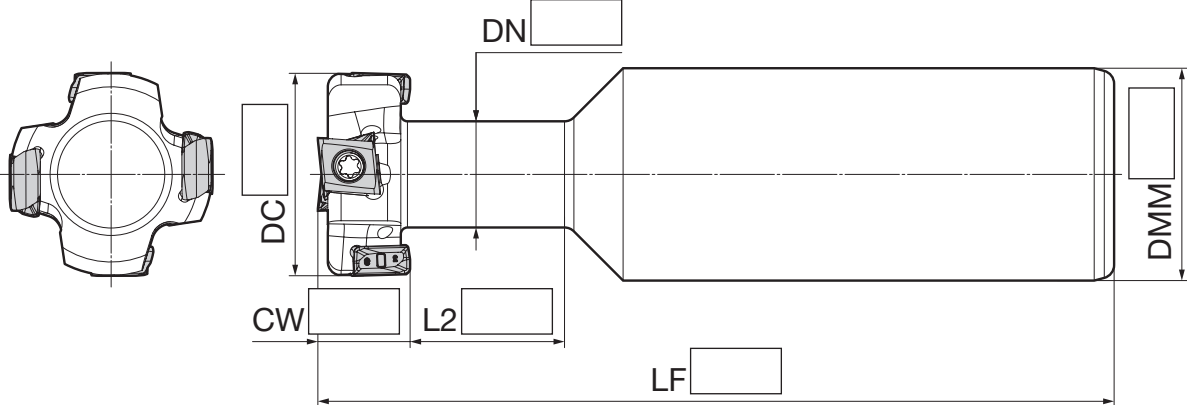
14mm	LNEX08 (Refer to P21)
18 to 22mm	LNEX13 (Refer to P23)

A multi-step design is required if the CW size exceeds the above.

Accessories

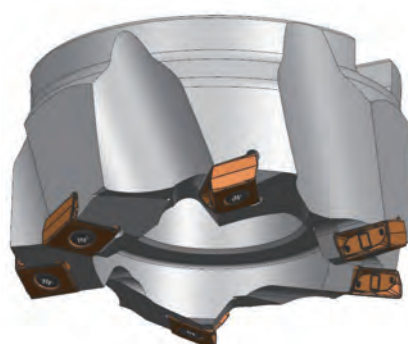
Flat Insert Screw	Wrench	Anti-seizure Cream
		

T-Slot Type

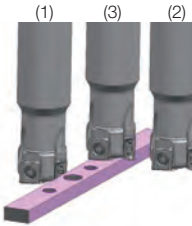


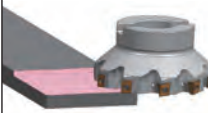
· Effective No. of Teeth Desired: · Coolant Hole: Yes No


Angled cutters, high-feed cutters and bore cutters can be designed. For details, please contact us.

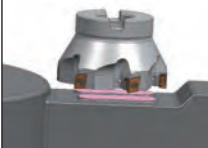



Application Examples


SCM440 Machine Component		Sumitomo	Conventional Tool
 <p>(1) Side Milling (2) Side Milling (3) Face Milling</p>	Tool	TSXF 08020E	Vertical Type 4 Corners
	Grade	ACP200	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	20	20
	Number of Teeth	3	3
	V_c (m/min)	270	270
	V_f (mm/min)	650	650
	f_z (mm/t)	0.05	0.05
	a_p (mm)	8.0	8.0
	a_e (mm)	0.64	0.64
	Coolant	Wet	Wet
	Results	Reduced finishing processes thanks to wall accuracy superior to conventional tools.	

