SFEEDUP HIGH SPEED & FEED

INDUSTRY 4.0 NEW PRODUCT ANNOUNCEMENT 2020

CHIPSURFER™

MILLING PRODUCTS

Tip Style
5 Flute Variable Pitch End Mill

Tip Series
47D_TWRQ

Diameter
1.250

Adaption
T21

Corner Radii
.060, .120, .250, .375

Materials
Steel, Stainless Steel, Iron, Hi-Temp Alloys, Titanium

New 1.250" diameter End Mill Tips with T21 Thread Adaption

Ingersoll is pleased to announce an expansion of the Chip Surfer line with a new T21 Thread Adaption for modular carbide tips and shanks. This opens up the Chip Surfer end mill diameter range to .062"-1.25".

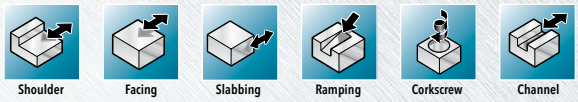
Features & Benefits:

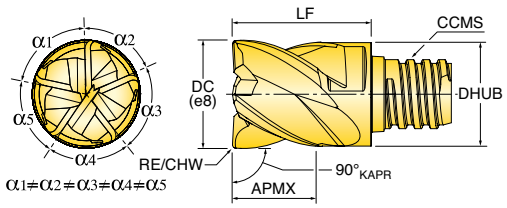
- Rigid and accurate T21 simultaneous fit T-Adaption with +/-.0005" repeatability
- Change tips on and off the machine within seconds
- Torque wrench required to index tips at 970 inch pounds (wrench head sold separately)
- Economical Steel and Long-Reach Carbide shank options
- Feature variations can be quoted

Member IMC Group Ingersoll Cutting Tools

CHIPSURFER™ SERIES 47D_RQ: 90° VARIABLE PITCH END MILL

5-FLUTE, 36-38° HELIX, NON-CENTER-CUTTING, 1/2XD FLUTE

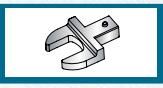




Part Number	DC Cutting Diameter	RE/CHW Corner Radius/Chamfer	APMX Depth of Cut Max.	LF Functional Length	ZEFF Effective Flutes	FHA Flute Helix Angle	CCMS Connection Code	DHUB Hub Diameter	RMPX Ramp Angle Max.
47DE1215TWRQ06	1.250	0.060 R	1.500	2.165	5	36-38	Chip Surfer T21	1.181	1.5
47DE1215TWRQ12	1.250	0.120 R	1.500	2.165	5	36-38	Chip Surfer T21	1.181	1.3
47DE1215TWRQ25	1.250	0.250 R	1.500	2.165	5	36-38	Chip Surfer T21	1.181	0.7
47DE1215TWRQ37	1.250	0.375 R	1.500	2.165	5	36-38	Chip Surfer T21	1.181	0.5

*When assembling, be sure tip is seated firmly on shank with no gap.
No lubricant on adaption.
Wrenches sold separately.

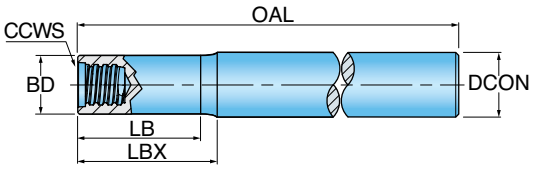
CHIPSURFER™ HARDWARE

	 Torque Wrench Head*	Tightening Torque (in. lbs.)
47DE1215TWRQ06	DT-24	970
47DE1215TWRQ12	DT-24	970
47DE1215TWRQ25	DT-24	970
47DE1215TWRQ37	DT-24	970

* 24mm opening: 14x18mm drive.
Fits most third party adjustable torque wrench handles that can be set to 970 in/lbs.

CHIPSURFER™ SERIES S*T*SA: STRIGHT SHANK WITH "T" CONNECTION

STEEL, CYLINDRICAL, NECK RELIEF

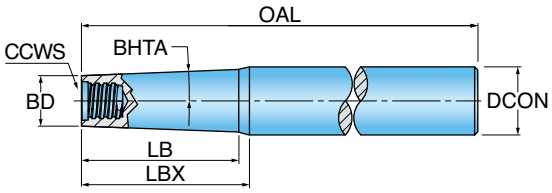


Part Number	CCWS Connection Code	LB Body Length 1	LBX Body Length Max.	OAL Overall Lengh	BD Body Dia.	DCON Shank Dia.	BMC Body Material Code
S125T21SA-12	Chip Surfer T21	1.200	1.320	4.000	1.181	1.250	Steel
S125T21SA-15	Chip Surfer T21	1.500	1.630	6.000	1.181	1.250	Steel

*When assembling, be sure tip is seated firmly on shank with no gap.
No lubricant on adaption.
Wrenches sold seperately.

CHIPSURFER™ SERIES S*T*SK: STRIGHT SHANK WITH "T" CONNECTION

STEEL, CYLINDRICAL, CONICAL NECK

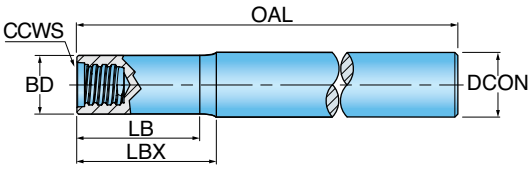


Part Number	CCWS Connection Code	LB Body Length 1	OAL Overall Lengh	BD Body Dia.	BHTA Body Half Taper Angle	DCON Shank Dia.	BMC Body Material Code
S150T21SK-18	Chip Surfer T21	1.820	6.000	1.181	5.0	1.500	Steel

*When assembling, be sure tip is seated firmly on shank with no gap.
No lubricant on adaption.
Wrenches sold seperately.

