

超硬防振型エンドミル

TW-VSシリーズ

Anti-Vibration Carbide End Mills
TW-VS series

TW-VS-EM2D(スクエア2Dタイプ)
TW-VS-CR-EM2D(ラジウス2Dタイプ)
Square and Radius 2D type



難削材切削で革新性能を実現!!

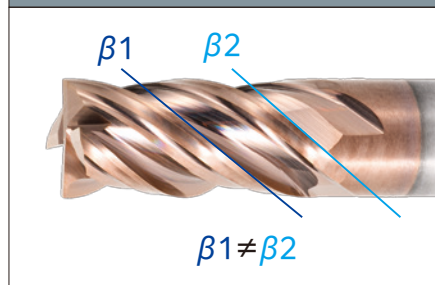
Achieves innovative performance in difficult-to-cut materials!!

びびり抑制

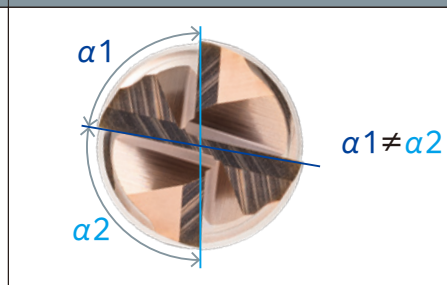
Vibration Suppression

難削材でも
安定した加工を実現
It allows stable machining of
difficult-to-cut materials.

不等リード Variable Leads



不等分割 Unequal Flute Spacing



長寿命

Long Tool Life

新材質で摩耗・欠損を抑制
Advanced material technology minimizes
wear and chipping.

ion Depo type V

新コーティング Innovative coating



新超硬母材

Advanced carbide material

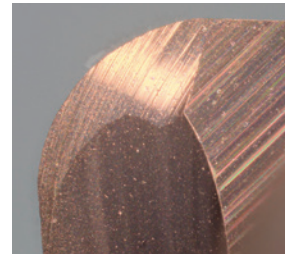
低抵抗

Reduced cutting force

コーナ半径で形状を最適化
Optimized corner radius design
reduces cutting force.



ギャッシュ当てなし
Without gash land



スパイラルギャッシュ
Spiral gash design

切削条件

Cutting Conditions

被削材: Inconel718

Work Material

使用工具: TW-VS-CR-EM2D-6×R0.3

Cutting Tool

切削速度: 30m/min

Cutting Speed

送り量: 0.03mm/t

Feed Rate

切込み: ap3mm, ae0.3mm

Depth of Cut

切削油剤: 水溶性外部給油

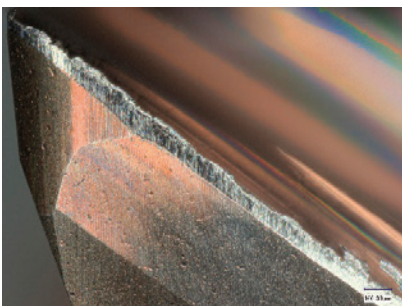
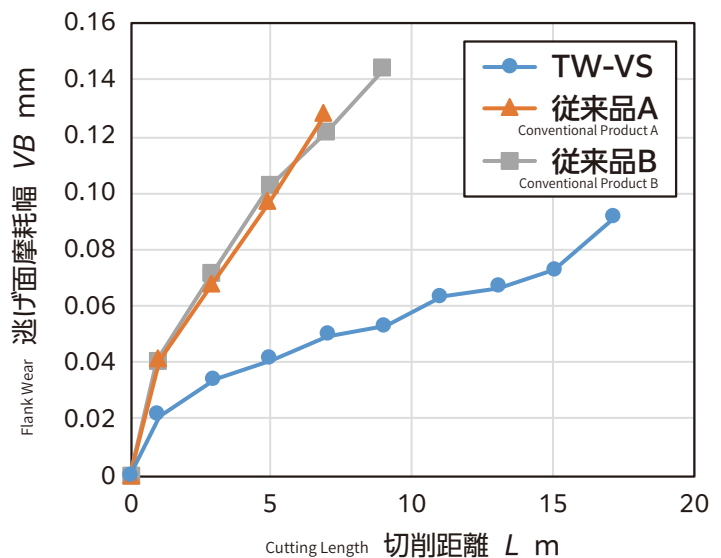
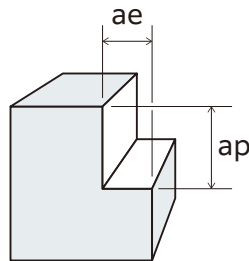
Cutting Fluid:

