



Insert Series:

SDES13
SDMS13
SDXS13
SDXS16
SDES19
SDMS19
SDXS19

Face Mills:

5M5P, 5M6P (13mm IC)
5G5Q, 5G6Q (16mm IC)
5M5M, 5M6M (19mm IC)

Insert Grades:

IN4005, IN4030, IN4035,
IN4015, IN2515, IN2505,
IN2530, IN2535, IN7035

Applications:

Die & Mold, Aerospace &
General Purpose



Triple Your Productivity! 30° Bevel Cutters in 13, 16 & 19mm IC Insert Sizes

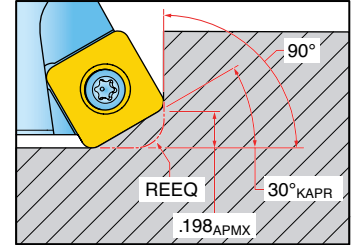
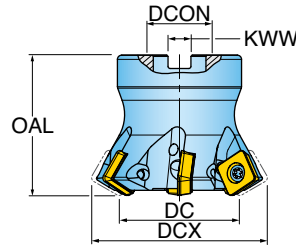
Features & Benefits:

- Positive 30° bevel angle
- Greater DOC, higher productivity
- Ultra-strong, super free cutting geometries
- 4 indexes per insert
- Up to 7 different insert geometry styles
- Extremely strong insert screw design
- Premium milling grades
- Latest post-coating treatment ensures long-lasting performance
- Application flexibility



GOLDQUAD^{XXX}™ SERIES 5M5P, 5M6P

30° BEVEL HIGH FEED CUTTER, 13MM IC



5M6P-20R30 5M5P-20R30	DCX Cutting Dia. Max.	NOI Number of Inserts 5M6P	NOI Number of Inserts 5M5P	OAL Overall Length	DC Cutting Diameter	REEQ Program Radius Equivalent	DCON Bore Diameter	KWW Keyway	CSP Coolant
Insert Number									
SDES130516N-PF	2.000	4	5	1.625	1.218	0.252	0.750	0.312	Yes
SDES130516N-PF1	2.000	4	5	1.625	1.218	0.252	0.750	0.312	Yes
SDMS130516R-PP	2.000	4	5	1.625	1.218	0.252	0.750	0.312	Yes
SDES1305MPR	1.961	4	5	1.606	1.237	0.252	0.750	0.312	Yes
SDES1305MPR-001	1.961	4	5	1.606	1.237	0.252	0.750	0.312	Yes

Insert screw tightening torque: 30-35 in-lbs

5M6P-25R30 5M5P-25R30	DCX Cutting Dia. Max.	NOI Number of Inserts 5M6P	NOI Number of Inserts 5M5P	OAL Overall Length	DC Cutting Diameter	REEQ Program Radius Equivalent	DCON Bore Diameter	KWW Keyway	CSP Coolant
Insert Number									
SDES130516N-PF	2.500	5	6	2.000	1.717	0.252	0.75	0.312	Yes
SDES130516N-PF1	2.500	5	6	2.000	1.717	0.252	0.75	0.312	Yes
SDMS130516R-PP	2.500	5	6	2.000	1.717	0.252	0.75	0.312	Yes
SDES1305MPR	2.461	5	6	1.981	1.737	0.252	0.75	0.312	Yes
SDES1305MPR-001	2.461	5	6	1.981	1.737	0.252	0.75	0.312	Yes

Insert screw tightening torque: 30-35 in-lbs

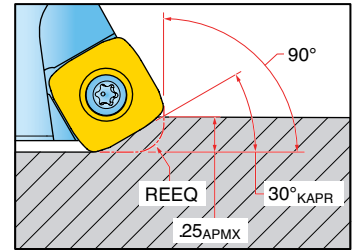
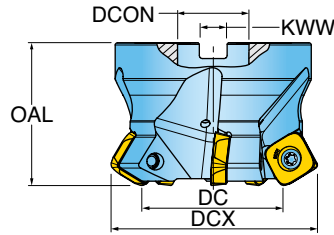
5M6P-30R30 5M5P-30R30	DCX Cutting Dia. Max.	NOI Number of Inserts 5M6P	NOI Number of Inserts 5M5P	OAL Overall Length	DC Cutting Diameter	REEQ Program Radius Equivalent	DCON Bore Diameter	KWW Keyway	CSP Coolant
Insert Number									
SDES130516N-PF	3.000	6	7	2.000	2.217	0.252	1.00	0.375	Yes
SDES130516N-PF1	3.000	6	7	2.000	2.217	0.252	1.00	0.375	Yes
SDMS130516R-PP	3.000	6	7	2.000	2.217	0.252	1.00	0.375	Yes
SDES1305MPR	2.962	6	7	1.981	2.237	0.252	1.00	0.375	Yes
SDES1305MPR-001	2.962	6	7	1.981	2.237	0.252	1.00	0.375	Yes

Insert screw tightening torque: 30-35 in-lbs

NOTE: For detailed programming information refer to tech page.

