

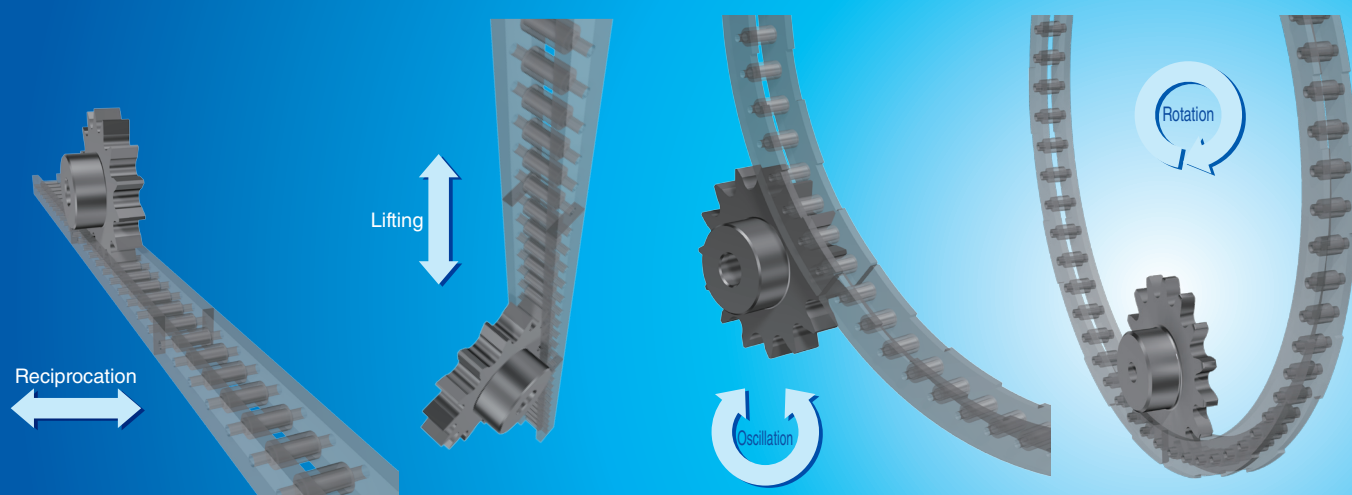
TSUBAKI Pin Gear Drive Unit



PDU

Pin Gear Drive Units

Turning ideas into reality. Tsubaki's Pin Gear Drive Unit with roller-type gear rack Supports a wide range of needs with space-saving design, easy installation, and extensive variations.



Features

■ Space-saving design and easy installation

Contributes to overall equipment compactness and allows use with flexible installation accuracy, enabling easy installation.

■ Wide variation enables large-size support

Extensive variations allow flexible support for a wide range of size requirements.

■ Resistant to foreign matter accumulation and wear

Rotating rollers reduce wear and prevent accumulation of foreign matter in meshing areas.

■ Cost reduction and improved efficiency

Segment structure allows selection of only the required length and angle, enabling cost reduction and efficient design.

Drive system	Pin Gear Drive	Ordinary gear	Chain-type pin gear
Installation man-hours	○	△	△
Variation	○	△	△
Large equipment	○	△	○
Transmission torque	○	○	○

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Tables of Dimensions

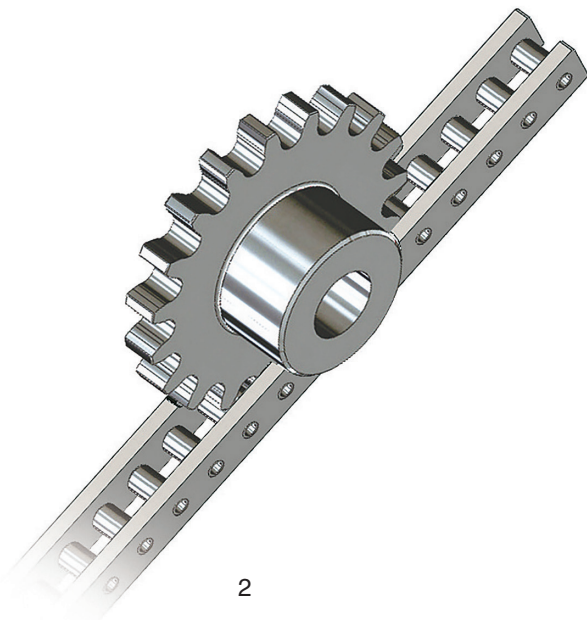
For Linear Drive	
PDU020-040	7
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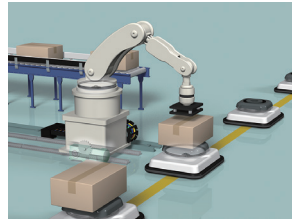


PDU opens up new possibilities for more efficient motion.

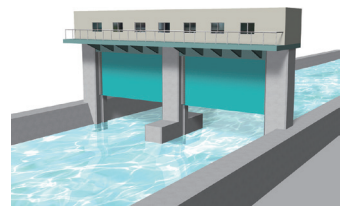
Hard Sail Wind Propulsion System (Lifting)



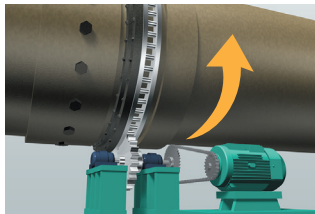
Transfer Robot (Traverse / Rotation)



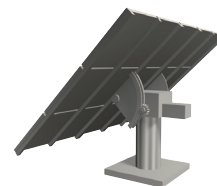
Floodgates (Lifting)



Rotary Kiln (Rotation)



Solar Panel (Oscillation)



Wave Power Generation (Lifting)



Tsubaki Power Transmission Products Information Site <https://en.tt-net.tsubakimoto.co.jp>

Video content is also available on the product information page.

HOME > Product info > Sprocket / Pin gear drive unit > Video content

https://en.tt-net.tsubakimoto.co.jp/tecs/pdct/spr/pdct_CPDU_toku.asp



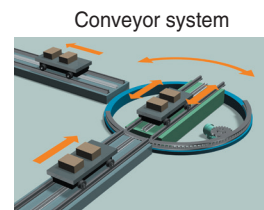
Extensive lineup supporting a wide range of mechanisms

Steel Models (Standard Specification)

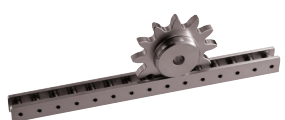


Standard PDU ideal for general industrial applications

- Supports a wide range of applications
- Easy installation and adjustment
- Stable power transmission

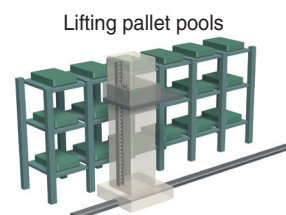


Steel Models (Electroless Nickel Plating Specification)

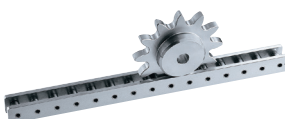


Surface-treated PDU for high reliability

- Uniform surface treatment ensures stable corrosion resistance
- Long-term operation possible with periodic maintenance
- Excellent rust prevention performance in standard environments



Steel Models (High Anti-Rust Specification)



High-performance surface-treated PDU suitable for outdoor use

- Combines excellent rust resistance with high strength
- High corrosion resistance enables long-term operation
- Stable performance even in harsh environments

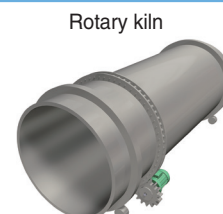


Flexible Models



PDU with high installation flexibility and tolerance for rough adjustment

- Wide allowable center distance range
- Adapts to environments with significant thermal expansion and vibration
- High tolerance during installation



Stainless Steel Models



PDU for industries requiring high hygiene levels and chemical resistance

- Excellent corrosion resistance and cleanliness
- Ideal for food and pharmaceutical industries
- Stability under high- and low-temperature environments
- Low maintenance

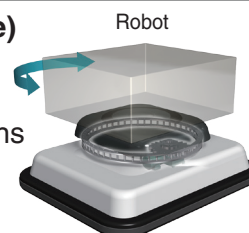


Special Models



Locking pin gear (Integrated friction clamping type) Special backlash specifications, Sluice/Movable weir specifications, etc.

- Custom-made design based on required specifications
- Ensures compatibility with existing equipment and machinery
- Supports non-standard sizes and materials



Consult Tsubaki for design support and technical consultation.

■ Frame Numbers by Model Type and Specification

Product \ Frame No.	PDU 020	PDU 022	PDU 030	PDU 035	PDU 040	PDU 050	PDU 055	PDU 070	PDU 080	PDU 090	PDU 120	PDU 150	PDU 180	PDU 240
Steel Models	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Electroless Nickel Plating Specification	○	○	○	○	○									
High Anti-Rust Specification	○	○	○	○	○	○	○	○	○*	○*				
Flexible Models						○	○	○	○	○				
Stainless Steel Models	○	○	○	○	○	○	○	○	○	○				

* Angle type is not available for frame numbers PDU080 and above.

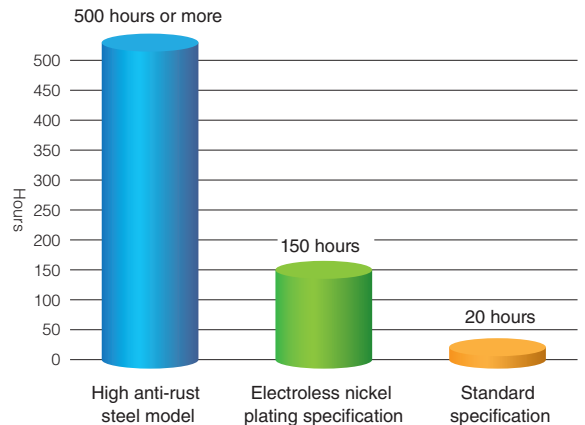
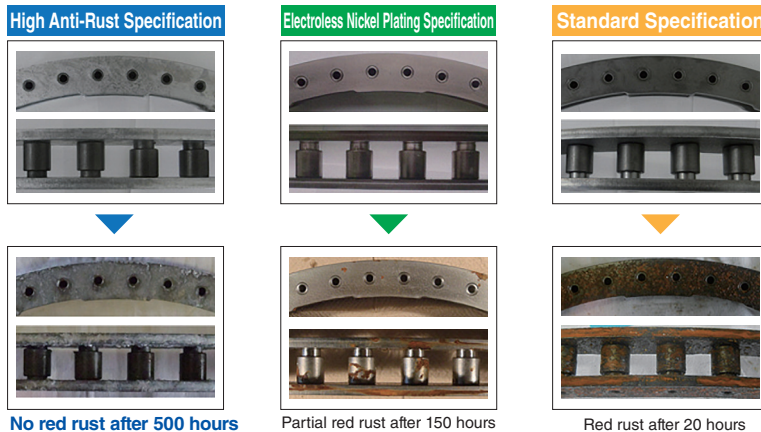
■ Steel Models (Standard Specification)

- Steel Models (Electroless Nickel Plating Specification)
- High Anti-Rust Steel Models

(Applicable Frames: PDU020–PDU040)

(Applicable Frames: PDU020–PDU090)

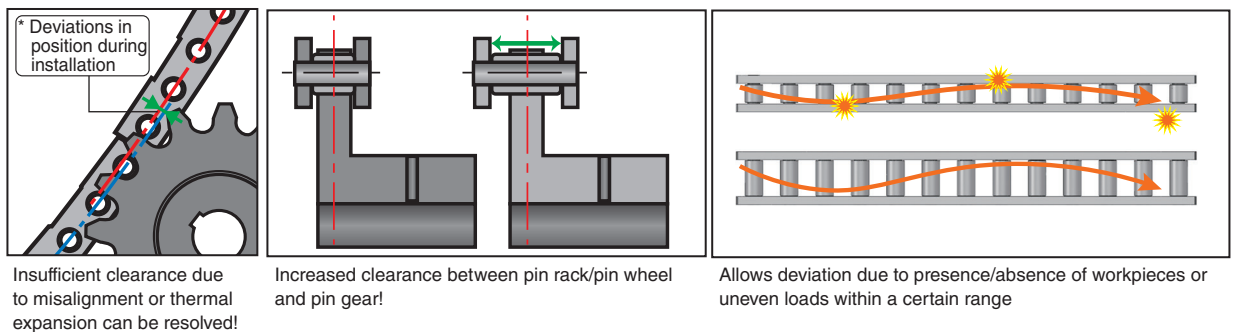
Salt Spray Test Results



Note: Based on in-house test results.

■ Flexible Models (Applicable Frames: PDU050–PDU090)

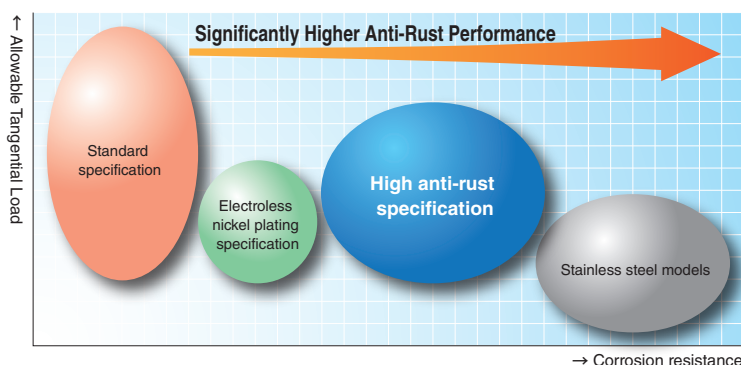
- Features Flexible models have a large center distance tolerance and a wider clearance between the pin rack/pin wheel and pin gear. This is effective not only for equipment requiring strict installation precision but also if the installation position changes due to thermal expansion during operation.
- Specifications Some steel models adopt different dimensions. See the Table of Dimensions.



■ Stainless Steel Models (Applicable Frames: PDU020–PDU090)

Some steel models adopt different dimensions. See the Table of Dimensions starting on page 7.

■ Selection Guide



Basic Information

■ Allowable Tangential Load F_p

Frame No.	Pitch mm	Allowable Tangential Load kN {kgf}		
		Steel Models	Flexible Models	Stainless Steel Models
PDU020	20	4.7 {480}	—	0.8 {80}
PDU022	22	7.7 {780}	—	1.1 {110}
PDU030	30	12.8 {1300}	—	1.9 {190}
PDU035	35	19.5 {1990}	—	2.6 {270}
PDU040	40	27.3 {2780}	—	4.1 {420}
PDU050	50	31.7 {3230}	25.3 {2580}	5.1 {520}
PDU055	55	52.9 {5390}	37.0 {3770}	7.0 {710}
PDU070	70	60.7 {6190}	48.5 {4950}	9.9 {1010}
PDU080	80	71.5 {7290}	57.2 {5830}	12.0 {1220}
PDU090	90	98.9 {10100}	79.1 {8070}	16.8 {1710}
PDU120	120	122.5 {12490}	—	—
PDU150	150	240 {24500}	—	—
PDU180	180	347 {35400}	—	—
PDU240	240	525 {53400}	—	—

* Pin wheel pitch is circular arc pitch.

* Tangential load may be reduced for some specifications or in certain applications.

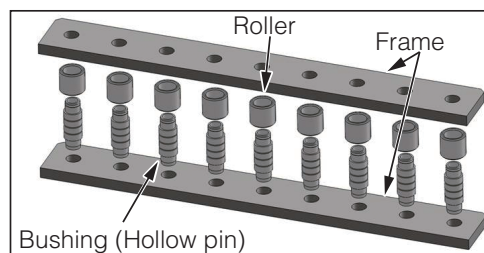
■ Operating Conditions and Materials

		Steel Models	Flexible Models	Stainless Steel Models
Maximum Speed		Tangential speed: 50 m/min		
Usage Environment		Indoors (not exposed to rain or water)		Corrosive atmospheres
Usage Temperature		-10°C to 150°C		-20°C to 400°C
Materials	Frame	Rolled steel		Austenitic stainless steel
	Bush	Alloy steel		Precipitation hardened stainless steel
	Roller	Alloy steel		Austenitic stainless steel
	Pin Gear	Carbon steel (with hardened teeth)		Austenitic stainless steel

■ Structure

Pin Gear Drive Units include a pin gear that meshes with a pin rack or pin wheel. The pin rack or pin wheel consists of a frame, bushings, and rollers. The bushes are all hollow pin-types that can also be used as mounting holes.

* For angle type, some solid pins are used and therefore cannot be used as mounting holes.

