

Small Diameter Indexable Drill

S-TAW

Innovative insert clamping offers stability and reliability for small hole drilling.

■ Available from $\varnothing 10.0$ to $\varnothing 13.9$ in 0.1mm increments.



Small Diameter Indexable Drill

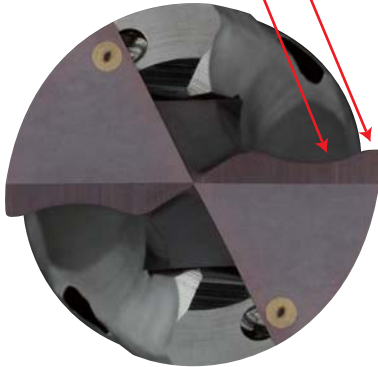
S-TAW

Features

Designed for extreme sharpness, precision and rigidity

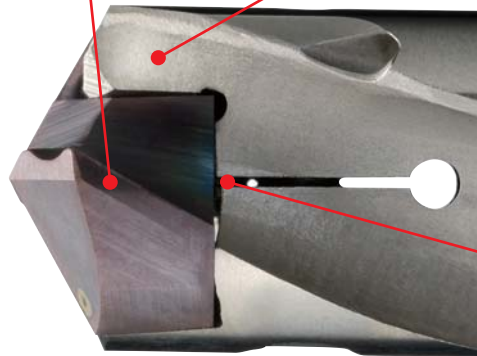
Wavy cutting edge

The wave edge design achieves a sharp peripheral edge cutting performance with a strong initial cutting point near the centre.



High helix

Low resistance and unique pocket design improves chip breaking properties to give superior chip disposal.



Back metal

Sufficient back metal increases rigidity.

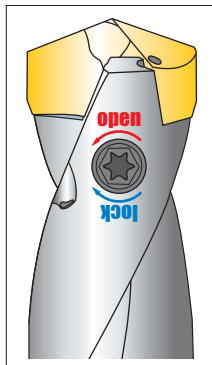
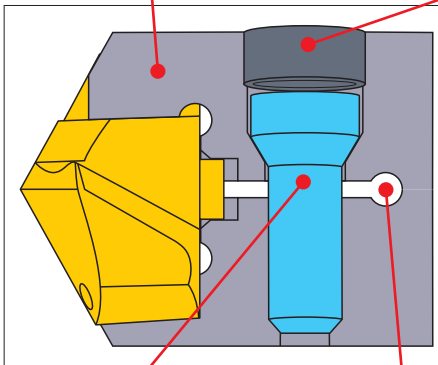
Centering location

Mitsubishi's unique clamping system ensures high clamping accuracy.

Mitsubishi's unique highly rigid clamping system (PAT.P.)

Back metal (with taper)

Stopper (fixed)



Inner screw

Slit

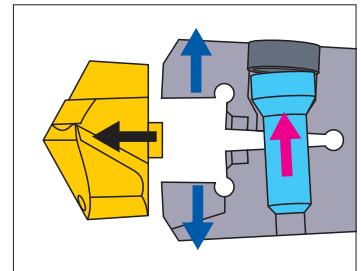
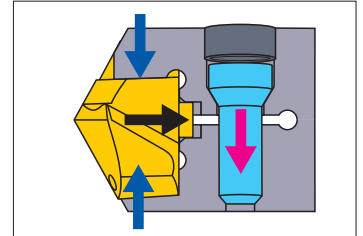
<Clamp>

Tighten the inner screw (in the lock direction) to securely clamp the insert with the back metal tapers.

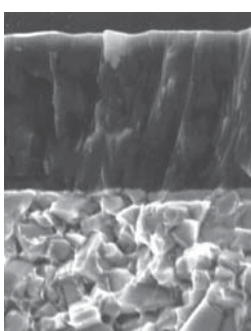
<Unclamp>

Unclamp the insert by loosening the inner screw (in the open direction) to make it come into contact with the stopper and open the back metal sections.

