

NEW

SS4P

Easy Cut 4 Corners Shoulder Mill SS4P

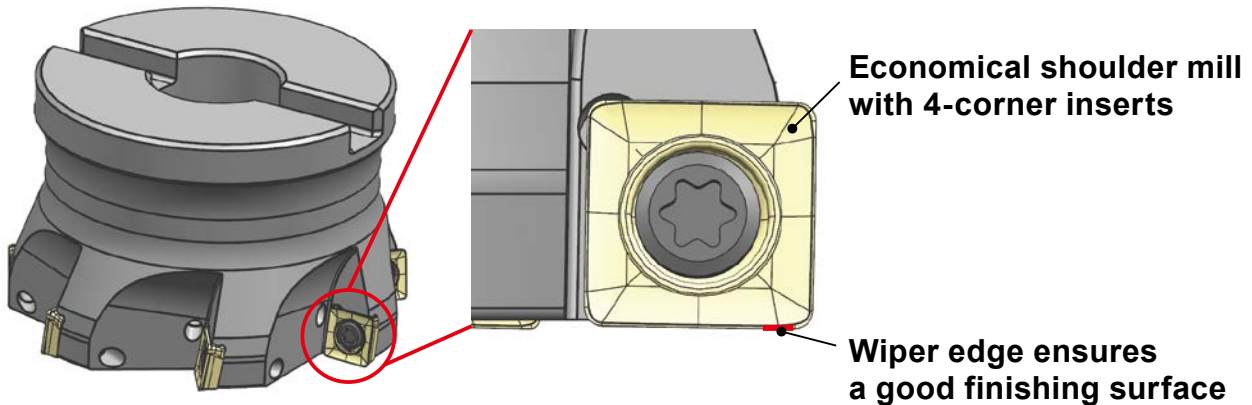
Bore types ($\phi 50$ to $\phi 125$) added.



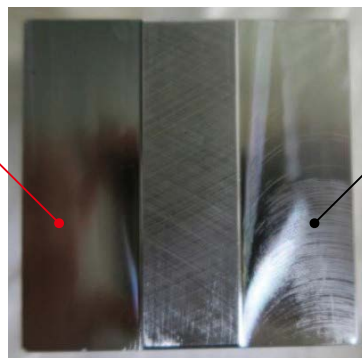
MOLDINO Tool Engineering, Ltd.

Cutting performance

01 Features



SPMT100308R-FW(JP4120)
Ra=0.5 μ m



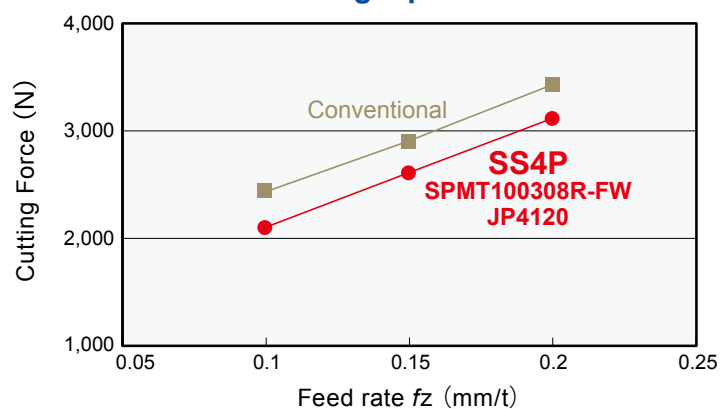
Conventional
Ra=1.5 μ m

Cutting conditions

Work material : S55C(210HB)
 Tool : ϕ 32(3 flutes)
 Machine : BT30 M/C
 $v_c = 200\text{m/min}$ ($n=1,989\text{min}^{-1}$) $f_z = 0.1\text{mm/t}$ $a_p \times a_e = 0.5 \times 22\text{mm}$
 Overhang : OH=65mm Air-blow

02 Cutting force

Bottom machining $a_p \times a_e = 3 \times 8$ (mm)



Approximately 10% lower cutting force than conventional products

Cutting conditions

Work material : S50C(220HB)
 Tool : ϕ 32(3 flutes)
 Machine : BT50 M/C
 $v_c = 160\text{m/min}$ ($n=1,590\text{min}^{-1}$) $f_z = 0.1, 0.15, 0.2\text{mm/t}$ $a_p \times a_e = 3 \times 8\text{mm}$
 Overhang : OH=50mm Air-blow

PVD
Technology

Grade for machining pre-hardened
or hardened materials

JP4120

Features

- Employs a fine carbide substrate with an excellent balance between wear resistance and toughness and the new "AJ Coating" to provide improved wear resistance and chipping resistance.
- Highly versatile with excellent wear resistance and chipping resistance when machining steel materials with hardnesses of 30 to 50 HRC.

