

F690TX 極超微粒鎢鋼塗層深溝環面R角立銑刀

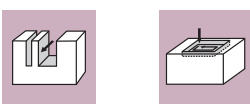
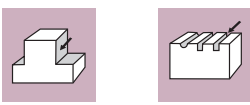
Toric End Mills For Rib Processing With Corner Radius

Code No. F690TX-Dc×R×L1

SMG Carbide **AlTiSiN TX**



Type of Operation



Work Material

P	H	M	K	N	S
●	●	●	○	○	○

P 鋼鐵 Steel

H 硬化鋼 <38HRC Hardened Steel

H 硬化鋼 <48HRC Hardened Steel

H 硬化鋼 <56HRC Hardened Steel

H 硬化鋼 <68HRC Hardened Steel

K 鑄鐵 Cast Iron

N 銅 Copper

Feature of product:

2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銅。



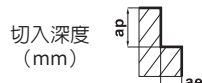
Dc	R	L1	Lc	L	d	D1	AlTiSiN	Dc	R	L1	Lc	L	d	D1	AlTiSiN
0-0.02	±0.005	mm	mm	mm	h5	mm	F690TX	0-0.02	±0.005	mm	mm	mm	h5	mm	F690TX
0.2	R0.02	0.50	15	50	4	0.18	●	0.8	R0.2	4	0.65	50	4	0.75	●
0.2	R0.02	1	0.15	50	4	0.18	●	0.8	R0.2	6	0.65	50	4	0.75	●
0.2	R0.02	2	0.15	50	4	0.18	●	0.8	R0.2	8	0.65	50	4	0.75	●
0.2	R0.05	0.50	15	50	4	0.18	●	0.8	R0.2	12	0.65	50	4	0.75	●
0.2	R0.05	1	0.15	50	4	0.18	●	1	R0.02	2	0.8	50	4	0.95	●
0.2	R0.05	2	0.15	50	4	0.18	●	1	R0.02	4	0.8	50	4	0.95	●
0.3	R0.02	1	0.25	50	4	0.28	●	1	R0.02	6	0.8	50	4	0.95	●
0.3	R0.02	2	0.25	50	4	0.28	●	1	R0.02	8	0.8	50	4	0.95	●
0.3	R0.02	3	0.25	50	4	0.28	●	1	R0.02	10	0.8	50	4	0.95	●
0.3	R0.05	1	0.25	50	4	0.28	●	1	R0.02	12	0.8	50	4	0.95	●
0.3	R0.05	2	0.25	50	4	0.28	●	1	R0.05	2	0.8	50	4	0.95	●
0.3	R0.05	3	0.25	50	4	0.28	●	1	R0.05	4	0.8	50	4	0.95	●
0.4	R0.02	1	0.3	50	4	0.37	●	1	R0.05	6	0.8	50	4	0.95	●
0.4	R0.02	2	0.3	50	4	0.37	●	1	R0.05	8	0.8	50	4	0.95	●
0.4	R0.02	3	0.3	50	4	0.37	●	1	R0.05	10	0.8	50	4	0.95	●
0.4	R0.02	4	0.3	50	4	0.37	●	1	R0.05	12	0.8	50	4	0.95	●
0.4	R0.05	1	0.3	50	4	0.37	●	1	R0.1	2	0.8	50	4	0.95	●
0.4	R0.05	2	0.3	50	4	0.37	●	1	R0.1	4	0.8	50	4	0.95	●
0.4	R0.05	3	0.3	50	4	0.37	●	1	R0.1	6	0.8	50	4	0.95	●
0.4	R0.05	4	0.3	50	4	0.37	●	1	R0.1	8	0.8	50	4	0.95	●
0.4	R0.1	1	0.3	50	4	0.37	●	1	R0.1	10	0.8	50	4	0.95	●
0.4	R0.1	2	0.3	50	4	0.37	●	1	R0.1	12	0.8	50	4	0.95	●
0.4	R0.1	3	0.3	50	4	0.37	●	1	R0.2	2	0.8	50	4	0.95	●
0.4	R0.1	4	0.3	50	4	0.37	●	1	R0.2	4	0.8	50	4	0.95	●
0.5	R0.02	1	0.4	50	4	0.46	●	1	R0.2	6	0.8	50	4	0.95	●
0.5	R0.02	2	0.4	50	4	0.46	●	1	R0.2	8	0.8	50	4	0.95	●
0.5	R0.02	3	0.4	50	4	0.46	●	1	R0.2	10	0.8	50	4	0.95	●
0.5	R0.02	4	0.4	50	4	0.46	●	1	R0.2	12	0.8	50	4	0.95	●
0.5	R0.02	5	0.4	50	4	0.46	●	1	R0.3	2	0.8	50	4	0.95	●