CHIPSURFER™ SERIES S*T*CA: STRIGHT SHANK WITH "T" CONNECTION

CARBIDE, CYLINDRICAL, NECK RELIEF



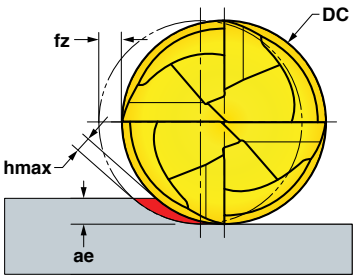
Part Number	CCWS Connection Code	LB Body Length 1	LBX Body Length Max.	OAL Overall Lengh	BD Body Dia.	DCON Shank Dia.	BMC Body Material Code
S125T21CA-25	Chip Surfer T21	2.500	2.630	5.000	1.181	1.250	Carbide
S125T21CA-40	Chip Surfer T21	4.000	4.130	7.000	1.181	1.250	Carbide
S125T21CA-80	Chip Surfer T21	8.000	8.130	11.000	1.181	1.250	Carbide

*When assembling, be sure tip is seated firmly on shank with no gap.
No lubricant on adaption.
Wrenches sold seperately.

CHIPSURFER™ OPERATING GUIDELINES

47D_RQ (T21 ADAPTION)

Chip Thinning



* When ae is less than 25% DC, recommend use of Chip Thinning Calculator to ensure hmax is within fz range.

Materials				Cutting Speed SFM	DC Cutting Dia. (inch)	fz* Feed per Tooth (inch)	Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples				
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	450-650	0.312	.0010-.0040	No
					0.375	.0015-.0045	
					0.500	.0015-.0050	
					0.625	.0020-.0060	
					0.750	.0020-.0070	
					1.000	.0020-.0080	
					1.250	.0020-.0080	
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	450-650	0.312	.0010-.0040	
					0.375	.0015-.0045	
					0.500	.0015-.0050	
					0.625	.0020-.0060	
					0.750	.0020-.0070	
					1.000	.0020-.0080	
					1.250	.0020-.0080	
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	400-600	0.312	.0010-.0030	
					0.375	.0010-.0035	
					0.500	.0015-.0040	
					0.625	.0015-.0045	
					0.750	.0020-.0055	
					1.000	.0020-.0060	
					1.250	.0020-.0070	
M	12 thru 14	Stainless Steel	410, 416, 440, 303, 304, 316, 15-5, 17-4	200-450	0.312	.0010-.0025	May be required at high speeds
					0.375	.0010-.0030	
					0.500	.0015-.0040	
					0.625	.0015-.0045	
					0.750	.0020-.0055	
					1.000	.0020-.0060	
					1.250	.0020-.0070	
K	15 thru 20	Iron	CLS. 20, 30, 45, 60-40-18, 100-70-03	500-800	0.312	.0010-.0040	No
					0.375	.0015-.0045	
					0.500	.0015-.0050	
					0.625	.0020-.0060	
					0.750	.0020-.0070	
					1.000	.0020-.0080	
					1.250	.0020-.0080	
S	31 thru 37	High-Temp, Ti	Inconel, Hastelloy, 6Al-4V, 5Al-5Mo-5V-3Cr	65-250	0.312	.0010-.0030	Yes
					0.375	.0010-.0035	
					0.500	.0015-.0040	
					0.625	.0015-.0045	
					0.750	.0020-.0055	
					1.000	.0020-.0060	
					1.250	.0020-.0070	

Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally, DOC and WOC may need to be revised to optimize the tools performance.

CHIPSURFER™ INDEXING T21 TIPS

Step 1: Screw tip into shank until finger tight (Figure 1a). Note a .010" gap (Figure 1b).
Step 2: Use wrench to torque approximately 1/4 turn, creating a simultaneous fit.
Step 3: Use .001" shim stock to check the simultaneous fit at the intersection of the tip and the shank.
The shim should not be able to enter the intersection.

Figure 1a. Finger tight

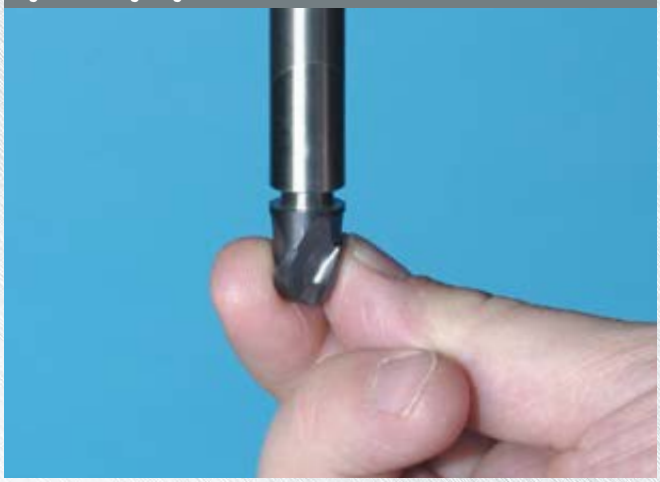


Figure 1b. .010" gap

Shim should NOT enter intersection

Proper fit