

NEW PRODUCT

Harmonic Gearing System



- Harmonic Gear Reducer
- High Torsional Rigidity
- Exceptional Starting Torque

DATORKER[®]

Harmonic Gear Reducer offers industry leading precision, efficiency, torsional rigidity with low starting torque.

Features

Compact and Light Weight

Simple assembly and integration

High Accuracy

Precise positioning and accuracy with no backlash

Customizable

Can be customized to suit unique applications

High Torque

Widely used in automation and inspection equipment

Wide Range of Reduction Ratios

Multiple sizes and reduction ratios available

Applications

- Aerospace
- Heavy-Duty Equipment
- Industrial Robots
- Machine Tools
- Measuring & Testing
- Medical Equipment
- Printing Machines
- Semiconductor Equipment
- Woodworking Machines
- Specialty Machines

Harmonic Gearing System

Basic Design & Function

A harmonic gearing system has three basic components: a wave generator, a flex spline, and a circular spline.

The elliptical shape of the wave generator, rotating against the thin, tooth lined flex spline, drives or is driven by the rigid circular spline which has more teeth than the flex spline. The result is a gear system that will reduce speed and increase torque.

The unique properties of the harmonic system allow it to achieve much higher gear ratios than other gear reduction solutions in a more compact space.



Wave Generator

Usually the drive component, the flex spline, with its elliptical geometric design, engages with the circular spline at regular intervals.

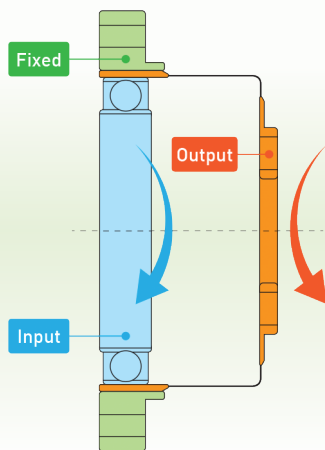
Circular Spline

Usually the fixed end, the rigid circular gear has 2 teeth more on its inner bore side than the external teeth on the flex spline.

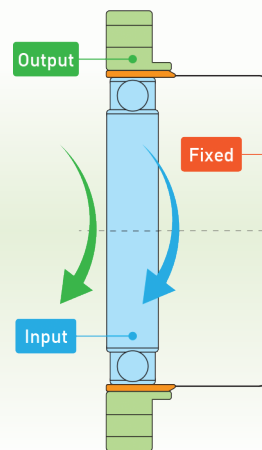
Flex Spline

Usually the output component, it is constructed of slim resilient metal for continuous elastic deformation when in use.

Mounting and Rotation



Input and Output with reverse direction rotation



Input and Output with same direction rotation

Standard Assemblies



WUTPO

- Assembled and Lubricated
- Cup Type Flex Spline
- Flange Type Circular Spline
- Crossed Roller Bearing Included



WUICO

- Not Assembled or Lubricated
- Cup Type Flex Spline
- Ring Type Circular Spline
- No Crossed Roller Bearing



WTIPH

- Assembled and Lubricated
- Hollow Type Flex Spline
- Ring Type Circular Spline
- Hollow Shaft
- Crossed Roller Bearing Included



WTIAH

- Assembled and Lubricated
- Hollow Type Flex Spline
- Ring Type Circular Spline
- Sealed Design
- Crossed Roller Bearing Included

Many sizes and other assembly variations available.







Ordering Information

W	U	T	S	25	80	P	O	C
	Flex Spline	Circular Spline	Series	Model	Reduction Ratio	Assembly	Shaft Input	Custom
	U: Cup Type T: Hollow Type	I: Ring Type T: Flange Type	S: Standard	14 17 20 25 32	50: 50 to 1 80: 80 to 1 100: 100 to 1 120: 120 to 1	C: Component Type P: Combination Type A: Sealed Type	O: Oldham Coupling H: Hollow Shaft J: Solid Shaft E: Plate	Blank: Uncustomized C: Customized

