

F693TX 極超微粒鎢鋼塗層深溝環面R角立銑刀

Toric End Mills For Rib Processing With Corner Radius

Code No. F693TX-Dc×R×L1

SMG Carbide

AlTiSiN TX



Type of Operation



Work Material

P	H	M	K	N	S
	●				

H 硬化鋼 <48HRC
Hardened Steel

H 硬化鋼 <56HRC
Hardened Steel

H 硬化鋼 <68HRC
Hardened Steel

Feature of product:

- 4刃R角深溝立銑刀
- 廣泛用於精微模具、深溝清角、微小3D曲面。
- 搭配奈米多層膜塗層具有優異的潤滑及耐磨性。
- 高精度R值與各式規格齊全。
- 可用於各式鋼鐵材料及電極鋼。



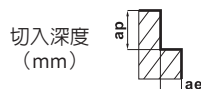
Dc	R	L1	Lc	L	d	D1	AlTiSiN	Dc	R	L1	Lc	L	d	D1	AlTiSiN
0 -0.02	±0.005	mm	mm	mm	h5	mm	F693TX	0 -0.02	±0.005	mm	mm	mm	h5	mm	F693TX
1	R0.1	4	0.8	50	4	0.95	●	3	R0.3	12	2.5	50	6	2.85	●
1	R0.1	6	0.8	50	4	0.95	●	3	R0.3	16	2.5	60	6	2.85	●
1	R0.1	8	0.8	50	4	0.95	●	3	R0.3	20	2.5	60	6	2.85	●
1	R0.1	10	0.8	50	4	0.95	●	3	R0.3	25	2.5	70	6	2.85	●
1	R0.1	12	0.8	50	4	0.95	●	3	R0.3	30	2.5	70	6	2.85	●
1	R0.2	4	0.8	50	4	0.95	●	3	R0.5	8	2.5	50	6	2.85	●
1	R0.2	6	0.8	50	4	0.95	●	3	R0.5	12	2.5	50	6	2.85	●
1	R0.2	8	0.8	50	4	0.95	●	3	R0.5	16	2.5	60	6	2.85	●
1	R0.2	10	0.8	50	4	0.95	●	3	R0.5	20	2.5	60	6	2.85	●
1	R0.2	12	0.8	50	4	0.95	●	3	R0.5	25	2.5	70	6	2.85	●
1	R0.3	4	0.8	50	4	0.95	●	3	R0.5	30	2.5	70	6	2.85	●
1	R0.3	6	0.8	50	4	0.95	●	4	R0.1	12	4	60	6	3.85	●
1	R0.3	8	0.8	50	4	0.95	●	4	R0.1	16	4	60	6	3.85	●
1	R0.3	10	0.8	50	4	0.95	●	4	R0.1	20	4	70	6	3.85	●
1	R0.3	12	0.8	50	4	0.95	●	4	R0.1	30	4	80	6	3.85	●
1.5	R0.1	4	1.2	50	4	1.45	●	4	R0.1	40	4	90	6	3.85	●
1.5	R0.1	6	1.2	50	4	1.45	●	4	R0.2	12	4	60	6	3.85	●
1.5	R0.1	8	1.2	50	4	1.45	●	4	R0.2	16	4	60	6	3.85	●
1.5	R0.1	10	1.2	50	4	1.45	●	4	R0.2	20	4	70	6	3.85	●
1.5	R0.1	12	1.2	50	4	1.45	●	4	R0.2	30	4	80	6	3.85	●
1.5	R0.1	16	1.2	50	4	1.45	●	4	R0.2	40	4	90	6	3.85	●
1.5	R0.2	4	1.2	50	4	1.45	●	4	R0.3	12	4	60	6	3.85	●
1.5	R0.2	6	1.2	50	4	1.45	●	4	R0.3	16	4	60	6	3.85	●
1.5	R0.2	8	1.2	50	4	1.45	●	4	R0.3	20	4	70	6	3.85	●
