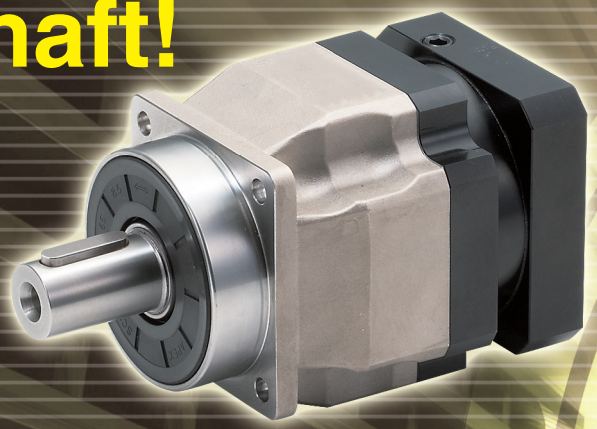
Innovation in Motion
TSUBAKI

TSUBAKI
HIGH PRECISION PLANETARY GEARBOX for SERVO MOTORS

Superior gear cutting technology delivers

Stainless housing and output shaft!



Planetary Accurate Tsubaki Reducer

Basic Series

Environment-resistant

Stainless steel housing and output shaft exhibits excellent rust and corrosion resistance, making this series ideal for clean environments.

Quiet operation

The precision machined helical planetary gears provide a smooth mesh that maintains even load balancing for quiet operation.

High efficiency, compact

The helical planet gear mechanism achieves high efficiency, while the ring gear machined integrally to the housing make it compact.

Low backlash

Excellent gear cutting technology achieves low backlash.

Wide variation

Full lineup offers an array of reduction ratios in 7 frame sizes, available with in line or right angle shafts.

Heavy-duty

Output shaft features double row angular contact ball bearings for extra durability against thrust and radial loads.

Mount codes

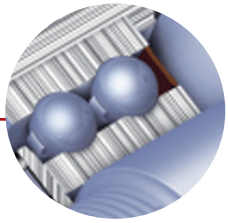
Standard line of flanges mount to servo motors from various manufacturers.

high quality and transfer capacity

Developed jointly with APEX DYNAMICS, INC.

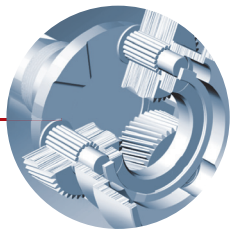
1 Double row angular contact ball bearings

Bears thrust loads from both directions to provide heavy-duty performance against moment loads.



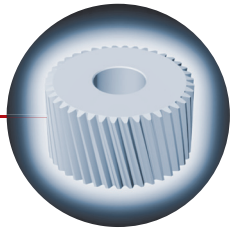
2 Needle roller bearings

Uncaged needle rollers arranged directly inside the planet gears afford greater contact area to deliver high stiffness and torque.



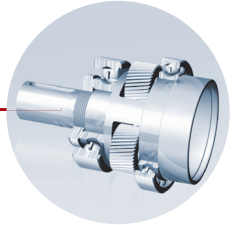
3 Helical planet gears

Low-temperature plasma nitriding treatment.



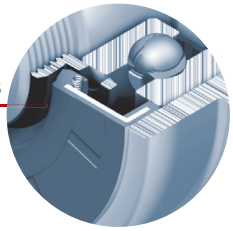
4 One piece carrier

Integral carrier and output shaft achieve torsional rigidity and concentricity.



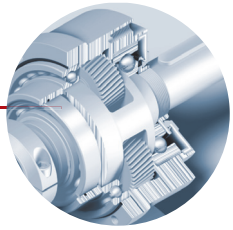
5 Output and input sealing systems

Carbon-coated shaft surfaces reduce friction and heat generation, and extend service life.



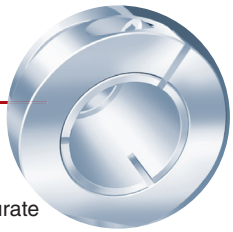
6 Carrier design

The carrier supports the bearing for the input sun gear to maintain concentricity and precision.



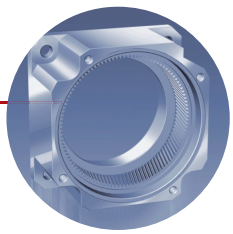
7 Input clamping system

The set collar clamp features a triple split collet for a balanced clamp and greater clamping force.
Suitable for high input speeds. Delivers accurate power transmission performance.



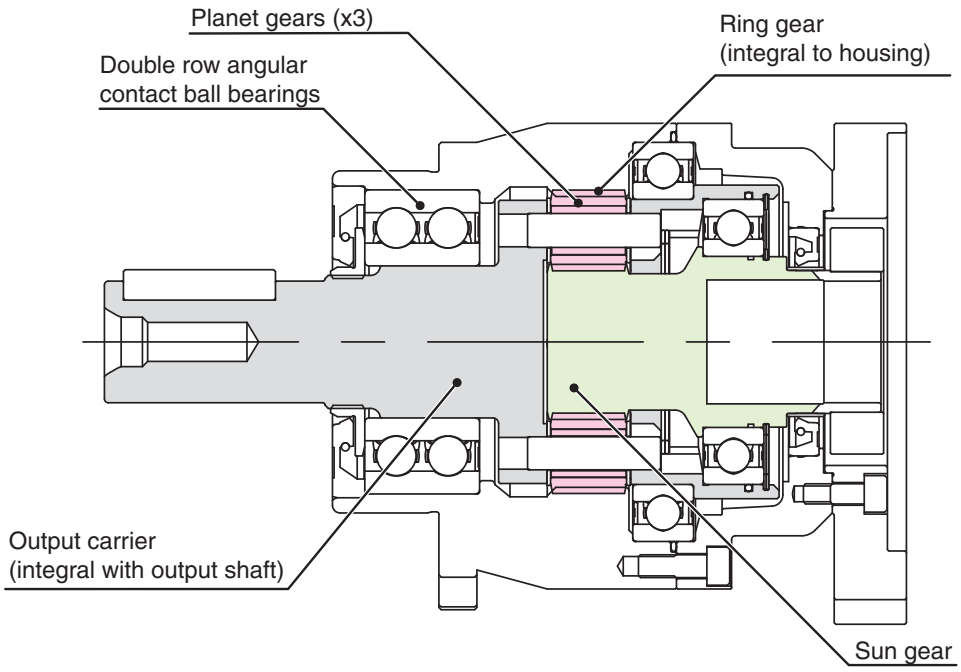
8 Helical ring gear

Integral ring gear and housing delivers high torque and stiffness.



Theory of Operation

Planetary type → **The ring gear is fixed, and the sun gear shaft serves as the drive shaft while the planetary carrier shaft serves as the follower shaft with both drive and follower shafts reducing speed by rotating in the same direction.**



This **planetary gear mechanism** consists of an outer **ring gear** meshed with three **planet gears** which rotate about their own axes while revolving about a **sun gear**. The orbital motion of the planet gears drive the output carrier.

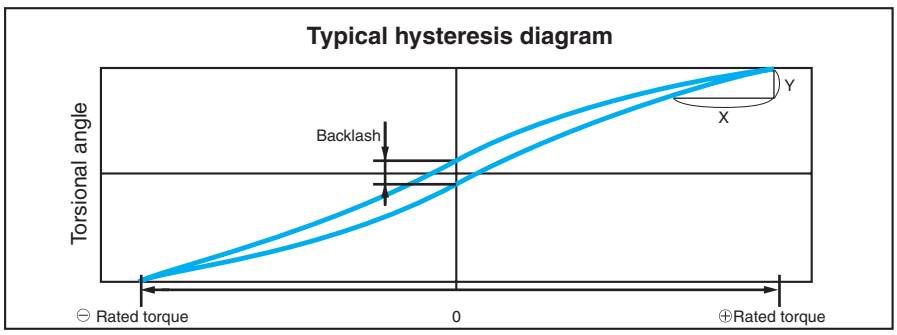
Advantages of the planetary gear mechanism are its ability to

- provide large reduction ratio with fewer stages
- transfer high torque
- arrange the input and output shafts coaxially.

Backlash

Backlash refers to the "play" between teeth when the gears are meshed.

When torque is applied to the output of a gearbox, the resultant torsion angle displays a hysteresis.



Torsional rigidity

The torsional rigidity of an output shaft is a measure of how easy a shaft will twist under torque, and is expressed by the upward slope in the hysteresis.

The higher the torsional rigidity (X/Y N·m/arc min), the less the shaft will deform when torqued.

Model Number

Straight Type (S)

Series	Frame No.	Type	Ratio	Output shaft	Backlash		Mount code
PAT-B	120	S	003	K	P1	-	B3D
B Series (Basic)	120/160 (16A)/220 (22 A)/320 400/550 750	S: In line	1 stage: 3, 4, 5 7, 9, 10 2 stages: 15, 20, 25 30, 35, 40 50, 70, 100	K: with key (Standard) S: Smooth			Applicable motor manufacturer/ model numbers Ex.: E4H, G5L, K3Y

	1 stage	2 stages
P1: Reduced	≤ 3 arcmin	≤ 5 arcmin
P2: Standard	≤ 5 arcmin	≤ 7 arcmin

Right Angle Type (R)

Series	Frame No.	Type	Ratio	Output shaft	Backlash		Mount code
PAT-B	220	R	100	K	P1	-	K3Y
B Series (Basic)	120/160 220/320 400/550 750	R: Right angle	1 stage: 3, 4, 5 7, 9, 10 14, 20 2 stages: 25, 30, 40 50, 70, 100, 140, 200	K: with key (Standard) S: Smooth			Applicable motor manufacturer/ model numbers Ex.: G5L, H1H, K3M

	1 stage	2 stages
P1: Reduced	≤ 4 arcmin	≤ 7 arcmin
P2: Standard	≤ 6 arcmin	≤ 9 arcmin

* Frames 16A and 22A are exclusively for double reduction models. Contact us for characteristics, dimensions, etc.

Standard Package

Type	In line: S		Right angle: R	
Ratio (Actual ratio)	1 stage	2 stages	1 stage	2 stages*
	1/3, 1/4, 1/5, 1/7, 1/9, 1/10	1/15, 1/20, 1/25, 1/30, 1/35, 1/40, 1/50, 1/70 1/100	1/3, 1/4, 1/5, 1/7, 1/9, 1/10, 1/14, 1/20	1/25, 1/30, 1/40, 1/50, 1/70, 1/100, 1/140, 1/200
Backlash	P1: Reduced, ≤ 3 arcmin	P1: Reduced, ≤ 5 arcmin	P1: Reduced, ≤ 4 arcmin	P1: Reduced, ≤ 7 arcmin
	P2: Standard ≤ 5 arcmin	P2: Standard ≤ 7 arcmin	P2: Standard ≤ 6 arcmin	P2: Standard ≤ 9 arcmin
Reduction method	Helical planetary mechanism		Helical planetary mechanism	Right angle: spiral bevel gear
Lubrication	Synthetic gear grease (NYOGEL 792D)			
Output shaft key	JIS B1301-1976			
Noise level (1 m)	PAT-B120: ≤ 56 dB (A scale)		PAT-B120: ≤ 61 dB (A scale)	
	PAT-B160: ≤ 58 dB (A scale)		PAT-B160: ≤ 63 dB (A scale)	
	PAT-B220: ≤ 60 dB (A scale)		PAT-B220: ≤ 65 dB (A scale)	
	PAT-B320: ≤ 63 dB (A scale)		PAT-B320: ≤ 68 dB (A scale)	
	PAT-B400: ≤ 65 dB (A scale)		PAT-B400: ≤ 70 dB (A scale)	
	PAT-B550: ≤ 67 dB (A scale)		PAT-B550: ≤ 72 dB (A scale)	
	PAT-B750: ≤ 70 dB (A scale)		PAT-B750: ≤ 74 dB (A scale)	
Torsional rigidity N·m/arcmin (Representative)	PAT-B120: 3			
	PAT-B160: 7			
	PAT-B220: 14			
	PAT-B320: 25			
	PAT-B400: 50			
	PAT-B550: 145			
	PAT-B750: 225			
Installation place	Indoors			
Ambient temperature	-10 to 40 °C			
Ambient humidity	85 % or less (no condensation)			
Altitude	No more than 1,000 m above sea level			
Atmosphere	Area must be free of corrosive and explosive gases and steam.			
Mounting direction	Mounts on any angle.			

* PAT-B120R: ratio 1/14 supplied as 1/15 and is 2 stages. Also, ratio 1/20 is 2 stages.

Models / Specification Table

Models / In line Type <S>

Frame No.	1 stage						2 stages								
	3	4	5	7	9	10	15	20	25	30	35	40	50	70	100
PAT-B120	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PAT-B160	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PAT-B220	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PAT-B320	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PAT-B400	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PAT-B550	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PAT-B750	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Specification Table / In line Type <S>

Ratio	Frame No.	Nominal output torque T_{2N} (Nm)	Max output torque T_{2B} (Nm)	Max radial load F_{2rB} (N)	Max axial load F_{2aB} (N)	Moment of inertia on input shaft (kg·cm²)	Nominal input speed n_{1N} (r/min)	Max. input speed n_{1B} (r/min)
1/3	PAT-B120	8.5	25.5	610	302	0.03	3000	6000
	PAT-B160	28.1	84.3	2900	1450	0.16	3000	6000
	PAT-B220	76.3	228	4500	2250	0.61	3000	6000
	PAT-B320	160	480	7800	3900	3.25	3000	6000
	PAT-B400	315	945	9450	4725	9.21	3000	6000
	PAT-B550	583	1749	15600	7800	28.98	3000	6000
	PAT-B750	1057	3171	46000	23000	69.61	2000	4000
1/4	PAT-B120	7.7	23.1	610	302	0.03	3000	6000
	PAT-B160	25.5	76.5	2900	1450	0.14	3000	6000
	PAT-B220	69.5	208	4500	2250	0.48	3000	6000
	PAT-B320	146	438	7800	3900	2.74	3000	6000
	PAT-B400	288	864	9450	4725	7.54	3000	6000
	PAT-B550	535	1605	15600	7800	23.67	3000	6000
	PAT-B750	969	2907	46000	23000	54.37	2000	4000
1/5	PAT-B120	8.8	26.4	610	302	0.03	3000	6000
	PAT-B160	29.1	87.3	2900	1450	0.13	3000	6000
	PAT-B220	79.5	238	4500	2250	0.47	3000	6000
	PAT-B320	167	501	7800	3900	2.71	3000	6000
	PAT-B400	330	990	9450	4725	7.42	3000	6000
	PAT-B550	613	1839	15600	7800	23.29	3000	6000
	PAT-B750	1109	3327	46000	23000	53.27	2000	4000
1/7	PAT-B120	7.8	23.4	610	302	0.03	3000	6000
	PAT-B160	26.0	78.0	2900	1450	0.13	3000	6000
	PAT-B220	71.2	213	4500	2250	0.45	3000	6000
	PAT-B320	150	450	7800	3900	2.62	3000	6000
	PAT-B400	297	891	9450	4725	7.14	3000	6000
	PAT-B550	553	1659	15600	7800	22.48	3000	6000
	PAT-B750	1000	3000	46000	23000	50.97	2000	4000
1/9	PAT-B120	6.7	20.1	610	302	0.03	3000	6000
	PAT-B160	22.4	67.2	2900	1450	0.13	3000	6000
	PAT-B220	61.3	183	4500	2250	0.44	3000	6000
	PAT-B320	129	387	7800	3900	2.57	3000	6000
	PAT-B400	257	771	9450	4725	7.04	3000	6000
	PAT-B550	479	1437	15600	7800	22.53	3000	6000
	PAT-B750	864	2592	46000	23000	50.63	2000	4000
1/10	PAT-B120	6.8	20.4	610	302	0.03	3000	6000
	PAT-B160	22.5	67.5	2900	1450	0.13	3000	6000
	PAT-B220	61.8	185	4500	2250	0.44	3000	6000
	PAT-B320	131	393	7800	3900	2.57	3000	6000
	PAT-B400	259	777	9450	4725	7.03	3000	6000
	PAT-B550	483	1449	15600	7800	22.51	3000	6000
	PAT-B750	872	2616	46000	23000	50.56	2000	4000
1/15	PAT-B120	8.5	25.5	610	302	0.03	3000	6000
	PAT-B160	28.1	84.3	2900	1450	0.03	3000	6000
	PAT-B220	76.3	228	4500	2250	0.13	3000	6000
	PAT-B320	160	480	7800	3900	0.47	3000	6000
	PAT-B400	315	945	9450	4725	2.71	3000	6000
	PAT-B550	583	1749	15600	7800	7.42	3000	6000
	PAT-B750	1057	3171	46000	23000	23.29	2000	4000
1/20	PAT-B120	7.7	23.1	610	302	0.03	3000	6000
	PAT-B160	25.5	76.5	2900	1450	0.03	3000	6000
	PAT-B220	69.5	208	4500	2250	0.13	3000	6000
	PAT-B320	146	438	7800	3900	0.47	3000	6000
	PAT-B400	288	864	9450	4725	2.71	3000	6000
	PAT-B550	535	1605	15600	7800	7.42	3000	6000
	PAT-B750	969	2907	46000	23000	23.29	2000	4000

Ratio	Frame No.	Nominal output torque T_{2N} (Nm)	Max output torque T_{2B} (Nm)	Max radial load F_{2rB} (N)	Max axial load F_{2aB} (N)	Moment of inertia on input shaft (kg·cm²)	Nominal input speed n_{1N} (r/min)	Max. input speed n_{1B} (r/min)
1/25	PAT-B120	8.8	26.4	610	302	0.03	3000	6000
	PAT-B160	29.1	87.3	2900	1450	0.03	3000	6000
	PAT-B220	79.5	238	4500	2250	0.13	3000	6000
	PAT-B320	167	501	7800	3900	0.47	3000	6000
	PAT-B400	330	990	9450	4725	2.71	3000	6000
	PAT-B550	613	1839	15600	7800	7.42	3000	6000
	PAT-B750	1109	3327	46000	23000	23.29	2000	4000
1/30	PAT-B120	8.0	24.0	610	302	0.03	3000	6000
	PAT-B160	26.6	79.8	2900	1450	0.03	3000	6000
	PAT-B220	72.6	217	4500	2250	0.13	3000	6000
	PAT-B320	153	459	7800	3900	0.47	3000	6000
	PAT-B400	302	906	9450	4725	2.71	3000	6000
	PAT-B550	562	1686	15600	7800	7.42	3000	6000
	PAT-B750	1016	3048	46000	23000	23.29	2000	4000
1/35	PAT-B120	7.8	23.4	610	302	0.03	3000	6000
	PAT-B160	26.0	78.0	2900	1450	0.03	3000	6000
	PAT-B220	71.2	213	4500	2250	0.13	3000	6000
	PAT-B320	150	450	7800	3900	0.47	3000	6000
	PAT-B400	297	891	9450	4725	2.71	3000	6000
	PAT-B550	553	1659	15600	7800	7.42	3000	6000
	PAT-B750	1000	3000	46000	23000	23.29	2000	4000
1/40	PAT-B120	7.2	21.6	610	302	0.03	3000	6000
	PAT-B160	23.8	71.4	2900	1450	0.03	3000	6000
	PAT-B220	65.3	195	4500	2250	0.13	3000	6000
	PAT-B320	138	414	7800	3900	0.47	3000	6000
	PAT-B400	273	819	9450	4725	2.71	3000	6000
	PAT-B550	509	1527	15600	7800	7.42	3000	6000
	PAT-B750	919	2757	46000	23000	23.29	2000	4000
1/50	PAT-B120	8.8	26.4	610	302	0.03	3000	6000
	PAT-B160	29.1	87.3	2900	1450	0.03	3000	6000
	PAT-B220	79.5	238	4500	2250	0.13	3000	6000
	PAT-B320	167	501	7800	3900	0.44	3000	6000
	PAT-B400	330	990	9450	4725	2.57	3000	6000
	PAT-B550	613	1839	15600	7800	7.03	3000	6000
	PAT-B750	1109	3327	46000	23000	22.51	2000	4000
1/70	PAT-B120	7.8	23.4	610	302	0.03	3000	6000
	PAT-B160	26.0	78.0	2900	1450	0.03	3000	6000
	PAT-B220	71.2	213	4500	2250	0.13	3000	6000
	PAT-B320	150	450	7800	3900	0.44	3000	6000
	PAT-B400	297	891	9450	4725	2.57	3000	6000
	PAT-B550	553	1659	15600	7800	7.03	3000	6000
	PAT-B750	1000	3000	46000	23000	22.51	2000	4000
1/100	PAT-B120	6.8	20.4	610	302	0.03	3000	6000
	PAT-B160	22.5	67.5	2900	1450	0.03	3000	6000
	PAT-B220	61.8	185	4500	2250	0.13	3000	6000
	PAT-B320	131	393	7800	3900	0.44	3000	6000
	PAT-B400	259	777	9450	4725	2.57	3000	6000
	PAT-B550	483	1449	15600	7800	7.03	3000	6000
	PAT-B750	872	2616	46000	23000	22.51	2000	4000

· F_{2rB} and F_{2aB} represent the values at the center of the output shaft rotating at 100 r/min.

