COUGAR•MILL™

Diameters:
4.00" – 14.00" (RH)
8.00" – 14.00" (LH)

Depth of Cut:
.51"

Insert Style:
SPEN2007DPTR-MR
SPKN2007DPTR-HD
ZPKN2007DPTR-HD
SPEN2007DPTL-MR (LH)
SPKN2007DPTL-HD (LH)
ZPKN2007DPTL-HD (LH)

Insert Grades:
IN4040, IN4030, IN4005, IN4015, IN2530, IN2540

Materials:

Steels: Low-High Carbon, Low-High Alloy, HSLA, Tool, Impact Resistant, Abrasion Resistant

Stainless Steels: PH Series, Martensitic

Irons: Ductile, Nodular

PRODUCT ANNOUNCEMENT UPDATE 2021

Powerfully Inclined for Performance
"The Cougar's a Beast"

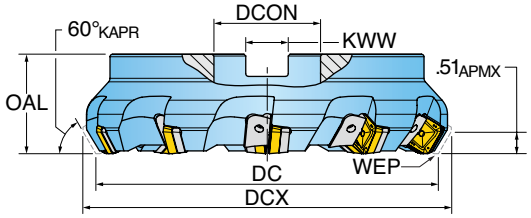
Features

- 60° lead family of face-mills with unique wedge-clamp design that mechanically secures and heavily pre-loads the insert for superior stability
- ***Multi-purpose*** insert combines edge strength with double positive shearing action for steels, stainless steels and ductile irons
- ***Heavy-duty*** inserts incorporate POWER•SHEAR technology for reliable shearing action in the most demanding applications
- POWER•SHEAR is ideally suited to descaling the most hardened and abrasive cast steels, forged steels and hot rolled oxide layers
- POWER•SHEAR designed inserts with robust rake face geometries is ideal for heavy continuous chip loads in the most hardened and abrasive materials
- Serrated POWER•SHEAR inserts allow for more smooth and efficient operation as set-up conditions require

Member IMC Group
Ingersoll Cutting Tools

COUGAR•MILL™ SERIES 5C2M FACE MILLS

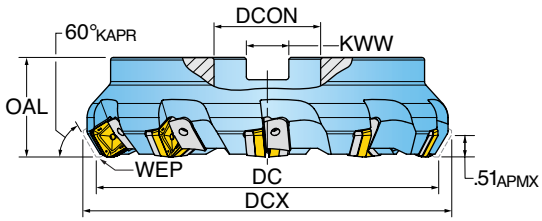
HEAVY DUTY 60° LEAD FACE MILL



WEP - See insert drawing for wiper options.

RIGHT HAND

Cutter Number	DC Cutting Diameter	DCX Cutting Dia. Max.	OAL Overall Length	ZEFF Effective Teeth Diameter	DCON Bore Dia.	KWW Keyway	DBC Bolt Circle
5C2M-04R01	4.000	4.670	2.500	6	1.500	0.625	N/A
5C2M-06R01	6.000	6.670	2.375	6	1.500	0.625	N/A
5C2M-06R02	6.000	6.670	2.375	8	1.500	0.625	N/A
5C2M-08R01	8.000	8.670	2.375	8	2.500	1.000	4.00"
5C2M-08R02	8.000	8.670	2.375	10	2.500	1.000	4.00"
5C2M-10R01	10.000	10.670	2.375	10	2.500	1.000	4.00",4.750"
5C2M-10R02	10.000	10.670	2.375	12	2.500	1.000	4.00",4.750",7.00"
5C2M-12R01	12.000	12.670	2.375	12	2.500	1.000	4.00",4.750",7.00"
5C2M-12R02	12.000	12.670	2.375	14	2.500	1.000	4.00",4.750",7.00"
5C2M-14R01	14.000	14.670	2.375	14	2.500	1.000	4.00",4.750",7.00"
5C2M-14R02	14.000	14.670	2.375	16	2.500	1.000	4.00",4.750",7.00"



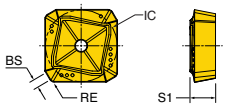
WEP - See insert drawing for wiper options.

