

PRODUCT NEWS

PN-E-015

SERIES EXPANSION

NEW

For high efficient roughing

SKS-G II

for high feed machining with 4corners.

G-Body

SKG/MSGtype

- Face mill type: $\varnothing 50 \sim \varnothing 160$
- Modular head type: $\varnothing 25 \sim \varnothing 42$



"SKS-G II" SKG / MSG type, innovative high feed cutter achieved extremely excellent chip removal rate!

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Feature of product

“SKS-G II” SKG / MSG type, innovative high feed cutter achieved extremely excellent chip removal rate!

Features 1

Applicable to deep cutting of mold material or high feed machine aircraft parts that made of titanium alloy & stainless steel.



Features 2

Adopted economical 4 corners positive insert, achieved stable high feed machining.

Features 3

Large Δp machining is possible.
(Max. $\Delta p = 1.5\text{mm}$ in case of using insert SPNW10-type &
Max. $\Delta p = 2.5\text{mm}$ in case of using SPNW14-type insert)



Features 4

Two types inserts with chipbreaker are available for hard-to-cut material or mold material).

Due to low cutting force geometry insert, stable machining in mold material is possible even in case of using low power machine or long overhung tool.



SM breaker insert for hard-to-cut material

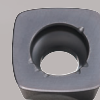


PM breaker insert for mold material



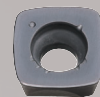
Features 5

3 insert grades "JC8118", "JC8050" & "JC7550" can be widely applied from general & mold steel to hard-to-cut materials such as high hardened die steel, titanium alloy & stainless steel.



JC8118

For mold steel more than 38HRC & high hardened die steel less than 50HRC.



JC8050

For general & mold steel less than 36HRC.



JC7550

For titanium alloy & stainless steel.

Application

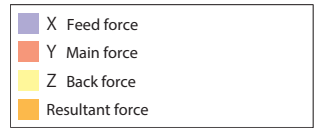
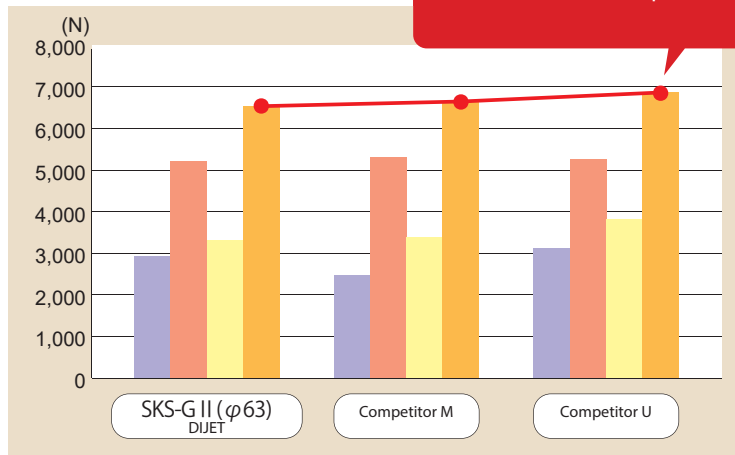
ISO	P					M					K				S				H		
	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	S01	S10	S20	S30	H01	H10	H20
Applicable range	JC8118										JC8118								JC8118		
	JC8050																				
						JC7550									JC7550						

Features 6

Large chip pocket achieved excellent chip removal.

Cutting performance

Cutting force comparison



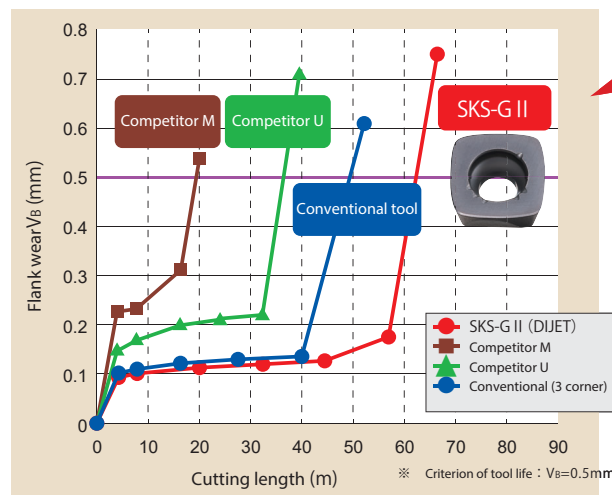
Material P21

● Tool dia. : φ63mm
 Insert No. :
 SPNW100415ZTR (JC8118)

● Cutting conditions :
 Vc=80m/min, fz=1.5mm/t,
 ap=1.5mm, ae=40mm,
 Dry, Down cut

Tool life comparison

① Insert without chipbreaker



SKS-G II achieved 3.2 times longer tool life compared with competitor M, 1.8 times longer compared with competitor U, and 1.2 times longer compared with conventional tool.

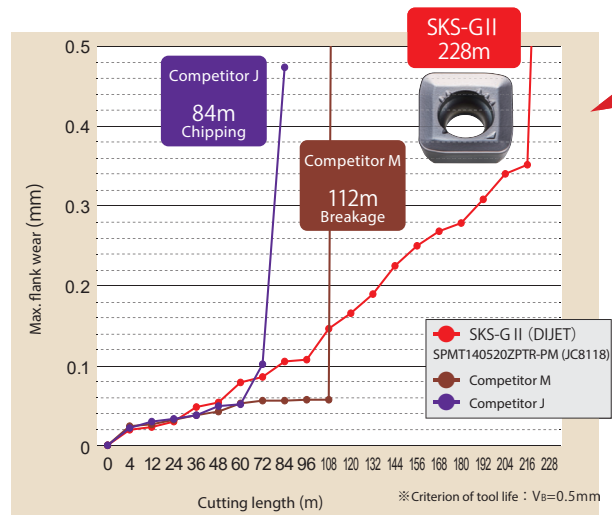
Material: P20

● Tool dia.
 Insert No. :
 SPNW100415ZTR (JC8118)

● Cutting conditions :
 Vc=150m/min, fz=1mm/t,
 ap=1.5mm, ae=37.5mm,

Air blow
 Down cut
 Test by one insert

② Insert with chipbreaker



SKS-G II achieved 2 times longer tool life compared with competitor M, and 2.7 times longer compared with competitor J.

Material: P20

● Tool dia. : φ63mm
 Insert No. :
 SPMT140520ZPTR-PM (JC8118)

● Cutting conditions :
 Vc=140m/min, fz=1.8mm/t,
 ap=2.0mm, ae=37.5mm,

Air blow
 Down cut
 Test by one insert

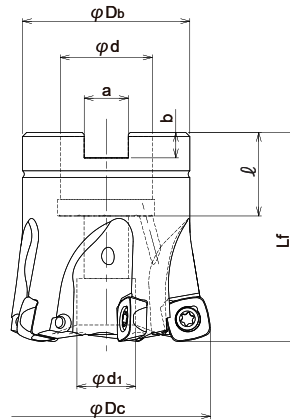
Line up

● Facemill type (Insert 10-type)

G-Body



● Through coolant hole



● Body

Type	Cat. No.	Stock	No. of inserts	Dimensions (mm)								Set bolt	Weight (kg)	Applicable inserts	
				φDc	Lf	φDb	φd	$\varphi d1$	a	b	l				
Metric Bore	SKG-4050R-10-22	●	4	50	50	40	22	14	10.4	6.3	20	M10×1.5×35★	Head cap screw (Slim head)	0.3	 SPNW10** SPET10** SPMT10**
	SKG-5050R-10-22	●	5	50	50	40	22	14	10.4	6.3	20	M10×1.5×35★	Head cap screw (Slim head)	0.3	
	SKG-5052R-10-22	●	5	52	50	40	22	16.6	10.4	6.3	20	M10	Head cap screw (JIS standard)	0.3	
	SKG-5063R-10-22	□	5	63	50	48	22	17	10.4	6.3	20	M10	Head cap screw (JIS standard)	0.5	 Clamp screw TSW-3509H A-15T
	SKG-5063R-10-27	□	5	63	50	48	27	20	12.4	7	22	M12×1.75×30★	Head cap screw (JIS standard)	0.5	
	SKG-6063R-10-22	●	6	63	50	48	22	17	10.4	6.3	20	M10	Head cap screw (JIS standard)	0.5	
	SKG-6063R-10-27	●	6	63	50	48	27	20	12.4	7	22	M12×1.75×30★	Head cap screw (JIS standard)	0.5	
	SKG-6066R-10-27	●	6	66	50	50	27	20	12.4	7	22	M12×1.75×30★	Head cap screw (JIS standard)	0.6	
	SKG-6080R-10-27	●	6	80	50	60	27	20	12.4	7	22	M12×1.75×30★	Head cap screw (JIS standard)	0.9	

- : Standard stock items.
- : Stock in Japan. (7-10 days delivery upon ordering)

Note) 1. All cutters are supplied without inserts.
 2. ★ mark shows: these cutter body are equipped with the set bolt because of the specified bolt size. Except for these cutter body, please use the set bolt equipped with arbor.
 3. Set bolt (M10×1.5×35) is slim head type with $\varphi 13$ head dia.
 4. All cutters are supplied without wrench & MOLY since February 2019 for our stock production.

Clamp screw	Recommended torque (N·m)
TSW-3509H	3.0

G-Body

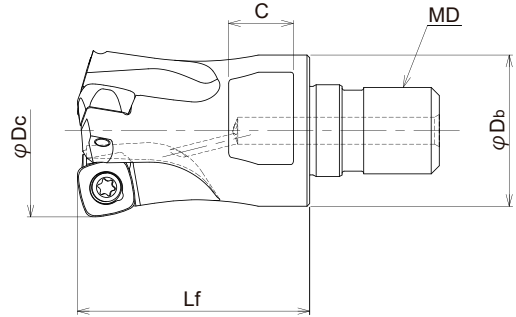
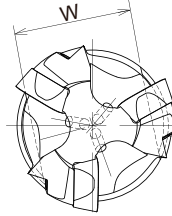
Adopted GN surface-hardening treatment on thermal resistant high strength steel gives high hardness over 65HRC and secure insert pocket and holder against thermal deformation, improved body durability and tool life by 30% or more. Make it difficult to be damaged even under severe cutting conditions. Also rust-proof and anti-welding effect is much improved.

Line up

MSG-10
Modular head type (Insert 10-type)



● Through coolant hole



Body

Cat. No.	Stock	No. of inserts	Dimensions (mm)					Applicable inserts	Parts		
			φDc	Lf	φDb	MD	C		W	Clamp screw	Wrench
MSG-2025-10-M12	●	2	25	35	23	M12	11	19	SPNW10** SPET10** SPMT10**	TSW-3509H	A-15
MSG-3032-10-M16	●	3	32	43	28	M16	12	22			
NEW MSG-3035-10-M16	□	3	35	43	30	M16	14	26			
MSG-4040-10-M16	●	4	40	43	32	M16	14	26			
MSG-4042-10-M16	●	4	42	43	32	M16	14	26			

●: Standard stock items
□: Stock in Japan (7-10 days delivery upon ordering)

- Note) 1. All cutters are supplied without inserts.
2. Please see page 17 for recommended tightening torque.
3. In case of using MSG-4040/4042-10-M16, recommend combining with MSN carbide shank straight arbor type.
4. All cutters are supplied without wrench & MOLY since February 2019 for our stock production.

