NPA

EXPANSION

Member IMC Group Ingersoll Cutting Tools

New Product Announcement

MILLING - INDEXABLE

Cutter Series (Depth of Cut)

1EJ5A End Mills (.185")
NEW **1EJ7A Face Mills (.185")**
NEW **1EJ5B End Mills (.317")**
NEW **EJ5B, EJ6B Face Mills (.317")**
1EJ5C End Mills (.385")
EJ5C, EJ6C Face Mills (.385")
EJ5D / EJ6D Face Mills (.479")

Insert Series

CGM101R, CGX101R (5 mm)
NEW **CGM212R (8 mm)**
CGM313R, CGX313R (11 mm)
CGM324R, CGX324R (13 mm)

Geometry

M: General Purpose
ML: General Purpose - Keen Edge

Diameter Range

0.500–6.000"

Lead Angle

90°

Corner Radii

.015–.125"

Materials

- Steel
- Stainless Steel
- Cast Iron
- Non-Ferrous
- High-Temp Alloys
- Hardened Steel

MAXSFEED™

NEW **MaxSFeed 8 mm Insert Size CGM212 and Dedicated Cutters**

- Strong double-sided, 4-corner, tangential insert with helical cutting edges for smooth machining.
- Exact 90° shouldering with straight and helical ramping capabilities.
- End mill and face mill bodies available from 0.5" to 6.0" diameter range.

See it in action! »

SFEEDUP™ HIGH SPEED & FEED EXPANSION

ingersoll-imc.com

Overview

Following the success of the **MaxSFeed** 5 mm, 11 mm, and 13 mm IC series of inserts and cutters, Ingersoll expands this family with new 8 mm IC inserts and associated cutter bodies.

Two new inserts have been added:

» **CGM212R00_-M** for general purpose milling

» **CGM212R00_-ML** for high-temp alloys, titanium alloys and stainless steel

New cylindrical shank tooling is also available for heavy duty milling chucks and ER style collets (available in the 8 mm series).

A new cutter body, 1EJ7A, has been added as well and utilizes the standard 5 mm IC insert along with Ingersoll's MultiSurfer shanks for an increased range of applications.

All MaxSFeed series inserts are optimized with our latest geometries for smooth machining and improved stability.

NEW

8 mm Expansion

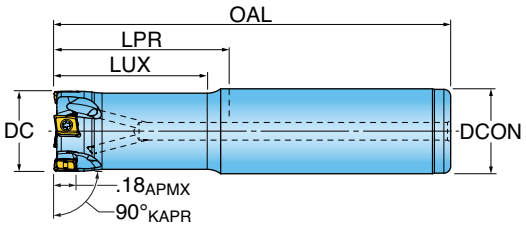
FEATURES & BENEFITS:

- Four comprehensive series of tangential end mills and face mills offer versatility, productivity, and economy.
- Insert sizes of 5, 8, 11, and 13 mm give operators a wide range of diameter, density, and length-of-cut combinations to work with.
- Dovetailed insert mounting is a prominent feature for increased edge-life and improved cutter reliability.
- High performance, ground-profile inserts are shaped to minimize lap lines when shouldering – available in both heavy and light geometries.
- Economical utility inserts for situations that do not require the performance benefits of ground-profile inserts.
- MaxSFeed series of inserts are capable of straight ramping and helical interpolation.
- Premium milling grades and the latest post-coating treatment technology.

SCAN/CLICK/TAP to view the new, **MaxSFeed** exchangeable milling/slotting heads

5 mm • Series 1EJ5A

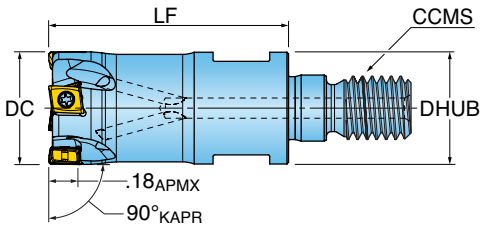
END MILL - CYLINDRICAL (5 MM INSERT)



Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Effective Teeth	DCON Shank Dia.	RPMX Ramp Angle Max.
INCH							
1EJ5A-05009S4R01	0.500	0.800	1.000	2.780	2	0.500	1.60
1EJ5A-05009S4R02	0.500	0.800	1.000	2.780	3	0.500	1.60
1EJ5A-07015S7R01	0.750	1.300	1.500	3.500	3	0.750	0.97
1EJ5A-07015S7R02	0.750	1.300	1.500	3.500	4	0.750	0.97
1EJ5A-10015S1R01	1.000	1.300	1.500	3.750	5	1.000	0.69
1EJ5A-10015S1R02	1.000	1.300	1.500	3.750	6	1.000	0.69

5 mm • Series 1EJ5A

END MILL - TOPON (5 MM INSERT)

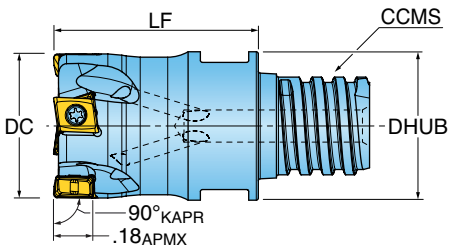


Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code Machine Side	DHUB Hub Dia.	RPMX Ramp Angle Max.
INCH						
1EJ5A-05010X4R01	0.500	1.00	2	TopOn 6 mm	0.465	1.60
1EJ5A-05010X4R02	0.500	1.00	3	TopOn 6 mm	0.465	1.60
1EJ5A-07015X6R01	0.750	1.50	3	TopOn 10 mm	0.700	0.97
1EJ5A-07015X6R02	0.750	1.50	4	TopOn 10 mm	0.700	0.97
1EJ5A-10015X7R01	1.000	1.50	5	TopOn 12 mm	0.820	0.70
1EJ5A-10015X7R02	1.000	1.50	6	TopOn 12 mm	0.820	0.70

Face Shoulder Channel Ramp Pocket Corkscrew Coolant

5 mm • Series 1EJ5A

END MILL - CHIPSURFER (5 MM INSERT)

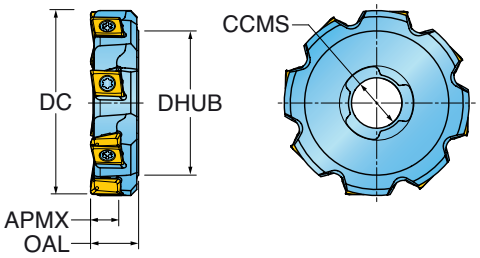


Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code Machine Side	DHUB Hub Dia.	RPMX Ramp Angle Max.
INCH						
1EJ5A-05006T8R01	0.500	0.65	2	ChipSurfer T08	0.485	1.60
1EJ5A-05006T8R02	0.500	0.65	3	ChipSurfer T08	0.485	1.60
1EJ5A-07010TSR01	0.750	1.00	3	ChipSurfer T12	0.725	0.97
1EJ5A-07010TSR02	0.750	1.00	4	ChipSurfer T12	0.725	0.97

Face Shoulder Channel Ramp Corkscrew

5 mm • Series 1EJ7A NEW

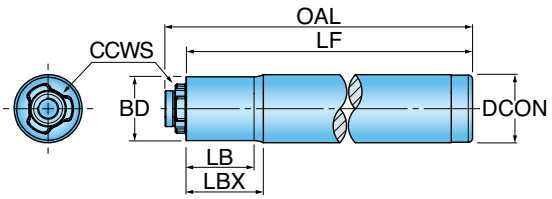
FACE MILL - MULTISURFER ADAPTION (5 MM INSERT)