GOLDQUAD^{XXX}™ SERIES 5G5Q, 5G6Q

30° BEVEL MID FEED CUTTER, 16MM IC

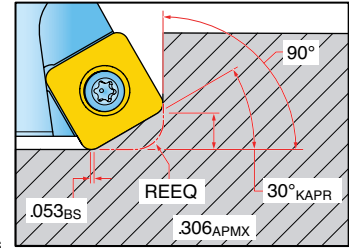
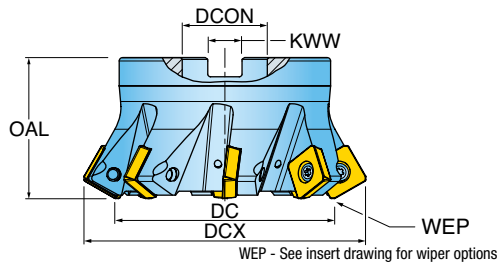


Part Number	DCX Cutting Dia. Max.	NOI Number of Inserts	OAL Overall Length	DC Cutting Diameter	REEQ Program Radius Equivalent	DCON Bore Diameter	KWW Keyway	CSP Coolant
5G6Q-25R30	2.500	4	2.000	1.592	0.297	0.750	0.312	Yes
5G5Q-30R30	3.000	6	2.000	2.093	0.297	1.000	0.375	Yes
5G6Q-30R30	3.000	5	2.000	2.093	0.297	1.000	0.375	Yes
5G6Q-30R31	3.000	5	2.000	2.093	0.297	1.250	0.500	Yes
5G5Q-40R30	4.000	7	2.500	3.092	0.297	1.500	0.625	Yes
5G6Q-40R30	4.000	6	2.500	3.092	0.297	1.500	0.625	Yes
5G5Q-50R30	5.000	8	2.500	4.092	0.297	1.500	0.625	Yes
5G6Q-50R30	5.000	7	2.500	4.092	0.297	1.500	0.625	Yes
5G5Q-60R30	6.000	9	2.500	5.092	0.297	1.500	0.625	Yes
5G6Q-60R30	6.000	8	2.500	5.092	0.297	1.500	0.625	Yes

Insert screw tightening torque: 40-45 in-lbs

GOLDQUAD^{XXX}™ SERIES 5M5M, 5M6M

30° BEVEL HIGH FEED CUTTER, 19MM IC



5M6M-40R30 5M5M-40R30	DCX Cutting Dia. Max.	NOI Number of Inserts 5M6M	NOI Number of Inserts 5M5M	OAL Overall Length	DC Cutting Diameter	REEQ Program Radius Equivalent	WEP Wiper Flat	DCON Bore Diameter	KWW Keyway	CSP Coolant
Insert Number										
SDMS1906ZPR-PF	4.000	6	7	2.500	2.89	.333	0.053	1.5	0.625	Yes
SDMS190620R-PH	4.018	6	7	2.509	2.84	.375	N/A	1.5	0.625	Yes
SDES190620N	4.018	6	7	2.509	2.84	.375	N/A	1.5	0.625	Yes
SDES190620N-001	4.018	6	7	2.51	2.84	.375	N/A	1.5	0.625	Yes
SDES1906MPR	3.949	6	7	2.475	2.89	.364	N/A	1.5	0.625	Yes
SDES1906MPR-001	3.949	6	7	2.475	2.89	.364	N/A	1.5	0.625	Yes

Insert screw tightening torque: 72-77 in-lbs

5M6M-50R30 5M5M-50R30	DCX Cutting Dia. Max.	NOI Number of Inserts 5M6M	NOI Number of Inserts 5M5M	OAL Overall Length	DC Cutting Diameter	REEQ Program Radius Equivalent	WEP Wiper Flat	DCON Bore Diameter	KWW Keyway	CSP Coolant
Insert Number										
SDMS1906ZPR-PF	5.000	7	8	2.500	3.89	.333	0.053	1.5	0.625	Yes
SDMS190620R-PH	5.018	7	8	2.509	3.84	.375	N/A	1.5	0.625	Yes
SDES190620N	5.018	7	8	2.509	3.84	.375	N/A	1.5	0.625	Yes
SDES190620N-001	5.018	7	8	2.509	3.84	.375	N/A	1.5	0.625	Yes
SDES1906MPR	4.949	7	8	2.475	3.89	.364	N/A	1.5	0.625	Yes
SDES1906MPR-001	4.949	7	8	2.475	3.89	.364	N/A	1.5	0.625	Yes

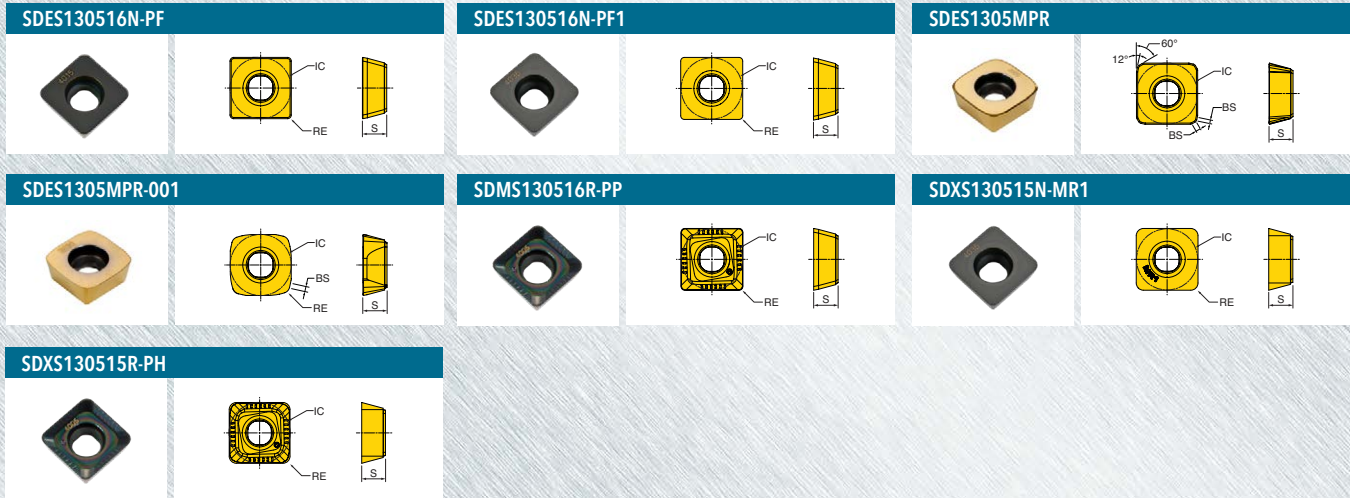
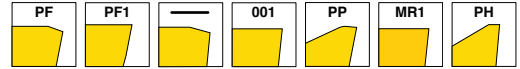
Insert screw tightening torque: 72-77 in-lbs

