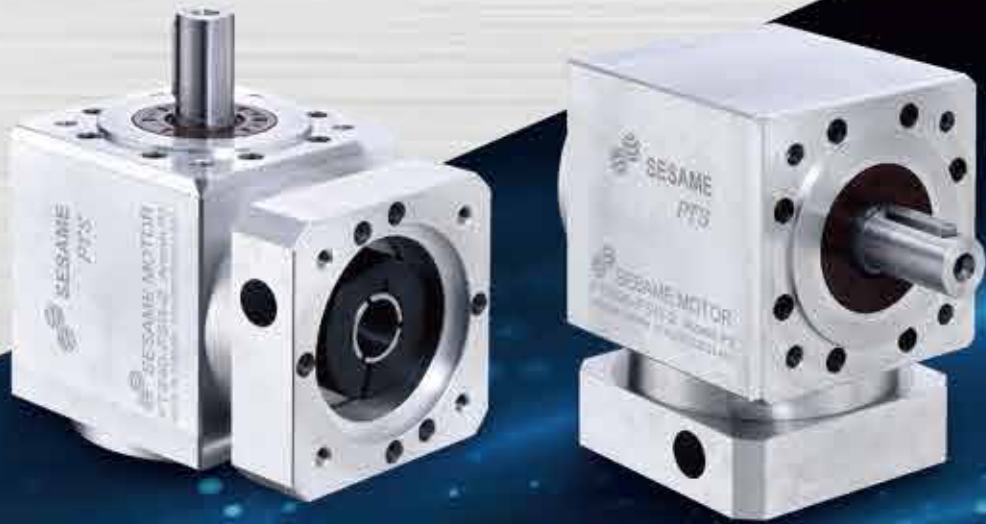




Spiral Bevel Gearbox

PTS series



PTS  
SERIES





## Servo Spiral Bevel Gearbox

Sesame servo spiral bevel gearboxes are ideal for use in applications that require high dynamic and positioning motion control. The compact and rigid design ensure good performance with space and weight efficient at the same time. Lubricated for life and IP65 sealing benefit virtually maintenance-free under normal operating conditions for 20,000 hours. They are provided in five sizes with input speed up to 8,500 rpm and standard backlash less than 9 arc-minutes. A wide range of motor adapter are available for installation to virtually all servo motors.

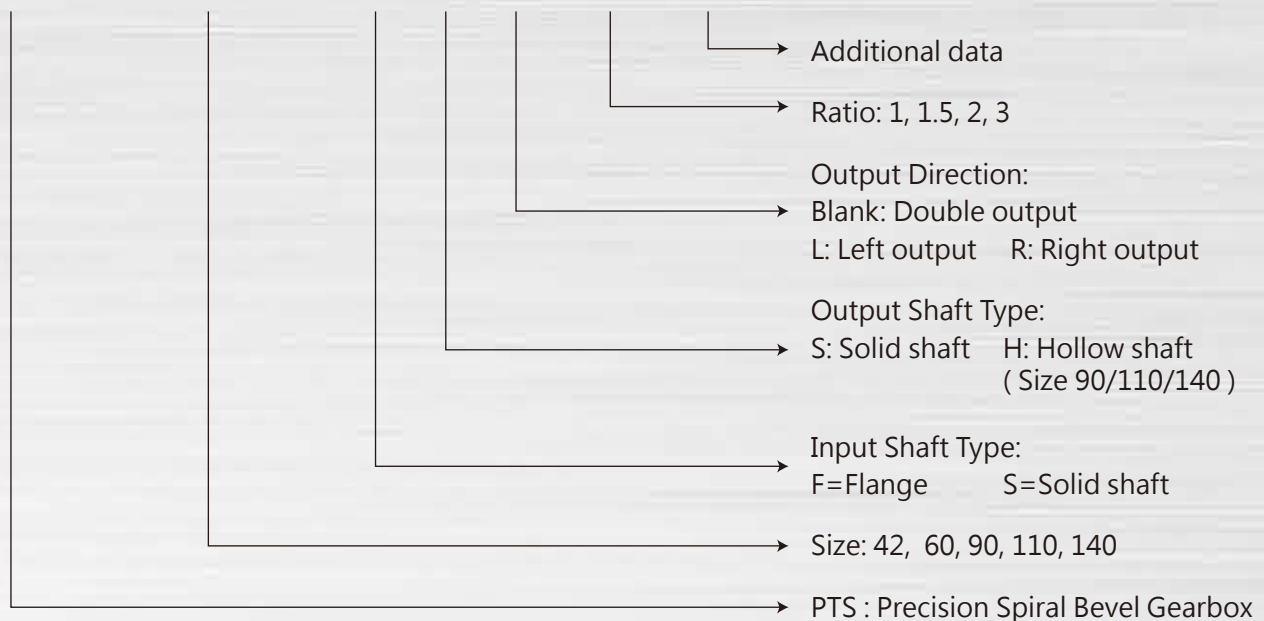
- Compact and rigid design ensure performance within light and small gearbox size
- The highest input speed up to 8,500 rpm
- Lubricated for life and IP65 sealing
- High operating efficiency more than 98%
- Low noise, low vibration, maintenance-free under normal operating conditions

Typical applications:  
precision rotary axis drives, travel gantry and columns, material handling axis drives and industrial areas in automation, aerospace, machine tool and robotics.



