

# EXTREME SAP

## EXSAP/MSX TYPE



Facemill type

Modular head type

Shank type

### Various line up

Capable of a variety of applications such as facemilling, slotting and plunging

### Arc-shaped cutting edge trajectory

Due to the arc-geometry on peripheral cutting edge, cusp height can be smaller even in case of large ap.

Achieves high efficient & high precision machining for side walls.



### Strong clamping system

Due to unique clamping system that holds insert in place, it is possible to achieve high efficient machining in roughing application.

### High precision G class periphery ground

capable of semi-finishing



Double sided 4 cutting edge insert

**EXTREME SAP** **EXSAP/MSX Type**

■ **EXSAP-11 type**



**High speed machining**  
with multi flutes & small insert

**Accuracy of tool diameter : 0-0.1mm**  
Achieves higher precision on semi-finishing process

Grade: **JC8050**  
**JC8118**

PM breaker for general steel (up to 50HRC)

Grade: **JC7550**  
**JC7518**  
**DS118**  
**DS150**

SL breaker for hard to cut material  
such as Titanium alloy, Heat resistant alloy

■ **EXSAP-17 type**



**Max.depth of cut (ap)=15mm**  
From roughing to semi-finishing

**High rigidity insert**  
Achieves high precision machining even when using large ap

Grade: **JC8050**  
**JC8118**

PM breaker for general steel (up to 50HRC)

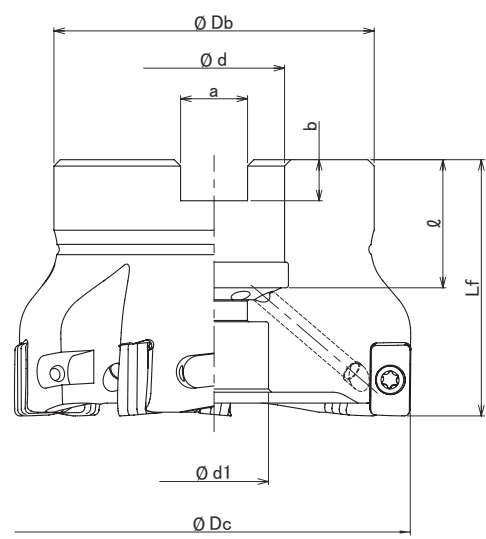
■ **Insert grades**

ISO	P					M					K				S				
	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	S01	S10	S20	S30	
Range			JC8118					JC8118					JC8118				DS118		
				JC8050					JC8050								DS150		
			JC7518					JC7518									JC7518		
				JC7550					JC7550									JC7550	

**EXTREME SAP** **EXSAP/MSX Type**

**EXSAP-11**  
TYPE

**Bore Type**



Cat.No.	Stock	No. of inserts	Dimensions (mm)								Arbor set bolt	Weight (kg)	Inserts
			φDc	Lf	φDb	φd	φd1	a	b	ℓ			
EXSAP-6040R-11-16	●	6	40	40	35	16	14	8.4	5.6	18	M8	0.22	ZNGU1105**ZER-**
EXSAP-7050R-11-22	●	7	50		47	22	16.5	10.4	6.3	20	M10	0.38	
EXSAP-7052R-11-22	●		52								M10	0.39	
EXSAP-7063R-11-22	●		63	50	27	20	12.4	7	22	M10	0.53		
EXSAP-7063R-11-27	●									M12X1.75X30*	0.62		
EXSAP-8080R-11-27	●	8	80	56						M12X1.75X30*	0.99		

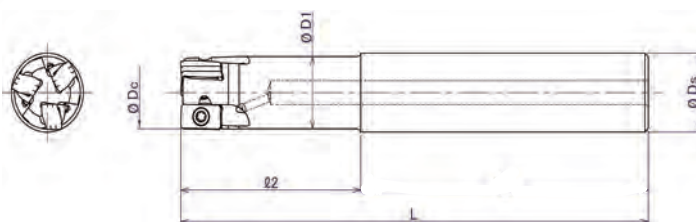
Screw	Torque(N.m)	Wrench
TSW-307H	2.1	A-10