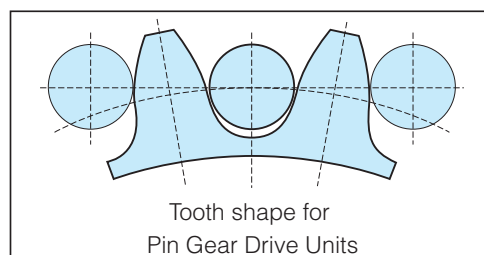


■ Unique Tooth Profile (Dislocated Tooth Profile)

The pin gear adopts a unique tooth profile that enables smooth engagement and transmission with pin racks and pin wheels. The continuous engagement of the teeth and the rollers results in flexible engagement. In addition, the steel teeth are hardened to improve strength and wear resistance.

Notes: 1. Tooth profile differs between linear drive and rotational drive applications.

2. In rotational drive applications, the tooth profile varies depending on inner/outer rotational drive and the number of pins per revolution.



Pin Rack (for Linear Drive) Table of Dimensions (1) (PDU020–040)

■ Example Model No.

● Pin rack

PDU020-SPA040P-R

Frame No.

Drive system
S: Linear drive

Pin rack

Mounting type F: Flat type
A: Angle type

Overall pin count

[Blank]: Standard steel model

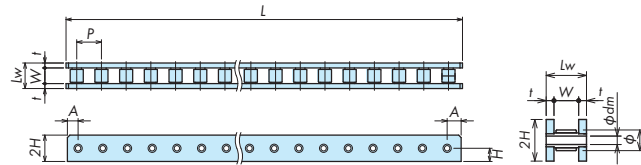
K: Electroless nickel plating specification

R: High anti-rust steel model

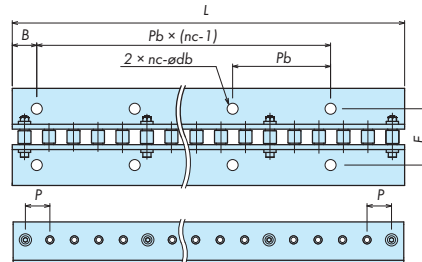
S: Standard stainless steel model

The number of pins can be freely selected as long as it is equal to or greater than the minimum number of pins.

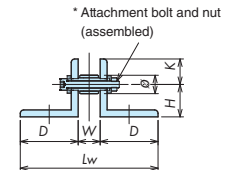
Pin Rack (Flat Type): SPF



Pin Rack (Angle Type): SPA



* Hollow pins for angle type are pre-fixed with bolts and nuts for rack mounting.



■ Flat Type

Frame No.		Pin Count <i>NT</i>	Pitch <i>P</i>	Roller Diameter <i>ø</i>	Length <i>L</i>	Inside Width <i>W</i>	Center Height <i>H</i>	Overall Height <i>2H</i>	Overall Width <i>Lw</i>	Plate Thickness <i>t</i>	Pin Position <i>A</i>	Bolt Hole Diameter <i>ødm</i>	Mounting Bolt Size	Approx. Mass kg
PDU020	Standard Length	40	20	10.16	800	12	11	22	21 (22)	4.5 (5)	10	4.5	M4	1.4 (1.5)
	Minimum	8	20	10.16	160	12	11	22	21 (22)	4.5 (5)	10	4.5	M4	0.3 (0.3)
PDU022	Standard Length	36	22	11.91	792	16	12.5	25	25 (26)	4.5 (5)	11	4.5	M4	1.7 (1.9)
	Minimum	13	22	11.91	286	16	12.5	25	25 (26)	4.5 (5)	11	4.5	M4	0.6 (0.7)
PDU030	Standard Length	26	30	15.88	780	19	16	32	31 (31)	6 (6)	15	6.5	M6	2.8 (2.8)
	Minimum	10	30	15.88	300	19	16	32	31 (31)	6 (6)	15	6.5	M6	1.1 (1.1)
PDU035	Standard Length	22	35	19.05	770	22	19	38	40 (34)	9 (6)	17.5	8.8	M8	4.7 (3.4)
	Minimum	8	35	19.05	280	22	19	38	40 (34)	9 (6)	17.5	8.8	M8	1.7 (1.2)
PDU040	Standard Length	20	40	22.23	800	28	22.5	45	46 (44)	9 (8)	20	10.8	M10	6 (5.5)
	Minimum	7	40	22.23	280	28	22.5	45	46 (44)	9 (8)	20	10.8	M10	2.1 (1.9)

■ Angle Type

Frame No.		Pin Count <i>NT</i>	Pitch <i>P</i>	Roller Diameter <i>ø</i>	Length <i>L</i>	Inside Width <i>W</i>	Center Height		Overall Height <i>H+K</i>	Overall Width <i>Lw</i>	Angle Leg Width <i>D</i>	End Surface <i>B</i>	Mounting Hole Diameter <i>ødb</i>	Mounting Bolt Size	Mounting Hole Position <i>E</i>	Mounting Hole Pitch <i>Pb</i>	Mounting Hole Count (One Side) <i>nc</i>	Distance Between Mounting Holes <i>Pb x (nc-1)</i>	Approx. Mass <i>kg</i>
							<i>H</i>	<i>K</i>											
PDU020	Standard Length	40	20	10.16	800	12	20	10	30	72	30	20	9	M8	56	120	7	720	2.4 (2.4)
	Minimum	8	20	10.16	160	12	20	10	30	72	30	20	9	M8	56	120	2	120	0.5 (0.5)
PDU022	Standard Length	36	22	11.91	792	16	27	13	40	96	40	22	11	M10	60	88	9	704	3.3 (3.3)
	Minimum	6	22	11.91	132	16	27	13	40	96	40	22	11	M10	60	88	2	88	0.6 (0.6)
PDU030	Standard Length	26	30	15.88	780	19	28	22	50	119	50	30	13.5	M12	69	120	7	720	7.5 (7.5)
	Minimum	6	30	15.88	180	19	28	22	50	119	50	30	13.5	M12	69	120	2	120	1.7 (1.7)
PDU035	Standard Length	22	35	19.05	770	22	30	20	50	122	50	35	13.5	M12	76	140	6	700	7.7 (7.5)
	Minimum	6	35	19.05	210	22	30	20	50	122	50	35	13.5	M12	76	140	2	140	2.1 (2)
PDU040	Standard Length	20	40	22.23	800	28	28	22	50	128	50	40	13.5	M12	88	120	7	720	8.6 (8.5)
	Minimum	8	40	22.23	320	28	28	22	50	128	50	40	13.5	M12	88	120	3	240	3.4 (3.4)

Notes: 1. Values in parentheses indicate dimensions and mass for stainless steel models.

2. The standard pin count is based on the number of pins used in segments with lengths that make them easy to handle. In addition, the minimum length and minimum number of pins are set based on manufacturing limitations.

3. If the total number of pins exceeds the standard number of pins, the standard number of pins and the number of pins less than the standard length (equal to or more than the minimum number of pins) are used for configuration.

4. See page 22 for installation instructions.

5. Mounting bolts are not included.

Pin Gear (for Linear Drive) Table of Dimensions (1) (PDU020–040)

■ Example Model No.

● Pin gear

PDU020-SGB014T-R

Frame No.

Drive system
S: Linear drive

Pin gear

No. of teeth

Pin gear model

B: Single hub model

C: Dual hub model

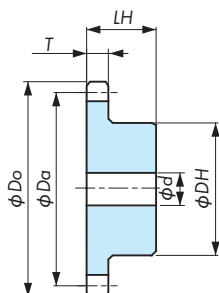
[Blank]: Standard steel model

K: Electroless nickel plating specification

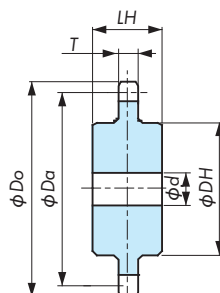
R: High anti-rust steel model

S: Standard stainless steel model

Pin Gear (Single Hub Model): SGB



Pin Gear (Double Hub Model): SGC



■ Pin gear

Frame No.	No. of Teeth NT	Pitch Circle Diameter ϕDa	Outer Diameter ϕDo	Hub Diameter ϕDH	Hub Length LH	Pin Gear Tooth Width T	Shaft Bore Diameter ϕd		Approx. Mass kg
							Pilot Bore	Max.	
PDU020	13T	84.76	100	50	30	9	12.7	31	0.7
	14T	91.13	106	50	30	9	12.7	31	0.8
	15T	97.29	111	50	30	9	12.7	31	0.8
	16T	103.66	117	50	30	9	12.7	31	0.9
	17T	109.83	123	50	30	9	12.7	31	1
	18T	116.19	129	60	30	9	12.7	37	1.2
	19T	122.36	135	60	30	9	12.7	37	1.3
	20T	128.72	141	60	30	9	12.7	37	1.4
	21T	135.09	148	60	40	9	15.9	37	1.7
	22T	141.46	154	60	40	9	15.9	37	1.8
	23T	147.62	160	60	40	9	15.9	37	1.9
	24T	153.99	167	60	40	9	15.9	37	2
PDU022	13T	93.44	110	60	40	12	15.9	37	1.2
	14T	100.44	117	60	40	12	15.9	37	1.3
	15T	107.04	122	60	40	12	15.9	37	1.4
	16T	114.05	129	70	40	12	15.9	43	1.8
	17T	120.85	136	70	50	12	15.9	43	2.2
	18T	127.85	143	70	50	12	15.9	43	2.3
	19T	134.65	149	70	50	12	15.9	43	2.4
	20T	141.66	156	70	50	12	15.9	43	2.6
	21T	148.66	163	70	50	12	15.9	43	2.7
	22T	155.66	170	70	50	12	15.9	43	2.9
	23T	162.46	177	70	50	12	18	43	3
	24T	169.47	184	70	50	12	18	43	3.2
PDU030	13T	126.94	150	80	50	15	19	50	2.8
	14T	136.49	158	80	50	15	19	50	3
	15T	145.84	167	80	50	15	19	50	3.3
	16T	155.39	175	80	60	15	19	50	3.9
	17T	164.74	184	90	60	15	19	56	4.7
	18T	174.29	194	90	60	15	19	56	5
	19T	183.44	203	90	60	15	23	56	5.2
	20T	192.99	213	90	70	15	23	56	6
	21T	202.54	222	90	70	15	23	56	6.4
	22T	212.08	232	90	70	15	23	56	6.7
	23T	221.43	241	100	70	15	23	62	7.8
	24T	230.98	251	100	70	15	23	62	8.2

Frame No.	No. of Teeth NT	Pitch Circle Diameter ϕDa	Outer Diameter ϕDo	Hub Diameter ϕDH	Hub Length LH	Pin Gear Tooth Width T	Shaft Bore Diameter ϕd		Approx. Mass kg
							Pilot Bore	Max.	
PDU035	13T	148.43	175	95	80	18	23	59	5.7
	14T	159.57	185	110	90	18	23	68	8
	15T	170.51	194	110	90	18	28	68	8.2
	16T	181.65	205	120	100	18	28	75	10.5
	17T	192.59	216	120	100	18	28	75	11
	18T	203.74	227	120	100	18	28	75	11.5
	19T	214.68	238	120	100	18	28	75	12
	20T	225.82	249	130	100	18	28	81	13.8
	21T	236.76	260	130	100	18	28	81	14.4
	22T	247.90	271	130	110	18	33	81	15.8
	23T	258.44	282	130	110	18	33	81	16.4
	24T	269.58	293	130	110	18	33	81	17
PDU040	13T	169.92	200	110	90	24	28	68	8.8
	14T	182.65	211	120	100	24	28	75	11.3
	15T	194.99	222	120	100	24	33	75	11.8
	16T	207.72	235	120	100	24	33	75	12.5
	17T	219.85	247	120	100	24	33	75	13.3
	18T	232.58	260	130	100	24	33	81	15.4
	19T	245.12	272	130	110	24	33	81	17.2
	20T	257.85	285	130	110	24	33	81	18.2
	21T	270.58	298	130	110	24	33	81	19.2
	22T	283.31	310	140	120	24	33	87	22.8
	23T	295.45	323	140	120	24	33	87	23.9
	24T	308.18	335	140	120	24	33	87	25

Note: There are limitations depending on specifications and sizes, but gears with numbers of teeth not listed can also be manufactured. See page 19 for the applicable tooth count range.

Pin Rack (for Linear Drive) Table of Dimensions (2) (PDU050–090)

■ Example Model No.

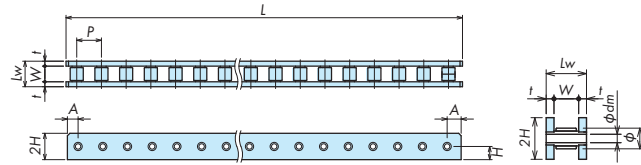
● Pin rack

PDU050-SPA080P-R

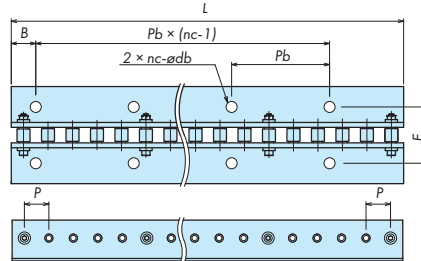
Frame No. Drive system S: Linear drive Pin rack Mounting type F: Flat type A: Angle type Overall pin count [Blank]: Standard steel model R: High anti-rust steel model S: Standard stainless steel model Y: Flexible model

The number of pins can be freely selected as long as it is equal to or greater than the minimum number of pins.

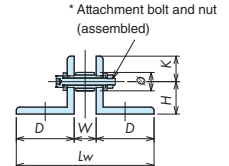
Pin Rack (Flat Type): SPF



Pin Rack (Angle Type): SPA



* Hollow pins for angle type are pre-fixed with bolts and nuts for rack mounting.



■ Flat Type

Frame No.	Type	Pin Count NT	Pitch P	Roller Diameter ø	Length L	Inside Width W	Center Height H	Overall Height 2H	Overall Width Lw	Plate Thickness t	Pin Position A	Bolt Hole Diameter ødm	Mounting Bolt Size	Approx. Mass kg
PDU050	Steel	Standard Length	20	50	25.4	1000	28	32.5	65	52 (46)	12 (9)	25	12.8	M12 13.2 (10.3)
		Minimum	6	50	25.4	300	28	32.5	65	52 (46)	12 (9)	25	12.8	M12 4 (3.1)
	Flexible	Standard Length	20	50	25.4	1000	40	32.5	65	64	12	25	12.8	M12 13.9
		Minimum	6	50	25.4	300	40	32.5	65	64	12	25	12.8	M12 4.2
PDU055	Steel	Standard Length	18	55	28.58	990	36	32.5	65	60 (54)	12 (9)	27.5	12.8	M12 14 (11.2)
		Minimum	9	55	28.58	495	36	32.5	65	60 (54)	12 (9)	27.5	12.8	M12 7 (5.6)
	Flexible	Standard Length	18	55	28.58	990	50	32.5	65	74	12	27.5	12.8	M12 15
		Minimum	9	55	28.58	495	50	32.5	65	74	12	27.5	12.8	M12 7.5
PDU070	Steel	Standard Length	14	70	35.71	980	40	37.5	75	72 (60)	16 (10)	35	17	M16 20.6 (14.3)
		Minimum	6	70	35.71	420	40	37.5	75	72 (60)	16 (10)	35	17	M16 8.8 (6.1)
	Flexible	Standard Length	14	70	35.71	980	72	37.5	75	104	16	35	17	M16 23.3
		Minimum	6	70	35.71	420	72	37.5	75	104	16	35	17	M16 10
PDU080	Steel	Standard Length	12	80	39.68	960	42	45	90	74 (66)	16 (12)	40	17	M16 24.6 (19.6)
		Minimum	7	80	39.68	560	42	45	90	74 (66)	16 (12)	40	17	M16 14.3 (11.4)
	Flexible	Standard Length	12	80	39.68	960	84	45	90	116	16	40	17	M16 28.4
		Minimum	7	80	39.68	560	84	45	90	116	16	40	17	M16 16.6
PDU090	Steel	Standard Length	11	90	47.63	990	52	50	100	90 (76)	19 (12)	45	22	M20 33.9 (24)
		Minimum	6	90	47.63	540	52	50	100	90 (76)	19 (12)	45	22	M20 18.5 (13.1)
	Flexible	Standard Length	11	90	47.63	990	100	50	100	138	19	45	22	M20 39.4
		Minimum	6	90	47.63	540	100	50	100	138	19	45	22	M20 21.5

