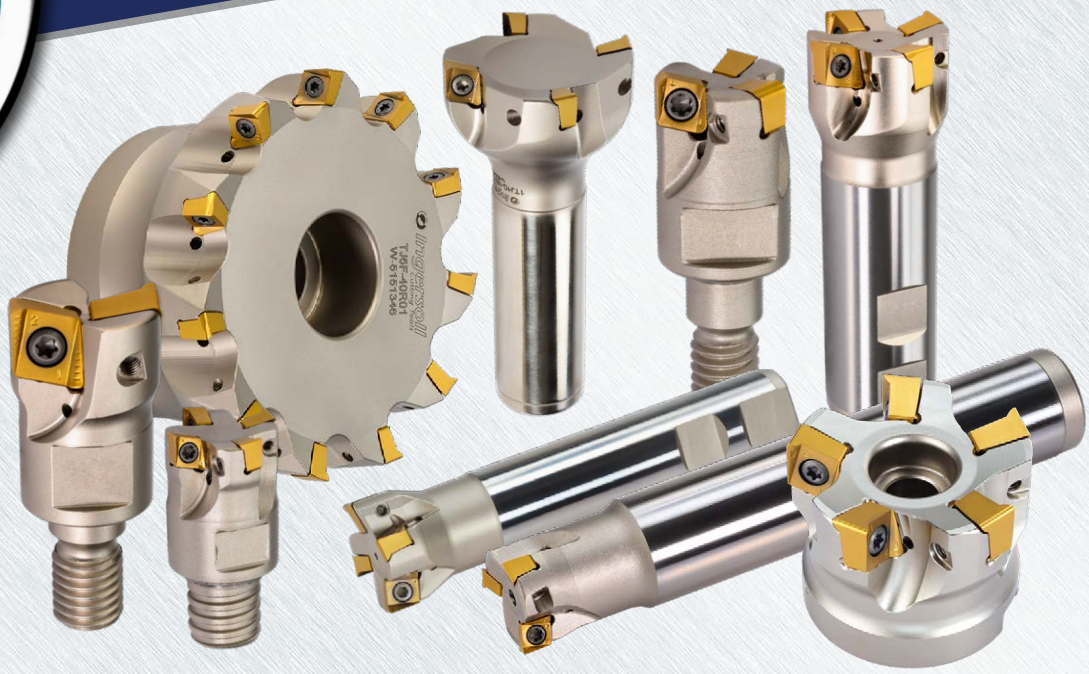
SFEEDUP HIGH SPEED & FEED

INDUSTRY 4.0 PRODUCT ANNOUNCEMENT •UPDATE• 2026

DIPOSDUO™

MILLING PRODUCTS



90°, Backdraft, Hi-Feed & Hi-Ramp Versatility with 4-Edge Economy!

Due to the success of milling insert series MNHU06, Ingersoll is pleased to announce the addition of 4 new insert IC's. The new MNHU 04, 09, 11 & 14 inserts/cutters are designed with the same features as MNHU06 and aim to cover a wider range of sizes and applications. With all of the geometry & grade options at hand, the General Purpose, Automotive, Die/Mold, Aerospace & Miniature industries will all benefit from this product's versatility to face, shoulder, channel and ramp.

Features & Benefits:

- All inserts feature 4 cutting edges
- True 90° shoulder milling capability
- Same cutter body utilizes 90°, Backdraft & Hi-Feed inserts
- Concave face design accommodates ramping, interpolation & drill-mill functions
- Pockets designed with wide mounting area for utmost support behind the cutting edge
- Durability with thick insert & strong screw.
- Integrated wiper flats produce 32-63 Ra surface finishes
- Cutters plumbed with coolant through the tool

Cutter Series (Depth of Cut):
1TJ1B (90°=.13" / HF=.02")
1TJ1D / TJ1D (90°=.24" / HF=.04")
1TJ1F / TJ6F (90°=.32" / HF=.06")
1TJ1G / TJ_G (90°=.41" / HF=.08")
1TJ1J / TJ_J (90°=.54" / HF=.12")

Insert Series:
MNHU04 / UNHU04
MNCU06 / MNHU06 / UNHU06
MNCU09 / MNHU09 / UNHU09
MNCU11 / MNHU11 / UNHU11
MNCU14 / MNHU14 / UNHU14

Diameter Range:
.500-4.000"
10.0-125.0mm

Adaptions:
Cylindrical, Weldon, R8, TopOn, Chip Surfer & Face Mill

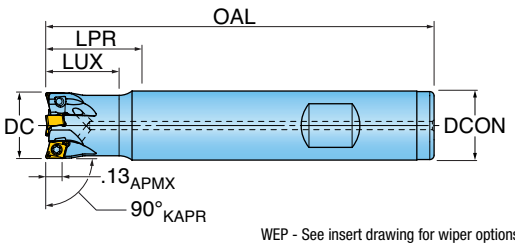
Corner Geometry:
.008, .015, .031, .039, .047, .062, .079 R, Backdraft & Hi-Feed

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

Member IMC Group Ingersoll Cutting Tools

DIPOSDUO™ 04 SERIES 1TJ1B (WELDON SHANK)

90° END MILLS (4MM INSERT)

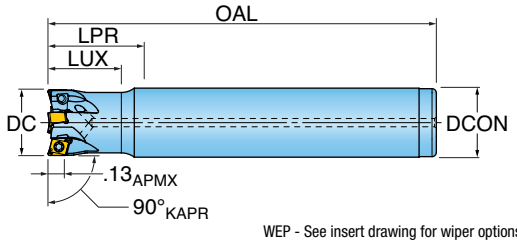


WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1B-0700784R01	0.750	1.00	2.00	4.00	5	0.750
1TJ1B-10017E1R01	1.000	1.25	1.75	4.75	7	1.000
1TJ1B-12020E2R01	1.250	1.50	2.00	5.00	8	1.250
1TJ1B-15025E2R01	1.500	1.75	2.50	5.50	10	1.500

DIPOSDUO™ 04 SERIES 1TJ1B (CYLINDRICAL SHANK)

90° END MILLS (4MM INSERT)



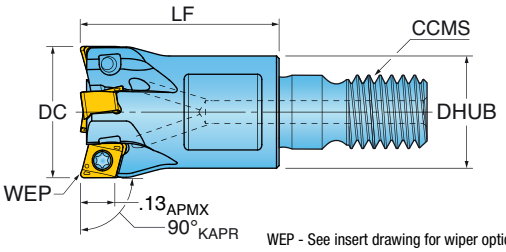
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1B-05007S4R01	0.500	0.75	1.72	3.50	3	0.500
1TJ1B-06008S6R01	0.625	0.81	2.09	4.00	4	0.625
1TJ1B-07008S7R01	0.750	0.87	3.00	5.00	5	0.750
1TJ1B-08010S8R01	0.875	1.00	3.25	5.25	6	0.875
1TJ1B-10012S1R01	1.000	1.25	2.25	5.50	7	1.000

Designed with modification in mind. Extend usable length by turning back the neck diameter or shorten the overall length by cutting off back end.

DIPOSDUO™ 04 SERIES 1TJ1B (TOP•ON STYLE)

90° MODULAR END MILLS (4MM INSERT)



WEP - See insert drawing for wiper options.

INCH

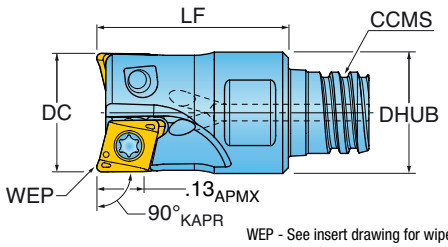
Part Number	DC Cutting Diameter	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code	DHUB Hub Diameter
1TJ1B-05007X4R01	0.500	0.75	3	TopOn M06	0.46
1TJ1B-06008X5R01	0.625	0.88	4	TopOn M08	0.50
1TJ1B-07010X6R01	0.750	1.00	5	TopOn M10	0.69
1TJ1B-10012X7R01	1.000	1.13	7	TopOn M12	0.81

METRIC

Part Number	DC Cutting Diameter	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code	DHUB Hub Diameter
1TJ1B010017X4R00	10.00 mm	17.0 mm	2	TopOn M06	9.8 mm
1TJ1B011017X4R00	11.00 mm	17.0 mm	2	TopOn M06	9.8 mm
1TJ1B012017X4R00	12.00 mm	17.0 mm	3	TopOn M06	11.8 mm
1TJ1B013017X4R00	13.00 mm	17.0 mm	3	TopOn M06	11.8 mm
1TJ1B016023X5R00	16.00 mm	23.0 mm	4	TopOn M08	13.0 mm
1TJ1B020023X6R00	20.00 mm	23.0 mm	5	TopOn M10	18.0 mm
1TJ1B025027X7R00	25.00 mm	27.0 mm	7	TopOn M12	21.0 mm

DIPOSDUO™ 04 SERIES 1TJ1B (CHIPSURFER STYLE)

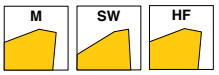
90° MODULAR END MILLS (4MM INSERT)



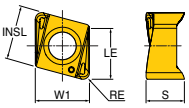
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Diameter	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code	DHUB Hub Diameter
1TJ1B-05006T8R01	0.500	0.65	3	Chip Surfer T08	0.485
1TJ1B-06008TRR01	0.625	0.80	4	Chip Surfer T10	0.605
1TJ1B-07010TSR01	0.750	1.00	5	Chip Surfer T12	0.725
1TJ1B-10012TUR01	1.000	1.25	7	Chip Surfer T15	0.945

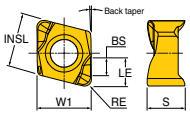
DIPOSDUO™ 04 INSERTS



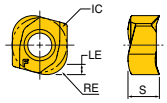
MNHU04_M



MNHU04-SW



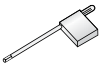
UNHU04_HF



Part Number	Application	RE Corner Radius	BS Wiper Length	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI Number of Indexes	IH Insert Hand	Grade	IN2504	IN2505	IN2510	IN2530
MNHU040202R-M	Multi-Purpose	0.008	-	0.130	0.157	0.157	0.122	4	Right			•		•
MNHU040204R-M	Multi-Purpose	0.015	-	0.130	0.157	0.157	0.122	4	Right			•	•	•
MNHU040205R-SW	Backdraft - Side Wiper	0.020	0.067	0.087	0.157	0.122	0.122	4	Right		•			
MNHU040208R-M	Multi-Purpose	0.031	-	0.130	0.157	0.157	0.122	4	Right			•	•	•
MNHU040210R-SW	Backdraft - Side Wiper	0.039	0.039	0.197	0.157	0.122	0.118	4	Right		•			

Part Number	Application	REEQ Program Radius Equivalent	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI Number of Indexes	IH Insert Hand	Grade	IN2504	IN2505
UNHU040212R-HF	Hi-Feed	0.047	0.019	0.157	0.157	0.104	4	Right		•	•

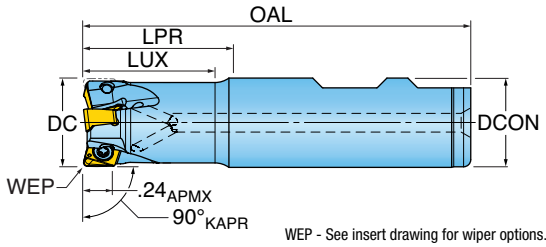
DIPOS DUO 04 HARDWARE

	 Screw	 Driver	 **OPTIONAL** Wrench	 **OPTIONAL** Thin Wrench	 **OPTIONAL** Torque Wrench	 **OPTIONAL** Torque Driver Handle	 **OPTIONAL** Preset Torque Bit	 **OPTIONAL** Torque Driver Bit
1TJ1B-0700784R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-10017E1R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-12020E2R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-15025E2R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-05007S4R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-06008S6R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-07008S7R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-08010S8R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-10012S1R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-05007X4R01	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-06008X5R01	SM18-041-00	DS-TP06S-NEU	610MM			DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-07010X6R01	SM18-041-00	DS-TP06S-NEU	615MM			DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-10012X7R01	SM18-041-00	DS-TP06S-NEU	617MM			DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-05006T8R01	SM18-041-00	DS-TP06S-NEU		WS-0030	DT-130-10	DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-06008TRR01	SM18-041-00	DS-TP06S-NEU		WS-0044	DT-250-13	DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-07010TSR01	SM18-041-00	DS-TP06S-NEU		WS-0059	DT-250-16	DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B-10012TUR01	SM18-041-00	DS-TP06S-NEU		WS-0061	DT-350-20	DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B010017X4R00	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B011017X4R00	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B012017X4R00	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B013017X4R00	SM18-041-00	DS-TP06S-NEU				DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B016023X5R00	SM18-041-00	DS-TP06S-NEU	610MM			DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B020023X6R00	SM18-041-00	DS-TP06S-NEU	615MM			DS-A00-.25-S	DT-05-.25	DS-TP06B
1TJ1B025027X7R00	SM18-041-00	DS-TP06S-NEU	617MM			DS-A00-.25-S	DT-05-.25	DS-TP06B

DIPOSDUO™ 06 SERIES 1TJ1D (WELDON SHANK)

90° END MILLS (6MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



WEP - See insert drawing for wiper options.

