

# **DATORKER® Robot Reducer**

Harmonic Gearing System



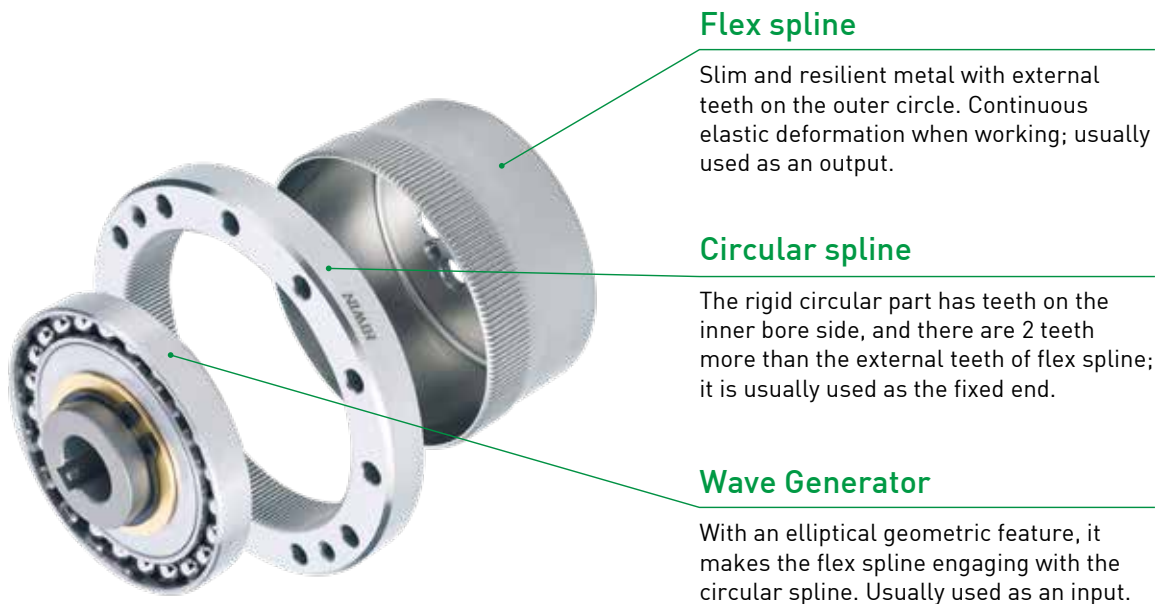
# DATORKER® Robot Reducer

DATORKER® (DT) – Robot Reducer has the characteristics of high precision, high efficiency, high torsional rigidity and low starting torque. It is widely used in robots, automation equipment, semiconductor equipment, machine tools and other industries.

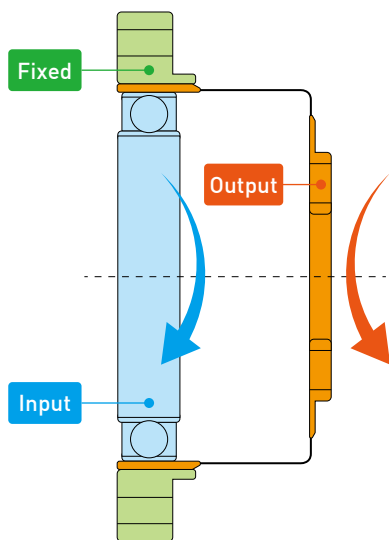
HIWIN has developed various specifications and reduction ratios to provide customers with wide range of choice. HIWIN is able to provide customized services to meet customers' various design and requirement.

## Features

- Compact and light weight – Easy for user to assemble and work with.
- High accuracy – Provides stable repeatability and positioning.
- Customization – Can be customized as per requirements.
- High torque – Widely use in automation and inspection equipment.
- Wide reduction ratio – Various choices available under same model.