Clamp screw	Recommended torque (N·m)
TSW-3509H	3.0

Insert 10-type

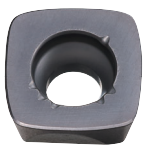


Fig.1 SPNW100415ZTR



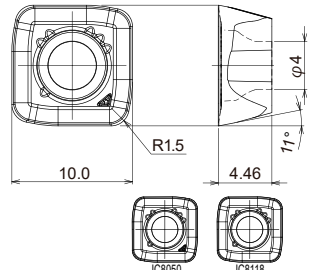
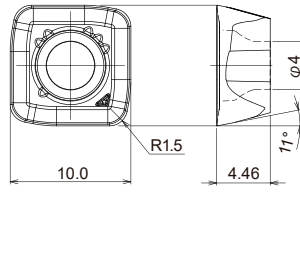
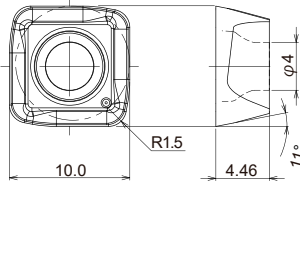
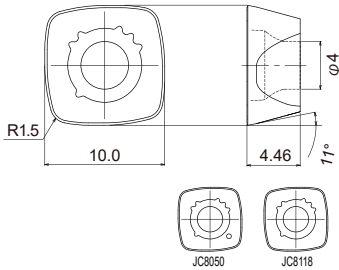
Fig.2 SPET100415ZPER-SM



Fig.3 SPMT100415ZPER-SM



Fig.4 SPMT100415ZPTR-PM



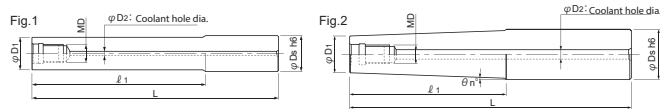
Cat. No.	Tolerance	PVD Coated			Fig.
		JC7550	JC8050	JC8118	
SPNW100415ZTR	N		●	●	1
SPET100415ZPER-SM	E	●			2
SPMT100415ZPER-SM	M	●			3
NEW SPMT100415ZPTR-PM	M		●	●	4

●: Standard stock items
10 inserts per case.

MSN Carbide shank arbor

End mill shank type

- Through coolant hole
- For high productivity



Cat. No.	Stock	Dimensions (mm)						Weight (kg)	Fig.	
		ϕD_s	ℓ_1	L	ϕD_1	θn°	MD			ϕD_2
MSN-M12-25-S25C	●	25	25	90	24	-	M12	6	0.53	1
MSN-M12-55-S25C	●	25	55	120	24	-			0.72	1
MSN-M12-100T-S32C	□	32	100	180	23.5	2°			1.61	2
MSN-M12-105-S25C	●	25	105	170	24	-			1.03	1
MSN-M12-135-S25C	●	25	135	215	24	-			1.30	1
MSN-M12-155-S25C	●	25	155	220	24	-			1.34	1
MSN-M12-200-S25C	●	25	200	265	24	-			1.58	1
MSN-M16-25-S32C	●	32	25	90	29	-			M16	8
MSN-M16-55-S32C	●	32	55	120	29	-	1.13	1		
MSN-M16-77-S32C	●	32	77	157	29	-	1.47	1		
MSN-M16-97-S32C	●	32	97	177	29	-	1.64	1		
MSN-M16-105-S32C	●	32	105	170	29	-	1.59	1		
MSN-M16-117T-S32C	□	32	117	197	29	0°38'	1.88	2		
MSN-M16-127-S32C	●	32	127	207	29	-	1.89	1		
MSN-M16-127T-S32C	□	32	127	207	29	0°30'	2.23	2		
MSN-M16-155-S32C	●	32	155	220	29	-	2.04	1		
MSN-M16-177-S32C	●	32	177	257	29	-	2.32	1		
MSN-M16-177T-S32C	●	32	177	257	29	0°23'	2.78	2		
MSN-M16-195-S32C	●	32	195	260	29	-	2.40	1		
MSN-M16-197T-S32C	□	32	197	277	29	0°23'	3.00	2		
MSN-M16-225-S32C	●	32	225	290	29	-	2.57	1		
MSN-M16-245-S32C	●	32	245	310	29	-	2.74	1		
MSN-M16-295-S32C	●	32	295	360	29	-	3.17	1		

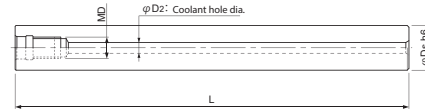
- : Standard stock items
- : Stock in Japan (7-10 days delivery upon ordering)

Note) Please see page 17 for recommended tightening torque.



Straight arbor type

- Through coolant hole
- For high productivity



Cat. No.	Stock	Dimensions (mm)				Weight (kg)
		ϕD_s	L	MD	ϕD_2	
MSN-M12-185S-S23C	●	23	185	M12	6	0.98
MSN-M12-265S-S23C	●		265			1.42
MSN-M12-185S-S24C	●	24	185	M12	6	1.07
MSN-M12-265S-S24C	●		265			1.54
MSN-M12-145S-S25C	●	25	145	M12	6	0.91
MSN-M12-215S-S25C	●		215			1.36
MSN-M12-285S-S25C	●		285			1.80
MSN-M16-160S-S28C	●	28	160	M16	8	1.22
MSN-M16-230S-S28C	●		230			1.77
MSN-M16-310S-S28C	●		310			2.41
MSN-M16-157S-S32C	●	32	157	M16	8	1.61
MSN-M16-217S-S32C	●		217			2.22
MSN-M16-287S-S32C	●		287			2.94
MSN-M16-357S-S32C	●		357			3.66

- : Standard stock items

Note) Please see page 17 for recommended tightening torque.

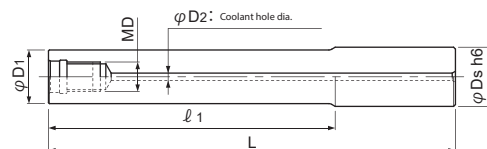
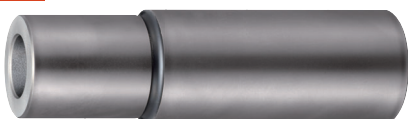
MGN G-Body steel shank holder

- Adopted ultra-rigid and improved body durability "G-Body".
- Short type
- Cost-effective and high strength steel shank holder.

End mill shank type

- Through coolant hole

G-Body



Cat. No.	Stock	Dimensions (mm)						Weight (kg)	
		ϕD_s	ℓ_1	L	ϕD_1	θn°	MD		ϕD_2
MGN-M12-35-S25	□	25	35	105	24	-	M12	4	0.36
MGN-M12-85-S25	□	25	85	165	24	-	M12	4	0.57
MGN-M16-37-S32	□	32	37	107	29	-	M16	6	0.56
MGN-M16-77-S32	□	32	77	157	29	-	M16	6	0.83

□: Stock in Japan (7-10 days delivery upon ordering)

Note) 1. In case of using modular head combined with MGN steel shank holder, apply the recommended cutting conditions sheet (see page 13).

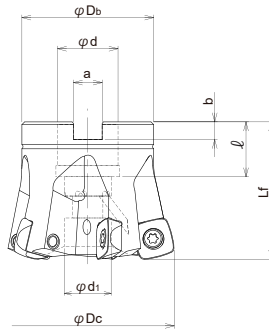
2. Please see page 17 for recommended tightening torque.

Line up

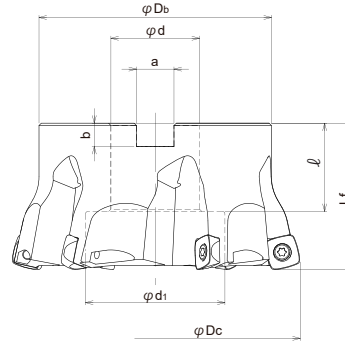
● SKG-14 Facemill type (Insert 14-type)



● fig.1
Through coolant hole
($\varphi D_c \leq \varphi 100$)



● fig.2
Without coolant hole
($\varphi D_c \geq \varphi 125$)



● Body

Type	Cat. No.	Stock	No. of inserts	Dimensions (mm)								Set bolt	Weight (kg)	Fig.	Applicable inserts	
				φD_c	L_f	φD_b	φd	φd_1	a	b	ℓ					
Metric Bore	SKG-4050R-14-22	●	4	50	50	40	22	9.6	10.4	6.3	19.05	M10×1.5×35★	Head cap screw (Slim head)	0.3	1	SPNW14** SPMT14**
	SKG-4052R-14-22	●	4	52	50	42	22	17	10.4	6.3	19.05	M10×1.5×35★	Head cap screw (Slim head)	0.3	1	
	SKG-4063R-14-22	●	4	63	50	48	22	17	10.4	6.3	20	M10	Head cap screw (JIS Standard)	0.5	1	
	SKG-4063R-14-27	●	4	63	50	48	27	20	12.4	7	22	M12×1.75×35★		0.5	1	
	SKG-5066R-14-27	●	5	66	50	50	27	20	12.4	7	22	M12×1.75×35★		0.5	1	
	SKG-5080R-14-27	●	5	80	50	60	27	37	12.4	7	22	M12×1.75×35★		0.8	1	
	SKG-6100R-14-32	●	6	100	63	70	32	45	14.4	8	25	M16		1.6	1	

●: Standard stock items

- Note) 1. All cutters are supplied without inserts.
- 2. ★ mark shows: these cutter body are equipped with the set bolt because of the specified bolt size. Except for these cutter body, please use the set bolt equipped with arbor.
- 3. Set bolt (M10×1.5×35) is slim head type with $\varphi 13$ head dia.
- 4. All cutters are supplied without wrench & MOLY since February 2019 for our stock production.

Parts
Clamp screw

CSW-513H

Wrench

A-20

Clamp screw	Recommended torque (N·m)
CSW-513H	5.5

● Insert 14-type

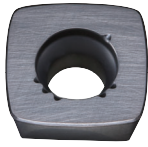


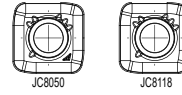
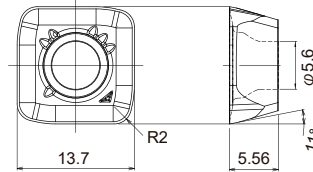
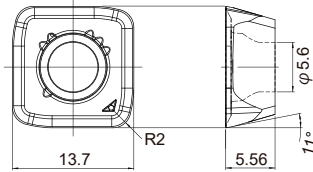
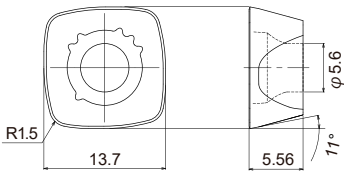
Fig.1 SPNW140515ZTR



Fig.2 SPMT140520ZPER-SM



Fig.3 SPMT140520ZPTR-PM



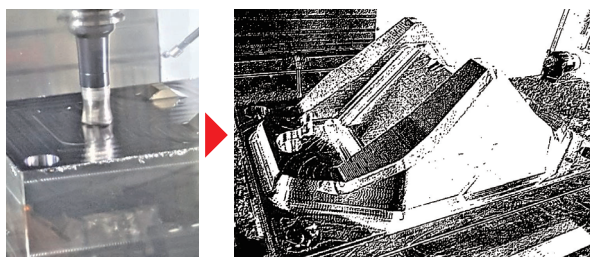
Cat. No.	Tolerance	PVD Coated			Fig.
		JC7550	JC8050	JC8118	
SPNW140515ZTR	N		●	●	1
NEW SPMT140520ZPER-SM	M	●			2
NEW SPMT140520ZPTR-PM	M		●	●	3

● : Standard stock items
10 inserts per case.

Cutting data

① High feed machining on mold steel (Insert 10-type)

Overhung length : 130mm
Contouring & slotting

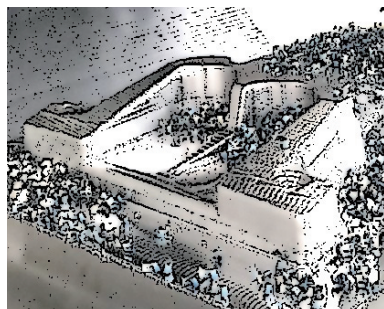


Result
Achieved high metal removal rate ($Q=126\text{cm}^3/\text{min}$) by 1.8 times compared with competitor's tool. And finished all the job with one corner, no wear or breakage, with a contact time of 3h 40min.

Work	Part name	Plastic mold	
	Material	Mold steel (1.2311)	
	Hardness	32-34HRC	
Tool	Tool No.	MSG-3032-10-M16	
	Insert No.	SPNW100415ZTR (JC8118)	
Cutting conditions	Cutting speed	n	2,000 (min^{-1})
		V_c	201 (m/min)
	Feed speed	V_f	6,300 (mm/min)
		f_z	1.1 (mm/t)
	a_p		0.8 (mm)
	a_e		25 (mm)
	Coolant		Air blow
Machine		Vertical MC	

② High feed machining on mold steel (Insert 14-type)

Overhung length : 220mm

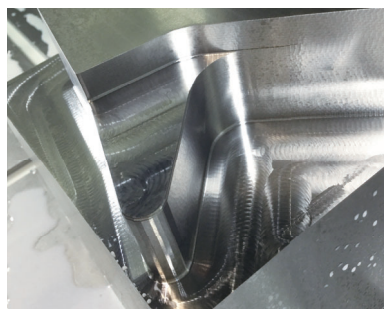


Result
Achieved high metal removal rate ($Q=330\text{cm}^3/\text{min}$) by 1.2 times compared with competitor's tool. And able to machine about 3 hours per 1 corner.