## Coding System

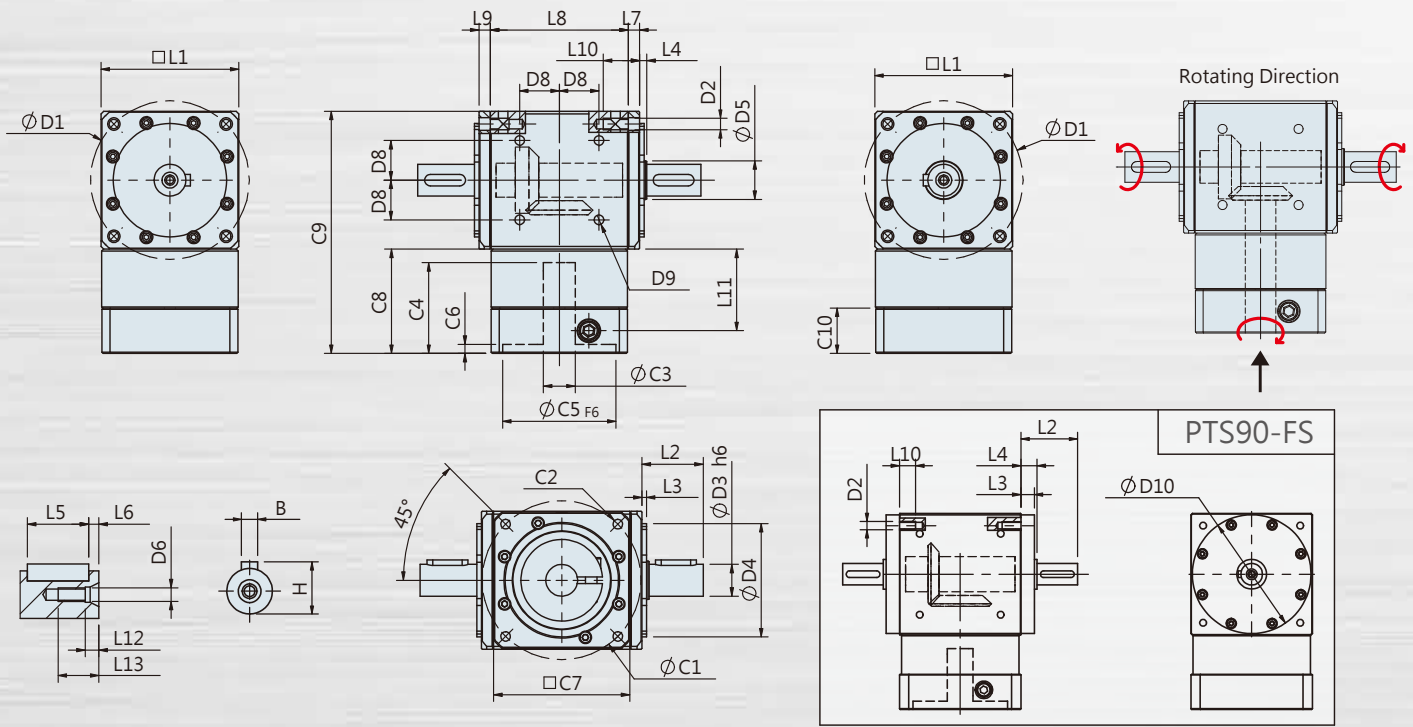
PTS - 0 9 0 - F S R - 3 -   



### Note:

The additional data include mounting position, input speed, input torque and options. Please indicate the input shaft diameter, flange version and flange dimensions when ordering.

