

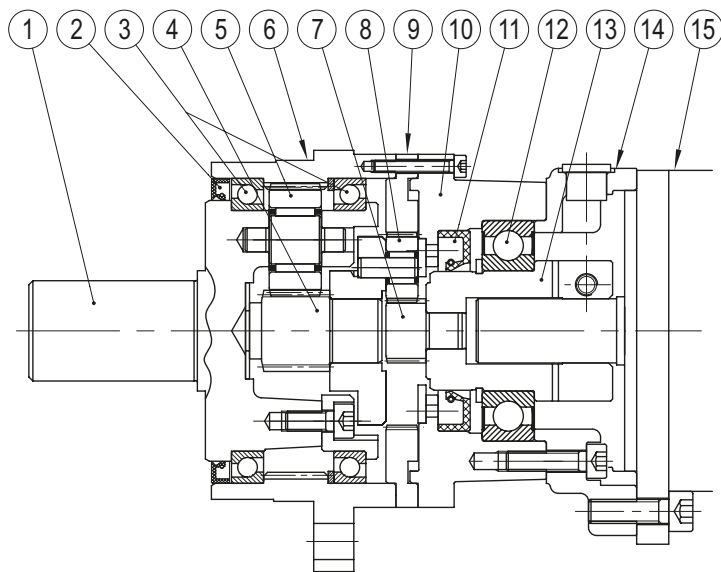
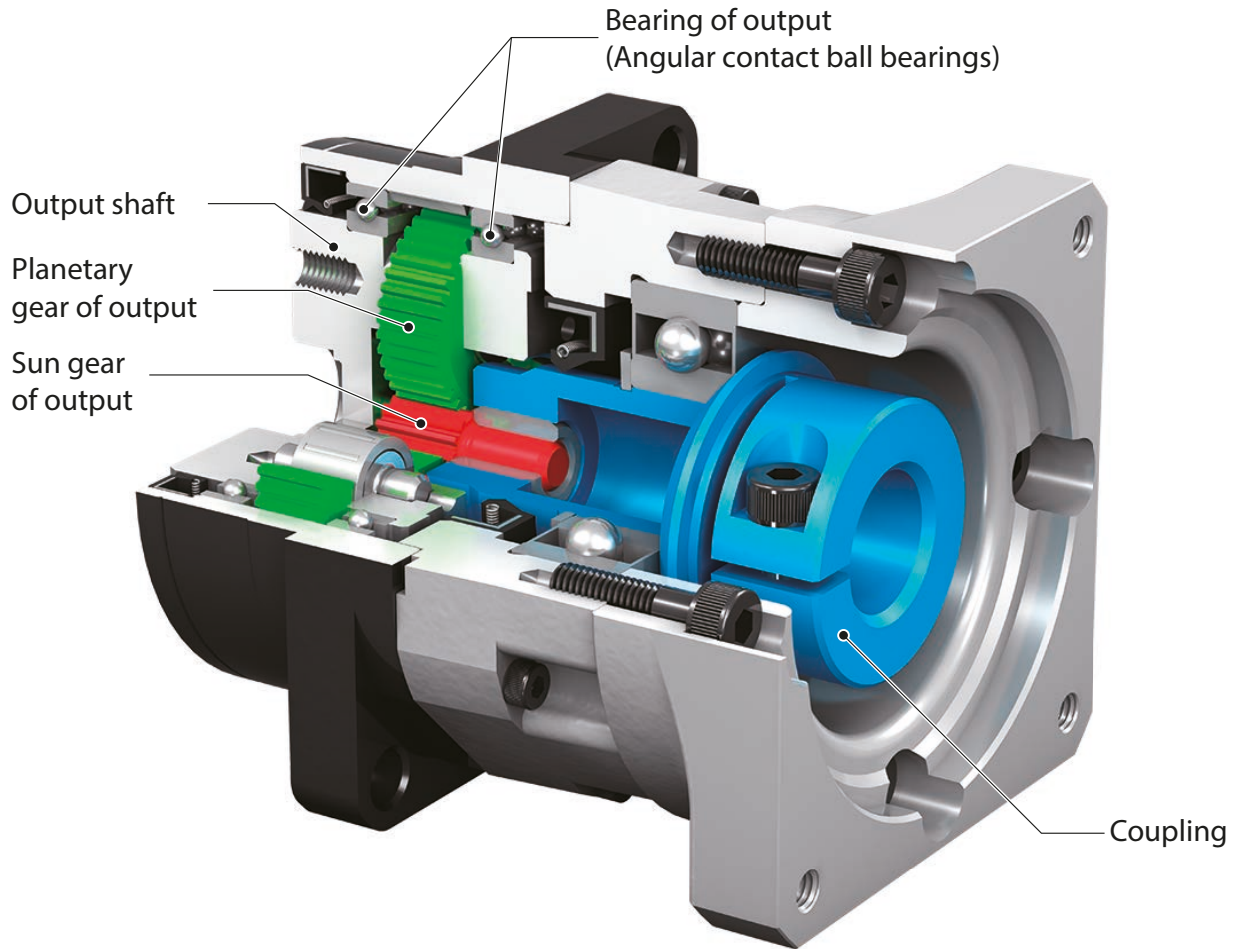
IB Series P1 Type

Planetary Gear Reducer
for Servo Motor

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Structure



Number	Part Name
1	Output Shaft
2	Oil Seal
3	Bearing of Output
4	Sun Gear of Output
5	Planetary Gear of Output
6	Casing with Internal Gear
7	Sun Gear of Input
8	Planetary Gear of Input
9	Internal Gear of Input
10	Joint Cover
11	Oil Seal
12	Input Shaft Bearing
13	Coupling
14	Adaptor Plate
15	Motor (Provided by Customers)

Fig. 1

Features

Compactness

The casing with internal gears makes it compact and highly rigid.

High Precision and High Rigidity

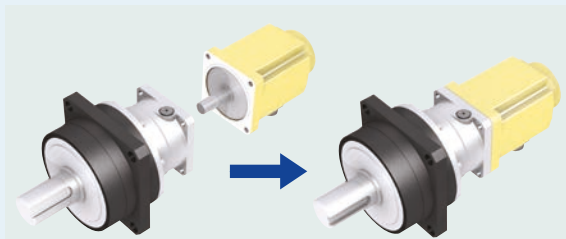
Large diameter precision angular ballbearing, supporting output shaft, allows large radial load with compact casing.

Compatible with Major Servo Motor Manufacturers

The motor adapter corresponds to the main motor of major servo motor manufacturers.

Simple Assembly

Simple assembly. Directly connect servo motor and reducer with bolt (provided by customer) after delivery. Tighten motor shaft with hexagon wrench. Ready for immediate use.



Servo motor keyless type



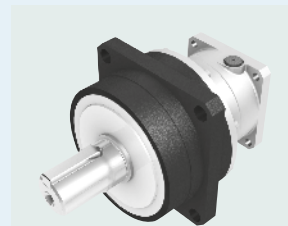
Input-side clamp

Output Shaft Variation

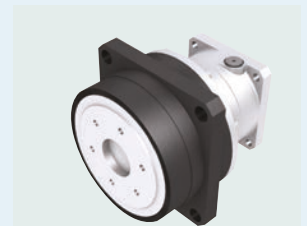
Three variations available to match customers' needs. Optimal selection possible for your application.



Solid Shaft (Keyless)



Solid Shaft (With key)



Flange shaft

Specifications

- Backlash 3 minutes, 15 minutes
- Rated torque 10.5 to 101 N • m
- Motor capacity 50 to 5,000 W
- Reduction ratios 3.7, 5, 9, 11, 15, 21, 33, 45, 81
- Input speed 6000 r/m (frame size P110, P120)
- Reduction method Planetary gear mechanism

Applications

- Material handling robots
- Robot peripherals
- FA equipment related
- Semiconductor manufacturing equipment
- Machine tools
- Loader operation and shaft drive
- Packaging equipment (bag manufacturing equipment, pillow packaging equipment)
- Woodworking equipment
- Medical equipment
- Monitoring cameras
- Bending machines
- Inspection equipment
- Measurement equipment
- Laser processing equipment

Sumitomo's Motion Control Drive can be widely applied in fields where precise control is required.

Application Examples


Recommended models

- F** Cyclo reducer for precision control
- IB** IB series
- SV** Cyclo reducer for servo motors



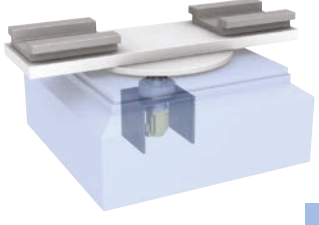
IB
SV

Machine tool peripherals
Loader, unloader



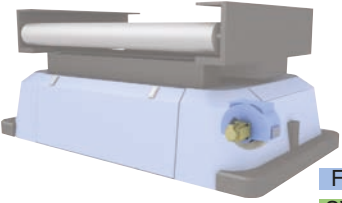
F
IB

Industrial robots
Axis Driving, robot sliders



F

Machine tools
Auto pallet changer drive



F
SV

FA equipment (AGV drive)



F
IB

Machine tools
Magazine drive




F
IB
SV

Machine tools
Auto pallet pool drive



IB






Packaging equipment
(pillow packaging equipment)



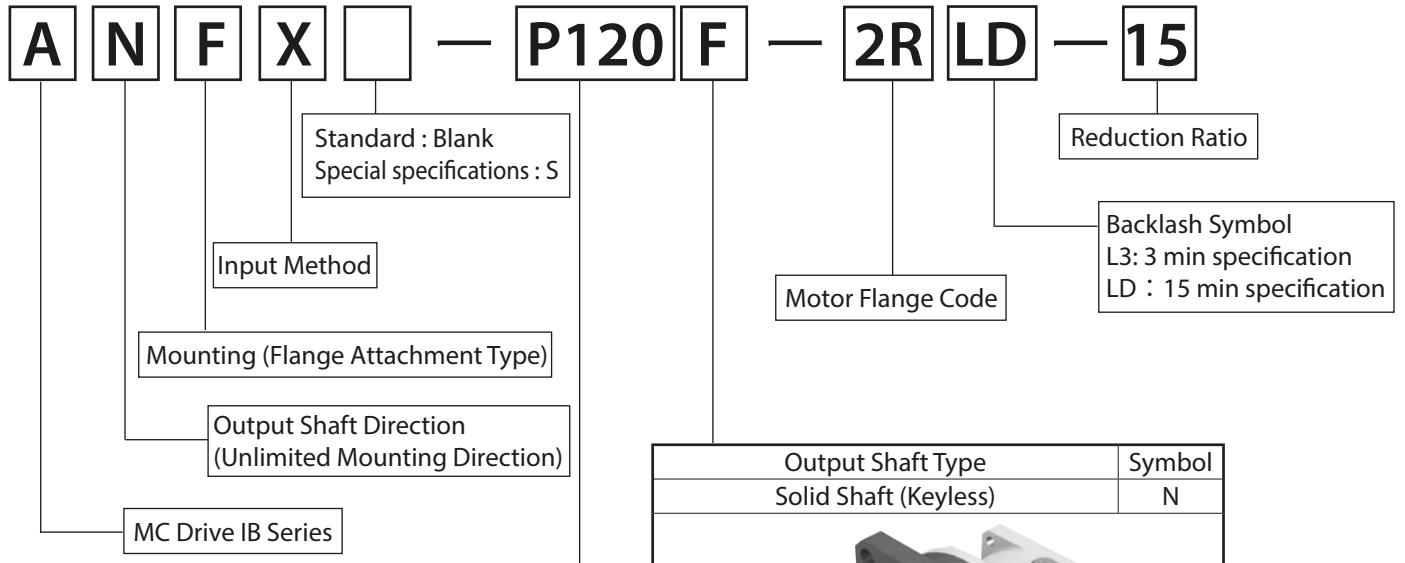
F
IB

Liquid crystal transfer robot
Axis Driving, robot sliders

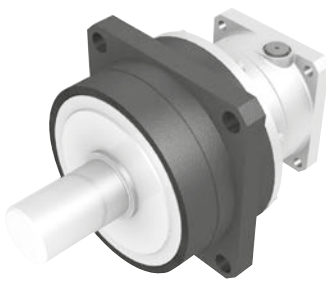
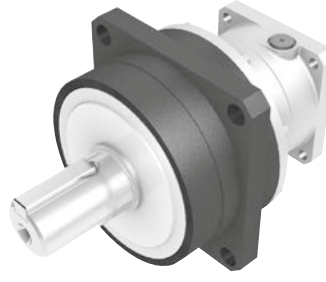
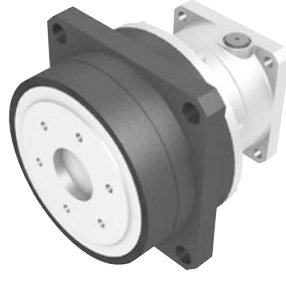
MCD product lineup

Cyclo reducer for precision control	Planetary gear reducer for servo motors IB series			Cyclo reducer for servo motors
Component types for high-precision positioning				Low backlash series Standard series
	PE type Low Price and Short Delivery Time 	P2 type Large capacity helical gear 	PK1 type Right angle shaft 	
Allowable peak torque 336–12500 N·m Reduction ratio 29–283 Lost motion 0.5–1.0 arc min	Motor capacity 50W–5.0 kW Reduction ratio 3–81 Backlash 15 min.	Motor capacity 0.5–37 kW Reduction ratio 4–100 Backlash 3 min.	Motor capacity 0.2–5.0 kW Reduction ratio 6–243 Backlash 6/15 min.	Motor capacity 0.2–9.0 kW Reduction ratio 6–87 Backlash 6 min. (Low backlash series)

Nomenclature



Type and Frame Size	
P	110
	120
	130

Output Shaft Type	Symbol
Solid Shaft (Keyless)	N
	
Solid Shaft (with Key)	W
	
Flange Shaft	F
	

Standard Specification, Construction, and Mechanism

Standard Specification

Backlash	Initial backlash setting is 3 or 15-minute.
Efficiency	90% or more at rated output torque (with reduction ratio 3.7, 5, 9)
Noise Level	70dB(A) 0.5m *Varies depending on models and mounting condition.
Lubrication system	Grease lubrication The unit is filled with grease at the time of shipping. It is ready for immediate use.
Reduction system	Planetary gear mechanism Single stage type (Reduction Ratio: 3.7, 5, 9) Double stage type (Reduction Ratio: 11, 15, 21, 33, 45, 81)
Output shaft rotation direction	Same direction as the rotation direction of input gear.
Material	Case with internal gear and gear: Chrome-Molybdenum Steel Joint cover, Adapter plate: Aluminum alloy Output and input shaft: S45C
Mounting location	Indoor (without dust and water)
Ambient temperature	0–40°C Consult us when the operation condition exceeds the above and when special grease is necessary such as food manufacturing machine.
Ambient humidity	85% or less. There should be no condensation.
Altitude	1000 m or below
Ambient atmosphere	There should be no corrosive gases, explosive gases, vapor, or dust.
Mounting angle	All angles possible (no limitation)
Paint	Black oxide coating for housing with internal gear Output shaft comes with rustproof treatment at the time of shipping.
Actual reduction ratio	The actual reduction ratio is 3/11 for 3.7. For others are integer reduction ratios.
Surface temperature of the reducer	80°C or below. Consult us when operating continuously.

Selection Table 1 (Frame Size Combination Table for Each Motor Rated Speed)

Rated Motor Speed 1000 (r/min)

Servo Motor Capacity (W)	Reduction Ratio								
	3.7 (11/3)	5	9	11	15	21	33	45	81
50								●	P120
100			P110			●	P120		P130
200									●
300				P120					
400							●	●	
500									
600				P130					
750						●			
1000									
1200		●							
1500									
2000	P130								
2500									
3000									
3500									
4000									
4500									
5000									

Rated Motor Speed 1500 (r/min)

Servo Motor Capacity (W)	Reduction Ratio								
	3.7 (11/3)	5	9	11	15	21	33	45	81
50									P120
100			P110					●	●
200						●			P130
300									●
400				P120				P130	
500								●	
600									
750									
1000				P130					
1200									
1500									
2000									
2500	P130								
3000									
3500									
4000									
4500									
5000									

Rated Motor Speed 2000 (r/min)

Servo Motor Capacity (W)	Reduction Ratio								
	3.7 (11/3)	5	9	11	15	21	33	45	81
50									●
100			P110					●	P120
200						●			
300			●				P120	●	P130
400									●
500				P120			P130		
600									
750									
1000									
1200					P130				
1500									
2000									
2500									
3000	P130								
3500									
4000									
4500									
5000									

Rated Motor Speed 3000 (r/min)

Servo Motor Capacity (W)	Reduction Ratio								
	3.7 (11/3)	5	9	11	15	21	33	45	81
50									●
100			P110						P120
200								●	●
300							●		
400									P130
500									●
600					P120		P130		
750									
1000									
1200									
1500					P130				
2000									
2500									
3000									
3500									
4000									
4500									
5000									

Rated Motor Speed 4000 (r/min)

Servo Motor Capacity (W)	Reduction Ratio								
	3.7 (11/3)	5	9	11	15	21	33	45	81
50									●
100									●
200			P110					●	●
300							●	●	●
400						●			
500									
600									
750				P120				P130	●
1000									
1200									
1500									
2000									
2500					P130				
3000									
3500									
4000									
4500									
5000									

Note 1. Refer to Selection Table 2 (on pages 10-26) for frame size combination for each servo motor manufacturer.

2. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

3. Refer to Selection Table 3 (on page 29) for %ED of each speed.

4. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

5. In the case of using a combination of $\frac{1}{3}$, make a selection after checking the no load running torques on page 9.

In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

Selection Table 1 (Frame Size Combination Table for Each Motor Rated Speed)

No Load Running Torque [SI Unit]

Frame Size	Unit	Reduction Ratio								
		3.7 (11/3)	5	9	11	15	21	33	45	81
P110	N·m	0.25	0.20	0.16	0.20			0.14		
P120		0.60	0.40	0.30	0.35			0.26		
P130		1.00	0.70	0.55	0.60			0.45		

No Load Running Torque [Engineering Unit]

Frame Size	Unit	Reduction Ratio								
		3.7 (11/3)	5	9	11	15	21	33	45	81
P110	kgf·m	0.025	0.020	0.016	0.020			0.014		
P120		0.061	0.041	0.031	0.036			0.027		
P130		0.102	0.071	0.056	0.061			0.046		

Note 1. Torque necessary at the input side to rotate the reducer at no load condition.

2. This is the representative value when the ambient temperature is 20°C.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

1. FANUC Ltd.

β is Series (Rated speed: 4000–1500 r/min) ... Applies to torque at rated speed

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code	
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81		
50	β iS0.2/5000	4000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	2D	
100	β iS0.3/5000	4000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	2D	
130	β iS0.4/5000	4000	P110	P110	P110	P110	P110	P110	P110	P110	P120 Δ	2H	
500	β iS2/4000	4000	P110	P110	P120	P120	P120	P120	P120	P120●	P120●	-	2J
750	β iS4/4000	3000	P120	P120	P120	P120	P120	P120●	P130	-	-	0V	
1200	β iS8/3000	2000	P120	P120	P130	P130	P130	P130	-	-	-	7X	
1400	β iS12/2000	2000	P120	P120	P130	P130	P130	-	-	-	-	7Z	
1800	β iS12/3000	2000	P120	P120	P130	P130●	P130●	-	-	-	-	7Z	
2500	β iS22/2000	2000	P130	P130	-	-	-	-	-	-	-	0X	
3000	β iS22/3000	2000	P130	P130	-	-	-	-	-	-	-	0X	
3000	β iS30/2000	2000	P130	P130	-	-	-	-	-	-	-	0X	
3000	β iS40/2000	1500	P130●	P130●	-	-	-	-	-	-	-	0X	

* For straight shafts only. Not for tapered shafts.

α is Series (Rated speed: 4000–3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
750	α iS2/5000	4000	P110	P110	P120	P120	P120	P120	P130	P130	-	2J
1000	α iS4/5000	4000	P120	P120	P120	P120	P120	P120	P130	P130	-	0V
2500	α iS8/4000	4000	P120	P120	P130	P130	-	-	-	-	-	7X
2700	α iS12/4000	3000	P120●	P120●	P130●	-	-	-	-	-	-	7Z
4500	α iS22/4000	3000	P130	P130●	-	-	-	-	-	-	-	0X
5500	α iS30/4000	3000	P130●	P130●	-	-	-	-	-	-	-	0X
5500	α iS40/4000	3000	P130●	P130●	-	-	-	-	-	-	-	0X

* For straight shafts only. Not for tapered shafts.

Dimension drawings Page number

(Page)

Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load and axial load for each frame size.

2. In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9).

In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

FANUC Ltd.

β iSc Series (Rated speed: 4000–2000 r/min) ... Applies to torque at rated speed

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
500	β iSc2/4000	4000	P110	P110	P110●	P120●	P120	P120	P120●	P120●	P130●	2J
750	β iSc4/4000	3000	P120	P120	P120	P120	P120	P120●	P130	P130	-	0V
1200	β iSc8/3000	2000	P120	P120	P130	P130	P130	P130	-	-	-	7X
1400	β iSc12/2000	2000	P120	P120	P130	P130	-	-	-	-	-	7Z

* For straight shafts only. Not for tapered shafts.

β iF Series (Rated speed: 3000–1500 r/min) ... Applies to torque at rated speed

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
750	β iF4/3000	3000	P120	P120	P120	P120	P120	P120●	P130	P130●	-	7X
1200	β iF8/2000	2000	P120	P120	P130	P130	P130	P130	-	-	-	7Z
1400	β iF12/2000	2000	P130	P130	P130	P130	P130	-	-	-	-	0X
2500	β iF22/2000	2000	P130	P130	P130●	-	-	-	-	-	-	0X
3000	β iF30/2000	1500	P130●	P130●	-	-	-	-	-	-	-	0X

* For straight shafts only. Not for tapered shafts.

α iF Series (Rated speed: 4000–3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
750	α iF2/5000	4000	P110	P110	P120	P120	P120	P120	P130	P130	P130●	2J
1400	α iF4/4000	4000	P120	P120	P120	P120	P120	P130	P130●	P130●	P130●	7X
1600	α iF8/3000	3000	P120	P120	P130	P130	P130	P130●	-	-	-	7X
3000	α iF12/3000	3000	P130	P130	P130	-	-	-	-	-	-	0X
4000	α iF22/3000	3000	P130	P130	-	-	-	-	-	-	-	0X

* For straight shafts only. Not for tapered shafts.

Dimension drawings Page number

(Page)

Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9).

In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

2. Yaskawa Electric Corporation

Σ-7 Series SGM7J model (Rated speed: 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	SGM7J-A5A	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2D
100	SGM7J-01A	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
150	SGM7J-C2A	3000	P110	P110	P110	P110	P110	P110	P110	P110●	P120	2D
200	SGM7J-02A	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	SGM7J-04A	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2R
600	SGM7J-06A	3000	P110	P110	P120	P120	P120	P120	P130	P130	-	2R
750	SGM7J-08A	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

Σ-7 Series SGM7A model (Rated speed: 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	SGM7A-A5A	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2D
100	SGM7A-01A	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
150	SGM7A-C2A	3000	P110	P110	P110	P110	P110	P110	P110	P110●	P120	2D
200	SGM7A-02A	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	SGM7A-04A	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2R
600	SGM7A-06A	3000	P110	P110	P120	P120	P120	P120	P130	P130	-	2R
750	SGM7A-08A	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G
1000	SGM7A-10A	3000	P120	P120	P120	P120	P120	P130	-	-	-	1G
1500	SGM7A-15A	3000	P120	P120	P120	P130	P130	P130	-	-	-	1L
2000	SGM7A-20A	3000	P120	P120	P130	P130	P130	-	-	-	-	1L
2500	SGM7A-25A	3000	P120	P120	P130	-	-	-	-	-	-	1L
3000	SGM7A-30A	3000	P130	P130	P130	-	-	-	-	-	-	1T
4000	SGM7A-40A	3000	P130	P130	-	-	-	-	-	-	-	1T
5000	SGM7A-50A	3000	P130	P130	-	-	-	-	-	-	-	1T
7000	SGM7A-70A	3000	P130	-	-	-	-	-	-	-	-	1T

Σ-7 Series SGM7P model (Rated speed: 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
100	SGM7P-01A	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	SGM7P-02A	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120	2T
400	SGM7P-04A	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2T
750	SGM7P-08A	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7X
1500	SGM7P-15A	3000	P120	P120	P120	P130	P130	P130	-	-	-	7X

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

- Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
2. In the case of using a combination of △, make a selection after checking the no load running torques in the Selection Table 1 (on page 9). In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.
3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

Yaskawa Electric Corporation

Σ-7 Series SGM7G model (Rated speed: 1500 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code	
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81		
300	SGM7G-03A	1500	P110	P110	P120	P120	P120	P120	P120	P130	P130	-	8E
450	SGM7G-05A	1500	P110	P120	P120	P120	P120	P120	P120	P130	P130	-	8E
850	SGM7G-09A	1500	P120	P120	P130	P130	P130	P130	P130	-	-	-	7Z
1300	SGM7G-13A	1500	P120	P120	P130	P130	P130	-	-	-	-	-	7Z
1800	SGM7G-20A	1500	P120	P120	P130	-	-	-	-	-	-	-	7Z
2900	SGM7G-30A	1500	P130	P130	-	-	-	-	-	-	-	-	0X
4400	SGM7G-44A	1500	P130	-	-	-	-	-	-	-	-	-	0X

Σ-V Series SGMJV series (Rated speed: 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code	
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81		
50	SGMJV-A5**A2*	3000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	2D
100	SGMJV-01**A2*	3000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110	P110	P120 Δ	2D
200	SGMJV-02**A2*	3000	P110	P110	P110	P110	P110	P110	P110	P110 \bullet	P120	P120 \bullet	2R
400	SGMJV-04**A2*	3000	P110	P110	P110	P120	P120	P120	P120	P120	P120	P130	2R
750	SGMJV-08**A2*	3000	P120	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

Σ-V Series SGMV series (Rated speed: 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code	
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81		
50	SGMAV-A5**A2*	3000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	2D
100	SGMAV-01**A2*	3000	P110 Δ	P110	P110 Δ	P110 Δ	P110	P110 Δ	P110	P110	P110	P120 Δ	2D
200	SGMAV-02**A2*	3000	P110	P110	P110	P110	P110	P110	P110	P110 \bullet	P120	P120 \bullet	2R
400	SGMAV-04**A2*	3000	P110	P110	P110	P120	P120	P120	P120	P120	P120	P130	2R
550	SGMAV-06**A2*	3000	P110	P110	P120	P120	P120	P120	P120	P130	P130	-	2R
750	SGMAV-08**A2*	3000	P120	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

Σ-V Series SGMGV series (Rated speed: 1500 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code	
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81		
450	SGMGV-05**A2*	1500	P110	P120	P120	P120	P120	P120	P120	P130	P130	-	8E
850	SGMGV-09**A2*	1500	P120	P120	P130	P130	P130	P130	-	-	-	-	7X
1300	SGMGV-13**A2*	1500	P120	P120	P130	-	-	-	-	-	-	-	1S
2000	SGMGV-20**A2*	1500	P130	P130	-	-	-	-	-	-	-	-	7Z
3000	SGMGV-30**A2*	1500	P130	P130	-	-	-	-	-	-	-	-	0X
4400	SGMGV-44**A2*	1500	P130	-	-	-	-	-	-	-	-	-	0X

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9).

In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked \bullet .

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

3. Mitsubishi Electric Corporation

MELSERVO-J4

HG-KR Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	HG-KR053(B)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2D
100	HG-KR13(B)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	HG-KR23(B)	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	HG-KR43(B)	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2R
750	HG-KR73(B)	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

MELSERVO-J4

HG-MR Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	HG-MR053(B)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2D
100	HG-MR13(B)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	HG-MR23(B)	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	HG-MR43(B)	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2R
750	HG-MR73(B)	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

MELSERVO-J4

HG-SR Series (Rated speed 2000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
500	HG-SR52(B)	2000	P120	P120	P120	P120	P120	P120	P130	P130	-	7Z
1000	HG-SR102(B)	2000	P120	P120	P120	P130	P130	P130	-	-	-	7Z
1500	HG-SR152(B)	2000	P120	P120	P130	P130	P130	-	-	-	-	7Z
2000	HG-SR202(B)	2000	P130	P130	P130	-	-	-	-	-	-	0X
3500	HG-SR352(B)	2000	P130	P130	-	-	-	-	-	-	-	0X

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

- In the case of using a combination of △, make a selection after checking the no load running torques in the Selection Table 1 (on page 9). In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.
- Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

Mitsubishi Electric Corporation

MELSERVO-J3

HF-KP Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	HF-KP053(B)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2D
100	HF-KP13(B)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	HF-KP23(B)	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	HF-KP43(B)	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2R
750	HF-KP73(B)	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

MELSERVO-J3

HF-MP Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	HF-MP053(B)	3000	P110△	P110△	P110	P110△	P110△	P110△	P110△	P110△	P110●	2D
100	HF-MP13(B)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	HF-MP23(B)	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	HF-MP43(B)	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2R
750	HF-MP73(B)	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

MELSERVO-J3

HF-SP Series (Rated speed 2000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
500	HF-SP52(B)	2000	P120	P120	P120	P120	P120	P120	P130	P130	-	7Z
1000	HF-SP102(B)	2000	P120	P120	P120	P130	P130	P130	-	-	-	7Z
1500	HF-SP152(B)	2000	P120	P120	P130	P130	P130	-	-	-	-	7Z
2000	HF-SP202(B)	2000	P130	P130	P130	-	-	-	-	-	-	0X
3500	HF-SP352(B)	2000	P130	P130	-	-	-	-	-	-	-	0X

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of △, make a selection after checking the no load running torques in the Selection Table 1 (on page 9).

In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

Mitsubishi Electric Corporation

HP Series for Mitsubishi CNC drive system (Rated speed: 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
500	HP54	3000	P120	P120	P120	P120	P120	P120	P130	P130●	-	7Z
1000	HP104	3000	P120	P120	P120●	P120●	P120●	P130	-	-	-	7Z
1500	HP154	3000	P120	P120●	P120●	P130●	P130●	P130●	-	-	-	7Z
2200	HP224	3000	P120●	P120●	P130●	P130●	P130●	-	-	-	-	7Z
2000	HP204	3000	P130	P130	P130●	P130●	P130●	-	-	-	-	0X
3500	HP354	3000	P130●	P130●	P130●	-	-	-	-	-	-	0X
4500	HP454	3000	P130●	P130●	-	-	-	-	-	-	-	0X
7000	HP704	3000	P130●	-	-	-	-	-	-	-	-	0X

HF Series for Mitsubishi CNC drive system (Rated speed: 4000–2000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
750	HF75	4000	P120	P120	P120	P120	P120	P120	P130	P130	-	0V
1000	HF105	4000	P120	P120	P120	P120	P120	P120	P130	P130●	-	0V
500	HF54	3000	P120	P120	P120	P120	P120	P120●	P130	P130●	-	7Z
1000	HF104	3000	P120	P120	P120●	P120●	P120●	P130●	-	-	-	7Z
1200	HF123	2000	P120	P120	P130	P130	P130	P130	-	-	-	7Z
1400	HF142	2000	P120	P120	P130	P130	P130	-	-	-	-	7Z
1500	HF154	3000	P120	P120●	P120●	P130●	P130●	P130●	-	-	-	7Z
2200	HF223	2000	P120	P120	P130	-	-	-	-	-	-	7Z
2200	HF224	3000	P120●	P120●	P130●	P130●	P130●	-	-	-	-	7Z
2000	HF204	3000	P130	P130	P130●	P130●	P130●	-	-	-	-	0X
3000	HF302	2000	P130	P130	-	-	-	-	-	-	-	0X
3000	HF303	2000	P130	P130	-	-	-	-	-	-	-	0X
3500	HF354	3000	P130●	P130●	P130●	-	-	-	-	-	-	0X
4500	HF453	3000	P130●	P130●	-	-	-	-	-	-	-	0X
7000	HF703	3000	P130●	-	-	-	-	-	-	-	-	0X

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9). In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

4. Sanyo Denki Co., Ltd.

SANMOTION R Series

R2 Series (Rated speed 3000/2000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	R2*A04005	3000	P110△	P110△	P110△	P110	P110	P110△	P110△	P110△	P110●	2D
100	R2*A04010	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
	R2*A06010	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	R2*A06020	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
	R2AA08020	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2T
400	R2AA06040	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2R
	R2AA08040	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2T
550	R2AA13050	2000	P120	P120	P120	P120	P120	P120	P130	P130	-	1S
750	R2AA08075	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7P
	R2AAB8075	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	8E
1000	R2AAB8100	3000	P120	P120	P120	P120	P120	P130	-	-	-	8E
1200	R2AA13120	2000	P120	P120	P130	P130	P130	P130	-	-	-	1S
1800	R2AA13180	2000	P120	P120	P130	-	-	-	-	-	-	1S
2000	R2AA13200	2000	P130	P130	P130	-	-	-	-	-	-	1T
3500	R2AA18350	2000	P130	P130	-	-	-	-	-	-	-	0X
4500	R2AA18450	2000	P130	-	-	-	-	-	-	-	-	0X

Q1 Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
1000	Q1AA10100	3000	P120	P120	P120	P120	P120	P130	-	-	-	0W
	Q1AA12100	3000	P120	P120	P120	P120	P120	P130	-	-	-	0Y
1500	Q1AA10150	3000	P120	P120	P120	P130	P130	P130	-	-	-	0W
2000	Q1AA10200	3000	P120	P120	P130	P130	P130	-	-	-	-	0W
	Q1AA12200	3000	P120	P120	P130	P130	P130	-	-	-	-	0Y
2500	Q1AA10250	3000	P120	P120	P130	-	-	-	-	-	-	0W
3000	Q1AA12300	3000	P130	P130	P130	-	-	-	-	-	-	0Z
	Q1AA10300	3000	P130	P130	P130	-	-	-	-	-	-	1T
4000	Q1AA10400	3000	P130	P130	-	-	-	-	-	-	-	1T
5000	Q1AA10500	3000	P130	P130	-	-	-	-	-	-	-	1T

R5 Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
200	R5**06020	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	R5**06040	3000	P110	P110	P110●	P120	P120	P120	P120	P120	P130	2R
750	R5**08075	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7P

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of △, make a selection after checking the no load running torques in the Selection Table 1 (on page 9). In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

5. Panasonic Corporation

A5 Series

Low inertia MSME (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	MSME (Small Capacity)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2C
100	MSME (Small Capacity)	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2C
200	MSME (Small Capacity)	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2L
400	MSME (Small Capacity)	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2P
750	MSME (Small Capacity)	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G
1000	MSME (Middle Capacity)	3000	P120	P120	P120	P120	P120	P130	-	-	-	7B
1500	MSME (Middle Capacity)	3000	P120	P120	P120	P130	P130	P130	-	-	-	7B
2000	MSME (Middle Capacity)	3000	P120	P120	P130	P130	P130	-	-	-	-	7B
3000	MSME (Middle Capacity)	3000	P120	P120	P130	-	-	-	-	-	-	1S
4000	MSME (Middle Capacity)	3000	P130	P130	-	-	-	-	-	-	-	7Z
5000	MSME (Middle Capacity)	3000	P130	P130	-	-	-	-	-	-	-	7Z

Low inertia MSMD (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	MSMD	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2C
100	MSMD	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2C
200	MSMD	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2L
400	MSMD	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2P
750	MSMD	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7S

High inertia MHMD (Rated speed: 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
200	MHMD	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120	2L
400	MHMD	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2P
750	MHMD	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7S

Middle inertia MDME (Rated speed: 2000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
1000	MDME	2000	P120	P120	P120	P130	P130	P130	-	-	-	1S
1500	MDME	2000	P120	P120	P130	P130	P130	-	-	-	-	1S
2000	MDME	2000	P120	P120	P130	-	-	-	-	-	-	1S
3000	MDME	2000	P130	P130	-	-	-	-	-	-	-	7Z
4000	MDME	2000	P130	P130	-	-	-	-	-	-	-	0X
5000	MDME	2000	P130	-	-	-	-	-	-	-	-	0X

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

- Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
2. In the case of using a combination of △, make a selection after checking the no load running torques in the Selection Table 1 (on page 9). In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.
3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

6. Fuji Electric Co., Ltd.

ALPHA5 Series

GYS Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	GYS500D5-*B2	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	7J
100	GYS101D5-*B2	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	GYS201D5-*B2	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	GYS401D5-*B2	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	GYS751D5-*B2	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7P
1000	GYS102D5-*B2	3000	P120	P120	P120	P120	P120	P130	-	-	-	1L
1500	GYS152D5-*B2	3000	P120	P120	P120	P130	P130	P130	-	-	-	1L
2000	GYS202D5-*B2	3000	P120	P120	P130	P130	P130	-	-	-	-	1L
3000	GYS302D5-*B2	3000	P130	P130	P130	-	-	-	-	-	-	1T
4000	GYS402D5-*B2	3000	P130	P130	-	-	-	-	-	-	-	1T
5000	GYS502D5-*B2	3000	P130	P130	-	-	-	-	-	-	-	1T

GYC Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
100	GYC101D5-*B2	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	GYC201D5-*B2	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2T
400	GYC401D5-*B2	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2T
750	GYC751D5-*B2	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7A
1000	GYC102D5-*B2	3000	P120	P120	P120	P120	P120	P130	-	-	-	7Z
1500	GYC152D5-*B2	3000	P120	P120	P120	P130	P130	P130	-	-	-	7Z
2000	GYC202D5-*B2	3000	P120	P120	P130	P130	P130	-	-	-	-	7Z

GYG Series (Rated speed 2000/ 1500 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
500	GYG501C5-*B2	2000	P120	P120	P120	P120	P120	P120	P130	P130	-	7X
750	GYG751C5-*B2	2000	P120	P120	P120	P120	P120	P130	-	-	-	7X
1000	GYG102C5-*B2	2000	P120	P120	P120	P130	P130	P130	-	-	-	1S
1500	GYG152C5-*B2	2000	P120	P120	P130	P130	-	-	-	-	-	1S
2000	GYG202C5-*B2	2000	P120	P120	P130	-	-	-	-	-	-	1S
500	GYG501B5-*B2	1500	P120	P120	P120	P120	P120	P120	P130	P130	-	7X
850	GYG851B5-*B2	1500	P120	P120	P130	P130	P130	P130	-	-	-	7X
1300	GYG132B5-*B2	1500	P120	P120	P130	P130	P130	-	-	-	-	1S

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of △, make a selection after checking the no load running torques in the Selection Table 1 (on page 9).

In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

Fuji Electric Co., Ltd.

ALPHA5 Series

GYB Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
200	GYB201D5-*B2	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	GYB401D5-*B2	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	GYB751D5-*B2	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

ALPHA5 Smart Series

GYS Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	GYS500D5-*B2	3000	P110△	P110△	P110△	P110△	P110△	P110	P110△	P110△	P110●	7J
100	GYS101D5-*B2	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	GYS201D5-*B2	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	GYS401D5-*B2	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	GYS751D5-*B2	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7P
1000	GYS102D5-*B2	3000	P120	P120	P120	P120	P120	P130	-	-	-	1L
1500	GYS152D5-*B2	3000	P120	P120	P120	P130	P130	P130	-	-	-	1L
2000	GYS202D5-*B2	3000	P120	P120	P130	P130	P130	-	-	-	-	1L
3000	GYS302D5-*B2	3000	P130	P130	P130	-	-	-	-	-	-	1T

GYC Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
100	GYC101D5-*B2	3000	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	GYC201D5-*B2	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2T
400	GYC401D5-*B2	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2T
750	GYC751D5-*B2	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7A
1000	GYC102D5-*B2	3000	P120	P120	P120	P120	P120	P130	-	-	-	7Z
1500	GYC152D5-*B2	3000	P120	P120	P120	P130	P130	P130	-	-	-	7Z
2000	GYC202D5-*B2	3000	P120	P120	P130	P130	P130	-	-	-	-	7Z

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of △, make a selection after checking the no load running torques in the Selection Table 1 (on page 9). In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

Fuji Electric Co., Ltd.

ALPHA5 Smart Series

GYG Series (Rated speed 2000/ 1500 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
500	GYG501C5-*B2	2000	P120	P120	P120	P120	P120	P120	P130	P130	-	7X
750	GYG751C5-*B2	2000	P120	P120	P120	P120	P120	P130	-	-	-	7X
1000	GYG102C5-*B2	2000	P120	P120	P120	P130	P130	P130	-	-	-	1S
1500	GYG152C5-*B2	2000	P120	P120	P130	P130	-	-	-	-	-	1S
2000	GYG202C5-*B2	2000	P120	P120	P130	-	-	-	-	-	-	1S
500	GYG501B5-*B2	1500	P120	P120	P120	P120	P120	P120	P130	P130	-	7X
850	GYG851B5-*B2	1500	P120	P120	P130	P130	P130	P130	-	-	-	7X
1300	GYG132B5-*B2	1500	P120	P120	P130	P130	P130	-	-	-	-	1S

GYB Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
200	GYB201D5-*B2	3000	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	GYB401D5-*B2	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	GYB751D5-*B2	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

- In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9).
In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.
- Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

P1 Type

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

7. Toshiba Machine Co., Ltd.

BS Servo Motor

V Series

Standard Type (Rated speed 1500 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
500	VLBSV-05015**-K	1500	P120	P120	P120	P120	P120	P120	P130	P130	-	7X
1000	VLBSV-10015**-K	1500	P120	P120	P130	P130	P130	P130	-	-	-	7X
1500	VLBSV-15015**-K	1500	P120	P120	P130	-	-	-	-	-	-	7Z
2000	VLBSV-20015**-K	1500	P130	P130	-	-	-	-	-	-	-	0X
3000	VLBSV-30015**-K	1500	P130	P130	-	-	-	-	-	-	-	0X

* A keyless motor shaft is recommended.

Standard Type (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
1000	VLBSV-10030**-K	3000	P120	P120	P120	P120	P120	P130	-	-	-	7X
1800	VLBSV-18030**-K	3000	P120	P120	P130	P130	P130	-	-	-	-	7X
2400	VLBSV-24030**-K	3000	P120	P120	P130	-	-	-	-	-	-	7Z
3000	VLBSV-30030**-K	3000	P130	P130	P130	-	-	-	-	-	-	0X
4500	VLBSV-45030**-K	3000	P130	P130	-	-	-	-	-	-	-	0X

* A keyless motor shaft is recommended.

ZA Type (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	VLBSV-ZA00530**-K	3000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	2D
100	VLBSV-ZA01030**-K	3000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110	P110	P120 Δ	2D
200	VLBSV-ZA02030**-K	3000	P110	P110	P110	P110	P110	P110	P110 \bullet	P120	P120 \bullet	2R
400	VLBSV-ZA04030**-K	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
600	VLBSV-ZA06030**-K	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G
750	VLBSV-ZA07530**-K	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

* A keyless motor shaft is recommended.

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9). In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked \bullet .

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

Toshiba Machine Co., Ltd.

BS Servo Motor

T Series

Standard Type Low inertia Characteristic (Rated speed 1500 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
400	VLBST-04015**V-K	1500	P120	P120	P120	P120	P120	P120	P130	P130	-	7V
800	VLBST-08015**V-K	1500	P120	P120	P120	P130	P130	P130	-	-	-	7X
1000	VLBST-10015**V-K	1500	P120	P120	P130	P130	P130	P130	-	-	-	7X
1500	VLBST-15015**V-K	1500	P120	P120	P130	-	-	-	-	-	-	7Z
2600	VLBST-26015**V-K	1500	P130	P130	-	-	-	-	-	-	-	0X
3700	VLBST-37015**V-K	1500	P130	P130	-	-	-	-	-	-	-	0X

* A keyless motor shaft is recommended.

Standard Type Low inertia Characteristic (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
500	VLBST-05030**V-K	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	0V
800	VLBST-08030**V-K	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7V
1400	VLBST-14030**V-K	3000	P120	P120	P120	P130	P130	P130	-	-	-	7X
1800	VLBST-18030**V-K	3000	P120	P120	P130	P130	P130	-	-	-	-	7X
2400	VLBST-24030**V-K	3000	P120	P120	P130	-	-	-	-	-	-	7Z
3700	VLBST-65030**V-K	3000	P130	P130	P130	-	-	-	-	-	-	0X
5000	VLBST-55030**V-K	3000	P130	P130	-	-	-	-	-	-	-	0X
5500	VLBST-55030**V-K	3000	P130	P130	-	-	-	-	-	-	-	0X
6500	VLBST-65030**V-K	3000	P130	-	-	-	-	-	-	-	-	0X

* A keyless motor shaft is recommended.