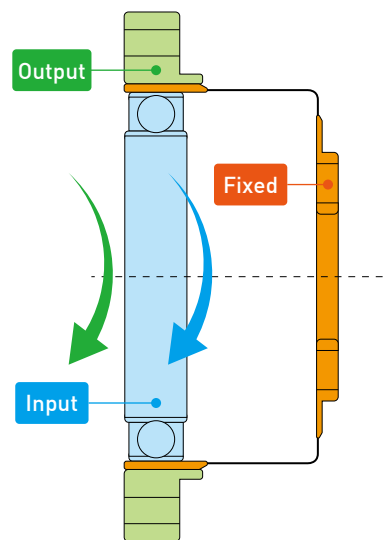


## Reduction ratio and rotation direction



Input and Output with reverse direction rotation

$$\text{Reduction ratio} = \frac{-1}{R}$$



Input and Output with the same direction rotation

$$\text{Reduction ratio} = \frac{1}{R+1}$$

(R = No. of external teeth ÷ difference between no. of external and internal teeth)

## Nomenclature

**WUT** – **S** – **25** – **80** – **PO** – **C**

Type		Series	Model	Reduction ratio	Module type	Input type	Customized
First code	Product code	S-Standard	14 / 17 / 20 / 25 / 32	50 / 80 / 100 / 120	C Component type	O Oldham's coupling	
Second code	The type of flex spline: U-Cup type T-Hollow type				P Combination type	H Hollow shaft	
Third code	The type of circular spline: I-Ring type T-Flange type				A Sealed type	J Solid shaft	
						E Flat	

## Specification Table

Item Model	Reduction Ratio	Rated torque at input 2000r/min ※1		Peak torque at start/stop ※2		Permissible maximum value of average load torque ※3		Instantaneous permissible max. torque ※4		Permissible maximum input speed r/min	Permissible average input speed r/min
		Nm	kgfm	Nm	kgfm	Nm	kgfm	Nm	kgfm		
14	50	5.4	0.55	18	1.8	6.9	0.7	35	3.6	8500	3500
	80	7.8	0.80	23	2.4	11	1.1	47	4.8		
	100	7.8	0.80	28	2.9	11	1.1	54	5.5		
17	50	16	1.6	34	3.5	26	2.6	70	7.1	7300	3500
	80	22	2.2	43	4.4	27	2.7	87	8.9		
	100	24	2.4	54	5.5	39	4	108	11		
	120	24	2.4	54	5.5	39	4	86	8.8		
20	50	25	2.5	56	5.7	34	3.5	98	10	6500	3500
	80	34	3.5	74	7.5	47	4.8	127	13		
	100	40	4.1	82	8.4	49	5	147	15		
	120	40	4.1	87	8.9	49	5	147	15		
25	50	39	4.0	98	10	55	5.6	186	19	5600	3500
	80	63	6.4	137	14	87	8.9	255	26		
	100	67	6.8	157	16	108	11	284	29		
	120	67	6.8	167	17	108	11	304	31		
32	50	76	7.8	216	22	108	11	382	39	4800	3500
	80	118	12	304	31	167	17	568	58		
	100	137	14	333	34	216	22	647	66		
	120	137	14	353	36	216	22	686	70		

※1 Permissible rated torque

※3 Permissible average torque

※2 Permissible maximum torque

※4 Permissible maximum value of impact

## Type / Function

### WUT Type



#### Oldham Combination Type (PO)

- Input shaft self-aligning.
- Withstand axial and radial load.

### WUI Type



#### Oldham Component Type (CO)

- Input shaft self-aligning.
- Self-assembly of parts required.