Water-soluble external coolant supply

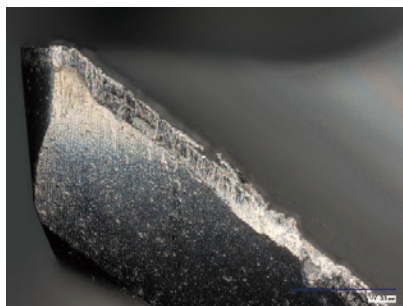
使用機械: 立形 M/C (BBT30)

Machine:

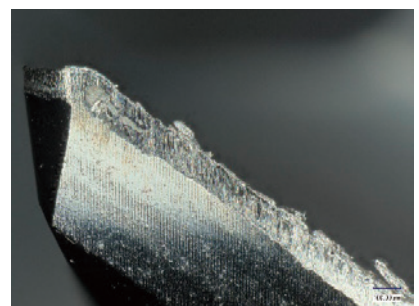
Vertical Machining Center (BBT30)



TW-VS 15m



従来品A 7m
Conventional Product A



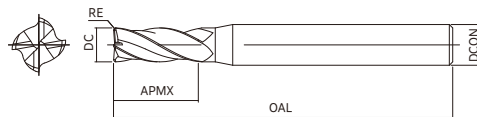
従来品B 9m
Conventional Product B



超硬防振型エンドミル Anti-Vibration Carbide End Mills

TW-VS-EM2D(スクエア2Dタイプ) (Square 2D type)

●=標準在庫品 Standard stock item



※図はラジাসタイプを示す。The drawing shows a radius type.

N番号 N No.	コードNo. Code No.	外径 DC	刃長 APMX	全長 OAL	シャンク径 DCON	首角 Acon	首下長さ LH	在庫 Stock
N009093	TW-VS-EM2D-2	2	4	50	4	15	8.7	●
N009094	TW-VS-EM2D-2.5	2.5	5	50	4	15	8.8	●
N009095	TW-VS-EM2D-3	3	6	50	6	15	13.6	●
N009096	TW-VS-EM2D-4	4	8	50	6	15	13.7	●
N009097	TW-VS-EM2D-5	5	10	50	6	15	13.9	●
N009098	TW-VS-EM2D-6	6	12	50	6	0	14	●
N009099	TW-VS-EM2D-8	8	16	60	8	0	18	●
N009100	TW-VS-EM2D-10	10	20	70	10	0	22	●
N009101	TW-VS-EM2D-12	12	24	80	12	0	26	●
N009102	TW-VS-EM2D-16	16	32	100	16	0	34	●
N009103	TW-VS-EM2D-20	20	40	110	20	0	42	●



超硬防振型エンドミル Anti-Vibration Carbide End Mills

TW-VS-CR-EM2D(ラジラス2Dタイプ) (Radius 2D type)

