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TOOLS NEWS

2004.4.Update B029G

Ball Nose End Mill for Metal Mold Roughing

SRM2 Ø40 Ø50

Series Expansions
Nose Radius
R20(ϕ40)

Highly rigid body & Low resistance insert

Cut costs of rough and semi-finishing of molds.

Miracle Coated
VP20RT&VP15TF

Excellent fracture resistance and wear resistance. Ideal for a wide range of materials from alloy tool steel to cast iron

■Highly rigid body

- The specially designed silver body employs special alloy with nickel based coating on its surface for significantly improved body rigidity and durability.
- The employment of heel cut (patent pending) prevents welding and damage to the body often caused by generated chips.

■Low resistance insert

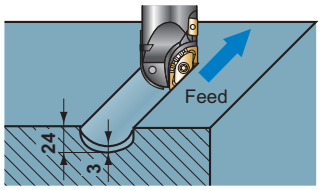
- The insert employs our proprietary, uniquely designed three dimensional cutting edge with "Variable Radial Undulation [V.R.U.])" (patent pending) that cuts generated chips into small pieces to significantly lower cutting vibration and resistance.

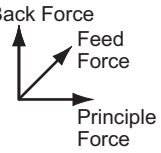
Ball Nose End Mill for Metal Mold Roughing

SRM2 ø40 ø50

Cutting Performance

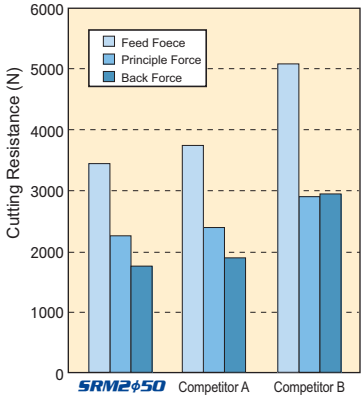
Comparison of Cutting Resistance



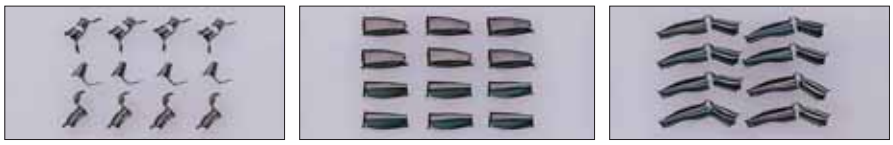


Cutting Condisions

Workpiece	FCD540
Tool	Ball nose end mill with 50mm cutting edge diameter
Cutting Speed	188m/min
Table Feed	1080mm/min
Depth of Cut	3mm
Coolant	Dry cutting

