CAT.TSXBROCHURE.6/17

SUMITOMO
CARBIDE - CBN - DIAMOND

Sumitomo Electric Carbide, Inc.

TSX Milling Cutter Series

90° Shoulder Tangential Milling Cutter

SUMITOMO ELECTRIC GROUP

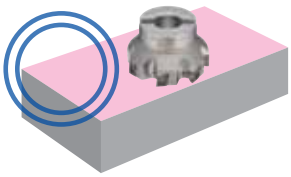
TSX Series

Features & Benefits

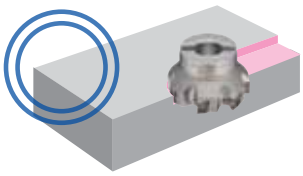
NEW

- TSX provides superior metal removal rates
- With the newly developed fine carbide press/ sintering technology and accurate grinding technics, the periphery ground inserts generate incredible accuracy and excellent surface finish
- Employs a cost effective 4-corner ground tolerance insert
- Tangentially mounted insert achieves excellent edge sharpness and side wall accuracy with optimized chipbreaker
- TSX is available in two insert sizes offering a max depth of cut of 8mm (.315") and 12mm (.473")
- TSX provides the strength required for increased depths of cut ranging from a small job to a heavy duty roughing application

Face Milling

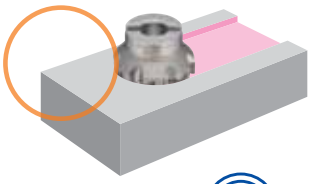


Shoulder Milling



Side Face Milling

Slot Milling

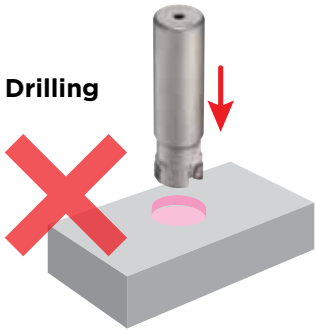


Best

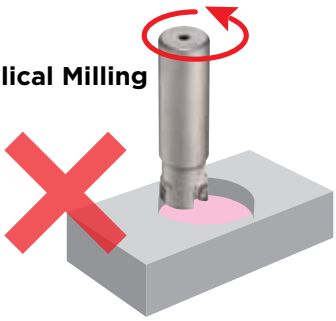
Good

Not Applicable

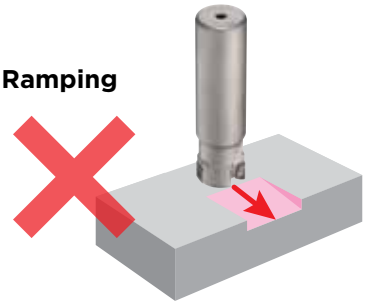
Drilling



Hellical Milling



Ramping

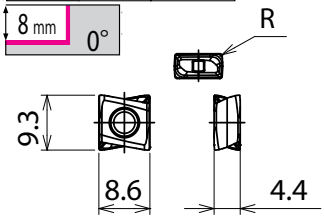


TSX Series
Applicable Insert: LNEX

P Steel	M Stainless Steel	K Cast Iron	S Exotic Alloy
●	●	●	●

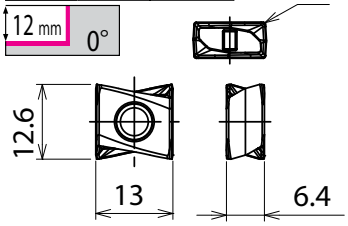
TSX3000
LNEX08
Max. DOC 8mm (.315")

Rake Angle LNEX08	Radial	−34°−20°
	Axial	−6°



TSX4000
LNEX13
Max. DOC 12 mm (.473")

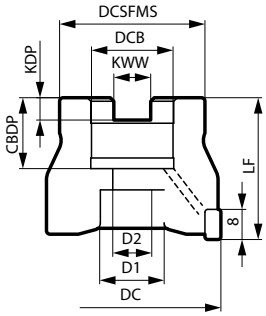
Rake Angle LNEX13	Radial	−31°−15°
	Axial	−6°



Inserts	P			K		M / S		
Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	R
LNEX080404PNER-L	●	●	●		●	●	●	.016
LNEX080404PNER-G	●	●	●	●	●	●	●	.016
LNEX080408PNER-L	●	●	●		●	●	●	.031
LNEX080408PNER-G	●	●	●	●	●	●	●	.031
LNEX080412PNER-G	●	●	●	●	●	●	●	.047
LNEX080416PNER-G	●	●	●	●	●	●	●	.063
LNEX130604PNER-L	●	●	●		●	●	●	.016
LNEX130604PNER-G	●	●	●	●	●	●	●	.016
LNEX130608PNER-L	●	●	●		●	●	●	.031
LNEX130608PNER-G	●	●	●	●	●	●	●	.031
LNEX130608PNER-H	●	●	●	●	●			.031
LNEX130616PNER-G	●	●	●	●	●	●	●	.063
LNEX130616PNER-H		●	●	●	●			.063
LNEX130624PNER-G	●	●	●	●	●	●	●	.094
LNEX130624PNER-H		●	●	●	●			.094
LNEX130632PNER-G	●	●	●	●	●	●	●	.126
LNEX130632PNER-H		●	●	●	●			.126