Part Number	DC Cutting Dia.	OAL Overall Length	DHUB Hub Dia.	ZEFF Effective Teeth	APMX Depth of Cut Max.	CCMS Connection Code Machine Side	RPMX Ramp Angle Max.
INCH							
1EJ7A-10032LQR01	1.000	0.315	0.748	6	0.185	MultiSurfer LQ	0.6
1EJ7A-12032LQR01	1.250	0.315	0.945	8	0.185	MultiSurfer LQ	0.4
1EJ7A-15040LRR01	1.500	0.394	1.220	10	0.185	MultiSurfer LR	0.3

5 mm • Series S_L_SA NEW

STEEL SHANK, NECKED - MULTISURFER ADAPTION

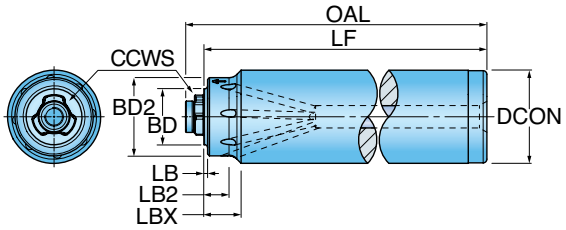


Part Number	CCWS Connection Code Workpiece Side	LB Body Length	LBX Body Length Max.	LF Functional Length	OAL Overall Length	BD Body Dia.	DCON Shank Dia.	BMC Body Material Code
INCH								
S062LPSA-05	MultiSurfer LP	0.600	0.650	4.000	4.170	0.510	0.625	Steel
S062LQSA-06	MultiSurfer LQ	0.700	0.720	4.000	4.190	0.590	0.625	Steel
S062LQSA-07	MultiSurfer LQ	0.780	0.800	5.000	5.190	0.590	0.625	Steel
S075LRSA-08	MultiSurfer LR	0.900	0.940	5.500	5.730	0.670	0.750	Steel
METRIC								
S016LPSA-16	MultiSurfer LP	13.00 mm	16.60 mm	100.00 mm	104.35 mm	13.00 mm	16.00 mm	Steel
S016LQSA-18	MultiSurfer LQ	16.00 mm	18.20 mm	100.00 mm	104.90 mm	15.00 mm	16.00 mm	Steel
S016LQSA-19	MultiSurfer LQ	16.00 mm	18.20 mm	130.00 mm	134.90 mm	15.00 mm	16.00 mm	Steel
S020LRSA-23	MultiSurfer LR	20.20 mm	23.80 mm	140.00 mm	146.00 mm	17.00 mm	20.00 mm	Steel

*Shank modifications can be made by cutting off the back to desired length or turning back the neck for more usable length.

5 mm • Series S_L_SA NEW

STEEL SHANK - MULTISURFER ADAPTION

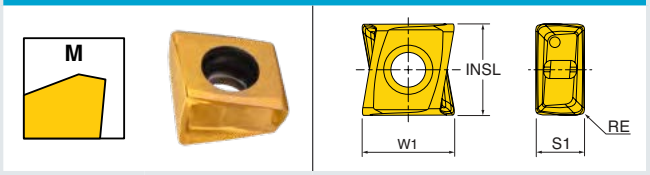


Part Number	CCWS Connection Code Workpiece Side	LB Body Length	LB2 Body Length 2	LBX Body Length Max.	LF Functional Length	OAL Overall Length	BD Body Dia.	BD2 Body Dia. 2	DCON Shank Dia.	CNSC Coolant Entry Style Code	CXSC Coolant Exit Style Code	BMC Body Material Code
INCH												
S075LPSA-03	MultiSurfer LP	0.030	0.300	0.380	4.250	4.420	0.510	0.625	0.750	1	1, 3	Steel
S100LQSA-03	MultiSurfer LQ	0.030	0.300	0.380	4.250	4.440	0.590	0.812	1.000	1	1, 3	Steel
S125LRSA-03	MultiSurfer LR	0.030	0.300	0.380	5.750	5.980	0.670	1.125	1.250	1	1, 3	Steel
METRIC												
S020LPSA-10	MultiSurfer LP	0.76 mm	7.60 mm	10.00 mm	100.00 mm	104.35 mm	13.00 mm	16.00 mm	20.00 mm	1	1, 3	Steel
S025LQSA-10	MultiSurfer LQ	0.76 mm	7.60 mm	10.00 mm	100.00 mm	104.90 mm	15.00 mm	21.00 mm	25.00 mm	1	1, 3	Steel
S032LRSA-10	MultiSurfer LR	0.76 mm	7.60 mm	10.00 mm	140.00 mm	146.00 mm	17.00 mm	28.00 mm	32.00 mm	1	1, 3	Steel

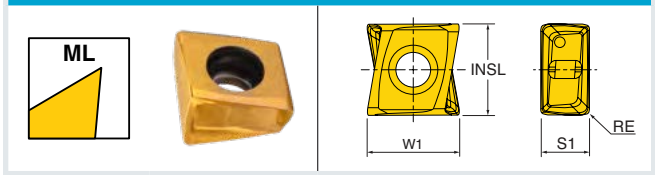
*Shank modifications can be made by cutting off the back to desired length or turning back the neck for more usable length.

5 mm • Inserts

CGM101R001-M



CGM101R001-ML



Part Number	Application	RE Corner Radius	INSL Insert Length	W1 Insert Width	S1 Thickness (Overall)	Grades		
						IN2510	IN2505	IN2530
CGM101R001-ML	General Purpose	0.015	0.197	0.197	0.106	•		•
CGX101R001-M	Utility	0.015	0.197	0.197	0.106	•	•	•

Insert screw tightening torque: 10–14 in*lbs.

5 mm • Hardware

Part Number	Insert Screw	Driver	Optional: Torque Driver Handle	Optional: Preset Torque Adapter	Optional: Torque Driver Bit
1EJ5A-05009S4R01	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-05009S4R02	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-07015S7R01	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-07015S7R02	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-10015S1R01	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-10015S1R02	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-05010X4R01	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-05010X4R02	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-07015X6R01	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-07015X6R02	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-10015X7R01	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-10015X7R02	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-05006T8R01	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-05006T8R02	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-07010TSR01	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ5A-07010TSR02	SM18-041-00	DS-TP06S-NEU	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ7A-10032LQR01	SM18-049-00	TD 6P	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ7A-12032LQR01	SM18-049-00	TD 6P	DS-A00-.25-S	DT-11-.25	DS-TP06B
1EJ7A-15040LRR01	SM18-049-00	TD 6P	DS-A00-.25-S	DT-11-.25	DS-TP06B

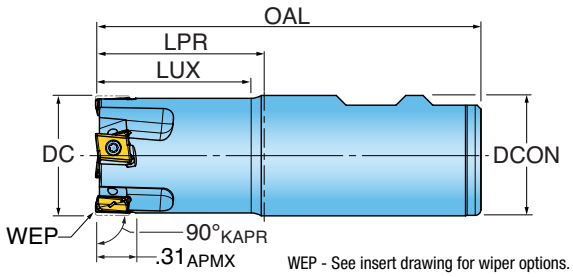
5 mm (MultiSurfer) • Hardware NEW

Part Number	Insert Screw	Driver Handle	Torx Bit
S062LPSA-05	TS40T098/HG-P	DS-A00T	DS-TP156B
S062LQSA-06	TS50T110/HG-P	DS-A00T	DS-TP206B
S062LQSA-07	TS50T110/HG-P	DS-A00T	DS-TP206B
S075LRSA-08	TS60T130/HG-P	DS-A00T	DS-TP206B
S016LPSA-16	TS40T098/HG-P	DS-A00T	DS-TP156B
S016LQSA-18	TS50T110/HG-P	DS-A00T	DS-TP206B
S016LQSA-19	TS50T110/HG-P	DS-A00T	DS-TP206B
S020LRSA-23	TS60T130/HG-P	DS-A00T	DS-TP206B
S075LPSA-03	TS40T098/HG-P	DS-A00T	DS-TP156B
S100LQSA-03	TS50T110/HG-P	DS-A00T	DS-TP206B
S125LRSA-03	TS60T130/HG-P	DS-A00T	DS-TP206B
S020LPSA-10	TS40T098/HG-P	DS-A00T	DS-TP156B
S025LQSA-10	TS50T110/HG-P	DS-A00T	DS-TP206B
S032LRSA-10	TS60T130/HG-P	DS-A00T	DS-TP206B