0.5	R0.02	6	0.4	50	4	0.46	●	1	R0.3	4	0.8	50	4	0.95	●
0.5	R0.05	1	0.4	50	4	0.46	●	1	R0.3	6	0.8	50	4	0.95	●
0.5	R0.05	2	0.4	50	4	0.46	●	1	R0.3	8	0.8	50	4	0.95	●
0.5	R0.05	3	0.4	50	4	0.46	●	1	R0.3	10	0.8	50	4	0.95	●
0.5	R0.05	4	0.4	50	4	0.46	●	1	R0.3	12	0.8	50	4	0.95	●
0.5	R0.05	5	0.4	50	4	0.46	●	1.2	R0.2	6	1	50	4	1.15	●
0.5	R0.05	6	0.4	50	4	0.46	●	1.2	R0.2	8	1	50	4	1.15	●
0.5	R0.1	1	0.4	50	4	0.46	●	1.2	R0.2	10	1	50	4	1.15	●
0.5	R0.1	2	0.4	50	4	0.46	●	1.5	R0.1	4	1.2	50	4	1.45	●
0.5	R0.1	3	0.4	50	4	0.46	●	1.5	R0.1	6	1.2	50	4	1.45	●
0.5	R0.1	4	0.4	50	4	0.46	●	1.5	R0.1	8	1.2	50	4	1.45	●
0.5	R0.1	5	0.4	50	4	0.46	●	1.5	R0.1	10	1.2	50	4	1.45	●
0.5	R0.1	6	0.4	50	4	0.46	●	1.5	R0.1	12	1.2	50	4	1.45	●
0.6	R0.02	2	0.5	50	4	0.55	●	1.5	R0.1	16	1.2	50	4	1.45	●
0.6	R0.02	4	0.5	50	4	0.55	●	1.5	R0.2	4	1.2	50	4	1.45	●
0.6	R0.02	6	0.5	50	4	0.55	●	1.5	R0.2	6	1.2	50	4	1.45	●
0.6	R0.02	8	0.5	50	4	0.55	●	1.5	R0.2	8	1.2	50	4	1.45	●
0.6	R0.05	2	0.5	50	4	0.55	●	1.5	R0.2	10	1.2	50	4	1.45	●
0.6	R0.05	4	0.5	50	4	0.55	●	1.5	R0.2	12	1.2	50	4	1.45	●
0.6	R0.05	6	0.5	50	4	0.55	●	1.5	R0.2	16	1.2	50	4	1.45	●
0.6	R0.05	8	0.5	50	4	0.55	●	1.5	R0.3	4	1.2	50	4	1.45	●
0.6	R0.1	2	0.5	50	4	0.55	●	1.5	R0.3	6	1.2	50	4	1.45	●
0.6	R0.1	4	0.5	50	4	0.55	●	1.5	R0.3	8	1.2	50	4	1.45	●
0.6	R0.1	6	0.5	50	4	0.55	●	1.5	R0.3	10	1.2	50	4	1.45	●
0.6	R0.1	8	0.5	50	4	0.55	●	1.5	R0.3	12	1.2	50	4	1.45	●
0.8	R0.02	2	0.65	50	4	0.75	●	1.5	R0.3	16	1.2	50	4	1.45	●
0.8	R0.02	4	0.65	50	4	0.75	●	2	R0.1	4	1.6	50	4	1.95	●
0.8	R0.02	6	0.65	50	4	0.75	●	2	R0.1	6	1.6	50	4	1.95	●
0.8	R0.02	8	0.65	50	4	0.75	●	2	R0.1	8	1.6	50	4	1.95	●
0.8	R0.02	12	0.65	50	4	0.75	●	2	R0.1	10	1.6	50	4	1.95	●
0.8	R0.05	2	0.65	50	4	0.75	●	2	R0.1	12	1.6	50	4	1.95	●
0.8	R0.05	4	0.65	50	4	0.75	●	2	R0.1	16	1.6	50	4	1.95	●
0.8	R0.05	6	0.65	50	4	0.75	●	2	R0.1	20	1.6	60	4	1.95	●
0.8	R0.05	8	0.65	50	4	0.75	●	2	R0.2	4	1.6	50	4	1.95	●
0.8	R0.05	12	0.65	50	4	0.75	●	2	R0.2	6	1.6	50	4	1.95	●
0.8	R0.1	2	0.65	50	4	0.75	●	2	R0.2	8	1.6	50	4	1.95	●
0.8	R0.1	4	0.65	50	4	0.75	●	2	R0.2	10	1.6	50	4	1.95	●
0.8	R0.1	6	0.65	50	4	0.75	●	2	R0.2	12	1.6	50	4	1.95	●
0.8	R0.1	8	0.65	50	4	0.75	●	2	R0.2	16	1.6	50	4	1.95	●
0.8	R0.1	12	0.65	50	4	0.75	●	2	R0.2	20	1.6	60	4	1.95	●
0.8	R0.2	2	0.65	50	4	0.75	●	2	R0.3	4	1.6	50	4	1.95	●

