MITSUBISHI
MITSUBISHI MATERIALS

TOOLS NEWS

B167G

Small Diameter Indexable Drill

S-TAW

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

■ Available from ø10.0 to ø13.9 in 0.1mm increments.

Small Diameter Indexable Drill

S-TAW

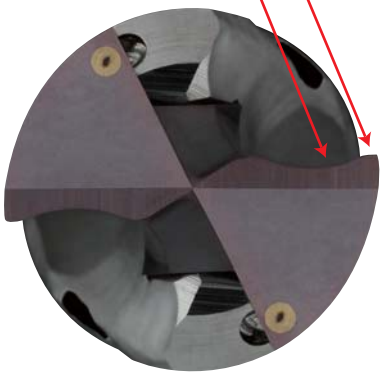
Features

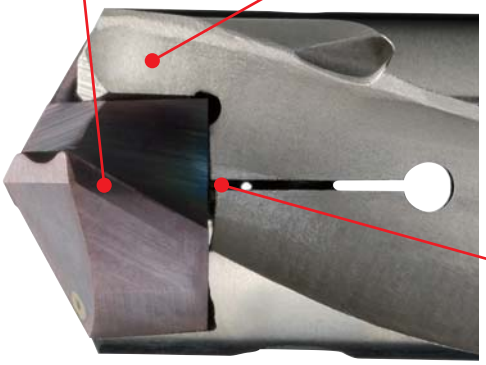
Designed for extreme sharpness, precision and rigidity

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.

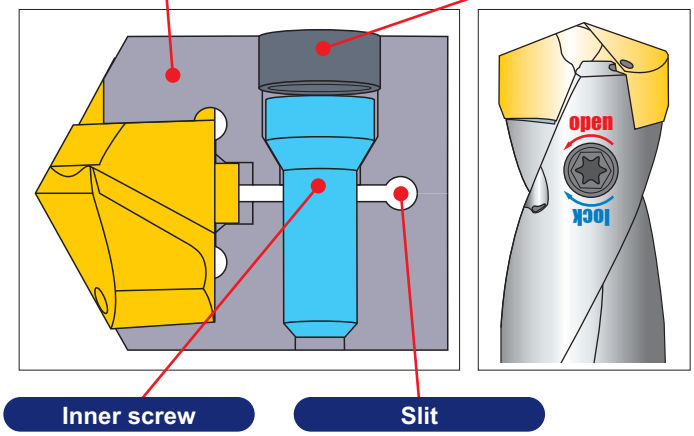
Back metal
Sufficient back metal increases rigidity.





Centering location
Mitsubishi's unique clamping system ensures high clamping accuracy.

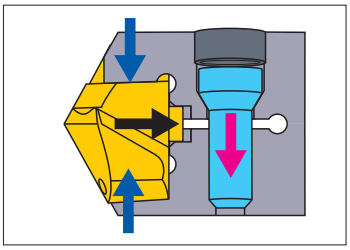
Mitsubishi's unique highly rigid clamping system (PAT.P.)

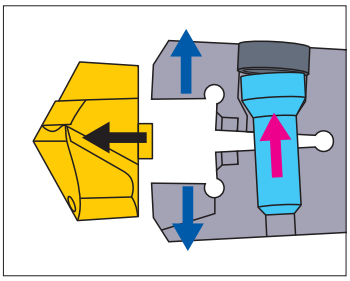


<Clamp>
Tighten the inner screw (in the lock direction) to securely clamp the insert with the back metal tapers.

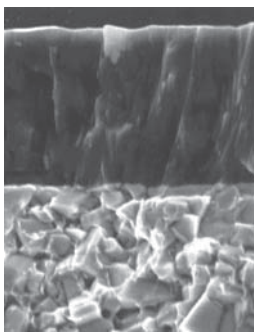
<Unclamp>
Unclamp the insert by loosing the inner screw (in the open direction) to make it come into contact with the stopper and open the back metal sections.