Models / Right Angle Type <S>

Frame No.	1 stage								2 stages									
	3	4	5	7	9	10	14	20	15	20	25	30	40	50	70	100	140	200
PAT-B120	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O	-	-
PAT-B160	O	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	-	-
PAT-B220	O	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O
PAT-B320	O	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O
PAT-B400	O	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O
PAT-B550	O	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O
PAT-B750	O	O	O	O	O	O	O	O	-	-	O	O	O	O	O	O	O	O

Specification Table / Right Angle Type <R>

Ratio	Frame No.	Nominal output torque T_{2N} (Nm)	Max output torque T_{2B} (Nm)	Max radial load F_{2rB} (N)	Max axial load F_{2aB} (N)	Moment of inertia on input shaft (kg·cm²)	Nominal input speed n_{1N} (r/min)	Max. input speed n_{1B} (r/min)
1/3	PAT-B120	8.5	25.5	610	302	0.09	3000	6000
	PAT-B160	28.1	84.3	2900	1450	0.35	3000	6000
	PAT-B220	76.3	228	4500	2250	2.25	3000	6000
	PAT-B320	160	480	7800	3900	6.84	3000	6000
	PAT-B400	315	945	9450	4725	23.4	3000	6000
	PAT-B550	583	1749	15600	7800	68.9	3000	6000
	PAT-B750	1057	3171	46000	23000	135.4	2000	4000
1/4	PAT-B120	7.7	23.1	610	302	0.09	3000	6000
	PAT-B160	25.5	76.5	2900	1450	0.35	3000	6000
	PAT-B220	69.5	208	4500	2250	2.25	3000	6000
	PAT-B320	146	438	7800	3900	6.84	3000	6000
	PAT-B400	288	864	9450	4725	23.4	3000	6000
	PAT-B550	535	1605	15600	7800	68.9	3000	6000
	PAT-B750	969	2907	46000	23000	135.4	2000	4000
1/5	PAT-B120	8.8	26.4	610	302	0.09	3000	6000
	PAT-B160	29.1	87.3	2900	1450	0.35	3000	6000
	PAT-B220	79.5	238	4500	2250	2.25	3000	6000
	PAT-B320	167	501	7800	3900	6.84	3000	6000
	PAT-B400	330	990	9450	4725	23.4	3000	6000
	PAT-B550	613	1839	15600	7800	68.9	3000	6000
	PAT-B750	1109	3327	46000	23000	135.4	2000	4000
1/7	PAT-B120	7.8	23.4	610	302	0.09	3000	6000
	PAT-B160	26.0	78.0	2900	1450	0.35	3000	6000
	PAT-B220	71.2	213	4500	2250	2.25	3000	6000
	PAT-B320	150	450	7800	3900	6.84	3000	6000
	PAT-B400	297	891	9450	4725	23.4	3000	6000
	PAT-B550	553	1659	15600	7800	68.9	3000	6000
	PAT-B750	1000	3000	46000	23000	135.4	2000	4000
1/9	PAT-B120	6.7	20.1	610	302	0.09	3000	6000
	PAT-B160	22.4	67.2	2900	1450	0.35	3000	6000
	PAT-B220	61.3	183	4500	2250	2.25	3000	6000
	PAT-B320	129	387	7800	3900	6.84	3000	6000
	PAT-B400	257	771	9450	4725	23.4	3000	6000
	PAT-B550	479	1437	15600	7800	68.9	3000	6000
	PAT-B750	864	2592	46000	23000	135.4	2000	4000
1/10	PAT-B120	6.8	20.4	610	302	0.09	3000	6000
	PAT-B160	22.5	67.5	2900	1450	0.35	3000	6000
	PAT-B220	61.8	185	4500	2250	2.25	3000	6000
	PAT-B320	131	393	7800	3900	6.84	3000	6000
	PAT-B400	259	777	9450	4725	23.4	3000	6000
	PAT-B550	483	1449	15600	7800	68.9	3000	6000
	PAT-B750	872	2616	46000	23000	135.4	2000	4000
1/14	PAT-B160	26.0	78.0	2900	1450	0.07	3000	6000
	PAT-B220	71.2	213	4500	2250	1.87	3000	6000
	PAT-B320	150	450	7800	3900	6.25	3000	6000
	PAT-B400	297	891	9450	4725	21.8	3000	6000
	PAT-B550	553	1659	15600	7800	65.6	3000	6000
	PAT-B750	1000	3000	46000	23000	119.8	2000	4000
1/15	PAT-B120	8.5	25.5	610	302	0.09	3000	6000
1/20	PAT-B120	7.7	23.1	610	302	0.09	3000	6000
	PAT-B160	22.5	67.5	2900	1450	0.07	3000	6000
	PAT-B220	61.8	185	4500	2250	1.87	3000	6000
	PAT-B320	131	393	7800	3900	6.25	3000	6000
	PAT-B400	259	777	9450	4725	21.8	3000	6000
	PAT-B550	483	1449	15600	7800	65.6	3000	6000
	PAT-B750	872	2616	46000	23000	119.8	2000	4000

Ratio	Frame No.	Nominal output torque T_{2N} (Nm)	Max output torque T_{2B} (Nm)	Max radial load F_{2rB} (N)	Max axial load F_{2aB} (N)	Moment of inertia on input shaft (kg·cm²)	Nominal input speed n_{1N} (r/min)	Max. input speed n_{1B} (r/min)
1/25	PAT-B120	8.8	26.4	610	302	0.09	3000	6000
	PAT-B160	29.1	87.3	2900	1450	0.09	3000	6000
	PAT-B220	79.5	238	4500	2250	0.35	3000	6000
	PAT-B320	167	501	7800	3900	2.25	3000	6000
	PAT-B400	330	990	9450	4725	6.84	3000	6000
	PAT-B550	613	1839	15600	7800	23.4	3000	6000
	PAT-B750	1109	3327	46000	23000	68.9	2000	4000
1/30	PAT-B120	8.0	24.0	610	302	0.09	3000	6000
	PAT-B160	26.6	79.8	2900	1450	0.09	3000	6000
	PAT-B220	72.6	217	4500	2250	0.35	3000	6000
	PAT-B320	153	459	7800	3900	2.25	3000	6000
	PAT-B400	302	906	9450	4725	6.84	3000	6000
	PAT-B550	562	1686	15600	7800	23.4	3000	6000
	PAT-B750	1016	3048	46000	23000	68.9	2000	4000
1/40	PAT-B120	7.2	21.6	610	302	0.09	3000	6000
	PAT-B160	23.8	71.4	2900	1450	0.09	3000	6000
	PAT-B220	65.3	195	4500	2250	0.35	3000	6000
	PAT-B320	138	414	7800	3900	2.25	3000	6000
	PAT-B400	273	819	9450	4725	6.84	3000	6000
	PAT-B550	509	1527	15600	7800	23.4	3000	6000
	PAT-B750	919	2757	46000	23000	68.9	2000	4000
1/50	PAT-B120	8.8	26.4	610	302	0.09	3000	6000
	PAT-B160	29.1	87.3	2900	1450	0.09	3000	6000
	PAT-B220	79.5	238	4500	2250	0.35	3000	6000
	PAT-B320	167	501	7800	3900	2.25	3000	6000
	PAT-B400	330	990	9450	4725	6.84	3000	6000
	PAT-B550	613	1839	15600	7800	23.4	3000	6000
	PAT-B750	1109	3327	46000	23000	68.9	2000	4000
1/70	PAT-B120	7.8	23.4	610	302	0.09	3000	6000
	PAT-B160	26.0	78.0	2900	1450	0.09	3000	6000
	PAT-B220	71.2	213	4500	2250	0.35	3000	6000
	PAT-B320	150	450	7800	3900	2.25	3000	6000
	PAT-B400	297	891	9450	4725	6.84	3000	6000
	PAT-B550	553	1659	15600	7800	23.4	3000	6000
	PAT-B750	1000	3000	46000	23000	68.9	2000	4000
1/100	PAT-B120	6.8	20.4	610	302	0.09	3000	6000
	PAT-B160	22.5	67.5	2900	1450	0.09	3000	6000
	PAT-B220	61.8	185	4500	2250	0.35	3000	6000
	PAT-B320	131	393	7800	3900	2.25	3000	6000
	PAT-B400	259	777	9450	4725	6.84	3000	6000
	PAT-B550	483	1449	15600	7800	23.4	3000	6000
	PAT-B750	872	2616	46000	23000	68.9	2000	4000
1/140	PAT-B220	71.2	213	4500	2250	0.31	3000	6000
	PAT-B320	150	450	7800	3900	1.87	3000	6000
	PAT-B400	297	891	9450	4725	6.25	3000	6000
	PAT-B550	553	1659	15600	7800	21.8	3000	6000
	PAT-B750	1000	3000	46000	23000	65.6	2000	4000
1/200	PAT-B220	61.8	185	4500	2250	0.31	3000	6000
	PAT-B320	131	393	7800	3900	1.87	3000	6000
	PAT-B400	259	777	9450	4725	6.25	3000	6000
	PAT-B550	483	1449	15600	7800	21.8	3000	6000
	PAT-B750	872	2616	46000	23000	65.6	2000	4000

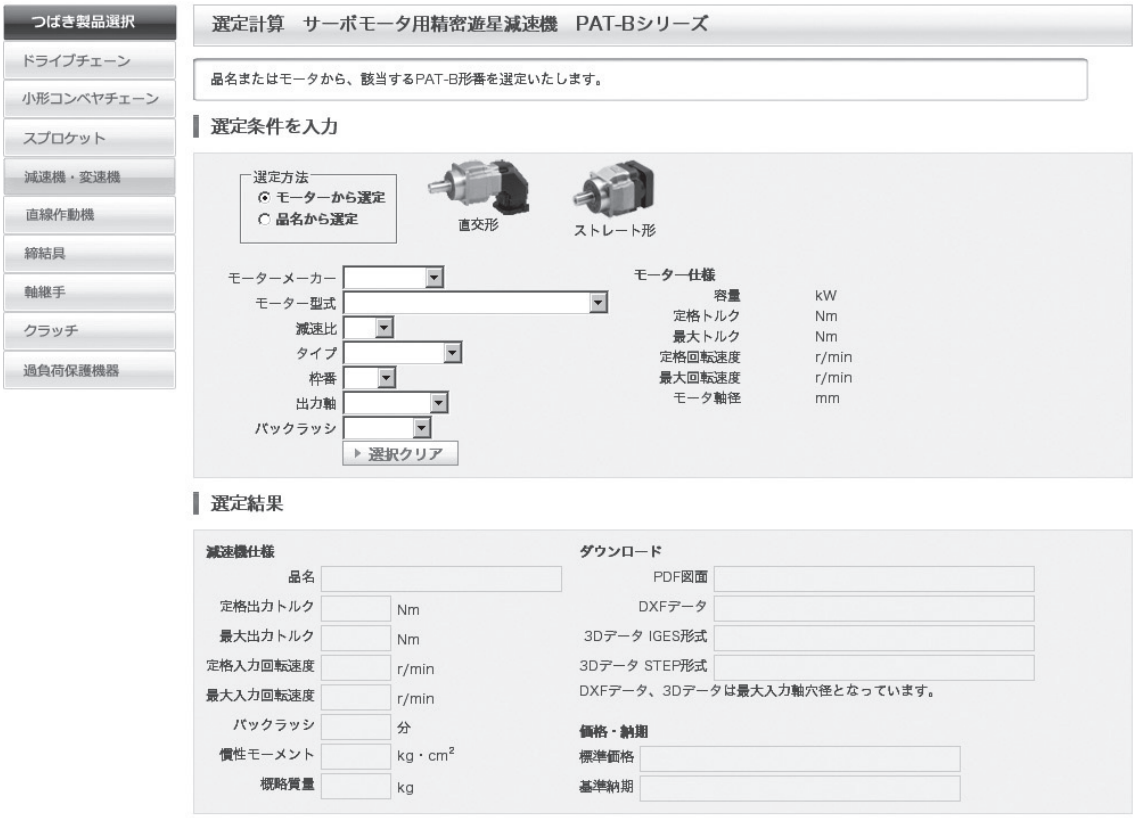
· F_{2rB} and F_{2aB} represent the values at the center of the output shaft rotating at 100 r/min.

PAT-B Selection Site

Our website provides a tool for easily selecting a gearbox by servo motor model numbers from various manufacturers.
The site also provides downloadable PDF drawings and CAD file drawings in DXF and 3D formats.
(Available in Japanese only)

http://www.tsubakimoto.jp/power-transmission/reducer-variable-speed-drive/servo-moter/reducer/

http://tt-net.tsubakimoto.co.jp/tecs/calc/gen/calc_gan_pat.asp



Mitsubishi Electric Motors

●J3 Series HF-KP

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
HF-KP053	0.05	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
HF-KP13	0.1	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
HF-KP23	0.2	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
HF-KP43	0.4	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
HF-KP73	0.75	220	G5L																	G5L																			
		22A								G5L																													
		320								G5L																			G5L	-	-								

●J3 Series HF-SP

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
HF-SP52	0.5	220	K3Y																	K3Y																			
		22A								K3Y																													
		320	K3Y							K3Y										K3Y									K3Y	-	-								
		400	K3Y							K3Y										K3Y									K3Y	-	-								
		550								K3Y																			K3Y	-	-								
HF-SP102	1	220	K3Y																	K3Y																			
		22A								K3Y																													
		320	K3Y							K3Y										K3Y									K3Y	-	-								
		400	K3Y							K3Y										K3Y									K3Y	-	-								
		550								K3Y																			K3Y	-	-								
HF-SP152	1.5	220	K3Y																	K3Y																			
		320	K3Y							K3Y										K3Y									K3Y	-	-								
		400	K3Y							K3Y										K3Y									K3Y	-	-								
		550								K3Y																			K3Y	-	-								
HF-SP202	2	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
HF-SP352	3.5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
HF-SP502	5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
HF-SP702	7	400	L1R																	L1R																			
		550	L1R																	L1R																			
		750								L1R																			L1R	-	-								

●J3 Series HA-LP

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
HA-LP502	5	550	N1S																	N1S																			
		750	N1S							N1S										N1S									N1S	-	-								
HA-LP702	7	550	N1S																	N1S																			
		750	N1S							N1S										N1S									N1S	-	-								
HA-LP11K2	11	550	N1S																	N1S																			
		750	N1S																	N1S																			
HA-LP15K2	15	750	R1T																	R1T																			
HA-LP22K2	22	750	R1T																	R1T																			

●J3 Series HC-RP

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
HC-RP103	1	220	J4Y																	J4Y																			
		22A								J4Y																													
		320	J4Y							J4Y										J4Y									J4Y	-	-								
		400								J4Y																			J4Y	-	-								
HC-RP153	1.5	220	J4Y																	J4Y																			
		22A								J4Y																													
		320	J4Y							J4Y										J4Y									J4Y	-	-								
		400								J4Y																			J4Y	-	-								
HC-RP203	2	220	J4Y																	J4Y																			
		320	J4Y							J4Y										J4Y									J4Y	-	-								
		400								J4Y																			J4Y	-	-								
HC-RP353	3.5	320	K4P																	K4P																			
		400	K3P							K4P										K3P									K4P	-	-								
		550								K3P																			K3P	-	-								
HC-RP503	5	320	K4P																	K4P																			
		400	K3P							K4P										K3P									K4P	-	-								
		550								K3P																			K3P	-	-								

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Motor Matching Table

Yaskawa Electric Motors

● Σ -V Series SGMJV

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
SGMJV-A5	0.05	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
SGMJV-01	0.1	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
SGMJV-02	0.2	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
SGMJV-04	0.4	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
SGMJV-08	0.75	220	G5L																	G5L																			
		22A								G5L																													
		320								G5L																			G5L	-	-								

● Σ -V Series SGMGV

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
SGMGV-03	0.3	160	H1H																	H1H																			
		16A								H1H																													
		220	H4H							H1H										H4H									H1H	-	-								
		320	H5H							H4H										H5H									H4H	-	-								
		400								H5H																			H5H	-	-								
SGMGV-05	0.45	160	H1K	-	-		-	-												H1K																			
		220	H4K							H1K							-	-		H4K									H1K	-	-								
		320	H5K							H4K										H5K									H4K	-	-								
		400								H5K																			H5K	-	-								
SGMGV-09	0.85	220	K3L																	K3L																			
		22A								K3L																													
		320	K4L							K3L										K4L									K3L	-	-								
		400	K3L							K4L										K3L									K4L	-	-								
		550								K3L																			K3L	-	-								
SGMGV-13	1.3	220	K3M																	K3M																			
		320	K4M							K3M										K4M									K3M	-	-								
		400	K3M							K4M										K3M									K4M	-	-								
		550								K3M																			K3M	-	-								
SGMGV-20	1.8	220	K3Y																	K3Y																			
		320	K4Y																	K4Y																			
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								
SGMGV-30	2.9	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
SGMGV-44	4.4	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
SGMGV-55	5.5	550	L2S																	L2S																			
		750								L2S																			L2S	-	-								
SGMGV-75	7.5	550	L2S																	L2S																			
		750								L2S																			L2S	-	-								
SGMGV-1A	11	550	P5S																	P5S																			
		750	P5S																	P5S																			
SGMGV-1E	15	750	P5T																	P5T																			

● Σ -II Series SGMGH (Rated speed 1500 r/min)

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
SGMGH-05A□A	0.45	220	K3L																	K3L																			
		22A								K3L																													
		320	K4L							K3L										K4L									K3L	-	-								
		400	K3L							K4L										K3L									K4L	-	-								
		550								K3L																			K3L	-	-								
SGMGH-09A□A	0.85	220	K3L																	K3L																			
		22A								K3L																													
		320	K4L							K3L										K4L									K3L	-	-								
		400	K3L							K4L										K3L									K4L	-	-								
		550								K3L																			K3L	-	-								
SGMGH-13A□A	1.3	220	K3M																	K3M																			
		320	K4M							K3M										K4M									K3M	-	-								
		400	K3M							K4M										K3M									K4M	-	-								
		550								K3M																			K3M	-	-								
SGMGH-20A□A	1.8	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
SGMGH-30A□A	2.9	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
SGMGH-44A□A	4.4	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
SGMGH-55A□A	5.5	550	L2S																	L2S																			
		750								L2S																			L2S	-	-								
SGMGH-75A□A	7.5	550	L2S																	L2S																			
		750								L2S																			L2S	-	-								
SGMGH-1AA□A	11	550	P5S																	P5S																			
		750	P5S																	P5S																			
SGMGH-1EA□A	15	750	P5T																	P5T																			