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9).

In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked ●.

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

8. Keyence Corporation

SV Series (Rated speed 3000 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code	
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81		
50	SV-M(B)005*S	3000	P110	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 \bullet	2D
100	SV-M(B)010*S	3000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110	P110	P120 Δ	2D
200	SV-M(B)020*S	3000	P110	P110	P110	P110	P110	P110	P110	P110 \bullet	P120	P120 \bullet	2R
400	SV-M(B)040*S	3000	P110	P110	P110 \bullet	P120	P120	P120	P120	P120	P120	P130	2R
750	SV-M(B)075*S	3000	P120	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

SV Series (Rated speed 1500 r/min)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code	
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81		
850	SV-M(B)100*S	1500	P120	P120	P130	P130	P130	P130	-	-	-	-	7X
1300	SV-M(B)150*S	1500	P120	P120	P130	P130	P130	-	-	-	-	-	1S
1800	SV-M(B)200*S	1500	P120	P120	P130	-	-	-	-	-	-	-	7Z
2900	SV-M(B)300*S	1500	P130	P130	-	-	-	-	-	-	-	-	0X
4400	SV-M(B)500*S	1500	P130	-	-	-	-	-	-	-	-	-	0X

Dimension drawings Page number

(Page)

Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

- In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9).
In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.
- Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked \bullet .

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

9. OMRON Corporation

G5 Series R88M- (Rated speed 3000 r/min, AC200V)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
50	K05030H/T	3000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	2D
100	K10030H/T	3000	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110 Δ	P110	P110	P120 Δ	2D
200	K20030H/T	3000	P110	P110	P110	P110	P110	P110	P110 \bullet	P120	P120 \bullet	2L
400	K40030H/T	3000	P110	P110	P110	P120	P120	P120	P120	P120	P130	2P
750	K75030H/T	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7S
1000	K1K030H/T	3000	P120	P120	P120	P120	P120	P130	-	-	-	7B
1500	K1K530H/T	3000	P120	P120	P120	P130	P130	P130	-	-	-	7B
2000	K2K030H/T	3000	P120	P120	P130	P130	P130	-	-	-	-	7B
3000	K3K030H/T	3000	P130	P130	P130	-	-	-	-	-	-	1S
4000	K4K030H/T	3000	P130	P130	-	-	-	-	-	-	-	7Z
5000	K5K030H/T	3000	P130	P130	-	-	-	-	-	-	-	7Z

G5 Series R88M- (Rated speed 3000 r/min, AC400V)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
750	K75030F/C	3000	P120	P120	P120	P120	P120	P120	P130	P130	-	7B
1000	K1K030F/C	3000	P120	P120	P120	P120	P120	P130	-	-	-	7B
1500	K1K530F/C	3000	P120	P120	P120	P130	P130	P130	-	-	-	7B
2000	K2K030F/C	3000	P120	P120	P130	P130	P130	-	-	-	-	7B
3000	K3K030F/C	3000	P130	P130	P130	-	-	-	-	-	-	1S
4000	K4K030F/C	3000	P130	P130	-	-	-	-	-	-	-	7Z
5000	K5K030F/C	3000	P130	P130	-	-	-	-	-	-	-	7Z

Dimension drawings Page number

(Page)

Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of Δ , make a selection after checking the no load running torques in the Selection Table 1 (on page 9).

In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked \bullet .

Selection Table 2 (Frame Size Combination Table for Each Servo Motor Manufacturers)

OMRON Corporation

G5 Series R88M- (Rated speed 2000 r/min, AC200V)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
1000	K1K020H/T	2000	P120	P120	P120	P130	P130	P130	-	-	-	1S
1500	K1K520H/T	2000	P120	P120	P130	P130	P130	-	-	-	-	1S
2000	K2K020H/T	2000	P130	P130	P130	-	-	-	-	-	-	1S
3000	K3K020H/T	2000	P130	P130	-	-	-	-	-	-	-	7Z
4000	K4K020H/T	2000	P130	P130	-	-	-	-	-	-	-	0X

G5 Series R88M- (Rated speed 2000 r/min, AC400V)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
400	K40020F/C	2000	P120	P120	P120	P120	P120	P120	P130	P130	-	7B
600	K60020F/C	2000	P120	P120	P120	P120	P120	P130	P130	-	-	7B
1000	K1K020F/C	2000	P120	P120	P120	P130	P130	P130	-	-	-	1S
1500	K1K520F/C	2000	P120	P120	P130	P130	P130	-	-	-	-	1S
2000	K2K020F/C	2000	P120	P120	P130	-	-	-	-	-	-	1S
3000	K3K020F/C	2000	P130	P130	-	-	-	-	-	-	-	7Z
4000	K4K020F/C	2000	P130	P130	-	-	-	-	-	-	-	0X

G5 Series R88M- (Rated speed 1000 r/min, AC200V & 400V)

Servo Motor Capacity (W)	Nomenclature of Servo Motor		Reduction Ratio									Motor flange code
	Type	Rated Speed (r/min)	3.7	5	9	11	15	21	33	45	81	
900	K90010H/T	1000	P120	P120	P130	P130	-	-	-	-	-	1S
2000	K2K010H/T	1000	P130	P130	-	-	-	-	-	-	-	0X
3000	K3K010H/T	1000	P130	-	-	-	-	-	-	-	-	0X

Dimension drawings Page number

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Frame Size	Output shaft type	Reduction Ratio								
		3.7	5	9	11	15	21	33	45	81
P110	Solid shaft (N, W)	34	35	36	37	38	39	40	41	42
	Flange shaft (F)	61	62	63	64	65	66	67	68	69
P120	Solid shaft (N, W)	43	44	45	46	47	48	49	50	51
	Flange shaft (F)	70	71	72	73	74	75	76	77	78
P130	Solid shaft (N, W)	52	53	54	55	56	57	58	59	60
	Flange shaft (F)	79	80	81	82	83	84	85	86	87

Note 1. Refer to Selection Table 3 (on pages 28, 30, 31) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.

2. In the case of using a combination of \triangle , make a selection after checking the no load running torques in the Selection Table 1 (on page 9). In the case where the no load running torque is larger for the selection, offering of a special specification is possible. Please contact us for details.

3. Refer to Selection Table 3 (on page 28) for allowable peak torque at startup for combinations marked \bullet .

Selection Table 3 (Rating Table)

Table 1-1 Rating Table [SI Unit]

Input Speed (r/min)		6000	5000	4000	3000	2000	1500	1000	Allowable Peak Torque at Startup and Stop ^{*2, 6}	Maximum Torque at Emergency ^{*3, 6}	Allowable Maximum Input Speed ^{*4}
Frame Size	Reduction Ratio	Rated Torque ^{*1}							N · m	N · m	r/min
		N · m									
P110	3.7(11/3)	8.0	8.5	9.0	10.0	11.0	12.0	13.5	40.0	60.0	6000
	5	8.5	9.0	9.5	10.5	12.0	13.0	14.5	45.0		
	9	9.5	10.0	10.5	11.5	11.5	11.5	11.5	35.0		
	11	12.5	13.0	14.0	15.5	17.5	18.0	18.5	45.0		
	15	12.5	13.5	14.0	15.5	17.5	19.0	21.5			
	21	14.0	15.0	16.0	17.5	19.5	21.5	22.5			
	33	18.0	18.0	18.0	18.5	18.5	18.5	18.5			
	45	18.0	19.0	20.0	22.0	22.5	22.5	22.5			
81	11.5	11.5	11.5	11.5	11.5	11.5	11.5	35.0			
P120	3.7(11/3)	34.0	36.0	38.5	42.0	47.5	52.0	58.5	140.0	175.0	6000
	5	36.0	38.0	41.0	44.5	50.5	55.0	62.0	145.0	240.0	
	9	41.0	43.0	43.0	43.0	43.5	43.5	43.5	140.0	200.0	
	11	27.5	29.0	31.0	34.0	38.5	42.0	47.5	135.0	180.0	
	15	37.5	40.0	42.5	46.5	52.5	57.5	64.5	185.0	250.0	
	21	40.0	42.5	45.5	49.5	56.0	61.0	69.0	190.0		
	33	34.5	36.5	39.0	40.5	40.5	40.5	40.5	135.0	180.0	
	45	47.0	49.5	53.0	55.0	55.0	55.0	55.5	180.0	250.0	
81	43.5	43.5	43.5	43.5	43.5	43.5	43.5	140.0	200.0		
P130	3.7(11/3)	-	70.0	75.0	82.0	92.5	101.0	114.0	290.0	445.0	5000
	5		74.0	79.5	86.5	97.5	106.5	120.5	325.0	500.0	
	9		83.5	89.5	97.5	100.0	100.0	100.5	330.0		
	11		56.5	60.5	66.0	74.5	81.0	92.0	320.0	395.0	
	15		77.0	82.5	90.0	101.5	111.0	125.0	380.0	500.0	
	21		82.0	88.0	96.0	105.5	118.0	133.5			
	33		70.5	75.5	82.0	93.0	101.0	114.5	355.0	395.0	
	45		96.0	103.0	112.0	126.5	138.0	153.0	380.0	500.0	
81	100.5	100.5	101.0	101.0	101.0	101.0	330.0				

Table 1-2 Rating Table [Engineering Unit]

Input Speed (r/min)		6000	5000	4000	3000	2000	1500	1000	Allowable Peak Torque at Startup and Stop ^{*2, 6}	Maximum Torque at Emergency ^{*3, 6}	Allowable Maximum Input Speed ^{*4}
Frame Size	Reduction Ratio	Rated Torque ^{*1}							kgf · m	kgf · m	rpm
		kgf · m									
P110	3.7	0.82	0.87	0.92	1.02	1.12	1.22	1.38	4.08	6.12	6000
	5	0.87	0.92	0.97	1.07	1.22	1.33	1.48	4.59		
	9	0.97	1.02	1.07	1.17	1.17	1.17	1.17	3.57		
	11	1.27	1.33	1.43	1.58	1.78	1.83	1.89	4.59		
	15	1.27	1.38	1.43	1.58	1.78	1.94	2.19			
	21	1.43	1.53	1.63	1.78	1.99	2.19	2.29			
	33	1.83	1.83	1.83	1.89	1.89	1.89	1.89			
	45	1.83	1.94	2.04	2.24	2.29	2.29	2.29			
81	1.17	1.17	1.17	1.17	1.17	1.17	1.17	3.57			
P120	3.7	3.47	3.67	3.92	4.28	4.84	5.30	5.96	14.3	17.8	6000
	5	3.67	3.87	4.18	4.54	5.15	5.61	6.32	14.8	24.5	
	9	4.18	4.38	4.38	4.38	4.43	4.43	4.43	14.3	20.4	
	11	2.80	2.96	3.16	3.47	3.92	4.28	4.84	13.8	18.3	
	15	3.82	4.08	4.33	4.74	5.35	5.86	6.57	18.9	25.5	
	21	4.08	4.33	4.64	5.05	5.71	6.22	7.03	19.4	25.5	
	33	3.52	3.72	3.98	4.13	4.13	4.13	4.13	13.8	18.3	
	45	4.79	5.05	5.40	5.61	5.61	5.61	5.66	18.3	25.5	
81	4.43	4.43	4.43	4.43	4.43	4.43	4.43	14.3	20.4		
P130	3.7	-	7.14	7.65	8.36	9.43	10.30	11.6	29.6	45.4	5000
	5		7.54	8.10	8.82	9.94	10.86	12.3	33.1	51.0	
	9		8.51	9.12	9.94	10.2	10.2	10.2	33.6		
	11		5.76	6.17	6.73	7.59	8.26	9.38	32.6	40.3	
	15		7.85	8.41	9.17	10.35	11.3	12.7	38.7	51.0	
	21		8.36	8.97	9.79	10.75	12.0	13.6			
	33		7.19	7.70	8.36	9.48	10.3	11.7	36.2	40.3	
	45		9.79	10.5	11.4	12.9	14.1	15.6	38.7	51.0	
81	10.2	10.2	10.3	10.3	10.3	10.3	33.6				

Selection Table 3 (Rating Table)

Table1-3 Allowable Operation Cycle

Input Speed (r/min)		6000		5000		4000		3000		2000		1500		1000	
Frame Size	Reduction Ratio	^{* 5} Allowable continuous operation period	Allowable % ED	^{* 5} Allowable continuous operation period	Allowable % ED	^{* 5} Allowable continuous operation period	Allowable % ED	^{* 5} Allowable continuous operation period	Allowable % ED	^{* 5} Allowable continuous operation period	Allowable % ED	^{* 5} Allowable continuous operation period	Allowable % ED	^{* 5} Allowable continuous operation period	Allowable % ED
		min	%	min	%	min	%	min	%	min	%	min	%	min	%
P110	3.7(11/3)	5	30	10	50	10	60	20	70	20	80	30	90	30	90
	5		40		60		70		80		90				
	9		50		70		80		90						
	11		40		60		70		80		90				
	15		40		60		70		80		90				
	21		40		60		70		80		90				
	33		40		60		70		80		90				
	45		50		70		80		90						
81	50	70	80	90											
P120	3.7(11/3)	5	20	10	20	10	30	20	40	20	60	30	70	30	80
	5		30		50		60		70		80				
	9		40		60		70		80						
	11		30		50		60		70		80				
	15		30		50		60		70		80				
	21		30		50		60		70		80				
	33		40		60		70		80		90				
	45		40		60		70		80		90				
81	40	60	70	80	90										
P130	3.7(11/3)	-	-	5	20	5	30	10	40	15	60	20	70	30	80
	5			30	50	60	70	80							
	9			40	60	70	80								
	11			30	50	60	70	80							
	15			30	50	60	70	80							
	21			30	50	60	70	80							
	33			40	60	70	80	90							
	45			40	60	70	80	90							
81	40	60	70	80	90										

P1 Type

- Note 1. Rated torque is the allowable value of the average load torque at the output shaft. The rated torque for the input speed of 1000 r/min or less is the same as the rated torque of 1000 r/min.
- Maximum allowable torque when startup and stop during operation cycle.
 - Maximum allowable value of the shock torque at emergency stop or external shock torque. Should be less than 1000 times in one lifetime.
 - Maximum allowable input speed when not under continuous operation condition.
 - Allowable continuous operating time during intermittent operation. (Consult us in the case of exceeding this time, or in the case of continuous operation.)
 - Some values are not allowable depending on the input shaft diameter. Make sure to follow the method of motor attachment in page 96.

Selection Table 3 (Allowable External Load)

Table 2-1 Allowable External Load [SI Unit]

Motor Speed (r/min)		6000		5000		4000		3000		2000		1500		1000		Allowable Moment N·m
Frame Size	Reduction Ratio	Radial Load*1	Axial Load*2	Radial Load*1	Axial Load*2	Radial Load*1	Axial Load*2	Radial Load*1	Axial Load*2	Radial Load*1	Axial Load*2	Radial Load*1	Axial Load*2	Radial Load*1	Axial Load*2	
		N	N	N	N	N	N	N	N	N	N	N	N	N	N	
P110	3.7(11/3)	215	425	230	450	250	485	275	535	315	610	345	670	395	770	70
	5	240	470	255	500	275	540	305	595	350	680	385	750	440	860	
	9	295	575	315	610	335	655	370	725	425	830	470	910	535	1045	
	11	310	615	330	650	355	700	395	775	450	885	495	975	570	1115	
	15	350	680	370	725	400	780	440	860	505	985	555	1080	635	1240	
	21	390	760	415	810	450	870	495	960	565	1100	620	1210	715	1385	
	33	455	885	485	940	520	1015	575	1115	655	1280	725	1405	830	1610	
	45	505	985	535	1045	580	1125	635	1240	730	1420	805	1560	920	1785	
81	615	1190	655	1265	705	1360	775	1500	890	1715	980	1885	1050	2160		
P120	3.7(11/3)	670	1245	710	1320	765	1425	845	1570	965	1795	1065	1975	1215	2260	300
	5	745	1385	790	1475	855	1590	940	1750	1075	2000	1185	2205	1355	2525	
	9	905	1690	965	1795	1040	1935	1145	2130	1310	2435	1440	2680	1650	3070	
	11	965	1800	1025	1915	1105	2060	1220	2270	1395	2595	1535	2860	1760	3270	
	15	1075	2000	1145	2130	1230	2295	1355	2525	1550	2890	1710	3180	1955	3640	
	21	1205	2240	1280	2380	1380	2565	1515	2825	1735	3235	1910	3560	2190	4075	
	33	1400	2605	1485	2770	1600	2985	1765	3285	2020	3760	2225	4140	2545	4735	
	45	1550	2890	1650	3070	1775	3305	1955	3640	2240	4170	2465	4585	2825	4800	
81	1890	3515	2005	3735	2165	4025	2380	4430	2725	4800	2900	4800	2900	4800		
P130	3.7(11/3)	-	-	955	2015	1030	2170	1135	2390	1295	2735	1430	3010	1635	3445	620
	5	-	-	1060	2235	1140	2405	1260	2650	1440	3030	1585	3335	1815	3820	
	9	-	-	1290	2715	1390	2925	1530	3220	1750	3685	1930	4055	2210	4640	
	11	-	-	1375	2910	1480	3135	1630	3450	1865	3945	2050	4345	2350	4975	
	15	-	-	1530	3230	1650	3480	1815	3830	2075	4380	2285	4825	2620	5520	
	21	-	-	1710	3610	1845	3885	2030	4280	2325	4895	2560	5390	2930	6170	
	33	-	-	1990	4200	2145	4525	2360	4980	2705	5700	2975	6270	3405	7180	
	45	-	-	2210	4655	2380	5015	2620	5520	3000	6315	3300	6955	3780	7960	
81	-	-	2685	5665	2895	6105	3185	6720	3645	7690	4015	8465	4500	9400		

Note 1. Radial load is the value applied to the middle of the output shaft (at axial load).
 2. Axial load is the value applied to the center of the output shaft (at radial load).

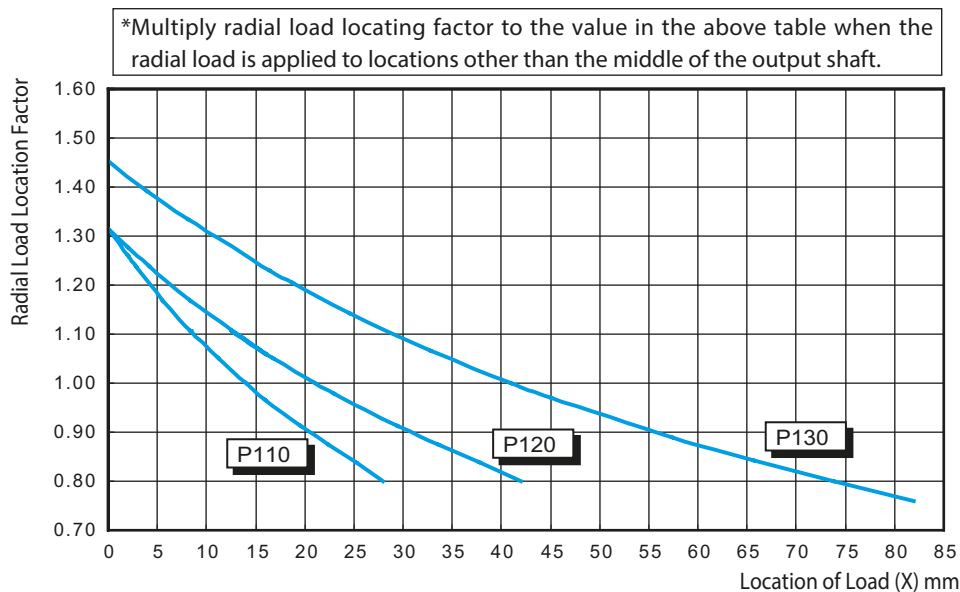


Fig. 2 Radial Load Location Factor

Selection Table 3 (Allowable External Load)

Table 2-2 Allowable External Load [Engineering Unit]

Motor Speed (r/min)		6000		5000		4000		3000		2000		1500		1000		Allowable Moment kgf·m
Frame Size	Reduction Ratio	Radial Load *1	Axial Load *2	Radial Load *1	Axial Load *2	Radial Load *1	Axial Load *2	Radial Load *1	Axial Load *2	Radial Load *1	Axial Load *2	Radial Load *1	Axial Load *2	Radial Load *1	Axial Load *2	
		kgf	kgf	kgf	kgf	kgf	kgf	kgf	kgf	kgf	kgf	kgf	kgf	kgf	kgf	
P110	3.7(11/3)	21.9	43.3	23.4	45.9	25.5	49.4	28.0	54.5	32.1	62.2	35.2	68.3	40.3	78.5	7.13
	5	24.5	47.9	26.0	51.0	28.0	55.0	31.1	60.7	35.7	69.3	39.2	76.5	44.9	87.7	
	9	30.1	58.6	32.1	62.2	34.1	66.8	37.7	73.9	43.3	84.6	47.9	92.8	54.5	106.5	
	11	31.6	62.7	33.6	66.3	36.2	71.4	40.3	79.0	45.9	90.2	50.5	99.4	58.1	113.7	
	15	35.7	69.3	37.7	73.9	40.8	79.5	44.9	87.7	51.5	100.4	56.6	110.1	64.7	126.4	
	21	39.8	77.5	42.3	82.6	45.9	88.7	50.5	97.9	57.6	112.1	63.2	123.3	72.9	141.2	
	33	46.4	90.2	49.4	95.8	53.0	103.5	58.6	113.7	66.8	130.5	73.9	143.2	84.6	164.1	
	45	51.5	100.4	54.5	106.5	59.1	114.7	64.7	126.4	74.4	144.8	82.1	159.0	93.8	182.0	
81	62.7	121.3	66.8	129.0	71.9	138.6	79.0	152.9	90.7	174.8	99.9	192.2	107.0	220.2		
P120	3.7(11/3)	68.3	126.9	72.4	134.6	78.0	145.3	86.1	160.0	98.4	183.0	108.6	201.3	123.9	230.4	30.6
	5	75.9	141.2	80.5	150.4	87.2	162.1	95.8	178.4	109.6	203.9	120.8	224.8	138.1	257.4	
	9	92.3	172.3	98.4	183.0	106.0	197.2	116.7	217.1	133.5	248.2	146.8	273.2	168.2	312.9	
	11	98.4	183.5	104.5	195.2	112.6	210.0	124.4	231.4	142.2	264.5	156.5	291.5	179.4	333.3	
	15	109.6	203.9	116.7	217.1	125.4	233.9	138.1	257.4	158.0	294.6	174.3	324.2	199.3	371.0	
	21	122.8	228.3	130.5	242.6	140.7	261.5	154.4	288.0	176.9	329.8	194.7	362.9	223.2	415.4	
	33	142.7	265.5	151.4	282.4	163.1	304.3	179.9	334.9	205.9	383.3	226.8	422.0	259.4	482.7	
	45	158.0	294.6	168.2	312.9	180.9	336.9	199.3	371.0	228.3	425.1	251.3	467.4	288.0	489.3	
81	192.7	358.3	204.4	380.7	220.7	410.3	242.6	451.6	277.8	489.3	295.6	489.3	295.6	489.3		
P130	3.7(11/3)	-	-	97.3	205.4	105.0	221.2	115.7	243.6	132.0	278.8	145.8	306.8	166.7	351.2	63.2
	5	-	-	108.1	227.8	116.2	245.2	128.4	270.1	146.8	308.9	161.6	340.0	185.0	389.4	
	9	-	-	131.5	276.8	141.7	298.2	156.0	328.2	178.4	375.6	196.7	413.4	225.3	473.0	
	11	-	-	140.2	296.6	150.9	319.6	166.2	351.7	190.1	402.1	209.0	442.9	239.6	507.1	
	15	-	-	156.0	329.3	168.2	354.7	185.0	390.4	211.5	446.5	232.9	491.8	267.1	562.7	
	21	-	-	174.3	368.0	188.1	396.0	206.9	436.3	237.0	499.0	261.0	549.4	298.7	629.0	
	33	-	-	202.9	428.1	218.7	461.3	240.6	507.6	275.7	581.0	303.3	639.1	347.1	731.9	
	45	-	-	225.3	474.5	242.6	511.2	267.1	562.7	305.8	643.7	336.4	709.0	385.3	811.4	
81	-	-	273.7	577.5	295.1	622.3	324.7	685.0	371.6	783.9	409.3	862.9	458.7	958.2		

P1 Type

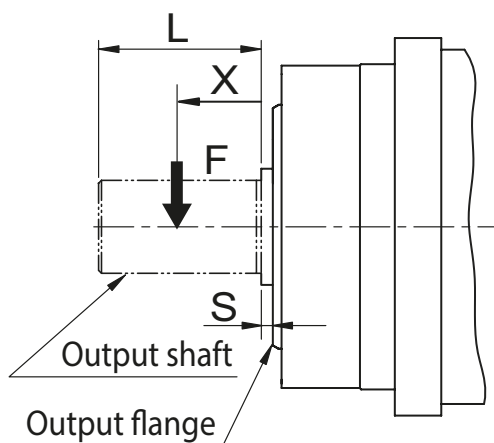
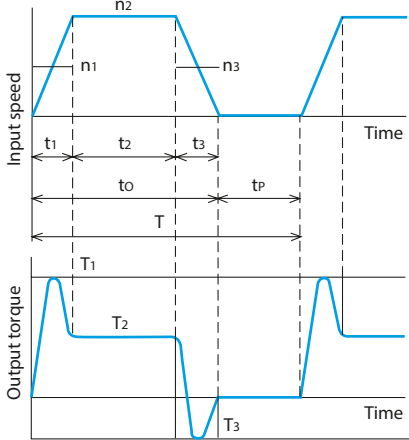


Fig. 3

Selection Procedure

Flow Chart and Formula of Selection

Fig. 4 Load Pattern

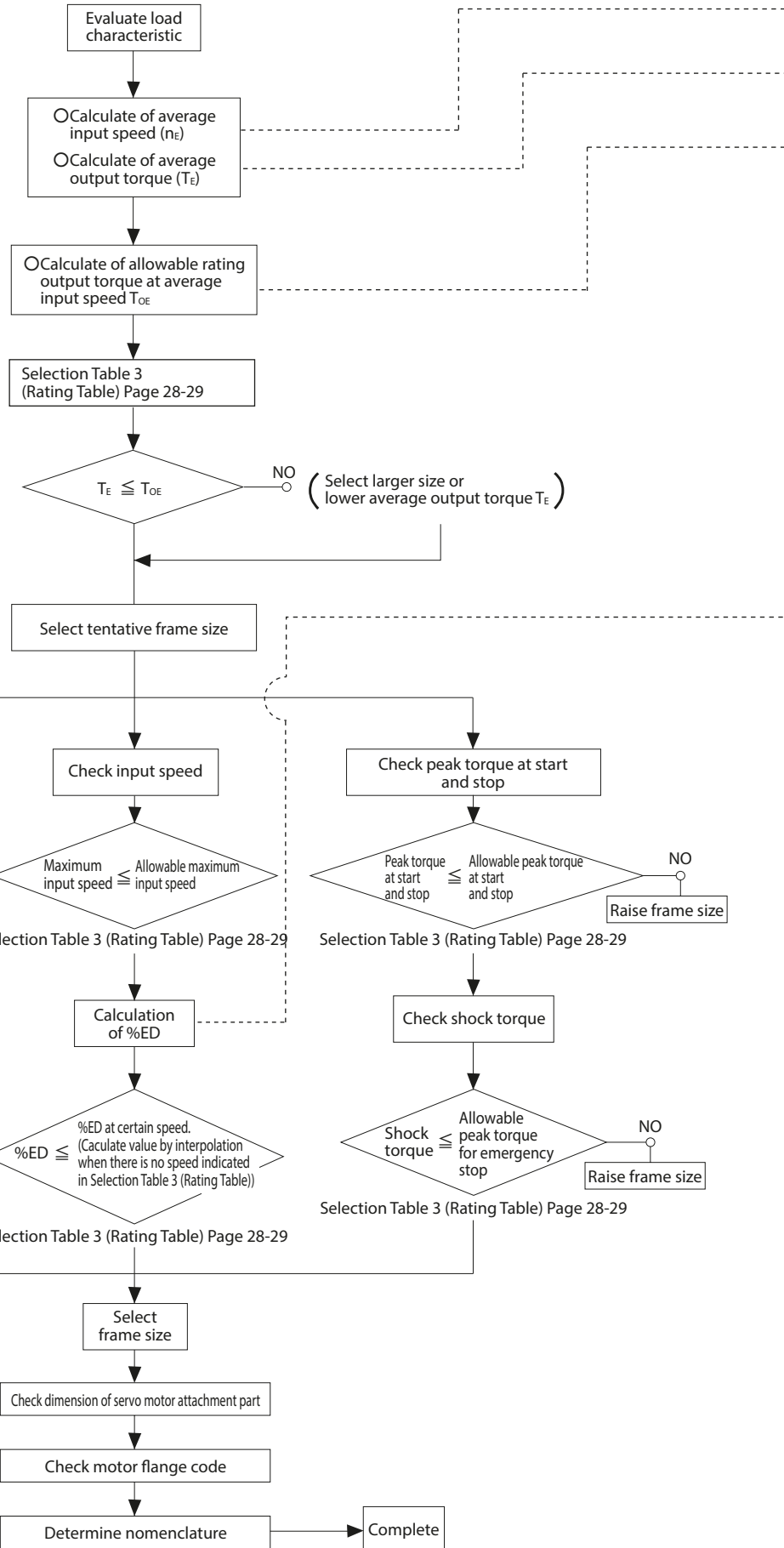


n_1 : Average input speed at acceleration when as in Fig 4:

$$n_1 = \frac{n_2}{2} \text{ (r/min)}$$
 n_2 : Input speed at normal operation
 n_3 : Average input speed at deceleration when as in Fig 4:

$$n_1 = n_3 = \frac{n_2}{2} \text{ (r/min)}$$

t_1 : Acceleration time [s]
 t_2 : Steady operation time [s]
 t_3 : Deceleration time [s]
 t_o : Operation time [s]
 t_p : Stop time [s]
 T : Operation cycle [s]
 T_1 : Starting peak torque [N · m]
 T_2 : Steady operation torque [N · m]
 T_3 : Stopping peak torque [N · m]



● Determine output following page 90
 Actual load moment \leq Allowable moment
 Calculated main bearing lifetime \leq Requested lifetime
 *Calculation is theoretical.

Selection Procedure

Calculation in Load Condition of Fig. 4

○ Average input speed $n_E = \frac{t_1 \cdot n_1 + t_2 \cdot n_2 + t_3 \cdot n_3 + \dots + t_n \cdot n_n}{t_o}$ Formula 1 $n=4,5,6 \dots$

○ Average output torque $T_E = \left(\frac{t_1 \cdot n_1 \cdot T_1^{10/3} + t_2 \cdot n_2 \cdot T_2^{10/3} + t_3 \cdot n_3 \cdot T_3^{10/3} + \dots + t_n \cdot n_n \cdot T_n^{10/3}}{t_o \cdot n_E} \right)^{0.3} \times F_{s2}$ Formula 2 $n=4,5,6 \dots$
(Table 3)

○ Allowable rating output torque at average input speed $T_{oE} = \left(\frac{3000}{n_E} \right)^{0.3} \times T_o$ Formula 3
* The rated torque for the input speed of 1000 r/min or less is the same as the rated torque of 1000 r/min.
To: Rated output torque at input speed 3000 r/min
Selection Table 3 (Rating Table) Page 28–29

○ %ED $\% ED = \frac{t_o}{T} \times 100$ Formula 4

%ED Calculation at Average Input Speed Interpolation method

$$\%ED(x) = \frac{y_i(x-x_{i+1}) - y_{i+1}(x-x_i)}{x_i - x_{i+1}}$$

- %ED(x) : Calculated %ED
- x : Average input speed
- x_i : Speed lower than the average input speed on the rating table
- y_i : Allowable %ED at the above speed
- x_{i+1} : Speed higher than the average input speed on the rating table
- y_{i+1} : Allowable %ED at the above speed

Table 3 F_{s2} Load factor

Loading condition	F _{s2}
Uniform load	1
Moderate shock	1–1.2
Heavy shock	1.4–1.6

Example of Selection

Evaluate ANFX-P120F-2RLD-15 for following specification.

- Specification: T_A : Peak torque at start 100 N · m t_A : Acceleration time 0.2s
 T_R : Normal running torque 30 N · m t_R : Normal running time 5.0s
 T_B : Peak torque at stop 80 N · m t_B : Deceleration time 0.2s
 Shock torque: 200 N · m (700 times during overall lifetime) t_P : Stop time 3.0s
 n_A : Average input speed during acceleration 1500r/min t_O : Operation time 5.4s
 n_R : Input speed with normal running 3000 r/min T : Single operation cycle time 8.4s
 n_B : Average input speed during deceleration 1500r/min

Application is assumed to have almost no load.

Calculation: Average input speed $n_E = \frac{0.2 \times 1500 + 5.0 \times 3000 + 0.2 \times 1500}{5.4} = 2889$ (r/min)

Average output torque $T_E = \left(\frac{0.2 \times 1500 \times 100^{10/3} + 5.0 \times 3000 \times 30^{10/3} + 0.2 \times 1500 \times 80^{10/3}}{5.4 \times 2889} \right)^{0.3} \times 1 = 39.6$ N · m

Allowable rating output torque at average input speed $T_{oE} = \left(\frac{3000}{2889} \right)^{0.3} \times 46.5 = 47.0 \geq 39.6 \rightarrow$ Select ANFX-P120F-2RLD-15 temporarily.

- Check Average output torque 39.6 < 47.0.....OK

- Calculate %ED $\% ED = \frac{5.4}{8.4} \times 100 = 64.3\%$

- Continuous operating time 20 min = 1200s > 5.4s.....OK

$$\frac{90 \times (2889 - 3000) - 70 \times (2889 - 2000)}{2000 - 3000} \div 72$$

72% > 64.3%OK

- Evaluate maximum input speed 3000 r/min < 6000 r/min

- Evaluate peak torque at start and stop 100 N · m < 185 N · m

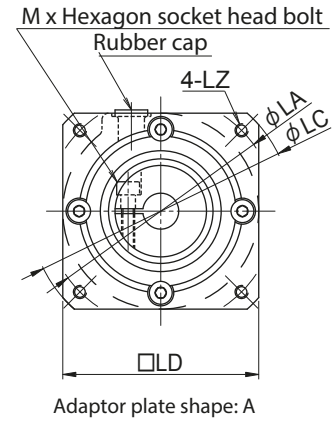
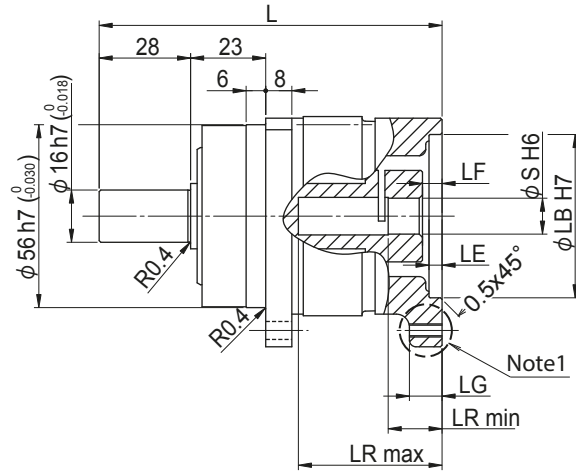
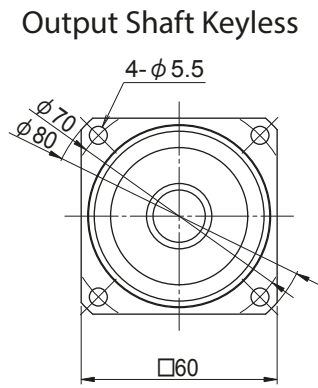
- Evaluate shock torque 200 N · m < 250 N · m(1000 times during entire lifetime)

Selection Table 3
(Rating Table)Page 28–29

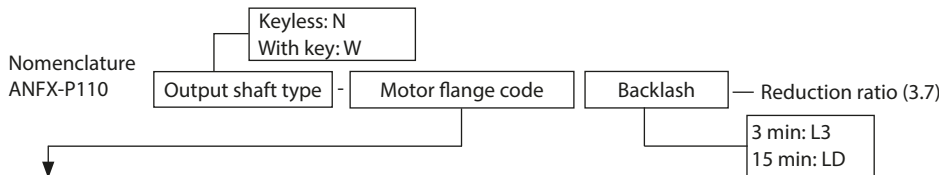
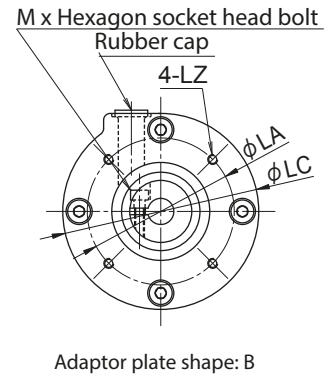
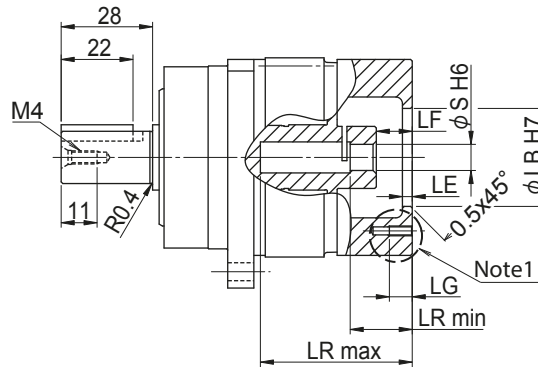
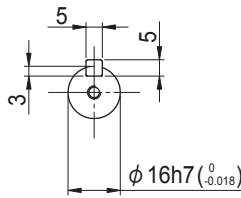
ANFX-P120F-2RLD-15 is selected by the process above.

