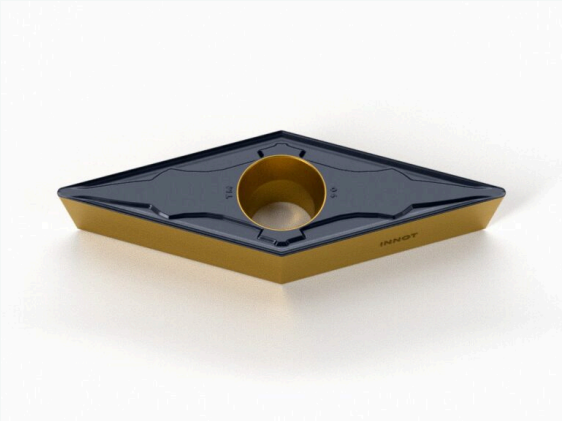
TURNING INSERTS · POSITIVE INSERTS · VBMT / VCMT - 35° RHOMBIC

VCMT-TM

35° positive rhombic insert (VCMT) for semi-finishing of steels and stainless steels, external and boring, with TM chipbreaker and INNOT CVD and PVD grades.



KEY DATA	
Product type	Turning Inserts
ISO materials	P steel M stainless
Operation	Semi-finishing
Chipbreaker	**TM**
INNOT grades	IT7125 · **IT7225** ★ · **IT8115** ★ · IT8125 · **IT8225** ★ ★ recommended
Nose radii	R0.4 · R0.8 · R1.2
Online page	innot-it.com/en/prodotto/vcmt-tm

ISO specifications

ISO	RADIUS (RE)	AVAILABLE GRADES	CHIPBREAKER
VCMT1103	0.4 - 0.8	IT8115 - IT8125 - IT8225 - IT7125 - IT7225	TM
VCMT1604	0.4 - 0.8 - 1.2	IT8115 - IT8125 - IT8225 - IT7125 - IT7225	TM

TM chipbreaker data sheet

Operation	Semi-finishing
ISO material	P (steels), M (stainless steels)
Tolerance	M
Features	Chipbreaker for semi-finishing, suitable for external and internal turning of steels and stainless steels. 7° positive insert (shape V, 35° rhombic) with screw clamping: the slimmest tip in the range, for copy turning and profiling of grooves and radii. SVQC (107.5°) and SVUC (93°) type toolholders.

Available INNOT grades

Grade	ISO	Coating	Composition	Application
IT8115 ★	**P**	**CVD**	TiN + MT-TiCN + Al_2O_3	Continuous and lightly interrupted cuts. Finishing and semi-finishing of carbon and alloy steels.
IT8125	**P**	**CVD**	TiN + MT-TiCN + Al_2O_3	Interrupted and continuous cuts on steel. The reinforced substrate limits plastic deformation at high temperature.
IT8225 ★	**P**	**CVD**	TiN + MT-TiCN + Al_2O_3	First-choice grade for steel, very versatile. Multilayer coating with excellent wear resistance and toughness.
IT7125	**M**	**PVD**	AlTiN	Universal grade for turning stainless steel in continuous and interrupted cuts. Smooth, low-friction coating, high nano-hardness and excellent oxidation resistance.
IT7225 ★	**M**	**PVD**	AlTiSiN + TiSiN	First-choice grade for turning stainless steel. Nano-gradient coating on a sub-micron grain substrate: excellent wear resistance and toughness.

★ Recommended grade for this chipbreaker. CVD and PVD = vapour deposition coatings (chemical and physical). ISO P = steels, ISO M = stainless steels.