■ Angle Type

Frame No.		Type	Pin Count <i>N</i> T	Pitch <i>P</i>	Roller Diameter <i>ø</i>	Length <i>L</i>	Inside Width <i>W</i>	Center Height		Overall Height <i>H</i> + <i>K</i>	Overall Width <i>L</i> w	Angle Leg Width <i>D</i>	End Surface <i>B</i>	Mounting Hole Diameter <i>ø</i> <i>db</i>	Mounting Bolt Size	Mounting Hole Position <i>E</i>	Mounting Hole Pitch <i>P</i> <i>b</i>	Mounting Hole Count (One Side) <i>n</i> <i>c</i>	Distance Between Mounting Holes <i>P</i> <i>b</i> x (<i>n</i> <i>c</i> -1)	Approx. Mass kg
								<i>H</i>	<i>K</i>											
PDU050	Standard Length	Steel	20	50	25.4	1000	28	40	25	65	158	65	50	17.5	M16	104	150	7	900	17.2 (13.8)
	Minimum		5	50	25.4	250	28	40	25	65	158	65	50	17.5	M16	104	150	2	150	4.3 (3.5)
	Standard Length	Flexible	20	50	25.4	1000	40	40	25	65	170	65	50	17.5	M16	104	150	7	900	18.1
	Minimum		5	50	25.4	250	40	40	25	65	170	65	50	17.5	M16	104	150	2	150	4.5
PDU055	Standard Length	Steel	18	55	28.58	990	36	37	28	65	166	65	55	17.5	M16	112	165	6	825	18 (14.8)
	Minimum		8	55	28.58	440	36	37	28	65	166	65	55	17.5	M16	112	165	3	330	8 (6.6)
	Standard Length	Flexible	18	55	28.58	990	50	37	28	65	180	65	55	17.5	M16	112	165	6	825	19.2
	Minimum		8	55	28.58	440	50	37	28	65	180	65	55	17.5	M16	112	165	3	330	8.5
PDU070	Standard Length	Steel	14	70	35.71	980	40	43	32	75	190	75	70	17.5	M16	130	210	5	840	29
	Minimum		8	70	35.71	560	40	43	32	75	190	75	70	17.5	M16	130	210	3	420	16.6
	Standard Length	Flexible	14	70	35.71	980	72	43	32	75	222	75	70	17.5	M16	130	210	5	840	32.3
	Minimum		8	70	35.71	560	72	43	32	75	222	75	70	17.5	M16	130	210	3	420	18.5
PDU080	Standard Length	Steel	12	80	39.68	960	42	55	35	90	222	90	80	22	M20	142	160	6	800	37
	Minimum		6	80	39.68	480	42	55	35	90	222	90	80	22	M20	142	160	3	320	18.5
	Standard Length	Flexible	12	80	39.68	960	84	55	35	90	264	90	80	22	M20	142	160	6	800	41.6
	Minimum		6	80	39.68	480	84	55	35	90	264	90	80	22	M20	142	160	3	320	20.8
PDU090	Standard Length	Steel	11	90	47.63	990	52	55	45	100	252	100	90	22	M20	162	180	5	720	44.6
	Minimum		6	90	47.63	540	52	55	45	100	252	100	90	22	M20	162	180	3	360	24.3
	Standard Length	Flexible	11	90	47.63	990	100	55	45	100	300	100	90	22	M20	162	180	5	720	51.5
	Minimum		6	90	47.63	540	100	55	45	100	300	100	90	22	M20	162	180	3	360	28.1

- Notes: 1. Values in parentheses indicate dimensions and mass for stainless steel models.
2. The standard pin count is based on the number of pins used in segments with lengths that make them easy to handle. In addition, the minimum length and minimum number of pins are set based on manufacturing limitations.
3. If the total number of pins exceeds the standard number of pins, the standard number of pins and the number of pins less than the standard length (equal to or more than the minimum number of pins) are used for configuration.
4. See page 22 for installation instructions. 5. Mounting bolts are not included.

Pin Gear (for Linear Drive) Table of Dimensions (2) (PDU050–090)

■ Example Model No.

● Pin gear

PDU050-SGB014T-R

Frame No.

Drive system
S: Linear drive

Pin gear

No. of teeth

Pin gear model

B: Single hub model

C: Dual hub model

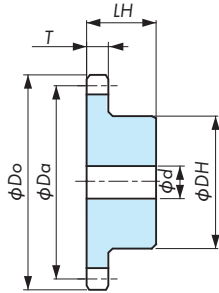
[Blank]: Standard steel model

R: High anti-rust steel model

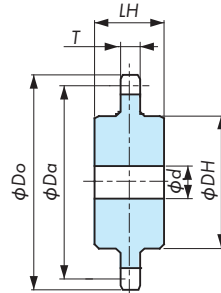
S: Standard stainless steel model

Y: Flexible model

Pin Gear (Single Hub Model): SGB



Pin Gear (Double Hub Model): SGC



■ Pin gear

Frame No.	No. of Teeth <i>NT</i>	Pitch Circle Diameter <i>øDa</i>	Outer Diameter <i>øDo</i>	Hub Diameter <i>øDH</i>	Hub Length <i>LH</i>	Pin Gear Tooth Width		Shaft Bore Diameter <i>ød</i>		Approx. Mass kg
						<i>T</i>	Flexible <i>T</i>			
								Pilot Bore	Max.	
PDU050	13T	211.7	250	130	100	24	20	33	81	14
	14T	227.62	264	130	110	24	20	33	81	16
	15T	243.13	277	130	110	24	20	33	81	17.1
	16T	259.05	292	140	120	24	20	33	87	20.9
	17T	274.56	306	140	120	24	20	33	87	22.1
	18T	290.48	322	140	130	24	20	33	87	24.6
	19T	305.99	337	140	130	24	20	33	87	26
	20T	321.91	353	150	140	24	20	33	93	30.7
	21T	337.83	369	150	140	24	20	33	93	32.2
	22T	353.74	385	150	140	24	20	33	93	33.9
	23T	369.06	400	150	140	24	20	33	93	35.5
	24T	384.97	416	160	140	24	20	33	100	39.6
PDU055	13T	232.79	275	150	140	30	26	33	93	24.5
	14T	250.3	290	160	140	30	26	33	100	28.2
	15T	267.41	305	160	140	30	26	33	100	29.8
	16T	284.91	320	170	150	30	26	33	106	35.6
	17T	302.02	337	170	150	30	26	33	106	37.5
	18T	319.53	354	170	160	30	26	33	106	41.2
	19T	336.63	372	170	160	30	26	33	106	43.3
	20T	354.14	389	180	160	30	26	33	112	48.4
	21T	371.65	406	180	160	30	26	33	112	50.8
	22T	389.15	424	180	160	30	26	38	112	52.9
	23T	406.06	441	190	170	30	26	38	118	60.5
	24T	423.57	458	190	170	30	26	38	118	63.3
PDU070	13T	295.66	349	180	160	34	32	43	112	41.9
	14T	317.94	368	180	160	34	32	43	112	44.8
	15T	339.83	388	180	160	34	32	43	112	47.9
	16T	362.11	407	190	160	34	32	43	118	54.1
	17T	383.79	427	190	170	34	32	43	118	59.6
	18T	406.07	450	190	170	34	32	43	118	63.3
	19T	428.15	472	200	190	34	32	43	125	75.2
	20T	450.43	494	200	190	34	32	43	125	79.3
	21T	472.72	516	200	190	34	32	63	125	81.2
	22T	495.00	538	210	190	34	32	63	131	89.7
	23T	516.48	560	210	190	34	32	63	131	94.3
	24T	538.76	582	210	190	34	32	63	131	99.2

Frame No.	No. of Teeth <i>NT</i>	Pitch Circle Diameter <i>øDa</i>	Outer Diameter <i>øDo</i>	Hub Diameter <i>øDH</i>	Hub Length <i>LH</i>	Pin Gear Tooth Width		Shaft Bore Diameter <i>ød</i>		Approx. Mass kg
						<i>T</i>	Flexible <i>T</i>	Pilot Bore	Max.	
PDU080	13T	337.64	399	190	160	36	34	43	118	51.4
	14T	363.11	421	200	180	36	34	43	125	63.1
	15T	388.17	443	200	180	36	34	43	125	67.3
	16T	413.64	465	210	200	36	34	43	131	80.8
	17T	438.50	488	210	200	36	34	43	131	85.5
	18T	463.97	512	220	200	36	34	43	137	95
	19T	489.03	537	220	200	36	34	63	137	97.7
	20T	514.50	563	230	200	36	34	63	143	108
	21T	539.96	588	230	210	36	34	63	143	117.1
	22T	565.43	614	230	210	36	34	63	143	123.4
	23T	590.09	638	230	210	36	34	63	143	129.7
	24T	615.55	664	240	230	36	34	63	150	148.3
PDU090	13T	380.42	449	220	190	45	40	43	137	81.8
	14T	409.07	474	230	210	45	40	43	143	98.5
	15T	437.32	498	230	210	45	40	63	143	102.4
	16T	465.97	524	240	230	45	40	63	150	121.1
	17T	494.01	552	240	230	45	40	63	150	128.6
	18T	522.66	580	250	240	45	40	63	156	146
	19T	550.91	609	250	240	45	40	63	156	154.5
	20T	579.56	637	260	250	45	40	63	162	173.6
	21T	608.21	666	260	250	45	40	63	162	183.1
	22T	636.85	695	270	260	45	40	63	168	204.1
	23T	664.30	722	270	260	45	40	63	168	214.1
	24T	692.95	751	270	260	45	40	63	168	224.9

Notes: 1. There are limitations depending on specifications and sizes, but gears with numbers of teeth not listed can also be manufactured. See page 19 for the applicable tooth count range.

2. Flexible models have different tooth width dimensions.

Pin Rack (for Linear Drive) Table of Dimensions (3) (PDU120–240)

■ Example Model No.

● Pin rack

PDU120-SPA080P

Frame No.

Drive system
S: Linear drive

Pin rack

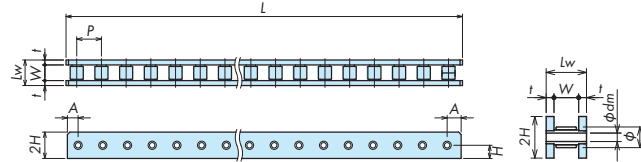
Overall pin count

Mounting type F: Flat type

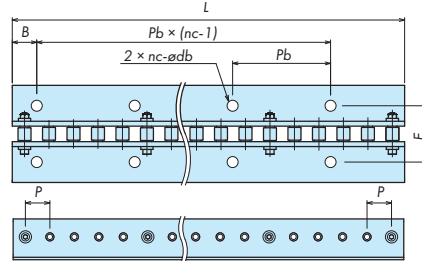
A: Angle type

The number of pins can be freely selected as long as it is equal to or greater than the minimum number of pins.

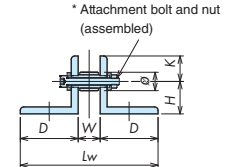
Pin Rack (Flat Type): SPF



Pin Rack (Angle Type): SPA



* Hollow pins for angle type are pre-fixed with bolts and nuts for rack mounting.



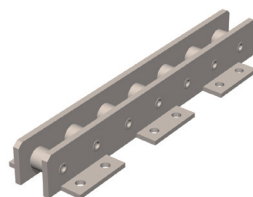
■ Flat Type

Frame No.	Pin Count NT	Pitch P	Roller Diameter ø	Length L	Inside Width W	Center Height H	Overall Height 2H	Overall Width Lw	Plate Thickness t	Pin Position A	Bolt Hole Diameter ødm	Mounting Bolt Size	Approx. Mass kg
PDU120	Standard Length	8	120	63.5	960	68	75	150	112	22	60	32	56.6
	Minimum	4	120	63.5	480	68	75	150	112	22	60	32	28.3
PDU150	Standard Length	8	150	79.38	1200	94	75	150	138	22	75	39	82.5
	Minimum	6	150	79.38	900	94	75	150	138	22	75	39	61.9
PDU180	Standard Length	7	180	95.25	1260	112	100	200	172	30	90	45	148.6
	Minimum	6	180	95.25	1080	112	100	200	172	30	90	45	127.4
PDU240	Standard Length	5	240	127	1200	150	125	250	226	38	120	52	235.6
	Minimum	5	240	127	1200	150	125	250	226	38	120	52	235.6

■ Angle Type

Frame No.		Pin Count <i>NT</i>	Pitch <i>P</i>	Roller Diameter <i>ø</i>	Length <i>L</i>	Inside Width <i>W</i>	Center Height		Overall Height <i>H+K</i>	Overall Width <i>Lw</i>	Angle Leg Width <i>D</i>	End Surface <i>B</i>	Mounting Hole Diameter <i>ødb</i>	Mounting Bolt Size	Mounting Hole Position <i>E</i>	Mounting Hole Pitch <i>Pb</i>	Mounting Hole Count (One Side) <i>nc</i>	Distance Between Mounting Holes <i>Pb x (nc-1)</i>	Approx. Mass <i>kg</i>
							<i>H</i>	<i>K</i>											
PDU120	Standard Length	8	120	63.5	960	68	85	65	150	368	150	120	33	M30	232	240	4	720	91
	Minimum	4	120	63.5	480	68	85	65	150	368	150	120	33	M30	232	240	2	240	45.5
PDU150	Standard Length	8	150	79.38	1200	94	85	65	150	394	150	150	39	M36	270	300	4	900	134
	Minimum	6	150	79.38	900	94	85	65	150	394	150	150	39	M36	270	300	3	600	100.5
PDU180	Standard Length	7	180	95.25	1260	112	125	95	220	462	175	Contact Tsubaki for details.	M42	Contact Tsubaki for details.				233	
	Minimum	7	180	95.25	1260	112	125	95	220	462	175		M42					233	
PDU240	Standard Length	5	240	127	1200	150	157	119	276	554	202	Contact Tsubaki for details.	M48	Contact Tsubaki for details.				362	
	Minimum	5	240	127	1200	150	157	119	276	554	202		M48					362	

- Notes: 1. The standard pin count is based on the number of pins used in segments with lengths that make them easy to handle. In addition, the minimum length and minimum number of pins are set based on manufacturing limitations.
 2. If the total number of pins exceeds the standard number of pins, the standard number of pins and the number of pins less than the standard length (equal to or more than the minimum number of pins) are used for configuration.
 3. See page 22 for installation instructions.
 4. Mounting bolts are not included.



Angle type PDU180 and PDU240 have different angle shapes.

Pin Gear (for Linear Drive) Table of Dimensions (3) (PDU120–240)

■ Example Model No.

● Pin gear

PDU120-SGB014T

Frame No.

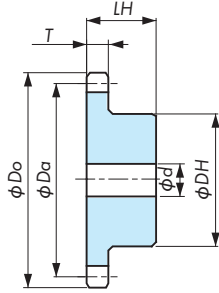
Drive system
S: Linear drive

Pin gear

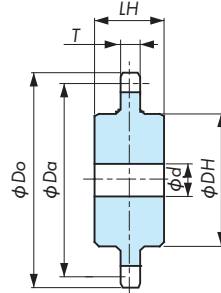
No. of teeth

Pin gear model
B: Single hub model
C: Dual hub model

Pin Gear (Single Hub Model): SGB



Pin Gear (Double Hub Model): SGC



■ Pin gear

Frame No.	No. of Teeth NT	Pitch Circle Diameter ϕDa	Outer Diameter ϕDo	Hub Diameter ϕDH	Hub Length LH	Pin Gear Tooth Width T	Shaft Bore Diameter ϕd		Approx. Mass kg
							Pilot Bore	Max.	
PDU120	13T	508.56	599	270	250	60	63	160	177
	14T	546.76	632	270	250	60	63	160	192
	15T	582.96	664	280	260	60	63	170	218
	16T	621.15	698	280	260	60	63	170	235
	17T	658.75	735	290	280	60	63	180	270
	18T	696.95	774	290	280	60	63	180	289
PDU150	13T	635.7	749	260	250	75	120	160	238
	14T	683.45	790	280	270	75	120	170	287
	15T	728.7	830	290	290	75	120	170	332
	16T	776.44	873	310	310	75	160	190	370
	17T	823.44	919	320	320	75	160	190	418
	18T	871.19	967	340	340	75	160	200	487
PDU180	13T	762.85	899	310	300	90	160	190	400
	14T	820.14	948	360	320	90	160	220	507
	15T	874.44	996	360	340	90	160	220	571
	16T	931.73	1047	370	370	90	160	220	660
	17T	988.13	1103	390	390	90	160	230	762
	18T	1045.42	1160	410	400	90	160	250	865
PDU240	13T	1017.13	1198	460	400	120	160	280	1068
	14T	1093.52	1264	460	400	120	160	280	1187
	15T	1165.92	1328	460	400	120	160	280	1308
	16T	1242.31	1396	490	400	120	160	300	1494
	17T	-	-	-	-	120	-	-	-
	18T	-	-	-	-	120	-	-	-

Note: There are limitations depending on specifications and sizes, but gears with numbers of teeth not listed can also be manufactured. See page 19 for the applicable tooth count range.

Pin Wheel (for Rotational Drive) Table of Dimensions (1) (PDU020–040)

■ Example Model No.

