CHIP SURFER™

Tip Series (# Flutes):
18V (6 Flute Dovetail)
45U (2 Flute Backdraft)
48U (6 Flute Backdraft)

Diameter Range:
.375" - 1.090"
8-20mm

Corners
.008" .015" .031" .062" .094" .125"
.187" .250" .375" R
0.2, 0.4, 0.5, 1.0, 1.5, 2.0,
3.0, 4.0 mm R
Sharp corner and chamfers

Adaptions
T5, T6, T8, T10, T12, T15, T21

Materials
Steel, stainless steel,
iron, hi-temp alloys & titanium

Angle Options:
60°, 45°, 30°, 27.5°, 20°, 15°,
10°, 5°

INDUSTRY 4.0
PRODUCT ANNOUNCEMENT
•UPDATE•
2024

Backdraft & Dovetail tips for contour finishing, undercuts & angular forms

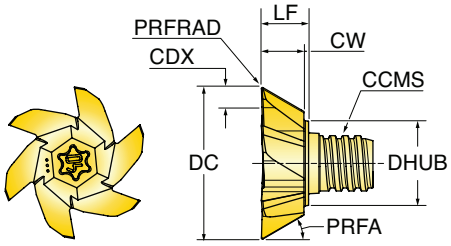
General Features:
- 6 flute dovetail tips are ideal for aerospace fixturing and pocket undercutting
- Compared to indexable, chip surfer dovetail offers 3x tool life and 200% higher feed rates!
- 2 flute backdraft perform best when finishing out corners of a pocket
- 6 flute backdraft blend precision with elevated productivity
- Solid carbide tips index on the shank in seconds and repeat within +/-.0005".

Member IMC Group
Ingersoll Cutting Tools

CHIPoSURFER™ SERIES 18V

SOLID CARBIDE DOVETAIL TIP

Undercut | Chamfering | Slotting | T-Slotting



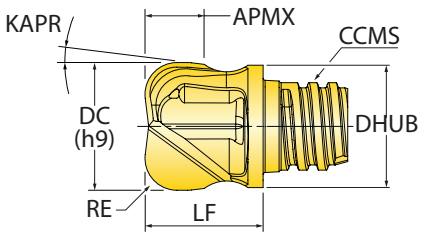
Cutter Number	DC Cutting Diameter	PRFA Profile Angle	KAPR Cutting Edge Angle	PRFRAD Profile Radius	CW Cutting Width	CDX Cutting Depth Max	LF Functional Length	ZEFF Effective Flutes	CCMS Connection Code	DHUB Hub Diameter
18V-5006TQRA30	0.500	120	60	0.008	0.056	0.080	0.090	6	Chip Surfer T05	0.300
18V-5010TQRA45	0.500	90	45	0.008	0.086	0.080	0.130	6	Chip Surfer T05	0.300
18V-5016TQRA60	0.500	60	30	0.008	0.140	0.080	0.180	6	Chip Surfer T05	0.300
18V-5016TQRA63	0.500	55	27.5	0.008	0.154	0.080	0.180	6	Chip Surfer T05	0.300
18V-5016TQRA70	0.500	40	20	0.008	0.161	0.060	0.180	6	Chip Surfer T05	0.300
18V-5027T6RA75	0.500	30	15	0.008	0.270	0.070	0.650	6	Chip Surfer T06	0.360
18V-5040T6RA80	0.500	20	10	0.008	0.400	0.070	0.650	6	Chip Surfer T06	0.360
18V-5044T6RA85	0.500	10	5	0.008	0.430	0.040	0.650	6	Chip Surfer T06	0.360
18V27710TRRP75	1.090	30	15	0.008	0.398	0.090	0.460	6	Chip Surfer T10	0.600
18V27750TRRP45	1.090	90	45	0.008	0.197	0.160	0.230	6	Chip Surfer T10	0.600
18V27778TRRP60	1.090	60	30	0.008	0.307	0.160	0.340	6	Chip Surfer T10	0.600

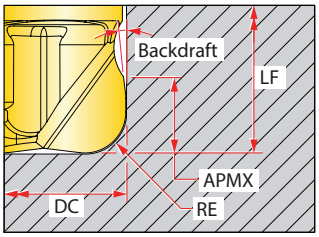
When assembling, be sure tip is seated firmly on shank with no gap. Tightening Torque: T10=250in/lbs. No lubricant on adaption. Wrenches sold seperately.