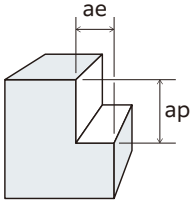
●=標準在庫品 Standard stock item

N番号 N No.	コードNo. Code No.	外径 DC	コーナ半径 RE	刃長 APMX	全長 OAL	シャンク径 DCON	首角 Acon	首下長さ LH	在庫 Stock
N009104	TW-VS-CR-EM2D-2×R0.2	2	R0.2	4	50	4	15	8.7	●
N009105	TW-VS-CR-EM2D-2×R0.3	2	R0.3	4	50	4	15	8.7	●
N009106	TW-VS-CR-EM2D-2×R0.5	2	R0.5	4	50	4	15	8.7	●
N009107	TW-VS-CR-EM2D-3×R0.2	3	R0.2	6	50	6	15	13.6	●
N009108	TW-VS-CR-EM2D-3×R0.3	3	R0.3	6	50	6	15	13.6	●
N009109	TW-VS-CR-EM2D-3×R0.5	3	R0.5	6	50	6	15	13.6	●
N009110	TW-VS-CR-EM2D-4×R0.2	4	R0.2	8	50	6	15	13.7	●
N009111	TW-VS-CR-EM2D-4×R0.3	4	R0.3	8	50	6	15	13.7	●
N009112	TW-VS-CR-EM2D-4×R0.5	4	R0.5	8	50	6	15	13.7	●
N009113	TW-VS-CR-EM2D-5×R0.2	5	R0.2	10	50	6	15	13.9	●
N009114	TW-VS-CR-EM2D-5×R0.3	5	R0.3	10	50	6	15	13.9	●
N009115	TW-VS-CR-EM2D-5×R0.5	5	R0.5	10	50	6	15	13.9	●
N009116	TW-VS-CR-EM2D-5×R1	5	R1	10	50	6	15	13.9	●
N009117	TW-VS-CR-EM2D-6×R0.3	6	R0.3	12	50	6	0	14	●
N009118	TW-VS-CR-EM2D-6×R0.5	6	R0.5	12	50	6	0	14	●
N009119	TW-VS-CR-EM2D-6×R1	6	R1	12	50	6	0	14	●
N009120	TW-VS-CR-EM2D-6×R1.5	6	R1.5	12	50	6	0	14	●
N009121	TW-VS-CR-EM2D-8×R0.3	8	R0.3	16	60	8	0	18	●
N009122	TW-VS-CR-EM2D-8×R0.5	8	R0.5	16	60	8	0	18	●
N009123	TW-VS-CR-EM2D-8×R1	8	R1	16	60	8	0	18	●
N009124	TW-VS-CR-EM2D-8×R1.5	8	R1.5	16	60	8	0	18	●
N009125	TW-VS-CR-EM2D-8×R2	8	R2	16	60	8	0	18	●
N009126	TW-VS-CR-EM2D-10×R0.3	10	R0.3	20	70	10	0	22	●
N009127	TW-VS-CR-EM2D-10×R0.5	10	R0.5	20	70	10	0	22	●
N009128	TW-VS-CR-EM2D-10×R1	10	R1	20	70	10	0	22	●
N009129	TW-VS-CR-EM2D-10×R1.5	10	R1.5	20	70	10	0	22	●
N009130	TW-VS-CR-EM2D-10×R2	10	R2	20	70	10	0	22	●
N009131	TW-VS-CR-EM2D-12×R0.3	12	R0.3	24	80	12	0	26	●
N009132	TW-VS-CR-EM2D-12×R0.5	12	R0.5	24	80	12	0	26	●
N009133	TW-VS-CR-EM2D-12×R1	12	R1	24	80	12	0	26	●
N009134	TW-VS-CR-EM2D-12×R1.5	12	R1.5	24	80	12	0	26	●
N009135	TW-VS-CR-EM2D-12×R2	12	R2	24	80	12	0	26	●
N009136	TW-VS-CR-EM2D-12×R3	12	R3	24	80	12	0	26	●

切削条件表 Cutting condition

TW-VS-EM2D

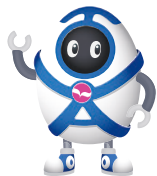
TW-VS-CR-EM2D



側面切削 Side milling

被削材 Work material	プリハードン鋼 焼入れ鋼 (30~45HRC) Prehardened steel Hardened steel PX5, NAK80		ステンレス鋼 Stainless steel SUS304		チタン合金 Titanium alloy Ti-6Al-4V		Ni基合金 Ni-based alloy Inconel 718	
切削速度 Cutting speed (m/min)	100		100		60		30	
切込み Depth Of cut (mm)	ap = 1DC ae = 0.2DC		ap = 1DC ae = 0.2DC		ap = 1DC ae = 0.1DC		ap = 1DC ae = 0.05DC	
外径 DC Tool dia. (mm)	回転数 Speed (min ⁻¹)	送り速度 Feed (mm/min)	回転数 Speed (min ⁻¹)	送り速度 Feed (mm/min)	回転数 Speed (min ⁻¹)	送り速度 Feed (mm/min)	回転数 Speed (min ⁻¹)	送り速度 Feed (mm/min)
2	15920	830	15920	640	9550	380	4770	190
3	10610	830	10610	640	6370	380	3180	190
4	7960	830	7960	640	4770	380	2390	190
5	6370	830	6370	640	3820	380	1910	190
6	5310	830	5310	640	3180	380	1590	190
8	3980	830	3980	640	2390	380	1190	190
10	3180	830	3180	640	1910	380	950	190
12	2650	830	2650	640	1590	380	800	190
16	1990	830	1990	640	1190	380	600	190
20	1590	830	1590	640	950	380	480	190

- 機械、ホルダは剛性のある精度の高いものを使用してください。
Use the high-rigidity and high accuracy machine and holder as possible.
- 被削材に応じて、適切なクーラントを使用してください。
Use the appropriate coolant for the work material.
- この切削条件表は目安を示すものです。実際の加工では、目的や使用機械等により切削条件を調整してください。
This table provides a guideline for cutting conditions.
Actual machining conditions should be adjusted according to the required results and machine specifications, etc.
- 加工精度が必要となる場合は、回転数、送り速度および切込みを下げて使用してください。
When high accuracy is required, reduce spindle speed, feed rate and depth of cut.



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