<Insert installation and detachment>



MIRACLE[®] coated VP15TF



MIRACLE[®]
coating
(Al,Ti)N

Cemented
carbide
substrate
TF15

VP15TF



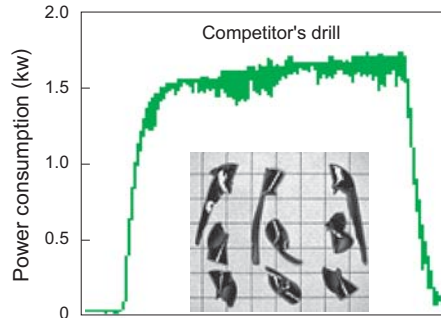
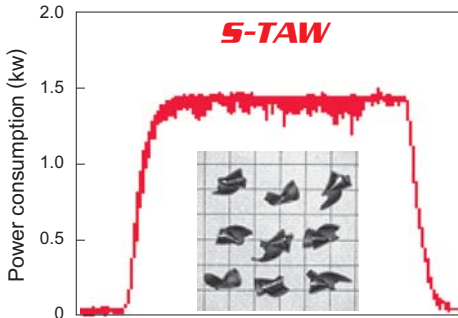
Features of VP15TF

MIRACLE[®] coated VP15TF has a high welding resistance, making it suitable for machining a wide range of workpiece materials from mild steels and carbon steels, through to stainless steels and cast iron.

Cutting Performance

Excellent chip control

- Chips are broken into a compact shape for excellent chip disposability to prevent jamming and lower power consumption.

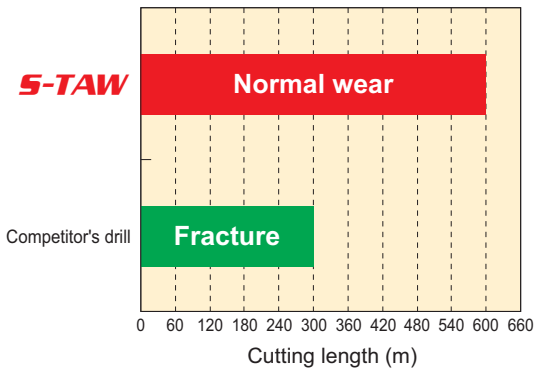


<Cutting conditions>
 Workpiece : JIS S50C (150–180HB)
 Drill diameter : $\phi 10$ (L/D=5)
 Cutting speed : 80m/min
 Feed : 0.2mm/rev
 Coolant : W.S.O.
 Coolant pressure : 0.5MPa (Internal coolant)
 Machine : Machining centre

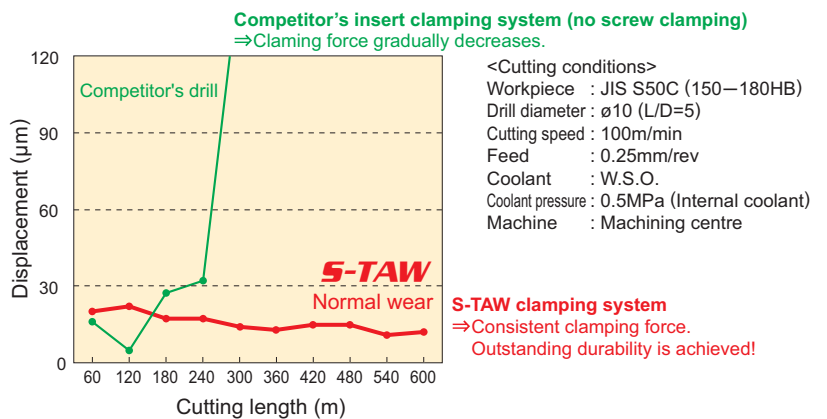
Durable body & insert

- Rigid clamping system offers exceptional tool life.

