

PRODUCT NEWS

No. 514

 **DIJET®**

NEW

가

SKS-GII

09

SKG-09/MSG-09形

- :φ40~φ80
- :φ25~φ35
- :φ20~φ42



NEW PRODUCT



ダイジェット工業株式会社

Features of product

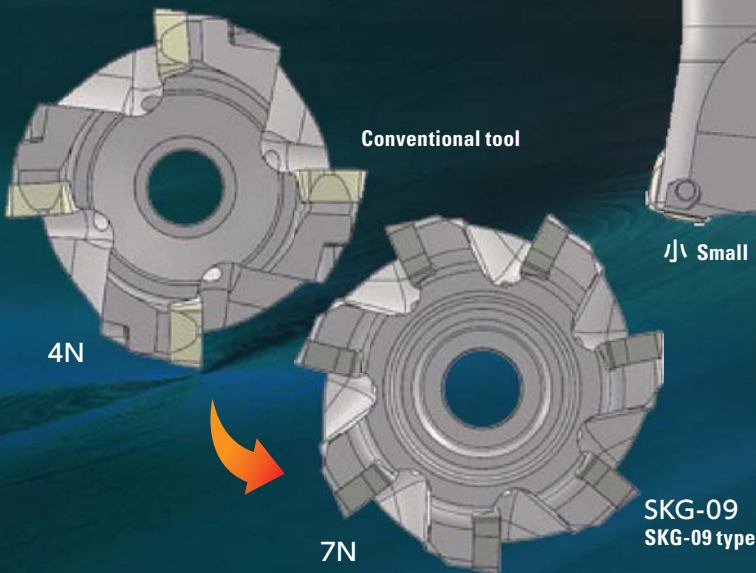
High efficient and high feed cutter specialized in hard-to-cut materials.

Feature 1

ap = 0.9mm

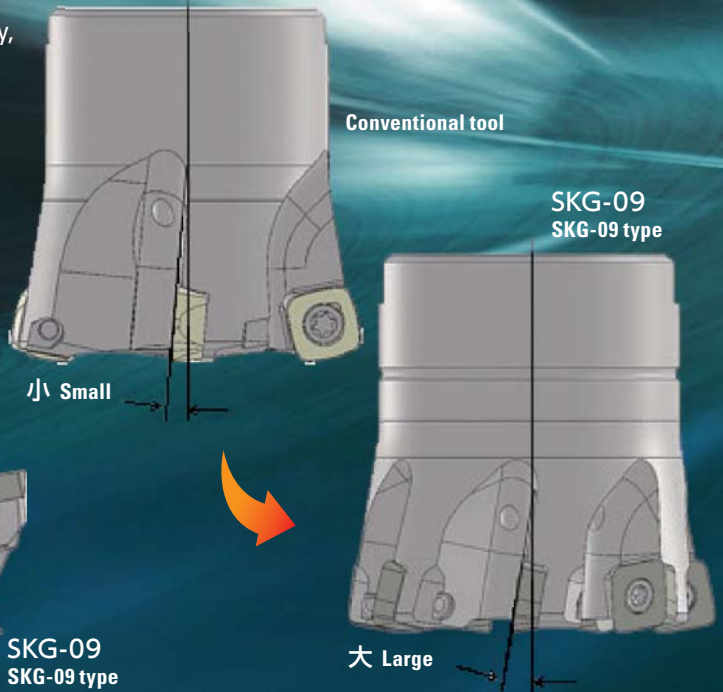
Superior cutting performance by multi blades with small inserts.
Maximum ap=0.9mm is possible even if machining Titanium Alloy, Stainless Steel and Heat Resistant Alloy.

