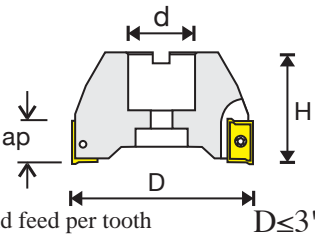


SHARS 90° Square Shoulder Indexable Face Mills & End Mills

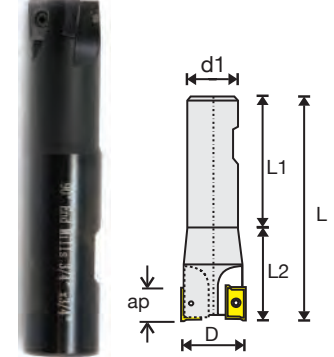
90° Cutting Angle • Screw Down Insert

FEATURES:

- Setting angle 90°
- Axial rake angle +7°
- All types of square shoulder face milling, side milling and full slot milling (shaft end mills) of steels, alloyed steels, stainless and heat resistant steels, cast irons and aluminum alloys.
- Fitted with 10° positive rectangular inserts allow high depth of cut and feed per tooth
- Uses APKT/APHT/APHW inserts (sold separately)
- Radial rake angle -10°



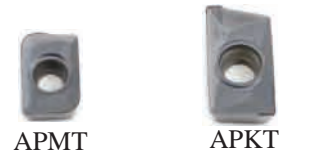
Cutting Diameter D	Shank d1	Arbor Holed	L,H	ap	No. of Insert	Screw	Insert#	Order #	USA Brand	SHARS (D)
FACE MILLS										
2"		3/4"	1.750"	0.551"	5	M4×8.4	APKT 33	404-1867	\$223.00	\$75.99
2-1/2"		3/4"	2.000"	0.551"	6	M4×8.4	APKT 33	404-1868	270.00	85.99
3"		1"	2.000"	0.551"	7	M4×8.4	APKT 33	404-1869	324.00	91.79
4"		1-1/2"	2.000"	0.551"	8	M4×8.4	APKT 33	404-1870	410.00	107.99
5"		1-1/2"	2.000"	0.551"	8	M4×8.4	APKT 33	404-1871	524.00	129.00
6"		2"	2-31/64"	0.551"	10	M4×8.4	APKT 33	404-2352	246.00	155.55
8"		2-1/2"	2-31/64"	0.551"	12	M4×8.4	APKT 33	404-2353	345.20	224.70
END MILLS										
1/2"	5/8"		3-1/4"	0.410"	1	M2.5×6.5	APKT 22	404-1860	124.00	23.95
5/8"	5/8"		3-1/4"	0.410"	2	M2.5×6.5	APKT 22	404-1861	138.00	28.75
3/4"	3/4"		3-1/2"	0.410"	3	M2.5×6.5	APKT 22	404-1862	162.00	31.15
1"	1"		3-1/2"	0.410"	4	M2.5×6.5	APKT 22	404-1863	190.00	50.35
1-1/4"	1-1/4"		3-3/4"	0.551"	3	M4×8.4	APKT 33	404-1864	128.00	48.00
1-1/2"	1-1/2"		4"	0.551"	4	M4×8.4	APKT 33	404-1865	155.00	81.55



Replacement Screw	Order #	Price (B)
M2.5×6.5	404-1998	\$2.50
M4×8.4	404-1999	2.50

*See Page 58 for Grade Information.

Insert	ISO	Coating	Length	Thickness	YBG202	Price(B)
APMT 22 PDER DM	APMT 100320 PDER	TIALN	0.413"	0.138"	424-3033	\$7.07
APKT 33 PDER PM	APKT 160408 PDER	TIALN	.551	.187	424-3012	8.37
APET 1604 PDER MP3	For Aluminum micrograin c2/c3 uncoated				424-0824	7.95



SHARS 90° Square Shoulder Indexable Face Mills

Clamp Style • Triangular 11° Positive Inserts

- All types of square shoulder face milling of steels, alloyed steels, stainless and heat resistant steels, cast irons and aluminum alloys.
- Fitted with 11° positive rectangular inserts allow high depth of cut and feed per tooth
- Uses TPKN/TPUN inserts (sold separately)

FEATURES:

- Setting angle 90°
- Radial rake angle +1°
- Axial rake +7°



Screw

Cutting Dia.	Order #	Price(D)
1-1/2 ~ 3"	404-6918s	\$2.50
4 ~ 6"	404-6927	2.50

Insert

Grade YBC151	Radius R	Order #	Price(D)
TPG 321	1/64"	424-1801	\$4.05
TPG 322	1/32"	424-1802	4.05
TPG 432	1/32"	424-1806	6.29
TPG 433	3/64"	424-1807	6.29

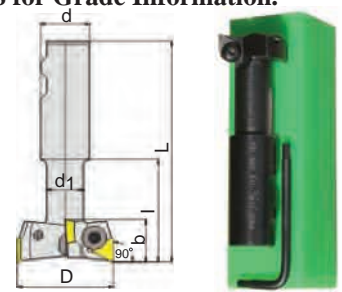
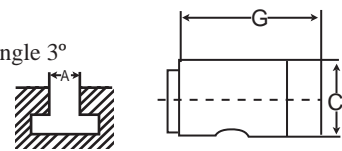
*See Page 58 for Grade Information.

SHARS Indexable T-Slot Cutter

Weldon Shank • TPG Style Insert • Setting Rake: 90° • Axial rake angle 3°

APPLICATION:

- Insert grade allows use on cast steel, carbon steel, alloys, hardened steels and stainless steel.



A	Cutting Diameter D	Shank Diameter d	d1	OAL L	b	G	# of Inserts	Insert Style	Order #	USA Brand	SHARS (D)
3/4"	1-15/32"	1"	25/32"	4-7/16"	5/8"	2-9/32"	2	TPG-222	404-6601	\$75.50	\$39.95
1"	1-27/32"	1-1/4"	1-1/32"	4-13/16"	53/64"	2-9/32"	4	TPG-322	404-6602	96.50	40.95
1-1/4"	2-7/32"	1-1/4"	1-9/32"	5-3/8"	1-3/32"	2-9/32"	4	TPG-322	404-6603	165.60	69.95
1-1/2"	2-21/32"	1-1/4"	1-17/32"	5-29/32"	1-11/32"	2-9/32"	4	TPG-433	404-6604	192.45	89.95

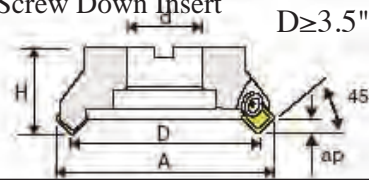
Description	Order #	Price(D)
Lock Screw M5×0.8	404-6601S	\$2.00
Wrench	404-6601W	\$2.00

SHARS 45° Indexable Face Mills

45° Cutting Angle • 20° High Positive Square Screw Down Insert

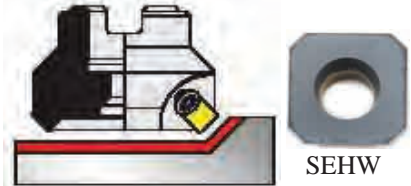
FEATURES:

- Setting angle 45°
- Radial rake angle -7°
- Axial rake angle 19°
- Use for surface milling in difficult conditions of steel, alloy steel, stainless steel, heat-resistant steel, cast iron and aluminum alloys
- The milling cutter reduces cutting forces and permits a high cutting speed
- Each insert pocket is designed to reduce run-out and extend insert life
- Uses SEKT/SEHT/SEHW 43 inserts (sold separately)



D ≥ 3.5"

Replacement Screw	Order #	Price
Screw M5×10.8	404-1873	\$3.00



Cutting Dia. D	Arbor Holed	H	A	ap	No. of Insert	Insert#	Order #	USA Brand	SHARS (D)
2"	3/4"	1.570"	2.460"	0.236"	4	SE 43	404-2245	\$223.00	\$92.25
2-1/2"	3/4"	1.570"	2.980"	0.236"	5	SE 43	404-2246	270.50	112.29
3"	1"	1.970"	3.650"	0.236"	6	SE 43	404-2247	324.95	134.29
4"	1-1/2"	1.970"	4.430"	0.236"	6	SE 43	404-2248	410.50	138.29
5"	1-1/2"	2.480"	5.420"	0.236"	7	SE 43	404-2249	524.40	156.29

*See Page 58 for Grade Information.