Face | Shoulder | Channel | Ramp | Pocket | Corkscrew | Coolant

8 mm • Series 1EJ5B NEW

END MILL - WELDON (8 MM INSERT)



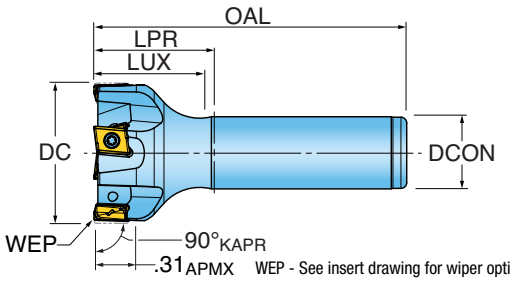
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Effective Teeth	DCON Shank Dia.	RPMX Ramp Angle Max.
INCH							
1EJ5B-0701284R01	0.750	1.208	1.250	3.500	2	0.750	2.18
1EJ5B-0701280R01	0.750	0.968	1.250	3.500	2	1.000	2.18
1EJ5B-0701280R02	0.750	0.968	1.250	3.500	3	1.000	2.18
1EJ5B-0702280R01	0.750	1.968	2.250	4.500	2	1.000	2.18
1EJ5B-0703280R01	0.750	2.968	3.250	5.500	2	1.000	2.18
1EJ5B-1001780R01	1.000	1.624	1.750	4.000	3	1.000	1.41
1EJ5B-1001780R02	1.000	1.624	1.750	4.000	4	1.000	1.41
1EJ5B-1001784R01	1.000	1.750	1.750	3.750	3	0.750	1.41
1EJ5B-1003280R01	1.000	3.124	3.250	5.500	3	1.000	1.41
1EJ5B-1201781R01	1.250	1.615	1.750	4.000	3	1.250	1.05
1EJ5B-1201781R02	1.250	1.615	1.750	4.000	4	1.250	1.05
1EJ5B-1201781R03	1.250	1.615	1.750	4.000	5	1.250	1.05
1EJ5B-1201784R01	1.250	1.750	1.750	4.000	3	0.750	1.05
1EJ5B-1203281R01	1.250	3.115	3.250	5.500	4	1.250	1.05
1EJ5B-1501781R01	1.500	1.750	1.750	4.000	4	1.250	0.84
1EJ5B-1501781R02	1.500	1.750	1.750	4.000	5	1.250	0.84
1EJ5B-1501781R03	1.500	1.750	1.750	4.000	6	1.250	0.84
1EJ5B-1502281R01	1.500	2.250	2.250	4.500	5	1.250	0.84

Face | Shoulder | Channel | Ramp | Pocket | Corkscrew | Coolant

8 mm • Series 1EJ5B NEW

END MILL - CYLINDRICAL (8 MM INSERT)



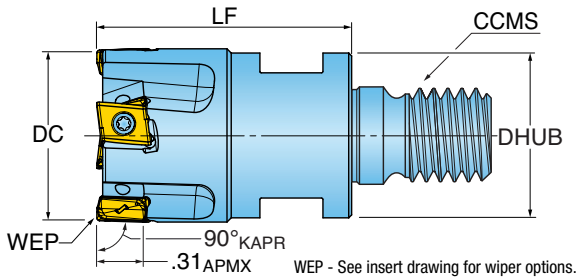
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Effective Teeth	DCON Shank Dia.	RPMX Ramp Angle Max.
INCH							
1EJ5B-10012S7R01	1.000	1.250	1.250	3.250	3	0.750	1.41
1EJ5B-15012S7R01	1.500	1.250	1.250	3.250	4	0.750	0.84
1EJ5B-20012S7R01	2.000	1.250	1.250	3.250	5	0.750	0.60

Face | Shoulder | Channel | Ramp | Pocket | Corkscrew | Coolant

8 mm • Series 1EJ5B NEW

END MILL - TOPON (8 MM INSERT)



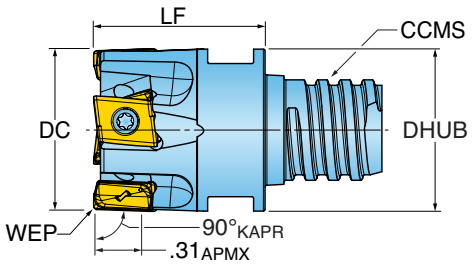
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code Machine Side	DHUB Hub Dia.	RPMX Ramp Angle Max.
INCH						
1EJ5B-07015X6R01	0.750	1.500	2	TopOn M10	0.725	2.18
1EJ5B-07015X6R02	0.750	1.500	3	TopOn M10	0.725	2.18
1EJ5B-10015X7R01	1.000	1.500	3	TopOn M12	0.817	1.41
1EJ5B-10015X7R02	1.000	1.500	4	TopOn M12	0.817	1.41
1EJ5B-12017X8R01	1.250	1.750	3	TopOn M16	1.320	1.05
1EJ5B-12017X8R02	1.250	1.750	4	TopOn M16	1.320	1.05
1EJ5B-12017X8R03	1.250	1.750	5	TopOn M16	1.320	1.05
1EJ5B-15015X9R01	1.500	1.750	4	TopOn M20	1.417	0.84
1EJ5B-15015X9R02	1.500	1.750	5	TopOn M20	1.417	0.84
1EJ5B-15015X9R03	1.500	1.750	6	TopOn M20	1.417	0.84

Face | Shoulder | Channel | Ramp | Pocket | Corkscrew | Coolant

8 mm • Series 1EJ5B NEW

END MILL - CHIPSURFER (8 MM INSERT)



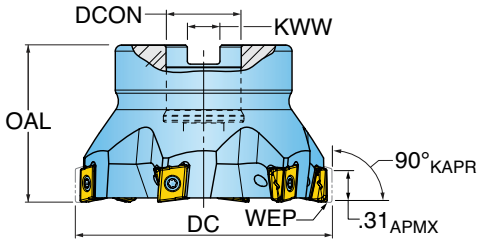
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code Machine Side	DHUB Hub Dia.	RPMX Ramp Angle Max.
INCH						
1EJ5B-07010TSR01	0.750	1.000	2	ChipSurfer T12	0.725	2.18
1EJ5B-07010TSR02	0.750	1.000	3	ChipSurfer T12	0.725	2.18
1EJ5B-10012TUR01	1.000	1.000	3	ChipSurfer T15	0.945	1.41
1EJ5B-10012TUR02	1.000	1.000	4	ChipSurfer T15	0.945	1.41

Face | Shoulder | Channel | Ramp | Pocket | Corkscrew | Coolant

8 mm • Series EJ5B NEW

FACE MILL (8 MM INSERT)

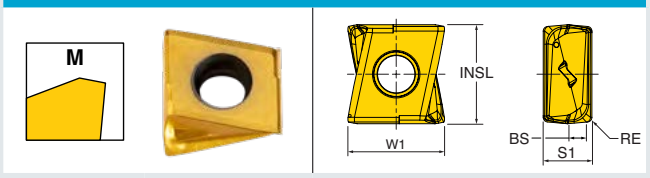


WEP - See insert drawing for wiper options.