● Pin Wheel

• Complete circumference

PDU020-GPF300P-S

Frame No. Drive system G: Outer drive N: Inner drive Pin wheel Flat type Overall pin count [Blank]: Standard steel model K: Electroless nickel plating specification R: High anti-rust steel model S: Standard stainless steel model

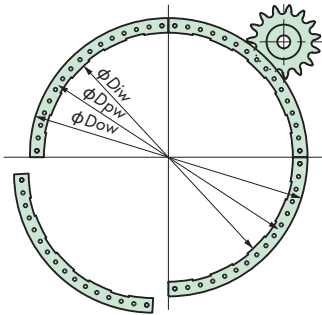
• Partial circumference (less than 360°)

PDU020-GPF300P090P-S

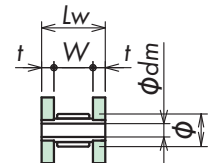
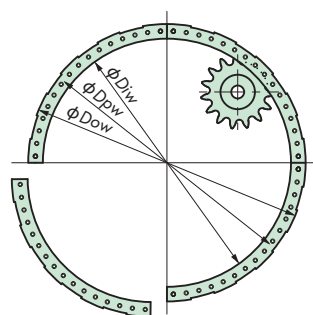
Overall pin count Required number of pins [Blank]: Standard steel model K: Electroless nickel plating specification R: High anti-rust steel model S: Standard stainless steel model

If the total number of pins is 60 or more, the number of pins can be freely selected, and partial circumference configurations are also available.

Outer Drive Pin Wheel: GPF (4-segment model)



Inner Drive Pin Wheel: NPF (4-segment model)



■ Pin Wheel

Frame No.	No. of Segments	Overall Pin Count NT	Pitch Circle Diameter øDpw	Outer Diameter øDow	Inner Diameter øDiw	Pitch P	Roller Diameter ø	Inside Width W	Overall Width LW	Plate Thickness t	Hollow Pin Hole Diameter ødm	Mounting Bolt Size	Approx. Mass kg
PDU020	1	80	509.3	532	487	20	10.16	12	21 (22)	4.5 (5)	4.5	M4	2.8 (3.2)
	4	160	1018.59	1041	996	20	10.16	12	21 (22)	4.5 (5)	4.5	M4	5.6 (6.4)
	6	240	1527.89	1550	1505	20	10.16	12	21 (22)	4.5 (5)	4.5	M4	8.4 (9.6)
	8	320	2037.18	2060	2015	20	10.16	12	21 (22)	4.5 (5)	4.5	M4	11.2 (12.8)
	12	480	3055.77	3078	3033	20	10.16	12	21 (22)	4.5 (5)	4.5	M4	16.8 (19.2)
PDU022	1	72	504.2	529	480	22	11.91	16	25 (26)	4.5 (5)	4.5	M4	3.4 (3.7)
	4	144	1008.41	1033	984	22	11.91	16	25 (26)	4.5 (5)	4.5	M4	6.8 (7.2)
	6	216	1512.61	1537	1488	22	11.91	16	25 (26)	4.5 (5)	4.5	M4	10.2 (10.8)
	8	288	2016.81	2041	1992	22	11.91	16	25 (26)	4.5 (5)	4.5	M4	13.6 (14.4)
	12	432	3025.22	3050	3001	22	11.91	16	25 (26)	4.5 (5)	4.5	M4	20.4 (21.3)
PDU030	1	-	-	-	-	-	-	-	-	-	-	-	-
	4	104	993.13	1026	961	30	15.88	19	31 (31)	6 (6)	6.5	M6	11.2 (11.2)
	6	156	1489.69	1522	1457	30	15.88	19	31 (31)	6 (6)	6.5	M6	16.8 (16.8)
	8	208	1986.25	2019	1954	30	15.88	19	31 (31)	6 (6)	6.5	M6	22.4 (22.4)
	12	312	2979.38	3012	2947	30	15.88	19	31 (31)	6 (6)	6.5	M6	33.6 (33.6)
PDU035	1	-	-	-	-	-	-	-	-	-	-	-	-
	4	88	980.39	1021	940	35	19.05	22	40 (34)	9 (6)	8.8	M8	19.6 (14.4)
	6	132	1470.59	1511	1430	35	19.05	22	40 (34)	9 (6)	8.8	M8	29.4 (21.6)
	8	176	1960.79	2001	1920	35	19.05	22	40 (34)	9 (6)	8.8	M8	39.2 (28.8)
	12	264	2941.18	2982	2901	35	19.05	22	40 (34)	9 (6)	8.8	M8	58.8 (43.2)
PDU040	1	-	-	-	-	-	-	-	-	-	-	-	-
	4	80	1018.59	1067	970	40	22.23	28	46 (44)	9 (8)	10.8	M10	25.6 (23.2)
	6	120	1527.89	1576	1479	40	22.23	28	46 (44)	9 (8)	10.8	M10	38.4 (34.8)
	8	160	2037.18	2086	1989	40	22.23	28	46 (44)	9 (8)	10.8	M10	51.2 (46.4)
	12	240	3055.77	3104	3007	40	22.23	28	46 (44)	9 (8)	10.8	M10	76.8 (69.6)

Notes: 1. Values in parentheses indicate dimensions and mass for stainless steel models.

2. Pin wheels are divided into segments. The number of segments depends on the frame number and the overall pin count.

3. There are projections on the inner rim of outer drive pin wheel segments and on the outer rim of inner drive pin wheel segments. These projections serve as the reference surface when installing the pin wheel on the device with which it is to be used.

4. The inner diameter (Diw) of outer drive wheels and the outer diameter (Dow) of inner drive wheels should be used respectively as the outer/inner diameter of the device with which the pin wheel is to be used.

5. See page 22 for installation instructions.

6. Mounting bolts are not included.

Pin Gear (for Rotational Drive) Table of Dimensions (1) (PDU020–040)

■ Example Model No.

- Pin Gear (Tooth profile varies depending on drive method and total number of pins of the pin wheel)

PDU020-GGC017T300P-S

Drive system
G: Outer drive
N: Inner drive

Pin gear

Pin gear model
B: Single hub model
C: Dual hub model

No. of teeth

Total No. of pins on
pin wheel

[Blank]: Standard steel model

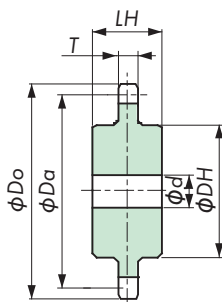
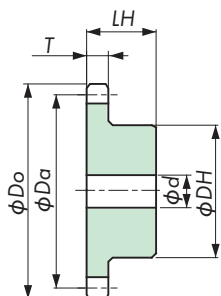
K: Electroless nickel plating specification

R: High anti-rust steel model

S: Standard stainless steel model

Pin Gear (Single Hub Model): ☐ GB

Pin Gear (Double Hub Model): ☐ GC



■ Pin Gear

Frame No.	No. of Teeth NT	Pitch Circle Diameter øDa	Reference Outer Diameter (Note 2) øDo	Hub Diameter øDH	Hub Length LH	Pin Gear Tooth Width T	Shaft Bore Diameter ød		Ap-prox. Mass kg
							Pilot Bore	Max.	
PDU020	12	78.59	95	49	20	9	12.7	30	0.5
	13	84.76	101	50	30	9	12.7	31	0.7
	14	91.13	108	50	30	9	12.7	31	0.8
	15	97.29	114	50	30	9	12.7	31	0.8
	16	103.66	120	50	30	9	12.7	31	0.9
	17	109.83	126	50	30	9	12.7	31	1
	18	116.19	131	60	30	9	12.7	37	1.2
	19	122.36	137	60	30	9	12.7	37	1.3
	20	128.72	143	60	30	9	12.7	37	1.4
	21	135.09	149	60	40	9	15.9	37	1.7
	22	141.46	155	60	40	9	15.9	37	1.8
	23	147.62	161	60	40	9	15.9	37	1.9
PDU022	24	153.99	167	60	40	9	15.9	37	2
	12	86.83	104	50	40	12	12.7	31	1
	13	93.44	111	60	40	12	15.9	37	1.2
	14	100.44	119	60	40	12	15.9	37	1.3
	15	107.04	126	60	40	12	15.9	37	1.4
	16	114.05	132	70	40	12	15.9	43	1.8
	17	120.85	138	70	50	12	15.9	43	2.2
	18	127.85	145	70	50	12	15.9	43	2.3
	19	134.65	151	70	50	12	15.9	43	2.4
	20	141.66	157	70	50	12	15.9	43	2.6
	21	148.66	164	70	50	12	15.9	43	2.7
	22	155.66	170	70	50	12	15.9	43	2.9
PDU030	23	162.46	177	70	50	12	18	43	3
	24	169.47	184	70	50	12	18	43	3.2
	12	117.79	142	75	50	15	19	46	2.4
	13	126.94	151	80	50	15	19	50	2.8
	14	136.49	162	80	50	15	19	50	3
	15	145.84	171	80	50	15	19	50	3.3
	16	155.39	180	80	60	15	19	50	3.9
	17	164.74	188	90	60	15	19	56	4.7
	18	174.29	197	90	60	15	19	56	5
	19	183.44	205	90	60	15	23	56	5.2
	20	192.99	214	90	70	15	23	56	6
	21	202.54	223	90	70	15	23	56	6.4
	22	212.08	232	90	70	15	23	56	6.7
PDU040	23	221.43	241	100	70	15	23	62	7.8
	24	230.98	251	100	70	15	23	62	8.2

Frame No.	No. of Teeth NT	Pitch Circle Diameter øDa	Reference Outer Diameter (Note 2) øDo	Hub Diameter øDH	Hub Length LH	Pin Gear Tooth Width T	Shaft Bore Diameter ød		Ap-prox. Mass kg
							Pilot Bore	Max.	
PDU035	12	137.49	166	85	80	18	23	53	4.6
	13	148.43	177	95	80	18	23	59	5.7
	14	159.57	189	110	90	18	23	68	8
	15	170.51	200	110	90	18	28	68	8.2
	16	181.65	210	120	100	18	28	75	10.5
	17	192.59	220	120	100	18	28	75	11
	18	203.74	230	120	100	18	28	75	11.5
	19	214.68	240	120	100	18	28	75	12
	20	225.82	250	130	100	18	28	81	13.8
	21	236.76	261	130	100	18	28	81	14.4
	22	247.90	271	130	110	18	33	81	15.8
	23	258.44	282	130	110	18	33	81	16.4
PDU040	24	269.58	293	130	110	18	33	81	17
	12	157.79	189	100	90	24	28	62	7.4
	13	169.92	202	110	90	24	28	68	8.8
	14	182.65	216	120	100	24	28	75	11.3
	15	194.99	228	120	100	24	33	75	11.8
	16	207.72	240	120	100	24	33	75	12.5
	17	219.85	251	120	100	24	33	75	13.3
	18	232.58	262	130	100	24	33	81	15.4
	19	245.12	274	130	110	24	33	81	17.2
	20	257.85	286	130	110	24	33	81	18.2
	21	270.58	298	130	110	24	33	81	19.2
	22	283.31	310	140	120	24	33	87	22.8
PDU040	23	295.45	323	140	120	24	33	87	23.9
	24	308.18	335	140	120	24	33	87	25

Notes: 1. There are limitations depending on specifications and sizes, but gears with numbers of teeth not listed can also be manufactured. See page 19 for the applicable tooth count range.
2. The outer diameter is for reference only, as the tooth profile varies depending on the drive method and total number of pins of the pin wheel.

Pin Wheel (for Rotational Drive) Table of Dimensions (2) (PDU050–090)

■ Example Model No.

● Pin Wheel

• Complete circumference

PDU050-GPF300P-S

• Partial circumference (less than 360°)

PDU050-GPF300P090P-S

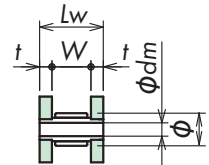
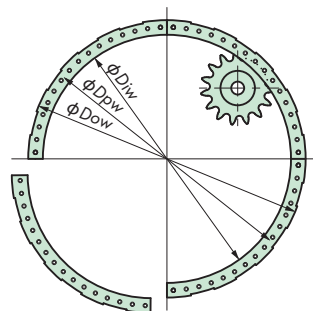
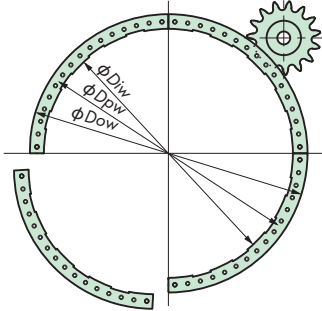
Frame No. _____
 Drive system
 G: Outer drive
 N: Inner drive
 Pin wheel
 Flat type
 Overall pin count
 [Blank]: Standard steel model
 R: High anti-rust steel model
 S: Standard stainless steel model
 Y: Flexible model

Overall pin count _____ Required number of pins _____
 [Blank]: Standard steel model
 R: High anti-rust steel model
 S: Standard stainless steel model
 Y: Flexible model

If the total number of pins is 60 or more, the number of pins can be freely selected, and partial circumference configurations are also available.

Outer Drive Pin Wheel: GPF (4-segment model)

Inner Drive Pin Wheel: NPF (4-segment model)



■ Pin Wheel

Frame No.	Type	No. of Segments	Overall Pin Count NT	Pitch Circle Diameter ϕ_{Dpw}	Outer Diameter ϕ_{Dow}	Inner Diameter ϕ_{Diw}	Pitch P	Roller Diameter ϕ	Inside Width W	Overall Width LW	Plate Thickness t	Hollow Pin Hole Diameter ϕ_{dm}	Mounting Bolt Size	Approx. Mass kg
PDU050	Steel	5	100	1591.55	1647	1536	50	25.4	28	52 (46)	12 (9)	12.8	M12	57 (45)
		6	120	1909.86	1965	1854	50	25.4	28	52 (46)	12 (9)	12.8	M12	68.4 (54)
		9	180	2864.79	2920	2809	50	25.4	28	52 (46)	12 (9)	12.8	M12	102.6 (81)
		13	260	4138.03	4194	4083	50	25.4	28	52 (46)	12 (9)	12.8	M12	148.2 (117)
	Flexible	16	320	5092.96	5148	5037	50	25.4	28	52 (46)	12 (9)	12.8	M12	182.4 (144)
		5	100	1591.55	1647	1536	50	25.4	40	64	12	12.8	M12	60.3
		6	120	1909.86	1965	1854	50	25.4	40	64	12	12.8	M12	72.4
		9	180	2864.79	2920	2809	50	25.4	40	64	12	12.8	M12	108.5
PDU055	Steel	13	260	4138.03	4194	4083	50	25.4	40	64	12	12.8	M12	156.8
		16	320	5092.96	5148	5037	50	25.4	40	64	12	12.8	M12	193
	Flexible	5	90	1575.63	1640	1511	55	28.58	36	60 (54)	12 (9)	12.8	M12	69.5 (55.5)
		6	108	1890.76	1955	1826	55	28.58	36	60 (54)	12 (9)	12.8	M12	83.4 (66.6)
		9	162	2836.14	2901	2772	55	28.58	36	60 (54)	12 (9)	12.8	M12	125.1 (99.9)
		13	234	4096.65	4161	4032	55	28.58	36	60 (54)	12 (9)	12.8	M12	180.7 (144.3)
	Flexible	16	288	5042.03	5107	4978	55	28.58	36	60 (54)	12 (9)	12.8	M12	222.4 (177.6)
		5	90	1575.63	1640	1511	55	28.58	50	74	12	12.8	M12	74.5
PDU070	Steel	6	108	1890.76	1955	1826	55	28.58	50	74	12	12.8	M12	89.3
		9	162	2836.14	2901	2772	55	28.58	50	74	12	12.8	M12	134
		13	234	4096.65	4161	4032	55	28.58	50	74	12	12.8	M12	193.6
		16	288	5042.03	5107	4978	55	28.58	50	74	12	12.8	M12	238.2
	Flexible	5	70	1559.72	1632	1487	70	35.71	40	72 (60)	16 (10)	17	M16	100 (70)
		6	84	1871.66	1944	1799	70	35.71	40	72 (60)	16 (10)	17	M16	120 (84)
		9	126	2807.49	2880	2735	70	35.71	40	72 (60)	16 (10)	17	M16	180 (126)
		13	182	4055.27	4128	3983	70	35.71	40	72 (60)	16 (10)	17	M16	260 (182)
PDU080	Steel	16	224	4991.1	5064	4919	70	35.71	40	72 (60)	16 (10)	17	M16	320 (224)
		5	70	1559.72	1632	1487	70	35.71	72	104	16	17	M16	112.6
	Flexible	6	84	1871.66	1944	1799	70	35.71	72	104	16	17	M16	135.1
		9	126	2807.49	2880	2735	70	35.71	72	104	16	17	M16	202.7
PDU090	Steel	13	182	4055.27	4128	3983	70	35.71	72	104	16	17	M16	292.8
		16	224	4991.1	5064	4919	70	35.71	72	104	16	17	M16	360.3
	Flexible	5	60	1527.89	1608	1447	80	39.68	42	74 (66)	16 (12)	17	M16	111.5 (89.5)
		6	72	1833.46	1914	1753	80	39.68	42	74 (66)	16 (12)	17	M16	133.8 (107.4)
PDU090	Steel	9	108	2750.2	2831	2670	80	39.68	42	74 (66)	16 (12)	17	M16	200.7 (161.1)
		13	156	3972.51	4053	3892	80	39.68	42	74 (66)	16 (12)	17	M16	289.9 (232.7)
		16	192	4889.24	4970	4809	80	39.68	42	74 (66)	16 (12)	17	M16	356.8 (286.4)
		5	60	1527.89	1608	1447	80	39.68	84	116	16	17	M16	130
PDU090	Flexible	6	72	1833.46	1914	1753	80	39.68	84	116	16	17	M16	156
		9	108	2750.2	2831	2670	80	39.68	84	116	16	17	M16	234
		13	156	3972.51	4053	3892	80	39.68	84	116	16	17	M16	337.9
		16	192	4889.24	4970	4809	80	39.68	84	116	16	17	M16	415.9
PDU090	Steel	5	-	-	-	-	-	-	-	-	-	-	-	-
		6	66	1890.76	1987	1794	90	47.63	52	90 (76)	19 (12)	22	M20	196.8 (140.4)
		9	99	2836.14	2933	2740	90	47.63	52	90 (76)	19 (12)	22	M20	295.2 (210.6)
		13	143	4096.65	4193	4000	90	47.63	52	90 (76)	19 (12)	22	M20	426.4 (304.2)
	Flexible	16	176	5042.03	5139	4946	90	47.63	52	90 (76)	19 (12)	22	M20	524.8 (374.4)
		5	-	-	-	-	-	-	-	-	-	-	-	-
		6	66	1890.76	1987	1794	90	47.63	100	138	19	22	M20	228.6
		9	99	2836.14	2933	2740	90	47.63	100	138	19	22	M20	342.9
PDU090	Flexible	13	143	4096.65	4193	4000	90	47.63	100	138	19	22	M20	495.3
		16	176	5042.03	5139	4946	90	47.63	100	138	19	22	M20	609.6

