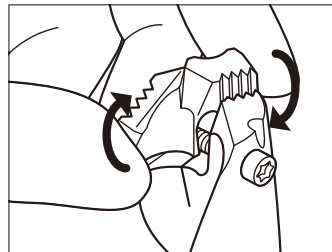
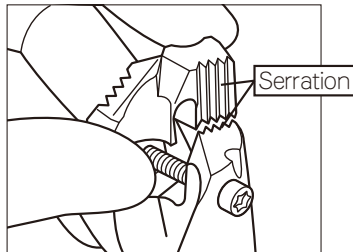


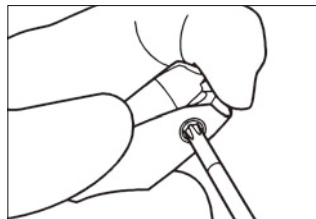
Thank you for purchasing MITSUBISHI WSTAR Indexable drill.  
Read this manual before use.

### ■ Fitting inserts on holders

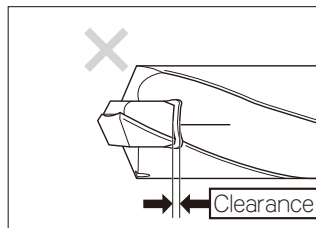
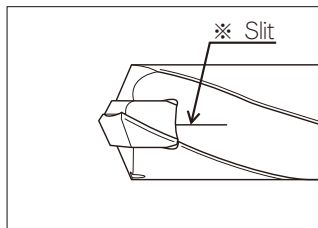
1. Check if a clamp screw of a holder is loose before fitting an insert on the holder. Remove the clamp screw to install the insert. (H type insert)
2. Check if there are any foreign objects or dirt in slits of the holder flutes and holder flute end.  
Blow any foreign objects and dirt with air.  
If they have not been removed, use the provided plate to remove.
3. Mesh a serration of the insert and that of the holder to put the insert into grooves of the holder.  
Then the insert can be fit smoothly if you put it into the grooves while pressing the insert against the serration face of the holder.



4. Fasten the clamp screw using the provided or off-the-shelf torque wrench while holding top of the insert lightly with your thumb.



5. Check if there is no clearances between the insert bottom and holder flute end.



Caution 1) Please fully note that poor fitting of inserts could provide poor drilling performance or break drills.

Caution 2) In case of setting indexable insert, make sure to take precautions such as wearing globes.

※ A slit is not provided for TAWS/M/LNH1400S16 and TAWS/M/LNH1500S20 holders.

### ■ Clamp screw torque (General guide)

Tighten clamp screws referring to the right table for torque.

Drill diameter	Torque
φ 14~φ 15	2.0N·m
φ 16~φ 18	2.0N·m
φ 19~φ 21	3.5N·m
φ 22~φ 24	5.5N·m
φ 25~φ 27	8.5N·m
φ 28~φ 30	12.0N·m