1.5	R0.2	12	1.2	50	4	1.45	●	4	R0.3	30	4	80	6	3.85	●
1.5	R0.2	16	1.2	50	4	1.45	●	4	R0.3	40	4	90	6	3.85	●
1.5	R0.3	4	1.2	50	4	1.45	●	4	R0.5	12	4	60	6	3.85	●
1.5	R0.3	6	1.2	50	4	1.45	●	4	R0.5	16	4	60	6	3.85	●
1.5	R0.3	8	1.2	50	4	1.45	●	4	R0.5	20	4	70	6	3.85	●
1.5	R0.3	12	1.2	50	4	1.45	●	4	R0.5	30	4	80	6	3.85	●
1.5	R0.3	16	1.2	50	4	1.45	●	4	R0.5	40	4	90	6	3.85	●
2	R0.1	6	1.6	50	4	1.95	●	4	R1	12	4	60	6	3.85	●
2	R0.1	8	1.6	50	4	1.95	●	4	R1	16	4	60	6	3.85	●
2	R0.1	12	1.6	50	4	1.95	●	4	R1	20	4	70	6	3.85	●
2	R0.1	16	1.6	50	4	1.95	●	4	R1	30	4	80	6	3.85	●
2	R0.1	20	1.6	60	4	1.95	●	4	R1	40	4	90	6	3.85	●
2	R0.2	6	1.6	50	4	1.95	●	5	R0.2	20	5	70	6	4.85	●
2	R0.2	8	1.6	50	4	1.95	●	5	R0.2	40	5	90	6	4.85	●
2	R0.2	12	1.6	50	4	1.95	●	5	R0.3	20	5	70	6	4.85	●
2	R0.2	16	1.6	50	4	1.95	●	5	R0.3	40	5	90	6	4.85	●
2	R0.2	20	1.6	60	4	1.95	●	5	R0.5	20	5	70	6	4.85	●
2	R0.3	6	1.6	50	4	1.95	●	5	R0.5	40	5	90	6	4.85	●
2	R0.3	8	1.6	50	4	1.95	●	5	R1	20	5	70	6	4.85	●
2	R0.3	12	1.6	50	4	1.95	●	5	R1	40	5	90	6	4.85	●
2	R0.3	16	1.6	50	4	1.95	●	6	R0.2	36	6	80	6	5.85	●
2	R0.3	20	1.6	60	4	1.95	●	6	R0.2	54	6	100	6	5.85	●
2	R0.5	6	1.6	50	4	1.95	●	6	R0.3	36	6	80	6	5.85	●
2	R0.5	8	1.6	50	4	1.95	●	6	R0.3	54	6	100	6	5.85	●
2	R0.5	12	1.6	50	4	1.95	●	6	R0.5	36	6	80	6	5.85	●
2	R0.5	16	1.6	50	4	1.95	●	6	R0.5	54	6	100	6	5.85	●
2	R0.5	20	1.6	60	4	1.95	●	6	R1	36	6	80	6	5.85	●
3	R0.1	8	2.5	50	6	2.85	●	6	R1	54	6	100	6	5.85	●
3	R0.1	12	2.5	50	6	2.85	●								
3	R0.1	16	2.5	60	6	2.85	●								
3	R0.1	20	2.5	60	6	2.85	●								
3	R0.1	25	2.5	70	6	2.85	●								
3	R0.1	30	2.5	70	6	2.85	●								
3	R0.2	8	2.5	50	6	2.85	●								
3	R0.2	12	2.5	50	6	2.85	●								
3	R0.2	16	2.5	60	6	2.85	●								
3	R0.2	20	2.5	60	6	2.85	●								
3	R0.2	25	2.5	70	6	2.85	●								
3	R0.2	30	2.5	70	6	2.85	●								
3	R0.3	8	2.5	50	6	2.85	●								