INCH

Part Number	DC Cutting Dia.	LPR Protruding Length	LUX Usable Length Max.	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1D-0600779R01	0.625	0.75	0.72	2.66	2	0.625
1TJ1D-0701284R01	0.750	1.25	1.20	3.25	3	0.750
1TJ1D-0801284R01	0.875	1.25	1.25	3.25	3	0.750
1TJ1D-1001780R01	1.000	1.75	1.72	4.00	4	1.000
1TJ1D-1001784R01	1.000	1.75	1.72	3.75	4	0.750
1TJ1D-1201781R01	1.250	1.75	1.72	4.00	5	1.250
1TJ1D-1201784R01	1.250	1.75	1.75	3.75	5	0.750
1TJ1D-1501784R01	1.500	1.75	1.75	3.75	6	0.750
1TJ1D-1502281R01	1.500	2.25	2.25	4.50	6	1.250

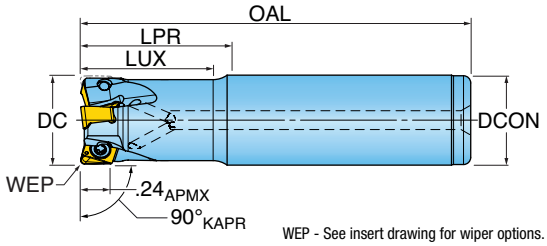
METRIC

Part Number	DC Cutting Dia.	LPR Protruding Length	LUX Usable Length Max.	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1D016025W3R00	16.00 mm	25.0 mm	28.0 mm	90.0 mm	2	16.00 mm
1TJ1D020025W4R00	20.00 mm	25.0 mm	28.0 mm	90.0 mm	3	20.00 mm
1TJ1D025030W5R00	25.00 mm	30.0 mm	32.0 mm	100.0 mm	4	25.00 mm
1TJ1D032035W6R00	32.00 mm	35.0 mm	38.0 mm	110.0 mm	5	32.00 mm

DIPOSDUO™ 06 SERIES 1TJ1D (CYLINDRICAL SHANK)

90° END MILLS (6MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



WEP - See insert drawing for wiper options.

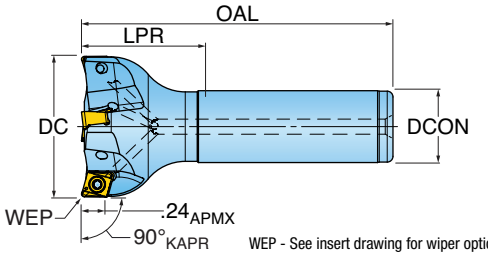
Part Number	DC Cutting Dia.	LPR Protruding Length	LUX Usable Length Max.	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1D-06020S6R01	0.625	2.09	1.25	4.00	2	0.625
1TJ1D-07030S7R01	0.750	3.00	1.25	5.00	3	0.750
1TJ1D-10037S1R01	1.000	3.75	1.25	6.00	4	1.000
1TJ1D-12042S9R01	1.250	4.25	1.25	6.50	5	1.250
1TJ1D-15047S5R01	1.500	4.75	1.25	7.00	6	1.500

Designed with modification in mind. Extend usable length by turning back the neck diameter or shorten the overall length by cutting off back end.

DIPOSDUO™ 06 SERIES 1TJ1D (KNEE MILL CYLINDRICAL STYLE)

90° END MILLS (6MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



WEP - See insert drawing for wiper options.

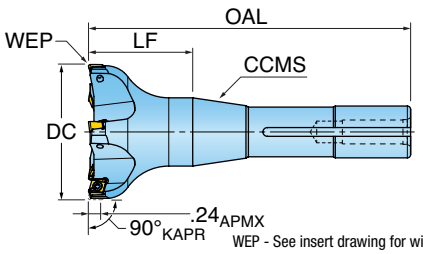
Part Number	DC Cutting Dia.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1D-10012S7R01	1.000	1.25	3.25	3	0.750
1TJ1D-15012S7R01	1.500	1.25	3.25	4	0.750
1TJ1D-20012S7R01	2.000	1.25	3.25	5	0.750

Ideal on Knee mills when coupled with toolholder series R8ER.

DIPOSDUO™ 06 SERIES 1TJ1D (KNEE MILL R8 STYLE)

90° END MILLS (6MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



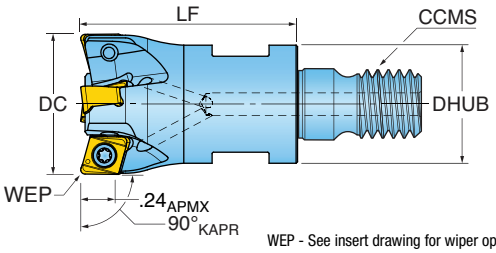
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LF Functional Length	OAL Overall Length	ZEFF Eff. Teeth	CCMS Connection Code Machine Side
1TJ1D-2501940R01	2.500	1.90	5.90	5	Bridgeport R8
1TJ1D-3001940R01	3.000	1.90	5.90	5	Bridgeport R8

DIPOSDUO™ 06 SERIES 1TJ1D (TOP•ON STYLE)

90° MODULAR END MILLS

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



WEP - See insert drawing for wiper options.

INCH

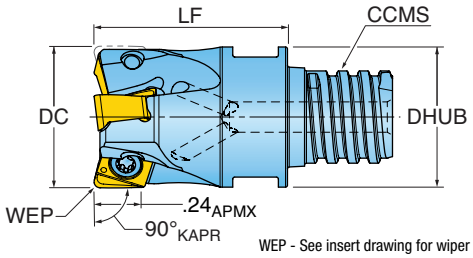
Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Dia.
1TJ1D-07015X6R01	0.750	1.50	3	TopOn M10	0.69
1TJ1D-10015X7R01	1.000	1.50	4	TopOn M12	0.81
1TJ1D-12017X8R01	1.250	1.75	5	TopOn M16	1.13
1TJ1D-15017X8R01	1.500	1.75	6	TopOn M16	1.13

METRIC

Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Dia.
1TJ1D016023X5R00	16.00 mm	23.0 mm	2	TopOn M08	13.00 mm
1TJ1D020035X6R00	20.00 mm	35.0 mm	3	TopOn M10	18.00 mm
1TJ1D025035X7R00	25.00 mm	35.0 mm	4	TopOn M12	21.00 mm
1TJ1D032043X8R00	32.00 mm	43.0 mm	5	TopOn M16	29.00 mm
1TJ1D040043X8R00	40.00 mm	43.0 mm	6	TopOn M16	29.00 mm

DIPOSDUO™ 06 SERIES 1TJ1D (CHIP•SURFER STYLE)

90° MODULAR END MILLS (6MM INSERT)



WEP - See insert drawing for wiper options.

INCH

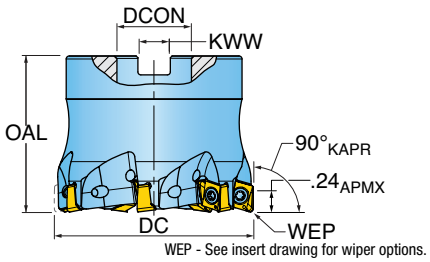
Part Number	DC Cutting Dia.	LF Protruding Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Dia.
1TJ1D-06008TRR01	0.625	0.80	2	Chip Surfer T10	0.605
1TJ1D-07010TSR01	0.750	1.00	3	Chip Surfer T12	0.725
1TJ1D-10012TUR01	1.000	1.25	4	Chip Surfer T15	0.945

METRIC

Part Number	DC Cutting Dia.	LF Protruding Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Dia.
1TJ1D016026TRR00	16.00 mm	26.0 mm	2	Chip Surfer T10	15.20 mm
1TJ1D020026TSR00	20.00 mm	26.0 mm	3	Chip Surfer T12	18.30 mm
1TJ1D025032TUR00	25.00 mm	32.0 mm	4	Chip Surfer T15	23.90 mm

DIPOSDUO™ 06 SERIES TJ1D

90° FACE MILLS (6MM INSERT)



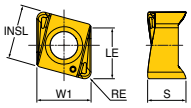
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Eff. Teeth	DCON Bore Dia.	KWW Keyway
TJ1D-15R01	1.500	1.57	6	0.500	0.250
TJ1D-20R01	2.000	1.57	7	0.750	0.312
TJ1D-25R01	2.500	1.57	8	0.750	0.312
TJ1D-30R01	3.000	1.75	9	1.000	0.375

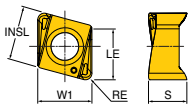
DIPOS DUO 06 INSERTS

SW | HW | HF | -R | -PH | -P

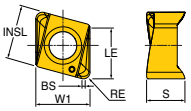
MNHU06-R

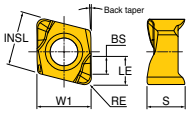
MNHU06-PH

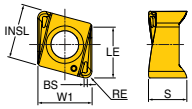
MNHU06-HW

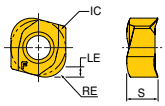
MNHU06-SW

MNCU06-P

UNHU06_HF

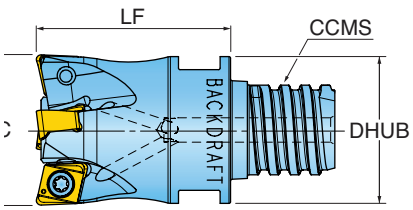
Part Number	Application	RE/BCH Corner Radius/ Chamfer	BS Wiper Length	LE Cutting Edge Length	INSL Length	W1 Width	S Thickness	NOI No. of Inserts	IH Insert Hand	Grade	IN10K	IN2036	IN2504	IN2505	IN2510	IN2530	IN3310 NEW	IN6515	IN6537
MNCU060304FR-P	Aluminum - Face Wiper	0.015 R	0.039	0.240	0.260	0.260	0.196	4	Right		•						•		
MNHU060304R	Multi-Purpose	0.015 R	-	0.240	0.260	0.260	0.184	4	Right					•	•	•			
MNHU060304R-HW	SS/Hi-Temp/Ti - Face Wiper	0.015 R	0.039	0.240	0.260	0.260	0.184	4	Right					•	•	•			
MNHU060304R-PH	SS/Hi-Temp/Ti	0.015 R	-	0.240	0.260	0.260	0.184	4	Right					•	•	•			
NEW MNHU060305R-SW	Backdraft - Side Wiper	0.020 R	0.070	0.090	0.260	0.260	0.193	4	Right				•	•					
MNCU060308FR-P	Aluminum - Face Wiper	0.031 R	0.023	0.230	0.260	0.260	0.190	4	Right		•						•		
MNHU060308R	Multi-Purpose	0.031 R	-	0.230	0.260	0.260	0.184	4	Right				•	•	•	•		•	•
MNHU060308R-HW	SS/Hi-Temp/Ti - Face Wiper	0.031 R	0.023	0.240	0.260	0.260	0.184	4	Right				•	•	•	•			
MNHU060308R-PH	SS/Hi-Temp/Ti	0.031 R	-	0.230	0.260	0.260	0.184	4	Right			•		•	•	•			
MNHU060310R-SW	Backdraft - Side Wiper	0.039 R	0.043	0.082	0.260	0.260	0.185	4	Right				•	•					
MNHU060312R	Multi-Purpose	0.047 R	-	0.220	0.260	0.260	0.177	4	Right				•	•	•	•			
MNHU060312R-PH	SS/Hi-Temp/Ti	0.047 R	-	0.220	0.260	0.260	0.177	4	Right					•	•	•			
MNHU060315R-SW	Backdraft - Side Wiper	0.059 R	0.070	0.130	0.260	0.260	0.177	4	Right				•	•					
MNHU060316R	Multi-Purpose	0.062 R	-	0.210	0.260	0.260	0.180	4	Right				•	•	•	•		•	•
MNHU060316R-PH	SS/Hi-Temp/Ti	0.062 R	-	0.210	0.260	0.260	0.180	4	Right			•		•	•	•			
MNHU060320R	Multi-Purpose	0.079 R	-	0.200	0.260	0.260	0.165	4	Right					•	•	•			
MNHU060320R-PH	SS/Hi-Temp/Ti	0.079 R	-	0.200	0.260	0.260	0.165	4	Right					•	•	•			
MNHU060320R-SW	Backdraft - Side Wiper	0.079 R	0.039	0.120	0.260	0.260	0.170	4	Right				•	•					

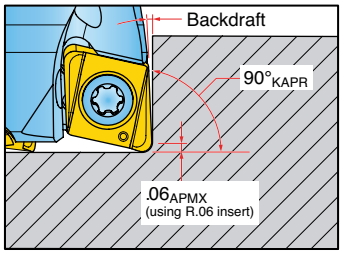
Part Number	Application	REEQ Program Radius Equivalent	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI Number of Indexes	IH Insert Hand	Grade	IN2504	IN2505	IN2530	IN6537
UNHU060320R-HF	Hi-Feed	0.078	0.039	0.260	0.260	0.152	4	Right		•	•	•	•

DIPOSDUO™ 06 SERIES 1TV1D (CHIP•SURFER STYLE)

BACKDRAFT END MILLS (6MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant





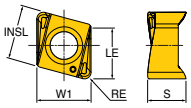
Part Number	DC Cutting Dia.	LF Protruding Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Dia.	KAPR Cutting Edge Angle
1TV1D-06208TRR10	0.625	0.80	2	Chip Surfer T10	0.60	91
1TV1D-07010TSR02	0.750	1.00	3	Chip Surfer T12	0.72	93
1TV1D-10012TUR02	1.000	1.25	4	Chip Surfer T15	0.95	93

Recommend .020" maximum axial stepdown on straight wall finish applications.- Well suited for long reach applications.

