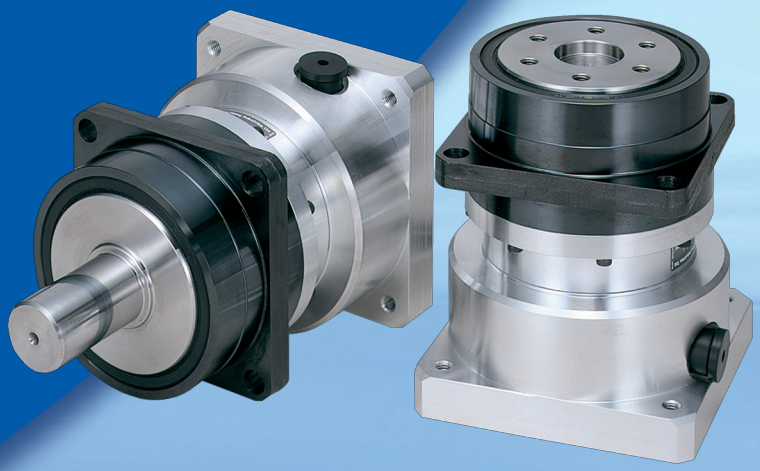
Sumitomo Drive Technologies

Always on the Move

New
IB Series P1 Type

Low-Backlash Planetary Gear Reducer for Servo Motors



More Reduction Ratios! 1/3.7, 1/11, 1/81
Three-Minute Backlash Available!
Jan. 2007

No. Z2004E-7 991128/EN-10/2011

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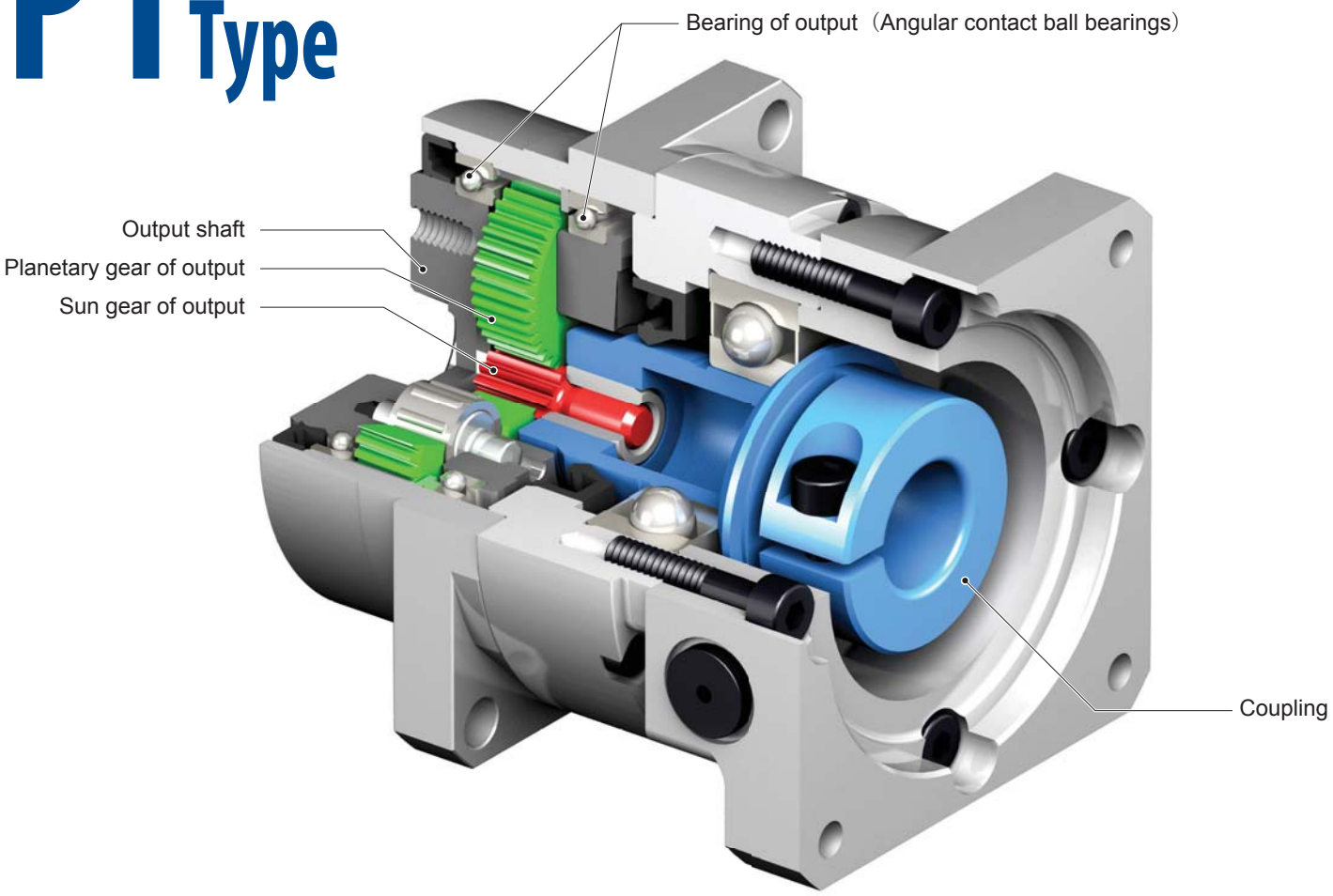
ISO9001 PTC NAGOYA PLANT
ISO14001 PTC NAGOYA PLANT

IB Series P1 Type

Low-backlash Planetary Gear Reducer for Servo Motors

IB Series P1 Type



Specification

- Backlash　Initial backlash setting is 3 or 15-minute
- Rated torque　10.5-101Nm
- Motor capacity　50W-5000W
- Reduction ratio　1/3.7,1/5,1/9,1/11,1/15,1/21,1/33,1/45,1/81
- Allowable maximum input speed　6000r/min
- Reduction system　Planetary gear mechanism

Features

- No.1 Compactness in the Industry
  Large diameter precision angular bearing, supporting output shaft, allows large radial load with compact casing.
- Responsiveness to Newest Servo Motors for Simpler Applications!
- Short delivery response

Purpose

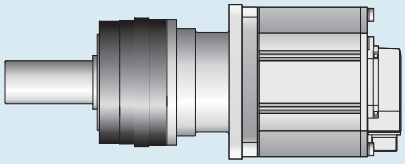
- Transfer robots
- Peripheral equipment for robots
- FA equipment related
- Semi-conductor production machine
- Machine tools
- Loader drive and shaft motion
- Wrapping machines
  (bag making and pillow wrapping)
- Wood-working machine
- Medical equipment
- Monitoring camera
- Vending machine
- Analyzing machine
- Measuring equipment
- Laser processing machine

No. 1 Compactness in Our Industry

Significant size and mass reduction in low reduction ratio and medium capacity range.

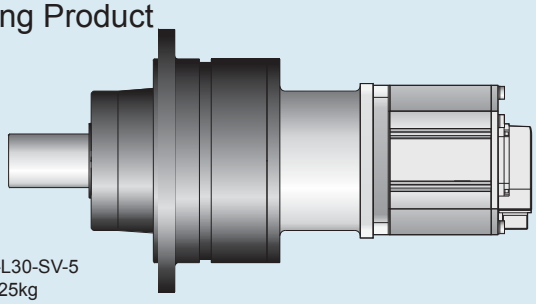
New Release

Mass reduced to about 1/3



ANFX-P130N-1ZLD-5
Mass 8.4kg

Existing Product

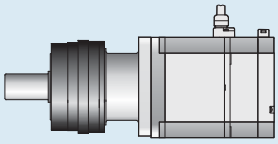


ANFJ-L30-SV-5
Mass 25kg

Comparison of Reduction Ratio 5 for 3500W

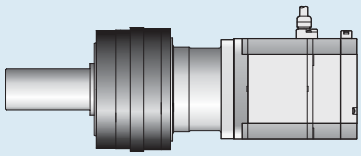
New Release

Mass reduced to about 1/2



ANFX-P120N-7XLD-5
Mass 2.7kg

Existing Product



ANFX-P35N-7XLC-5
Mass 6.3kg

Comparison of Reduction Ratio 5 for 1500W

Output shaft Variation

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

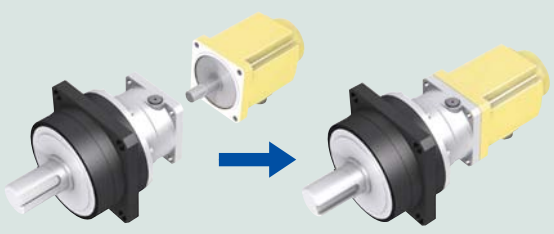
Keyless solid shaft type

Flange shaft type

Solid shaft type with keyway

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.



Keyless Type Servo Motor

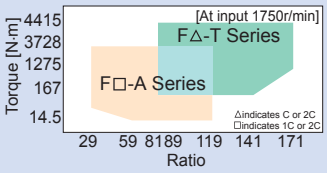
Input Side Clamp

IB Series P1 Type

Motion Control Drives Product Lineup

CYCLOR®DRIVE F Series

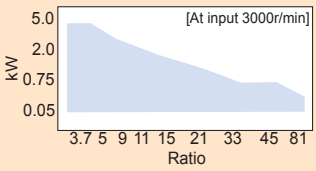
Flat type component
Lost motion
0.5-1.0 arcmin



Refer to separate catalog No.F2001

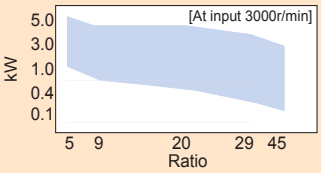
Speed Reducer for Servo Motors IB Series

NEW **P1 Type**
Backlash 3min 15min



This catalog

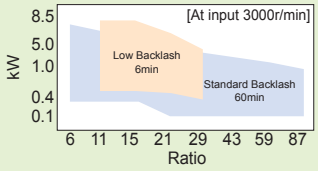
L Type
Backlash 3min



Refer to separate catalog No.Z2002

CYCLOR®DRIVE LB Series (Backlash) STD Series

Backlash
LB Series 6min
STD Series 60min



Refer to separate catalog No.C2103

IB Series Manufacture Range

Motor Rated Speed 3000 [r/min]

Servo motor Capacity [W]	Reduction Ratio 3.7	5	9	11	15	21	33	45	81
50									
100									
200									
300									
400									
500									
600									
750									
1000									
1200									
1500									
2000									
2500									
3000									
3500							*2		
4000						*1			
4500									
5000									

New Release P1 type

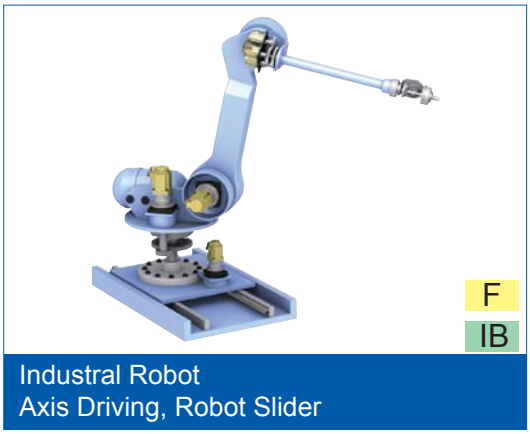
L type

Reduction ratio of Ltype: 1/20 for *1 and 1/29 for *2

Motion Control Drive of Sumitomo Drive Technologies are available for various areas requiring precision control.

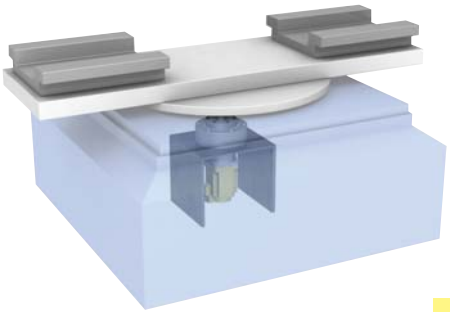
Application Examples

Recommended models:
F CYCLOR DRIVE F Series
IB IB Series
SV CYCLOR DRIVE for servo motors



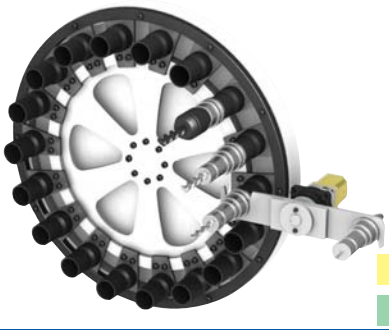
F
IB

Industral Robot
Axis Driving, Robot Slider



F

Machine Tool
Automatic Pallet Changer Drive



F
IB

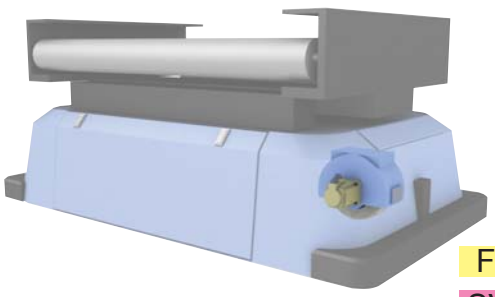
Machine Tool Magazine Drive

F
IB
SV

Machine Tool
Automatic Pallet Pool Drive

IB
SV

Peripheral Equipment for Machine Tool
Loader, Unloader



F
SV

FA Equipment (AGV Driving)

IB

Packaging Machine
(Pillow-Shape Wrapping Machine)

F
IB

Liquid Crystal Transfer Robot
Axis Driving, Robot Slider

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 prate: 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	1000m 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	3/11 is the actual reduction ratio for 1/3.7. All of the other reduction ratios are whole numbers.
Surface temperature of the reducer	80°C or below. Consult us when operating continuously.

Construction Drawing

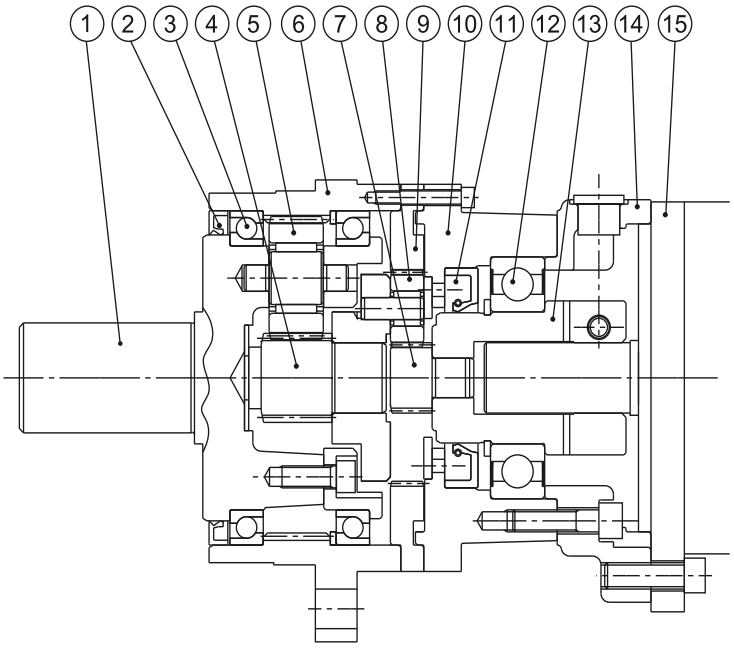


Fig. 1

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	Input Shaft Bearing
12	Oil Seal
13	Coupling
14	Adaptor Plate
15	Motor (Provided by Customers)

Nomenclature

A N F X □ - P120 F - 7A LD - 15

- A: MC Drive IB Series
- N: Output Shaft Direction (Unlimited Mounting Direction)
- F: Mounting (Flange Attachment Type)
- X: Input Method
- □: Special
- P120: Type and Frame Size

Type and Frame Size	
P	110
	120
	130

- F: Output Shaft Type

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

- 7A: Motor Flange Code
- LD: Backlash Symbol
  - 3 min specification: L3
  - 15 min specification: LD
- 15: Reduction Ratio

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

Rated Motor Speed 1000 [r/min]

Servo Moto Capacity [W]	Reduction Ratio								
	3.7 (3/11)	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 Moto Capacity [W]	Reduction Ratio								
	3.7 (3/11)	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 Moto Capacity [W]	Reduction Ratio								
	3.7 (3/11)	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 Moto Capacity [W]	Reduction Ratio								
	3.7 (3/11)	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 Moto Capacity [W]	Reduction Ratio								
	3.7 (3/11)	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									

No Load Running Torque [SI Unit]

Frame Size	Uni	Reduction Ratio								
		3.7 (3/11)	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	Uni	Reduction Ratio								
		3.7 (3/11)	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		

*Torque necessary at the input side to rotate the reducer at no load condition.
*This is the representative value when the ambient temperature is 20°C.

*Refer to Selection Table 2 (on pages 9-18) for frame size combination for each servo motor manufacturer.
*Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Refer to Selection Table 3 (on pages 21) for %ED of each speed.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.
*Note the no load running torque on this page when using combinations with ⊏⋯⊐.
*Consult us when no load running torque is too large for your application. Special models for lowering no load running torque are available on request.