F690TX 切削條件參考表

Recommended Milling Conditions

Side Milling 側面切削

被削材 Work Material	型號 Code No.	刃徑×類長 Dc×Ll	GR.1 碳鋼 / GR.2 低合金鋼 / GR.3 高合金鋼 Carbon Steel / Low-alloyed Steel / Hi-alloyed Steel (~24HRC) (~30HRC)				GR.4 硬化鋼 / GR.5 硬化鋼 Hardened Steel / Hardened Steel (38~48HRC) (30~38HRC)				GR.6 硬化鋼 Hardened Steel (48~56HRC)				GR.7 硬化鋼 Hardened Steel (56~68HRC)			
			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)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	ap (mm)	ae (mm)
F690TX	0.2×0.5	38,500	550	0.01	0.05	35000	500	0.01	0.05	31500	400	0.01	0.05	47775	30	0.01	0.05	
F690TX	0.2×1	38,115	528	0.008	0.03	34650	480	0.008	0.03	31185	384	0.008	0.03	39812.5	20	0.008	0.03	
F690TX	0.2×2	37,026	495	0.005	0.02	33660	450	0.005	0.02	30294	360	0.005	0.02	31850	10	0.005	0.02	
F690TX	0.3×1	37,785	638	0.015	0.07	34350	580	0.015	0.07	30915	464	0.015	0.07	31850	30	0.015	0.07	
F690TX	0.3×2	36,740	605	0.012	0.06	33400	550	0.012	0.06	30060	440	0.012	0.06	26541.667	20	0.012	0.06	
F690TX	0.3×3	30,448	572	0.01	0.05	27680	520	0.01	0.05	24912	416	0.01	0.05	21233.333	10	0.01	0.05	
F690TX	0.4×1	36,960	704	0.02	0.1	33600	640	0.02	0.1	30240	512	0.02	0.1	23887.5	50	0.02	0.1	
F690TX	0.4×2	35,750	682	0.018	0.08	32500	620	0.018	0.08	29250	496	0.018	0.08	19906.25	45	0.018	0.08	
F690TX	0.4×3	29,480	660	0.015	0.06	26800	600	0.015	0.06	24120	480	0.015	0.06	15925	40	0.015	0.06	
F690TX	0.4×4	26,785	638	0.01	0.05	24350	580	0.01	0.05	21915	464	0.01	0.05	14332.5	30	0.01	0.05	
F690TX	0.5×1	35,200	748	0.03	0.12	32,000	680	0.03	0.12	28800	544	0.03	0.12	21500	70	0.03	0.12	
F690TX	0.5×2	35,112	730	0.029	0.117	31,920	664	0.029	0.117	28728	531	0.026	0.117	20,100	68	0.011	0.117	
F690TX	0.5×3	28,072	563	0.023	0.113	25,520	512	0.023	0.113	22968	410	0.020	0.113	16,100	52	0.008	0.113	
F690TX	0.5×4	25,608	484	0.016	0.108	23,280	440	0.016	0.108	20952	352	0.014	0.108	14,600	45	0.006	0.108	
F690TX	0.5×5	23,232	414	0.011	0.099	21,120	376	0.011	0.099	19008	301	0.010	0.099	13,300	39	0.004	0.099	
F690TX	0.5×6	21,296	352	0.007	0.090	19,360	320	0.007	0.090	17424	256	0.006	0.090	12,200	33	0.003	0.090	
F690TX	0.6×2	25,168	449	0.010	0.219	22,880	408	0.010	0.219	20592	326	0.010	0.219	15,200	43	0.004	0.219	
F690TX	0.6×4	17,952	290	0.005	0.104	16,320	264	0.005	0.104	14688	211	0.005	0.104	10,800	28	0.002	0.1035	
F690TX	0.6×6	14,784	220	0.003	0.099	13,440	200	0.003	0.099	12096	160	0.003	0.099	8,900	21	0.001	0.099	
