MITSUBISHI
MITSUBISHI MATERIALS

TOOLS NEWS

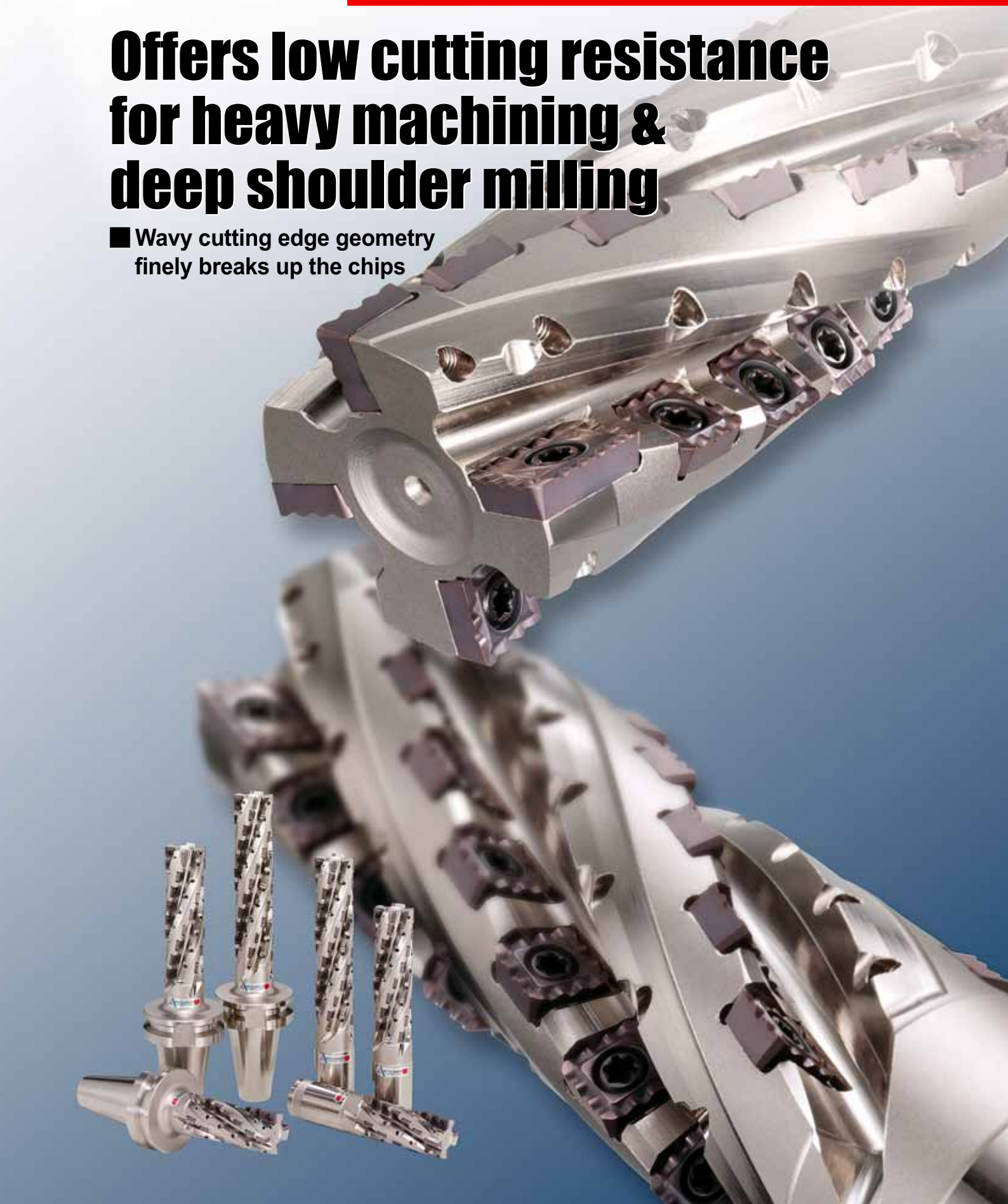
B111G

Indexable end mill for deep shoulder milling

SPX

Offers low cutting resistance for heavy machining & deep shoulder milling

■ Wavy cutting edge geometry finely breaks up the chips



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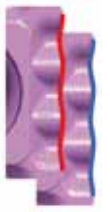
Features

Wavy Cutting Edge

The wavy cutting edge gradually engages the workpieces.