### WTI Type



#### Hollow Combination Type (PH)

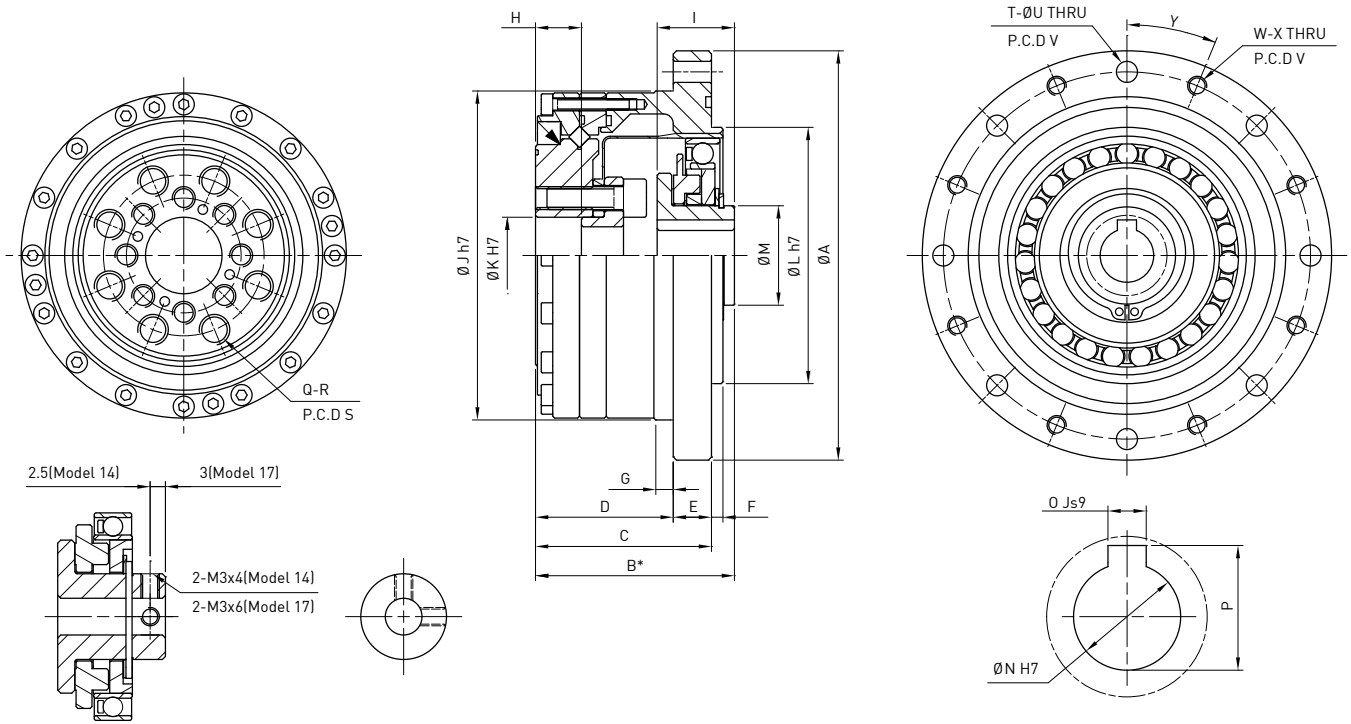
- Input hollow shaft design.
- Withstand axial and radial load.