●= USA Stocked Item

TSX3000 Shell Mill Series

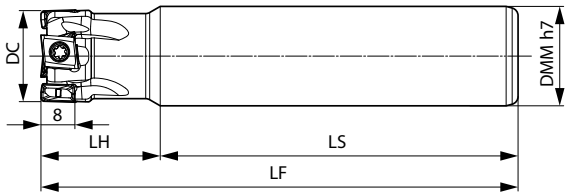


TSX Shell Mill - Inch												Insert: LNEX08 Type	
	Cat. No.	Stock	Dimensions (in.)									No. of Teeth	Weight (lbs)
			DC	DCSFM	LF	DCB	KWW	KDP	CBDP	D1	D2		
Standard	TSX31500R	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	4	0.44
Standard	TSX32000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	5	0.88
Standard	TSX32500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	6	1.10
Fine	TSXF31500R	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	6	0.44
Fine	TSXF32000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	8	0.88
Fine	TSXF32500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	10	1.10

TSX Shell Mill - Metric												Insert: LNEX08 Type	
	Cat. No.	Stock	Dimensions (mm.)									No. of Teeth	Weight (lbs)
			DC	DCSFM	LF	DCB	KWW	KDP	CBDP	D1	D2		
Standard	TSX08040RS	★	40	33	40	16.0	8.4	5.6	18	14	9	4	0.44
Standard	TSX08050RS	★	50	41	40	22.0	10.4	6.3	20	18	11	5	0.88
Standard	TSX08063RS	★	63	50	40	22.0	10.4	6.3	20	18	11	6	1.10
Fine	TSXF08040RS	★	40	33	40	16.0	8.4	5.6	18	14	9	6	0.44
Fine	TSXF08050RS	★	50	41	40	22.0	10.4	6.3	20	18	11	8	0.88
Fine	TSXF08063RS	★	63	50	40	22.0	10.4	6.3	20	18	11	10	1.10

●= USA Stocked Item
★= World Wide Warehouse Item

TSX3000 Endmill Series



TSX Endmill - Inch								Insert: LNEX08 Type	
	Cat. No.	Stock	Dimensions (in.)					No. of Teeth	Weight (lbs)
			DC	DMM	LH	LS	LF		
Standard	TSX30625EW	●	0.625	0.625	1.312	1.906	3.218	2	0.22
Standard	TSX30750EW	●	0.750	0.750	1.534	2.030	3.563	2	0.35
Standard	TSX31000EW	●	1.000	1.000	2.060	2.281	4.341	3	0.88
Standard	TSX31250EW	●	1.250	1.250	2.060	2.281	4.341	3	1.32
Standard	TSX31500EW	●	1.500	1.250	2.060	2.281	4.341	4	1.54
Fine	TSXF30750EW	●	0.750	0.750	1.534	2.030	3.563	3	0.44
Fine	TSXF31000EW	●	1.000	1.000	2.060	2.281	4.341	4	0.88
Fine	TSXF31250EW	●	1.250	1.250	2.060	2.281	4.341	5	1.32
Fine	TSXF31500EW	●	1.500	1.250	2.060	2.281	4.341	6	1.54

TSX Endmill - Metric								Insert: LNEX08 Type	
	Cat. No.	Stock	Dimensions (mm.)					No. of Teeth	Weight (lbs)
			DC	DMM	LH	LS	LF		
Standard	TSX08016E	★	16	16	25	75	100	2	0.28
Standard	TSX08020E	★	20	20	30	80	110	2	0.48
Standard	TSX08025E	★	25	25	30	90	120	3	0.88
Standard	TSX08032E	★	32	32	30	90	120	3	1.47
Standard	TSX08040E	★	40	32	30	90	120	4	1.58
Fine	TSXF08020E	★	20	20	30	80	110	3	0.48
Fine	TSXF08025E	★	25	25	30	90	120	4	0.88
Fine	TSXF08032E	★	32	32	30	90	120	5	1.47
Fine	TSXF08040E	★	40	32	30	90	120	6	1.58

●= USA Stocked Item
★= World Wide Warehouse Item

TSX4000 Shell Mill Series

Fig 1

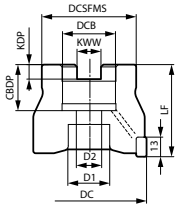


Fig 2

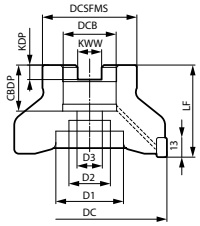


Fig 3

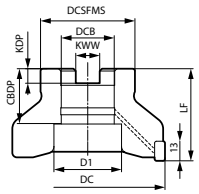


Fig 4

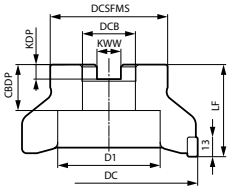
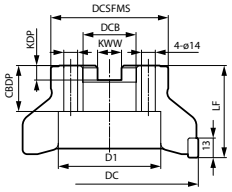