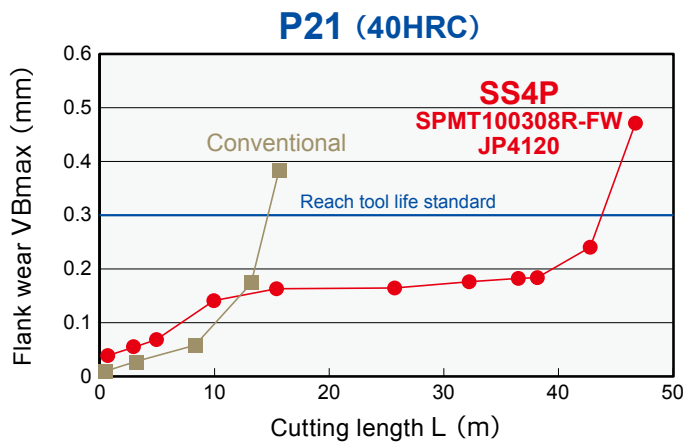
CVD
Technology

General purpose for steel GX2140

Features

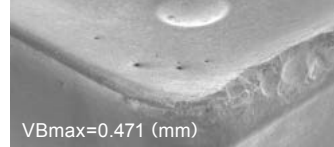
- Smooth surfaced α -Al₂O₃ layer with improved chipping / welding resistance brings less sudden-tool-edge-chipping.
- Machining efficiency is improved for high-speed, high-feed-rate rough machining by using the hard-layer with fine columnar structure.

03 Tool life



SS4P

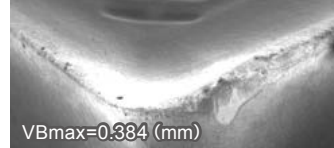
Cutting length 47m



VBmax=0.471 (mm)

Conventional

Cutting length 15m

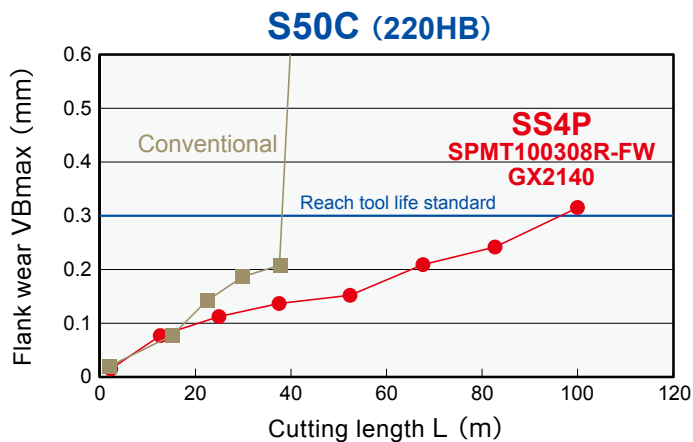


VBmax=0.384 (mm)

Tool life is 3 times longer than conventional products.

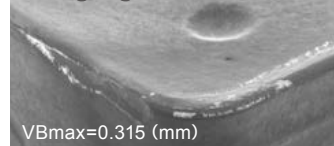
Cutting
conditions

Work material : P21 (40HRC)
Tool : $\phi 32$ (3 flutes)
Machine : BT50 M/C
 $V_c = 100\text{m/min}$ ($n=995\text{min}^{-1}$) $f_z = 0.15\text{mm/t}$ $a_p \times a_e = 2 \times 10\text{mm}$
Overhang : OH=50mm Air-blow



SS4P

Cutting length 100m



VBmax=0.315 (mm)

Conventional

Cutting length 40m



Damage

Tool life is 2.2 times longer than conventional products.