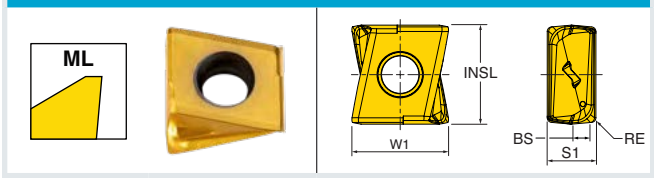
Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Effective Teeth	DCON Bore Dia.	KWW Keyway	RPMX Ramp Angle Max.
INCH						
EJ5B-01R01	1.500	1.570	6	0.500	0.250	0.84
EJ6B-01R01	1.500	1.570	5	0.500	0.250	0.84
EJ5B-02R01	2.000	1.570	10	0.750	0.312	0.60
EJ5B-02R02	2.000	1.570	7	0.750	0.312	0.60
EJ6B-02R01	2.000	1.570	5	0.750	0.312	0.60
EJ5B-02R03	2.500	1.570	9	0.750	0.312	0.47
EJ6B-02R02	2.500	1.570	6	0.750	0.312	0.47
EJ5B-03R01	3.000	1.750	14	1.000	0.375	0.38
EJ5B-03R02	3.000	1.750	10	1.000	0.375	0.38
EJ6B-03R01	3.000	1.750	7	1.000	0.375	0.38

8 mm • Inserts NEW

CGM212R00_-M



CGM212R00_-ML



Part Number	Application	RE Corner Radius	BS Wiper Length	INSL Insert Length	W1 Insert Width	S1 Thickness	Grades										
							IN4040	IN2540	IN2510	IN4015	IN2515	IN4005	IN2505	IN4030	IN2530	IN4035	IN2535
CGM212R001-M	General Purpose	0.015	0.069	0.345	0.336	0.169	•	•	•	•	•	•	•	•	•		
CGM212R001-ML	General Purpose - Keen Edge	0.015	0.069	0.345	0.336	0.169	•	•	•	•	•	•	•	•	•	•	•
CGM212R002-M	General Purpose	0.031	0.053	0.345	0.333	0.169	•	•	•	•	•	•	•	•	•		
CGM212R002-ML	General Purpose - Keen Edge	0.031	0.053	0.345	0.332	0.169	•	•	•	•	•	•	•	•	•	•	•
CGM212R003-M	General Purpose	0.062	0.022	0.345	0.325	0.169	•	•	•	•	•	•	•	•	•		
CGM212R003-ML	General Purpose - Keen Edge	0.062	0.022	0.345	0.324	0.169	•	•	•	•	•	•	•	•	•	•	•

Insert screw tightening torque: 14–18 in*lbs.

8 mm • Hardware NEW

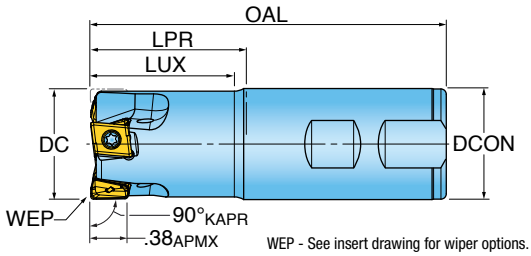
Part Number	Insert Screw	Driver	Optional: Torque Driver Handle	Optional: Preset Torque Adapter	Optional: Torque Driver Bit
1EJ5B-0701284R01	SM30-074-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-0701280R01	SM30-074-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-0701280R02	SM30-074-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-0702280R01	SM30-074-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-0703280R01	SM30-074-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1001780R01	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1001780R02	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1001784R01	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1003280R01	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1201781R01	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1201781R02	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1201781R03	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1201784R01	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1203281R01	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1501781R01	SM30-082-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1501781R02	SM30-082-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1501781R03	SM30-082-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-1502281R01	SM30-082-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-10012S7R01	SM30-082-81	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-15012S7R01	SM30-082-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-20012S7R01	SM30-082-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-07015X6R01	SM30-074-21	DS-0020	DS-A00-.25-S	DT-18-.25	DS-0021

8 mm • Hardware (continued) NEW

				Optional			
Part Number	 Insert Screw	 Driver	 Retention Bolt	 Coolant Bolt	 Torque Driver Handle	 Preset Torque Adapter	 Torque Driver Bit
1EJ5B-07015X6R02	SM30-074-21	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-10015X7R01	SM30-082-81	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-10015X7R02	SM30-082-81	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-12017X8R01	SM30-082-81	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-12017X8R02	SM30-082-81	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-12017X8R03	SM30-082-81	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-15015X9R01	SM30-082-21	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-15015X9R02	SM30-082-21	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-15015X9R03	SM30-082-21	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-07010TSR01	SM30-074-21	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-07010TSR02	SM30-074-21	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-10012TUR01	SM30-082-81	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
1EJ5B-10012TUR02	SM30-082-81	DS-0020	-	-	DS-A00-.25-S	DT-18-.25	DS-0021
EJ5B-01R01	SM30-082-21	DS-0020	SD04-47	-	DS-A00-.25-S	DT-18-.25	DS-0021
EJ6B-01R01	SM30-082-21	DS-0020	SD04-47	-	DS-A00-.25-S	DT-18-.25	DS-0021
EJ5B-02R01	SM30-082-21	DS-0020	SD06-46	SD06-89	DS-A00-.25-S	DT-18-.25	DS-0021
EJ5B-02R02	SM30-082-21	DS-0020	SD06-46	SD06-89	DS-A00-.25-S	DT-18-.25	DS-0021
EJ6B-02R01	SM30-082-21	DS-0020	SD06-46	SD06-89	DS-A00-.25-S	DT-18-.25	DS-0021
EJ5B-02R03	SM30-082-21	DS-0020	SD06-46	SD06-89	DS-A00-.25-S	DT-18-.25	DS-0021
EJ6B-02R02	SM30-082-21	DS-0020	SD06-46	SD06-89	DS-A00-.25-S	DT-18-.25	DS-0021
EJ5B-03R01	SM30-082-21	DS-0020	SD08-46	SD08-92	DS-A00-.25-S	DT-18-.25	DS-0021
EJ5B-03R02	SM30-082-21	DS-0020	SD08-46	SD08-92	DS-A00-.25-S	DT-18-.25	DS-0021
EJ6B-03R01	SM30-082-21	DS-0020	SD08-46	SD08-92	DS-A00-.25-S	DT-18-.25	DS-0021

11 mm • Series 1EJ5C

END MILL - WELDON (11 MM INSERT)

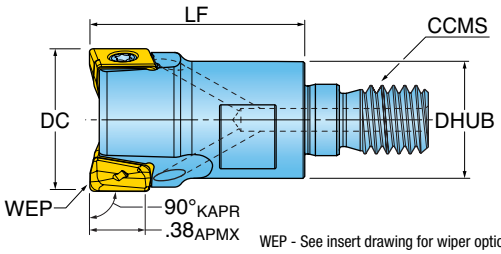


WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Effective Teeth	DCON Shank Dia.	RPMX Ramp Angle Max.
INCH							
1EJ5C-1001780R01	1.000	1.550	1.750	4.000	2	1.000	1.99
1EJ5C-1001784R01	1.000	1.750	1.750	3.750	2	0.750	1.99
1EJ5C-1003780R01	1.000	3.550	3.750	6.000	2	1.000	1.99
1EJ5C-1201780R01	1.250	1.750	1.750	4.000	3	1.000	1.41
1EJ5C-1201781R01	1.250	1.550	1.750	4.000	3	1.250	1.41
1EJ5C-1204281R01	1.250	4.050	4.250	6.500	3	1.250	1.41
1EJ5C-1501781R01	1.500	1.550	1.750	4.000	4	1.250	1.08
1EJ5C-1501781R02	1.500	1.550	1.750	4.000	3	1.250	1.08
1EJ5C-1504281R02	1.500	4.050	4.250	6.500	3	1.250	1.08

11 mm • Series 1EJ5C

END MILL - TOPON (11 MM INSERT)