F690TX	0.6×8	13,695	198	0.003	0.05	12,450	180	0.003	0.08	11205	144	0.003	0.08	10,617	20	0.001	0.08	
F690TX	0.8×4	15,400	396	0.014	0.117	14,000	360	0.014	0.117	12600	288	0.015	0.117	10,200	41	0.007	0.117	
F690TX	0.8×6	12,848	299	0.008	0.108	11,680	272	0.008	0.108	10512	218	0.008	0.108	8,500	30	0.004	0.108	
F690TX	0.8×8	11,264	238	0.005	0.090	10,240	216	0.005	0.090	9216	173	0.004	0.090	7,600	20	0.002	0.090	
F690TX	0.8×12	10,780	220	0.003	0.08	9,800	200	0.003	0.08	8820	160	0.003	0.08	6,370	15	0.001	0.05	
F690TX	1×2	14,014	770	0.03	0.9	12,740	700	0.03	0.9	11466	560	0.03	0.9	5,308	90	0.02	0.3	
F690TX	1×4	12,144	722	0.030	0.870	11,040	656	0.030	0.870	9936	525	0.035	0.270	8,500	80	0.017	0.270	
F690TX	1×6	9,944	572	0.021	0.216	9,040	520	0.021	0.216	8136	416	0.024	0.216	7,000	64	0.012	0.216	
F690TX	1×8	8,624	431	0.016	0.189	7,840	392	0.016	0.189	7056	314	0.018	0.189	6,100	48	0.009	0.189	
F690TX	1×10	7,744	282	0.011	0.126	7,040	256	0.011	0.126	6336	205	0.013	0.126	5,400	32	0.006	0.126	
F690TX	1×12	7,128	185	0.008	0.072	6,480	168	0.008	0.072	5832	134	0.009	0.072	5,000	21	0.004	0.072	
F690TX	1.2×6	8,272	510	0.018	0.090	7,520	464	0.018	0.090	6768	371	0.022	0.090	6,200	60	0.011	0.090	
F690TX	1.2×8	8,272	510	0.018	0.090	7,520	464	0.018	0.090	6768	371	0.022	0.090	6,200	60	0.011	0.090	
F690TX	1.2×10	5,984	326	0.007	0.072	5,440	296	0.007	0.072	4896	237	0.008	0.072	4,500	38	0.004	0.072	
F690TX	1.5×4	11,616	959	0.045	0.450	10,560	872	0.045	0.450	9504	698	0.060	0.450	9,200	124	0.033	0.450	
F690TX	1.5×6	9,328	906	0.041	0.405	8,480	824	0.041	0.405	7632	659	0.055	0.405	7,400	117	0.030	0.405	
F690TX	1.5×8	8,184	766	0.034	0.315	7,440	696	0.034	0.315	6696	557	0.045	0.315	6,500	99	0.025	0.315	
F690TX	1.5×10	7,480	660	0.032	0.288	6,800	600	0.032	0.288	6120	480	0.042	0.288	6,000	85	0.023	0.288	
F690TX	1.5×12	6,864	590	0.029	0.270	6,240	536	0.029	0.270	5616	429	0.038	0.270	5,400	76	0.021	0.270	
F690TX	1.5×16	5,984	449	0.015	0.180	5,440	408	0.015	0.180	4896	326	0.020	0.180	4,700	58	0.011	0.180	
F690TX	2×4	12,650	935	0.05	0.8	11,500	850	0.05	0.8	10350	680	0.05	0.8	11,148	140	0.04	0.85	
F690TX	2×6	11,264	898	0.043	0.810	10,240	816	0.043	0.810	9216	653	0.060	0.810	9,700	133	0.036	0.810	
F690TX	2×8	9,856	818	0.039	0.720	8,960	744	0.039	0.720	8064	595	0.055	0.720	8,400	121	0.033	0.720	
F690TX	2×10	8,800	766	0.033	0.585	8,000	696	0.033	0.585	7200	557	0.047	0.585	7,600	113	0.028	0.585	
F690TX	2×12	8,008	722	0.031	0.450	7,280	656	0.031	0.450	6552	525	0.044	0.450	6,900	107	0.026	0.450	