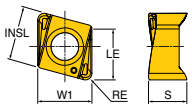
DIPOSDUO™ 06 SERIES 1TV1D INSERTS

-R -PH

MNHU06-R

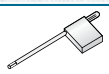


MNHU06-PH



Part Number	Application	RE/BCH Corner Radius/ Chamfer	LE Cutting Edge Length	INSL Length	W1 Width	S Thickness	NOI Number of Indexes	IH Insert Hand	Grade	IN10K	IN2036	IN2504	IN2505	IN2510	IN2530	IN6515	IN6537
MNHU060304R	Multi-Purpose	0.015 R	0.240	0.260	0.260	0.184	4	Right					•	•	•		
MNHU060304R-PH	SS/Hi-Temp/Ti	0.015 R	0.240	0.260	0.260	0.184	4	Right					•	•	•		
MNHU060308R	Multi-Purpose	0.031 R	0.230	0.260	0.260	0.184	4	Right				•	•	•	•	•	•
MNHU060308R-PH	SS/Hi-Temp/Ti	0.031 R	0.230	0.260	0.260	0.184	4	Right			•		•	•	•		
MNHU060312R	Multi-Purpose	0.047 R	0.220	0.260	0.260	0.177	4	Right				•	•	•	•		
MNHU060312R-PH	SS/Hi-Temp/Ti	0.047 R	0.220	0.260	0.260	0.177	4	Right					•	•	•		
MNHU060316R	Multi-Purpose	0.062 R	0.210	0.260	0.260	0.180	4	Right				•	•	•	•	•	•
MNHU060316R-PH	SS/Hi-Temp/Ti	0.062 R	0.210	0.260	0.260	0.180	4	Right			•		•	•	•		
MNHU060320R	Multi-Purpose	0.079 R	0.200	0.260	0.260	0.165	4	Right					•	•	•		
MNHU060320R-PH	SS/Hi-Temp/Ti	0.079 R	0.200	0.260	0.260	0.165	4	Right					•	•	•		

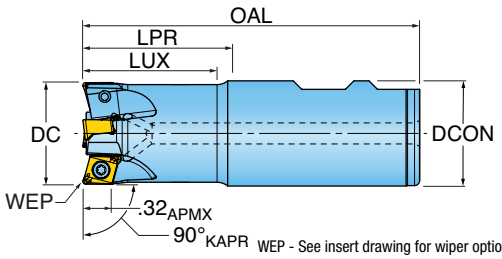
DIPOSDUO™ 06 HARDWARE

	 Screw	 Driver	 Retention Bolt	 **OPTIONAL** Coolant Retention Bolt	 Wrench	 **OPTIONAL** Torque Wrench	 **OPTIONAL** Torque Driver Handle	 **OPTIONAL** Preset Torque Bit	 **OPTIONAL** Torque Driver Bit
1TJ1D-0600779R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-0701284R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-0801284R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-1001780R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-1001784R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-1201781R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-1201784R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-1501784R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-1502281R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-06020S6R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-07030S7R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-10037S1R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-12042S9R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-15047S5R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-10012S7R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-15012S7R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-20012S7R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-2501940R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-3001940R01	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-07015X6R01	SM30-068-30	DS-T08W			615MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-10015X7R01	SM30-068-30	DS-T08W			617MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-12017X8R01	SM30-068-30	DS-T08W			622MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-15017X8R01	SM30-068-30	DS-T08W			622MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TV1D-06208TRR10	SM30-068-30	DS-T08W			WS-0044	DT-250-13	DS-A00-.25-S	DT-11-.25	DS-T08B
1TV1D-07010TSR02	SM30-068-30	DS-T08W			WS-0059	DT-250-16	DS-A00-.25-S	DT-11-.25	DS-T08B
1TV1D-10012TUR02	SM30-068-30	DS-T08W			WS-0061	DT-350-20	DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-06008TRR01	SM30-068-30	DS-T08W			WS-0044	DT-250-13	DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-07010TSR01	SM30-068-30	DS-T08W			WS-0059	DT-250-16	DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D-10012TUR01	SM30-068-30	DS-T08W			WS-0061	DT-350-20	DS-A00-.25-S	DT-11-.25	DS-T08B
TJ1D-15R01	SM30-068-30	DS-T08W	SD-04-46				DS-A00-.25-S	DT-11-.25	DS-T08B
TJ1D-20R01	SM30-068-30	DS-T08W	SD-06-46	SD-06-89			DS-A00-.25-S	DT-11-.25	DS-T08B
TJ1D-25R01	SM30-068-30	DS-T08W	SD-06-46	SD-06-89			DS-A00-.25-S	DT-11-.25	DS-T08B
TJ1D-30R01	SM30-068-30	DS-T08W	SD-08-46	SD-08-92			DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D016025W3R00	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D020025W4R00	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D025030W5R00	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D032035W6R00	SM30-068-30	DS-T08W					DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D016023X5R00	SM30-068-30	DS-T08W			610MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D020035X6R00	SM30-068-30	DS-T08W			615MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D025035X7R00	SM30-068-30	DS-T08W			617MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D032043X8R00	SM30-068-30	DS-T08W			622MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D040043X8R00	SM30-068-30	DS-T08W			622MM		DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D016026TRR00	SM30-068-30	DS-T08W			WS-0044	DT-250-13	DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D020026TSR00	SM30-068-30	DS-T08W			WS-0059	DT-250-16	DS-A00-.25-S	DT-11-.25	DS-T08B
1TJ1D025032TUR00	SM30-068-30	DS-T08W			WS-0061	DT-350-20	DS-A00-.25-S	DT-11-.25	DS-T08B

DIPOSDUO™ 09 SERIES 1TJ1F (WELDON SHANK)

90° END MILLS (9MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



WEP - See insert drawing for wiper options.

INCH

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1F-1001780R01	1.000	1.72	1.75	4.00	3	1.000
1TJ1F-1201781R01	1.250	1.72	1.75	4.00	4	1.250
1TJ1F-1502281R01	1.500	2.20	2.25	4.50	5	1.250

* Relieve cutter body when using high-feed insert UNHU09_HF (see page 30).

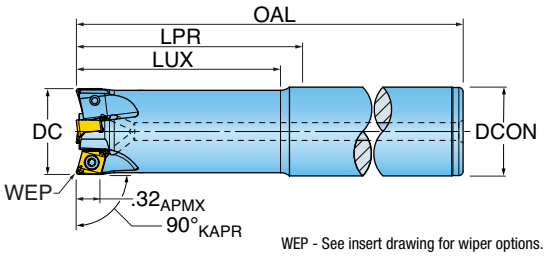
METRIC

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1F020030W4R00	20.00 mm	30.0 mm	50.0 mm	100.0 mm	2	20.00 mm
1TJ1F025040W5R00	25.00 mm	40.0 mm	44.0 mm	100.0 mm	3	25.00 mm
1TJ1F032040W5R00	32.00 mm	40.0 mm	44.0 mm	100.0 mm	4	25.00 mm

* Relieve cutter body when using high-feed insert UNHU09_HF (see page 30).

DIPOSDUO™ 09 SERIES 1TJ1F (CYLINDRICAL SHANK)

90° END MILLS (9MM INSERT)



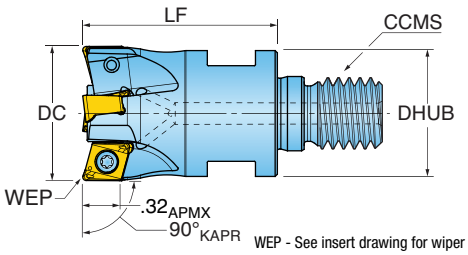
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1F-10057S1R01	1.000	2.40	5.75	8.00	3	1.000
1TJ1F-12077S9R01	1.250	2.90	7.75	10.00	4	1.250
1TJ1F-15073S5R01	1.500	2.90	7.34	10.00	5	1.500

* Relieve cutter body when using high-feed insert UNHU09_HF (see page 30).
Designed with modification in mind. Extend usable length by turning back the neck diameter or shorten the overall length by cutting off back end.

DIPOSDUO™ 09 SERIES 1TJ1F (TOP•ON STYLE)

90° MODULAR END MILLS (9MM INSERT)



WEP - See insert drawing for wiper options.

INCH

Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Dia.
1TJ1F-10015X7R01	1.000	1.50	3	TopOn M12	0.81
1TJ1F-12017X8R01	1.250	1.75	4	TopOn M16	1.13
1TJ1F-15017X9R01	1.500	1.75	5	TopOn M16	1.13

* Relieve cutter body when using high-feed insert UNHU09_HF (see page 30).

METRIC

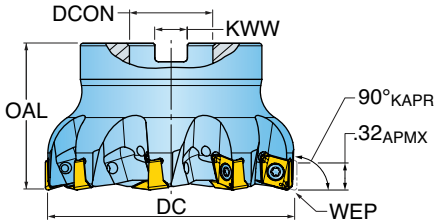
Part Number	DC Cutting Dia.	LF Functional Length	ZEFF Eff. Teeth	CCMS Connection Code	DHUB Hub Dia.
1TJ1F020035X6R00	20.00 mm	35.0 mm	2	TopOn M10	18.00 mm
1TJ1F025035X7R00	25.00 mm	35.0 mm	3	TopOn M12	21.00 mm
1TJ1F032043X8R00	32.00 mm	43.0 mm	4	TopOn M16	29.00 mm
1TJ1F040043X8R00	40.00 mm	43.0 mm	5	TopOn M16	29.00 mm

* Relieve cutter body when using high-feed insert UNHU09_HF (see page 30).

DIPOSDUO™ 09 SERIES TJ6F/TJ5F

90° FACE MILLS (9MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



WEP - See insert drawing for wiper options.

INCH

Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Eff. Teeth	DCON Bore Dia.	KWW Keyway
TJ6F-15R01	1.500	1.570	5	0.500	0.250
TJ6F-20R01	2.000	1.570	6	0.750	0.312
TJ6F-25R01	2.500	1.570	7	0.750	0.312
TJ6F-30R01	3.000	1.750	9	1.000	0.375
TJ6F-40R01	4.000	2.375	11	1.500	0.625

* Relieve cutter body when using high-feed insert UNHU09_HF (see page 30).

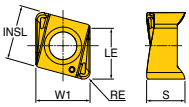
METRIC

Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Eff. Teeth	DCON Bore Dia.	KWW Keyway
TJ5F040R00	40.00 mm	40.00 mm	5	16.00 mm	8.40 mm
TJ5F050R00	50.00 mm	40.00 mm	6	22.00 mm	10.40 mm
TJ5F063R00	63.00 mm	40.00 mm	7	22.00 mm	10.40 mm
TJ5F080R00	80.00 mm	50.00 mm	9	27.00 mm	12.40 mm

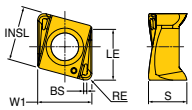
* Relieve cutter body when using high-feed insert UNHU09_HF (see page 30).

DIPOSDUO™ 09 INSERTS

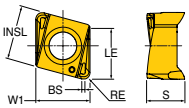
MNHU09-M



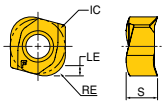
MN_U09_ML



MNCU09_AL



UNHU09_HF



Part Number	Application	RE Corner Radius	BS Wiper Length	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI No. of Indexes	IH Insert Hand	Grade	IN10K	IN2036	IN2504	IN2505	IN2510	IN2530	IN3310 (NEW)	IN6515	IN6537
MNCU090404FR-AL	Grd/Pol for Al - Face Wiper	0.015	0.047	0.314	0.338	0.338	0.248	4	Right		•						•		
NEW MNHU090404R-M	Multi-Purpose	0.015	-	0.323	0.338	0.338	0.244	4	Right					•					
MNHU090404R-ML	SS/Hi-Temp/Ti - Face Wiper	0.015	0.047	0.314	0.338	0.338	0.248	4	Right					•					
MNCU090408FR-AL	Grd/Pol for Al - Face Wiper	0.031	0.031	0.314	0.338	0.338	0.244	4	Right		•						•		
MNHU090408R-M	Multi-Purpose	0.031	-	0.314	0.338	0.338	0.232	4	Right				•	•	•	•		•	•
NEW MNMU090408R-ML	SS/Hi-Temp/Ti	0.031	-	0.314	0.338	0.338	0.244	4	Right			•		•		•			
MNHU090408R-ML	SS/Hi-Temp/Ti - Face Wiper	0.031	0.031	0.314	0.338	0.338	0.248	4	Right					•		•			
MNHU090416R-M	Multi-Purpose	0.062	-	0.314	0.338	0.338	0.224	4	Right					•	•	•			
NEW MNHU090420R-M	Multi-Purpose	0.078	-	0.303	0.338	0.338	0.224	4	Right					•					

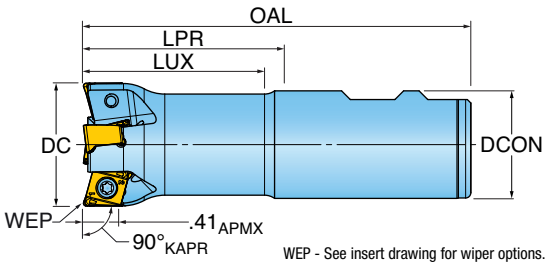
Part Number	Application	REEQ Program Radius Equivalent	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI Number of Indexes	IH Insert Hand	Grade	IN2504	IN2505	IN6537
UNHU090432R-HF	Hi-Feed	0.125	0.059	0.338	0.338	0.187	4	Right		•	•	•

DIPOSDUO™ 09 HARDWARE

	 Screw	 Driver Handle	 Torx Driver Blade	 Retention Bolt	 **OPTIONAL** Coolant Retention Bolt	 **OPTIONAL** Wrench	 **OPTIONAL** Torque Driver Handle	 **OPTIONAL** Preset Torque Bit	 **OPTIONAL** Torque Driver Bit
1TJ1F-1001780R01	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F-1201781R01	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F-1502281R01	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F-10057S1R01	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F-12077S9R01	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F-15073S5R01	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F-10015X7R01	SM35-088-10	DS-A00T	DS-T106B			617MM	DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F-12017X8R01	SM35-088-10	DS-A00T	DS-T106B			622MM	DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F-15017X9R01	SM35-088-10	DS-A00T	DS-T106B			630MM	DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ6F-15R01	SM35-088-10	DS-A00T	DS-T106B	SD-04-86			DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ6F-20R01	SM35-088-10	DS-A00T	DS-T106B	SD-06-46	SD-06-89		DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ6F-25R01	SM35-088-10	DS-A00T	DS-T106B	SD-06-46	SD-06-89		DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ6F-30R01	SM35-088-10	DS-A00T	DS-T106B	SD-08-46	SD-08-92		DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ6F-40R01	SM35-088-10	DS-A00T	DS-T106B	SD-12-82	SD-12-99		DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F020030W4R00	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F025040W5R00	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F032040W5R00	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F020035X6R00	SM35-088-10	DS-A00T	DS-T106B				DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F025035X7R00	SM35-088-10	DS-A00T	DS-T106B			617MM	DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F032043X8R00	SM35-088-10	DS-A00T	DS-T106B			622MM	DS-A00-.25-T	DT-30-.25	DS-T10B1
1TJ1F040043X8R00	SM35-088-10	DS-A00T	DS-T106B			622MM	DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ5F040R00	SM35-088-10	DS-A00T	DS-T106B	ISO4762M8X25-12.9			DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ5F050R00	SM35-088-10	DS-A00T	DS-T106B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ5F063R00	SM35-088-10	DS-A00T	DS-T106B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-30-.25	DS-T10B1
TJ5F080R00	SM35-088-10	DS-A00T	DS-T106B	ISO4762M12X35-12.9			DS-A00-.25-T	DT-30-.25	DS-T10B1

DIPOSDUO™11 SERIES 1TJ1G (WELDON SHANK)

90° END MILLS (11MM INSERT)



WEP - See insert drawing for wiper options.