Fig 5



TSX Shell Mill - Inch — **Insert: LNEX13 Type**

	Cat. No.	Stock	Dimensions (in.)									No. of Teeth	Weight (lbs)	Fig.
			DC	DCSFM	LF	DCB	KWW	KDP	CBDP	D1	D2			
Standard	TSX41500R	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	4	0.44	1
	TSX42000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	5	0.66	1
	TSX42500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	6	1.10	1
	TSX43000R	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	7	1.76	1
	TSX44000R	●	4.000	2.870	2.000	1.500	0.625	0.380	1.000	2.000	0.781	9	4.85	2
	TSX45000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.000	2.000	0.781	12	7.50	2
	TSX46000R	●	6.000	4.380	2.500	1.500	0.625	0.380	1.000	2.000	0.781	14	11.0	2
Fine	TSXF41500R	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	5	0.44	1
	TSXF42000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	6	0.66	1
	TSXF42500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	8	1.10	1
	TSXF43000R	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	10	1.76	1
	TSXF44000R	●	4.000	2.870	2.000	1.500	0.625	0.380	1.000	2.000	0.781	13	4.85	2

TSX Shell Mill - Metric - Inch Arbors — **Insert: LNEX13 Type**

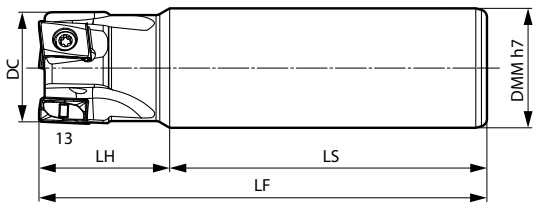
	Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (lbs)	Fig.
			DC	DCSFM	LF	DCB	KWW	KDP	CBDP	D1	D2			
Coarse	TSX13080R	★	80	55	50	25.4	8.4	5.6	25	14	-	5	2.05	1
	TSX130100R	★	100	70	63	31.75	10.4	6.3	32	27	18	6	4.14	2
	TSX130125R	★	125	80	63	38.1	10.4	6.3	35.5	30	-	7	5.75	1
	TSX130160R	★	160	100	63	50.8	10.4	6.3	38	-	-	8	9.21	4
Standard	TSXM13080R	★	80	55	50	25.4	8.4	5.6	25	14	-	7	2.05	1
	TSXM13100R	★	100	70	63	31.75	10.4	6.3	32	27	18	8	4.19	2
	TSXM13125R	★	125	80	63	38.1	10.4	6.3	35.5	30	-	10	5.78	1
	TSXM13160R	★	160	100	63	50.8	10.4	6.3	38	-	-	12	9.30	4

TSX Shell Mill - Metric - Metric Arbors — **Insert: LNEX13 Type**

	Cat. No.	Stock	Dimensions (mm)									No. of Teeth	Weight (lbs)	Fig.
			DC	DCSFM	LF	DCB	KWW	KDP	CBDP	D1	D2			
Corase	TSX13040RS	★	40	33	40	16.0	8.4	5.6	18	14	9	3	0.44	1
	TSX13050RS	★	50	41	40	22.0	10.4	6.3	20	18	11	4	0.66	1
	TSX13063RS	★	63	50	40	22.0	10.4	6.3	20	18	11	5	1.10	1
	TSX13080RS	★	80	55	50	27.0	12.4	7.0	22	20	14	5	2.02	1
	TSX13100RS	★	100	70	50	32.0	14.4	8.0	32	46	-	6	2.97	3
	TSX13125RS	★	125	80	63	40.0	16.4	9.0	29	52	29	7	5.62	1
	TSX13160RS	★	160	130	63	40.0	16.4	9.0	29	90	-	8	10.95	5
Standard	TSXM13040RS	★	40	33	40	16.0	8.4	5.6	18	14	9	4	0.41	1
	TSXM13050RS	★	50	41	40	22.0	10.4	6.3	20	18	11	5	0.62	1
	TSXM13063RS	★	63	50	40	22.0	10.4	6.3	20	18	11	6	1.10	1
	TSXM13080RS	★	80	55	50	27.0	12.4	7.0	22	20	14	7	2.02	1
	TSXM13100RS	★	100	70	50	32.0	14.4	8.0	32	46	-	8	3.00	3
	TSXM13125RS	★	125	80	63	40.0	16.4	9.0	29	52	29	10	5.66	1
	TSXM13160RS	★	160	130	63	40.0	16.4	9.0	29	90	-	12	11.06	5