● **φ50** Tool dia. φ50



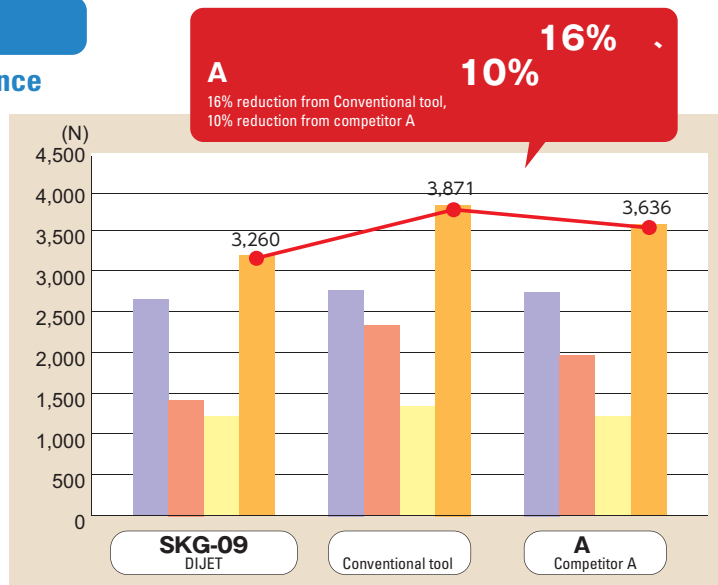
Feature 2

Straight cutting edge and high axial rake angle give low cutting force and stable machining in hard-to-cut materials.



Cutting performance

Cutting force comparison



X (Feed force)
Y (Main force)
Z (Back force)
	(Resultant force)

(Ti-6Al-4V)
Material: Titanium Alloy
● : φ50
Tool dia.
Insert No. :
SDEW090312ZER(JC7518)
● Cutting conditions :
n=380/min, Vc=60m/min,
fz=0.6mm/t, ap=0.8mm,
ae=20mm,
가 Face milling (Roughing)
:135mm Overhung length
1 Test by one insert, Down cut
Air (Internal)

Cutting force is reduced by high axial rake angle and the sharp cutting edge.

Feature 3

4

Adopted economical 4 corner positive insert.
E class grinding inserts reduce initial wear and achieve long tool life.
With chip-breaker insert and non-breaker insert are available.

Line up



インサート選定 Application

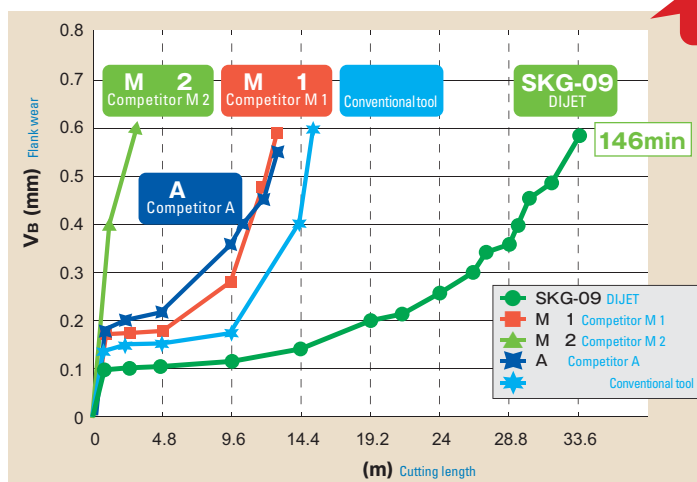
	Titanium Alloy	Inconel	SUS630	SUS316
SDEW090312ZER (JC7518)	●	●	●	
SDEW090312ZER (JC7550)	■			● ■
SDET090312ZDER-SM(JC7550)		■	■	

●: 安定加工 Stable machining ■: 不安定加工 Unstable machining

M 2 14倍、M社1比3.1倍
当社従来品比
2.2倍の寿命アップを達成。

SKG-09 achieved 14 times longer tool life compared with competitor M 2, 3.1 times longer compared with competitor M 1, and 2.2 times longer compared with conventional tool.

Tool life comparison



Material: Titanium Alloy
(Ti-6Al-4V)

● : φ50
Tool dia.

Insert No.:
SDEW090312ZER(JC7518)

Cutting conditions:
n=380/min, Vc=60m/min,
fz=0.6mm/t, ap=0.8mm,
ae=20mm.

加工 Face milling (Roughing)
1 : 135mm Overhung length
Wet Test by one insert, Down cut

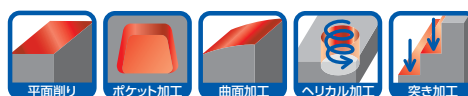
JC7518

Low cutting force specification and new grade JC7518 give long tool life.