# PTS-FS Single Stage Dimensions



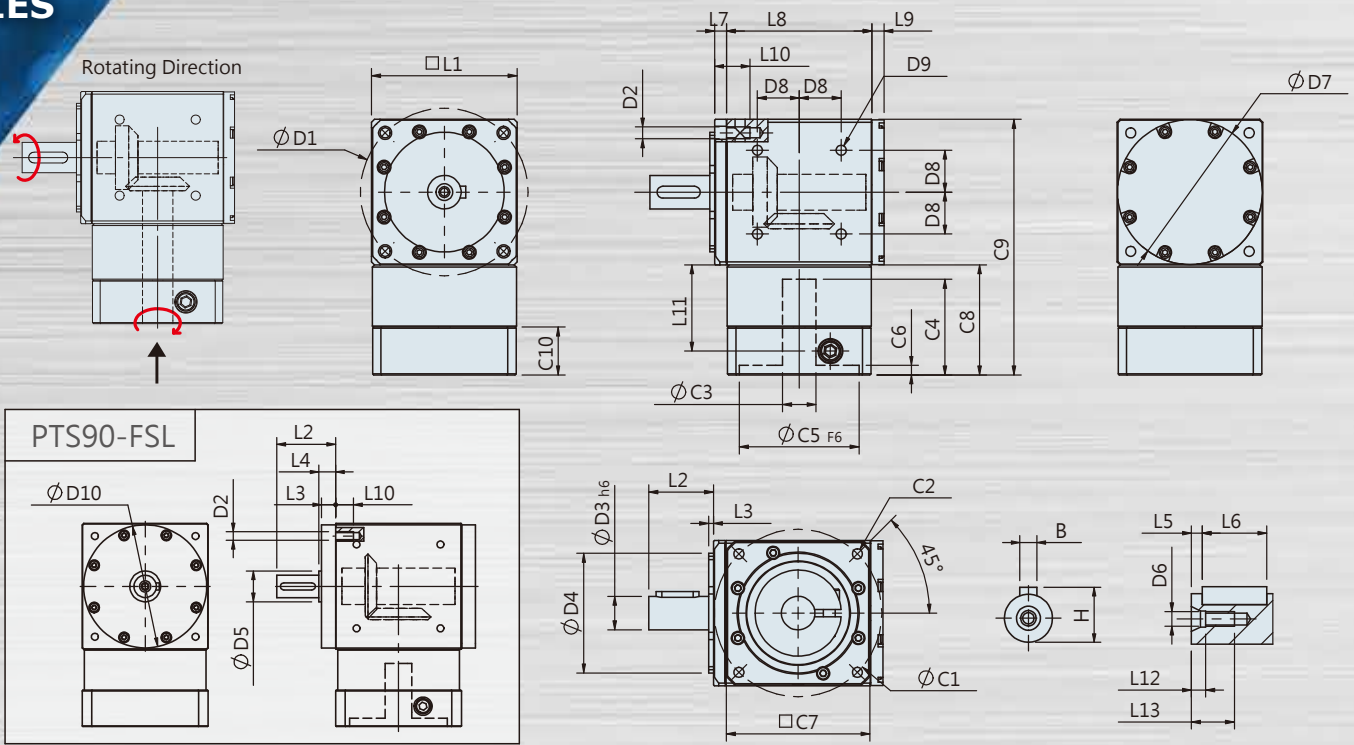
## Specifications

Unit: mm

Dimensions	PTS42-FS	PTS42G-FS	PTS60-FS	PTS90-FS
D1	46	46	70	101.8
D2	M4x0.7P	M4x0.7P	M5x0.8P	M6x1.0P
D3 <sub>h6</sub>	10	10	14	16
D4	30 <sup>+0</sup> <sub>-0.035</sub>	30 <sup>+0</sup> <sub>-0.035</sub>	50 <sup>+0</sup> <sub>-0.04</sub>	-
D5	12	12	17	22
D6	-	M3x0.5P	M4x0.7P	M5x0.8P
D7	-	-	-	-
D8	-	16.27	24.75	36
D9	-	M4x0.7P	M5x0.8P	M6x1.0P
D10	-	-	-	88 <sup>+0</sup> <sub>-0.035</sub>
L1	45	45	60.8	90
L2	22.5	22.5	27	42
L3	1.5	1.5	2	10
L4	2.5	2.5	3.2	12
L5	15	18	18	25
L6	2	2.5	3	2.5
L7	6	6	5	-
L8	42	42	60.8	90
L9	6	6	5	10
L10	14	14	15	12
L11	26.5	26.5	36	40.7
L12	-	3	4	4
L13	-	9	12	14
C1 <sup>1</sup>	46	46	70	90
C2 <sup>1</sup>	M4x0.7P	M4x0.7P	M5x0.8P	M6x1.0P
C3 <sup>1</sup>	≤8/≤11	≤8/≤11	≤14/≤19	≤19/≤24
C4 <sup>1</sup>	33	33	44	57
C5 <sup>1</sup>	30	30	50	70
C6 <sup>1</sup> <sub>F6</sub>	4	4	4	6
C7 <sup>1</sup>	42.6	42.6	60	90
C8 <sup>1</sup>	35.5	35.5	46	55.2
C9 <sup>1</sup>	80.5	80.5	106.8	145.2
C10 <sup>1</sup>	18.5	18.5	20	26
B	4	3	5	5
H	11.5	11.2	16	18

\*1. C1~C10 are motor specific dimensions (metric std shown), size may vary according to motor flange.

★ Specification subject to change without notice.



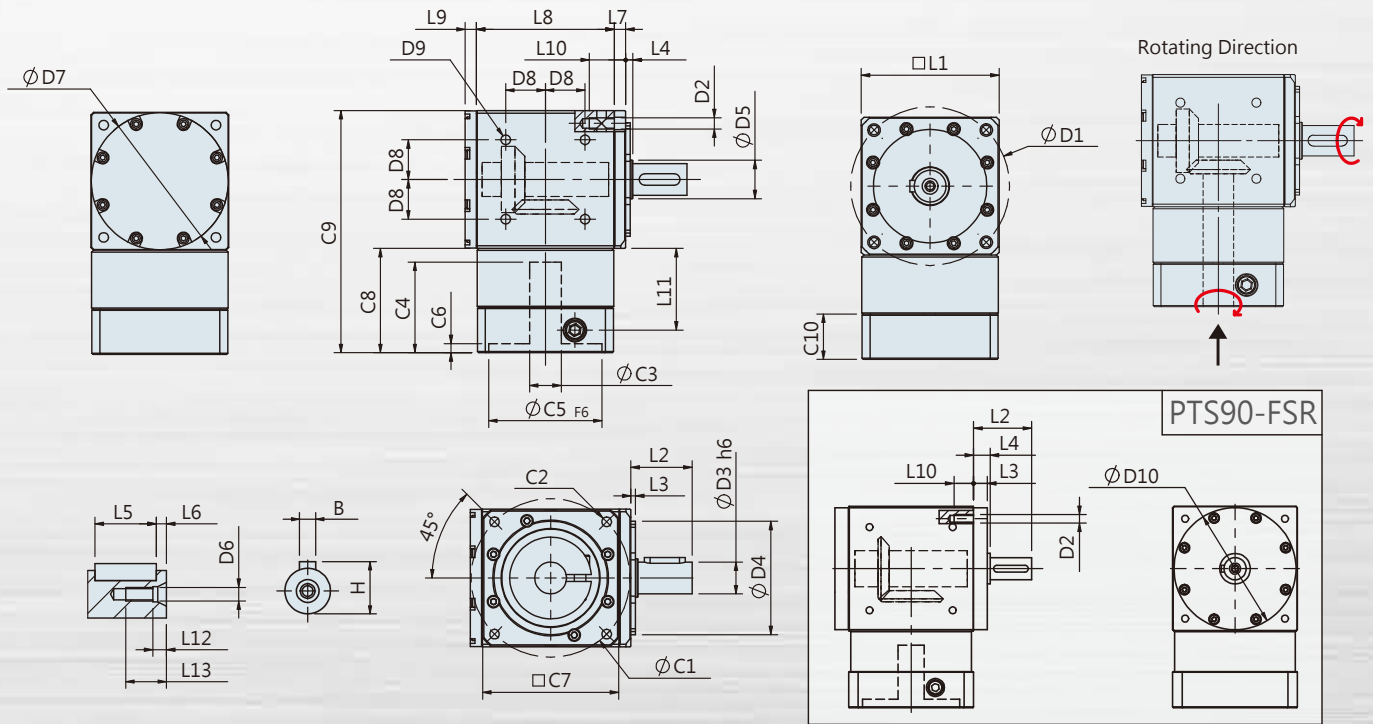
**Specifications**

Unit: mm

Dimensions	PTS42-FSL	PTS42G-FSL	PTS60-FSL	PTS90-FSL
D1	46	46	70	101.8
D2	M4x0.7P	M4x0.7P	M5x0.8P	M6x1.0P
D3 <sub>h6</sub>	10	10	14	16
D4	30 <sup>+0</sup> <sub>-0.035</sub>	30 <sup>+0</sup> <sub>-0.035</sub>	50 <sup>+0</sup> <sub>-0.04</sub>	-
D5	-	12	-	22
D6	-	M3x0.5P	M4x0.7P	M5x0.8P
D7	44.7	44.7	60.5	88
D8	-	16.27	24.75	36
D9	-	M4x0.7P	M5x0.8P	M6x1.0P
D10	-	-	-	88 <sup>+0</sup> <sub>-0.035</sub>
L1	45	45	60.8	90
L2	22.5	25.5	27	42
L3	1.5	1.5	2	10
L4	-	-	-	12
L5	15	18	18	25
L6	2	2.5	3	2.5
L7	6	6	5	-
L8	42	42	60.8	90
L9	5	6	5	10
L10	14	14	15	12
L11	26.5	26.5	36	40.7
L12	-	3	4	4
L13	-	9	12	14
C1 <sup>1</sup>	46	46	70	90
C2 <sup>1</sup>	M4x0.7P	M4x0.7P	M5x0.8P	M6x1.0P
C3 <sup>1</sup>	≤8/≤11	≤8/≤11	≤14/≤19	≤19/≤24
C4 <sup>1</sup>	33	33	44	57
C5 <sup>1</sup> F6	30	30	50	70
C6 <sup>1</sup>	4	4	4	6
C7 <sup>1</sup>	42.6	42.6	60	90
C8 <sup>1</sup>	35.5	35.5	46	55.2
C9 <sup>1</sup>	80.5	80.5	106.8	145.2
C10 <sup>1</sup>	18.5	18.5	20	26
B	4	3	5	5
H	11.5	11.2	16	18

\*1. C1~C10 are motor specific dimensions (metric std shown), size may vary according to motor flange.  
 ★ Specification subject to change without notice.