LEFT HAND

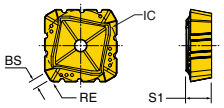
Cutter Number	DC Cutting Diameter	DCX Cutting Dia. Max.	OAL Overall Length	ZEFF Effective Teeth Diameter	DCON Bore Dia.	KWW Keyway	DBC Bolt Circle
5C2M-08L01	8.000	8.670	2.375	8	2.500	1.000	4.00"
5C2M-10L01	10.000	10.670	2.375	10	2.500	1.000	4.00",4.75"
5C2M-10L02	10.000	10.670	2.375	12	2.500	1.000	4.00",4.75",7.00"
5C2M-12L01	12.000	12.670	2.375	12	2.500	1.000	4.00",4.75",7.00"
5C2M-12L02	12.000	12.670	2.375	14	2.500	1.000	4.00",4.75",7.00"
522M-14L02	14.000	14.670	2.375	16	2.500	1.000	4.00",4.75",7.00"

COUGAR•MILL™ INSERTS

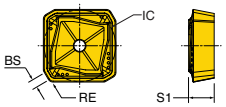
SPKN2007DPTR-HD



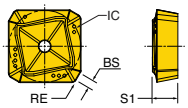
ZPKN2007DPTR-HD



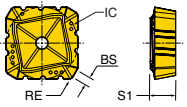
SPEN2007DPTR-MR



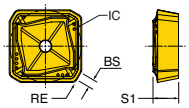
SPKN2007DPTL-HD



ZPKN2007DPTL-HD



SPEN2007DPTL-MR



Part Number	Application	RE Corner Radius	BS Wiper Length	IC Inscribed Circle Dia.	S1 Thickness	NOI Number of Indexes	IH Insert Hand	(Harder --------> Tougher)						
								Grade	IN4015	IN4040	IN2540	IN4005	IN4030	IN2530
SPEN2007DPTR-MR	Multi-Purpose	0.063	0.099	20mm	0.276	4	Right		•			•	•	•
SPKN2007DPTR-HD	Heavy-Duty	0.063	0.096	20mm	0.276	4	Right			•	•		•	•
ZPKN2007DPTR-HD	Serrated	0.063	0.096	20mm	0.276	4	Right			•			•	
SPEN2007DPTL-MR	Multi-Purpose	0.063	0.099	20mm	0.276	4	Left							•
SPKN2007DPTL-HD	Heavy-Duty	0.063	0.096	20mm	0.276	4	Left			•	•			•
ZPKN2007DPTL-HD	Serrated	0.063	0.096	20mm	0.276	4	Left			•			•	