Work	Part name	Plastic mold	
	Material	Mold steel (1.2738)	
	Hardness	36HRC	
Tool	Tool No.	SKG-6080R-14-27	
	Insert No.	SPNW140515ZTR (JC8118)	
Cutting conditions	Cutting speed	n	560 (min^{-1})
		V_c	140 (m/min)
	Feed speed	V_f	4,000 (mm/min)
		f_z	1.2 (mm/t)
	a_p		1.5 (mm)
	a_e		55 (mm)
	Coolant		Air blow
Machine		Vertical MC	

③ High efficient machining on Ti-alloy (Insert 10-type)

Overhung length : 110mm

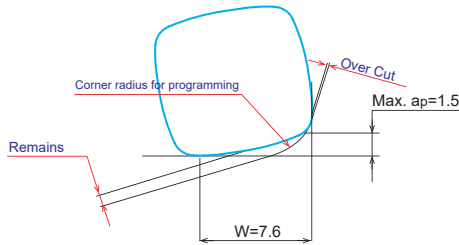


Result
Machining test piece shaped like aircraft parts. No chatter & smooth cutting, and achieved good chip removal.

Work	Part name	Test piece	
	Material	Ti-6Al-4V	
	Hardness	50HRC	
Tool	Tool No.	MSG-3032-10-M16	
	Insert No.	SPET100415ZPER-SM (JC7550)	
Cutting conditions	Cutting speed	n	597 (min^{-1})
		V_c	60 (m/min)
	Feed speed	V_f	1,075 (mm/min)
		f_z	0.6 (mm/t)
	a_p		1 (mm)
	a_e		12.8 (mm)
	Coolant		Wet (internal)
Machine		Vertical MC	

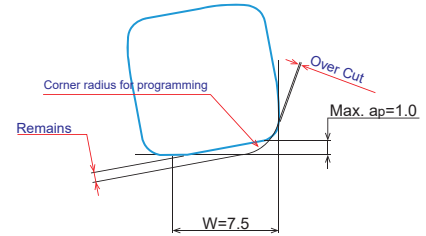
Definition of corner shape for programming

■ SPNW100415ZTR type inserts



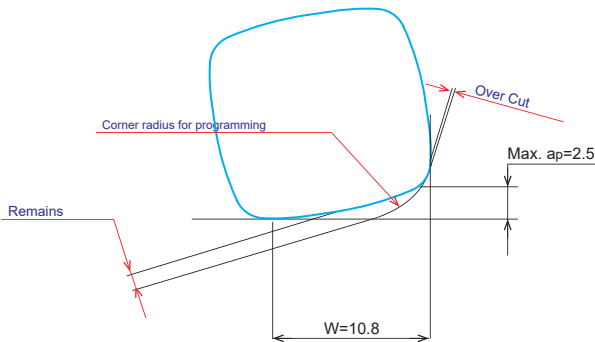
Corner R for programming	Over cut	Remains
R2.5	0	0.99
R3.0 (Standard)	0	0.84
R3.5	0.09	0.71
R4.0	0.23	0.59

■ SPE(M)T100415ZPER-SM type or SPMT100415ZPTR-PM type inserts



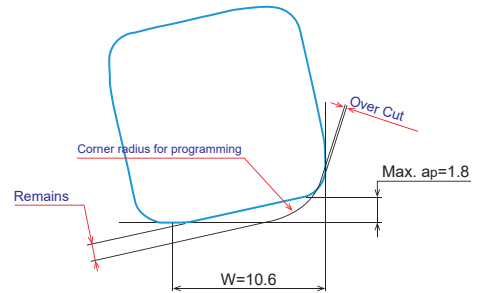
Corner R for programming	Over cut	Remains
R2.5 (Standard)	0	0.77
R3.0	0.09	0.68
R3.5	0.25	0.60
R4.0	0.43	0.52

■ SPNW140515ZTR type inserts



Corner R for programming	Over cut	Remains
R3.5	0	1.60
R4.0 (Standard)	0	1.46
R4.5	0.06	1.32
R5.0	0.17	1.19

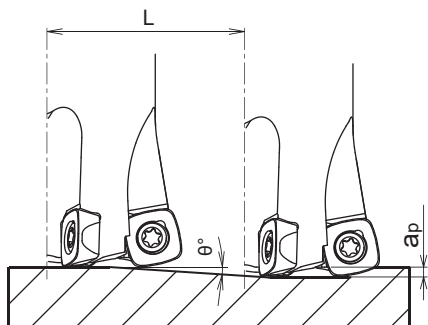
■ SPMT140520ZPER-SM type or SPMT140520ZPTR-PM type inserts



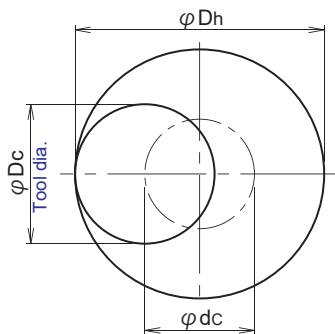
Corner R for programming	Over cut	Remains
R3.5 (Standard)	0	1.35
R4.0	0.02	1.25
R4.5	0.14	1.12
R5.0	0.29	1.05

Attention for profile milling

Ramping



Helical interpolation



● Calculation of tool pass dia.

$$\varphi dc = \varphi Dh - \varphi Dc$$

Tool pass dia. Bore dia. Tool dia.

● Depth of cut per one circuit should not exceed max. depth of cut ap.

● Down cutting is recommended, so tool pass rotation should be counterclockwise.

◎ In case of ramping and helical interpolation, apply 70% or less feed speed from standard cutting condition table.

■ SPNW100415ZTR or SPNW140515ZTR type inserts

Cat. No.	Tool dia. (mm)	Eff. Cutting dia. (mm)	Max. depth of cut (mm)	Ramping		Helical interpolation	
				Max. ramping angle θ°	Total cutting length at Max. ap	Min. bore dia. Dh min (mm)	Max. bore dia. Dh max (mm)
MSG-2025-10	25	9.8	1.5	1°	85.9	36	48
MSG-3032-10	32	16.8	1.5	1°	85.9	50	62
MSG-3035-10	35	19.8	1.5	1°	85.9	56	70
MSG-4040-10	40	24.8	1.5	1°	85.9	66	78
MSG-4042-10	42	26.8	1.5	1°	85.9	70	82
SKG-*050R-10	50	34.8	1.5	1°	85.9	86	98
SKG-5052R-10	52	36.8	1.5	1°	85.9	90	102
SKG-*063R-10	63	47.8	1.5	0°45'	114.6	112	124
SKG-6066R-10	66	50.8	1.5	0°45'	114.6	118	130
SKG-6080R-10	80	64.8	1.5	0°30'	171.9	146	158
SKG-4050R-14	50	28.4	2.5	1°	143.2	80	98
SKG-4052R-14	52	30.4	2.5	1°	143.2	84	102
SKG-*063R-14	63	41.4	2.5	0°45'	191	106	124
SKG-5066R-14	66	44.4	2.5	0°45'	191	112	130
SKG-5080R-14	80	58.4	2.5	0°30'	286.5	140	158
SKG-6100R-14	100	78.4	2.5	0°20'	430	180	198
SKG-6125R-14	125	103.4	2.5	0°20'	430	230	248
SKG-7160R-14	160	138.4	2.5	0°15'	573	300	318

■ SPE (M) T100415ZPER-SM type or SPMT100415ZPTR-PM type

■ SPMT140520ZPER-SM type or SPMT140520ZPTR-PM type

Cat. No.	Tool dia. (mm)	Eff. Cutting dia. (mm)	Max. depth of cut (mm)	Ramping		Helical interpolation	
				Max. ramping angle θ°	Total cutting length at Max. ap	Min. bore dia. Dh min (mm)	Max. bore dia. Dh max (mm)
MSG-2025-10	25	10	1.0	1°	57.3	36	48
MSG-3032-10	32	17	1.0	1°	57.3	50	62
MSG-3035-10	35	20	1.0	1°	57.3	56	70
MSG-4040-10	40	25	1.0	1°	57.3	66	78
MSG-4042-10	42	27	1.0	1°	57.3	70	82
SKG-*050R-10	50	35	1.0	1°	57.3	86	98
SKG-5052R-10	52	37	1.0	1°	57.3	90	102
SKG-*063R-10	63	48	1.0	0°45'	76.4	112	124
SKG-6066R-10	66	51	1.0	0°45'	76.4	118	130
SKG-6080R-10	80	65	1.0	0°30'	114.6	146	158
SKG-4050R-14	50	28.8	1.8	1°	103.1	80	98
SKG-4052R-14	52	30.8	1.8	1°	103.1	84	102
SKG-*063R-14	63	41.8	1.8	0°45'	137.5	106	124
SKG-5066R-14	66	44.8	1.8	0°45'	137.5	112	130
SKG-5080R-14	80	58.8	1.8	0°30'	206.3	140	158
SKG-6100R-14	100	78.8	1.8	0°20'	206.3	180	198
SKG-6125R-14	125	123.8	1.8	0°20'	206.3	230	248
SKG-7160R-14	160	138.8	1.8	0°15'	412.5	300	318

Recommended cutting conditions

MSG-10 Modular head type (Insert 10-type)

Work materials	Grades	Tool dia. (mm)														
		25					32/35					40/42				
		No. of teeth 2N					No. of teeth 3N					No. of teeth 4N				
		l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050 (JC8118) SPNW type SPMT-PM type	~75	1	~9	2,290	6,870	~100	1	~14	1,640	7,380	~100	1	~24	1,430	8,580
		125	0.8	~9	2,290	6,870	150	0.8	~14	1,640	7,380	150	0.8	~24	1,430	8,580
		175	0.6	~9	2,290	6,410	210	0.6	~14	1,640	6,890	210	0.6	~24	1,430	8,010
Die steel (1.2344,1.2379) Below 255HB	JC8050 (JC8118) SPNW type SPMT-PM type	~75	1	~9	1,910	5,730	~100	1	~14	1,360	6,120	~100	1	~24	1,190	7,140
		125	0.8	~9	1,910	5,730	150	0.8	~14	1,360	6,120	150	0.8	~24	1,190	7,140
		175	0.6	~9	1,910	5,350	210	0.6	~14	1,360	5,710	210	0.6	~24	1,190	6,660
Mold steel (1.2311,P20) 30-36HRC	JC8050 (JC8118) SPNW type SPMT-PM type	~75	1	~9	1,910	5,730	~100	1	~14	1,360	6,120	~100	1	~24	1,190	7,140
		125	0.8	~9	1,910	5,730	150	0.8	~14	1,360	6,120	150	0.8	~24	1,190	7,140
		175	0.6	~9	1,910	5,350	210	0.6	~14	1,360	5,710	210	0.6	~24	1,190	6,660
Mold steel (1.2311,P21) 38-43HRC	JC8118 (JC8050) SPNW type SPMT-PM type	~75	1	~9	1,400	3,640	~100	1	~14	1,000	3,900	~100	1	~24	880	4,580
		125	0.8	~9	1,400	3,640	150	0.8	~14	1,000	3,900	150	0.8	~24	880	4,580
		175	0.6	~9	1,400	3,360	210	0.6	~14	1,000	3,600	210	0.6	~24	880	4,220
Hardened die steel (1.2344, 1.2379) 42-52HRC	JC8118 SPNW type	~75	0.6	~9	1,270	3,050	~100	0.6	~14	910	3,280	~100	0.6	~24	800	3,840
		125	0.4	~9	1,270	3,050	150	0.4	~14	910	3,280	150	0.4	~24	800	3,840
		175	0.3	~9	1,270	2,540	210	0.3	~14	910	2,730	210	0.3	~24	800	3,200
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8118 SPNW type SPMT-PM type	~75	1.2★	~9	2,290	6,870	~100	1.2★	~14	1,640	7,380	~100	1.2★	~24	1,430	8,580
		125	1	~9	2,290	6,870	150	1	~14	1,640	7,380	150	1	~24	1,430	8,580
		175	0.8	~9	2,290	6,870	210	0.8	~14	1,640	7,380	210	0.8	~24	1,430	8,580
Stainless steel Below 250HB	JC7550 SPMT-SM type SPET-SM type	~75	1	~9	1,910	3,820	~100	1	~14	1,360	4,080	~100	1	~24	1,190	4,760
		125	0.8	~9	1,910	3,820	150	0.8	~14	1,360	4,080	150	0.8	~24	1,190	4,760
		175	0.6	~9	1,660	2,990	210	0.6	~14	1,180	3,190	210	0.6	~24	1,030	3,710
Titanium alloy (Ti-6Al-4V)	JC7550 SPMT-SM type SPET-SM type	~75	1	~9	760	910	~100	1	~14	550	990	~100	1	~24	480	1,150
		125	0.8	~9	760	910	150	0.8	~14	550	990	150	0.8	~24	480	1,150
		175	0.6	~9	760	760	210	0.6	~14	550	830	210	0.6	~24	480	960

l : Overhung length a_p : Axial depth of cut a_e : Radial depth of cut n : Spindle speed V_f : Feed speed

Note:

*1. The figure to be adjusted according to the machine rigidity or work rigidity.