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

FANUC Motors

α iS Series (Straight shaft)

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
α iS 2/5000	0.75	120	H1F																	H1F							-	-											
		160	H1F																	H1F																			
		220	H4F							H1F										H4F									H1F	-	-									
		320								H4F																			H4F	-	-									
α iS 2/6000	1	120	H1F																	H1F							-	-											
		160	H1F							H1F										H1F									H1F	-	-								-	-
		220	H4F							H1F										H4F									H1F	-	-									
		320								H4F																			H4F	-	-									
α iS 4/5000	1	160	H1H																	H1H																			
		220	H1H							H1H										H1H									H1H	-	-									
		320	H5H							H1H										H5H									H1H	-	-									
		400								H5H																			H5H	-	-									
α iS 8/4000	2.5	220	K3L																	K3L																			
		320	K4L																	K4L																			
		400	K3L							K4L										K3L									K4L	-	-									
		550								K3L																			K3L	-	-									
α iS 8/6000	2.2	220	K3L																	K3L																			
		320	K4L							K3L										K4L									K3L	-	-									
		400	K3L							K4L										K3L									K4L	-	-									
		550								K3L																			K3L	-	-									
α iS 12/4000	2.7	220	K3Y																	K3Y																			
		320	K4Y																	K4Y																			
		400	K3Y							K4Y										K3Y									K4Y	-	-									
		550								K3Y																			K3Y	-	-									
α iS 22/4000	4.5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-									
		750								L1R																			L1R	-	-									
α iS 30/4000	5.5	400	L1R																	L1R																			
		550	L1R																	L1R																			
		750								L1R																			L1R	-	-									
α iS 40/4000	5.5	400	L1R																	L1R																			
		550	L1R																	L1R																			
		750								L1R																			L1R	-	-									
α iS 50/3000	5	400	L1R																	L1R																			
		550	L1R																	L1R																			

β iS Series (Straight shaft)

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
β iS 0.2/5000	0.05	120	B4D							B4D										B4D							-	-	B4D									-	-
		160	B3D							B4D										B3D									B4D	-	-								-	-
		220								B3D																			B3D	-	-									
β iS 0.3/5000	0.1	120	B4D							B4D										B4D							-	-	B4D									-	-
		160	B3D							B4D										B3D									B4D	-	-								-	-
		220								B3D																			B3D	-	-									
β iS 0.4/5000	0.13	120	E4E							E4E										E4E							-	-	E4E									-	-
		160	E4E							E4E										E4E									E4E	-	-								-	-
		220								E4E																			E4E	-	-									
β iS 0.5/6000	0.35	120	E4E																	E4E							-	-											
		160	E4E							E4E										E4E									E4E	-	-								-	-
		220								E4E																			E4E	-	-									
β iS 1/5000	0.4	160	E4H																	E4H																			
		16A								E4H																														
		220								E4H																			E4H	-	-									
β iS 1/6000	0.5	160	E4H																	E4H																			
		16A								E4H																														
		220								E4H																			E4H	-	-									
β iS 2/4000	0.5	120	H1F																	H1F							-	-											
		160	H1F																	H1F																			
		220	H4F							H1F										H4F									H1F	-	-									
		320								H4F																			H4F	-	-									
β iS 4/4000	0.75	160	H1H																	H1H																			
		220	H1H							H1H										H1H									H1H	-	-									
		320	H1H							H1H										H1H									H1H	-	-									
		400								H1H																			H1H	-	-									
β iS 8/3000	1.2	220	K3L																	K3L																			
		22A								K3L																														
		320	K4L							K3L										K4L									K3L	-	-									
		400	K3L							K4L										K3L									K4L	-	-									
		550								K3L																			K3L	-	-									
β iS 12/2000	1.4	220	K3Y																	K3Y																			
		320	K3Y							K3Y										K3Y									K3Y	-	-									
		400	K3Y							K3Y										K3Y									K3Y	-	-									
		550								K3Y																			K3Y	-	-									
β iS 12/3000	1.8	220	K3Y																	K3Y																			
		320	K3Y																	K3Y																			
		400	K3Y							K3Y										K3Y									K3Y	-	-									
		550								K3Y																			K3Y	-	-									
β iS 22/1500	1.4	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-									
		750								L1R																			L1R	-	-									
β iS 22/2000	2.5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-									
		750								L1R																			L1R	-	-									

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Motor Matching Table

Panasonic Motors

●MINAS A4 Series MSMD

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
MSMD5A	0.05	120	B2D							B2D										B2D							-	-	B2D									-	-
		160								B2D																			B2D	-	-							-	-
MSMD01	0.1	120	B2D							B2D										B2D							-	-	B2D									-	-
		160								B2D																			B2D	-	-							-	-
MSMD02	0.2	120	E3G							E3G										E3G							-	-	E3G									-	-
		160	E3G							E3G										E3G									E3G	-	-							-	-
		220								E3G																			E3G	-	-								
MSMD04	0.4	160	E3H																	E3H																			
		16A								E3H																													
		220								E3H																			E3H	-	-								
MSMD08	0.75	220	G4L																	G4L																			
		22A								G4L																													
		320								G4L																			G4L	-	-								

●MINAS A4 Series MSMA

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
MSMA08	0.75	220	G4L																	G4L																			
		22A								G4L																													
		320								G4L																			G4L	-	-								
MSMA10	1	220	H4L																	H4L																			
		22A								H4L																													
		320	H1L							H4L										H1L									H4L	-	-								
		400								H1L																			H1L	-	-								
MSMA15	1.5	220	J4L																	J4L																			
		22A								J4L																													
		320	J4L							J4L										J4L									J4L	-	-								
		400								J4L																			J4L	-	-								
MSMA20	2	220	J4L																	J4L																			
		320	J4L							J4L										J4L									J4L	-	-								
		400								J4L																			J4L	-	-								
MSMA25	2.5	220	J4L																	J4L																			
		320	J4L							J4L										J4L									J4L	-	-								
		400								J4L																			J4L	-	-								
MSMA30	3	220	K3M																	K3M																			
		320	K3M																	K3M																			
		400								K3M																			K3M	-	-								
MSMA35	3.5	220	K3M																	K3M																			
		320	K3M																	K3M																			
		400								K3M																			K3M	-	-								
MSMA40	4	220	K4Y																	K4Y																			
		320	K4Y																	K4Y																			
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								
MSMA45	4.5	220	K4Y																	K4Y																			
		320	K4Y																	K4Y																			
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								
MSMA50	5	220	K4Y																	K4Y																			
		320	K4Y																	K4Y																			
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								

●MINAS A4 Series MDMA

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
MDMA08	0.75	220	K3L																	K3L																			
		22A								K3L																													
		320	K3L							K3L										K3L									K3L	-	-								
		400								K3L																			K3L	-	-								
MDMA10	1	220	K3M																	K3M																			
		22A								K3M																													
		320	K3M							K3M										K3M									K3M	-	-								
		400	K3M							K3M										K3M									K3M	-	-								
		550								K3M																			K3M	-	-								
MDMA15	1.5	220	K3M																	K3M																			
		320	K3M							K3M										K3M									K3M	-	-								
		400	K3M							K3M										K3M									K3M	-	-								
		550								K3M																			K3M	-	-								
MDMA20	2	220	K3M																	K3M																			
		320	K3M																	K3M																			
		400	K3M							K3M										K3M									K3M	-	-								
		550								K3M																			K3M	-	-								
MDMA25	2.5	220	K4Y																	K4Y																			
		320	K4Y																	K4Y																			
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								
MDMA30	3	220	K4Y																	K4Y																			
		320	K4Y																	K4Y																			
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								
MDMA35	3.5	320	M3P																	M3P																			
		400	M4P																	M4P																			
		550	M3P							M4P										M3P									M4P	-	-								
		750								M3P																			M3P	-	-								
MDMA40	4	320	M3P																	M3P																			
		400	M4P																	M4P																			
		550	M3P							M4P										M3P									M4P	-	-								
		750								M3P																			M3P	-	-								
MDMA45	4.5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
MDMA50	5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
MDMA75	7.5	550	L2S																	L2S																			
		750								L2S																			L2S	-	-								

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Fuji Electric Motors

●ALPHA 5 Series GYS

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
GYS500D5	0.05	120	B3B							B3B										B3B							-	-	B3B									-	-
		160	B3B							B3B										B3B									B3B	-	-							-	-
		220								B3B																			B3B	-	-								
GYS101D5	0.1	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
GYS201D5	0.2	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
GYS401D5	0.4	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
GYS751D5	0.75	160	G5K	-	-		-	-												G5K																			
		220	G5K							G5K								-	-	G5K									G5K	-	-								
		320								G5K																			G5K	-	-								
GYS102D	1	220	J4Y																	J4Y																			
		22A								J4Y																													
		320	J4Y							J4Y										J4Y									J4Y	-	-								
		400								J4Y																			J4Y	-	-								
GYS152D	1.5	220	J4Y																	J4Y																			
		22A								J4Y																													
		320	J4Y							J4Y										J4Y									J4Y	-	-								
		400								J4Y																			J4Y	-	-								
GYS202D	2	220	J4Y																	J4Y																			
		320	J4Y							J4Y										J4Y									J4Y	-	-								
		400								J4Y																			J4Y	-	-								
GYS302D	3	320	K4P																	K4P																			
		400	K3P							K4P										K3P									K4P	-	-								
		550								K3P																			K3P	-	-								
GYS402D	4	320	K4P																	K4P																			
		400	K3P							K4P										K3P									K4P	-	-								
		550								K3P																			K3P	-	-								
GYS502D	5	320	K4P																	K4P																			
		400	K3P							K4P										K3P									K4P	-	-								
		550								K3P																			K3P	-	-								

●ALPHA 5 Series GYS

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
GYC101D5	0.1	120	E4D							E4D										E4D							-	-	E4D									-	-
		160	E4D							E4D										E4D									E4D	-	-							-	-
		220								E4D																			E4D	-	-								
GYC201D5	0.2	160	G5H																	G5H																			
		16A								G5H																													
		220	G5H							G5H										G5H									G5H	-	-								
		320								G5H																			G5H	-	-								
GYC401D5	0.4	160	G5H																	G5H																			
		16A								G5H																													
		220	G5H							G5H										G5H									G5H	-	-								
		320								G5H																			G5H	-	-								
GYC751D5	0.75	160	J2K	-	-		-	-												J2K																			
		220	J2K							J2K								-	-	J2K									J2K	-	-								
		320	J4K							J2K										J4K									J2K	-	-								
		400								J4K																			J4K	-	-								
GYC102D5	1	220	K3Y																	K3Y																			
		22A								K3Y																													
		320	K4Y							K3Y										K4Y									K3Y	-	-								
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								
GYC152D5	1.5	220	K3Y																	K3Y																			
		22A								K3Y																													
		320	K4Y							K3Y										K4Y									K3Y	-	-								
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								
GYC202D5	2	220	K3Y																	K3Y																			
		320	K4Y							K3Y										K4Y									K3Y	-	-								
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								

●FALDIC- α Series GYM

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
GYM292BC	2.9	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
GYM402BC	4	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
GYM552BC	5.5	550	L2S																	L2S																			
		750								L2S																			L2S	-	-								
GYM752BC	7.5	550	L2S																	L2S																			
		750								L2S																			L2S	-	-								
GYM113BC	11	550	P5S																	P5S																			
		750	P5S																	P5S																			
GYM153BC	15	750	P5T																	P5T																			

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Motor Matching Table

Sanyo Denki Motors

●R2 Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
R2AA04003F	0.03	120	B4B							B4B										B4B							-	-	B4B									-	-
		160	B3B							B4B										B3B									B4B	-	-							-	-
		220								B3B																			B3B	-	-								
R2AA04005F	0.05	120	B4D							B4D										B4D							-	-	B4D									-	-
		160	B3D							B4D										B3D									B4D	-	-							-	-
		220								B3D																			B3D	-	-								
R2AA04010F	0.1	120	B4D							B4D										B4D							-	-	B4D									-	-
		160	B3D							B4D										B3D									B4D	-	-							-	-
		220								B3D																			B3D	-	-								
R2AA06010F	0.1	120	E4D							E4D										E4D							-	-	E4D									-	-
		160	E4D							E4D										E4D									E4D	-	-							-	-
		220								E4D																			E4D	-	-								
R2AA06020F	0.2	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
R2AA06040F	0.4	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
R2AA08020F	0.2	160	G5H																	G5H																			
		16A								G5H																													
		220	G5H							G5H										G5H									G5H	-	-								
		320								G5H																			G5H	-	-								
R2AA08040F	0.4	160	G5H																	G5H																			
		16A								G5H																													
		220	G5H							G5H										G5H									G5H	-	-								
		320								G5H																			G5H	-	-								
R2AA08075F	0.75	160	G5K	-	-		-	-												G5K																			
		220	G5K							G5K								-	-	G5K									G5K	-	-								
		320								G5K																			G5K	-	-								

●Q1 Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
Q1AA10100D	1	220	J4M																	J4M																			
		22A								J4M																													
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
Q1AA10150D	1.5	220	J4M																	J4M																			
		22A								J4M																													
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
Q1AA10200D	2	220	J4M																	J4M																			
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
Q1AA10250D	2.5	220	J4M																	J4M																			
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
Q1AA12100D	1	220	K6M																	K6M																			
		22A								K6M																													
		320	K6M							K6M										K6M									K6M	-	-								
		400								K6M																			K6M	-	-								
Q1AA12200D	2	220	K6M																	K6M																			
		320	K6M							K6M										K6M									K6M	-	-								
		400								K6M																			K6M	-	-								

●Q2 Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
Q2AA08100D	1	160	H1K	-	-		-	-												H1K																			
		220	H1K							H1K								-	-	H1K									H1K	-	-								
		320	H1K							H1K										H1K									H1K	-	-								
		400								H1K																			H1K	-	-								
Q2AA10100H	1	220	J4M																	J4M																			
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
Q2AA10150H	1.5	220	J4M																	J4M																			
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
Q2AA13100H	1	220	K3M																	K3M																			
		22A								K3M																													
		320	K3M							K3M										K3M									K3M	-	-								
		400	K3M							K3M										K3M									K3M	-	-								
		550								K3M																			K3M	-	-								
Q2AA13150H	1.5	220	K3M																	K3M																			
		320	K3M							K3M										K3M									K3M	-	-								
		400	K3M							K3M										K3M									K3M	-	-								
		550								K3M																			K3M	-	-								
Q2AA22350H	3.5	400	P2R																	P2R																			
		550	P2R							P2R										P2R									P2R	-	-								
		750	P2R							P2R										P2R									P2R	-	-								
Q2AA22450R	4.5	400	P2R																	P2R																			
		550	P2R							P2R										P2R									P2R	-	-								
		750	P2R							P2R										P2R									P2R	-	-								
Q2AA22550B	5.5	750	P2T																	P2T																			
Q2AA22700S	7	750	P2T																	P2T																			
Q2AA18550H	5.5	550	L1S																	L1S																			
		750								L1S																			L1S	-	-								
Q2AA18750L	7.5	550	L1S																	L1S																			
		750								L1S																			L1S	-	-								

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Tamagawa Seiki Motors

●TBL-i II Series (Rated speed 3000 r/min)

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
TS4601	0.03	120	B4D							B4D										B4D							-	-	B4D									-	-
		160	B3D							B4D										B3D									B4D	-	-							-	-
		220								B3D																			B3D	-	-								
TS4602	0.05	120	B4D							B4D										B4D							-	-	B4D									-	-
		160	B3D							B4D										B3D									B4D	-	-							-	-
		220								B3D																			B3D	-	-								
TS4603	0.1	120	B4D							B4D										B4D							-	-	B4D									-	-
		160	B3D							B4D										B3D									B4D	-	-							-	-
		220								B3D																			B3D	-	-								
TS4606	0.1	120	E4D							E4D										E4D							-	-	E4D									-	-
		160	E4D							E4D										E4D									E4D	-	-							-	-
		220								E4D																			E4D	-	-								
TS4607	0.2	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
TS4609	0.4	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
TS4611	0.2	160	G5H																	G5H																			
		16A								G5H																													
		220	G5H							G5H										G5H									G5H	-	-								
		320								G5H																			G5H	-	-								
TS4612	0.4	160	G5H																	G5H																			
		16A								G5H																													
		220	G5H							G5H										G5H									G5H	-	-								
		320								G5H																			G5H	-	-								
TS4613	0.6	220	G5L																	G5L																			
		22A								G5L																													
		320								G5L																			G5L	-	-								
TS4614	0.75	220	G5L																	G5L																			
		22A								G5L																													
		320								G5L																			G5L	-	-								
TS4813	1	220	J4M																	J4M																			
		22A								J4M																													
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
TS4815	1.5	220	J4M																	J4M																			
		22A								J4M																													
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
TS4817	2	220	J4M																	J4M																			
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
TS4833	1.6	220	K3M																	K3M																			
		22A								K3M																													
		320	K3M							K3M										K3M									K3M	-	-								
		400	K3M							K3M										K3M									K3M	-	-								
		550								K3M																			K3M	-	-								
TS4836	3.3	220	K3M																	K3M																			
		320	K3M																	K3M																			
		400	K3M							K3M										K3M									K3M	-	-								
		550								K3M																			K3M	-	-								
TS4839	5	320	K3Z																	K3Z																			
		400	K3Z							K3Z										K3Z									K3Z	-	-								
		550								K3Z																			K3Z	-	-								

●TBL-i II Series (Rated speed 2000 r/min)

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
TS4882	2	320	L1Q																	L1Q																			
		400	L1Q							L1Q										L1Q									L1Q	-	-								
		550	L1Q							L1Q										L1Q									L1Q	-	-								
		750								L1Q																			L1Q	-	-								
TS4884	4	320	L1Q																	L1Q																			
		400	L1Q							L1Q										L1Q									L1Q	-	-								
		550	L1Q							L1Q										L1Q									L1Q	-	-								
		750								L1Q																			L1Q	-	-								
TS4887	6	320	L1Q																	L1Q																			
		400	L1Q																	L1Q																			
		550	L1Q							L1Q										L1Q									L1Q	-	-								
		750								L1Q																			L1Q	-	-								
TS4889	7.5	320	L1Q																	L1Q																			
		400	L1Q																	L1Q																			
		550	L1Q							L1Q										L1Q									L1Q	-	-								
		750								L1Q																			L1Q	-	-								

●TBL-i II Series (Rated speed 1500 r/min)

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
TS4927	11	550	P5S																	P5S																			
		750	P5S																	P5S																			
TS4920	15	550	P5S																	P5S																			
		750	P5S																	P5S																			

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Motor Matching Table

Omron Motors

●R88M-K Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
R88M-K05030H (T)	0.05	120	B3D							B3D										B3D							-	-	B3D								-	-
		160	B3D							B3D										B3D									B3D	-	-						-	-
		220								B3D																			B3D	-	-							
R88M-K10030H (T)	0.1	120	B3D							B3D										B3D							-	-	B3D								-	-
		160	B3D							B3D										B3D									B3D	-	-						-	-
		220								B3D																			B3D	-	-							
R88M-K20030H (T)	0.2	120	E3G							E3G										E3G							-	-	E3G								-	-
		160	E3G							E3G										E3G									E3G	-	-						-	-
		220								E3G																			E3G	-	-							
R88M-K40030H (T)	0.4	160	E3H																	E3H																		
		16A								E3H																												
		220								E3H																			E3H	-	-							
R88M-K75030H (T)	0.75	220	G4L																	G4L																		
		22A								G4L																												
		320								G4L																			G4L	-	-							
R88M-K1K030H (T)	1	220	J4L																	J4L																		
		22A								J4L																												
		320	J4L							J4L										J4L									J4L	-	-							
		400								J4L																			J4L	-	-							
R88M-K1K530H (T)	1.5	220	J4L																	J4L																		
		22A								J4L																												
		320	J4L							J4L										J4L									J4L	-	-							
		400								J4L																			J4L	-	-							
R88M-K2K030H (T)	2	220	J4L																	J4L																		
		320	J4L							J4L										J4L									J4L	-	-							
		400								J4L																			J4L	-	-							
R88M-K3K030H (T)	3	220	K3M																	K3M																		
		320	K3M																	K3M																		
		400								K3M																			K3M	-	-							
R88M-K4K030H (T)	4	220	K4Y																	K4Y																		
		320	K4Y																	K4Y																		
		400	K3Y							K4Y										K3Y									K4Y	-	-							
		550								K3Y																			K3Y	-	-							
R88M-K5K030H (T)	5	220	K4Y																	K4Y																		
		320	K4Y																	K4Y																		
		400	K3Y							K4Y										K3Y									K4Y	-	-							
		550								K3Y																			K3Y	-	-							