■ Tool body life

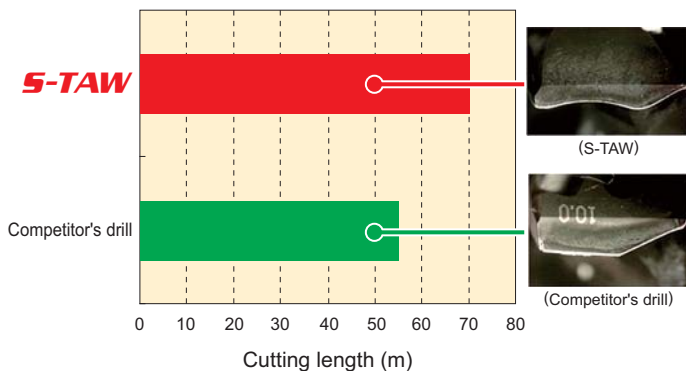


■ Insert radial runout displacement



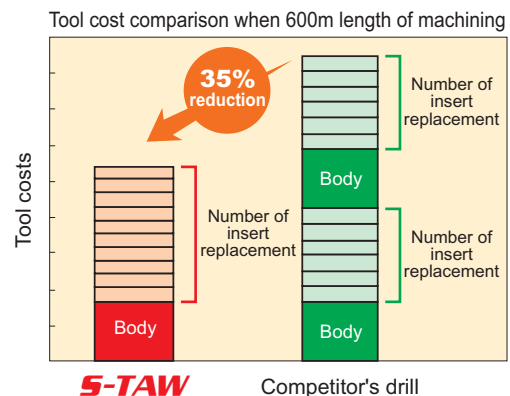
- Longer tool life with Miracle coating!

■ Insert life

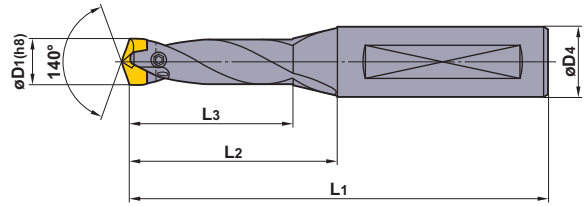


- Durable body & inserts enables cost reduction!

■ Cost reduction effect



S-TAW

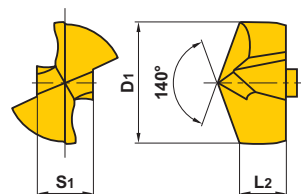


■ Holders

Drill Dia. Range D1 (mm)	Hole Depth (l/d)	Holder		Insert			Dimensions (mm)				① ② Wrench	
		Order Number	Stock	Drill Dia. D1 (mm)	Order Number	Stock VP15TF VP10H		L3	L2	L1		D4
10.0 10.4	3	STAWSN1000S16	●	10.0	STAWN1000TH	●	□	37	47	95	16	①TIP06F
				10.1	STAWN1010TH	●	□					
				10.2	STAWN1020TH	●	□					
	5	STAWMN1000S16	●	10.3	STAWN1030TH	●	□	57	67	115	16	①TIP06F
				10.4	STAWN1040TH	●	□					
10.5 10.9	3	STAWSN1050S16	●	10.5	STAWN1050TH	●	□	37	47	95	16	①TIP06F
				10.6	STAWN1060TH	●	□					
				10.7	STAWN1070TH	●	□					
	5	STAWMN1050S16	●	10.8	STAWN1080TH	●	□	57	67	115	16	①TIP06F
				10.9	STAWN1090TH	●	□					
11.0 11.4	3	STAWSN1100S16	●	11.0	STAWN1100TH	●	□	41	52	100	16	①TIP06F
				11.1	STAWN1110TH	●	□					
				11.2	STAWN1120TH	●	□					
	5	STAWMN1100S16	●	11.3	STAWN1130TH	●	□	66	77	125	16	①TIP06F
				11.4	STAWN1140TH	●	□					
11.5 11.9	3	STAWSN1150S16	●	11.5	STAWN1150TH	●	□	41	52	100	16	①TIP06F
				11.6	STAWN1160TH	●	□					
				11.7	STAWN1170TH	●	□					
	5	STAWMN1150S16	●	11.8	STAWN1180TH	●	□	66	77	125	16	①TIP06F
				11.9	STAWN1190TH	●	□					
12.0 12.4	3	STAWSN1200S16	●	12.0	STAWN1200TH	●	□	45	57	105	16	①TIP06F
				12.1	STAWN1210TH	●	□					
				12.2	STAWN1220TH	●	□					
	5	STAWMN1200S16	●	12.3	STAWN1230TH	●	□	70	82	130	16	①TIP06F
				12.4	STAWN1240TH	●	□					
12.5 12.9	3	STAWSN1250S16	●	12.5	STAWN1250TH	●	□	45	57	105	16	①TIP06F
				12.6	STAWN1260TH	●	□					
				12.7	STAWN1270TH	●	□					
	5	STAWMN1250S16	●	12.8	STAWN1280TH	●	□	70	82	130	16	①TIP06F
				12.9	STAWN1290TH	●	□					
13.0 13.4	3	STAWSN1300S16	●	13.0	STAWN1300TH	●	□	49	62	110	16	②TIP08W
				13.1	STAWN1310TH	●	□					
				13.2	STAWN1320TH	●	□					
	5	STAWMN1300S16	●	13.3	STAWN1330TH	●	□	74	87	135	16	②TIP08W
				13.4	STAWN1340TH	●	□					
13.5 13.9	3	STAWSN1350S16	●	13.5	STAWN1350TH	●	□	49	62	110	16	②TIP08W
				13.6	STAWN1360TH	●	□					
				13.7	STAWN1370TH	●	□					
	5	STAWMN1350S16	●	13.8	STAWN1380TH	●	□	74	87	135	16	②TIP08W
				13.9	STAWN1390TH	●	□					