INCH

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1G-1001780R01	1.000	1.72	1.75	4.00	2	1.000
1TJ1G-1202281R01	1.250	2.22	2.25	4.50	3	1.250
1TJ1G-1502281R01	1.500	2.22	2.25	4.50	4	1.250

* Relieve cutter body when using high-feed insert UNHU11_HF (see page 30).

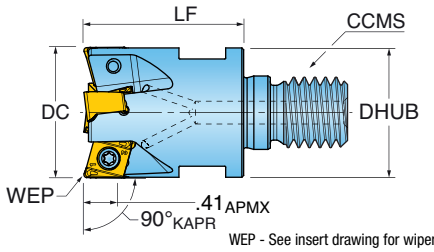
METRIC

Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1G025030W5R00	25.00 mm	40.0 mm	44.0 mm	100.0 mm	2	25.00 mm
1TJ1G032040W6R00	32.00 mm	38.0 mm	50.0 mm	110.0 mm	3	32.00 mm

* Relieve cutter body when using high-feed insert UNHU11_HF (see page 30).

DIPOSDUO™ 11 SERIES 1TJ1G (TOP•ON STYLE)

90° MODULAR END MILLS (11MM INSERT)



WEP - See insert drawing for wiper options.

INCH

Part Number	DC Cutting Diameter	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code	DHUB Hub Diameter
1TJ1G-10015X7R01	1.000	1.50	2	TopOn M12	0.81
1TJ1G-12017X8R01	1.250	1.75	3	TopOn M16	1.13
1TJ1G-15017X9R01	1.500	1.75	4	TopOn M20	1.41

* Relieve cutter body when using high-feed insert UNHU11_HF (see page 30).

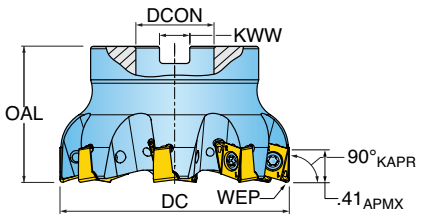
METRIC

Part Number	DC Cutting Diameter	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code	DHUB Hub Diameter
1TJ1G025035X7R00	25.00 mm	35.0 mm	2	TopOn M12	21.00 mm
1TJ1G032043X8R00	32.00 mm	43.0 mm	3	TopOn M16	29.00 mm
1TJ1G040043X8R00	40.00 mm	43.0 mm	4	TopOn M16	29.00 mm

* Relieve cutter body when using high-feed insert UNHU11_HF (see page 30).

DIPOSDUO™ 11 SERIES TJ5G, TJ6G

90° FACE MILLS (11MM INSERT)



WEP - See insert drawing for wiper options.

INCH

Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Eff. Teeth	DCON Bore Dia.	KWW Keyway
TJ5G-20R01	2.000	1.750	5	0.750	0.312
TJ6G-20R01	2.000	1.750	4	0.750	0.312
TJ5G-25R01	2.500	1.750	6	1.000	0.375
TJ6G-25R01	2.500	1.750	4	1.000	0.375
TJ5G-30R01	3.000	1.750	8	1.000	0.375
TJ6G-30R01	3.000	1.750	6	1.000	0.375
TJ5G-40R01	4.000	2.375	10	1.500	0.625
TJ6G-40R01	4.000	2.375	7	1.500	0.625

* Relieve cutter body when using high-feed insert UNHU11_HF (see page 30).

METRIC

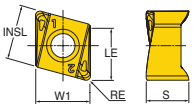
Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Eff. Teeth	DCON Bore Dia.	KWW Keyway
TJ5G040R00	40.00 mm	40.00 mm	4	16.00 mm	8.40 mm
TJ5G050R00	50.00 mm	40.00 mm	5	22.00 mm	10.40 mm
TJ6G050R00	50.00 mm	40.00 mm	4	22.00 mm	10.40 mm
TJ5G063R00	63.00 mm	40.00 mm	6	22.00 mm	10.40 mm
TJ6G063R00	63.00 mm	40.00 mm	4	22.00 mm	10.40 mm
TJ5G080R00	80.00 mm	50.00 mm	8	27.00 mm	12.40 mm
TJ6G080R00	80.00 mm	50.00 mm	4	27.00 mm	12.40 mm
TJ5G100R00	100.00 mm	50.00 mm	10	32.00 mm	14.40 mm
TJ6G100R00	100.00 mm	50.00 mm	6	32.00 mm	14.40 mm

* Relieve cutter body when using high-feed insert UNHU11_HF (see page 30).

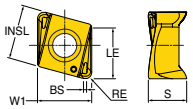
DIPOSDUO™ 11 INSERTS

HF M AL

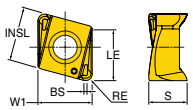
MNHU11_M

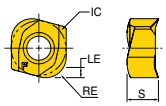
MNHU11_PNR-M

MNCUU11_AL

UNHU11_HF

Part Number	Application	RE Corner Radius	BS Wiper Length	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI No. of Indexes	IH Insert Hand	Grade	IN10K	IN2505	IN2510	IN2530	IN3310 (NEW)	IN6537
MNCU110608FR-AL	Grd/Pol for Al - Face Wiper	0.031	0.039	0.413	0.421	0.421	0.319	4	Right		•				•	
MNHU110608R-M	Multi-Purpose	0.031	-	0.410	0.421	0.421	0.318	4	Right			•		•		•
MNHU110608PNR-M	Multi-Purpose - Integrated Wiper	0.031	0.039	0.410	0.421	0.421	0.318	4	Right			•	•	•		•
MNHU110616R-M	Multi-Purpose	0.062	-	0.400	0.421	0.421	0.318	4	Right			•				
MNHU110624R-M	Multi-Purpose	0.093	-	0.389	0.421	0.421	0.318	4	Right			•				•

Part Number	Application	REEQ Program Radius Equivalent	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI No. of Indexes	IH Insert Hand	Grade	IN2505	IN6537
UNHU110640R-HF	Hi-Feed	0.157	0.078	0.421	0.421	0.240	4	Right		•	

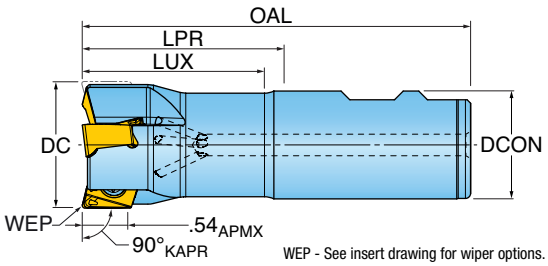
DIPOSDUO™ 11 HARDWARE

	 Screw	 Driver Handle	 Torx Driver Blade	 Retention Bolt	 **OPTIONAL** Coolant Retention Bolt	 **OPTIONAL** Wrench	 **OPTIONAL** Torque Driver Handle	 **OPTIONAL** Preset Torque Bit	 **OPTIONAL** Torque Driver Bit
1TJ1G-12017X8R01	SM40-100-10	DS-A00T	DS-T156B			622MM	DS-A00-.25-T	DT-35-.25	DS-T15B1
1TJ1G-15017X9R01	SM40-100-10	DS-A00T	DS-T156B			630MM	DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G-20R01	SM40-100-10	DS-A00T	DS-T156B	SD-06-46	SD-06-89		DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ6G-20R01	SM40-100-10	DS-A00T	DS-T156B	SD-06-46	SD-06-89		DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G-25R01	SM40-100-10	DS-A00T	DS-T156B	SD-08-47	SD-08-C9		DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ6G-25R01	SM40-100-10	DS-A00T	DS-T156B	SD-08-47	SD-08-C9		DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G-30R01	SM40-100-10	DS-A00T	DS-T156B	SD-08-47	SD-08-C9		DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ6G-30R01	SM40-100-10	DS-A00T	DS-T156B	SD-08-47	SD-08-C9		DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G-40R01	SM40-100-10	DS-A00T	DS-T156B	SD-12-82	SD-12-99		DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ6G-40R01	SM40-100-10	DS-A00T	DS-T156B	SD-12-82	SD-12-99		DS-A00-.25-T	DT-35-.25	DS-T15B1
1TJ1G025030W5R00	SM40-100-10	DS-A00T	DS-T156B				DS-A00-.25-T	DT-35-.25	DS-T15B1
1TJ1G032040W6R00	SM40-100-10	DS-A00T	DS-T156B				DS-A00-.25-T	DT-35-.25	DS-T15B1
1TJ1G025035X7R00	SM40-100-10	DS-A00T	DS-T156B			617MM	DS-A00-.25-T	DT-35-.25	DS-T15B1
1TJ1G032043X8R00	SM40-100-10	DS-A00T	DS-T156B			622MM	DS-A00-.25-T	DT-35-.25	DS-T15B1
1TJ1G040043X8R00	SM40-100-10	DS-A00T	DS-T156B			622MM	DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G040R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M8X25-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G050R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ6G050R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G063R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ6G063R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G080R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M12X35-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ6G080R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M12X35-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ5G100R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M16X30-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1
TJ6G100R00	SM40-100-10	DS-A00T	DS-T156B	ISO4762M16X30-12.9			DS-A00-.25-T	DT-35-.25	DS-T15B1

DIPOSDUO™ 14 SERIES 1TJ1J (WELDON SHANK)

90° END MILLS (14MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



WEP - See insert drawing for wiper options.

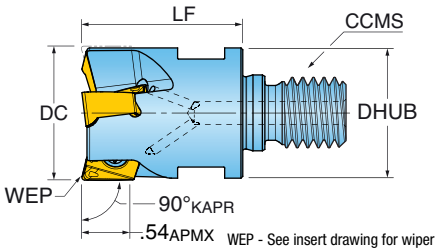
Part Number	DC Cutting Dia.	LUX Usable Length Max.	LPR Protruding Length	OAL Overall Length	ZEFF Eff. Teeth	DCON Shank Dia.
1TJ1J-1202281R01	1.250	2.22	2.25	4.50	2	1.250
1TJ1J-1502281R01	1.500	2.22	2.25	4.50	3	1.250

* Relieve cutter body when using high-feed insert UNHU14_HF (see page 30).

DIPOSDUO™ 14 SERIES 1TJ1J (TOP•ON STYLE)

90° MODULAR END MILLS (14MM INSERT)

Shoulder | Channel | Ramp | Corkscrew | Facing | Pocketing | Coolant



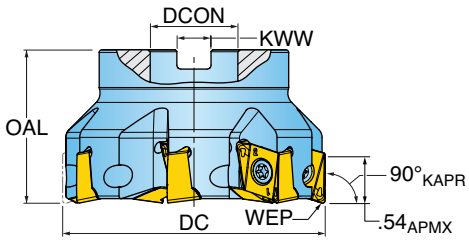
WEP - See insert drawing for wiper options.

Part Number	DC Cutting Diameter	LF Functional Length	ZEFF Effective Teeth	CCMS Connection Code	DHUB Hub Diameter
1TJ1J-12017X8R01	1.250	1.75	2	TopOn M16	1.13
1TJ1J-15017X9R01	1.500	1.75	3	TopOn M20	1.41

* Relieve cutter body when using high-feed insert UNHU14_HF (see page 30).

DIPOSDUO™ 14 SERIES TJ5J, TJ6J

90° ROUGH & RAMP FACE MILL (14MM INSERT)



WEP - See insert drawing for wiper options.

INCH

Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Eff. Teeth	DCON Bore Dia.	KWW Keyway
TJ5J-20R01	2.000	1.750	4	0.750	0.312
TJ5J-25R01	2.500	1.750	6	1.000	0.375
TJ6J-25R01	2.500	1.750	4	1.000	0.375
TJ5J-30R01	3.000	1.750	7	1.000	0.375
TJ6J-30R01	3.000	1.750	5	1.000	0.375
TJ5J-40R01	4.000	2.375	9	1.500	0.625
TJ6J-40R01	4.000	2.375	6	1.500	0.625

* Relieve cutter body when using high-feed insert UNHU14_HF (see page 30).