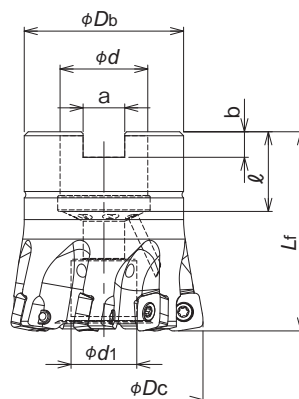
Line up

Facemill type

G-Body



Through coolant hole



Body

タイプ Type	Cat. No.	Stock	No. of inserts	(mm) Dimensions								Set bolt		(kg) Weight	Applicable inserts
				φDc	Lf	φDb	φd	φd1	a	b	ℓ				
穴径ハサイズ Metric Bore	SKG-5040R-09-16	☆	5	40	40	37	16	13.5	8.4	5.6	18	M8	(JIS) Head cap screw (JIS standard)	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	☆	7	52	50	40	22	16.5	10.4	6.3	20	M10		0.37	
	SKG-8063R-09-22	●	8	63	50	48	22	17	10.4	6.3	20	M12		0.58	
	SKG-8066R-09-27	☆	8	66	50	50	27	20	12.4	7	22	M12×1.75×30★		0.60	
	SKG-9080R-09-27	●	9	80	50	60	27	20	12.4	7	22	M12×1.75×30★		0.97	

●: Standard stock items.
☆: (10日~2) Stock in Europe. (14 days delivery upon ordering)

注) 1.
2. MOLDY ()
3. ★

Note) 1. All cutters are supplied without inserts.
2. All cutters are supplied without wrench & MOLDY.
3. ★ mark shows: these cutter bodies are equipped with the set bolt because of the specified bolt size.
Except for these cutter bodies, please use the set bolt equipped with arbor.

Clamp screw	(N·m) Recommended torque
DSW-307H	2.1

Parts

Clamp screw	(Wrench not be included)
DSW-307H	A-10

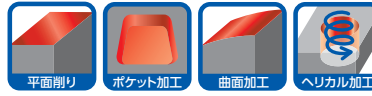
G-Body

+ GN 65HRC
30% 가 가

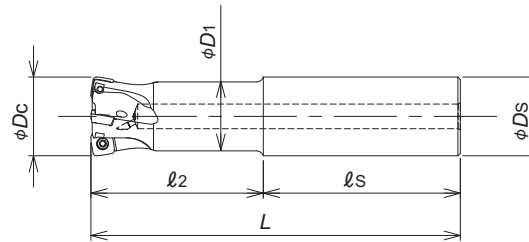
Adopted GN surface-hardening treatment on thermal resistant high strength steel gives high hardness over 65HRC and secure insert pocket and holder against thermal deformation, improved body durability and tool life by 30% or more. Make it difficult to be damaged even under severe cutting conditions.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



Shank type



Through coolant hole



Body

Cat. No.	Stock	No. of inserts	(mm) Dimensions						Applicable inserts	部 Parts	
			φDc	L2	Ls	L	φD1	φDs		Clamp screw	Wrench (別売 not be included)
SKG-3025-60-09-S25	●	3	25	60	80	140	23	25	SDEW090312ZER SDET090312ZDER-SM	DSW-307H	A-10
SKG-3025-100-09-S25	●	3	25	100	80	180	23	25			
SKG-4032-70-09-S32	●	4	32	70	80	150	28	32			
SKG-4032-120-09-S32	●	4	32	120	80	200	28	32			
SKG-5035-70-09-S32	●	5	35	70	80	150	31	32			
SKG-5035-120-09-S32	●	5	35	120	80	200	31	32			

●: Standard stock items

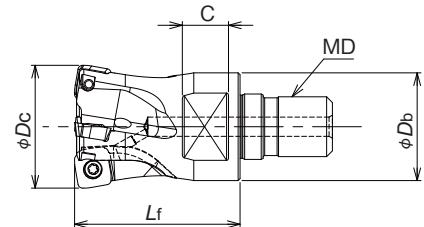
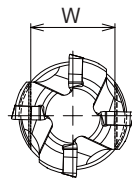
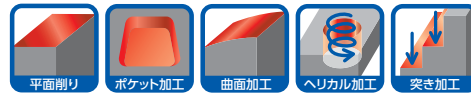
注) 1. ()
2. MOLY
Note) 1. All cutters are supplied without inserts.
2. All cutters are supplied without wrench & MOLY.