Reduced impact when entering the workpiece.



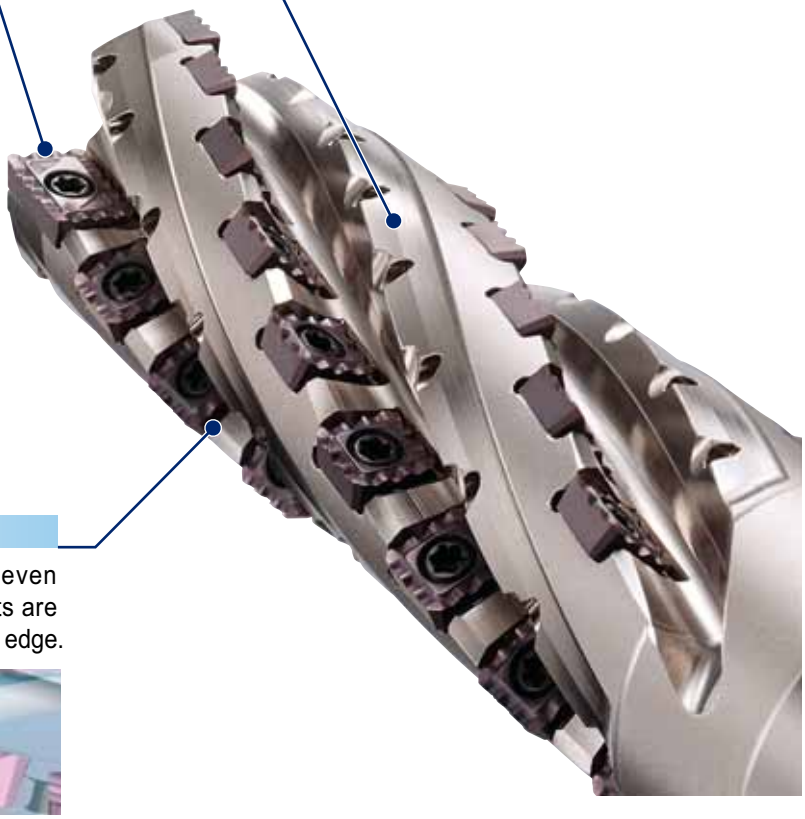
Chip cross section

Uses the theory of a solid end mill with a roughing cutting edge.

Lower cutting resistance

Spiral Relief Cut

Prevents chip packing and damage to the tool body without hindering the overall tool rigidity.

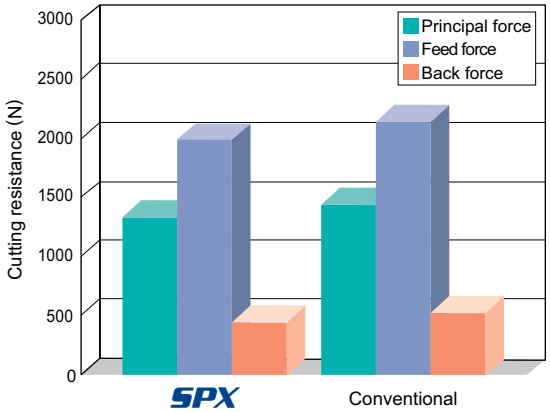


High Clamping Rigidity

Due to the high clamping rigidity of the inserts even under the harshest of cutting conditions the inserts are rigidly located preventing any damage to the cutting edge.