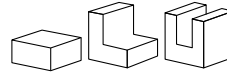
Cutting
conditions

Work material : S50C (220HB)
Tool : $\phi 32$ (3 flutes)
Machine : BT50 M/C
 $V_c = 160\text{m/min}$ ($n=1,590\text{min}^{-1}$) $f_z = 0.2\text{mm/t}$ $a_p \times a_e = 3 \times 10\text{mm}$
Overhang : OH=50mm Air-blow

Line Up



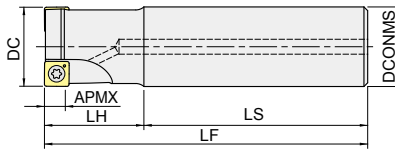
Applications



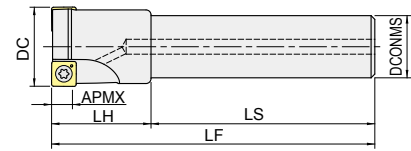
Shank type

SS4P30 \circ \circ S \circ \circ - \circ

Numeric figure in a circle \circ .



Type A (Standard type)



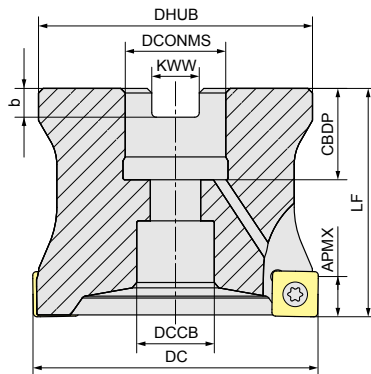
Type B (Undercut type)

Shank type	Item code	Stock	No. of flutes	Size(mm)						Shape	Inserts
				DC	LF	APMX	LH	LS	DCONMS		
Shank type	SS4P3025S25-2	●	2	25	120	8	35	85	25	A	SPMT10030 \circ R-FW SPMT100308R-TFW
	SS4P3032S32-3	●	3	32	130	8	45	85	32	A	
	SS4P3040S32-4	●	4	40	130	8	45	85	32	B	

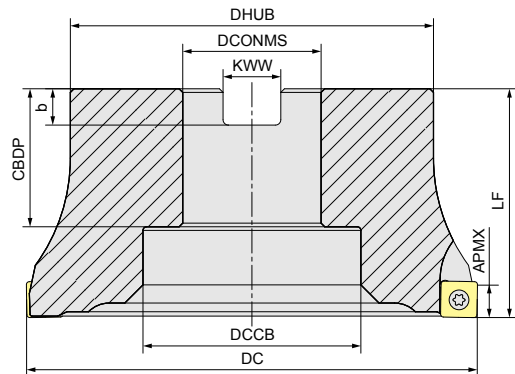
Bore type

SS4P30 \circ \circ B \square - \circ

Numeric figure in a circle \circ and Alphabetical character comes in a square \square .



Type A
with air hole

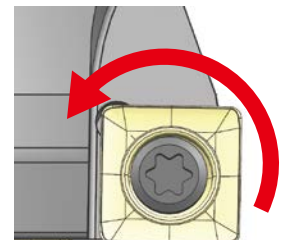


Type B
without air hole

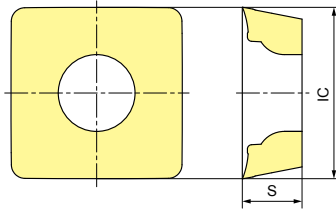
Internal diameter	Item code	Stock	No. of flutes	Size(mm)									Shape	Inserts
				DC	APMX	DCONMS	DCCB	DHUB	CBDP	KWW	b	LF		
inch size	SS4P3050B-6	★	6	50	8	22.225	17	47	19	8.4	5	50	A	SPMT10030 \circ R-FW SPMT100308R-TFW
	SS4P3063B-6	★	6	63	8	22.225	17	60	19	8.4	5	50	A	
	SS4P3080B-7	★	7	80	8	25.4	20	70	26	9.5	6	50	A	
	SS4P3100B-8	★	8	100	8	31.75	26	96	32	12.7	8	63	A	
	SS4P3125B-9	★	9	125	8	38.1	60	100	38	15.9	10	63	B	
mm size	SS4P3050BM-6	★	6	50	8	22	17	47	20	10.4	6.3	50	A	
	SS4P3063BM-6	★	6	63	8	22	17	60	20	10.4	6.3	50	A	
	SS4P3080BM-7	★	7	80	8	27	20	76	22	12.4	7	50	A	
	SS4P3100BM-8	★	8	100	8	32	26	96	25.5	14.4	8	63	A	
	SS4P3125BM-9	★	9	125	8	40	60	100	38	16.4	9	63	B	



Attention for the corner change






- Please turn the insert counterclockwise upon corner change of insert.