5M6M-60R30 5M5M-60R30	DCX Cutting Dia. Max.	NOI Number of Inserts 5M6M	NOI Number of Inserts 5M5M	OAL Overall Length	DC Cutting Diameter	REEQ Program Radius Equivalent	WEP Wiper Flat	DCON Bore Diameter	KWW Keyway	CSP Coolant
Insert Number										
SDMS1906ZPR-PF	6.000	8	9	2.500	4.89	.333	0.053	1.5	0.625	No
SDMS190620R-PH	6.018	8	9	2.509	4.837	.375	N/A	1.5	0.625	No
SDES190620N	6.018	8	9	2.509	4.837	.375	N/A	1.5	0.625	No
SDES190620N-001	6.018	8	9	2.509	4.837	.375	N/A	1.5	0.625	No
SDES1906MPR	5.949	8	9	2.475	4.89	.364	N/A	1.5	0.625	No
SDES1906MPR-001	5.949	8	9	2.475	4.89	.364	N/A	1.5	0.625	No

Insert screw tightening torque: 72-77 in-lbs

NOTE: For detailed programming information refer to tech page.

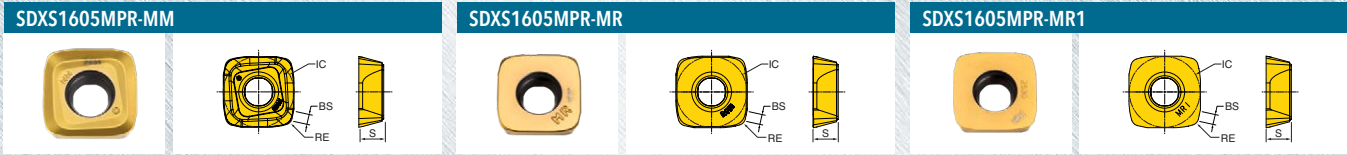
GOLDQUAD^{XXX}™ 13 INSERTS



Part Number	Application	RE Corner Radius	IC Inscribed Circle	S Thickness	NOI Number of Indexes	IH Insert Hand	Grade	IN4015	IN4005	IN2505	IN4030	IN2530	IN4035	IN2535	IN7035
SDES130516N-PF	Flat Top - Landed Edge	0.062	13	0.200	4	Neutral		•	•		•		•		
SDES130516N-PF1	Flat Top - Keen Edge	0.062	13	0.200	4	Neutral					•		•		
SDES1305MPR	Hi-Feed, Heavy Duty	-	13	0.200	4	Right			•	•		•	•		
SDES1305MPR-001	Hi-Feed, Heavy Duty- Keen Edge	-	13	0.200	4	Right			•	•	•	•	•		
SDMS130516R-PP	Positive Geometry	0.062	13	0.200	4	Right			•		•	•	•	•	
SDXS130515N-MR1	Flat Top - Keen Edge	0.060	13	0.200	4	Right				•	•	•	•		•
SDXS130515R-PH	Positive Geometry	0.060	13	0.200	4	Neutral			•	•	•	•	•		•

BS Wiper Length is not functional on 13mm GoldQuad XXX family cutters due to lead angle difference.

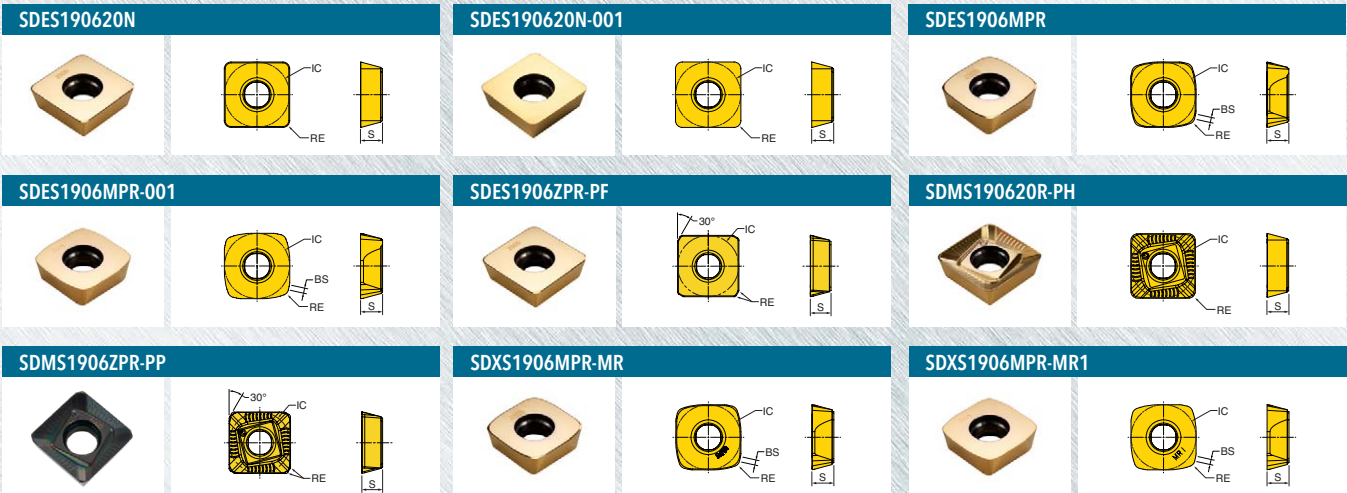
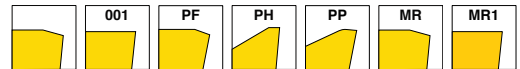
GOLDQUAD^{XXX}™ 16 INSERTS