<Insert installation and detachment>





MIRACLE® coated VP15TF



VP15TF

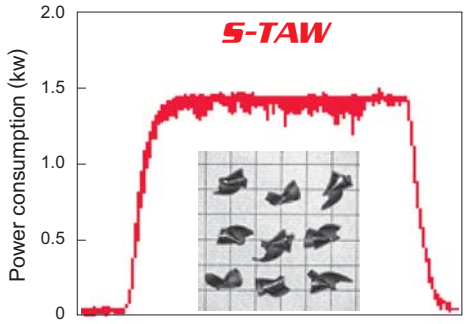
MIRACLE® Coated Features of VP15TF

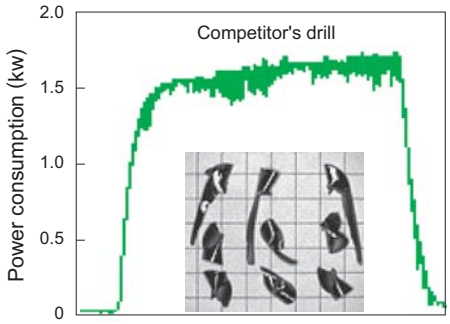
MIRACLE® coated VP15TF has a high welding resistance, making it suitable for machining a wide range of workpiece materials from mild steels and carbon steels, through to stainless steels and cast iron.

Cutting Performance

Excellent chip control

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



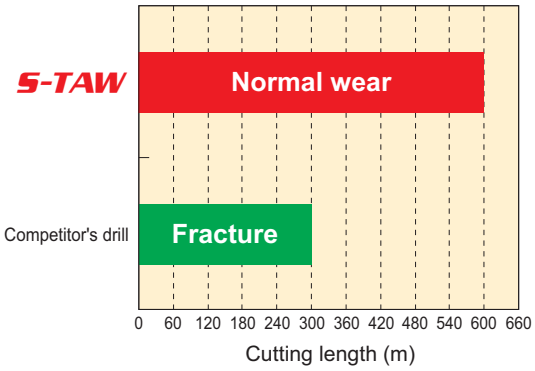


<Cutting conditions>
Workpiece : JIS S50C (150—180HB)
Drill diameter : ø10 (L/D=5)
Cutting speed : 80m/min
Feed : 0.2mm/rev
Coolant : W.S.O.
Coolant pressure : 0.5MPa (Internal coolant)
Machine : Machining centre

Durable body & insert

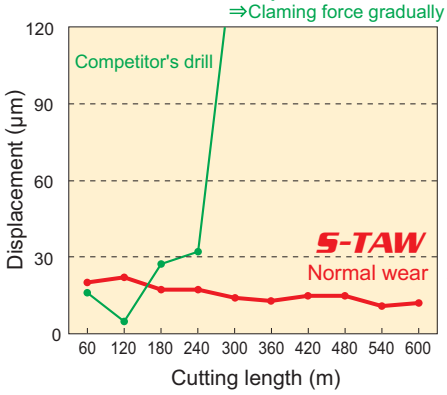
●Rigid clamping system offers exceptional tool life.

■Tool body life



■Insert radial runout displacement

Competitor's insert clamping system (no screw clamping)
⇒Claming force gradually decreases.

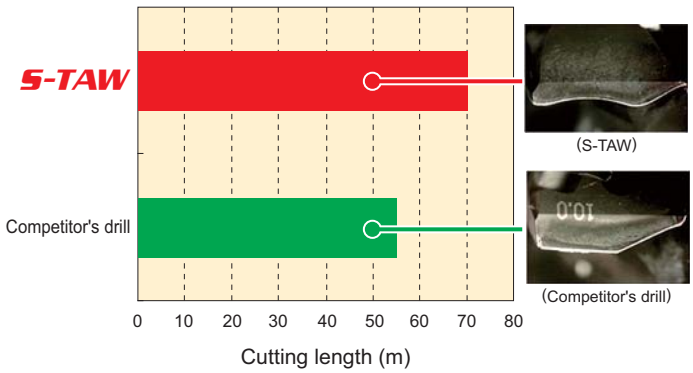


<Cutting conditions>
Workpiece : JIS S50C (150—180HB)
Drill diameter : ø10 (L/D=5)
Cutting speed : 100m/min
Feed : 0.25mm/rev
Coolant : W.S.O.
Coolant pressure : 0.5MPa (Internal coolant)
Machine : Machining centre

S-TAW clamping system
⇒Consistent clamping force.
Outstanding durability is achieved!