EXTREME SAP

EXSAP/MSX Type

EXSAP-11  
TYPE

Shank Type

Through  
coolant  
hole

Cat.No.	Stock	No. of inserts	Dimensions (mm)					Insert
			$\phi D_c$	$l_2$	L	$\phi D_1$	$\phi D_s$	
EXSAP-2016-11-50-S16+A	●	2	16	50	110	14.6	16	ZNGU1105**ZER**
EXSAP-3020-11-50-S20	●	3	20	50	130	18.3	20	
EXSAP-3025-11-50-S25+A	●	2	25	50	130	23.4	25	
EXSAP-4032-11-70-S32	●	4	32	70	150	29	32	

Note) +A types has no coolant holes.

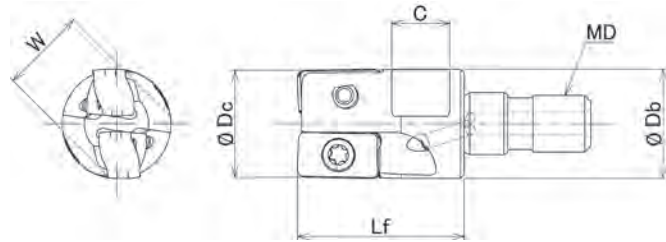
Screw	Torque(N.m)	Wrench
TSW-307H	2.1	A-10

## EXTREME SAP

## EXSAP/MSX Type

**MSX-11**  
 TYPE

**Modular Type**

 Through  
 coolant  
 hole


Cat.No.	Stock	No. of inserts	Dimensions (mm)						Insert
			$\varphi D_c$	Lf	$\varphi D_b$	MD	C	W	
MSX-2016-11-M8	●	2	16	23	15	M8	8	12	ZNGU1105**ZER**
MSX-2017-11-M8	○		17						
MSX-2018-11-M8	○		18						
MSX-3020-11-M10	●	3	20	30	18	M10	9	14	
MSX-3021-11-M10	○		21						
MSX-3025-11-M12	●		25						
MSX-3026-11-M12	○	4	26	43	29	M16	12	22	
MSX-4030-11-M16	○		30						
MSX-4032-11-M16	●		32						
MSX-4033-11-M16	○	5	33	40					
MSX-4035-11-M16	○		35						
MSX-5040-11-M16	●		40						

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

**Insert**



Fig 1

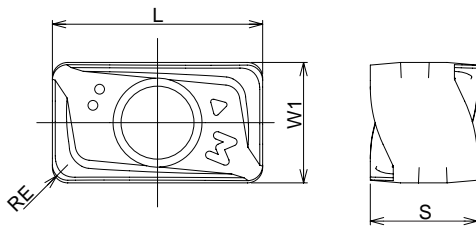
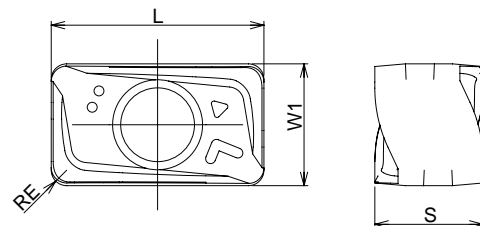
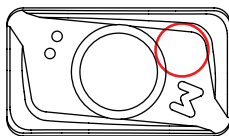


Fig 2

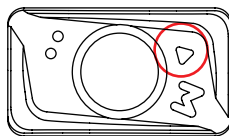


Cat.No.	Tolerance	PVD Coating						Dimensions (mm)				Fig.
		DS118	DS150	JC7518	JC7550	JC8050	JC8118	RE	L	W1	S	
ZNGU110504ZER-PM	G					●	●	0.4	11	6.3	5.6	1
ZNGU110508ZER-PM						●	●	0.8				
ZNGU110516ZER-PM						●	●	1.6				
ZNGU110504ZER-SL		●	●	●	●			0.4				2
ZNGU110508ZER-SL		●	●	●	●			0.8				
ZNGU110516ZER-SL		●	●	●	●			1.6				