*2. In case of chatter occurring, recommend to reduce the depth of cut a_p or Spindle speed and keep feed per tooth.

*3. If machine does not have enough power, recommend to reduce the depth of cut a_p or Spindle speed and

Feed speed.

*4. Use air blow.

★ : Reduce the depth of cut a_p to below 1.0mm in case of using SPMT / SPET type insert.

Recommended cutting conditions

SKG-10 Facemill type (Insert 10-type)

Work materials	Grades	Tool dia. (mm)														
		50					50/52					63				
		No. of teeth 4N					No. of teeth 5N					No. of teeth 5N				
		l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	1.5★	~32	1,020	7,340	~150	1.5★	~32	1,020	9,180	~150	1.5★	~44	810	7,290
		200	1.2★	~32	1,020	7,340	200	1.2★	~32	1,020	9,180	200	1.5★	~44	810	7,290
		250	0.8	~32	890	5,340	250	0.8	~32	890	6,680	250	1.2★	~44	710	5,330
		300	0.6	~32	830	4,980	300	0.6	~32	830	6,230	300	1	~44	660	4,950
		350	0.5	~32	830	4,650	350	0.5	~32	830	5,810	350	0.5	~44	660	4,620
Die steel (1.2344, 1.2379) Below 255HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	1.5★	~32	1,020	7,340	~150	1.5★	~32	1,020	9,180	~150	1.5★	~44	810	7,290
		200	1.2★	~32	1,020	7,340	200	1.2★	~32	1,020	9,180	200	1.5★	~44	810	7,290
		250	0.8	~32	890	5,340	250	0.8	~32	890	6,680	250	1.2★	~44	710	5,330
		300	0.6	~32	830	4,980	300	0.6	~32	830	6,230	300	1	~44	660	4,950
		350	0.5	~32	830	4,650	350	0.5	~32	830	5,810	350	0.5	~44	660	4,620
Mold steel (1.2311,P20) 30-36HRC	JC8050 (JC8118) SPNW type SPMT-PM type	~150	1.5★	~32	1,020	7,340	~150	1.5★	~32	1,020	9,180	~150	1.5★	~44	810	7,290
		200	1.2★	~32	1,020	7,340	200	1.2★	~32	1,020	9,180	200	1.5★	~44	810	7,290
		250	0.8	~32	890	5,340	250	0.8	~32	890	6,680	250	1.2★	~44	710	5,330
		300	0.6	~32	830	4,980	300	0.6	~32	830	6,230	300	1	~44	660	4,950
		350	0.5	~32	830	4,650	350	0.5	~32	830	5,810	350	0.5	~44	660	4,620
Mold steel (1.2311,P21) 38-43HRC	JC8118 (JC8050) SPNW type SPMT-PM type	~150	1.2★	~32	700	4,200	~150	1.2★	~32	700	5,250	~150	1.2★	~44	560	4,200
		200	1	~32	700	4,200	200	1	~32	700	5,250	200	1.2★	~44	560	4,200
		250	0.7	~32	640	3,840	250	0.7	~32	640	4,800	250	1	~44	510	3,830
		300	0.6	~32	510	2,860	300	0.6	~32	510	3,570	300	0.5	~44	400	2,800
		350	-	-	-	-	350	-	-	-	-	350	-	-	-	-
Hardened die steel (1.2344, 1.2379) 42-52HRC	JC8118 SPNW type	~150	1	~32	640	3,580	~150	1	~32	640	4,480	~150	1	~44	510	3,570
		200	0.8	~32	640	3,330	200	0.8	~32	640	4,160	200	0.8	~44	510	3,320
		250	0.6	~32	640	3,070	250	0.6	~32	640	3,840	250	0.6	~44	510	3,060
		300	-	-	-	-	300	-	-	-	-	300	-	-	-	-
		350	-	-	-	-	350	-	-	-	-	350	-	-	-	-
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8118 SPNW type SPMT-PM type	~150	1.5★	~32	1,150	8,280	~150	1.5★	~32	1,150	10,350	~150	1.5★	~44	910	8,190
		200	1.5★	~32	1,150	8,280	200	1.5★	~32	1,150	10,350	200	1.5★	~44	910	8,190
		250	1.2★	~32	1,150	6,900	250	1.2★	~32	1,150	8,630	250	1.2★	~44	910	6,830
		300	0.8	~32	1,020	6,120	300	0.8	~32	1,020	7,650	300	0.8	~44	810	6,080
		350	0.5	~32	1,020	6,120	350	0.5	~32	1,020	7,650	350	0.5	~44	810	6,080
Stainless steel Below 250HB	JC7550 SPMT-SM type SPET-SM type	~150	1	~32	950	4,940	~150	1	~32	950	6,180	~150	1	~44	760	5,320
		200	1	~32	950	4,940	200	1	~32	950	6,180	200	1	~44	760	4,940
		250	0.8	~32	830	3,980	250	0.8	~32	830	4,980	250	0.8	~44	660	3,960
		300	0.6	~32	760	3,040	300	0.6	~32	760	3,800	300	0.6	~44	610	3,050
		350	0.4	~32	640	2,560	350	0.4	~32	640	3,200	350	0.5	~44	510	2,550
Titanium alloy (Ti-6Al-4V)	JC7550 SPMT-SM type SPET-SM type	~150	1	~32	380	910	~150	1	~32	380	1,140	~150	1	~44	300	900
		200	0.8	~32	380	910	200	0.8	~32	380	1,140	200	0.8	~44	300	900
		250	0.6	~32	380	760	250	0.6	~32	380	950	250	0.6	~44	300	750
		300	0.4	~32	380	610	300	0.4	~32	380	760	300	0.4	~44	300	600
		350	-	-	-	-	350	-	-	-	-	350	-	-	-	-

l : Overhung length a_p : Axial depth of cut a_e : Radial depth of cut n : Spindle speed V_f : Feed speed

Note:

- *1. The figure to be adjusted according to the machine rigidity or work rigidity.
- *2. In case of chatter occurring, recommend to reduce the depth of cut a_p or Spindle speed and keep feed per tooth.
- *3. If machine does not have enough power, recommend to reduce the depth of cut a_p or Spindle speed and Feed speed.
- *4. Use air blow.

★ : Reduce the depth of cut a_p to below 1.0mm in case of using SPMT / SPET type insert.

Work materials	Grades	Tool dia. (mm)									
		63/66					80				
		No. of teeth 6N					No. of teeth 6N				
		l (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	1.5★	~44	810	8,750	~150	1.5★	~60	640	6,910
		200	1.5★	~44	810	8,750	200	1.5★	~60	640	6,910
		250	1.2★	~42	710	6,390	250	1.2★	~55	560	5,040
		300	1	~42	660	5,940	300	1	~55	520	4,680
		350	0.5	~42	660	5,540	350	0.5	~55	520	4,370
Die steel (1.2344, 1.2379) Below 255HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	1.5★	~44	810	8,750	~150	1.5★	~60	640	6,910
		200	1.5★	~44	810	8,750	200	1.5★	~60	640	6,910
		250	1.2★	~42	710	6,390	250	1.2★	~55	560	5,040
		300	1	~42	660	5,940	300	1	~55	520	4,680
		350	0.5	~42	660	5,540	350	0.5	~55	520	4,370
Mold steel (1.2311,P20) 30-36HRC	JC8050 (JC8118) SPNW type SPMT-PM type	~150	1.5★	~44	810	8,750	~150	1.5★	~60	640	6,910
		200	1.5★	~44	810	8,750	200	1.5★	~60	640	6,910
		250	1.2★	~42	710	6,390	250	1.2★	~55	560	5,040
		300	1	~42	660	5,940	300	1	~55	520	4,680
		350	0.5	~42	660	5,540	350	0.5	~55	520	4,370
Mold steel (1.2311,P21) 38-43HRC	JC8118 (JC8050) SPNW type SPMT-PM type	~150	1.2★	~44	560	5,040	~150	1.2★	~60	440	3,960
		200	1.2★	~44	560	5,040	200	1.2★	~60	440	3,960
		250	1	~42	510	4,590	250	1	~55	400	3,600
		300	0.5	~42	400	3,360	300	0.5	~55	320	2,690
		350	-	-	-	-	350	-	-	-	-
Hardened die steel (1.2344, 1.2379) 42-52HRC	JC8118 SPNW type	~150	1	~44	510	4,280	~150	1	~60	400	3,360
		200	0.8	~44	510	3,980	200	0.8	~60	400	3,120
		250	0.6	~42	510	3,670	250	0.6	~55	400	2,880
		300	-	-	-	-	300	-	-	-	-
		350	-	-	-	-	350	-	-	-	-
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8118 SPNW type SPMT-PM type	~150	1.5★	~44	910	9,830	~150	1.5★	~60	720	7,780
		200	1.5★	~44	910	9,830	200	1.5★	~60	720	7,780
		250	1.2★	~42	910	8,190	250	1.2★	~55	720	6,480
		300	0.8	~42	810	7,290	300	0.8	~55	640	5,760
		350	0.5	~42	810	7,290	350	0.5	~55	640	5,760
Stainless steel Below 250HB	JC7550 SPMT-SM type SPET-SM type	~150	1	~44	760	6,380	~150	1	~60	600	5,040
		200	1	~44	760	5,930	200	1	~60	600	4,680
		250	0.8	~42	660	4,750	250	0.8	~55	520	3,740
		300	0.6	~42	610	3,660	300	0.6	~55	480	2,880
		350	0.5	~42	510	3,060	350	0.5	~55	400	2,400
Titanium alloy (Ti-6Al-4V)	JC7550 SPMT-SM type SPET-SM type	~150	1	~44	300	1,080	~150	1	~60	240	860
		200	0.8	~44	300	1,080	200	0.8	~60	240	860
		250	0.6	~42	300	900	250	0.6	~55	240	720
		300	0.4	~42	300	720	300	0.4	~55	240	580
		350	-	-	-	-	350	-	-	-	-

l : Overhung length a_p : Axial depth of cut a_e : Radial depth of cut n : Spindle speed V_f : Feed speed

Note:

*1. The figure to be adjusted according to the machine rigidity or work rigidity.

*2. In case of chatter occurring, recommend to reduce the depth of cut a_p or spindle speed and keep feed per tooth.

*3. If machine does not have enough power, recommend to reduce the depth of cut a_p or spindle speed and feed speed.

*4. Use air blow.

★ : Reduce the depth of cut a_p to below 1.0mm in case of using SPMT / SPET type insert.