- Notes: 1. Values in parentheses indicate dimensions and masses for stainless steel models.
 2. Pin wheels are divided into segments. The number of segments depends on the frame number and the overall pin count.
 3. There are projections on the inner rim of outer drive pin wheel segments and on the outer rim of inner drive pin wheel segments. These projections serve as the reference surface when installing the pin wheel on the device with which it is to be used.
 4. The inner diameter (Diw) of outer drive wheels and the outer diameter (Dow) of inner drive wheels should be used respectively as the outer/inner diameter of the device with which the pin wheel is to be used.
 5. See page 22 for installation instructions. 6. Mounting bolts are not included.

Pin Gear (for Rotational Drive) Table of Dimensions (2) (PDU050–090)

■ Example Model No.

● Pin Gear (Tooth profile varies depending on drive method and total number of pins of the pin wheel)

PDU050-GGC017T300P-S

Drive system
G: Outer drive
N: Inner drive

Pin gear

No. of teeth

Total No. of pins on
pin wheel

[Blank]: Standard steel model

R: High anti-rust steel model

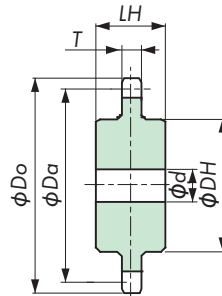
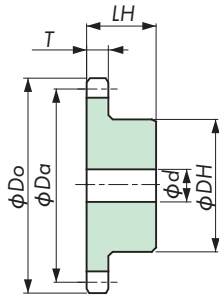
S: Standard stainless steel model

Y: Flexible model

Pin gear model
B: Single hub model
C: Dual hub model

Pin Gear (Single Hub Model): ☐ GB

Pin Gear (Double Hub Model): ☐ GC



■ Pin Gear

Frame No.	No. of Teeth NT	Pitch Circle Diameter øDa	Reference Outer Diameter (Note 2) øDo	Hub Diameter øDH	Hub Length LH	Pin Gear Tooth Width		Shaft Bore Diameter ød		Approx. Mass kg
						T	Flexible T	ød	Pilot Bore: Max.	
PDU050	12	196.59	237	110	100	24	20	33	68	10.8
	13	211.7	252	130	100	24	20	33	81	14
	14	227.62	269	130	110	24	20	33	81	16
	15	243.13	285	130	110	24	20	33	81	17.1
	16	259.05	299	140	120	24	20	33	87	20.9
	17	274.56	313	140	120	24	20	33	87	22.1
	18	290.48	328	140	130	24	20	33	87	24.6
	19	305.99	342	140	130	24	20	33	87	26
	20	321.91	357	150	140	24	20	33	93	30.7
	21	337.83	372	150	140	24	20	33	93	32.2
	22	353.74	387	150	140	24	20	33	93	33.9
	23	369.06	401	150	140	24	20	33	93	35.5
PDU055	12	216.08	261	135	140	30	26	33	84	20.2
	13	232.79	277	150	140	30	26	33	93	24.5
	14	250.3	296	160	140	30	26	33	100	28.2
	15	267.41	313	160	140	30	26	33	100	29.8
	16	284.91	329	170	150	30	26	33	106	35.6
	17	302.02	344	170	150	30	26	33	106	37.5
	18	319.53	360	170	160	30	26	33	106	41.2
	19	336.63	376	170	160	30	26	33	106	43.3
	20	354.14	393	180	160	30	26	33	112	48.4
	21	371.65	409	180	160	30	26	33	112	50.8
	22	389.15	426	180	160	30	26	38	112	52.9
	23	406.06	442	190	170	30	26	38	118	60.5
PDU070	12	273.98	331	170	160	34	32	43	106	36.6
	13	295.66	352	180	160	34	32	43	112	41.9
	14	317.94	376	180	160	34	32	43	112	44.8
	15	339.83	398	180	160	34	32	43	112	47.9
	16	362.11	418	190	160	34	32	43	118	54.1
	17	383.79	438	190	170	34	32	43	118	59.6
	18	406.07	458	190	170	34	32	43	118	63.3
	19	428.15	478	200	190	34	32	43	125	75.2
	20	450.43	499	200	190	34	32	43	125	79.3
	21	472.72	520	200	190	34	32	63	125	81.2
	22	495.00	541	210	190	34	32	63	131	89.7
	23	516.48	562	210	190	34	32	63	131	94.3
	24	538.76	583	210	190	34	32	63	131	99.2

Frame No.	No. of Teeth NT	Pitch Circle Diameter øDa	Reference Outer Diameter (Note 2) øDo	Hub Diameter øDH	Hub Length LH	Pin Gear Tooth Width		Shaft Bore Diameter ød		Approx. Mass kg
						T	Flexible T	ød	Pilot Bore: Max.	
PDU080	12	312.78	378	190	160	36	34	43	118	47.8
	13	337.64	402	190	160	36	34	43	118	51.4
	14	363.11	430	200	180	36	34	43	125	63.1
	15	388.17	455	200	180	36	34	43	125	67.3
	16	413.64	478	210	200	36	34	43	131	80.8
	17	438.50	500	210	200	36	34	43	131	85.5
	18	463.97	524	220	200	36	34	43	137	95
	19	489.03	547	220	200	36	34	63	137	97.7
	20	514.50	570	230	200	36	34	63	143	108
	21	539.96	594	230	210	36	34	63	143	117.1
	22	565.43	618	230	210	36	34	63	143	123.4
	23	590.09	642	230	210	36	34	63	143	129.7
PDU090	12	352.77	425	220	190	45	40	43	137	76.1
	13	380.42	453	220	190	45	40	43	137	81.8
	14	409.07	484	230	210	45	40	43	143	98.5
	15	437.32	512	230	210	45	40	63	143	102.4
	16	465.97	538	240	230	45	40	63	150	121.1
	17	494.01	563	240	230	45	40	63	150	128.6
	18	522.66	589	250	240	45	40	63	156	146
	19	550.91	615	250	240	45	40	63	156	154.5
	20	579.56	642	260	250	45	40	63	162	173.6
	21	608.21	669	260	250	45	40	63	162	183.1
	22	636.85	696	270	260	45	40	63	168	204.1
	23	664.30	722	270	260	45	40	63	168	214.1
	24	692.95	751	270	260	45	40	63	168	224.9

Notes: 1. There are limitations depending on specifications and sizes, but gears with numbers of teeth not listed can also be manufactured. See page 19 for the applicable tooth count range.
2. The outer diameter is for reference only, as the tooth profile varies depending on the drive method and total number of pins of the pin wheel.
3. The flexible type has a different tooth width.

Pin Wheel (for Rotational Drive) Table of Dimensions (3) (PDU120–240)

■ Example Model No.

● Pin Wheel

• Complete circumference

PDU120-GPF300P

Frame No. Drive system
G: Outer drive
N: Inner drive
Pin wheel
Flat type
Overall pin count

• Partial circumference (less than 360°)

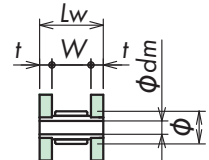
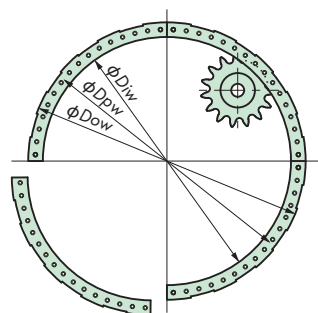
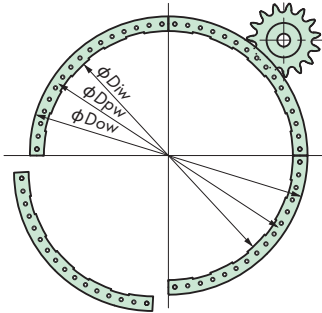
PDU120-GPF300P090P

Overall pin count Required number of pins

If the total number of pins is 60 or more, the number of pins can be freely selected, and partial circumference configurations are also available.

Outer Drive Pin Wheel: GPF (4-segment model)

Inner Drive Pin Wheel: NPF (4-segment model)



■ Pin Wheel

Frame No.	No. of Segments	Overall Pin Count NT	Pitch Circle Diameter ϕDpw	Outer Diameter ϕDow	Inner Diameter ϕDiw	Pitch P	Roller Diameter ϕ	Inside Width W	Overall Width LW	Plate Thickness t	Hollow Pin Hole Diameter ϕdm	Mounting Bolt Size	Approx. Mass kg
PDU120	9	72	2750.2	2901	2600	120	63.5	68	112	22	32	M30	511.2
	10	80	3055.77	3206	2905	120	63.5	68	112	22	32	M30	568
	13	104	3972.51	4123	3822	120	63.5	68	112	22	32	M30	738.4
	16	128	4889.24	5040	4739	120	63.5	68	112	22	32	M30	908.8
	20	160	6111.55	6262	5961	120	63.5	68	112	22	32	M30	1136
PDU150	9	72	3437.75	3588	3287	150	79.38	94	138	22	39	M36	744.3
	10	80	3819.72	3970	3669	150	79.38	94	138	22	39	M36	827
	13	104	4965.63	5116	4815	150	79.38	94	138	22	39	M36	1075.1
	16	128	6111.55	6262	5961	150	79.38	94	138	22	39	M36	1323.2
	20	160	7639.44	7790	7489	150	79.38	94	138	22	39	M36	1654
PDU180	9	63	3609.63	3810	3409	180	95.25	112	172	30	45	M42	1340.1
	10	70	4010.71	4211	3810	180	95.25	112	172	30	45	M42	1489
	13	91	5213.92	5414	5013	180	95.25	112	172	30	45	M42	1935.7
	16	112	6417.13	6618	6217	180	95.25	112	172	30	45	M42	2382.4
	20	140	8021.41	8222	7821	180	95.25	112	172	30	45	M42	2978
PDU240	9	-	-	-	-	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-	-	-	-	-
	13	65	4965.63	5216	4715	240	127	150	226	38	52	M48	3066.7
	16	80	6111.55	6362	5861	240	127	150	226	38	52	M48	3774.4
	20	100	7639.44	7890	7389	240	127	150	226	38	52	M48	4718

- Notes: 1. Pin wheels are divided into segments. The number of segments depends on the frame number and the overall pin count.
2. There are projections on the inner rim of outer drive pin wheel segments and on the outer rim of inner drive pin wheel segments. These projections serve as the reference surface when installing the pin wheel on the device with which it is to be used.
3. The inner diameter (Diw) of outer drive wheels and the outer diameter (Dow) of inner drive wheels should be used respectively as the outer/inner diameter of the device with which the pin wheel is to be used.
4. See page 22 for installation instructions.
5. Mounting bolts are not included.

Pin Gear (for Rotational Drive) Table of Dimensions (3) (PDU120–240)

■ Example Model No.

● Pin Gear (Tooth profile varies depending on drive method and total number of pins of the pin wheel)

PDU120-GGC017T300P

Drive system
G: Outer drive
N: Inner drive

Pin gear

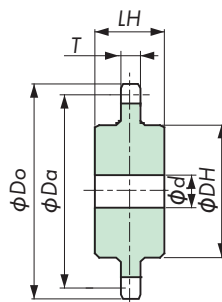
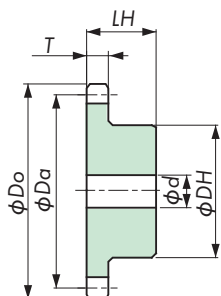
No. of teeth

Total No. of pins on pin wheel

Pin gear model
B: Single hub model
C: Dual hub model

Pin Gear (Single Hub Model): ☐ GB

Pin Gear (Double Hub Model): ☐ GC



■ Pin Gear

Frame No.	No. of Teeth NT	Pitch Circle Diameter ϕDa	Reference Outer Diameter (Note 2) ϕDo	Hub Diameter ϕDH	Hub Length LH	Pin Gear Tooth Width T	Shaft Bore Diameter ϕd		Approx. Mass kg
							Pilot Bore	Max.	
PDU120	12	472.37	569	260	240	60	63	150	153
	13	508.56	599	270	250	60	63	160	177
	14	546.76	650	270	250	60	63	160	192
	15	582.96	682	280	260	60	63	170	218
	16	621.15	717	280	260	60	63	170	235
	17	658.75	751	290	280	60	63	180	270
PDU150	18	696.95	786	290	280	60	63	180	289
	12	590.46	711	250	230	75	120	150	201
	13	635.7	749	260	250	75	120	160	238
	14	683.45	813	280	270	75	120	170	287
	15	728.7	853	290	290	75	120	170	332
	16	776.44	896	310	310	75	160	190	370
PDU180	17	823.44	938	320	320	75	160	190	418
	18	871.19	982	340	340	75	160	200	487
	12	708.55	853	310	280	90	120	190	367
	13	762.85	899	310	300	90	160	190	400
	14	820.14	975	360	320	90	160	220	507
	15	874.44	1023	360	340	90	160	220	571
PDU240	16	931.73	1075	370	370	90	160	220	660
	17	988.13	1126	390	390	90	160	230	762
	18	1045.42	1178	410	400	90	160	250	865
	12	944.73	1137	460	370	120	160	280	929
	13	1017.13	1233	460	400	120	160	280	1068
	14	1093.52	1300	460	400	120	160	280	1187
	15	1165.92	1364	460	400	120	160	280	1308
	16	1242.31	1433	490	400	120	160	300	1494
	17	-	-	-	-	120	-	-	-
	18	-	-	-	-	120	-	-	-

Notes: 1. There are limitations depending on specifications and sizes, but gears with numbers of teeth not listed can also be manufactured. See page 19 for the applicable tooth count range.

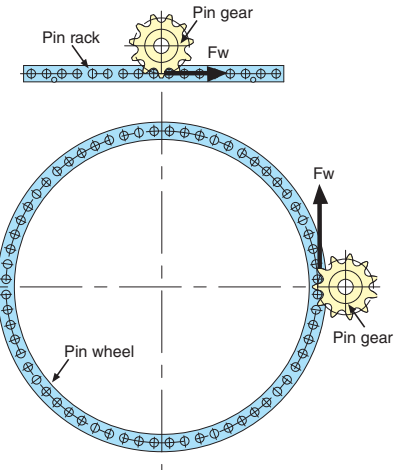
2. The outer diameter is for reference only, as the tooth profile varies depending on the drive method and total number of pins of the pin wheel.