CHIPoSURFER™ 18V HARDWARE

	OPTIONAL T-Handle Torx Driver	**OPTIONAL** Torx Bit	**OPTIONAL** Torx Drive L-Key	**OPTIONAL** Adjustable Torque Wrench Handle	**OPTIONAL** Torque Wrench Torx Bit Socket	**OPTIONAL** Torque Wrench 90° Socket Adapter	**OPTIONAL** Wrench	**OPTIONAL** Torque Driver
18V-5006TQRA30	DS-T20T	DS-T20B	DS-T20/3L	TORQUE WRENCH 5-50NM 9X12	DS-38SKT9X12	DS-T2038SKT	-	-
18V-5010TQRA45	DS-T20T	DS-T20B	DS-T20/3L	TORQUE WRENCH 5-50NM 9X12	DS-38SKT9X12	DS-T2038SKT	-	-
18V-5016TQRA60	DS-T20T	DS-T20B	DS-T20/3L	TORQUE WRENCH 5-50NM 9X12	DS-38SKT9X12	DS-T2038SKT	-	-
18V-5016TQRA63	DS-T20T	DS-T20B	DS-T20/3L	TORQUE WRENCH 5-50NM 9X12	DS-38SKT9X12	DS-T2038SKT	-	-
18V-5016TQRA70	DS-T20T	DS-T20B	DS-T20/3L	TORQUE WRENCH 5-50NM 9X12	DS-38SKT9X12	DS-T2038SKT	-	-
18V-5027T6RA75	-	-	-	-	-	-	WS-0029	DT-90-08
18V-5040T6RA80	-	-	-	-	-	-	WS-0029	DT-90-08
18V-5044T6RA85	-	-	-	-	-	-	WS-0029	DT-90-08
18V27710TRRP75	DS-T40T	DS-T40B	DS-T40/3L	TORQUE WRENCH 5-50NM 9X12	DS-38SKT9X12	DS-T4038SKT	-	-
18V27750TRRP45	DS-T40T	DS-T40B	DS-T40/3L	TORQUE WRENCH 5-50NM 9X12	DS-38SKT9X12	DS-T4038SKT	-	-
18V27778TRRP60	DS-T40T	DS-T40B	DS-T40/3L	TORQUE WRENCH 5-50NM 9X12	DS-38SKT9X12	DS-T4038SKT	-	-

SOLID CARBIDE BACKDRAFT TOROID TIP





INCH

Cutter Number	DC Cutting Diameter	RE Corner Radius	APMX Depth of Cut Max.	LF Functional Length	ZEFF Effective Flutes	KAPR Cutting Edge Angle	CCMS Connection Code	DHUB Hub Diameter
45U-6231TRRA18	0.625	0.187	0.310	0.795	2	7	Chip Surfer T10	0.600
45U-7545TSRA31	0.750	0.312	0.445	0.680	2	7	Chip Surfer T12	0.726
45U-7545TSRA25	0.750	0.250	0.450	0.680	2	7	Chip Surfer T12	0.726