Specification Table

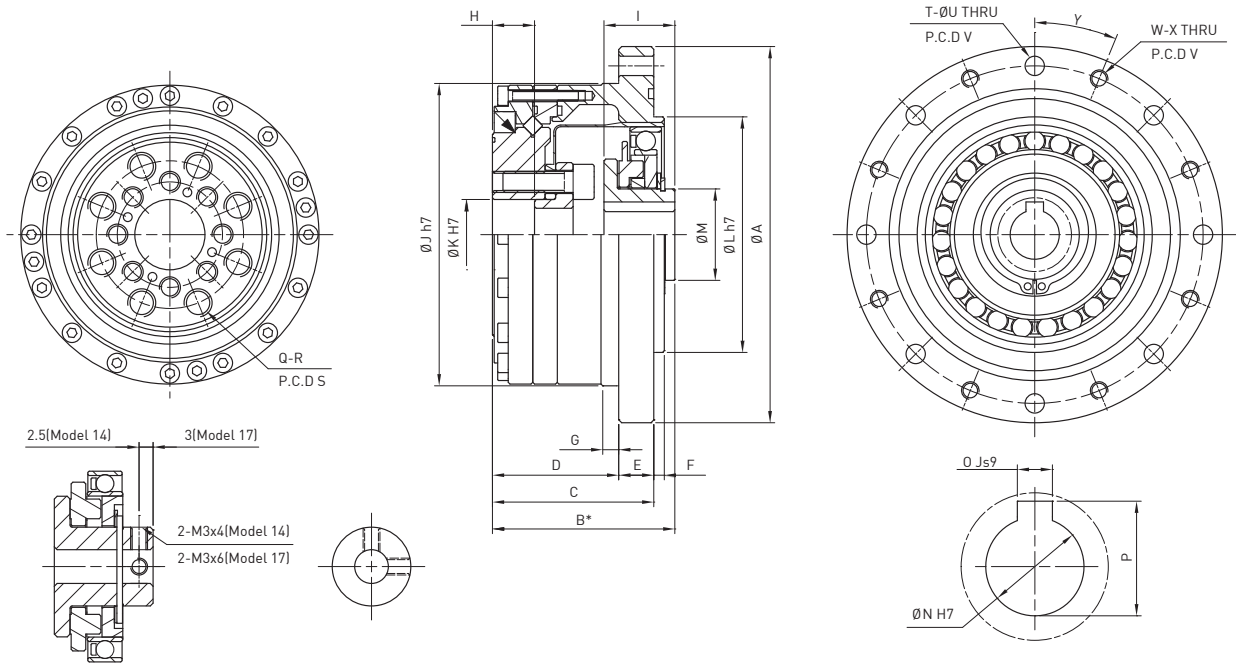
Model	Reduction Ratio	Rated torque at input 2000rpms		Peak torque at start/stop		Instantaneous permissible max. torque	
		Nm	kgfm	Nm	kgfm	Nm	kgfm
14	50	5.4	0.55	18	1.8	35	3.6
	80	7.8	0.8	23	2.4	47	4.8
	100	7.8	0.8	28	2.9	54	5.5
17	50	16	1.6	34	3.5	70	7.1
	80	22	2.2	43	4.4	87	8.9
	100	24	2.4	54	5.5	108	11
	120	24	2.4	54	5.5	86	8.8
20	50	25	2.5	56	5.7	98	10
	80	34	3.5	74	7.5	127	13
	100	40	4.1	82	8.4	147	15
	120	40	4.1	87	8.9	147	15
25	50	39	4	98	10	186	19
	80	63	6.4	137	14	255	26
	100	67	6.8	157	16	284	29
	120	67	6.8	167	17	304	31
32	50	76	7.8	216	22	382	39
	80	118	12	304	31	568	58
	100	137	14	333	34	647	66
	120	137	14	353	36	686	70

Component/Assembly Options

<p>Flex Spline Types</p>  <p>Cup Type (U) Hollow Type (T)</p>	<p>Shaft Input Types</p>  <p>Oldham Coupling (O) Hollow Type (H)</p>	<p>Assembly</p> <p>Component (C)</p> <ul style="list-style-type: none"> • Unassembled • Not Pre-lubricated • Crossed Roller Bearing Not Included 
<p>Circular Spline Types</p>  <p>Ring Type (I) Flange Type (T)</p>	<p>Assembly</p> <p>Combination (P)</p> <ul style="list-style-type: none"> • Assembled • Pre-lubricated (G11 Grease) • Crossed Roller Bearing Included 	<p>Assembly</p> <p>Sealed (A)</p> <ul style="list-style-type: none"> • Assembled with Seals • Pre-lubricated (G11 Grease) • Crossed Roller Bearing Included 