Insert	I.C.	T	Grade	Order #	Price(B)
SEHT 43 AFTN	1/2"	3/16"	YBG203	424-1496	\$6.75
SEHW 43 AFTN	1/2"	3/16"	YBG202	424-1500	6.75

SHARS Shank Type 45° Indexable End Mills & Face Mills

45° Cutting Angle • Clamp Style • 20° Square Inserts

FEATURES:

- 45° setting angle, shim supported 1/2"
- IC square inserts account for this cutter's stability and free cutting.
- Clamping system (screw & washer) makes quick and easy insert exchanging
- Uses SEAN 42 and SEKN 42 inserts (sold separately)

APPLICATION:

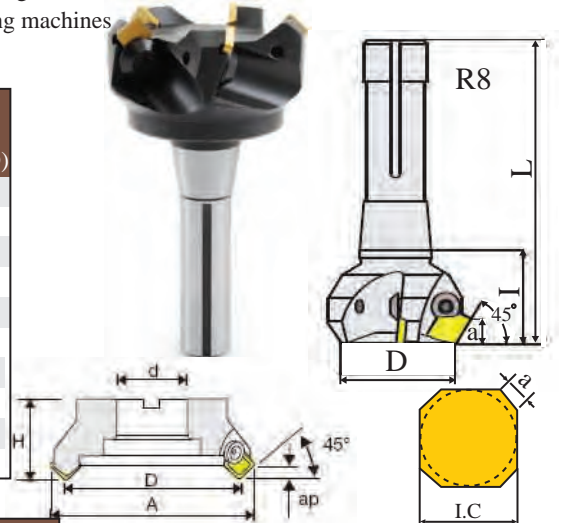
- Surface milling in difficult conditions of steels, alloy steels, stainless and heat resistant steels, cast irons and aluminum alloys
- Milling cutter for CNC machining centers and all types of conventional milling machines

TOOL ANGLES:

- Setting Angle.....45°
- Cutting Rake Angle.....10°
- Radial Rake Angle.....-9°
- Axial Rake Angle.....20°

End Mills

Cutting Diameter D	OAL	Cutting Length I	a	Shank Size	No. of Insert	Order #	USA Brand	SHARS (D)
Straight Shank								
2"	3-11/16"	1-13/32"	15/64"	1"	3	404-1880	\$161.00	\$79.95
2-1/2"	3-11/16"	1-13/32"	15/64"	1-1/4"	4	404-1881	187.30	87.95
R8 Shank								
1-1/2"	5-9/16"	1-1/2"	15/64"	R8	3	404-1882	161.65	67.95
2"	5-9/16"	1-1/2"	15/64"	R8	3	404-1883	170.85	75.95
2-1/2"	5-9/16"	1-1/2"	15/64"	R8	4	404-1884	191.65	88.95
3"	5-9/16"	1-1/2"	15/64"	R8	5	404-1885	230.00	103.95
NMTB 40 Shank								
2"	6"	2-19/64"	15/64"	NMTB-40	3	404-1886	178.55	76.95



Face Mills

Cutting Diameter D	A	Height H	Arbor Hole d	ap	No. of Insert	Order #	USA Brand	SHARS (D)
2"	2.55"	1-57/64"	3/4"	15/64"	3	404-1894	\$143.00	\$78.95
2-1/2"	3.05"	1-37/64"	3/4"	15/64"	4	404-1895	181.00	91.95
3"	3.55"	1-31/32"	1"	15/64"	5	404-1896	231.00	113.95
4"	4.55"	1-31/32"	1-1/4"	15/64"	5	404-1897	314.00	121.95
5"	5.55"	2-31/64"	1-1/2"	15/64"	6	404-1898	349.00	140.95
6"	5.55"	2-31/64"	2"	15/64"	7	404-2354	364.20	192.05
8"	5.55"	2-31/64"	2-1/2"	15/64"	8	404-2355	446.65	225.30
10"	5.55"	2-31/64"	2-1/2"	15/64"	10	404-2356	680.15	475.30