Recommended cutting conditions

SKG-14 Facemill type (Insert 14-type)

Work materials	Grades	Tool dia. (mm)														
		50/52					63					66				
		No. of teeth 4N					No. of teeth 4N					No. of teeth 5N				
		l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~28	890	6,410	~150	2★	~40	710	5,110	~150	2★	~44	680	6,120
		200	1.8	~28	890	6,410	200	1.8	~40	710	5,110	200	1.8	~44	680	6,120
		250	1.5	~28	830	4,980	250	1.5	~40	660	3,960	250	1.5	~44	630	4,730
		300	0.8	~28	760	4,560	300	0.8	~40	610	3,660	300	0.8	~44	580	4,350
		350	0.6	~28	640	3,580	350	0.6	~40	510	2,860	350	0.6	~44	480	3,360
Die steel (1.2344, 1.2379) Below 255HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~28	890	6,410	~150	2★	~40	710	5,110	~150	2★	~44	680	6,120
		200	1.8	~28	890	6,410	200	1.8	~40	710	5,110	200	1.8	~44	680	6,120
		250	1.5	~28	830	4,980	250	1.5	~40	660	3,960	250	1.5	~44	630	4,730
		300	0.8	~28	760	4,560	300	0.8	~40	610	3,660	300	0.8	~44	580	4,350
		350	0.6	~28	640	3,580	350	0.6	~40	510	2,860	350	0.6	~44	480	3,360
Mold steel (1.2311,P20) 30-36HRC	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~28	890	6,410	~150	2★	~40	710	5,110	~150	2★	~44	680	6,120
		200	1.8	~28	890	6,410	200	1.8	~40	710	5,110	200	1.8	~44	680	6,120
		250	1.5	~28	830	4,980	250	1.5	~40	660	3,960	250	1.5	~44	630	4,730
		300	0.8	~28	760	4,560	300	0.8	~40	610	3,660	300	0.8	~44	580	4,350
		350	0.6	~28	640	3,580	350	0.6	~40	510	2,860	350	0.6	~44	480	3,360
Mold steel (1.2311,P21) 38-43HRC	JC8118 (JC8050) SPNW type SPMT-PM type	~150	1.6	~28	640	3,840	~150	1.6	~40	510	3,060	~150	1.6	~44	480	3,600
		200	1.4	~28	640	3,840	200	1.4	~40	510	3,060	200	1.4	~44	480	3,600
		250	1.2	~28	640	3,840	250	1.2	~40	510	3,060	250	1.2	~40	480	3,600
		300	0.7	~28	510	2,860	300	0.7	~40	400	2,240	300	0.7	~40	390	2,730
		350	-	-	-	-	350	-	-	-	-	350	-	-	-	-
Hardened die steel (1.2344, 1.2379) 42-52HRC	JC8118 SPNW type	~150	1	~28	570	2,740	~150	1	~40	450	2,160	~150	1	~44	430	2,580
		200	1	~28	570	2,280	200	1	~40	450	1,800	200	1	~44	430	2,150
		250	0.8	~28	570	1,820	250	0.8	~40	450	1,440	250	0.8	~40	430	1,720
		300	0.5	~28	450	1,260	300	0.5	~40	350	980	300	0.5	~40	340	1,190
		350	-	-	-	-	350	-	-	-	-	350	-	-	-	-
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8118 SPNW type SPMT-PM type	~150	2★	~28	1,150	8,280	~150	2★	~40	910	6,550	~150	2★	~44	870	7,830
		200	1.8	~28	1,150	8,280	200	1.8	~40	910	6,550	200	1.8	~44	870	7,830
		250	1.5	~28	1,150	6,900	250	1.5	~40	910	5,460	250	1.5	~44	870	6,530
		300	0.8	~28	1,020	6,120	300	0.8	~40	810	4,860	300	0.8	~44	770	5,780
		350	0.6	~28	1,020	5,710	350	0.6	~40	810	4,540	350	0.6	~44	770	5,390
Stainless steel Below 250HB	JC7550 SPMT-SM type	~150	1.3	~28	950	4,940	~150	1.3	~40	760	4,260	~150	1.3	~44	760	5,320
		200	1.3	~28	950	4,940	200	1.3	~40	760	3,950	200	1.3	~44	760	4,940
		250	1.1	~28	830	3,980	250	1.1	~40	660	3,170	250	1.1	~40	660	3,960
		300	0.9	~28	760	3,040	300	0.9	~40	610	2,440	300	0.9	~40	610	3,050
		350	0.7	~28	640	2,560	350	0.7	~40	510	2,040	350	0.7	~40	510	2,550
Titanium alloy (Ti-6Al-4V)	JC7550 SPMT-SM type	~150	1.3	~28	380	910	~150	1.3	~40	300	720	~150	1.3	~44	300	900
		200	1.1	~28	380	910	200	1.1	~40	300	720	200	1.1	~44	300	900
		250	0.9	~28	380	760	250	0.9	~40	300	600	250	0.9	~40	300	750
		300	0.7	~28	380	610	300	0.7	~40	300	480	300	0.7	~40	300	600
		350	-	-	-	-	350	-	-	-	-	350	-	-	-	-

l : Overhung length a_p : Axial depth of cut a_e : Radial depth of cut n : Spindle speed V_f : Feed speed

- Note:
 *1. The figure to be adjusted according to the machine rigidity or work rigidity.
 *2. In case of chatter occurring, recommend to reduce the depth of cut a_p or Spindle speed and keep feed per tooth.
 *3. If machine does not have enough power, recommend to reduce the depth of cut a_p or Spindle speed and Feed speed.
 *4. Use air blow.

★ : Reduce the depth of cut a_p to below 1.8mm in case of using SPMT type insert.

Work materials	Grades	Tool dia. (mm)														
		80					100					125				
		No. of teeth 5N					No. of teeth 6N					No. of teeth 6N				
		l (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)	l (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~56	600	5,400	~150	2★	~70	480	5,180	~150	2★	~87	380	4,100
		200	1.8	~56	600	5,400	200	1.8	~70	480	5,180	200	1.8	~87	380	4,100
		250	1.5	~56	560	4,200	250	1.5	~70	450	4,050	250	1.5	~87	360	3,240
		300	0.8	~56	520	3,900	300	0.8	~70	410	3,690	300	0.8	~87	330	2,970
Die steel (1.2344, 1.2379) Below 255HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~56	600	5,400	~150	2★	~70	480	5,180	~150	2★	~87	380	4,100
		200	1.8	~56	600	5,400	200	1.8	~70	480	5,180	200	1.8	~87	380	4,100
		250	1.5	~56	560	4,200	250	1.5	~70	450	4,050	250	1.5	~87	360	3,240
		300	0.8	~56	520	3,900	300	0.8	~70	410	3,690	300	0.8	~87	330	2,970
Mold steel (1.2311,P20) 30-36HRC	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~56	600	5,400	~150	2★	~70	480	5,180	~150	2★	~87	380	4,100
		200	1.8	~56	600	5,400	200	1.8	~70	480	5,180	200	1.8	~87	380	4,100
		250	1.5	~56	560	4,200	250	1.5	~70	450	4,050	250	1.5	~87	360	3,240
		300	0.8	~56	520	3,900	300	0.8	~70	410	3,690	300	0.8	~87	330	2,970
Mold steel (1.2311,P21) 38-43HRC	JC8118 (JC8050) SPNW type SPMT-PM type	~150	1.6	~56	400	3,000	~150	1.6	~70	320	2,880	~150	1.6	~87	250	2,250
		200	1.4	~56	400	3,000	200	1.4	~70	320	2,880	200	1.4	~87	250	2,250
		250	1.2	~56	400	3,000	250	1.2	~70	320	2,880	250	1.2	~87	250	2,250
		300	0.7	~56	320	2,240	300	0.7	~70	250	2,100	300	0.7	~87	200	1,680
Hardened die steel (1.2311, 1.2379) 42-52HRC	JC8118 SPNW type	~150	1	~56	360	2,160	~150	1	~70	290	2,090	~150	1	~87	230	1,660
		200	1	~56	360	1,800	200	1	~70	290	1,740	200	1	~87	230	1,380
		250	0.8	~52	360	1,440	250	0.8	~60	290	1,390	250	0.8	~75	230	1,100
		300	0.5	~52	280	980	300	0.5	~60	220	920	300	0.5	~75	180	760
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8118 SPNW type SPMT-PM type	~150	2★	~56	720	6,480	~150	2★	~70	570	6,160	~150	2★	~87	460	4,970
		200	1.8	~56	720	6,480	200	1.8	~70	570	6,160	200	1.8	~87	460	4,970
		250	1.5	~56	720	5,400	250	1.5	~70	570	5,130	250	1.5	~87	460	4,140
		300	0.8	~56	640	4,800	300	0.8	~70	510	4,590	300	0.8	~87	410	3,690
Stainless steel Below 250HB	JC7550 SPMT-SM type	~150	1.5	~56	600	4,200	~150	1.5	~70	480	4,030	~150	1.5	~87	380	3,190
		200	1.5	~56	600	3,900	200	1.5	~70	480	3,740	200	1.5	~87	380	2,960
		250	1.3	~52	520	3,120	250	1.3	~60	410	2,950	250	1.3	~75	330	2,380
		300	1.1	~52	480	2,400	300	1.1	~60	380	2,280	300	1.1	~75	310	1,860
Titanium alloy (Ti-6Al-4V)	JC7550 SPMT-SM type	~150	1.3	~56	240	720	~150	1.3	~70	190	680	~150	1.3	~87	150	540
		200	1.1	~56	240	720	200	1.1	~70	190	680	200	1.1	~87	150	540
		250	0.9	~52	240	600	250	0.9	~60	190	570	250	0.9	~75	150	450
		300	0.7	~52	240	480	300	0.7	~60	190	460	300	0.7	~75	150	360
350	-	-	-	-	-	350	-	-	-	-	350	-	-	-	-	

l : Overhung length a_p : Axial depth of cut a_e : Radial depth of cut n : Spindle speed V_f : Feed speed

Note:

*1. The figure to be adjusted according to the machine rigidity or work rigidity.

*2. In case of chatter occurring, recommend to reduce the depth of cut a_p or Spindle speed and keep feed per tooth.

*3. If machine does not have enough power, recommend to reduce the depth of cut a_p or Spindle speed and Feed speed.

*4. Use air blow.

★ : Reduce the depth of cut a_p to below 1.8mm in case of using SPMT type insert.

3/3

Work materials	Grades	Tool dia. (mm)				
		160				
		No. of teeth 7N				
		l (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~112	300	3,780
		200	1.8	~112	300	3,780
		250	1.5	~112	280	2,940
		300	0.8	~112	260	2,730
		350	0.6	~112	220	2,160
Die steel (1.2344,1.2379) Below 255HB	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~112	300	3,780
		200	1.8	~112	300	3,780
		250	1.5	~112	280	2,940
		300	0.8	~112	260	2,730
		350	0.6	~112	220	2,160
Mold steel (1.2311,P20) 30-36HRC	JC8050 (JC8118) SPNW type SPMT-PM type	~150	2★	~112	300	3,780
		200	1.8	~112	300	3,780
		250	1.5	~112	280	2,940
		300	0.8	~112	260	2,730
		350	0.6	~112	220	2,160
Mold steel (1.2311,P21) 38-43HRC	JC8118 (JC8050) SPNW type SPMT-PM type	~150	1.6	~112	200	2,100
		200	1.4	~112	200	2,100
		250	1.2	~112	200	2,100
		300	0.7	~112	160	1,570
		350	-	-	-	-
Hardened die steel (1.2344, 1.2379) 42-52HRC	JC8118 SPNW type	~150	1	~112	180	1,510
		200	1	~112	180	1,260
		250	0.8	~100	180	1,010
		300	0.5	~100	140	690
		350	-	-	-	-
Grey & Nodular cast iron (GG, GGG) Below 300HB	JC8118 SPNW type SPMT-PM type	~150	2★	~112	360	4,540
		200	1.8	~112	360	4,540
		250	1.5	~112	360	3,780
		300	0.8	~112	320	3,360
		350	0.6	~112	320	3,140
Stainless steel Below 250HB	JC7550 SPMT-SM type	~150	1.5	~112	300	2,940
		200	1.5	~112	300	2,730
		250	1.3	~100	260	2,180
		300	1.1	~100	240	1,680
		350	0.9	~100	200	1,400
Titanium alloy (Ti-6Al-4V)	JC7550 SPMT-SM type	~150	1.3	~112	120	500
		200	1.1	~112	120	500
		250	0.9	~100	120	420
		300	0.7	~100	120	340
		350	-	-	-	-

l : Overhung length a_p : Axial depth of cut a_e : Radial depth of cut n : Spindle speed V_f : Feed speed

Note:

*1. The figure to be adjusted according to the machine rigidity or work rigidity.

