CHIP SURFER™

ANGULAR ADVANTAGE WITH VARIOUS TIP STYLES ON A SINGLE SHANK

Series:
45M, 45N, 45P, 47N, 48N, 18T

Tip Style:
Spot, C'Sink &
Chamfer (Front & Back)

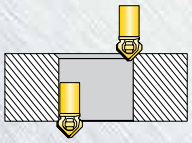
Lead Angles
18°, 30°, 40°, 45°, 50° & 60°

Diameters
.31"-1.00"

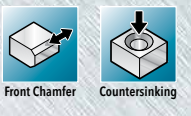
Adaptions
T05, T06, T08, T10, T12, T15

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

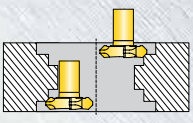
- 144°, 120°, 100°, 90°, 80° & 60° Included Angle options
- 18°, 30°, 40°, 45°, 50° & 60° Lead Angle options
- Point geometry accommodates spotting from solid
- 90° shoulder mill capability
- Low face pressure when countersinking with 2-flute positive geometry
- Recommended for large countersinks



- 45° Front and 45° Back Chamfer capability
- Low face pressure when countersinking with 2-flute positive geometry
- Recommended for large countersinks



- 120°, 90° & 60° Included Angle options
- 30°, 45° & 60° Lead Angle options
- 4- & 6-flute promote utmost productivity for chamfers & corner breaks
- Recommended for shallow countersinks with existing hole



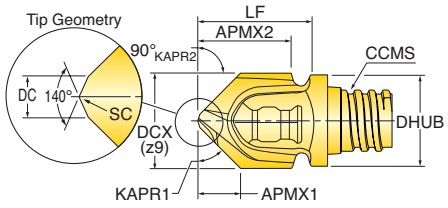
- 45° Front and 45° Back Chamfer capability
- Radial reach for back-chamfering in a bore

PRODUCT ANNOUNCEMENT
UPDATE
2019

Member IMC Group
Ingersoll Cutting Tools

SERIES 45N, 45M, 45P

CHAMFER AND SPOTTING TIP



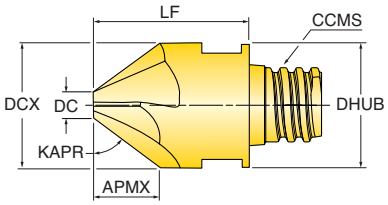
Part Number	DCX Cutting Dia. Max.	DC Cutting Diameter	KAPR1 Cutting Edge Angle	APMX1 Depth of Cut Max.	APMX2 Depth of Cut Max.	LF Functional Length	ZEFF Effective Flutes	CCMS Connection Code	DHUB Hub Diameter
INCH	(inch)	(inch)		(inch)	(inch)	(inch)			(inch)
NEW 45N-3704T6RA40	0.375	0.079	50	0.197	0.354	0.465	2	Chip Surfer T06	0.362
NEW 45N-3705T6RA50	0.375	0.079	40	0.140	0.378	0.530	2	Chip Surfer T06	0.362
NEW 45N-5006T8RA40	0.500	0.059	50	0.268	0.437	0.610	2	Chip Surfer T08	0.480
NEW 45N-5005T8RA50	0.500	0.059	40	0.192	0.430	0.580	2	Chip Surfer T08	0.480
NEW 45N-6207TRRA40	0.625	0.079	50	0.346	0.598	0.740	2	Chip Surfer T10	0.591
NEW 45N-6207TRRA50	0.625	0.079	40	0.244	0.587	0.748	2	Chip Surfer T10	0.594
NEW 45N-7509TSRA40	0.750	0.059	50	0.433	0.772	0.972	2	Chip Surfer T12	0.720
NEW 45N-7509TSRA50	0.750	0.059	40	0.295	0.728	0.929	2	Chip Surfer T12	0.720
METRIC	(mm)	(mm)		(mm)	(mm)	(mm)			(mm)
45N08007TQRA45	8.00	1.00	45	3.15	7.00	9.75	2	Chip Surfer T05	7.60
45N10009T6RA72	10.00	-	18	1.70	9.00	12.70	2	Chip Surfer T06	9.50
45P10009T6RA60	10.00	1.50	30	2.70	9.50	12.70	2	Chip Surfer T06	9.50
45N10010T6RA45	10.00	1.50	45	4.50	10.10	14.00	2	Chip Surfer T06	9.50
45M10009T6RA30	10.00	1.50	60	7.60	9.30	11.75	2	Chip Surfer T06	9.50
45P12012T8RA60	12.00	1.50	30	3.50	11.65	15.20	2	Chip Surfer T08	11.50
45N12012T8RA45	12.00	1.50	45	5.30	12.00	15.50	2	Chip Surfer T08	11.50
45M12012T8RA30	12.00	1.50	60	9.24	11.00	15.40	2	Chip Surfer T08	11.50
45P16015TRRA60	16.00	1.50	30	4.40	15.50	19.90	2	Chip Surfer T10	15.20
45N16016TRRA45	16.00	1.50	45	7.40	15.70	20.00	2	Chip Surfer T10	15.20
45M16015TRRA30	16.00	2.50	60	12.00	16.20	20.20	2	Chip Surfer T10	15.20
45P20018TSRA60	20.00	1.50	30	5.50	14.65	21.15	2	Chip Surfer T12	18.45
45N20018TSRA45	20.00	1.50	45	9.40	18.20	24.70	2	Chip Surfer T12	18.45
45M20018TSRA30	20.00	2.50	60	15.50	18.20	24.70	2	Chip Surfer T12	18.45