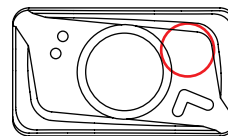
**Grade markings**



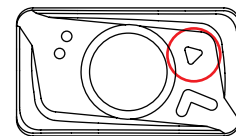
JC8118



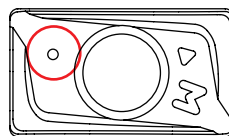
JC8050



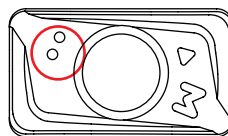
JC7518 / DS118



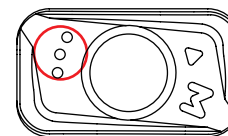
JC7550 / DS150



ZNGU110504ZER



ZNGU110508ZER

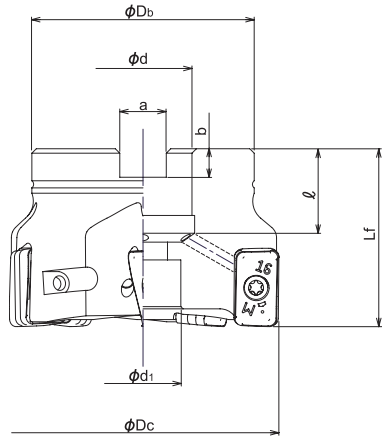


ZNGU110516ZER

**EXTREME SAP** **EXSAP/MSX Type**

**EXSAP-17**  
TYPE

**Bore Type**



Cat.No.	Stock	No. of inserts	Dimensions (mm)								Arbor set bolt	Weight (kg)	Insert							
			φDc	Lf	φDb	φd	φd1	a	b	ℓ										
EXSAP-4050R-22	●	4	50	40	47	22	17	10.4	6.3	20	M10	0.38	ZNGU1709**ZER-PM							
EXSAP-5050R-22	●	5	52									50		56	27	20	12.4	7	22	0.38
EXSAP-5052R-22	●		63	85	32	26	14.4	8	25	M16X2X25*										0.41
EXSAP-5063R-22	●		80																	100
EXSAP-7080R-27	●	7	100	125	63	100	40	32	16.4	9	32	1.09								
EXSAP-7100R-32	●	8	63									100		40	32	16.4	9	32	M20X2.5X40*	1.93
EXSAP-8125R-40	●	8	125	100	40	32	16.4	9	32	M20X2.5X40*	3.66									

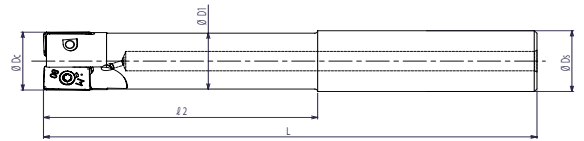
Screw	Torque(N.m)	Wrench
TSW-410H	3.5	A-15T

EXTREME SAP

EXSAP/MSX Type

EXSAP-17  
TYPE

Shank Type

Through  
coolant  
hole

Cat.No.	Stock	No. of inserts	Dimensions (mm)					Insert
			$\varphi D_c$	$\ell_2$	L	$\varphi D_1$	$\varphi D_s$	
EXSAP-2025-60-S25	●	2	25	60	140	23	25	ZNGU1709**ZER-PM
EXSAP-2025-100-S25	○			100	180			
EXSAP-2032-70-S32	○		32	70	150	29	32	
EXSAP-2032-120-S32	○	120		200				
EXSAP-3032-70-S32	●	70		150				
EXSAP-3032-120-S32	○	120		200				