●R88M-K Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
R7M-A05030	0.05	120	B3B							B3B										B3B							-	-	B3B								-	-
		160	B3B							B3B										B3B									B3B	-	-						-	-
		220								B3B																			B3B	-	-							
R7M-A10030	0.1	120	B3D							B3D										B3D							-	-	B3D								-	-
		160	B3D							B3D										B3D									B3D	-	-						-	-
		220								B3D																			B3D	-	-							
R7M-A20030	0.2	160	E4H																	E4H																		
		16A								E4H																												
		220								E4H																			E4H	-	-							
R7M-A40030	0.4	160	E4H																	E4H																		
		16A								E4H																												
		220								E4H																			E4H	-	-							
R7M-A75030	0.75	160	G5K	-	-		-	-												G5K																		
		220	G5K							G5K								-	-	G5K																		
		320								G5K																			G5K	-	-							

●R88M-W Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
R88M-W05030	0.05	120	B3B							B3B										B3B							-	-	B3B								-	-
		160	B3B							B3B										B3B									B3B	-	-						-	-
		220								B3B																			B3B	-	-							
R88M-W10030	0.1	120	B3D							B3D										B3D							-	-	B3D								-	-
		160	B3D							B3D										B3D									B3D	-	-						-	-
		220								B3D																			B3D	-	-							
R88M-W20030	0.2	160	E4H																	E4H																		
		16A								E4H																												
		220								E4H																			E4H	-	-							
R88M-W40030	0.4	160	E4H																	E4H																		
		16A								E4H																												
		220								E4H																			E4H	-	-							
R88M-W75030	0.75	160	G5K	-	-		-	-												G5K																		
		220	G5K							G5K								-	-	G5K																		
		320								G5K																			G5K	-	-							
R88M-W1K030	1	220	J3Y																	J3Y																		
		22A								J3Y																												
		320	J3Y							J3Y										J3Y									J3Y	-	-							
		400								J3Y																			J3Y	-	-							
R88M-W1K530	1.5	220	J3Y																	J3Y																		
		22A								J3Y																												
		320	J3Y							J3Y										J3Y									J3Y	-	-							
		400								J3Y																			J3Y	-	-							
R88M-W2K030	2	220	J3Y																	J3Y																		
		320	J3Y							J3Y										J3Y									J3Y	-	-							
		400								J3Y																			J3Y	-	-							
R88M-W3K030	3	320	K4P																	K4P																		
		400	K3P							K4P										K3P									K4P	-	-							
		550								K3P																			K3P	-	-							
R88M-W4K030	4	320	K4P																	K4P																		
		400	K3P							K4P										K3P									K4P	-	-							
		550								K3P																			K3P	-	-							
R88M-W5K030	5	320	K4P																	K4P																		
		400	K3P																	K3P																		
		550								K3P																			K3P	-	-							

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Keyence Motors

●MV Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
MV-M05 (B05)	0.05	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
MV-M10 (B10)	0.1	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
MV-M20 (B20)	0.2	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
MV-M40 (B40)	0.4	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
MV-M75 (B75)	0.75	160	G4K	-	-		-	-												G4K																			
		220	G4K							G4K								-	-	G4K									G4K	-	-								
		320								G4K																													

●SV Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
SV-M005 (B005)	0.05	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
SV-M010 (B010)	0.1	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
SV-M020 (B020)	0.2	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
SV-M040 (B040)	0.4	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
SV-M075 (B075)	0.75	220	G5L																	G5L																			
		22A								G5L																													
		320								G5L																			G5L	-	-								
SV-M100A (B100A)	0.85	220	K3L																	K3L																			
		22A								K3L																													
		320	K4L							K3L										K4L									K3L	-	-								
		400	K3L							K4L										K3L									K4L	-	-								
		550								K3L																			K3L	-	-								
SV-M150A (B150A)	1.3	220	K3M																	K3M																			
		320	K4M							K3M										K4M									K3M	-	-								
		400	K3M							K4M										K3M									K4M	-	-								
		550								K3M																			K3M	-	-								
SV-M200A (B200A)	1.8	220	K3Y																	K3Y																			
		320	K4Y																	K4Y																			
		400	K3Y							K4Y										K3Y									K4Y	-	-								
		550								K3Y																			K3Y	-	-								
SV-M300A (B300A)	2.9	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
SV-M500A (B500A)	4.4	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Motor Matching Table

Hitachi Industrial Motors

ADMA Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
ADMA-R5L	0.05	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
ADMA-01L	0.1	120	B3D							B3D										B3D							-	-	B3D									-	-
		160	B3D							B3D										B3D									B3D	-	-							-	-
		220								B3D																			B3D	-	-								
ADMA-02L	0.2	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
ADMA-04L	0.4	160	E4H																	E4H																			
		16A								E4H																													
		220								E4H																			E4H	-	-								
ADMA-08L	0.75	220	G5L																	G5L																			
		22A								G5L																													
		320								G5L																			G5L	-	-								
ADMA-10L	1	220	H1Y																	H1Y																			
		22A								H1Y																													
		320	H1Y							H1Y										H1Y									H1Y	-	-								
		400								H1Y																			H1Y	-	-								
ADMA-15L	1.5	220	H1Y																	H1Y																			
		22A								H1Y																													
		320	H1Y							H1Y										H1Y									H1Y	-	-								
		400								H1Y																			H1Y	-	-								
ADMA-20L	2	220	H1Y																	H1Y																			
		320	H1Y							H1Y										H1Y									H1Y	-	-								
		400								H1Y																			H1Y	-	-								
ADMA-30L	3	320	K4P																	K4P																			
		400								K4P																			K4P	-	-								
ADMA-50L	5	320	K4P																	K4P																			
		400								K4P																													

ADMC Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
ADMC-04L	0.4	220	H1Y	-	-		-	-												H1Y																			
		22A								H1Y								-	-																					
		320	H1Y							H1Y										H1Y									H1Y	-	-								
		400								H1Y																			H1Y	-	-								
ADMC-08L	0.75	220	H1Y																	H1Y																			
		22A								H1Y																													
		320	H1Y							H1Y										H1Y									H1Y	-	-								
		400								H1Y																			H1Y	-	-								
ADMC-10L	1	220	H1Y																	H1Y																			
		320	H1Y							H1Y										H1Y									H1Y	-	-								
		400								H1Y																			H1Y	-	-								
ADMC-15L	1.5	320	K4P																	K4P																			
		400								K4P																			K4P	-	-								
ADMC-20L	2	320	K4P																	K4P																			
		400								K4P																			K4P	-	-								
ADMC-30L	2.9	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
ADMC-45L	4.5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								

ADMG Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
ADMG-05HP	0.5	160	H1K	-	-		-	-												H1K																			
		220	H1K							H1K								-	-	H1K									H1K	-	-								
		320	H1K							H1K										H1K									H1K	-	-								
		400								H1K																			H1K	-	-								
ADMG-10HP	1	220	J4M																	J4M																			
		320	J4M							J4M										J4M									J4M	-	-								
		400								J4M																			J4M	-	-								
ADMG-15HP	1.5	220	K3M																	K3M																			
		320	K3M							K3M										K3M									K3M	-	-								
		400	K3M							K3M										K3M									K3M	-	-								
		550								K3M																			K3M	-	-								
ADMG-20HP	2	320	K3P																	K3P																			
		400	K3P							K3P										K3P									K3P	-	-								
		550								K3P																			K3P	-	-								
ADMG-35HP	3.5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
ADMG-45HP	4.5	400	L1R																	L1R																			
		550	L1R							L1R										L1R									L1R	-	-								
		750								L1R																			L1R	-	-								
ADMG-55HP	5.5	750	P2T																	P2T																			
ADMG-70HP	7	750	P2T																	P2T																			

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Nikki Denso Motors

●NA100 Series (Rated speed 1000 r/min)

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
NA100-110F(B)-10	1.2	320	Z9P																	Z9P																		
		400	Z9P																	Z9P																		
		550								Z9P																			Z9P	-	-								
NA100-180F(B)-10	1.9	320	Z9P																	Z9P																		
		400	Z9P																	Z9P																		
		550	Z9P							Z9P										Z9P									Z9P	-	-								
		750								Z9P																			Z9P	-	-								
NA100-270F(B)-10	2.8	400	Z9Z																	Z9Z																		
		550	Z9Z																	Z9Z																		
		750	Z9Z							Z9Z										Z9Z									Z9Z	-	-								
NA100-370F(B)-10	3.7	400	Z9Z																	Z9Z																		
		550	Z9Z																	Z9Z																		
		750	Z9Z																	Z9Z																		
NA100-550F(B)-10	5.5	550	Z9S																	Z9S																		
		750	Z9S																	Z9S																		
NA100-750F(B)-10	7.5	550	Z9Z																	Z9Z																		
		750	Z9Z																	Z9Z																		
NA100-1100F(B)-10	11	750	Z9Z																	Z9Z																		

●NA100 Series (Rated speed 2000 r/min)

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
NA100-110F(B)	2.2	320	Z9P																	Z9P																		
		400	Z9P																	Z9P																		
		550								Z9P																			Z9P	-	-								
NA100-180F(B)	3.7	320	Z9P																	Z9P																		
		400	Z9P																	Z9P																		
		550	Z9P							Z9P										Z9P									Z9P	-	-								
		750								Z9P																			Z9P	-	-								
NA100-270F(B)	5.5	400	Z9Z																	Z9Z																		
		550	Z9Z																	Z9Z																		
		750	Z9Z							Z9Z										Z9Z									Z9Z	-	-								
NA100-370F(B)	7.5	400	Z9Z																	Z9Z																		
		550	Z9Z																	Z9Z																		
		750	Z9Z																	Z9Z																		
NA100-550F(B)	11	550	Z9S																	Z9S																		
		750	Z9S																	Z9S																		
NA100-750F(B)	15	550	Z9Z																	Z9Z																		
		750	Z9Z																	Z9Z																		
NA100-1100F(B)	22	750	Z9Z																	Z9Z																		

●NA80 Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
NA80-05	0.05	120	Z9D							Z9D										Z9D							-	-	Z9D								-	-
		160	Z9D							Z9D										Z9D									Z9D	-	-						-	-
		220								Z9D																			Z9D	-	-								
NA80-10	0.1	120	Z9D							Z9D										Z9D							-	-	Z9D								-	-
		160	Z9D							Z9D										Z9D									Z9D	-	-						-	-
		220								Z9D																			Z9D	-	-								
NA80-20	0.2	160	Z9H																	Z9H																		
		16A								Z9H																													
		220								Z9H																			Z9H	-	-								
NA80-40	0.4	160	Z9H																	Z9H																		
		16A								Z9H																													
		220								Z9H																			Z9H	-	-								
NA80-60	0.6	220	Z9L																	Z9L																		
		22A								Z9L																													
		320								Z9L																			Z9L	-	-								
NA80-75	0.75	220	Z9L																	Z9L																		
		22A								Z9L																													
		320								Z9L																			Z9L	-	-								

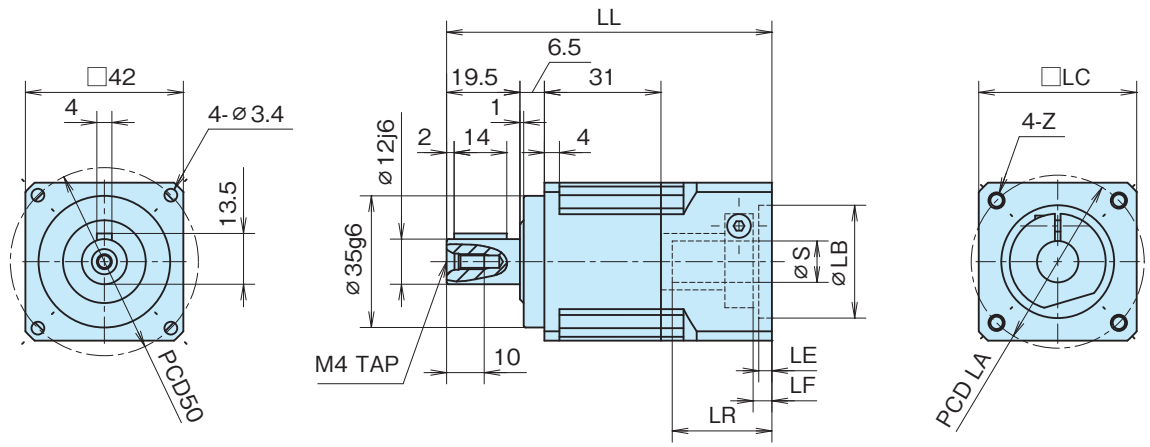
●NA800 Series

Motor model numbers	Rated output kW	Gearbox frame No.	In line type (S) 1 stage Mount code	Ratio 3	4	5	7	9	10	In line type (S) 2 stages Mount code	Ratio 15	20	25	30	35	40	50	70	100	Right angle type (R) 1 stage Mount code	Ratio 3	4	5	7	9	10	14	20	Right angle type (R) 2 stages Mount code	Ratio 15	20	25	30	40	50	70	100	140	200
NA830-162	1.6	220	Z9M																	Z9M																		
		22A								Z9M																													
		320	Z9M							Z9M										Z9M									Z9M	-	-								
		400	Z9M							Z9M										Z9M									Z9M	-	-								
		550								Z9M																			Z9M	-	-								
NA830-332	3.3	220	Z9M																	Z9M																		
		320	Z9M																	Z9M																		
		400	Z9M							Z9M										Z9M									Z9M	-	-								
		550								Z9M																			Z9M	-	-								
NA820-402	4	320	Z9Q																	Z9Q																		
		400	Z9Q							Z9Q										Z9Q									Z9Q	-	-								
		550	Z9Q							Z9Q										Z9Q									Z9Q	-	-								
		750								Z9Q																			Z9Q	-	-								
NA820-602	6	320	Z9Q																	Z9Q																		
		400	Z9Q																	Z9Q																		
		550	Z9Q							Z9Q										Z9Q									Z9Q	-	-								
		750								Z9Q																			Z9Q	-	-								
NA820-752	7.5	320	Z9Q																	Z9Q																		
		400	Z9Q																	Z9Q																		
		550	Z9Q							Z9Q										Z9Q									Z9Q	-	-								
		750								Z9Q																			Z9Q	-	-								
NA820-113	11	550	Z9S																	Z9S																		
		750	Z9S							Z9S										Z9S									Z9S	-	-								
NA820-153	15	550	Z9S																	Z9S																		
		750	Z9S																	Z9S																		

Note) ////// : Motor torque limit is required. Use only within the gearbox's performance.

Dimensions In line Type (S)

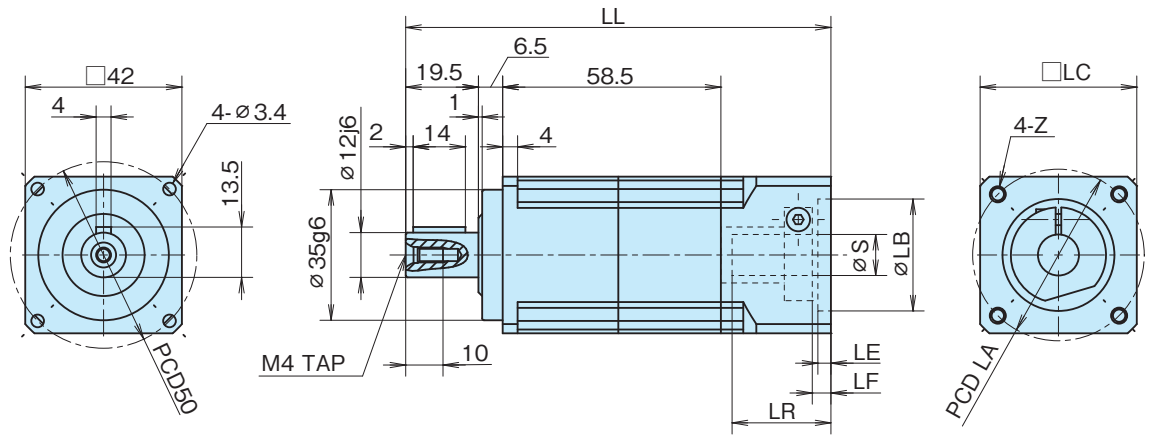
PAT – B 120 S 003 to 010 (1 stage) K P1 (P2) – Mount code



Mass: 0.6 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
B2D	86.5	42	30	3.5	8	26.5	5	45	M3 6 deep
B3B	86.5	42	30	3.5	6	26.5	5	46	M4 9 deep
B3D	86.5	42	30	3.5	8	26.5	5	46	M4 9 deep

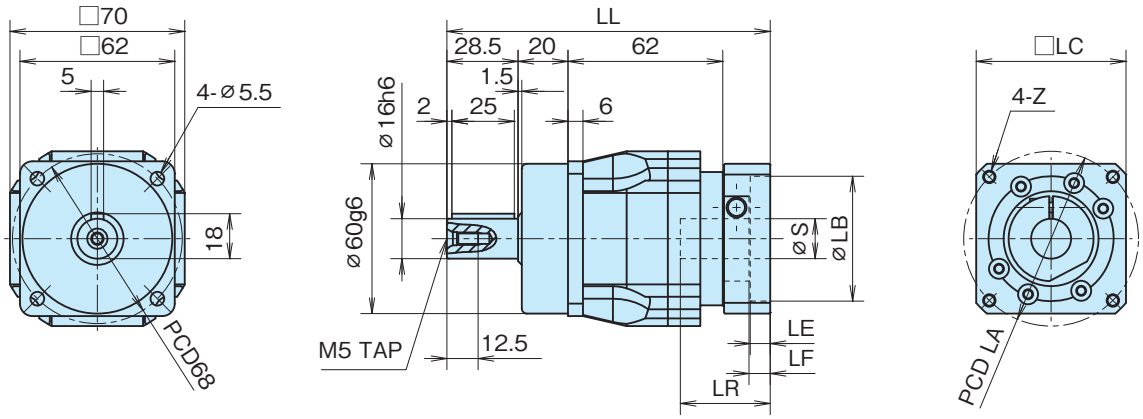
PAT – B 120 S 015 to 100 (2 stages) K P1 (P2) – Mount code



Mass: 0.8 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
B2D	114	42	30	3.5	8	26.5	5	45	M3 6 deep
B3B	114	42	30	3.5	6	26.5	5	46	M4 9 deep
B3D	114	42	30	3.5	8	26.5	5	46	M4 9 deep