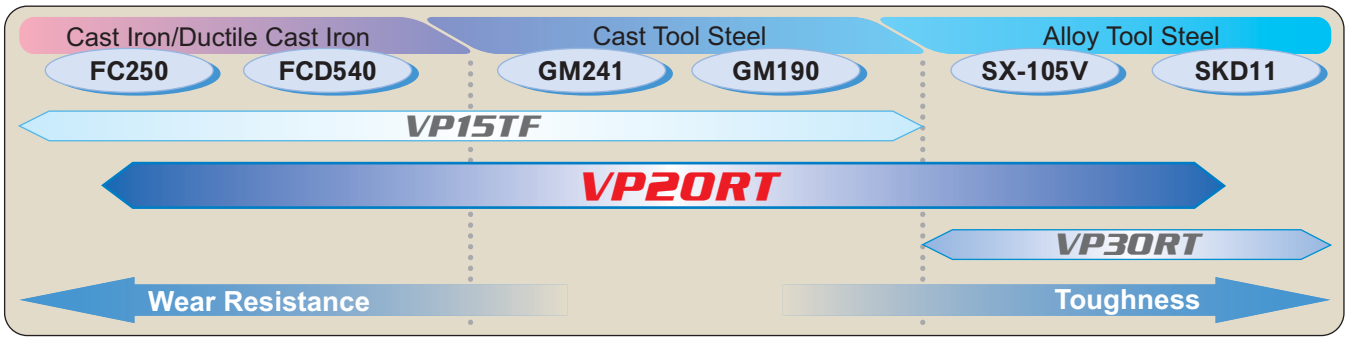


Chip Geometry



SRM2ϕ50 | Competitor A | Competitor B

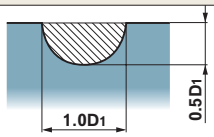
Application Insert Grades



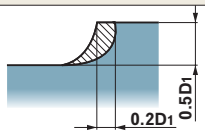
RECOMMENDED CUTTING CONDITIONS

Cutting mode

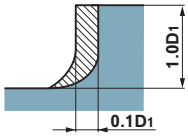
A : Slot Milling



B : Shoulder Milling



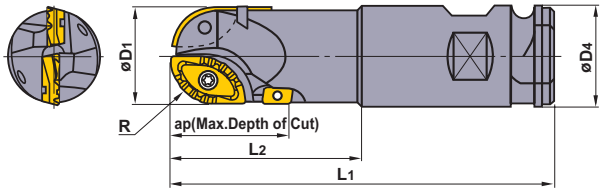
C : Shoulder Milling (Long Edge Type)



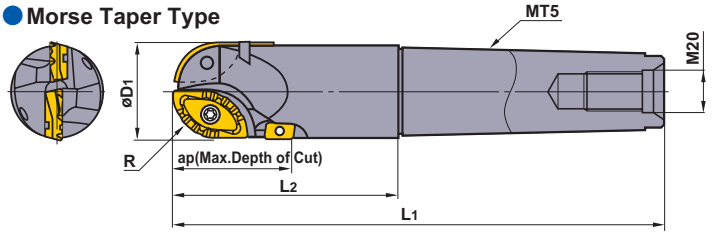
	Workpiece	Hardness	Insert Grade	Cutting Speed (m/min)	Feed per Tooth (mm/tooth)	Cutting Mode
P	Alloy Tool Steel (JIS SKD11 etc.)	≤250HB	VP20RT VP30RT	160 (120－200)	0.12 (0.08－0.2)	A
					0.2 (0.1－0.4)	B
					0.15 (0.1－0.3)	C
	Alloy Tool Steel (HMD5,SX-105V etc.)	≤250HB	VP20RT VP30RT	200 (160－250)	0.2 (0.1－0.3)	A
					0.2 (0.1－0.4)	B
					0.3 (0.1－0.4)	C
	Cast Iron Steel (GM190 etc.)	≤235HB	VP20RT	200 (160－250)	0.2 (0.1－0.3)	A
					0.3 (0.1－0.4)	B
					0.2 (0.1－0.4)	C
	Cast Iron Steel (GM241,ICD5 etc.)	≤230HB	VP15TF VP20RT	200 (160－300)	0.2 (0.1－0.3)	A
					0.3 (0.1－0.45)	B
					0.2 (0.1－0.4)	C
K	Ductile Cast Iron (JIS FCD540 etc.)	Tensile Strength ≤540N/mm²	VP15TF VP20RT	200 (160－300)	0.25 (0.1－0.4)	A
					0.25 (0.1－0.45)	B
					0.35 (0.1－0.45)	C
	Cast Iron (JIS FC250 etc.)	Tensile Strength ≤250N/mm²	VP15TF VP20RT	200 (160－300)	0.25 (0.1－0.4)	A
					0.35 (0.1－0.45)	B
					0.25 (0.1－0.4)	C