Screw	Torque(N.m)	Wrench
TSW-410H	3.5	A-15

## EXTREME SAP

## EXSAP/MSX Type

MSX-17  
TYPE

Modular Type

Through  
coolant  
holeG-  
Body

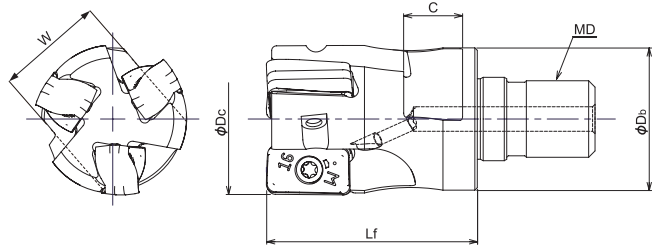
Face Milling

Shoulder Milling

Slotting

Helical Interpolation

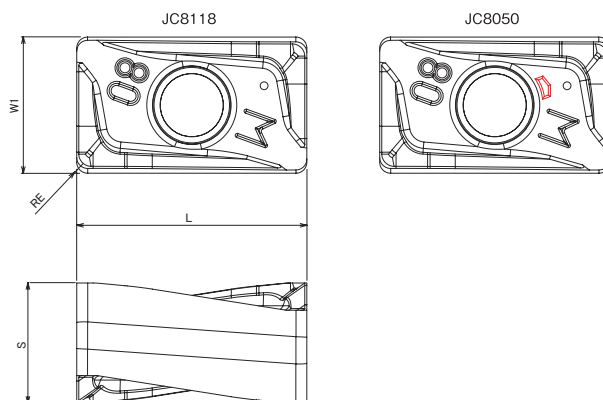
Plunge Milling



Cat.No.	Stock	No. of inserts	Dimensions (mm)						Insert
			$\phi D_c$	Lf	$\phi D_b$	MD	C	W	
MSX-2025-M12	●	2	25	35	22	M12	11	19	ZNGU1709**ZER-PM
MSX-2026-M12	○		26						
MSX-2028-M12	○		28						
MSX-2030-M16	○		30						
MSX-2032-M16	●	3	32	43	29	M16	12	22	
MSX-3032-M16	●		33						
MSX-3033-M16	○		35						
MSX-3035-M16	○		35						
MSX-4040-M16	●		40						

Screw	Torque(N.m)	Wrench
TSW-410H	3.5	A-15

**Insert**



Cat.No.	Tolerance	PVD Coating		Dimensions (mm)			
		JC8050	JC8118	RE	L	W1	S
ZNGU170904ZER-PM	G	●	●	0.4	16.9	10	8.8
ZNGU170908ZER-PM		●	●	0.8			
ZNGU170916ZER-PM		●	●	1.6			
ZNGU170920ZER-PM		●	●	2			
ZNGU170930ZER-PM		●	●	3	8.6		

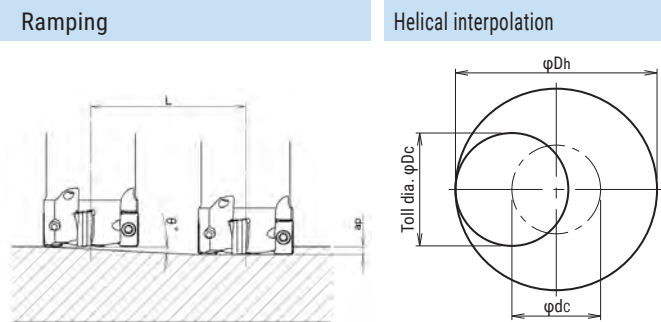
Cat.No.	Tolerance	PVD Coating	Dimensions (mm)			
		JC7550	RE	L	W1	S
ZNGU170908ZER-SM	G	●	0.8	16.9	10	8.8