### ■ Recommended cutting conditions

Workpiece material	Condition	Drill diameter		14~15.4		15.5~18.4		18.5~21.4		21.5~24.4		24.5~27.4		27.5~30.4	
		vc (m/min)	fr (mm/rev)	vc (m/min)	fr (mm/rev)	vc (m/min)	fr (mm/rev)	vc (m/min)	fr (mm/rev)	vc (m/min)	fr (mm/rev)	vc (m/min)	fr (mm/rev)	vc (m/min)	fr (mm/rev)
Carbon steel Alloy steel	180~280HB	70 (60~90)	0.20 (0.15~0.25)	80 (60~100)	0.25 (0.20~0.30)	80 (60~100)	0.25 (0.20~0.30)	90 (70~110)	0.30 (0.25~0.35)	100 (80~120)	0.30 (0.25~0.35)	100 (80~120)	0.30 (0.25~0.35)	100 (80~120)	0.30 (0.25~0.35)
	280~350HB	60 (50~80)	0.15 (0.12~0.18)	70 (50~90)	0.20 (0.15~0.25)	70 (50~90)	0.20 (0.15~0.25)	80 (60~100)	0.25 (0.20~0.30)	90 (70~110)	0.30 (0.25~0.35)	90 (70~110)	0.25 (0.20~0.30)	90 (70~110)	0.25 (0.20~0.30)
Structural steel	SS400 tensile strength 400~500N/mm	60 (45~70)	0.20 (0.15~0.25)	60 (45~70)	0.25 (0.20~0.30)	65 (50~75)	0.25 (0.20~0.30)	65 (50~75)	0.25 (0.20~0.30)	65 (50~75)	0.30 (0.25~0.35)	70 (60~80)	0.30 (0.25~0.35)	70 (60~80)	0.30 (0.25~0.35)
	SM490 tensile strength 490~610N/mm	55 (40~65)	0.20 (0.15~0.25)	55 (40~65)	0.25 (0.20~0.30)	60 (45~70)	0.25 (0.20~0.30)	60 (45~70)	0.25 (0.20~0.30)	60 (45~70)	0.30 (0.25~0.35)	65 (55~75)	0.30 (0.25~0.35)	65 (55~75)	0.30 (0.25~0.35)
	SM570 tensile strength 570~720N/mm	50 (40~60)	0.20 (0.15~0.25)	50 (40~60)	0.25 (0.20~0.30)	55 (40~65)	0.25 (0.20~0.30)	55 (40~65)	0.25 (0.20~0.30)	55 (40~65)	0.30 (0.25~0.35)	60 (50~70)	0.30 (0.25~0.35)	60 (50~70)	0.30 (0.25~0.35)
Mild steel	~180HB	70 (60~90)	0.20 (0.15~0.25)	80 (60~100)	0.25 (0.20~0.30)	90 (70~110)	0.25 (0.20~0.30)	100 (80~120)	0.30 (0.25~0.35)	110 (80~120)	0.30 (0.25~0.35)	110 (80~120)	0.30 (0.25~0.35)	110 (80~120)	0.30 (0.25~0.35)
Stainless steel	~200HB	50 (40~60)	0.15 (0.12~0.18)	50 (40~60)	0.15 (0.12~0.18)	60 (50~70)	0.20 (0.15~0.22)	60 (50~70)	0.20 (0.15~0.22)	60 (50~70)	0.20 (0.15~0.22)	70 (60~80)	0.25 (0.20~0.28)	70 (60~80)	0.25 (0.20~0.28)
Ductile cast iron	tensile strength ~450N/mm	70 (50~90)	0.20 (0.15~0.25)	80 (60~90)	0.25 (0.20~0.30)	80 (60~90)	0.25 (0.20~0.30)	90 (70~110)	0.30 (0.25~0.35)	100 (80~110)	0.30 (0.25~0.35)	100 (80~110)	0.30 (0.25~0.35)	100 (80~110)	0.30 (0.25~0.35)
Cast iron	tensile strength ~350N/mm	70 (50~90)	0.20 (0.15~0.25)	100 (60~120)	0.25 (0.20~0.30)	120 (60~140)	0.25 (0.20~0.30)	130 (80~150)	0.35 (0.25~0.40)	140 (90~160)	0.35 (0.25~0.40)	140 (90~160)	0.35 (0.25~0.40)	140 (90~160)	0.40 (0.30~0.45)

- Notes
1. When using the 8D type holder, reduce the cutting speed by approx. 20%.
  2. When using the 8D type holder, it is recommended to drill a pilot guide hole.
  3. H type honing is recommended when machining mild steel and stainless steel.
  4. Use the internal coolant system when machining stainless steel. (MQL and mist machining should not be used.)

### ■ Parts table

Holder order number				
	Clamp screw	Wrench	Plate	Lubricant to prevent screw seizing
TAWS/M/LNH1400S16	WS254012T	① TKY08W	WPT4405	MK1KS
TAWS/M/LNH1500S20	WS254013T			
TAWS/M/LN1600S20	WS254014T			
TAWS/M/LN1700S20	WS254015T			
TAWS/M/LN1800S20	WS254016T	② TKY10T		
TAWS/M/LN1900S25	WS304517T			
TAWS/M/LN2000S25	WS304518T	② TKY15T		
TAWS/M/LN2100S25	WS355520T			
TAWS/M/LN2300S25	WS355521T			
TAWS/M/LN2400S32	WS406023T	② TKY25T		
TAWS/MB2500S32	WS406024T			
TAWS/M/LN2600S32	WS508026T			
TAWS/M/LN2700S32	WS508027T			
TAWS/M/LN2800S32	WS508026T	② TKY27T		
TAWS/M/LN2900S32	WS508027T			
TAWS/M/LN3000S32	WS508027T			

Always apply an anti-seizure lubricant to clamp screws when exchanging them.