(Note) Please contact us for any geometry that is not in this catalogue (e.g. different diameter and length).

Inserts



Order Number	Stock		Dimensions (mm)			Applicable Holder
	VP15TF	VP10H	D1	L2	S1	
STAWN1000TH	●	□	10.0	3.8	4.6	STAWSN1000S16 STAWMN1000S16
1010TH	●	□	10.1	3.8	4.6	
1020TH	●	□	10.2	3.8	4.6	
1030TH	●	□	10.3	3.8	4.6	
1040TH	●	□	10.4	3.8	4.6	
1050TH	●	□	10.5	4.0	4.8	STAWSN1050S16 STAWMN1050S16
1060TH	●	□	10.6	4.0	4.8	
1070TH	●	□	10.7	4.0	4.8	
1080TH	●	□	10.8	4.0	4.8	
1090TH	●	□	10.9	4.0	4.8	
1100TH	●	□	11.0	4.2	5.1	STAWSN1100S16 STAWMN1100S16
1110TH	●	□	11.1	4.2	5.1	
1120TH	●	□	11.2	4.2	5.1	
1130TH	●	□	11.3	4.2	5.1	
1140TH	●	□	11.4	4.2	5.1	
1150TH	●	□	11.5	4.4	5.3	STAWSN1150S16 STAWMN1150S16
1160TH	●	□	11.6	4.4	5.3	
1170TH	●	□	11.7	4.4	5.3	
1180TH	●	□	11.8	4.4	5.3	
1190TH	●	□	11.9	4.4	5.3	
1200TH	●	□	12.0	4.6	5.5	STAWSN1200S16 STAWMN1200S16
1210TH	●	□	12.1	4.6	5.5	
1220TH	●	□	12.2	4.6	5.5	
1230TH	●	□	12.3	4.6	5.5	
1240TH	●	□	12.4	4.6	5.5	
1250TH	●	□	12.5	4.8	5.8	STAWSN1250S16 STAWMN1250S16
1260TH	●	□	12.6	4.8	5.8	
1270TH	●	□	12.7	4.8	5.8	
1280TH	●	□	12.8	4.8	5.8	
1290TH	●	□	12.9	4.8	5.8	
1300TH	●	□	13.0	4.9	6.0	STAWSN1300S16 STAWMN1300S16
1310TH	●	□	13.1	4.9	6.0	
1320TH	●	□	13.2	4.9	6.0	
1330TH	●	□	13.3	4.9	6.0	
1340TH	●	□	13.4	4.9	6.0	
1350TH	●	□	13.5	5.1	6.2	STAWSN1350S16 STAWMN1350S16
1360TH	●	□	13.6	5.1	6.2	
1370TH	●	□	13.7	5.1	6.2	
1380TH	●	□	13.8	5.1	6.2	
1390TH	●	□	13.9	5.1	6.2	