METRIC

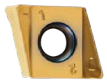
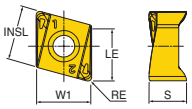
Part Number	DC Cutting Dia.	OAL Overall Length	ZEFF Eff. Teeth	DCON Bore Dia.	KWW Keyway
TJ5J050R00	50.00 mm	45.00 mm	4	22.00 mm	10.40 mm
TJ5J063R00	63.00 mm	45.00 mm	6	22.00 mm	10.40 mm
TJ6J063R00	63.00 mm	45.00 mm	4	22.00 mm	10.40 mm
TJ5J080R00	80.00 mm	50.00 mm	7	27.00 mm	12.40 mm
TJ6J080R00	80.00 mm	50.00 mm	5	27.00 mm	12.40 mm
TJ5J100R00	100.00 mm	55.00 mm	9	32.00 mm	14.40 mm
TJ6J100R00	100.00 mm	55.00 mm	6	32.00 mm	14.40 mm
TJ5J125R00	125.00 mm	63.00 mm	11	40.00 mm	16.40 mm
TJ6J125R00	125.00 mm	63.00 mm	7	40.00 mm	16.40 mm

* Relieve cutter body when using high-feed insert UNHU14_HF (see page 30).

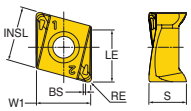
DIPOSDUO™ 14 INSERTS

HF M AL

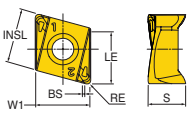
MNHU14_M

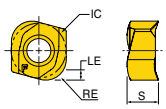
MNHU14_PNR-M

MNCU14_AL

UNHU14_HF

Part Number	Application	RE Corner Radius	BS Wiper Length	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI No. of Indexes	IH Insert Hand	Grade	IN10K	IN2505	IN2510	IN2530	IN2540	IN6537
MNCU140708FR-AL	Grd/Pol for Al - Face Wiper	0.031	0.047	0.531	0.551	0.551	0.366	4	Right		•					
MNHU140708R-M	Multi-Purpose	0.031	-	0.540	0.551	0.551	0.362	4	Right			•	•	•	•	
MNHU140708PNR-M	Multi-Purpose - Integrated Wiper	0.031	0.049	0.540	0.551	0.551	0.381	4	Right			•		•		•
NEW **MNCU140716FR-AL**	Grd/Pol for Al	0.062	-	0.531	0.551	0.551	0.360	4	Right		•					
NEW **MNCU140724FR-AL**	Grd/Pol for Al	0.094	-	0.531	0.551	0.551	0.350	4	Right		•					
NEW **MNCU140730FR-AL**	Grd/Pol for Al	0.118	-	0.531	0.551	0.551	0.342	4	Right		•					

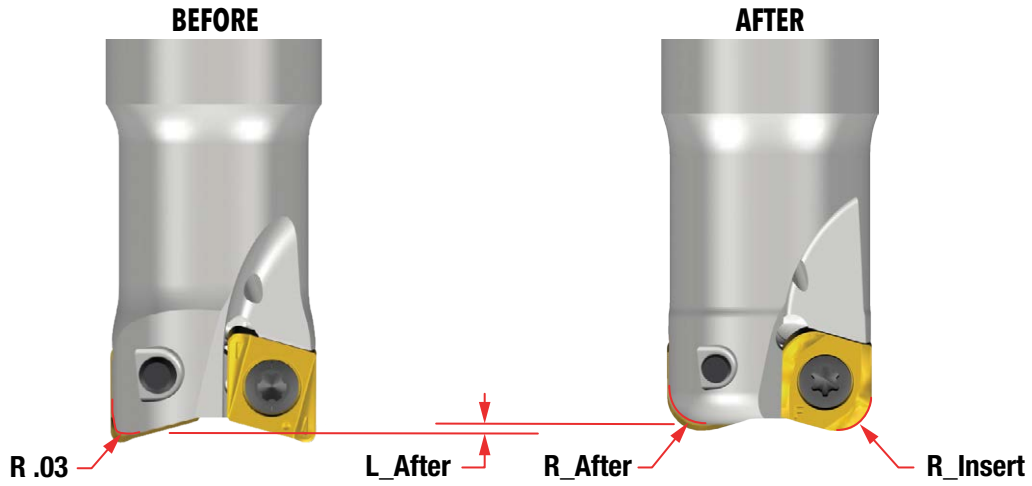
Part Number	Application	REEQ Program Radius Equivalent	LE Cutting Edge Eff. Length	INSL Insert Length	W1 Insert Width	S Thickness	NOI No. of Indexes	IH Insert Hand	Grade	IN2505	IN6537
UNHU140750R-HF	Hi-Feed	0.196	0.118	0.551	0.551	0.267	4	Right		•	•

DIPOSDUO™ 14 HARDWARE

	 Screw	 Driver Handle	 Torx Driver Blade	 Retention Bolt	 **OPTIONAL** Coolant Retention Bolt	 **OPTIONAL** Wrench	 **OPTIONAL** Torque Driver Handle	 **OPTIONAL** Preset Torque Bit	 **OPTIONAL** Torque Driver Bit
1TJ1J-1202281R01	SM50-127-10	DS-A00T	DS-T206B				DS-A00-.25-T	DT-44-.25	DS-T20B1
1TJ1J-1502281R01	SM50-127-10	DS-A00T	DS-T206B				DS-A00-.25-T	DT-44-.25	DS-T20B1
1TJ1J-12017X8R01	SM50-127-10	DS-A00T	DS-T206B			622MM	DS-A00-.25-T	DT-44-.25	DS-T20B1
1TJ1J-15017X9R01	SM50-127-10	DS-A00T	DS-T206B			630MM	DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J-20R01	SM50-127-10	DS-A00T	DS-T206B	SD-06-47	SD-06-A6		DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J-25R01	SM50-127-10	DS-A00T	DS-T206B	SD-08-47	SD-08-C9		DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ6J-25R01	SM50-127-10	DS-A00T	DS-T206B	SD-08-47	SD-08-C9		DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J-30R01	SM50-127-10	DS-A00T	DS-T206B	SD-08-47	SD-08-C9		DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ6J-30R01	SM50-127-10	DS-A00T	DS-T206B	SD-08-47	SD-08-C9		DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J-40R01	SM50-127-10	DS-A00T	DS-T206B	SD-12-89	SD-12-99		DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ6J-40R01	SM50-127-10	DS-A00T	DS-T206B	SD-12-89	SD-12-99		DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J050R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J063R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ6J063R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M10X25-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J080R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M12X35-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ6J080R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M12X35-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J100R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M16X30-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ6J100R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M16X30-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ5J125R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M20X40-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1
TJ6J125R00	SM50-127-10	DS-A00T	DS-T206B	ISO4762M20X40-12.9			DS-A00-.25-T	DT-44-.25	DS-T20B1

DIPOSDUO™ CUTTER BODY MODIFICATION FOR UNHU HI-FEED INSERTS

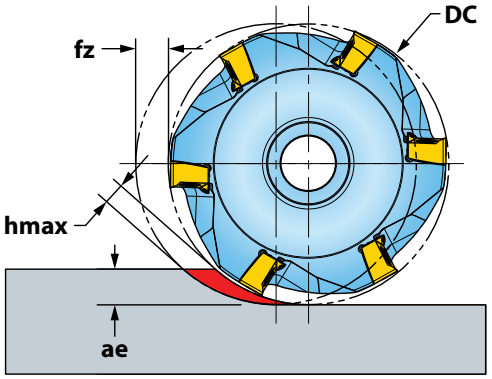
When using an UNHU_HF Hi-Feed inserts, check to ensure the cutter body does not protrude beyond the trailing edge of the insert. If it does, the housing corner can be modified on a lathe or grinder by removing material from the face and enlarging the corner radius (illustrated below).



Insert Size	R_Insert	L_After	R_After
UNHU090432R-HF	0.062	0.020	0.105
UNHU110640R-HF	0.078	0.030	0.135
UNHU140750R-HF	0.120	0.040	0.175

DIPOSDUO™ 04 OPERATING GUIDELINES: 90°

Chip Thinning



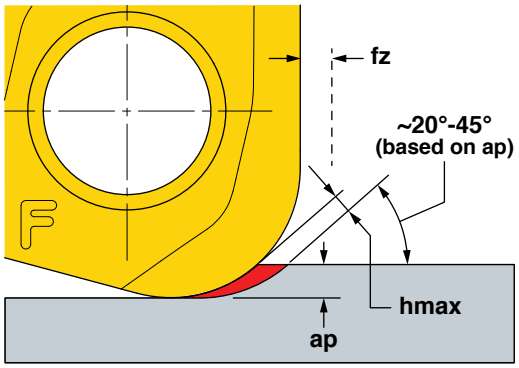
* Chip Thinning Calculator is recommended to ensure hmax is within fz range.

Materials				Vc Cutting Speed SFM	fz* Feed per Tooth (inch)	Harder <----------> Tougher				Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples			IN2504	IN2510	IN2505	IN2530	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.002-.005	3		2	1	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700						
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600						
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.002-.005			2	1	Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550						May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.002-.005	1	2	3		No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800						
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.002-.005			1	2	Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200				2	1	
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.002-.004	1		2		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.

DIPOSDUO™ 04 OPERATING GUIDELINES: HI-FEED

Chip Thinning



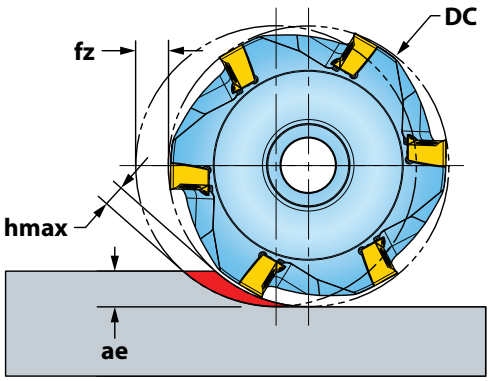
* Chip Thinning Calculator is recommended to ensure hmax is within range.

Materials				Vc Cutting Speed SFM	fz Feed/Tooth (inch)	ap Axial Depth of Cut (inch)	hmax* Chip Thickness Min. (inch)	Harder<-->Tougher		Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples					IN2504	IN2505	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.004-.015	.008-.016	.002-.006	2	1	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700						
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600						
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.004-.0165	.008-.016	.002-.006		1	Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550						May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.004-.020	.008-.016	.002-.007	1	2	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800						
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.004-.015	.008-.016	.002-.006		1	Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200						
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.004-.010	.008-.012	.002-.005	1	2	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.

DIPOS DUO 06 OPERATING GUIDELINES: 90°

Chip Thinning



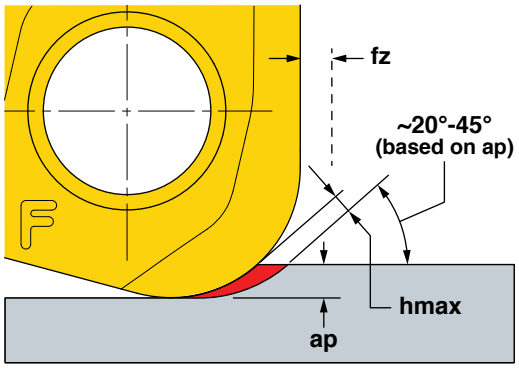
* Chip Thinning Calculator is recommended to ensure hmax is within fz range.

Materials				Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Harder <----------> Tougher								Coolant
						DLC	Carbide							
ISO	Mat'l Group #VDI 3323	Type	Examples			IN3310	IN2504	IN10K	IN2510	IN6515	IN2505	IN2530	IN6537	IN2036	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.003-.006						2	1	3		No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700											
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600											
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.003-.005						2	1		3	Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550							3	2		1	May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.003-.007		2		1	3					No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800			3		2	1					
N	21 - 30	Aluminum	7075, 6061	1000-3000	.003-.009			1							Yes
				1500-4500		1									
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.003-.005						2	3		1	Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200							3	2		1	
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.003-.004		1				2				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.

DIPOSDUO™ 06 OPERATING GUIDELINES: HI-FEED

Chip Thinning



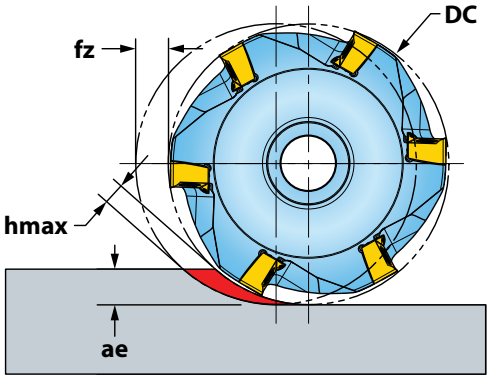
* Chip Thinning Calculator is recommended to ensure hmax is within range.

Materials				Vc Cutting Speed SFM	fz Feed/Tooth (inch)	ap Axial Depth of Cut (inch)	hmax* Chip Thickness Min. (inch)	Harder <-----> Tougher				Coolant
								Carbide				
ISO	Mat'l Group #VDI 3323	Type	Examples					IN2504	IN2505	IN2530	IN6537	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.008-.020	.008-.024	.003-.008		3	2	1	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700								
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600								
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.008-.015	.008-.024	.003-.006		2	1		Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550								May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.008-.025	.008-.024	.003-.009		1	2	3	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800								
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.008-.015	.008-.024	.003-.006		1	2		Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200					2	1		
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.008-.012	.008-.020	.003-.005	1	2			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.

DIPOS DUO 09 OPERATING GUIDELINES: 90°

Chip Thinning



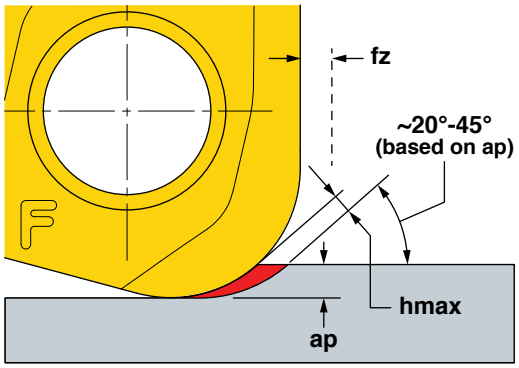
* Chip Thinning Calculator is recommended to ensure hmax is within fz range.