Dimension drawings

Frame Size P110
 Reduction Ratio 3.7
 Solid Shaft
 Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	LG	Note 1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
												max	min					
2C	108.5	45	30	60	-	5	11	7	Blind hole	B	M3	46.5	19	8	M3	0.9	2C	
7J		46	30	60	-	5	11	9	Blind hole		M4	46.5	19	6	M3	0.9	7J	
2D		46	30	60	-	5	11	9	Blind hole		M4	46.5	19	8	M3	0.9	2D	
2E	106	60	50	80	60	4	8.5	8	Blind hole	A	M4	44	16.5	8	M3	0.9	2E	
2K		60	50	80	60	4	6	8	Blind hole		M4	44	16.5	11	M4	0.9	2K	
2F		70	50	80	60	4	8.5	10	Through hole		M4	44	16.5	8	M3	0.9	2F	
2L		70	50	80	60	4	6	10	Through hole		M4	44	16.5	11	M4	0.9	2L	
2P		70	50	80	60	4	6	10	Through hole		M4	44	16.5	14	M4	0.9	2P	
2G		70	50	80	60	4	8.5	10	Through hole		M5	44	16.5	8	M3	0.9	2G	
2H		70	50	80	60	4	6	10	Through hole		M5	44	16.5	9	M4	0.9	2H	
2R		70	50	80	60	4	6	10	Through hole		M5	44	16.5	14	M4	0.9	2R	
8A		107.5	90	70	105	80	6	7.5	12		Through hole	M5	45.5	18	11	M4	1.0	8A
8B			90	70	105	80	6	7.5	12		Through hole	M5	45.5	18	14	M4	1.0	8B
2T	90		70	105	80	6	7.5	12	Through hole	M6	45.5	18	14	M4	1.0	2T		
2J	113	100	80	120	90	5	13	12	Through hole	M6	51	23.5	10	M4	1.1	2J		
8E	129.5	100	80	120	90	6	9.5	12	Through hole	M6	41	22	16	M5	1.3	8E		

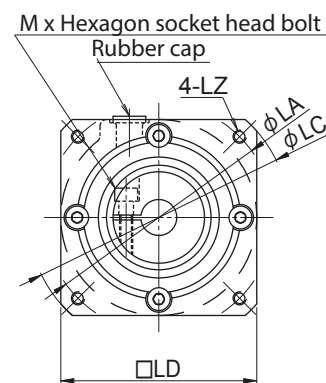
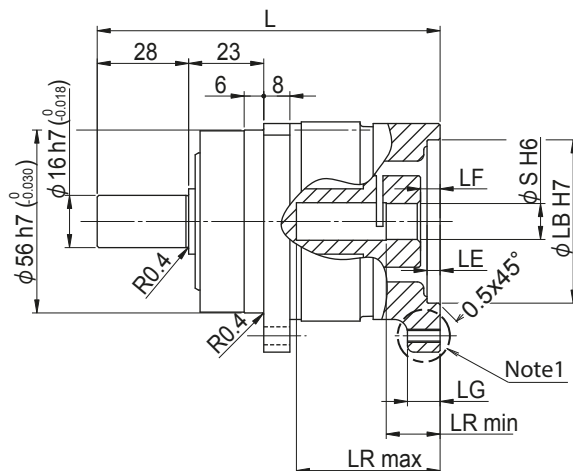
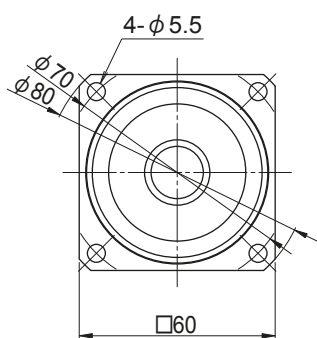
Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

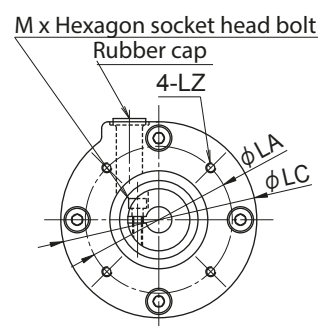
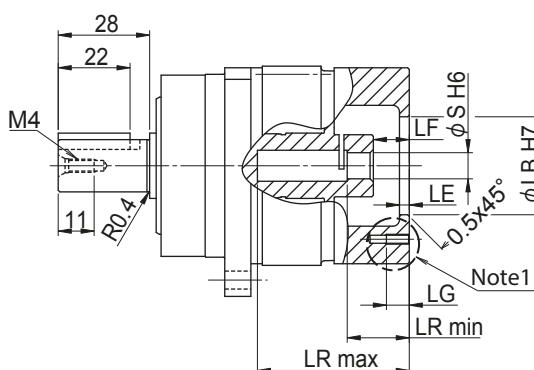
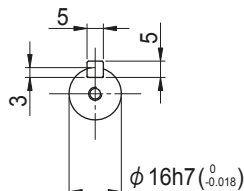
Frame Size P110
Reduction Ratio 5
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

Nomenclature ANFX-P110

Output shaft type: Keyless: N, With key: W

Motor flange code

Backlash

Reduction ratio (5)

3 min: L3, 15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code		
												max	min						
2C	108.5	45	30	60	-	5	11	7	Blind hole	B	M3	46.5	19	8	M3	0.9	2C		
7J		46	30	60	-	5	11	9	Blind hole		M4	46.5	19	6	M3	0.9	7J		
2D		46	30	60	-	5	11	9	Blind hole		M4	46.5	19	8	M3	0.9	2D		
2E	106	60	50	80	60	4	8.5	8	Blind hole	A	M4	44	16.5	8	M3	0.9	2E		
2K		60	50	80	60	4	6	8	Blind hole		M4	44	16.5	11	M4	0.9	2K		
2F		70	50	80	60	4	8.5	10	Through hole		M4	44	16.5	8	M3	0.9	2F		
2L		70	50	80	60	4	6	10	Through hole		M4	44	16.5	11	M4	0.9	2L		
2P		70	50	80	60	4	6	10	Through hole		M4	44	16.5	14	M4	0.9	2P		
2G		70	50	80	60	4	8.5	10	Through hole		M5	44	16.5	8	M3	0.9	2G		
2H		70	50	80	60	4	6	10	Through hole		M5	44	16.5	9	M4	0.9	2H		
2R		70	50	80	60	4	6	10	Through hole		M5	44	16.5	14	M4	0.9	2R		
8A		107.5	90	70	105	80	6	7.5	12		Through hole	A	M5	45.5	18	11	M4	1.0	8A
8B			90	70	105	80	6	7.5	12		Through hole		M5	45.5	18	14	M4	1.0	8B
2T			90	70	105	80	6	7.5	12		Through hole		M6	45.5	18	14	M4	1.0	2T
2J	113	100	80	120	90	5	13	12	Through hole	A	M6	51	23.5	10	M4	1.1	2J		
8E	129.5	100	80	120	90	6	9.5	12	Through hole		M6	41	22	16	M5	1.3	8E		

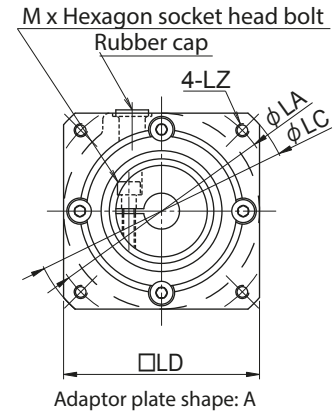
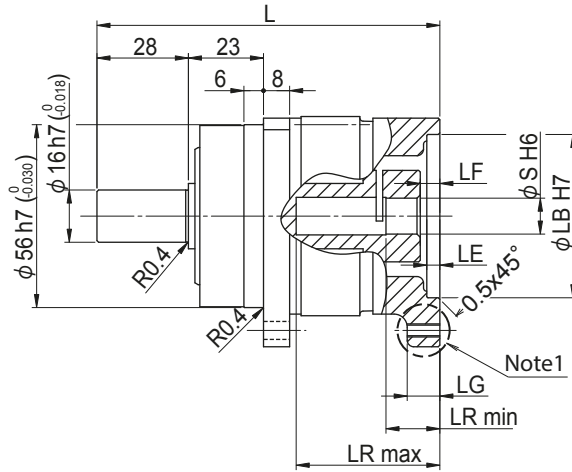
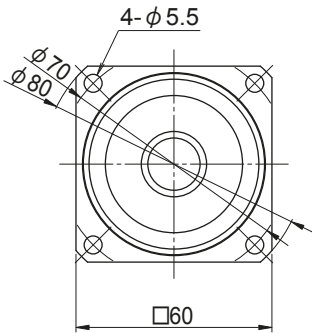
Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

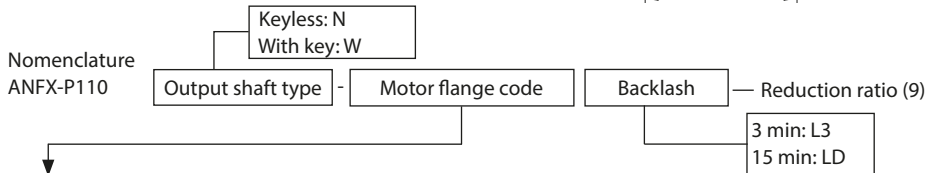
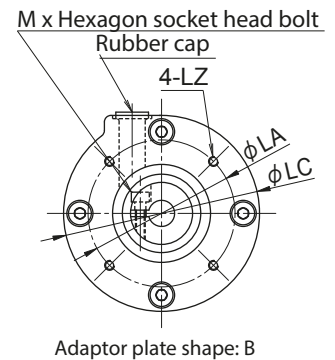
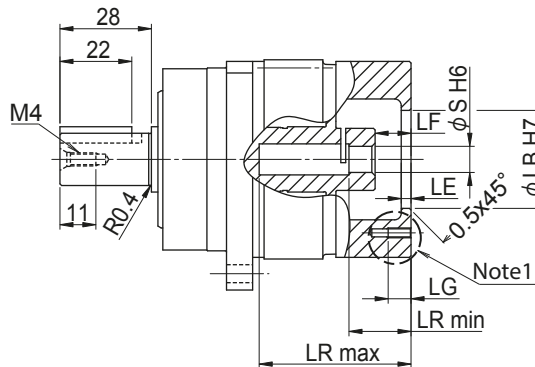
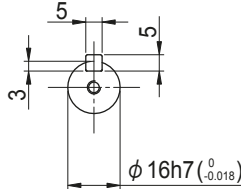
Dimension drawings

Frame Size P110
Reduction Ratio 9
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code		
												max	min						
2C	108.5	45	30	60	-	5	11	7	Blind hole	B	M3	46.5	19	8	M3	0.9	2C		
7J		46	30	60	-	5	11	9	Blind hole		M4	46.5	19	6	M3	0.9	7J		
2D		46	30	60	-	5	11	9	Blind hole		M4	46.5	19	8	M3	0.9	2D		
2E	106	60	50	80	60	4	8.5	8	Blind hole	A	M4	44	16.5	8	M3	0.9	2E		
2K		60	50	80	60	4	6	8	Blind hole		M4	44	16.5	11	M4	0.9	2K		
2F		70	50	80	60	4	8.5	10	Through hole		M4	44	16.5	8	M3	0.9	2F		
2L		70	50	80	60	4	6	10	Through hole		M4	44	16.5	11	M4	0.9	2L		
2P		70	50	80	60	4	6	10	Through hole		M4	44	16.5	14	M4	0.9	2P		
2G		70	50	80	60	4	8.5	10	Through hole		M5	44	16.5	8	M3	0.9	2G		
2H		70	50	80	60	4	6	10	Through hole		M5	44	16.5	9	M4	0.9	2H		
2R		70	50	80	60	4	6	10	Through hole		M5	44	16.5	14	M4	0.9	2R		
8A		107.5	90	70	105	80	6	7.5	12		Through hole	A	M5	45.5	18	11	M4	1.0	8A
8B			90	70	105	80	6	7.5	12		Through hole		M5	45.5	18	14	M4	1.0	8B
2T	90		70	105	80	6	7.5	12	Through hole	M6	45.5		18	14	M4	1.0	2T		
2J	113	100	80	120	90	5	13	12	Through hole	A	M6	51	23.5	10	M4	1.2	2J		
8E	129.5	100	80	120	90	6	9.5	12	Through hole		M6	41	22	16	M5	1.3	8E		

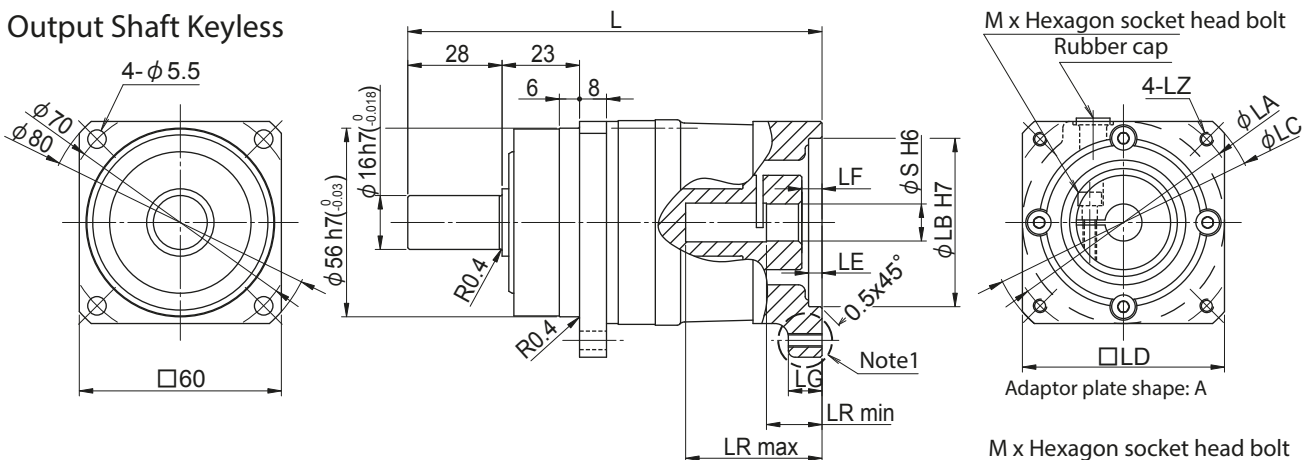
Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

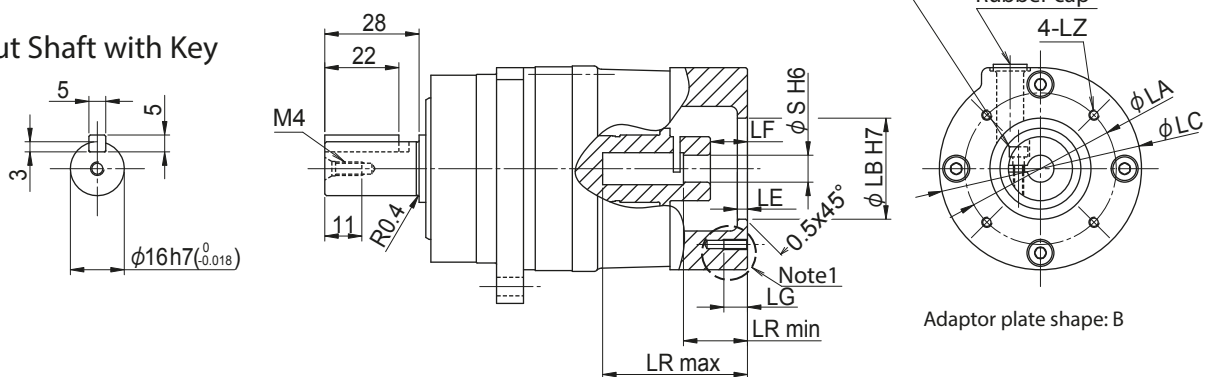
Dimension drawings

Frame Size P110
Reduction Ratio 11
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature ANFX-P110

Output shaft type: Keyless: N
With key: W

Motor flange code

Backlash

Reduction ratio (11)

3 min: L3
15 min: LD

Motor flange code	Dimension										Adaptor plate shape	LR		S	M	Mass [kg]	Motor flange code	
	L	LA	LB	LC	LD	LE	LF	LG	Note1	Thread hole Shape		LZ	max					min
2C	126.5	45	30	60	-	5	11	7		Blind hole	B	M3	43	19	8	M3	1.1	2C
7J		46	30	60	-	5	11	9		Blind hole		M4	43	19	6	M3	1.1	7J
2D		46	30	60	-	5	11	9		Blind hole		M4	43	19	8	M3	1.1	2D
2E	124	60	50	80	60	4	8.5	9		Blind hole	A	M4	40.5	16.5	8	M3	1.1	2E
2K		60	50	80	60	4	6	9		Blind hole		M4	40.5	16.5	11	M4	1.2	2K
2F		70	50	80	60	4	8.5	10		Through hole		M4	40.5	16.5	8	M3	1.1	2F
2L		70	50	80	60	4	6	10		Through hole		M4	40.5	16.5	11	M4	1.2	2L
2G		70	50	80	60	4	8.5	10		Through hole		M5	40.5	16.5	8	M3	1.1	2G
2H		70	50	80	60	4	6	10		Through hole		M5	40.5	16.5	9	M4	1.2	2H
2R	125.5	70	50	80	60	4	6	10		Through hole	M5	40.5	16.5	14	M4	1.2	2R	
8A		90	70	105	80	6	7.5	12		Through hole	M5	42	18	11	M4	1.3	8A	
8B		90	70	105	80	6	7.5	12		Through hole	M5	42	18	14	M4	1.3	8B	
2T		90	70	105	80	6	7.5	12		Through hole	M6	42	18	14	M4	1.3	2T	

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

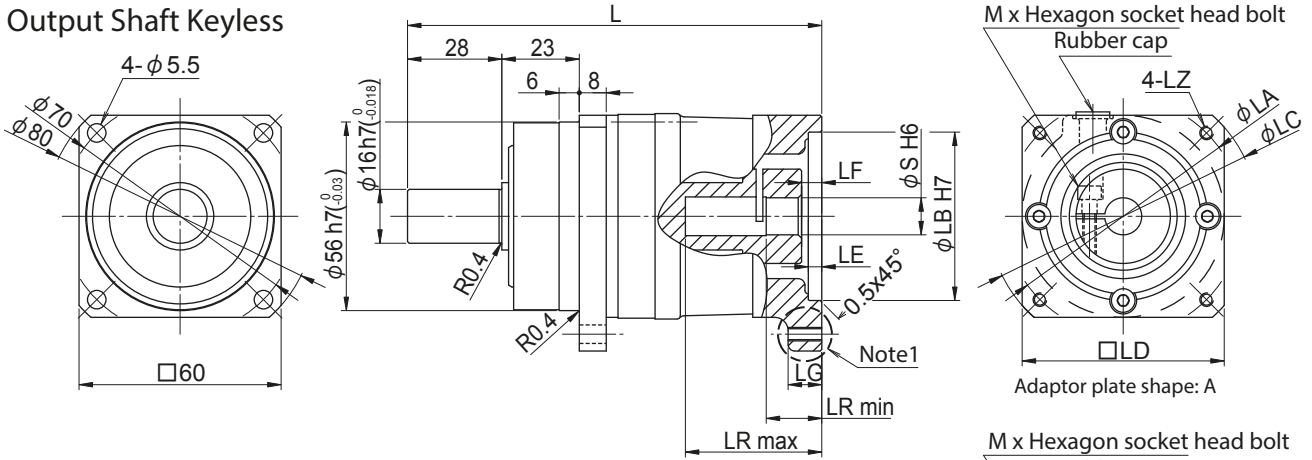
2. Dimensions and mass shown in the above figures are subject to change without prior notification.

P1 Type

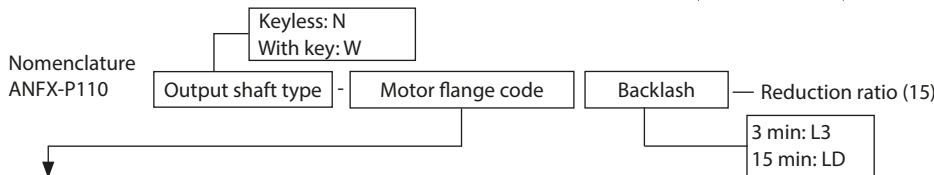
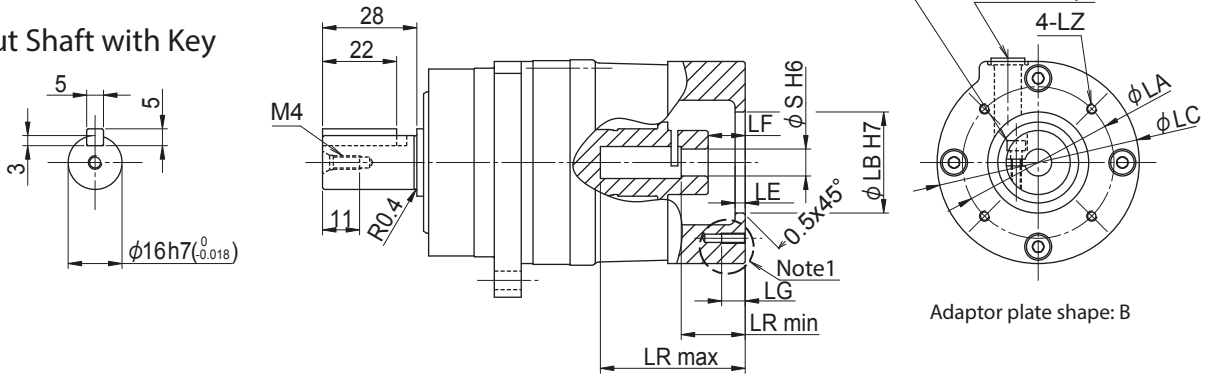
Dimension drawings

Frame Size P110
Reduction Ratio 15
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Motor flange code	Dimension										Adaptor plate shape	LR		S	M	Mass [kg]	Motor flange code	
	L	LA	LB	LC	LD	LE	LF	LG	Note1	Thread hole		Shape	max					min
2C	126.5	45	30	60	-	5	11	7	Blind hole	B	M3	43	19	8	M3	1.1	2C	
7J		46	30	60	-	5	11	9	Blind hole		M4	43	19	6	M3	1.1	7J	
2D		46	30	60	-	5	11	9	Blind hole		M4	43	19	8	M3	1.1	2D	
2E	124	60	50	80	60	4	8.5	9	Blind hole	A	M4	40.5	16.5	8	M3	1.1	2E	
2K		60	50	80	60	4	6	9	Blind hole		M4	40.5	16.5	11	M4	1.2	2K	
2F		70	50	80	60	4	8.5	10	Through hole		M4	40.5	16.5	8	M3	1.1	2F	
2L		70	50	80	60	4	6	10	Through hole		M4	40.5	16.5	11	M4	1.2	2L	
2G		70	50	80	60	4	8.5	10	Through hole		M5	40.5	16.5	8	M3	1.1	2G	
2H		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	9	M4	1.2	2H	
2R		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	14	M4	1.2	2R	
8A		125.5	90	70	105	80	6	7.5	12		Through hole	M5	42	18	11	M4	1.3	8A
8B			90	70	105	80	6	7.5	12		Through hole	M5	42	18	14	M4	1.3	8B
2T			90	70	105	80	6	7.5	12		Through hole	M6	42	18	14	M4	1.3	2T

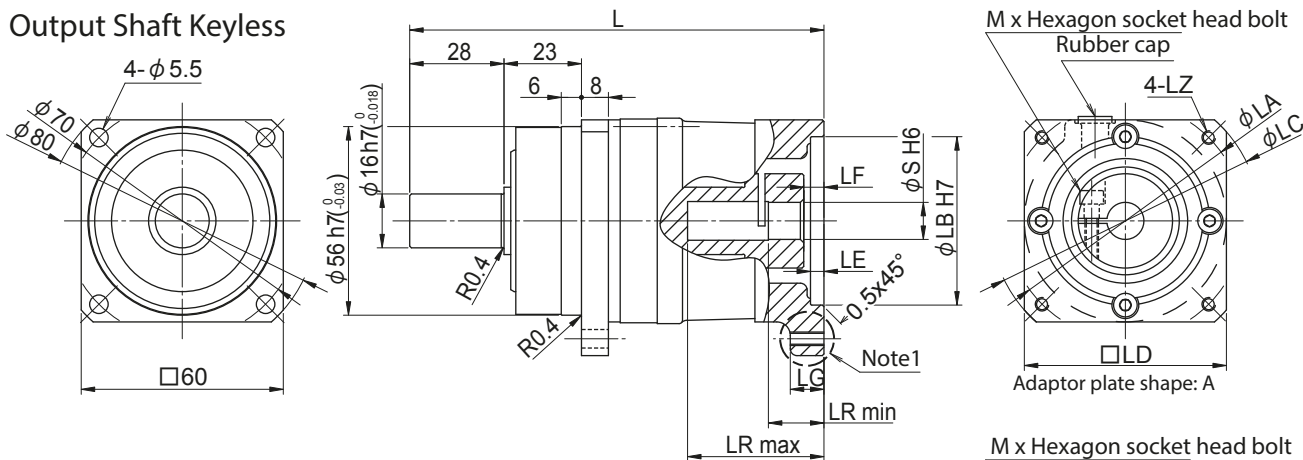
Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

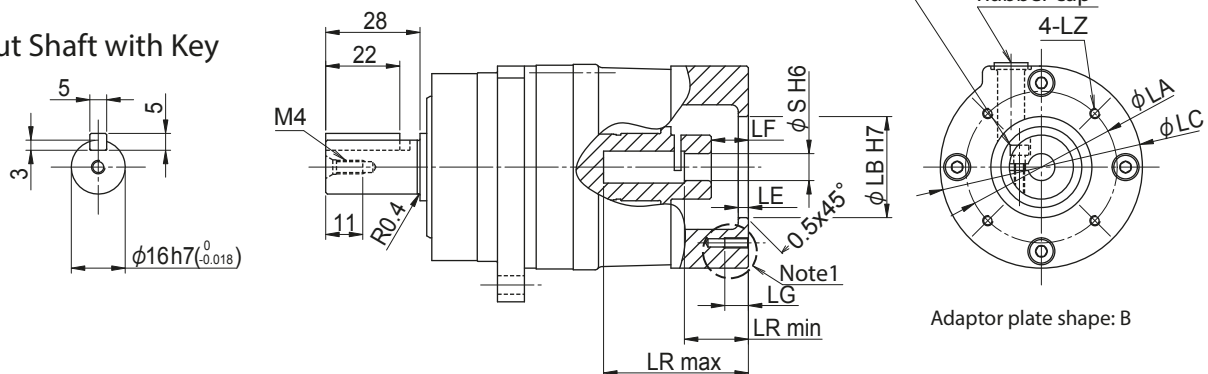
Dimension drawings

Frame Size P110
Reduction Ratio 21
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature ANFX-P110

Output shaft type: Keyless: N
With key: W

Motor flange code

Backlash

Reduction ratio (21)

3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
2C	126.5	45	30	60	-	5	11	7	Blind hole	B	M3	43	19	8	M3	1.1	2C
7J		46	30	60	-	5	11	9	Blind hole		M4	43	19	6	M3	1.1	7J
2D		46	30	60	-	5	11	9	Blind hole		M4	43	19	8	M3	1.1	2D
2E	124	60	50	80	60	4	8.5	9	Blind hole	A	M4	40.5	16.5	8	M3	1.1	2E
2K		60	50	80	60	4	6	9	Blind hole		M4	40.5	16.5	11	M4	1.2	2K
2F		70	50	80	60	4	8.5	10	Through hole		M4	40.5	16.5	8	M3	1.1	2F
2L		70	50	80	60	4	6	10	Through hole		M4	40.5	16.5	11	M4	1.1	2L
2G		70	50	80	60	4	8.5	10	Through hole		M5	40.5	16.5	8	M3	1.1	2G
2H		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	9	M4	1.2	2H
2R	125.5	70	50	80	60	4	6	10	Through hole	A	M5	40.5	16.5	14	M4	1.1	2R
8A		90	70	105	80	6	7.5	12	Through hole		M5	42	18	11	M4	1.3	8A
8B		90	70	105	80	6	7.5	12	Through hole		M5	42	18	14	M4	1.2	8B
2T		90	70	105	80	6	7.5	12	Through hole		M6	42	18	14	M4	1.2	2T

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

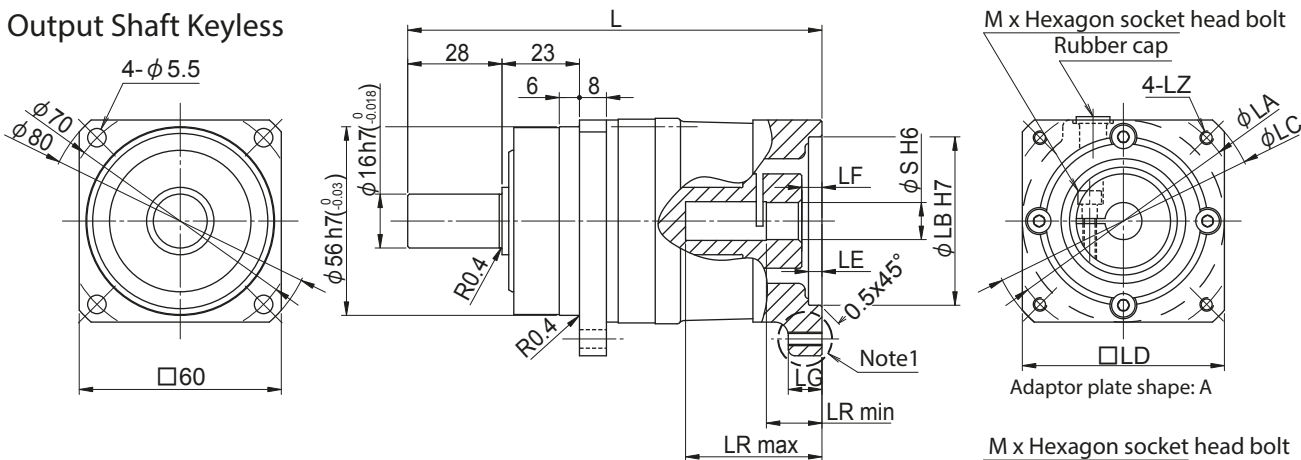
2. Dimensions and mass shown in the above figures are subject to change without prior notification.

P1 Type

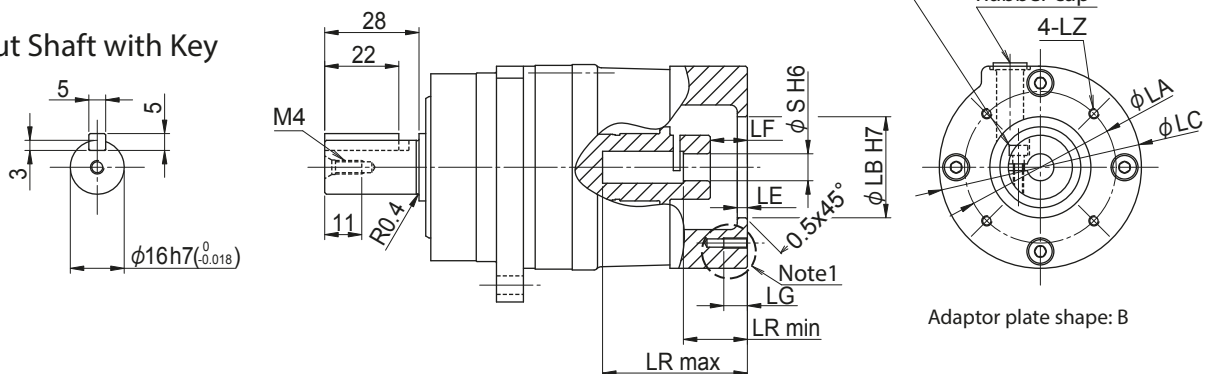
Dimension drawings

Frame Size P110
Reduction Ratio 45
Solid Shaft

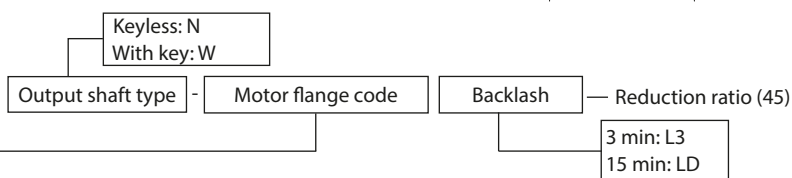
Output Shaft Keyless



Output Shaft with Key



Nomenclature
ANFX-P110



Motor flange code	Dimension										Adaptor plate shape	LR		S	M	Mass [kg]	Motor flange code	
	L	LA	LB	LC	LD	LE	LF	LG	Note1	Thread hole Shape		max	min					
2C	126.5	45	30	60	-	5	11	7		Blind hole	B	M3	43	19	8	M3	1.2	2C
7J		46	30	60	-	5	11	9		Blind hole		M4	43	19	6	M3	1.2	7J
2D		46	30	60	-	5	11	9		Blind hole		M4	43	19	8	M3	1.2	2D
2E	124	60	50	80	60	4	8.5	9		Blind hole	A	M4	40.5	16.5	8	M3	1.1	2E
2F		70	50	80	60	4	8.5	10		Through hole		M4	40.5	16.5	8	M3	1.1	2F
2G		70	50	80	60	4	8.5	10		Through hole		M5	40.5	16.5	8	M3	1.1	2G
2H		70	50	80	60	4	6	10		Through hole		M5	40.5	16.5	9	M4	1.2	2H

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

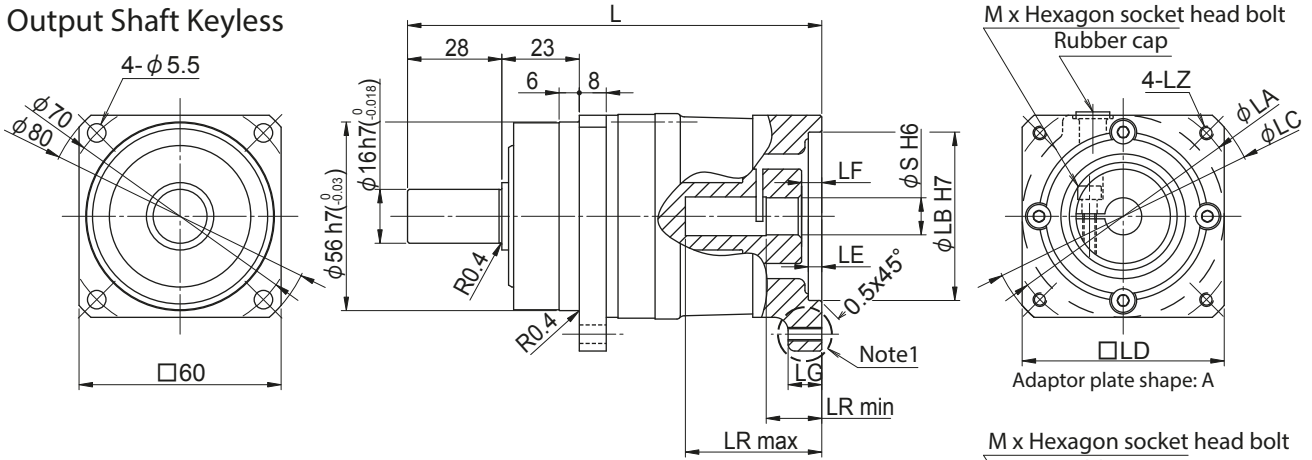
2. Dimensions and mass shown in the above figures are subject to change without prior notification.

P1 Type

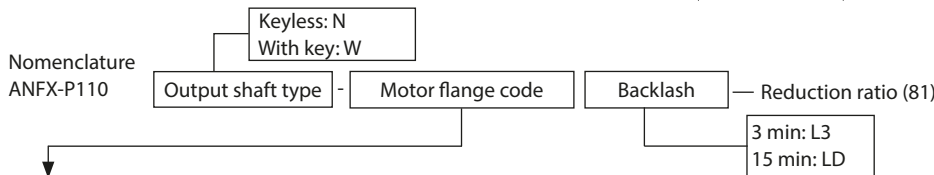
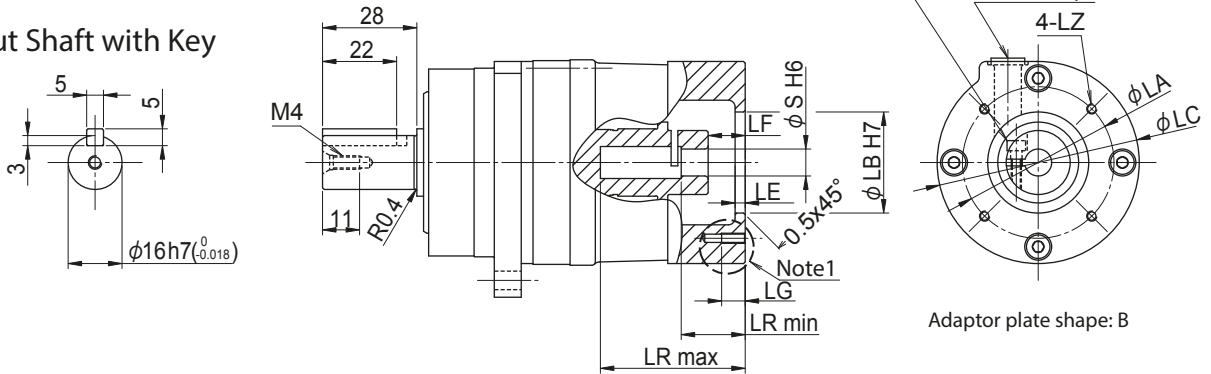
Dimension drawings

Frame Size P110
 Reduction Ratio 81
 Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
											max	min					
2C	126.5	45	30	60	-	5	11	7	Blind hole	B	M3	43	19	8	M3	1.1	2C
7J		46	30	60	-	5	11	9	Blind hole		M4	43	19	6	M3	1.1	7J
2D		46	30	60	-	5	11	9	Blind hole		M4	43	19	8	M3	1.1	2D
2E	124	60	50	80	60	4	8.5	9	Blind hole	A	M4	40.5	16.5	8	M3	1.2	2E
2H		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	9	M4	1.2	2H

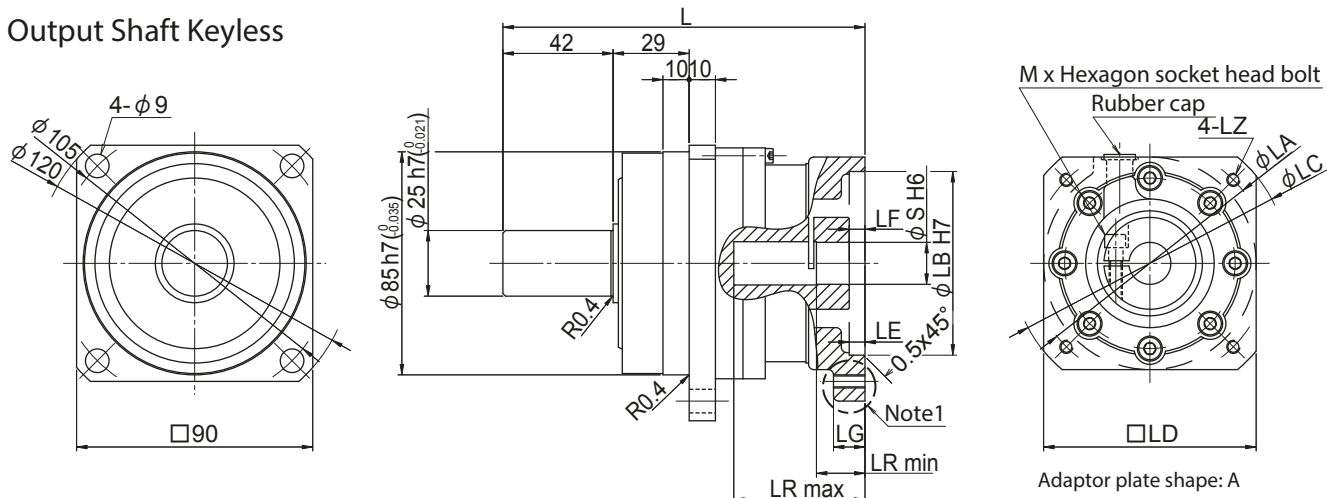
Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

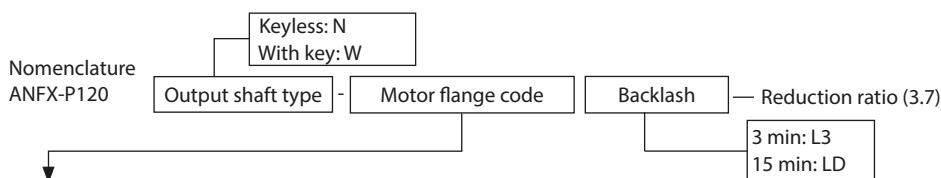
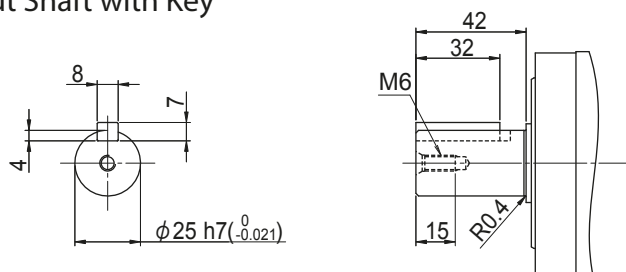
Dimension drawings

Frame Size P120
Reduction Ratio 3.7
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
0U	139	90	70	105	81	6	6	12	Through hole	A	M5	50	18.5	16	M5	2.5	0U
7S		90	70	105	81	6	6	12	Through hole		M5	50	18.5	19	M5	2.4	7S
7P		90	70	105	81	6	6	12	Through hole		M6	50	18.5	16	M5	2.5	7P
1G		90	70	105	81	6	6	12	Through hole		M6	50	18.5	19	M5	2.4	1G
0V	152.5	100	80	120	90	5	21.5	12	Through hole		M6	63.5	32	14	M4	2.6	0V
8E		100	80	120	90	5	19.5	12	Through hole		M6	63.5	32	16	M5	2.6	8E
7V		100	80	120	90	5	19.5	12	Through hole		M6	63.5	32	19	M5	2.5	7V
1L	165.5	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	2.9	1L
7A	152.5	115	95	135	100	6	19.5	16	Through hole		M8	63.5	32	16	M5	2.7	7A
7B		115	95	135	100	6	19.5	16	Through hole		M8	63.5	32	19	M5	2.6	7B
0W	165.5	115	95	135	100	6	17	16	Through hole		M8	46	31.5	22	M6	3.0	0W
7Y		115	95	135	100	6	17	16	Through hole		M8	46	31.5	24	M6	2.9	7Y
0Y		135	110	165	120	7	17	16	Through hole		M8	46	31.5	22	M6	3.1	0Y
7R	155.5	145	110	165	120	7	22.5	16	Through hole		M8	66.5	35	16	M5	2.8	7R
7X		145	110	165	120	7	22.5	16	Through hole		M8	66.5	35	19	M5	2.7	7X
1S	190.5	145	110	165	120	7	42	16	Through hole		M8	71	55	22	M6	3.2	1S
7Z		145	110	165	120	7	42	16	Through hole	M8	71	55	24	M6	3.2	7Z	

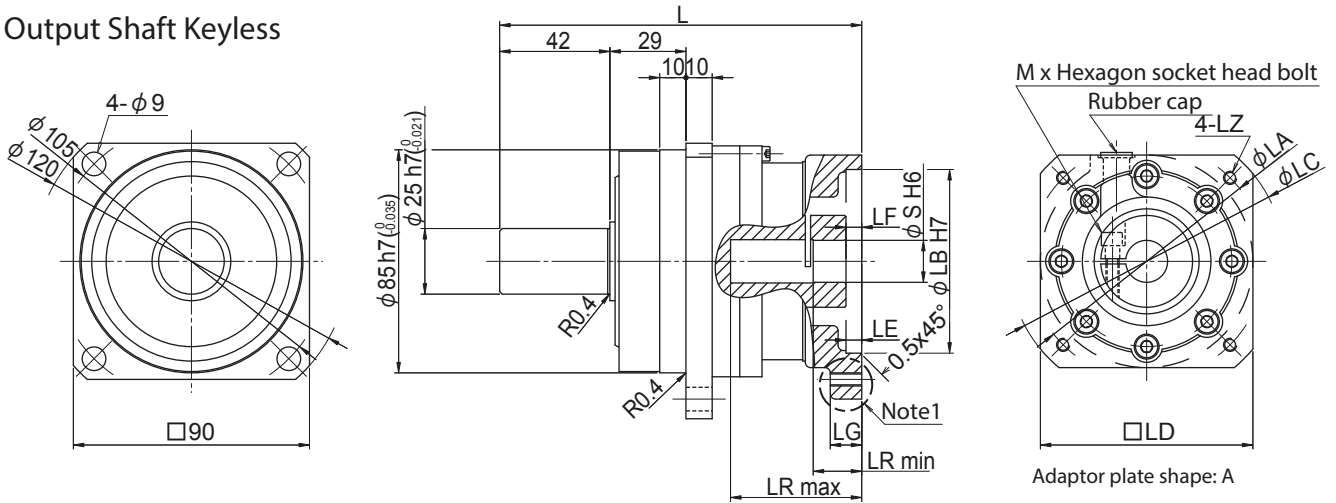
Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

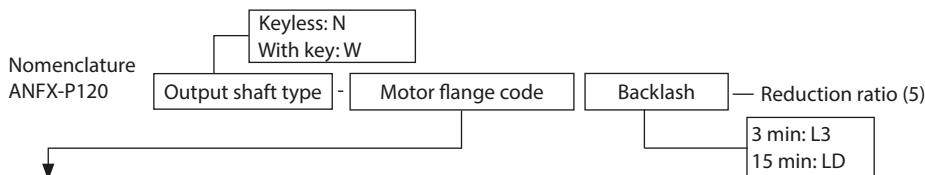
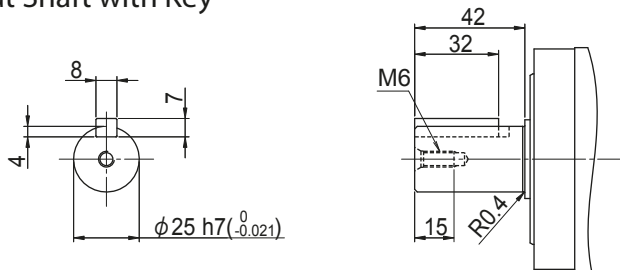
Dimension drawings

Frame Size P120
 Reduction Ratio 5
 Solid Shaft

Output Shaft Keyless



Output Shaft with Key



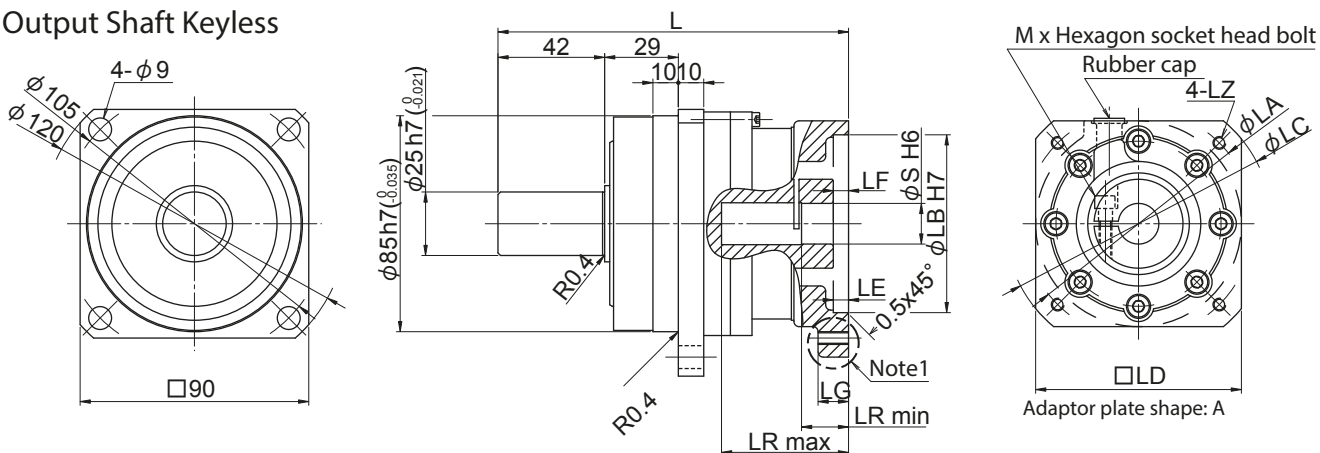
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
0U	139	90	70	105	81	6	6	12	Through hole	A	M5	50	18.5	16	M5	2.5	0U
7S		90	70	105	81	6	6	12	Through hole		M5	50	18.5	19	M5	2.4	7S
7P		90	70	105	81	6	6	12	Through hole		M6	50	18.5	16	M5	2.5	7P
1G		90	70	105	81	6	6	12	Through hole		M6	50	18.5	19	M5	2.4	1G
0V ^{Note 3}	152.5	100	80	120	90	5	19.5	12	Through hole		M6	63.5	30	14	M4	2.6	0V ^{Note 3}
8E		100	80	120	90	5	19.5	12	Through hole		M6	63.5	32	16	M5	2.6	8E
7V		100	80	120	90	5	19.5	12	Through hole		M6	63.5	32	19	M5	2.5	7V
1L	165.5	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	2.9	1L
7A	152.5	115	95	135	100	6	19.5	16	Through hole		M8	63.5	32	16	M5	2.7	7A
7B		115	95	135	100	6	19.5	16	Through hole		M8	63.5	32	19	M5	2.6	7B
0W	165.5	115	95	135	100	6	17	16	Through hole		M8	46	31.5	22	M6	3.0	0W
7Y		115	95	135	100	6	17	16	Through hole		M8	46	31.5	24	M6	2.9	7Y
0Y		135	110	165	120	7	17	16	Through hole	M8	46	31.5	22	M6	3.1	0Y	
7R	155.5	145	110	165	120	7	22.5	16	Through hole	M8	66.5	35	16	M5	2.8	7R	
7X		145	110	165	120	7	22.5	16	Through hole	M8	66.5	35	19	M5	2.7	7X	
1S	190.5	145	110	165	120	7	42	16	Through hole	M8	71	55	22	M6	3.2	1S	
7Z		145	110	165	120	7	42	16	Through hole	M8	71	55	24	M6	3.2	7Z	

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
 2. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012~+0.023).
 3. Dimensions and mass shown in the above figures are subject to change without prior notification.