#### Hollow Sealed Type (AH)

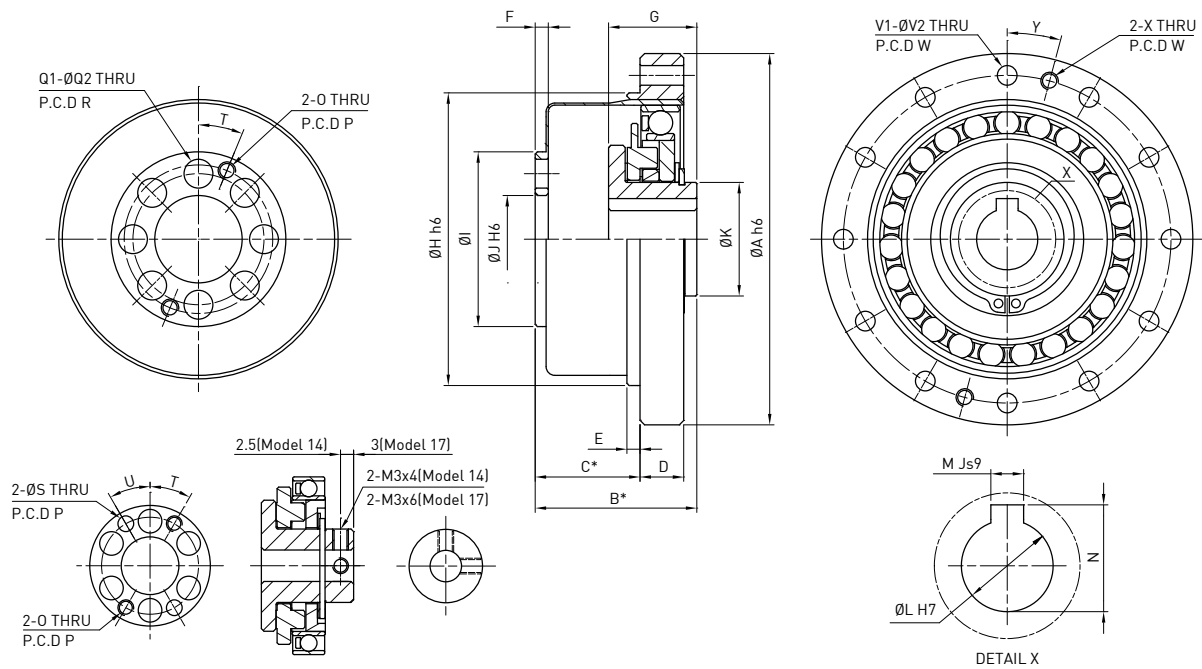
- Input hollow shaft design.
- Withstand axial and radial load.
- Completely sealed design.
- User friendly design.

# WUT-PO



Mark \ Model	14	17	20	25	32
ØA	73	79	93	107	138
B*	41 <sup>0</sup> <sub>-0.9</sub>	45 <sup>0</sup> <sub>-0.9</sub>	45.5 <sup>0</sup> <sub>-1</sub>	52 <sup>0</sup> <sub>-1</sub>	62 <sup>0</sup> <sub>-1.1</sub>
C	34	37	38	46	57
D	27	29	28	36	45
E	7	8	10	10	12
F	2	2	3	3	3
G	3.5	4	5	5	5
H	9.4	9.5	9	12	15
I	17.6 <sup>0</sup> <sub>-0.1</sub>	19.5 <sup>0</sup> <sub>-0.1</sub>	20.1 <sup>0</sup> <sub>-0.1</sub>	20.2 <sup>0</sup> <sub>-0.1</sub>	22 <sup>0</sup> <sub>-0.1</sub>
ØJ h7	56	63	72	86	113
ØK H7	11	10	14	20	26
ØL h7	38	48	56	67	90
ØM	14	18	21	26	26
ØN H7	6	8	12	14	14
0 Js9	-	-	4	5	5
P	-	-	13.8 <sup>+0.1</sup> <sub>0</sub>	16.3 <sup>+0.1</sup> <sub>0</sub>	16.3 <sup>+0.1</sup> <sub>0</sub>
Q	6	6	8	8	8
R	M4 x 8DP	M5 x 10DP	M6 x 9DP	M8 x 12DP	M10 x 15DP
S (P.C.D)	23	27	32	42	55
T	6	6	6	8	12
ØU	4.5	4.5	5.5	5.5	6.6
V (P.C.D)	65	71	82	96	125
W	6	6	6	8	12
X	M4	M4	M5	M5	M6
Y (Degree)	30°	30°	30°	22.5°	15°
Moment of Inertia [× 10 <sup>-4</sup> kgm <sup>2</sup> ]	0.033	0.079	0.193	0.413	1.69
Weight (kg)	0.52	0.68	0.98	1.5	3.2

\*The dimension B is the fitting position and permissible tolerance in the axial direction.