Part Number	Application	RE Corner Radius	IC Inscribed Circle	S Thickness	NOI Number of Indexes	IH Insert Hand	Grade	IN4015	IN2515	IN4005	IN2505	IN4030	IN2530	IN4035	IN2535	IN7035
SDXS1605MPR-MM	Positive Geometry	0.210	16 mm	0.220	4	Right		•	•	•	•	•	•	•	•	
SDXS1605MPR-MR	Utility Insert - Heavy Duty	0.210	16 mm	0.220	4	Right					•	•	•			
SDXS1605MPR-MR1	Utility Insert - Heavy Duty - Keen Edge	0.210	16 mm	0.220	4	Right		•	•	•	•		•	•	•	•

BS Wiper Length is not functional on 16mm GoldQuad XXX family cutters due to lead angle difference.









GOLDQUAD^{XXX}™ 19 INSERTS



Part Number	Application	RE Corner Radius	IC Inscribed Circle	S Thickness	NOI Number of Indexes	IH Insert Hand	Grade	IN4005	IN2505	IN4030	IN2530	IN4035	IN2535
SDES190620N	Hi-Feed	0.078	19	0.250	4	Right					•		
SDES190620N-001	Hi-Feed	0.078	19	0.250	4	Right			•		•		
SDES1906MPR	Hi-Feed, Heavy Duty	0.210	19	0.250	4	Right		•	•		•	•	
SDES1906MPR-001	Hi-Feed, Heavy Duty - Keen Edge	0.210	19	0.250	4	Right		•	•	•	•	•	•
SDES1906ZPR-PF	Hi-Feed	Sharp	19	0.250	4	Right		•		•		•	
SDMS190620R-PH	Hi-Feed	0.178	19	0.250	4	Right		•	•	•	•	•	
SDMS1906ZPR-PP	Hi-Feed	Sharp	19	0.250	4	Right				•		•	
SDXS1906MPR-MR	Utility Insert - Heavy Duty	0.210	19	0.250	4	Right		•	•	•	•		
SDXS1906MPR-MR1	Utility Insert - Heavy Duty - Keen Edge	0.210	19	0.250	4	Right				•	•		•








BS Wiper Length is not functional on 19mm GoldQuad XXX family cutters due to lead angle difference.

GOLDQUAD^{XXX}™ 13 HARDWARE

					Optional 	Optional 	Optional 	Optional 
	Screw	Driver Handle	Torx Driver Bit	Retention Bolt	Coolant Bolt	Torque Driver Handle	Preset Torque Bit	Torque Driver Bit
5M6P-20R30	SM40-100-R0	DS-A00T	BLD T15/S7	SB-04-15	N/A	DS-A00-.25-T	DT-35-.25	DS-T15B1
5M5P-20R30	SM40-100-R0	DS-A00T	BLD T15/S7	SB-04-15	N/A	DS-A00-.25-T	DT-35-.25	DS-T15B1
5M5P-25R30	SM40-100-R0	DS-A00T	BLD T15/S7	SD-06-48	SD-06-A6	DS-A00-.25-T	DT-35-.25	DS-T15B1
5M6P-25R30	SM40-100-R0	DS-A00T	BLD T15/S7	SD-06-48	SD-06-A6	DS-A00-.25-T	DT-35-.25	DS-T15B1
5M5P-30R30	SM40-100-R0	DS-A00T	BLD T15/S7	SD-08-47	SD-08-92	DS-A00-.25-T	DT-35-.25	DS-T15B1
5M6P-30R30	SM40-100-R0	DS-A00T	BLD T15/S7	SD-08-47	SD-08-92	DS-A00-.25-T	DT-35-.25	DS-T15B1






Insert screw tightening torque: 30-35 in-lbs.

GOLDQUAD^{XXX}™ 16 HARDWARE

					Optional 	Optional 	Optional 
	Screw	Driver Handle	Torx Driver Bit	Retention Bolt	Torque Driver Handle	Preset Torque Bit	Torque Driver Bit
5G6Q-25R30	SM50-130-R0	DS-A00T	DS-T206B	SD06-49	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G5Q-30R30	SM50-130-R0	DS-A00T	DS-T206B	SD08-48	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G6Q-30R30	SM50-130-R0	DS-A00T	DS-T206B	SD08-48	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G6Q-30R31	SM50-130-R0	DS-A00T	DS-T206B	SD10-48	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G5Q-40R30	SM50-130-R0	DS-A00T	DS-T206B	SD12-89	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G6Q-40R30	SM50-130-R0	DS-A00T	DS-T206B	SD12-89	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G5Q-50R30	SM50-130-R0	DS-A00T	DS-T206B	SD12-89	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G6Q-50R30	SM50-130-R0	DS-A00T	DS-T206B	SD12-89	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G5Q-60R30	SM50-130-R0	DS-A00T	DS-T206B	SD12-89	DS-A00-.25-T	DT-44-.25	DS-T20B1
5G6Q-60R30	SM50-130-R0	DS-A00T	DS-T206B	SD12-89	DS-A00-.25-T	DT-44-.25	DS-T20B1

Insert screw tightening torque: 40-45 in-lbs.