Line up




Modular head type



Through coolant hole



Body

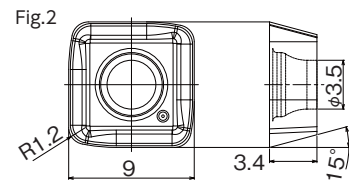
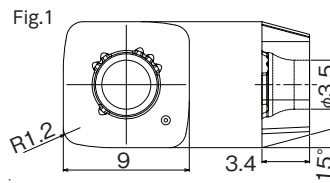
Cat. No.	Stock	No. of inserts	(mm) Dimensions						Applicable inserts	Parts	
			φDc	Lf	φDb	MD	C	W		Clamp screw	Wrench (別売 not be included)
											
MSG-2020-09-M10	◎	2	20	30	19	M10	9	14	SDEW090312ZER SDET090312ZDER-SM	DSW-306H	A-10
MSG-2022-09-M10	◎	2	22	30	19	M10	9	14		DSW-307H	
MSG-3025-09-M12	●	3	25	35	23	M12	11	19			
MSG-4028-09-M12	●	4	28	35	23.6	M12	11	19			
MSG-4032-09-M16	●	4	32	43	28	M16	12	22			
MSG-5035-09-M16	●	5	35	43	29	M16	12	22			
MSG-5040-09-M16	●	5	40	43	32	M16	14	26			
MSG-5042-09-M16	☆	5	42	43	32	M16	14	26			

●: Standard stock items
 ◎: Soon be stocked
 ☆: (10日~2) Stock in Europe. (14 days delivery upon ordering).
 注) 1. MOLY P.9
 2. All cutters are supplied without inserts.
 3. Please see page 9 for recommended tightening torque.

Clamp screw	(N·m) Recommended torque
DSW-306H	1.8
DSW-307H	2.1



Insert



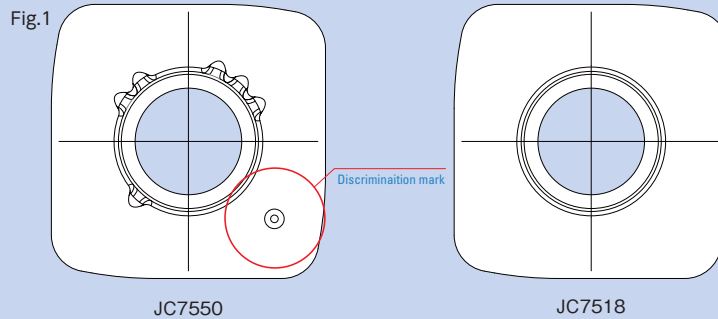
Cat. No.	Tolerance	PVD	PVD Coated	Fig.
		JC7550	JC7518	
SDEW090312ZER	E	●	●	1
SDET090312ZDER-SM	E	●		2

●: Standard stock items
1 10 10 inserts per case.

SKS-GII 09

Discrimination of grade for SKS-GII 09 type insert

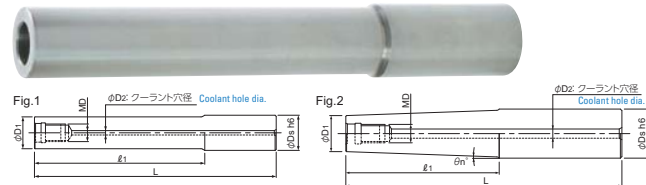
() 가
Each grade shows discrimination mark on the insert surface.



● 頑固一徹 (ALL) MSN Carbide shank arbor

■ End mill shank type

● Through coolant hole ● 가 For high productivity



Cat. No.	Stock	(mm) Dimensions						Weight (kg)	Fig.
		φDs	ℓ1	L	φD1	θn°	MD		
MSN-M10-20-S20C	●	20	20	80	19.5	-	M10	0.29	1
MSN-M10-40-S20C	●	20	40	100	19.5	-		0.39	1
MSN-M10-40T-S20C	●	20	40	100	18.5	0°43'		0.39	2
MSN-M10-70-S20C	●	20	70	130	19.5	-		0.50	1
MSN-M10-85T-S25C	●	25	85	161	18.5	2°		0.90	2
MSN-M10-90-S20C	●	20	90	150	19.5	-		0.60	1
MSN-M10-90T-S20C	●	20	90	150	18.5	0°19'		0.58	2
MSN-M10-140-S20C	●	20	140	200	19.5	-		0.80	1
MSN-M10-140T-S20C	●	20	140	200	18.5	0°12'		0.77	2
MSN-M10-160-S20C	●	20	160	220	19.5	-		0.87	1
MSN-M10-210-S20C	●	20	210	270	19.5	-		1.07	1
MSN-M12-25-S25C	●	25	25	90	24	-	M12	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	0.85	1
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

注) 9
Note) Please see page 9 for recommended tightening torque.