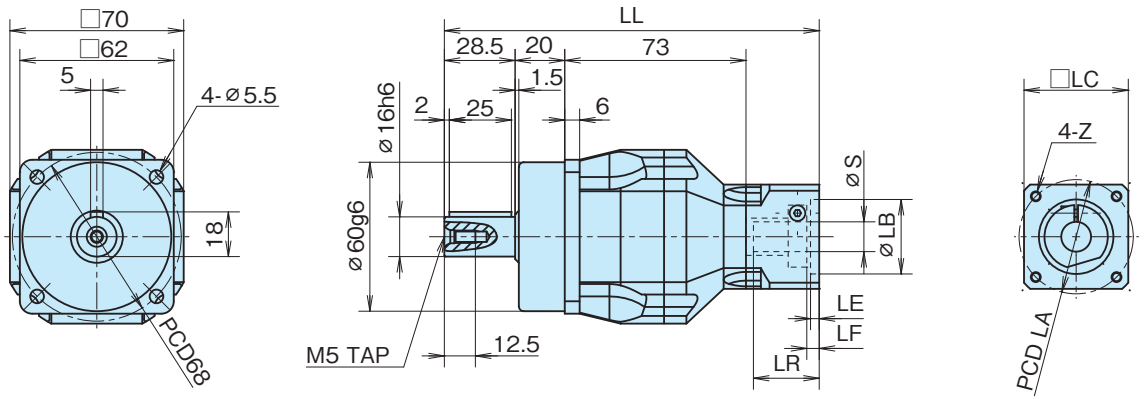
PAT – B 160 S 003 to 010 (1 stage) K P1 (P2) – Mount code



Mass: 1.7 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
E3G	125.5	60	50	4	11	32	4.5	70	M4 9 deep
E4E	129.5	60	50	8	9	36	8.5	70	M5 10 deep
E4H	129.5	60	50	8	14	36	8.5	70	M5 10 deep

PAT – B 160 S 015 to 100 (2 stages) K P1 (P2) – Mount code

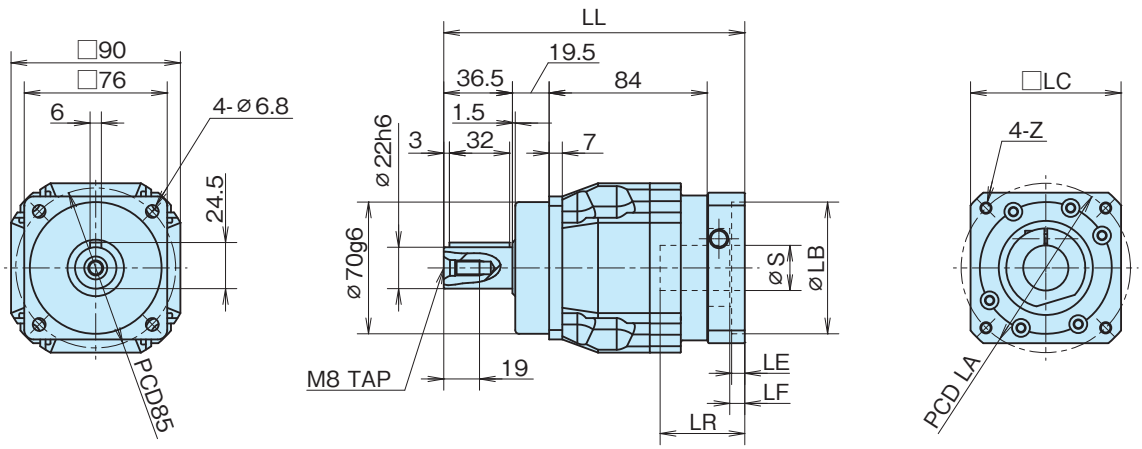


Mass: 2.0 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
B2D	151	42	30	3.5	8	26.5	5	45	M3 6 deep
B3B	151	42	30	3.5	6	26.5	5	46	M4 9 deep
B3D	151	42	30	3.5	8	26.5	5	46	M4 9 deep

Dimensions In line Type (S)

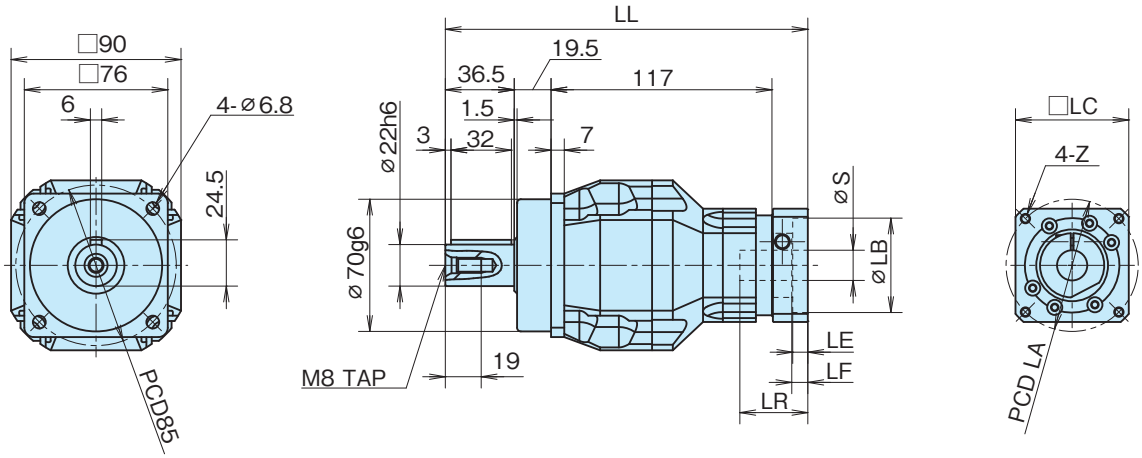
PAT – B 220 S 003 to 010 (1 stage) K P1 (P2) – Mount code



Mass: 3.5 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
G4L	158.5	80	70	5.5	19	43.5	6.5	90	M5 10 deep
G5K	160	80	70	7	16	45	8	90	M6 12 deep
G5L	160	80	70	7	19	45	8	90	M6 12 deep
H4F	172	90	80	8	10	57	20	100	M6 12 deep
H1H	161	90	80	7.5	14	46	9	100	M6 12 deep
K3L	175	130	110	18	19	60	23	145	M8 15 deep
K3M	175	130	110	18	22	60	23	145	M8 15 deep
K3Y	175	130	110	18	24	60	23	145	M8 15 deep

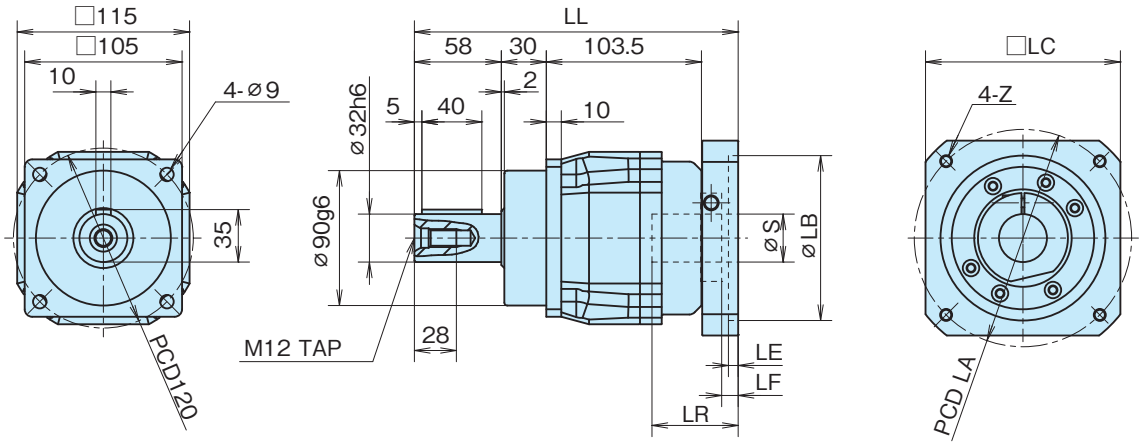
PAT – B 220 S 015 to 100 (2 stages) K P1 (P2) – Mount code



Mass: 4.0 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
E3G	188	60	50	4	11	32	4.5	70	M4 9 deep
E4E	192	60	50	8	9	36	8.5	70	M5 10 deep
E4H	192	60	50	8	14	36	8.5	70	M5 10 deep

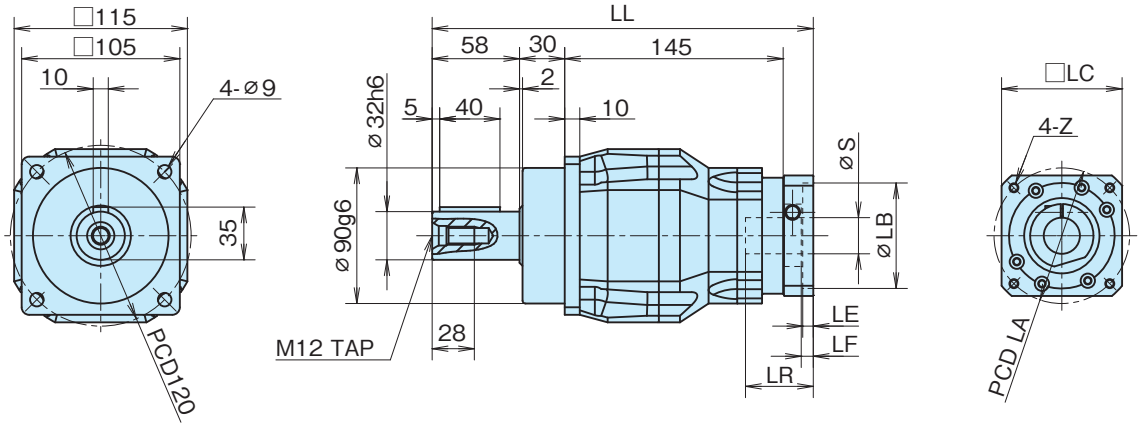
PAT – B 320 S 003 to 010 (1 stage) K P1 (P2) – Mount code



Mass: 7.4 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
K3M	216	130	110	6.5	22	57.5	11	145	M8 15 deep
K3Y	216	130	110	6.5	24	57.5	11	145	M8 15 deep

PAT – B 320 S 015 to 100 (2 stages) K P1 (P2) – Mount code

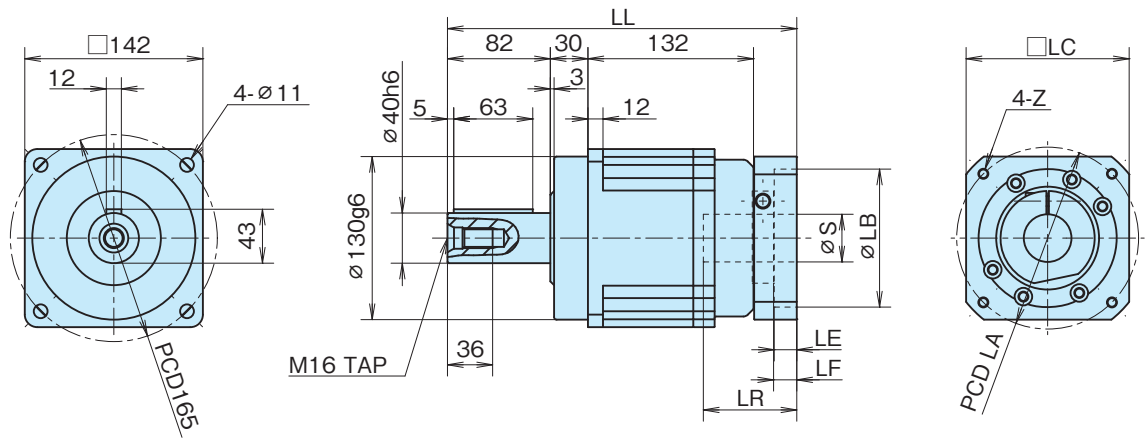


Mass: 9.0 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
G4L	251.5	80	70	5.5	19	43.5	6.5	90	M5 10 deep
G5K	253	80	70	7	16	45	8	90	M6 12 deep
G5L	253	80	70	7	19	45	8	90	M6 12 deep
H4F	265	90	80	8	10	57	20	100	M6 12 deep
H1H	254	90	80	7.5	14	46	9	100	M6 12 deep
K3L	268	130	110	18	19	60	23	145	M8 15 deep
K3M	268	130	110	18	22	60	23	145	M8 15 deep
K3Y	268	130	110	18	24	60	23	145	M8 15 deep

Dimensions In line Type (S)

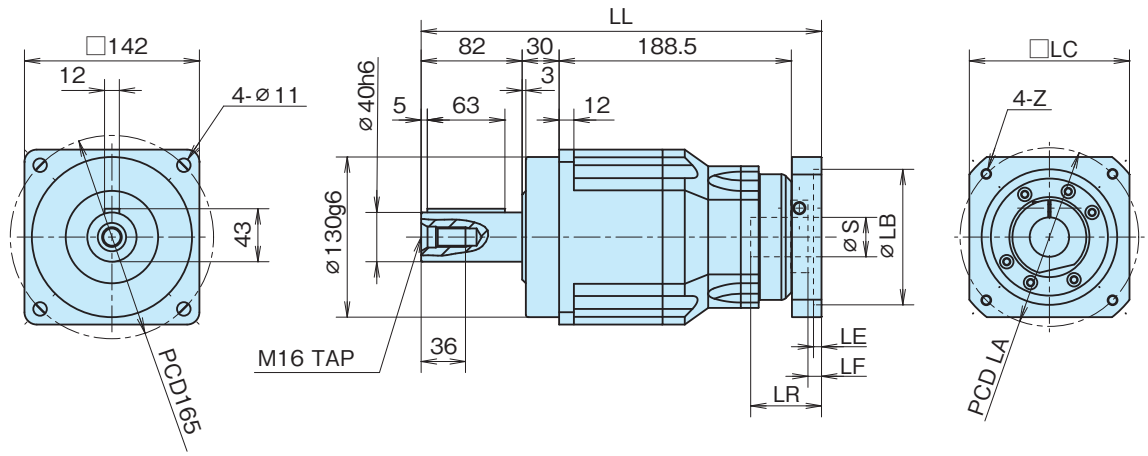
PAT – B 400 S 003 to 010 (1 stage) K P1 (P2) – Mount code



Mass: 15.8 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
K3Y	278.5	130	110	18	24	74.5	18.5	145	M8 15 deep
L1R	286.5	176	114.3	6	35	82.5	26.5	200	M12 21 deep

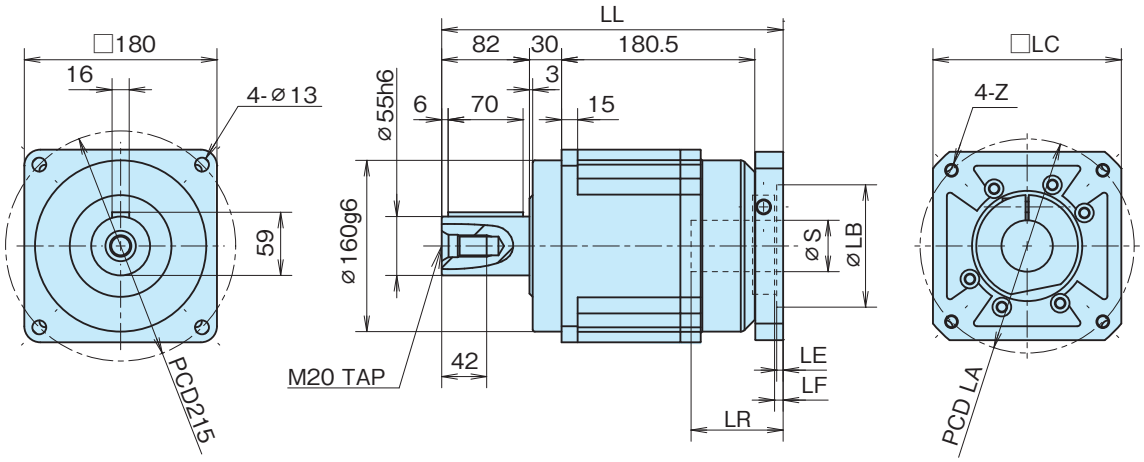
PAT – B 400 S 015 to 100 (2 stages) K P1 (P2) – Mount code



Mass: 19.1 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
K3M	325	130	110	6.5	22	57.5	11	145	M8 15 deep
K3Y	325	130	110	6.5	24	57.5	11	145	M8 15 deep

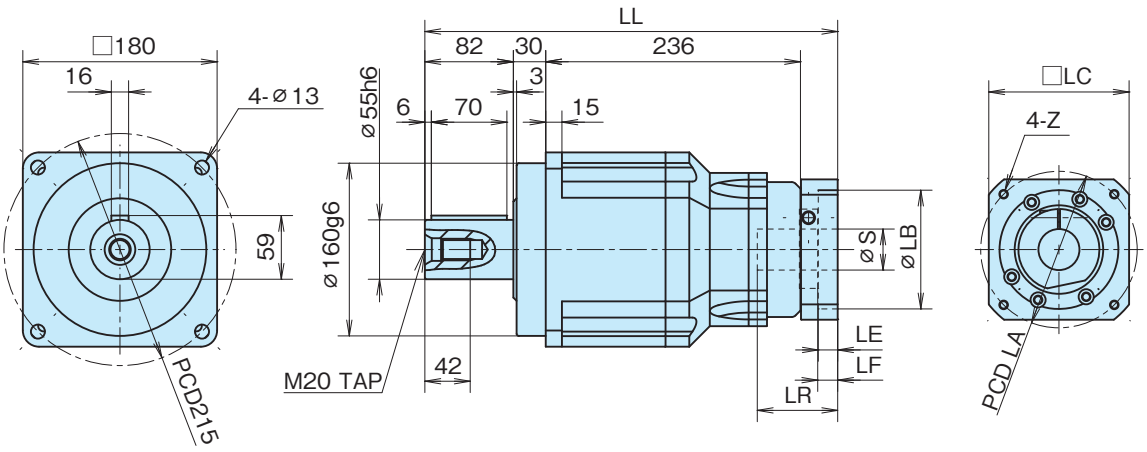
PAT – B 550 S 003 to 010 (1 stage) K P1 (P2) – Mount code



Mass: 32.7 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
L1R	319	176	114.3	6	35	86	8	200	M12 21 deep
L2S	349.5	180	114.3	6	42	116.5	38.5	200	M12 21 deep

PAT – B 550 S 015 to 100 (2 stages) K P1 (P2) – Mount code

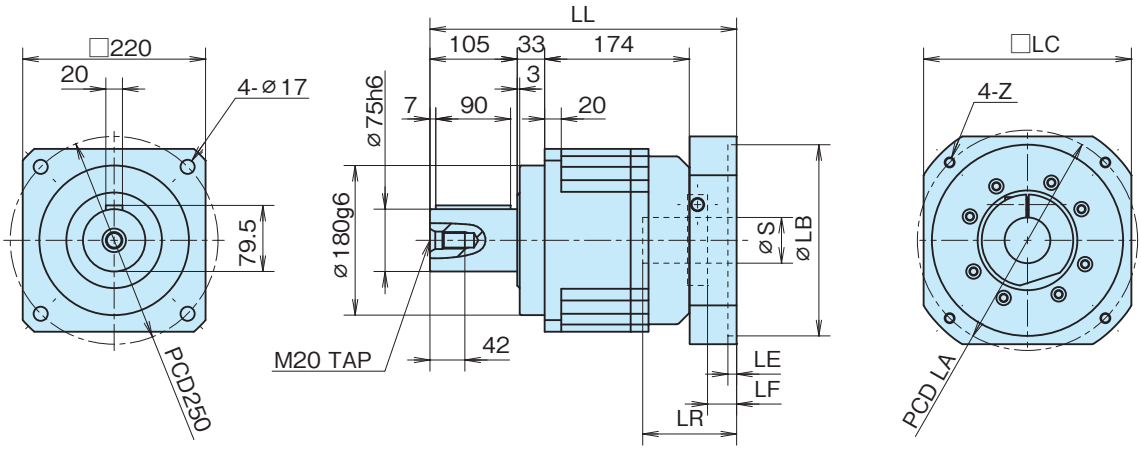


Mass: 37.6 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
K3Y	382.5	130	110	18	24	74.5	18.5	145	M8 15 deep
L1R	390.5	176	114.3	6	35	82.5	26.5	200	M12 21 deep