GOLDQUAD^{XXX}™ 19 HARDWARE












					Optional 
	Screw	Driver Handle	Torx Driver Bit	Retention Bolt	Coolant Bolt
5M6P-20R30	SM60-135-R0	DS-A00T	DS-T256B	SD-12-82	SD-12-99
5M5P-20R30	SM60-135-R0	DS-A00T	DS-T256B	SD-12-82	SD-12-99
5M5P-25R30	SM60-135-R0	DS-A00T	DS-T256B	SD-12-82	SD-12-99
5M6P-25R30	SM60-135-R0	DS-A00T	DS-T256B	SD-12-82	SD-12-99
5M5P-30R30	SM60-135-R0	DS-A00T	DS-T256B	SD-12-82	N/A
5M6P-30R30	SM60-135-R0	DS-A00T	DS-T256B	SD-12-82	N/A

Insert screw tightening torque: 72-77 in-lbs.

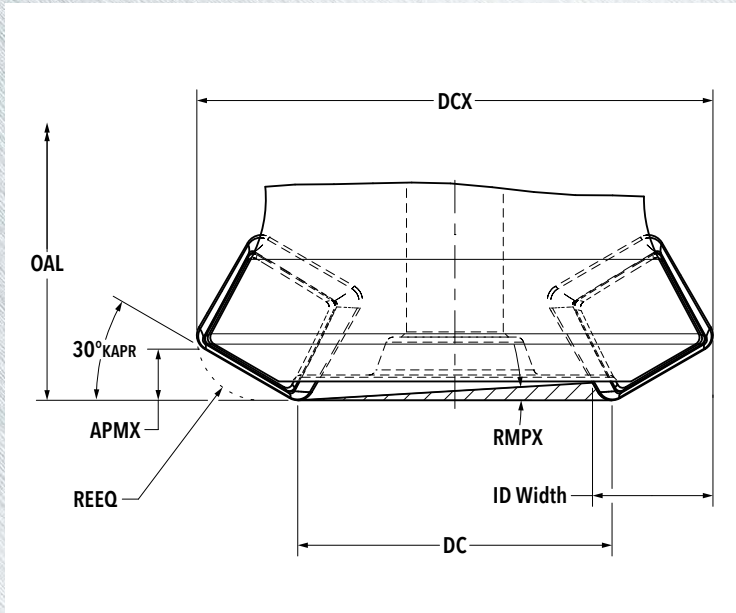
ISO	Materials			V _c Cutting Speed SFM	H _{ex} Max. Chip Thickness (inch)	f _z Feed/ Tooth (inch)	Harder <-----> Tougher								Coolant	Geometry			
	Mat'l Group #VDI 3323	Type	Examples				IN4015	IN2515	IN4005	IN2505	IN4030	IN2530	IN4035	IN2535					
P	1 thru 5	Non-alloy Steel	1018, A36, 1045, A572, 1070	400-600	.008-.022	.016-.044			1	2	3	4			NO	1	2	3	
	6 thru 9	Low-alloy Steel	4140, 4340, P20, 8620, 300M	300-500	.008-.018	.016-.036			1	2	3	4			NO	1	2	3	
	10, 11	High-alloy Steel	H13, A2, D2, M2, T1	300-650	.008-.015	.016-.030			1	2	3	4			NO	1	2	3	
M	12 thru 13	Stainless Steel (Ferritic & Martensitic)	410, 416, 440	200-400	.006-.012	.012-.024						4	3	2	1	YES		1	2
	14	Stainless Steel (Austenitic)	303, 304, 316, 15-5, 17-4	300-500	.004-.008	.008-.016						4	3	2	1	YES		2	1
K	15 thru 16	Gray Cast Iron	CLS. 20, 30, 45	500-900	.004-.024	.008-.048	1	2	3	4					NO	3	1	2	
	17 thru 20	Nodular Cast Iron	"60-40-18, 100-70-03"	300-700	.004-.020	.008-.040		1	2	3	4				NO	3	1	2	
N	21 thru 30	Aluminum	7075, 6061	1000+	.004-.025	.008-.050	1	2	3	4					YES		2	1	
S	31 thru 35	High-Temp Alloys	Inconel, Hastelloy, Nimonic, Monel	50-100	.002-.005	.004-.010						4	3	2	1	YES		1	2
	36 thru 37	Titanium Alloys	6AL-4V, 5AL-5Mo-5V-3Cr	90-150	.004-.008	.008-.016						4	3	2	1	YES		1	2
H	38 thru 39	Hardened Steel >48	A2, O1, D2	100-200	.003-.005	.006-.010				1	2				NO	2	1		