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

1. Yaskawa Electric Corporation

ΣV Series SGMJV Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	SGMJV-A5**A2*	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110•△	2D
100	SGMJV-01**A2*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	SGMJV-02**A2*	P110	P110	P110	P110	P110	P110	P110•	P120	P120•	2R
400	SGMJV-04**A2*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	SGMJV-08**A2*	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

ΣV Series SGMAV Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	SGMAV-A5**A2*	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110•△	2D
100	SGMAV-01**A2*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	SGMAV-02**A2*	P110	P110	P110	P110	P110	P110	P110•	P120	P120•	2R
400	SGMAV-04**A2*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
550	SGMAV-06**A2*	P110	P110	P120	P120	P120	P120	P130	P130	-	2R
750	SGMAV-08**A2*	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

ΣV Series SGMGV Series (Rated speed: 1500 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
450	SGMGV-05**A2*	P110	P120	P120	P120	P120	P120	P130	P130	-	8E
850	SGMGV-09**A2*	P120	P120	P130	P130	P130	P130	-	-	-	7X
1300	SGMGV-13**A2*	P120	P120	P130	-	-	-	-	-	-	1S
2000	SGMGV-20**A2*	P130	P130	-	-	-	-	-	-	-	7Z
3000	SGMGV-30**A2*	P130	P130	-	-	-	-	-	-	-	0X
4400	SGMGV-44**A2*	P130	-	-	-	-	-	-	-	-	0X

Page of Dimension Table

[Page]

Frame Size	Output Shaft Type	Reduction Ratio 3.7	5	9	11	15	21	33	45	81
P110	(N,W)	26	27	28	29	30	31	32	33	34
	(F)	53	54	55	56	57	58	59	60	61
P120	(N,W)	35	36	37	38	39	40	41	42	43
	(F)	62	63	64	65	66	67	68	69	70
P130	(N,W)	44	45	46	47	48	49	50	51	52
	(F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

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

1. Yaskawa Electric Corporation

Σ III Series SGMAS Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	SGMAS-A5A**2*	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	7J
100	SGMAS-01A**2*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	SGMAS-02A**2*	P110	P110	P110	P110	P110	P110●	P110●	P120	P120●	2R
400	SGMAS-04A**2*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
600	SGMAS-06A**2*	P110	P110	P120	P120	P120	P120	P130	P130	-	2R
750	SGMAS-08A**2*	P120	P120	P120	P120	P120	P120	P130	P130	-	7P

Σ III Series SGMPS Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
100	SGMPS-01A**2*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	SGMPS-02A**2*	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2T
400	SGMPS-04A**2*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2T
750	SGMPS-08A**2*	P120	P120	P120	P120	P120	P120	P130	P130	-	7R
1500	SGMPS-15A**2*	P120	P120	P120	P130	P130	P130	-	-	-	7X

Σ III Series SGMSS Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
1000	SGMSS-10A**2*	P120	P120	P120	P120	P120	P130	-	-	-	1L
1500	SGMSS-15A**2*	P120	P120	P120	P130	P130	P130	-	-	-	1L
2000	SGMSS-20A**2*	P120	P120	P130	P130	P130	-	-	-	-	1L
2500	SGMSS-25A**2*	P120	P120	P130		-	-	-	-	-	1L
3000	SGMSS-30A**2*	P130	P130	P130		-	-	-	-	-	1T
4000	SGMSS-40A**2*	P130	P130	-		-	-	-	-	-	1T
5000	SGMSS-50A**2*	P130	P130	-		-	-	-	-	-	1T

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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)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) 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 II Series SGMAH Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	SGMAH-A5***2*	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	7J
100	SGMAH-01***2*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	SGMAH-02***2*	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	SGMAH-04***2*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	SGMAH-08***2*	P120	P120	P120	P120	P120	P120	P130	P130	-	7P

Σ II Series SGMPH Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
100	SGMPH-01***2*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	SGMPH-02***2*	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2T
400	SGMPH-04***2*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2T
750	SGMPH-08***2*	P120	P120	P120	P120	P120	P120	P130	P130	-	7R
1500	SGMPH-15***2*	P120	P120	P120	P130	P130	P130	-	-	-	7X

Σ II Series SGMSH Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
1000	SGMSH-10***2*	P120	P120	P120	P120	P120	P130	-	-	-	1L
1500	SGMSH-15***2*	P120	P120	P120	P130	P130	P130	-	-	-	1L
2000	SGMSH-20***2*	P120	P120	P130	P130	P130	-	-	-	-	1L
3000	SGMSH-30***2*	P130	P130	P130	-	-	-	-	-	-	1T
4000	SGMSH-40***2*	P130	P130	-	-	-	-	-	-	-	1T
5000	SGMSH-50***2*	P130	P130	-	-	-	-	-	-	-	1T

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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)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

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

Yaskawa Electric Corporation

ΣSeries SGM Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	SGM-A5***2*	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	7J
100	SGM-01***2*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	SGM-02***2*	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	SGM-04***2*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	SGM-08***2*	P120	P120	P120	P120	P120	P120	P130	P130	-	7P

ΣSeries SGMP Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
100	SGMP-01***2*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	SGMP-02***2*	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2T
400	SGMP-04***2*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2T
750	SGMP-08***2*	P120	P120	P120	P120	P120	P120	P130	P130	-	7R
1500	SGMP-15***2*	P120	P120	P120	P130	P130	P130	-	-	-	7X

ΣSeries SGMS Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
1000	SGMS-10A*2*	P120	P120	P120	P120	P120	P130	-	-	-	1L
1500	SGMS-15A**2*	P120	P120	P120	P130	P130	P130	-	-	-	1L
2000	SGMS-20A**2*	P120	P120	P130	P130	P130	-	-	-	-	1L
3000	SGMS-30A**2*	P130	P130	P130	-	-	-	-	-	-	1T
4000	SGMS-40A**2*	P130	P130	-	-	-	-	-	-	-	1T
5000	SGMS-50A**2*	P130	P130	-	-	-	-	-	-	-	1T

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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)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

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

2. Mitsubishi Electric Corporation

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

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	HF-KP053(B)	P110	P110	P110	P110	P110	P110	P110	P110	P110●△	2D
100	HF-KP13(B)	P110	P110	P110	P110	P110	P110	P110	P110	P120△	2D
200	HF-KP23(B)	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	HF-KP43(B)	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	HF-KP73(B)	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

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

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	HF-MP053(B)	P110	P110	P110	P110	P110	P110	P110	P110	P110●△	2D
100	HF-MP13(B)	P110	P110	P110	P110	P110	P110	P110	P110	P120△	2D
200	HF-MP23(B)	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	HF-MP43(B)	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	HF-MP73(B)	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

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

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
500	HF-SP52(B)	P120	P120	P120	P120	P120	P120	P130	P130	-	7Z
1000	HF-SP102(B)	P120	P120	P120	P130	P130	P130	-	-	-	7Z
1500	HF-SP152(B)	P120	P120	P130	P130	P130	-	-	-	-	7Z
2000	HF-SP202(B)	P130	P130	P130	-	-	-	-	-	-	0X
3500	HF-SP352(B)	P130	P130	-	-	-	-	-	-	-	0X
5000	HF-SP502(B)	-	-	-	-	-	-	-	-	-	

HF-KFS Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	HC-KFS053(B)	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2D
100	HC-KFS13(B)	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	HC-KFS23(B)	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	HC-KFS43(B)	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	HC-KFS73(B)	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)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

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

Mitsubishi Electric Corporation

HC-MFS Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	HC-MFS053(B)	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●	2D
100	HC-MFS13(B)	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	HC-MFS23(B)	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	HC-MFS43(B)	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	HC-MFS73(B)	P120	P120	P120	P120	P120	P120	P130	P130	-	1G

HC-SFS Series (Rated speed: 2000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
500	HC-SFS52(B)	P120	P120	P120	P120	P120	P120	P130	P130	-	7Z
1000	HC-SFS102(B)	P120	P120	P120	P130	P130	P130	-	-	-	7Z
1500	HC-SFS152(B)	P120	P120	P130	P130	P130	-	-	-	-	7Z
2000	HC-SFS202(B)	P130	P130	P130	-	-	-	-	-	-	0X
3500	HC-SFS352(B)	P130	P130	-	-	-	-	-	-	-	0X
5000	HC-SFS502(B)	-	-	-	-	-	-	-	-	-	

HC-UFS Series (Rated speed: 2000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
100	HC-UFS13(B)	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	HC-UFS23(B)	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2T
400	HC-UFS43(B)	P110	P110	P110	P120	P120	P120	P120	P120	P130	2T
750	HC-UFS73(B)	P120	P120	P120	P120	P120	P120	P130	P130	-	7X

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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)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

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

3. Matsushita Electric Industrial Co., Ltd.

MSMA Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	MSMA5A**1A	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	2C
100	MSMA01**1A	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2C
200	MSMA02**1A	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2L
400	MSMA04**1A	P110	P110	P110	P120	P120	P120	P120	P120	P130	2P
750	MSMA08**1A	P120	P120	P120	P120	P120	P120	P130	P130	-	7S
1000	MSMA10**1A	P120	P120	P120	P120	P120	P130	-	-	-	7V
1500	MSMA15**1A	P120	P120	P120	P130	P130	P130	-	-	-	7B
2000	MSMA20**1A	P120	P120	P130	P130	P130	-	-	-	-	7B
2500	MSMA25**1A	P120	P120	P130		-	-	-	-	-	7B
3000	MSMA30**1A	P130	P130	P130		-	-	-	-	-	1S
3500	MSMA35**1A	P130	P130	P130		-	-	-	-	-	1S
4000	MSMA40**1A	P130	P130	-		-	-	-	-	-	7Z
4500	MSMA45**1A	P130	P130	-		-	-	-	-	-	7Z
5000	MSMA50**1A	P130	P130	-		-	-	-	-	-	7Z

MQMA Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
100	MQMA022A1A	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2F
200	MQMA032A1A	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	8A
400	MQMA042A1A	P110	P110	P110	P120	P120	P120	P120	P120	P130	8B

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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)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) 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.

P3 Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	P30B04005H***	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	2D
100	P30B04010H***	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	P30B06020H***	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	P30B06040H***	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	P30B08075H***	P120	P120	P120	P120	P120	P120	P130	P130	-	7P

P5 Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	P50B05005H***	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	2E
100	P50B05010H***	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2E
200	P50B05020H***	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2K
	P50B07020H***	P110	P110	P110	P110	P110	P110	P110●	P120	P130	8B
300	P50B07030H***	P110	P110	P110	P110	P110	P120	P120	P120	P130	8B
400	P50B07040H***	P110	P110	P110	P120	P120	P120	P120	P120	P130	8B
500	P50B08050H***	P110	P110	P120	P120	P120	P120	P130	P130	-	8E
750	P50B08075H***	P120	P120	P120	P120	P120	P120	P130	P130	-	8E
1000	P50B08100H***	P120	P120	P120	P120	P120	P130	-	-	-	8E

Q1 Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	Q1AA04005***	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	2D
100	Q1AA04010***	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	Q1AA06020***	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	Q1AA06040***	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	Q1AA07075***	P120	P120	P120	P120	P120	P120	P130	P130	-	0U
1000	Q1AA10100***	P120	P120	P120	P120	P120	P130	-	-	-	0W
	Q1AA12100***	P120	P120	P120	P120	P120	P130	-	-	-	0Y
1500	Q1AA10150***	P120	P120	P120	P130	P130	P130	-	-	-	0W
2000	Q1AA10200***	P120	P120	P130	P130	P130	-	-	-	-	0W
	Q1AA12200***	P120	P120	P130	P130	P130	-	-	-	-	0Y
2500	Q1AA10250***	P120	P120	P130	-	-	-	-	-	-	0W
3000	Q1AA12300***	P130	P130	P130	-	-	-	-	-	-	1T
	Q1AA13300***	P130	P130	P130	-	-	-	-	-	-	1T
4000	Q1AA13400***	P130	P130	-	-	-	-	-	-	-	1T
5000	Q1AA13500***	P130	P130	-	-	-	-	-	-	-	1T

Page of Dimension Table

[Page]

Frame Size	Output Shaft Type	Reduction Ratio 3.7	5	9	11	15	21	33	45	81
P110	Solid Shaft (N, W)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

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

5. Fuji Electric FA Components & Systems

GYS Motor (Rated speed: 3000 r/min)

FALDIC-α, β Series Cubic Type
FALDIC-W Low Inertia Series

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	GYS500DC*-**B-*	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	7J
100	GYS101DC*-**B-*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	GYS201DC*-**B-*	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	GYS401DC*-**B-*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	GYS751DC*-**B-*	P120	P120	P120	P120	P120	P120	P130	P130	-	7P
1000	GYS102DC*-**B-*	P120	P120	P120	P120	P120	P130	-	-	-	7Y
1500	GYS152DC*-**B-*	P120	P120	P120	P130	P130	P130	-	-	-	7Y
2000	GYS202DC*-**B-*	P120	P120	P130	P130	P130	-	-	-	-	7Y
3000	GYS302DC*-**B-*	P130	P130	P130	-	-	-	-	-	-	1T
4000	GYS402DC*-**B-*	P130	P130	-	-	-	-	-	-	-	1T
5000	GYS502DC*-**B-*	P130	P130	-	-	-	-	-	-	-	1T

GYS Motor (Rated speed: 3000 r/min)

FALDIC-α, β Series Slim Type

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
100	GYC101DC*-**B-*	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2G
200	GYC201DC*-**B-*	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2T
400	GYC401DC*-**B-*	P110	P110	P110	P120	P120	P120	P120	P120	P130	2T
750	GYC751DC*-**B-*	P120	P120	P120	P120	P120	P120	P130	P130	-	7A
1000	GYC102DC*-**B-*	P120	P120	P120	P120	P120	P130	-	-	-	7Z
1500	GYC152DC*-**B-*	P120	P120	P120	P130	P130	P130	-	-	-	7Z
2000	GYC202DC*-**B-*	P120	P120	P130	P130	P130	-	-	-	-	7Z

Page of Dimension Table [Page]

Frame Size	Output Shaft Type	Reduction Ratio 3.7	5	9	11	15	21	33	45	81
P110	Solid Shaft (N, W)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

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

6. FANUC Ltd.

β is Series (Rated speed: 4000-2000 r/min) Applies to rated speed torque.

Servo motor Capacity [W]	Nomenclature of Servo Motor ( ) indicates reted spped	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
50	β 0.2/5000is (4000)	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	2D
100	β 0.3/5000is (4000)	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	P110Δ	P110•Δ	2D
130	β 0.4/5000is (4000)	P110	P110	P110	P110	P110	P110	P110	P110	P110•	2H
200	β 0.5/5000is (4000)	P110	P110	P110	P110	P110	P110•	P110•	P110•	P110•	2H
400	β 1/5000is (4000)	P110	P110	P110	P120	P120	P120	P120•	P120•	-	2R
500	β 2/4000is (4000)	P110	P110	P120	P120	P120	P120	P120•	P120•	-	2J
750	β 4/4000is (3000)	P120	P120	P120	P120	P120	P120•	P130	-	-	0V
1200	β 8/3000is (2000)	P120	P120	P130	P130	P130	P130	-	-	-	7X
1800	β 12/3000is (2000)	P120	P120	P130	P130•	P130•	-	-	-	-	7Z
2500	β 22/2000is (2000)	P130	P130	-	-	-	-	-	-	-	0X

α is Series (Rated speed: 4000-2000 r/min)

Servo motor Capacity [W]	Nomenclature of Servo Motor ( ) indicates reted spped	Reduction Ratio 3.7	5	9	11	15	21	33	45	81	Motor Flange Code
750	α 2/5000is (4000)	P110	P110	P120	P120	P120	P120	P130	P130	P130•	2J
1000	α 4/5000is (4000)	P120	P120	P120	P120	P120	P120	P130	P130	-	0V
2500	α 8/4000is (4000)	P120	P120	P130	-	-	-	-	-	-	7X
2700	α 12/4000is (3000)	P130	P130	-	-	-	-	-	-	-	7Z
4500	α 22/4000is (3000)	P130	P130	-	-	-	-	-	-	-	0X
5500	α 30/4000is (3000)	-	-	-	-	-	-	-	-	-	0X
5500	α 40/4000is (3000)	-	-	-	-	-	-	-	-	-	0X
5000	α 50/3000is (2000)	-	-	-	-	-	-	-	-	-	0X

Page of Dimension Table [Page]

Frame Size	Output Shaft Type	Reduction Ratio 3.7	5	9	11	15	21	33	45	81
P110	Solid Shaft (N, W)	26	27	28	29	30	31	32	33	34
	Flange Shaft (F)	53	54	55	56	57	58	59	60	61
P120	Solid Shaft (N, W)	35	36	37	38	39	40	41	42	43
	Flange Shaft (F)	62	63	64	65	66	67	68	69	70
P130	Solid Shaft (N, W)	44	45	46	47	48	49	50	51	52
	Flange Shaft (F)	71	72	73	74	75	76	77	78	79

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with Δ. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

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

7. KEYENCE

MV Series (Rated speed: 3000 r/min)

Servo Motor Capacity [W]	Nomenclature of Servo Motor	Reduction Ratio									Motor Flange Code
		3.7	5	9	11	15	21	33	45	81	
50	MV-M05(MV-B05)	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110△	P110●△	2D
100	MV-M10(MV-B10)	P110△	P110△	P110△	P110△	P110△	P110△	P110	P110	P120△	2D
200	MV-M20(MV-B20)	P110	P110	P110	P110	P110	P110	P110●	P120	P120●	2R
400	MV-M40(MV-B40)	P110	P110	P110	P120	P120	P120	P120	P120	P130	2R
750	MV-M75(MV-B75)	P120	P120	P120	P120	P120	P120	P130	P130	-	0U

Note: *Refer to Selection Table 3 (on pages 20, 22-23) for rated torque, allowable maximum input speed, allowable peak torque, and allowable radial load for each frame size.
*Check the value of no load running torque in Selection Table 1 (page 8) when using the combinations marked with △. Consult us for larger no load running torque is larger. Specialized units may be available.
*Refer to Selection Table 3 (on page 20) for allowable peak torque at startup for combinations marked ●.