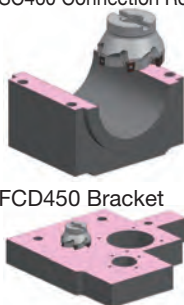
SUS304L Guide		Sumitomo	Conventional Tool
	Tool	TSXM 13125RS	—
	Grade	ACM200	—
	Chipbreaker	L	—
	Cutter Dia. (mm)	125	125
	Number of Teeth	10	8
	V_c (m/min)	70	70
	V_f (mm/min)	80	40
	f_z (mm/t)	0.045	0.028
	a_p (mm)	5.0	5.0
	a_e (mm)	95	95
	Coolant	Wet	Wet
	Results	2 times the machining efficiency and 2 times longer tool life.	

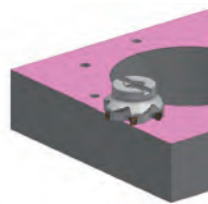
FC250 Cylinder Block		Sumitomo	Conventional Tool
	Tool	TSX 13050RS	—
	Grade	ACK300	—
	Chipbreaker	L	—
	Cutter Dia. (mm)	50	50
	Number of Teeth	4	4
	V_c (m/min)	235	235
	V_f (mm/min)	600	600
	f_z (mm/t)	0.1	0.1
	a_p (mm)	0.8	0.8
	a_e (mm)	0.8	0.8
	Coolant	Wet	Wet
	Results	Dimensional tolerance and surface roughness superior to conventional tools.	

Cast Steel Shaft Housing		Sumitomo	Conventional Tool
	Tool	TSX 13100R	—
	Grade	ACP200	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	100	100
	Number of Teeth	6	8
	V_c (m/min)	180	141
	V_f (mm/min)	962	1,000
	f_z (mm/t)	0.28	0.28
	a_p (mm)	Roughing: 3mm, Finishing: 1mm	Roughing: 3mm, Finishing: 1mm
	a_e (mm)	—	—
	Coolant	Wet	Wet
	Results	Machined surface superior to conventional tools.	

Ductile Cast Iron Housing		Sumitomo	Conventional Tool
	Tool	TSXM 13050RS	Single-Sided, 4 Corners
	Grade	ACK300	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	50	50
	Number of Teeth	5	5
	V_c (m/min)	240	240
	V_f (mm/min)	1,150	1,150
	f_z (mm/t)	0.13	0.13
	a_p (mm)	1.0	1.0
	a_e (mm)	30.0	30.0
	Coolant	Dry	Dry
	Results	Tool life extension of 131% achieved.	

SCM430 Bearing Cover		Sumitomo	Competitor's Product
	Tool	TSXM 13080RS	—
	Grade	ACP200	—
	Chipbreaker	H	—
	Cutter Dia. (mm)	80	80
	Number of Teeth	7	6
	V_c (m/min)	180	180
	V_f (mm/min)	950	950
	f_z (mm/t)	0.2	0.2
	a_p (mm)	3.8	3.8
	a_e (mm)	50.0	50.0
	Coolant	Dry	Dry
	Results	Tool life extension of 333% achieved.	

Mixed SC460 and FCD450 Machine Component		Sumitomo	Conventional Tool
 <p>SC460 Connection Rod FCD450 Bracket</p>	Tool	TSX13100R	Vertical Type 4 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	100	100
	Number of Teeth	6	6
	V_c (m/min)	180	180
	V_f (mm/min)	860	860
	f_z (mm/t)	0.25	0.25
	a_p (mm)	3	3
	a_e (mm)	—	—
	Coolant	Wet	Wet
	Results	Suppresses cutting edge damage and realises stable long tool life even in mixed lines of steel and cast iron.	

FCD500 Machine Component		Sumitomo	Conventional Tool
	Tool	TSX13100RS	—
	Grade	XCK2000	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	170	125
	Number of Teeth	10	7
	V_c (m/min)	170	163
	V_f (mm/min)	1,244	581
	f_z (mm/t)	0.23	0.2
	a_p (mm)	2.0	3.0
	a_e (mm)	—	—
	Coolant	Wet	Wet
	Results	Suppresses wear to achieve 2x longer tool life.	

< SAFETY NOTES >



- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.

- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.

- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

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<https://www.sumitool.com/global>