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

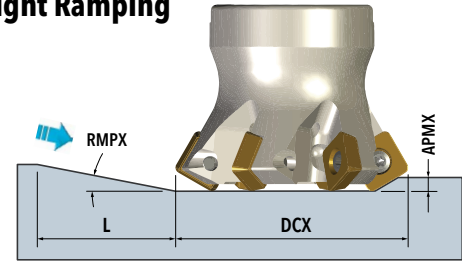
GOLDQUAD^{XXX}™ INSERT DETAILS

Detail	Part Number	Hone	Corner	Description
	SDES130516N-PF	K	0.063 radius	MULTI-PURPOSE Strong, flat rake face insert for machining in standard steel
	SDES130516N-PF1	K	0.063 radius	MULTI-PURPOSE, KEEN EDGE Strong, flat rake face insert for machining standard steels and stainless steel
	SDMS130516R-PP	K	0.063 radius	HIGH POSITIVE, MULTI-PURPOSE Universal insert with landed edge for machining steels and hi-temp alloys. Good choice for most application
	SDES1906ZPR-PF	K	0.053 wiper	MULTI-PURPOSE, WIPER Faceted wiper insert for improved surface finishes. Strong, flat rake face insert for machining standard steels
	SDMS1906ZPR-PP	K	0.053 wiper	HIGH POSITIVE, MULTI-PURPOSE / WIPER Faceted wiper insert for improved surface finishes. Excels in standard steel and is the first choice in milling high temp alloys such as titanium and stainless steel
	SDMS190620R-PH	K	0.078 radius	HIGH POSITIVE, MULTI-PURPOSE Universal insert with landed edge for machining steels and hi-temp alloys. Good choice for most applications
	SDES190620N	K	0.078 radius	MULTI-PURPOSE Strong, flat rake face insert for general machining in standard steels and cast irons
	SDES190620N-001	K	0.078 radius	MULTI-PURPOSE, KEEN EDGE Strong, flat rake face insert for machining in standard steel and stainless steels
	SDES1305MPR	K	n/a	HEAVY DUTY Exceptionally strong, flat rake face insert for machining standard steels and cast materials. Larger insert radius profile allows for deeper DOC and aggressive operating parameters
	SDXS1605MPR-MR	J	n/a	
	SDES1906MPR	K	n/a	
	SDES1305MPR-001	K	n/a	HEAVY DUTY, KEEN EDGE Exceptionally strong, flat rake face insert with sharp edge prep for machining hi-temp alloys or stainless steels. Larger insert radius profile allows for deeper DOC and aggressive operating parameters
	SDXS1605MPR-MR1	J	n/a	
	SDES1906MPR-001	K	n/a	
	SDXS1605MPR-MM	K	n/a	HIGH POSITIVE, MULTI-PURPOSE Universal insert with landed edge for machining steels and hi-temp alloys. Good choice for most applications.

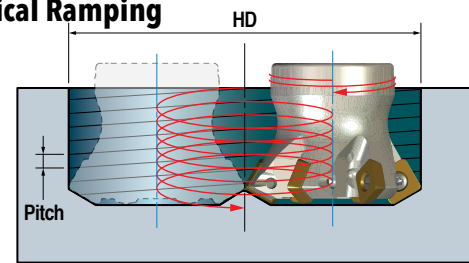
GOLDQUAD^{XXX}™ 30° BEVEL - HIGH FEED CUTTER - 13MM IC INSERTS



Straight Ramping



Helical Ramping

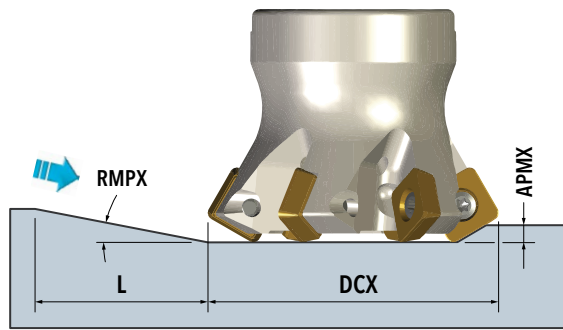


5M6P-20R30 5M5P-20R30	Insert Corner	DCX Max. Dia.	OAL Eff. Ext.	DC Eff. Dia.	APMX Max. DOC	REEQ Program Corner Radius	RMPX Max. Ramp Angle	L Min. Ramp Length	ID Width	Helical Milling (Min. & Max. Hole)			
										Max. Dia. w/Cusp	Max. Dia. w/o Cusp	Min. Dia. w/Cusp	Min. Dia. w/o Cusp
SDES130516N-PF	0.063	2.000	1.625	1.218	0.198	0.252	3.4	3.333	0.467	4.000	3.218	3.066	3.218
SDES130516N-PF1	0.063	2.000	1.625	1.218	0.198	0.251	3.4	3.333	0.467	4.000	3.218	3.066	3.218
SDMS130516R-PP	0.063	2.000	1.625	1.218	0.198	0.251	3.4	3.333	0.467	4.000	3.218	3.066	3.218
SDES1305MPR	-	1.961	1.606	1.237	0.202	0.242	2.4	4.820	0.436	3.922	3.198	3.050	3.198
SDES1305MPR-001	-	1.961	1.606	1.237	0.202	0.242	2.4	4.820	0.436	3.922	3.198	3.050	3.198

5M6P-25R30 5M5P-25R30	Insert Corner	DCX Max. Dia.	OAL Eff. Ext.	DC Eff. Dia.	APMX Max. DOC	REEQ Program Corner Radius	RMPX Max. Ramp Angle	L Min. Ramp Length	ID Width	Helical Milling (Min. & Max. Hole)			
										Max. Dia. w/Cusp	Max. Dia. w/o Cusp	Min. Dia. w/Cusp	Min. Dia. w/o Cusp
SDES130516N-PF	0.063	2.500	2.000	1.717	0.198	0.252	2.4	4.724	0.467	5.000	4.217	4.066	4.217
SDES130516N-PF1	0.063	2.500	2.000	1.717	0.196	0.252	2.4	4.724	0.467	5.000	4.217	4.066	4.217
SDMS130516R-PP	0.063	2.500	2.000	1.717	0.198	0.252	2.4	4.724	0.467	5.000	4.217	4.066	4.217
SDES1305MPR	-	2.461	1.981	1.737	0.202	0.243	1.7	6.806	0.436	4.922	4.198	4.050	4.198
SDES1305MPR-001	-	2.461	1.981	1.737	0.202	0.243	1.7	6.806	0.436	4.922	4.198	4.050	4.198