Selection Table 3 (Rating Table)

Table1-1 Rating Table (SI Unit))

Input Speed (r/min)		6000	5000	4000	3000	2000	1500	1000	*2, *6 Allowable Peak Torque at Startup and Stop	*3, *6 Maximum Torque at Emergency	*4 Allowable Maximum Input Speed
Frame Size	Reduction Ratio	Rated Torque *1									
		Nm							Nm	Nm	r/min
P110	3.7(3/11)	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(3/11)	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(3/11)	-	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	*2, *6 Allowable Peak Torque at Startup and Stop	*3, *6 Maximum Torque at Emergency	*4 Allowable Maximum Input Speed
Frame Size	Reduction Ratio	Rated Torque *1									
		kgf·m							kgf·m	kgf·m	rpm
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(3/11)	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						
	15														
	21														
	33		50		70		80		90						
	45														
	81														
P120	3.7(3/11)	5	20	10	20	10	30	20	40	20	60	30	70	30	70
	5		30		50		60		70		80		90		90
	9		40		60		70		80		90				
	11		30		50		60		70						
	15														
	21														
	33		40		60		70		80						
	45								90						
	81														
P130	3.7(3/11)	-	-	5	20	5	30	10	40	15	60	20	70	30	80
	5			10	30	10	50	20	60	20	70	30	80	30	90
	9				40		60		70		90		90		
	11				30		50		60		70				
	15														
	21														
	33				40		60		70		90				
	45														
	81														

*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.

*2: Maximum allowable torque when startup and stop during operation cycle.

*3: Maximum allowable value of the shock torque at emergency stop or external shock torque. Should be less than 1,000 times in one lifetime.

*4: Maximum allowable input speed when not under constant operation condition.

*5: Allowable constant operation hours for intermittent operation condition (Consult us when exceeding or when continuously operating).

*6: Some values are not allowable depending on the input shaft diameter.
Make sure to follow the method of motor attachment in page 88.

Selection Table 3 (Allowable External Rating)

Table 2-1 External Load (SI Unit)

Motor Speed (r/min)		6000		5000		4000		3000		2000		1500		1000		Allowable Moment
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	Nm
P110	3.7(3/11)	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(3/11)	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(3/11)	-	-	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	

*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).

Multiply radial load locating factor to the value in the above table when the radial load is applied to locations other than the middle of the output shaft.

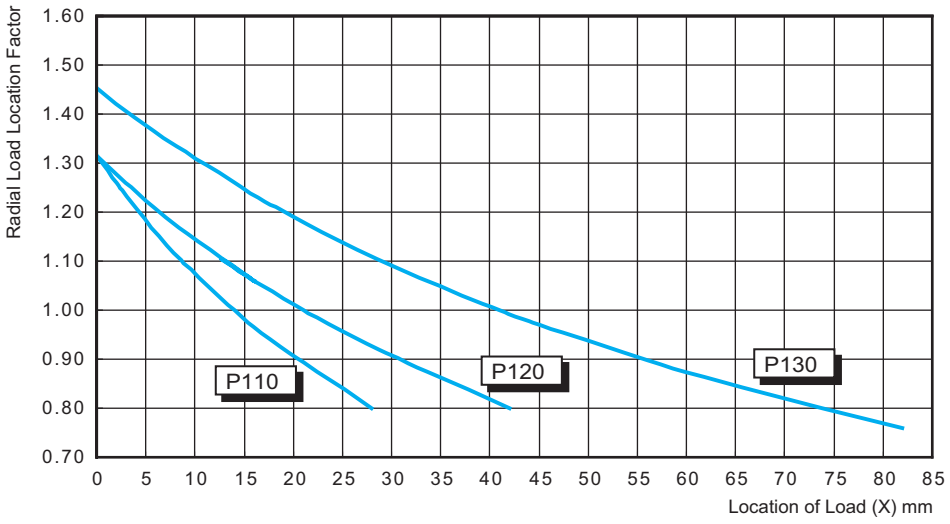


Fig. 2 Radial Load Location Factor

Selection Table 3 (Allowable External Rating)

Table 2-2 External Load (SI Engineering)

Motor Speed r/min		6000		5000		4000		3000		2000		1500		1000		Allowable Momen
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	kgfm
P110	3.7(3/11)	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(3/11)	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(3/11)	-	-	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	

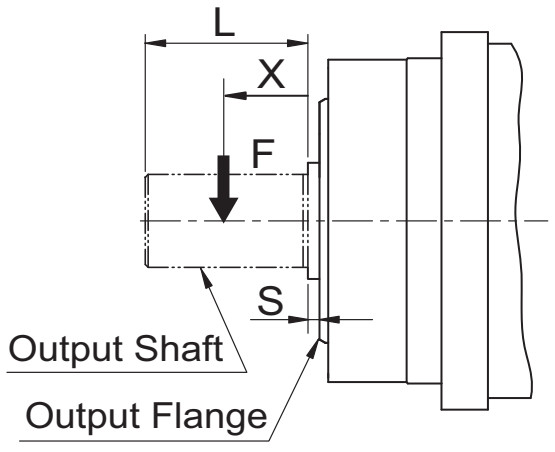
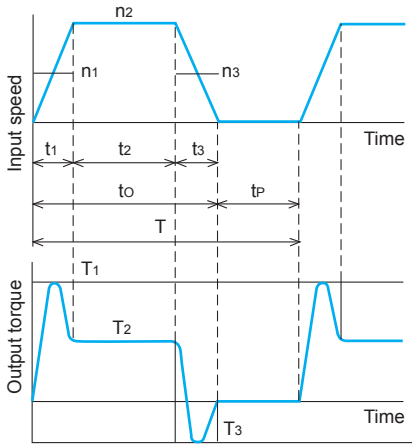


Fig. 3

Selection Procedure

Flow Chart and Formula of Selection

Fig. 4 Load Pattern



n_1: Average input speed at acceleration when as in Fig 4: $n_1 = \frac{n_2}{2}$ [r/min]

n_2: Input speed at normal operation

n_3: Average input speed at deceleration when as in Fig 4: $n_1 = n_3 = \frac{n_2}{2}$ [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 [Nm]
T_2: Steady operation torque [Nm]
T_3: Stopping peak torque [Nm]

Evaluate load characteristic

●Calculate of average input speed (n_E)
●Calculate of average output torque (T_E)

●Calculate of allowable rating output torque at average input speed T_{OE}

Selection Table 3 (Rating Table) Page 20-21

$T_E < T_{AE}$ and $T_E \leqq T_{OE}$ — NO — (Select larger size or lower average output torque. T_E)

Select tentative frame size

Radial load at output shaft
Axial load at output shaft
Moment load
} Check

Actual radial load, axial load, or moment ≦ Allowable radial load, axial load,or moment — NO

Selection Table 3 (Allowable External Rating) Page 22-23

Check input speed

Maximum input speed ≦ Allowable maximum input speed — NO — Lower maximum speed

Selection Table 3 (Rating Table) Page 20-21

Calculation of %ED

%ED ≦ %ED at certain speed. (Caculate value by interpolation when there is no speed indicated in Selection Table 3 (Rating Table)) — NO — Make stop time longer or reduce speed

Selection Table 3 (Rating Table) Page 20-21

Check peak torque acceleration and deceleration

Peak torque at acceleration and deceleration ≦ Allowable peak torque at acceleration and deceleration — NO — Raise frame size

Selection Table 3 (Rating Table) Page 20-21

Check shock torque

Shock torque ≦ Allowable peak torque for emergency stop — NO — Raise frame size

Selection Table 3 (Rating Table) Page 20-21

Determine output following page 80
Actual load moment ≦ allowable moment
Calculated main bearing lifetime ≦ requested lifetime
*Calculation is theoretical.
— NO — Raise frame size

Select frame size

Check dimension of servo motor attachment part

Check motor flange code

Determine nomenclature → Complete

Calculation in Load Condition of Fig. 4

- Average input speed $n_E = \dfrac{t_1 \cdot n_1 + t_2 \cdot n_2 + t_3 \cdot n_3 \cdots t_n \cdot n_n}{to}$ ..... Formula 1 n =4, 5, 6....

- Average output torque $T_E = \left(\dfrac{t_1 \cdot n_1 \cdot T_1^{10/3} + t_2 \cdot n_2 \cdot T_2^{10/3} + t_3 \cdot n_3 \cdot T_3^{10/3} + t_n \cdot n_n \cdot T_n^{10/3}}{to \cdot n_E} \right)^{0.3}$ x Fs_2..... Formula 2 n=4,5,6.... (Table 3)

- Allowable rating output torque at average input speed $T_{OE} = \left(\dfrac{3000}{n_E} \right)^{0.3}$ x To ..... Formula 3

To: Rated output torque at input speed 3000 r/min
Selection Table 3 (Rating Table) Page 20-21

- %ED $\%ED = \dfrac{to}{T}$ x 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 Fs2 Load factor

Loading condition	Fs_2
Uniform load	1
Moderate shock	1-1.2
Heavy shock	1.4-1.6

Example of Selection

Evaluate ANFX-P120F-7ZLD-15 for following specification.

Specification:
T_A: Acceleration peak torque 100 Nm
T_R: Normal running torque 30 Nm
T_B: Peak torque at breaking 80 Nm
Shock torque: 2000 Nm
(700 times during overall lifetime)
n_A: Average input speed during acceleration 1500 r/min
n_R: Input speed with normal running 3000 r/min
n_B: Average input speed during deceleration 1500 r/min

t_A: Acceleration time 0.2s
t_R: Normal running time 5.0s
t_B: Deceleration time 0.2s
t_P: Total running time 3.0s
t_O: Standstill time 5.4s
T: Single cycle time 8.4s

Application is assumed to have almost no load.

Calculation:
Average input speed $n_E = \dfrac{0.2 \times 1500 + 5.0 \times 3000 + 0.2 \times 1500}{5.4} = 2889$ [r/min]

Average output torque $T_E = \left(\dfrac{0.2 \times 1500 \times 100^{10/3} + 5.0 \times 3000 \times 30^{10/3} + 0.2 \times 1500 \times 80^{10/3}}{5.4 \times 2889} \right)^{0.3} \times 1 = 39.6$ [Nm]

- Allowable rating output torque at average input speed $T_{OE} = \left(\dfrac{3000}{2889} \right)^{0.3} \times 46.5 = 47.0 \geq 39.6 \rightarrow$ Select ANFX-P120F-7ZLD-15 temporarily.
- Cheak Average output torque 39.6 < 47.0·····OK
- Calculate %ED $\%ED = \dfrac{5.4}{8.4} \times 100 = 64.3\%$
- Cheak Average output torque 20 [min]= 1200 [s] > 5.4 [s]·····OK

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

72% > 64.3%·····OK

- Evaluate maximum input speed 3000 [r/min] < 6000 [r/min]
- Evaluate peak torque at acceleration and deceleration 100 [Nm] < 185 [Nm]
- Evaluate shock torque 200 [Nm] < 250 [Nm] (1000 times during entire lifetime)

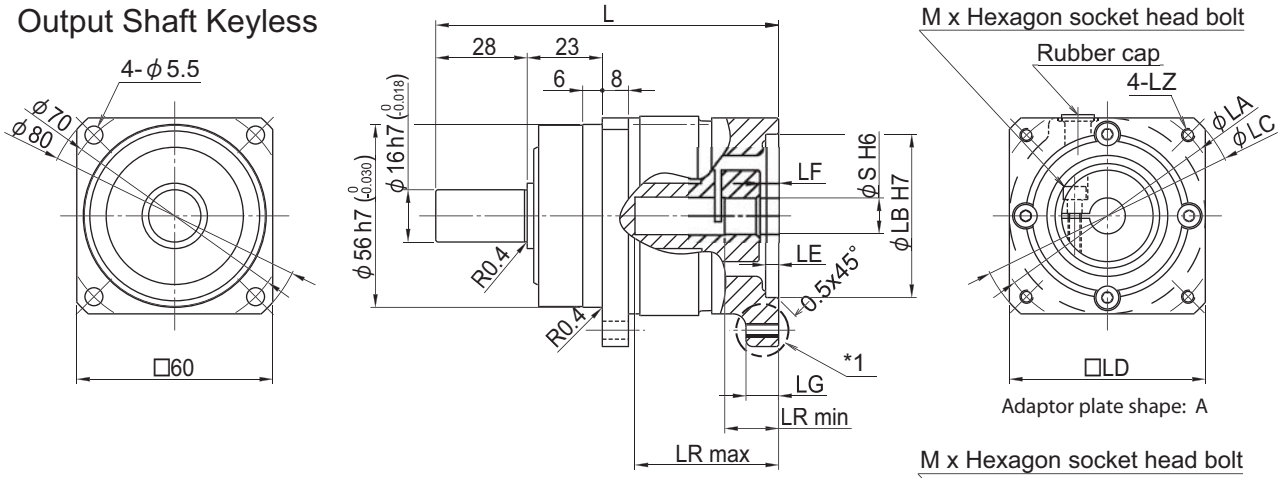
Selection Table 3 (Rating Table) Page 20-21

ANFX-P120F-7ZLD-15 is selected by the process above.

Dimension Drawings

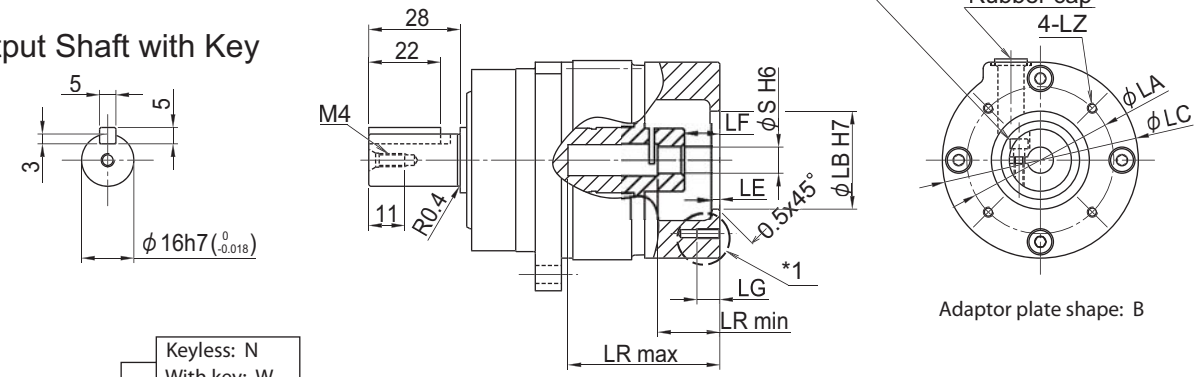
Frame Size: P110
Reduction Ratio: 1/3.7
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

Nomenclature
ANFX-P110

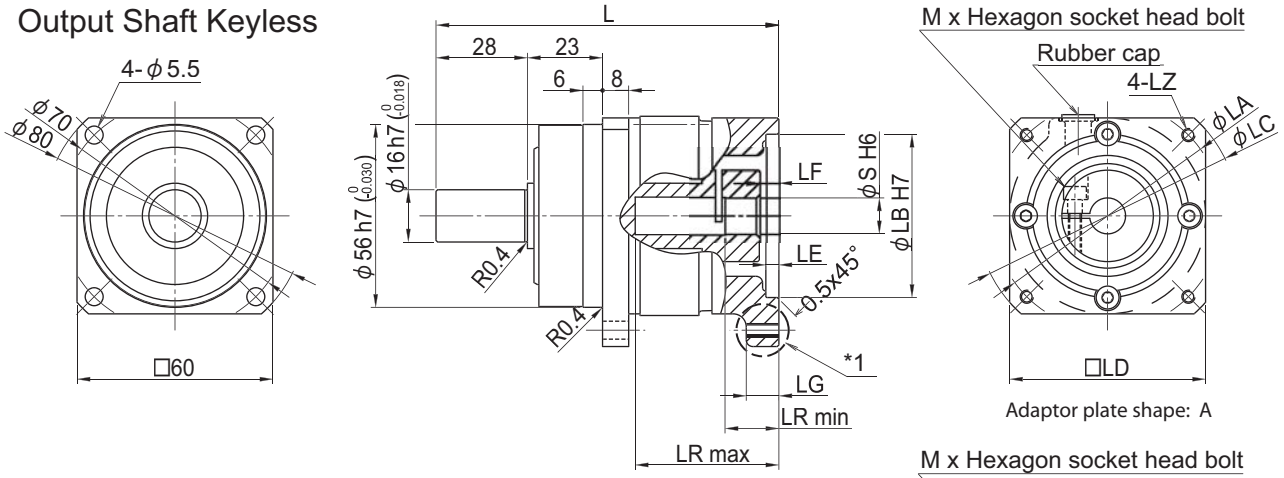
- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (3.7)

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	Shape *1	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	107.5	45	30	60	-	5	11	7	Useful thread length	B	M3	46.5	19	8	M3	0.9	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	6	M3	0.9	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	8	M3	0.9	2D
2E	105	60	50	80	60	4	8.5	8	Useful thread length	A	M4	44	16.5	8	M3	0.9	2E
2K		60	50	80	60	4	6	8	Useful thread length		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	106.5	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	112	100	80	120	90	5	13	12	Through hole		M6	51	23.5	10	M4	1.1	2J
8E	128.5	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.