# EXTREME SAP

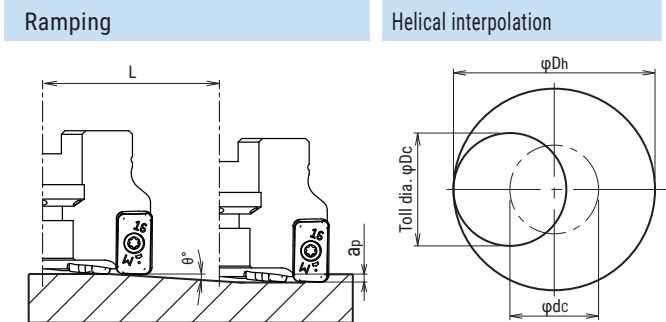
# EXSAP/MSX Type

## Recommended Data for Profile Milling

### EXSAP-11 Type



### EXSAP-17 Type



Cat. No.	Tool dia.	Effective Cutting dia.	Max. depth of cut : ap	Ramping		Helical interpolation	
				Max. ramping angle θ	Max. depth of cut : ap Total cutting length L(mm)	Min. Bore dia.	Max. Bore dia.
MSX-2016-11-M8	16	14.1	1.5	1.0°	86	18	29.6
MSX-3020-11-M10	20	18.1	1.5	0.7°	123	26	37.6
MSX-3025-11-M12	25	23.1	1.5	0.4°	215	36	47.6
MSX-4030-11-M16	30	28.1	1.5	0.3°	286	46	57.6
MSX-4032-11-M16	32	30.1	1.5	0.3°	286	50	61.6
MSX-5040-11-M16	40	38.1	1.5	0.2°	430	66	77.6
EXSAP-2016-11-**-S16	16	14.1	1.5	1.0°	86	18	29.6
EXSAP-3020-11-**-S20	20	18.1	1.5	0.7°	123	26	37.6
EXSAP-3025-11-**-S25	25	23.1	1.5	0.4°	215	36	47.6
EXSAP-4030-11-**-S32	30	28.1	1.5	0.3°	286	46	57.6
EXSAP-4032-11-**-S32	32	30.1	1.5	0.3°	286	50	61.6
EXSAP-5040-11-**-S32	40	38.1	1.5	0.2°	430	66	77.6
EXSAP-6040R-11-16	40	38.1	1.5	0.2°	430	66	77.6
EXSAP-7050R-11-22	50	48.1	1.5	0.15°	573	86	97.6
EXSAP-7052R-11-22	52	50.1	1.5	0.15°	573	90	101.6
EXSAP-7063R-11-22	63	61.1	1.5	Not recommended			
EXSAP-7063R-11-27	63	61.1	1.5	Not recommended			
EXSAP-8080R-11-27	80	78.1	1.5	Not recommended			

Cat. No.	Tool dia.	Effective Cutting dia.	Max. depth of cut : ap	Ramping		Helical interpolation	
				Max. ramping angle θ	Max. depth of cut : ap Total cutting length L(mm)	Min. Bore dia.	Max. Bore dia.
EXSAP/MSX-2025	25	21.5	1.5	0.7°	123	34	46
MSX-2026-M12	26	22.5	1.5	0.7°	123	36	48
MSX-2028-M12	28	25.5	1.5	0.6°	143	40	52
MSX-2030-M16	30	26.5	1.5	0.6°	143	44	56
EXSAP/MSX-*032	32	28.5	1.5	0.5°	172	48	60
MSX-3033-M16	33	29.5	1.5	0.5°	172	50	62
MSX-3035-M16	35	31.5	1.5	0.4°	215	54	66
MSX-4040-M16	40	36.5	1.5	0.4°	215	64	76
EXSAP-*050R-22	50	46.5	1.5	0.3°	286	84	96
EXSAP-5052R-22	52	48.5	1.5	0.3°	286	88	100
EXSAP-5063R-22	63	59.5	1.5	0.2°	430	110	122
EXSAP-7080R-27	80	76.5	1.5	0.15°	573	144	156
EXSAP-7100R-32	100	96.5	Not recommended				
EXSAP-8125R-40	125	121.5	Not recommended				