Materials				Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Harder <----------> Tougher									Coolant
						DLC	Carbide								
ISO	Mat'l Group #VDI 3323	Type	Examples			IN3310	IN2504	IN10K	IN2510	IN6515	IN2505	IN2530	IN6537	IN2036	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.003-.007						2	1	3		No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700											
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600											
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.003-.006						3	2		1	Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550											May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.003-.008		2		1	3			4		No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800			3		2	1			4		
N	21 - 30	Aluminum	7075, 6061	1000-3000	.003-.012			1							Yes
				1500-4500		1									
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.003-.006						2	3		1	Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200							3	2		1	
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.003-.005		1				2				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.

DIPOSDUO™ 09 OPERATING GUIDELINES: HI-FEED

Chip Thinning



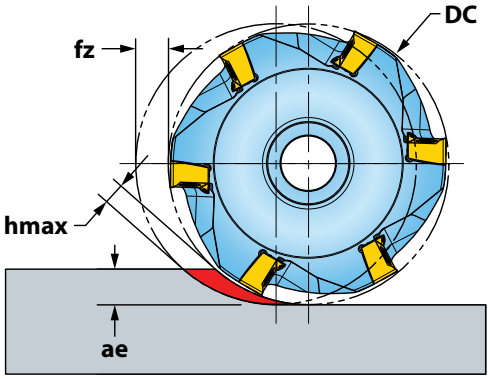
* Chip Thinning Calculator is recommended to ensure hmax is within range.

Materials				Vc Cutting Speed SFM	fz Feed/Tooth (inch)	ap Axial Depth of Cut (inch)	hmax* Chip Thickness Min. (inch)	Harder<-->Tougher			Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples					IN2504	IN2505	IN6537	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.008-.025	.012-.031	.003-.010		1	2	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700							
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600							
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.008-.020	.012-.031	.003-.008		1		Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550							May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.008-.025	.012-.031	.003-.010	2	1	3	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800							
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.008-.020	.012-.031	.003-.007		1		Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200							
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.008-.015	.012-.025	.003-.006	1	2		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.

DIPOSDUO™ 11 OPERATING GUIDELINES: 90°

Chip Thinning



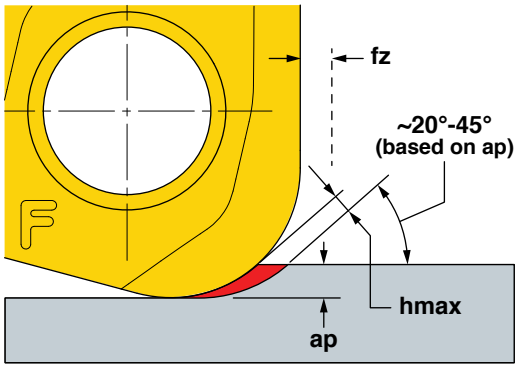
* Chip Thinning Calculator is recommended to ensure hmax is within fz range.

Materials				Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Harder <----------> Tougher						Coolant
						DLC	Carbide					
ISO	Mat'l Group #VDI 3323	Type	Examples			IN3310	IN10K	IN2510	IN2505	IN2530	IN6537	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.003-.008				3	2	1	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700								
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600								
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.003-.007				2	1		Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550								May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.003-.009			1	2		3	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800								
N	21 - 30	Aluminum	7075, 6061	1000-3000	.003-.012		1					Yes
				1500-4500		1						
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-150	.003-.006				1	2		Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200					2	1		
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.003-.005				1			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.

DIPOS DUO 11 OPERATING GUIDELINES: HI-FEED

Chip Thinning



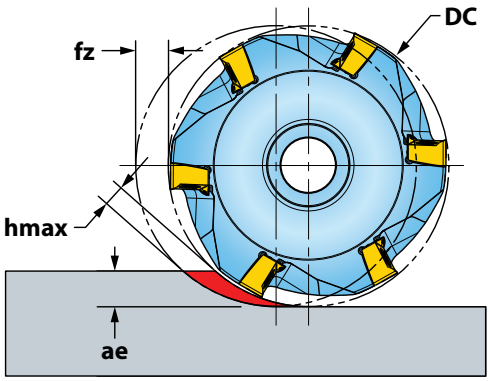
* Chip Thinning Calculator is recommended to ensure hmax is within range.

Materials				Vc Cutting Speed SFM	fz Feed/Tooth (inch)	ap Axial Depth of Cut (inch)	hmax* Chip Thickness Min. (inch)	Harder<->Tougher Carbide		Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples					IN2505	IN6537	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.012-.030	.012-.045	0.003-.012	2	1	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700						
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600						
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.012-.025	.012-.045	0.003-.009	1		Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550						May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.012-.030	.012-.045	0.003-.012	1	2	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800						
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.012-.025	.012-.035	0.003-.008	1		Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200						
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.012-.018	.012-.028	0.003-.006	1		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.

DIPOSDUO™ 14 OPERATING GUIDELINES: 90°

Chip Thinning



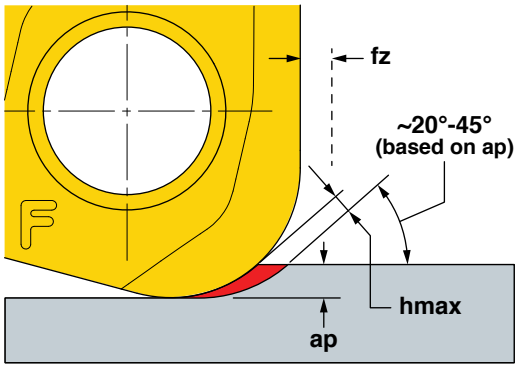
* Chip Thinning Calculator is recommended to ensure hmax is within fz range.

Materials				Vc Cutting Speed SFM	fz* Feed/Tooth (inch)	Harder <----------> Tougher Carbide						Coolant
ISO	Mat'l Group #VDI 3323	Type	Examples			IN10K	IN2510	IN2540	IN2505	IN2530	IN6537	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.003-.008			3	1	2	4	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700								
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600								
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.003-.007				2	1		Yes
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-550								May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.003-.009		1	4	2		3	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800								
N	21 - 30	Aluminum	7075, 6061	1000-3000	.003-.012	1						Yes
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.003-.006				1	2		Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200					2	1		
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.003-.005				1			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.

DIPOS DUO 14 OPERATING GUIDELINES: HI-FEED

Chip Thinning



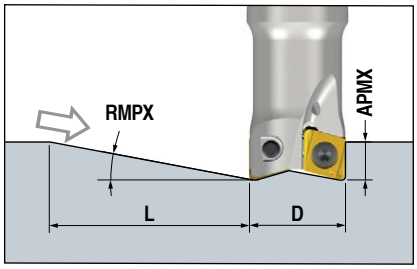
* Chip Thinning Calculator is recommended to ensure hmax is within range.

Materials				Vc Cutting Speed SFM	fz Feed/Tooth (inch)	ap Axial Depth of Cut (inch)	hmax* Chip Thickness Min. (inch)	Harder<->Tougher		Coolant
								Carbide		
ISO	Mat'l Group #VDI 3323	Type	Examples					IN2505	IN6537	
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-1000	.012-.035	.012-.045	.003-.012	2	1	No
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	350-700						
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-600						
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	350-600	.012-.030	.012-.045	.003-.009	1		Yes
	14	Stainless Steel (Aus-tenitic)	303, 304, 316, 15-5, 17-4	300-550						May not be required at high speeds
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-1000	.012-.035	.012-.045	.003-.012	1	2	No
	17 thru 20	Nodular Cast Iron	60-40-18, 100-70-03	400-800						
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	65-200	.012-.025	.012-.035	.003-.008	1		Yes
	36 thru 37	Titanium Alloys	6Al-4V, 5Al-5Mo-5V-3Cr	85-200						
H	38 thru 39	Hardened Steel >48	A2, O1, D2	130-250	.012-.020	.012-.028	.003-.006	1		No

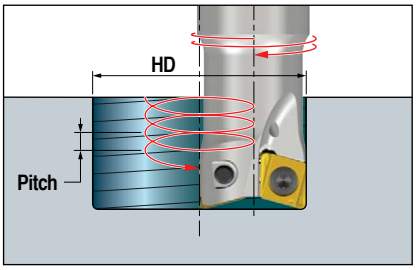
Note: Feed and speed recommendations are starting operating parameters. They are only guidelines from which further optimization should take place. Operating parameters are influenced by many machining variables. These variables may cause for reductions in feeds and speed or dramatic increases. Additionally,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

DIPOSDUO™ 04 RAMPING DATA USING MN_U04

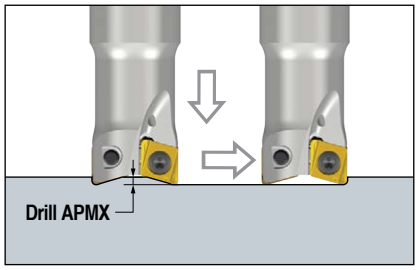
Straight Ramping



Helical Ramping



Drill Mill



USING MN_U04 (R.008")

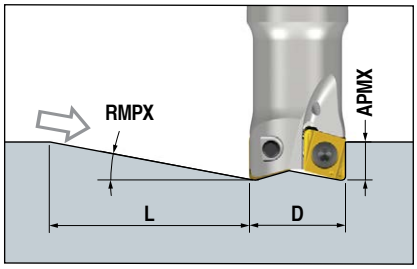
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.500	5.1	0.13	1.4	0.76	1.00	0.062 0.122	0.027
.625	4.4	0.13	1.6	1.21	1.25	0.078 0.118	0.027
.750	3.3	0.13	2.2	1.26	1.50	0.082 0.122	0.023
.875	2.8	0.13	2.6	1.51	1.75	0.084 0.119	0.023
1.000	2.5	0.13	2.9	1.76	2.00	0.086 0.114	0.023
1.250	1.9	0.13	3.9	2.26	2.50	0.090 0.110	0.023
1.500	1.4	0.13	5.3	2.76	3.00	0.090 0.106	0.023

USING MN_U04 (R.015")

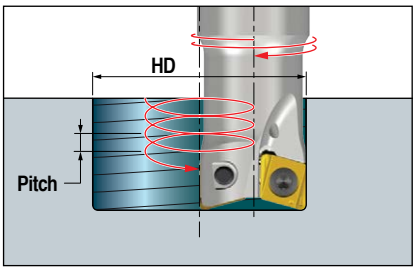
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.500	4.7	0.13	1.5	0.76	1.00	0.059 0.114	0.023
.625	4.1	0.13	1.8	1.21	1.25	0.074 0.122	0.023
.750	3.1	0.13	2.4	1.26	1.50	0.078 0.114	0.019
.875	2.6	0.13	2.8	1.51	1.75	0.080 0.110	0.019
1.000	2.3	0.13	3.2	1.76	2.00	0.082 0.106	0.019
1.250	1.7	0.13	4.3	2.26	2.50	0.082 0.102	0.019
1.500	1.3	0.13	5.7	2.76	3.00	0.082 0.098	0.019

DIPOSDUO™ 04 RAMPING DATA USING MN_U04

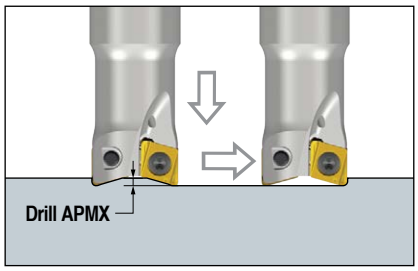
Straight Ramping



Helical Ramping



Drill Mill

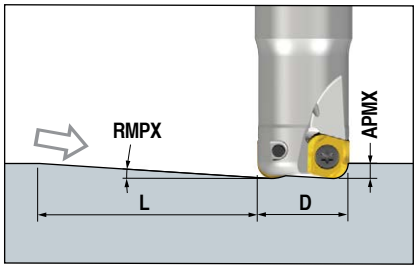


USING MN_U04 (R.031")

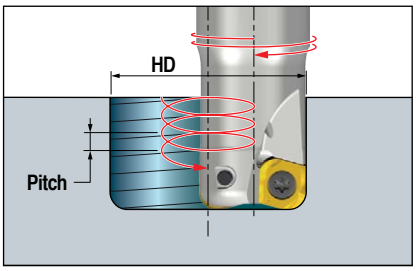
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.500	3.9	0.13	1.9	0.76		0.051	0.015
					1.00	0.094	
.625	3.5	0.13	2.1	1.21		0.062	0.015
					1.25	0.102	
.750	2.6	0.13	2.8	1.26		0.066	0.012
					1.50	0.094	
.875	2.3	0.13	3.2	1.51		0.066	0.012
					1.75	0.092	
1.000	1.9	0.13	3.9	1.76		0.066	0.012
					2.00	0.090	
1.250	1.5	0.13	4.9	2.26		0.070	0.012
					2.50	0.085	
1.500	1.1	0.13	6.7	2.76		0.070	0.012
					3.00	0.082	

DIPOSDUO™ 04 RAMPING DATA USING UNHU04

Straight Ramping



Helical Ramping

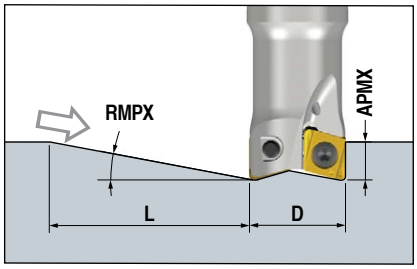


USING UNHU04 (HI-FEED)