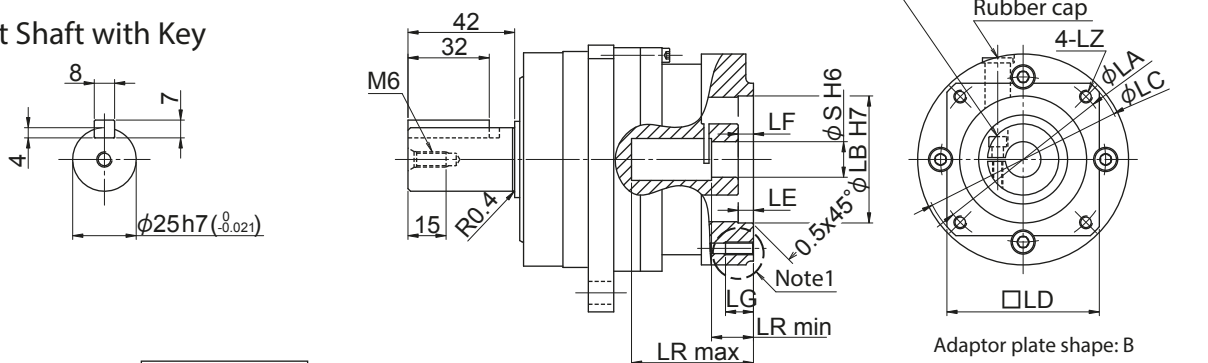
Dimension drawings

Frame Size P120
Reduction Ratio 9
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature ANFX-P120

Output shaft type: Keyless: N
With key: W

Motor flange code

Backlash

Reduction ratio (9)

3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	LG Note1	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
											max	min					
2R	137	70	50	80	60	6	6	11	Blind hole	B	M5	48	16.5	14	M4	2.5	2R
0U	139	90	70	105	81	6	6	12	Through hole	A	M5	50	18.5	16	M5	2.5	0U
7S		90	70	105	81	6	6	12	Through hole		M5	50	18.5	19	M5	2.4	7S
7P		90	70	105	81	6	6	12	Through hole		M6	50	18.5	16	M5	2.5	7P
1G		90	70	105	81	6	6	12	Through hole		M6	50	18.5	19	M5	2.4	1G
2J		100	80	120	90	5	21.5	12	Through hole		M6	63.5	32	10	M4	2.6	2J
0V ^{Note 3}	152.5	100	80	120	90	5	19.5	12	Through hole	M6	63.5	30	14	M4	2.4	0V ^{Note 3}	
8E		100	80	120	90	5	19.5	12	Through hole	M6	63.5	32	16	M5	2.6	8E	
7V		100	80	120	90	5	19.5	12	Through hole	M6	63.5	32	19	M5	2.5	7V	
1L	165.5	115	95	135	100	6	17	16	Through hole	M6	46	31.5	24	M6	2.9	1L	
7A	152.5	115	95	135	100	6	19.5	16	Through hole	M8	63.5	32	16	M5	2.7	7A	
7B		115	95	135	100	6	19.5	16	Through hole	M8	63.5	32	19	M5	2.6	7B	
0W	165.5	115	95	135	100	6	17	16	Through hole	M8	46	31.5	22	M6	3.0	0W	
7Y		115	95	135	100	6	17	16	Through hole	M8	46	31.5	24	M6	2.9	7Y	
0Y		135	110	165	120	7	17	16	Through hole	M8	46	31.5	22	M6	3.1	0Y	
7R	155.5	145	110	165	120	7	22.5	16	Through hole	M8	66.5	35	16	M5	2.8	7R	
7X		145	110	165	120	7	22.5	16	Through hole	M8	66.5	35	19	M5	2.8	7X	
1S	190.5	145	110	165	120	7	42	16	Through hole	M8	71	55	22	M6	3.3	1S	
7Z		145	110	165	120	7	42	16	Through hole	M8	71	55	24	M6	3.2	7Z	

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

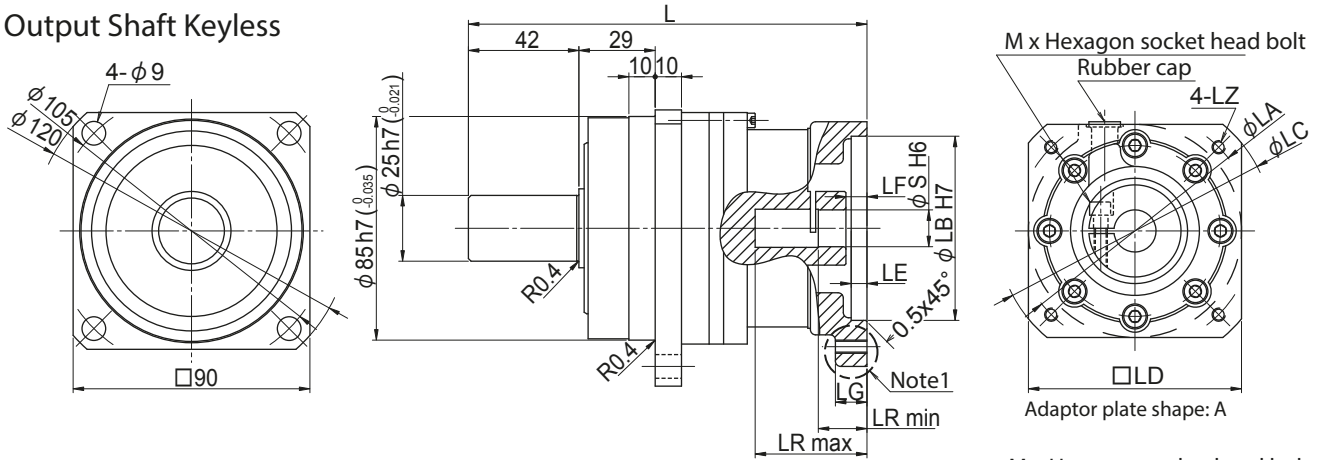
2. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012--+0.023).

3. Dimensions and mass shown in the above figures are subject to change without prior notification.

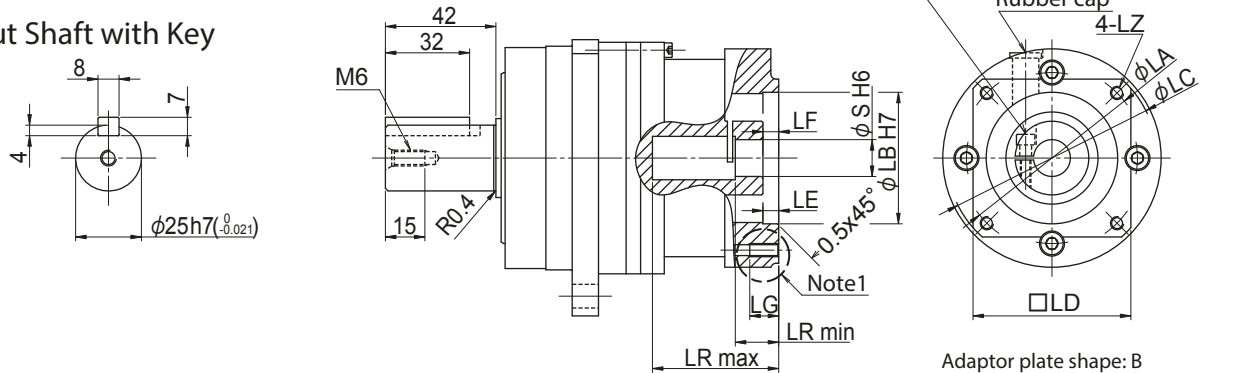
Dimension drawings

Frame Size P120
Reduction Ratio 11
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature ANFX-P120

Output shaft type: Keyless: N, With key: W

Motor flange code

Backlash

Reduction ratio (11)

3 min: L3, 15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	LG	Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code																																																						
												max	min																																																										
2P	150.5	70	50	80	60	6	6	9	Blind hole	B	M4	40.5	16.5	14	M4	2.8	2P																																																						
2R																		11	Blind hole	M5	40.5	16.5	14	M4	2.8	2R																																													
8B	152.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	14	M4	2.8	8B																																																						
0U																		12	Through hole	M5	42.5	18.5	16	M5	2.9	0U																																													
7S																											12	Through hole	M5	42.5	18.5	19	M5	2.9	7S																																				
2T																																				12	Through hole	M6	42.5	18.5	14	M4	2.8	2T																											
7P																																													12	Through hole	M6	42.5	18.5	16	M5	2.9	7P																		
1G																																																						12	Through hole	M6	42.5	18.5	19	M5	2.9	1G									
2J																																																															12	Through hole	M6	56	32	10	M4	3.0	2J
0V ^{Note 3}																																																																							
8E	12	Through hole	M6	56	32	16	M5	3.0	8E																																																														
7V										12	Through hole	M6	56	32	19	M5	3.0	7V																																																					
1L																			16	Through hole	M6	46	31.5	24	M6	3.4	1L																																												
7A																												16	Through hole	M8	56	32	16	M5	3.1	7A																																			
0W																																					16	Through hole	M8	46	31.5	22	M6	3.7	0W																										
7Y																																														16	Through hole	M8	46	31.5	24	M6	3.4	7Y																	
0Y																																																							16	Through hole	M8	46	31.5	22	M6	3.6	0Y								
7R																																																																16	Through hole	M8	59	35	16	M5	3.2
7X	16	Through hole	M8	59	35	19	M5	3.2	7X																																																														
7Z										16	Through hole	M8	71	55	24	M6	3.7	7Z																																																					

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

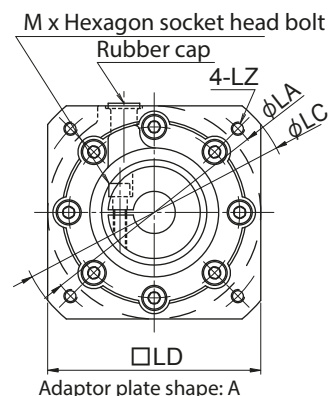
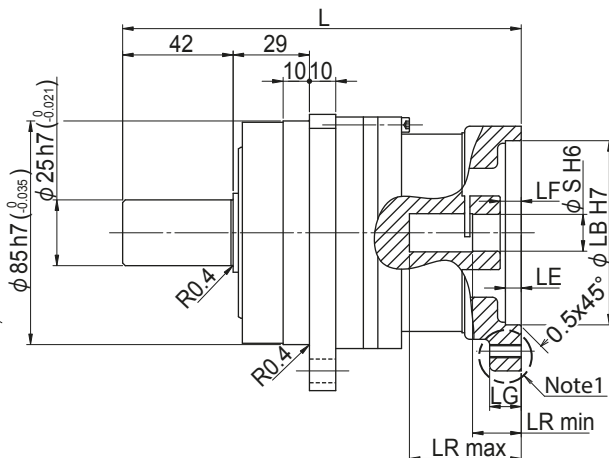
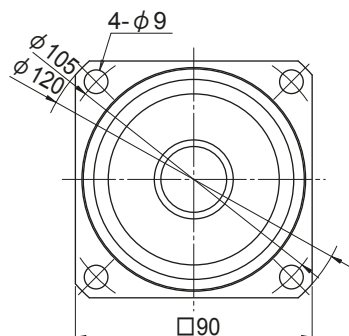
2. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012~+0.023).

3. Dimensions and mass shown in the above figures are subject to change without prior notification.

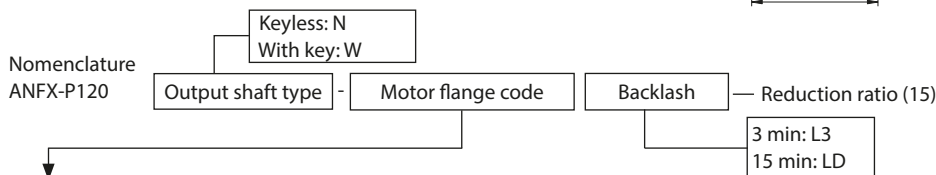
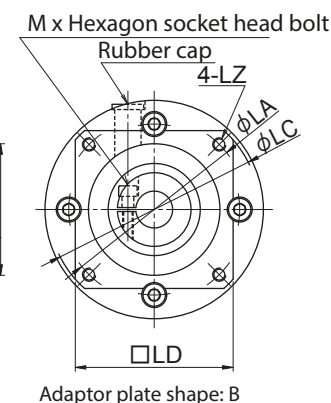
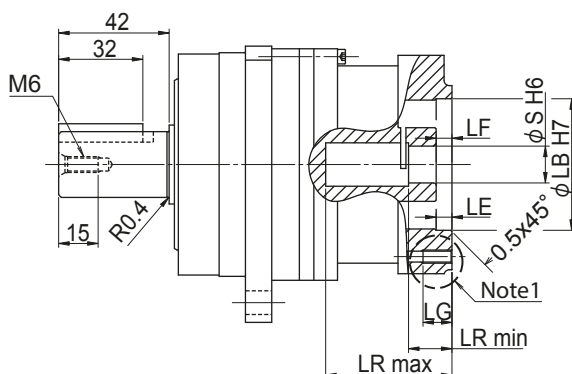
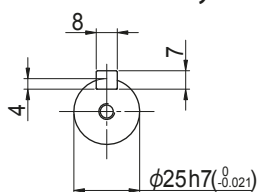
Dimension drawings

Frame Size P120
Reduction Ratio 15
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	LG	Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code		
												max	min						
2P	150.5	70	50	80	60	6	6	9	Blind hole	B	M4	40.5	16.5	14	M4	2.8	2P		
2R		70	50	80	60	6	6	11	Blind hole		M5	40.5	16.5	14	M4	2.8	2R		
8B	152.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	14	M4	2.8	8B		
OU		90	70	105	81	6	6	12	Through hole		M5	42.5	18.5	16	M5	2.9	OU		
7S		90	70	105	81	6	6	12	Through hole		M5	42.5	18.5	19	M5	2.9	7S		
2T		90	70	105	81	6	8	12	Through hole		M6	42.5	18.5	14	M4	2.8	2T		
7P		90	70	105	81	6	6	12	Through hole		M6	42.5	18.5	16	M5	2.9	7P		
1G		90	70	105	81	6	6	12	Through hole		M6	42.5	18.5	19	M5	2.9	1G		
2J		166	100	80	120	90	5	21.5	12		Through hole	A	M6	56	32	10	M4	3.0	2J
0V ^{Note 3}			100	80	120	90	5	19.5	12		Through hole		M6	56	30	14	M4	2.9	0V ^{Note 3}
8E	100		80	120	90	5	19.5	12	Through hole	M6	56		32	16	M5	3.0	8E		
7V	100		80	120	90	5	19.5	12	Through hole	M6	56		32	19	M5	3.0	7V		
1L	179		115	95	135	100	6	17	16	Through hole	M6		46	31.5	24	M6	3.4	1L	
7A	166	115	95	135	100	6	19.5	16	Through hole	A	M8	56	32	16	M5	3.1	7A		
0W		115	95	135	100	6	17	16	Through hole		M8	46	31.5	22	M6	3.7	0W		
7Y	179	115	95	135	100	6	17	16	Through hole	A	M8	46	31.5	24	M6	3.4	7Y		
0Y		135	110	165	120	7	17	16	Through hole		M8	46	31.5	22	M6	3.6	0Y		
7R	169	145	110	165	120	7	22.5	16	Through hole	A	M8	59	35	16	M5	3.2	7R		
7X		145	110	165	120	7	22.5	16	Through hole		M8	59	35	19	M5	3.2	7X		
7Z		204	145	110	165	120	7	42	16		Through hole	M8	71	55	24	M6	3.7	7Z	

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

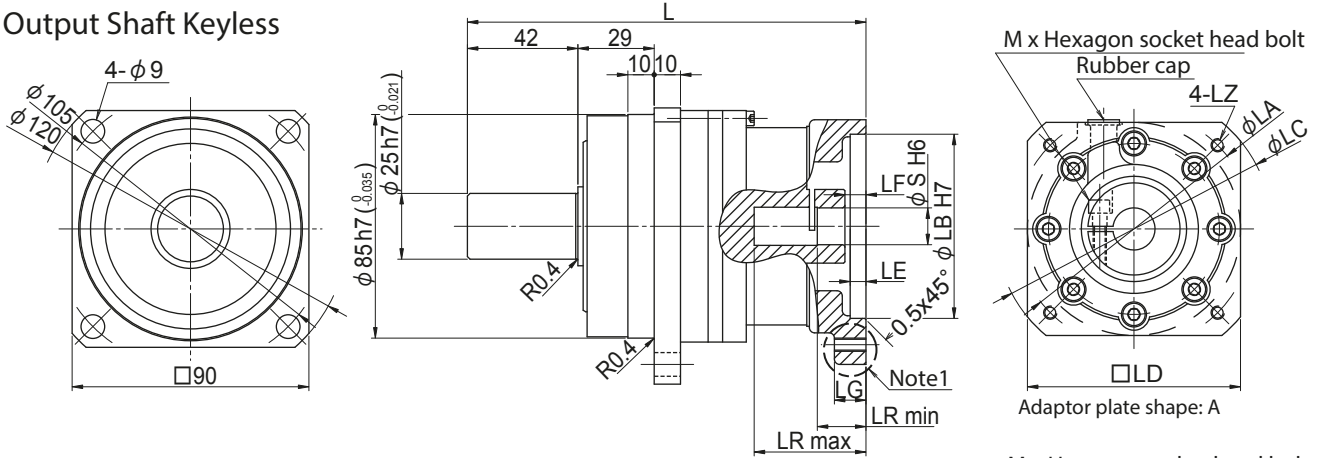
2. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012~+0.023).

3. Dimensions and mass shown in the above figures are subject to change without prior notification.

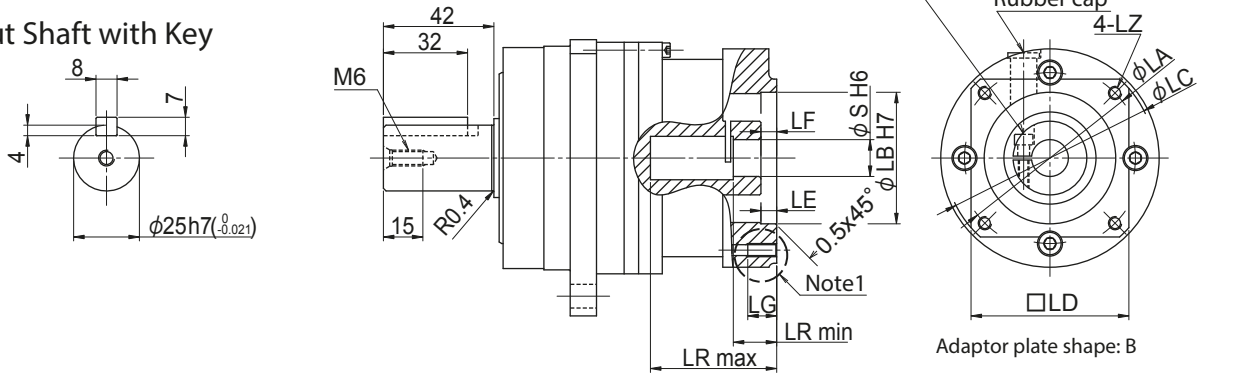
Dimension drawings

Frame Size P120
 Reduction Ratio 21
 Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature ANFX-P120

Output shaft type: Keyless: N / With key: W

Motor flange code: _____

Backlash: _____

Reduction ratio (21): _____

3 min: L3
 15 min: LD

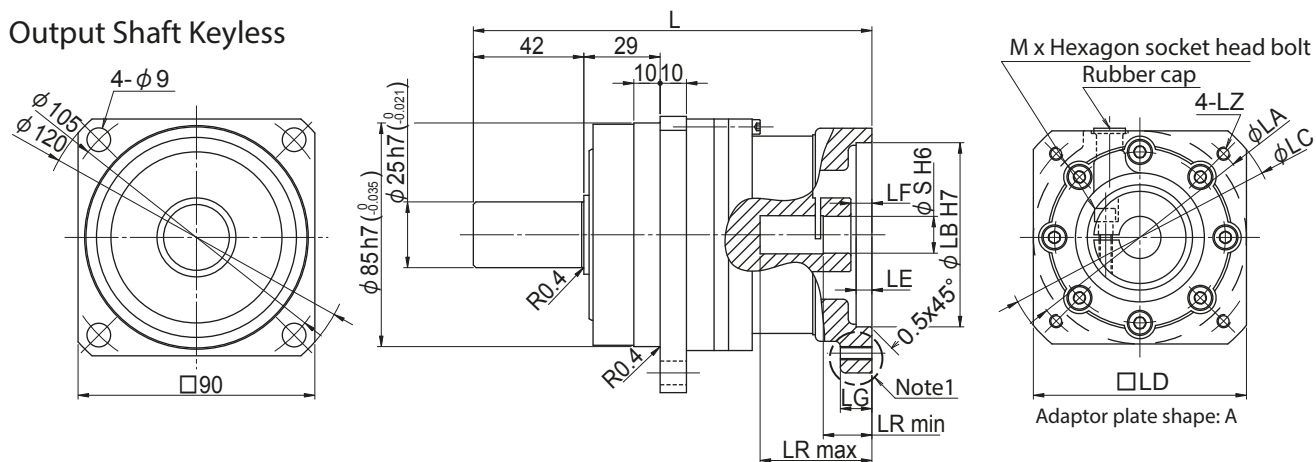
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
2P	150.5	70	50	80	60	6	6	9	Blind hole	B	M4	40.5	16.5	14	M4	2.8	2P
2H		70	50	80	60	6	6	11	Blind hole		M5	40.5	16.5	9	M4	2.8	2H
2R		70	50	80	60	6	6	11	Blind hole		M5	40.5	16.5	14	M4	2.8	2R
8B	152.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	14	M4	2.8	8B
0U		90	70	105	81	6	6	12	Through hole		M5	42.5	18.5	16	M5	2.9	0U
7S		90	70	105	81	6	6	12	Through hole		M5	42.5	18.5	19	M5	2.9	7S
2T	166	90	70	105	81	6	8	12	Through hole	A	M6	42.5	18.5	14	M4	2.8	2T
7P		90	70	105	81	6	6	12	Through hole		M6	42.5	18.5	16	M5	2.9	7P
1G		90	70	105	81	6	6	12	Through hole		M6	42.5	18.5	19	M5	2.9	1G
2J	169	100	80	120	90	5	21.5	12	Through hole	A	M6	56	32	10	M4	3.0	2J
0V ^{Note 3}		100	80	120	90	5	19.5	12	Through hole		M6	56	30	14	M4	3.0	0V ^{Note 3}
8E		100	80	120	90	5	19.5	12	Through hole		M6	56	32	16	M5	3.0	8E
7A	204	115	95	135	100	6	19.5	16	Through hole	A	M8	56	32	16	M5	3.1	7A
7R		145	110	165	120	7	22.5	16	Through hole		M8	59	35	16	M5	3.2	7R
7X		145	110	165	120	7	22.5	16	Through hole		M8	59	35	19	M5	3.2	7X
7Z		145	110	165	120	7	42	16	Through hole		M8	71	55	24	M6	3.7	7Z

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
 2. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012~+0.023).
 3. Dimensions and mass shown in the above figures are subject to change without prior notification.

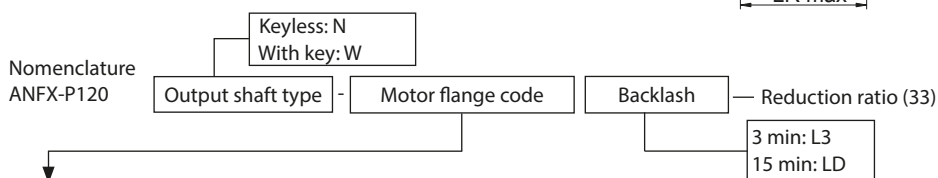
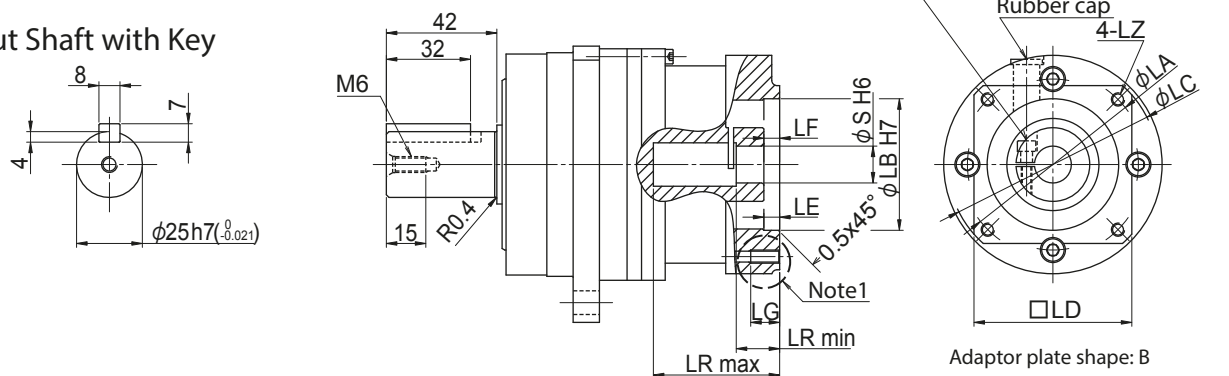
Dimension drawings

Frame Size P120
Reduction Ratio 33
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
2P	150.5	70	50	80	60	6	6	9	Blind hole	B	M4	40.5	16.5	14	M4	2.9	2P
2R												40.5	16.5				
8B	152.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	14	M4	2.9	8B
2T												42.5	18.5				
2J	166	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	3.0	2J

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

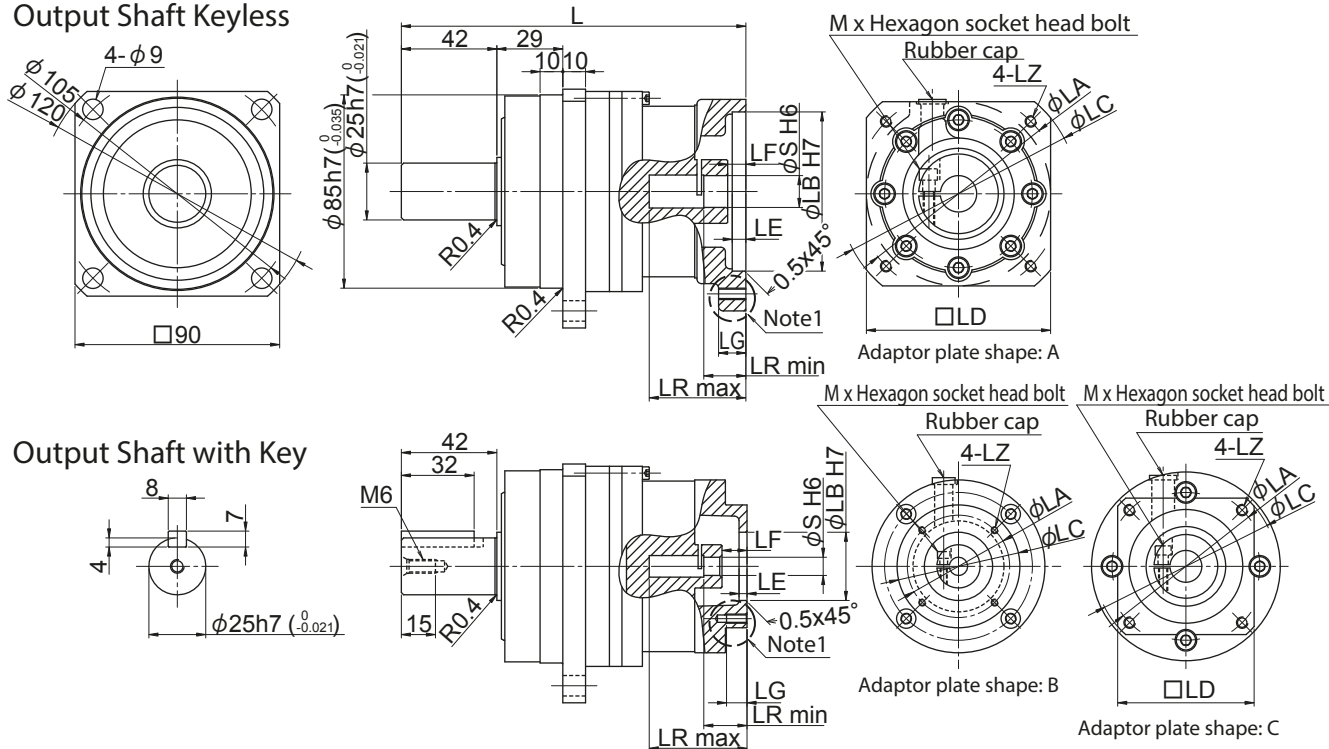
2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

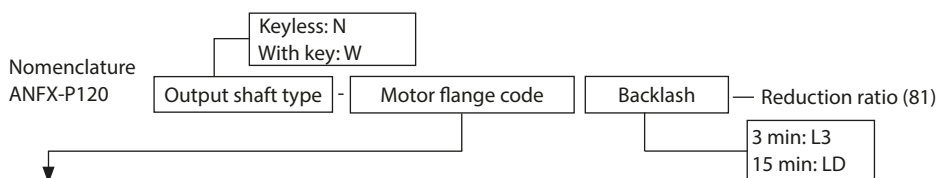
Frame Size P120
Reduction Ratio 81
Solid Shaft

P1 Type

Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
												max	min					
2C	153	45	30	54	-	4	11	7	Blind hole	B	M3	43	19	8	M3	2.8	2C	
2D		46	30	54	-	4	11	9	Blind hole		M4	43	19	8	M3	2.8	2D	
2E	150.5	60	50	80	60	6	8.5	9	Blind hole	C	M4	40.5	16.5	8	M3	2.9	2E	
2K		60	50	80	60	6	6	9	Blind hole		M4	40.5	16.5	11	M4	2.9	2K	
2F		70	50	80	60	6	8.5	9	Blind hole		M4	40.5	16.5	8	M3	2.9	2F	
2G		70	50	80	60	6	8.5	11	Blind hole		M5	40.5	16.5	8	M3	2.9	2G	
2H		70	50	80	60	6	6	11	Blind hole		M5	40.5	16.5	9	M4	2.9	2H	
2R		70	50	80	60	6	6	11	Blind hole		A	M5	40.5	16.5	14	M4	2.9	2R
2T		152.5	90	70	105	81	6	8	12			Through hole	M6	42.5	18.5	14	M4	2.9

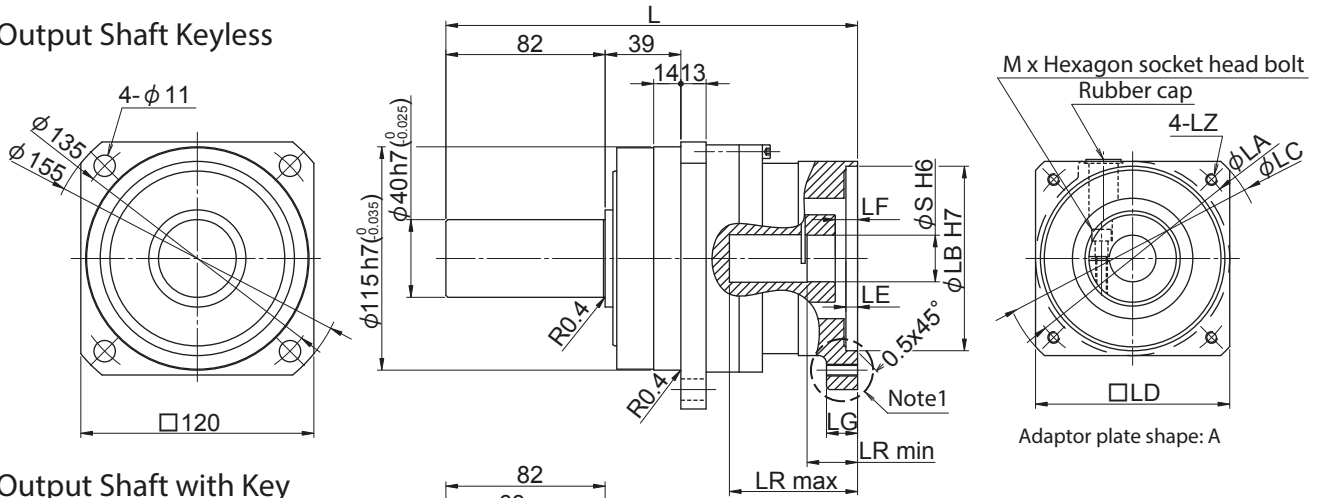
Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

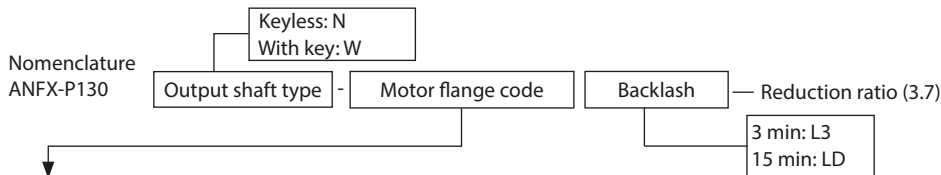
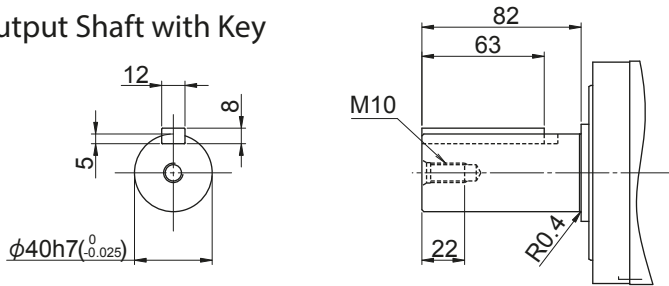
Dimension drawings

Frame Size P130
 Reduction Ratio 3.7
 Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
1S	221.5	145	110	165	120	7	19.5	16	Through hole	A	M8	74	34	22	M6	6.9	1S
7Z		145	110	165	120	7	19.5	16	Through hole		M8	74	34	24	M6	6.8	7Z
1T		145	110	165	120	7	19.5	16	Through hole		M8	74	34	28	M6	6.7	1T
0Z		135	110	165	120	7	19.5	16	Through hole		M8	74	34	28	M6	6.7	0Z
0X ^{Note 3}	267	200	114.3	230	180	6	41.5	24	Through hole	M12	81	60	35	M8	8.4	0X ^{Note 3}	

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

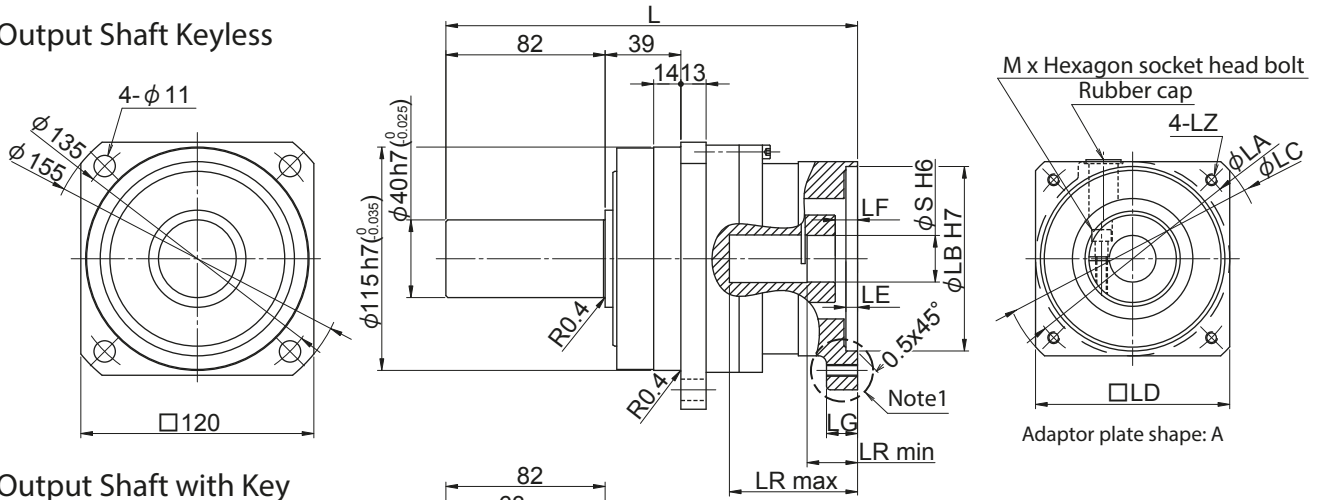
2. Tolerance of coupling for motor flange code "0X" is over tolerance (+0.010-+0.026).

3. Dimensions and mass shown in the above figures are subject to change without prior notification.

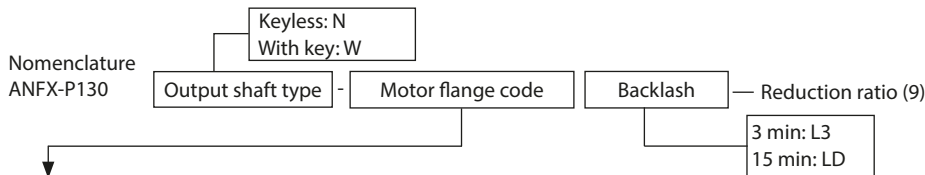
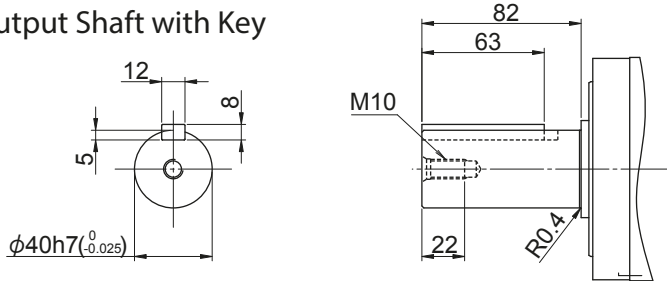
Dimension drawings

Frame Size P130
Reduction Ratio 9
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
												max	min					
1L	213.5	115	95	135	100	6	11.5	16	Through hole	A	M6	66	26	24	M6	6.5	1L	
7B		115	95	135	100	6	13.5	16	Through hole		M8	66	26	19	M5	6.5	7B	
0W		115	95	135	100	6	11.5	16	Through hole		M8	66	26	22	M6	6.5	0W	
7Y		115	95	135	100	6	11.5	16	Through hole		M8	66	26	24	M6	6.5	7Y	
0Y	221.5	135	110	165	120	7	19.5	16	Through hole		M8	74	34	22	M6	7.0	0Y	
7X		145	110	165	120	7	21.5	16	Through hole		M8	74	34	19	M5	7.0	7X	
1S		145	110	165	120	7	19.5	16	Through hole		M8	74	34	22	M6	7.0	1S	
7Z		145	110	165	120	7	19.5	16	Through hole		M8	74	34	24	M6	6.9	7Z	
1T		145	110	165	120	7	19.5	16	Through hole		M8	74	34	28	M6	6.8	1T	
0Z		135	110	165	120	7	19.5	16	Through hole		M8	74	34	28	M6	6.7	0Z	
0X ^{Note 3}		267	200	114.3	230	180	6	41.5	24		Through hole	M12	81	60	35	M8	8.5	0X ^{Note 3}

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

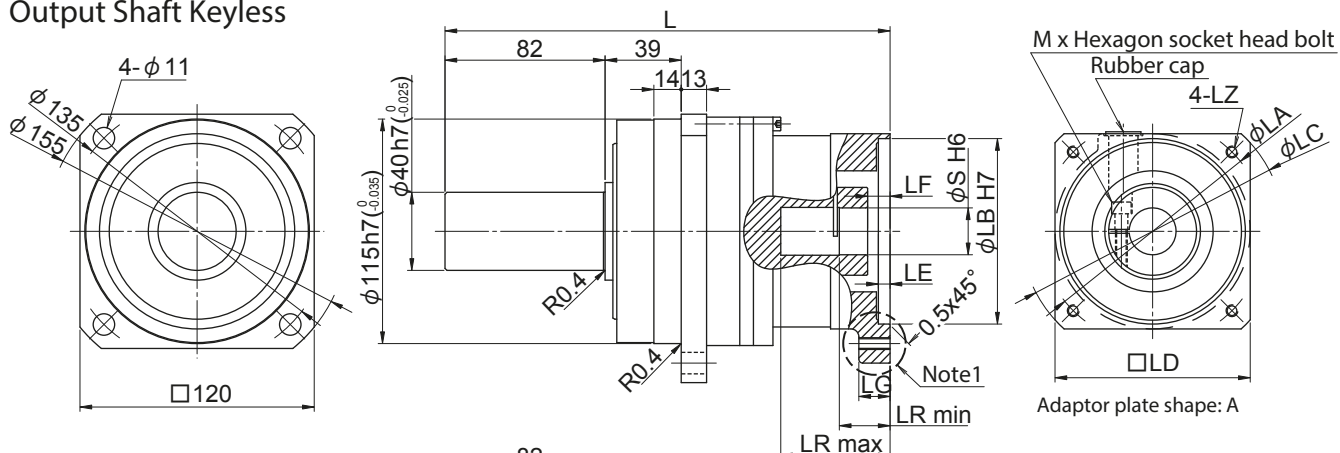
2. Tolerance of coupling for motor flange code "0X" is over tolerance (+0.010-+0.026).

3. Dimensions and mass shown in the above figures are subject to change without prior notification.

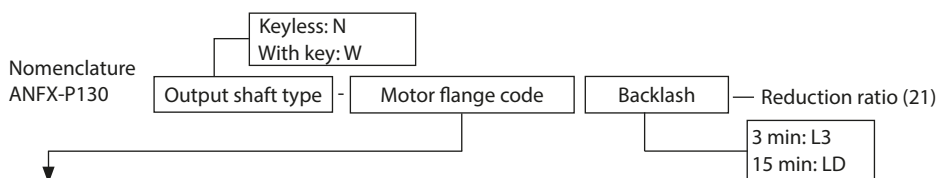
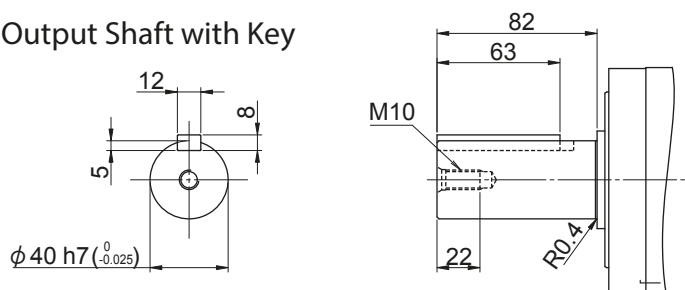
Dimension drawings

Frame Size P130
Reduction Ratio 21
Solid Shaft

Output Shaft Keyless



Output Shaft with Key

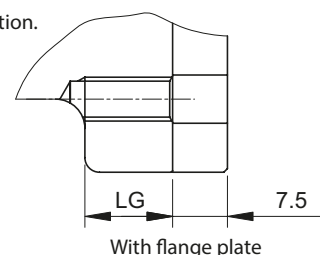


Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
8E ^{Note 3}	229.5	100	80	120	90	5	13.5	12	Through hole	A	M6	56	26	16	M5	7.4	8E ^{Note 3}
7V ^{Note 3}		100	80	120	90	5	13.5	12	Through hole		M6	56	26	19	M5	7.3	7V ^{Note 3}
1L		115	95	135	100	6	11.5	16	Through hole		M6	56	26	24	M6	7.3	1L
7B		115	95	135	100	6	13.5	16	Through hole		M8	56	26	19	M5	7.3	7B
0W		115	95	135	100	6	11.5	16	Through hole		M8	56	26	22	M6	7.3	0W
7Y		115	95	135	100	6	11.5	16	Through hole		M8	56	26	24	M6	7.3	7Y
0Y	237.5	135	110	165	120	7	19.5	16	Through hole	M8	74	34	22	M6	7.9	0Y	
7X		145	110	165	120	7	21.5	16	Through hole	M8	64	34	19	M5	7.6	7X	
1S		145	110	165	120	7	19.5	16	Through hole	M8	64	34	22	M6	7.6	1S	
7Z		145	110	165	120	7	19.5	16	Through hole	M8	64	34	24	M6	7.7	7Z	

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Flange plate for motor is attached between the motor and the adaptor plate.