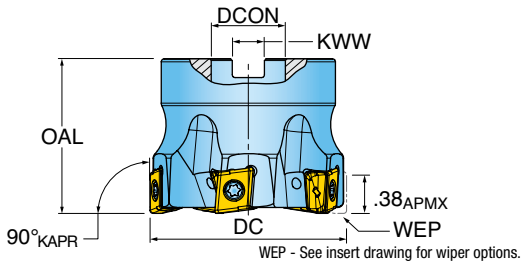


WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code Machine Side	DHUB Hub Dia.	RPMX Ramp Angle Max.
INCH						
1EJ5C-10015X7R01	1.000	1.500	2	TopOn 12 mm	0.820	1.99
1EJ5C-12017X8R01	1.250	1.750	3	TopOn 16 mm	1.135	1.41

11 mm • Series EJ5C, EJ6C

FACE MILL (11 MM INSERT)

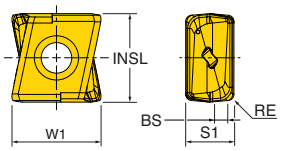


WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Effective Teeth	DCON Bore Dia.	KWW Keyway	RPMX Ramp Angle Max.
INCH						
EJ5C-01R01	1.500	1.570	5	0.500	0.250	1.08
EJ6C-01R01	1.500	1.570	4	0.500	0.250	1.08
EJ5C-02R01	2.000	1.570	6	0.750	0.312	0.76
EJ6C-02R01	2.000	1.570	5	0.750	0.312	0.76
EJ5C-02R02	2.500	1.570	7	0.750	0.312	0.58
EJ6C-02R02	2.500	1.570	6	0.750	0.312	0.58
EJ5C-03R01	3.000	2.375	9	1.000	0.375	0.47
EJ6C-03R01	3.000	2.375	7	1.000	0.375	0.47
EJ5C-04R01	4.000	2.375	13	1.500	0.625	0.34
EJ6C-04R01	4.000	2.375	9	1.500	0.625	0.34

11 mm • Inserts

CGM313R00_-M



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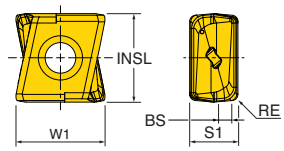


Part Number	Application	RE Corner Radius	BS Wiper Length	INSL Insert Length	W1 Insert Width	S1 Thickness	Grades							
							IN4015	IN2515	IN4005	IN2505	IN4030	IN2530	IN4035	IN2535
CGM313R001-M	General Purpose	0.031	0.079	0.433	0.436	0.236	•	•	•	•	•	•		
CGM313R001-ML	General Purpose	0.031	0.079	0.433	0.436	0.236	•	•	•	•	•	•	•	•
CGM313R002-M	General Purpose	0.062	0.047	0.433	0.436	0.236	•	•	•	•	•	•		
CGM313R002-ML	General Purpose	0.062	0.047	0.433	0.436	0.236	•	•	•	•	•	•	•	•
CGX313R001-M	Utility	0.031	0.079	0.433	0.436	0.236	•	•	•	•	•	•		
CGX313R002-M	Utility	0.062	0.047	0.433	0.436	0.236	•	•	•	•	•	•		

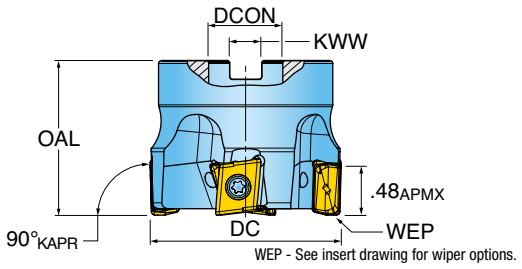
Insert screw tightening torque: 25–30 in*lbs.

11 mm • Hardware

				Optional			
Part Number	 Insert Screw	 Driver Handle	 Driver Bit	 Retention Bolt	 Torque Driver Handle	 Preset Torque Adapter	 Torque Driver Bit
1EJ5C-1001780R01	SM35-095-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-1001784R01	SM35-095-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-1003780R01	SM35-095-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-1201780R01	SM35-107-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-1201781R01	SM35-107-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-1204281R01	SM35-107-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-1501781R01	SM35-107-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-1501781R02	SM35-107-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-1504281R02	SM35-107-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-10015X7R01	SM35-095-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
1EJ5C-12017X8R01	SM35-107-H0	DS-A00T	DS-T156B	-	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5C-01R01	SM35-107-H0	DS-A00T	DS-T156B	SD04-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6C-01R01	SM35-107-H0	DS-A00T	DS-T156B	SD04-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5C-02R01	SM35-107-H0	DS-A00T	DS-T156B	SD06-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6C-02R01	SM35-107-H0	DS-A00T	DS-T156B	SD06-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5C-02R02	SM35-107-H0	DS-A00T	DS-T156B	SD06-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6C-02R02	SM35-107-H0	DS-A00T	DS-T156B	SD06-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5C-03R01	SM35-107-H0	DS-A00T	DS-T156B	SD08-43	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6C-03R01	SM35-107-H0	DS-A00T	DS-T156B	SD08-43	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5C-04R01	SM35-107-H0	DS-A00T	DS-T156B	SD12-89	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6C-04R01	SM35-107-H0	DS-A00T	DS-T156B	SD12-89	DS-A00-.25-T	DT-35-.25	DS-T15B

13 mm • Series EJ5D, EJ6D

FACE MILL (13 MM INSERT)

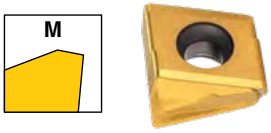


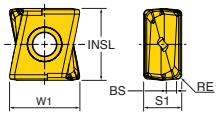
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Effective Teeth	DCON Bore Dia.	KWW Keyway	RPMX Ramp Angle Max.
INCH						
EJ5D-02R01	2.000	1.570	5	0.750	0.312	0.98
EJ6D-02R01	2.000	1.570	4	0.750	0.312	0.98
EJ5D-02R02	2.500	1.570	6	0.750	0.312	0.75
EJ5D-02R03	2.500	1.570	6	1.000	0.375	0.75
EJ6D-02R02	2.500	1.570	5	0.750	0.312	0.75
EJ5D-03R01	3.000	2.000	7	1.000	0.375	0.60
EJ6D-03R01	3.000	2.000	5	1.000	0.375	0.60
EJ5D-04R01	4.000	2.375	9	1.500	0.625	0.44
EJ6D-04R01	4.000	2.375	7	1.250	0.500	0.44
EJ6D-04R02	4.000	2.375	7	1.500	0.625	0.44
EJ6D-05R01	5.000	2.500	11	1.500	0.625	0.34
EJ6D-06R01	6.000	2.500	13	1.500	0.625	0.28

13 mm • Inserts

CGM324R00_-M





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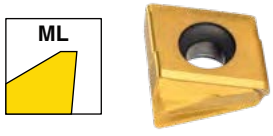
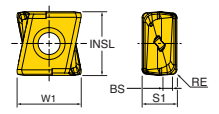




Part Number	Application	RE Corner Radius	BS Wiper Length	INSL Insert Length	W1 Insert Width	S1 Thickness	Grades							
							IN4015	IN2515	IN4005	IN2505	IN4030	IN2530	IN4035	IN2535
CGM324R001-M	General Purpose	0.031	0.099	0.531	0.518	0.281	•	•	•	•	•	•		
CGM324R001-ML	General Purpose	0.031	0.099	0.531	0.518	0.281	•	•	•	•	•	•	•	•
CGM324R002-M	General Purpose	0.062	0.067	0.531	0.518	0.281	•	•	•	•	•	•		
CGM324R002-ML	General Purpose	0.062	0.067	0.531	0.518	0.281	•	•	•	•	•	•	•	•
CGM324R004-M	General Purpose	0.125	0.005	0.531	0.518	0.281	•	•	•	•	•	•		
CGX324R001-M	Utility	0.031	0.099	0.531	0.518	0.281	•	•	•	•	•	•		
CGX324R002-M	Utility	0.062	0.067	0.531	0.518	0.281	•	•	•	•	•	•		

Insert screw tightening torque: 30–35 in*lbs.