■ Straight arbor type

● Through coolant hole ● 가 For high productivity



Cat. No.	Stock	(mm) Dimensions				Weight (kg)
		φDs	L	MD	φD2	
MSN-M10-130S-S18C	●	18	130	M10	4	0.42
MSN-M10-190S-S18C	●		190			0.62
MSN-M10-240S-S18C	●		240			0.89
MSN-M10-130S-S20C	●	20	130	M10	4	0.53
MSN-M10-190S-S20C	●		190			0.78
MSN-M10-250S-S20C	●		250			1.02
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

注) 9
Note) Please see page 9 for recommended tightening torque.



頑固一徹 ([BT/HSK])

Please scan the following QR code for the other arbor (MSA type integrated carbide shank).

● 頑固 G-Body () MGN G-Body steel shank arbor

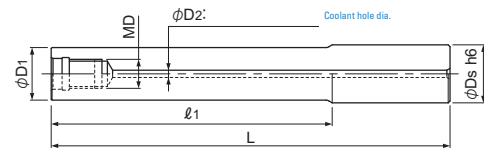
- G-Body ●
- 가 가 가
- G-Body ()

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

■ End mill shank type

● Through coolant hole

G-Body



Cat. No.	Stock	(mm) Dimensions							(kg) Weight
		φDs	ℓ1	L	φD1	θn°	MD	φD2	
MGN-M10-30-S20	●	20	30	100	19	—	M10	4	0.21
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

●: Standard stock items

注) 1. G-Body 12~14
2. 9

Note) 1. In case of using modular head combined with MGN steel shank arbor, apply the recommended cutting conditions sheet (see page 12 - 14).
2. Please see page 9 for recommended tightening torque.

Attention



Attention to mounting head and MSN/ MGN shank arbor.



Tightening procedure

① Cleaning

ALL 『 』
()

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

② Initial Tightening

ALL 『 』 『頑固 G-Body』

Tighten by hand until the head and MSN/MGN arbor faces touch.

③ Final Tightening

(DS)

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

()

가

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



NOTE

1. () (DS)
2. ()
3. ALL () 『頑固 G-Body』

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 arbor and modular head.

Thread	Tightening torque	W(mm) Spanner size
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

- 注) 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)
3. ☆ mark shows: DIJET have a stock of DS-8 and 12 type spanner wrenches.



(ALL)

Selection of "MSN Carbide shank arbor"