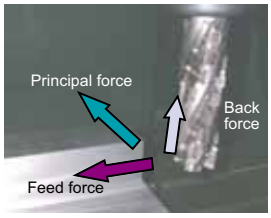
Cutting Performance

Low Cutting Resistance



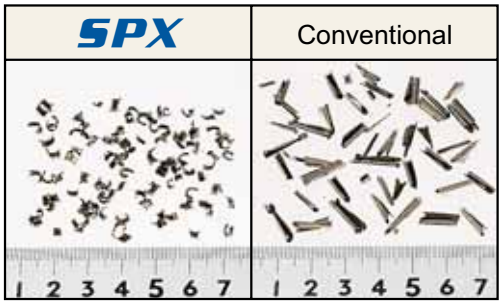
Power requirement: 2.8kw

Power requirement: 3.1kw



<Cutting conditions>
Workpiece : JIS FCD450
Cutting speed : 100m/min
Feed per tooth : 0.20mm/tooth
Axial depth of cut : 50m
Width of cut : 5mm
Dry cutting

Chip Breaking



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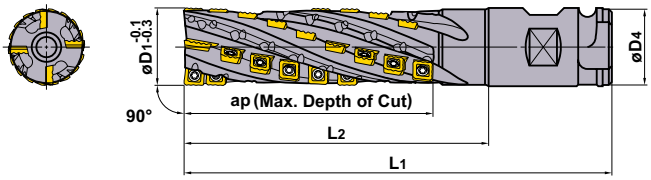
SPX

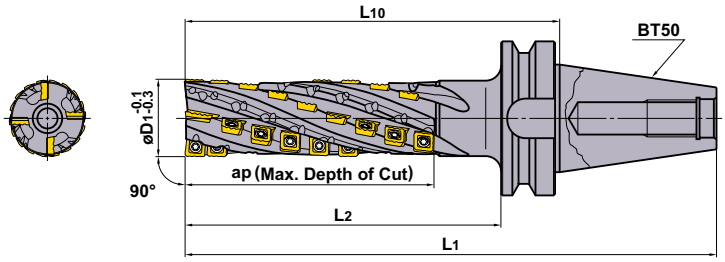
Holder

Light Alloy	Cast Iron	General Steel	Alloy Tool Steel	Hardened Steel

● Straight shank (Combination type)



● BT50 shank

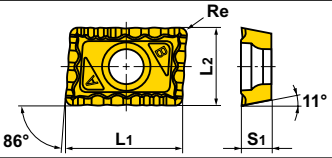
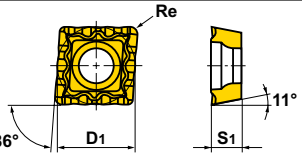
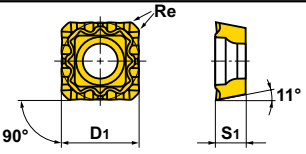


Type	Order Number	Stock	Number of Teeth			Dimensions (mm)						Number of Insert		
												Bottom Cutting Edge A	Bottom Cutting Edge B	Peripheral Cutting Edge
			Flutes	Total	Bottom	D1	L1	D4	L2	L10	ap	JPMX 190412-WH	MPMX 120412-WH	SPMX 120408-WH
Straight Shank (Combination)	**SPX4R05024WNS**	●	2	24	4	50	220	50.8	140	—	105	2	2	20
	4R05034WNM	●	2	34	4	50	270	50.8	190	—	155	2	2	30
	4R05044WNL	●	2	44	4	50	320	50.8	240	—	205	2	2	40
BT50 Shank	**SPX4R05024BT50NS**	●	2	24	4	50	289.8	—	140	188	105	2	2	20
	4R05034BT50NM	●	2	34	4	50	339.8	—	190	238	155	2	2	30
	4R05044BT50NL	●	2	44	4	50	389.8	—	240	288	205	2	2	40

Spare Parts

Holder	Insert			Clamp Screw	Wrench
	Bottom Cutting Edge A	Bottom Cutting Edge B	Peripheral Cutting Edge		
SPX	JPMX190412-WH	MPMX120412-WH	SPMX120408-WH	TS55	TKY25D