- In case of ramping and helical interpolation, apply 80% or less feed (Vf) from standard cutting condition table
- In case of helical interpolation, recommend wet cutting by coolant through the tool

● 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

## EXTREME SAP

## EXSAP/MSX Type

### Recommended Cutting Conditions

#### EXSAP-11 type / Side Milling

Material	Grade	Vc	fz		Tool dia. (mm)							
					16	20	25	32	40	50	63	80
Carbon Steel below 250HB	JC8050 (JC8118)	140 - 180	0.14 - 0.20	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~4	~5	~7.2	~9.8	~14	~24	~30	~36
Cast Steel below 285HB	JC8050 (JC8118)	140 - 180	0.14 - 0.20	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~4	~5	~7.2	~9.8	~14	~24	~30	~36
Tool & Die Steel below 255HB	JC8050 (JC8118)	140 - 180	0.14 - 0.20	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~4	~5	~7.2	~9.8	~14	~24	~30	~36
Mold Steel 30-36HRC	JC8118 (JC8050)	110 - 130	0.10 - 0.18	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~4	~5	~7.2	~9.8	~14	~24	~30	~36
Mold Steel 38-43HRC	JC8118 (JC8050)	90 - 120	0.10 - 0.18	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~3.4	~4	~6	~8	~10	~20	~24	~28
Hardened Die Steel 42-52HRC	JC8118	80 - 100	0.07 - 0.12	ap	~3	~3.5	~4	~4	~4.5	~6	~9	~9
				ap x ae	~1.6	~2	~3.2	~3.6	~4	~8	~9	~10
Grey Cast Iron below 160-260HB	JC8118 (JC8050)	160 - 200	0.14 - 0.20	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~5	~6	~9.8	~12	~16	~28	~34	~40
Nodular Cast Iron below 170-300HB	JC8118 (JC8050)	140 - 180	0.12 - 0.20	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~5	~6	~9.8	~12	~16	~28	~34	~40
Austenitic Stainless Steel	JC8050 (JC7550)	100 - 120	0.10 - 0.18	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~4	~5	~7.2	~9.8	~14	~24	~30	~36
Martensitic Stainless Steel	JC8050 (JC7550)	100 - 140	0.10 - 0.18	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~3.2	~5	~7.2	~9.8	~14	~24	~30	~36
Titanium Alloy	DS150 (JC7550)	50 - 70	0.11 - 0.13	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~3.2	~4	~6	~8	~10	~20	~26	~30
Heat Resistant Alloy	JC7518 (JC8118)	20 - 30	0.08 - 0.10	ap	~5	~5	~6	~6	~7	~8	~9	~9
				ap x ae	~3.2	~4	~6	~8	~10	~20	~26	~30

#### Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter occurring, recommended to reduce ap or rpm and keep feed per tooth.
3. ap should be reduced when using on low rigidity machine.
4. Use air blow.