Dimensions In line Type (S)

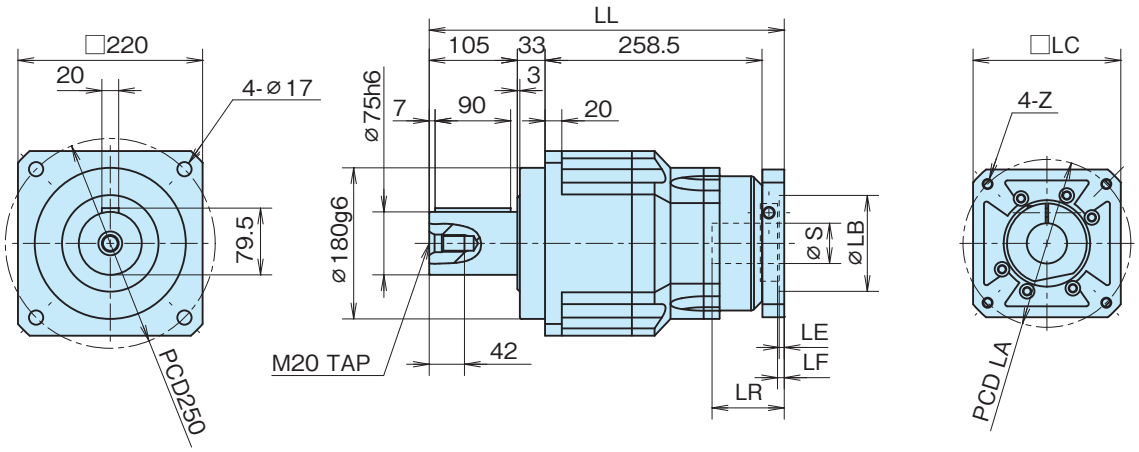
PAT – B 750 S 003 to 010 (1 stage) K P1 (P2) – Mount code



Mass: 51.2 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
R1T	369	250	230	10.5	55	113.5	35.5	265	M12 21 deep

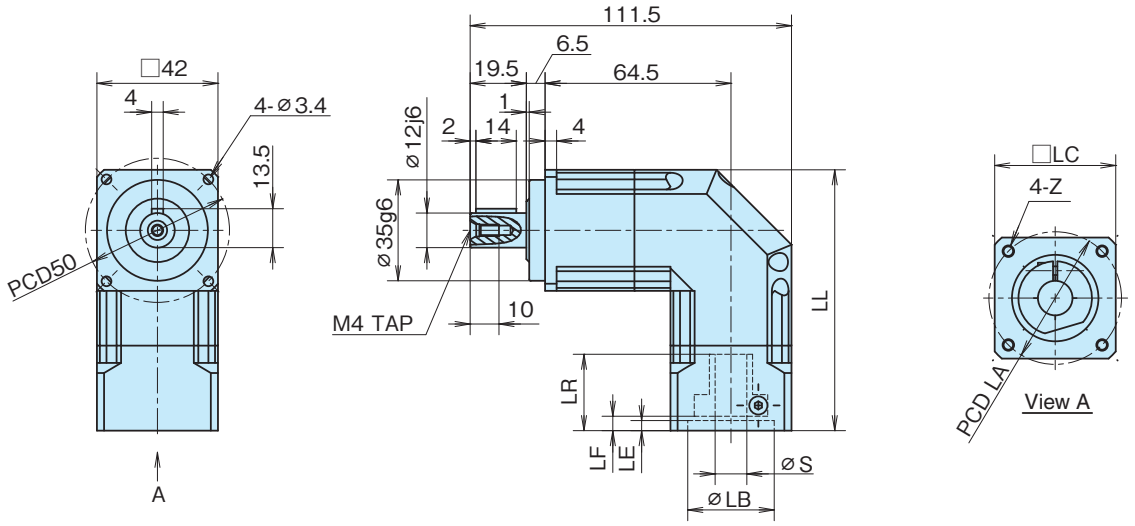
PAT – B 750 S 015 to 100 (2 stages) K P1 (P2) – Mount code



Mass: 60.3 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
L1R	423	176	114.3	6	35	86	8	200	M12 21 deep
L2S	453.5	180	114.3	6	42	116.5	38.5	200	M12 21 deep

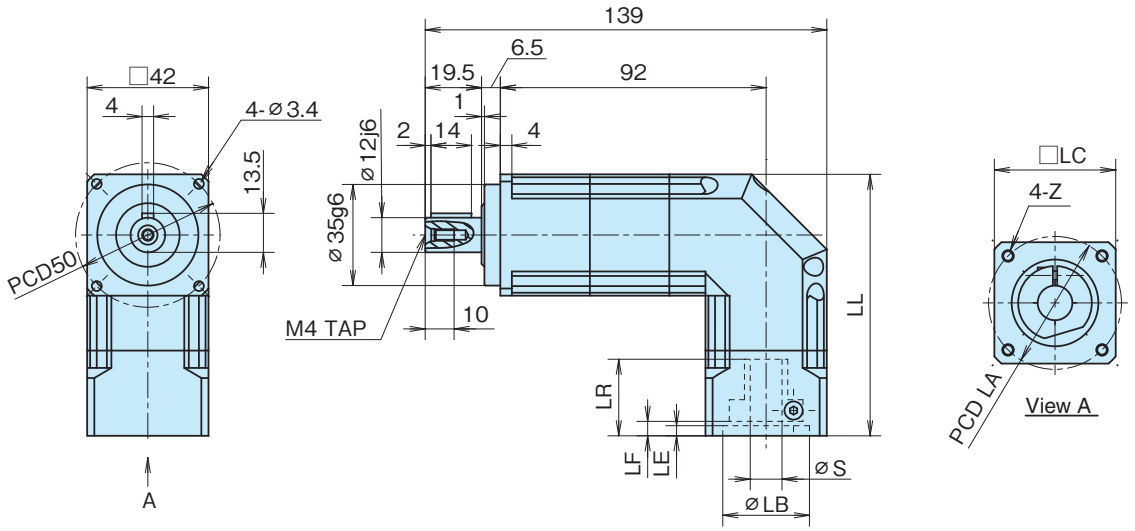
PAT – B 120 R 003 to 010 (1 stage) K P1 (P2) – Mount code



Mass: 0.9 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
B2D	90.5	42	30	3.5	8	26.5	5	45	M3 6 deep
B3B	90.5	42	30	3.5	6	26.5	5	46	M4 9 deep
B3D	90.5	42	30	3.5	8	26.5	5	46	M4 9 deep

PAT – B 120 R 015 to 100 (2 stages) K P1 (P2) – Mount code

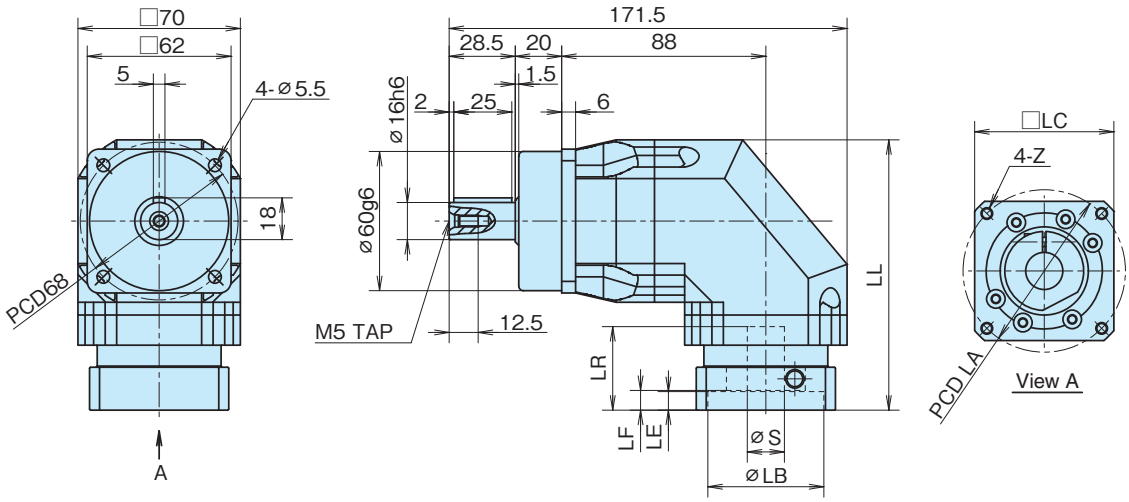


Mass: 1.2 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
B2D	90.5	42	30	3.5	8	26.5	5	45	M3 6 deep
B3B	90.5	42	30	3.5	6	26.5	5	46	M4 9 deep
B3D	90.5	42	30	3.5	8	26.5	5	46	M4 9 deep

Dimensions Right Angle Type (R)

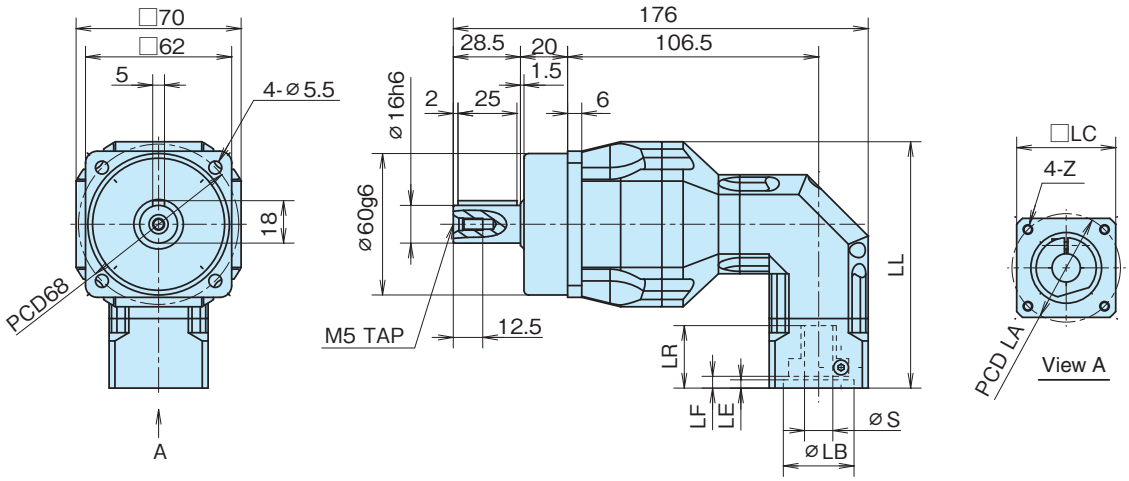
PAT – B 160 R 003 to 020 (1 stage) K P1 (P2) – Mount code



Mass: 2.7 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
E3G	112.5	60	50	4	11	32	4.5	70	M4 9 deep
E4E	116.5	60	50	8	9	36	8.5	70	M5 10 deep
E4H	116.5	60	50	8	14	36	8.5	70	M5 10 deep

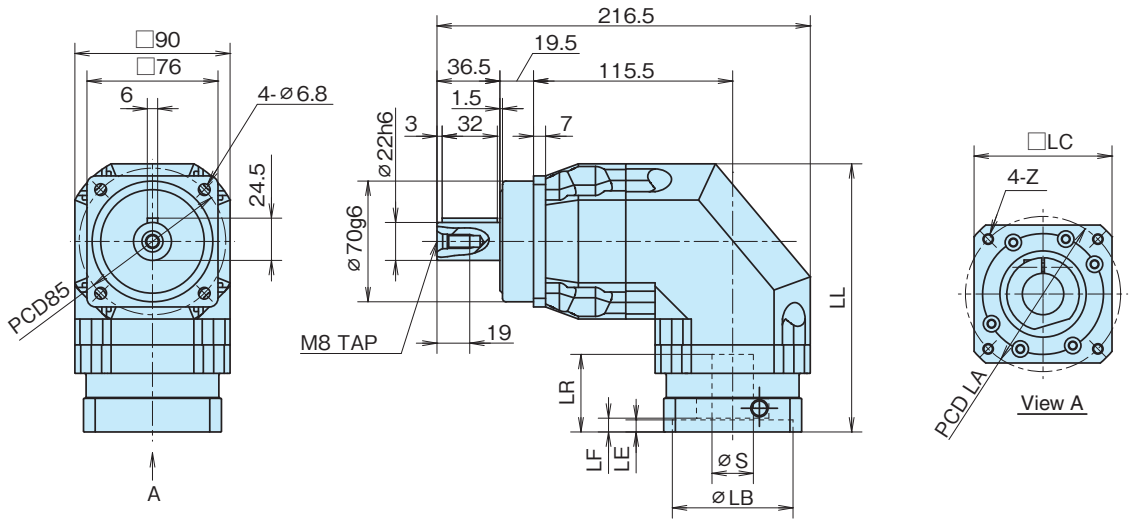
PAT – B 160 R 025 to 100 (2 stages) K P1 (P2) – Mount code



Mass: 2.4 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
B2D	104.5	42	30	3.5	8	26.5	5	45	M3 6 deep
B3B	104.5	42	30	3.5	6	26.5	5	46	M4 9 deep
B3D	104.5	42	30	3.5	8	26.5	5	46	M4 9 deep

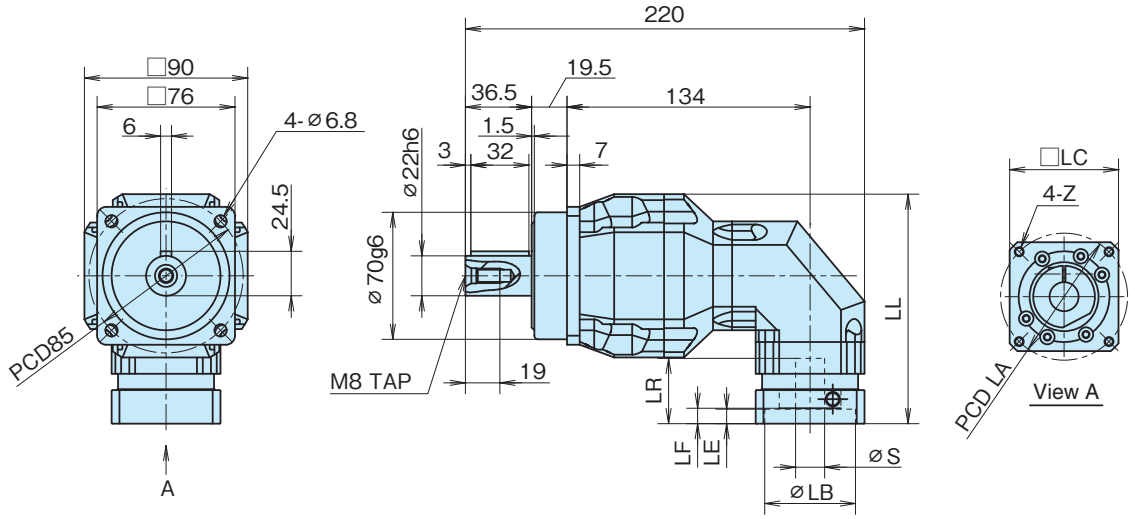
PAT – B 220 R 003 to 020 (1 stage) K P1 (P2) – Mount code



Mass: 6.1 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
G4L	154	80	70	5.5	19	43.5	6.5	90	M5 10 deep
G5K	155.5	80	70	7	16	45	8	90	M6 12 deep
G5L	155.5	80	70	7	19	45	8	90	M6 12 deep
H4F	167.5	90	80	8	10	57	20	100	M6 12 deep
H1H	156.5	90	80	7.5	14	46	9	100	M6 12 deep
K3L	170.5	130	110	18	19	60	23	145	M8 15 deep
K3M	170.5	130	110	18	22	60	23	145	M8 15 deep
K3Y	170.5	130	110	18	24	60	23	145	M8 15 deep

PAT – B 220 R 025 to 200 (2 stages) K P1 (P2) – Mount code

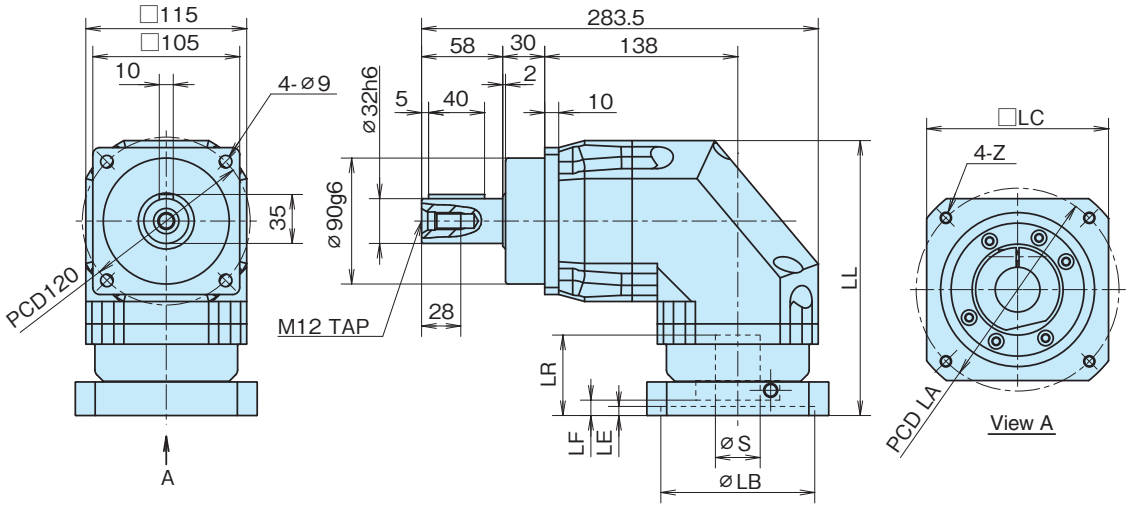


Mass: 4.8 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
E3G	122.5	60	50	4	11	32	4.5	70	M4 9 deep
E4E	126.5	60	50	8	9	36	8.5	70	M5 10 deep
E4H	126.5	60	50	8	14	36	8.5	70	M5 10 deep

Dimensions Right Angle Type (R)

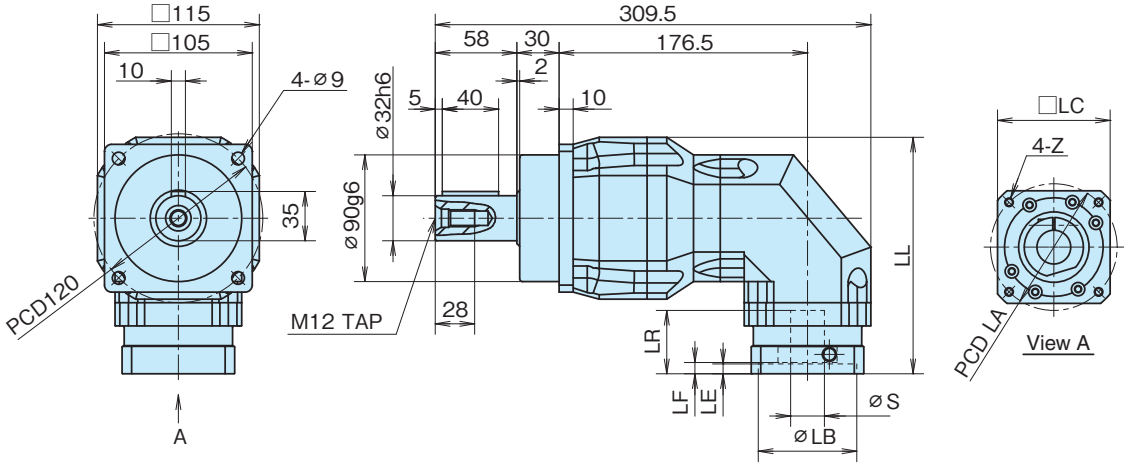
PAT – B 320 R 003 to 020 (1 stage) K P1 (P2) – Mount code