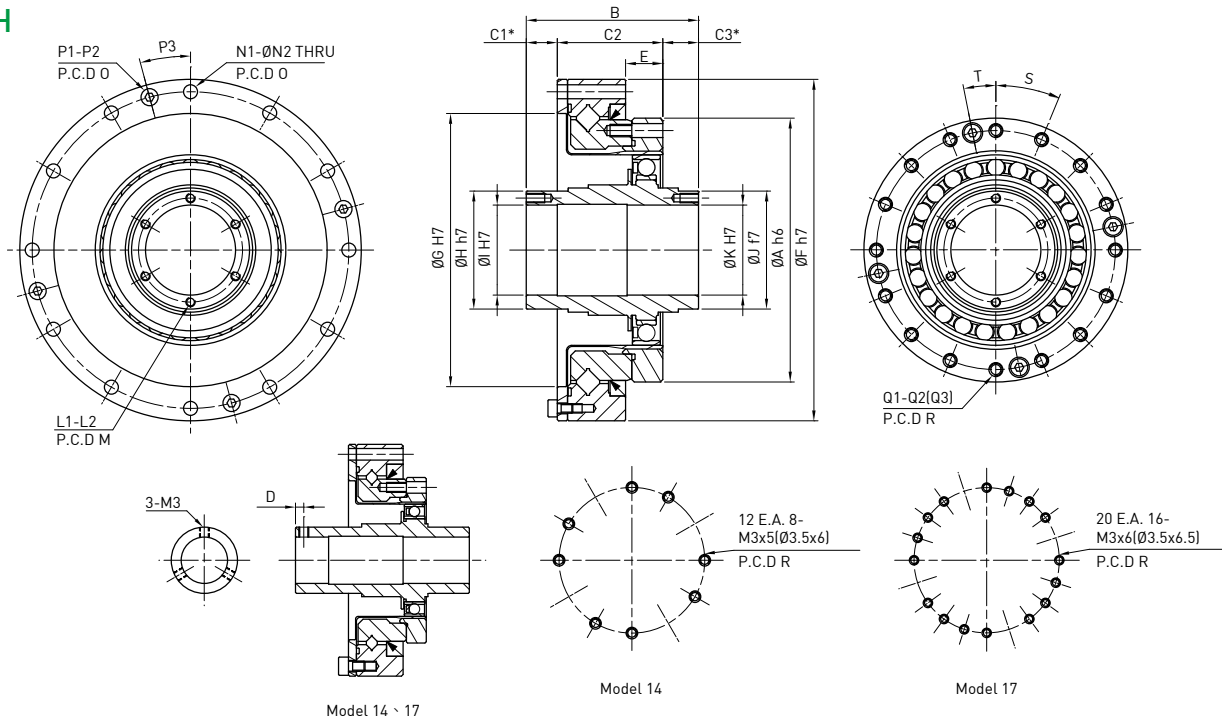


Model 14 - 17

Mark	Model	14	17	20	25	32
ØA h6		50	60	70	85	110
B*		28.5 <sup>0</sup> <sub>-0.8</sub>	32.5 <sup>0</sup> <sub>-0.9</sub>	33.5 <sup>0</sup> <sub>-1.0</sub>	37 <sup>0</sup> <sub>-1.0</sub>	44 <sup>0</sup> <sub>-1.1</sub>
C*		17.5 <sup>+0.4</sup> <sub>0</sub>	20 <sup>+0.5</sup> <sub>0</sub>	21.5 <sup>+0.6</sup> <sub>0</sub>	24 <sup>+0.6</sup> <sub>0</sub>	28 <sup>+0.6</sup> <sub>0</sub>
D		6	6.5	7.5	10	14
E		2	2.5	3	3	3
F		2.4	3	3	3	3.2
G		17.6 <sup>0</sup> <sub>-0.1</sub>	19.5 <sup>0</sup> <sub>-0.1</sub>	20.1 <sup>0</sup> <sub>-0.1</sub>	20.2 <sup>0</sup> <sub>-0.1</sub>	22 <sup>0</sup> <sub>-0.1</sub>
ØH h6		38	48	54	67	90
ØI		23	27.2	32	40	52
ØJ H6		11	10	16	20	26
ØK		14	18	21	26	26
ØL H7		6	8	9	11	14
M Js9		-	-	3	4	5
N		-	-	10.4 <sup>+0.1</sup> <sub>0</sub>	12.8 <sup>+0.1</sup> <sub>0</sub>	16.3 <sup>+0.1</sup> <sub>0</sub>
O		M3	M3	M3	M4	M5
P (P.C.D)		18.5	21.5	27	34	45
Q1		6	6	8	8	8
ØQ2		4.5	5.5	5.5	6.6	9
R (P.C.D)		17	19	24	30	40
S		3 <sup>+0.015</sup> <sub>0</sub>	3 <sup>+0.015</sup> <sub>0</sub>	-	-	-
T (Degree)		30°	30°	22.5°	22.5°	22.5°
U (Degree)		30°	30°	-	-	-
V1		6	12	12	12	12
ØV2		3.5	3.5	3.5	4.5	5.5
W (P.C.D)		44	54	62	75	100
X		M3	M3	M3	M4	M5
Y (Degree)		30°	15°	15°	15°	15°
Moment of Inertia (× 10 <sup>-4</sup> kgm <sup>2</sup> )		0.033	0.079	0.193	0.413	1.69
Weight (Kg)		0.09	0.15	0.28	0.45	0.89

\*The dimension B, C is the fitting position and permissible tolerance in the axial direction.