●= USA Stocked Item
★= World Wide Warehouse Item

TSX4000 Endmill Series



TSX Endmill - Inch — **Insert: LNEX13 Type**

	Cat. No.	Stock	Dimensions (in.)					No. of Teeth	Weight (lbs)
			DC	DMM	LH	LS	LF		
Standard	TSX41000EW	●	1.000	1.000	2.060	2.281	4.341	2	0.66
	TSX41250EW	●	1.250	1.250	2.060	2.281	4.341	2	1.32
	TSX41500EW	●	1.500	1.250	2.060	2.281	4.341	3	1.54
Fine	TSXF41250EW	●	1.250	1.250	2.060	2.281	4.341	3	1.32
	TSXF41500EW	●	1.500	1.250	2.060	2.281	4.341	4	1.78

TSX Endmill - Metric — **Insert: LNEX13 Type**

	Cat. No.	Stock	Dimensions (mm.)					No. of Teeth	Weight (lbs)
			DC	DMM	LH	LS	LF		
Standard	TSX13025E	★	25	25	35	85	120	2	0.83
	TSX13032E	★	32	32	35	85	120	2	1.45
	TSX13040E	★	40	32	30	90	120	3	1.56
	TSX13050E	★	50	32	30	90	120	4	1.54
Fine	TSXM13032E	★	32	32	35	85	120	3	1.43
	TSXM13040E	★	40	32	30	90	120	4	1.56
	TSXM13050E	★	50	32	30	90	120	5	1.76

●= USA Stocked Item
★= World Wide Warehouse Item

Application Examples

Part Material: 4140 (28HRC)		TSX	Comp.
Construction Machine Parts 	**Tool**	TSX42000R	-
	Grade	ACP200	-
	Chipbreaker	G	-
	Diameter	2.000"	3.000"
	# of Teeth	5	9
	V_c (sfm)	630	630
	f_z (in. /t)	0.008"	0.007"
	a_p (in.)	R) 0.090" F) 0.010" Total 2 pass	R)0.050", 0.040" F)0.010 Total 3 pass
	a_e (in.)	0.800"	0.800"
	Coolant	Wet	Wet
	Per Corner	-	-
Results: Reducing # of passes and achieving a higher efficiency			

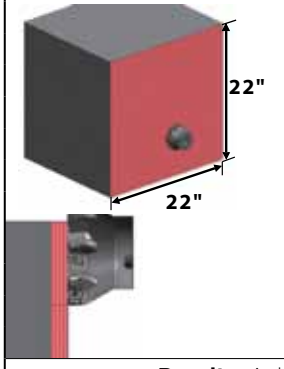
Part Material: 4140 (28HRC)		TSX	Comp.
Housing 	**Tool**	TSXM13080RS	-
	Grade	ACP200	-
	Chipbreaker	H	-
	Diameter	3.150" (80mm)	3.150" (80mm)
	# of Teeth	7	6
	V_c (sfm)	590	590
	f_z (in. /t)	0.007"	0.009"
	a_p (in.)	0.150"	0.150"
	a_e (in.)	2.000"	2.000"
	Coolant	Dry	Dry
	Tool Life	100 pieces	30 pieces
Results: Achieving 3.3x longer tool life			

Part Material: 4140 (42HRC)		TSX	Comp.
Mechanical Parts 	**Tool**	TSX42000R	-
	Grade	ACK300	-
	Chipbreaker	G	-
	Diameter	2.000"	2.000"
	# of Teeth	5	6
	V_c (sfm)	400	400
	f_z (in. /t)	0.010"	0.007"
	a_p (in.)	0.340"	0.340"
	a_e (in.)	0.250"	0.250"
	Coolant	Air	Air
	Wall Accuracy	0.001"	0.003"
Results: Achieving a better wall accuracy			

Part Material: 4140		TSX	Comp.
Machine Parts 1 & 2: Peripheral Milling 3: Surface Milling 	**Tool**	TSXF30750EW	-
	Grade	ACP200	-
	Chipbreaker	G	-
	Diameter	0.750"	0.750"
	# of Teeth	3	3
	V_c (sfm)	886	886
	f_z (in. /t)	0.002"	0.002"
	a_p (in.)	0.315"	0.315"
	a_e (in.)	0.025"	0.025"
	Coolant	Wet	Wet
	Tool Life	220 pieces	135 pieces
Results: Achieving a better wall accuracy and a shoter cycle time			

Part Material: Ductile Cast Iron		TSX	Comp.
Housing 	**Tool**	TSX42000R	-
	Grade	ACK300	-
	Chipbreaker	G	-
	Diameter	2.000"	2.000"
	# of Teeth	5	5
	V_c (sfm)	787	787
	f_z (in. /t)	0.005"	0.005"
	a_p (in.)	0.040"	0.040"
	a_e (in.)	1.100"	1.100"
	Coolant	Dry	Dry
	Tool Life	236 pcs/corner	180 pcs/corner
Results: Achieving 30% longer tool life			

Part Material: Ductile Cast Iron (32HRC)		TSX	Comp.
Automotive Parts 	**Tool**	TSX41500R	-
	Grade	ACK300	-
	Chipbreaker	G	-
	Diameter	1.500"	1.500"
	# of Teeth	4	6
	V_c (sfm)	984	984
	f_z (in. /t)	0.004"	0.003"
	a_p (in.)	Max 0.315"	Max 0.315"
	a_e (in.)	1.000"	1.000"
	Coolant	Wet	Wet
	Tool Life	1,000 pieces	800 pieces
Results: Achieving 25% longer tool life with economical tool life per corner			