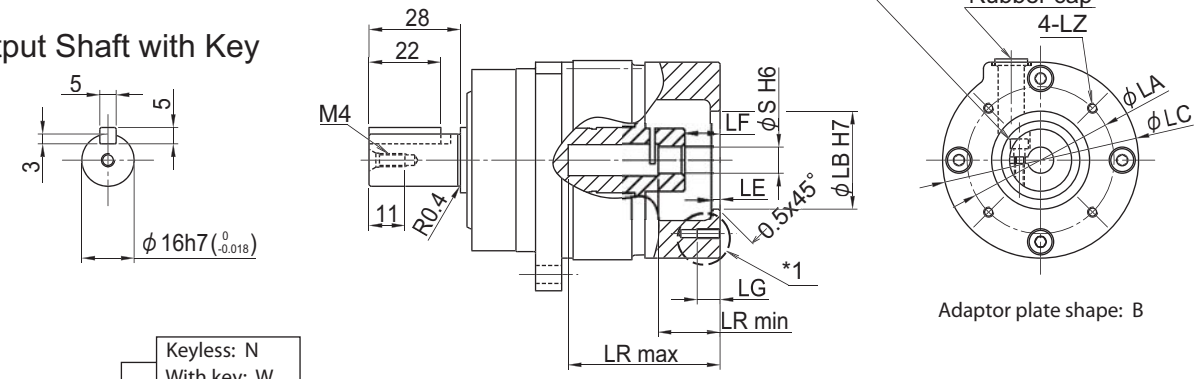
Frame Size: P110
Reduction Ratio: 1/5
Solid Shaft

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 (3 min: L3, 15 min: LD) | Reduction ratio (5)

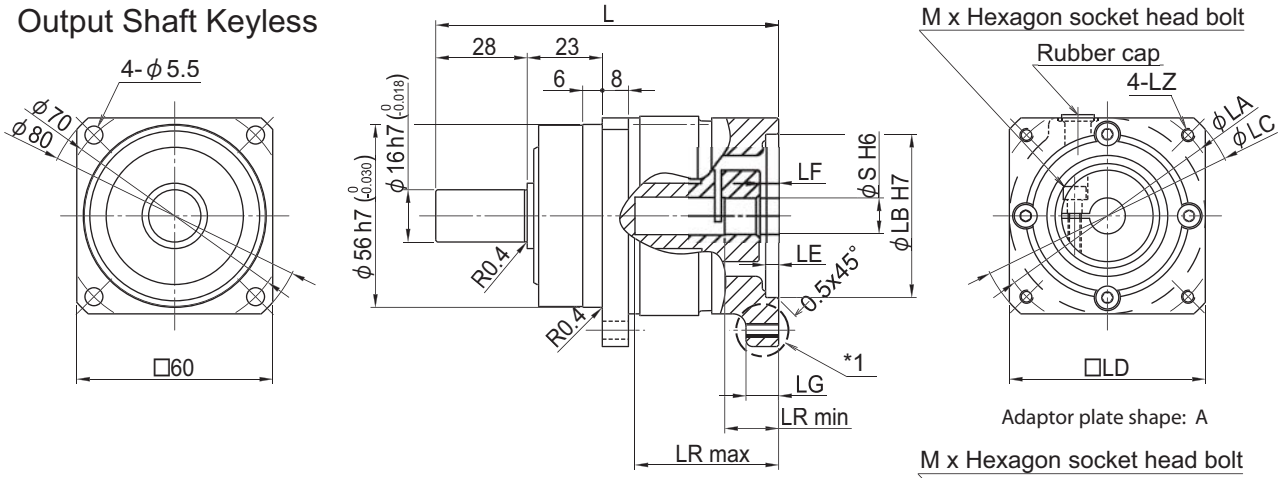
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor Ppate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	107.5	45	30	60	-	5	11	7	Useful thread length	B	M3	46.5	19	8	M3	0.9	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	6	M3	0.9	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	8	M3	0.9	2D
2E	105	60	50	80	60	4	8.5	8	Useful thread length	A	M4	44	16.5	8	M3	0.9	2E
2K		60	50	80	60	4	6	8	Useful thread length		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	106.5	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	112	100	80	120	90	5	13	12	Through hole		M6	51	23.5	10	M4	1.1	2J
8E	128.5	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

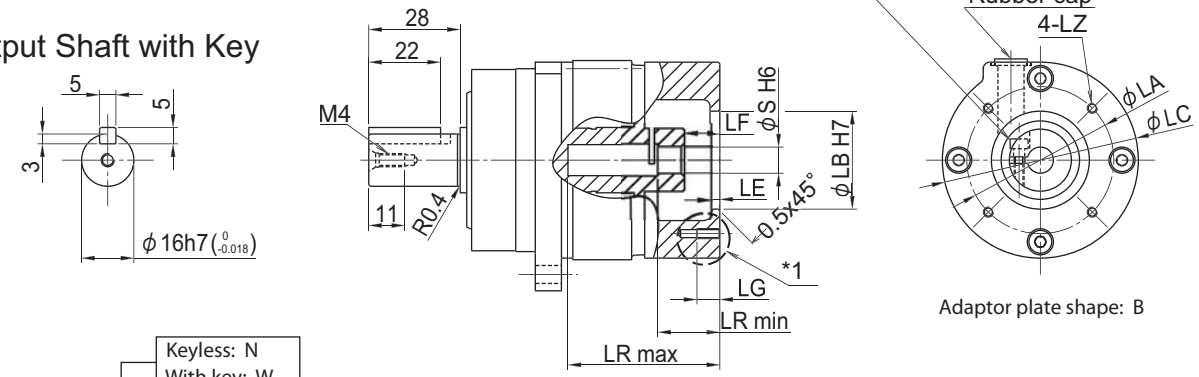
Frame Size: P110
Reduction Ratio: 1/9
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

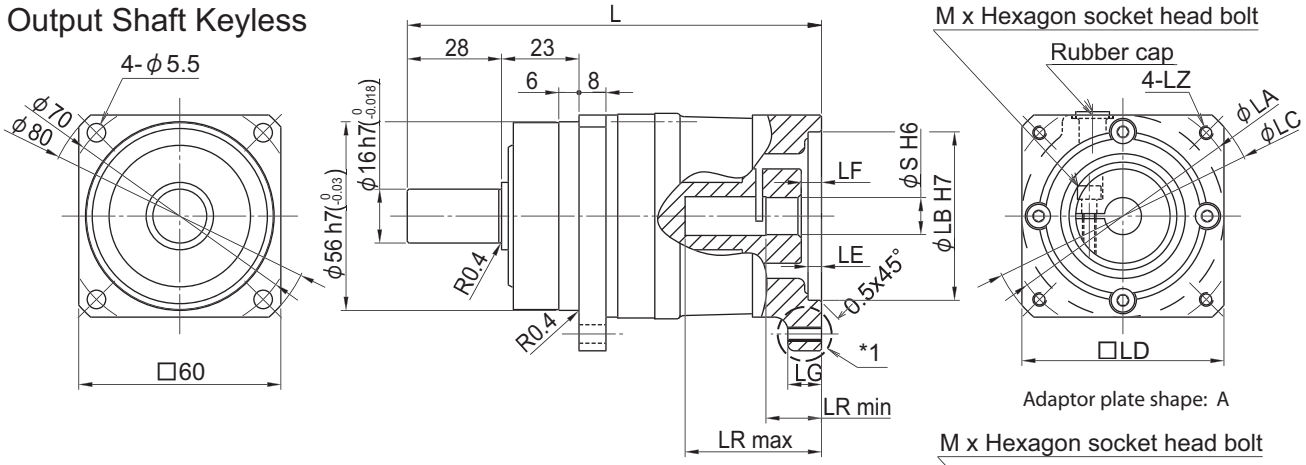
Nomenclature
ANFX-P110
Output shaft type: Keyless: N, With key: W
Motor flange code
Backlash — Reduction ratio (9)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	107.5	45	30	60	-	5	11	7	Useful thread length	B	M3	46.5	19	8	M3	0.9	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	6	M3	0.9	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	8	M3	0.9	2D
2E	105	60	50	80	60	4	8.5	8	Useful thread length	A	M4	44	16.5	8	M3	0.9	2E
2K		60	50	80	60	4	6	8	Useful thread length		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	106.5	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	112	100	80	120	90	5	13	12	Through hole		M6	51	23.5	10	M4	1.2	2J
8E	128.5	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.

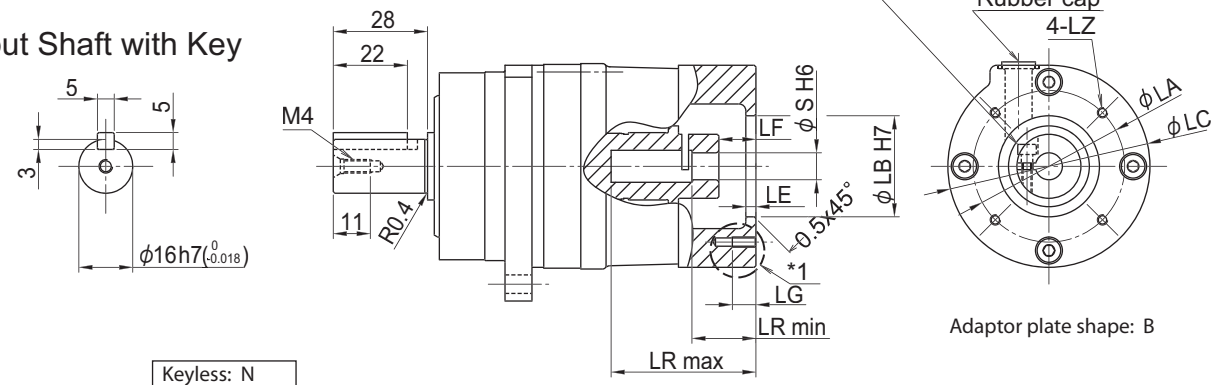
Frame Size: P110
Reduction Ratio: 1/11
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

Nomenclature
ANFX-P110

Keyless: N
With key: W

Output shaft type | Motor flange code | Backlash | Reduction ratio (11)

3 min: L3
15 min: LD

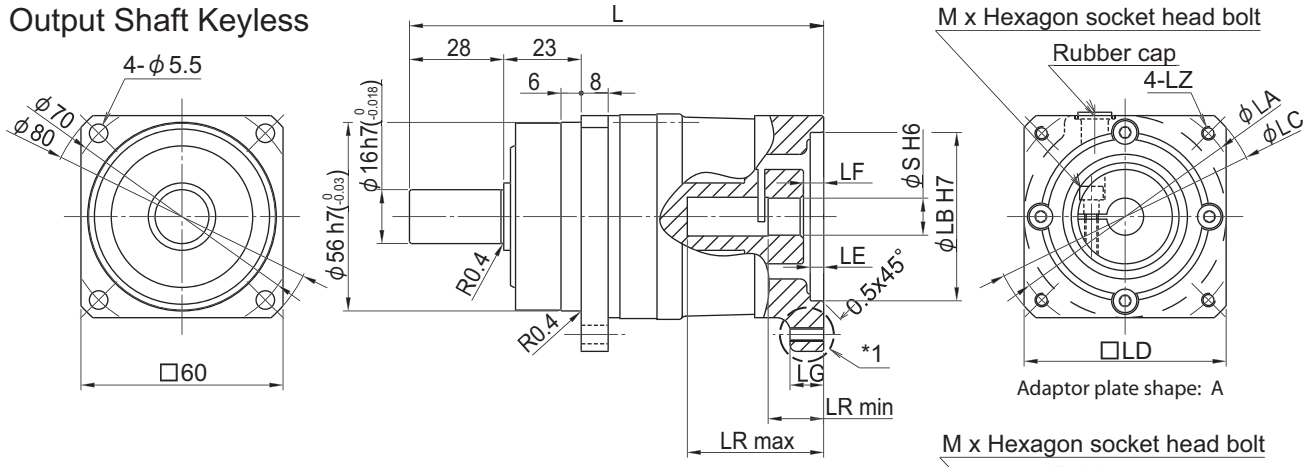
Motor flange code	Dimension L	LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C		45	30	60	-	5	11	7	Useful thread length		M3	43	19	8	M3	1.1	2C
7J	125.5	46	30	60	-	5	11	9	Useful thread length	B	M4	43	19	6	M3	1.1	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.1	2D
2E		60	50	80	60	4	8.5	9	Useful thread length		M4	40.5	16.5	8	M3	1.1	2E
2K		60	50	80	60	4	6	9	Useful thread length		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	123	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	A	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		90	70	105	80	6	7.5	12	Through hole		M5	42	18	11	M4	1.3	8A
8B	124.5	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.

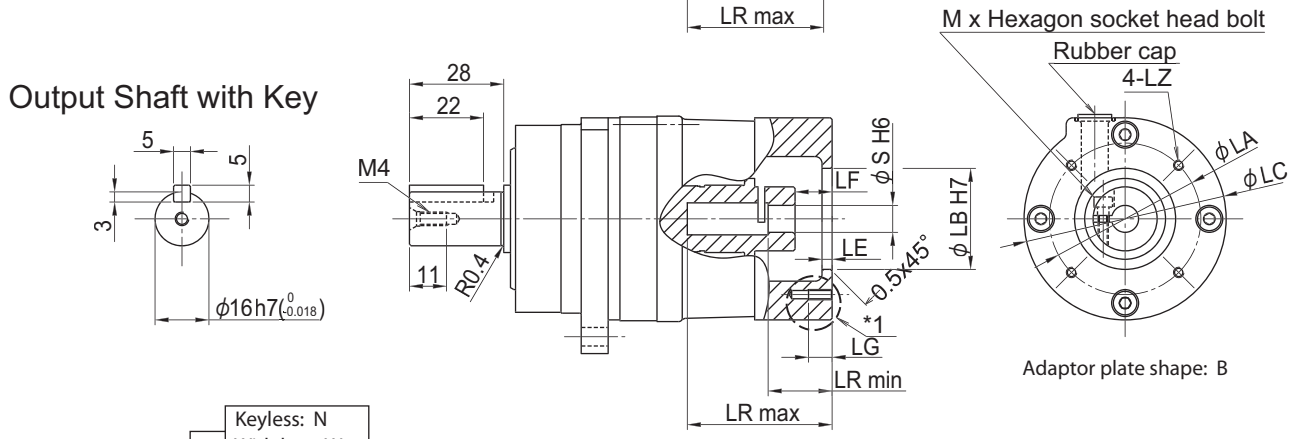
Dimension Drawings

Frame Size: P110
Reduction Ratio: 1/15
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature
ANFX-P110

- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (15)

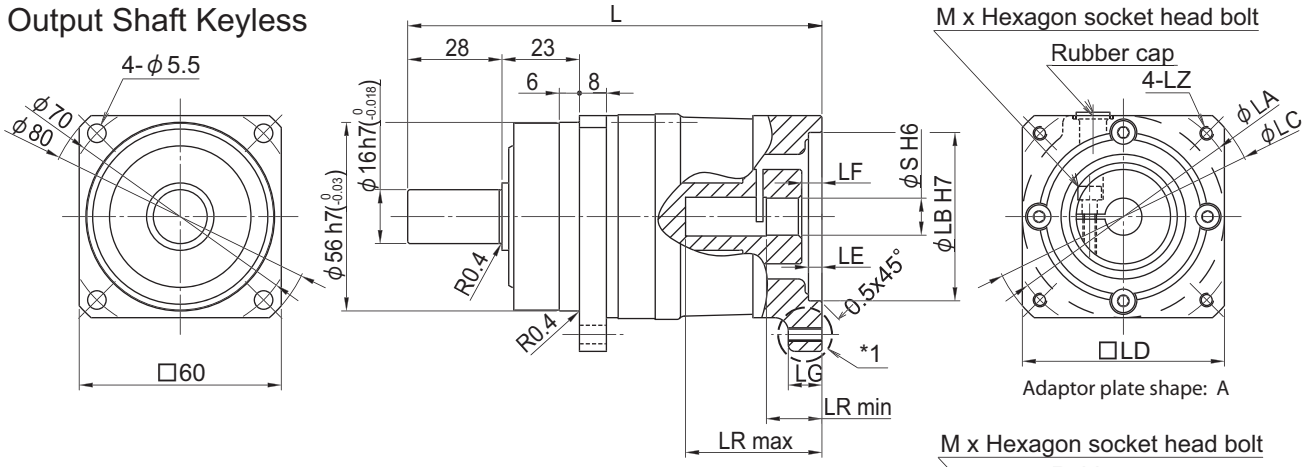
Motor flange code	Dimension L	LA	LB	LC	LD	LE	LF	LG	LG Shape	*1 Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C		45	30	60	-	5	11	7	Useful thread length		M3	43	19	8	M3	1.1	2C
7J	125.5	46	30	60	-	5	11	9	Useful thread length	B	M4	43	19	6	M3	1.1	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.1	2D
2E		60	50	80	60	4	8.5	9	Useful thread length		M4	40.5	16.5	8	M3	1.1	2E
2K		60	50	80	60	4	6	9	Useful thread length		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	123	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	A	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		90	70	105	80	6	7.5	12	Through hole		M5	42	18	11	M4	1.3	8A
8B	124.5	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

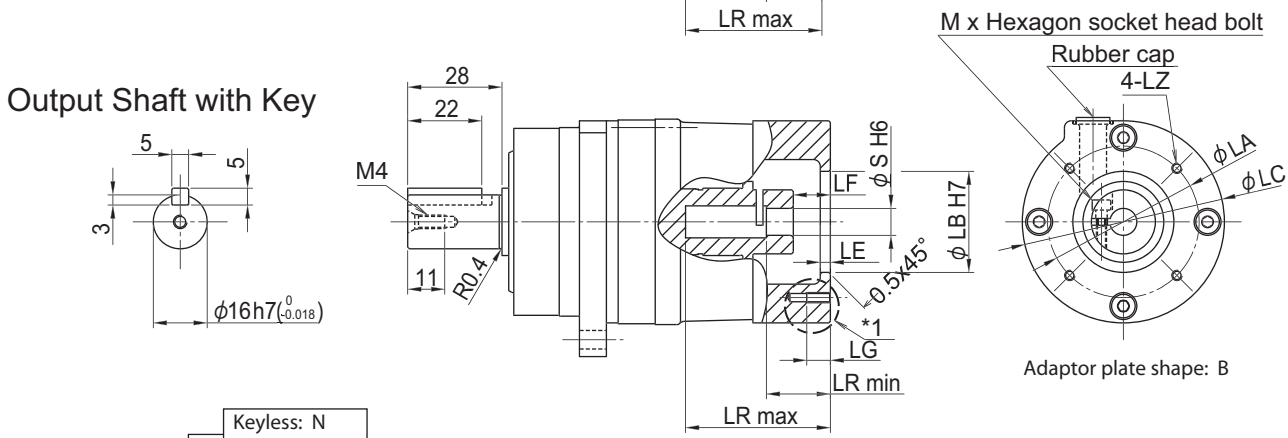
Frame Size: P110
Reduction Ratio: 1/21
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

Nomenclature
ANFX-P110

Keyless: N
With key: W

Output shaft type | Motor flange code | Backlash — Reduction ratio (21)

3 min: L3
15 min: LD

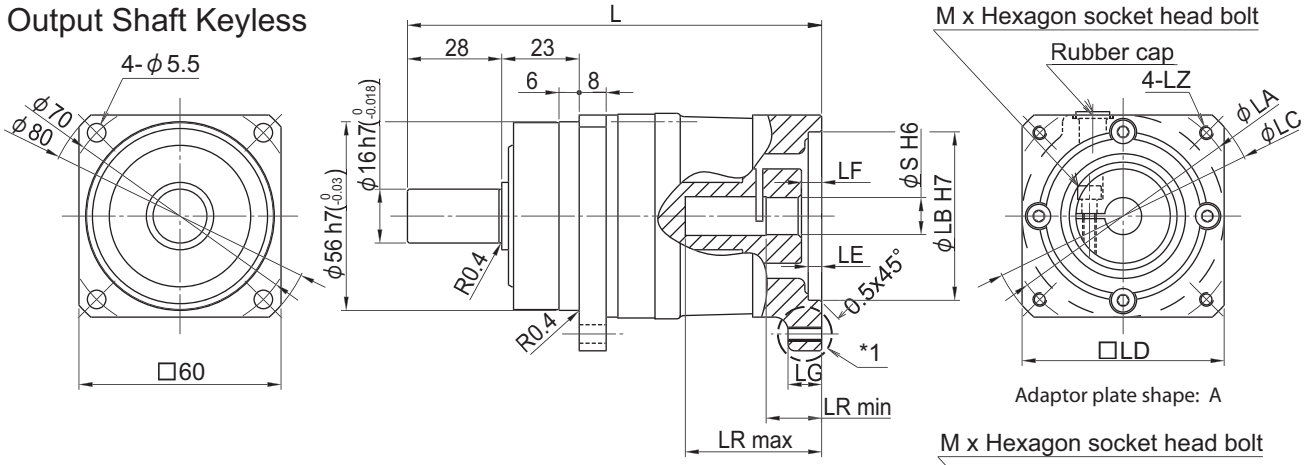
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG *1	Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	125.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.1	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.1	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.1	2D
2E	123	60	50	80	60	4	8.5	9	Useful thread length	A	M4	40.5	16.5	8	M3	1.1	2E
2K		60	50	80	60	4	6	9	Useful thread length		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		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	14	M4	1.1	2R
8A	124.5	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	1.2	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.

