## **RECOMMENDED CUTTING CONDITIONS**

		Insert		Cutting Speed	Width of Cut	Depth of Cut		Feed p	Feed per Tooth (inch/tooth)			
	Work Material	Grade	Breaker	VC (SEM)	ae (inch)	ap (inch)	Cutting Edge Diameter <b>DC</b>					
					(	(	φ.787"	¢1.000"	φ1.250"	¢1.500"	\$\$\phi_2.000_\$5.000"	
Ν						—.197	≤ .002	≤ .014	≤ .014	≤ .016	≤ .016	
				3300		.197—.295	≤ .002	≤ .013	≤ .013	≤ .015	≤ .015	
				(660-9800)	—.25 DC	.295—.393	≤ .002	≤ .012	≤ .012	≤ .014	≤ .014	
				,		.393—.492	≤ .002	≤ .011	≤ .011	≤ .013	≤ .013	
						.492—.571	≤ .002	≤ .010	≤ .010	≤ .012	≤ .012	
						—.197	≤ .002	≤ .014	≤ .014	≤ .014	≤ .016	
				2200		.197—.295	≤ .002	≤ .013	≤ .013	≤ .013	≤ .015	
				(660-9800)	—.5 DC	.295—.393	-	≤ .012	≤ .012	≤ .012	≤ .014	
				(000 0000)		.393—.492	—	≤ .010	≤ .011	≤ .011	≤ .013	
	Aluminum Alloy	LC15TF	GL			.492—.571	_	≤ .008	≤ .010	≤ .010	≤ .012	
	Si<5%	MP9120	GM			—.197	≤ .002	≤ .012	≤ .012	≤ .012	≤ .014	
						<u>.</u> 197—.295	≤ .002	≤ .011	≤ .011	≤ .011	≤ .013	
				3300 (660–9800)	—.75 DC	.295—.393	_	≤ .010	≤ .010	≤ .010	≤ .012	
					))	.393—.492	_	≤ .009	≤ .009	≤ .009	≤ .011	
						.492—.571	_	≤ .008	≤ .008	≤ .008	≤ .010	
				3300 (660—9800)		—.197	≤ .002	≤ .010	≤ .010	≤ .012	≤ .014	
						.197—.295 ≤ .002 ≤ .00	≤ .009	≤ .009	≤ .011	≤ .013		
					DC(Slot)	.295—.393	≤.002 ≤.009 — ≤.008	≤ .008	≤ .010	≤ .012		
						.393—.492	_	_	≤ .007	≤ .009	≤ .011	
						.492—.571	_	_	≤ .006	≤ .008	≤ .010	
						<del>-</del> .197	≤ .002	≤ .014	≤ .014	≤ .016	≤ .016	
				660 (660 0800)	—.25 DC	.197—.295	≤ .002	≤ .013	≤ .013	≤ .015	≤ .015	
						.295—.393	≤ .002	≤ .012	≤ .012	≤ .014	≤ .014	
				(000-9000)		.393—.492	≤ .002	≤ .011	≤ .011	≤ .013	≤ .013	
						.492—.571	≤ .002	≤ .010	≤ .010	≤ .012	≤ .012	
						—.197	≤ .002	≤ .014	≤ .014	≤ .014	≤ .016	
						.197—.295	≤ .002	≤ .013	≤ .013	≤ .013	≤ .015	
				660	—.5 DC	.295—.393	_	≤ .012	≤ .012	≤ .012	≤ .014	
				(000–9800)		.393—.492	_	≤ .010	≤ .011	≤ .011	≤ .013	
	Aluminum Alloy	LC15TF	GL			.492—.571	_	≤ .008	≤ .010	≤ .010	≤ .012	
	5% ≤ Si ≤ 10%	TF15	GM			—.197	≤ .002	≤ .012	≤ .012	≤ .012	≤ .014	
	Si>10%	WF 5120				.197—.295	≤ .002	≤ .011	≤ .011	≤ .011	≤ .013	
				660	—.75 DC	.295—.393	_	≤ .010	≤ .010	≤ .010	≤ .012	
				(660—9800)		.393—.492	_	≤.009	≤ .009	≤.009	≤ .011	
						.492571	_	≤.008	≤ .008	≤ .008	≤ .010	
						197	≤ .002	≤ .010	≤ .010	≤ .012	≤ .014	
						.197—.295	≤ .002	≤.009	≤ .009	≤ .011	≤ .013	
				660	DC(Slot)	.295393	_	≤.008	≤.008	≤ .010	≤.012	
				(660—9800)	20(000)	393-492	_		< 007	< 0.09	< 011	
						492-571	_	_	< 006	< 008	< 010	
						-32371	_		<u> </u>	2.000	2.010	