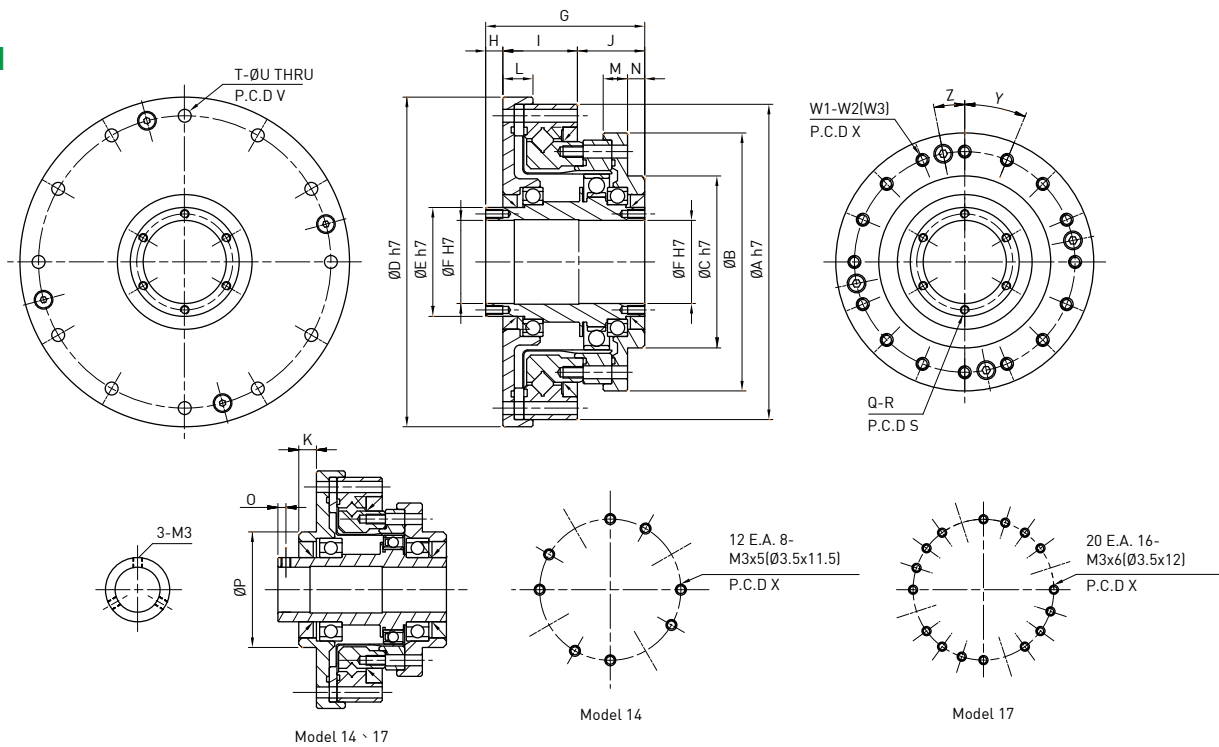
# WTI-PH



Mark	Model	14	17	20	25	32
ØA h6		50	60	70	85	110
B		52.5 <sup>0</sup> <sub>-0.1</sub>	56.5 <sup>0</sup> <sub>-0.1</sub>	51.5 <sup>0</sup> <sub>-0.1</sub>	55.5 <sup>0</sup> <sub>-0.1</sub>	65.5 <sup>0</sup> <sub>-0.1</sub>
C1*		16 <sup>+0.8</sup> <sub>0</sub>	16 <sup>+0.9</sup> <sub>0</sub>	9.5 <sup>+1.0</sup> <sub>0</sub>	10 <sup>+1.1</sup> <sub>0</sub>	12 <sup>+1.1</sup> <sub>0</sub>
C2		23.5	26.5	29	34	42
C3*		13	14	13	11.5	11.5
D		2.5	2.5	-	-	-
E		7	7.5	8.5	12	15
ØF h7		70	80	90	110	142
ØG H7		48	60	70	88	114
ØH h7		20	25	30	38	45
ØI H7		14	19	21	29	36
ØJ f7		20	25	30	38	45
ØK H7		14	19	21	29	36
L1		3	3	2 x 6	2 x 6	2 x 6
L2		M3	M3	M3 x 6DP	M3 x 6DP	M3 x 6DP