Dimension Drawings

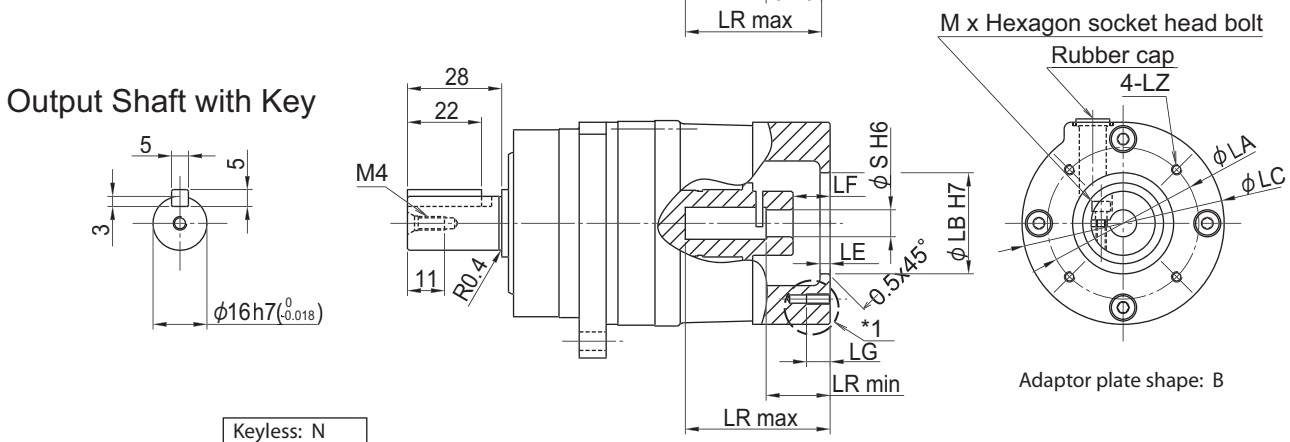
Frame Size: P110
Reduction Ratio: 1/33
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

Nomenclature
ANFX-P110

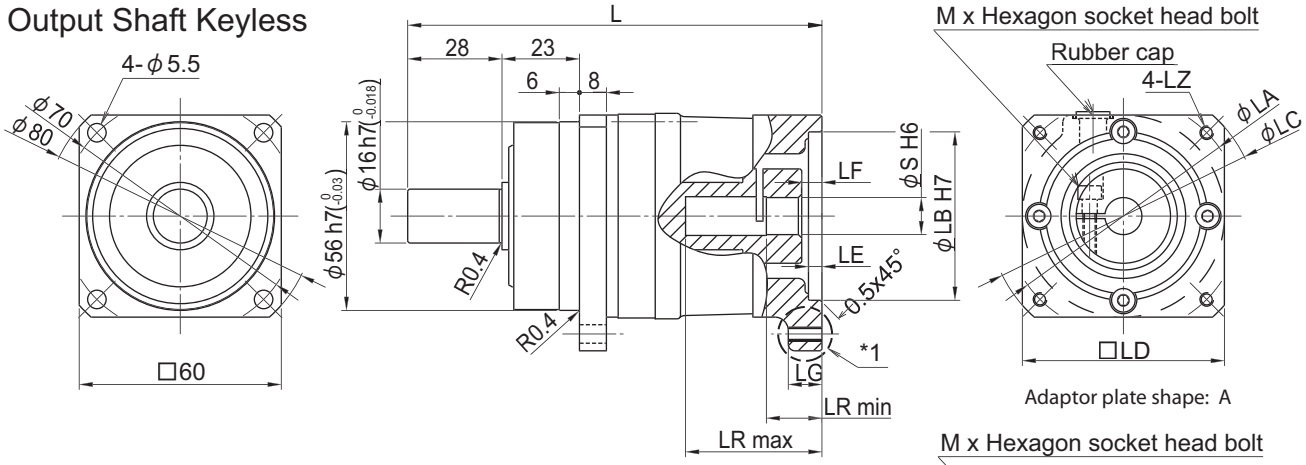
- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (33)

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	Shape	*1 Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	125.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.2	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.2	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.2	2D
2E	123	60	50	80	60	4	8.5	9	Useful thread length	A	M4	40.5	16.5	8	M3	1.1	2E
2K		60	50	80	60	4	6	9	Useful thread length		M4	40.5	16.5	11	M4	1.3	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	1.1	2R
8A	124.5	90	70	105	80	6	7.5	12	Through hole		M5	42	18	11	M4	1.4	8A
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.

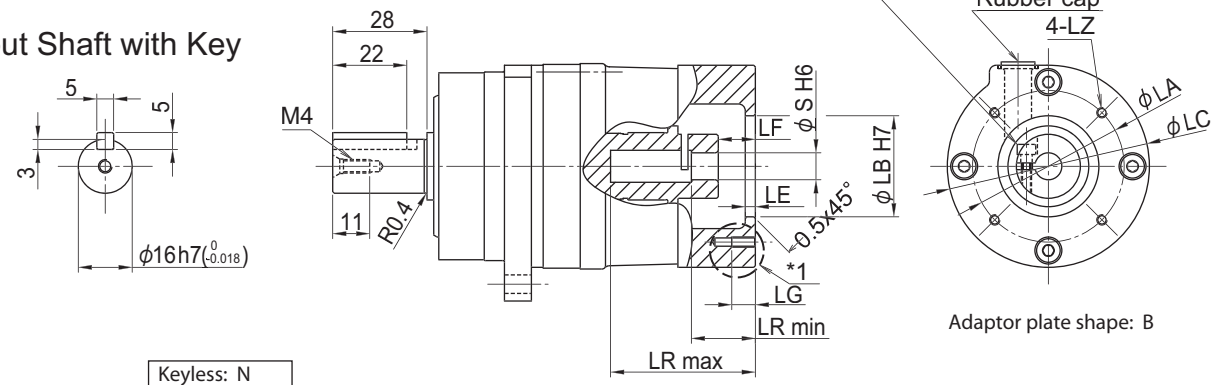
Frame Size: P110
Reduction Ratio: 1/45
Solid Shaft

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: 3 min: L3 / 15 min: LD
- Reduction ratio (45)

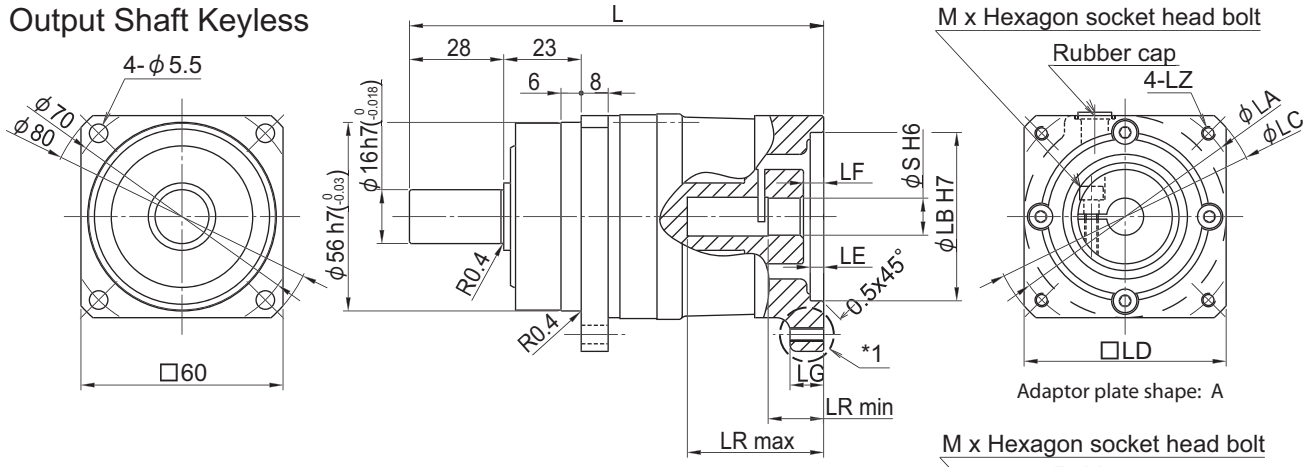
Motor flange code	Dimension L	LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	125.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.2	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.2	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.2	2D
2E	123	60	50	80	60	4	8.5	9	Useful thread length	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.

Dimension Drawings

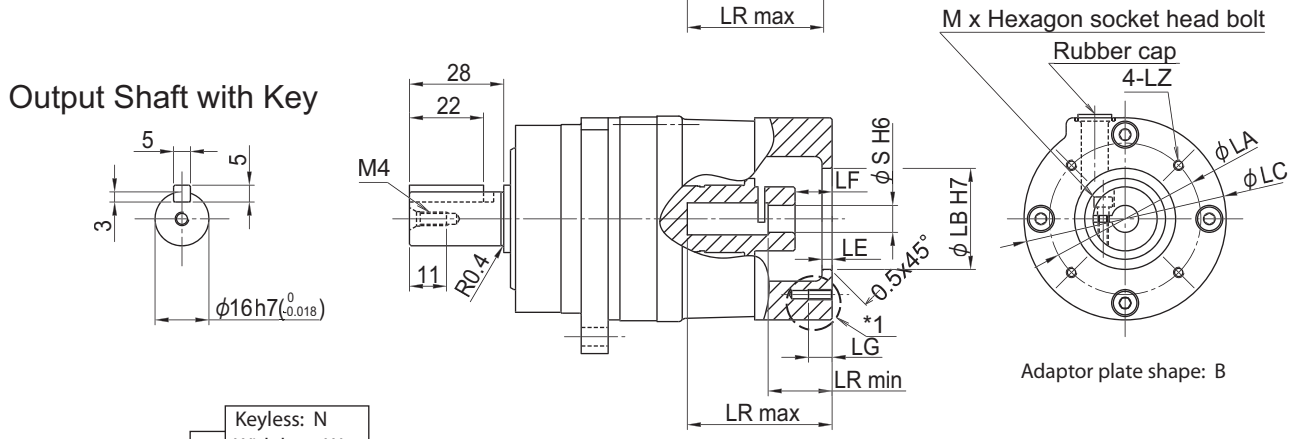
Frame Size: P110
Reduction Ratio: 1/81
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

Nomenclature
ANFX-P110

Keyless: N
With key: W

Output shaft type | Motor flange code | Backlash — Reduction ratio (81)

3 min: L3
15 min: LD

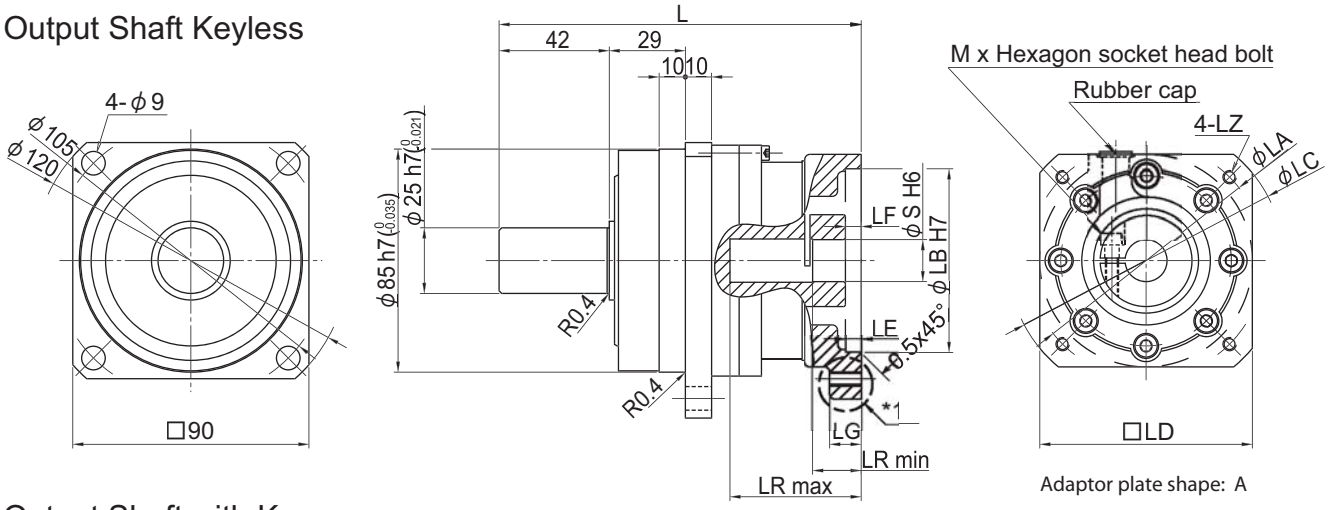
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG *1	Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	125.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.1	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.1	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.1	2D
2E	123	60	50	80	60	4	8.5	9	Useful thread length	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

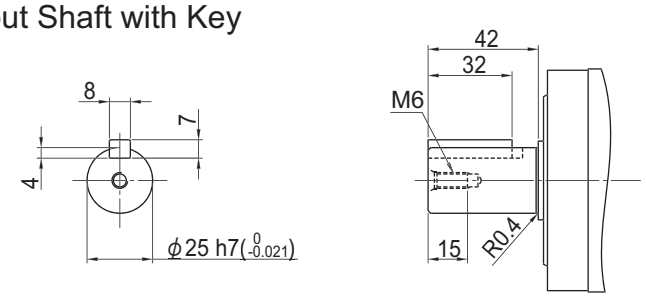
Frame Size: P120
Reduction Ratio: 1/3.7
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Nomenclature
ANFX-P120

- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (3.7)

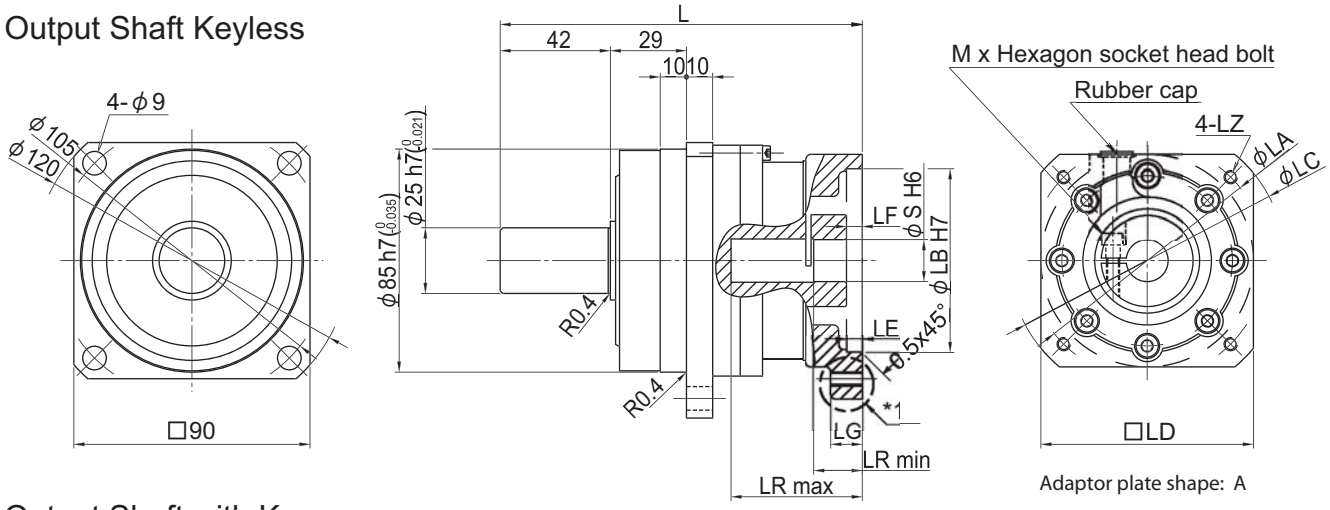
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
0U	138	90	70	105	81	6	6	12	Through hole		M5	50	18.5	16	M5	2.5	0U
7S		90	70	105	81	6	6	12	Through hole		M5	50	18.5	19	M5	2.4	7S
7P		90	70	105	81	6	6	12	Through hole		M6	50	18.5	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	151.5	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	164.5	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	2.9	1L
7A	151.5	115	95	135	100	6	19.5	16	Through hole	A	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	164.5	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	154.5	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	189.5	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