SRM2 Ø40 Ø50

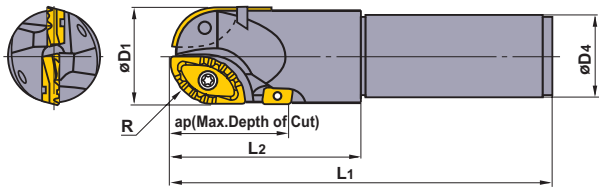
Combination Type



Morse Taper Type



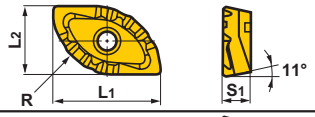
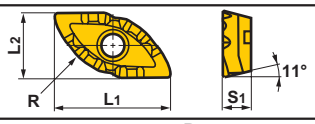
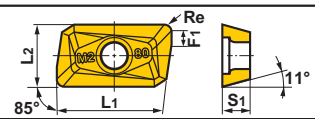
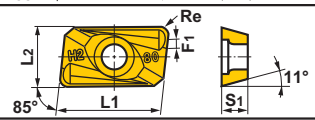
Straight Type



Right hand tool holder only.

Shank		Order Number	Stock R	Number of Teeth	Dimensions (mm) R	D1	D4	L1	L2	ap	Insert Inner	Insert Outer	Insert Peripheral	Clamp Screw Inner/Outer	Clamp Screw Peripheral	Wrench Inner/Outer	Wrench Peripheral
Combination Type	Standard	NEW SRM2400WNLS	●	2	20	40	50.8	200	120	63	SRG40C	SRG40E	APMT1604 PDER-○2	TS6S	TS43	TKY30T	TKY15F
		2500WNLS	●	2	25	50	50.8	200	120	63	SRG50C	SRG50E	APMT1604 PDER-○2	TS6	TS43	TKY30T	TKY15F
	Long	NEW 2400WNLM	●	2	20	40	50.8	250	170	63	SRG40C	SRG40E	APMT1604 PDER-○2	TS6S	TS43	TKY30T	TKY15F
		2500WNLM	●	2	25	50	50.8	250	170	63	SRG50C	SRG50E	APMT1604 PDER-○2	TS6	TS43	TKY30T	TKY15F
	Extra Long	2500WNLL	●	2	25	50	50.8	300	220	63	SRG50C	SRG50E	APMT1604 PDER-○2	TS6	TS43	TKY30T	TKY15F
		2500WNLX	●	2	25	50	50.8	350	270	63	SRG50C	SRG50E	APMT1604 PDER-○2	TS6	TS43	TKY30T	TKY15F
Straight Type	Standard	NEW SRM2400SNLS	●	2	20	40	42	200	100	63	SRG40C	SRG40E	APMT1604 PDER-○2	TS6S	TS43	TKY30T	TKY15F
		2500SNLS	●	2	25	50	42	200	100	63	SRG50C	SRG50E	APMT1604 PDER-○2	TS6	TS43	TKY30T	TKY15F
	Long	NEW 2400SNLM	●	2	20	40	42	250	100	63	SRG40C	SRG40E	APMT1604 PDER-○2	TS6S	TS43	TKY30T	TKY15F
		2500SNLM	●	2	25	50	42	250	100	63	SRG50C	SRG50E	APMT1604 PDER-○2	TS6	TS43	TKY30T	TKY15F
Morse Tapper Type	Standard	SRM2500MNLS	●	2	25	50	–	256	120	63	SRG50C	SRG50E	APMT1604 PDER-○2	TS6	TS43	TKY30T	TKY15F
	Long	2500MNLM	●	2	25	50	–	286	150	63	SRG50C	SRG50E	APMT1604 PDER-○2	TS6	TS43	TKY30T	TKY15F

INSERTS

Type	Shape	Order Number	Class	Coated VP15TF	VP20RT	VP30RT	Geometry	Dimensions (mm) R	L1	L2	S1	F1	Re
Inner		NEW SRG40C	G	●	●	●		20	36	20.5	8.0	–	–
		50C	G	●	●	●		25	40	26	8.5	–	–
Outer		NEW SRG40E	G	●	●	●		20	32	16.6	8.0	–	–
		50E	G	●	●	●		25	35.8	20	8.5	–	–
Peripheral		APMT1604PDER-M2	M	●				–	16.5	9.525	4.76	1.4	0.8
		APMT1604PDER-H2 (Strong Cutting Edge)	M	●				–	16.5	9.525	4.76	1.4	0.8

