

# QEJ147

## Operation Manual Modular Step Drilling System

2010. 6

Thank you for purchasing MITSUBISHI Modular Step Drilling system for TAW.  
Read this manual before use.

### ■ Fitting Modular Step Drilling system on TAW holders

1. Check if fixing screw(A) and adjust screw(B) is loose before use.
2. Set chamfering insert to the ring.
3. Insert the ring from the top of holder.  
\*Remove TAW insert and clamp screw before setting the ring.
4. Set TAW insert and tighten the clamp screw.  
\*Check operation manual of TAW (WSTAR indexable drill) in detail.
5. Tighten two fixing screw(A) to contact with drill body. (Fig.1)  
\*Fix clamping elements to the wall of drill flute. \*(Fixing screw torque(General guide): 6N·m)
6. Tighten adjust screw(B) for insert to contact with drill body. (Fig.2)  
\*(Adjust screw torque(General guide): 3.5N·m)
7. When removing the ring or changing chamfering position, loosen adjust screw. (Fig.2)

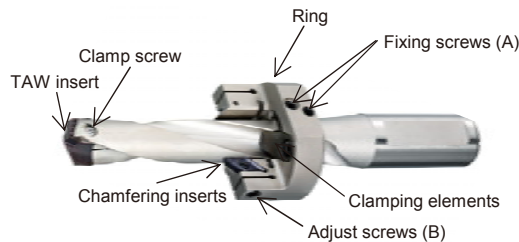


Fig.1

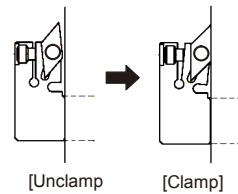
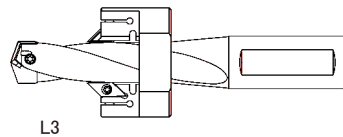


Fig.2

### ■ Drilling depth [MIN-MAX]

Ring order number	Holder designation	Drilling depth L3 [min-max] (inch)		
		TAWS	TAWM	TAWL
TAW200R-90	TAWS/M/L2000S25 TAW S/M/L0051	12-29 (0.47-1.14)	29-70 (1.14-2.76)	70-127 (2.76-5.00)
TAW210R-90	TAWS/M/L2100S25 TAW S/M/L0054	12-32 (0.47-1.26)	32-75 (1.26-2.95)	75-135 (2.95-5.31)
TAW220R-90	TAWS/M/L2200S25 TAW S/M/L0056	14-36 (0.55-1.42)	36-81 (1.42-3.19)	81-143 (3.19-5.63)
TAW230R-90	TAWS/M/L2300S25 TAW S/M/L0059	14-39 (0.55-1.54)	39-86 (1.54-3.39)	86-151 (3.39-5.94)
TAW240R-90	TAWS/M/L2400S32 TAW S/M/L0061	14-43 (0.55-1.69)	43-92 (1.69-3.62)	92-159 (3.62-6.26)
TAW250R-90	TAWS/M/L2500S32 TAW S/M/L0100	15-43 (0.59-1.69)	43-95 (1.69-3.74)	95-165 (3.74-6.50)
TAW260R-90	TAWS/M/L2600S32 TAW S/M/L0102	15-47 (0.59-1.85)	47-101 (1.85-3.98)	101-173 (3.98-6.81)
TAW270R-90	TAWS/M/L2700S32 TAW S/M/L0105	15-49 (0.59-1.93)	49-106 (1.93-4.17)	106-181 (4.17-7.13)
TAW280R-90	TAWS/M/L2800S32 TAW S/M/L0107	15-52 (0.59-2.05)	52-112 (2.05-4.41)	112-189 (4.41-7.44)
TAW290R-90	TAWS/M/L2900S32 TAW S/M/L0110	15-52 (0.59-2.05)	52-114 (2.05-4.49)	114-194 (4.49-7.64)
TAW300R-90	TAWS/M/L3000S32 TAW S/M/L0112	15-56 (0.59-2.20)	56-119 (2.20-4.69)	119-202 (4.69-7.95)