Insert Style	Insert IC	Thick-ness	C2 Import	C6 Import	Price (D)	YBG202	Price (B)
SEAN42-AFTN	1/2"	1/8"	404-1890	404-1892	\$5.50		
SEKN42-AFTN	1/2"	1/8"	404-1891		4.65	424-1505	4.32
SEKR42-AFTN	1/2"	1/8"				424-1510	5.68

Description	Order #	Price(B)
Lock Screw	404-6927	\$2.50
Shim	404-1888	3.95
Shim Screw	404-1889	3.00
Arbor Screw	404-1900	3.75

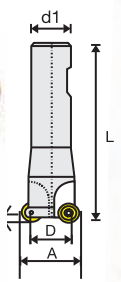
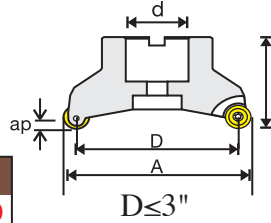
◆ Insert Not Included MILLING • Face Mills, Inserts, Dovetail Cutter

SHARS Round Face Milling, Profiling & Copying End Mills & Face Mills

11° Positive Round Insert • Screw Down

FEATURES:

- Radial rake angle -6° to 0° depends on diameter
- Axial rake angle +5°



Insert #	IC	Thickness	Coating	Order #	Price
RPMT 1204	.473	3/16"	CVD	424-0897	\$5.50

Cutting Diameter D	Shank d1	Arbor Holed	L,H	ap	No. of Insert	Screw	Insert#	Order #	USA Brand	SHARS (D)
FACE MILLS										
2"		3/4"	1.970"	0.236"	4	M4×10	RP..1204	404-1918	\$223.00	\$62.15
3		1	1.970	0.236	6	M4×10	RP..1204	404-1919	324.90	92.95
4		1-1/2	1.970	0.236	7	M4×10	RP..1204	404-1948	410.50	104.15
5		1-1/2	2.480	0.236	7	M4×10	RP..1204	404-1949	524.40	120.55
END MILLS										
1-1/4"	1-1/4"		6.000"	0.236"	2	M4×10	RP..1204	404-1915	128.00	45.75
1-1/2	1-1/4		6.250	0.236	3	M4×10	RP..1204	404-1916	155.00	52.95
2	1-1/4		4.000	0.236	4	M4×10	RP..1204	404-1917	158.00	64.95

Description	Order #	Price(B)
Lock Screw	404-1872	\$2.50
Wrench	404-1918W	2.00

- All types of face milling, side milling, axial milling, profiling copying of steels, alloyed steels, stainless and heat resistant steels, cast irons and aluminum alloys
- Fitting with 11° positive inserts allow high depth of cut and greater clearance during profiling than a 7° positive insert
- Uses RPMT/RPMW inserts (sold separately)

SHARS 75° Indexable Face Mills

75° Cutting Angle • Clamp Style • 11° Square Inserts

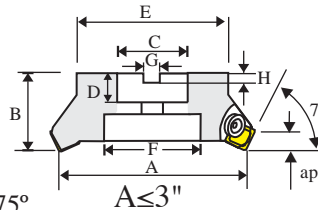
APPLICATION:

- General purpose face milling of steels, alloy steels, stainless and heat resistant steels, cast irons and aluminum alloys
- Milling cutter for CNC machining centers and all types of conventional milling machines

Insert Style	C2	C5	Price (A)	TiN Coated	Price(A)
SPG 422	424-0010	404-6942A	\$2.09	424-0011	\$3.04
SPU 422	424-0835	424-0459	1.87	424-0460	2.80
Locking Screw M6×0.75		404-1858	2.50		
Wrench		404-6434	1.75		

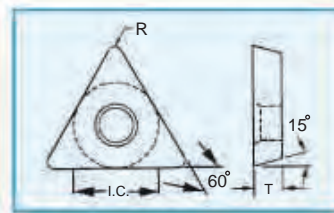
TOOL ANGLES:

- Setting Angle.....75°
- Cutting Rake Angle.....1°
- Axial Rake Angle.....4°



- 75° cutting angle fitted with 11° positive inserts allowing high depth of cut and feed per tooth
- Clamping system (screw & washer) makes quick and easy insert exchanging