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.

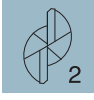
1. 請使用剛性好、精度高的設備和夾具。
2. 請選擇適用於工件材料的切削液。
3. 此切削條件表中的數值為切削條件的基準值，實際加工時，請考慮加工形狀、目的、使用機台等因素，對切削條件進行調整。
4. 如果機台轉速低於表中所列數值，則進給速度應與轉速按同一比例降低。
5. 切削加工時如果發生振顫，請降低切削條件。

F690TX 極超微粒鎢鋼塗層深溝環面R角立銑刀

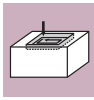
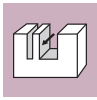
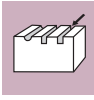
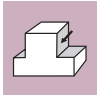
Toric End Mills For Rib Processing With Corner Radius

SMG
Carbide

AlTiSiN
TX



Type of Operation



Work Material

P	H	M	K	N	S
●	●	○	○	○	○

P 鋼鐵
Steel

H 硬化鋼 <38HRC
Hardened Steel

H 硬化鋼 <48HRC
Hardened Steel

H 硬化鋼 <56HRC
Hardened Steel

H 硬化鋼 <68HRC
Hardened Steel

K 鑄鐵
Cast Iron

N 銅
Copper

Feature of product:

2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銅。



Code No. F690TX-Dc×R×L1

Dc	R	L1	Lc	L	d	D1	AlTiSiN	Dc	R	L1	Lc	L	d	D1	AlTiSiN
$\begin{matrix} 0 \\ -0.02 \end{matrix}$	± 0.005	mm	mm	mm	h5	mm	F690TX	$\begin{matrix} 0 \\ -0.02 \end{matrix}$	± 0.005	mm	mm	mm	h5	mm	F690TX
2	R0.3	6	1.6	50	4	1.95	●	4	R0.5	8	4	60	6	3.85	●
2	R0.3	8	1.6	50	4	1.95	●	4	R0.5	12	4	60	6	3.85	●
2	R0.3	10	1.6	50	4	1.95	●	4	R0.5	16	4	60	6	3.85	●
2	R0.3	12	1.6	50	4	1.95	●	4	R0.5	20	4	70	6	3.85	●
2	R0.3	16	1.6	50	4	1.95	●	4	R0.5	25	4	70	6	3.85	●
2	R0.3	20	1.6	60	4	1.95	●	4	R0.5	30	4	80	6	3.85	●
2	R0.5	4	1.6	50	4	1.95	●	4	R0.5	40	4	90	6	3.85	●
2	R0.5	6	1.6	50	4	1.95	●	4	R1	8	4	60	6	3.85	●
2	R0.5	8	1.6	50	4	1.95	●	4	R1	12	4	60	6	3.85	●
2	R0.5	10	1.6	50	4	1.95	●	4	R1	16	4	60	6	3.85	●
2	R0.5	12	1.6	50	4	1.95	●	4	R1	20	4	70	6	3.85	●
2	R0.5	16	1.6	50	4	1.95	●	4	R1	25	4	70	6	3.85	●
2	R0.5	20	1.6	60	4	1.95	●	4	R1	30	4	80	6	3.85	●
3	R0.1	6	2.5	50	6	2.85	●	4	R1	40	4	90	6	3.85	●
3	R0.1	8	2.5	50	6	2.85	●	5	R0.2	20	4	70	6	4.85	●
3	R0.1	12	2.5	50	6	2.85	●	5	R0.2	40	4	90	6	4.85	●
3	R0.1	16	2.5	60	6	2.85	●	5	R0.3	20	4	70	6	4.85	●