COUGAR•MILL™ INSERT SELECTION GUIDE

Insert	No. of Indexes	Material Focus	Description
SPEN2007DPTR-MR 	4	**Steels:** Low – High Carbon Low – High Alloy HSLA Tooling Impact Resistant Abrasion Resistant **Stainless Steels:** PH Series Martensitic **Irons:** Ductile	Medium- High chip loads in steels, stainless steels, and irons. Rake geometry is presented Pos./Pos. with the edge strengthened with both land and hone. IN4005 recommended for steels. If additional toughness is needed, switch to IN4030. IN2530 recommended for stainless steels. If additional hardness is needed, switch to IN4005. IN4015 recommended for irons. If additional toughness is needed, switch to IN4005.
SPKN2007DPTR-HD 	4	**Steels:** Low – High Carbon Low – High Alloy HSLA Tooling Impact Resistant Abrasion Resistant	High- very high chip loads in steels. Rake geometry is presented Neg./Pos. with the edge strengthened with both land and hone. IN4040 recommended for all steels. If additional toughness is needed, switch to IN4030. Power·Shear is the combination of a strong insert cross-section that is inclined for smooth chip formation. Primary benefit is improved edge life in difficult material conditions (sand and hard spots cast and forged scale, slag and mechanical shock).
ZPKN2007DPTR-HD 	4	**Steels:** Low – High Carbon Low – High Alloy HSLA Tooling Impact Resistant Abrasion Resistant	Same insert as SPKN2007DPTR-HD but with serrated edges.
SPEN2007DPTL-MR 	4	**Steels:** Low – High Carbon Low – High Alloy HSLA Tooling Impact Resistant Abrasion Resistant **Stainless Steels:** PH Series Martensitic **Irons:** Ductile	Medium- High chip loads in steels, stainless steels, and irons. Rake geometry is presented Pos./Pos. with the edge strengthened with both land and hone. IN2530 recommended for steels and stainless steels.
SPKN2007DPTL-HD 	4	**Steels:** Low – High Carbon Low – High Alloy HSLA Tooling Impact Resistant Abrasion Resistant	High- very high chip loads in steels. Rake geometry is presented Neg./Pos. with the edge strengthened with both land and hone. IN4040 recommended for all steels. If additional toughness is needed, switch to IN2530. Power·Shear is the combination of a strong insert cross-section that is inclined for smooth chip formation. Primary benefit is improved edge life in difficult material conditions (sand and hard spots cast and forged scale, slag and mechanical shock).
ZPKN2007DPTL-HD 	4	**Steels:** Low – High Carbon Low – High Alloy HSLA Tooling Impact Resistant Abrasion Resistant	Same insert as SPKN2007DPTL-HD but with serrated edges.

COUGARMILL™ HARDWARE

RIGHT HAND

Cutter Number								
	Wedge Screw Driver	Driver Handle	Insert Driver Blade	Retention Bolt	Seat Screw	Seat	Wedge	Wedge Screw
5C2M-04R01	DS-H04T	DS-A00T	DS-T206B	SD-12-82	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-06R01	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-06R02	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-08R01	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-08R02	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-10R01	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-10R02	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-12R01	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-12R02	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-14R01	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
5C2M-14R02	DS-H04T	DS-A00T	DS-T206B	-	SM50-130-R0	PAR0748	WSC8R-21	TS80200W
Kit Hardware 5C2M-R (Kit includes one of each item)					SM50-130-R0	PAR0748	WSC8R-21	TS80200W

LEFT HAND

Cutter Number							
	Wedge Screw Driver	Driver Handle	Insert Driver Blade	Seat Screw	Seat	Wedge	Wedge Screw
5C2M-08L01	DS-H04T	DS-A00T	DS-T206B	SM50-130-R0	PAL0748	WSC8L-21	TS80200W
5C2M-10L01	DS-H04T	DS-A00T	DS-T206B	SM50-130-R0	PAL0748	WSC8L-21	TS80200W
5C2M-10L02	DS-H04T	DS-A00T	DS-T206B	SM50-130-R0	PAL0748	WSC8L-21	TS80200W
5C2M-12L01	DS-H04T	DS-A00T	DS-T206B	SM50-130-R0	PAL0748	WSC8L-21	TS80200W
5C2M-12L02	DS-H04T	DS-A00T	DS-T206B	SM50-130-R0	PAL0748	WSC8L-21	TS80200W
5C2M-14L02	DS-H04T	DS-A00T	DS-T206B	SM50-130-R0	PAL0748	WSC8L-21	TS80200W
Kit Hardware 5C2M-L (Kit includes one of each item)				SM50-130-R0	PAL0748	WSC8L-21	TS80200W

Notes: Insert seat screw tightening torque: 40-45 in*lb. Insert wedge screw tightening torque: 55-60 in*lb.