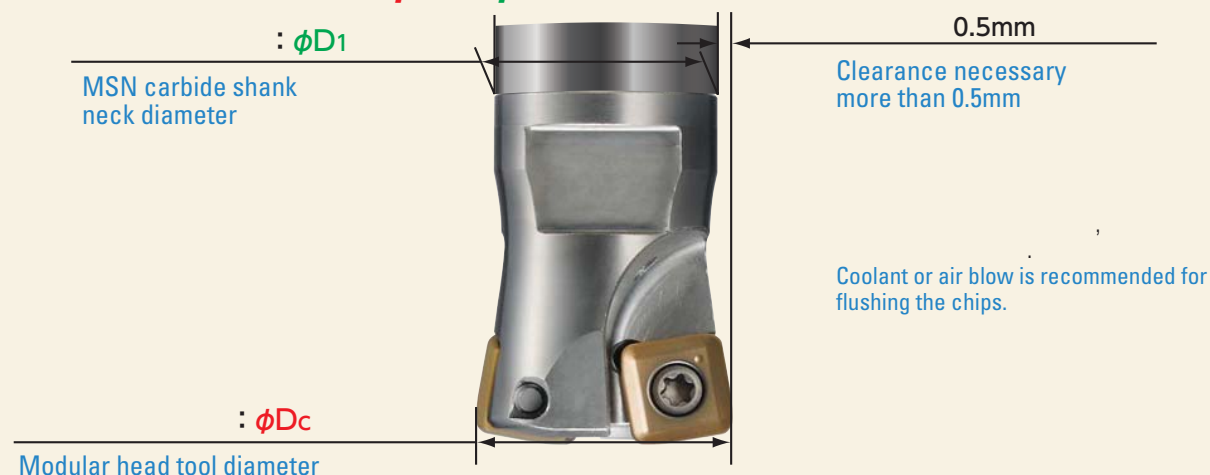
φ16

1mm

가 가

In case of using modular head over φ16mm, please select MSN carbide shank arbor that diameter (φD1) is 1mm or more smaller than modular head (φDc). A wrong selection causes damage to the carbide shank.

$$\phi Dc - \phi D1 \geq 1mm$$



Caution for the mounting to shrink fit holder.

ALL 『 』

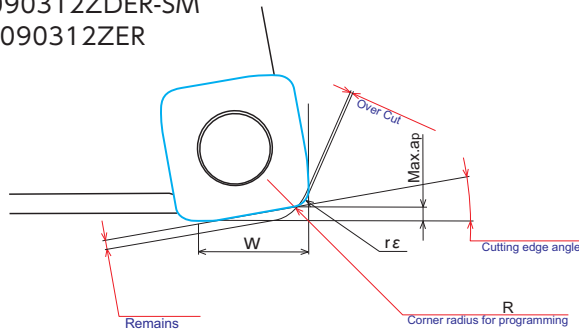
When you use a carbide shank and a modular head on the shrink fit holder, please shrink fit the only carbide shank without mounting a modular head together. **Please mount a modular head after shrinking fit operation.**

注)

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

Definition of corner shape for programming

SDET090312ZDER-SM
SDEW090312ZER

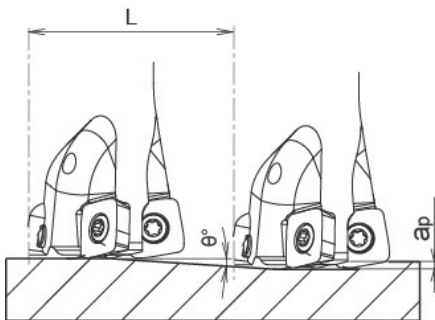


R Corner R for programming	Remains	Over cut	Max.ap	W	Cutting edge angle	R (rε) Insert corner R
1.5	0.81	0	0.9	7.1	10°	1.2
2 (基本)	0.73	0				
2.5	0.65	0.08				

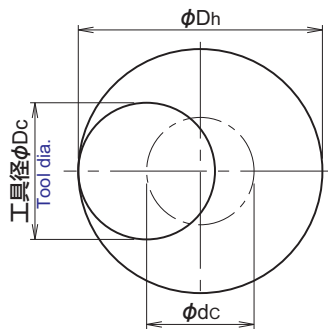
가

Attention for profile milling

가 Ramping



가 Helical interpolation



- Calculation of tool pass dia.

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

Tool pass dia. Bore dia. Tool dia.
- 가 ap

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

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

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

Cat. No.	Tool dia. (mm)	가 가 Eff. Cutting dia. (mm)	:ap Max. depth of cut (mm)	가 Ramping		가 Helical interpolation	
				θ (°) Max. ramping angle θ°	(ap) :L (mm) Total cutting length at Max. ap	Min. bore dia. Dh min (mm)	Max. bore dia. Dh max (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

가

Cutting data

① 가 1. Machining on Ti-alloy



Result

1 가 2 가 가

No chatter, Stable machining.

Able to machine for about 2 hours / corner.