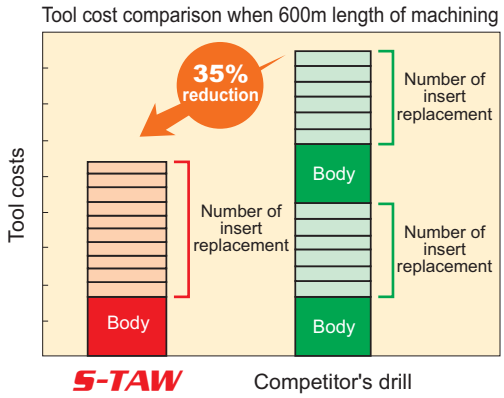
●Longer tool life with Miracle coating!

■Insert life

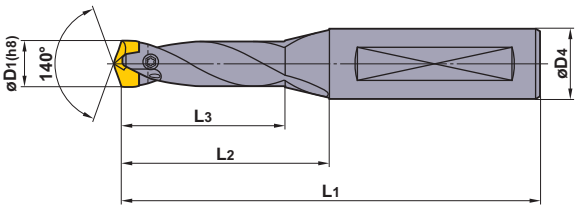


●Durable body & inserts enables cost reduction!

■Cost reduction effect



S-TAW



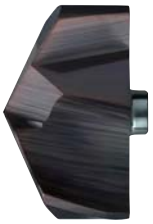
Holders

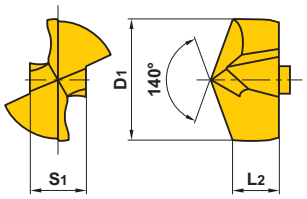
Drill Dia. Range D1 (mm)	Hole Depth (l/d)	Holder Order Number	Holder Stock	Insert Drill Dia. D1 (mm)	Insert Order Number	Insert Stock VP15TF	Insert Stock VP10H	L3	L2	L1	D4	Wrench
10.0 | 10.4	3	STAWSN1000S16	●	10.0	STAWN1000TH	●	□	37	47	95	16	①TIP06F
				10.1	STAWN1010TH	●	□					
				10.2	STAWN1020TH	●	□					
	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).

● : Inventory maintained. □ : Non stock, produced to order only.

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	

● : Inventory maintained. (Note: 2 inserts in one case) □ : Non stock, produced to order only.

S-TAW

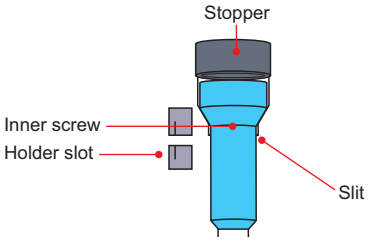
Recommended Cutting Conditions

Work Material		Drill Diameter / Conditions / Hardness	ϕ10.0—ϕ12.9 Cutting Speed (m/min)	ϕ10.0—ϕ12.9 Feed (mm/rev)	ϕ13.0—ϕ13.9 Cutting Speed (m/min)	ϕ13.0—ϕ13.9 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)
P	Carbon Steel Alloy Steel	180—280HB	80 (60—100)	0.20 (0.15—0.25)	90 (70—110)	0.25 (0.20—0.30)
P	Carbon Steel Alloy Steel	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)
K	Ductile Cast Iron	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.