3. Dimensions and mass shown in the above figures are subject to change without prior notification.

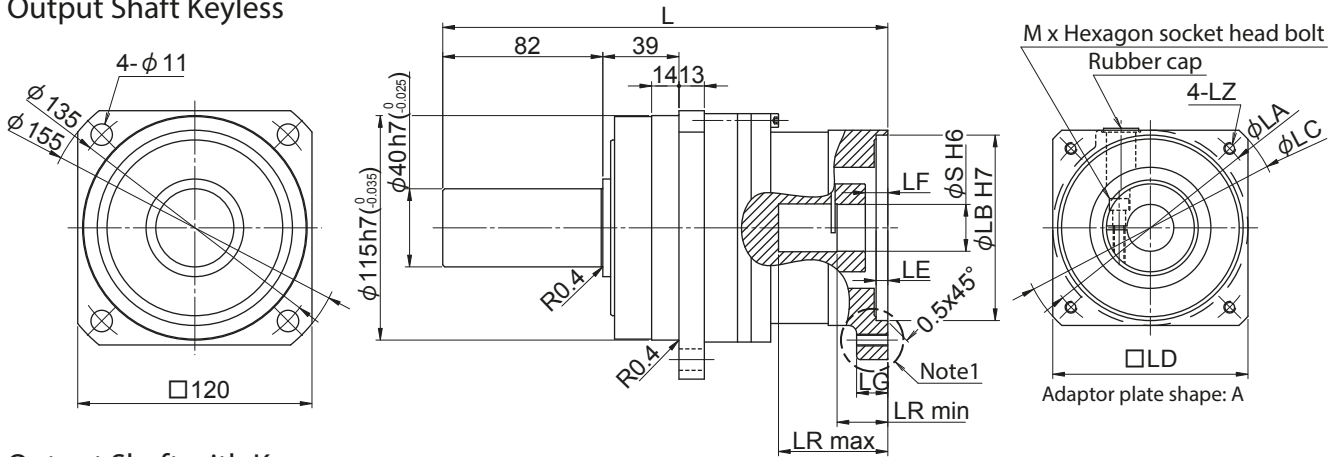


P1 Type

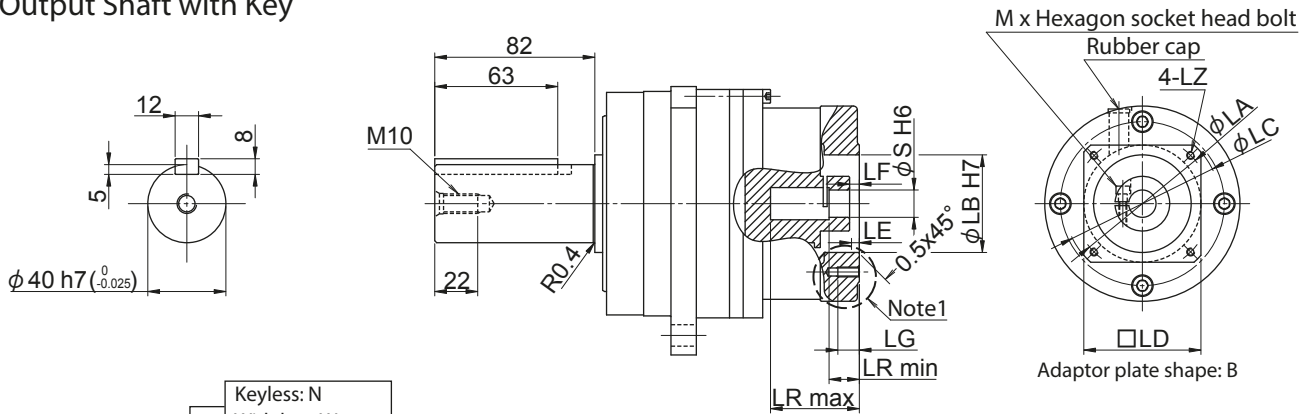
Dimension drawings

Frame Size P130
 Reduction Ratio 33
 Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature ANFX-P130

Output shaft type: Keyless: N, With key: W

Motor flange code

Backlash

Reduction ratio (33)

3 min: L3, 15 min: LD

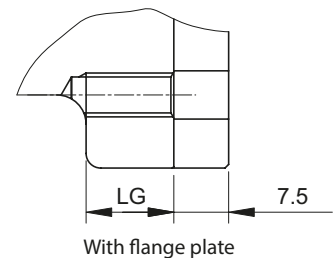
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension		Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
								LG	Note1 Thread hole Shape			max	min				
2R	219	70	50	80	60	4	5	11	Blind hole	B	M5	45.5	15.5	14	M4	7.3	2R
0U	222	90	70	120	90	6	6	11	Blind hole		M5	48.5	18.5	16	M5	7.3	0U
7S		90	70	120	90	6	6	11	Blind hole		M5	48.5	18.5	19	M5	7.3	7S
7P		90	70	120	90	6	6	13	Blind hole		M6	48.5	18.5	16	M5	7.3	7P
1G		90	70	120	90	6	6	13	Blind hole		M6	48.5	18.5	19	M5	7.3	1G
2J ^{Note 3}		229.5	100	80	120	90	5	15.5	12	Through hole	M6	56	26	10	M4	7.4	2J ^{Note 3}
0V ^{Note 4}	100		80	120	90	5	15.5	12	Through hole	M6	56	26	14	M4	7.4	0V ^{Note 4}	
8E ^{Note 3}	100		80	120	90	5	13.5	12	Through hole	M6	56	26	16	M5	7.4	8E ^{Note 3}	
7A	115		95	135	100	6	13.5	16	Through hole	A	M8	56	26	16	M5	7.4	7A
7R	145		110	165	120	7	21.5	16	Through hole		M8	64	34	16	M5	7.7	7R
7X	237.5	145	110	165	120	7	21.5	16	Through hole		M8	64	34	19	M5	7.7	7X
7Z		145	110	165	120	7	19.5	16	Through hole		M8	64	36	24	M6	7.7	7Z

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Flange plate for motor is attached between the motor and the adaptor plate.

3. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012+0.023).

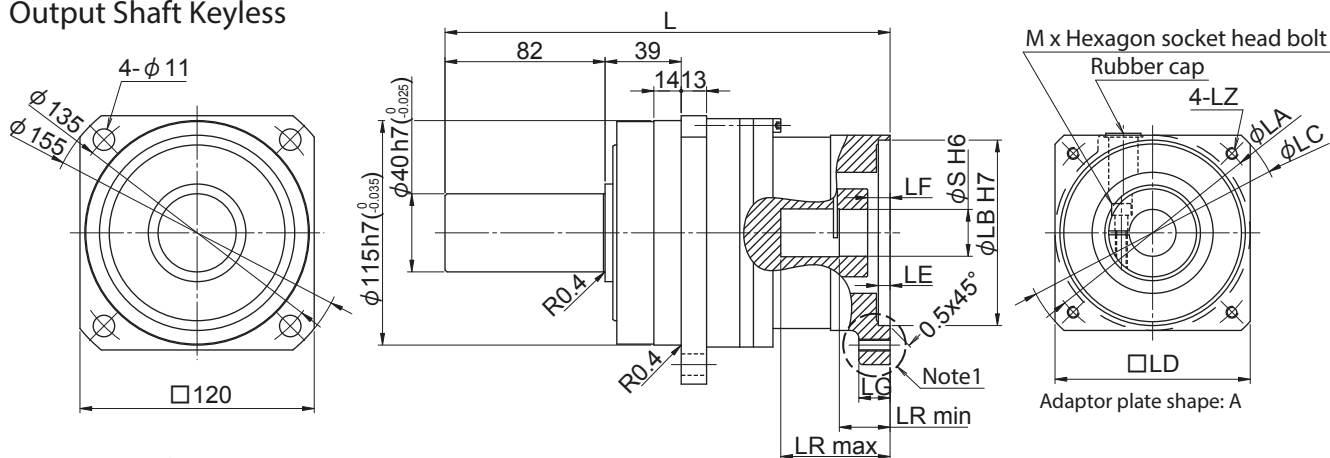
4. Dimensions and mass shown in the above figures are subject to change without prior notification.



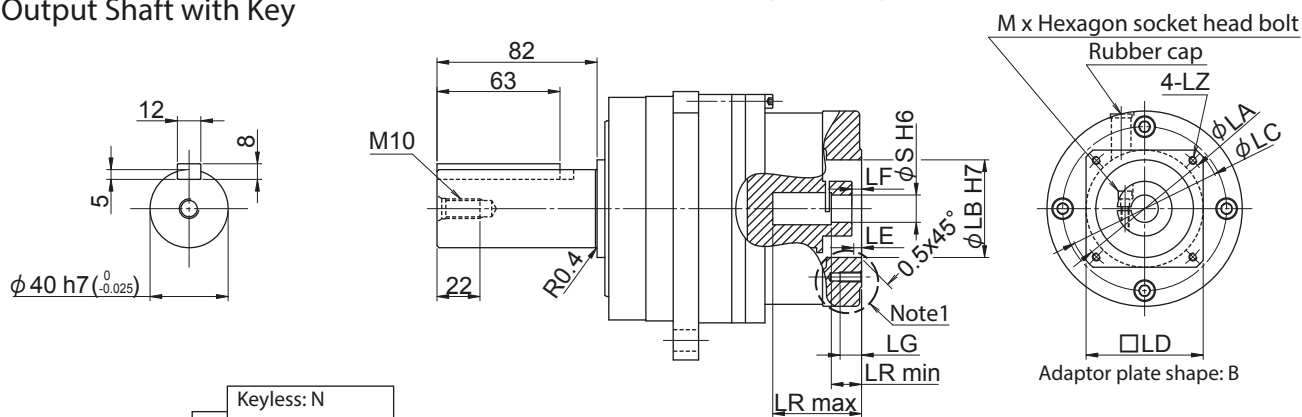
Dimension drawings

Frame Size P130
Reduction Ratio 45
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature ANFX-P130

Output shaft type: Keyless: N, With key: W

Motor flange code

Backlash: 3 min: L3, 15 min: LD

Reduction ratio (45)

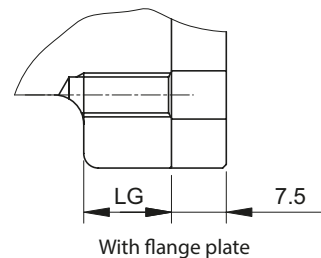
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension		Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
								LG	Note 1 Thread hole Shape			max	min				
2R	219	70	50	80	60	4	5	11	Blind hole	B	M5	45.5	15.5	14	M4	7.3	2R
0U	222	90	70	120	90	6	6	11	Blind hole		M5	48.5	18.5	16	M5	7.3	0U
7S		90	70	120	90	6	6	11	Blind hole		M5	48.5	18.5	19	M5	7.3	7S
7P		90	70	120	90	6	6	13	Blind hole		M6	48.5	18.5	16	M5	7.3	7P
1G		90	70	120	90	6	6	13	Blind hole		M6	48.5	18.5	19	M5	7.3	1G
2J ^{Note 3}		229.5	100	80	120	90	5	15.5	12		Through hole	M6	56	26	10	M4	7.4
0V ^{Note 4}			100	80	120	90	5	15.5	12	Through hole	M6	56	26	14	M4	7.4	0V ^{Note 4}
8E ^{Note 3}	100		80	120	90	5	13.5	12	Through hole	M6	56	26	16	M5	7.4	8E ^{Note 3}	
7A	115		95	135	100	6	13.5	16	Through hole	A	M8	56	26	16	M5	7.4	7A
7R	145		110	165	120	7	21.5	16	Through hole		M8	64	34	16	M5	7.7	7R
7X	237.5		145	110	165	120	7	21.5	16		Through hole	M8	64	34	19	M5	7.7
7Z		145	110	165	120	7	19.5	16	Through hole		M8	64	36	24	M6	7.7	7Z

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

2. Flange plate for motor is attached between the motor and the adaptor plate.

3. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012~+0.023).

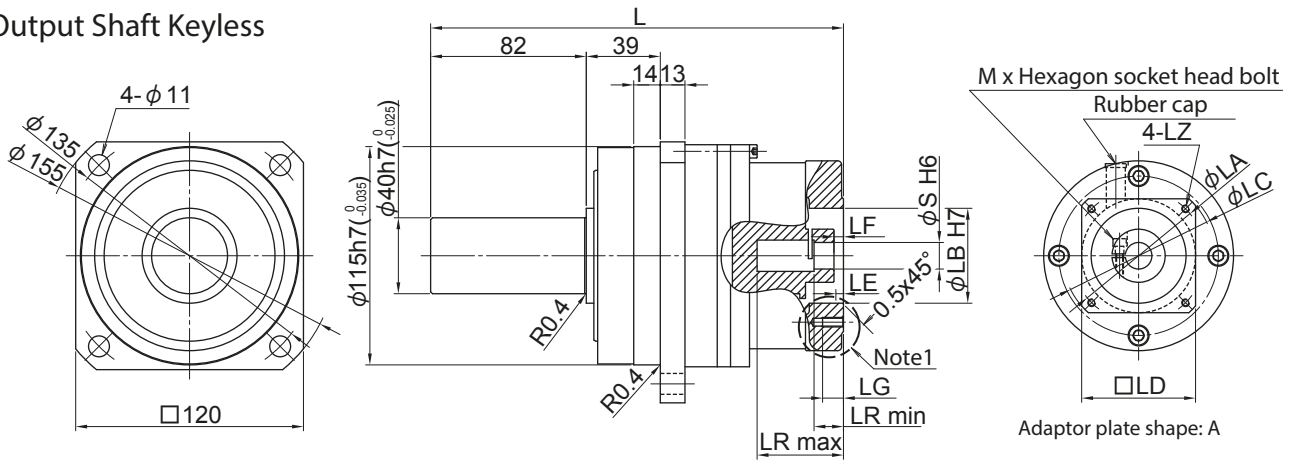
4. Dimensions and mass shown in the above figures are subject to change without prior notification.



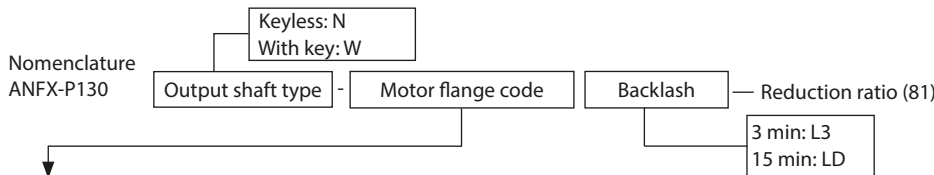
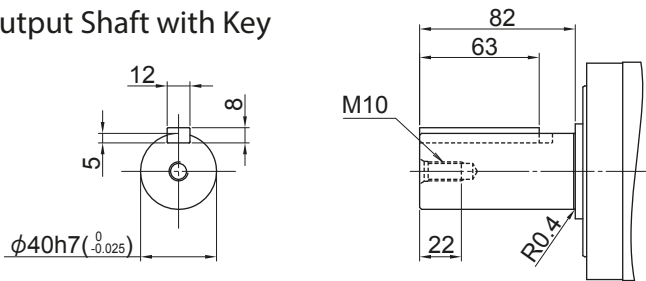
Dimension drawings

Frame Size P130
Reduction Ratio 81
Solid Shaft

Output Shaft Keyless



Output Shaft with Key

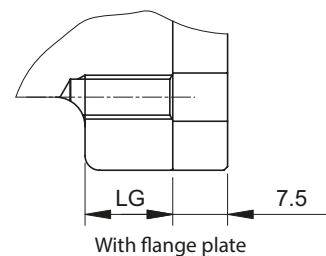


Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
2L	219	70	50	80	60	4	5	9	Blind hole	A	M4	45.5	15.5	11	M4	7.3	2L
2P		70	50	80	60	4	5	9	Blind hole		M4	45.5	15.5	14	M4	7.3	2P
2H		70	50	80	60	4	5	11	Blind hole		M5	45.5	15.5	9	M4	7.3	2H
2R		70	50	80	60	4	5	11	Blind hole		M5	45.5	15.5	14	M4	7.3	2R
8A	222	90	70	120	90	6	8	11	Blind hole		M5	48.5	18.5	11	M4	7.4	8A
8B		90	70	120	90	6	8	11	Blind hole		M5	48.5	18.5	14	M4	7.4	8B
2T		90	70	120	90	6	8	13	Blind hole		M6	48.5	18.5	14	M4	7.4	2T
2J ^{Note 3}		229.5	100	80	120	90	5	15.5	12		Through hole	M6	56	26	10	M4	7.4

Note 1. Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."

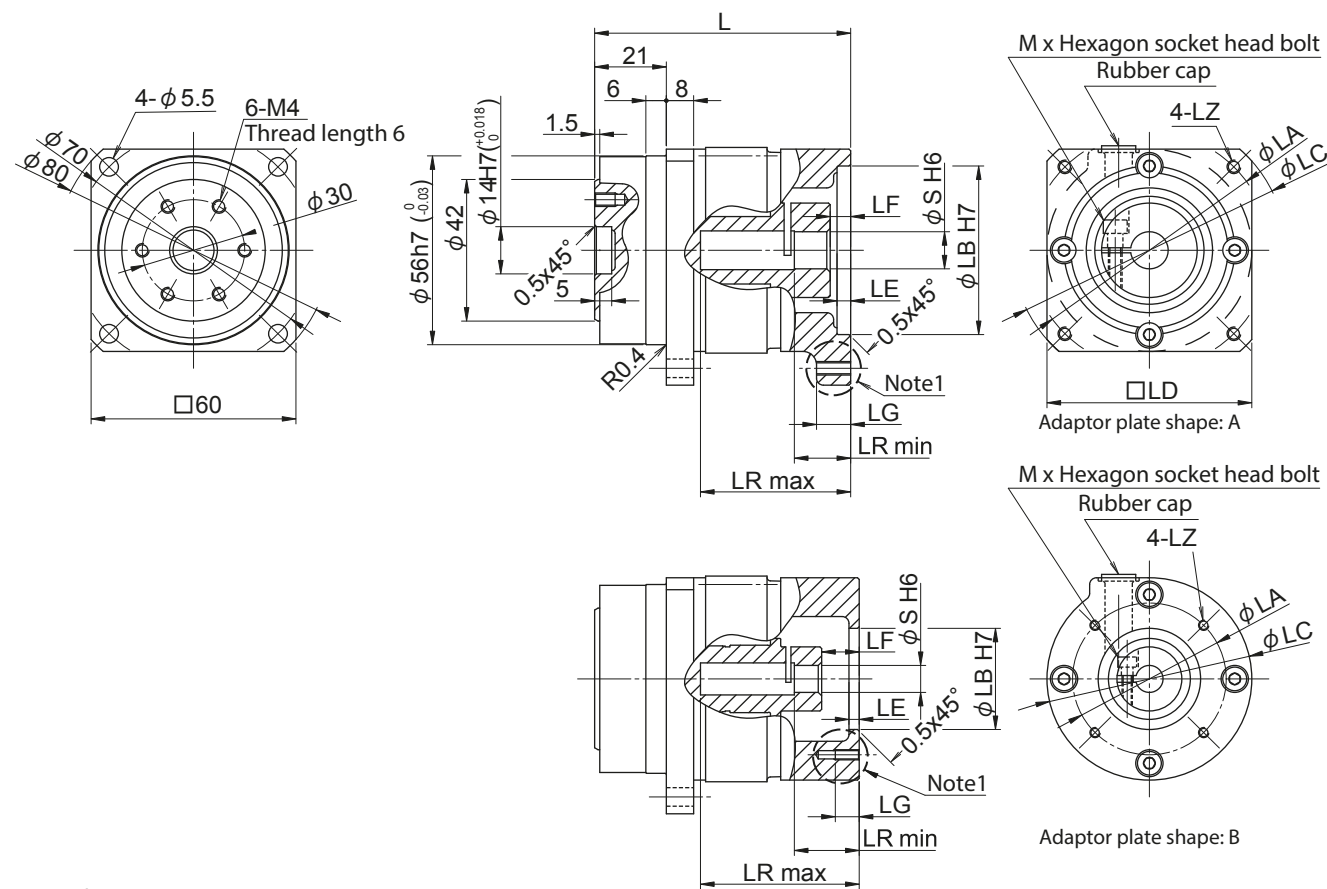
2. Flange plate for motor is attached between the motor and the adaptor plate.

3. Dimensions and mass shown in the above figures are subject to change without prior notification.



Dimension drawings

Frame Size P110
Reduction Ratio 3.7
Flange Shaft



Nomenclature
ANFX-P110F - Motor flange code Backlash - Reduction ratio (3.7)
3 min: L3
15 min: LD

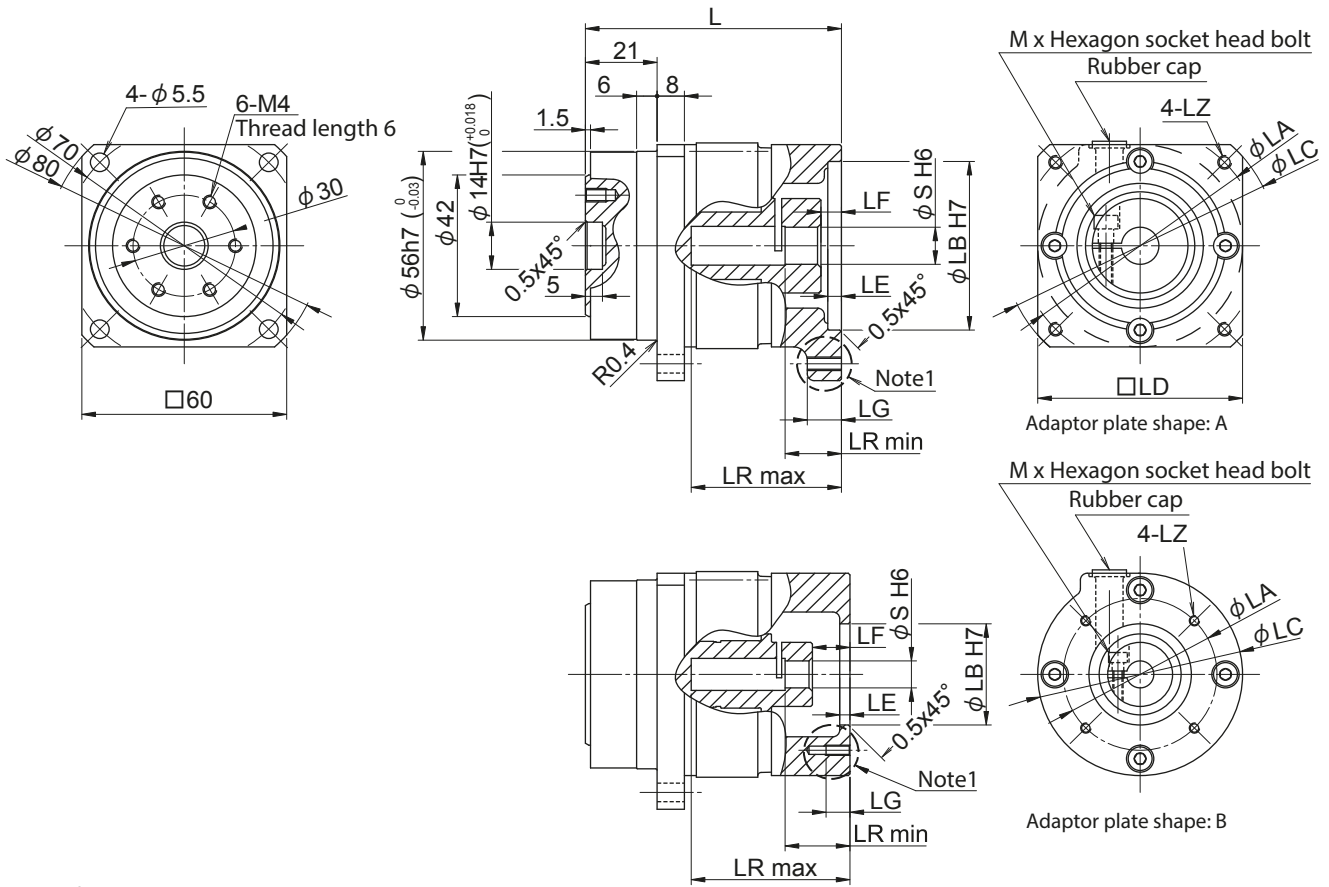
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code		
											max	min						
2C	78.5	45	30	60	-	5	11	7	B	M3	46.5	19	8	M3	0.86	2C		
7J		46	30	60	-	5	11	9		Blind hole	M4	46.5	19	6	M3	0.86	7J	
2D		46	30	60	-	5	11	9		Blind hole	M4	46.5	19	8	M3	0.86	2D	
2E	76	60	50	80	60	4	8.5	8	A	M4	44	16.5	8	M3	0.86	2E		
2K		60	50	80	60	4	6	8		Blind hole	M4	44	16.5	11	M4	0.86	2K	
2F		70	50	80	60	4	8.5	10		Through hole	M4	44	16.5	8	M3	0.86	2F	
2L		70	50	80	60	4	6	10		Through hole	M4	44	16.5	11	M4	0.86	2L	
2P		70	50	80	60	4	6	10		Through hole	M4	44	16.5	14	M4	0.86	2P	
2G		70	50	80	60	4	8.5	10		Through hole	M5	44	16.5	8	M3	0.86	2G	
2H		70	50	80	60	4	6	10		Through hole	M5	44	16.5	9	M4	0.86	2H	
2R		70	50	80	60	4	6	10		Through hole	M5	44	16.5	14	M4	0.86	2R	
8A		77.5	90	70	105	80	6	7.5		12	A	M5	45.5	18	11	M4	0.96	8A
8B			90	70	105	80	6	7.5		12		Through hole	M5	45.5	18	14	M4	0.96
2T	90		70	105	80	6	7.5	12	Through hole	M6		45.5	18	14	M4	0.96	2T	
2J	83	100	80	120	90	5	13	12	A	M6	51	23.5	10	M4	1.06	2J		
8E	99.5	100	80	120	90	6	9.5	12		Through hole	M6	41	22	16	M5	1.26	8E	

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

P1 Type

Dimension drawings

Frame Size P110
 Reduction Ratio 5
 Flange Shaft



Nomenclature ANFX-P110F - Motor flange code Backlash Reduction ratio (5)

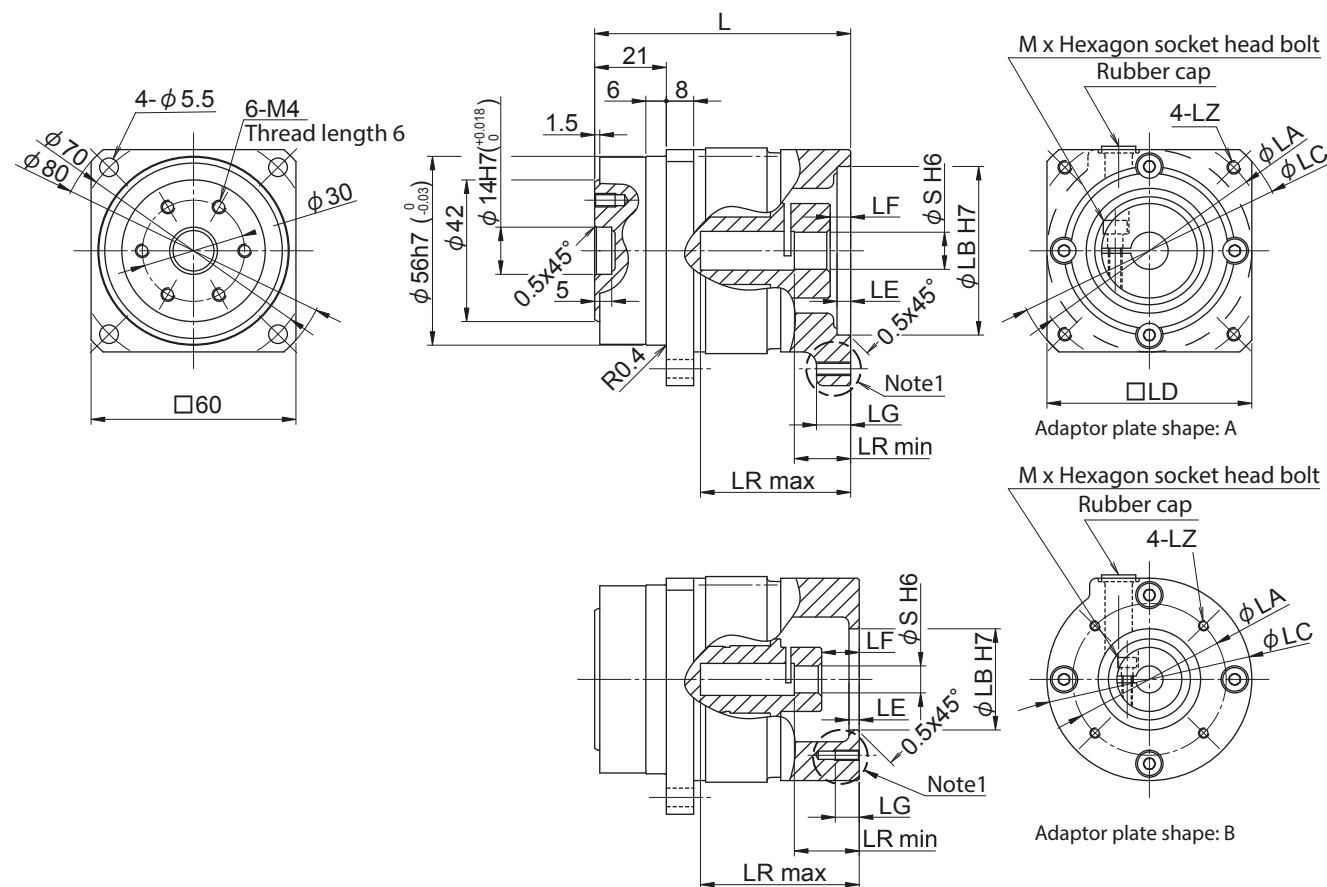
3 min: L3
 15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code		
											max	min						
2C	78.5	45	30	60	-	5	11	7	B	M3	46.5	19	8	M3	0.86	2C		
7J		46	30	60	-	5	11	9		Blind hole	M4	46.5	19	6	M3	0.86	7J	
2D		46	30	60	-	5	11	9		Blind hole	M4	46.5	19	8	M3	0.86	2D	
2E	76	60	50	80	60	4	8.5	8	A	M4	44	16.5	8	M3	0.86	2E		
2K		60	50	80	60	4	6	8		Blind hole	M4	44	16.5	11	M4	0.86	2K	
2F		70	50	80	60	4	8.5	10		Through hole	M4	44	16.5	8	M3	0.86	2F	
2L		70	50	80	60	4	6	10		Through hole	M4	44	16.5	11	M4	0.86	2L	
2P		70	50	80	60	4	6	10		Through hole	M4	44	16.5	14	M4	0.86	2P	
2G		70	50	80	60	4	8.5	10		Through hole	M5	44	16.5	8	M3	0.86	2G	
2H		70	50	80	60	4	6	10		Through hole	M5	44	16.5	9	M4	0.86	2H	
2R		70	50	80	60	4	6	10		Through hole	M5	44	16.5	14	M4	0.86	2R	
8A		77.5	90	70	105	80	6	7.5		12	A	M5	45.5	18	11	M4	0.96	8A
8B			90	70	105	80	6	7.5		12		Through hole	M5	45.5	18	14	M4	0.96
2T	90		70	105	80	6	7.5	12	Through hole	M6		45.5	18	14	M4	0.96	2T	
2J	83	100	80	120	90	5	13	12	A	M6	51	23.5	10	M4	1.06	2J		
8E	99.5	100	80	120	90	6	9.5	12		Through hole	M6	41	22	16	M5	1.26	8E	

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P110
Reduction Ratio 9
Flange Shaft



Nomenclature
ANFX-P110F - Motor flange code Backlash Reduction ratio (9)

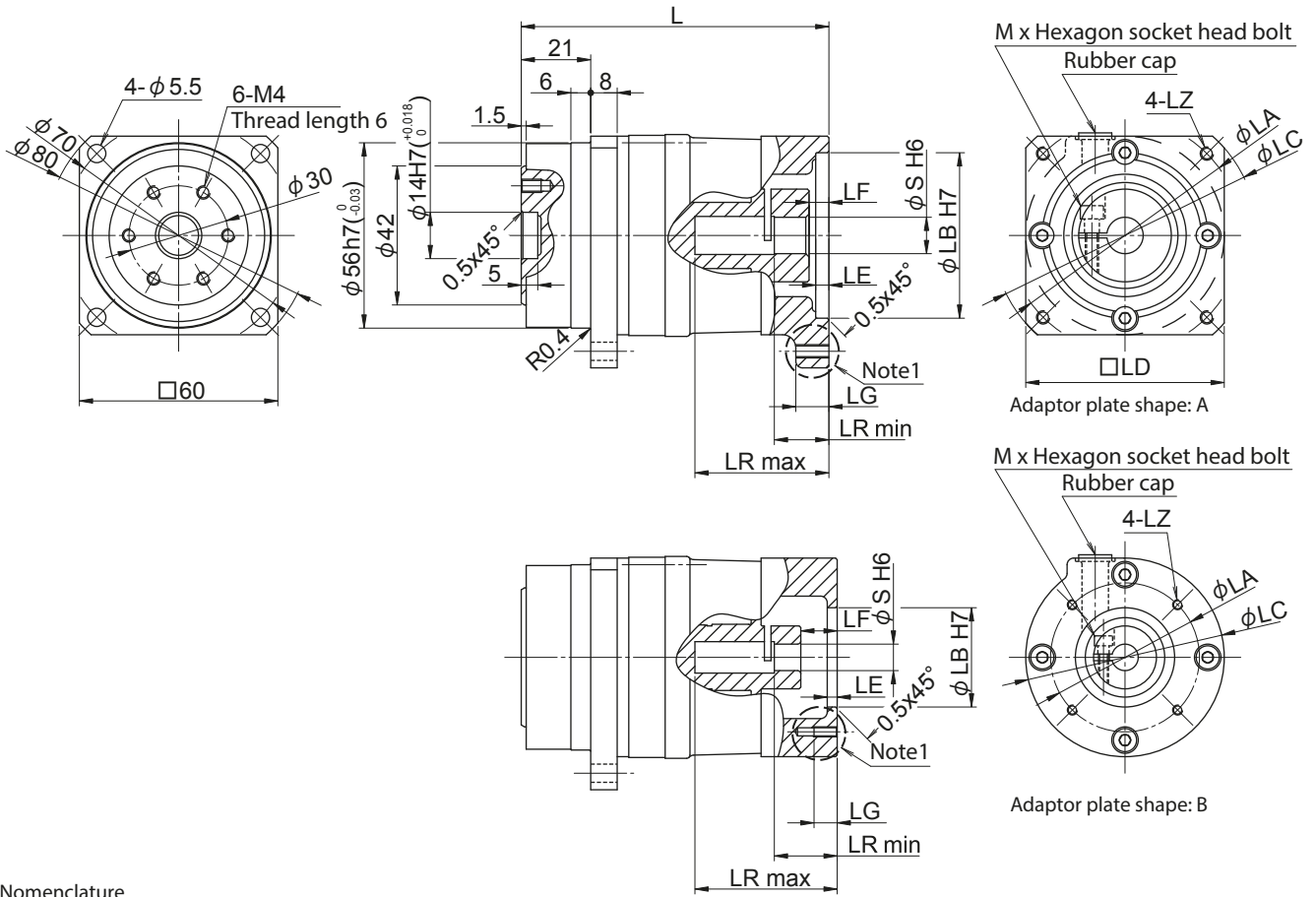
3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code		
											max	min						
2C	78.5	45	30	60	-	5	11	7	B	M3	46.5	19	8	M3	0.86	2C		
7J		46	30	60	-	5	11	9		M4	46.5	19	6	M3	0.86	7J		
2D		46	30	60	-	5	11	9		M4	46.5	19	8	M3	0.86	2D		
2E	76	60	50	80	60	4	8.5	8	A	M4	44	16.5	8	M3	0.86	2E		
2K		60	50	80	60	4	6	8		M4	44	16.5	11	M4	0.86	2K		
2F		70	50	80	60	4	8.5	10		M4	44	16.5	8	M3	0.86	2F		
2L		70	50	80	60	4	6	10		M4	44	16.5	11	M4	0.86	2L		
2P		70	50	80	60	4	6	10		M4	44	16.5	14	M4	0.86	2P		
2G		70	50	80	60	4	8.5	10		M5	44	16.5	8	M3	0.86	2G		
2H		70	50	80	60	4	6	10		M5	44	16.5	9	M4	0.86	2H		
2R		70	50	80	60	4	6	10		M5	44	16.5	14	M4	0.86	2R		
8A		77.5	90	70	105	80	6	7.5		12	A	M5	45.5	18	11	M4	0.96	8A
8B			90	70	105	80	6	7.5		12		M5	45.5	18	14	M4	0.96	8B
2T	90		70	105	80	6	7.5	12	M6	45.5		18	14	M4	0.96	2T		
2J	83	100	80	120	90	5	13	12	A	M6	51	23.5	10	M4	1.16	2J		
8E	99.5	100	80	120	90	6	9.5	12		M6	41	22	16	M5	1.26	8E		

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P110
 Reduction Ratio 11
 Flange Shaft



Nomenclature
 ANFX-P110F - Motor flange code Backlash Reduction ratio (11)

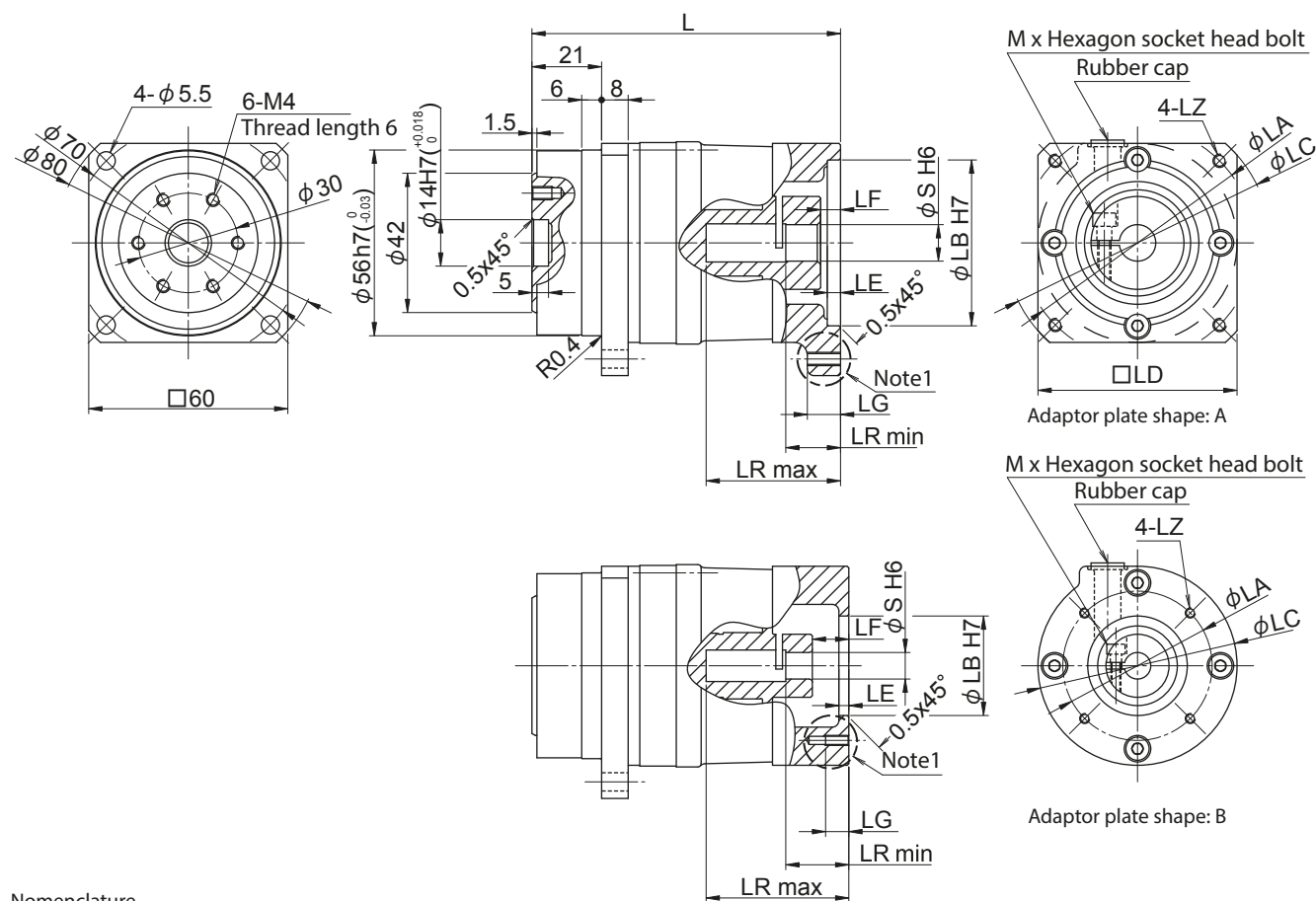
3 min: L3
 15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code		
											max	min						
2C	96.5	45	30	60	-	5	11	7	B	M3	43	19	8	M3	1.06	2C		
7J		46	30	60	-	5	11	9		M4	43	19	6	M3	1.06	7J		
2D		46	30	60	-	5	11	9		M4	43	19	8	M3	1.06	2D		
2E	94	60	50	80	60	4	8.5	9	A	M4	40.5	16.5	8	M3	1.06	2E		
2K		60	50	80	60	4	6	9		M4	40.5	16.5	11	M4	1.06	2K		
2F		70	50	80	60	4	8.5	10		M4	40.5	16.5	8	M3	1.06	2F		
2L		70	50	80	60	4	6	10		M4	40.5	16.5	11	M4	1.16	2L		
2G		70	50	80	60	4	8.5	10		M5	40.5	16.5	8	M3	1.06	2G		
2H		70	50	80	60	4	6	10		M5	40.5	16.5	9	M4	1.16	2H		
2R		70	50	80	60	4	6	10		M5	40.5	16.5	14	M4	1.16	2R		
8A		95.5	90	70	105	80	6	7.5		12	A	M5	42	18	11	M4	1.26	8A
8B			90	70	105	80	6	7.5		12		M5	42	18	14	M4	1.26	8B
2T			90	70	105	80	6	7.5		12		M6	42	18	14	M4	1.26	2T

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P110
Reduction Ratio 15
Flange Shaft



Nomenclature
ANFX-P110F - Motor flange code Backlash - Reduction ratio (15)