## EXTREME SAP

## EXSAP/MSX Type

### Recommended Cutting Conditions

#### EXSAP-11 type / Face Milling

Material	Grade	Vc	fz		Tool dia. (mm)							
					16	20	25	32	40	50	63	80
Carbon Steel below 250HB	JC8050 (JC8118)	130 - 180	0.11 - 0.2	ap	~1	~1.2	~1.2	~1.5	~1.8	~2	~2	~2
				ae	~10	~12	~15	~18	~24	~30	~30	~48
Cast Steel below 285HB	JC8050 (JC8118)	130 - 180	0.11 - 0.2	ap	~1	~1.2	~1.2	~1.5	~1.8	~2	~2	~2
				ae	~10	~12	~15	~18	~24	~30	~30	~48
Tool & Die Steel below 255HB	JC8050 (JC8118)	130 - 180	0.11 - 0.2	ap	~1	~1.2	~1.2	~1.5	~1.8	~2	~2	~2
				ae	~10	~12	~15	~18	~24	~30	~30	~48
Mold Steel 30-36HRC	JC8118 (JC8050)	110 - 130	0.1 - 0.18	ap	~1	~1.2	~1.2	~1.5	~1.8	~2	~2	~2
				ae	~10	~12	~15	~18	~24	~30	~30	~48
Mold Steel 38-43HRC	JC8118 (JC8050)	90 - 120	0.1 - 0.16	ap	~0.8	~1	~1	~1.2	~1.4	~1.8	~1.8	~1.8
				ae	~10	~12	~15	~18	~24	~30	~30	~48
Hardened Die Steel 42-52HRC	JC8118	80 - 100	0.08 - 0.12	ap	~0.4	~0.5	~0.5	~0.6	~0.8	~1	~1	~1
				ae	~8	~8	~10	~12	~16	~20	~25	~32
Grey Cast Iron below 160-260HB	JC8118 (JC8050)	160 - 200	0.11 - 0.2	ap	~1	~1.2	~1.2	~1.5	~1.8	~2	~2	~2
				ae	~10	~12	~15	~18	~24	~30	~30	~48
Nodular Cast Iron below 170-300HB	JC8118 (JC8050)	130 - 180	0.11 - 0.2	ap	~1	~1.2	~1.2	~1.5	~1.8	~2	~2	~2
				ae	~10	~12	~15	~18	~24	~30	~30	~48
Austenitic Stainless Steel	JC8050 (JC7550)	100 - 120	0.11 - 0.18	ap	~1	~1.2	~1.2	~1.5	~1.8	~2	~2	~2
				ae	~6	~8	~10	~12	~16	~20	~25	~32
Martensitic Stainless Steel	JC8050 (JC7550)	100 - 150	0.11 - 0.18	ap	~1	~1.2	~1.2	~1.5	~1.8	~2	~2	~2
				ae	~10	~12	~15	~18	~24	~30	~30	~48
Titanium Alloy	DS150 (JC7550)	50 - 70	0.08 - 0.12	ap	~0.8	~1	~1	~0.8	~1.4	~1.8	~1.8	~1.8
				ae	~6	~8	~10	~12	~16	~20	~25	~32
Heat Resistant Alloy	JC7518 (JC8118)	20 - 30	0.06 - 0.11	ap	~0.8	~1	~1	~0.8	~1.4	~1.8	~1.8	~1.8
				ae	~6	~8	~10	~12	~16	~20	~25	~32

#### Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter occurring, recommended to reduce ap or rpm and keep feed per tooth.
3. ap should be reduced when using on low rigidity machine.
4. Use air blow.
5. When using for slot milling, apply 50% or less feed (Vf) from standard cutting condition.

## EXTREME SAP

## EXSAP/MSX Type

### Recommended Cutting Conditions

#### EXSAP-17 type / Side Milling

Material	Grade	Vc	fz		Tool dia. (mm)								
					25	32	40	50	63	80	100	125	
Carbon Steel below 250HB	JC8050	150 - 200	0.2 - 0.35	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~15	~24	~30	~40	~45	~45	~45	~45	
Cast Steel below 285HB	JC8050	130 - 180	0.2 - 0.35	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~15	~24	~30	~40	~45	~45	~45	~45	
Tool & Die Steel below 255HB	JC8050	150 - 200	0.2 - 0.35	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~15	~24	~30	~40	~45	~45	~45	~45	
Mold Steel 30-36HRC	JC8118	110 - 150	0.2 - 0.35	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~15	~24	~30	~40	~45	~45	~45	~45	
Mold Steel 38-43HRC	JC8118	90 - 120	0.15 - 0.25	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~12	~18	~20	~30	~30	~30	~30	~30	
Hardened Die Steel 42-52HRC	JC8118	80 - 100	0.1 - 0.2	ap	~10	~12	~12	~15	~15	~15	~15	~15	~15
				ap x ae	~7	~8	~12	~18	~25	~25	~25	~25	
Grey Cast Iron below 160-260HB	JC8118	200 - 250	0.2 - 0.35	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~15	~24	~30	~40	~45	~45	~45	~45	
Nodular Cast Iron below 170-300HB	JC8118	110 - 150	0.15 - 0.3	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~15	~24	~30	~40	~45	~45	~45	~45	
Austenitic Stainless Steel	JC8050 (JC7550)	100 - 120	0.1 - 0.2	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~15	~24	~30	~40	~45	~45	~45	~45	
Martensitic Stainless Steel	JC8118	130 - 180	0.15 - 0.3	ap	~10	~12	~15	~15	~15	~15	~15	~15	~15
				ap x ae	~15	~24	~30	~40	~45	~45	~45	~45	

#### Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter occurring, recommended to reduce ap or rpm and keep feed per tooth.
3. ap should be reduced when using on low rigidity machine.
4. Use air blow.

## EXTREME SAP

## EXSAP/MSX Type

### Recommended Cutting Conditions

#### EXSAP-17 type / Face Milling

Material	Grade	Vc	fz		Tool dia. (mm)							
					25	32	40	50	63	80	100	125
Carbon Steel below 250HB	JC8050	110 - 150	0.20 - 0.30	ap	~3	~3.5	~3.5	~4	~4	~4	~4	~4
				ae	~25	~32	~40	~50	~63	~80	~100	~125
Cast Steel below 285HB	JC8050	110 - 150	0.20 - 0.30	ap	~3	~3.5	~3.5	~4	~4	~4	~4	~4
				ae	~25	~32	~40	~50	~63	~80	~100	~125
Tool & Die Steel below 255HB	JC8050	110 - 150	0.15 - 0.25	ap	~3	~3.5	~3.5	~4	~4	~4	~4	~4
				ae	~25	~32	~40	~50	~63	~80	~100	~125
Mold Steel 30-36HRC	JC8118	110 - 130	0.15 - 0.25	ap	~3	~3.5	~3.5	~4	~4	~4	~4	~4
				ae	~25	~32	~40	~50	~63	~80	~100	~125
Mold Steel 38-43HRC	JC8118	90 - 110	0.15 - 0.25	ap	~2	~2.5	~2.5	~3	~3	~3	~4	~4
				ae	~25	~32	~40	~50	~63	~80	~100	~125
Hardened Die Steel 42-52HRC	JC8118	70 - 90	0.10 - 0.20	ap	~1	~2	~2	~2.5	~2.5	~2.5	~4	~4
				ae	~20	~25	~32	~40	~55	~65	~80	~100
Grey Cast Iron below 160-260HB	JC8118	130 - 180	0.20 - 0.30	ap	~5	~5.5	~5.5	~6	~6	~6	~4	~4
				ae	~25	~32	~40	~50	~63	~80	~100	~125
Nodular Cast Iron below 170-300HB	JC8118	110 - 130	0.15 - 0.25	ap	~3	~3.5	~3.5	~4	~4	~4	~4	~4
				ae	~25	~32	~40	~50	~63	~80	~100	~125
Austenitic Stainless Steel	JC8050 (JC7550)	90 - 110	0.10 - 0.20	ap	~3	~3.5	~3.5	~4	~4	~4	~4	~4
				ae	~20	~25	~32	~40	~55	~65	~80	~100
Martensitic Stainless Steel	JC8118	110 - 150	0.15 - 0.25	ap	~3	~3.5	~3.5	~4	~4	~4	~4	~4
				ae	~25	~32	~40	~50	~63	~80	~100	~125

#### Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter occurring, recommended to reduce ap or rpm and keep feed per tooth.
3. ap should be reduced when using on low rigidity machine.
4. Use air blow.
5. When using for slot milling, apply 50% or less feed (Vf) from standard cutting condition.