METRIC

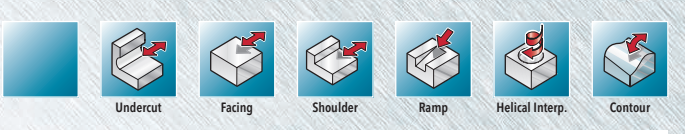
Cutter Number	DC Cutting Diameter	RE Corner Radius	APMX Depth of Cut Max.	LF Functional Length	ZEFF Effective Flutes	KAPR Cutting Edge Angle	CCMS Connection Code	DHUB Hub Diameter
45U10006T6RA20	10.00 mm	2.00 mm	6.00 mm	12.60 mm	2	7	Chip Surfer T06	9.50 mm
45U10006T6RA30	10.00 mm	3.00 mm	6.00 mm	12.60 mm	2	7	Chip Surfer T06	9.50 mm
45U10008T6RA05	10.00 mm	0.50 mm	7.00 mm	12.45 mm	2	5	Chip Surfer T06	9.50 mm
45U10008T6RA10	10.00 mm	1.00 mm	7.00 mm	12.45 mm	2	5	Chip Surfer T06	9.50 mm
45U12006T8RA25	12.00 mm	2.50 mm	5.50 mm	11.10 mm	2	7	Chip Surfer T08	11.50 mm
45U12006T8RA30	12.00 mm	3.00 mm	5.50 mm	11.10 mm	2	7	Chip Surfer T08	11.50 mm
45U12006T8RA40	12.00 mm	4.00 mm	5.60 mm	11.10 mm	2	7	Chip Surfer T08	11.50 mm
45U12006T8RA16	12.00 mm	1.60 mm	5.70 mm	11.10 mm	2	7	Chip Surfer T08	11.50 mm
45U12006T8RA20	12.00 mm	2.00 mm	5.90 mm	11.10 mm	2	7	Chip Surfer T08	11.50 mm
45U12006T8RA10	12.00 mm	1.00 mm	6.00 mm	11.10 mm	2	7	Chip Surfer T08	11.50 mm
45U16007TRRA40	16.00 mm	4.00 mm	7.10 mm	13.40 mm	2	7	Chip Surfer T10	15.20 mm
45U16007TRRA20	16.00 mm	2.00 mm	7.20 mm	13.10 mm	2	7	Chip Surfer T10	15.20 mm
45U16007TRRA30	16.00 mm	3.00 mm	7.20 mm	13.40 mm	2	7	Chip Surfer T10	15.20 mm
45U16008TRRA50	16.00 mm	5.00 mm	8.00 mm	20.20 mm	2	7	Chip Surfer T10	15.20 mm
45U20011TSRA30	20.00 mm	3.00 mm	10.80 mm	17.00 mm	2	7	Chip Surfer T12	18.45 mm
45U20011TSRA80	20.00 mm	8.00 mm	10.90 mm	17.30 mm	2	7	Chip Surfer T12	18.45 mm
45U20011TSRA60	20.00 mm	6.00 mm	11.00 mm	17.30 mm	2	7	Chip Surfer T12	18.45 mm
45U20011TSRA40	20.00 mm	4.00 mm	11.10 mm	17.30 mm	2	7	Chip Surfer T12	18.45 mm
45U20011TSRA50	20.00 mm	5.00 mm	11.10 mm	17.30 mm	2	7	Chip Surfer T12	18.45 mm

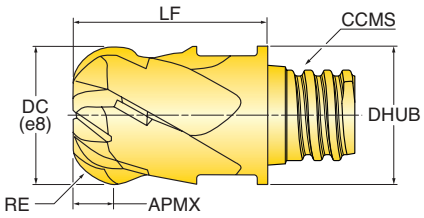
CHIPoSURFER™ 45U HARDWARE

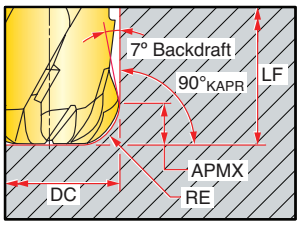
	 **OPTIONAL** Wrench	 **OPTIONAL** Torque Driver	
45U-6231TRRA18	WS-0044	DT-250-08	
45U-7545TSRA31	WS-0059	DT-250-09	
45U-7545TSRA25	WS-0059	DT-250-09	
45U10006T6RA20	WS-0029	DT-90-05	
45U10006T6RA30	WS-0029	DT-90-05	
45U10008T6RA05	WS-0029	DT-90-05	
45U10008T6RA10	WS-0029	DT-90-05	
45U12006T8RA25	WS-0030	DT-130-07	
45U12006T8RA30	WS-0030	DT-130-07	
45U12006T8RA40	WS-0030	DT-130-07	
45U12006T8RA16	WS-0030	DT-130-07	
45U12006T8RA20	WS-0030	DT-130-07	
45U12006T8RA10	WS-0030	DT-130-07	
45U16007TRRA40	WS-0044	DT-250-08	
45U16007TRRA20	WS-0044	DT-250-08	
45U16007TRRA30	WS-0044	DT-250-08	
45U16008TRRA50	WS-0044	DT-250-08	
45U20011TSRA30	WS-0059	DT-250-09	
45U20011TSRA80	WS-0059	DT-250-09	
45U20011TSRA60	WS-0059	DT-250-09	
45U20011TSRA40	WS-0059	DT-250-09	
45U20011TSRA50	WS-0059	DT-250-09	