*2. In case of chatter occurring, recommend to reduce the depth of cut a_p or Spindle speed and keep feed per tooth.

*3. If machine does not have enough power, recommend to reduce the depth of cut a_p or Spindle speed and Feed speed.

*4. Use air blow.

★ : Reduce the depth of cut a_p to below 1.8mm in case of using SPMT type insert.

Attention

⚠ Attention to mounting head and MSN/ MGN shank holder.

■ Tightening procedure

① Cleaning

Remove dirt and chips with air from the connecting thread and face of modular head and MSN/MGN shank holder.

② Initial Tightening

Tighten by hand until the head and the shank holder faces touch.

③ Final Tightening

Tighten slowly with torque control spanner wrench or DIJET DS type spanner wrench and confirm that there is no gap.

⚠ NOTE

Note) 1. Only use the torque control spanner wrench or DIJET DS type spanner wrench.

2. Please gently apply pressure on wrench.

3. Please confirm that there is no gap between MSN/MGN shank holder and modular head.

Thread	Tightening torque	Spanner size W(mm)
M6	8.0N·m	8☆
M8	16N·m	10, 12☆
M10	16N·m	14, 15
M12	20N·m	17, 19
M16	25N·m	22, 26

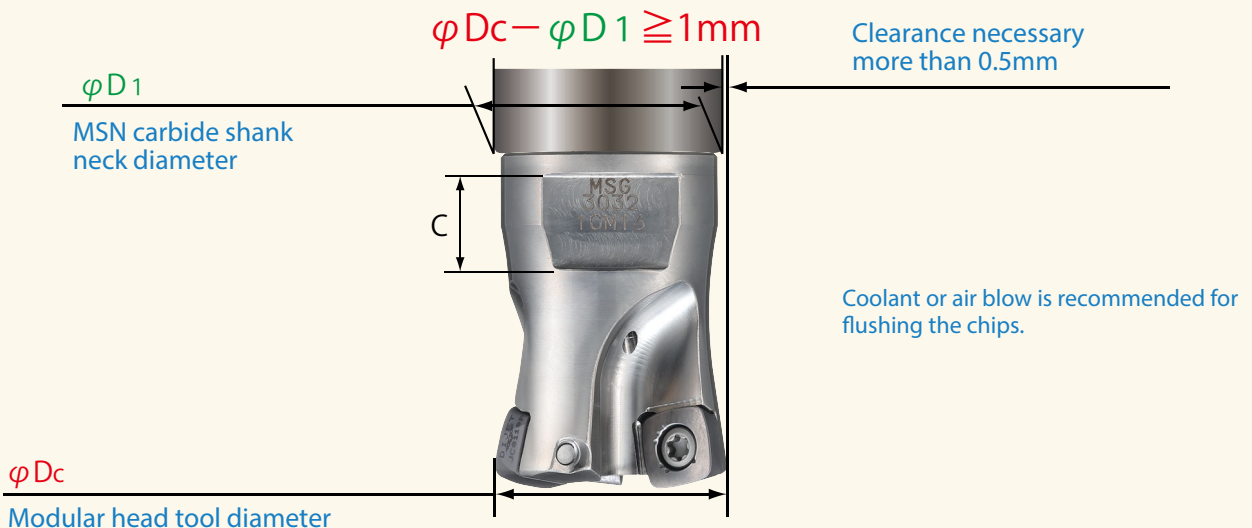
Note) 1. Modular heads are supplied without spanner wrench.

2. In case of choosing torque control spanner wrench, confirm that the wrench size is match to the dimensions W & C of each modular head.
(There are some cases that modifying the thickness of spanner wrench is necessary)

Attention : Final tightening without initial tightening cause connecting thread damage.

⚠ Selection of "MSN Carbide shank holder"

In case of using modular head over $\varphi 16\text{mm}$, please select MSN carbide shank that diameter ($\varphi D1$) is 1mm or more smaller than modular head (φDc). A wrong selection causes damage to the carbide shank.



⚠ Caution for the mounting to shrink fit holder.

When you use a carbide shank and a modular head on the shrink fit holder, please shrink fit the only carbide shank without mounting a modular head together. **Please mount a modular head after shrinking fit operation.**

Note) In case of shrink fit MSN shank + modular head together, it will be difficult to loose due to heat desipation.



HEADQUARTER

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SKS-GII

Type 09



Specifically designed for high efficiency machining of difficult to cut materials

Feature 1

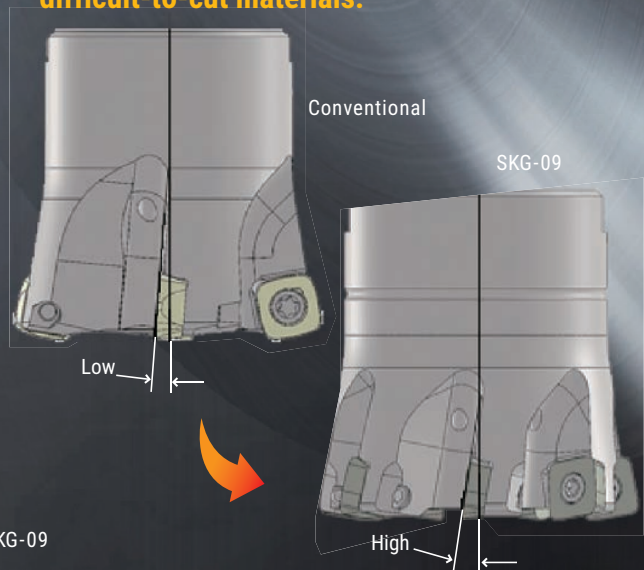
Multi-edge design enables high efficiency machining. Achieved Max ap=0.9 mm even if difficult-to-cut materials such as titanium alloy , stainless steel & heat-resistant alloy

● Tool dia. φ50



Feature 2

The optimised cutting edge design provides the sharpness and low cutting resistance that is ideal for difficult-to-cut materials.



Feature 3

Economical 4 cutting edges
Precise ground insert provides run out accuracy and longer tool life.



Line up

Wear resistance

Fracture resistance



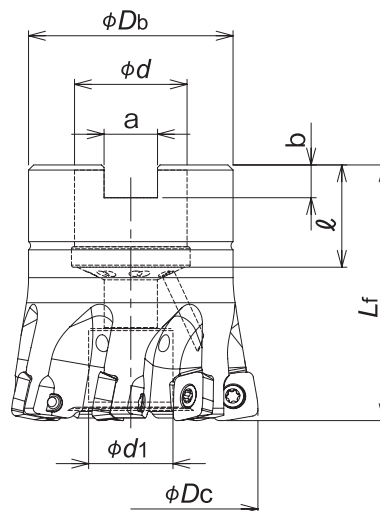
Insert	Titanium alloy	Inconel	SUS630	SUS316
SDEW090312ZER (JC7518)		■	◎	
SDEW090312ZER (JC7550)			●	◎
SDEW090312ZER (DS118)	◎	■		
SDEW090312ZER (DS150)	●	●		
SDET090312ZDER-SM (JC7550)		●	●	●
SDET090312ZDER-SM (DS150)	●	●		
SDET090312ZDER-SM (DS118)	●	◎		

◎: stable machining ●: unstable machining ■: light load machining

■ SKG09 Facemill Type



Through coolant hole

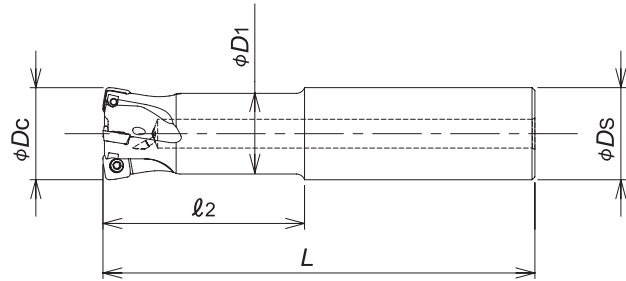


Cat.No.	Stock	No. of inserts	Dimensions (mm)								Arbor set bolt	Weight (kg)	Inserts
			φDc	Lf	φDb	φd	φd1	a	b	ℓ			
SKG-5040R-09-16	●	5	40	40	37	16	13.5	8.4	5.6	18	M8	0.21	SDEW090312ZER; SDET090312ZDER-SM
SKG-7050R-09-22	●	7	50	50	40	22	16.5	10.4	6.3	20	M10	0.35	
SKG-7052R-09-22	●		52		M10						0.37		
SKG-8063R-09-22	●	8	63	48	27	20	12.4	7	22	M10	0.58		
SKG-8066R-09-27	●		66	M12X1.75X30★						0.60			
SKG-9080R-09-27	●	9	80	60	M12X1.75X30★	0.97							

Screw	Torque(N.m)	Wrench
DSW-307H	2.1	A-10

■ SKG09 Endmill Type

Through coolant hole



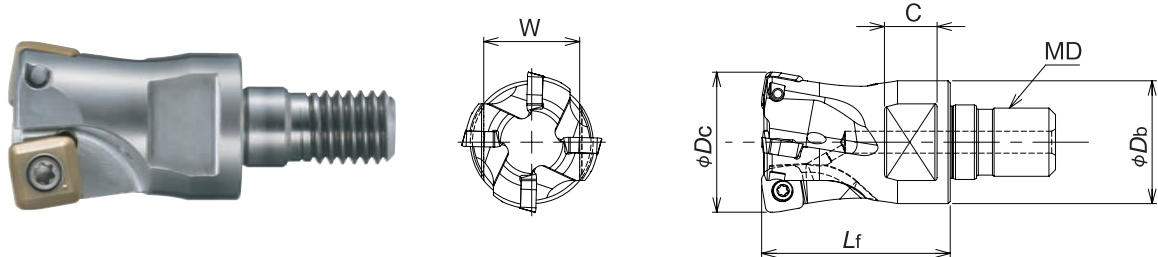
Cat.No.	Stock	No. of inserts	Dimensions (mm)					Inserts
			φDc	ℓ2	L	φD1	φDs	
SKG-3025-60-09-S25	●	3	25	60	140	23	25	SDEW090312ZER; SDET090312ZDER-SM
SKG-3025-100-09-S25	●			100	180			
SKG-4032-70-09-S32	●	4	32	70	150	28	32	
SKG-4032-120-09-S32	●			120	200			
SKG-5035-70-09-S32	●	5	35	70	150	31	32	
SKG-5035-120-09-S32	●			120	200			

Screw	Torque(N.m)	Wrench
DSW-307H	2.1	A-10

■ MSG09 Modular Head Type



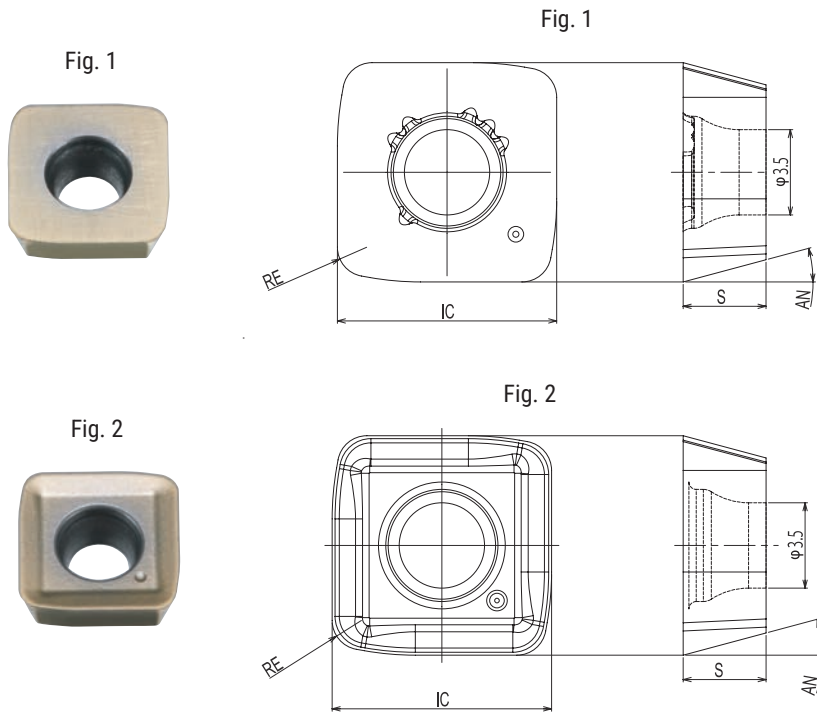
Through coolant hole



Cat.No.	Stock	No. of inserts	Dimensions (mm)						Inserts	Parts
			ϕD_c	Lf	ϕD_b	MD	C	W		
MSG-2020-09-M10	●	2	20	30	19	M10	9	14	SDEW090312ZER; SDET090312ZDER-SM	DSW-306H
MSG-2022-09-M10	●		22			M10				
MSG-3025-09-M12	●	3	25	35	23	M12	11	19		DSW-307H
MSG-4028-09-M12	●	4	28		23.6					
MSG-4032-09-M16	●	4	32	43	28	M16	12	22		
MSG-5035-09-M16	●		35		29					
MSG-5040-09-M16	●		5		40	M16	14	26		
MSG-5042-09-M16	●	42	M16							

