Application

- Smart robot
- Multi-axis robot arm for industrial or household
- High precision machining tool
- Aerospace and marine technology
- Electric bike and scooter
- Control for wind turbine blades
- Other speed reducing applications

Designation for TPI Strainwave Drive

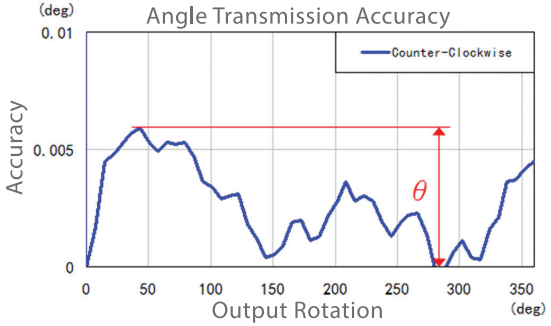
Model	Type	Gear Ratio	Assembly/Part Type
TCS TSH	14 17 20 25 32	50 80 100 120	CT UT HUT SUT NST HST

- TCS=Cup Type, TSH=Hat Type
- Gear ratio is determined by the combination of **input**: Wave Generator, **fixed**: Circular Gear, and **output part**: Flex Gear.

Corresponding Cross Roller Bearing to Reducer Type

Type	Thin Raced Bearing	Cross Roller Bearing (TCS)	Cross Roller Bearing (TSH)
14	SX05T01	CRA1116	CRC3815
17	SX06T01	CRA1016	CRC4717
20	SX07T01	CRA1416	CRC5418
25	SX09T01	CRA2018	CRC6720
32	SX12T01	CRA2621	CRC8824

Angle Transmission Accuracy



Specification(arc min)

Ratio \ Type	14	17	20	25	32
30	1.5	1.0	1.0	1.0	1.0
Over 50	1.0	1.0	0.5	0.5	0.5

TPI Strainwave Drive

TPI BEARINGS

TUNG PEI INDUSTRIAL CO., LTD.

10F., No.142, Sec. 4, Zhongxiao E. Rd., Taipei City 10688, Taiwan
Tel: +886-2-2741-7321 Fax: +886-2-2741-6623

TPI® BEARINGS

www.tpi.tw

Product Origin

Strain wave gearing was invented by American inventor C.W. Musser by utilizing the flexibility of metal and elastic dynamics. This invention caught the world's attention as it revolutionized the way we transmit power through reducer with its small volume, high torque capability, high rigidity, high rotational accuracy and repeatability. Until now, strain wave gearing is still being improved continuously and used by people all over the world.

Product Definition

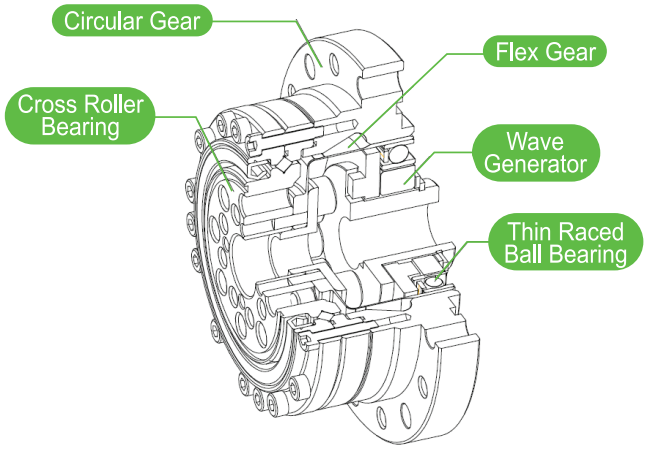
Strain wave gear is used between the driving part and working machine to match speed and transmitting torque. It is a high-precision, power-transmitting reducer, with the function of reducing speed and increasing torque.

Product Principle

Strain wave gear is commonly used in low speed, high torque equipment. TPI Strain Wave Drive achieves its speed reducing function by connecting the high speed driving force with the input shaft, and then transmitting it through the meshing of the gear teeth.