5M6P-30R30 5M5P-30R30	Insert Corner	DCX Max. Dia.	OAL Eff. Ext.	DC Eff. Dia.	APMX Max. DOC	REEQ Program Corner Radius	RMPX Max. Ramp Angle	L Min. Ramp Length	ID Width	Helical Milling (Min. & Max. Hole)			
										Max. Dia. w/Cusp	Max. Dia. w/o Cusp	Min. Dia. w/Cusp	Min. Dia. w/o Cusp
SDES130516N-PF	0.063	3.000	2.000	2.217	0.198	0.252	1.8	6.300	0.467	6.000	5.217	5.066	5.217
SDES130516N-PF1	0.063	3.000	2.000	2.217	0.196	0.252	1.8	6.300	0.467	6.000	5.217	5.066	5.217
SDMS130516R-PP	0.063	3.000	2.000	2.217	0.198	0.252	1.8	6.300	0.467	6.000	5.217	5.066	5.217
SDES1305MPR	-	2.962	2.237	2.237	0.202	0.243	1.3	8.970	0.436	5.924	5.199	5.052	5.199
SDES1305MPR-001	-	2.962	2.237	2.237	0.202	0.243	1.3	8.970	0.436	5.924	5.199	5.052	5.199

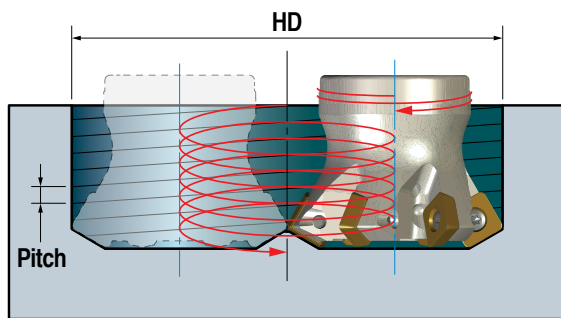
GOLDQUAD^{XXX}™ 16 STRAIGHT RAMPING



DCX Cutter Diameter	RMPX Ramp Angle Max.	L	APMX Depth of Cut Max.
2.500	2.50	5.731	0.250
3.000	1.86	7.702	0.250
4.000	1.20	11.937	0.250
5.000	0.90	15.916	0.250
6.000	0.70	20.463	0.250

L in this table is the length the cutter travels to reach the max. depth of cut (.250") while traveling at the max ramp angle listed for the cutter.

GOLDQUAD^{XXX}™ 16 HELICAL RAMPING

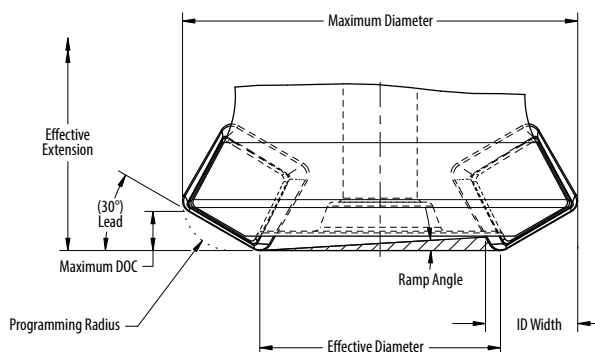


DCX Cutter Diameter	HD Min.	HD Max.	HD Max. w/o Cusp	Max Pitch Per Revolution
2.500	3.908	5.000	4.092	0.250
3.000	4.908	6.000	5.093	0.250
4.000	6.908	8.000	7.092	0.250
5.000	8.908	10.000	9.092	0.246
6.000	10.908	12.000	11.092	0.230

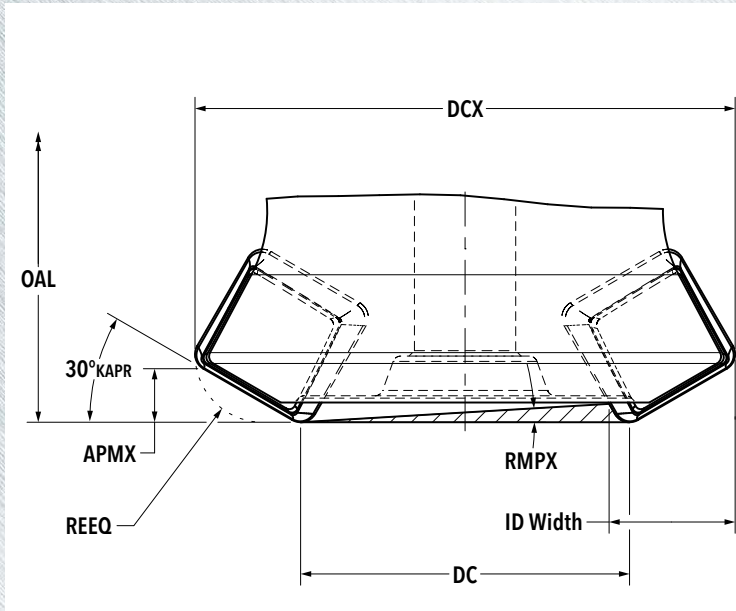
Example:

1. The min. hole dia. that the 2.500" dia. cutter can interpolate from solid is 3.908" (leaving a raised cusp).
2. The max. hole dia. that the 2.500" dia. cutter can interpolate from solid is 5.000".
3. The hole dia. that the 2.500" dia. cutter can interpolate from solid while leaving a flat-bottom is 4.092" (leaving no raised cusp).

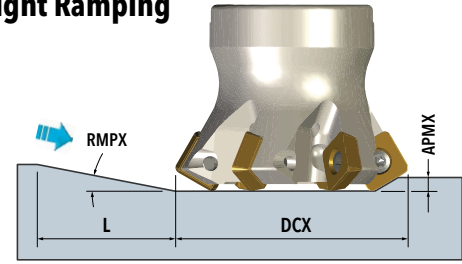
Pitch:
The max. pitch is determined to not exceed the max. depth of cut (APMX) and to not exceed the max. ramp angle (RMPX).