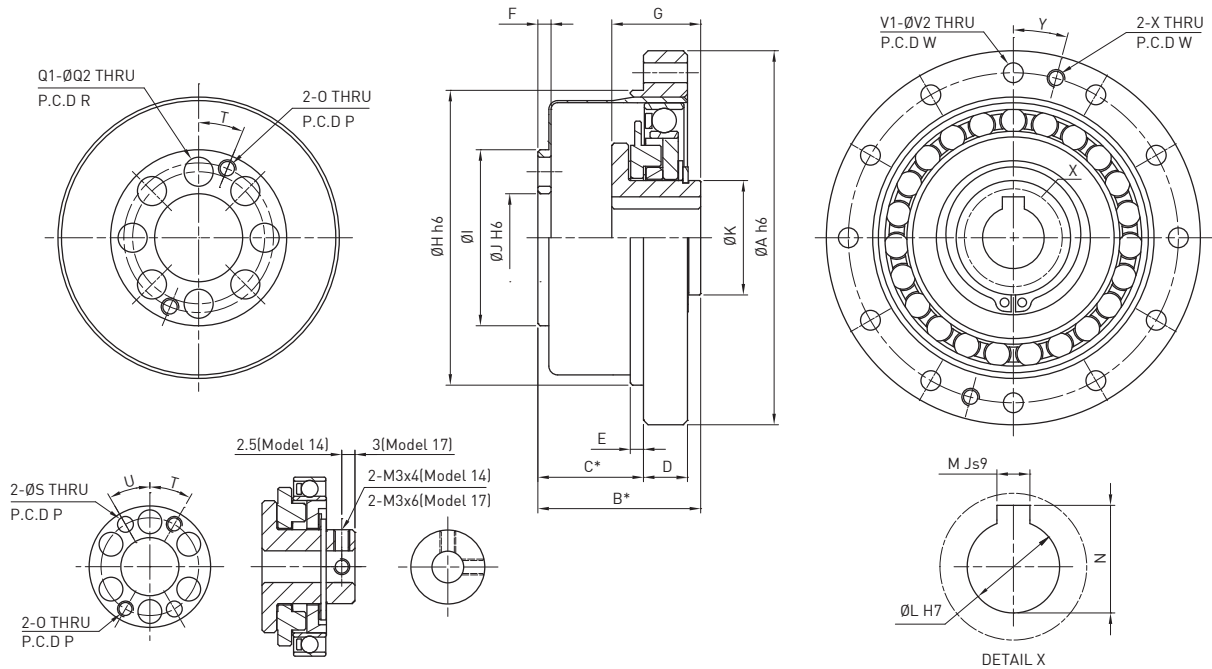
Please contact HIWIN for more info.

WUT-S---PO



Mark \ Model	14	17	20	25	32
ØA	73	79	93	107	138
B*	41 _{-0.9}	45 _{-0.9}	45.5 ₋₁	52 ₋₁	62 _{-1.1}
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 _{-0.1}	19.5 _{-0.1}	20.1 _{-0.1}	20.2 _{-0.1}	22 _{-0.1}
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
Ø Js9	-	-	4	5	5
P	-	-	13.8 ₀ ^{+0.1}	16.3 ₀ ^{+0.1}	16.3 ₀ ^{+0.1}
Q	6	6	8	8	8
R	M4xDP8	M5xDP10	M6xDP9	M8xDP12	M10xDP15
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°

* B is the tolerance and the matching position of axial direction.