Mass: 12.2 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
K3M	196.5	130	110	6.5	22	57.5	11	145	M8 15 deep
K3Y	196.5	130	110	6.5	24	57.5	11	145	M8 15 deep

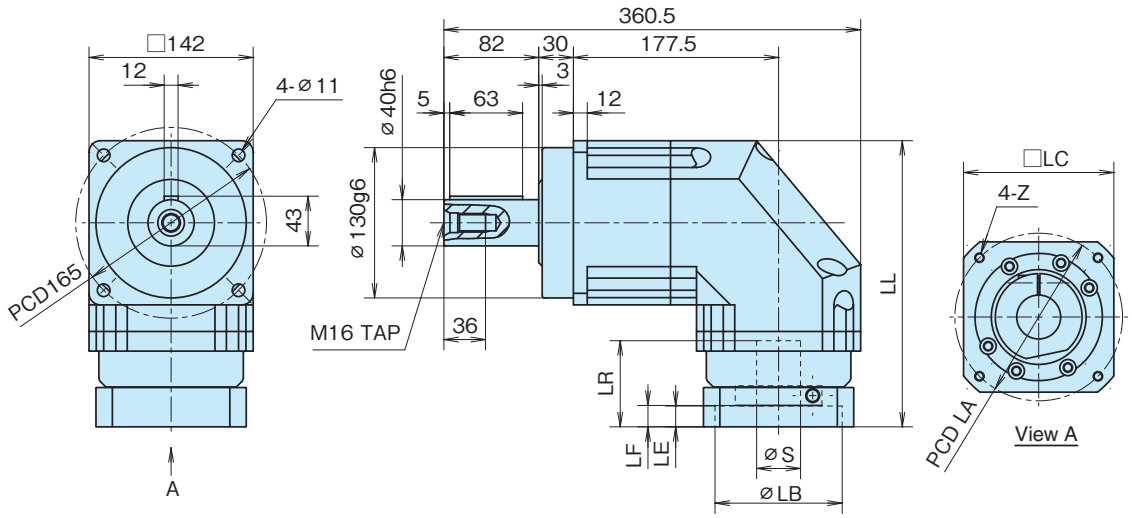
PAT – B 320 R 025 to 200 (2 stages) K P1 (P2) – Mount code



Mass: 11.6 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
G4L	166.5	80	70	5.5	19	43.5	6.5	90	M5 10 deep
G5K	168	80	70	7	16	45	8	90	M6 12 deep
G5L	168	80	70	7	19	45	8	90	M6 12 deep
H4F	180	90	80	8	10	57	20	100	M6 12 deep
H1H	169	90	80	7.5	14	46	9	100	M6 12 deep
K3L	183	130	110	18	19	60	23	145	M8 15 deep
K3M	183	130	110	18	22	60	23	145	M8 15 deep
K3Y	183	130	110	18	24	60	23	145	M8 15 deep

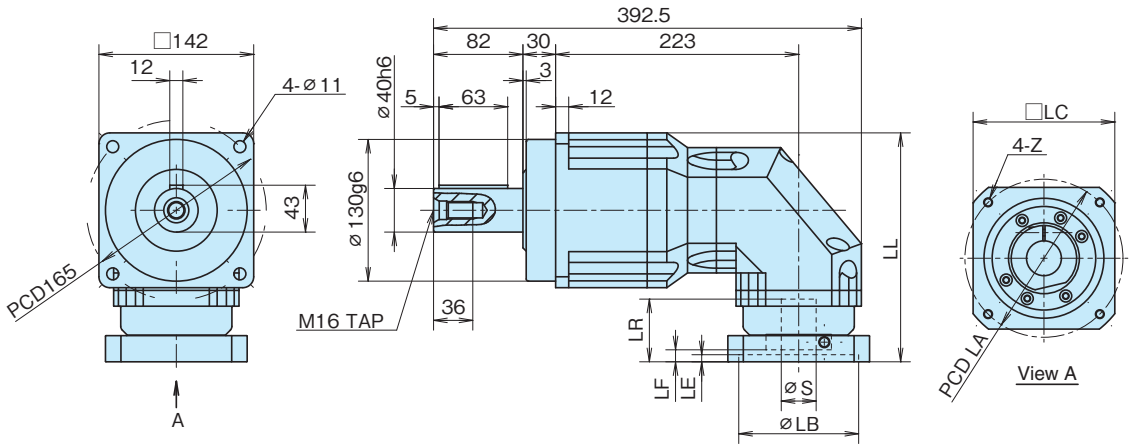
PAT – B 400 R 003 to 020 (1 stage) K P1 (P2) – Mount code



Mass: 25.3 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
K3Y	247.5	130	110	18	24	74.5	18.5	145	M8 15 deep
L1R	255.5	176	114.3	6	35	82.5	26.5	200	M12 21 deep

PAT – B 400 R 025 to 200 (2 stages) K P1 (P2) – Mount code

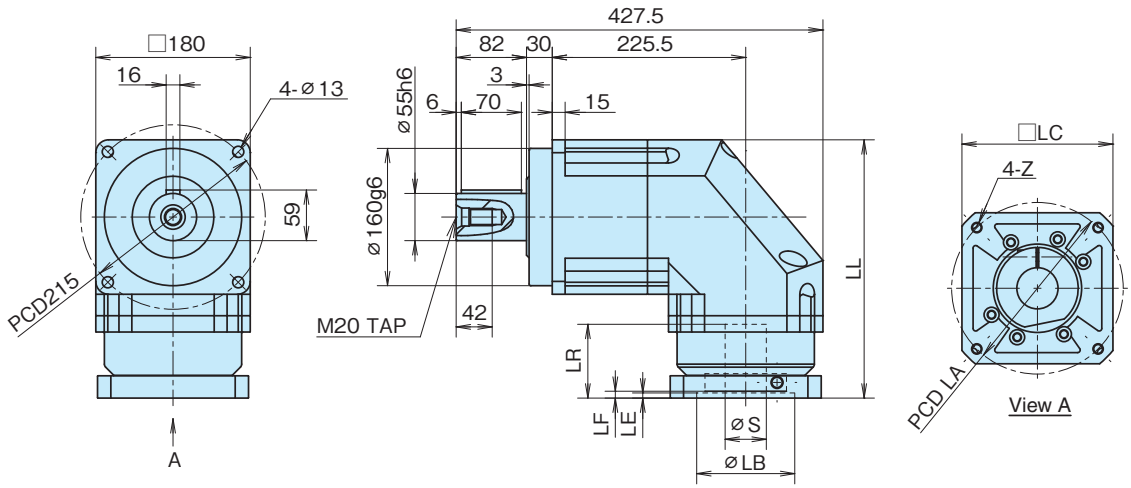


Mass: 24.0 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
K3M	210	130	110	6.5	22	57.5	11	145	M8 15 deep
K3Y	210	130	110	6.5	24	57.5	11	145	M8 15 deep

Dimensions Right Angle Type (R)

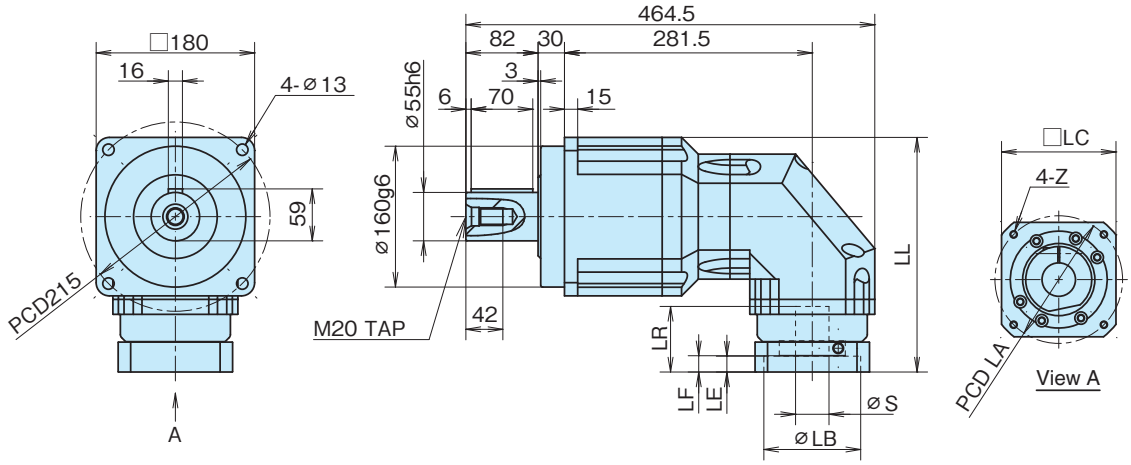
PAT – B 550 R 003 to 020 (1 stage) K P1 (P2) – Mount code



Mass: 50.2 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
L1R	301	176	114.3	6	35	86	8	200	M12 21 deep
L2S	331.5	180	114.3	6	42	116.5	38.5	200	M12 21 deep

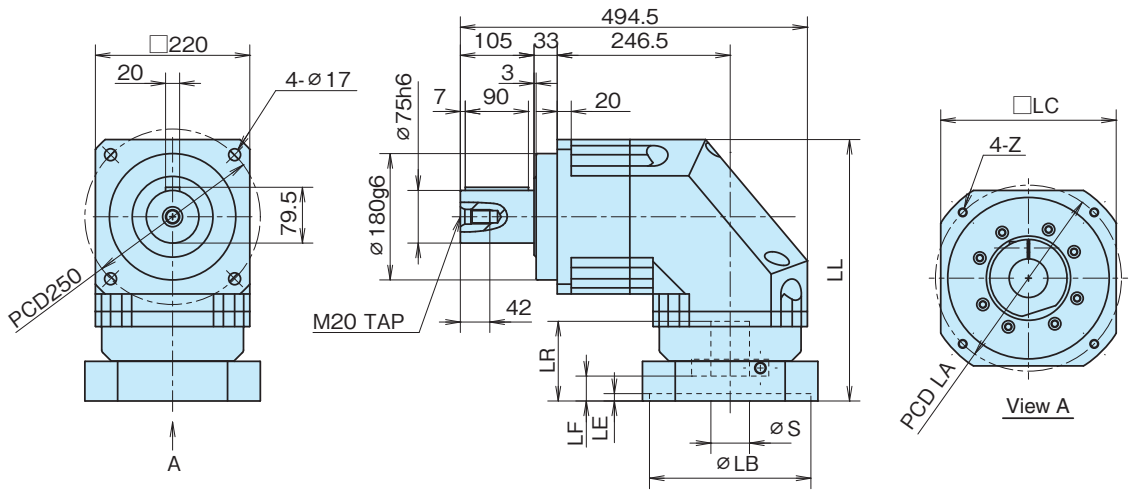
PAT – B 550 R 025 to 200 (2 stages) K P1 (P2) – Mount code



Mass: 47.4 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
K3Y	266.5	130	110	18	24	74.5	18.5	145	M8 15 deep
L1R	274.5	176	114.3	6	35	82.5	26.5	200	M12 21 deep

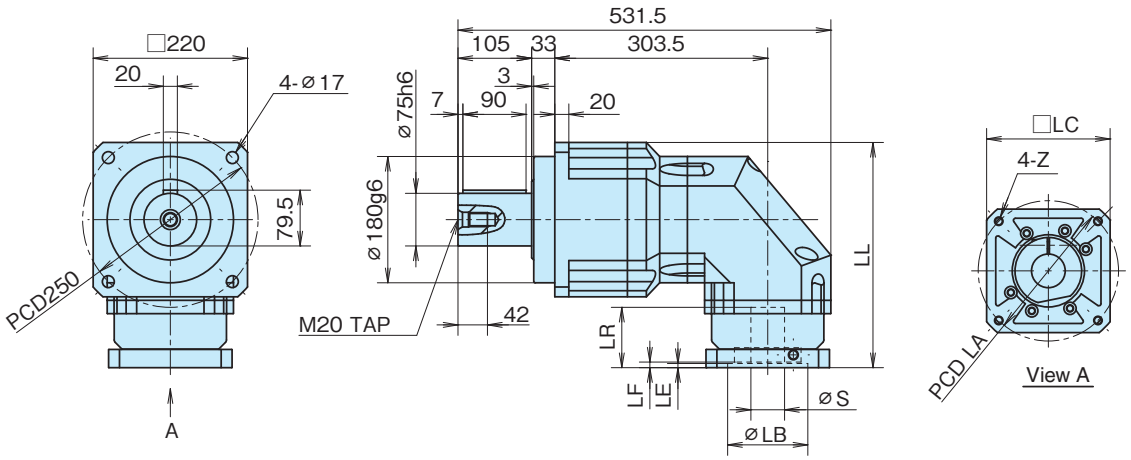
PAT – B 750 R 003 to 020 (1 stage) K P1 (P2) – Mount code



Mass: 81.7 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
R1T	372.5	250	230	10.5	55	113.5	35.5	265	M12 21 deep

PAT – B 750 R 025 to 200 (2 stages) K P1 (P2) – Mount code



Mass: 78.3 kg

Mount code	LL	LC	LB	LE	S	LR	LF	LA	Z
L1R	321	176	114.3	6	35	86	8	200	M12 21 deep
L2S	351.5	180	114.3	6	42	116.5	38.5	200	M12 21 deep

Selection

Selection start

Calculate the ratio i — See (1)

(1) $i \fallingdotseq \frac{n_m}{n_2}$ n_m: Motor speed n_2: Output speed

Calculate the mean output torque T_{2m} — See (2)

(2) $T_{2m} = \sqrt[3]{\frac{n_{2a} x t_a x T_{2a}^3 + n_{2c} x t_c x T_{2c}^3 + n_{2d} x t_d x |T_{2d}^3|}{n_{2a} x t_a + n_{2c} x t_c + n_{2d} x t_d}}$

Calculate the max. output torque T'_{2max} — See (3)

(3) $T'_{2max} = T_{2max} \times ks$

Cycles factor: ks

ks	Number of Cycles/hr
1.0	0 to 1,000
1.1	1,000 to 1,500
1.3	1,500 to 2,000
1.6	2,000 to 3,000
1.8	3,000 to 5,000

$T'_{2max} < T_{2B}$, $T_{2m} < T_{2N}$ — NO → Select a larger gearbox

See pages 5 and 6 for T_{2B} and T_{2N}.

YES

Calculate the mean output speed n_{2m} and nominal output speed n_{2n} — See (4)

(4) $n_{2a} = n_{2d} = \frac{1}{2} \times n_{2c}$

$n_{2m} = \frac{n_{2a} x t_a + n_{2c} x t_c + n_{2d} x t_d}{t_a + t_c + t_d}$

$n_{2N} = \frac{n_{1N}}{i}$

$n_{2m} < n_{2N}$ — NO → Select a smaller ratio

YES

Calculate the mean radial load F_{2rm} and mean axial load F_{2am} on output shaft of gearbox — See (5)

(5) $F_{2rm} = \sqrt[3]{\frac{n_{2a} x t_a x F_{2ra}^3 + n_{2c} x t_c x F_{2rc}^3 + n_{2d} x t_d x |F_{2rd}^3|}{n_{2a} x t_a + n_{2c} x t_c + n_{2d} x t_d}}$

$F_{2am} = \sqrt[3]{\frac{n_{2a} x t_a x F_{2aa}^3 + n_{2c} x t_c x F_{2ac}^3 + n_{2d} x t_d x |F_{2ad}^3|}{n_{2a} x t_a + n_{2c} x t_c + n_{2d} x t_d}}$

Calculate the permitfed radial load F'_{2rB} on output shaft of gearbox

See page 34

$F_{2rm} < F'_{2rB}$, $F_{2am} < F_{2aB}$ — NO → Select a larger gearbox

See pages 5 and 6 for F_{2rB} and F_{2aB}.

YES

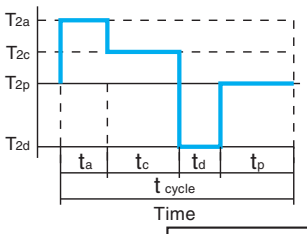
Select the required backlash (P1 or P2)

Motor shaft dia. ≤ max. input bore S — NO → Select a larger gearbox

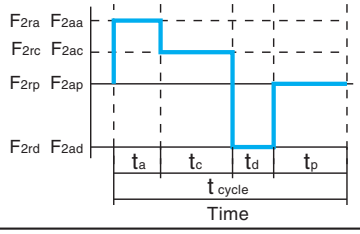
See pages 19 to 32 for dimensions.

Motion Profile

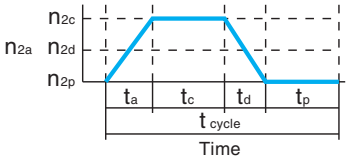
· **Output torque**



· **Loads on output shaft**



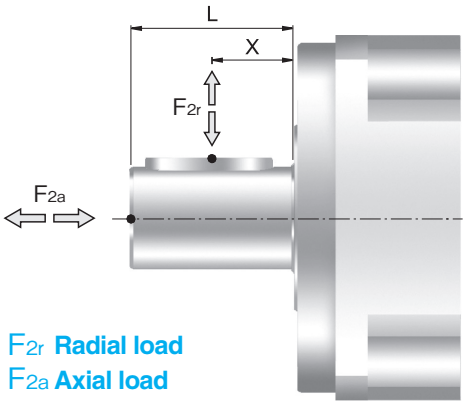
· **Output speed**



Index

a: acceleration c: constant d: deceleration p: pause t: time T: torque F: shaft load 1: input 2: output

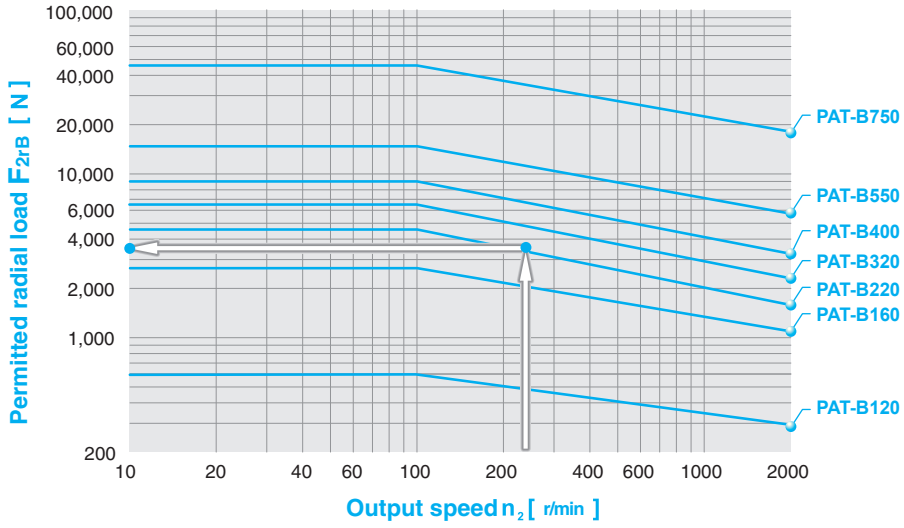
Permitted Radial and Axial Loads on Output Shaft



F_{2r} **Radial load**
F_{2a} **Axial load**

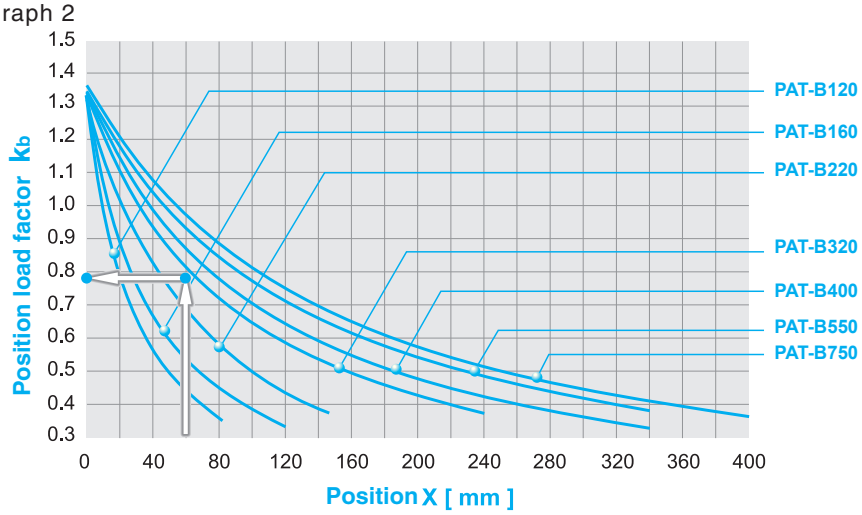
The permitted radial and axial loads on the output shaft of the gearbox depend on the design of the gearbox supporting bearings. Double row angular contact ball bearings offer longevity and can withstand heavy radial and axial loads.