Cutting Diameter A	B	Arbor Size C	D	E	F	G	H	No. of Insert	Order #	Price(D)
2"	1.750"	3/4"	0.787"	1.574"	0.610"	5/16"	3/16"	3	404-6430	\$49.95
2-1/2	1.750	1	0.787	2.094	0.826	3/8	7/32	4	404-6431	60.00
3	2	1	0.787	2.379	0.826	3/8	7/32	5	404-6432	72.00

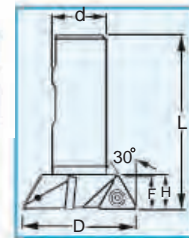


SHARS Indexable 60° Dovetail Mills & Inserts

Positive Triangular Insert • 15° Clearance • Use TDEX Insert

- For milling, roughing and finishing at high speeds and feeds.
- Use on cast iron, carbon steel, alloy hardened steels and stainless steel.
- No regrinding needed
- Weldon shank.
- High rate of material removal.
- A 90° slot must first be cut into the material allowing clearance for the dovetail neck during the final cut.
- Precision machine alignment pad integrated into each pocket

Description	Order #	Price(B)
Insert Screw M2.5×6.5	404-4542	\$1.50
Wrench	404-1909	1.95



TOOL ANGLES:

- Cutting Rake 15°
- Axial Rake +10°
- Radial Rake 14°



Cutting Diameter	Shank Dia.	OAL	Max Depth of Cut F.	TDEX Insert	No. of Insert	Order #	USA Brand	SHARS (D)
1/2"	3/8"	2.390"	0.325"	21.5	1	404-1901	\$86.25	\$22.50
3/4	3/8	2.390	0.325	21.5	2	404-1902	116.60	26.50
1	1/2	2.375	0.325	21.5	3	404-1903	149.25	52.95
1-3/8	5/8	2.862	0.510	32	3	404-1904	165.57	53.95
1-7/8	3/4	3.000	0.510	32	3	404-1905	193.56	55.95
2-1/4	1	3.500	0.700	43	3	404-1906	244.86	69.95
2-1/2	1	3.500	0.700	43	3	404-1907	270.51	71.95

Insert Style	IC	Thick-ness	Radius R	Hole Dia.	TIN Coated	Order #	Price(D)
TDEX21.51E	1/4"	3/32"	1/64"	.110"	404-1910	\$5.95	
TDEX21.52E	1/4	3/32	1/32	.110	404-1911	4.95	
TDEX321E	3/8	1/8	1/64	.168	404-1912	9.68	
TDEX322E	3/8	1/8	1/32	.168	404-1913	9.68	
TDEX431E	1/2	3/16	1/64	.180	404-1914	9.68	

SHARS 90° Square Shoulder Indexable End Mills

Individual End Mill

Size	Insert Style	No. Of Insert	Order #	Price (E)
3/4" Shank				
3/4"	TPG/TPU/TPC-221	2	404-6901	\$18.95
7/8	TPG/TPU/TPC-222	2	404-6902	19.00
1	TPG/TPU/TPC-222	2	404-6903	19.95
1-1/4	TPG-322	2	404-6904	24.00
1-1/2	TPG-322	3	404-6905	30.00
1-3/4	TPG-322	3	404-6906	36.00
2	TPG/TPU/TPC-432	3	404-6907	39.00
1" Shank				
1	TPG/TPU/TPC-222	2	404-6908	\$17.00
1-1/4	TPG/TPU/TPC-321	2	404-6909	24.00
1-1/2	TPG/TPU/TPC-321	3	404-6910	29.00
1-5/8	TPG/TPU/TPC-321	3	404-6911	33.00
1-3/4	TPG/TPU/TPC-321	3	404-6912	36.00
2	TPG/TPU/TPC-432	3	404-6913	39.00
R8 Shank (Bridgeport)				
1"	TPG/TPU/TPC-222	2	404-6914	\$17.95
1-1/4	TPG/TPU/TPC-321	2	404-6915	26.00
1-1/2	TPG-322	3	404-6916	30.00
1-5/8	TPG-322	3	404-6917	38.50
1-3/4	TPG-322	3	404-6918	39.20
2	TPG/TPU/TPC-431	3	404-6919	39.00
2-1/2	TPG/TPU/TPC-431	3	404-6920	49.00
3	TPG/TPU/TPC-431	3	404-6921	50.00
3	TPG/TPU/TPC-322	5	404-69215	51.00
NMTB 30 Shank				
2	TPG/TPU/TPC-321	3	404-6925	59.50
NMTB 40 Shank				
2	TPG/TPU/TPC-322	3	404-6922	55.00
2-1/2	TPG/TPU/TPC-322	3	404-6923	59.00
3	TPG/TPU/TPC-322	5	404-6924	79.95