NOTE: When assembling, be sure tip is seated firmly on shank with no gap.
DO NOT apply lubricant to the thread connection.
Wrenches sold seperately.

SEE HARDWARE CHART ON PAGE 3.

SERIES 47N, 48N

CHAMFER & COUNTERSINK TIP



Part Number	DCX Cutting Dia. Max.	DC Cutting Diameter	KAPR Cutting Edge Angle	APMX Depth of Cut Max.	LF Functional Length	ZEFF Effective Flutes	CCMS Connection Code	DHUB Hub Diameter
INCH	(inch)	(inch)		(inch)	(inch)			(inch)
NEW 47N-5006T8RA30	0.500	0.079	30	0.122	0.650	4	Chip Surfer T08	0.500
47N-5006T8RA45	0.500	0.078	45	0.200	0.650	4	Chip Surfer T08	0.500
NEW 47N-5006T8RA60	0.500	0.118	60	0.256	0.650	4	Chip Surfer T08	0.500
METRIC	(mm)	(mm)		(mm)	(mm)			(mm)
NEW 47N10007T6RA60	10.00	2.00	30	2.30	13.0	4	Chip Surfer T06	10.00
NEW 48N16003TRRA30	16.00	3.00	30	3.70	20.5	6	Chip Surfer T10	16.00
NEW 48N20004TSRA30	20.00	5.00	30	4.30	25.5	6	Chip Surfer T12	18.45
NEW 48N25005TURA30	25.00	6.00	30	5.40	25.0	6	Chip Surfer T15	25.00
47N10004T6RA45	10.00	1.95	45	4.00	13.0	4	Chip Surfer T06	10.00
48N16006TRRA45	16.00	3.00	45	6.50	20.5	6	Chip Surfer T10	16.00
48N20025TSRA45	20.00	5.00	45	7.50	25.5	6	Chip Surfer T12	18.45
NEW 48N25010TURA45	25.00	5.00	45	10.00	25.0	6	Chip Surfer T15	25.00
NEW 47N10002T6RA30	10.00	1.60	60	7.30	13.0	4	Chip Surfer T06	10.00
NEW 48N16010TRRA60	16.00	4.00	60	10.00	20.5	6	Chip Surfer T10	16.00
NEW 48N20013TSRA60	20.00	5.00	60	13.00	25.5	6	Chip Surfer T12	18.45
NEW 48N25014TURA60	25.00	8.00	60	14.00	25.0	6	Chip Surfer T15	25.00

NOTE: When assembling, be sure tip is seated firmly on shank with no gap.
DO NOT apply lubricant to the thread connection.
Wrenches sold seperately.

HARDWARE - SERIES 45N, 45M, 45P, 47N, 48N

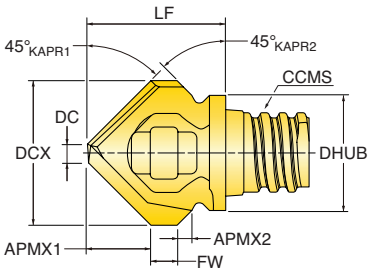
CCMS Connection Code	Wrench	Optional Torque Driver	Torque Value
T05	WS-0043	DT-60-06	60in/lbs
T06	WS-0029	DT-90-08	90in/lbs
T08	WS-0030	DT-130-10	130in/lbs
T10	WS-0044	DT-250-13	250in/lbs
T12	WS-0059	DT-250-16	250in/lbs
T15	WS-0061	-	350in/lbs

