



Ultra precision ER style integral collet tooling for Swiss style and lathe live tooling.

Ingersoll expands the HiPOSMicro and ChipSurfer lines to target use on Swiss type machines, lathe live spindles and smaller spindle machine centers. Think inside and outside the box to view a fine assortment of engineered precision and guaranteed performance.

Features and Benefits.

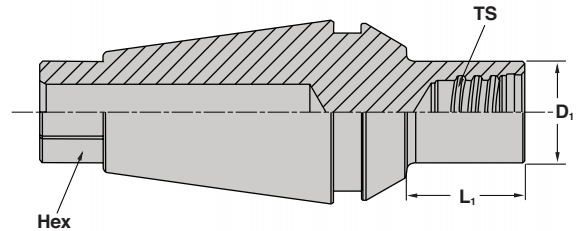
- Small diameter solid carbide and indexable (.250"-.625")
Equipped with the modular quick change ChipSurfer system (ER11, ER16, and ER20)
- Large diameter indexables (.750"-2.00") are offered with a cylindrical shank that fits various ER collets (starting at ER16)
- High shear, double positive geometries present free cutting action for low horsepower machines
- Pick your favorite style and geometry and we will satisfy your sweet cutting tooth needs



CHIP SURFER™ INTEGRAL ER-ADAPTOR

Thread Connections
T05, T06, T08 and T10

Shank Materials
Alloy Steel



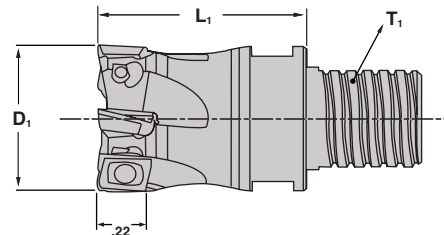
Part Number	ER Size	Cutter Diameter/ TS Thread Size	L ₁ Length	D ₁ Diameter	Hex
ER11T05SA-05	11	T05 / .250 and .312	0.413	0.300	0.312
ER16T05SA-05	16	T05 / .250 and .312	0.413	0.300	0.312
ER16T06SA-05	16	T06 / .375	0.413	0.354	0.312
ER16T08SA-06	16	T08 / .500	0.512	0.472	0.312
ER20T05SA-05	20	T05 / .250 and .312	0.413	0.300	0.437
ER20T06SA-05	20	T06 / .375	0.413	0.354	0.437
ER20T08SA-06	20	T08 / .500	0.512	0.472	0.437
ER20T10SA-07	20	T10 / .625	0.630	0.598	0.437

CHIP SURFER™ 90° LEAD END MILL SERIES 12J1D

Diameters
.375 to .750

Max. Depth of Cut
0.22"

Insert Corner
0.008", 0.015", 0.031", 0.062"



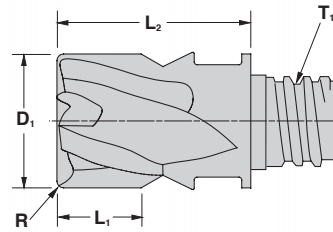
Part Number	D ₁ Nominal Diameter	# Inserts	T ₁ Thread Size	L ₁ Extension Length	Ramp Angle
12J1D-03006T6R01	0.375	2	T06	0.625	9.6
12J1D-05006T8R01	0.500	2	T08	0.650	6.0
12J1D-05006T8R02	0.500	3	T08	0.650	6.0
12J1D-06008TRR01	0.625	4	T10	0.800	4.0

Wrench (Not included with carbide tip or shank purchase).

Thread Size	Wrench Part No.	Optional Torque Wrench	Torque Value (in. lbs.)
T06	WS-0029	DT-90-08	90
T08	WS-0030	DT-130-10	130
T10	WS-0044	DT-250-13	250
T12	WS-0059	DT-250-16	250

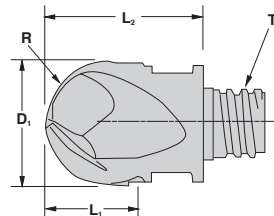
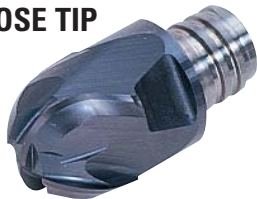
-HERE IS A SAMPLING OF SOLID CARBIDE CHIPSURFER TIPS

CENTER CUTTING END MILL TIP



Cutter Numbrerr	Eff.	D ₁ Nominal Diameter	L ₁ Cutting Edge Length	T ₁ Thread Size	L ₂ Extension Length	R Corner Radius
47J-2520TQRD04	4	.250	.20	T05	.39	SHARP
47J-3120TQRD04	4	.312	.20	T05	.39	SHARP
47D-3120TQRD01	4	.312	.20	T05	.39	.015
47D-3120TQRD03	4	.312	.20	T05	.39	.031
47D-3120TQRD06	4	.312	.20	T05	.39	.062
47J-3727T6RD05	4	.375	.27	T06	.50	SHARP
47D-3727T6RD01	4	.375	.27	T06	.50	.015
47D-3727T6RD03*	4	.375	.27	T06	.50	.031
47D-3727T6RD06	4	.375	.27	T06	.50	.062
47J-5037T8RD06	4	.500	.37	T08	.65	SHARP
47D-5037T8RD01	4	.500	.37	T08	.65	.015
47D-5037T8RD03	4	.500	.37	T08	.65	.031
47D-5037T8RD06	4	.500	.37	T08	.65	.062
47J-6247TRRD08	4	.625	.47	T10	.80	SHARP
47D-6247TRRD03	4	.625	.47	T10	.80	.031