3 min: L3
15 min: LD

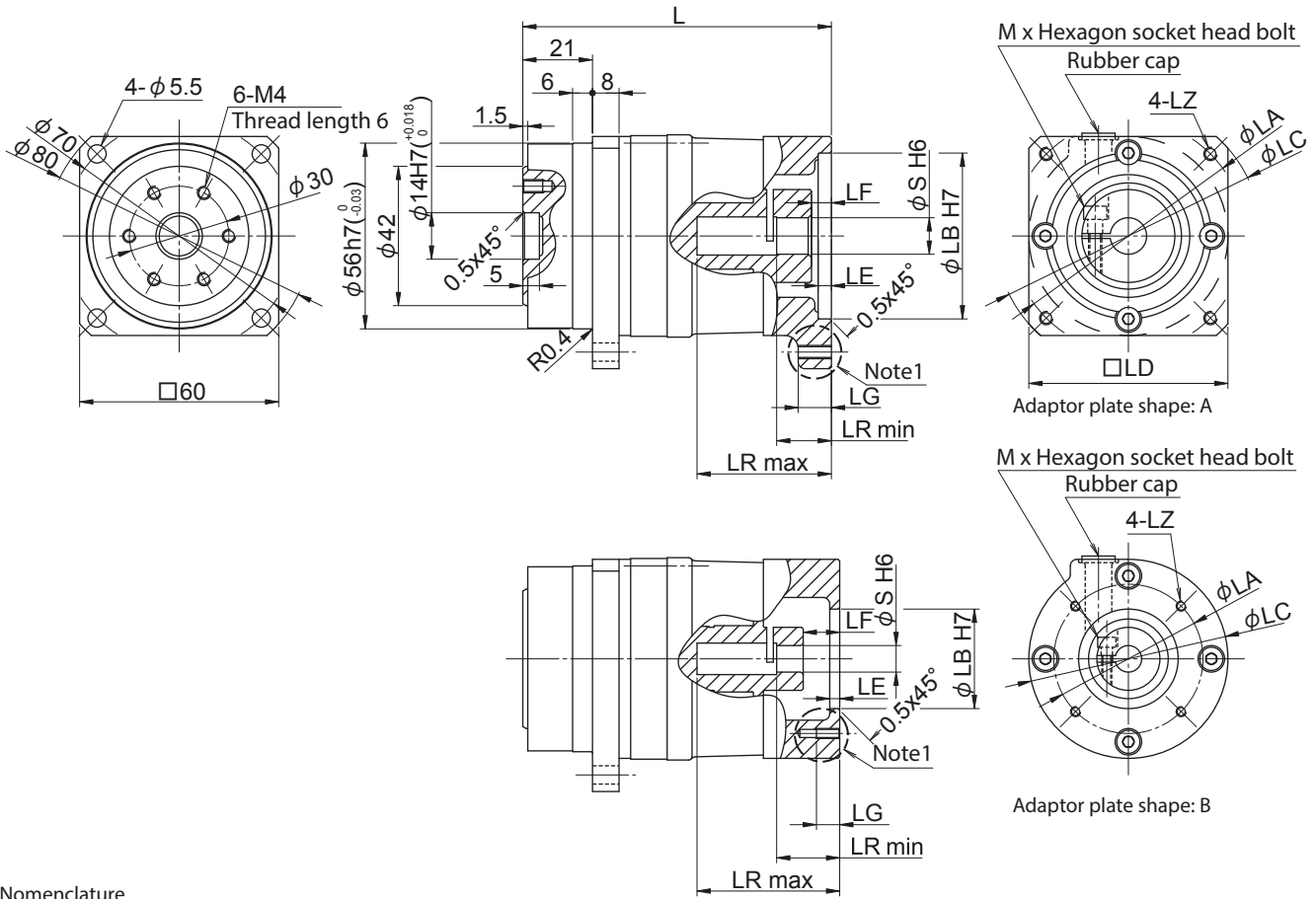
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
											max	min				
2C	96.5	45	30	60	-	5	11	7	B	M3	43	19	8	M3	1.06	2C
7J		46	30	60	-	5	11	9		M4	43	19	6	M3	1.06	7J
2D		46	30	60	-	5	11	9		M4	43	19	8	M3	1.06	2D
2E	94	60	50	80	60	4	8.5	9	A	M4	40.5	16.5	8	M3	1.06	2E
2K		60	50	80	60	4	6	9		M4	40.5	16.5	11	M4	1.06	2K
2F		70	50	80	60	4	8.5	10		M4	40.5	16.5	8	M3	1.06	2F
2L		70	50	80	60	4	6	10		M4	40.5	16.5	11	M4	1.16	2L
2G		70	50	80	60	4	8.5	10		M5	40.5	16.5	8	M3	1.06	2G
2H		70	50	80	60	4	6	10		M5	40.5	16.5	9	M4	1.16	2H
2R	95.5	70	50	80	60	4	6	10	A	M5	40.5	16.5	14	M4	1.16	2R
8A		90	70	105	80	6	7.5	12		M5	42	18	11	M4	1.26	8A
8B		90	70	105	80	6	7.5	12		M5	42	18	14	M4	1.26	8B
2T		90	70	105	80	6	7.5	12		M6	42	18	14	M4	1.26	2T

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

P1 Type

Dimension drawings

Frame Size P110
 Reduction Ratio 21
 Flange Shaft



Nomenclature
 ANFX-P110F - Motor flange code Backlash Reduction ratio (21)

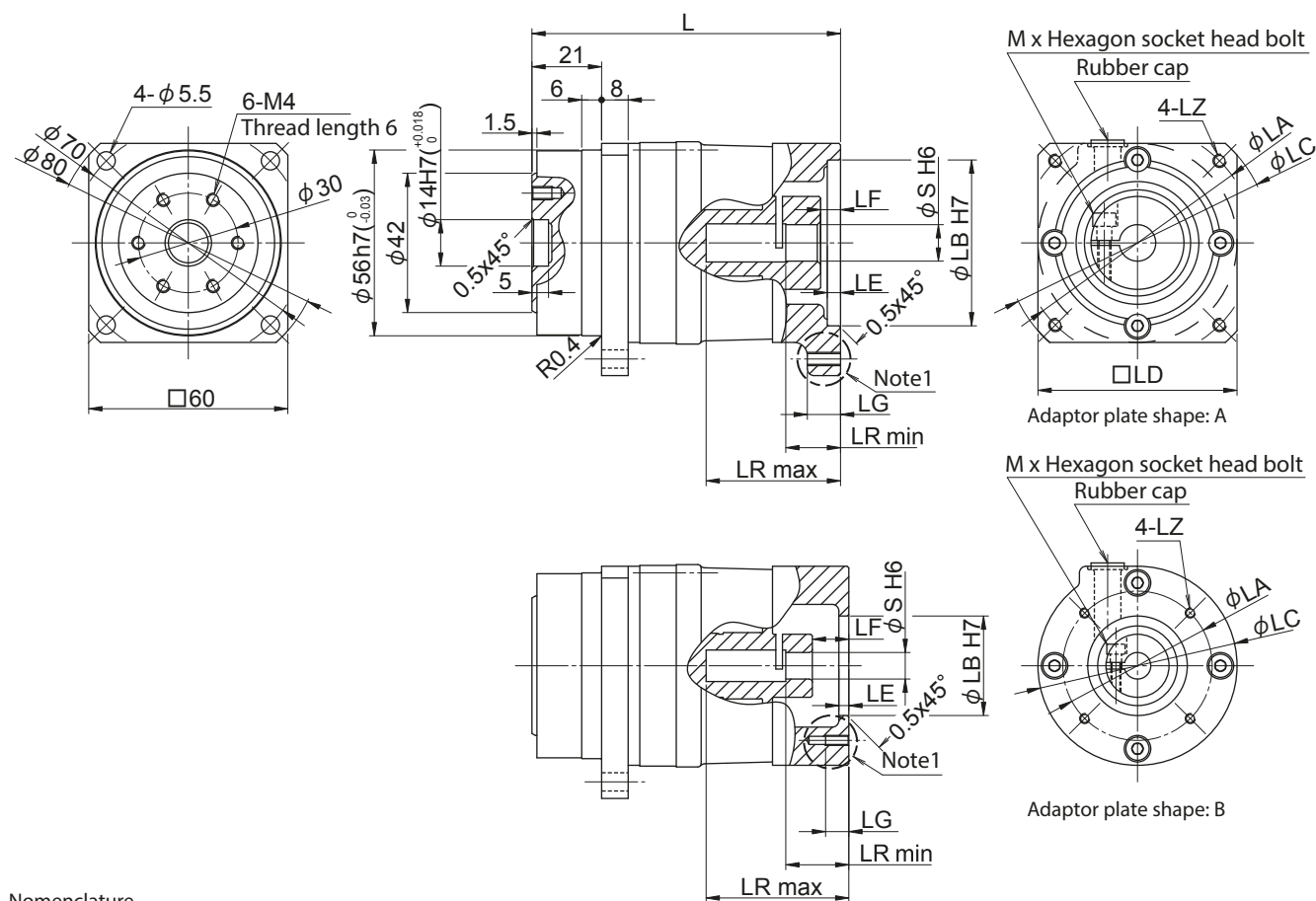
3 min: L3
 15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code		
											max	min						
2C	96.5	45	30	60	-	5	11	7	B	M3	43	19	8	M3	1.06	2C		
7J		46	30	60	-	5	11	9		M4	43	19	6	M3	1.06	7J		
2D		46	30	60	-	5	11	9		M4	43	19	8	M3	1.06	2D		
2E	94	60	50	80	60	4	8.5	9	A	M4	40.5	16.5	8	M3	1.06	2E		
2K		60	50	80	60	4	6	9		M4	40.5	16.5	11	M4	1.16	2K		
2F		70	50	80	60	4	8.5	10		M4	40.5	16.5	8	M3	1.06	2F		
2L		70	50	80	60	4	6	10		M4	40.5	16.5	11	M4	1.06	2L		
2G		70	50	80	60	4	8.5	10		M5	40.5	16.5	8	M3	1.06	2G		
2H		70	50	80	60	4	6	10		M5	40.5	16.5	9	M4	1.16	2H		
2R		70	50	80	60	4	6	10		M5	40.5	16.5	14	M4	1.06	2R		
8A		95.5	90	70	105	80	6	7.5		12	A	M5	42	18	11	M4	1.26	8A
8B			90	70	105	80	6	7.5		12		M5	42	18	14	M4	1.16	8B
2T			90	70	105	80	6	7.5		12		M6	42	18	14	M4	1.16	2T

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P110
Reduction Ratio 33
Flange Shaft



Nomenclature
ANFX-P110F - Motor flange code Backlash - Reduction ratio (33)

3 min: L3
15 min: LD

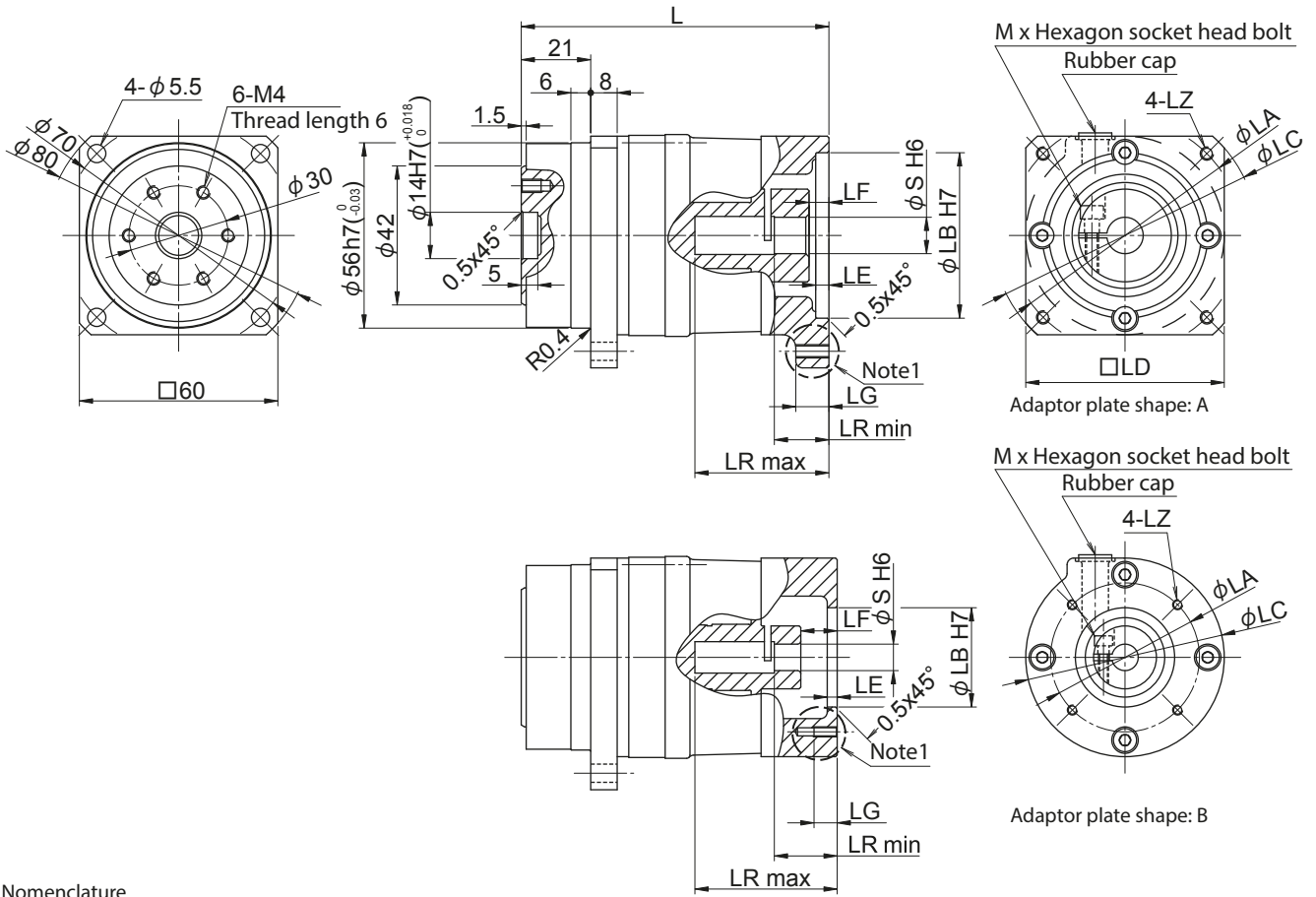
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
											max	min				
2C	96.5	45	30	60	-	5	11	7	B	M3	43	19	8	M3	1.16	2C
7J		46	30	60	-	5	11	9		M4	43	19	6	M3	1.16	7J
2D		46	30	60	-	5	11	9		M4	43	19	8	M3	1.16	2D
2E	94	60	50	80	60	4	8.5	9	A	M4	40.5	16.5	8	M3	1.06	2E
2K		60	50	80	60	4	6	9		M4	40.5	16.5	11	M4	1.26	2K
2F		70	50	80	60	4	8.5	10		M4	40.5	16.5	8	M3	1.06	2F
2L		70	50	80	60	4	6	10		M4	40.5	16.5	11	M4	1.16	2L
2G		70	50	80	60	4	8.5	10		M5	40.5	16.5	8	M3	1.06	2G
2H		70	50	80	60	4	6	10		M5	40.5	16.5	9	M4	1.16	2H
2R	95.5	70	50	80	60	4	6	10	A	M5	40.5	16.5	14	M4	1.06	2R
8A		90	70	105	80	6	7.5	12		M5	42	18	11	M4	1.36	8A
2T		90	70	105	80	6	7.5	12		M6	42	18	14	M4	1.16	2T

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

P1 Type

Dimension drawings

Frame Size P110
 Reduction Ratio 45
 Flange Shaft



Nomenclature
 ANFX-P110F - Motor flange code Backlash - Reduction ratio (45)

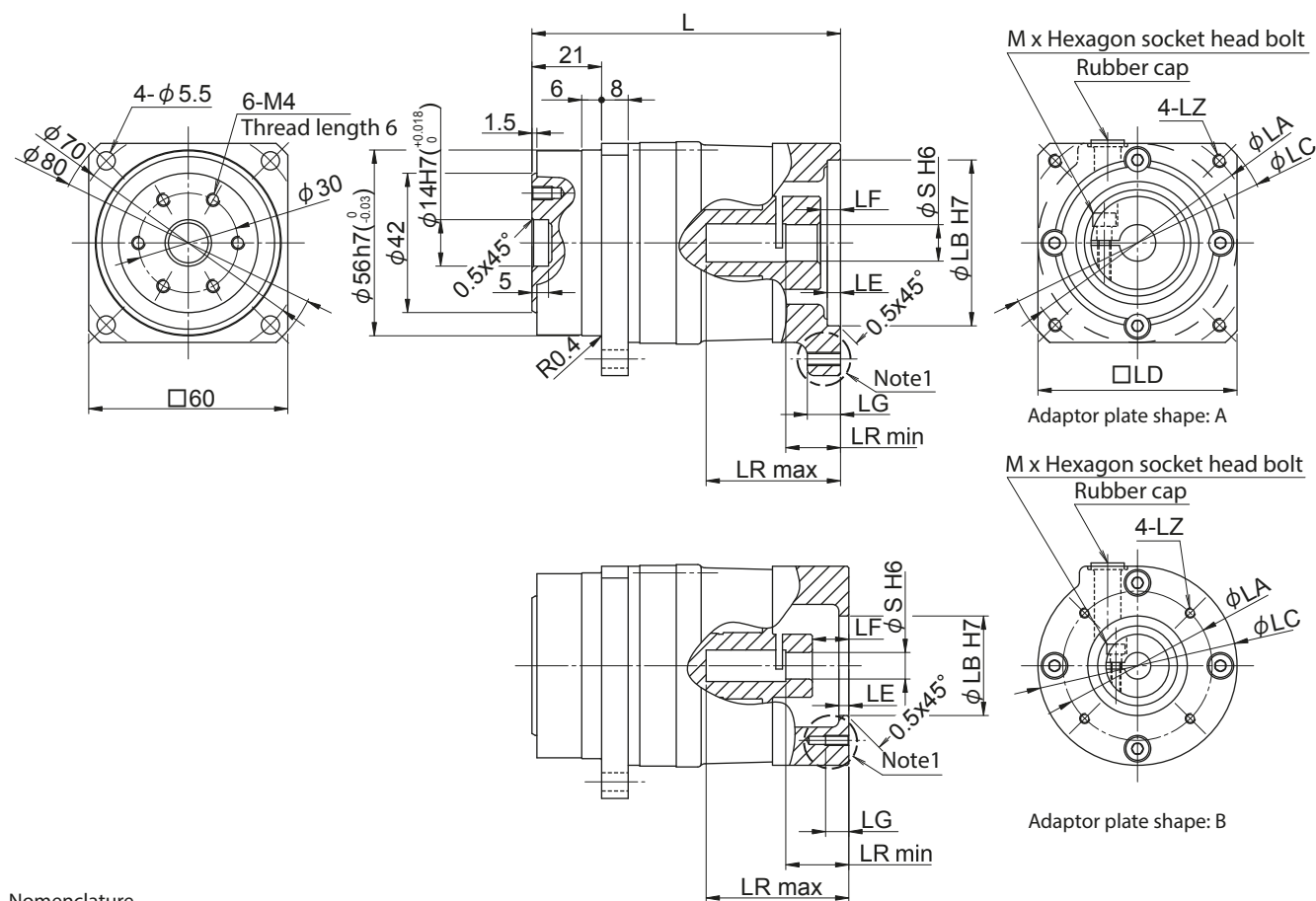
3 min: L3
 15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
											max	min					
2C	96.5	45	30	60	-	5	11	7	Blind hole	B	M3	43	19	8	M3	1.16	2C
7J		46	30	60	-	5	11	9	Blind hole		M4	43	19	6	M3	1.16	7J
2D		46	30	60	-	5	11	9	Blind hole		M4	43	19	8	M3	1.16	2D
2E	94	60	50	80	60	4	8.5	9	Blind hole	A	M4	40.5	16.5	8	M3	1.06	2E
2F		70	50	80	60	4	8.5	10	Through hole		M4	40.5	16.5	8	M3	1.06	2F
2G		70	50	80	60	4	8.5	10	Through hole		M5	40.5	16.5	8	M3	1.06	2G
2H		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	9	M4	1.16	2H

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P110
Reduction Ratio 81
Flange Shaft



Nomenclature
ANFX-P110F - Motor flange code Backlash - Reduction ratio (81)

3 min: L3
15 min: LD

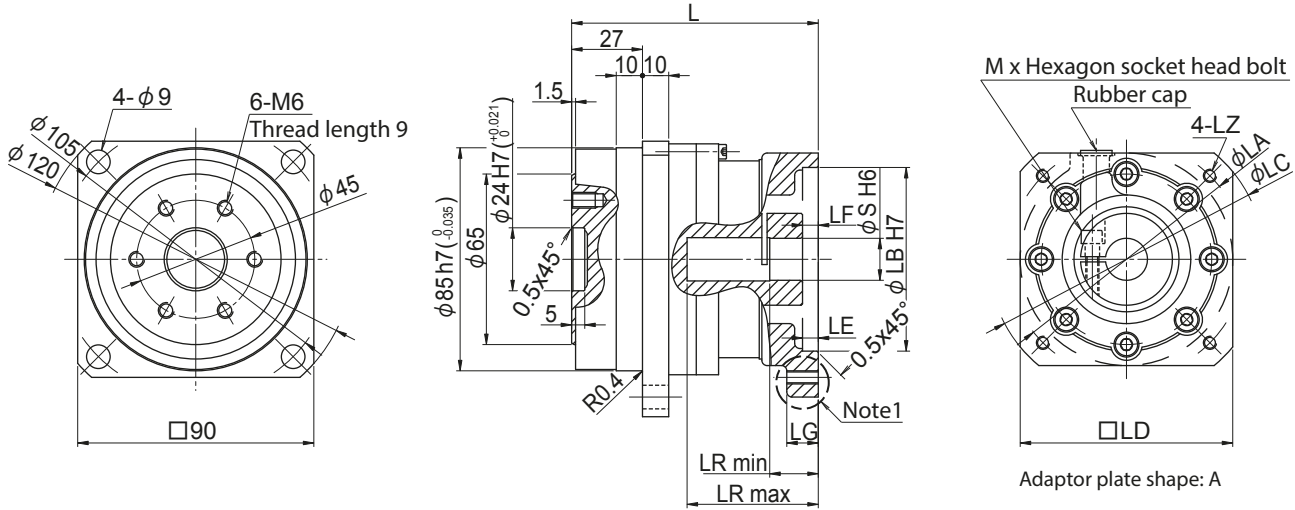
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
											max	min				
2C	96.5	45	30	60	-	5	11	7	B	M3	43	19	8	M3	1.16	2C
7J		46	30	60	-	5	11	9		M4	43	19	6	M3	1.16	7J
2D		46	30	60	-	5	11	9		M4	43	19	8	M3	1.16	2D
2E	94	60	50	80	60	4	8.5	9	A	M4	40.5	16.5	8	M3	1.16	2E
2H		70	50	80	60	4	6	10		M5	40.5	16.5	9	M4	1.16	2H

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

P1 Type

Dimension drawings

Frame Size P120
 Reduction Ratio 3.7
 Flange Shaft



Nomenclature
 ANFX-P120F - Motor flange code Backlash Reduction ratio (3.7)

3 min: L3
 15 min: LD

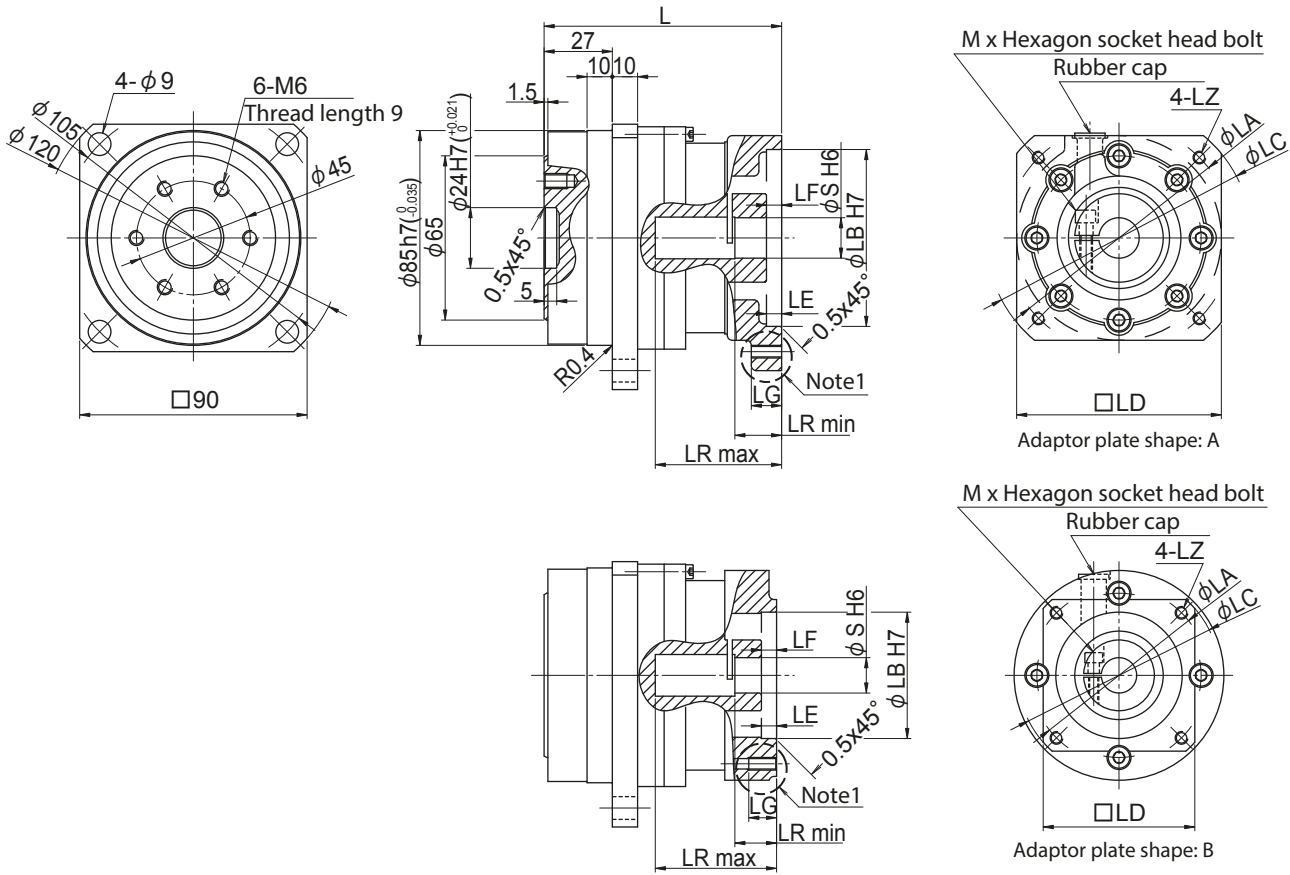
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
											max	min					
0U	95	90	70	105	81	6	6	12	Through hole	A	M5	50	18.5	16	M5	2.3	0U
7S		90	70	105	81	6	6	12	Through hole		M5	50	18.5	19	M5	2.2	7S
7P		90	70	105	81	6	6	12	Through hole		M6	50	18.5	16	M5	2.3	7P
1G		90	70	105	81	6	6	12	Through hole		M6	50	18.5	19	M5	2.4	1G
0V ^{Note 2}	108.5	100	80	120	90	5	19.5	12	Through hole	A	M6	63.5	30	14	M4	2.4	0V ^{Note 2}
8E		100	80	120	90	5	19.5	12	Through hole		M6	63.5	32	16	M5	2.4	8E
7V		100	80	120	90	5	19.5	12	Through hole		M6	63.5	32	19	M5	2.3	7V
1L	108.5	115	95	135	100	6	17	16	Through hole	A	M6	46	31.5	24	M6	2.7	1L
7A		115	95	135	100	6	19.5	16	Through hole		M8	63.5	32	16	M5	2.5	7A
7B	121.5	115	95	135	100	6	19.5	16	Through hole	A	M8	63.5	32	19	M5	2.4	7B
0W		115	95	135	100	6	17	16	Through hole		M8	46	31.5	22	M6	2.8	0W
7Y	111.5	115	95	135	100	6	17	16	Through hole	A	M8	46	31.5	24	M6	2.7	7Y
0Y		135	110	165	120	7	17	16	Through hole		M8	46	31.5	22	M6	2.9	0Y
7R	146.5	145	110	165	120	7	22.5	16	Through hole	A	M8	66.5	35	16	M5	2.6	7R
7X		145	110	165	120	7	22.5	16	Through hole		M8	66.5	35	19	M5	2.5	7X
1S	146.5	145	110	165	120	7	42	16	Through hole	A	M8	71	55	22	M6	3.0	1S
7Z		145	110	165	120	7	42	16	Through hole		M8	71	55	24	M6	3.0	7Z

Note:1. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012~+0.023).

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P120
 Reduction Ratio 9
 Flange Shaft



Nomenclature
 ANFX-P120F - Motor flange code Backlash - Reduction ratio (9)

3 min: L3
15 min: LD

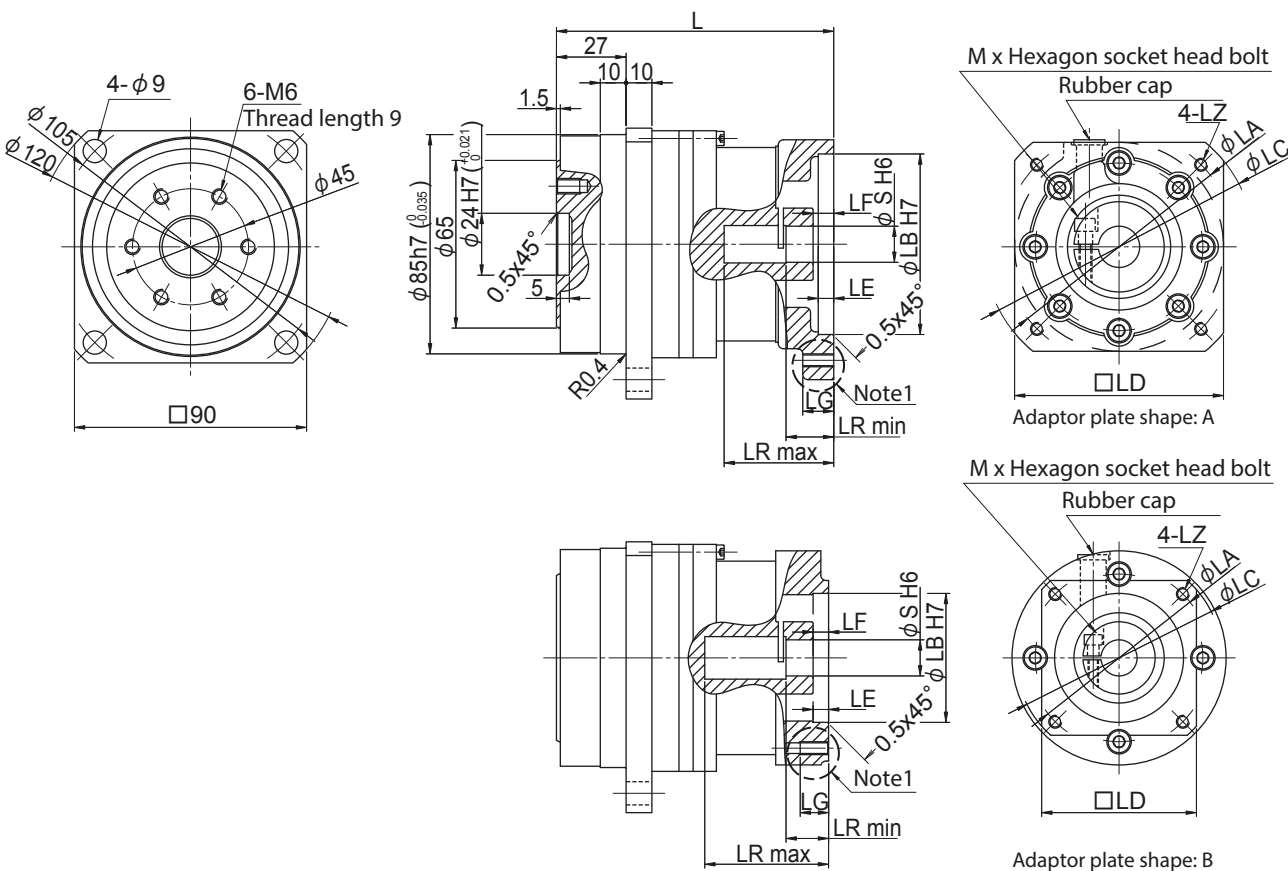
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
											max	min					
2R	93	70	50	80	60	6	6	11	A	M5	48	16.5	14	M4	2.3	2R	
0U	95	90	70	105	81	6	6	12		Through hole	M5	50	18.5	16	M5	2.3	0U
7S		90	70	105	81	6	6	12		Through hole	M5	50	18.5	19	M5	2.2	7S
7P		90	70	105	81	6	6	12		Through hole	M6	50	18.5	16	M5	2.3	7P
1G		90	70	105	81	6	6	12		Through hole	M6	50	18.5	19	M5	2.2	1G
2J		100	80	120	90	5	21.5	12		Through hole	M6	63.5	32	10	M4	2.4	2J
0V ^{Note 2}	108.5	100	80	120	90	5	19.5	12		Through hole	M6	63.5	30	14	M4	2.2	0V ^{Note 2}
8E		100	80	120	90	5	19.5	12		Through hole	M6	63.5	32	16	M5	2.4	8E
7V		100	80	120	90	5	19.5	12		Through hole	M6	63.5	32	19	M5	2.3	7V
1L		121.5	115	95	135	100	6	17		16	Through hole	M6	46	31.5	24	M6	2.7
7A	108.5	115	95	135	100	6	19.5	16		Through hole	M8	63.5	32	16	M5	2.5	7A
7B		115	95	135	100	6	19.5	16		Through hole	M8	63.5	32	19	M5	2.4	7B
0W	121.5	115	95	135	100	6	17	16		Through hole	M8	46	31.5	22	M6	2.8	0W
7Y		115	95	135	100	6	17	16		Through hole	M8	46	31.5	24	M6	2.7	7Y
0Y		135	110	165	120	7	17	16		Through hole	M8	46	31.5	22	M6	2.9	0Y
7R	111.5	145	110	165	120	7	22.5	16		Through hole	M8	66.5	35	16	M5	2.6	7R
7X		145	110	165	120	7	22.5	16		Through hole	M8	66.5	35	19	M5	2.6	7X
1S	146.5	145	110	165	120	7	42	16		Through hole	M8	71	55	22	M6	3.1	1S
7Z		145	110	165	120	7	42	16		Through hole	M8	71	55	24	M6	3.0	7Z

Note: 1. Tolerance of coupling for motor flange code "OV" is over tolerance (+0.012~+0.023).

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P120
Reduction Ratio 11
Flange Shaft



Nomenclature
ANFX-P120F - Motor flange code Backlash — Reduction ratio (11)

3 min: L3
15 min: LD

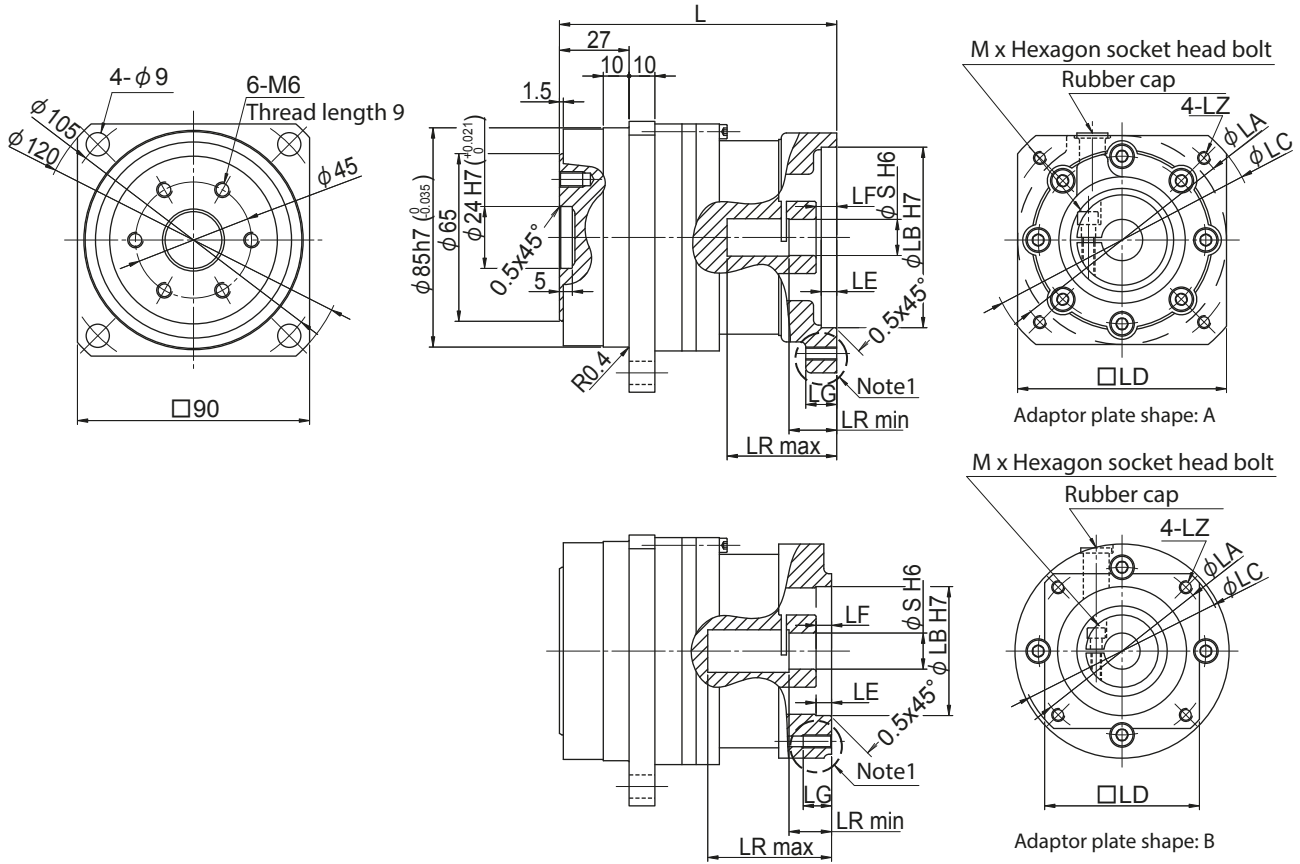
Motor flange code	L	LA	LB	LC	LD	LE	LF	LG	Note1 Thread hole Shape	Adaptor plate shape	LR		S	M	Mass [kg]	Motor flange code		
											max	min						
2P	106.5	70	50	80	60	6	6	9	Blind hole	B	M4	40.5	16.5	14	M4	2.6	2P	
2R		70	50	80	60	6	6	11	Blind hole		M5	40.5	16.5	14	M4	2.6	2R	
8B	108.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	14	M4	2.6	8B	
0U		90	70	105	81	6	6	12	Through hole		M5	42.5	18.5	16	M5	2.7	0U	
7S		90	70	105	81	6	6	12	Through hole		M5	42.5	18.5	19	M5	2.7	7S	
2T		90	70	105	81	6	8	12	Through hole		M6	42.5	18.5	14	M4	2.6	2T	
7P		90	70	105	81	6	6	12	Through hole		M6	42.5	18.5	16	M5	2.7	7P	
1G		90	70	105	81	6	6	12	Through hole		M6	42.5	18.5	19	M5	2.7	1G	
2J		100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	2.8	2J	
0V ^{Note 2}		100	80	120	90	5	19.5	12	Through hole		M6	56	30	14	M4	2.7	0V ^{Note 2}	
8E	122	100	80	120	90	5	19.5	12	Through hole	A	M6	56	32	16	M5	2.8	8E	
7V		100	80	120	90	5	19.5	12	Through hole		M6	56	32	19	M5	2.8	7V	
1L	135	115	95	135	100	6	17	16	Through hole	A	M6	46	31.5	24	M6	3.2	1L	
7A	122	115	95	135	100	6	19.5	16	Through hole		M8	56	32	16	M5	2.9	7A	
0W	135	115	95	135	100	6	17	16	Through hole		A	M8	46	31.5	22	M6	3.5	0W
7Y		115	95	135	100	6	17	16	Through hole			M8	46	31.5	24	M6	3.2	7Y
0Y	135	110	165	120	7	17	16	Through hole	A		M8	46	31.5	22	M6	3.4	0Y	
7R	125	145	110	165	120	7	22.5	16			Through hole	A	M8	59	35	16	M5	3.0
7X		145	110	165	120	7	22.5	16	Through hole		M8		59	35	19	M5	3.0	7X
7Z	160	145	110	165	120	7	42	16	Through hole		A	M8	71	55	24	M6	3.5	7Z

Note:1. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012+0.023).

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P120
 Reduction Ratio 15
 Flange Shaft



Nomenclature
 ANFX-P120F - Motor flange code Backlash Reduction ratio (15)

3 min: L3
 15 min: LD

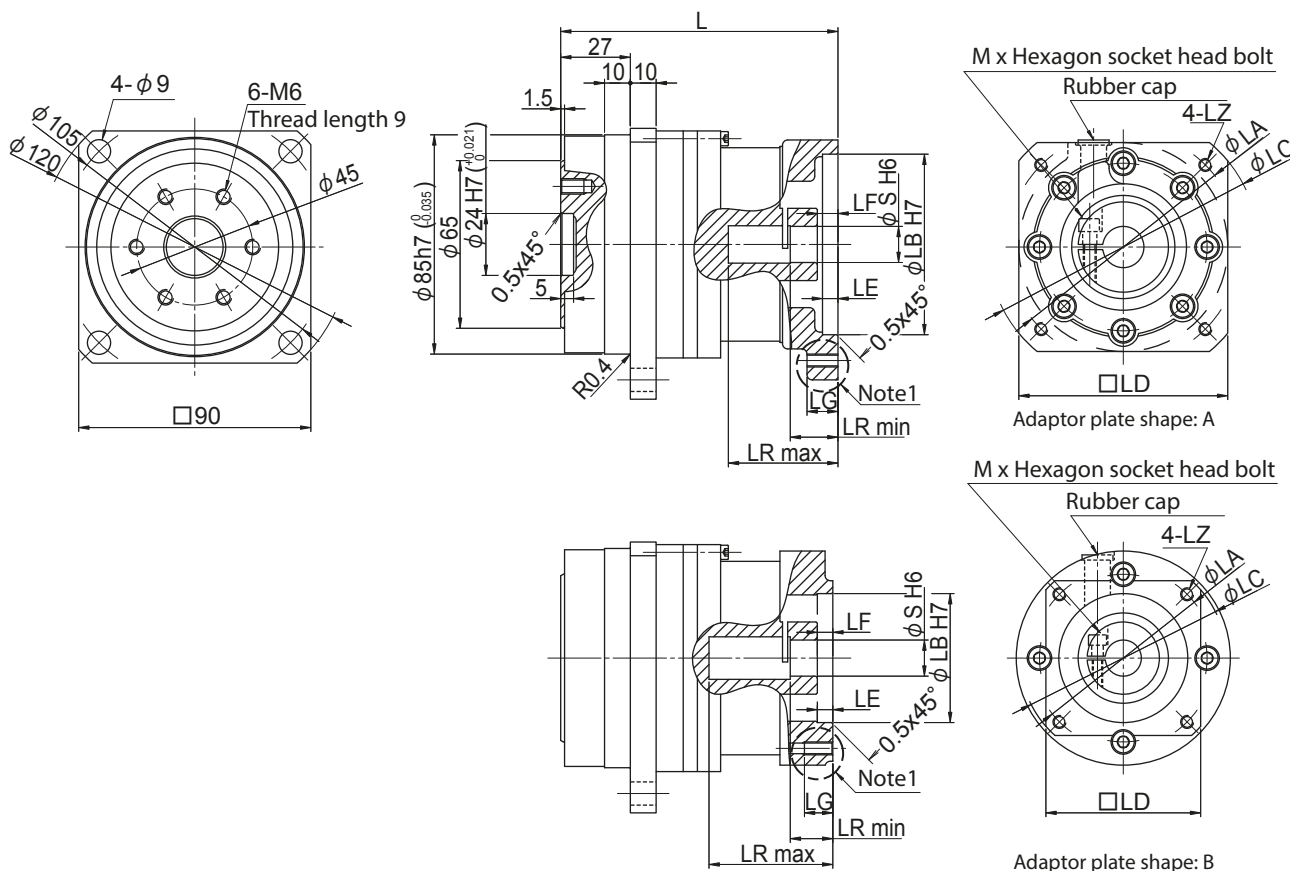
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
											max	min					
2P	106.5	70	50	80	60	6	6	9	Blind hole	B	M4	40.5	16.5	14	M4	2.6	2P
2R											M5	40.5	16.5	14	M4	2.6	2R
8B	108.5	90	70	105	81	6	8	12	Through hole	B	M5	42.5	18.5	14	M4	2.6	8B
0U											M5	42.5	18.5	16	M5	2.7	0U
7S											M5	42.5	18.5	19	M5	2.7	7S
2T											M6	42.5	18.5	14	M4	2.6	2T
7P											M6	42.5	18.5	16	M5	2.7	7P
1G											M6	42.5	18.5	19	M5	2.7	1G
2J											M6	56	32	10	M4	2.8	2J
0V ^{Note 2}	122	100	80	120	90	5	19.5	12	Through hole	A	M6	56	30	14	M4	2.7	0V ^{Note 2}
8E											M6	56	32	16	M5	2.8	8E
7V											M6	56	32	19	M5	2.8	7V
1L											M6	46	31.5	24	M6	3.2	1L
7A	122	115	95	135	100	6	19.5	16	Through hole	A	M8	56	32	16	M5	2.9	7A
0W											M8	46	31.5	22	M6	3.5	0W
7Y	135	115	95	135	100	6	17	16	Through hole	A	M8	46	31.5	24	M6	3.2	7Y
0Y											M8	46	31.5	22	M6	3.4	0Y
7R	125	145	110	165	120	7	22.5	16	Through hole	A	M8	59	35	16	M5	3.0	7R
7X											M8	59	35	19	M5	3.0	7X
7Z	160	145	110	165	120	7	42	16	Through hole	A	M8	71	55	24	M6	3.5	7Z

Note: 1. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012~+0.023).