13 mm • Hardware

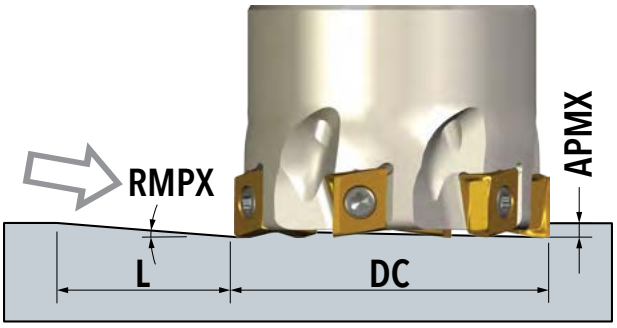
				Optional			
Part Number	 Insert Screw	 Driver Handle	 Driver Bit	 Retention Bolt	 Torque Driver Handle	 Preset Torque Adapter	 Torque Driver Bit
EJ5D-02R01	SM40-123-H0	DS-A00T	DS-T156B	SD06-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6D-02R01	SM40-123-H0	DS-A00T	DS-T156B	SD06-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5D-02R02	SM40-123-H0	DS-A00T	DS-T156B	SD06-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5D-02R03	SM40-123-H0	DS-A00T	DS-T156B	SD08-46	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6D-02R02	SM40-123-H0	DS-A00T	DS-T156B	SD06-47	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5D-03R01	SM40-123-H0	DS-A00T	DS-T156B	SD08-46	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6D-03R01	SM40-123-H0	DS-A00T	DS-T156B	SD08-46	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ5D-04R01	SM40-123-H0	DS-A00T	DS-T156B	SD12-89	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6D-04R01	SM40-123-H0	DS-A00T	DS-T156B	SD10-49	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6D-04R02	SM40-123-H0	DS-A00T	DS-T156B	SD12-89	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6D-05R01	SM40-123-H0	DS-A00T	DS-T156B	SD12-89	DS-A00-.25-T	DT-35-.25	DS-T15B
EJ6D-06R01	SM40-123-H0	DS-A00T	DS-T156B	SD12-89	DS-A00-.25-T	DT-35-.25	DS-T15B

5 mm • Operating Guidelines

Materials				Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Harder «---» Tougher			Coolant	Geometry	
ISO	Material Group #VDI 3323	Type	Examples			IN2510	IN2505	IN2530		M	ML
P	1–5	Non-alloy steel	1018, A36, 1045, A572, 1070	400–850	.0015–.0030	–	1	2	No	2	1
	6–9	Low-alloy steel	4140, 4340, P20, 8620, 300M	350–500	.0015–.0030	–	1	2	No	2	1
	10, 11	High-alloy steel	H13, A2, D2, M2, T1	250–500	.0015–.0030	–	1	2	No	1	2
M	12, 13	Stainless steel (ferritic & martensitic)	410, 416, 440	350–550	.0015–.0030	–	2	1	Yes	2	1
	14	Stainless steel (austenitic)	303, 304, 316, 15-5, 17-4	300–500	.0015–.0030	–	2	1	May not be required at high speeds	2	1
K	15, 16	Gray cast iron	CLS. 20, 30, 45	500–700	.0015–.0030	1	2	3	No	2	1
	17, 18	Nodular cast iron	60-40-18, 100-70-03	400–650	.0015–.0030	2	1	3	No	1	2
N	21–30	Aluminum	7075, 6061	1000+	.0015–.0030	1	–	2	–	–	1
S	31–35	High-temp alloys	Inconel, Hastelloy, Monel	60–130	.0015–.0030	–	2	1	Yes	2	1
	36, 37	Titanium alloys	6Al-4V, 5Al-5Mo-5V-3Cr	65–150	.0015–.0030	–	2	1	Yes	2	1
H	38, 39	Hardened steel >48	A2, O1, D2	150–400	.0015–.0030	–	1	2	No	1	–

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.

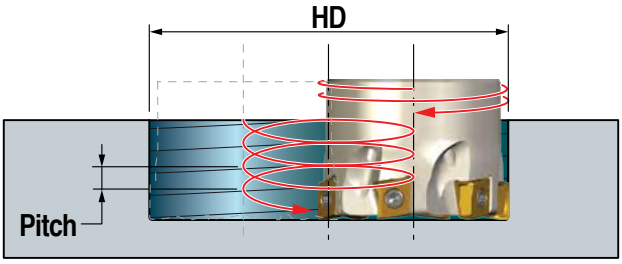
5 mm • Straight Ramping



DCX Cutting Dia. Max.	RMPX Ramp Angle Max.	L*	APMX Depth of Cut Max.
0.500	1.60	6.620	0.185
0.750	0.97	10.930	0.185
1.000	0.69	15.360	0.185

* L in this table is the length the cutter travels to reach the maximum depth of cut **(.185")** while traveling at the maximum ramp angle listed for the cutter.

5 mm • Helical Ramping



PITCH

The maximum pitch is determined to not exceed the maximum depth of cut (APMX) and to not exceed the maximum ramp angle (RMPX).

DCX Cutting Dia. Max.	HD Hole Dia. Min.	HD Hole Dia. Max.	HD Hole Dia. Max. w/o Cusp	Max. Pitch Per Revolution
0.500	0.808	1.000	0.970	0.037
0.750	1.306	1.500	1.470	0.034
1.000	1.806	2.000	1.970	0.032

EXAMPLE

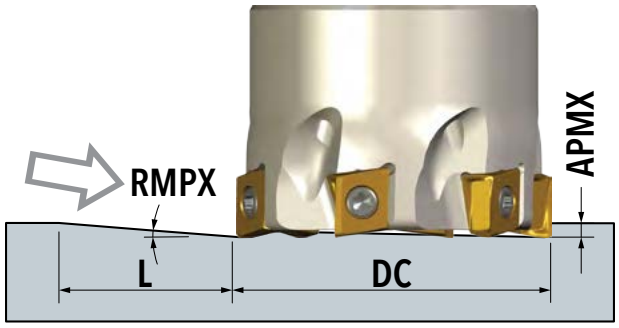
» The minimum hole diameter that the **.500"** diameter cutter can interpolate from solid is **.808"** (leaving a raised cusp).

» The maximum hole diameter that the **.500"** diameter cutter can interpolate from solid is **1.000"**.

» The maximum hole diameter that the **.500"** diameter cutter can interpolate from solid while leaving a flat-bottom is **.970"** (leaving no raised cusp).

» The maximum pitch for this series matches the insert's radial wiper length of **.040"**.

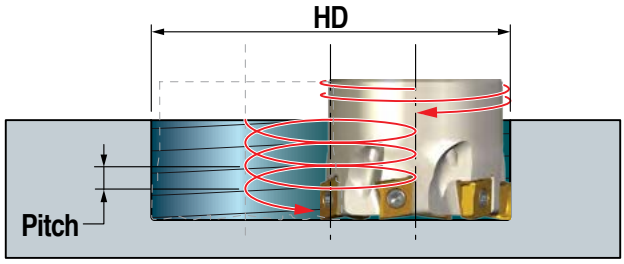
5 mm (MultiSurfer) • Straight Ramping NEW



DCX Cutting Dia. Max.	RMPX Ramp Angle Max.	L*	APMX Depth of Cut Max.
1.000	0.6	17.300	0.185
1.250	0.4	26.000	0.185
1.500	0.3	34.600	0.185

* L in this table is the length the cutter travels to reach the maximum depth of cut **(.185")** while traveling at the maximum ramp angle listed for the cutter.

5 mm (MultiSurfer) • Helical Ramping NEW



PITCH

The maximum pitch is determined to not exceed the maximum depth of cut (APMX) and to not exceed the maximum ramp angle (RMPX).