Selection

Selection Procedure

1. Pre-select the pitch circle diameter of the Pin Gear Drive Unit.

- For linear operation: Pre-select the pitch circle diameter of the pin gear based on the equipment layout.
- For rotational operation: Pre-select the pitch circle diameter of the pin wheel to suit the size of the equipment.
Determine the reduction gear ratio required, then pre-select the pitch circle diameter of the pin gear.



2. Calculate the applied tangential load (F_w).

Calculate the applied tangential load (F_w) that will act on the pin wheel or pin rack based on load conditions.

The applied tangential force (F_w) can be calculated using the Tsubaki Product Information website (selection calculation).

3. Calculate the corrected tangential load (F_t).

To calculate the corrected tangential load (F_t), obtain the service factor (K_s , Table 1) based on operating conditions, obtain the speed factor (K_v , Table 2) based on the tangential speed, and then multiply the product thereof by the applied tangential load (F_w).

$$F_t = K_s \times K_v \times F_w$$

Table 1: Service Factor (K_s)

Operation Status	Operating Hours/Day		
	Up to 3 hrs	Up to 12 hrs	Up to 24 hrs
Even load	1.00(1.25)	1.15(1.40)	1.25(1.50)
Load with small impacts	1.25(1.50)	1.40(1.70)	1.60(2.00)
Load with large impacts	1.50(1.80)	1.75(2.15)	2.00(2.50)

* Use values in parentheses if operation stops 10 or more times an hour.

Table 2: Speed Factor (K_v)

Tangential speed m/min								
0	10	15	20	25	30	35	40	50
1.02	1.04	1.05	1.06	1.06	1.07	1.08	1.1	1.2

4. Select the frame number of the Pin Gear Drive Unit.

Using the allowable tangential load (F_p) of each pin wheel/pin rack frame number and the corrected tangential load (F_t), select the appropriate Pin Gear Drive Unit that satisfies the following condition: (Allowable tangential load (F_p): see page 6)

$$\text{Allowable tangential load } (F_p) > \text{Corrected tangential load } (F_t)$$

5. Select the model number.

- Pin wheels: From the selected frame number and the pre-selected pin wheel pitch circle diameter, choose the quantity of rollers of the pin wheel closest to the pitch circle diameter.
- Pin racks: From the selected frame number and the total running distance (or total movement distance), calculate the quantity of rack rollers.
- Pin gears: From the selected frame number and the pre-selected pin gear pitch circle diameter, choose the model number of the pin gear with the number of teeth closest to the pitch circle diameter.

Note: There are limits to the extent to which numbers of gear teeth can be used (see table below). If a gear does not have enough teeth, select a gear with a larger number of teeth.

● Applicable Number of Teeth Range for Pin Gear

Pin Count No. of Teeth	Linear Rack	Outer Drive Pin Wheel								Inner Drive Pin Wheel						
		60P	70P	80P	100P	150P	200P	250P	300P	60P	70P	80P	100P	150P	200P	250P
11	×	×	×	×	×	×	×	×	×	○	○	○	○	×	×	×
12	△	×	×	×	×	×	×	×	×	○	○	○	○	○	○	○
13	○	×	×	×	×	×	△	△	△	○	○	○	○	○	○	○
14	○	×	×	△	△	△	△	△	△	○	○	○	○	○	○	○
15	○	△	△	△	△	△	△	△	△	○	○	○	○	○	○	○
16	○	△	△	△	△	△	△	△	△	○	○	○	○	○	○	○
17	○	△	△	△	△	△	△	△	○	○	○	○	○	○	○	○
18	○	△	△	△	△	△	△	○	○	○	○	○	○	○	○	○
19	○	△	△	△	△	○	○	○	○	○	○	○	○	○	○	○
20	○	△	△	△	○	○	○	○	○	○	○	○	○	○	○	○
21	○	△	△	○	○	○	○	○	○	○	○	○	○	○	○	○
22	○	△	○	○	○	○	○	○	○	○	○	○	○	○	○	○
23	○	△	○	○	○	○	○	○	○	○	○	○	○	○	○	○
24 or more	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

○: Applicable
△: Applicable, but tangential load may be reduced in certain applications. Consult Tsubaki for details.
×: Not applicable due to insufficient contact ratio.

Caution Contact your Tsubaki representative for more information on the inclusion of substances restricted for use in specific industries and applications.

■ Multiple Unit Use

Calculation of Multiple Load F_{pp}

As shown in Figures 1 and 2, using multiple pin gears on a single rack or wheel, or using them in parallel as shown in Figure 3, increases the allowable tangential load. However, it does not increase proportionally with the number of pin gears or parallel units, so confirm that the corrected tangential load F_t multiplied by the multiple drive factor K_o in Table 3 satisfies the multiple allowable tangential load F_{pp} .

Calculation example: Using 2 units

$$F_{pp} = F_p \times K_o$$

For PDU020 ($F_p = 4.7$ kN), when using 2 units

$$F_{pp} = 4.7 \times 1.6 = 7.5 \text{ kN}$$

Table 3: Multiple Drive Factor K_o

Number of Pin Gears Used	2 units	3 units	4 units
Multiple Drive Factor	1.6	2.1	2.4

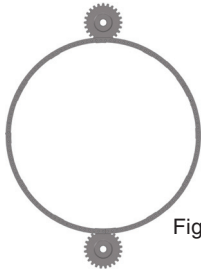


Fig. 1 Multiple Drive (Rotation)

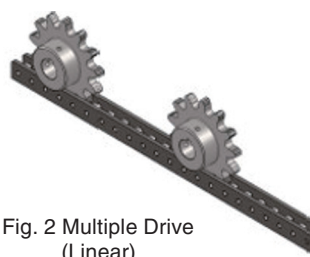


Fig. 2 Multiple Drive (Linear)

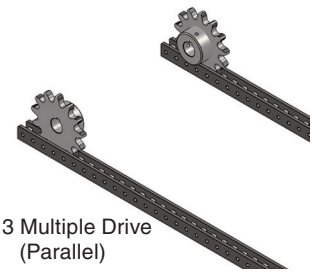


Fig. 3 Multiple Drive (Parallel)

Precautions (for Figures 1 and 2)

- (1) If multiple pin gears engage with the same segment, the minimum number of mounting bolts may not withstand the load. Be sure to avoid having multiple pin gears engage with the same segment. (Fig. 4)
- (2) When multiple gears are used, the number of engagements per roller increases, accelerating wear of the rack and wheel.

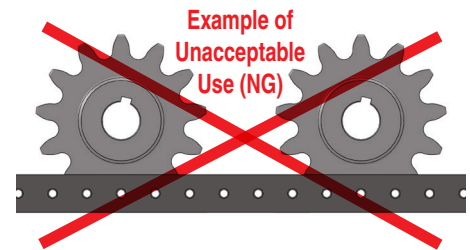


Fig. 4 Multiple Drive on One Segment

■ Design Lifespan

The design lifespan of the pin gear drive unit (steel model) is shown in Table 4.

This is an estimated lifespan (reference value) based on wear conditions under our test conditions and is not a guaranteed value. The actual lifespan varies depending on usage method, operating conditions, and environment.

Operating conditions include load, speed, degree of impact, hours of use, and frequency of start/stop.

Operating environment includes the installation environment, proper lubrication condition, and maintenance status.

Depending on the equipment, the lifespan determination may vary due to user-specific settings such as changes in stopping position. Contact us for more information about different operating conditions.

The load factor P_F is obtained by dividing the actual load tangential force F_w by the allowable tangential load F_p .

$$\text{Load factor } P_F = \frac{\text{Load tangential force } F_w}{\text{Allowable tangential load } F_p} \times 100$$

Table 4: Design lifespan for load factor $P_F = 30\%$ (relatively light load) and $P_F = 65\%$ (relatively heavy load)

(Unit: h)

Model No.	PDU020	PDU022	PDU030	PDU035	PDU040	PDU050	PDU055
$P_F = 30\%$	12100	13200	15600	19200	20400	25000	22300
$P_F = 65\%$	5600	6000	7200	8800	9400	11500	10300

In-house test conditions

Steel model pin gear drive unit (Number of pins: 60 pins, Number of pin gear teeth: 11 teeth)

Continuous operation under uniform load without impact, 8 hours per day, tangential velocity 30 [m/min], with proper lubrication maintained

If the number of pins of the pin wheel (or pin rack) or the number of teeth of the pin gear exceeds the test conditions (60 pins, 11 teeth), the design lifespan can be converted by multiplying by the ratio of the actual number of pins or teeth used.

Calculation Example: When the number of pins of a PDU030 pin wheel is 208 pins and the number of pin gear teeth is 18 (load factor $P_F = 30\%$)

Design lifespan of PDU030: 15600 [h] (from Table 4)

Estimated lifespan of pin wheel: $15600 \text{ [h]} \times 208/60 = 54080 \text{ [h]}$

Estimated lifespan of pin gear: $15600 \text{ [h]} \times 18/11 = 25527 \text{ [h]}$

The design lifespan of the pin gear drive unit is the shorter of the lifespan for the pin wheel and pin gear: 25527 [h].

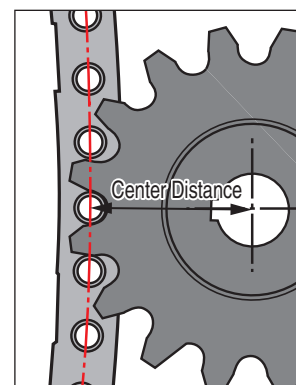
Technical Data

Backlash (Reference Value) and Center Distance Precision

Frame No.	Backlash (mm)			Center Distance Precision (mm)		
	Steel Models	Flexible Models	Stainless Steel Models	Steel Models	Flexible Models	Stainless Steel Models
PDU020	0.26 to 0.47	—	0.26 to 0.47	±0.25	—	±0.25
PDU022	0.32 to 0.57	—	0.32 to 0.57	±0.3	—	±0.3
PDU030	0.32 to 0.66	—	0.32 to 0.67	±0.4	—	±0.4
PDU035	0.33 to 0.88	—	0.33 to 0.88	±0.5	—	±0.5
PDU040	0.41 to 0.86	—	0.41 to 0.86	±0.6	—	±0.6
PDU050	0.53 to 0.98	0.77 to 1.22	0.53 to 1.08	±0.7	±1.57	±0.7
PDU055	0.61 to 1.06	1.01 to 1.46	0.61 to 1.26	±0.75	±1.72	±0.75
PDU070	0.86 to 1.24	1.36 to 1.74	0.86 to 1.61	±0.9	±2.02	±0.9
PDU080	0.89 to 1.20	1.49 to 1.80	0.89 to 1.74	±1	±2.2	±1
PDU090	0.97 to 1.42	1.57 to 2.02	0.97 to 1.92	±1.2	±2.7	±1.2
PDU120	1.30 to 1.57	—	—	±1.6	—	—
PDU150	1.63 to 1.96	—	—	±2	—	—
PDU180	1.95 to 2.36	—	—	±2.4	—	—
PDU240	2.60 to 3.14	—	—	±3.2	—	—

* Backlash amounts are calculated figures and are not guaranteed values.

* For adjustment of center distance, see page 25.



Corrosion Resistance of Stainless Steel Models

Corrosion resistance may be altered depending on the operating conditions. The table below does not indicate any guaranteed levels. See the table below and use a test sample under actual operating conditions to confirm corrosion resistance before use.

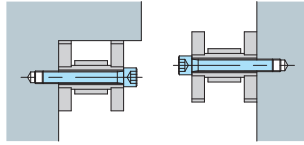
○ : Sufficient corrosion resistance △ : Corrosion resistance depending on operating conditions × : No corrosion resistance — : Uncertain

Name of Chemical/Foodstuff	Rating	Name of Chemical/Foodstuff	Rating	Name of Chemical/Foodstuff	Rating
Acetone	20°C ○	Developer (photographic)	20°C △	Kerosene	20°C ○
Oil (vegetable/mineral)	20°C ○	Synthetic detergent	○	Varnish	○
Linseed oil	100%, 20°C △	Coffee	Boiling ○	Concentrated nitric acid	65%, 20°C ×
Sulfur dioxide gas (wet)	20°C ×	Cola syrup	○	Concentrated nitric acid	65%, boiling ×
Alcohol (methyl/ethyl/propyl/butyl)	○	Acetic acid	10%, 20°C ○	Lactic acid	10%, 20°C △
Aqueous ammonia	20°C ○	Sugar solution	20°C ○	Honey, molasses	○
Whiskey	20°C ○	Calcium hypochlorite (bleaching powder) Effective chlorine 1 to 14%, 20°C	×	Paraffin	20°C ○
Ether (Ethyl ether)	20°C ○	Sodium hypochlorite	10%, 20°C ×	Beer	20°C ○
Zinc chloride	50%, 20°C ×	Sodium cyanide	20°C —	Picric acid	Saturated, 20°C ○
Ammonium chloride	50%, 20°C ×	Carbon tetrachloride (dry)	20°C ○	Fruit juice	20°C △
Potassium chloride	Saturated, 20°C △	Potassium dichromate	10%, 20°C ○	Benzene	20°C ○
Calcium chloride	Saturated, 20°C ×	Oxalic acid	10%, 20°C △	Boric acid	50%, 100°C ○
Ferric chloride	5%, 20°C ×	Tartaric acid	10%, 20°C ○	Formalin (formaldehyde) 40%,	20°C ○
Sodium chloride	5%, 20°C △	Nitric acid	5%, 20°C △	Mayonnaise	20°C △
Hydrochloric acid	2%, 20°C ×	Ammonium nitrate	Saturated boiling ○	Water	○
Chlorine gas (dry)	20°C ×	Potassium nitrate	25%, 20°C ○	Vegetable juice	20°C ○
Chlorine gas (wet)	20°C ×	Potassium nitrate	25%, boiling point ×	Lard	○
Chlorine water	×	Vinegar	20°C ×	Butyric acid	20°C ○
Oleic acid	20°C ○	Potassium hydroxide (caustic potash)	20%, 20°C ○	Hydrogen sulfide (dry)	○
Seawater	20°C ×	Potassium hydroxide (slaked lime)	Boiling ○	Hydrogen sulfide (wet)	×
Sodium perchlorate	10%, boiling point ×	Sodium hydroxide (caustic soda)	25%, 20°C ○	Sulfuric acid	5%, 20°C ×
Hydrogen peroxide	30%, 20°C △	Stearic acid	100%, boiling point ×	Zinc sulfate	25%, Saturated, 20°C ○
Gasoline	20°C ○	Soft drink	20°C ○	Aluminum sulfate	Saturated, 20°C ×
Sodium permanganate	Saturated, 20°C ○	Phenol	20°C ○	Ammonium sulfate	Saturated, 20°C △
Formic acid	50%, 20°C ○	Petroleum	20°C ○	Sodium sulfate	Saturated, 20°C ○
Milk	20°C ○	Soapsuds	20°C ○	Malic acid	50%, 20°C ○
Citric acid	50%, 20°C ○	Carbonated water	20°C ○	Phosphoric acid	5%, 20°C △
Glycerin	20°C ○	Sodium bicarbonate	20°C ○	Phosphoric acid	10%, 20°C △
Creosote	20°C ○	Sodium carbonate	Saturated boiling point ○	Wine	20°C ○
Chromic acid	5%, 20°C △	Sodium thiosulfate	25%, boiling point ○		
Ketchup	20°C ○	Turpentine	35°C ○		

Installation

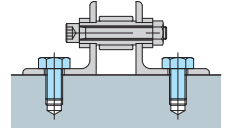
■ Installation

- Flat-type Pin Rack
- Pin Wheel



The side of the rack/wheel can be attached to the device with a bolt using the hole in the hollow pin.
When installing, a stopper or guide can be fixed to the projected surface to position the wheel.

- Angle-type Pin Rack



Angle racks can be attached to the device using the mounting bolt holes on the feet of the rack.

■ Mounting Bolt Position

At least the minimum number of bolts (see table below) must be used at both ends of each segment and at regularly spaced intervals in between.

■ Minimum Mounting Bolt Quantity per Segment (For Horizontal Installation)

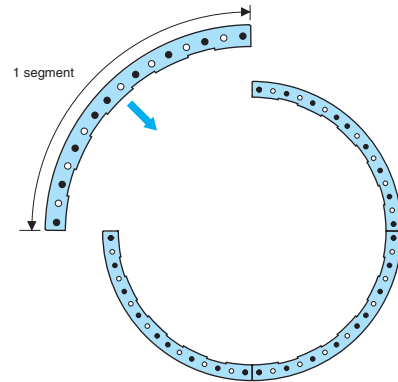
Type	Frame No.	Mounting Bolt Size	Minimum Qty
Steel Models	PDU020	M4	8
	PDU022	M4	13
	PDU030	M6	10
	PDU035	M8	8
	PDU040	M10	7
	PDU050	M12	6
	PDU055	M12	9
	PDU070	M16	6
	PDU080	M16	7
	PDU090	M20	6
	PDU120	M30	4
	PDU150	M36	6
	PDU180	M42	6
	PDU240	M48	5
Stainless Steel Models	PDU020	M4	8
	PDU022	M4	13
	PDU030	M6	10
	PDU035	M8	8
	PDU040	M10	7
	PDU050	M12	6
	PDU055	M12	9
	PDU070	M16	6
	PDU080	M16	7
	PDU090	M20	6

Example: Bolt mounting: PDU050-GPF064P 4-segment model
Mounting position: See figure below (Mounting bolt positions indicated by black dots.)