# PTS-FSR Single Stage Dimensions



## Specifications

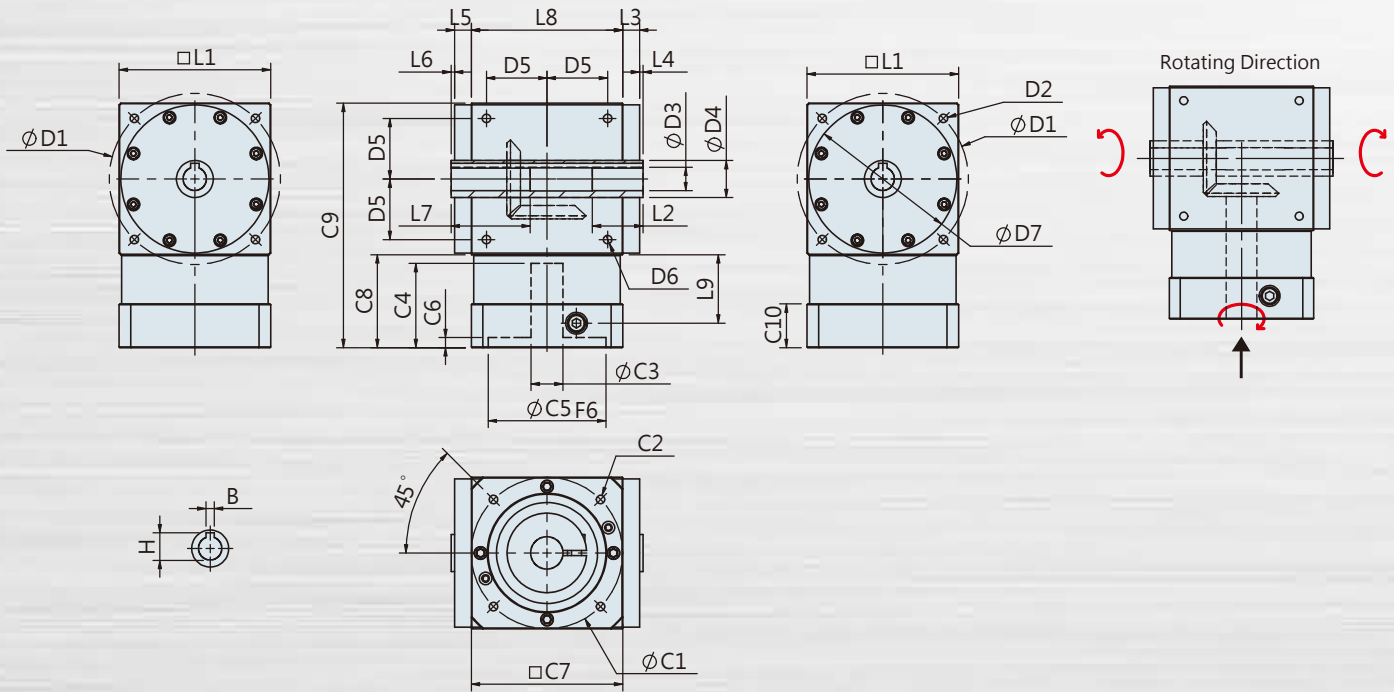
Unit: mm

Dimensions	PTS42-FSR	PTS42G-FSR	PTS60-FSR	PTS90-FSR
D1	46	46	70	101.8
D2	M4x0.7P	M4x0.7P	M5x0.8P	M6x1.0P
D3 <sub>h6</sub>	10	10	14	16
D4	30 <sup>+0</sup> <sub>-0.035</sub>	30 <sup>+0</sup> <sub>-0.035</sub>	50 <sup>+0</sup> <sub>-0.04</sub>	-
D5	12	12	17	22
D6	-	M3x0.5P	M4x0.7P	M5x0.8P
D7	44.7	44.7	60.5	88
D8	-	16.27	24.75	36
D9	-	M4x0.7P	M5x0.8P	M6x1.0P
D10	-	-	-	88 <sup>+0</sup> <sub>-0.035</sub>
L1	45	45	60.8	90
L2	22.5	25.5	27	42
L3	1.5	1.5	2	10
L4	2.5	2.5	3.2	12
L5	15	18	18	25
L6	2	2.5	3	2.5
L7	6	6	5	-
L8	42	42	60.8	90
L9	5	5	5	10
L10	14	14	15	12
L11	26.5	26.5	36	40.7
L12	-	3	4	4
L13	-	9	12	14
C1 <sup>1</sup>	46	46	70	90
C2 <sup>1</sup>	M4x0.7P	M4x0.7P	M5x0.8P	M6x1.0P
C3 <sup>1</sup>	≤8/≤11	≤8/≤11	≤14/≤19	≤19/≤24
C4 <sup>1</sup>	33	33	44	57
C5 <sup>1</sup>	30	30	50	70
C6 <sup>1</sup> F <sub>6</sub>	4	4	4	6
C7 <sup>1</sup>	42.6	42.6	60	90
C8 <sup>1</sup>	35.5	35.5	46	55.2
C9 <sup>1</sup>	80.5	80.5	106.8	145.2
C10 <sup>1</sup>	18.5	18.5	20	26
B	4	3	5	5
H	11.5	11.2	16	18

\*1. C1~C10 are motor specific dimensions (metric std shown), size may vary according to motor flange.

★ Specification subject to change without notice.

# PTS-FH Single Stage Dimensions



## Specifications

Unit: mm

Dimensions	PTS90-FH	PTS110-FH	PTS140-FH
D1	101.8	-	-
D2	M6x1.0P	-	-
D3 <sub>H7</sub>	14	-	-
D4	22	-	-
D5	36	-	-
D6	M6x1.0P	-	-
D7	88 <sup>+0</sup> <sub>-0.035</sub>	-	-
L1	90	-	-
L2	30	-	-
L3	10	-	-
L4	2	-	-
L5	10	-	-
L6	2	-	-
L7	47	-	-
L8	90	-	-
C1 <sup>1</sup>	90	-	-
C2 <sup>1</sup>	M6x1.0P	-	-
C3 <sup>1</sup>	≤19/≤24	-	-
C4 <sup>1</sup>	57	-	-
C5 <sup>1</sup> <sub>F6</sub>	70	-	-
C6 <sup>1</sup>	6	-	-
C7 <sup>1</sup>	90	-	-
C8 <sup>1</sup>	55.2	-	-
C9 <sup>1</sup>	145.2	-	-
C10 <sup>1</sup>	26	-	-
B	5	-	-
H	16.3	-	-

\*1. C1~C10 are motor specific dimensions (metric std shown), size may vary according to motor flange.  
 ★ Specification subject to change without notice.