FEATURES:

- Cutting rake angle 0°
- Setting angle 90°
- Axial rake angle 0°
- Positive rake 90° Right Hand Cut



End Mill Set

Shank	Consiste Of Size	Order #	Price(D)
3/4"	3/4" 7/8" 1"	404-6930	\$51.00
	1-1/4 1-1/2 2	404-6931	95.00
	1 1-1/4 1-1/2	404-6932	70.00
1"	1-1/4 1-1/2 2	404-6933	90.00
	NMTB 40 2 2-1/2 3	404-6934	178.00
R8	1 1-1/4 1-1/2	404-6935	72.00
	1-1/4 1-1/2 2 2 2-1/2 3	404-6936	93.00
		404-6937	137.00

Carbide Insert & Locking Screw

Insert Style	C2 Order #	C6 Order #	Price	YBC151 Grade	Price(B)
TPG221	404-6952	404-6953	\$2.00	424-1799	\$3.60
TPG222	404-6954	404-6955	2.00	424-1800	3.60
TPG322	404-6964	404-6965	2.00	424-1802	4.05
TPG432	404-6966	404-6967	2.00	424-1806	6.29
LockingScrew	404-6927		2.50		

SHARS 1" Diameter Hogger End Mills

3/4" Shank • 2Flutes

- Feed at an average rate of 12 per min. at 1600 RPM
- Mill at 5 times the speed of high-speed tool
- No loss of cutter size due to regrinding
- New cutting edges in less than 1 minute
- Set includes: a mill for round, square & triangle



Degree	Use Insert	Order #	Price(D)	3 Pc Set: 1 of each size	Insert Order #	Price(C)	Screw
45°	SNMA 322	404-6701	\$16.90	404-6700	404-6701S	\$3.50	404-6700S
3/16R	RNMA 322	404-6702	17.50	\$43.95 (D)	404-6702R	3.50	M3.5x8
90°	TNMA 322	404-6703	18.00		404-6703T	3.95	\$1.50

SHARS 75° Indexable Face Mills

- Positive 15° lead angle
- Wrench & case included
- Complete with SPG434 insert



Cutting Diameter	Shank	No. Of Inserts	Order #	Price (D)
2"	R8	3	404-6940	\$39.00
2-1/2	R8	4	404-6941	53.00
3	R8	5	404-6943	55.00
2	30NMTB	3	404-6945	39.95
2	40NMTB	3	404-6946	72.00
3	40NMTB	5	404-6947	79.95

Carbide Insert & Locking Screw

Insert Style	C2 Order #	Price (D)	TiN Coated	Price (B)
SPG 434	404-6942	\$3.00	424-0025	\$3.50
Locking Screw			404-6927	2.50

SHARS Indexable Countersink & Chamfering Tools

Positive rake makes for smooth cutting without chatter. Carbide indexable. No tool sharpening needed. Comes with inserts. Uses TPGH-321 & SPGH-433 inserts.



Set	Angle	Order #	Price(D)
1/4" 1/2" 1-1/4" 3 Pc Set	82°	404-9240	\$51.95
	60°	404-9241	52.50
	90°	404-9242	52.50

Insert Style	C6 Order #	Price (D)	YBC251	Price (B)
TCMT-32.5	404-9256	\$4.95	424-1647	\$4.26
SCMT-433	404-9258	5.95	424-1483	4.54

Cutter Min.	Body Max	Shank size	82°	60°	90°	Price(D)
1/4"	3/4"	1/2"	404-9252	404-9250	404-9254	\$21.00
1/2	1-3/4	1/2	404-9253	404-9251	404-9255	22.00
1-1/4	2-1/2	3/4	404-9249	404-9248	404-9247	24.95

Replacement Screw	Order #	Price(B)	Replacement Screw	Order #	Price(B)
For 1/4	Mx0.7	404-9196	\$1.50	For 1/2, 1-1/4	M5x0.8 404-9195 \$1.50