F693TX 切削條件參考表

Recommended Milling Conditions

Side Milling 側面切削

被削材 Work Material		GR.5 硬化鋼 Hardened Steel (38~48HRC)				GR.6 硬化鋼 Hardened Steel (48~56HRC)				GR.7 硬化鋼 Hardened Steel (56~68HRC)			
型號 Code No.	刃徑×頸長 Dc×Ll	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	ap (mm)	ae (mm)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	ap (mm)	ae (mm)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	ap (mm)	ae (mm)
F693TX	1×4	13,800	1,310	0.039	0.270	12,000	1,070	0.031	0.243	8,500	640	0.015	0.243
F693TX	1×6	11,300	1,040	0.021	0.216	9,800	860	0.016	0.209	7,000	510	0.01	0.108
F693TX	1×8	9,800	780	0.02	0.189	8,500	720	0.012	0.16	6,100	420	0.008	0.094
F693TX	1×10	8,800	510	0.011	0.126	7,600	510	0.009	0.1	5,400	350	0.006	0.05
F693TX	1×12	8,000	450	0.01	0.1	7,000	450	0.005	0.05	5,000	300	0.003	0.03
F693TX	1.5×4	13,200	1,360	0.054	0.054	13,200	1,280	0.042	0.495	10,100	700	0.033	0.292
F693TX	1.5×6	11,600	1,280	0.041	0.486	10,600	1,210	0.038	0.445	8,100	460	0.025	0.202
F693TX	1.5×8	10,200	1,080	0.037	0.378	9,300	1,020	0.031	0.346	7,100	390	0.015	0.157
F693TX	1.5×10	9,500	9,000	0.032	0.35	8,800	800	0.03	0.32	6,500	350	0.013	0.15
F693TX	1.5×12	8,500	830	0.029	0.324	7,800	780	0.026	0.297	5,900	300	0.01	0.162
F693TX	1.5×16	7,400	670	0.018	0.216	6,800	600	0.014	0.198	5,100	230	0.005	0.108
F693TX	2×6	12,800	1,280	0.064	0.648	12,000	1,200	0.06	0.729	9,700	700	0.028	0.324
F693TX	2×8	11,200	1,160	0.058	0.612	10,400	1,100	0.055	0.648	8,400	600	0.026	0.288
F693TX	2×12	9,100	1,030	0.046	0.405	8,500	960	0.044	0.405	6,900	420	0.018	0.180
F693TX	2×16	7,800	860	0.042	0.283	7,300	700	0.039	0.315	5,900	270	0.016	0.157
F693TX	2×20	7,000	800	0.025	0.198	6,600	650	0.024	0.198	5,300	290	0.007	0.116
F693TX	3×8	12,500	2,530	0.105	0.7	11,800	2,200	0.07	0.7	9,900	810	0.047	0.50
F693TX	3×12	10,500	2,020	0.084	0.670	10,000	1,950	0.052	0.67	8,100	660	0.037	0.5
F693TX	3×16	9,200	1,680	0.064	0.634	8,800	1,600	0.04	0.63	7,100	570	0.027	0.378
F693TX	3×20	8,400	1,540	0.058	0.580	7,900	1,490	0.036	0.58	6,300	550	0.022	0.319
F693TX	3×25	7,500	1,350	0.05	0.4	7,000	1,100	0.025	0.4	6,000	450	0.01	0.2
F693TX	3×30	7,000	1,260	0.04	0.38	6,500	1,230	0.015	0.38	5,400	390	0.007	0.144
F693TX	4×12	8,500	1,400	0.1	1.0	7,100	1,350	0.078	1.08	6,000	760	0.051	0.76
F693TX	4×16	7,900	1,370	0.091	1.0	6,600	1,330	0.071	1.0	5,600	740	0.043	0.7
F693TX	4×20	6,200	1,200	0.06	0.8	5,200	1,120	0.047	0.8	4,500	630	0.022	0.56
F693TX	4×30	5,500	960	0.037	0.648	4,600	920	0.029	0.648	3,900	600	0.011	0.388
F693TX	4×40	4,125	720	0.027	0.486	3,450	690	0.021	0.486	2,925	450	0.008	0.291
F693TX	5×20	5,800	1,730	0.18	2.358	3,500	1,000	0.1	1.31	3,000	760	0.07	1.31
F693TX	5×40	3,000	800	0.1	1.35	1,700	480	0.1	0.75	1,400	360	0.04	0.5
F693TX	6×36	4,500	1,290	0.158	2.268	2,600	740	0.158	1.260	2,200	580	0.066	1.26
F693TX	6×54	2,000	510	0.05	0.9	1,200	330	0.04	0.5	1,000	240	0.02	0.3



1. Please work with good rigidity / high precision facilities and collet chuck.
 2. Please choose proper cutting fluid.
 3. The cutting data is reference value only. Please adjust it according to your real working conditions.
 4. If RPM is lower the reference value, the Feed rate [fz] and RPM should be reduced by the same proportion.
 5. If vibration occurs during cutting, please reduce cutting parameter.
1. 請使用剛性好、精度高的設備和夾具。
 2. 請選擇適用於工件材料的切削液。
 3. 此切削條件表中的數值為切削條件的基準值，實際加工時，請考慮加工形狀、目的、使用機台等因素，對切削條件進行調整。
 4. 如果機台轉速低於表中所列數值，則進給速度應與轉速按同一比例降低。
 5. 切削加工時如果發生振顫，請降低切削條件。