## PTS Flange Input Specs. Table

Specifications		Stage	Ratio	PTS42/PTS42G (FS/FSL/FSR)	PTS-60 (FS/FSL/FSR)	PTS90 (FS/FSL/FSR) (FH)	PTS110 (FS/FSL/FSR) (FH)	PTS140 (FS/FSL/FSR) (FH)	
T <sub>2N</sub> Nominal Output Torque	N · m	1	1	8	15	45	78	150	
			1.5	8	15	45	78	150	
			2	7	12	42	68	150	
			3	5.5	10	33	54	120	
T <sub>2NOT</sub> Emergency Stop Torque	N · m	2.0 times of Nominal Output Torque * Max. Output Torque T <sub>2B</sub> =1.5 times of Nominal Output Torque							
n <sub>1N</sub> Nominal Input Speed	rpm	1	1~3	4000	3500	3000	2800	2500	
n <sub>1max</sub> Max. Input Speed	rpm	1	1~3	8500	7500	7000	6000	5000	
Precision Backlash P1	arcmin	1	1~3	≤9	≤9	≤9	≤8	≤8	
Standard Backlash P2	arcmin	1	1~3	≤15	≤12	≤12	≤12	≤12	
F <sub>2rB</sub> <sup>1</sup> Max. Radial Load	N	1	1~3	400	600	1200	-	-	
F <sub>2aB</sub> <sup>1</sup> Max. Axial Load	N	1	1~3	200	300	600	-	-	
Operating Temp.	°C	-10 °C ~ +90 °C							
Service Life	hr	20,000 (10,000/Continuous operation)							
Efficiency	%	≥ 98%							
Weight	FS	kg	1	1~3	0.65	1.5	4.4	-	-
	FSL	kg	1	1~3	0.6	1.4	4.2	-	-
	FSR	kg	1	1~3	0.6	1.4	4.2	-	-
	FH	kg	1	1~3	-	-	4.1	-	-
Mounting Position	-	1	1~3	Any Direction					
Noise Level <sup>2</sup>	dBA/1m	1	1~3	66	68	72	74	76	
Protection Class	-	1	1~3	IP 65					
Lubrication	-	1	1~3	Synthetic Lubricant					

### Inertia (J1)

Stage	Ratio	unit	PTS42/PTS42G (φ 8)	PTS-60(φ 14)	PTS-90(φ 19)	PTS-110(φ 24)	PTS-140(φ 32)
1	1	Kg · cm <sup>2</sup>	0.07	0.40	2.30	-	-
	1.5		0.06	0.33	1.82	-	-
	2		0.05	0.30	1.51	-	-
	3		0.05	0.29	1.48	-	-

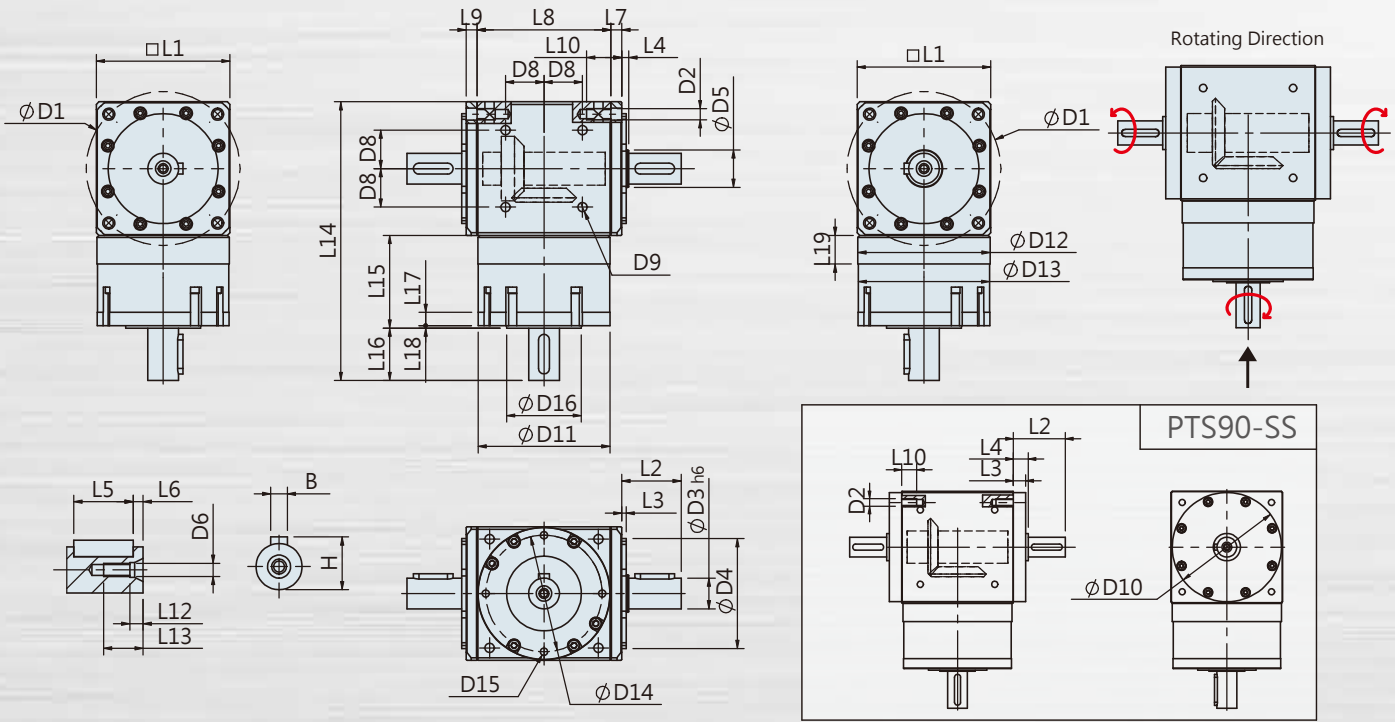
\* 1. Applied to the output shaft center @400rpm.