가	Work	Part name	Test piece	
		Material	Ti-6Al-4V	
		Hardness	—	
Tool	Tool	Tool No.	SKG-7050R-09-22	
		Insert No.	SDEW090312ZER(JC7518)	
Cutting conditions	Spindle speed Cutting speed	n	380 (min ⁻¹)	
		V_c	60 (m/min)	
	Feed speed	V_f	1,600 (mm/min)	
		f_z	0.6 (mm/t)	
	a_p		0.6 (mm)	
	a_e		20 (mm)	
	Coolant		() Wet (Internal)	
	Machine		MC(HSK-63) Vertical MC (HSK-63)	

② 가 2. Machining on Inconel

Overhung length : 150mm



Result

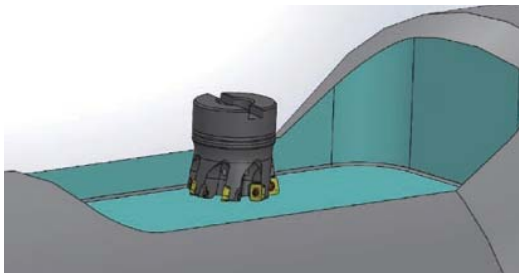
가 30分 1 1 가
()

SKG can complete this application by only one corner of insert.
Possible to use continuously after machining 30 minutes.

가	Work	Part name	Aircraft parts	
		Material	INCONEL625	
		Hardness	—	
Tool	Tool	Tool No.	SKG-7050R-09-22	
		Insert No.	SDEW090312ZER(JC7518)	
Cutting conditions	Spindle speed Cutting speed	n	230 (min ⁻¹)	
		V_c	37 (m/min)	
	Feed speed	V_f	760 (mm/min)	
		f_z	0.47 (mm/t)	
	a_p		0.5 (mm)	
	a_e		20 (mm)	
	Coolant		() Wet (External)	
	Machine		MC(HSK-63) Vertical MC (HSK-63)	

③ 가 3. Machining on Stainless Steel

Gauge length : 101.6mm



Result

12%가
가 1.75 70分 1
1 가

Improved machining efficiency by 12% compared with current tool. Machining time is 70 minutes.
(1.75 times longer than current tool.) This application is completed by using only one corner of insert.

가	Work	Part name	OIL Excavator parts	
		Material	Nonmagnetic, Austenitic Mn-Cr-steel	
		Hardness	36HRC	
Tool	Tool	Tool No.	SKG-7050R-09-22	
		Insert No.	SDEW090312ZER(JC7550)	
Cutting conditions	Spindle speed Cutting speed	n	460 (min ⁻¹)	
		V_c	73.4 (m/min)	
	Feed speed	V_f	1,803 (mm/min)	
		f_z	0.56 (mm/t)	
	a_p		0.635 (mm)	
	a_e		12.8 (mm)	
	Coolant		Air (Internal)	
	Machine		MC(CAT40) Vertical MC (CAT40)	

Recommended cutting conditions

MSG-09形+頑固一徹(

ALL

) MSG-09 and MSN type

1/3

Work materials	Insert No.	Grades	(mm) Tool dia.														
			20					22					25				
			No. of teeth 2N					No. of teeth 2N					No. of teeth 3N				
			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)
(SUS304,316,317) 17Cr系 Stainless steel Austenitic (AISI 304, 316, 317)	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
(SUS403,420J2,430) 13Cr系 Stainless steel Ferritic/Martensitic (AISI 403, 420J2, 430)	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
Super duplex stainless steel (S32750)	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
(Ti-6Al-4V) 硬さ35~43HRC Titanium alloy 35~43HRC	SDEW 090312 ZER	JC7518 (JC7550)	~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
(INCO718) 硬さ35~43HRC Inconel 35~43HRC	SDEW 090312 ZER	JC7518 (JC7550)	~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

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

- *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.
- MC cavity 가



MSG-09形+頑固一徹(

ALL

) MSG-09 and MSN type

2/3

Work materials	Insert No.	Grades	(mm) Tool dia.														
			28					32					35				
			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)
(SUS304,316,317) 17Cr系 Stainless steel Austenitic (AISI 304, 316, 317)	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
(SUS403,420J2,430) 13Cr系 Stainless steel Ferritics/Martensitic (AISI 403, 420J2, 430)	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
Super duplex stainless steel (S32750)	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
(Ti-6Al-4V) 硬さ35~43HRC Titanium alloy 35~43HRC	SDEW 090312 ZER	JC7518 (JC7550)	~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
(INCO718) 硬さ35~43HRC Inconel 35~43HRC	SDEW 090312 ZER	JC7518 (JC7550)	~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

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.

*1.

*2.

, 1

*3.

*4.