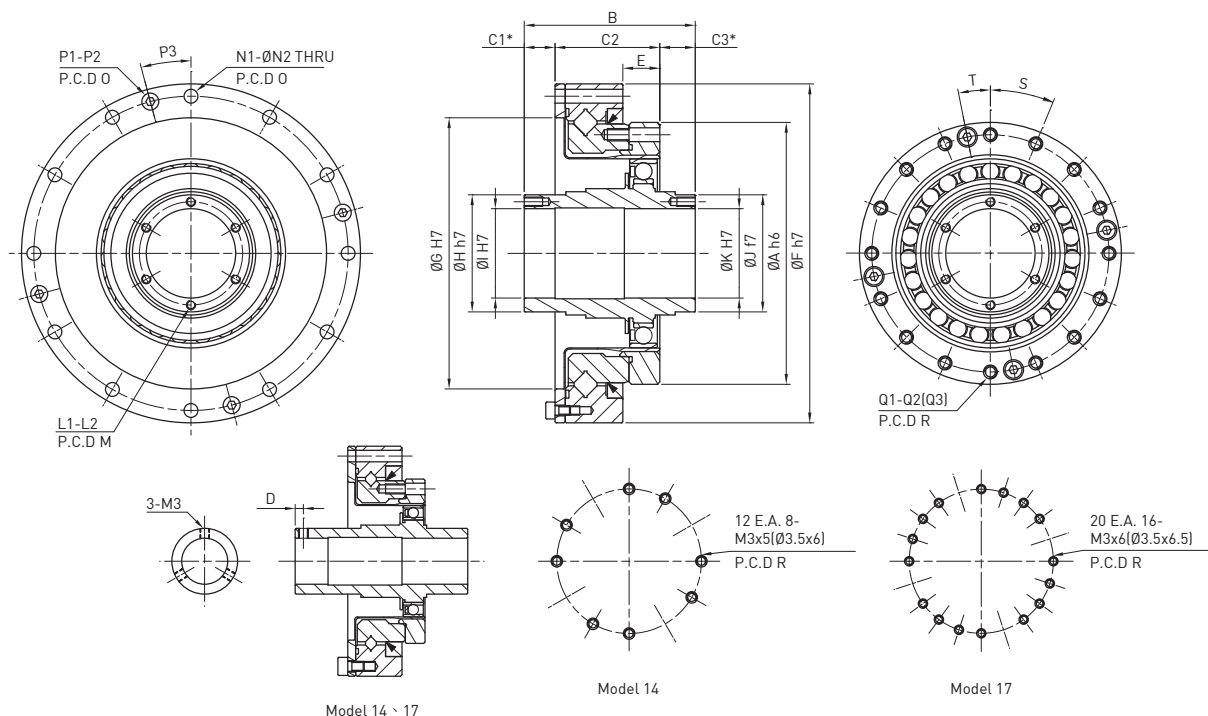


Model 14 - 17

Model	14	17	20	25	32
Mark					
ØA h6	50	60	70	85	110
B*	28.5 ^{-0.8}	32.5 ^{-0.9}	33.5 ^{-1.0}	37 ^{-1.0}	44 ^{-1.1}
C*	17.5 ^{+0.4}	20 ^{+0.5}	21.5 ^{+0.6}	24 ^{+0.6}	28 ^{+0.6}
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 ^{-0.1}	19.5 ^{-0.1}	20.1 ^{-0.1}	20.2 ^{-0.1}	22 ^{-0.1}
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 ^{+0.1}	12.8 ^{+0.1}	16.3 ^{+0.1}
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 ^{+0.015}	3 ^{+0.015}	-	-	-
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°

* B and C is the tolerance and the matching position of axial direction.