PDU050 requires a minimum of 6, M12 mounting bolts.

Install at least 6 bolts per segment as evenly as possible.

* Contact Tsubaki if you are unsure about installation.



■ Mounting Bolt Strength

Steel Models	Flat Type	Hex cap bolt (Strength class 12.9)
	Angle Type	Hex cap bolt (Strength class 12.9) Hex bolt (Strength class 10.9)
Stainless Steel Models	Flat Type	Hex cap bolt (Strength class 50)
	Angle Type	Hex cap bolt (Strength class 50) Hex bolt (Strength class 50)

* See the instruction manual for more information.

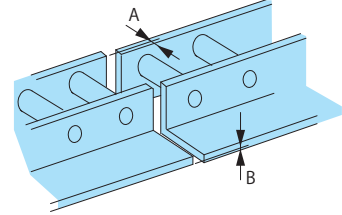
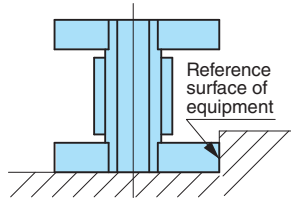
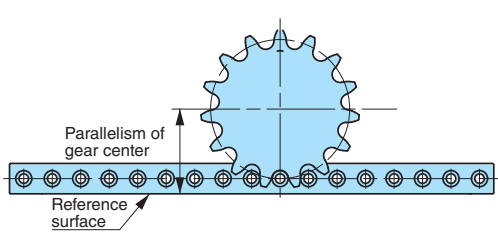
Note: Mounting bolts are not included.

Installation Precision

• Pin racks (for linear drive)

Ensure that the parallelism of the equipment-side reference surface of the pin rack and the pin gear center is equal to or less than the indicated gear center parallelism in the table below by ensuring that the machine is correctly aligned in advance.

Ensure that the alignment along the A and B axes of adjoining pin racks is within the tolerance indicated in the table below.



Frame No.	PDU020	PDU022	PDU030	PDU035	PDU040	PDU050	PDU055	PDU070	PDU080	PDU090	PDU120	PDU150	PDU180	PDU240
Parallelism of gear center (mm)	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.6	2.0	2.4	3.2
Misalignment tolerance of A and B axes (mm)	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.8	1.0	1.2	1.5

• Pin wheels (for rotational drive)

Projections on the pin wheel frame share the same centers as the roller mounting holes, so projections can be used as a reference surface for centering when fitting the pin wheel into the pilot section on the equipment.

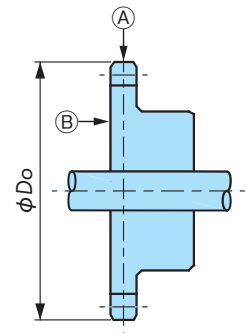
The precision of equipment pilot section must be finished within the precision of pilot section runout indicated in the table below.

Frame No.	PDU020	PDU022	PDU030	PDU035	PDU040	PDU050	PDU055	PDU070	PDU080	PDU090	PDU120	PDU150	PDU180	PDU240
Precision of pilot section runout (mm)	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.6	2.0	2.4	3.2

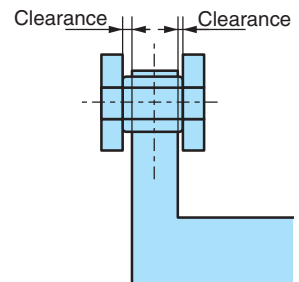
• Pin gears (common for linear drive and rotational drive)

Install so that the rotational accuracy of the pin gear is within the values shown in the table below.

Frame No.	Pin Gear Outer Diameter D_o					
	50 or less	150 or less	250 or less	650 or less	1000 or less	Over 1000
Pin gear axial runout A	0.1	0.12	0.15	$0.0006 \times D_o$	0.4	0.45
Pin gear radial runout B	0.12	0.15	0.15	$0.0006 \times D_o$	$0.0006 \times D_o$	0.6



Adjust the mounting clearance so that the teeth of the pin gear are positioned at the center of the inner width of the pin wheel/pin rack, and ensure that they do not contact the frame during operation.



* Always read the instruction manual before installing.

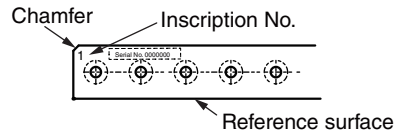
1. Preparation of Parts

Prepare the following parts.

- Pin Gear Drive Unit

Check the number of parts and other details from the delivery drawing, and confirm that all parts are included.

Numbers are inscribed on the pin wheel and pin rack. During assembly, the inscribed surfaces should be oriented in the same direction, so it is recommended to align the inscribed sides in advance. (Other numbers indicate the serial number.)



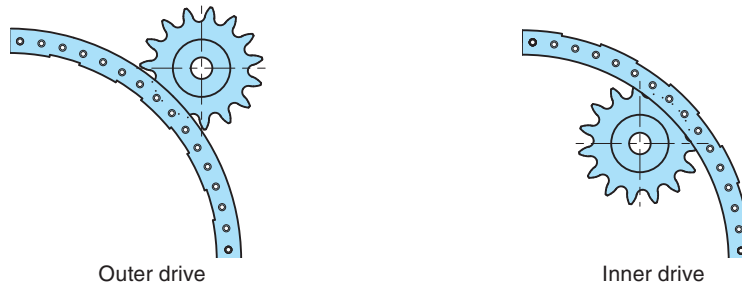
- Bolts and Nuts

The required quantities are listed on page 22, so please check these values.

2. Installation of Pin Wheel and Pin Rack

- Pin Wheel

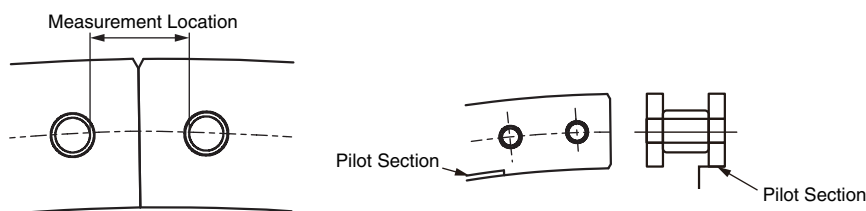
- (1) There is a concave/convex structure on the side opposite the surface where the pin gear is installed. (The direction of the concave/convex shape varies for outer rotational and inner rotational drive.)



Install so that the protrusion contacts the pilot section of the mounting base.

Install so that the surface with inscribed numbers faces the same direction. (It is acceptable even if the sequence of numbers is not continuous.)

- (2) Temporarily fasten each segment with bolts and nuts. (Secure them so that they do not move during test operation.) Arrange the bolts and nuts at equal intervals within each segment.
- (3) Adjust the position of each segment. (Perform this when the number of segments exceeds 10.) Measure the inner diameter between the bushings at the segment joints and make adjustments. (Consult Tsubaki for the target values.) Consult Tsubaki if measurement of the inner diameter between bushings is not possible due to inserted bolts.

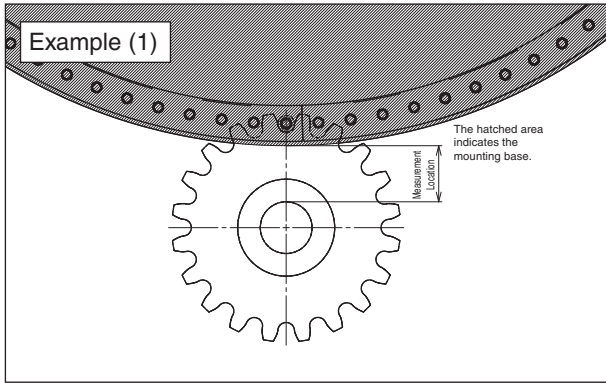


- (4) Install the pin gear to enable test operation, and check the runout accuracy of the pin rack.
- (5) Fully tighten the bolts and nuts. (See the instruction manual for tightening torque.)

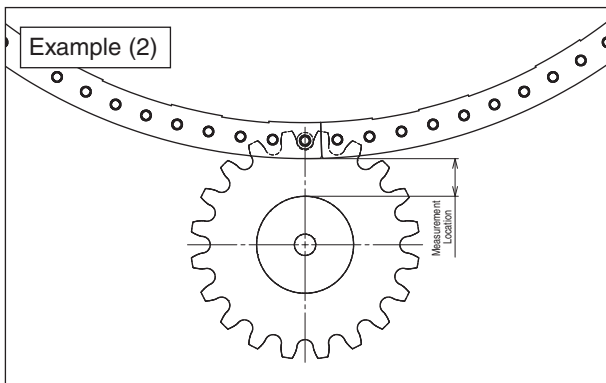
3. Mounting of Pin Gear

- (1) Mount the pin gear on the shaft of the motor, etc., and secure the pin gear sprocket.
- (2) Install so that the center of the tooth width of the pin gear is near the center of the inner width of the pin wheel and pin rack.
- (3) Adjust the center distance.

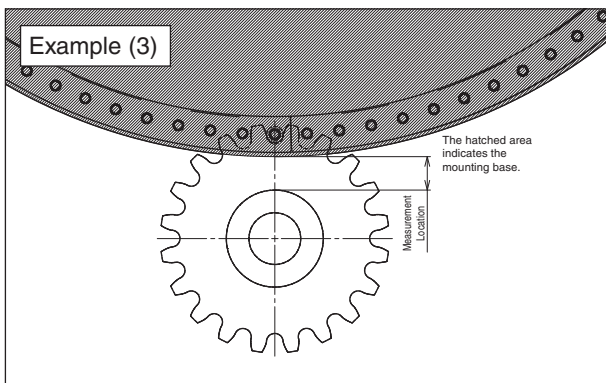
Adjustment of Center Distance Examples



Measure the distance between the mounting base and the shaft, and confirm the center distance.
(Calculate and adjust the center distance based on the diameter of the measurement location on the mounting base and the shaft diameter.)



With the roller in contact with the tooth root of the pin gear, measure the clearance between the frame of the pin wheel or pin rack and the hub of the pin gear, and contact Tsubaki as adjustment to our specified value is required.



With the roller in contact with the tooth root of the pin gear, measure the clearance between the outer diameter of the mounting base and the hub of the pin gear, and contact Tsubaki as adjustment to our specified value is required.

- (4) Use a marking compound (such as red lead) to check the contact state between the tooth surface of the pin gear and the roller.
If only part of the tooth surface is in contact, the pin gear may be tilted relative to the center of the pin wheel and pin rack, so adjust the tilt of the pin gear.

Notes: 1. The backlash values listed in the catalog are values obtained by theoretical calculation. They are not values that can be achieved by adjusting the installation state.

2. For the specified values in Examples (2) and (3), please consult Tsubaki as needed.

Lubrication

Molybdenum disulfide grease has been applied beforehand to the inner surfaces of the rollers of the pin rack/pin wheel. Grease is not applied to the roller surfaces, so be sure to apply extreme-pressure grease to all roller surfaces before operation. (Refer to the table below for examples of recommended grease.) The operating temperature range of the pin gear drive unit is -10 to 150°C for steel models and -20 to 400°C for stainless steel models. Select the appropriate grease for the operating environment.

Examples of Commercial Lubricants

Manufacturer	Grease Name	NLGI No. (Consistency Number)	Grease Operating Temperature Range
Idemitsu Kosan Co., Ltd.	Daphne Grease MP No. 0, No. 1, or No. 2	0, 1, or 2	-20 to 130°C
	Daphne Eponex SR	0, 1, or 2	-20 to 160°C
ExxonMobil Ltd.	Mobilux EPO, EP1, or EP2	0, 1, or 2	-10 to 130°C
	Mobil SHC Polyree 005, 221, 222, or 462		-20 to 170°C
Nippon Grease Co., Ltd.	Nightight LE-0, LE-1, or LE-2	0, 1, or 2	-20 to 120°C
Sumico Lubricant Co., Ltd.	Sumiplex MP No. 0, No. 1, or No. 2	0, 1, or 2	-20 to 200°C
	Sumiplex L-MO No. 0, No. 1, or No. 2	0, 1, or 2	-10 to 240°C

NLGI (National Lubricating Grease Institute) (USA)

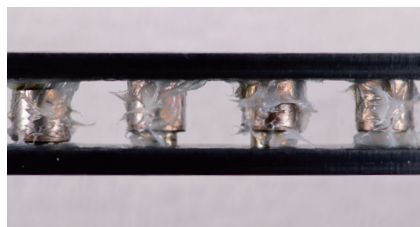
The product names listed in the table above are trademarks or registered trademarks of their respective companies.

Application Method

Apply grease to the pin gear or rollers. Applying grease to both the pin gear and rollers helps eliminate uneven application and prevents insufficient lubrication.

The guideline for the amount of grease per roller is shown in the table on the right. It is recommended to apply grease several times so that it is evenly distributed over the entire roller surface.

Periodically check the condition of the roller surface, and if grease is insufficient, apply additional grease. Set the appropriate amount of grease according to the condition of the roller surface and the operating environment.



Frame No.	Application Amount g
PDU020	0.5
PDU022	0.5
PDU030	1
PDU035	1.5
PDU040	2.5
PDU050	3
PDU055	4
PDU070	6
PDU080	7
PDU090	10
PDU120	20
PDU150	30
PDU180	40
PDU240	80

Inspection and Maintenance

- (1) Check that the bolts and nuts are properly tightened.
- (2) Apply grease to the rollers of the pin rack/pin wheel and the tooth surfaces of the pin gear.
Using without lubrication may cause premature wear, so apply grease periodically.

Before Use

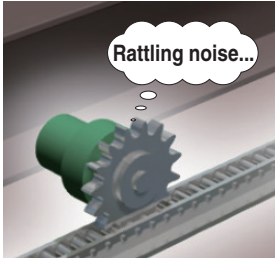
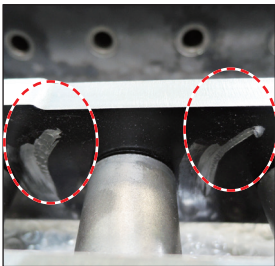
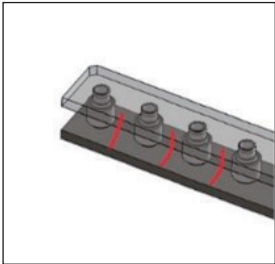
- Check that there is no uneven contact between the pin gear tooth surfaces and the rollers.
- Check that there is no contact between the pin gear tooth root and the rollers of the pin rack/pin wheel.
- Check that the meshing between the pin gear and the pin rack/pin wheel is smooth.
- Check that there is no contact between the pin gear and the frame of the pin rack/pin wheel.

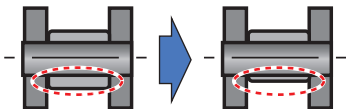
Read the instruction manual and catalog carefully before use to ensure the correct use of the product.

Function and performance may deteriorate depending on installation accuracy, load conditions, wear and lifespan of components, and other factors.

Perform periodic inspection and maintenance, and implement safety measures on the equipment side as well.

Examples of Failures, Causes, and Corrective Action

Symptom	Possible Cause	Corrective Action
Abnormal noise occurs  Failure example (Abnormal noise)	Improper installation of pin gear, pin wheel, or pin rack	Inspect and adjust according to page 26. Check installation accuracy of pin wheel or pin rack. Check axial and radial runout of pin gear. Etc.
	Severe wear of pin gear, pin wheel, or pin rack	Replace with new parts.
	No lubrication or insufficient lubrication	Apply lubrication and continue proper lubrication according to page 26.
Pin gear disengages	Improper installation of pin gear, pin wheel, or pin rack	Inspect and adjust according to page 26. Adjust the center distance. Etc.
Wear on the side surfaces of pin gear teeth/ Wear on the inner side of the plate of the pin wheel or pin rack  	Improper installation of pin gear, pin wheel, or pin rack	Inspect and adjust according to page 26. Check installation accuracy of pin wheel or pin rack. Check axial and radial runout of pin gear. Etc.
Rusting	No lubrication or insufficient lubrication/ Mismatch between environment and specifications	After replacing with new parts, continue with proper lubrication according to page 26. Improve operating environment. Adopt environment-resistant specifications.