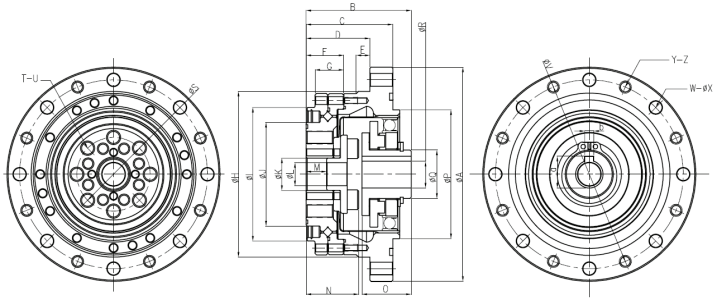
Unique Characteristic

TPI Strain Wave Drive comprises of the Wave Generator, Flex Gear, Circular Gear, and Cross Roller Bearing, while the Wave Generator itself is made up of Thin Raced Ball Bearing. The reason TPI Strain Wave Drive is capable of producing such high torque and repeatability is due to the small gear module and high number of meshing teeth, this also what makes it very compact and lightweight.



TCS-UT | Unit Type

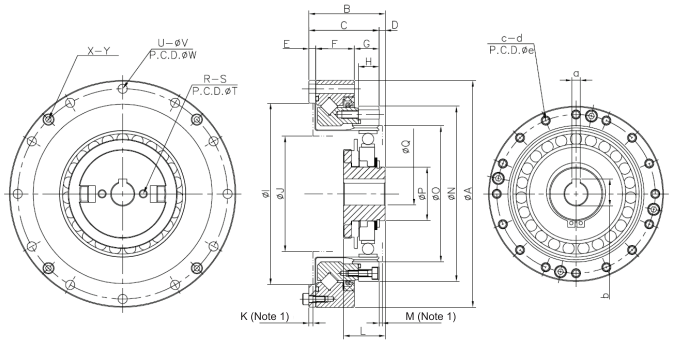
*Actual dimension will be based on Approval Drawing



Type / Dimension	14	17	20	25	32
ϕA	73	79	93	107	138
B	41	45	45.5	52	62
C	34	37	38	46	57
D	27	29	28	36	45
E	3.5	4.5	6	6	6
F	16.5	16.5	16.5	18.5	22.5
G	12	12	12	14	17
ϕH	56	63	72	86	113
ϕI	42.5	49.5	58	73	96
ϕJ	31	38	45	58	78
ϕK	11	10	14	20	26
ϕL	8	6	10	15	20
M	9.4	9.5	9	12	15
N	21.4	23.5	23	29	37
O	18.5	20.7	21.5	21.6	23.6
ϕP	38	48	56	67	90
ϕQ	14	18	21	26	26
ϕR	6	8	12	14	14
ϕS	23	27	32	42	55
T	6	6	8	8	8
U	M4	M5	M6	M8	M10
ϕV	65	71	82	96	125
W	8	8	8	10	12
ϕX	4.5	4.5	5.5	5.5	6.6
Y	8	8	8	10	12
Z	M4	M4	M5	M5	M6
a	-	-	13.8	16.3	16.3
b	-	-	4	5	5
set screw	2-M3	2-M3	-	-	-

TSH-NST | Simple Unit Type

*Actual dimension will be based on Approval Drawing



Note 1: Area defined by the ------ line should be considered when designing the case, to prevent the reducer coming into contact with the case.

Type / Dimension	14	17	20	25	32
ϕA	70	80	90	110	142
B	28.5	32.5	33.5	37	44
C	23.5	26.5	29	34	42
D	5	6	4.5	3	2
E	2.4	3	3	3.3	3.6
F	14.1	16	17.5	18.7	23.4
G	7	7.5	8.5	12	15
H	6	6.5	7.5	10	14
ϕI	48	60	70	88	114
ϕJ	32	38	45	56	75
K	1.5	2	1.8	2	2
L	17.6	19.5	20.1	20.2	22
M	1	1	1.5	1.5	1.5
ϕN	50	60	70	85	110
ϕO	37	45	53	66	86.5
ϕP	14	18	21	26	26
ϕQ	8	8	11	11	14
R	-	-	2	2	-
S	-	-	M3	M4	-
ϕT	-	-	16	20	-
U	8	12	12	12	12
ϕV	3.5	3.5	3.5	4.5	5.5
ϕW	64	74	84	102	132
X	2	4	4	4	4
Y	M3	M3	M3	M3	M4
a	-	-	4	4	5
b	-	-	12.8	12.8	16.3
c	8	16	16	16	16
d	M3	M3	M3	M4	M5
ϕe	44	54	62	77	100
set screw	2-M3	2-M3	-	-	-