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P120
Reduction Ratio 21
Flange Shaft



Nomenclature
ANFX-P120F - Motor flange code Backlash Reduction ratio (21)

3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
											max	min				
2P	106.5	70	50	80	60	6	6	9	B	M4	40.5	16.5	14	M4	2.6	2P
2H		70	50	80	60	6	6	11		M5	40.5	16.5	9	M4	2.6	2H
2R		70	50	80	60	6	6	11		M5	40.5	16.5	14	M4	2.6	2R
8B	108.5	90	70	105	81	6	8	12	A	M5	42.5	18.5	14	M4	2.6	8B
0U		90	70	105	81	6	6	12		M5	42.5	18.5	16	M5	2.7	0U
7S		90	70	105	81	6	6	12		M5	42.5	18.5	19	M5	2.7	7S
2T		90	70	105	81	6	8	12		M6	42.5	18.5	14	M4	2.6	2T
7P	122	90	70	105	81	6	6	12	A	M6	42.5	18.5	16	M5	2.7	7P
1G		90	70	105	81	6	6	12		M6	42.5	18.5	19	M5	2.7	1G
2J		100	80	120	90	5	21.5	12		M6	56	32	10	M4	2.8	2J
0V ^{Note 2}		100	80	120	90	5	19.5	12		M6	56	30	14	M4	2.8	0V ^{Note 2}
8E		100	80	120	90	5	19.5	12		M6	56	32	16	M5	2.8	8E
7A	125	115	95	135	100	6	19.5	16	A	M8	56	32	16	M5	2.9	7A
7R		145	110	165	120	7	22.5	16		M8	59	35	16	M5	3.0	7R
7X		145	110	165	120	7	22.5	16		M8	59	35	19	M5	3.0	7X
7Z	160	145	110	165	120	7	42	16	A	M8	71	55	24	M6	3.5	7Z

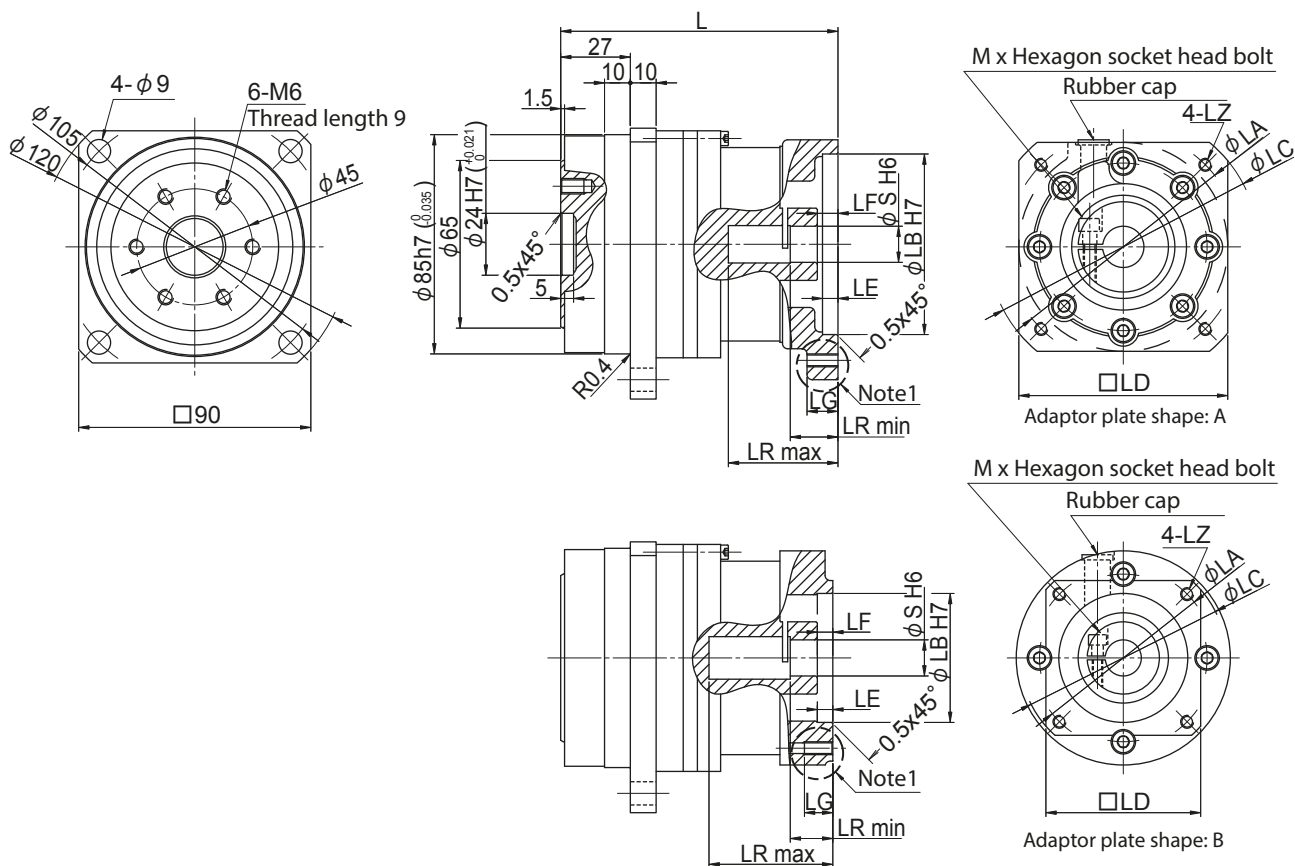
Note:1. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012~+0.023).

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P120
Reduction Ratio 45
Flange Shaft

P1 Type



Nomenclature
ANFX-P120F - Motor flange code Backlash Reduction ratio (45)

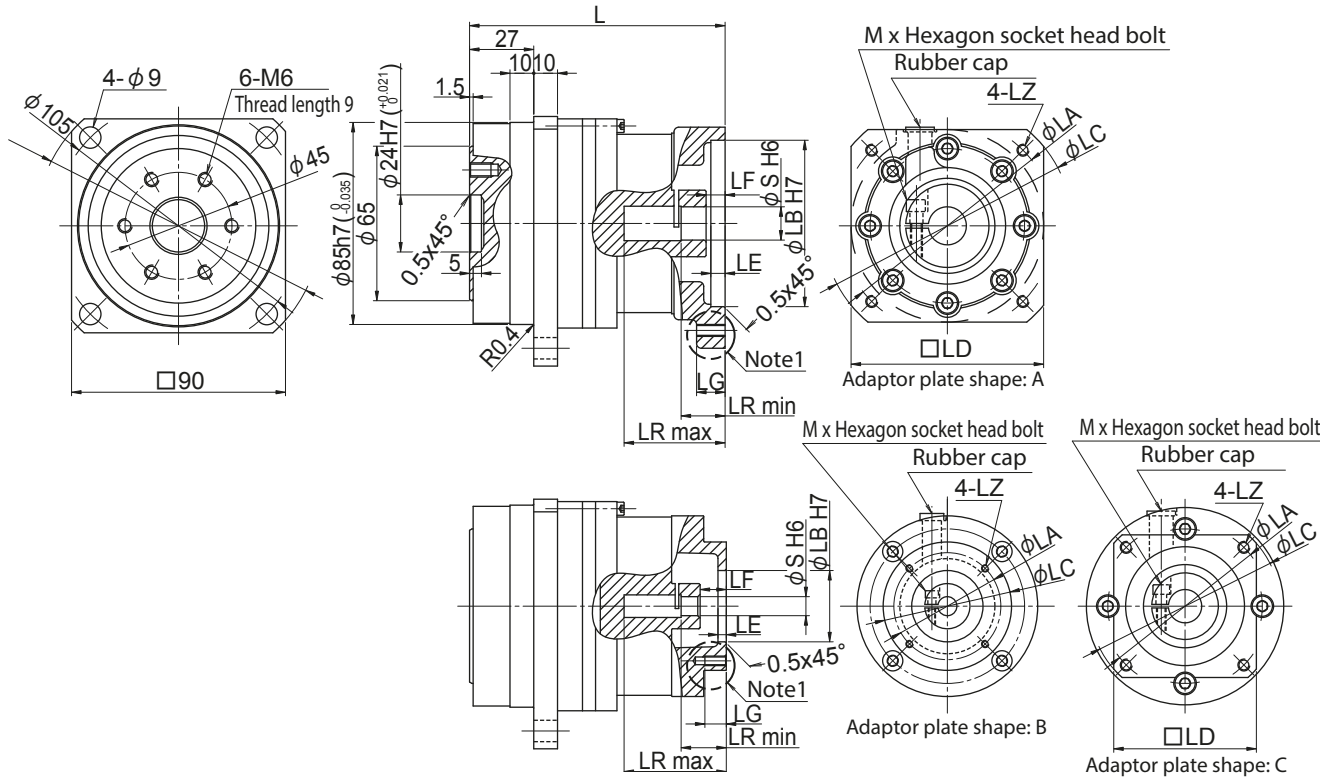
3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
											max	min				
2K	106.5	60	50	80	60	6	6	9	B	M4	40.5	16.5	11	M4	2.7	2K
2L		70	50	80	60	6	6	9		M4	40.5	16.5	11	M4	2.7	2L
2P		70	50	80	60	6	6	9		M4	40.5	16.5	14	M4	2.7	2P
2H		70	50	80	60	6	6	11		M5	40.5	16.5	9	M4	2.7	2H
2R		70	50	80	60	6	6	11		M5	40.5	16.5	14	M4	2.7	2R
8A	108.5	90	70	105	81	6	8	12	A	M5	42.5	18.5	11	M4	2.7	8A
8B		90	70	105	81	6	8	12		M5	42.5	18.5	14	M4	2.7	8B
2T		90	70	105	81	6	8	12		M6	42.5	18.5	14	M4	2.7	2T
2J		122	100	80	120	90	5	21.5		12	M6	56	32	10	M4	3.0

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P120
 Reduction Ratio 81
 Flange Shaft



Nomenclature
 ANFX-P120F - Motor flange code Backlash - Reduction ratio (81)

3 min: L3
15 min: LD

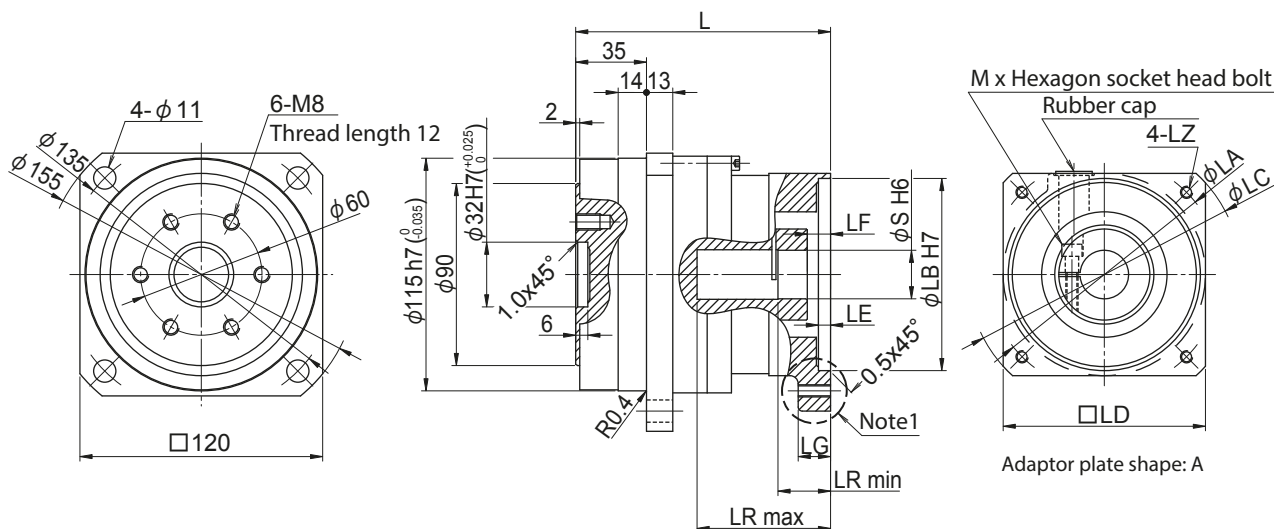
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
2C	109	45	30	54	-	4	11	7	Blind hole	B	M3	43	19	8	M3	2.6	2C
2D		46	30	54	-	4	11	9	Blind hole		M4	43	19	8	M3	2.6	2D
2E	106.5	60	50	80	60	6	8.5	9	Blind hole	C	M4	40.5	16.5	8	M3	2.7	2E
2K		60	50	80	60	6	6	9	Blind hole		M4	40.5	16.5	11	M4	2.7	2K
2F		70	50	80	60	6	8.5	9	Blind hole		M4	40.5	16.5	8	M3	2.7	2F
2G		70	50	80	60	6	8.5	11	Blind hole		M5	40.5	16.5	8	M3	2.7	2G
2H		70	50	80	60	6	6	11	Blind hole		M5	40.5	16.5	9	M4	2.7	2H
2R		70	50	80	60	6	6	11	Blind hole		M5	40.5	16.5	14	M4	2.7	2R
2T		108.5	90	70	105	81	6	8	12		Through hole	A	M6	42.5	18.5	14	M4

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P130
Reduction Ratio 3.7
Flange Shaft

P1 Type



Nomenclature
ANFX-P130F - Motor flange code Backlash Reduction ratio (3.7)

3 min: L3
15 min: LD

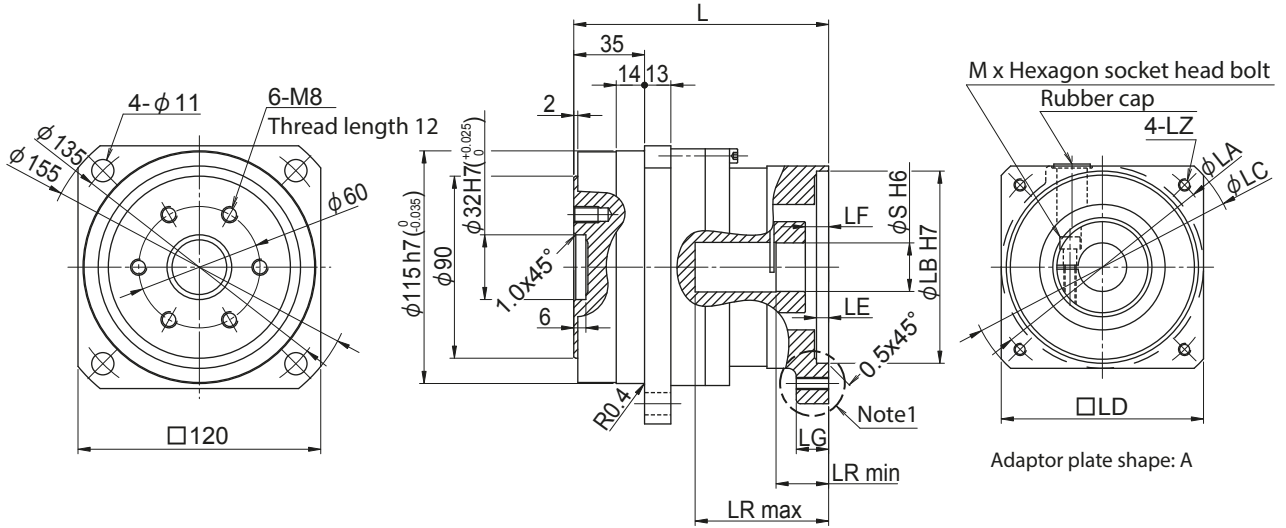
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
											max	min					
1S	135.5	145	110	165	120	7	19.5	16	A	M8	74	34	22	M6	6.7	1S	
7Z		145	110	165	120	7	19.5	16		Through hole	M8	74	34	24	M6	6.6	7Z
1T		145	110	165	120	7	19.5	16		Through hole	M8	74	34	28	M6	5.9	1T
0Z		135	110	165	120	7	19.5	16		Through hole	M8	74	34	28	M6	6.7	0Z
0X ^{Note 2}	181	200	114.3	230	180	6	41.5	24	Through hole	M12	81	60	35	M8	7.6	0X ^{Note 2}	

Note:1. Tolerance of coupling for motor flange code "0X" is over tolerance (+0.010~+0.026)

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P130
 Reduction Ratio 5
 Flange Shaft



Nomenclature
 ANFX-P130F - Motor flange code Backlash - Reduction ratio (5)

3 min: L3
 15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
											max	min				
1S	135.5	145	110	165	120	7	19.5	16	A	M8	74	34	22	M6	6.7	1S
7Z		145	110	165	120	7	19.5	16		M8	74	34	24	M6	6.6	7Z
1T		145	110	165	120	7	19.5	16		M8	74	34	28	M6	5.9	1T
0Z		135	110	165	120	7	19.5	16		M8	74	34	28	M6	6.7	0Z
0X ^{Note 2}	181	200	114.3	230	180	6	41.5	24		M12	81	60	35	M8	7.6	0X ^{Note 2}

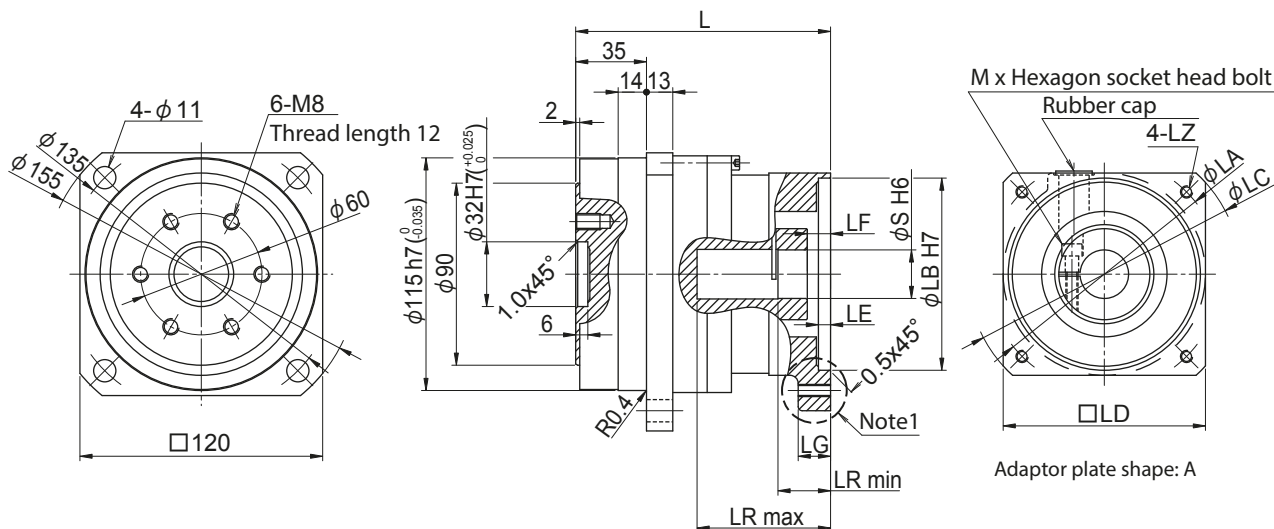
Note: 1. Tolerance of coupling for motor flange code "0X" is over tolerance (+0.010-+0.026)

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P130
Reduction Ratio 9
Flange Shaft

P1 Type



Nomenclature
ANFX-P130F - Motor flange code Backlash Reduction ratio (9)

3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
											max	min				
1L	127.5	115	95	135	100	6	11.5	16	A	M6	66	26	24	M6	5.7	1L
7B		115	95	135	100	6	13.5	16		M8	66	26	19	M5	6.3	7B
0W		115	95	135	100	6	11.5	16		M8	66	26	22	M6	6.3	0W
7Y		115	95	135	100	6	11.5	16		M8	66	26	24	M6	5.7	7Y
0Y	135.5	135	110	165	120	7	19.5	16		M8	74	34	22	M6	6.2	0Y
7X		145	110	165	120	7	21.5	16		M8	74	34	19	M5	6.8	7X
1S		145	110	165	120	7	19.5	16		M8	74	34	22	M6	6.2	1S
7Z		145	110	165	120	7	19.5	16		M8	74	34	24	M6	6.1	7Z
1T		145	110	165	120	7	19.5	16		M8	74	34	28	M6	6.0	1T
0Z		135	110	165	120	7	19.5	16		M8	74	34	28	M6	6.7	0Z
0X ^{Note 2}	181	200	114.3	230	180	6	41.5	24	M12	81	60	35	M8	7.7	0X ^{Note 2}	

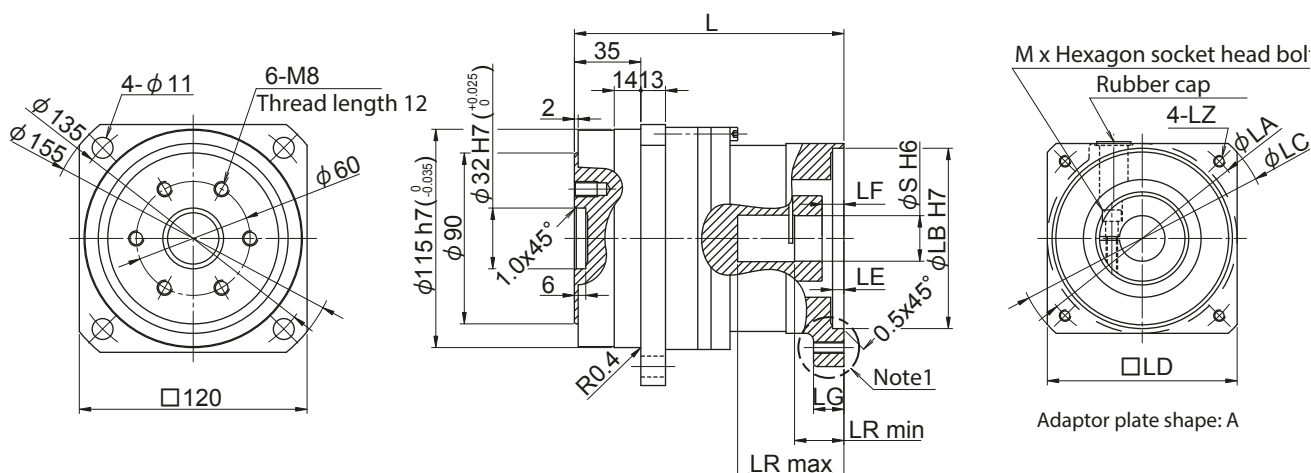
Note:1. Tolerance of coupling for motor flange code "0X" is over tolerance (+0.010--+0.026)

2. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P130
Reduction Ratio 15
Flange Shaft

P1 Type



Nomenclature
ANFX-P130F - Motor flange code Backlash Reduction ratio (15)

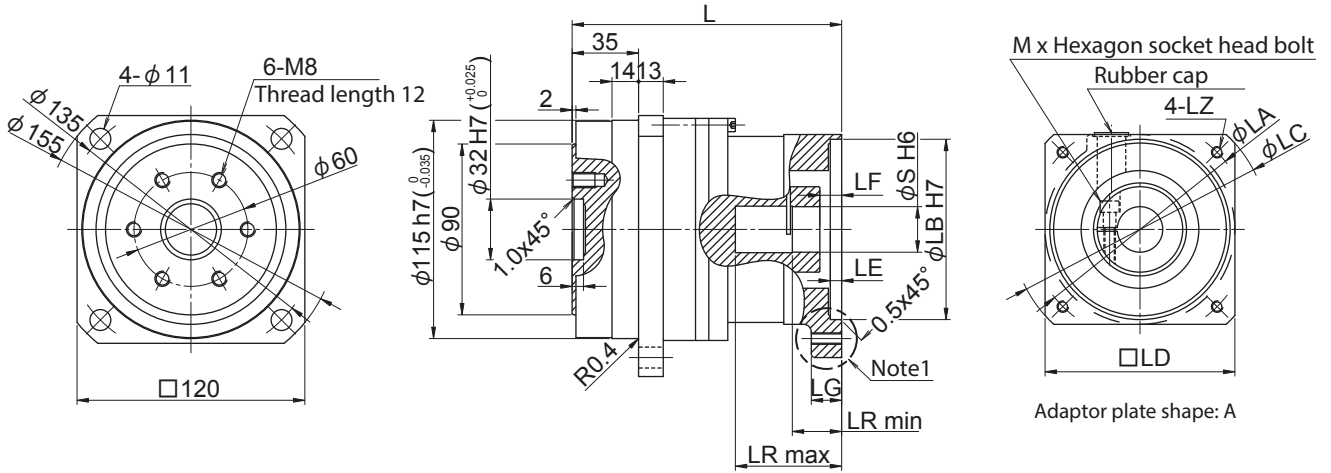
3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
											max	min				
1L	143.5	115	95	135	100	6	11.5	16	A	M6	56	26	24	M6	6.6	1L
7B		115	95	135	100	6	13.5	16		M8	56	26	19	M5	6.4	7B
0W		115	95	135	100	6	11.5	16		M8	56	26	22	M6	6.5	0W
7Y		115	95	135	100	6	11.5	16		M8	56	26	24	M6	6.6	7Y
0Y	151.5	135	110	165	120	7	19.5	16	A	M8	74	34	22	M6	7.1	0Y
7X		145	110	165	120	7	21.5	16		M8	64	34	19	M5	6.7	7X
1S		145	110	165	120	7	19.5	16		M8	64	34	22	M6	6.2	1S
7Z		145	110	165	120	7	19.5	16		M8	64	34	24	M6	6.9	7Z

Note 1. Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension drawings

Frame Size P130
 Reduction Ratio 21
 Flange Shaft

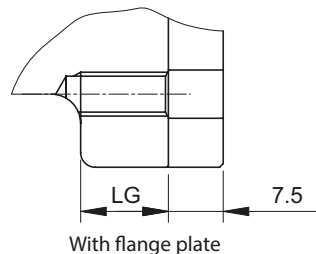


Nomenclature
 ANFX-P130F - Motor flange code Backlash - Reduction ratio (21)

3 min: L3
 15 min: LD

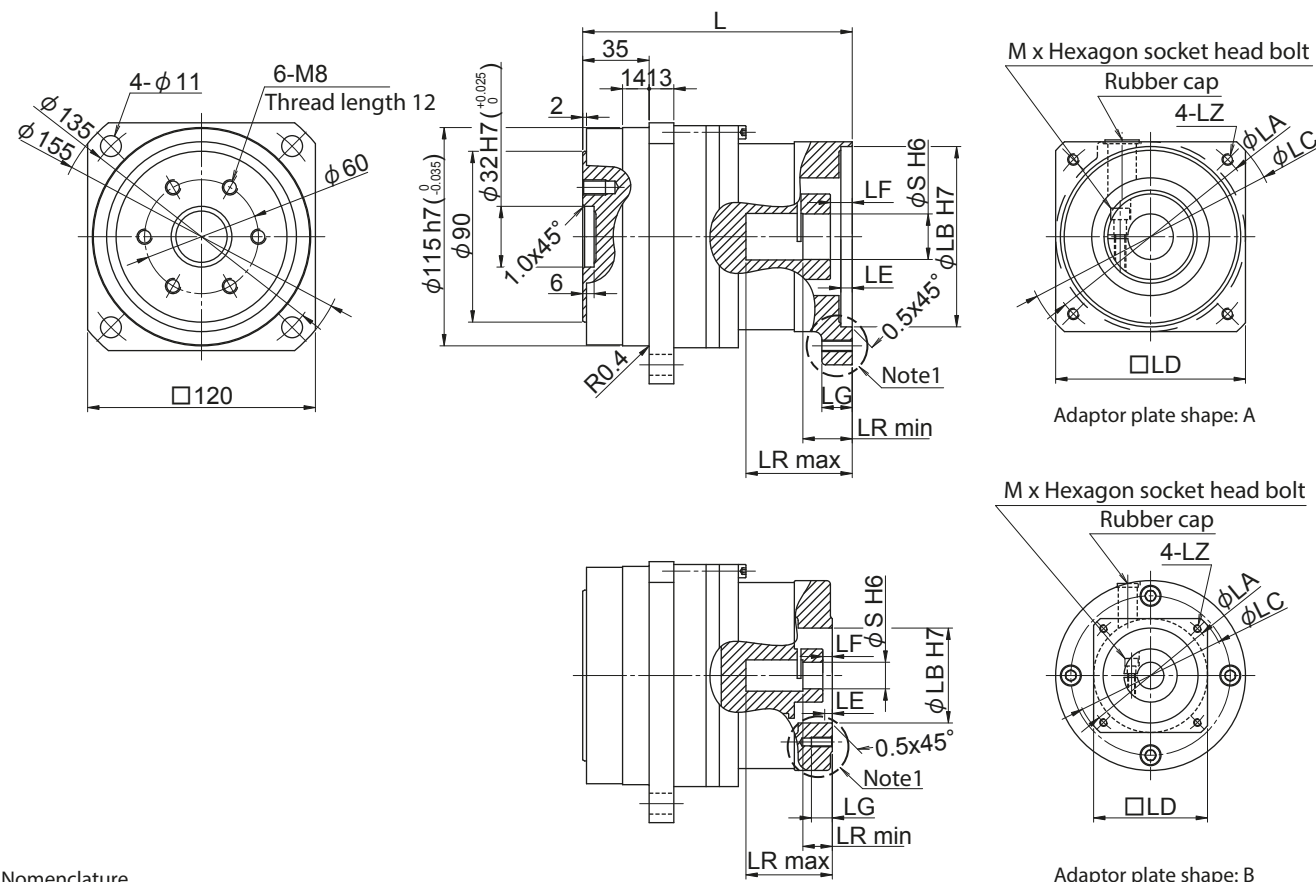
Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1 Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code	
											max	min					
8E ^{Note 2}	143.5	100	80	120	90	5	13.5	12	A	M6	56	26	16	M5	6.6	8E ^{Note 2}	
7V ^{Note 2}		100	80	120	90	5	13.5	12		M6	56	26	19	M5	6.5	7V ^{Note 2}	
1L		115	95	135	100	6	11.5	16		Through hole	M6	56	26	24	M6	6.5	1L
7B		115	95	135	100	6	13.5	16		Through hole	M8	56	26	19	M5	6.5	7B
0W		115	95	135	100	6	11.5	16		Through hole	M8	56	26	22	M6	7.2	0W
7Y		115	95	135	100	6	11.5	16		Through hole	M8	56	26	24	M6	6.5	7Y
0Y	151.5	135	110	165	120	7	19.5	16	A	M8	74	34	22	M6	7.1	0Y	
7X		145	110	165	120	7	21.5	16		Through hole	M8	64	34	19	M5	6.8	7X
1S		145	110	165	120	7	19.5	16		Through hole	M8	64	34	22	M6	7.5	1S
7Z		145	110	165	120	7	19.5	16		Through hole	M8	64	34	24	M6	6.9	7Z

Note:1. Flange plate for motor is attached between the motor and the adaptor plate.
 2. Dimensions and mass shown in the above figures are subject to change without prior notification.



Dimension drawings

Frame Size P130
Reduction Ratio 33
Flange Shaft

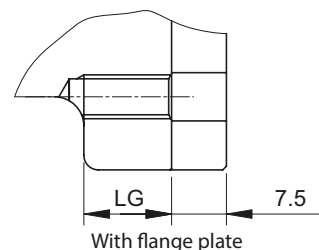


Nomenclature ANFX-P130F - Motor flange code Backlash Reduction ratio (33)

3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
2R	133	70	50	80	60	4	5	11	Blind hole	B	M5	45.5	15.5	14	M4	6.5	2R
0U	136	90	70	120	90	6	6	11	Blind hole		M5	48.5	18.5	16	M5	6.5	0U
7S		90	70	120	90	6	6	11	Blind hole		M5	48.5	18.5	19	M5	6.5	7S
7P		90	70	120	90	6	6	13	Blind hole		M6	48.5	18.5	16	M5	6.5	7P
1G		90	70	120	90	6	6	13	Blind hole		M6	48.5	18.5	19	M5	6.5	1G
2J ^{Note 2}		143.5	100	80	120	90	5	15.5	12	Through hole	A	M6	56	26	10	M4	6.6
0V ^{Note 3}	100		80	120	90	5	15.5	12	Through hole	M6		56	26	14	M4	6.6	0V ^{Note 3}
8E ^{Note 2}	100		80	120	90	5	13.5	12	Through hole	M6		56	26	16	M5	6.6	8E ^{Note 2}
7A	115		95	135	100	6	13.5	16	Through hole	M8		56	26	16	M5	6.6	7A
7R	151.5		145	110	165	120	7	21.5	16	Through hole		M8	64	34	16	M5	6.9
7X		145	110	165	120	7	21.5	16	Through hole	M8		64	34	19	M5	6.9	7X
7Z		145	110	165	120	7	19.5	16	Through hole	M8		64	36	24	M6	6.9	7Z

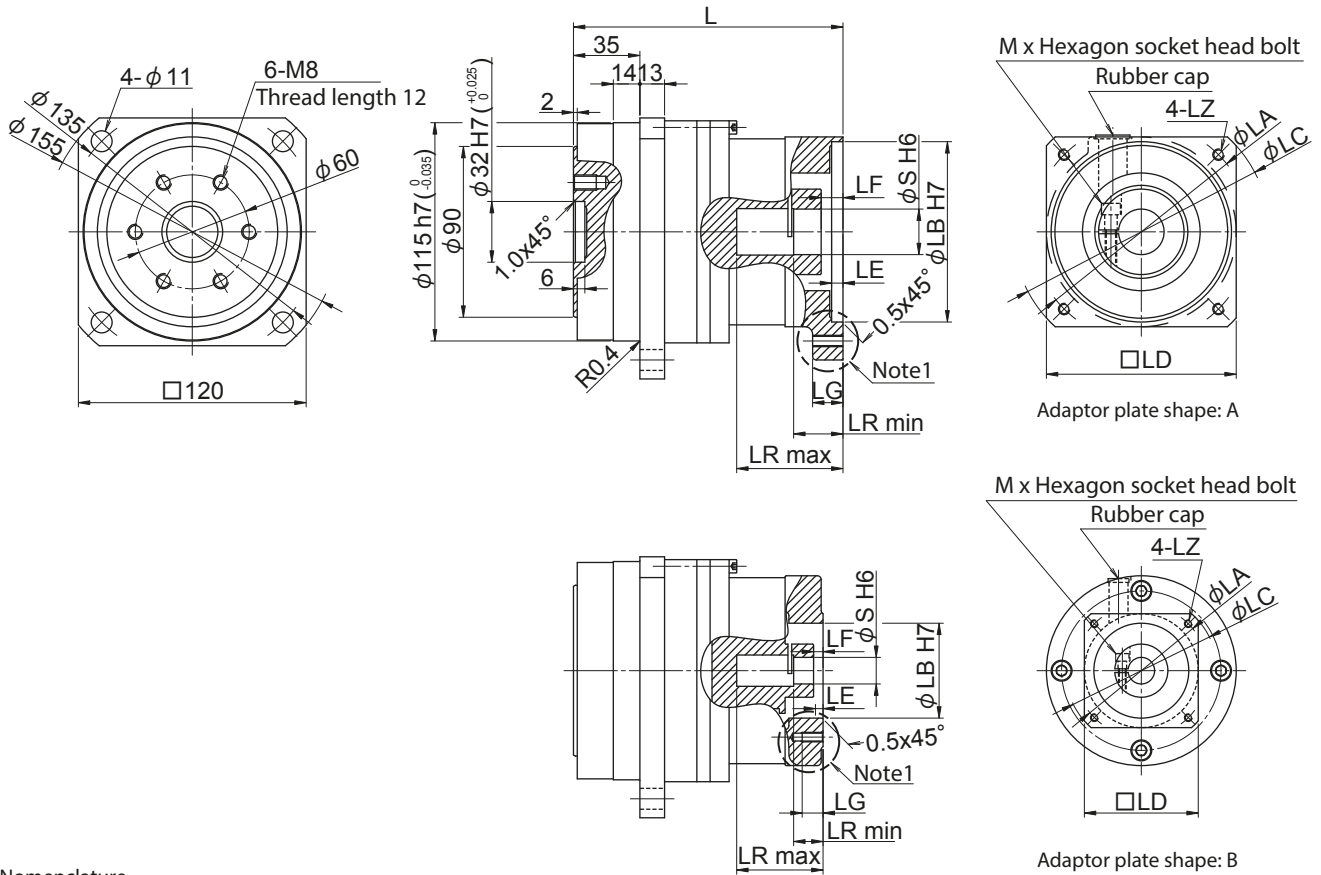
- Note: 1. Flange plate for motor is attached between the motor and the adaptor plate.
 2. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012--+0.023).
 3. Dimensions and mass shown in the above figures are subject to change without prior notification.



P1 Type

Dimension drawings

Frame Size P130
 Reduction Ratio 45
 Flange Shaft

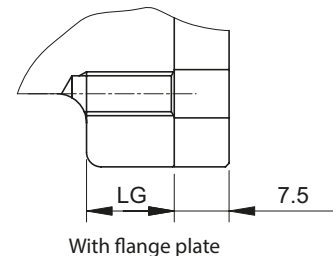


Nomenclature
 ANFX-P130F - Motor flange code Backlash Reduction ratio (45)

3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
2R	133	70	50	80	60	4	5	11	Blind hole	B	M5	45.5	15.5	14	M4	6.5	2R
0U	136	90	70	120	90	6	6	11	Blind hole		M5	48.5	18.5	16	M5	6.5	0U
7S		90	70	120	90	6	6	11	Blind hole		M5	48.5	18.5	19	M5	6.5	7S
7P		90	70	120	90	6	6	13	Blind hole		M6	48.5	18.5	16	M5	6.5	7P
1G		90	70	120	90	6	6	13	Blind hole		M6	48.5	18.5	19	M5	6.5	1G
2J ^{Note 2}		143.5	100	80	120	90	5	15.5	12	Through hole	M6	56	26	10	M4	6.6	2J ^{Note 2}
0V ^{Note 3}	100		80	120	90	5	15.5	12	Through hole	M6	56	26	14	M4	6.6	0V ^{Note 3}	
8E ^{Note 2}	100		80	120	90	5	13.5	12	Through hole	M6	56	26	16	M5	6.6	8E ^{Note 2}	
7A	115		95	135	100	6	13.5	16	Through hole	M8	56	26	16	M5	6.6	7A	
7R	145		110	165	120	7	21.5	16	Through hole	M8	64	34	16	M5	6.9	7R	
7X	151.5	145	110	165	120	7	21.5	16	Through hole	A	M8	64	34	19	M5	6.9	7X
7Z		145	110	165	120	7	19.5	16	Through hole		M8	64	36	24	M6	6.9	7Z

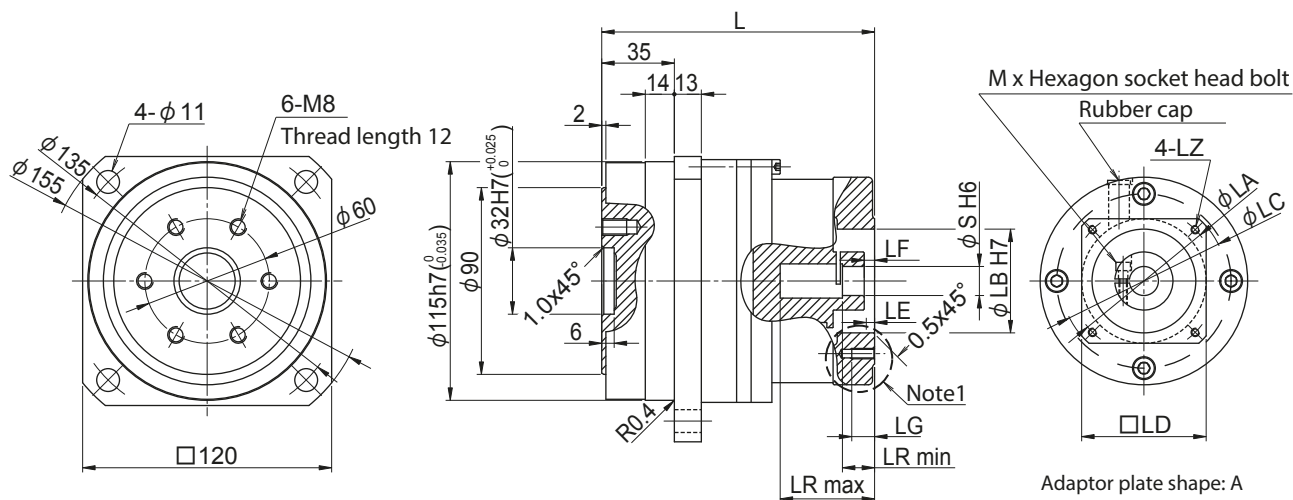
- Note: 1. Flange plate for motor is attached between the motor and the adaptor plate.
 2. Tolerance of coupling for motor flange code "0V" is over tolerance (+0.012-+0.023).
 3. Dimensions and mass shown in the above figures are subject to change without prior notification.



Dimension drawings

Frame Size P130
Reduction Ratio 81
Flange Shaft

P1 Type



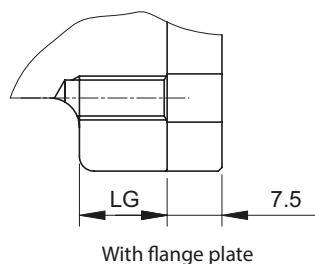
Nomenclature
ANFX-P130F - Motor flange code Backlash Reduction ratio (81)

3 min: L3
15 min: LD

Motor flange code	L	LA	LB	LC	LD	LE	LF	Dimension LG Note1	Thread hole Shape	Adaptor plate shape	LZ	LR		S	M	Mass [kg]	Motor flange code
												max	min				
2L	133	70	50	80	60	4	5	9	Blind hole	B	M4	45.5	15.5	11	M4	6.5	2L
2P		70	50	80	60	4	5	9	Blind hole		M4	45.5	15.5	14	M4	6.5	2P
2H		70	50	80	60	4	5	11	Blind hole		M5	45.5	15.5	9	M4	6.5	2H
2R		70	50	80	60	4	5	11	Blind hole		M5	45.5	15.5	14	M4	6.5	2R
8A	136	90	70	120	90	6	8	11	Blind hole	B	M5	48.5	18.5	11	M4	6.6	8A
8B		90	70	120	90	6	8	11	Blind hole		M5	48.5	18.5	14	M4	6.6	8B
2T		90	70	120	90	6	8	13	Blind hole		M6	48.5	18.5	14	M4	6.6	2T
2J ^{Note 2}	143.5	100	80	120	90	5	15.5	12	Through hole	A	M6	56	26	10	M4	7.4	2J ^{Note 2}

Note:1. Flange plate for motor is attached between the motor and the adaptor plate.

2. Dimensions and mass shown in the above figures are subject to change without prior notification.



Durability Check of Output Shaft Part

P1 Type of IB Series uses angular bearing to allow high maximum load moment. Make sure that your load moment does not exceed the allowable value through the following calculation.