\* 2. Measured at 1500rpm with no load

※The above figures/specifications are subject to change without prior notice.

Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

# PTS-SS Single Stage Dimensions



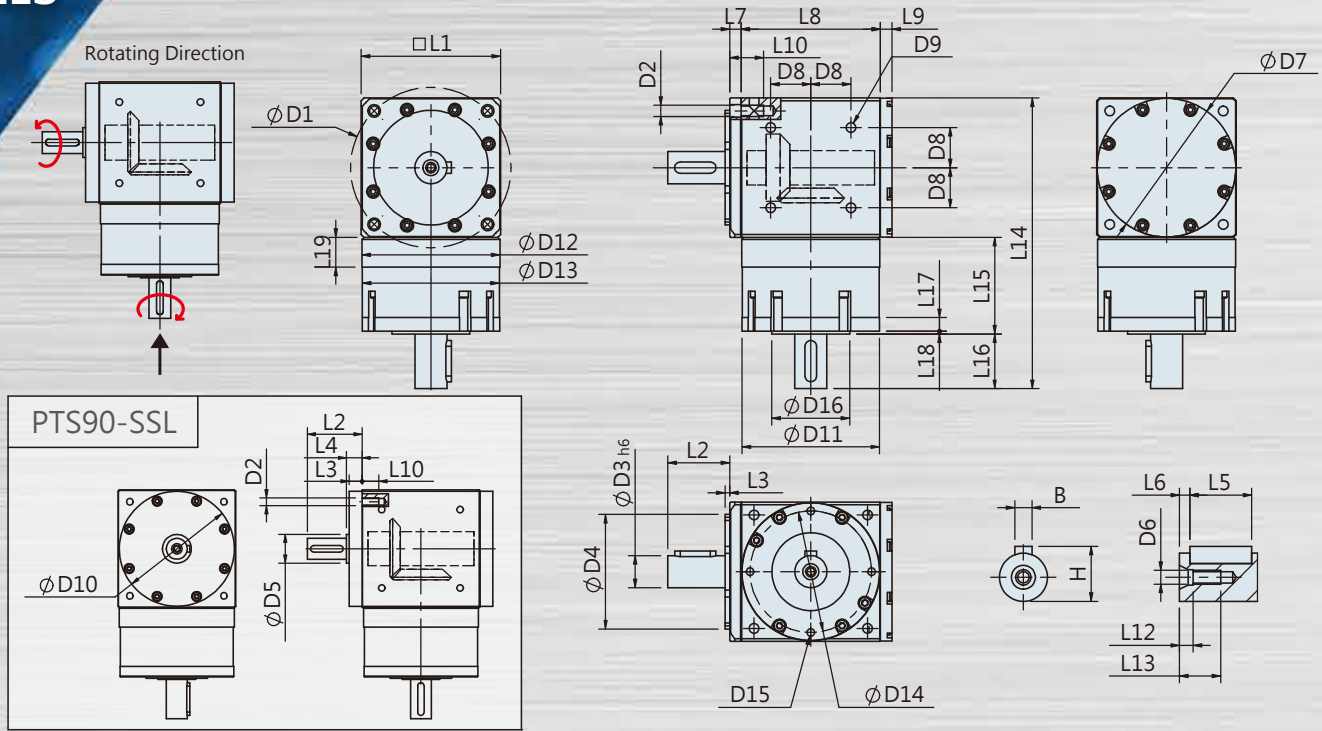
## Specifications

Unit: mm

Dimensions	PTS42G-SS	PTS60-SS	PTS90-SS
D1	46	70	101.8
D2	M4x0.7P	M5x0.8P	M6x1.0P
D3 <sub>h6</sub>	10	14	16
D4	30 <sup>+0</sup> <sub>-0.035</sub>	50 <sup>+0</sup> <sub>-0.04</sub>	-
D5	12	17	22
D6	M3x0.5P	M4x0.7P	M5x0.8P
D7	-	-	-
D8	16.27	24.75	36
D9	M4x0.7P	M5x0.8P	M6x1.0P
D10	-	-	88 <sup>+0</sup> <sub>-0.035</sub>
D11 <sub>g6</sub>	41.7	60	87
D12	41.8 <sup>+0</sup> <sub>-0.03</sub>	60.2 <sup>+0</sup> <sub>-0.03</sub>	88 <sup>+0</sup> <sub>-0.035</sub>
D13	41	59.8	86.5
D14	36	53	76
D15	M3x0.5Px6L	M4x0.7Px8L	M5x0.8Px12L
D16	19.5	34	47
L1	45	60.8	90
L2	22.5	27	42
L3	1.5	2	10
L4	2.5	3.2	12
L5	18	18	25
L6	2.5	3	2.5
L7	6	5	-
L8	42	60.8	90
L9	6	5	10
L10	14	15	12
L11	-	-	-
L12	3	4	4
L13	9	12	14
L14	103	126.8	175
L15	35	42.2	55
L16	23	23.8	30
L17	4.5	6	8
L18	2.5	1.2	2
L19	9	13	15
B	3	5	5
H	11.2	16	18

★ Specification subject to change without notice.