Part Material: 65-45-12 (210HB)		TSX	Comp.
Machine Parts 	**Tool**	TSXM13100R	-
	Grade	ACP200	-
	Chipbreaker	G	-
	Diameter	4.0" (100mm)	5.0" (125mm)
	# of Teeth	8	8
	V_c (sfm)	492	492
	f_z (in. /t)	0.010"	0.003"
	a_p (in.)	0.160" x 4 pass	0.100" x 7 pass
	a_e (in.)	3.150"	3.150"
	Coolant	Wet	Wet
	Tool Life	1 piece	1 piece
Results: Achieving 3x higher efficiency			

Part Material: Grey Cast Iron		TSX	Comp.
Cylinder Block 	**Tool**	TSX13050RS	-
	Grade	ACK300	-
	Chipbreaker	L	-
	Diameter	2.000" (50mm)	2.000" (50mm)
	# of Teeth	4	4
	V_c (sfm)	770	770
	f_z (in. /t)	0.004"	0.004"
	a_p (in.)	0.030"	0.030"
	a_e (in.)	0.030"	0.030"
	Coolant	Wet	Wet
	Tool Life	-	-
Results: Achieving a better wall accuracy and surface flatness			

Application Examples

Toughness TSX has extremely tough cutting edge.

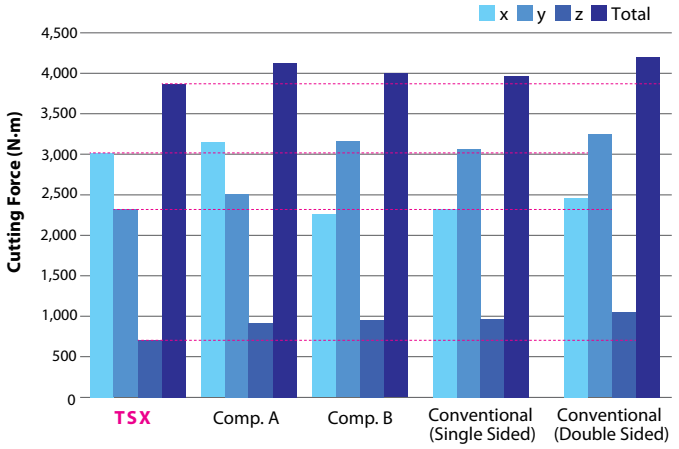
Cutting Length	4 pass	8 pass	12 pass
TSX	Available		
Comp. A	Breakage		
Comp. B	Breakage		

1 pass = 12″

Machine: M/C BT-50 Vertical **Part Material:** 1049
Tool: TSX13100R, ø4.00″ (100mm), z = 6 **Insert:** LNEX130608PNER-G (ACP200)
Cutting Conditions
v_c = 500sfm, f_z=0.024in/t, a_p=0.12″,a_e=1.57″, Dry

Cutting Force Comparison

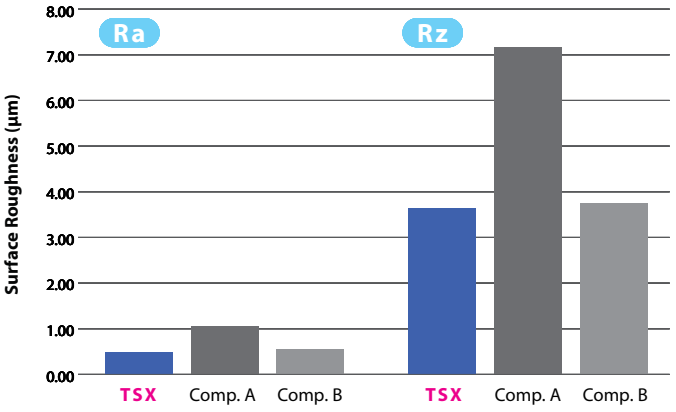
TSX shows smooth cutting action.



Machine: M/C BT-50 Vertical **Part Material:** 4140
Tool: TSX13100R, ø4.00″ (100mm), z = 6 **Insert:** LNEX130608PNER-G (ACP200)
Cutting Conditions
v_c = 650 sfm, f =0.008in/t, a_p= 0.2″, a_e = 3″, Dry