Graph 1



Graph 1 shows the permitted radial load when radial load F_{2r} is applied to the center (X = L/2) of the output shaft. Determine the permitted radial load from the frame no. and output speed.

Graph 2



Graph 2 shows the position load factor k_b when radial load F_{2r} is applied to a non-center position (X > L/2 or X < L/2) of the output shaft.
Determine the position load factor k_b from the frame no. and position: X.
Corrected permitted radial load:

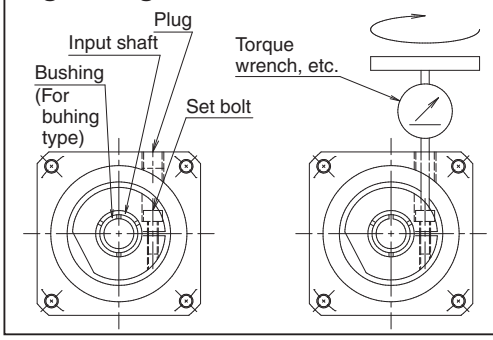
$$F'_{2rB}=k_b \times F_{2rB}$$

Motor Mounting Procedures

1. For smooth motor shafts

(1) Set the gearbox so that the mounting surface is on top.
(2) Remove the plug from the adapter and turn the input shaft so that the bolt head aligns with the plug hole.
(3) Use an Allen key wrench to check that the set bolt is loose.
(4) Thoroughly remove dust, rust-preventive oil on the motor shaft, the input shaft bore and inner / outer surfaces of the bushing (when bushing type).
(5) Insert the motor shaft into the input shaft bore. Make sure the motor shaft is not inclined. Otherwise, the shaft will bind in the bore and will not mount properly.
(6) After inserting the spigot facing completely, fasten the motor bolts to the adapter with appropriate tightening torque.

Tightening the set bolt



(7) Tighten the set bolt using a torque wrench or similar tool with the tightening torque listed in the table. Failure to apply the proper amount of torque may cause the set bolt to loosen. If this occurs, the motor shaft may slip and cause operating failures. Do not apply Loctite or any other locking adhesive to the set bolt. Doing so will prevent the bolt from being tightened to its appropriate torque and result in an insufficient clamp.
(8) Attach the plug. This completes the motor set up procedure.

Unexpected shock may cause the interlocking surfaces of the clamp to slip. Furnish a separate safety mechanism when using for lifting and hoisting applications.

● Set bolt tightening torque

Gearbox frame no.		Motor shaft diameter mm	Bolt size mm	Width across flats mm	Tightening torque N·m
PAT-B120	1 stage	≤11	M3 ×0.5P ×8L	2.5	2.1
	2 stages	≤11	M3 ×0.5P ×8L	2.5	2.1
PAT-B160	1 stage	≤14	M4 ×0.7P ×12L	3	4.9
	2 stages	≤11	M3 ×0.5P ×8L	2.5	2.1
PAT-B220	1 stage	≤24	M5 ×0.8P ×14L	4	9.8
	2 stages	≤14	M4 ×0.7P ×12L	3	4.9
PAT-B320	1 stage	≤32	M6 ×1P ×16L	5	17
	2 stages	≤24	M5 ×0.8P ×14L	4	9.8
PAT-B400	1 stage	≤38	M8 ×1.25P×20L	6	41
	2 stages	≤32	M6 ×1P ×16L	5	17
PAT-B550	1 stage	≤48	M10×1.5P ×25L	8	80
	2 stages	≤38	M8 ×1.25P×20L	6	41
PAT-B750	1 stage	≤55	M12×1.75P×30L	10	139
	2 stages	≤48	M10×1.5P ×25L	8	80

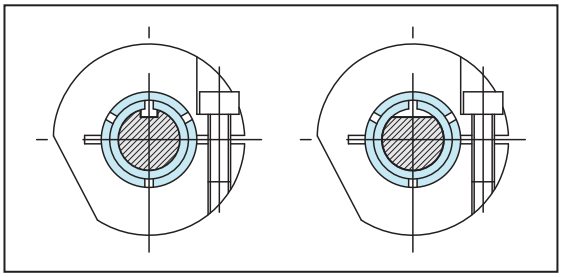
* Tightening torque for bolts should be between x1.0 and x1.2 the above figures.

●Motor mounting bolt tightening torque

Bolt size mm	Width across flats mm	Tightening torque N·m
M3 ×0.5P	2.5	1.8
M4 ×0.7P	3	4.1
M5 ×0.8P	4	8.2
M6 ×1P	5	14
M8 ×1.25P	6	34
M10×1.5P	8	67
M12×1.75P	10	116
M14×2P	12	186
M16×2P	14	286

2. Mounting a keyed/flatted motor

Keyed/flatted motor shafts can be used with clamp type just like smooth shafts by removing the key.
Set the keyway/flat, each slit, and set bolt on the motor shaft as shown in the figure on the right.
Otherwise, assemble using the same procedures for smooth shafts.



Handling Precautions

1. Upon delivery

Check the following items and contact the distributor if you find any defects.
(1) Verify the model number engraved on the gearbox corresponds to your order.
(2) Visually inspect for damage sustained during transport.
(3) Make sure there are no loose screws or bolts.

* When contacting the distributor, note (1) the serial number and (2) model number engraved on the gearbox.

2. Transporting

When transporting this product, use the mounting holes in the gearbox and keep the gearbox balanced when hoisting.

For details, refer to the instraction manual supplied with the product.

Daily Maintenance

(1) Make sure the surface of the gearbox is 90 °C or less.

(2) Regularly check the clamp bolt for loosening.

Selecting a Coupling for the Output Shaft

When selecting couplings for Tsubaki PAT gear reducers, we recommend our ECHT-FLEX Coupling NES Series.

Features

(1) No backlash
(2) High torsional stiffness
(3) Low moment of inertia
(4) Clamp-on design for easy mounting
(Can also be mounted on keyed shafts.)
(5) Environmentally friendly

Select the coupling size from the table below based on the frame number of the gearbox, input speed, allowable maximum torque, gearbox output shaft diameter, and mating shaft diameter. Depending on conditions of your application, it may be necessary to include the service factor in the allowable maximum torque. For details, refer to our brochure, "ECHT-FLEX Coupling NES Series". In addition to the NES Series, we offer other couplings that can be used with our Tsubaki PAT gear reducers. Refer to the Tsubaki "Couplings", or visit our website.

Model Number

NES 100 W - D 8 C × N 20 C

Series | Size | Spacer type | Hub type | Shaft bore (mm) | Clamp shaft bore

Hub type D: low inertia hub
N: Straight hub
Shaft bore (mm)
(Specify 6.3 for a bore diameter of 6.35 mm, or 9.5 for 9.525 mm.)
* Specify the smaller diameter first.

Straight hub type

Model No.	Allowable torque N·m (kgf·m)	Maximum speed *1 r/min	Shaft bore diameter ϕ D mm Bore range	Moment of inertia *2 kg·m²
NES07W	0.7 (0.07)	18000	4 to 6	0.32×10⁻⁶
NES15W	1.5 (0.15)	18000	4 to 8	0.90×10⁻⁶
NES20W	2.0 (0.20)	18000	5 to 10	2.7 ×10⁻⁶
NES30W	3.0 (0.31)	18000	6 to 16	8.0 ×10⁻⁶
NES50W	5.0 (0.51)	18000	6 to 16	14 ×10⁻⁶
NES70W	7.0 (0.71)	18000	8 to 20	21 ×10⁻⁶
NES100W	10 (1.0)	15000	8 to 22	47 ×10⁻⁶
NES250W	25 (2.6)	10000	10 to 25	140 ×10⁻⁶
NES800W	80 (8.2)	10000	14 to 30	320 ×10⁻⁶
NES1300W	130 (13)	10000	20 to 35	1100 ×10⁻⁶
NES2000W	200 (20.4)	9000	25 to 45	1700 ×10⁻⁶
NES3000W	300 (30.6)	8000	35 to 50	2960 ×10⁻⁶

Low inertia hub type

Model No.	Allowable torque N·m (kgf·m)	Maximum speed *1 r/min	Shaft bore diameter ϕ D mm Bore range	Moment of inertia *2 kg·m²
NES50W	5.0 (0.51)	18000	5 to 10	7.1×10⁻⁶
NES70W	7.0 (0.71)	18000	8 to 14	12.8×10⁻⁶
NES100W	10 (1.0)	15000	8 to 15	28.8×10⁻⁶
NES250W	25 (2.6)	10000	10 to 20	83.1×10⁻⁶
NES800W	80 (8.2)	10000	14 to 24	188 ×10⁻⁶
NES1300W	130 (13)	10000	19 to 32	671 ×10⁻⁶
NES2000W	200 (20.4)	9000	25 to 35	1230 ×10⁻⁶
NES3000W	300 (30.6)	8000	32 to 42	2230 ×10⁻⁶

*1. The maximum rotating speed does not take dynamic balance into account.
2. The moment of inertia is given for the maximum bore diameter.
3. The output shaft on the PAT-B120 is finished to a j6 tolerance. If you are considering using an NES coupling, contact us.

Technical Data Form (for inquiries)

1. Machine and application

(1) Machine name

(2) Application

* To explain your application in detail, attach a layout drawing and any other relevant application study documents.

2.Drive motor

(1) Manufacturer

(2) Series, model number

(3) Rated output kW

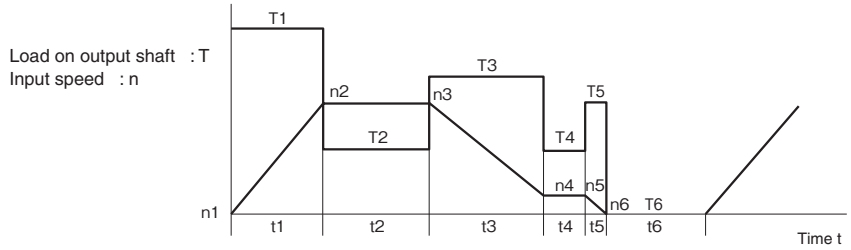
(4) Rated speed r/min Max. speed r/min

(5) Rated torque N·m Max. torque N·m

(6) Motor output dimensions - Attach motor outline drawing.

* Specify whether motor is keyed, has oil seals, etc. Tapered shafts may not be used.

3.Motion profile



Example

Time sec	Motion	Input speed r/min	Load on output shaft N•m
t 1	Acceleration	n 1 → n 2	T 1
t 2	Constant	n 2	T 2
t 3	Deceleration	n 3 → n 4	T 3
t 4	Constant 2	n 4	T 4
t 5	Deceleration 2	n 5 → n 6	T 5
t 6	Stop	n 6	T 6

Cycle time=Σt1 to t 6

Time sec	Motion	Input speed r/min	Load on output shaft N•m

Cycle time=

4. Gearbox specifications and operating conditions

(1) Type S: In line, R: Right angle

(2) Ratio 1/

(3) Output shaft K: keyed (Standard)

(4) Backlash P2: standard, P1: reduced

(5) Radial load N Position X = mm (See page 34)

(6) Axial load N

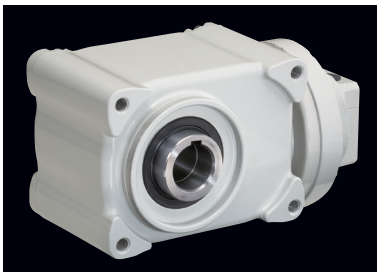
(7) Others

Complete this form and fax it to one of the sales offices listed on the back cover of this brochure.

Tsubaki
TERVO Series — Gear Reducers for Servo Motors

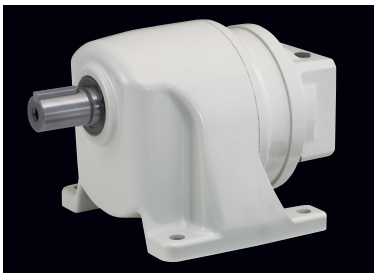
TERVO series offers a line of general-purpose gear heads for servo motors from various manufacturers. Available from 0.1 to 7.0 kW with ratios of 1/5 to 1/200 (choose either parallel or right-angle shafts, hollow or solid, hypoid or worm gear.)

Ideal for general-purpose speed control applications, feedback-based torque control applications, and positioning in hoisting and lifting applications.

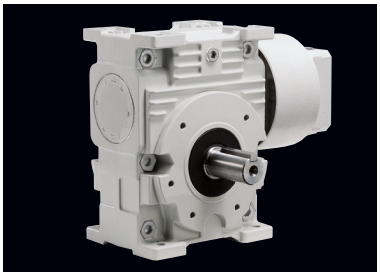


HMTK H type
Hypoid gear head

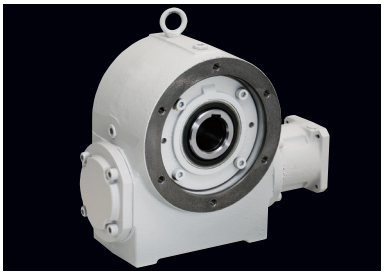
GMTK U type
Helical gear head



GMTK L type
Helical gear head



EWMK type
Worm gear head



SWMK type
Worm gear head

Limited Warranty

Tsubaki E&M Co.: hereinafter referred to as “Seller”
Customer: hereinafter referred to as “Buyer”
Goods sold or supplied by Seller to Buyer: hereinafter referred to as “Goods”

1. Warranty period without charge

18 months effective the date of shipment or 12 months effective the first use of Goods, including installation of Goods to Buyer’s equipment or machine - whichever comes first.

2. Warranty coverage

Should any damage or problem with the Goods arise within the warranty period, given that the Goods were operated and maintained according to the instructions provided in the manual, Seller will repair and replace at no charge once the Goods are returned to the Seller.

This warranty only covers individual Goods supplied by the Seller to the Buyer and therefore does not include the following:

(1) Any costs related to the removal or re-installation of Goods from the Buyer’s equipment or machine to repair or replace parts.
(2) Cost to transport Buyer’s equipment or machines to replace or repair.
(3) Costs to reimburse any profit loss due to any repair or damage and consequential losses caused by the Buyer.

3. Warranty with charge

Seller will charge for any investigation and repair of Goods (even during the warranty period without charge) caused by:

(1) Improper installation by failing to follow the instruction manual.
(2) Insufficient maintenance or improper operation by the Buyer.
(3) Incorrect installation of Goods onto other equipment or machines.
(4) Structure change of the Goods by any modifications or alterations by the Buyer.
(5) Any repair by engineers other than the Seller or those designated by the Seller.
(6) Operation in an inappropriate environment not specified in the manual.
(7) Force Majeure or forces beyond the Seller’s control such as a natural disaster and injustices committed by a third party.
(8) Secondary damage or problems incurred by the Buyer’s equipment or machines.
(9) Defective parts supplied or specified by the Buyer.
(10) Wear, tear or deterioration of parts including bearings and oil seals.
(11) Loss or damage not liable to the Seller.

⚠ Safety precautions

(General)

- Comply with the required safety regulations where the product is set or used. (Ordinance on Labor Safety Law by government, electrical system technical standards, building standard laws, etc.)
- To ensure optimum performance is obtained from the product, it is necessary to read and understand the instructions and safety precautions contained in the manual.
  If the instruction manual is not at hand, request one from the distributor where you purchased the product with product name and model number.
  This manual should remain with the product at all times, including when redistributed.
  Make sure this manual is available to every person who operates the product.

(Selection)

- Select the products which are suitable for the usage environment and application.
- When using with equipment for transporting humans or an elevating device, install a suitable protection device on the equipment for safety purposes. Otherwise an accident resulting in death, injury or damage to the equipment may occur due to accidental falling.
- When the product is used for food processing machinery, install devices such as oil pans to prevent grease from leaking. Lubricant oil can damage food or other such products.

TSUBAKIMOTO CHAIN CO.

Japan	Headquarters	+81 6-6441-0011	http://tsubakimoto.com

Global Group Companies

AMERICAS

United States of America	U.S. TSUBAKI POWER TRANSMISSION, LLC	+1 847-459-9500	http://www.ustsubaki.com/
Brazil	TSUBAKI BRASIL EQUIPAMENTOS INDUSTRIAIS LTDA.	+55 11-3253-5656	http://tsubaki.ind.br/
Canada	TSUBAKI of CANADA LIMITED	+1 905-676-0400	http://tsubaki.ca/

EUROPE

Netherlands	TSUBAKI EUROPE B.V.	+31 78-6204000	http://tsubaki.eu/
France	KABELSCHLEPP FRANCE S.A.R.L.	+33 1-34846365	http://kabelschlepp.fr/
Germany	TSUBAKI DEUTSCHLAND GmbH	+49 8105-7307100	http://tsubaki.de/
	TSUBAKI KABELSCHLEPP GmbH	+49 2762-4003-0	http://kabelschlepp.de/
Italy	KABELSCHLEPP ITALIA S.R.L.	+39 0331-350962	http://kabelschlepp.it/
Russia	OOO TSUBAKI KABELSCHLEPP	+7 499-4180212	http://kabelschlepp.ru/
United Kingdom	TSUBAKIMOTO U.K. LTD.	+44 1623-688-700	http://tsubaki.eu/

INDIAN OCEAN RIM

Singapore	TSUBAKIMOTO SINGAPORE PTE. LTD.	+65 6861-0422/3/4	http://tsubaki.sg/
Australia	TSUBAKI AUSTRALIA PTY. LTD.	+61 2-9704-2500	http://tsubaki.com.au/
India	TSUBAKI INDIA POWER TRANSMISSION PTE. LTD.	+91 44-4231-5251	http://tsubaki.sg/
Indonesia	PT. TSUBAKI INDONESIA TRADING	+62 21-571-4230/1	http://tsubakimoto.co.id/
Malaysia	TSUBAKI POWER TRANSMISSION (MALAYSIA) SDN. BHD.	+60 3-7859-8585	http://tsubaki.sg/
New Zealand	TSUBAKI AUSTRALIA PTY LIMITED - NEW ZEALAND BRANCH	+64 275-082-726	http://tsubaki.com.au/
Philippines	TSUBAKIMOTO SINGAPORE PTE. LTD. - PHILIPPINES REPRESENTATIVE OFFICE	+63 2-464-7129	http://tsubaki.ph/
Thailand	TSUBAKIMOTO (THAILAND) CO., LTD.	+66 2-262-0667	http://tsubaki.co.th/
Vietnam	TSUBAKIMOTO SINGAPORE PTE. LTD. - VIETNAM REPRESENTATIVE OFFICE	+84 8-3999-0131/2	http://tsubaki.net.vn/

EAST ASIA

Korea	TSUBAKIMOTO KOREA CO., LTD.	+82 2-2183-0311	http://tsubakimoto-tck.co.kr/
Taiwan	TAIWAN TSUBAKIMOTO CO.	+886 33-293827/8/9	http://tsubakimoto.com.tw/

CHINA

China	TSUBAKIMOTO CHAIN (SHANGHAI) CO., LTD.	+86 215396-6651/2	http://tsubaki.cn/

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