Symptom	Possible Cause	Corrective Action
Breakage of pin gear teeth/bushing  	Excessive impact load or excessive load	Reduce impact load by changing operating conditions such as making start/stop smoother. Increase the size of the pin gear drive unit.
	Ingress of foreign matter	Improve operating environment. Change to large backlash or flexible specification.
	Improper installation of pin gear, pin wheel, or pin rack	Inspect and adjust according to page 26. Adjust the center distance. Etc.
	Operation beyond the wear limit of gears and rollers	Inspect according to page 26 and replace before breakage.
Roller cracks 	Excessive impact load or excessive load	Reduce impact load by changing operating conditions such as making start/stop smoother. Increase the size of the pin gear drive unit.
	Excessive rotational speed	Review operating conditions (Maximum allowable speed: 50 m/min).
	No lubrication or insufficient lubrication	After replacing with new parts, continue with proper lubrication according to page 26.
Roller does not rotate	No lubrication or insufficient lubrication	After replacing with new parts, continue with proper lubrication according to page 26.
	Excessive load due to the roller approaching the tooth root during operation	Inspect and adjust according to page 26. Check installation accuracy of pin wheel or pin rack. Check axial and radial runout of pin gear. Etc.
	Foreign matter enters between bushing and roller	Remove periodically. Install casing for protection. Improve operating environment.
Uneven roller wear 	No lubrication or insufficient lubrication	After replacing with new parts, continue with proper lubrication according to page 26.
	Excessive load	Reselect. Increase the size of the pin gear drive unit.

This site is designed to facilitate product selection, with provisional selection available from the Selection Calculation page, and drawing downloads available from the Drawing Library.

HOME > Sizing > Sprocket / Pin gear drive > Pin gear drive unit



● Selection Calculations

https://en.tt-net.tsubakimoto.co.jp/tecs/calc/cdc/pdu/calc_pdu.asp

Pin Gear Drive Unit selection and drawing software greatly reduces the time required to identify the model number



◆ Simple selection for linear and rotational drive is possible

◆ Reduced selection time

For linear drive, results for one size larger are displayed simultaneously

Specifications

Steel Type: ☒ Steel Type ☐ Advanced Rust Protection Series ☐ Stainless Steel Type

Pin rack shape: ☒ Flat Rack ☐ Angled Rack

Operating conditions

Running angle of inclination: β 0 [°]

Total weight of travel part: M 100 [kg]

Running speed: V 10 [m/min]

Coefficient of bearing friction of wheel: μ 1

Coefficient of rolling friction of wheel: μ_r 1

Acceleration and deceleration time: t 1 [s]

Operation type

☒ Uniform load ☐ Load with minor impacts ☐ Load with major impacts

Hours operated daily: ☒ Less than 3 hours ☐ Less than 12 hours ☐ More than 12 hours

Number start/stop times per hour: ☒ Less than 9 times ☐ 10 or more times

Designated type

Pin gear no. of teeth: NT₁ 15

Hub type: ☒ B ☐ C

Total required pin rack length: 1000 [mm]

Selected model number

Pin gear model no.: PDU020-SGB016T

Pin rack model no.: PDU020-SFP060P

Pin gear outer diameter: Do 120 [mm]

Pin gear pitch diameter: Da 103.66 [mm]

Pitch: P 20 [mm]

Total pin rack length: La₁ 1000 [mm]

Pin gear rotational speed: n₁ 30.71 [r/min]

Pin gear load power: Pw 0.34 [kW]

Reference model number

One size up frame number. For safety margin and price comparison.

Frame no.: PDU022

Pin gear no. of teeth: NT₁ 15

Pin gear model no.: PDU022-SGB016T

Pin rack model no.: PDU022-SFP046P

Pin gear outer diameter: Do 126 [mm]

Pin gear pitch diameter: Da 107.04 [mm]

Pitch: P 22 [mm]

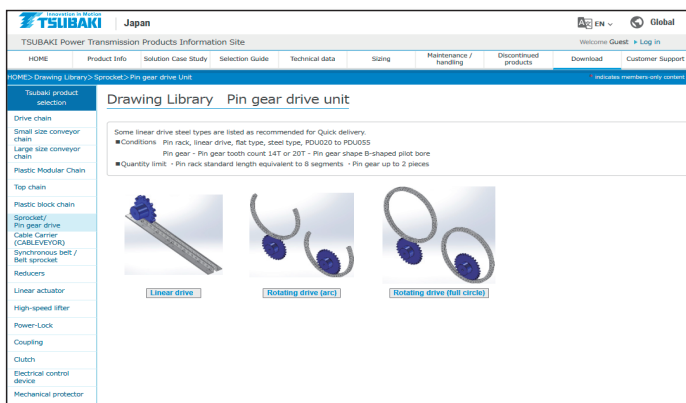
Total pin rack length: La₂ 1012 [mm]

Pin gear rotational speed: n₁ 29.74 [r/min]

Pin gear load power: Pw 0.34 [kW]

● Drawing Library

https://en.tt-net.tsubakimoto.co.jp/tecs/pdf/cdc/pdf_CPDU.asp



Linear drive

Recommended Models for Quick Delivery will be displayed if you select [Quick Delivery Conditions]

Pin rack shape: ☒ Flat Rack ☐ Angled Rack

Specifications: ☒ Steel Type ☐ Advanced Rust Protection Series ☐ Stainless Steel Type

Frame no.: PDU020

Pin rack length: ☐ Total required pin rack length ☐ No. of rollers 120 [mm]

Pin gear

Hub type: ☒ B type ☐ C type

No. of teeth: 13~24

14

Selected model number

Total pin rack length: 3600 [mm]

Pin rack model no.: PDU020-SFP180P

Pin gear model no.: PDU020-SGB014T

Recommended Models for Quick Delivery

Total pin rack length: 4000 [mm]

Pin rack model no.: PDU020-SFP200P

Pin gear model no.: Same as the selected model num

Based on the customer's selection conditions, additional results are proposed if products available with short delivery times are found

* Displayed only when applicable

Tsubaki Pin Gear Drive Unit Selection Service Sheet (For Linear Drives)

Complete this sheet to receive a report on the selection result.

Company: _____

Name: _____

Department: _____

Phone/Fax: _____

E-mail: _____

Tsubaki dealer: _____

Machinery used: (Please attach a layout diagram if possible.) _____

① Specifications

- ☐ Steel models Standard Specification
 ☐ Steel models Electroless Nickel Plating Specification
 ☐ Steel models High Anti-Rust Specification
- ☐ Flexible Models
 ☐ Stainless steel models

② Mounting type

- ☐ Flat Type
 ☐ Angle Type

③ Pin rack size

Overall length mm

④ Movable component/conveyor component

Travel angle (β) °

Overall travel weight kg

⑤ Coefficient of friction

Friction coefficient of wheel bearing (μ_s)

Friction coefficient when rolling wheel (μ_r)

⑥ Operating conditions

Traveling speed (V) m/min Acceleration/deceleration time sec

Operation status ☐ Even load ☐ Load with small impacts ☐ Load with large impacts

Daily operating time Hours

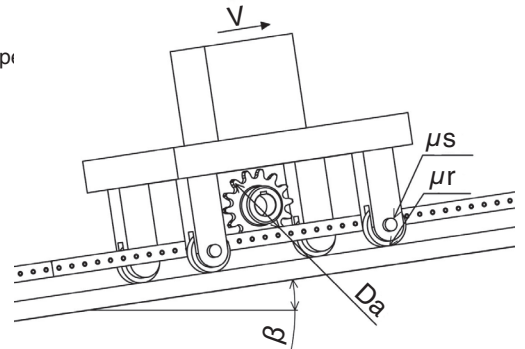
No. of start/stop operations per hour Operations

⑦ Pin gear specifications

Pitch circle diameter (Da) mm or Pin gear outer diameter mm or No. of pin gear teeth

Hub type ☐ B (Single hub) ☐ C (Dual hub)

⑧ Other specifications (Include details such as required reduction gear ratio, usage conditions, operation patterns, and other relevant points.)



Tsubaki Pin Gear Drive Unit Selection Service Sheet (For Rotational Drives)

Complete this sheet to receive a report on the selection result.

Company: _____

Name: _____

Department: _____

Phone/Fax: _____

E-mail: _____

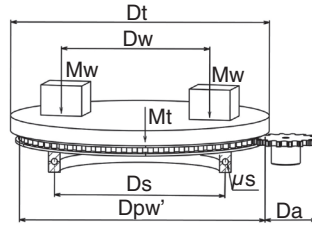
Tsubaki dealer: _____

Machinery used: (Please attach a layout diagram if possible.)

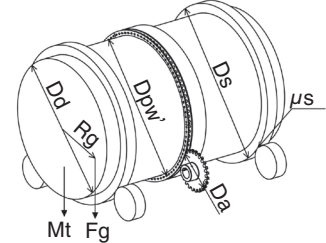
① Specifications

- ☐ Steel models Standard Specification
☐ Steel models High Anti-Rust Specification
☐ Stainless steel models
- ☐ Steel models Electroless Nickel Plating Specification
☐ Flexible Models

* Table drive



* Drum drive



② Drive system

- ☐ Outer drive ☐ Inner drive

③ Pin wheel size

Mounting part diameter mm or Pitch circle diameter (Dpw') mm

④ Movable component/conveyor component

* For table drive

Outer diameter of table (Dt) mm Load rotation diameter (Dw) mm
 Table weight (Mt) kg Total load (Mw) kg

* For drum drive

Drum outer diameter (Dd) mm Working radius (Rg) mm
 Total weight (Mt) kg Workload (Fg) kN

⑤ Coefficient of friction

Rotational support diameter (Ds) mm Coefficient of friction of rotational support (μs)

⑥ Operating conditions

Table/drum rotation speed r/min Acceleration/deceleration time sec
 Operation status ☐ Even load ☐ Load with small impacts ☐ Load with large impacts
 Daily operating time Hours
 No. of start/stop operations per hour Operations

⑦ Pin gear specifications

Pitch circle diameter (Da) mm or Pin gear outer diameter mm or No. of pin gear teeth
 Hub type ☐ B (Single hub) ☐ C (Dual hub)

⑧ Other specifications (Include details such as required reduction gear ratio, usage conditions, operation patterns, and other relevant points.)

Inquiries: Tsubakimoto Sprocket Co. Tel: 0774-43-8911, Fax: 0774-43-4370

MEMO

Lined area for writing notes, consisting of multiple horizontal lines.

MEMO

Lined area for writing the memo.

Safety Precautions



WARNING

Observe the items below to prevent danger.

- Check that no torque is acting on the rotating shaft of the product or the equipment before installation and before performing maintenance and inspection work.
- Product function or performance may be adversely affected by mounting accuracy and load conditions or the wear and life of parts used. Implement safety measures for the equipment in advance and regularly perform maintenance and inspections.
- Follow all applicable local safety regulations as required.
- Observe the following when installing, removing, maintaining, or inspecting the product:
 - Wear suitable clothes and protective gear (e.g., safety glasses, gloves, and shoes) when working.
 - Turn off the main power switch of the equipment before conducting the work and take preventive measures so that the switch will not be turned on unexpectedly. Take the same precautions during a power failure.
 - Read and follow the instructions in the operation manuals and catalogs before conducting the work.
- When servicing or inspecting equipment that is continually subject to a load, such as lifting equipment, remove the load before starting work or take steps to prevent the equipment from falling.



CAUTION

Observe the items below to prevent accidents.

- Great force will act on the mount if the product is used for applications where the product is started and stopped frequently. Make sure that the mount is sturdy enough.
- Before using the device, read the instruction manual thoroughly, and ensure the device is used correctly. If no instruction manual is available, request an instruction manual from the distributor where the device was purchased, or from the Tsubaki sales office.
- Contact your Tsubaki representative for more information on the inclusion of substances restricted for use in specific industries and applications.
- Always make sure that the operation manual is delivered to the end user.
- Product details described in this catalog are primarily intended to aid product selection. Always read the instruction manual before using any product to ensure correct use.

Warranty

1. Warranty period without charge

Tsubakimoto Chain Co. (hereinafter referred to as “Company”) provides a warranty without charge valid for either 18 months after the shipment of the purchased product (hereinafter referred to as “Goods”) from the factory, or 12 months after the first use of Goods, whichever comes first. First use of Goods is considered to be the complete incorporation of Goods into the equipment of the purchasing party (hereinafter referred to as “Customer”). This warranty may be provided with charge in certain circumstances.

2. Warranty coverage

Should any malfunction in Goods arise during the warranty period, given that Goods were properly installed, operated, and maintained as instructed in the catalog, instruction manual, or similar, Company shall promptly deliver or repair Goods or the failed part at no charge once Company has confirmed such failure. This warranty only covers delivered Goods and therefore does not include the following: (“Instruction manual or similar” includes documentation specially provided to Customer.)

- (1) Any costs required for the removal or mounting of Goods from or into Customer’s equipment for repair or replacement.
- (2) Costs required for transporting Customer’s equipment to repair shop, etc.
- (3) Profits lost due to a malfunction or repair, or any other consequential loss.

3. Warranty with charge

Company will charge for any investigation and repair of a malfunction in Goods (even during the warranty period) if caused by:

- (1) Improper location, installation, lubrication, or maintenance by Customer’s failing to follow the catalog, instruction manual, or similar. (“Instruction manual or similar” includes documentation specially provided to Customer.)
- (2) Operation methods (including usage conditions, usage environment, and allowable values) resulting from Customer’s failure to follow operation described in the catalog, instruction manual, or similar. (“Instruction manual or similar” includes documentation specially provided to Customer.)
- (3) Inappropriate disassembly, modification, alteration, or processing by Customer.
- (4) Use of Goods by Customer in conjunction with damaged or worn parts not made by Company.
- (5) Failure of operational life under conditions of use as determined by Company to satisfy operational life covered by Warranty.
- (6) Use by Customer under conditions other than those discussed.
- (7) Consumption, wear, or deterioration of bearings, oil seals, oil, and other consumable parts incorporated into Goods.
- (8) Secondary failure or malfunction resulting from malfunctioning of Customer’s equipment.
- (9) Malfunction of Goods resulting from a Force Majeure such as an act of God.
- (10) Malfunction of Goods resulting from a wrongful act committed by a third party.
- (11) Any other reason that is not attributable to Company.

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Japan	Tsubakimoto Chain Co.	https://tsubakimoto.com/
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Global Group Companies

AMERICAS

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Brazil	Tsubaki Brasil Equipamentos Industriais Ltda.	https://tsubaki.ind.br/
Canada	Tsubaki of Canada Limited	https://tsubaki.ca/

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France	Kabelschlepp France S.A.R.L.	https://tsubaki-kabelschlepp.com/fr-fr/
Germany	Tsubaki Deutschland GmbH	https://tsubaki.de/
	Tsubaki Kabelschlepp GmbH	https://tsubaki-kabelschlepp.com/de-de/
Italy	Kabelschlepp Italia S.R.L.	https://tsubaki-kabelschlepp.com/it-it/
Spain	Tsubaki Ibérica Power Transmission S.L.	https://tsubaki.es/
United Kingdom	Tsubakimoto UK Ltd.	https://tsubaki.eu/
Slovakia	Kabelschlepp-Systemtechnik, spol. s r.o.	https://tsubaki-kabelschlepp.com/sk-sk/
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INDIAN OCEAN RIM

Singapore	Tsubakimoto Singapore Pte. Ltd.	https://tsubaki.sg/
Australia	Tsubaki Australia Pty. Limited	https://tsubaki.com.au/
India	Tsubaki India Power Transmission Private Limited	https://en.tsubaki.in/
Indonesia	PT. Tsubaki Indonesia Trading	https://tsubaki.id/
Malaysia	Tsubaki Power Transmission (Malaysia) Sdn. Bhd.	https://en.tsubaki.my/
New Zealand	Tsubaki Australia Pty. Limited - New Zealand Branch	https://tsubaki.com.au/
Philippines	Tsubakimoto Philippines Corporation	https://en.tsubaki.ph/
Thailand	Tsubakimoto (Thailand) Co., Ltd.	https://tsubaki.co.th/
Vietnam	Tsubakimoto Vietnam Co., Ltd.	https://tsubaki.net.vn/

EAST ASIA

Republic of Korea	Tsubakimoto Korea Co., Ltd.	https://tsubakimoto-tck.co.kr/
Taiwan	Taiwan Tsubakimoto Trading Co., Ltd.	https://tsubakimoto.tw/

CHINA

China	Tsubakimoto Chain (Shanghai) Co., Ltd.	https://www.tsubaki-sh.cn/
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The Tsubaki Eco Link logo is used only on products that satisfy the standards for environmental friendliness set by the Tsubaki Group.