M (P.C.D)		-	-	25.5	33.5	40.5
N1		8	12	12	12	12
ØN2		3.5	3.5	3.5	4.5	5.5
O (P.C.D)		64	74	84	102	132
P1		2	4	4	4	4
P2		M3	M3	M3	M3	M4
P3 (degree)		22.5°	15°	15°	15°	15°
Q1		12 E.A. 8	20 E.A. 16	16	16	16
Q2		M3 x 5DP	M3 x 6DP	M3 x 6DP	M4 x 7DP	M5 x 8DP
Q3		Ø3.5 x 6DP	Ø3.5 x 6.5DP	Ø3.5 x 7.5DP	Ø4.5 x 10DP	Ø5.5 x 14DP
ØR		44	54	62	77	100
S (degree)		30°	18°	22.5°	22.5°	22.5°
T (degree)		30°	18°	11.25°	11.25°	11.25°
Moment of Inertia (×10 <sup>-4</sup> kgm <sup>2</sup> )		0.091	0.193	0.404	1.070	2.85
Weight(Kg)		0.45	0.63	0.89	1.44	3.1

\*The dimension C1, C3 is the fitting position and permissible tolerance in the axial direction.

# WTI-AH



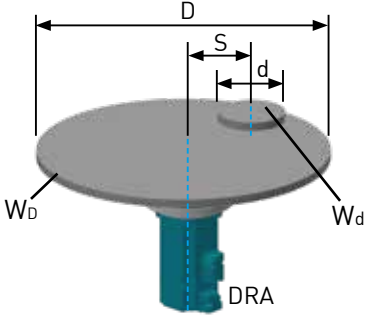
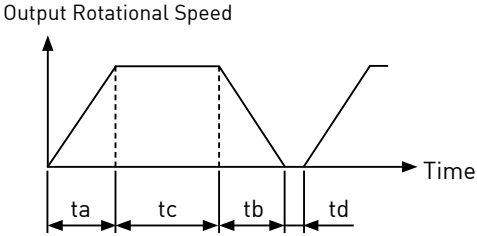
Model 14、17