Recommended cutting data

External turning of steels (ISO P) – TM chipbreaker

Material	Condition	Vc (m/min) by grade	fn (mm/rev)	ap (mm)
Structural steels ≤ 180 HB (S235, C45...)	Stable	IT8115: 215 – 415 IT8125: 190 – 355 IT8225: 205 – 375	0.15 – 0.35	0.50 – 3.00
Structural steels ≤ 180 HB (S235, C45...)	Average	IT8115: 200 – 405 IT8125: 185 – 350 IT8225: 195 – 360	0.15 – 0.30	0.50 – 3.00
Structural steels ≤ 180 HB (S235, C45...)	Difficult	IT8125: 185 – 350 IT8225: 195 – 360	0.15 – 0.25	0.50 – 3.00
Carbon and alloy steels 180 – 280 HB (41Cr4, 42CrMo4...)	Stable	IT8115: 215 – 415 IT8125: 190 – 355 IT8225: 205 – 375	0.15 – 0.35	0.50 – 3.00
Carbon and alloy steels 180 – 280 HB (41Cr4, 42CrMo4...)	Average	IT8115: 200 – 405 IT8125: 185 – 350 IT8225: 195 – 360	0.15 – 0.30	0.50 – 3.00
Carbon and alloy steels 180 – 280 HB (41Cr4, 42CrMo4...)	Difficult	IT8125: 185 – 350 IT8225: 195 – 360	0.15 – 0.25	0.50 – 3.00
Quenched and tempered steels ≥ 280 HB	Stable	IT8115: 215 – 420 IT8225: 190 – 395	0.15 – 0.35	0.50 – 3.00
Quenched and tempered steels ≥ 280 HB	Average	IT8115: 215 – 420 IT8225: 190 – 395	0.15 – 0.30	0.50 – 3.00

Guide values for the TM chipbreaker (positive inserts), given only for the grades available in this product.

External turning of stainless steel (ISO M) – TM chipbreaker

Material	Condition	Vc (m/min) by grade	fn (mm/rev)	ap (mm)
Austenitic stainless steel ≤ 200 HB (AISI 304, 316...)	Stable	IT7125: 80 – 150 IT7225: 80 – 150	0.15 – 0.35	0.50 – 3.00
Austenitic stainless steel ≤ 200 HB (AISI 304, 316...)	Average	IT7125: 80 – 150 IT7225: 80 – 150	0.15 – 0.30	0.50 – 3.00
Austenitic stainless steel ≤ 200 HB (AISI 304, 316...)	Difficult	IT7125: 80 – 150 IT7225: 80 – 150	0.15 – 0.25	0.50 – 3.00
Martensitic stainless steel > 200 HB (AISI 431, 420...)	Stable	IT7125: 70 – 140 IT7225: 70 – 140	0.15 – 0.35	0.50 – 3.00
Martensitic stainless steel > 200 HB (AISI 431, 420...)	Average	IT7125: 70 – 140 IT7225: 70 – 140	0.15 – 0.30	0.50 – 3.00
Martensitic stainless steel > 200 HB (AISI 431, 420...)	Difficult	IT7125: 70 – 140 IT7225: 70 – 140	0.15 – 0.25	0.50 – 3.00

Guide values for the TM chipbreaker (positive inserts), given only for the grades available in this product.

Internal turning / boring (ISO P)

Material	Operation	Cut	RE	Vc (m/min) min – recomm. – max	ap (mm) min – recomm. – max	fn (mm/rev) min – recomm. – max