SERIES 45N_RA45

FRONT-BACK CHAMFER & COUNTERSINK TIP


Front/Back Chamfer


Countersinking



Part Number	DCX Cutting Dia. Max.	DC Cutting Diameter	APMX1 Depth of Cut Max.	APMX2 Depth of Cut Max.	FW Flat Width	LF Functional Length	ZEFF Effective Flutes	CCMS Connection Code	DHUB Hub Diameter
METRIC	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)			(mm)
45N09809TQRA45	9.80	1.20	4.30	0.90	2.50	10.80	2	Chip Surfer T05	7.60
45N11814T6RA45	11.80	1.20	5.30	1.20	2.00	11.20	2	Chip Surfer T06	9.30
45N15722T8RA45	15.70	1.50	7.10	2.20	2.00	14.00	2	Chip Surfer T08	11.50

NOTE: When assembling, be sure tip is seated firmly on shank with no gap.
DO NOT apply lubricant to the thread connection.
Wrenches sold seperately.

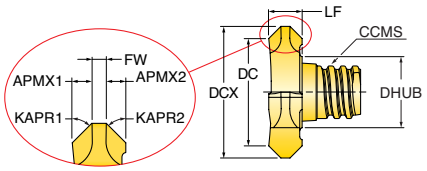
HARDWARE - SERIES 45N_RA45

CCMS Connection Code	 Wrench	 Optional Torque Driver	Torque Value
T05	WS-0029	-	60in/lbs
T06	WS-0030	DT-90-07	90in/lbs
T08	WS-0044	DT-130-08	130in/lbs

SERIES 18T

FRONT & BACK CHAMFER TIP


Front/Back Chamfer



Part Number	DCX Cutting Dia. Max.	DC Cutting Diameter	KAPR1 Cutting Edge Angle	APMX1 Depth of Cut Max.	APMX2 Depth of Cut Max.	KAPR2 Cutting Edge Angle	FW Flat Width	LF Functional Length	ZEFF Effective Flutes	CCMS Connection Code	DHUB Hub Diameter
INCH	(inch)	(inch)		(inch)	(inch)	(inch)	(inch)	(inch)			(inch)
18T-6216T6RN06	0.625	0.533	45.0	0.046	0.046	45.0	0.030	0.159	6	Chip Surfer T06	0.364

NOTE: When assembling, be sure tip is seated firmly on shank with no gap.
DO NOT apply lubricant to the thread connection.
Wrenches sold seperately.

HARDWARE - SERIES 18T

CCMS Connection Code	 Wrench	 Optional Torque Driver	Torque Value
T06	DS-T25T	DS-T25B	90in/lbs

OPERATING GUIDELINES - MILLING


Material		Brinnell Hardness	SFM	Feed per Tooth	Coolant
Aluminum	6061 T-6, 7075 T-6, 2024	-	1300-4000	.003-.006	Yes
Cast Iron	Gray	150-250	450-700	.002-.005	No
	Nodular	150-250	400-600	.002-.004	
Steel	Low Carbon 1018, 8620	150-250	350-600	.002-.004	No
	High Carbon F-6180	250-400			
	Alloyed Steel 4140, 4340	150-300			
	Tool Steel A-6, D-1, D-2	Up to 300	300-500		
Stainless Steel	300 Series, 304, 316	-	250-500	.002-.004	May not be needed at high speeds
	400 Series 15-5 PH	Up to 320			
	13-8 PH	-			Yes
Nickel Alloys	Inconel, Hastelloy, Waspalloy	-	75-125	.002-.004	Yes
Titanium	6AL-4V	-	125-200	.002-.004	Yes

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.

OPERATING GUIDELINES - SPOT/COUNTERSINK


Material		Brinnell Hardness	SFM	Feed per Revolution	Coolant
Cast Iron	Gray	150-250	300-600	.004-.007	No
	Nodular	150-250	260-450	.004-.007	
Steel	Low Carbon 1018, 8620	150-250	200-450	.002-.005	No
	High Carbon F-6180	250-400			
	Alloyed Steel 4140, 4340	150-300			
	Tool Steel A-6, D-1, D-2	Up to 300	150-300		
Stainless Steel	300 Series, 304, 316	-	100-200	.002-.005	May not be needed at high speeds
	400 Series 15-5 PH	Up to 320			
	13-8 PH	-			Yes
Nickel Alloys	Inconel, Hastelloy, Waspalloy	-	70-150	.002-.003	Yes
Titanium	6AL-4V	-	70-150	.002-.003	Yes

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.

INDEXING CHIP SURFER 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 (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: Pre-set torque wrenches (series DT-. . .) 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

Series DT-. . . Optional Torque Wrench