DCX Cutting Dia. Max.	HD Hole Dia. Min.	HD Hole Dia. Max.	HD Hole Dia. Max. w/o Cusp	Max. Pitch Per Revolution
1.000	1.90	-	0.970	.0010
-	-	2.00	-	.0011
1.250	2.40	-	1.470	.0214
-	-	2.50	-	.0233
1.500	2.90	-	1.970	.0196
-	-	3.00	-	.0210

EXAMPLE

» The minimum hole diameter that the **1.000"** diameter cutter can interpolate from solid is **1.90"** (leaving a raised cusp).

» The maximum hole diameter that the **1.000"** diameter cutter can interpolate from solid is **2.00"**.

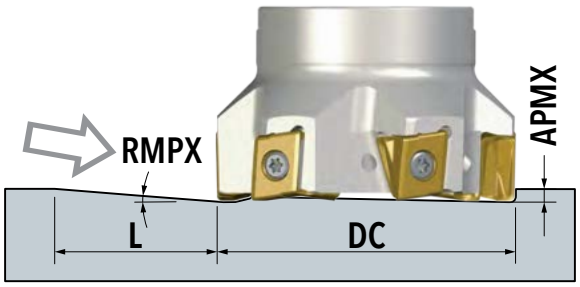
» The maximum hole diameter that the **1.000"** diameter cutter can interpolate from solid while leaving a flat-bottom is **.970"** (leaving no raised cusp).

8 mm • Operating Guidelines NEW

Materials				Vc Cutting Speed SFM	fz* Feed/ Tooth (inch)	Harder «----------» Tougher							Coolant	Geometry	
ISO	Material Group #VDI 3323	Type	Examples			IN2510	IN2515	IN4005	IN2505	IN4030	IN2530	IN2535		M	ML
P	1–5	Non-alloy steel	1018, A36, 1045, A572, 1070	400–850	.004–.010	–	–	2	1	–	3	–	No	1	2
	6–9	Low-alloy steel	4140, 4340, P20, 8620, 300M	300–600	.004–.008	–	–	2	1	–	3	–	No	1	2
	10, 11	High-alloy steel	H13, A2, D2, M2, T1	300–600	.004–.008	–	–	2	1	–	3	–	No	1	2
M	12, 13	Stainless steel (ferritic & martensitic)	410, 416, 440	350–700	.004–.010	–	–	–	–	3	2	1	Yes	2	1
	14	Stainless steel (austenitic)	303, 304, 316, 15-5, 17-4	300–600	.004–.010	–	–	–	–	3	2	1	May not be required at high speeds	2	1
K	15, 16	Gray cast iron	CLS. 20, 30, 45	400–750	.004–.010	1	2	3	–	–	–	–	No	2	1
	17, 18	Nodular cast iron	60-40-18, 100-70-03	300–650	.004–.010	–	1	3	2	–	–	–	No	1	2
N	21–30	Aluminum	7075, 6061	1000+	.004–.015	–	1	–	2	–	–	–	Yes	–	1
S	31–35	High-temp alloys	Inconel, Hastelloy, Nimonic, Monel	75–150	.004–.008	–	–	–	3	–	2	1	Yes	2	1
	36, 37	Titanium alloys	6Al-4V, 5Al-5Mo-5V-3Cr	75–200	.004–.008	–	–	–	3	–	2	1	Yes	–	1
H	38, 39	Hardened steel >48	A2, O1, D2	150–400	.002–.004	–	–	–	1	–	2	–	No	1	–

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.

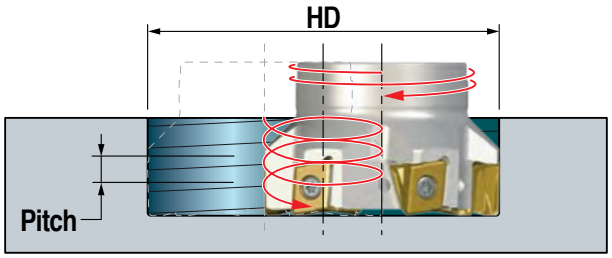
8 mm • Straight Ramping NEW



DCX Cutting Dia. Max.	RMPX Ramp Angle Max.	L*	APMX Depth of Cut Max.
0.750	2.18	8.310	0.317
1.000	1.41	12.880	0.317
1.250	1.05	17.840	0.317
1.500	0.84	21.620	0.317
2.000	0.60	30.270	0.317
2.500	0.47	38.645	0.317
3.000	0.38	47.795	0.317

* L in this table is the length the cutter travels to reach the maximum depth of cut **(.317")** while traveling at the maximum ramp angle listed for the cutter.

8 mm • Helical Ramping NEW



PITCH

The maximum pitch is determined to not exceed the maximum depth of cut (APMX) and to not exceed the maximum ramp angle (RMPX).

DCX Cutting Dia. Max.	HD Hole Dia. Min.	HD Hole Dia. Max.	HD Hole Dia. Max. w/o Cusp	Max. Pitch Per Revolution
0.750	1.176	1.500	1.468	0.075
1.000	1.676	2.000	1.968	0.064
1.250	2.176	2.250	2.468	0.060
1.500	2.676	3.000	2.968	0.057
2.000	3.676	4.000	3.968	0.054
2.500	4.676	5.000	4.968	0.053
3.000	5.830	6.000	5.968	0.051

All ramping data is calculated with CGM212R001-M inserts installed.

EXAMPLE

» The minimum hole diameter that the **.750"** diameter cutter can interpolate from solid is **1.176"** (leaving a raised cusp).

» The maximum hole diameter that the **.750"** diameter cutter can interpolate from solid is **1.500"**.

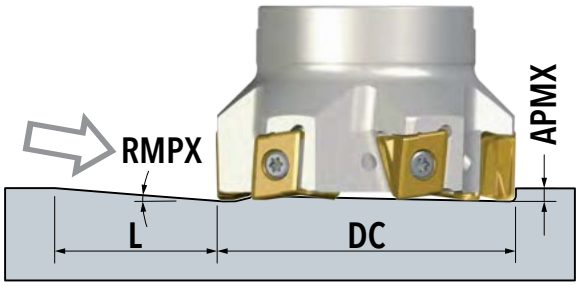
» The maximum hole diameter that the **.750"** diameter cutter can interpolate from solid while leaving a flat-bottom is **1.468"** (leaving no raised cusp).

11 mm • Operating Guidelines

Materials				Vc Cutting Speed SFM	fz* Feed/ Tooth (inch)	Harder «----------» Tougher							Coolant	Geometry	
ISO	Material Group #VDI 3323	Type	Examples			IN4015	IN2515	IN4005	IN2505	IN4030	IN2530	IN2535		M	ML
P	1–5	Non-alloy steel	1018, A36, 1045, A572, 1070	400–850	.005–.012	–	–	2	1	–	3	–	No	1	2
	6–9	Low-alloy steel	4140, 4340, P20, 8620, 300M	300–600	.005–.010	–	–	2	1	–	3	–	No	1	2
	10, 11	High-alloy steel	H13, A2, D2, M2, T1	300–600	.005–.010	–	–	2	1	–	3	–	No	1	2
M	12, 13	Stainless steel (ferritic & martensitic)	410, 416, 440	350–700	.005–.012	–	–	–	–	3	2	1	Yes	2	1
	14	Stainless steel (austenitic)	303, 304, 316, 15-5, 17-4	300–600	.005–.012	–	–	–	–	3	2	1	May not be required at high speeds	2	1
K	15, 16	Gray cast iron	CLS. 20, 30, 45	400–750	.005–.012	1	2	3	–	–	–	–	No	2	1
	17, 18	Nodular cast iron	60-40-18, 100-70-03	300–650	.005–.012	–	1	3	2	–	–	–	No	1	2
N	21–30	Aluminum	7075, 6061	1000+	.004–.015	–	1	–	2	–	–	–	Yes	–	1
S	31–35	High-temp alloys	Inconel, Hastelloy, Monel	75–150	.004–.008	–	–	–	3	–	2	1	Yes	2	1
	36, 37	Titanium alloys	6Al-4V, 5Al-5Mo-5V-3Cr	75–200	.004–.008	–	–	–	3	–	2	1	Yes	–	1
H	38, 39	Hardened steel >48	A2, O1, D2	150–400	.002–.004	–	–	–	1	–	2	–	No	1	–

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.