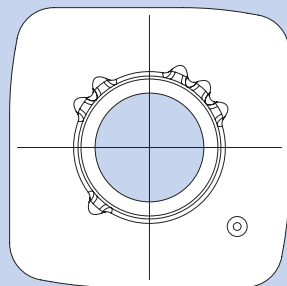
Screw	Torque(N.m)	Wrench
DSW-306H	1.8	A-10
DSW-307H	2.1	A-10

■ SKG/MSG09 Type Insert

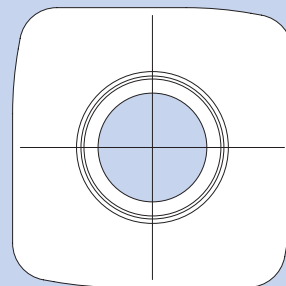


Cat.No.	Tolerance	PVD Coating				Dimensions (mm)				Fig.
		DS118	DS150	JC7518	JC7550	RE	IC	S	AN	
SDEW090312ZER	E	●	●	●	●	1.2	9	3.4	15°	1
SDET090312ZDER-SM		●	●		●					2

GRADE MARKING



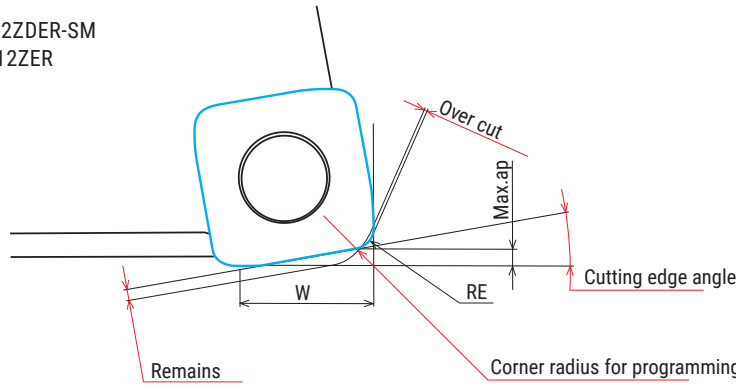
JC7550/DS150



JC7518/DS118

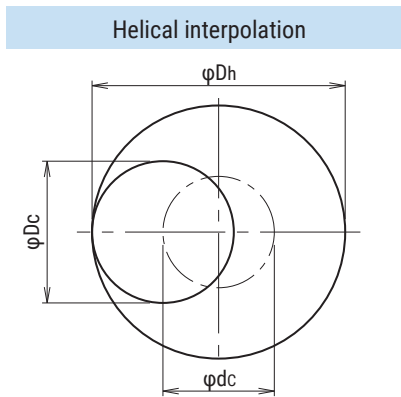
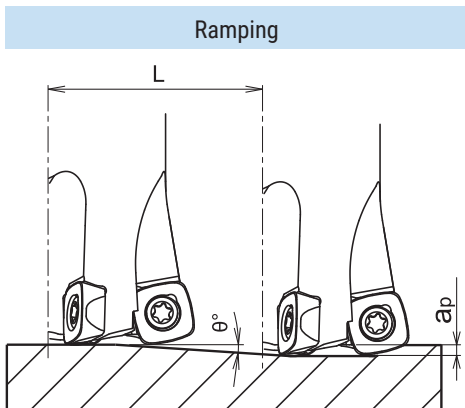
Definition of corner shape for programming

SDET090312ZDER-SM
SDEW090312ZER



Corner radius for programming	Remains	Over cut	Max.ap	W	Cutting edge angle
1.5	0.81	0	0.9	7.1	10°
2 (Standard)	0.73	0			
2.5	0.65	0.08			

Recommended Data for Profile Milling



● Calculation of tool pass dia.

$$\varphi_{dc} = \varphi_{Dh} - \varphi_{Dc}$$

Tool pass dia. Bore dia. Tool dia.

● Depth of cut per one circuit should not exceed max. depth of cut Ap

● Down cutting is recommended, tool pass rotation should be counterclockwise

● In case of ramping and helical interpolation, apply 70% or less feed (Vf) from standard cutting condition table

Cat.No.	Tool dia.	Effective cutting dia.	Max.depth of cut : ap	Ramping		Helical interpolation	
				Max.ramping angle θ	Total cutting length at Max.ap : L(mm)	Min.Bore dia. (mm)	Max.Bore dia. (mm)
MSG-2020-09-M10	20	5.6	0.9	1°	51.6	27	38
MSG-2022-09-M10	22	7.7	0.9	1°	51.6	31	42
MSG-3025-09-M12	25	10.7	0.9	1°	51.6	37	48
MSG-4028-09-M12	28	13.7	0.9	1°	51.6	43	54
MSG-4032-09-M16	32	17.6	0.9	1°	51.6	51	62
MSG-5035-09-M16	35	20.6	0.9	1°	51.6	57	68
MSG-5040-09-M16	40	25.7	0.9	1°	51.6	67	78
MSG-5042-09-M16	42	27.7	0.9	1°	51.6	71	82
SKG-3025-60-09-S25	25	10.7	0.9	1°	51.6	37	48
SKG-3025-100-09-S25	25	10.7	0.9	1°	51.6	37	48
SKG-4032-70-09-S32	32	17.6	0.9	1°	51.6	51	62
SKG-4032-120-09-S32	32	17.6	0.9	1°	51.6	51	62
SKG-5035-70-09-S32	35	20.6	0.9	1°	51.6	57	68
SKG-5035-120-09-S32	35	20.6	0.9	1°	51.6	57	68
SKG-5040R-09-16	40	25.7	0.9	1°	51.6	67	78
SKG-7050R-09-22	50	35.6	0.9	1°	51.6	87	98
SKG-7052R-09-22	52	37.6	0.9	1°	51.6	91	102
SKG-8063R-09-22	63	48.7	0.9	0°45'	68.8	113	124
SKG-8066R-09-27	66	51.7	0.9	0°45'	68.8	119	130
SKG-9080R-09-27	80	65.7	0.9	0°30'	103.1	147	158

■ Recommended cutting conditions

● MSG09 Type + MSN shank

Material	Cat.No	Grade	Tool dia.(mm)														
			20					22					25				
			2N					2N					3N				
			ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)
Austenitic stainless steel (SUS304, 316, 317) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~60	0.8	~5	2,390	4,780	~60	0.8	~6	2,170	4,340	~75	0.8	~9	1,910	5,730
			100	0.6	~5	2,390	4,780	100	0.6	~6	2,170	4,340	125	0.6	~9	1,910	5,730
			140	0.6	~5	1,990	3,180	140	0.6	~6	1,810	2,900	175	0.6	~9	1,720	4,390
Ferritic and martensitic stainless steel (SUS403 420J2, 430) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~60	0.8	~5	3,020	6,040	~60	0.8	~6	2,750	5,500	~75	0.8	~9	2,420	7,260
			100	0.6	~5	3,020	6,040	100	0.6	~6	2,750	5,500	125	0.6	~9	2,420	7,260
			140	0.6	~5	2,470	3,950	140	0.6	~6	2,240	3,580	175	0.6	~9	2,160	5,510
Duplex stainless steel	SDEW 090312 ZER	JC7518 (JC7550)	~60	0.8	~5	1,590	950	~60	0.8	~6	1,450	870	~75	0.8	~9	1,270	1,140
			100	0.6	~5	1,590	950	100	0.6	~6	1,450	870	125	0.6	~9	1,270	1,140
			140	0.6	~5	1,350	680	140	0.6	~6	1,230	620	175	0.6	~9	1,150	860
Titanium alloy (Ti-6Al-4V) 35-43HRC	SDEW 090312 ZER	DS118 (DS150)	~60	0.8	~5	950	1,140	~60	0.8	~6	870	1,040	~75	0.8	~9	760	1,370
			100	0.6	~5	950	1,140	100	0.6	~6	870	1,040	125	0.6	~9	760	1,370
			140	0.6	~5	800	800	140	0.6	~6	720	720	175	0.6	~9	700	1,050
Heat resistant alloy (INCO718) 35-43HRC	SDET 090312 ZDER-SM (SDEW 090312 ZER)	DS118 (DS150)	~60	0.5	~5	480	580	~60	0.5	~6	430	520	~75	0.5	~9	380	680
			100	0.4	~5	480	580	100	0.4	~6	430	520	125	0.4	~9	380	680
			140	0.4	~5	400	400	140	0.4	~6	360	360	175	0.4	~9	320	480

Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity. (the above table is guide for cutting on a #50 BT machine.)
2. In case of chatter occurring, recommended to reduce a_p or rpm and keep feed per tooth.
3. a_p should be reduced when using on low rigidity machine.
4. Use air blow.
5. Wet cutting is recommended for machining super duplex , titanium alloy and heat resistant alloy.

■ Recommended cutting conditions

● MSG09 Type + MSN shank

Material	Cat.No	Grade	Tool dia.(mm)														
			28					32					35				
			4N					4N					5N				
			ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)
Austenitic stainless steel (SUS304, 316, 317) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~75	0.8	~12	1,710	6,840	~90	0.8	~15	1,490	5,960	~90	0.8	~18	1,360	6,800
			125	0.6	~12	1,710	6,840	150	0.6	~15	1,490	5,960	150	0.6	~18	1,360	6,800
			175	0.6	~12	1,530	5,200	210	0.6	~15	1,240	3,970	210	0.6	~18	1,140	4,560
Ferritic and martensitic stainless steel (SUS403 420J2, 430) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~75	0.8	~12	2,160	8,640	~90	0.8	~15	1,890	7,560	~90	0.8	~18	1,730	8,650
			125	0.6	~12	2,160	8,640	150	0.6	~15	1,890	7,560	150	0.6	~18	1,730	8,650
			175	0.6	~12	1,930	6,560	210	0.6	~15	1,540	4,930	210	0.6	~18	1,410	5,640
Duplex stainless steel	SDEW 090312 ZER	JC7518 (JC7550)	~75	0.8	~12	1,140	1,370	~90	0.8	~15	990	1,190	~90	0.8	~18	910	1,370
			125	0.6	~12	1,140	1,370	150	0.6	~15	990	1,190	150	0.6	~18	910	1,370
			175	0.6	~12	1,020	1,020	210	0.6	~15	850	850	210	0.6	~18	770	960
Titanium alloy (Ti-6Al-4V) 35-43HRC	SDEW 090312 ZER	DS118 (DS150)	~75	0.8	~12	680	1,630	~90	0.8	~15	600	1,440	~90	0.8	~18	550	1,650
			125	0.6	~12	680	1,630	150	0.6	~15	600	1,440	150	0.6	~18	550	1,650
			175	0.6	~12	630	1,260	210	0.6	~15	500	1,000	210	0.6	~18	450	1,130
Heat resistant alloy (INCO718) 35-43HRC	SDET 090312 ZDER-SM (SDEW 090312 ZER)	DS118 (DS150)	~75	0.5	~12	340	820	~90	0.5	~15	300	720	~90	0.5	~18	270	810
			125	0.4	~12	340	820	150	0.4	~15	300	720	150	0.4	~18	270	810
			175	0.4	~12	280	560	210	0.4	~15	250	500	210	0.4	~18	230	580

Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity. (the above table is guide for cutting on a #50 BT machine.)
2. In case of chatter occurring, recommended to reduce a_p or rpm and keep feed per tooth.
3. a_p should be reduced when using on low rigidity machine.
4. Use air blow.
5. Wet cutting is recommended for machining super duplex , titanium alloy and heat resistant alloy.