Low carbon / low alloy ≤ 300 HB	Precision finishing	Continuous	0.4	250 – 300 – 350	0.05 – 0.3 – 0.5	0.03 – 0.1 – 0.15
		Interrupted		120 – 170 – 220	0.05 – 0.3 – 0.5	0.03 – 0.1 – 0.15
	Finishing	Continuous	0.4 – 0.8	200 – 250 – 300	0.2 – 0.5 – 1.0	0.05 – 0.1 – 0.2
		Interrupted		150 – 200 – 250	0.2 – 0.5 – 1.0	0.05 – 0.1 – 0.2
	Finishing – semi-roughing	Continuous	0.4 – 0.8	150 – 200 – 250	0.5 – 1.0 – 2.0	0.1 – 0.15 – 0.25
		Interrupted		100 – 150 – 200	0.5 – 1.0 – 1.5	0.1 – 0.15 – 0.2
	Semi-roughing	Continuous	0.4 – 0.8	100 – 150 – 200	1.0 – 1.5 – 2.5	0.1 – 0.15 – 0.3
		Interrupted		80 – 120 – 150	1.0 – 1.5 – 2.0	0.1 – 0.15 – 0.2
Medium carbon / medium alloy ≤ 300 HB	Precision finishing	Continuous	0.4	150 – 200 – 250	0.05 – 0.3 – 0.5	0.03 – 0.1 – 0.15
		Interrupted		120 – 140 – 170	0.05 – 0.3 – 0.5	0.03 – 0.1 – 0.15
	Finishing	Continuous	0.4 – 0.8	150 – 200 – 250	0.2 – 0.5 – 1.0	0.05 – 0.1 – 0.2
		Interrupted		120 – 180 – 200	0.2 – 0.5 – 1.0	0.05 – 0.1 – 0.2
	Finishing – semi-roughing	Continuous	0.4 – 0.8	120 – 180 – 220	0.5 – 1.0 – 2.0	0.1 – 0.15 – 0.25
		Interrupted		100 – 150 – 200	0.5 – 1.0 – 1.5	0.1 – 0.15 – 0.2
	Semi-roughing	Continuous	0.4 – 0.8	100 – 150 – 200	1.0 – 1.5 – 2.5	0.1 – 0.15 – 0.3
		Interrupted		80 – 120 – 150	1.0 – 1.5 – 2.0	0.1 – 0.15 – 0.2
High carbon / alloy ≤ 280 HB	Precision finishing	Continuous	0.4	120 – 150 – 180	0.05 – 0.3 – 0.5	0.03 – 0.1 – 0.15
		Interrupted		110 – 130 – 160	0.05 – 0.3 – 0.5	0.03 – 0.1 – 0.15
	Finishing	Continuous	0.4 – 0.8	120 – 150 – 180	0.2 – 0.5 – 1.0	0.05 – 0.1 – 0.2
		Interrupted		100 – 120 – 150	0.2 – 0.5 – 1.0	0.05 – 0.1 – 0.2
	Finishing – semi-roughing	Continuous	0.4 – 0.8	120 – 150 – 180	0.5 – 1.0 – 2.0	0.1 – 0.15 – 0.25
		Interrupted		100 – 120 – 150	0.5 – 1.0 – 1.5	0.1 – 0.15 – 0.2
	Semi-roughing	Continuous	0.4 – 0.8	100 – 120 – 150	1.0 – 1.5 – 2.5	0.1 – 0.15 – 0.3
		Interrupted		80 – 100 – 120	1.0 – 1.5 – 2.0	0.1 – 0.15 – 0.2

Recommended grades: IT8115 – IT8225. Minimum machining diameter: Ø10 mm. ap = radial depth of cut.

Internal turning / boring (ISO M)

Material	Operation	Cut	RE	Vc (m/min) min – recomm. – max	ap (mm) min – recomm. – max	fn (mm/rev) min – recomm. – max
Austenitic stainless steel ≤ 220 HB	Finishing	Continuous	0.4 – 0.8	120 – 150 – 180	0.2 – 0.5 – 0.8	0.05 – 0.08 – 0.1
		Interrupted		100 – 120 – 150	0.2 – 0.5 – 0.8	0.05 – 0.08 – 0.1
	Semi-finishing	Continuous	0.4 – 0.8	120 – 150 – 180	0.5 – 1.0 – 1.5	0.05 – 0.1 – 0.2
		Interrupted		100 – 120 – 150	0.5 – 1.0 – 1.5	0.05 – 0.1 – 0.2
Precipitation-hardening stainless steel ≤ 300 HB	Finishing	Continuous	0.4 – 0.8	80 – 100 – 120	0.2 – 0.7 – 1.0	0.05 – 0.1 – 0.15
		Interrupted		60 – 80 – 100	0.2 – 0.7 – 1.0	0.05 – 0.1 – 0.15
	Semi-finishing	Continuous	0.4 – 0.8	80 – 100 – 120	0.5 – 1.0 – 1.5	0.05 – 0.1 – 0.2
		Interrupted		60 – 80 – 100	0.5 – 1.0 – 1.5	0.05 – 0.1 – 0.2

Recommended grades: IT7125 – IT7225. Guide values for positive inserts, machining diameter over Ø10 mm. ap = radial depth of cut.

Profondità di passata e misura dell'inserto. The TM chipbreaker range goes up to ap 3 mm. The 35° shape has the slimmest tip in the range: with VCMT11 (11 mm cutting edge) keep the depth of cut within about 1/4 of the edge, i.e. about 2.5 mm. With VCMT16 (16.5 mm cutting edge) the full range can be used.

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Cutting data are indicative starting values: adjust them to machine, clamping, tool overhang and workpiece material. Data and images may change without notice.