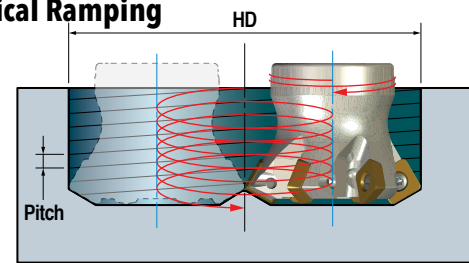
GOLDQUAD^{XXX}™ 30° BEVEL - HIGH FEED CUTTER - 19MM IC INSERTS



Straight Ramping



Helical Ramping



5M5M-40R30 5M6M-40R30	Insert Corner	DCX Max. Dia.	OAL Eff. Ext.	DC Eff. Dia.	APMX Max. DOC	REEQ Program Corner Radius	RMPX Max. Ramp Angle	L Min. Ramp Length	Wiper Flat	ID Width	Helical Milling (Min. & Max. Hole)			
											Max. Dia. w/Cusp	Max. Dia w/o Cusp	Min. Dia. w/Cusp	Min. Dia w/o Cusp
SDES1906ZPR-PF	Facet	4.000	2.500	2.89	0.31	0.333	2.0	8.762	0.053	0.686	8.000	6.885	6.628	6.779
SDMS1906ZPR-PP	Facet	4.000	2.500	2.89	0.31	0.333	2.0	8.762	0.053	0.686	8.000	6.885	6.628	6.779
SDMS190620R-PH	0.078	4.018	2.509	2.84	0.31	0.375	2.2	7.939	-	0.698	8.036	6.856	6.640	6.856
SDES190620N	0.078	4.018	2.509	2.84	0.31	0.375	2.2	7.939	-	0.698	8.036	6.856	6.640	6.856
SDES190620N-001	0.078	4.018	2.51	2.84	0.31	0.375	2.2	7.939	-	0.698	8.036	6.856	6.640	6.856
SDES1906MPR	-	3.949	2.475	2.89	0.31	0.364	1.0	17.989	-	0.637	7.898	6.842	6.620	6.842
SDES1906MPR-001	-	3.949	2.475	2.89	0.31	0.364	1.0	17.989	-	0.637	7.898	6.842	6.620	6.842

5M5M-50R30 5M6M-50R30	Insert Corner	DCX Max. Dia.	OAL Eff. Ext.	DC Eff. Dia.	APMX Max. DOC	REEQ Program Corner Radius	RMPX Max. Ramp Angle	L Min. Ramp Length	Wiper Flat	ID Width	Helical Milling (Min. & Max. Hole)			
											Max. Dia. w/Cusp	Max. Dia w/o Cusp	Min. Dia. w/Cusp	Min. Dia w/o Cusp
SDES1906ZPR-PF	Facet	5.000	2.500	3.89	0.31	0.333	1.3	13.484	0.053	0.686	10.000	8.885	8.628	8.779
SDMS1906ZPR-PP	Facet	5.000	2.500	3.89	0.31	0.333	1.3	13.484	0.053	0.686	10.000	8.885	8.628	8.779
SDMS190620R-PH	0.078	5.018	2.509	3.84	0.31	0.375	1.5	11.647	-	0.698	10.036	8.856	8.640	8.855
SDES190620N	0.078	5.018	2.509	3.84	0.31	0.375	1.5	11.647	-	0.698	10.036	8.856	8.640	8.855
SDES190620N-001	0.078	5.018	2.509	3.84	0.31	0.375	1.5	11.647	-	0.698	10.036	8.856	8.640	8.855
SDES1906MPR	-	4.949	2.475	3.89	0.31	0.364	0.7	25.700	-	0.612	9.898	8.842	8.674	8.842
SDES1906MPR-001	-	4.949	2.475	3.89	0.31	0.364	0.7	25.700	-	0.612	9.898	8.842	8.674	8.842

5M5M-60R30 5M6M-60R30	Insert Corner	DCX Max. Dia.	OAL Eff. Ext.	DC Eff. Dia.	APMX Max. DOC	REEQ Program Corner Radius	RMPX Max. Ramp Angle	L Min. Ramp Length	Wiper Flat	ID Width	Helical Milling (Min. & Max. Hole)			
											Max. Dia. w/Cusp	Max. Dia w/o Cusp	Min. Dia. w/Cusp	Min. Dia w/o Cusp
SDES1906ZPR-PF	Facet	6.000	2.500	4.89	0.31	0.333	1.0	17.530	0.053	0.686	12.000	10.885	10.628	10.779
SDMS1906ZPR-PP	Facet	6.000	2.500	4.89	0.31	0.333	1.0	17.530	0.053	0.686	12.000	10.885	10.628	10.779
SDMS190620R-PH	0.078	6.018	2.509	4.837	0.305	0.375	1.1	15.884	-	0.698	12.036	10.855	10.640	10.855
SDES190620N	0.078	6.018	2.509	4.837	0.305	0.375	1.1	15.884	-	0.698	12.036	10.855	10.640	10.855
SDES190620N-001	0.078	6.018	2.509	4.837	0.305	0.375	1.1	15.884	-	0.698	12.036	10.855	10.640	10.855
SDES1906MPR	-	5.949	2.475	4.89	0.31	0.364	0.6	29.938	-	0.612	11.898	10.842	10.674	8.842
SDES1906MPR-001	-	5.949	2.475	4.89	0.31	0.364	0.67	29.938	-	0.612	11.898	10.842	10.674	8.842