Surface Finish

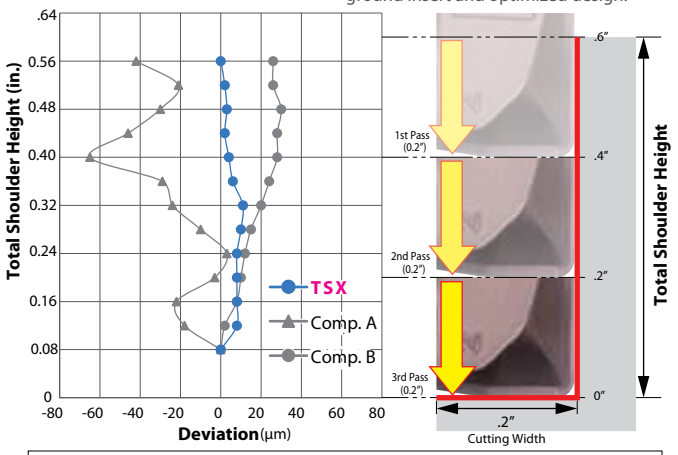
TSX shows excellent surface roughness



Machine: M/C BT-50 Vertical **Part Material:** 1049
Tool: TSX13100R, ø4.00″ (100mm), z = 6 **Insert:** LNEX130608PNER-G (ACP200)
Cutting Conditions
v_c = 650 sfm, f_z =0.008in/t, a_p = 0.12″, a_e= 2.36″, Dry

Shoulder Squareness

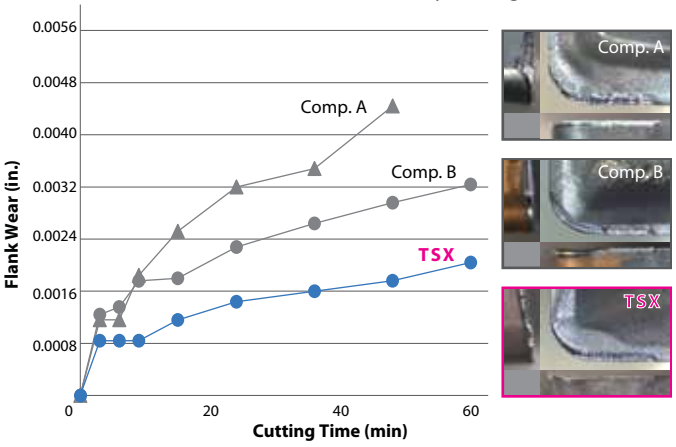
TSX shows excellent squareness due to ground insert and optimized design.



Machine: M/C BT-50 Vertical **Part Material:** Carbon Steel
Tool: TSX13100R, ø4.00″ (100mm), z = 6 **Insert:** LNEX130608PNER-G (ACP200)
Cutting Conditions
v_c = 650 sfm, f_z=0.008in/t, a_p= 0.2″ x 3 passes, a_e= 0.2″, Dry

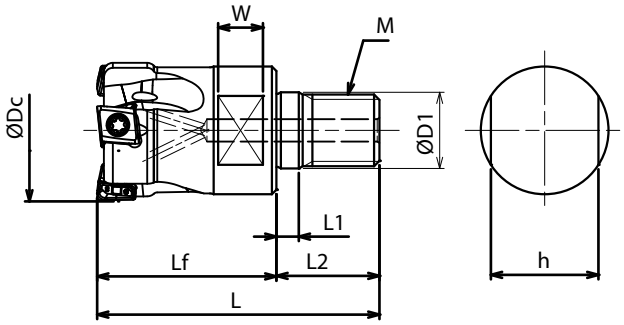
Tool Life

Excellent wear resistance yields longer tool life



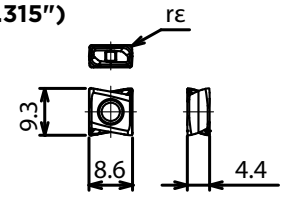
Machine: M/C BT-50 Vertical **Part Material:** 1049
Tool: TSX3100EW, ø1.00″ (25mm), z = 3 **Insert:** LNEX080408PNER-G (ACP200)
Cutting Conditions
v_c = 650 sfm, f_z =0.002in/t, a_p = 0.079″, a_e= 0.2″, Dry

TSX Modular Head Series

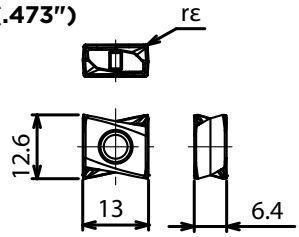


TSX Series
Applicable Insert: LNEX

TSX3000
LNEX08
Max. DOC 8mm (.315")



TSX4000
LNEX13
Max. DOC 12 mm (.473")

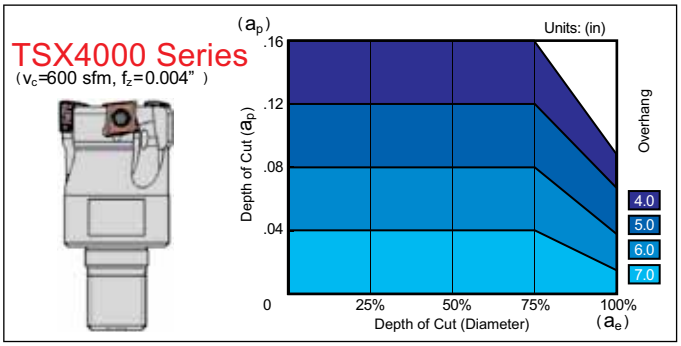


Modular Head - INCH											Insert: LNEX08 Type
Catalog Number	Stock	Dimensions (in.)									No. of Teeth
		øDc	øD1	M	L	Lf	L1	L2	W	h	
TSXF30750M10Z3	●	0.750	0.413	M10	1.929	1.181	0.197	0.748	0.315	0.591	3
TSXF31000M12Z4	●	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	4
TSXF31250M16Z5	●	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	5
TSXF31500M16Z6	●	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	6