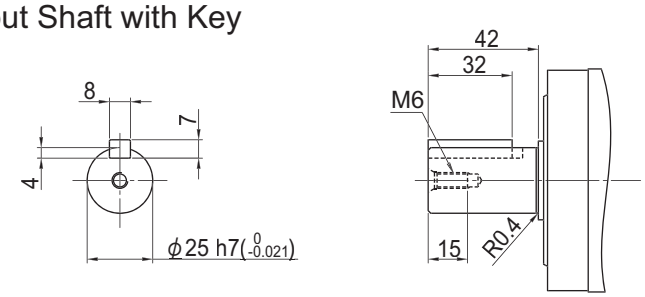
Frame Size: P120
Reduction Ratio: 1/5
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Nomenclature
ANFX-P120

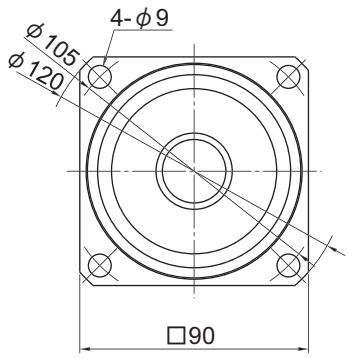
- Keyless: N / With key: W → Output shaft type
- Motor flange code
- Backlash → 3 min: L3 / 15 min: LD
- Reduction ratio (5)

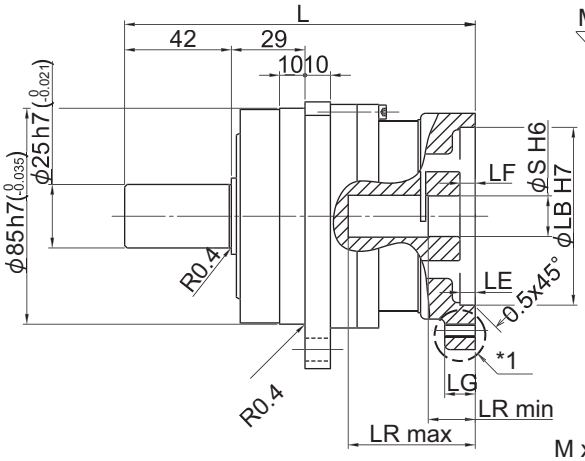
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
0U	138	90	70	105	81	6	6	12	Through hole	A	M5	50	18.5	16	M5	2.5	0U
7S		90	70	105	81	6	6	12	Through hole		M5	50	18.5	19	M5	2.4	7S
7P		90	70	105	81	6	6	12	Through hole		M6	50	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 Note3	151.5	100	80	120	90	5	19.5	12	Through hole		M6	63.5	30	14	M4	2.6	0V Note3
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	164.5	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	2.9	1L
7A	151.5	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	164.5	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	154.5	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	189.5	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

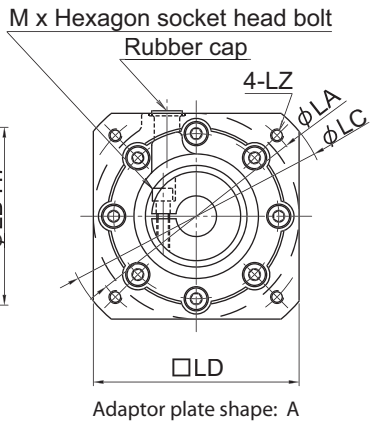
Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
3: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P120
Reduction Ratio: 1/9
Solid Shaft

Output Shaft Keyless

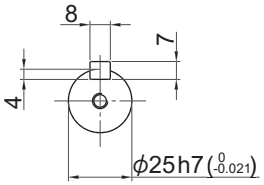


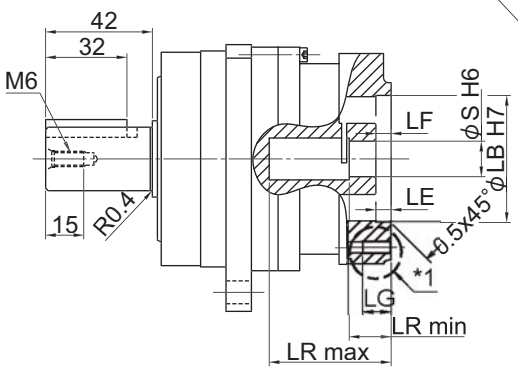


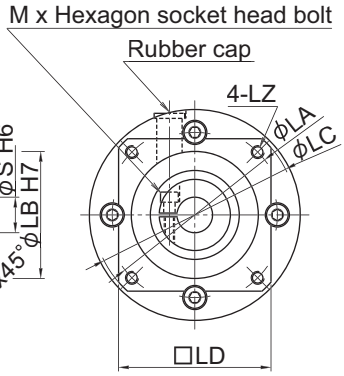


Adaptor plate shape: A

Output Shaft with Key







Adaptor plate shape: B

Nomenclature
ANFX-P120

- Output shaft type: Keyless: N; With key: W
- Motor flange code
- Backlash: 3 min: L3; 15 min: LD
- Reduction ratio (9)

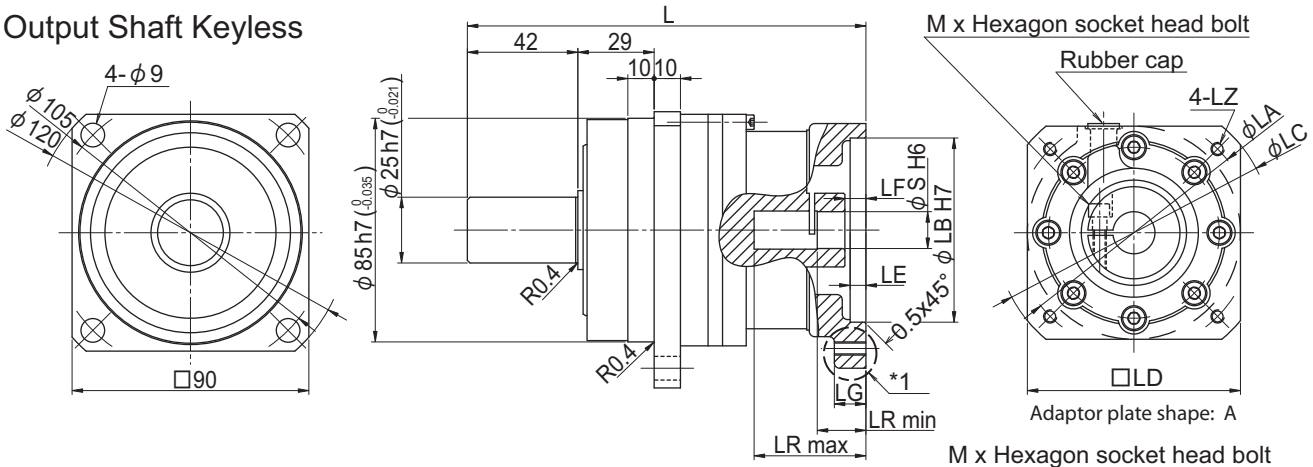
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2R	136	70	50	80	60	6	6	11	Useful thread length	B	M5	48	16.5	14	M4	2.5	2R
0U	138	90	70	105	81	6	6	12	Through hole	A	M5	50	18.5	16	M5	2.5	0U
7S		90	70	105	81	6	6	12	Through hole		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	151.5	100	80	120	90	5	21.5	12	Through hole		M6	63.5	32	10	M4	2.6	2J
0V Note3		100	80	120	90	5	19.5	12	Through hole		M6	63.5	30	14	M4	2.4	0V Note3
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	164.5	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	2.9	1L
7A	151.5	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	164.5	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	154.5	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	189.5	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: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
3: Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension Drawings

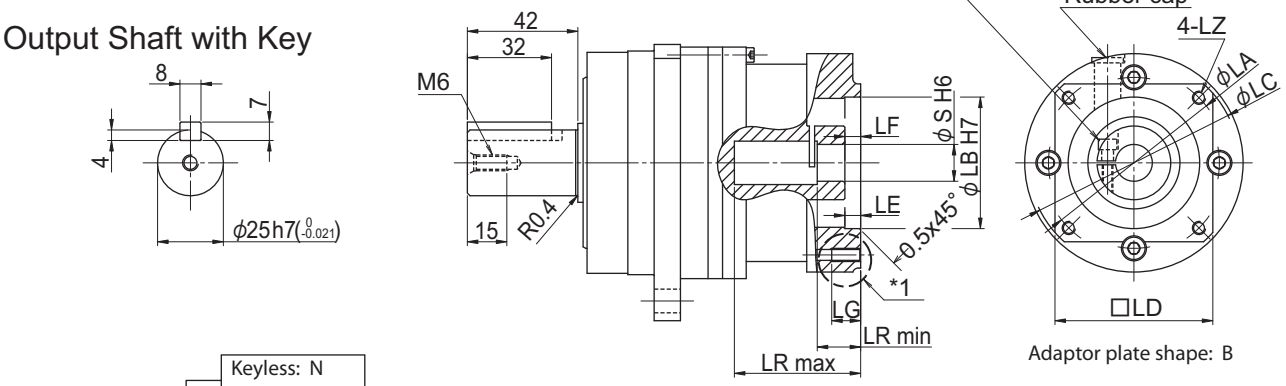
Frame Size: P120
Reduction Ratio: 1/11
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

Nomenclature
ANFX-P120

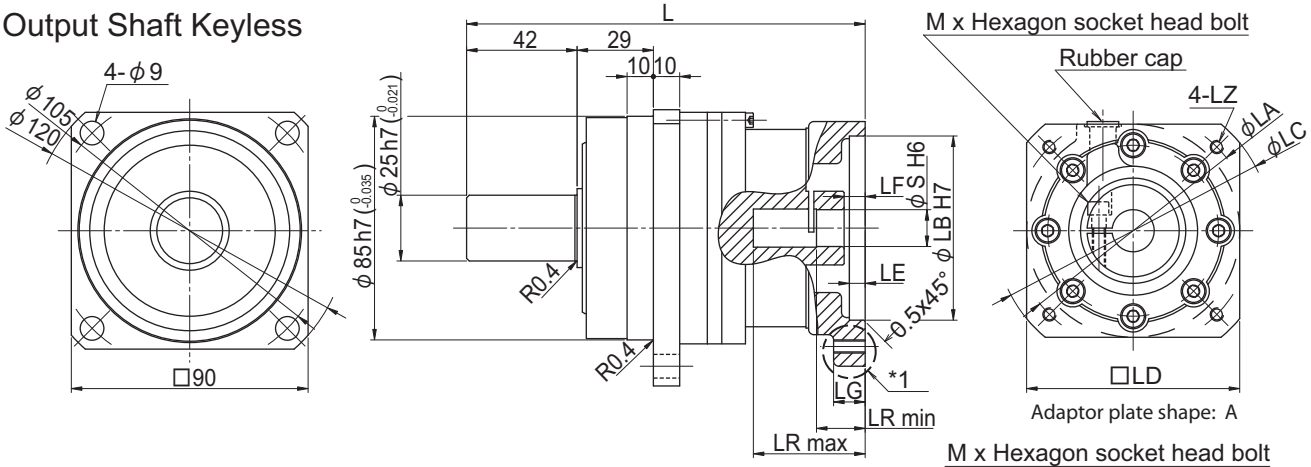
- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (11)

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2P	149.5	70	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	14	M4	2.8	2P
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.8	2R
8B	151.5	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		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	165	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	3.0	2J
0V[Note3]		100	80	120	90	5	19.5	12	Through hole		M6	56	30	14	M4	2.9	0V[Note3]
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	178	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	3.4	1L
7A	165	115	95	135	100	6	19.5	16	Through hole		M8	56	32	16	M5	3.1	7A
0W	178	115	95	135	100	6	17	16	Through hole		M8	46	31.5	22	M6	3.7	0W
7Y		115	95	135	100	6	17	16	Through hole		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	168	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	203	145	110	165	120	7	42	16	Through hole		M8	71	56.5	24	M6	3.7	7Z

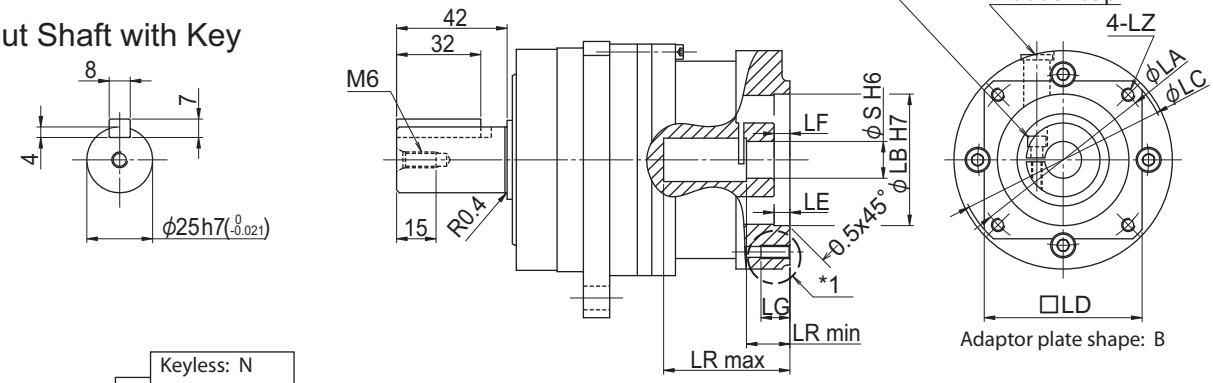
Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
3: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P120
Reduction Ratio: 1/15
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature
ANFX-P120

Keyless: N
With key: W

Output shaft type | Motor flange code | Backlash | Reduction ratio (15)

3 min: L3
15 min: LD

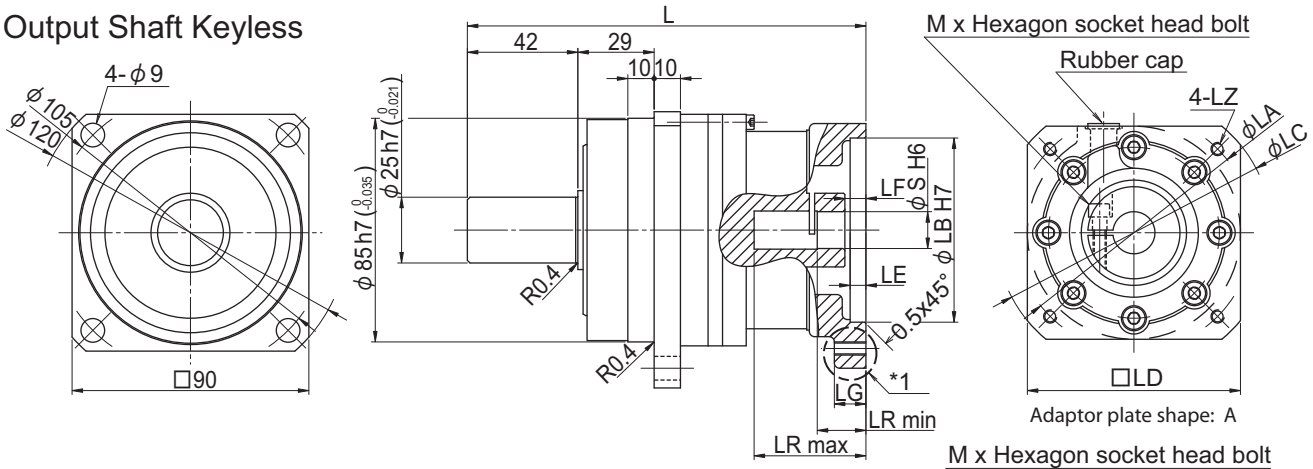
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2P	149.5	70	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	14	M4	2.8	2P
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.8	2R
8B	151.5	90	70	105	81	6	8	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		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	165	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	3.0	2J
0V Note3		100	80	120	90	5	19.5	12	Through hole		M6	56	30	14	M4	2.9	0V Note3
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	178	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	3.4	1L
7A	165	115	95	135	100	6	19.5	16	Through hole		M8	56	32	16	M5	3.1	7A
0W	178	115	95	135	100	6	17	16	Through hole		M8	46	31.5	22	M6	3.7	0W
7Y		115	95	135	100	6	17	16	Through hole		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	168	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	203	145	110	165	120	7	42	16	Through hole		M8	71	56.5	24	M6	3.7	7Z