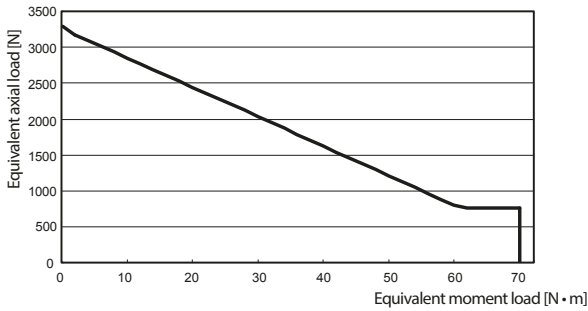
1. Check Maximum Load Moment

$$M_{max} = \frac{F_{rmax} \cdot (L_c + L_r) + F_{amax} \cdot L_a}{10^3} \dots (1)$$

Make sure that : $M_{max} \leq Mc$

Table 5 Allowable Moment for P1 Type

Frame size	Moment load	Axial load
	N·m	N
P110	70	3300
P120	300	4800
P130	620	9400



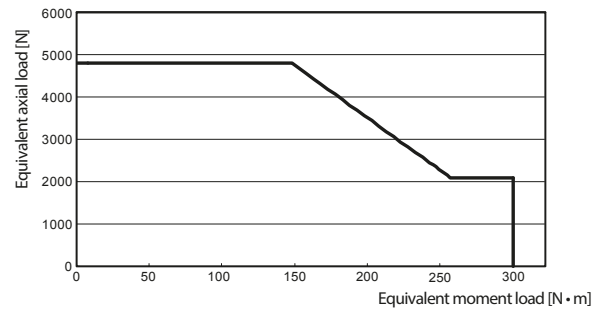
P110 Allowable Load Diagram for Moment and Axial Load

Table 4 Symbol in Formula (1)

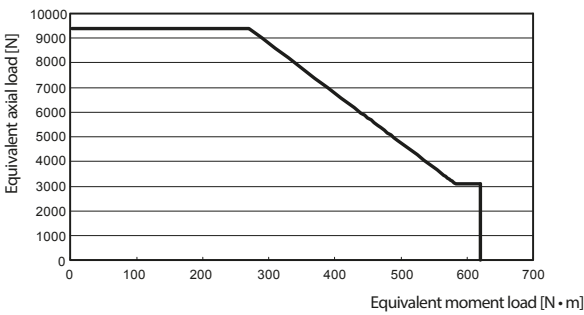
F_{rmax}	Maximum radial load during the operation pattern	N (kgf)	Refer to Fig. 6.
F_{amax}	Maximum axial load during the operation pattern	N (kgf)	
L_r, L_c, L_a	Load application location	mm	

Table 6 Dimensions

Frame size	Dimension [mm]				
	LB	LC	S	L	Z
P110	52.76	42.38	2	28	19.62
P120	82.56	64.53	2	42	25.97
P130	109.02	86.26	4	82	63.24



P120 Allowable Load Diagram for Moment and Axial Load



P130 Allowable Load Diagram for Moment and Axial Load

- Note 1. Consult us when the radial load is exerted on the location exceeding the range of "L + S."
 Note 2. Consult us when the value exceeds the range of allowable load. Units may sometimes be used without problem for some cases, depending on the direction of axial load and the leverage point of the load.

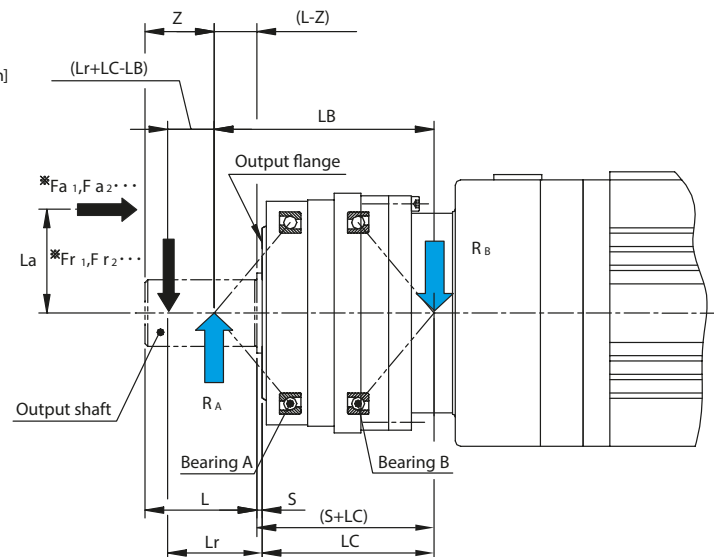


Fig. 5 External Load Effect diagram

Note: Refer to Fig. 6. (Fig. 6 shows the load of each period in the specific operation pattern.)

Bearing Lifetime Check

2. Check Equivalent Load Bearing Lifetime

Check lifetime by converting to equivalent load when radial or axial load varies.

Equivalent radial load : Fre

$$F_{re} = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot (F_{r1})^3 + n_2 \cdot t_2 \cdot (F_{r2})^3 + \dots + n_n \cdot t_n \cdot (F_{rn})^3}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}} \dots(2)$$

Equivalent axial load : Fae

$$F_{ae} = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot (F_{a1})^3 + n_2 \cdot t_2 \cdot (F_{a2})^3 + \dots + n_n \cdot t_n \cdot (F_{an})^3}{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}} \dots(3)$$

Equivalent output speed : Neo

$$N_{eo} = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + \dots + n_n \cdot t_n}{t_1 + t_2 + \dots + t_n} \dots(4)$$

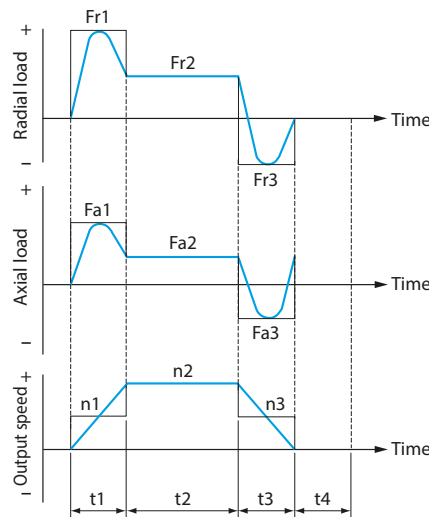




Fig. 6 Example of Load Fluctuation

Table 7 Axial Load Direction and Dynamic Equivalent Load Formula

Axial Load Direction	Load Condition	Bearing Category	Axial Load	Dynamic Equivalent Load
 (Applied to motor side)	$\frac{R_B}{2Y_2} + F_{ae} \geq \frac{R_A}{2Y_2}$	Bearing A	$F_{aA} = \frac{R_B}{2Y_2} + F_{ae}$	$P_A = X \cdot R_A + Y \cdot F_{aA}$ Note : When $P_A < R_A$, use $P_A = R_A$.
		Bearing B	—	$P_B = R_B$
	$\frac{R_B}{2Y_2} + F_{ae} < \frac{R_A}{2Y_2}$	Bearing A	—	$P_A = R_A$
		Bearing B	$F_{aB} = \frac{R_A}{2Y_2} - F_{ae}$	$P_B = X \cdot R_B + Y \cdot F_{aB}$ Note : When $P_B < R_B$, use $P_B = R_B$.
 (Applied to output side)	$\frac{R_B}{2Y_2} \leq \frac{R_A}{2Y_2} + F_{ae}$	Bearing A	—	$P_A = R_A$
		Bearing B	$F_{aB} = \frac{R_A}{2Y_2} + F_{ae}$	$P_B = X \cdot R_B + Y \cdot F_{aB}$ Note : When $P_B < R_A$, use $P_B = R_A$.
	$\frac{R_B}{2Y_2} > \frac{R_A}{2Y_2} + F_{ae}$	Bearing A	$F_{aA} = \frac{R_B}{2Y_2} - F_{ae}$	$P_A = X \cdot R_A + Y \cdot F_{aA}$ Note : When $P_A < R_A$, use $P_A = R_A$.
		Bearing B	—	$P_B = R_B$

P1 Type

Bearing Lifetime Check

Table 8 Bearing Specification

Frame size	Dynamic rated load C	Load Factor				e
		X		Y		
	N(kgf)	$F_{aA} / R_A \leq e$ $F_{aB} / R_B \leq e$	$F_{aA} / R_A > e$ $F_{aB} / R_B > e$	$F_{aA} / R_A \leq e$ $F_{aB} / R_B \leq e$	$F_{aA} / R_A > e$ $F_{aB} / R_B > e$	
P110	3050(310)	1	0.35	0	0.57	1.14
P120	8950(910)					
P130	13600(1390)					

Table 9 Symbols in Table 7 & 8

P	Dynamic equivalent load (Either the larger one of dynamic equivalent load P _A or P _B , each influencing bearing A and B)	N(kgf)	Refer to Table 7 in page 81.
R _A , R _B	Support reaction applied to each bearing A and B calculated from equivalent external load F _{re} and F _{ae}	N(kgf)	—
X	Radial load factor	—	Refer to Table 8.
Y	Axial load factor		
Y ₂	Axial load factor Y ₂ = 0.57 when F _a * / R* > e		
F _{aA} , F _{aB}	Axial load exerted on each of bearing A and B	N(kgf)	—

Lifetime L_{10h}

$$L_{10h} = \frac{10^6}{60 \cdot N e o} \left(\frac{C}{C_f \cdot F_s \cdot P} \right)^3 \dots (5)$$

Table 10 Coupling Factor C_f

Coupling Method	C _f
Chain	1.00
Gears	1.25
V-Belt	1.50

Table 11 Shock Factor F_s

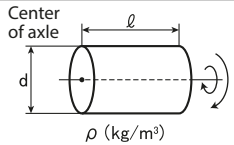
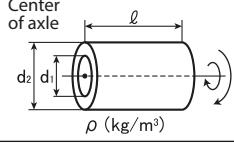
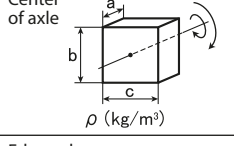
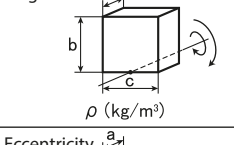
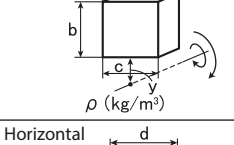
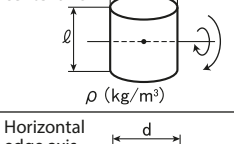
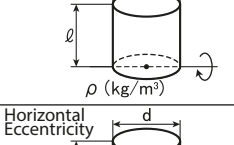
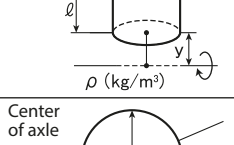
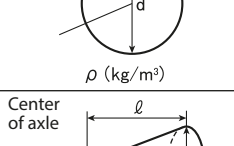
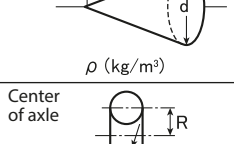
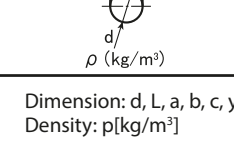
Degree of shock	F _s
Practically no shock	1.0
Light shock	1.0 ~ 1.2
Severe shock	1.4 ~ 1.6

Table 12 Symbol in Formula (5)

Neo	Equivalent output speed	r/min	Refer to formula (4).
P	Dynamic equivalent load	N(kgf)	Refer to Table 4.
C	Dynamic rated load	N(kgf)	Refer to Table 5.
C _f	Coupling factor	—	Refer to Table 7.
F _s	Shock factor	—	Refer to Table 8.

Formula to Calculate Moment of Inertia and GD^2

● Formula to Calculate Moment of inertia and GD^2

Location of rotation	Shape	Mass M [kg]	Moment of Inertia J [kg · m ²]	GD^2 [kgf · m ²]
 <p>Center of axle d l ρ (kg/m³)</p>	Cylinder	$\frac{1}{4} \cdot \pi \cdot d^2 \cdot l \cdot \rho$	$\frac{1}{32} \cdot \pi \cdot d^4 \cdot l \cdot \rho$	$\frac{1}{8} \cdot \pi \cdot d^4 \cdot l \cdot \rho$
 <p>Center of axle d₁ d₂ l ρ (kg/m³)</p>	Cylinder hollow	$\frac{1}{4} \cdot \pi \cdot (d_1^2 - d_2^2) \cdot l \cdot \rho$	$\frac{1}{32} \cdot \pi \cdot (d_1^4 - d_2^4) \cdot l \cdot \rho$	$\frac{1}{8} \cdot \pi \cdot (d_1^4 - d_2^4) \cdot l \cdot \rho$
 <p>Center of axle a b c ρ (kg/m³)</p>	Rectangular solid	$a \cdot b \cdot c \cdot \rho$	$\frac{a \cdot b \cdot c}{12} \cdot (b^2 + c^2) \cdot \rho$	$\frac{a \cdot b \cdot c}{3} \cdot (b^2 + c^2) \cdot \rho$
 <p>Edge axle a b c ρ (kg/m³)</p>	Rectangular solid	$a \cdot b \cdot c \cdot \rho$	$\frac{a \cdot b \cdot c}{12} \cdot (4b^2 + c^2) \cdot \rho$	$\frac{a \cdot b \cdot c}{3} \cdot (4b^2 + c^2) \cdot \rho$
 <p>Eccentricity a b c y ρ (kg/m³)</p>	Rectangular solid	$a \cdot b \cdot c \cdot \rho$	$\frac{a \cdot b \cdot c}{12} \cdot (4b^2 + c^2 + 12b \cdot y + 12y^2) \cdot \rho$	$\frac{a \cdot b \cdot c}{3} \cdot (4b^2 + c^2 + 12b \cdot y + 12y^2) \cdot \rho$
 <p>Horizontal center axis d l ρ (kg/m³)</p>	Cylinder	$\frac{1}{4} \cdot \pi \cdot d^2 \cdot l \cdot \rho$	$\frac{\pi \cdot d^2 \cdot l}{192} \cdot (4l^2 + 3d^2) \cdot \rho$	$\frac{\pi \cdot d^2 \cdot l}{48} \cdot (4l^2 + 3d^2) \cdot \rho$
 <p>Horizontal edge axis d l ρ (kg/m³)</p>	Cylinder	$\frac{1}{4} \cdot \pi \cdot d^2 \cdot l \cdot \rho$	$\frac{\pi \cdot d^2 \cdot l}{192} \cdot (16l^2 + 3d^2) \cdot \rho$	$\frac{\pi \cdot d^2 \cdot l}{48} \cdot (16l^2 + 3d^2) \cdot \rho$
 <p>Horizontal Eccentricity d l y ρ (kg/m³)</p>	Cylinder	$\frac{1}{4} \cdot \pi \cdot d^2 \cdot l \cdot \rho$	$\frac{\pi \cdot d^2 \cdot l}{192} \cdot (16l^2 + 3d^2 + 48y \cdot l + 48y^2) \cdot \rho$	$\frac{\pi \cdot d^2 \cdot l}{48} \cdot (16l^2 + 3d^2 + 48y \cdot l + 48y^2) \cdot \rho$
 <p>Center of axle d ρ (kg/m³)</p>	Sphere	$\frac{1}{6} \cdot \pi \cdot d^2 \cdot \rho$	$\frac{1}{60} \cdot \pi \cdot d^5 \cdot \rho$	$\frac{1}{15} \cdot \pi \cdot d^5 \cdot \rho$
 <p>Center of axle l d ρ (kg/m³)</p>	Cone	$\frac{1}{12} \cdot \pi \cdot d^2 \cdot l \cdot \rho$	$\frac{1}{160} \cdot \pi \cdot d^4 \cdot l \cdot \rho$	$\frac{1}{40} \cdot \pi \cdot d^4 \cdot l \cdot \rho$
 <p>Center of axle R d ρ (kg/m³)</p>	Torus	$\frac{1}{2} \cdot \pi^2 \cdot R \cdot d^2 \cdot \rho$	$\frac{\pi^2 \cdot R \cdot d^2}{8} \cdot (4R^2 + \frac{3d^2}{4}) \cdot \rho$	$\frac{\pi^2 \cdot R \cdot d^2}{2} \cdot (4R^2 + \frac{3d^2}{4}) \cdot \rho$

Dimension: d, L, a, b, c, y, R [m]
Density: p[kg/m³]

Formula for Calculation of Moment of Inertia, Load Torque, and Acceleration Torque

● Formula for Calculation of Moment of Inertia, Load Torque, and Acceleration Torque

Specification	Diagram	Load moment of Inertia J [kg · m ²]	Load torque of reducer output shaft T [N · m]	Acceleration torque of reducer output shaft T_s [N · m]	Relationship of Output Speed and Speed N[r/min]
Object in linear motion		$M(\frac{P}{2\pi})^2 + J_B$ M : Mass of load [kg] P : Pitch of ball screw [m]	$\frac{P}{2\pi} (\mu \cdot M \cdot g + F)$ μ : Friction coefficient of ball screw g : Gravity acceleration [9.8m/sec ²] F : External force [N]	$\frac{2\pi \cdot N \cdot J_L}{60t_a}$ J_L : Load inertia converted to output shaft of the reducer [kg · m ²] N : Speed [r/min] t_a : Acceleration time [sec]	$\frac{V}{P}$ V : Velocity [m/min] P : Pitch of ball screw [m]
Hoisting object with a pulley		$\frac{M_1 \cdot D^2}{8} + \frac{M_2 \cdot D^2}{4}$ M ₁ : Mass of cylinder [kg] M ₂ : Mass of suspended object [kg] D : Diameter of drum [m]	$F \cdot \frac{D}{2}$ F : External load [N] = M ₂ · g g : Gravity acceleration [9.8m/sec ²]	$\frac{2\pi \cdot N \cdot J_L}{60t_a}$ J_L : Load inertia converted to output shaft of the reducer [kg · m ²] N : Speed [r/min] t_a : Acceleration time [sec]	$\frac{V}{\pi \cdot D}$ V : Velocity [m/min] D : Drum diameter [m]
Transfer by rack or pinion		$\frac{M \cdot D^2}{4}$ M : Mass of rack [kg] D : PCD of pinion [m]	$F \cdot \frac{D}{2} + F_c$ F : External force [N] g : Gravity acceleration [9.8m/sec ²] F _c : Contact loss [N · m]	$\frac{2\pi \cdot N \cdot J_L}{60t_a}$ J_L : Load inertia converted to output shaft of the reducer [kg · m ²] N : Speed [r/min] t_a : Acceleration time [sec]	$\frac{V}{R}$ V : Velocity [m/min] R = πdp or Zp · Lp dp : P, C, D [m] Zp : Teeth number Lp : Pitch
Transfer by belt conveyer		$\frac{M_1 \cdot D_1^2}{8} + \frac{M_2 \cdot D_2^2}{8} + \frac{D_1^2}{D_2^2} \cdot \frac{M_3 \cdot D_1^2}{4} + \frac{M_4 \cdot D_1^2}{4}$ M ₁ : Mass of cylinder 1 [kg] M ₂ : Mass of cylinder 2 [kg] M ₃ : Mass of object [kg] M ₄ : Mass of belt [kg] D ₁ : Diameter of cylinder 1 [m] D ₂ : Diameter of cylinder 2 [m]	$\frac{1}{2} D(F + \mu \cdot M_3 \cdot g)$ F : External force [N] g : Gravity acceleration [9.8m/sec ²]	$\frac{2\pi \cdot N \cdot J_L}{60t_a}$ J_L : Load inertia converted to output shaft of the reducer [kg · m ²] N : Speed [r/min] t_a : Acceleration time [sec]	$\frac{V}{D_1}$ V : Velocity [m/min] D ₁ : Diameter of cylinder 1 [m]
Transfer by roll feed		$J_1 + (\frac{D_1}{D_2})^2 \cdot J_2 + \frac{M \cdot D_1^2}{4}$ D ₁ : Diameter of roll 1 [m] D ₂ : Diameter of roll 2 [m] M : Equivalent mass of work [kg]	$\frac{D(F + N \cdot \mu_1 + Mg \cdot \mu_2)}{2}$ F : Tension [N] g : Gravity acceleration [9.8m/sec ²] N : Welding force [N]	$\frac{2\pi \cdot N \cdot J_L}{60t_a}$ J_L : Load inertia converted to output shaft of the reducer [kg · m ²] N : Speed [r/min] t_a : Acceleration time [sec]	$\frac{N}{\pi \cdot D_1}$ V : Velocity [m/min] D ₁ : Roll diameter [m]

1. Calculate inertia and make additions when using additional apparatus for each drive part.
2. Calculate each element for frictional force and convert to frictional force at output shaft of reducer if necessary.
3. Calculate each element for external force and convert to external torque at output shaft of reducer if necessary.

Moment of Inertia (at Motor Shaft)

Table 13

Unit: $\times 10^{-4} \text{kg}\cdot\text{m}^2$

Frame size	Input shaft hollow (mm)	Motor flange code	Reduction ratio									
			3.7		5		9		11		15	
			Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft
P110	6	7J	0.142	0.141	0.116	0.116	0.098	0.097	0.140	0.140	0.137	0.137
	8	2C,2D,2E,2F,2G	0.142	0.140	0.116	0.115	0.098	0.097	0.140	0.140	0.137	0.137
	9	2H	0.212	0.211	0.183	0.186	0.168	0.168	0.211	0.211	0.208	0.208
	10	2J	0.211	0.210	0.186	0.185	0.167	0.167				
	11	2K,2L,8A	0.210	0.208	0.184	0.184	0.166	0.165	0.209	0.209	0.206	0.206
	14	2P,2R,8B,2T,2V	0.202	0.201	0.177	0.176	0.158	0.158	0.202	0.202	0.199	0.199
	16	7P,8E,7A,7R	0.422	0.421	0.394	0.396	0.378	0.378				
P120	8	2C,2D,2E,2F,2G										
	9	2H										
	10	2J					0.506	0.485	0.513	0.512	0.491	0.490
	11	2K,2L,8A										
	14	2P,2R,8B,2T,2V,0V	0.849	0.831	0.653	0.640	0.504	0.483	0.505	0.503	0.483	0.482
	16	7A,7P,8E,7R,0U	0.985	0.975	0.789	0.783	0.647	0.645	0.618	0.617	0.596	0.595
	19	7S,1G,7X,7B,7V	0.962	0.951	0.766	0.760	0.624	0.622	0.599	0.597	0.577	0.576
	22	1S,0Y,0W	1.679	1.668	1.483	1.477	1.341	1.339	1.338	1.337	1.316	1.315
24	7Y,7Z,1L	1.657	1.646	1.460	1.455	1.318	1.317	1.315	1.314	1.293	1.293	
P130	9	2H										
	10	2J										
	11	2K,2L,8A										
	14	2P,2R,8B,2T,2V,0V										
	16	7A,7P,8E,7R,0U										
	19	7S,1G,7X,7B,7V					1.820	1.797	1.920	1.905	1.822	1.814
	22	1S,0Y,0W	3.750	3.611	2.866	2.792	2.211	2.188	2.285	2.269	2.186	2.178
	24	1L,7Y,7Z	3.707	3.568	2.823	2.749	2.168	2.145	2.250	2.234	2.152	2.143
	28	1T,1W,1X,0E,0K	3.827	3.688	2.943	2.869	2.288	2.265				
35	1Z,0M,0X	6.901	6.763	6.018	5.943	5.363	5.159					

Frame Size	Input shaft hollow (mm)	Motor flange code	Reduction ratio							
			21		33		45		81	
			Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft
P110	6	7J	0.107	0.107	0.092	0.092	0.092	0.092	0.092	0.092
	8	2C,2D,2E,2F,2G	0.107	0.107	0.092	0.092	0.092	0.092	0.092	0.092
	9	2H	0.178	0.178	0.160	0.160	0.160	0.160		
	10	2J								
	11	2K,2L,8A	0.176	0.176	0.157	0.157				
	14	2P,2R,8B,2T,2V	0.169	0.169	0.151	0.151				
	16	7P,8E,7A,7R								
P120	8	2C,2D,2E,2F,2G						0.352	0.352	
	9	2H	0.440	0.440			0.410	0.410	0.408	0.408
	10	2J	0.441	0.440	0.411	0.411	0.409	0.409		
	11	2K,2L,8A					0.407	0.407	0.406	0.406
	14	2P,2R,8B,2T,2V,0V	0.432	0.432	0.403	0.403	0.401	0.401	0.399	0.399
	16	7A,7P,8E,7R,0U	0.546	0.546						
	19	7S,1G,7X,7B,7V	0.527	0.526						
	24	7Y,7Z,1L	1.243	1.243						
P130	9	2H						1.265	1.265	
	10	2J			1.284	1.282	1.273	1.272	1.264	1.264
	11	2K,2L,8A						1.265	1.264	
	14	2P,2R,8B,2T,2V,0V			1.282	1.280	1.271	1.270	1.263	1.262
	16	7A,7P,8E,7R,0U	1.555	1.551	1.404	1.402	1.393	1.392		
	19	7S,1G,7X,7B,7V	1.533	1.529	1.381	1.380	1.370	1.370		
	22	1S,0Y,0W	1.897	1.893						
	24	1L,7Y,7Z	1.862	1.858	1.711	1.709	1.700	1.699		
	28	1T,1W,1X,0E,0K								
35	1Z,0M,0X									

P1 Type

GD² (at Motor Shaft)

Table 14

Unit: x10⁻⁴kgf·m²

Frame size	Input shaft hollow (mm)	Motor flange code	Reduction ratio									
			3.7		5		9		11		15	
			Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft
P110	6	7J	0.568	0.562	0.464	0.464	0.392	0.388	0.560	0.560	0.548	0.548
	8	2C,2D,2E,2F,2G	0.567	0.561	0.464	0.460	0.392	0.388	0.560	0.559	0.548	0.548
	9	2H	0.850	0.844	0.732	0.744	0.672	0.672	0.844	0.844	0.832	0.832
	10	2J	0.845	0.840	0.744	0.740	0.668	0.668				
	11	2K,2L,8A	0.839	0.834	0.736	0.736	0.664	0.660	0.835	0.834	0.824	0.824
	14	2P,2R,8B,2T,2V	0.809	0.803	0.708	0.704	0.632	0.632	0.807	0.807	0.796	0.796
	16	7P,8E,7A,7R	1.689	1.684	1.576	1.584	1.512	1.512				
P120	8	2C,2D,2E,2F,2G										
	9	2H										
	10	2J					2.024	1.940	2.051	2.046	1.964	1.960
	11	2K,2L,8A										
	14	2P,2R,8B,2T,2V,0V	3.397	3.325	2.612	2.560	2.016	1.932	2.018	2.013	1.932	1.928
	16	7A,7P,8E,7R,0U	3.942	3.899	3.156	3.132	2.588	2.580	2.472	2.467	2.384	2.380
	19	7S,1G,7X,7B,7V	3.848	3.805	3.064	3.040	2.496	2.488	2.395	2.390	2.308	2.304
	22	1S,0Y,0W	6.717	6.674	5.932	5.908	5.364	5.356	5.351	5.346	5.264	5.260
24	7Y,7Z,1L	6.627	6.584	5.840	5.820	5.272	5.268	5.261	5.256	5.172	5.172	
P130	9	2H										
	10	2J										
	11	2K,2L,8A										
	14	2P,2R,8B,2T,2V,0V										
	16	7A,7P,8E,7R,0U										
	19	7S,1G,7X,7B,7V					7.280	7.188	7.681	7.619	7.288	7.256
	22	1S,0Y,0W	14.999	14.445	11.464	11.168	8.844	8.752	9.138	9.077	8.744	8.712
	24	1L,7Y,7Z	14.827	14.273	11.292	10.996	8.672	8.580	8.999	8.937	8.608	8.572
	28	1T,1W,1X,0E,0K	15.306	14.752	11.772	11.476	9.152	9.060				
35	1Z,0M,0X	27.605	27.051	24.072	23.772	21.452	20.636					

Frame size	Input shaft hollow (mm)	Motor flange code	Reduction ratio							
			21		33		45		81	
			Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft	Solid shaft	Flange shaft
P110	6	7J	0.428	0.428	0.368	0.368	0.368	0.368	0.368	0.368
	8	2C,2D,2E,2F,2G	0.428	0.428	0.368	0.368	0.368	0.368	0.368	0.368
	9	2H	0.712	0.712	0.640	0.640	0.640	0.640		
	10	2J								
	11	2K,2L,8A	0.704	0.704	0.628	0.628				
	14	2P,2R,8B,2T,2V	0.676	0.676	0.604	0.604				
	16	7P,8E,7A,7R								
P120	8	2C,2D,2E,2F,2G							1.408	1.408
	9	2H	1.760	1.760			1.640	1.640	1.632	1.632
	10	2J	1.764	1.760	1.644	1.644	1.636	1.636		
	11	2K,2L,8A					1.628	1.628	1.624	1.624
	14	2P,2R,8B,2T,2V,0V	1.728	1.728	1.612	1.612	1.604	1.604	1.596	1.596
	16	7A,7P,8E,7R,0U	2.184	2.184						
	19	7S,1G,7X,7B,7V	2.108	2.104						
	24	7Y,7Z,1L	4.972	4.972						
P130	9	2H							5.060	5.060
	10	2J			5.136	5.128	5.092	5.088	5.056	5.056
	11	2K,2L,8A							5.060	5.056
	14	2P,2R,8B,2T,2V,0V			5.128	5.120	5.084	5.080	5.052	5.048
	16	7A,7P,8E,7R,0U	6.220	6.204	5.616	5.608	5.572	5.568		
	19	7S,1G,7X,7B,7V	6.132	6.116	5.524	5.520	5.480	5.480		
	22	1S,0Y,0W	7.588	7.572						
	24	1L,7Y,7Z	7.448	7.432	6.844	6.836	6.800	6.796		
	28	1T,1W,1X,0E,0K								
35	1Z,0M,0X									

Mechanical Precision of Output Part of the Reducer

Mechanical precision of solid shaft (with and without key) and flange shaft is indicated below.

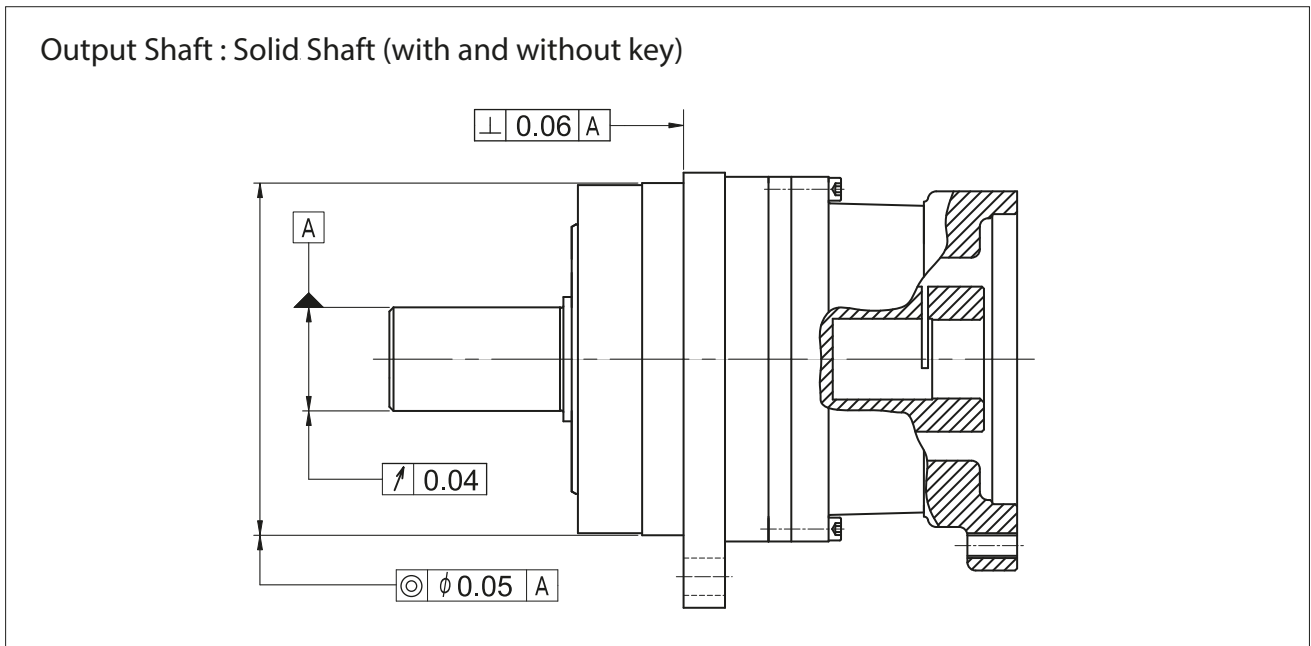


Fig. 7

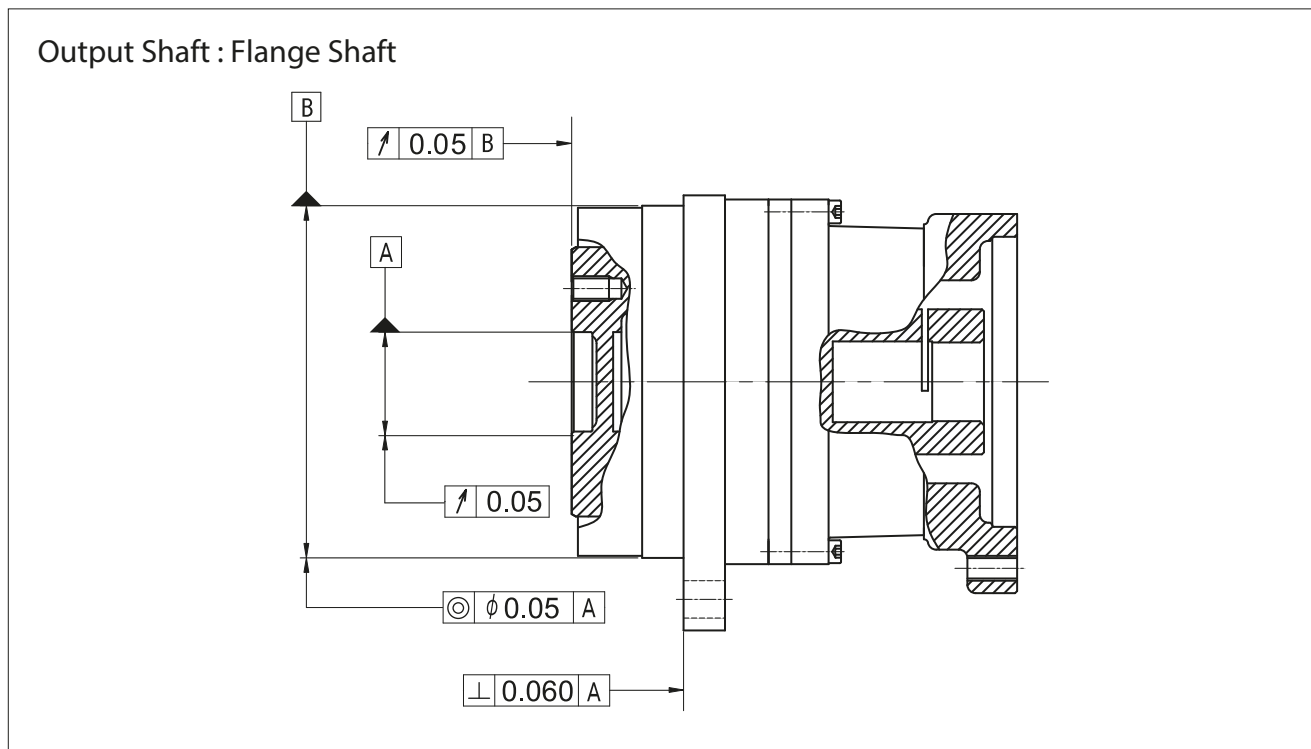


Fig. 8

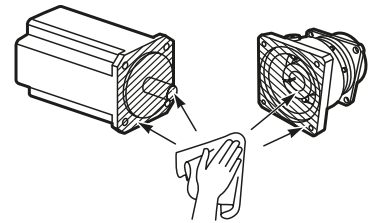
Motor Attachment Procedure

Either straight type, shaft with keyway, or D shaft may be attached to the motor shaft, because special coupling is used for shaft connection part of reducer and motor.
 Follow the process below from (1) through (8) for assembly.
 (Remove key while assembly for shaft with keyway.)

- (1) Remove anti-corrosive agent and oil on the motor shaft.
- (2) Place reducer on an appropriate worktable with coupling ③ on the top side.
- (3) Remove fitting ① of the setting hole of the reducer unit.
- (4) Match the location by turning by hand to tighten tightening bolt of the coupling into setting hole ① of the reducer unit.
- (5) Insert motor shaft into the center hole of the coupling ③, press in vertically and fit the pilot part of the adaptor plate ④ and motor.
- (6) Tighten motor and adaptor plate ④ with motor attachment bolt.
- (7) Using a torque wrench, tighten coupling tightening bolt ② with tightening torque shown in Table 15 through the setting hole.
- (8) Replace the fitting ① of the setting hole of the reducer unit.

Table 15 Tightening torque of bolt

Coupling hole diameter mm	Tightening bolt	Tightening torque	Allowable transmission torque
		Nm	Nm
∅6	M3	1.67	9.18
∅8			7.93
∅9			22.0
∅10	M4	3.92	22.7
∅11			24.9
∅14			26.4
∅16	M5	7.35	49.6
∅19			52.9
∅22	M6	8.83	61.8
∅24			66.2
∅28			78.3
∅35	M8	21.6	99.2



Make sure with the formula below that the selected unit can allow maximum emergency torque (peak torque at start and stop) in your operation cycle.

$$\frac{\text{Maximum emergency torque (Peak torque at start or stop)}}{\text{Reduction ratio}} \leq \text{Allowable transmission torque}$$

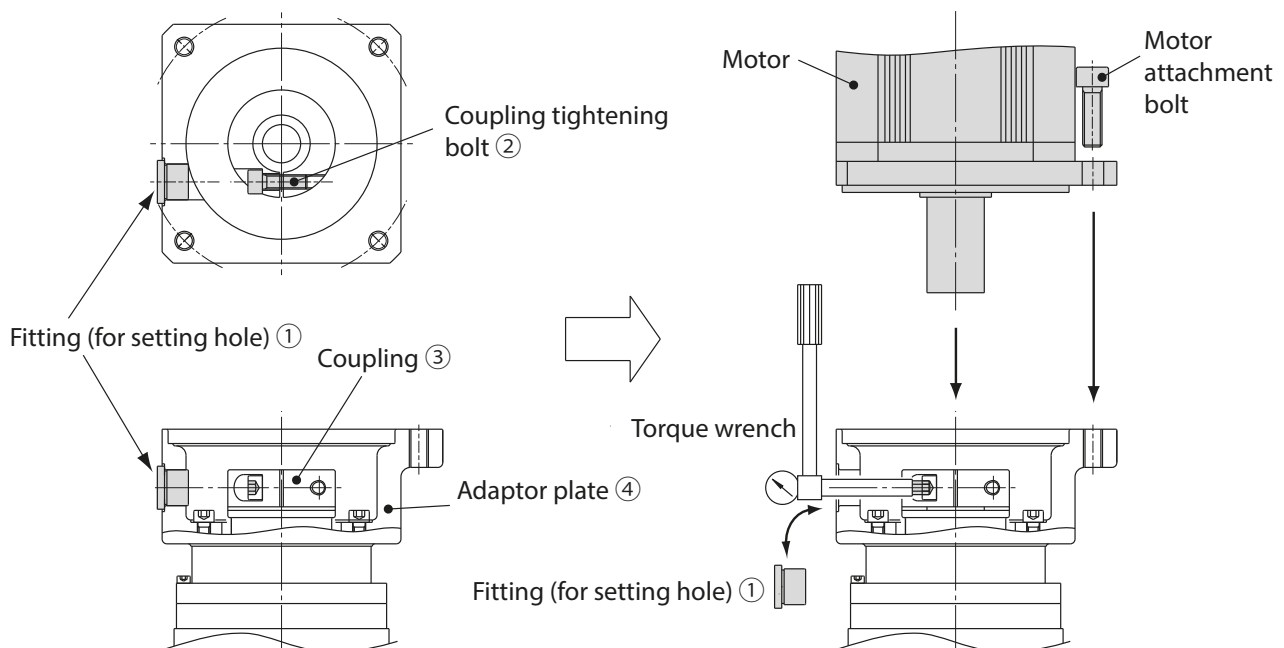


Fig. 9 Assembling Diagram

Motor Precision

Table 16

Type	Measuring item	Measuring method	Sketch of measurement	Measuring Instrument	Work accuracy		
					Grade AA	Grade A	Grade B
Foot-mount type and flange type	Run-out of shaft end	Secure the dial gauge on the floor or flange surface. Place the probe of the dial gauge on the circumference close to the shaft end. Turn the shaft once. Difference between the observed maximum and minimum values is the measured value.		Dial gauge	Shaft length Work accuracy = 0.01 when $L \leq 100$ As below when $L > 100$	Shaft length Work accuracy = 0.02 when $L \leq 100$ As below when $L > 100$	Shaft length Work accuracy = 0.04 when $L \leq 100$ As below when $L > 100$
Flange type	Eccentricity of flange engagement O.D.	Secure the dial gauge on the shaft close to the flange surface. Place the probe of the dial gauge on the circumference of flange connection. Turn the shaft once. Half of the difference between the observed maximum and minimum values is the measured value.		Dial gauge	Flange engagement O.D. Work accuracy = 0.01 when $D \leq 200$ As below when $D > 200$	Flange engagement O.D. Work accuracy = 0.02 when $D \leq 200$ As below when $D > 200$	Flange engagement O.D. Work accuracy = 0.03 when $D \leq 200$ As below when $D > 200$
	Perpendicularity with respect to flange surface	Secure the dial gauge on the shaft close to the flange surface. Place the probe of the dial gauge on the flange surface close to flange circumference. Turn the shaft once. The difference between the observed maximum and minimum values is the measured value.		Dial gauge	Flange diameter Work accuracy = 0.03 when $D \leq 250$ As below when $D > 250$	Flange diameter Work accuracy = 0.04 when $D \leq 250$ As below when $D > 250$	Flange diameter Work accuracy = 0.06 when $D \leq 250$ As below when $D > 250$

P1 Type

Warranty and Safety Precautions

The specification shown in this document is based on our evaluation method. Evaluate the performance and durability in the condition of installation in the drive considering the field usage conditions, etc. and confirm that there is no problem, by yourself, before using this product.

Be sure not to perform disassembly, inspection, repair, and overhaul in cases of abnormalities of this product by yourself because they have to be performed by our skilled workers with special jigs and tools and expertise.

Note that the specifications and dimensions shown in this document may be changed without notice to customers.

Warranty Period	The warranty period for the Products shall be 18 months after the commencement of delivery or 18 months after the shipment of the Products from the seller's works or 12 months from the Products coming into operation, whichever comes first.
Warranty Condition	In the event that any problem or damage to the Product arises during the "Warranty Period" from defects in the Product whenever the Product is properly installed and combined with the Buyer's equipment or machines, maintained as specified in the maintenance manual, and properly operated under the conditions described in the catalog or as otherwise agree upon in writing between the Seller and the Buyer or its customers; the Seller will provide, at its sole discretion, appropriate repair or replacement of the Product without charge at a designated facility, except as stipulated in the "Warranty Exclusions" as described below. However, if the Product is installed or integrated into the Buyer's equipment or machines, the Seller shall not reimburse the cost of: removal or re-installation of the Product or other incidental costs related thereto, any lost opportunity, any profit loss or other incidental or consequential losses or damages incurred by the Buyer or its customers.
Warranty Exclusions	Notwithstanding the above warranty, the warranty as set forth herein shall not apply to any problem or damage to the Product that is caused by: <ol style="list-style-type: none"> 1. installation, connection, combination or integration of the Product in or to the other equipment or machine that is rendered by any person or entity other than the Seller; 2. insufficient maintenance or improper operation by the Buyer or its customers, such that the Product is not maintained in accordance with the maintenance manual provided or designated by the Seller; 3. improper use or operation of the Product by the Buyer or its customers that is not informed to the Seller, including, without limitation, the Buyer's or its customers, operation of the Product not in conformity with the specifications, or use of lubricating oil in the Product that is not recommended by the Seller; 4. any problem or damage on any equipment or machine to which the Product is installed, connected or combined or on any specifications particular to the Buyer or its customers; 5. any changes, modifications, improvements or alterations to the Product or those functions that are rendered on the Product by any person or entity other than the Seller; 6. any parts in the Product that are supplied or designated by the Buyer or its customers; 7. earthquake, fire, flood, sea-breeze, gas, thunder, acts of God or any other reasons beyond the control of the Seller; 8. normal wear and tear, or deterioration of the Products, parts, such as bearings, oil-seals; 9. any other troubles, problems or damage to the Product that are not attributable to the Seller.



SAFETY PRECAUTIONS

- Observe the safety rules for the installation site and equipment strictly (Industrial safety and health law, technical standard for electric facilities, extension rules, plant explosion guidelines, building standards law, etc).
- Read the maintenance manual carefully before use.
Request a copy from the distributor of the Product or our Sales Department if the maintenance manual is not handy.
A copy of maintenance manual should always reach the actual user of the Product.
- Select a sufficient product for the usage condition and application.
- Install protective equipment on the machine side when the machine is used for applications which may cause loss of human life or significant loss in facility, such as use for human transportation or elevators.
- Install an oil pan or other preventive devices in case of oil leakage due to failure or termination of service life when the machine is used for food processing equipment, clean room, or other applications that are sensitive to oil.

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