WTI-S-■■-■■-PH

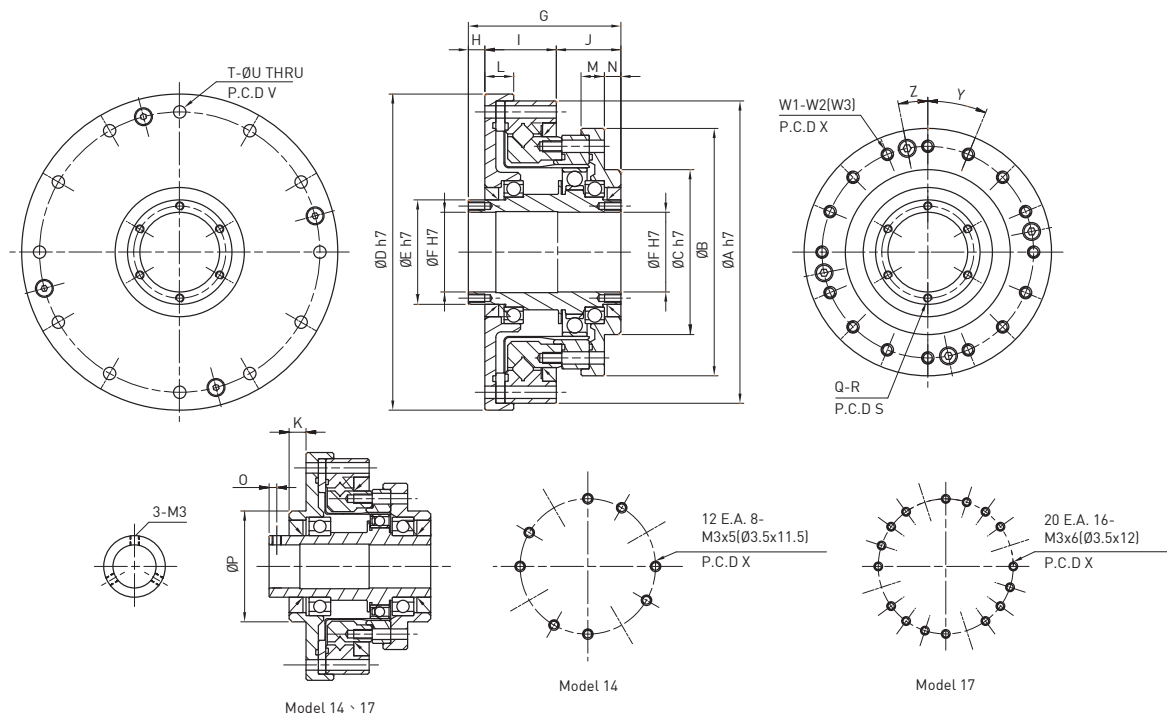


Model 14、17

Model	14	17	20	25	32
Mark					
ØA h6	50	60	70	85	110
B	52.5 ^{-0.1}	56.5 ^{-0.1}	51.5 ^{-0.1}	55.5 ^{-0.1}	65.5 ^{-0.1}
C1*	16 ^{+0.8}	16 ^{+0.9}	9.5 ^{+1.0}	10 ^{+1.1}	12 ^{+1.1}
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	2x6	2x6	2x6
L2	M3	M3	M3xDP6	M3xDP6	M3xDP6
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	M3xDP5	M3xDP6	M3xDP6	M4xDP7	M5xDP8
Q3	Ø3.5xDP6	Ø3.5xDP6.5	Ø3.5xDP7.5	Ø4.5xDP10	Ø5.5xDP14
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°

* C1, C3 is the tolerance and the matching position of axial direction.

WTI-S---AH



Model	14	17	20	25	32
Mark					
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	2x6	2x6	2x6
R	M3	M3	M3xDP6	M3xDP6	M3xDP6
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	M3xDP5	M3xDP6	M3xDP6	M4xDP7	M5xDP8
W3	Ø3.5xDP11.5	Ø3.5xDP12	Ø3.5xDP13.5	Ø4.5xDP15.5	Ø5.5xDP20.5
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°

Harmonic Gearing System

HIWIN[®]
Motion Control and System Technology



HIWIN Advantages:

Harmonic gearing systems have no backlash, high compactness and are light weight. HIWIN offers reduction ratios from 50:1 up to 120:1 in the same space a planetary gear would typically only produce a 10:1 ratio.

HIWIN reducers offer fine resolution and excellent repeatability. More than 30% of all gear teeth engage simultaneously to ensure precision motion control.

HIWIN systems have industry leading load capacities and are 50% smaller and lighter than designs with similar capacities.

HIWIN integrates its own, patented crossed roller bearing, ensuring a highly compact design with superior load ratings.

HIWIN offers gearing systems with a large selection of specifications and reduction ratios to ensure optimal machine integration.

HIWIN gearing systems offer industry leading torsional stiffness for longer service life.

HIWIN can also provide customized designs and services to meet customers' unique requirements.

HIWIN[®]
Motion Control and System Technology

- Reduce Component Costs
- Improve Production Time
- Engineering Support Available

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