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

Dimension Drawings

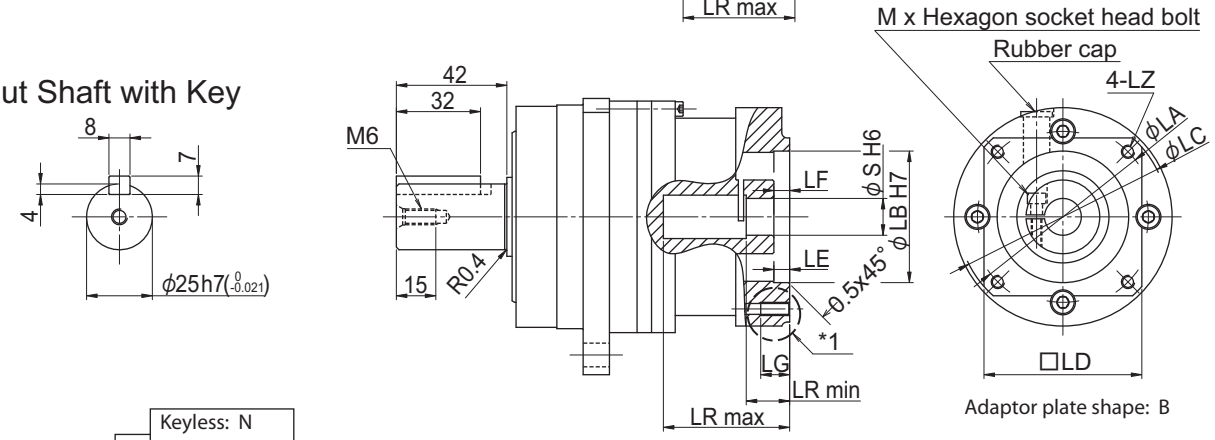
Frame Size: P120
Reduction Ratio: 1/21
Solid Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Adaptor plate shape: B

Nomenclature
ANFX-P120

Keyless: N
With key: W

Output shaft type | Motor flange code | Backlash | Reduction ratio (21)

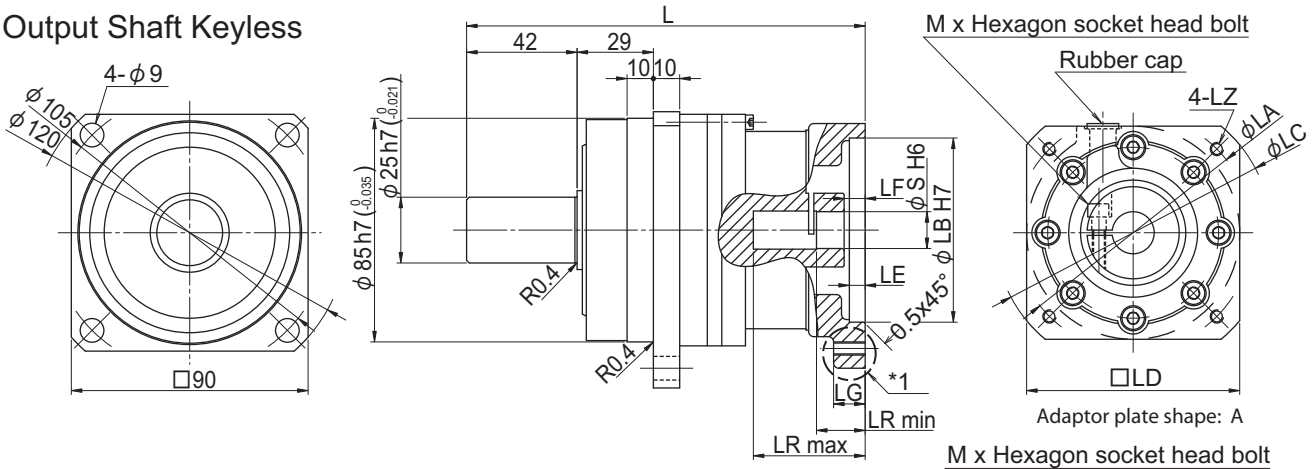
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2P	149.5	70	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	14	M4	2.8	2P
2H		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	9	M4	2.8	2H
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.8	2R
8B	151.5	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		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	165	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	3.0	2J
0V[Note3]		100	80	120	90	5	19.5	12	Through hole		M6	56	30	14	M4	3.0	0V[Note3]
8E		100	80	120	90	5	19.5	12	Through hole		M6	56	32	16	M5	3.0	8E
7A		115	95	135	100	6	19.5	16	Through hole		M8	56	32	16	M5	3.1	7A
7R	168	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	203	145	110	165	120	7	42	16	Through hole		M8	71	56.5	24	M6	3.7	7Z

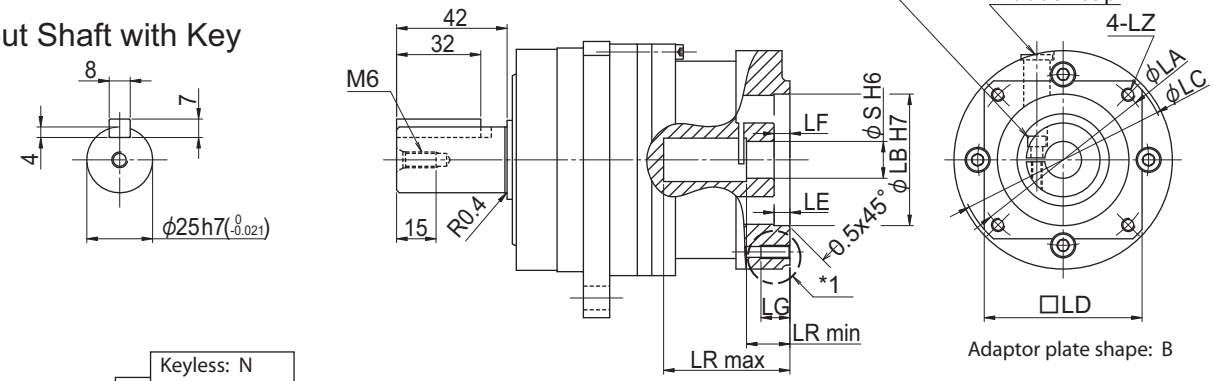
Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
3: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P120
Reduction Ratio: 1/33
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature
ANFX-P120

- Keyless: N / With key: W
- Output shaft type
- Motor flange code
- Backlash
- Reduction ratio (33)
- 3 min: L3 / 15 min: LD

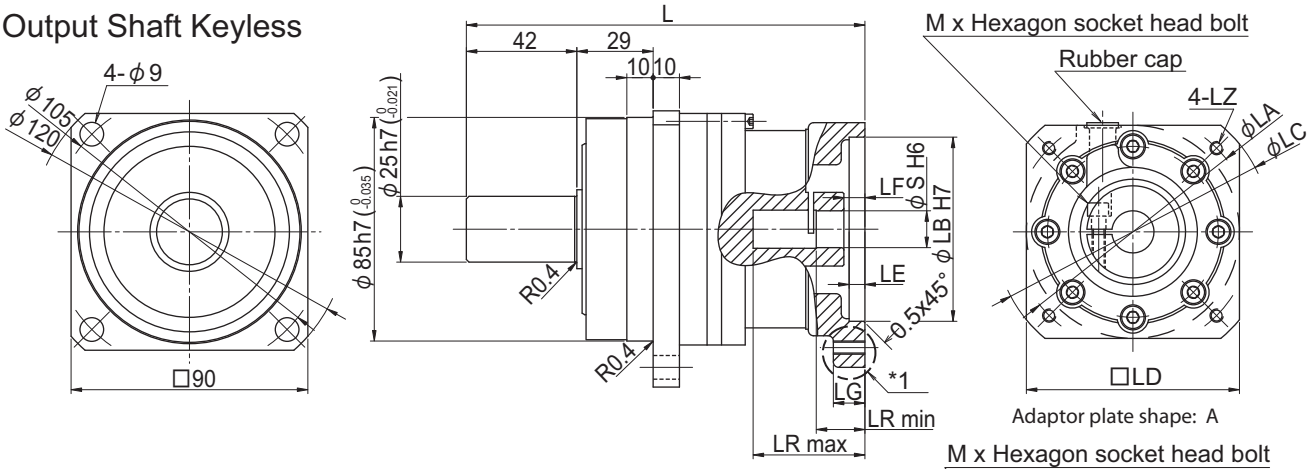
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2P	149.5	70	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	14	M4	2.9	2P
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.9	2R
8B	151.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	14	M4	2.9	8B
2T		90	70	105	81	6	8	12	Through hole		M6	42.5	18.5	14	M4	2.9	2T
2J	165	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.

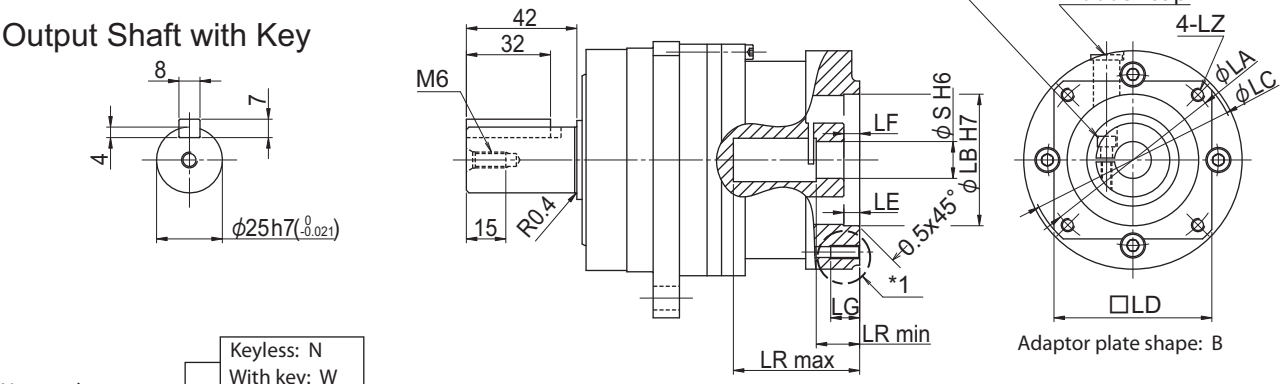
Dimension Drawings

Frame Size: P120
Reduction Ratio: 1/45
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature
ANFX-P120

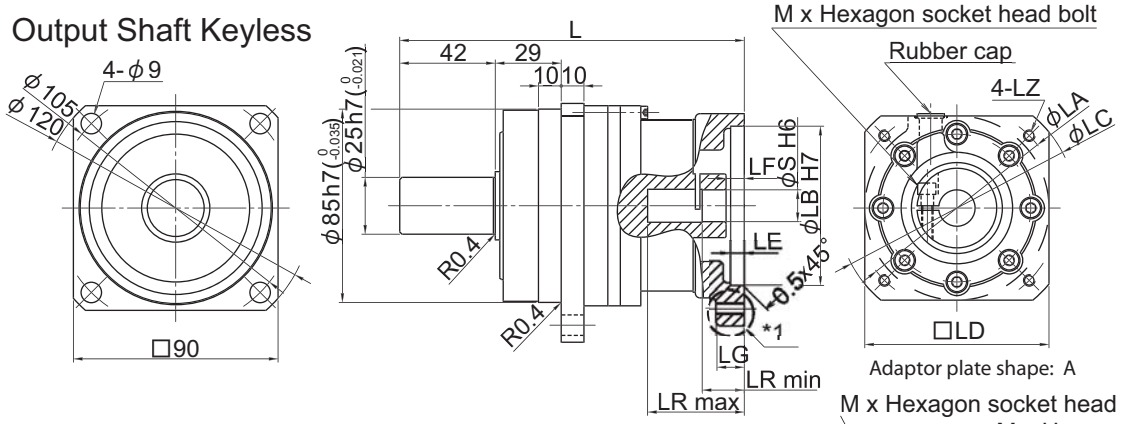
Output shaft type: Keyless: N; With key: W
Motor flange code
Backlash: 3 min: L3; 15 min: LD
Reduction ratio (45)

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2K	149.5	60	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	11	M4	2.9	2K
2L		70	50	80	60	6	6	9	Useful thread length		M4	40.5	16.5	11	M4	2.9	2L
2P		70	50	80	60	6	6	9	Useful thread length		M4	40.5	16.5	14	M4	2.9	2P
2H		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	9	M4	2.9	2H
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.9	2R
8A	151.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	11	M4	2.9	8A
8B		90	70	105	81	6	8	12	Through hole		M5	42.5	18.5	14	M4	2.9	8B
2T		90	70	105	81	6	8	12	Through hole		M6	42.5	18.5	14	M4	2.9	2T
2J	165	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	3.0	2J

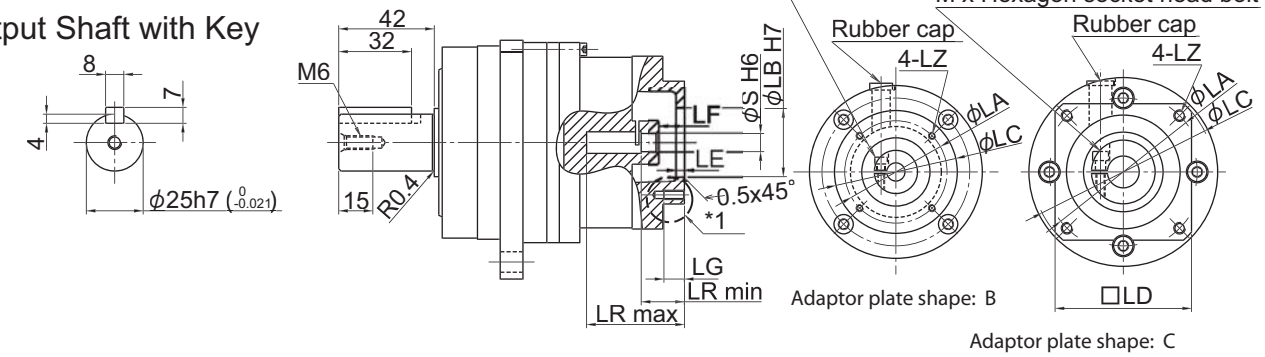
Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P120
Reduction Ratio: 1/81
Solid Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature
ANFX-P120

- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (81)

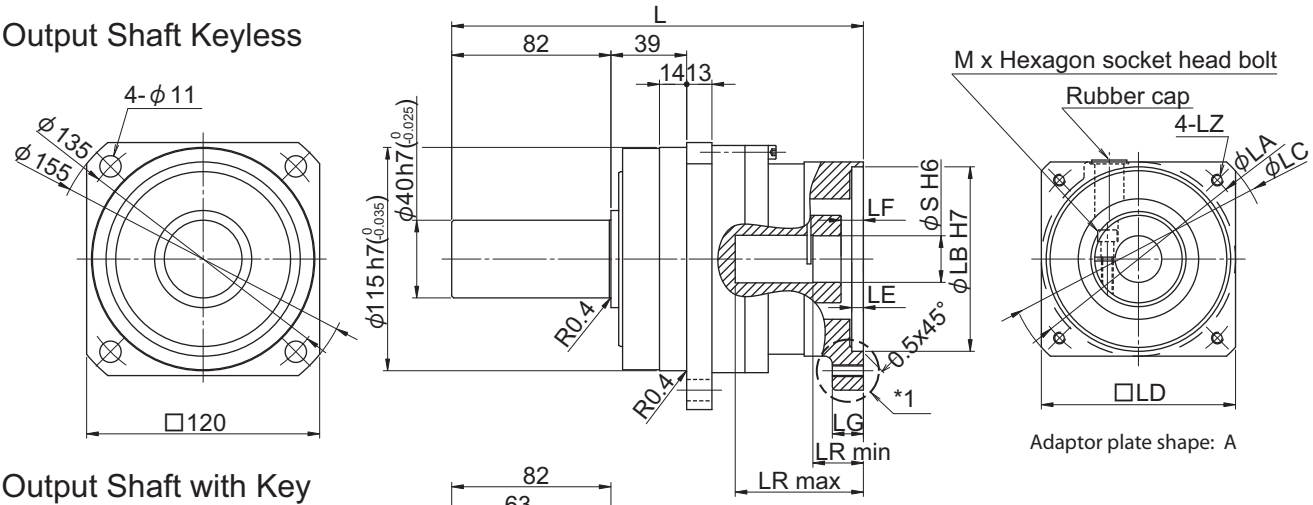
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	152	45	30	54	-	4	11	7	Useful thread length	B	M3	43	19	8	M3	2.8	2C
2D		46	30	54	-	4	11	9	Useful thread length		M4	43	19	8	M3	2.8	2D
2E	149.5	60	50	80	60	6	8.5	9	Useful thread length	C	M4	40.5	16.5	8	M3	2.9	2E
2K		60	50	80	60	6	6	9	Useful thread length		M4	40.5	16.5	11	M4	2.9	2K
2F		70	50	80	60	6	8.5	9	Useful thread length		M4	40.5	16.5	8	M3	2.9	2F
2G		70	50	80	60	6	8.5	11	Useful thread length		M5	40.5	16.5	8	M3	2.9	2G
2H		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	9	M4	2.9	2H
2R		70	50	80	60	6	6	11	Useful thread length	A	M5	40.5	16.5	14	M4	2.9	2R
2T	151.5	90	70	105	81	6	8	12	Through hole		M6	42.5	18.5	14	M4	2.9	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

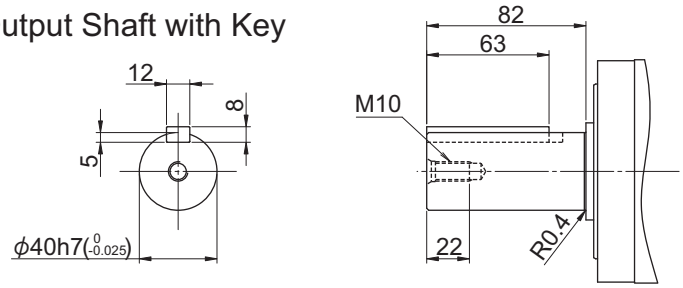
Frame Size: P130
Reduction Ratio: 1/3.7
Flange Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Nomenclature
ANFX-P130