Modular Head - INCH											Insert: LNEX13 Type
Catalog Number	Stock	Dimensions (in.)									No. of Teeth
		øDc	øD1	M	L	Lf	L1	L2	W	h	
TSX41000M12Z2	●	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	2
TSX41250M16Z3	●	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	3
TSX41500M16Z4	●	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	4

●= USA Stocked Item

■ Application Range



Note: These tables indicate reference machining conditions. Actual machining parameters should be adjusted based on machine rigidity and work clamp rigidity.

■ Recommended Tightening Torque (N•m)

*Notes about tightening the head.

·When attaching the head to an arbor, follow the standard tightening torque in the table below.

·Check the mounting screw size for the head and arbor beforehand.

Screw Size	Torque (foot / lbs)
M8	17
M10	34
M12	59
M16	67

Inserts	P			K		M	S	
Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	R
LNEX080404PNER-L	●	●	●		●	●	●	.016
LNEX080404PNER-G	●	●	●	●	●	●	●	.016
LNEX080408PNER-L	●	●	●		●	●	●	.031
LNEX080408PNER-G	●	●	●	●	●	●	●	.031
LNEX080412PNER-G	●	●	●	●	●	●	●	.047
LNEX080416PNER-G	●	●	●	●	●	●	●	.063
LNEX130604PNER-L	●	●	●		●	●	●	.016
LNEX130604PNER-G	●	●	●	●	●	●	●	.016
LNEX130608PNER-L	●	●	●		●	●	●	.031
LNEX130608PNER-G	●	●	●	●	●	●	●	.031
LNEX130608PNER-H	●	●	●	●	●			.031
LNEX130616PNER-G	●	●	●	●	●	●	●	.063
LNEX130616PNER-H		●	●	●	●			.063
LNEX130624PNER-G	●	●	●	●	●	●	●	.094
LNEX130624PNER-H		●	●	●	●			.094
LNEX130632PNER-G	●	●	●	●	●	●	●	.126
LNEX130632PNER-H		●	●	●	●			.126

●= USA Stocked Item

■ Hardware

Insert Size	Catalog Number	Insert Screw	Wrench	Recommended Tightening Torque (In/ lbs)
TSX3000 (LNEX08)	TSX□30625□~TSX□30750□	BFTX0306IP	TRDR08IP	18
	TSX□31000□~TSX□32500□	BFTX0308IP		
TSX4000 (LNEX13)	TSX□40000□	BFTX03510IP	TRDR15IP	25

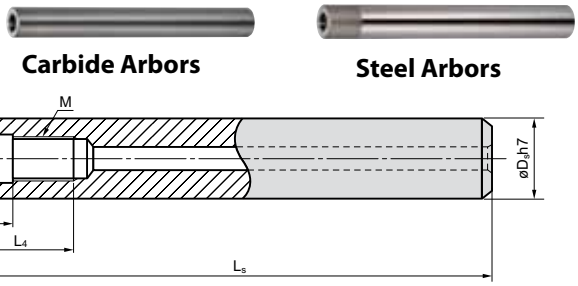
■ Modular Head Identification Details

TSX F 3 0750 M12 Z3

(1)	(2)	(3)	(4)	(5)	(6)
Cutter Series	Pitch Type	Insert Size 3: 08 4:13	Diameter	Mounting Screw	No. of Teeth

Modular Tools Special Arbors (Carbide Arbors/Steel Arbors)

Suitable for milling with **long overhangs** *when combined with carbide or steel arbors*



■ Set Dimensions (*)

★Worldwide Warehouse Item

Carbide Arbors

Catalog Number	Stock	Dimension (mm)						
		M	ød1	øDs	Ls	L3	L4	L5*
MA15M08L120C	★	M8	8.5	15	120	10	18	145
MA15M08L160C	★	M8	8.5	15	160	10	18	185
MA16M08L120C	★	M8	8.5	16	120	10	18	145
MA16M08L160C	★	M8	8.5	16	160	10	18	185
MA18M10L150C	★	M10	10.5	18	150	10	20	180
MA18M10L200C	★	M10	10.5	18	200	10	20	230
MA20M10L150C	★	M10	10.5	20	150	10	20	180
MA20M10L200C	★	M10	10.5	20	200	10	20	230
MA23M12L200C	★	M12	12.5	23	200	10	22	235
MA23M12L250C	★	M12	12.5	23	250	10	22	285
MA25M12L200C	★	M12	12.5	25	200	10	22	235
MA25M12L250C	★	M12	12.5	25	250	10	22	285
MA28M16L200C	★	M16	17.0	28	200	10	24	240
MA28M16L300C	★	M16	17.0	28	300	10	24	340
MA32M16L200C	★	M16	17.0	32	200	10	24	240
MA32M16L300C	★	M16	17.0	32	300	10	24	340