Insert



	FW type	TFW type
Insert cross-section shape	 Fig.1	 Fig.2
Application	General purpose	Forged surface cutting; Strong interrupted cutting

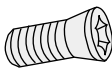
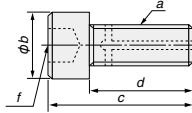
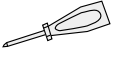

P	Carbon steels		
M	SUS, etc.		
K	FC · FCD Cast irons		
S	Hardened steels		

 : General cutting, First recommendation
 : General cutting, Second recommendation

Item code	Nose radius R	Tolerance class	AJ Coating	GX Coating	Size (mm)		Insert cross-section shape
			JP4120	GX2140	IC	S	
SPMT100304R-FW	0.4	M	●	●	10	3.5	Fig.1
SPMT100308R-FW	0.8		●	●			Fig.1
SPMT100308R-TFW	0.8		●	●			Fig.2

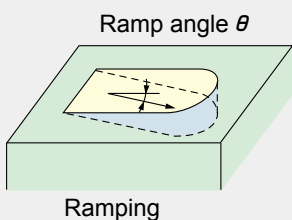
[Note] Please note that the GX2140 does not cause a reaction in conductive touch sensors.

Parts

Parts	Clamp screw	Arbor screw							Screw Driver	Screw anti-seizure agent	
Shape											
		Fastening torque (N · m)	Item code	a	ϕb	c	d	f			
Cutter body											
Shank type	412-141	2.9	—	—	—	—	—	—	104-T15	P-37	
Internal diameter inch size			SS4P3050B-6	100-178	M10 × 1.5	16	35	25			8
			SS4P3063B-6	100-179	M12 × 1.75	18	42	30			10
			SS4P3080B-7	100-180	M16 × 2.0	24	51	35			14
			SS4P3100B-8	—	—	—	—	—			—
			SS4P3125B-9	—	—	—	—	—			—
Internal diameter mm size			SS4P3050BM-6	100-178	M10 × 1.5	16	35	25			8
			SS4P3063BM-6	100-179	M12 × 1.75	18	42	30			10
			SS4P3080BM-7	100-180	M16 × 2.0	24	51	35			14
			SS4P3100BM-8	—	—	—	—	—			—
			SS4P3125BM-9	—	—	—	—	—			—

[Note] The clamp screw is a consumable part. Since replacement life depends on the use environment, it is recommended that it be replaced at an early stage.

Regarding ramping



Tool dia. DC (mm)	$\phi 25$	$\phi 32$	$\phi 40 \sim 125$
Maximum ramp angle θ	0.2°	0.2°	Ramping or helical milling is not recommended.

Recommended Cutting Conditions

Work material	Recommended inserts grade	Cutting speed Vc(m/min)	Feed rate fz(mm/t)	φ 25 (2 Flutes)		φ 32 (3 Flutes)		φ 40 (4 Flutes)	
				Revolution n min ⁻¹	Feed speed Vf mm/min	Revolution n min ⁻¹	Feed speed Vf mm/min	Revolution n min ⁻¹	Feed speed Vf mm/min
Mild steels SS (200HB or less)	GX2140	150 ~ 200	0.15 ~ 0.25	2,290	920	1,790	1,070	1,430	1,140
				Vc=180m/min, fz=0.2mm/t, ap=3mm, ae=0.5DC					
Carbon steels Alloy steels S-C SCM (300HB or less)	GX2140	120 ~ 180	0.15 ~ 0.25	2,040	820	1,590	950	1,270	1,020
				Vc=160m/min, fz=0.2mm/t, ap=3mm, ae=0.5DC					
Pre-hardened steels (30 ~ 40HRC)	JP4120	80 ~ 120	0.1 ~ 0.2	1,270	380	1,000	450	800	480
				Vc=100m/min, fz=0.15mm/t, ap=2mm, ae=0.5DC					
Pre-hardened steels Alloy steels (40 ~ 50HRC)	JP4120	60~80	0.1~0.2	890	270	700	310	560	330
				Vc=70m/min, fz=0.15mm/t, ap=2mm, ae=0.5DC					
Stainless steels SUS	JP4120	80 ~ 120	0.15 ~ 0.25	1,270	510	1,000	600	800	640
				Vc=100m/min, fz=0.2mm/t, ap=3mm, ae=0.5DC					
Cast irons FC, FCD	JP4120 GX2140	120 ~ 160	0.15 ~ 0.25	1,780	710	1,390	830	1,110	890
				Vc=140m/min, fz=0.2mm/t, ap=3mm, ae=0.5DC					
Titanium alloys (wet) Ti-6Al-4V	JP4120	30 ~ 60	0.1 ~ 0.2	570	170	450	200	360	220
				Vc=45m/min, fz=0.15mm/t, ap=3mm, ae=0.5DC					