3	R0.1	20	2.5	60	6	2.85	●	5	R0.3	40	4	90	6	4.85	●
3	R0.1	25	2.5	70	6	2.85	●	5	R0.5	20	4	70	6	4.85	●
3	R0.1	30	2.5	70	6	2.85	●	5	R0.5	40	4	90	6	4.85	●
3	R0.2	6	2.5	50	6	2.85	●	5	R1	20	4	70	6	4.85	●
3	R0.2	8	2.5	50	6	2.85	●	5	R1	40	4	90	6	4.85	●
3	R0.2	12	2.5	50	6	2.85	●	6	R0.2	12	5	60	6	5.85	●
3	R0.2	16	2.5	60	6	2.85	●	6	R0.2	18	5	60	6	5.85	●
3	R0.2	20	2.5	60	6	2.85	●	6	R0.2	24	5	70	6	5.85	●
3	R0.2	25	2.5	70	6	2.85	●	6	R0.2	36	5	80	6	5.85	●
3	R0.2	30	2.5	70	6	2.85	●	6	R0.2	54	5	100	6	5.85	●
3	R0.3	6	2.5	50	6	2.85	●	6	R0.3	12	5	60	6	5.85	●
3	R0.3	8	2.5	50	6	2.85	●	6	R0.3	18	5	60	6	5.85	●
3	R0.3	12	2.5	50	6	2.85	●	6	R0.3	24	5	70	6	5.85	●
3	R0.3	16	2.5	60	6	2.85	●	6	R0.3	36	5	80	6	5.85	●
3	R0.3	20	2.5	60	6	2.85	●	6	R0.3	54	5	100	6	5.85	●
3	R0.3	25	2.5	70	6	2.85	●	6	R0.5	12	5	60	6	5.85	●
3	R0.3	30	2.5	70	6	2.85	●	6	R0.5	18	5	60	6	5.85	●
3	R0.5	6	2.5	50	6	2.85	●	6	R0.5	24	5	70	6	5.85	●
3	R0.5	8	2.5	50	6	2.85	●	6	R0.5	36	5	80	6	5.85	●
3	R0.5	12	2.5	50	6	2.85	●	6	R0.5	54	5	100	6	5.85	●
3	R0.5	16	2.5	60	6	2.85	●	6	R1	12	5	60	6	5.85	●
3	R0.5	20	2.5	60	6	2.85	●	6	R1	18	5	60	6	5.85	●
3	R0.5	25	2.5	70	6	2.85	●	6	R1	24	5	70	6	5.85	●
3	R0.5	30	2.5	70	6	2.85	●	6	R1	36	5	80	6	5.85	●
4	R0.1	8	4	60	6	3.85	●	6	R1	54	5	100	6	5.85	●
4	R0.1	12	4	60	6	3.85	●								
4	R0.1	16	4	60	6	3.85	●								
4	R0.1	20	4	70	6	3.85	●								
4	R0.1	25	4	70	6	3.85	●								
4	R0.1	30	4	80	6	3.85	●								
4	R0.1	40	4	90	6	3.85	●								
4	R0.2	8	4	60	6	3.85	●								
4	R0.2	12	4	60	6	3.85	●								
4	R0.2	16	4	60	6	3.85	●								
4	R0.2	20	4	70	6	3.85	●								
4	R0.2	25	4	70	6	3.85	●								
4	R0.2	30	4	80	6	3.85	●								
4	R0.2	40	4	90	6	3.85	●								
4	R0.3	8	4	60	6	3.85	●								
4	R0.3	12	4	60	6	3.85	●								
4	R0.3	16	4	60	6	3.85	●								
4	R0.3	20	4	70	6	3.85	●								
4	R0.3	25	4	70	6	3.85	●								
4	R0.3	30	4	80	6	3.85	●								
4	R0.3	40	4	90	6	3.85	●								