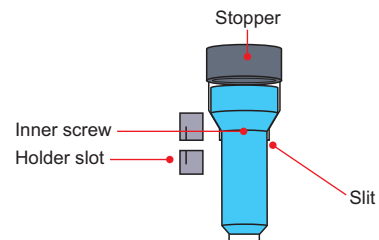
Recommended Cutting Conditions

Work Material	Drill Diameter Conditions Hardness	φ10.0—φ12.9		φ13.0—φ13.9	
		Cutting Speed (m/min)	Feed (mm/rev)	Cutting Speed (m/min)	Feed (mm/rev)
P Mild Steel	≤180HB	80 (60—100)	0.20 (0.15—0.25)	90 (70—110)	0.25 (0.20—0.30)
	180—280HB	80 (60—100)	0.20 (0.15—0.25)	90 (70—110)	0.25 (0.20—0.30)
	280—350HB	70 (60— 90)	0.20 (0.15—0.25)	80 (60—100)	0.25 (0.20—0.30)
M Stainless Steel	≤200HB	40 (30— 50)	0.13 (0.10—0.16)	50 (40— 60)	0.15 (0.12—0.18)
K Cast Iron	Tensile Strength ≤350MPa	80 (60—100)	0.20 (0.15—0.25)	90 (70—110)	0.25 (0.20—0.30)
	Tensile Strength ≤450MPa	70 (60— 90)	0.20 (0.15—0.25)	80 (60—100)	0.25 (0.20—0.30)

Operational Guidance

Insert Installation

1. Before inserting the insert into the holder, ensure that there are no foreign objects or dirt in the holder slot or slit. If there are any foreign objects or dirt, use compressed air to remove them.



2. Use the provided wrench to loosen the inner screw to open the tip of the holder, then put the insert into the holder slot as shown in figure 1.
* Ensure that the wrench is firmly in contact with the base of the inner screw head when tightening.

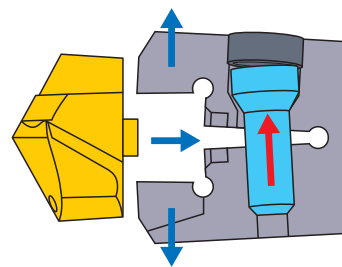
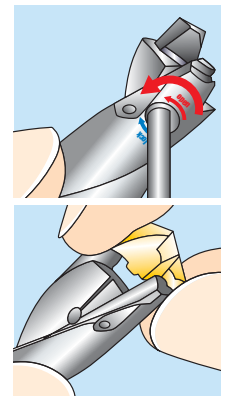


Fig. 1



3. After the insert has been set in the holder slot, tighten the inner screw while holding the insert lightly as shown in figure 2 to securely clamp and locate the insert.
* Ensure that the wrench is firmly in contact with the base of the inner screw head when tightening.

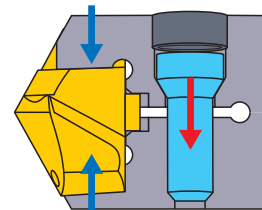
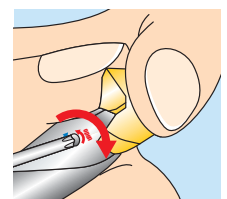
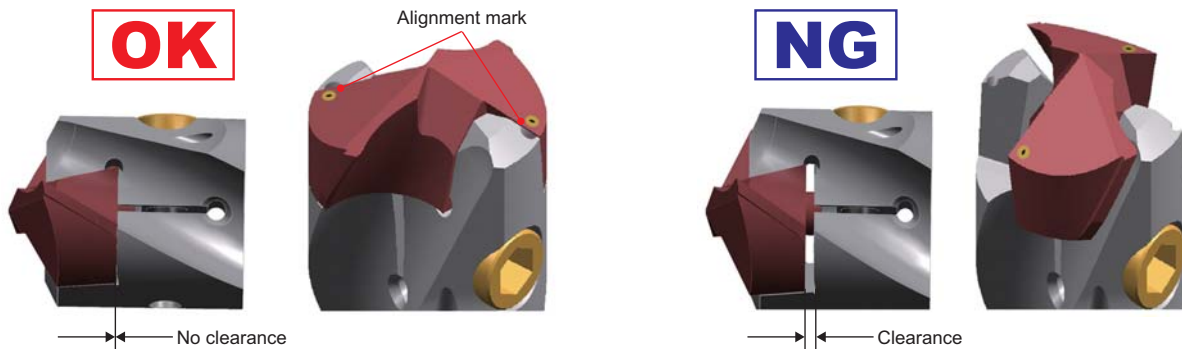