MC

n Vf
cavity 가



MSG-09形+頑固一徹(

ALL

) MSG-09 and MSN type

3/3

Work materials	Insert No.	Grades	(mm) Tool dia.									
			40					42				
			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)
(SUS304,316,317) 17Cr系 Stainless steel Austenitic (AISI 304, 316, 317)	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
(SUS403,420J2,430) 13Cr系 Stainless steel Ferritics/Martensitic (AISI 403, 420J2, 430)	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
Super duplex stainless steel (S32750)	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
(Ti-6Al-4V) 35~43HRC Titanium alloy 35~43HRC	SDEW 090312 ZER	JC7518 (JC7550)	~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
(INCO718) 35~43HRC Inconel 35~43HRC	SDEW 090312 ZER	JC7518 (JC7550)	~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

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

- *1. , 1
*2. , 1
*3. , 1
*4. , 1
- 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.
- MC cavity 가

Recommended cutting conditions

Shank type

Work materials	Insert No.	Grades	(mm) <small>Tool dia.</small>														
			25					32					35				
			No. of teeth 3N					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)
(SUS304,316,317) 17Cr系 Stainless steel Austenitic (AISI 304, 316, 317)	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
(SUS403,420J2,430) 13Cr系 Stainless steel Ferritics/Martensitic (AISI 403, 420J2, 430)	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
Super duplex stainless steel (S32750)	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
(Ti-6Al-4V) 35~43HRC Titanium alloy 35~43HRC	SDEW 090312 ZER	JC7518 (JC7550)	~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
(INCO718) 35~43HRC Inconel 35~43HRC	SDEW 090312 ZER	JC7518 (JC7550)	~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

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

*1. (BT50)
 *2.
 *3. n V_f
 *4. MC cavity?

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.

Recommended cutting conditions

Facemill type

1/2

Work materials	Insert No.	Grades	(mm) Tool dia.														
			40					50					52				
			No. of teeth 5N					No. of teeth 7N					No. of teeth 7N				
			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)
(SUS304,316,317) 17Cr系 Stainless steel Austenitic (AISI 304, 316, 317)	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
(SUS403,420J2,430) 13Cr系 Stainless steel Ferritic/Martensitic (AISI 403, 420J2, 430)	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
Super duplex stainless steel (S32750)	SDEW 090312 ZER (JC7550)	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
(Ti-6Al-4V) 35~43HRC Titanium alloy 35~43HRC	SDEW 090312 ZER (JC7550)	JC7518 (JC7550)	~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
(INCO718) 35~43HRC Inconel 35~43HRC	SDEW 090312 ZER (JC7550)	JC7518 (JC7550)	~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

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

*1. (BT50)
*2. ,1
*3. n V_f
*4. MC cavity?

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.

Facemill type

Work materials	Insert No.	Grades	(mm) Tool dia.														
			63					66					80				
			No. of teeth 8N					No. of teeth 8N					No. of teeth 9N				
			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)
(SUS304,316,317) 17Cr系 Stainless steel Austenitic (AISI 304, 316, 317)	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
(SUS403,420J2,430) 13Cr系 Stainless steel Ferritic/Martensitic (AISI 403, 420J2, 430)	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
Super duplex stainless steel (S32750)	SDEW 090312 ZER (JC7550)	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
(Ti-6Al-4V) 35~43HRC Titanium alloy 35~43HRC	SDEW 090312 ZER (JC7550)	JC7518 (JC7550)	~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
(INCO718) 35~43HRC Inconel 35~43HRC	SDEW 090312 ZER (JC7550)	JC7518 (JC7550)	~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

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

*1. (BT50)

*2. ,1

*3. n V_f

*4. MC cavity가

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.

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**ご使用上の注意** 工具を安全にご使用いただくために

- 不適切な切削条件で使用しないでください。●大きな摩耗や欠けのある工具は使用しないでください。
- 切りくずの飛散、巻き付きによるケガにご注意ください。又、保護眼鏡や安全カバーをご使用ください。

WARNING: •Grinding produces hazardous dust. •To avoid adverse health, use adequate ventilation and read Material Safety Data Sheet first.
 •Cutting tools may fragment in use. Wear eye protection in the vicinity of their operation.

●工具仕様は、改良のため予告なく変更することがあります。 **Specification shall be changed without notice.**

販売店



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