F690TX 切削條件參考表

Recommended Milling Conditions

Side Milling 側面切削

被削材 Work Material	型號 Code No.	刃徑×頸長 Dc×Ll	GR.1 碳鋼 / GR.2 低合金鋼 / GR.3 高合金鋼 Carbon Steel / Low-alloyed Steel / Hi-alloyed Steel (~24HRC) (~30HRC)				GR.4 硬化鋼 / GR.5 硬化鋼 Hardened Steel / Hardened Steel (38~48HRC) (30~38HRC)				GR.6 硬化鋼 Hardened Steel (48~56HRC)				GR.7 硬化鋼 Hardened Steel (56~68HRC)			
			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)	RPM 迴轉速度 (min-1)	Feed 進給速度 (mm/min)	ap (mm)	ae (mm)
F690TX	2×16		6,864	607	0.028	0.315	6,240	552	0.028	0.315	5616	442	0.039	0.315	5,900	90	0.023	0.315
F690TX	2×20		6,160	563	0.017	0.198	5,600	512	0.017	0.198	5040	410	0.024	0.198	5,300	84	0.014	0.198
F690TX	3×6		13,200	1,375	0.15	0.8	12,000	1,250	0.15	0.8	10800	1000	0.15	0.8	12,740	300	0.15	0.8
F690TX	3×8		12,320	1,329	0.15	0.72	11,200	1,208	0.15	0.72	10080	966	0.15	0.72	12,000	270	0.1	0.72
F690TX	3×12		9,240	1,012	0.105	0.670	8,400	920	0.105	0.670	7560	736	0.105	0.670	9,000	200	0.075	0.670
F690TX	3×16		8,096	845	0.081	0.630	7,360	768	0.081	0.630	6624	614	0.081	0.630	7,900	173	0.054	0.630
F690TX	3×20		7,392	774	0.073	0.580	6,720	704	0.073	0.580	6048	563	0.073	0.580	7,100	150	0.044	0.580
F690TX	3×25		6,600	722	0.065	0.495	6,000	656	0.065	0.495	5400	525	0.065	0.495	6,400	146	0.043	0.495
F690TX	3×30		6,160	634	0.050	0.380	5,600	576	0.050	0.380	5040	461	0.050	0.380	6,000	118	0.029	0.360
F690TX	4×8		8,800	990	0.1	1.2	8,000	900	0.1	1.2	7200	720	0.1	1.2	7,963	230	0.09	1.3
F690TX	4×12		7,832	950	0.083	1.150	7,120	864	0.083	1.150	6408	691	0.120	1.150	6,400	215	0.085	1.150
F690TX	4×16		6,952	906	0.065	1.000	6,320	824	0.065	1.000	5688	659	0.100	1.000	5,600	205	0.065	1.000
F690TX	4×20		6,072	871	0.054	0.900	5,520	792	0.054	0.900	4968	634	0.080	0.900	4,900	198	0.058	0.900
F690TX	4×25		5,456	792	0.043	0.8	4,960	720	0.043	0.8	4464	576	0.065	0.8	4,500	175	0.043	0.8
F690TX	4×30		4,840	634	0.027	0.648	4,400	576	0.027	0.648	3960	461	0.04	0.6	3,900	144	0.029	0.648
F690TX	4×40		4,048	317	0.007	0.315	3,680	288	0.007	0.315	3312	230	0.01	0.315	3,300	72	0.007	0.315
F690TX	5×20		7,007	935	0.05	0.9	6,370	850	0.05	0.9	5733	680	0.05	0.9	6,370	250	0.06	0.9
F690TX	5×40		5,606	770	0.01	0.3	5,096	700	0.01	0.3	4586	560	0.01	0.3	5,733	90	0.03	0.3
F690TX	6×12		5,830	946	0.1	1.0	5,300	860	0.1	1.0	4770	688	0.1	1.0	5,308	200	0.1	1.0
F690TX	6×18		5,170	880	0.05	0.9	4,700	800	0.05	0.9	4230	640	0.05	0.9	4,778	160	0.05	0.9
F690TX	6×24		4,620	770	0.04	0.8	4,200	700	0.04	0.8	3780	560	0.04	0.8	4,247	130	0.04	0.8
F690TX	6×36		4,070	517	0.02	0.6	3,700	470	0.02	0.6	3330	376	0.02	0.6	3,716	120	0.02	0.6
F690TX	6×54		3,498	275	0.01	0.3	3,180	250	0.01	0.3	2862	200	0.01	0.3	3,185	90	0.01	0.3

切入深度
(mm)



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。