### ■ Recommended cutting conditions (metric)

Workpiece	Hardness	Condition		19.5-21.4		21.5-24.4		24.5-27.4		27.5-30.4	
		vc	f	vc	f	vc	f	vc	f		
Mild steel	~ 180HB	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)
Carbon steel	180 ~ 280HB	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)
Alloy steel	280 ~ 350HB	70 (50-90)	0.20 (0.15-0.25)	80 (60-100)	0.25 (0.20-0.30)	90 (70-110)	0.25 (0.20-0.30)	90 (70-110)	0.25 (0.20-0.30)	90 (70-110)	0.25 (0.20-0.30)
Stainless steel	~ 200HB	60 (50-70)	0.20 (0.15-0.22)	60 (50-70)	0.20 (0.15-0.22)	60 (60-80)	0.25 (0.20-0.28)	70 (60-80)	0.25 (0.20-0.28)	70 (60-80)	0.25 (0.20-0.28)
Cast iron	Tensile strength ~ 350N/mm <sup>2</sup>	90 (70-110)	0.25 (0.20-0.30)	100 (80-110)	0.35 (0.25-0.40)	110 (90-120)	0.35 (0.25-0.40)	110 (90-120)	0.35 (0.25-0.40)	110 (90-120)	0.40 (0.30-0.45)
Ductile cast iron	Tensile strength ~ 450N/mm <sup>2</sup>	80 (60-90)	0.25 (0.20-0.30)	90 (60-100)	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)

### ■ Recommended cutting conditions (inch)

Workpiece	Hardness	Condition		.7813" - .8438"		.8594" - .9531"		.9688" - 1.0781"		1.0938" - 1.1875"	
		Cutting Speed (SFM)	Feed (inch/rev)	Cutting Speed (SFM)	Feed (inch/rev)	Cutting Speed (SFM)	Feed (inch/rev)	Cutting Speed (SFM)	Feed (inch/rev)		
Mild steel	~ 180HB	295 (230-360)	.010 (.008-.012)	330 (260-390)	.012 (.010-.014)	360 (260-390)	.012 (.010-.014)	360 (260-390)	.012 (.010-.014)	360 (260-390)	.012 (.010-.014)
Carbon steel	180 ~ 280HB	260 (195-330)	.010 (.008-.012)	295 (230-360)	.012 (.010-.014)	330 (260-390)	.012 (.010-.014)	330 (260-390)	.012 (.010-.014)	330 (260-390)	.012 (.010-.014)
Alloy steel	280 ~ 350HB	230 (165-295)	.008 (.006-.010)	260 (195-330)	.010 (.008-.012)	295 (230-360)	.010 (.008-.012)	295 (230-360)	.010 (.008-.012)	295 (230-360)	.010 (.008-.012)
Stainless steel	~ 200HB	195 (165-230)	.008 (.006-.009)	195 (165-230)	.008 (.006-.009)	230 (195-260)	.010 (.008-.011)	230 (195-260)	.010 (.008-.011)	230 (195-260)	.010 (.008-.011)
Cast iron	Tensile strength ~ 350N/mm <sup>2</sup>	295 (230-360)	.010 (.008-.012)	330 (260-390)	.014 (.010-.016)	360 (295-390)	.014 (.010-.016)	360 (295-390)	.014 (.010-.016)	360 (295-390)	.016 (.012-.018)
Ductile cast iron	Tensile strength ~ 450N/mm <sup>2</sup>	260 (195-295)	.010 (.008-.012)	295 (195-330)	.012 (.010-.014)	330 (260-390)	.012 (.010-.014)	330 (260-390)	.012 (.010-.014)	330 (260-390)	.012 (.010-.014)

- \* Drilling and chamfering can be done at the same cutting conditions.
- \* When using over C1.0, reduce the feed rate by approx. 20-50%.

### ■ Spare parts

Ring order number	Insert screw	Clamping element	Clamping element screw	Fixing screw	adjust screw	Wrench
TAW200R-90	TS254	TAWP20-21	HSC04008	TSR06011S	TSR05008S	 ①TKY20R ①TKY10R ②TKY08F
TAW210R-90	TS254	TAWP20-21	HSC04008	TSR06011S	TSR05008S	
TAW220R-90	TS254	TAWP22-24	HSC04008	TSR06011S	TSR05008S	
TAW230R-90	TS254	TAWP22-24	HSC04008	TSR06011S	TSR05008S	
TAW240R-90	TS254	TAWP22-24	HSC04008	TSR06011S	TSR05008S	
TAW250R-90	TS254	TAWP25-26	HSC04008	TSR06011S	TSR05008S	
TAW260R-90	TS254	TAWP25-26	HSC04008	TSR06011S	TSR05008S	
TAW270R-90	TS254	TAWP27-28	HSC04008	TSR06011S	TSR05008S	
TAW280R-90	TS254	TAWP27-28	HSC04008	TSR06011S	TSR05008S	
TAW290R-90	TS254	TAWP29-30	HSC04008	TSR06011S	TSR05008S	
TAW300R-90	TS254	TAWP29-30	HSC04008	TSR06011S	TSR05008S	