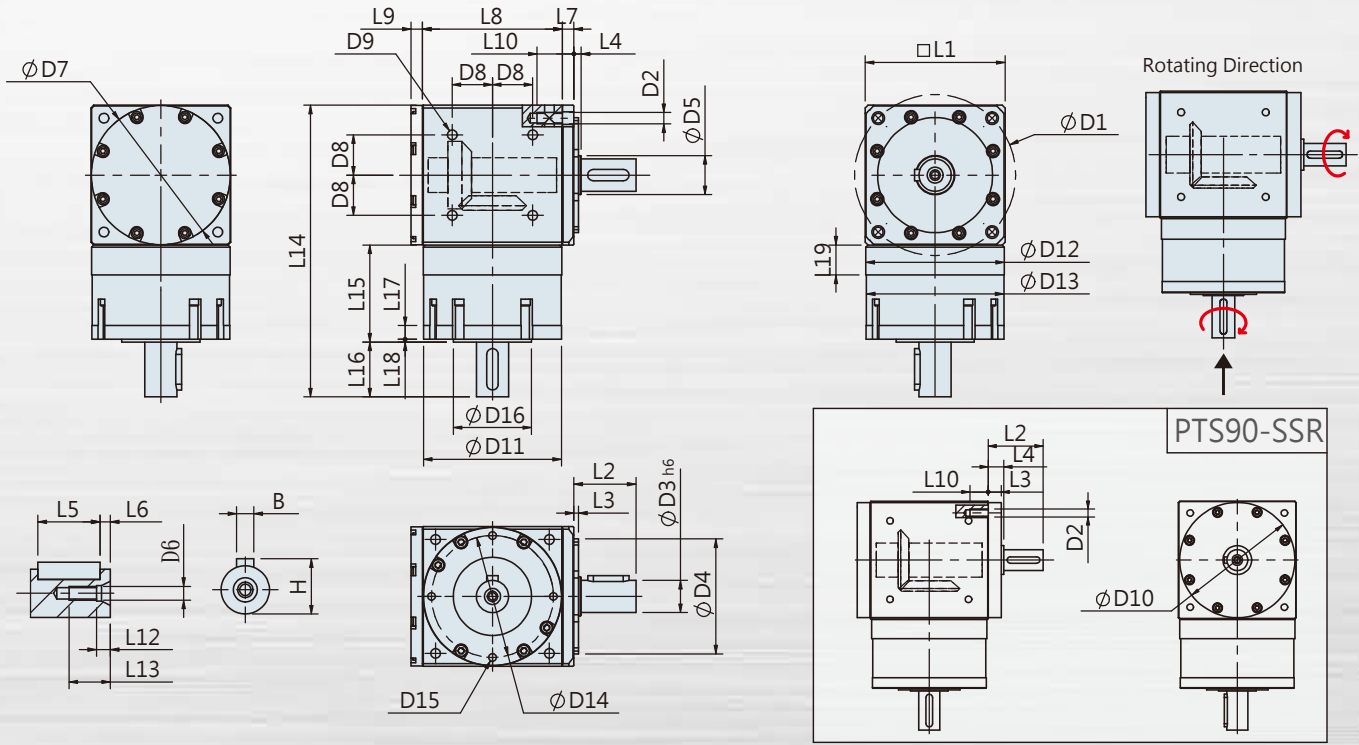
**Specifications**

Unit: mm

Dimensions	PTS42G-SSL	PTS60-SSL	PTS90-SSL
D1	46	70	101.8
D2	M4x0.7P	M5x0.8P	M6x1.0P
D3 <sub>h6</sub>	10	14	16
D4	30 <sup>+0</sup> <sub>-0.035</sub>	50 <sup>+0</sup> <sub>-0.04</sub>	-
D5	12	-	22
D6	M3x0.5P	M4x0.7P	M5x0.8P
D7	44.7	60.5	88
D8	16.27	24.75	36
D9	M4x0.7P	M5x0.8P	M6x1.0P
D10	-	-	88 <sup>+0</sup> <sub>-0.035</sub>
D11 <sub>g6</sub>	41.7	60	87
D12	41.8 <sup>+0</sup> <sub>-0.03</sub>	60.2 <sup>+0</sup> <sub>-0.04</sub>	88 <sup>+0</sup> <sub>-0.035</sub>
D13	41	59.8	86.5
D14	36	53	76
D15	M3x0.5Px6L	M4x0.7Px8L	M5x0.8Px12L
D16	19.5	34	47
L1	45	60.8	90
L2	25.5	27	42
L3	1.5	2	10
L4	-	-	12
L5	18	18	25
L6	2.5	3	2.5
L7	6	5	-
L8	42	60.8	90
L9	5	5	10
L10	14	15	12
L11	-	-	-
L12	3	4	4
L13	9	12	14
L14	103	126.8	175
L15	35	42.2	55
L16	23	23.8	30
L17	4.5	6	8
L18	2.5	1.2	2
L19	9	13	15
B	3	5	5
H	11.2	16	18

★ Specification subject to change without notice.