		Insert Grade	Breaker	Cutting Speed vc (SFM)	Width of Cut ae	Depth of Cut	Feed per Tooth (inch/tooth)				
	Work Material					ap (inch)	Cutting Edge Diameter DC				
					(11011)		¢.787"	¢1.000"	¢1.250"	φ1.500"	\$\$\phi_2.000 -\$\$.000
S				100		—.197	≤ .002	≤ .004	≤ .004	≤ .004	≤ .004
					.197—.295	≤ .002	≤ .004	≤ .004	≤ .004	≤ .004	
				130 (100—200)	—.25 DC	.295—.393	≤ .002	≤ .004	≤ .004	≤ .004	≤ .004
				(100 200)		.393—.492	≤ .002	≤ .004	≤ .004	≤ .004	≤ .004
						.492—.571	≤ .002	≤ .004	≤ .004	≤ .004	≤ .004
				120	5 DC	—.197	≤ .002	≤ .003	≤ .004	≤ .004	≤ .004
						.197—.295	≤ .002	≤ .003	≤ .004	≤ .004	≤ .004
				130 (100-200)		.295—.393	I	≤ .003	≤ .004	≤ .004	≤ .004
				(100 200)		.393—.492	-	≤ .003	≤ .004	≤ .004	≤ .004
		MD0120	GM			.492—.571	1	≤ .003	≤ .004	≤ .004	≤ .004
	Intanium Alloy	WF9120	GIVI	400		—.197	≤ .002	≤ .002	≤ .003	≤ .004	≤ .004
						.197—.295	≤ .002	≤ .002	≤ .003	≤ .004	≤ .004
				(100-200)	—.75 DC	.295—.393	-	≤ .002	≤ .003	≤ .004	≤ .004
				(100 200)		.393—.492	1	≤ .002	≤ .003	≤ .004	≤ .004
						.492—.571	1	≤ .002	≤ .003	≤ .004	≤ .004
						—.197	≤ .002	≤ .002	≤ .002	≤ .002	≤ .002
				100		.197—.295	≤ .002	≤ .002	≤ .002	≤ .002	≤ .002
				(100-200)	DC(Slot)	295—.393	-	≤ .002	≤ .002	≤ .002	≤ .002
				(100 200)	100 2007	.393—.492	_	≤ .002	≤ .002	≤ .002	≤ .002
						492571	-	≤ .002	≤ .002	≤ .002	≤ .002

(Note 1) The above cutting conditions are determined based on high rigidity of workpiece and machine,

where no vibration occurred. If vibrations occur make adjustments according to the machining conditions.

(Note 2) Vibrations may occur in the following conditions.

• When using long tool overhang.

· When pocket machining corner radii.

• When the workpiece has poor clamping rigidity or when the machine rigidity or workpiece rigidity is low,

vibrations can occur easily, if so, reduce cutting conditions such as width and depth of cut and feed per tooth.

### **OPERATIONAL GUIDANCE**

Only use the inserts and parts provided by Mitsubishi Materials with this tool. Use of the correct insert clamp screws is especially important to ensure overall tool safety. Do not use damaged or worn clamp screws.

Cutting Edge Diameter <b>DC</b> (inch)	ø.787"	ø1.000"-ø5.000"	
Clamp Screw Number	TS3SBS	TS3SB	
Overall Length <b>L</b> (inch)	.256	.315	- minim
Clamp Torque (lbf-in)	13	13	- L

When tightening the clamp screws, follow the order in Figure 1.

The maximum allowable spindle speeds are shown in Table 1. Ensure that the cutter operates under the maximum allowable spindle speed.

The maximum allowable spindle speeds for safety purposes are determined in accordance with ISO15641 (Milling Cutters for high speed machining-Safety requirements).

# First Second

### (Table 1) Maximum allowable spindle speed

Cutting Edge Diameter <b>DC</b> (inch)	ø.787"	ø1.000"	ø1.250"	ø1.500"	ø2.000"	ø2.500"	ø3.000"	ø4.000"	ø5.000"
Max. Allowable Spindle Speed (min <sup>-1</sup> )	15000	49000	48000	41000	35000	30000	27000	23000	20000

Even when operating under the maximum allowable spindle speed, if the spindle speed is equal to or higher than the values shown in table 2, it is recommended that the balance quality (with the arbor or milling chuck) conforms to G6.3 or better based on ISO1940. It is also recommended to replace the clamp screws with new ones when changing inserts. Furthermore, ensure to use machines that are provided with safety measures in case of cutter breakage. \* The balance quality of the holder (without inserts and clamp screws) is G6.3 or better at 10000min<sup>-1</sup>.

### (Table 2) Maximum spindle speed when balancing with the arbor or milling chuck has not been achieved

Cutting Edge Diameter <b>DC</b> (inch)	ø.787"	ø1.000"	ø1.250"	ø1.500"	ø2.000"	ø2.500"	ø3.000"	ø4.000"	ø5.000"
Max. Spindle Speed (min <sup>-1</sup> )	15000	12000	9500	7600	6000	4800	3800	3000	2400

•When setting the spindle speed, take into consideration the maximum allowable spindle speed of the arbor or milling chuck.

Use the specified set bolt when using the arbor type with through coolant.

• The inserts have sharp cutting edges and handling them with bare hands may cause injuries. Always wear safety gloves when handling the indexable inserts.