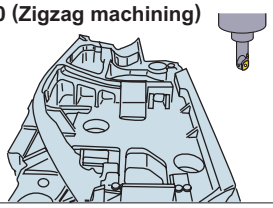
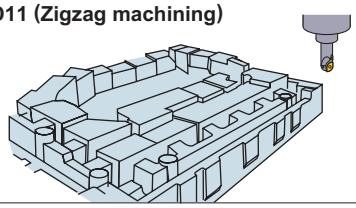
● : Inventory maintained. No mark : Products not manufactured.

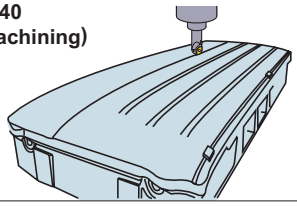
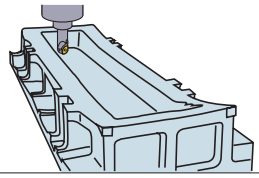
Ball Nose End Mill for Metal Mold Roughing

MITSUBISHI

SRM2 Ø40 Ø50

APPLICATION EXAMPLES

Tool			SRM2500WNLS	SRM2500WNLS
Grade			VP15TF	VP20RT
Workpiece			JIS FCD500 (Zigzag machining) 	JIS SKD11 (Zigzag machining) 
Component			Press Mold	Press Mold
Cutting Conditions	Revolution	(min-1)	1200	1200
	Table Feed	(mm/min)	600 - 650	600
	Axial Depth of Cut	(mm)	5 - 20	5 - 20
	Pick Feed	(mm)	10	10
Coolant			Dry Cutting	Dry Cutting
Result			●Compared to a competitor`s conventional product, tool life has become about 1.5 times longer. ●Small cutting noise and stable cutting performance. ●Body friction and chip welding was significantly reduced due to the excellent chip disposal.	●Compared to a competitor`s conventional product, tool life has become about 2 times longer. ●Unmanned machining has been achieved without unexpected insert fracture. ●Small cutting noise and stable cutting performance

Tool			SRM2500WNLM	SRM2500WNLM
Grade			VP15TF	VP15TF
Workpiece			JIS FCD540 (2 way machining) 	JIS FCD400 (Zigzag machining) 
Component			Press Mold	Press Mold
Cutting Conditions	Revolution	(min-1)	1200	1200
	Table Feed	(mm/min)	600 - 1200	600 - 1300
	Axial Depth of Cut	(mm)	10 - 15	5 - 20
	Pick Feed	(mm)	7	8
Coolant			Dry Cutting	Dry Cutting
Result			●Compared to a competitor`s conventional product,tool life has become about 1.3 - 2 times longer . ●Small cutting noise and excellent chip disposal enabled unmanned machining at night.	●Compared to a competitor`s conventional product,tool life has become about 1.5 times longer. ●Small cutting noise and excellent surface finish due to the low cutting resistance. ●In addition to zigzag machining, SRM2-Ø50 displayed stable cutting performance in various cutting modes including heeling down.

Preventing screws/bolts seizing
●The application of a special lubricant MK1K (separately sold) is recommended to prevent screws/bolts seizing.

For Your Safety
●Don't touch breakers and chips without gloves. ●Please machine within recommended application range, and exchange expired tools with new parts in advance. ●Please use safety cover and wear safety glasses. ●When using compounded cutting oils, please take fire prevention. ●When attaching chips or spare parts, please use the attached wrench or spanner. ●When using tools in revolution machining, please make a trial run to check run-out, vibration, abnormal sounds etc.

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(Tools specifications subject to change without notice.)

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