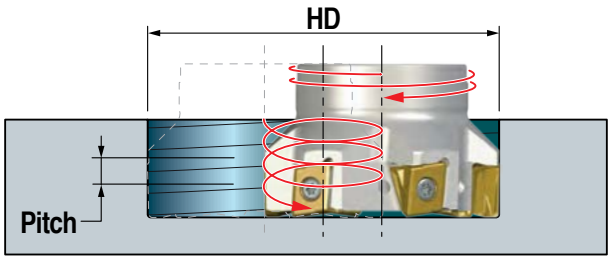
11 mm • Straight Ramping



DCX Cutting Dia. Max.	RMPX Ramp Angle Max.	L*	APMX Depth of Cut Max.
1.000	1.99	11.080	0.385
1.250	1.41	15.640	0.385
1.500	1.08	20.420	0.385
2.000	0.76	29.020	0.385
2.500	0.58	38.030	0.385
3.000	0.47	46.930	0.385
4.000	0.34	64.880	0.385

* L in this table is the length the cutter travels to reach the maximum depth of cut **(.385")** while traveling at the maximum ramp angle listed for the cutter.

11 mm • Helical Ramping



PITCH

The maximum pitch is determined to not exceed the maximum depth of cut (APMX) and to not exceed the maximum ramp angle (RMPX).

DCX Cutting Dia. Max.	HD Hole Dia. Min.	HD Hole Dia. Max.	HD Hole Dia. Min. w/o Cusp	HD Hole Dia. Max. w/o Cusp	Max. Pitch Per Revolution
1.000	1.568	2.000	1.780	1.938	0.093
1.250	2.066	2.500	2.280	2.438	0.082
1.500	2.566	3.000	2.780	2.938	0.076
2.000	3.566	4.000	3.780	3.938	0.071
2.500	4.566	5.000	4.780	4.938	0.068
3.000	5.566	6.000	5.780	5.938	0.066
4.000	7.566	8.000	7.780	7.938	0.063

All ramping data is calculated with CGM313R001-M inserts installed.

EXAMPLE

» The minimum hole diameter that the **1.000"** diameter cutter can interpolate from solid is **1.568"** (leaving a raised cusp).

» The maximum hole diameter that the **1.000"** diameter cutter can interpolate from solid is **2.000"**.

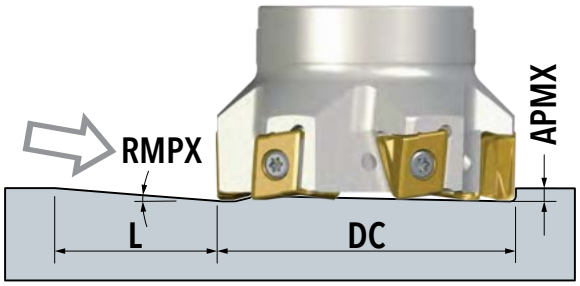
» The maximum hole diameter that the **1.000"** diameter cutter can interpolate from solid while leaving a flat-bottom is **1.938"** (leaving no raised cusp).

13 mm • Operating Guidelines

Materials				Vc Cutting Speed SFM	fz* Feed/ Tooth (inch)	Harder «----------» Tougher								Coolant	Geometry	
ISO	Material Group #VDI 3323	Type	Examples			IN4015	IN2515	IN4005	IN2505	IN4030	IN2530	IN4035	IN2535		M	ML
P	1–5	Non-alloy steel	1018, A36, 1045, A572, 1070	400–850	.005–.014	–	–	2	1	4	3	–	–	No	1	2
	6–9	Low-alloy steel	4140, 4340, P20, 8620, 300M	350–700	.005–.012	–	–	2	1	4	3	–	–	No	1	2
	10, 11	High-alloy steel	H13, A2, D2, M2, T1	300–600	.005–.012	–	–	2	1	4	3	–	–	No	1	2
M	12, 13	Stainless steel (ferritic & martensitic)	410, 416, 440	350–700	.005–.012	–	–	–	–	4	3	2	1	Yes	2	1
	14	Stainless steel (austenitic)	303, 304, 316, 15-5, 17-4	300–600	.005–.012	–	–	–	–	4	3	2	1	May not be required at high speeds	2	1
K	15, 16	Gray cast iron	CLS. 20, 30, 45	400–750	.005–.015	1	2	3	–	–	–	–	–	No	2	1
	17, 18	Nodular cast iron	60-40-18, 100-70-03	300–650	.005–.015	–	1	3	2	–	–	–	–	No	1	2
N	21–30	Aluminum	7075, 6061	1000+	.004–.015	–	1	–	2	–	–	–	–	Yes	–	1
S	31–35	High-temp alloys	Inconel, Hastelloy, Monel	75–150	.004–.008	–	–	–	–	–	3	2	1	Yes	2	1
	36, 37	Titanium alloys	6Al-4V, 5Al-5Mo-5V-3Cr	75–200	.004–.008	–	–	–	–	–	3	2	1	Yes	–	1
H	38, 39	Hardened steel >48	A2, O1, D2	150–400	.002–.004	–	–	–	1	–	2	–	–	No	1	–

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.

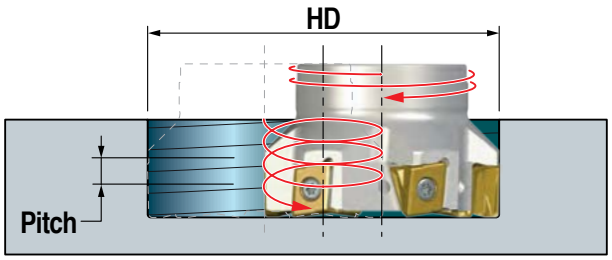
13 mm • Straight Ramping



DCX Cutting Dia. Max.	RMPX Ramp Angle Max.	L*	APMX Depth of Cut Max.
2.000	0.98	28.000	0.479
2.500	0.75	36.590	0.479
3.000	0.6	45.740	0.479
4.000	0.44	62.370	0.479
5.000	0.34	80.720	0.479
6.000	0.28	98.020	0.479

* L in this table is the length the cutter travels to reach the maximum depth of cut **(.479")** while traveling at the maximum ramp angle listed for the cutter.

13 mm • Helical Ramping



PITCH

The maximum pitch is determined to not exceed the maximum depth of cut (APMX) and to not exceed the maximum ramp angle (RMPX).

DCX Cutting Dia. Max.	HD Hole Dia. Min.	HD Hole Dia. Max.	HD Hole Dia. Min. w/o Cusp	HD Hole Dia. Max. w/o Cusp	Max. Pitch Per Revolution
2.000	3.470	4.000	3.740	3.938	0.091
2.500	4.470	5.000	4.740	4.938	0.087
3.000	5.470	6.000	5.740	5.938	0.084
4.000	7.470	8.000	7.740	7.938	0.082
5.000	9.470	10.000	9.740	9.938	0.079
6.000	11.470	12.000	11.740	11.938	0.078

All ramping data is calculated with CGM324R001-M inserts installed.

EXAMPLE

» The minimum hole diameter that the **2.000"** diameter cutter can interpolate from solid is **3.470"** (leaving a raised cusp).

» The maximum hole diameter that the **2.000"** diameter cutter can interpolate from solid is **4.000"**.

» The maximum hole diameter that the **2.000"** diameter cutter can interpolate from solid while leaving a flat-bottom is **3.938"** (leaving no raised cusp).