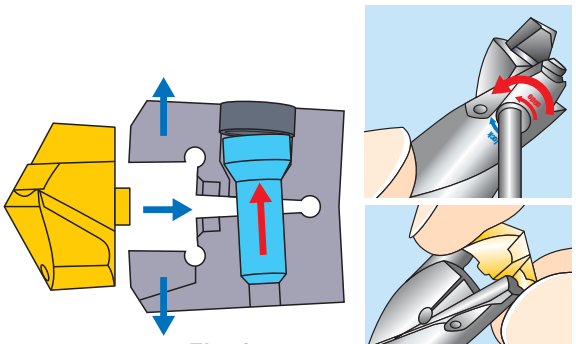


Fig. 1

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.

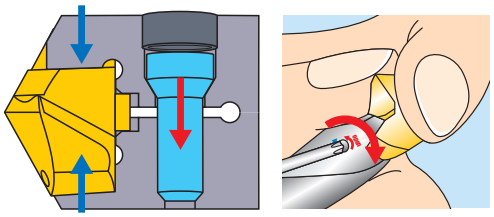
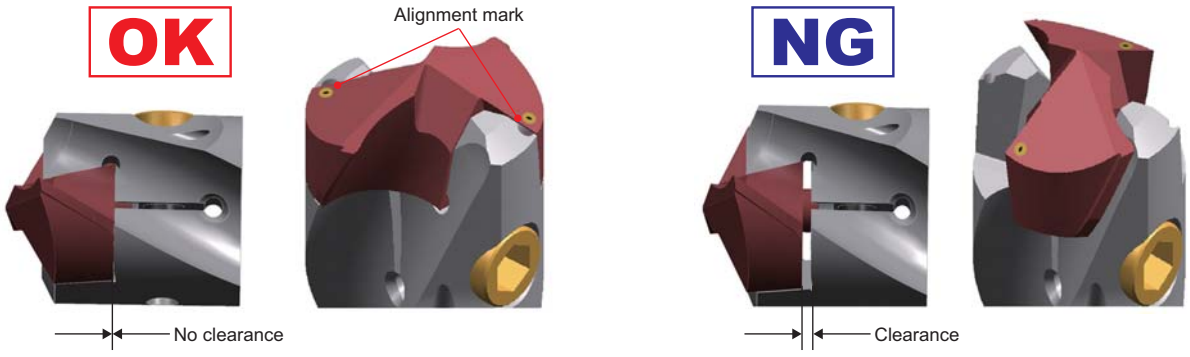


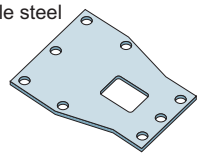
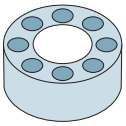
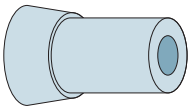
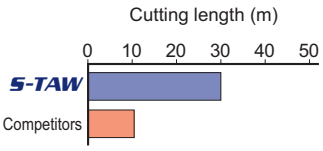
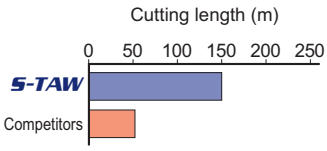
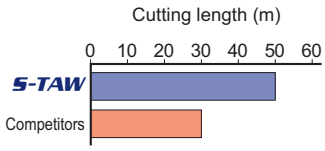
Fig. 2

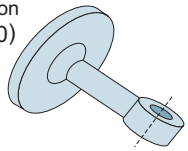
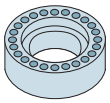
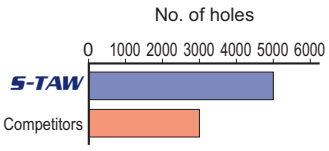
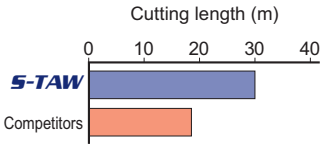
4. Check there is no gap between the bottom of the insert and holder slot.



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				

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			

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.

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(Tools specifications subject to change without notice.)

2008.10.E(-)