Fig. 2

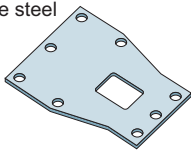
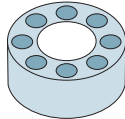
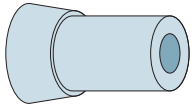
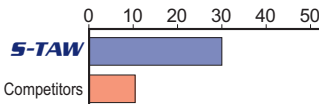
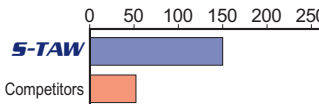
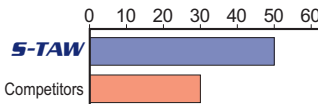


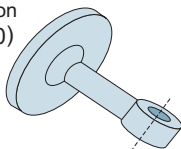
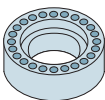
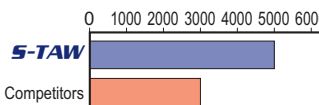
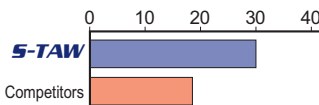
4. Check there is no gap between the bottom of the insert and holder slot.



Note) Poor or incorrect clamping of inserts can cause poor drilling performance and/or drill breakage. Therefore ensure that the alignment marks on both the body and insert are aligned when setting. When machining, use safety guards and goggles.

Application Examples

Holder		STAWMN1000S16	STAWMN1250S16	STAWMN1350S16
Insert (Grade)		STAWN1000TH (VP15TF)	STAWN1250TH (VP15TF)	STAWN1350TH (VP15TF)
Workpiece		High tensile steel 	Cast iron (JIS FC250) 	Carbon steel (JIS S45C) 
Component		Arm parts	Shaft case	Shaft
Cutting Conditions	Cutting Speed (m/min)	100	78.5	95
	Feed (mm/rev)	0.25	0.3	0.25
	Revolution (mm/rev)	3183	2000	2240
	Table Feed (mm/min)	796	600	560
Coolant		W.S.O. (Internal coolant)	W.S.O. (Internal coolant)	W.S.O. (Internal coolant)
Machine		Machining centre	Machining centre	Lathe
Result		Cutting length (m) 	Cutting length (m) 	Cutting length (m) 

Holder		STAWSN1350S16	STAWMN1100S16
Insert (Grade)		STAWN1370TH (VP15TF)	STAWN1100TH (VP15TF)
Workpiece		Ductile cast iron (JIS FCD500) 	Alloy steel (JIS SNCM439) 
Component		Agricultural machinery parts	Machine parts
Cutting Conditions	Cutting Speed (m/min)	90	70
	Feed (mm/rev)	0.1	0.25
	Revolution (mm/rev)	2091	2025
	Table Feed (mm/min)	209	506
Coolant		W.S.O. (Internal coolant)	W.S.O. (Internal coolant)
Machine		Machining centre	Machining centre
Result		No. of holes 	Cutting length (m) 

For Your Safety

●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When attaching inserts or spare parts, please use only the correct wrench or spanner. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc. ●Grinding or heating of cutting tools produces dust and mist. Inhaling large amount of dust or contacting with eyes and skins may harm your body.

MITSUBISHI MATERIALS CORPORATION



The Scope of the Registration:
Design, Development, and
Production of Cemented
Carbide Tools and Carbide
Blanks



The Scope of the Registration:
Design, Development and
Production of Cutting Tools,
Wear-resistant Tools, Rock
Drilling Tools, Cemented
Carbide Blanks and Coated
Products



MITSUBISHI MATERIALS CORPORATION Area Marketing & Operations Dept.

KFC bldg., 8F, 1-6-1, Yokoami, Sumida-ku, Tokyo 130-0015, Japan
TEL +81-3-5819-8772 FAX +81-3-5819-8774

MMC HARTMETALL GmbH

Comeniusstr.2, 40670, Meerbusch GERMANY
TEL +49-2159-9189-0 FAX +49-2159-918966

MITSUBISHI MATERIALS U.S.A. CORPORATION Headquarters

17401, Eastman Street, Irvine, California, 92614, USA
TEL +1-949-862-5100 FAX +1-949-862-5180

MMC METAL SINGAPORE PTE LTD.

10, Arumugam Road, #04-00 Lion Industrial Bldg.,409957, SINGAPORE
TEL +65-6743-9370 FAX +65-6749-1469

Mitsubishi Carbide Home page : <http://www.mitsubishicarbide.com>
(Tools specifications subject to change without notice.)