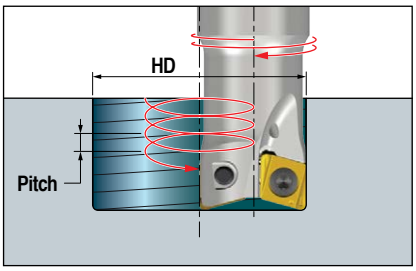
DC Cutter Diameter	Straight Ramp			Helical Ramp		
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.
.500	2.0	0.019	0.5	0.76		0.019
					1.00	0.019
.625	1.9	0.019	0.6	1.21		0.019
					1.25	0.019
.750	2.2	0.019	0.5	1.26		0.019
					1.50	0.019
.875	2.0	0.019	0.4	1.51		0.019
					1.75	0.019
1.000	1.7	0.019	0.6	1.76		0.019
					2.00	0.019
1.250	1.3	0.019	0.9	2.26		0.019
					2.50	0.019
1.500	1.0	0.019	1.1	2.76		0.019
					3.00	0.019

DIPOSDUO™ 06 RAMPING DATA USING MN_U06

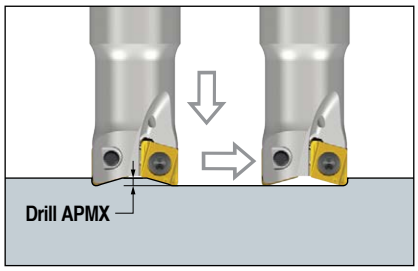
Straight Ramping



Helical Ramping



Drill Mill

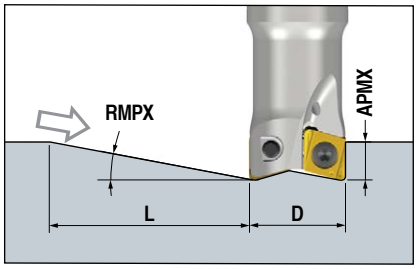


USING MN_U06 (R.015")

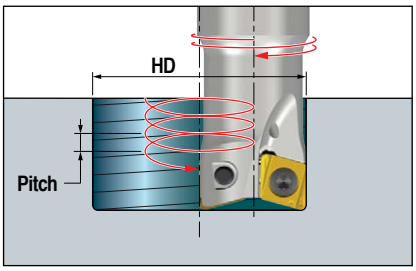
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.625	2.9	0.24	4.7	0.84		0.027	0.015
					1.25	0.086	
.750	3.8	0.24	3.6	1.09		0.066	0.015
					1.50	0.137	
.875	4.0	0.24	3.4	1.34		0.078	0.015
					1.75	0.153	
1.000	3.8	0.24	3.6	1.59		0.106	0.015
					2.00	0.181	
1.250	2.8	0.24	4.9	2.09		0.110	0.015
					2.50	0.165	
1.500	2.3	0.24	5.9	2.59		0.114	0.015
					3.00	0.161	
2.000	1.6	0.24	8.5	3.59		0.118	0.015
					4.00	0.149	
2.500	1.2	0.24	11.4	4.59		0.122	0.015
					5.00	0.145	
3.000	0.8	0.24	17.0	5.59		0.128	0.015
					6.00	0.141	

DIPOSDUO™ 06 RAMPING DATA USING MN_U06

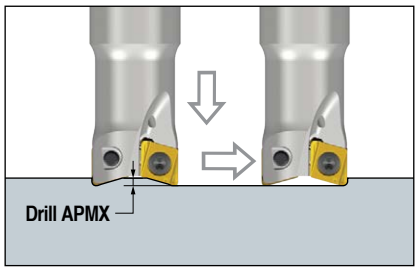
Straight Ramping



Helical Ramping



Drill Mill

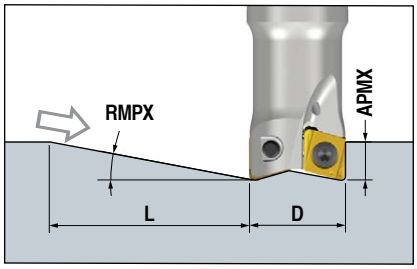


USING MN_U06 (R.031")

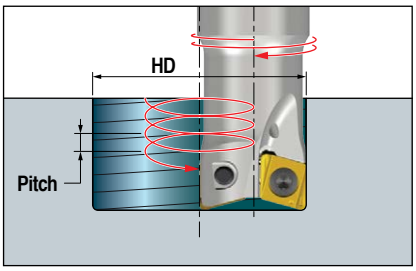
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.625	2.9	0.24	4.7	0.84		0.027	0.015
					1.25	0.086	
.750	3.8	0.24	3.6	1.09		0.066	0.015
					1.50	0.137	
.875	4.0	0.24	3.4	1.34		0.078	0.015
					1.75	0.153	
1.000	4.1	0.24	3.6	1.59		0.106	0.015
					2.00	0.181	
1.250	2.8	0.24	4.9	2.09		0.110	0.015
					2.50	0.165	
1.500	2.3	0.24	5.9	2.59		0.114	0.015
					3.00	0.161	
2.000	1.6	0.24	8.5	3.59		0.118	0.015
					4.00	0.149	
2.500	1.2	0.24	11.4	4.59		0.122	0.015
					5.00	0.145	
3.000	0.8	0.24	17.0	5.59		0.128	0.015
					6.00	0.141	

DIPOSDUO™ 06 RAMPING DATA USING MN_U06

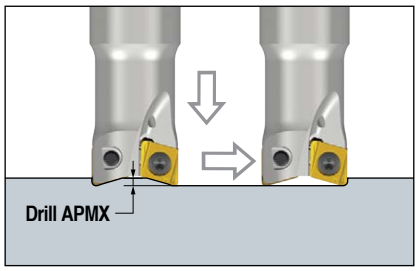
Straight Ramping



Helical Ramping



Drill Mill

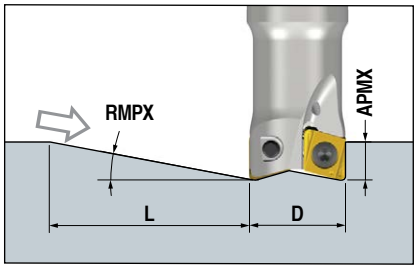


USING MN_U06 (R.039")

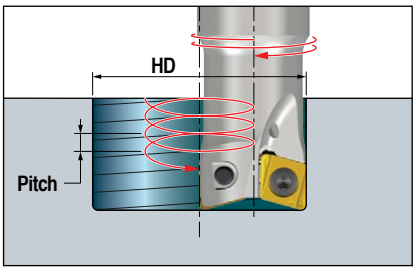
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.625	2.7	0.24	5.0	0.84		0.027	0.017
					1.25	0.082	
.750	3.6	0.24	3.8	1.09		0.062	0.017
					1.50	0.133	
.875	3.8	0.24	3.6	1.34		0.074	0.017
					1.75	0.145	
1.000	4.4	0.24	3.1	1.59		0.118	0.017
					2.00	0.200	
1.250	3.1	0.24	4.4	2.09		0.122	0.017
					2.50	0.181	
1.500	2.5	0.24	5.4	2.59		0.125	0.017
					3.00	0.173	
2.000	1.8	0.24	7.6	3.59		0.129	0.017
					4.00	0.165	
2.500	1.4	0.24	9.8	4.59		0.133	0.017
					5.00	0.161	
3.000	0.9	0.24	15.2	5.59		0.139	0.017
					6.00	0.157	

DIPOSDUO™ 06 RAMPING DATA USING MN_U06

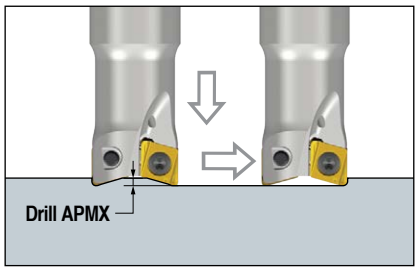
Straight Ramping



Helical Ramping



Drill Mill

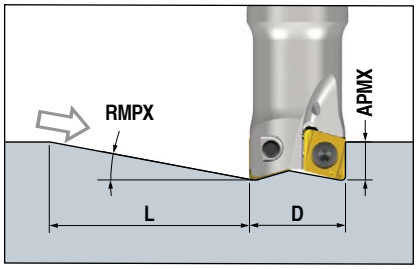


USING MN_U06 (R.047")

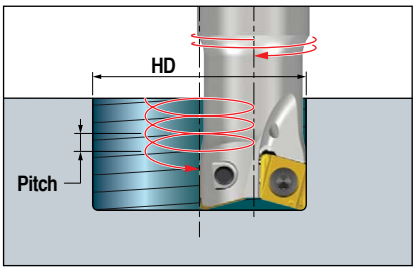
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.625	3.0	0.24	4.5	0.84	1.25	0.031 0.086	0.015
.750	3.9	0.24	3.5	1.09	1.50	0.066 0.141	0.015
.875	4.1	0.24	3.3	1.34	1.75	0.078 0.157	0.015
1.000	4.2	0.24	3.2	1.59	2.00	0.110 0.192	0.015
1.250	2.9	0.24	4.7	2.09	2.50	0.114 0.169	0.015
1.500	2.3	0.24	5.9	2.59	3.00	0.118 0.165	0.015
2.000	1.7	0.24	8.0	3.59	4.00	0.122 0.157	0.015
2.500	1.3	0.24	10.5	4.59	5.00	0.125 0.149	0.015
3.000	0.9	0.24	15.2	5.59	6.00	0.129 0.143	0.015

DIPOSDUO™ 06 RAMPING DATA USING MN_U06

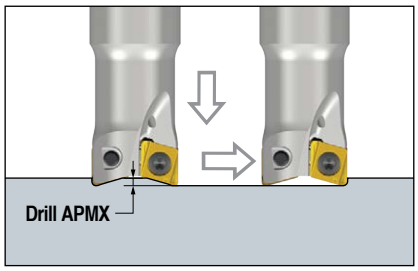
Straight Ramping



Helical Ramping



Drill Mill

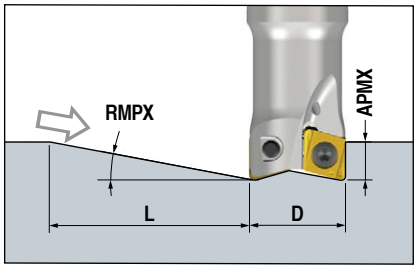


USING MN_U06 (R.062")

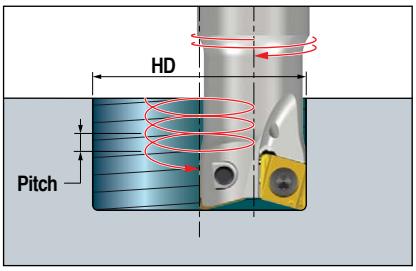
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.625	2.2	0.24	6.2	0.84		0.023	0.008
					1.25	0.062	
.750	3.2	0.24	4.2	1.09		0.055	0.008
					1.50	0.118	
.875	3.4	0.24	4.0	1.34		0.066	0.008
					1.75	0.130	
1.000	3.4	0.24	4.0	1.59		0.098	0.008
					2.00	0.161	
1.250	2.5	0.24	5.4	2.09		0.102	0.008
					2.50	0.149	
1.500	2.0	0.24	6.8	2.59		0.102	0.008
					3.00	0.141	
2.000	1.5	0.24	9.1	3.59		0.110	0.008
					4.00	0.137	
2.500	1.1	0.24	12.4	4.59		0.110	0.008
					5.00	0.133	
3.000	0.5	0.24	28.6	5.59		0.112	0.008
					6.00	0.129	

DIPOSDUO™ 06 RAMPING DATA USING MN_U06

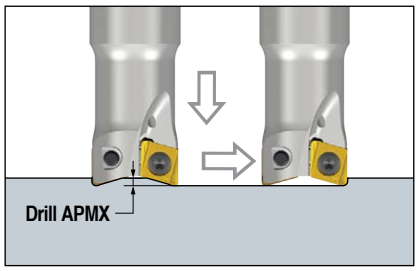
Straight Ramping



Helical Ramping



Drill Mill

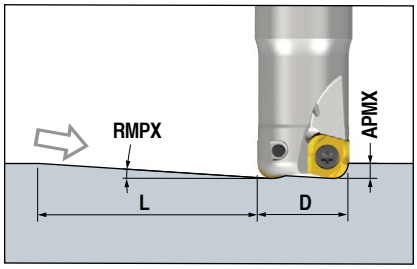


USING MN_U06 (R.079")

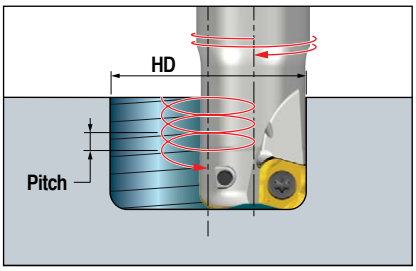
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
.625	0.8	0.24	17.1	0.84	1.25	0.007 0.023	0.003
.750	2.1	0.24	6.5	1.09	1.50	0.035 0.078	0.003
.875	2.3	0.24	5.9	1.34	1.75	0.043 0.090	0.003
1.000	3.2	0.24	4.2	1.59	2.00	0.086 0.145	0.003
1.250	2.2	0.24	6.2	2.09	2.50	0.090 0.133	0.003
1.500	1.8	0.24	7.6	2.59	3.00	0.090 0.125	0.003
2.000	1.3	0.24	10.5	3.59	4.00	0.094 0.118	0.003
2.500	1.0	0.24	13.7	4.59	5.00	0.094 0.114	0.003
3.000	0.4	0.24	34.3	5.59	6.00	0.096 0.110	0.003

DIPOSDUO™ 06 RAMPING DATA USING UNHU06

Straight Ramping



Helical Ramping

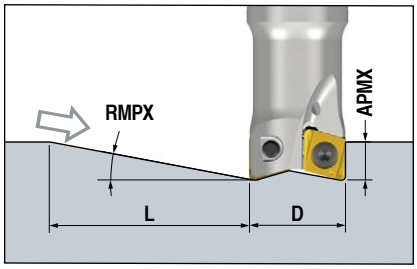


USING UNHU06 (HI-FEED)