Model 14

Model 17

Mark	Model	14	17	20	25	32
ØA h7		70	80	90	110	142
ØB		54	64	75	90	115
ØC h7		36	45	50	60	85
ØD h7		74	84	95	115	147
ØE h7		20	25	30	38	45
ØF H7		14	19	21	29	36
G		52.5	56.5	51.5	55.5	65.5
H		12	12	5	6	7
I		20.5	23	25	26	32
J		20	21.5	21.5	23.5	26.5
K		5.5	5.5	-	-	-
L		9	10	10.5	10.5	12
M		8	8.5	9	8.5	9.5
N		7.5	8.5	7	6	5
O		2.5	2.5	-	-	-
P		36	45	-	-	-
Q		3	3	2 x 6	2 x 6	2 x 6
R		M3	M3	M3 x 6DP	M3 x 6DP	M3 x 6DP
S (P.C.D)		-	-	25.5	33.5	40.5
T		8	12	12	12	12
ØU		3.5	3.5	3.5	4.5	5.5
V (P.C.D)		64	74	84	102	132
W1		12 E.A. 8	20 E.A. 16	16	16	16
W2		M3 x 5DP	M3 x 6DP	M3 x 6DP	M4 x 7DP	M5 x 8DP
W3		Ø3.5 x 11.5DP	Ø3.5 x 12DP	Ø3.5 x 13.5DP	Ø4.5 x 15.5DP	Ø5.5 x 20.5DP
X (P.C.D)		44	54	62	77	100
Y (degree)		30°	18°	22.5°	22.5°	22.5°
Z (degree)		30°	18°	11.25°	11.25°	11.25°
Moment of Inertia (×10 <sup>-4</sup> kgm <sup>2</sup> )		0.091	0.193	0.404	1.07	2.85
Weight(Kg)		0.71	1.0	1.38	2.1	4.5

# DATORKER® Inquiry Form

Customer Name		Date	
Basic Information	Equipment	<input type="checkbox"/> Robot _____ <input type="checkbox"/> Semi-conductor equipment _____ <input type="checkbox"/> Machine tool _____ <input type="checkbox"/> Automation equipment _____ <input type="checkbox"/> Inspection equipment _____ <input type="checkbox"/> Medical related equipment _____ <input type="checkbox"/> Others _____	
	Others	<input type="checkbox"/> Dust Proof <input type="checkbox"/> Customized Dimensions <input type="checkbox"/> Others ( _____ )	
Type of Reducer currently used		<input type="checkbox"/> Planetary gear reducer <input type="checkbox"/> Cycloid gear reducer <input type="checkbox"/> Hollow rotary platform <input type="checkbox"/> Harmonic reducer, Brand _____ ; Spec _____ <input type="checkbox"/> Others ( _____ )	
Selection	● Mechanism details Table diameter (D) : _____ (mm) Table weight (W <sub>D</sub> ) : _____ (kg) Workpiece diameter (d) : _____ (mm) Workpiece weight (W <sub>d</sub> ) : _____ (kg) Distance between axis center and workpiece center(S) : _____ (mm)		● Operation Parameters Maximum RPM : _____ (rpm) Acceleration time (t <sub>a</sub> ) : _____ (sec) Deceleration time (t <sub>b</sub> ) : _____ (sec) Velocity time (t <sub>c</sub> ) : _____ (sec) Rest time (t <sub>d</sub> ) : _____ (sec)
			
Reduction Ratio		<input type="checkbox"/> 50 <input type="checkbox"/> 80 <input type="checkbox"/> 100 <input type="checkbox"/> 120	
Environments		<input type="checkbox"/> Normal working conditions (ambient temperature 0°C - 40°C , humidity under 80% RH) <input type="checkbox"/> Special working conditions (ambient temperature : _____ °C) <input type="checkbox"/> Harsh environment (Dusty, Cutting fluid, dirty, etc) <input type="checkbox"/> Other special conditions : _____	

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