SPEN Series Inserts

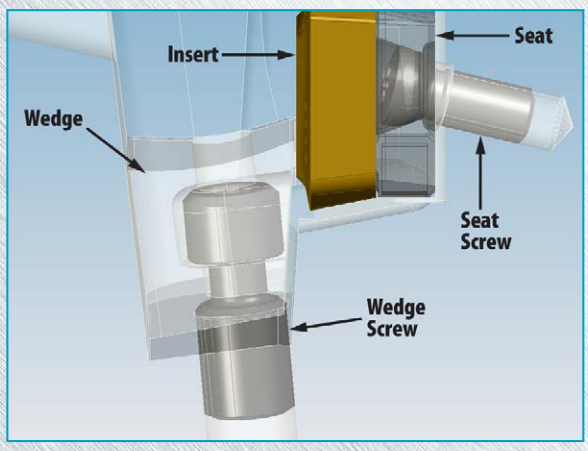
Materials				V_c Cutting Speed SFM	f_z Feed/Tooth (inch)	Harder <----------> Tougher				Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples			IN4015	IN4005	IN4030	IN2530	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-800	.006-.018		1	3	2	NO
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	250-500	.006-.015		1	3	2	NO
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	250-500	.006-.015		1	3	2	NO
	10, 11	High-alloy Steel	SR & AR Armor, Rail, Hardox	200-350	.006-.012		1	2	3	NO
M	12 thru 13	"Stainless Steel (Ferritic & Martensitic)"	410, 416, 440	250-450	.006-.014		3	2	1	YES
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	200-350	.006-.012		3	2	1	NO
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-900	.006-.018	1	2	3		NO
	17 thru 18	Nodular Cast Iron	60-40-18, 100-70-03	400-800	.006-.018	2	1	3		NO
S	36 thru 37	Titanium Alloys	6AL-4V, 5Al-5Mo-5V-3Cr	90-130	.004-.008			2	1	YES

SPKN / ZPKN Series Inserts

Materials				V_c Cutting Speed SFM	f_z Feed/Tooth (inch)	Harder <----------> Tougher				Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples			IN4040	IN2540	IN4030	IN2530	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-700	.010-.024	1	2	3	4	NO
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	250-500	.010-.018	1	2	3	4	NO
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	250-500	.010-.018	1	2	3	4	NO
	10, 11	High-alloy Steel	SR & AR Armor, Rail, Hardox	200-350	.010-.014	1	3	2	4	NO

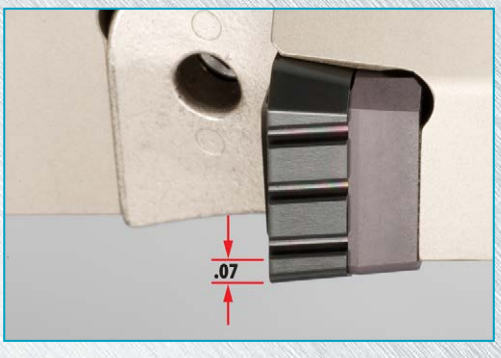
Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally,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

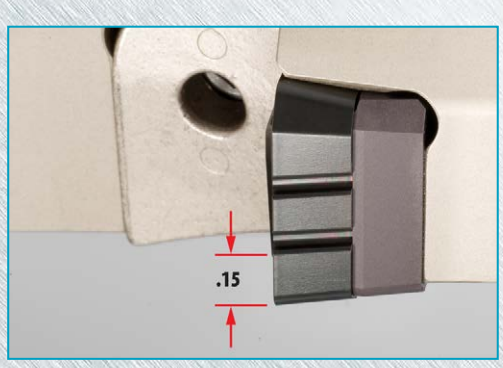
COUGAR-MILL™ ASSEMBLY



HARDWARE KIT (ABOVE) INCLUDES:
SEAT, SEAT SCREW, WEDGE & WEDGE SCREW

COUGAR-MILL™ CHIPBREAKERS





- Serrations should be installed with alternating grooves in each flute for best performance and surface finish results.
- Serrations allow for more efficient chip formation and decrease mechanical shock during entry and exit of the part.
- Shock reducing benefits of serrated inserts become more beneficial as depth-of-cut increases.
- Serrated edge inserts form smaller chips which may be problematic with some chip conveyer systems.