# PTS-SSR Single Stage Dimensions



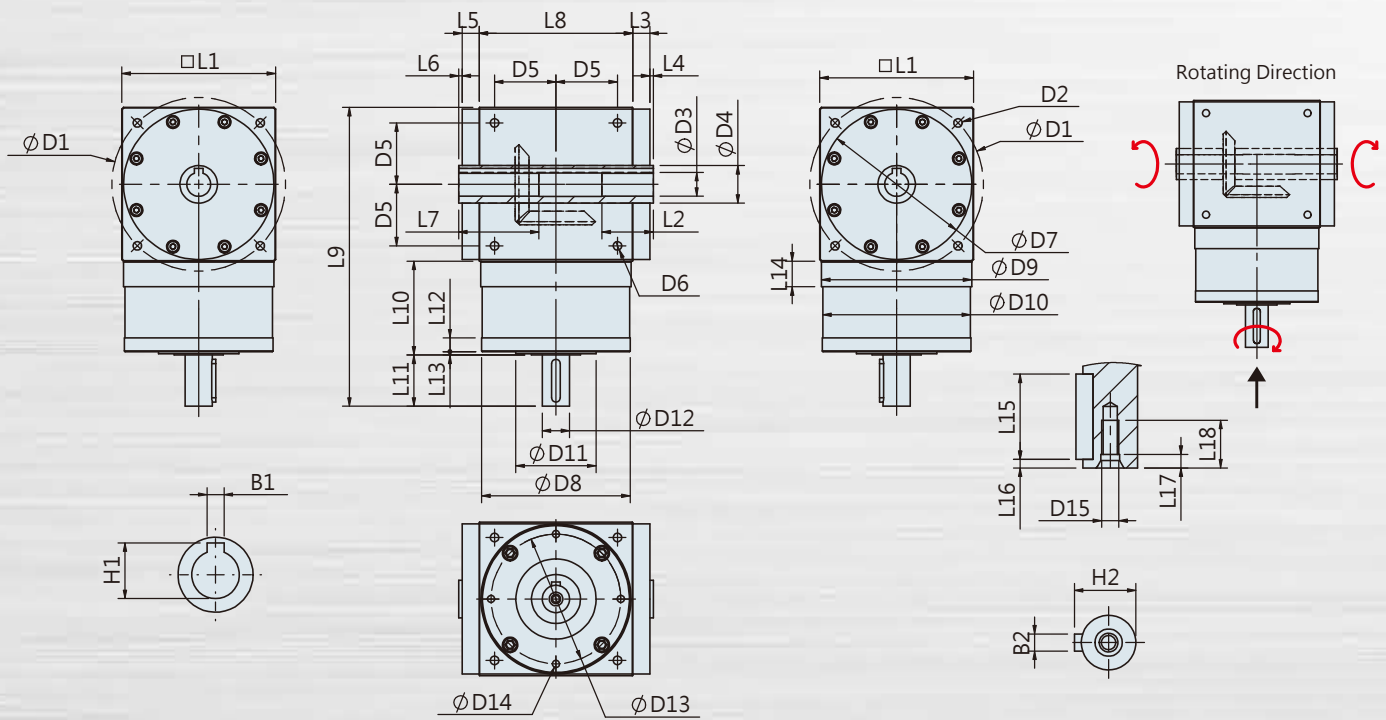
## Specifications

Unit: mm

Dimensions	PTS42G-SSR	PTS60-SSR	PTS90-SSR
D1	46	70	101.8
D2	M4x0.7P	M5x0.8P	M6x1.0P
D3 h6	10	14	16
D4	30 <sup>+0</sup> <sub>-0.035</sub>	50 <sup>+0</sup> <sub>-0.04</sub>	-
D5	12	17	22
D6	M3x0.5P	M4x0.7P	M5x0.8P
D7	44.7	60.5	88
D8	16.27	24.75	36
D9	M4x0.7P	M5x0.8P	M6x1.0P
D10	-	-	88 <sup>+0</sup> <sub>-0.035</sub>
D11 g6	41.7	60	87
D12	41.8 <sup>+0</sup> <sub>-0.03</sub>	60.2 <sup>+0</sup> <sub>-0.04</sub>	88 <sup>+0</sup> <sub>-0.035</sub>
D13	41	59.8	86.5
D14	36	53	76
D15	M3x0.5Px6L	M4x0.7Px8L	M5x0.8Px12L
D16	19.5	34	47
L1	45	60.8	90
L2	22.5	27	42
L3	1.5	2	10
L4	2.5	3.2	12
L5	18	18	25
L6	2.5	3	2.5
L7	6	5	-
L8	42	60.8	90
L9	5	5	10
L10	14	15	12
L11	-	-	-
L12	3	4	4
L13	9	12	14
L14	103	126.8	175
L15	35	42.2	55
L16	23	23.8	30
L17	4.5	6	8
L18	2.5	1.2	2
L19	9	13	15
B	3	5	5
H	11.2	16	18

★ Specification subject to change without notice.

# PTS-SH Single Stage Dimensions



## Specifications

Unit: mm

Dimensions	PTS90-SH	PTS110-SH	PTS140-SH
D1	101.8	-	-
D2	M6x1.0P	-	-
D3 <sub>H7</sub>	14	-	-
D4	22	-	-
D5	36	-	-
D6	M6x1.0P	-	-
D7	88 <sup>+0</sup> <sub>-0.035</sub>	-	-
D8 <sub>g6</sub>	87	-	-
D9	88 <sup>+0</sup> <sub>-0.035</sub>	-	-
D10	86.5	-	-
D11	47	-	-
D12 <sub>h6</sub>	16	-	-
D13	76	-	-
D14	M5x0.8Px12L	-	-
D15	M5x0.8P	-	-
L1	90	-	-
L2	30	-	-
L3	10	-	-
L4	2	-	-
L5	10	-	-
L6	2	-	-
L7	47	-	-
L8	90	-	-
L9	175	-	-
L10	55	-	-
L11	30	-	-
L12	8	-	-
L13	2	-	-
L14	15	-	-
L15	25	-	-
L16	2.5	-	-
L17	4	-	-
L18	14	-	-
B1	5	-	-
H1	16.3	-	-
B2	5	-	-
H2	18	-	-

★ Specification subject to change without notice.

## PTS Solid Shaft Input Specs. Table

Specifications		Stage	Ratio	PTS42G (SS/SSL/SSR)	PTS-60 (SS/SSL/SSR)	PTS90 (SS/SSL/SSR) (SH)	PTS110 (SS/SSL/SSR) (SH)	PTS140 (SS/SSL/SSR) (SH)	
Nominal Output Torque $T_{2N}$	N · m	1	1	8	15	45	78	150	
			1.5	8	15	45	78	150	
			2	7	12	42	68	150	
			3	5.5	10	33	54	120	
Emergency Stop Torque $T_{2NOT}$	N · m	2.0 times of Nominal Output Torque * Max. Output Torque $T_{2B}=1.5$ times of Nominal Output Torque							
Nominal Input Speed $n_{1N}$	rpm	1	1~3	4000	3500	3000	2800	2500	
Max. Input Speed $n_{1max}$	rpm	1	1~3	8500	7500	7000	6000	5000	
Precision Backlash P1	arcmin	1	1~3	≤9	≤9	≤9	≤8	≤8	
Standard Backlash P2	arcmin	1	1~3	≤15	≤12	≤12	≤12	≤12	
Max. Radial Load on Output Shaft $F_{2rB}^1$	N	1	1~3	400	600	1200	-	-	
Max. Axial Load on Output Shaft $F_{2aB}^1$	N	1	1~3	200	300	600	-	-	
Max. Radial Load on Input Shaft $F_{2rB}^1$	N	1	1~3	260	520	1050	-	-	
Max. Axial Load on Input Shaft $F_{2aB}^1$	N	1	1~3	130	260	525	-	-	
Operating Temp.	°C	-10 °C ~ +90 °C							
Service Life	hr	20,000 (10,000/Continuous operation)							
Efficiency	%	≥ 98%							
Weight	SS	kg	1	1~3	0.6	1.4	4.2	-	-
	SSL	kg	1	1~3	0.55	1.3	4.1	-	-
	SSR	kg	1	1~3	0.55	1.3	4.1	-	-
	SH	kg	1	1~3	-	-	4.0	-	-
Mounting Position	-	1	1~3	Any Direction					
Noise Level <sup>2</sup>	dB(A)/1m	1	1~3	66	68	72	74	76	
Protection Class	-	1	1~3	IP 65					
Lubrication	-	1	1~3	Synthetic Lubricant					

### Inertia (J1)

Stage	Ratio	unit	PTS42G ( $\phi 8$ )	PTS-60( $\phi 14$ )	PTS-90( $\phi 19$ )	PTS-110( $\phi 24$ )	PTS-140( $\phi 32$ )
1	1	Kg · cm <sup>2</sup>	0.07	0.40	2.30	-	-
	1.5		0.06	0.33	1.82	-	-
	2		0.05	0.30	1.51	-	-
	3		0.05	0.29	1.48	-	-

\* 1. Applied to the output shaft center @400rpm.

\* 2. Measured at 1500rpm with no load.

※The above figures/specifications are subject to change without prior notice.

Products due to human error, natural disasters or other factors lead to poor or damaged, will not be covered under warranty.

AGENT

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