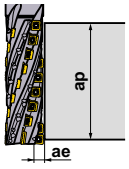
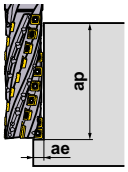
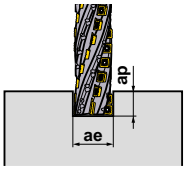
Inserts

Shape	Order Number	Class	Coated				Dimensions (mm)					Geometry
			VP15TF	VP20RT			L1	L2	D1	S1	Re	
Bottom Cutting Edge A 	**JPMX190412-WH**	M	●	●			19.05	12.7	—	4.76	1.2	
Bottom Cutting Edge B 	**MPMX120412-WH**	M	●	●			—	—	12.7	4.76	1.2	
Peripheral Cutting Edge 	**SPMX120408-WH**	M	●	●			—	—	12.7	4.76	0.8	

● : Inventory maintained.

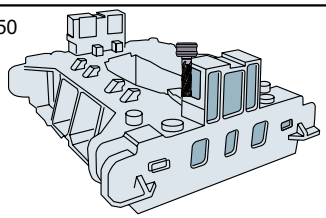
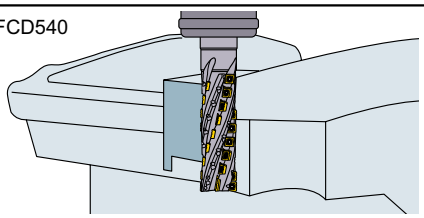
Indexable end mill for deep shoulder milling

Recommended Cutting Conditions

Cutting Mode	A: Side milling	B: Shoulder Milling	C: Slot Milling
			

	Work Material	Hardness	Grade	Cutting Speed (m/min)	Cutting Mode	Revolution (min^{-1})	Table Feed (mm/min)	ap (mm)	ae (mm)
P	Alloy Tool Steel	≤300HB	**VP20RT**	60 (50—80)	A	382	191	100—200	10
					B	382	191	100—200	10
					C	318	159	10	—
	Alloy Tool Steel	≤280HB	**VP20RT**	80 (60—100)	A	509	305	100—200	10
					B	509	305	100—200	10
					C	382	191	10	—
	Alloy Tool Steel	≤250HB	**VP20RT**	80 (60—100)	A	509	356	100—200	10
					B	509	356	100—200	10
					C	382	191	10	—
	Alloy Tool Steel	≤250HB	**VP20RT**	80 (60—100)	A	509	356	100—200	10
					B	509	356	100—200	10
					C	382	191	10	—
K	Cast Iron	Tensile Strength ≤300MPa	**VP15TF**	100 (50—140)	A	636	509	100—200	10
					B	636	509	100—200	10
					C	318	127	50	—
	Ductile Cast Iron	Tensile Strength ≤500MPa	**VP15TF**	100 (50—140)	A	636	509	100—200	10
					B	636	509	100—200	10
					C	318	127	40	—
	Ductile Cast Iron	Tensile Strength ≤800MPa	**VP15TF**	100 (40—140)	A	509	407	100—200	10
					B	509	407	100—200	10
					C	254	102	30	—

Application Examples

Tool		**SPX4R05034WNM**	**SPX4R05034WNM**
Grade		VP15TF	VP20RT
Workpiece		JIS FC250 	JIS FCD540 
Component		Press moulds (base)	Press moulds (trim)
Cutting Conditions	Cutting Speed (m/min)	100	100
	Table Feed (mm/min)	509	445
	Feed per Tooth (mm/tooth)	0.4	0.35
	Axial Depth of Cut (mm)	125	50—100
	Width of Cut (mm)	8—10	5—8
Coolant		Dry Cutting	Dry Cutting
Results		In comparison with the conventional product overall machining efficiency was doubled. Stable tool life due to effective chip control and low cutting resistance was also achieved.	In comparison with the conventional product overall machining efficiency was increased by 70%.

For Your Safety
●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When attaching inserts or spare parts, please use only the correct wrench or spanner. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

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(Tools specifications subject to change without notice.)

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