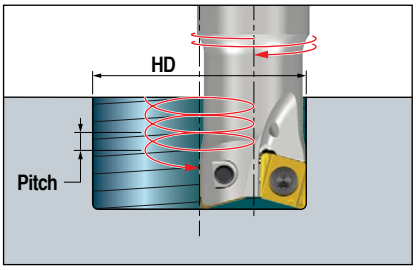
DC Cutter Diameter	Straight Ramp			Helical Ramp		
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.
0.625	0.6	0.039	3.7	0.83		0.008
					1.25	0.019
0.750	1.7	0.039	1.3	1.08		0.027
					1.50	0.039
0.875	2.1	0.039	1.1	1.33		0.039
					1.75	0.039
1.000	2.3	0.039	1.0	1.58		0.039
					2.00	0.039
1.250	2.4	0.039	0.9	2.08		0.039
					2.50	0.039
1.500	1.8	0.039	1.2	2.58		0.039
					3.00	0.039
2.000	1.4	0.039	1.6	3.58		0.039
					4.00	0.039
2.500	1.1	0.039	2.0	4.58		0.039
					5.00	0.039
3.000	0.8	0.039	2.8	5.58		0.039
					6.00	0.039

DIPOSDUO™ 09 RAMPING DATA USING MN_U09

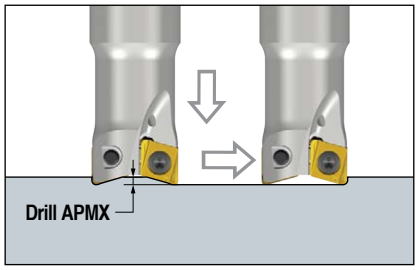
Straight Ramping



Helical Ramping



Drill Mill



USING MN_U09 (R.015")

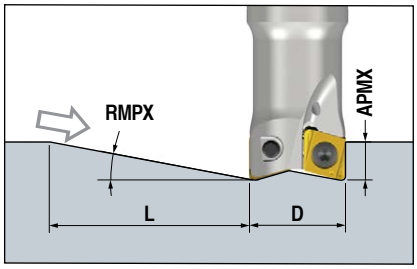
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
1.000	4.3	0.32	4.2	1.43	2.00	0.082 0.200	0.035
1.250	4.5	0.32	4.0	1.93	2.50	0.145 0.263	0.035
1.500	3.2	0.32	5.7	2.43	3.00	0.150 0.236	0.035
2.000	2.4	0.32	7.6	3.43	4.00	0.157 0.220	0.035
2.500	1.8	0.32	10.0	4.43	5.00	0.161 0.210	0.035
3.000	1.3	0.32	14.0	5.43	6.00	0.161 0.200	0.035
4.000	0.8	0.32	22.0	7.43	8.00	0.154 0.183	0.035

USING MN_U09 (R.031")

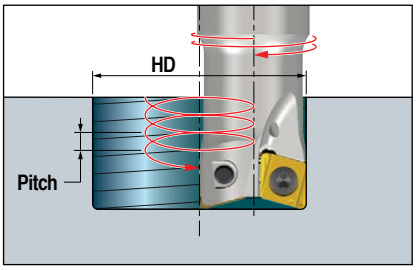
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
1.000	4.3	0.32	4.2	1.43	2.00	0.082 0.200	0.023
1.250	4.5	0.32	4.0	1.93	2.50	0.145 0.263	0.023
1.500	3.2	0.32	5.7	2.43	3.00	0.150 0.236	0.023
2.000	2.4	0.32	7.6	3.43	4.00	0.157 0.220	0.023
2.500	1.8	0.32	10.0	4.43	5.00	0.161 0.210	0.023
3.000	1.3	0.32	14.0	5.43	6.00	0.161 0.200	0.023
4.000	0.8	0.32	22.0	7.43	8.00	0.154 0.183	0.023

DIPOSDUO™ 09 RAMPING DATA USING MN_U09

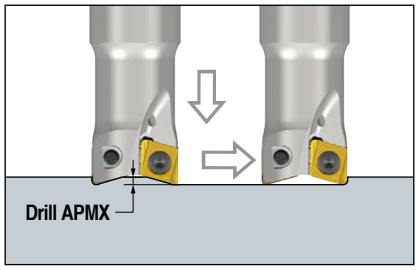
Straight Ramping



Helical Ramping



Drill Mill

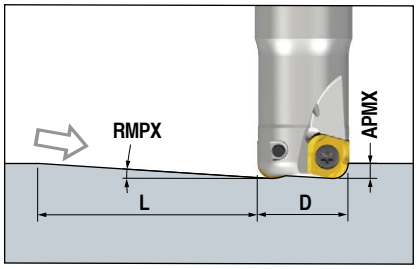


USING MN_U09 (R.062")

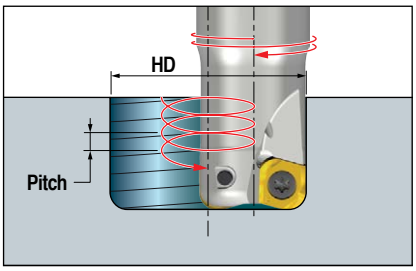
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
1.000	4.1	0.32	4.4	1.43		0.078	0.023
					2.00	0.180	
1.250	4.4	0.32	4.1	1.93		0.140	0.023
					2.50	0.260	
1.500	3.1	0.32	5.6	2.43		0.145	0.023
					3.00	0.228	
2.000	2.3	0.32	7.5	3.43		0.153	0.023
					4.00	0.216	
2.500	1.8	0.32	10.0	4.43		0.161	0.023
					5.00	0.208	
3.000	1.3	0.32	13.3	5.43		0.161	0.023
					6.00	0.196	
4.000	0.8	0.32	22.0	7.43		0.154	0.023
					8.00	0.183	

DIPOSDUO™ 09 RAMPING DATA USING UNHU09

Straight Ramping



Helical Ramping

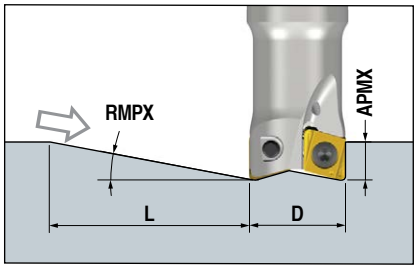


USING UNHU09 (HI-FEED)

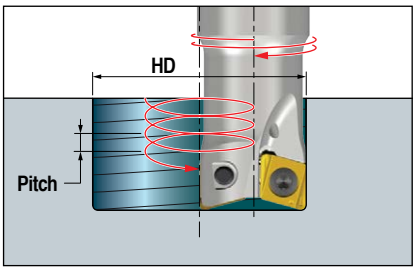
DC Cutter Diameter	Straight Ramp			Helical Ramp		
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.
1.000	1.2	0.059	2.8	1.41		0.023
					2.00	0.059
1.250	2.4	0.059	1.4	1.91		0.059
					2.50	0.059
1.500	2.3	0.059	1.4	2.41		0.059
					3.00	0.059
2.000	1.7	0.059	1.9	3.41		0.059
					4.00	0.059
2.500	1.3	0.059	2.6	4.41		0.059
					5.00	0.059
3.000	1.0	0.059	3.3	5.41		0.059
					6.00	0.059
4.000	0.5	0.059	6.7	7.41		0.059
					8.00	0.059

DIPOSDUO™ 11 RAMPING DATA USING MN_U11

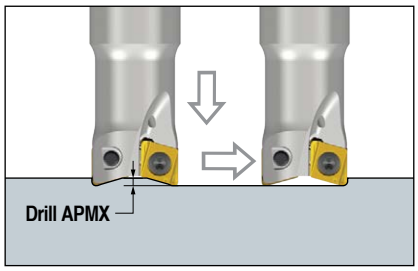
Straight Ramping



Helical Ramping



Drill Mill

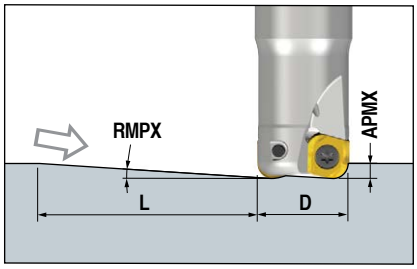


USING MN_U11 (R.031")

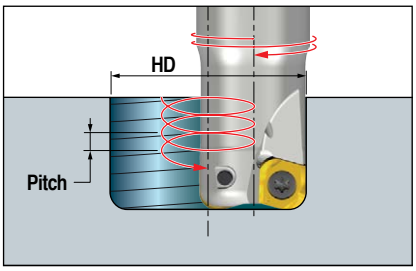
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
1.000	4.0	0.41	5.8	1.27		0.047	0.043
					2.00	0.185	
1.250	4.3	0.41	5.4	1.77		0.106	0.039
					2.50	0.255	
1.500	4.5	0.41	5.2	2.27		0.177	0.035
					3.00	0.330	
2.000	3.2	0.41	7.3	3.27		0.185	0.035
					4.00	0.295	
2.500	2.4	0.41	9.7	4.27		0.196	0.035
					5.00	0.275	
3.000	1.8	0.41	13.0	5.27		0.204	0.035
					6.00	0.263	
4.000	1.0	0.41	23.4	7.27		0.213	0.035
					8.00	0.249	

DIPOSDUO™ 11 RAMPING DATA USING UNHU11

Straight Ramping



Helical Ramping

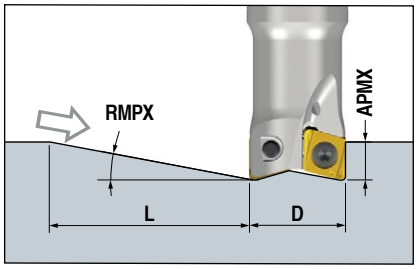


USING UNHU11 (HI-FEED)

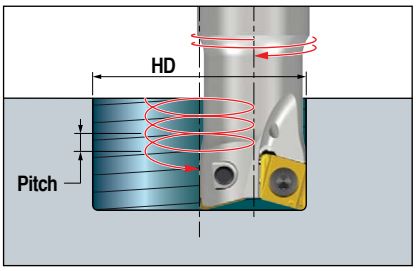
DC Cutter Diameter	Straight Ramp			Helical Ramp		
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.
1.000	0.8	0.078	5.5	1.25		0.008
					2.00	0.035
1.250	2.0	0.078	2.2	1.75		0.047
					2.50	0.078
1.500	3.4	0.078	1.3	2.25		0.078
					3.00	0.078
2.000	2.4	0.078	1.8	3.25		0.078
					4.00	0.078
2.500	1.8	0.078	2.4	4.25		0.078
					5.00	0.078
3.000	1.3	0.078	3.4	5.25		0.078
					6.00	0.078
4.000	0.6	0.078	7.4	7.25		0.078
					8.00	0.078

DIPOSDUO™ 14 RAMPING DATA USING MN_U14

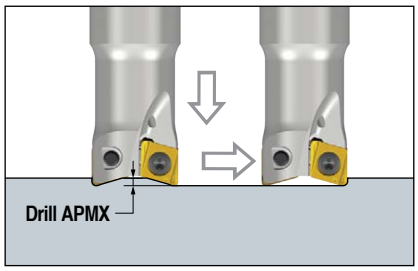
Straight Ramping



Helical Ramping



Drill Mill

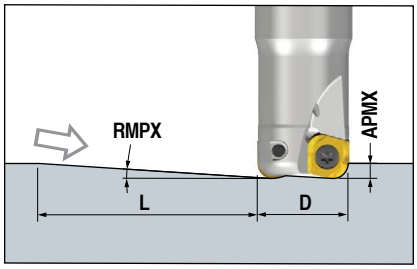


USING MN_U14 (R.031")

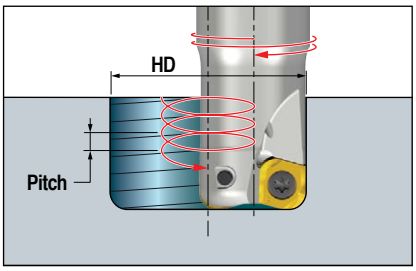
DC Cutter Diameter	Straight Ramp			Helical Ramp			Drill Mill
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.	Drill APMX Depth of Cut Max.
1.250	4.1	0.54	7.5	1.54		0.055	0.043
					2.50	0.240	
1.500	4.3	0.54	7.1	2.04		0.122	0.035
					3.00	0.314	
2.000	4.7	0.54	6.5	3.04		0.224	0.035
					4.00	0.437	
2.500	3.5	0.54	8.8	4.04		0.248	0.035
					5.00	0.405	
3.000	2.6	0.54	11.8	5.04		0.263	0.035
					6.00	0.381	
4.000	1.4	0.54	22.0	7.04		0.278	0.035
					8.00	0.347	

DIPOSDUO™ 14 RAMPING DATA USING UNHU14

Straight Ramping



Helical Ramping



USING UNHU14 (HI-FEED)

DC Cutter Diameter	Straight Ramp			Helical Ramp		
	RMPX Ramp Angle Max.	APMX Depth of Cut Max.	L Ramp Length Min.	HD Hole Dia. Min.	HD Hole Dia. Max.	Pitch Max.
1.250	1.0	0.118	6.7	1.52		0.011
					2.50	0.059
1.500	1.8	0.118	3.7	2.02		0.051
					3.00	0.118
2.000	3.9	0.118	1.7	3.02		0.118
					4.00	0.118
2.500	2.7	0.118	2.5	4.02		0.118
					5.00	0.118
3.000	1.9	0.118	3.5	5.02		0.118
					6.00	0.118
4.000	0.7	0.118	9.6	7.02		0.118
					8.00	0.118