HELICAL BALL NOSE TIP



Cutter Number	Eff.	D ₁ Nominal Diameter	L ₁ Cutting Edge Length	T ₁ Thread Size	L ₂ Extension Length	R Corner Radius	Tolerance
47B-2520TQRB03	4	.250	.20	T05	.39	.125	.0004
45B-3120TQRB03	2	.312	.20	T05	.39	.156	.0004
47B-3120TQRB03	4	.312	.20	T05	.39	.156	.0004
45B-3727T6RB05	2	.375	.27	T06	.51	.187	.0004
*47B-3727T6RB05	4	.375	.27	T06	.51	.187	.0004
45B-5037T8RB06	2	.500	.37	T08	.65	.250	.0004
47B-5037T8RB06	4	.500	.37	T08	.65	.250	.0004
45B-6235TRRB08	2	.625	.35	T10	.80	.312	.0004
47B-6247TRRB08	4	.625	.47	T10	.80	.312	.0004

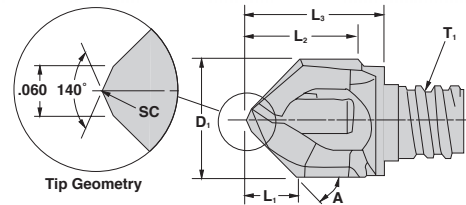
Wrench (Not included with carbide tip or shank purchase).

Thread Size	Wrench Part No.	Optional Torque Wrench	Torque Value (in. lbs.)
T05	WS-0043	DT-60-06	60
T06	WS-0029	DT-90-08	90
T08	WS-0030	DT-130-10	130
T10	WS-0044	DT-250-13	250
T12	WS-0059	DT-250-16	250



To view the complete offering of ChipSurfer tips visit: www.ingersoll-imc.com under the NEW PRODUCTS tab.

CHAMFER AND SPOTTING TIP

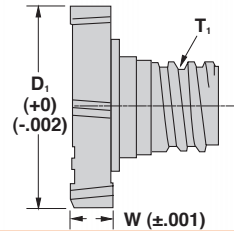
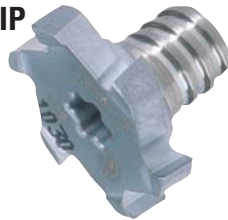


Cutter Number	A Nominal Chamfer Angle	Eff.	D ₁ Nominal Diameter	L ₁ Cutting Edge Length	T ₁ Thread Size	L ₂ Depth	L ₃ Extension Length
45N08007TQRA45	45°	2	.315	.14	T05	.27	.38
45N10009T6RA45	45°	2	.390	.18	T06	.35	.50
45N10009T6RA72	72°	2	.390	.06	T06	.35	.50
45N16015TRRA45	45°	2	.625	.29	T10	.59	.75
45M10009T6RA30	30°	2	.390	.26	T06	.37	.50
45P10009T6RA60	60°	2	.390	.10	T06	.39	.50

Wrench (Not included with carbide tip or shank purchase).

Thread Size	Wrench Part No.	Optional Torque Wrench	Torque Value (in. lbs.)
T06	WS-0029	DT-90-05	90
T10	WS-0044	DT-250-08	250

T-SLOT MILLING TIP



Cutter Number	Eff.	D ₁ Nominal Diameter	W Width	Max. Radial Depth of Cut	T ₁ Thread Size	Corner Radius	Torque Driver (Value)
18T-5006TQRN00	6	.500	.062	.12	T05	.006 x 45°	1 / 60
18T-5012TQRN00	6	.500	.125	.12	T05	.006 x 45°	1 / 60
18T-6205T6RN02	6	.625	.056	.13	T06	.015	1 / 90
18T-6206T6RN01	6	.625	.062	.13	T06	.015	1 / 90
18T-6206T6RN02	6	.625	.068	.13	T06	.015	1 / 90
18T-6208T6RN01	6	.625	.078	.13	T06	.015	1 / 90
18T-6208T6RN02	6	.625	.086	.13	T06	.015	1 / 90
18T-6210T6RN01	6	.625	.105	.13	T06	.015	1 / 90
18T-6212T6RN01	6	.625	.125	.13	T06	.015	2 / 90
18T-6216T6RN01	6	.625	.156	.13	T06	.015	2 / 90
18T-7516T8RN01	6	.750	.156	.13	T08	.015	3 / 130
18T-7519T8RN01	6	.750	.187	.13	T08	.015	3 / 130
18T-7525T8RN01	6	.750	.250	.13	T08	.015	3 / 130
18T-8718T8RN01	6	.875	.187	.19	T08	.015	4 / 130
18T-8725T8RN01	6	.875	.250	.19	T08	.015	4 / 130
18T-8731T8RN01	6	.875	.312	.19	T08	.015	4 / 130
18T-10037TRRN02	6	1.00	.375	.19	T10	.015	5 / 250

Wrench (Not included with carbide tip or shank purchase).