Steel Arbors

Catalog Number	Stock	Dimension (mm)						
		M	ød1	øDs	Ls	L3	L4	L5
MA16M08L120S	★	M8	8.5	16	120	10	18	145
MA18M10L150S	●	M10	10.5	18	150	10	20	180
MA20M10L150S	★	M10	10.5	20	150	10	20	180
MA25M12L200S	★	M12	12.5	25	200	10	22	235
MA28M16L200S	●	M16	17.0	28	200	10	24	240
MA32M16L200S	★	M16	17.0	32	200	10	24	240

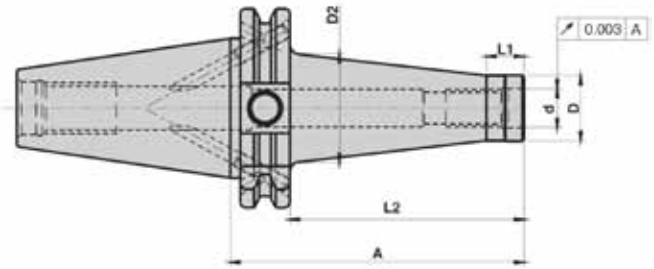
●= USA Stocked Item
★= World Wide Warehouse Item

Arbor Identification

MA 15 M08 L120 C

(1) Cutter Series — (2) Shank Diameter — (3) Mounting Screw — (4) Arbor Length — (5) C: Carbide S: Steel

Modular Tools Adapters



Modular Adapters - SK40

Catalog Number	Stock	Dimension (mm)						
		M	d	D1	D2	A	L1	L2
SMA-M8-69-SK40	★	M8	8.5	13.8	23	69	12	49.9
SMA-M8-94-SK40	★	M8	8.5	13.8	25	94	12	74.9
SMA-M8-119-SK40	★	M8	8.5	13.8	30	119	12	99.9
SMA-M10-69-SK40	★	M8	8.5	18.0	25	69	12	49.9
SMA-M10-94-SK40	★	M10	10.5	18.0	30	94	12	74.9
SMA-M10-119-SK40	★	M10	10.5	18.0	35	119	12	99.9
SMA-M10-169-SK40	★	M10	10.5	18.0	45	169	12	149.9
SMA-M12-69-SK40	★	M10	12.5	21.0	30	69	12	49.9
SMA-M12-94-SK40	★	M12	12.5	21.0	35	94	12	74.9
SMA-M12-119-SK40	★	M12	12.5	21.0	38	119	12	99.9
SMA-M12-169-SK40	★	M12	12.5	21.0	48	169	12	149.9
SMA-M16-69-SK40	★	M12	17.0	29.0	34	69	12	49.9
SMA-M16-94-SK40	★	M16	17.0	29.0	35	94	12	74.9
SMA-M16-119-SK40	★	M16	17.0	29.0	40	119	12	99.9
SMA-M16-169-SK40	★	M16	17.0	29.0	48	169	12	149.9

Note: The above holders require an M16 thread retention knob

Modular Adapters - SK50

Catalog Number	Stock	Dimension (mm)						
		M	d	D1	D2	A	L1	L2
SMA-M8-69-SK50	★	M8	8.5	13.8	23	69	12	49.9
SMA-M8-119-SK50	★	M8	8.5	13.8	30	119	12	74.9
SMA-M8-169-SK50	★	M8	8.5	13.8	45	169	12	99.9
SMA-M10-69-SK50	★	M10	10.5	18.0	25	69	12	49.9
SMA-M10-119-SK50	★	M10	10.5	18.0	35	119	12	99.9
SMA-M10-169-SK50	★	M10	10.5	18.0	45	169	12	149.9
SMA-M12-69-SK50	★	M12	12.5	21.0	30	69	12	49.9
SMA-M12-119-SK50	★	M12	12.5	21.0	38	119	12	99.9
SMA-M12-169-SK50	★	M12	12.5	21.0	52	169	12	149.9
SMA-M16-69-SK50	★	M16	17.0	29.0	34	69	12	49.9
SMA-M16-119-SK50	★	M16	17.0	29.0	40	119	12	99.9
SMA-M16-169-SK50	★	M16	17.0	29.0	48	169	12	149.9

Note: The above holders require an M24 thread retention knob

Hardware

Insert Size	Catalog Number	Insert Screw	Wrench	Recommended Tightening Torque (In/ lbs)
TSX3000 (LNEX08)	TSX□30625□~TSX□30750□	BFTX0306IP	TRDR08IP	18
	TSX□31000□~TSX□32500□	BFTX0308IP		
TSX4000 (LNEX13)	TSX□40000□	BFTX03510IP	TRDR15IP	25

Recommended Running Conditions

ISO	Work Material	Hardness	Cutting Speed v_c(sfm) Min-Max	Feed Rate f_z(ipt) Min-Max	Recommended Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

NOTE: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

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