■ Recommended cutting conditions

● MSG09 Type + MSN shank

Material	Cat.No	Grade	Tool dia.(mm)									
			40					42				
			5N					5N				
			ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)
Austenitic stainless steel (SUS304, 316, 317) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~120	0.8	~23	1,190	5,950	~120	0.8	~24	1,140	5,700
			200	0.6	~23	1,190	5,950	200	0.6	~24	1,140	5,700
			280	0.6	~23	990	4,210	280	0.6	~24	950	4,040
Ferritic and martensitic stainless steel (SUS403 420J2, 430) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~120	0.8	~23	1,510	7,550	~120	0.8	~24	1,440	7,200
			200	0.6	~23	1,510	7,550	200	0.6	~24	1,440	7,200
			280	0.6	~23	1,230	5,230	280	0.6	~24	1,170	4,970
Duplex stainless steel	SDEW 090312 ZER	JC7518 (JC7550)	~120	0.8	~23	800	1,200	~120	0.8	~24	760	1,140
			200	0.6	~23	800	1,200	200	0.6	~24	760	1,140
			280	0.6	~23	680	850	280	0.6	~24	640	800
Titanium alloy (Ti-6Al-4V) 35-43HRC	SDEW 090312 ZER	DS118 (DS150)	~120	0.8	~23	480	1,440	~120	0.8	~24	450	1,350
			200	0.6	~23	480	1,440	200	0.6	~24	450	1,350
			280	0.6	~23	400	1,000	280	0.6	~24	380	950
Heat resistant alloy (INCO718) 35-43HRC	SDET 090312 ZDER-SM (SDEW 090312 ZER)	DS118 (DS150)	~120	0.5	~23	240	720	~120	0.5	~24	230	690
			200	0.4	~23	240	720	200	0.4	~24	230	690
			280	0.4	~23	200	500	280	0.4	~24	190	480

- Note
1. Please adjust cutting conditions according to machine rigidity or work rigidity. (the above table is guide for cutting on a #50 BT machine.)
 2. In case of chatter occurring, recommended to reduce a_p or rpm and keep feed per tooth.
 3. a_p should be reduced when using on low rigidity machine.
 4. Use air blow.
 5. Wet cutting is recommended for machining super duplex , titanium alloy and heat resistant alloy.

■ Recommended cutting conditions

● SKG09 Endmill shank type

Material	Cat.No	Grade	Tool dia.(mm)														
			25					32					35				
			3N					4N					5N				
			φ (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)	φ (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)	φ (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)
Austenitic stainless steel (SUS304, 316, 317) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~70	0.6	~9	1,910	5,730	~90	0.6	~15	1,490	5,960	~90	0.6	~18	1,360	6,800
			70~120	0.6	~9	1,590	3,820	90~140	0.6	~15	1,240	3,970	90~140	0.6	~18	1,140	4,560
Ferritic and martensitic stainless steel (SUS403 420J2, 430) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~70	0.6	~9	2,420	7,260	~90	0.6	~15	1,890	7,560	~90	0.6	~18	1,730	8,650
			70~120	0.6	~9	1,970	4,730	90~140	0.6	~15	1,540	4,930	90~140	0.6	~18	1,410	5,640
Duplex stainless steel	SDEW 090312 ZER	JC7518 (JC7550)	~70	0.6	~9	1,270	1,140	~90	0.6	~15	990	1,190	~90	0.6	~18	910	1,370
			70~120	0.6	~9	1,080	810	90~140	0.6	~15	850	850	90~140	0.6	~18	770	960
Titanium alloy (Ti-6Al-4V) 35-43HRC	SDEW 090312 ZER	DS118 (DS150)	~70	0.6	~9	760	1,370	~90	0.6	~15	600	1,440	~90	0.6	~18	550	1,650
			70~120	0.6	~9	640	960	90~140	0.6	~15	500	1,000	90~140	0.6	~18	450	1,130
Heat resistant alloy (INCO718) 35-43HRC	SDET 090312 ZDER-SM (SDEW 090312 ZER)	DS118 (DS150)	~70	0.5	~9	380	680	~90	0.5	~15	300	720	~90	0.5	~18	270	810
			70~120	0.5	~9	320	480	90~140	0.5	~15	250	500	90~140	0.5	~18	230	580

Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity. (the above table is guide for cutting on a #50 BT machine.)
2. In case of chatter occurring, recommended to reduce a_p or rpm and keep feed per tooth.
3. a_p should be reduced when using on low rigidity machine.
4. Use air blow.
5. Wet cutting is recommended for machining super duplex , titanium alloy and heat resistant alloy.

■ Recommended cutting conditions

● SKG09 Facemill type

Material	Cat.No	Grade	Tool dia.(mm)														
			40					50					52				
			5N					7N					7N				
			φ (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)	φ (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)	φ (mm)	a_p (mm)	a_e (mm)	n (min^{-1})	V_f (mm/min)
Austenitic stainless steel (SUS304, 316, 317) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~150	0.6	~23	1,190	5,950	~150	0.8	~32	950	6,650	~150	0.8	~33	920	6,440
			200	0.4	~23	1,190	5,950	200	0.6	~32	950	6,650	200	0.6	~33	920	6,440
			250	0.3	~23	990	4,950	250	0.4	~32	800	5,600	250	0.4	~33	770	5,390
			300	-	-	-	-	300	0.3	~32	800	5,600	300	0.3	~33	770	5,390
			350	-	-	-	-	350	0.3	~32	800	4,760	350	0.3	~33	770	4,580
Ferritic and martensitic stainless steel (SUS403 420J2, 430) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~150	0.6	~23	1,510	7,550	~150	0.8	~32	1,210	8,470	~150	0.8	~33	1,160	8,120
			200	0.4	~23	1,510	7,550	200	0.6	~32	1,210	8,470	200	0.6	~33	1,160	8,120
			250	0.3	~23	1,230	6,150	250	0.4	~32	990	6,930	250	0.4	~33	950	6,650
			300	-	-	-	-	300	0.3	~32	990	6,930	300	0.3	~33	950	6,650
			350	-	-	-	-	350	0.3	~32	990	5,890	350	0.3	~33	950	5,650
Duplex stainless steel	SDEW 090312 ZER	JC7518 (JC7550)	~150	0.6	~23	800	1,200	~150	0.8	~32	640	1,340	~150	0.8	~33	610	1,280
			200	0.4	~23	800	1,200	200	0.6	~32	640	1,340	200	0.6	~33	610	1,280
			250	0.3	~23	680	1,020	250	0.4	~32	540	1,130	250	0.4	~33	520	1,090
			300	-	-	-	-	300	0.3	~32	540	1,130	300	0.3	~33	520	1,090
			350	-	-	-	-	350	0.3	~32	540	950	350	0.3	~33	520	910
Titanium alloy (Ti-6Al-4V) 35-43HRC	SDEW 090312 ZER	DS118 (DS150)	~150	0.6	~23	480	1,440	~150	0.8	~32	380	1,600	~150	0.8	~33	370	1,550
			200	0.4	~23	480	1,440	200	0.6	~32	380	1,600	200	0.6	~33	370	1,550
			250	0.3	~23	400	1,200	250	0.4	~32	320	1,340	250	0.4	~33	310	1,300
			300	-	-	-	-	300	0.3	~32	320	1,340	300	0.3	~33	310	1,300
			350	-	-	-	-	350	0.3	~32	320	1,120	350	0.3	~33	310	1,090
Heat resistant alloy (INCO718) 35-43HRC	SDET 090312 ZDER-SM (SDEW 090312 ZER)	DS118 (DS150)	~150	0.5	~23	240	720	~150	0.5	~32	190	800	~150	0.5	~33	180	760
			200	0.35	~23	240	720	200	0.4	~32	190	800	200	0.4	~33	180	760
			250	0.25	~23	200	600	250	0.25	~32	160	670	250	0.25	~33	150	630
			300	-	-	-	-	300	0.2	~32	160	670	300	0.2	~33	150	630
			350	-	-	-	-	350	0.2	~32	160	560	350	0.2	~33	150	530

Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity. (the above table is guide for cutting on a #50 BT machine.)
2. In case of chatter occurring, recommended to reduce a_p or rpm and keep feed per tooth.
3. a_p should be reduced when using on low rigidity machine.
4. Use air blow.
5. Wet cutting is recommended for machining super duplex, titanium alloy and heat resistant alloy.

■ Recommended cutting conditions

● SKG09 Facemill type

Material	Cat.No	Grade	Tool dia.(mm)														
			63					66					80				
			8N					8N					9N				
			ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)	ϕ (mm)	a_p (mm)	a_e (mm)	n (min ⁻¹)	V_f (mm/min)
Austenitic stainless steel (SUS304, 316, 317) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~150	0.8	~43	760	6,080	~150	0.8	~46	720	5,760	~150	0.8	~59	600	5,400
			200	0.6	~43	760	6,080	200	0.6	~46	720	5,760	200	0.6	~59	600	5,400
			250	0.4	~43	630	5,040	250	0.4	~46	600	4,800	250	0.4	~59	500	4,500
			300	0.3	~43	630	5,040	300	0.3	~46	600	4,800	300	0.3	~59	500	4,500
			350	0.3	~43	630	4,280	350	0.3	~46	600	4,080	350	0.3	~59	500	3,830
Ferritic and martensitic stainless steel (SUS403 420J2, 430) 17Cr	SDEW 090312 ZER (SDET 090312 ZDER-SM)	JC7550	~150	0.8	~43	960	7,680	~150	0.8	~46	920	7,360	~150	0.8	~59	760	6,840
			200	0.6	~43	960	7,680	200	0.6	~46	920	7,360	200	0.6	~59	760	6,840
			250	0.4	~43	780	6,240	250	0.4	~46	750	6,000	250	0.4	~59	620	5,580
			300	0.3	~43	780	6,240	300	0.3	~46	750	6,000	300	0.3	~59	620	5,580
			350	0.3	~43	780	5,300	350	0.3	~46	750	5,100	350	0.3	~59	620	4,740
Duplex stainless steel	SDEW 090312 ZER	JC7518 (JC7550)	~150	0.8	~43	510	1,220	~150	0.8	~46	480	1,150	~150	0.8	~59	400	1,080
			200	0.6	~43	510	1,220	200	0.6	~46	480	1,150	200	0.6	~59	400	1,080
			250	0.4	~43	430	1,030	250	0.4	~46	410	980	250	0.4	~59	340	920
			300	0.3	~43	430	1,030	300	0.3	~46	410	980	300	0.3	~59	340	920
			350	0.3	~43	430	860	350	0.3	~46	410	820	350	0.3	~59	340	770
Titanium alloy (Ti-6Al-4V) 35-43HRC	SDEW 090312 ZER	DS118 (DS150)	~150	0.8	~43	300	1,440	~150	0.8	~46	290	1,390	~150	0.8	~59	240	1,300
			200	0.6	~43	300	1,440	200	0.6	~46	290	1,390	200	0.6	~59	240	1,300
			250	0.4	~43	250	1,200	250	0.4	~46	240	1,150	250	0.4	~59	200	1,080
			300	0.3	~43	250	1,200	300	0.3	~46	240	1,150	300	0.3	~59	200	1,080
			350	0.3	~43	250	1,000	350	0.3	~46	240	960	350	0.3	~59	200	900
Heat resistant alloy (INCO718) 35-43HRC	SDET 090312 ZDER-SM (SDEW 090312 ZER)	DS118 (DS150)	~150	0.5	~43	150	720	~150	0.5	~46	140	670	~150	0.5	~59	120	650
			200	0.4	~43	150	720	200	0.4	~46	140	670	200	0.4	~59	120	650
			250	0.25	~43	130	620	250	0.25	~46	120	580	250	0.25	~59	100	540
			300	0.2	~43	130	620	300	0.2	~46	120	580	300	0.2	~59	100	540
			350	0.2	~43	130	520	350	0.2	~46	120	480	350	0.2	~59	100	450

Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity. (the above table is guide for cutting on a #50 BT machine.)
2. In case of chatter occurring, recommended to reduce a_p or rpm and keep feed per tooth.
3. a_p should be reduced when using on low rigidity machine.
4. Use air blow.
5. Wet cutting is recommended for machining super duplex , titanium alloy and heat resistant alloy.