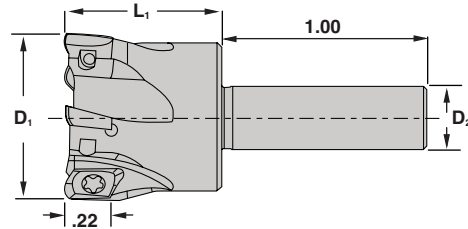
Torx Driver	Torx Driver Part No.	Optional Torque Bit / Hex Drive
1	DS-T20T	DS-T20B / .250"
2	DS-T25T	DS-T25B / .250"
3	DS-T30T	DS-T30B / .250"
4	DS-T40T	DS-T40B / .250"
5	DS-T50L	DS-T50B / .312"

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-USE THESE TOOLS WITH YOUR EXISTING COLLET SYSTEM

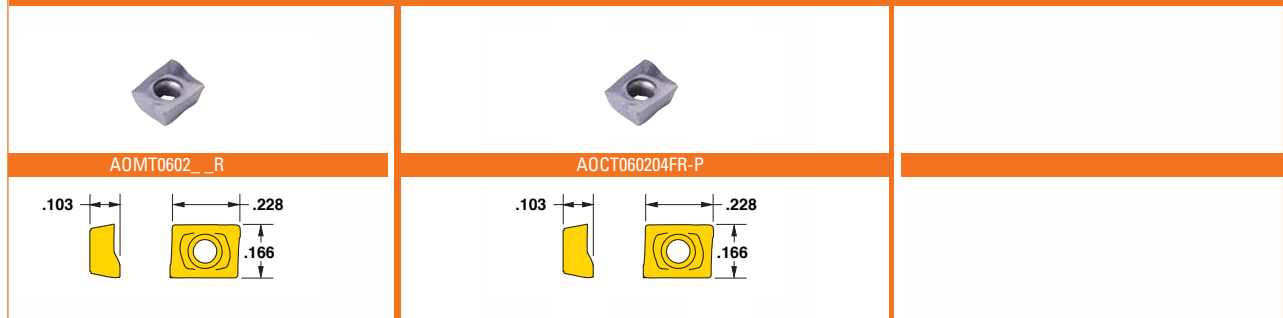
HiPOPOS™ 0° END MILL SERIES 12J1D

Diameters .750"-2.00"
Cutting Edge Length .22"
Insert Corner .008", .015", .031" and .062" R



Cutter Number	D1 Diameter	Number of teeth	L1 Extension Length	D2 Shank
12J1D-07007R8R01	0.750	5	0.750"	0.375"
12J1D-10007R8R01	1.000	5	0.750"	0.375"
12J1D-15007S4R01	1.500	7	0.750"	0.500"
12J1D-20007S6R01	2.000	7	0.750"	0.625"

INSERTS



Insert Number	Application	Corner	Grades					
			IN	2005	2030	1030	05S	2505
AOMT060202R	Multi-Purpose	.008R	■	■	■			
AOMT060204R	Multi-Purpose	.015R	■	■				
AOMT060208R	Multi-Purpose	.031R	■	■				
AOMT060216R*	Multi-Purpose	.062R	■	■				
AOCT060204FR-P	Ground/Polished (for Alu.)	.015R						■

HARDWARE

Insert Screw	Driver	Preset Torque Driver	Bit for Torque Driver
Part No.	Torque	Part No.	Part No.
SM18-041-00	5 in. lbs.	DS-TP06S (Tx Plus 06)	DTN005S
			DS-TP06TB

OPERATING GUIDELINES:

Series 12J1D, 22J3D, 12P1D, 12N1D, 12M1D		Brinell Hardness	SFM	Feed per Insert	Grades				Coolant
Material					INV300M	INV2005	INV1030	INV2030	
Aluminum	6061 T-6, 7075 T-6, 2024	-	1000-8000	.003-.008	1	2			Yes
Cast Iron	Gray	150-250	500-1200	.002-.004		1	2	1	No
	Nodular		400-800						
Steel	Low Carbon 1018-8620	150-250	600-1200	.002-.004		3	1	2	No
	High Carbon F-6180, Nitralloy 52100	250-400	400-600	.002-.004					
	Alloyed Steel 4140, 4340, 6150	150-300	400-800			3	2	1	
	Tool Steel A-6, D-1, D-2, P-20	Up to 300							
Stainless Steel	300 Series, 304, 316	-	400-800	.002-.004					May not be required at high speeds
	400 Series 15-5 PH, 17-4 PH	Up to 320	500-1000			3	1	2	
	13-8 PH	-	200-400						Yes
Nickel Alloys	Inconel, Hastelloy, Waspalloy	-	75-120	.002-.003		2	3	1	Yes
Titanium	6AL-4V	-	80-150	.002-.003		1	3	2	Yes