CHIPoSURFER™ SERIES 48U

SOLID CARBIDE BACKDRAFT TOROID TIP







INCH

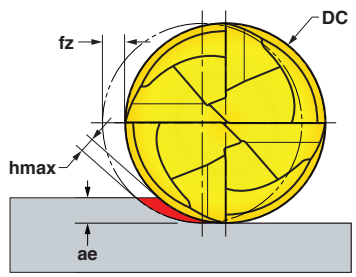
Cutter Number	DC Cutting Diameter	RE Corner Radius	APMX Depth of Cut Max.	LF Functional Length	ZEFF Effective Flutes	FHA Flute Helix Angle	CCMS Connection Code	DHUB Hub Diameter
48U-3719T6RB03	0.375	0.031	0.190	0.500	6	30	Chip Surfer T06	0.364
48U-3719T6RB06	0.375	0.062	0.190	0.484	6	30	Chip Surfer T06	0.364
48U-3719T6RB12	0.375	0.125	0.190	0.510	6	30	Chip Surfer T06	0.364
48U-5027T8RB03	0.500	0.031	0.270	0.630	6	30	Chip Surfer T08	0.480
48U-5027T8RB06	0.500	0.062	0.270	0.650	6	30	Chip Surfer T08	0.480
48U-5027T8RB12	0.500	0.125	0.270	0.630	6	30	Chip Surfer T08	0.480
48U-6235TRRB20	0.625	0.200	0.350	0.800	6	30	Chip Surfer T10	0.600

METRIC

Cutter Number	DC Cutting Diameter	RE Corner Radius	APMX Depth of Cut Max.	LF Functional Length	ZEFF Effective Flutes	FHA Flute Helix Angle	CCMS Connection Code	DHUB Hub Diameter
48U08004TQRB20	8.000	2.000	4.000	10.000	6	30	Chip Surfer T05	5.900
48U10005T6RB30	10.000	3.000	5.000	13.000	6	30	Chip Surfer T06	7.900
48U12007T8RB40	12.000	4.000	7.000	16.500	6	30	Chip Surfer T08	9.900
48U16009TRRB50	16.000	5.000	9.000	20.500	6	30	Chip Surfer T10	12.900

CHIPoSURFER™ 48U HARDWARE

	 **OPTIONAL** Wrench	 **OPTIONAL** Torque Driver	
48U-3719T6RB03	WS-0029	DT-90-08	
48U-3719T6RB06	WS-0029	DT-90-08	
48U-3719T6RB12	WS-0029	DT-90-08	
48U-5027T8RB03	WS-0030	DT-130-10	
48U-5027T8RB06	WS-0030	DT-130-10	
48U-5027T8RB12	WS-0030	DT-130-10	
48U-6235TRRB20	WS-0044	DT-250-13	
48U08004TQRB20	WS-0043	DT-60-06	
48U10005T6RB30	WS-0029	DT-90-08	
48U12007T8RB40	WS-0030	DT-130-10	
48U16009TRRB50	WS-0044	DT-250-13	

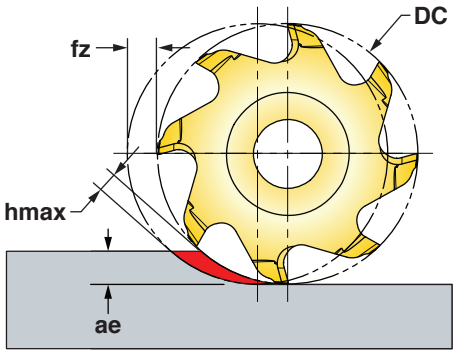


When ae is less than 25% DC, recommend use of Chip Thinning Calculator to ensure hmax is within fz range.

Materials				Vc Cutting Speed SFM	fz Feed/Tooth (inch)	Coolant
ISO	Mat'l Group	Type	Examples			
P	1-5	Non-alloy Steel	1018, A36, 1045, A572, 1070	350-600	.002-.004	No
	6-9	Low-alloy Steel	4140, 4340, P20, 8620, 300M			
	10-11	High-alloy Steel	H13, A2, D2, M2, T1	300-500		
M	12-13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	250-500	.002-.004	Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4			May not be required at high speeds
K	15-16	Gray Cast Iron	CLS. 20, 30, 45	450-700	.003-.005	No
	17-20	Nodular Cast Iron	60-40-18, 100-70-03	400-600	.003-.004	
S	31-35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	75-125	.002-.004	Yes
	36-37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	125-200		

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.

Chip Thinning



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

Materials				Full Slot		Side Cut		Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples	Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	300-400	.001-.004	450-650	.002-.005	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	300-400		450-650		
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	250-350		400-600		
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	200-450	.001-.004	250-550	.002-.005	Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4					May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	400-700	.001-.005	500-800	.002-.006	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03					
N	21-30	Aluminum	7075, 6061	1000-2000	.002-.006	1000-3000	.002-.007	Yes
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-125	.001-.004	65-150	.002-.004	Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr					

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.

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 (Figure 2).
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 3a).
If it does, tighten further with the wrench until there is no gap (Figure 3b).

Note: Torque wrenches can be purchased.

Figure 1a. Finger tight

Figure 1b. .010" gap

Figure 2. 1/4 turn

Figure 3a. Shim should NOT enter intersection

Figure 3b. Proper fit

Optional Torque Wrench