- [Note]**
- ① Use the appropriate coolant for the work material and machining shape.
 - ② These conditions are for general guidance; in actual machining conditions adjust the parameters according to your actual machine and work-piece conditions.
 - ③ Please note that the GX2140 does not cause a reaction in conductive touch sensors.
 - ④ Please reduce feed rate 30% from above table for slotting.
 - ⑤ In order to avoid of insert breakage, please change insert earlier.
 - ⑥ The steel chips may cause cuts, burns or damages to eyes. Be sure to install the safety cover around the tool and wear the safety glasses when carrying out any works.
 - ⑦ Please don't use cutting oil as coolant.(It may be cause of fire.)

ϕ 50 (6 Flutes)		ϕ 63 (6 Flutes)		ϕ 80 (7 Flutes)		ϕ 100 (8 Flutes)		ϕ 125 (9 Flutes)		Work material
Revolution n min ⁻¹	Feed speed V_f mm/min	Revolution n min ⁻¹	Feed speed V_f mm/min	Revolution n min ⁻¹	Feed speed V_f mm/min	Revolution n min ⁻¹	Feed speed V_f mm/min	Revolution n min ⁻¹	Feed speed V_f mm/min	
1,150	1,380	910	1,090	720	1,000	570	920	460	830	Mild steels SS (200HB or less)
Vc=180m/min, fz=0.2mm/t, ap=3mm, ae=0.5DC										
1,020	1,220	810	970	640	890	510	810	410	730	Carbon steels Alloy steels S-C SCM (300HB or less)
Vc=160m/min, fz=0.2mm/t, ap=3mm, ae=0.5DC										
640	570	510	450	400	420	320	380	250	340	Pre-hardened steels (30 ~ 40HRC)
Vc=100m/min, fz=0.15mm/t, ap=2mm, ae=0.5DC										
450	400	350	320	280	290	220	270	180	240	Pre-hardened steels Alloy steels (40 ~ 50HRC)
Vc=70m/min, fz=0.15mm/t, ap=2mm, ae=0.5DC										
640	760	510	610	400	560	320	510	250	450	Stainless steels SUS
Vc=100m/min, fz=0.2mm/t, ap=3mm, ae=0.5DC										
890	1,070	710	850	560	780	450	710	360	640	Cast irons FC, FCD
Vc=140m/min, fz=0.2mm/t, ap=3mm, ae=0.5DC										
290	260	230	210	180	190	140	170	110	150	Titanium alloys (wet) Ti-6Al-4V
Vc=45m/min, fz=0.15mm/t, ap=3mm, ae=0.5DC										



The diagrams and table data are examples of test results, and are not guaranteed values.
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Attentions on Safety

1. Attentions regarding handling

- (1) When removing the tool from the case (package), be careful not to drop it on your foot or drop it onto the tips of your bare fingers.
- (2) When actually setting the inserts, be careful not to touch the cutting flute directly with your bare hands.

2. Attentions regarding mounting

- (1) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.
- (2) If abnormal chattering occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Attentions during use

- (1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
- (2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
- (3) The inserts are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be installed and safety equipment such as safety glasses should be worn to create a safe environment for work.
 - Do not use where there is a risk of fire or explosion.
 - Do not use non-water-soluble cutting oils. Such oils may result in fire.
- (4) Do not use the tool for any purpose other than that for which it is intended, and do not modify it.

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