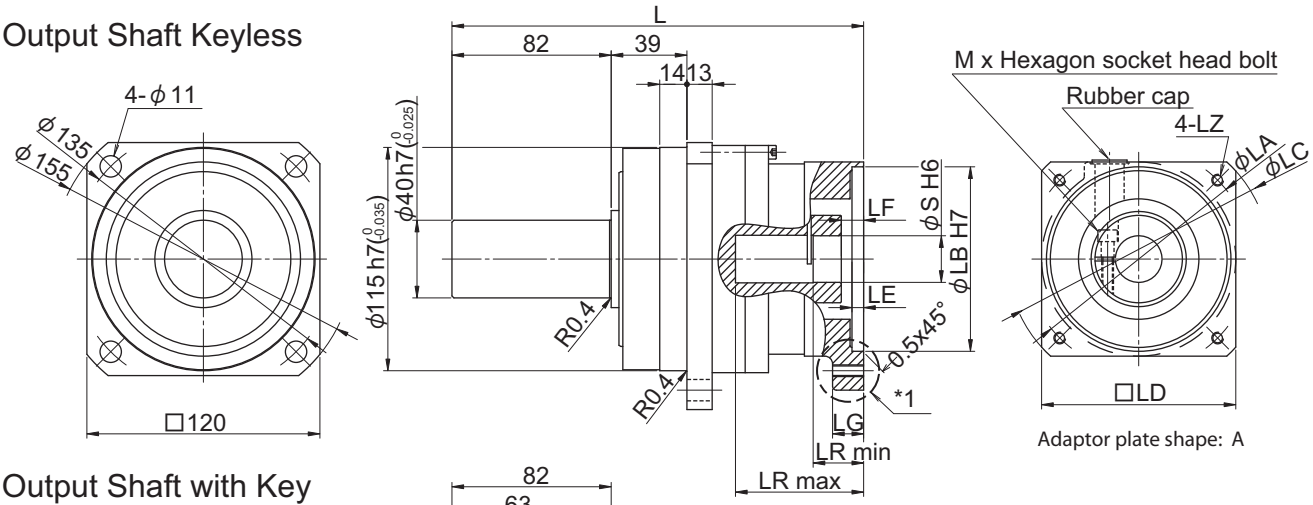
Keyless: N
With key: W
Output shaft type
Motor flange code
Backlash
Reduction ratio (3.7)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
1S	220	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
0X Note3	265.5	200	114.3	230	180	6	41.5	24	Through hole		M12	81	60	35	M8	8.4	0X Note3

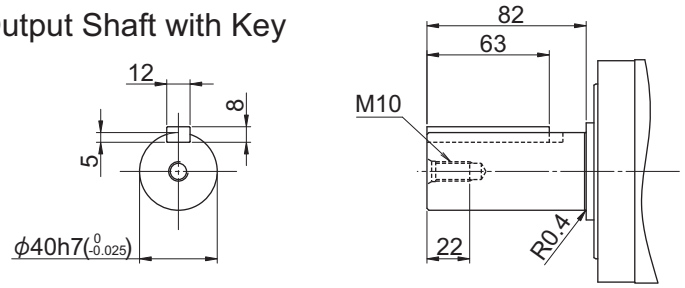
Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Dimension of coupling of motor flange code (0V) includes tolerance (+0.010 ~ +0.026)
3: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P130
Reduction Ratio: 1/5
Flange Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature
ANFX-P130

Keyless: N
With key: W
Output shaft type
Motor flange code
Backlash
Reduction ratio (5)
3 min: L3
15 min: LD

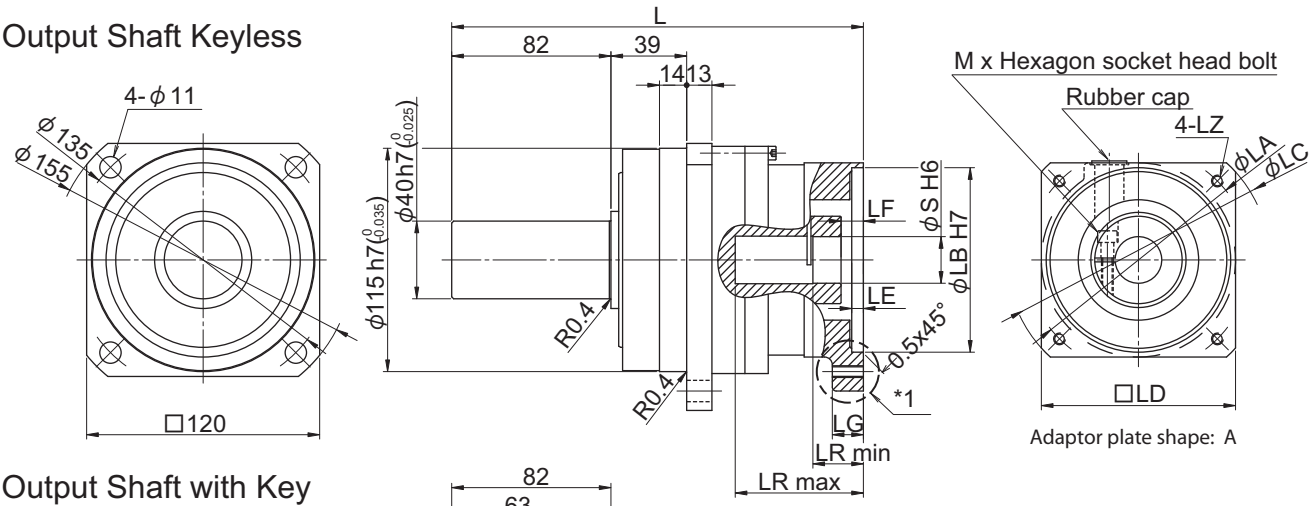
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	Shape *1	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
1S	220	145	110	165	120	7	19.5	16	Through hole	A	M8	74	34	22	M6	6.9	1S
7Z		145	110	165	120	7	19.5	16	Through hole		M8	74	34	24	M6	6.8	7Z
1T		145	110	165	120	7	19.5	16	Through hole		M8	74	34	28	M6	6.7	1T
0X Note3	265.5	200	114.3	230	180	6	41.5	24	Through hole		M12	81	60	35	M8	8.4	0X Note3

Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Dimension of coupling of motor flange code (0V) includes tolerance (+0.010 ~ +0.026)
3: Dimensions and mass shown in the above figures are subject to change without prior notification.

Dimension Drawings

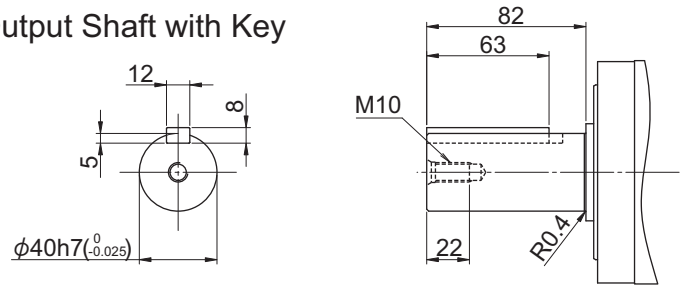
Frame Size: P130
Reduction Ratio: 1/9
Flange Shaft

Output Shaft Keyless



Adaptor plate shape: A

Output Shaft with Key



Nomenclature
ANFX-P130

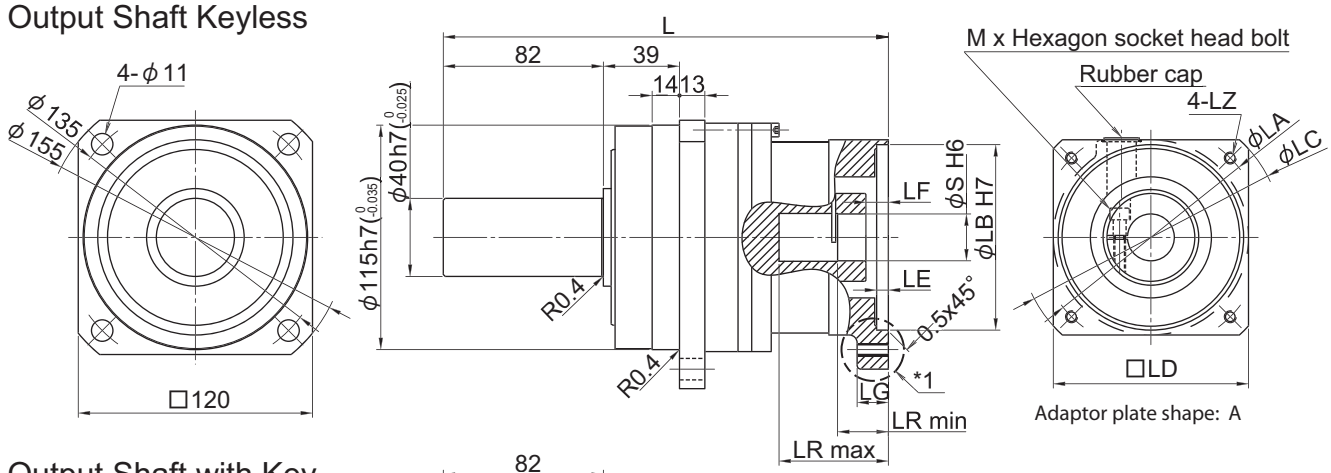
Keyless: N
With key: W
Output shaft type
Motor flange code
Backlash
Reduction ratio (9)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
1L	212	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	220	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
0X Note3	265.5	200	114.3	230	180	6	41.5	24	Through hole		M12	81	60	35	M8	8.5	0X Note3

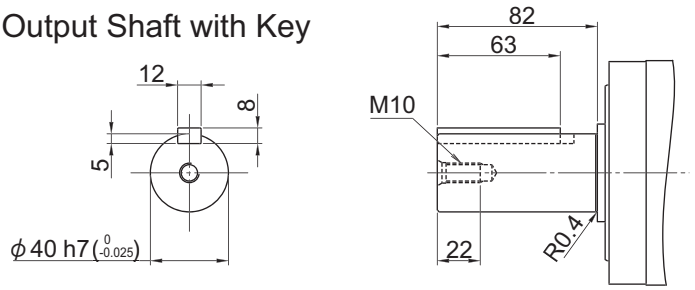
Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Dimension of coupling of motor flange code (0V) includes tolerance (+0.010 ~ +0.026)
3: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P130
Reduction Ratio: 1/11
Flange 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 (11)

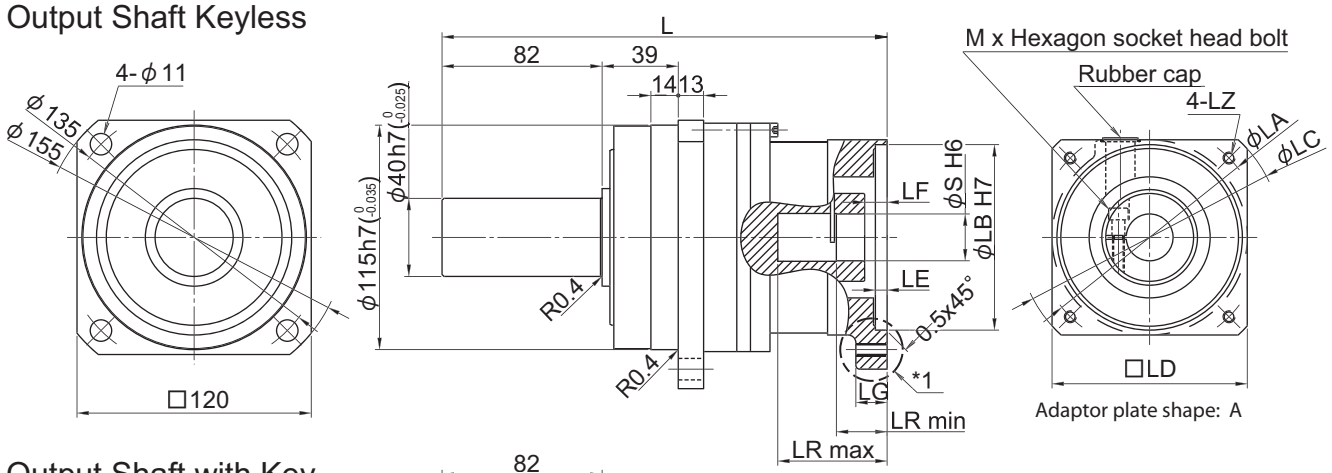
Motor flange code	L	Dimension														Mass [kg]	Motor flange code
		LA	LB	LC	LD	LE	LF	LG *1		Adaptor plate shape	LZ	LR		S	M		
									Shape			max	min				
1L	228	115	95	135	100	6	11.5	16	Through hole	A	M6	56	26	24	M6	7.4	1L
7B		115	95	135	100	6	13.5	16	Through hole		M8	56	26	19	M5	7.3	7B
0W		115	95	135	100	6	11.5	16	Through hole		M8	56	26	22	M6	7.4	0W
7Y		115	95	135	100	6	11.5	16	Through hole		M8	56	26	24	M6	7.4	7Y
0Y	236	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	7.7	7X
1S		145	110	165	120	7	19.5	16	Through hole		M8	64	34	22	M6	7.0	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: Dimensions and mass shown in the above figures are subject to change without prior notification.

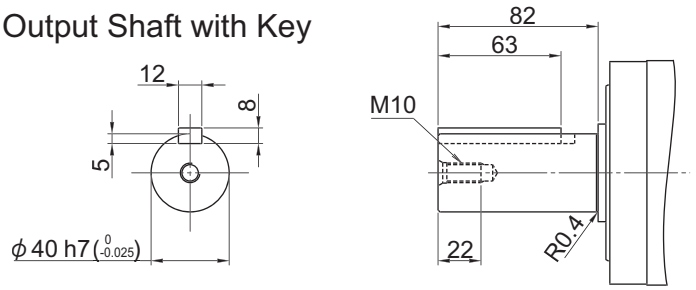
Dimension Drawings

Frame Size: P130
Reduction Ratio: 1/15
Flange Shaft

Output Shaft Keyless



Output Shaft with Key



Nomenclature
ANFX-P130

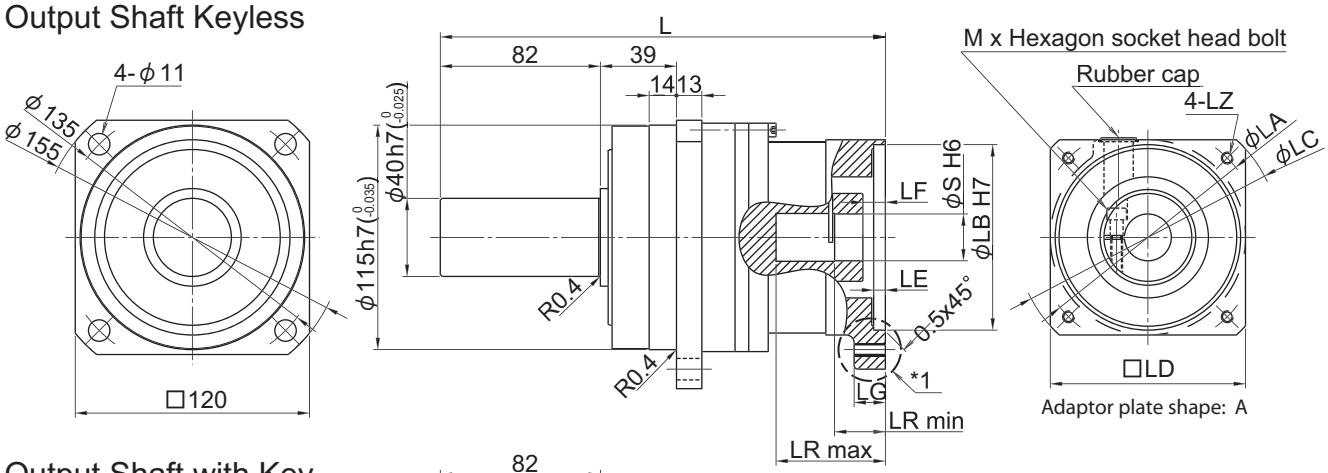
- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (15)

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
1L	228	115	95	135	100	6	11.5	16	Through hole	A	M6	56	26	24	M6	7.4	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	7.4	0W
7Y		115	95	135	100	6	11.5	16	Through hole		M8	56	26	24	M6	7.4	7Y
0Y	236	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	7.7	7X
1S		145	110	165	120	7	19.5	16	Through hole		M8	64	34	22	M6	7.0	1S
7Z		145	110	165	120	7	19.5	16	Through hole		M8	64	34	24	M6	7.7	7Z

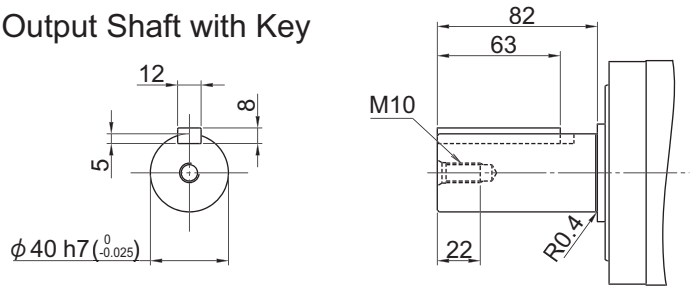
Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P130
Reduction Ratio: 1/21
Flange Shaft

Output Shaft Keyless



Output Shaft with Key

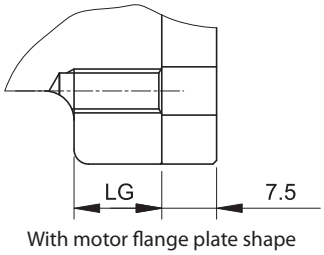


Nomenclature
ANFX-P130

- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (21)

Motor flange code	L	Dimension														Mass [kg]	Motor flange code
		LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M		
8E[Note3]	228	100	80	120	90	5	13.5	12	Through hole	A	M6	56	26	16	M5	7.4	8E[Note3]
7V[Note3]		100	80	120	90	5	13.5	12	Through hole		M6	56	26	19	M5	7.3	7V[Note3]
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	236	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: Shape of flange plate for motor
3: Dimensions and mass shown in the above figures are subject to change without prior notification.

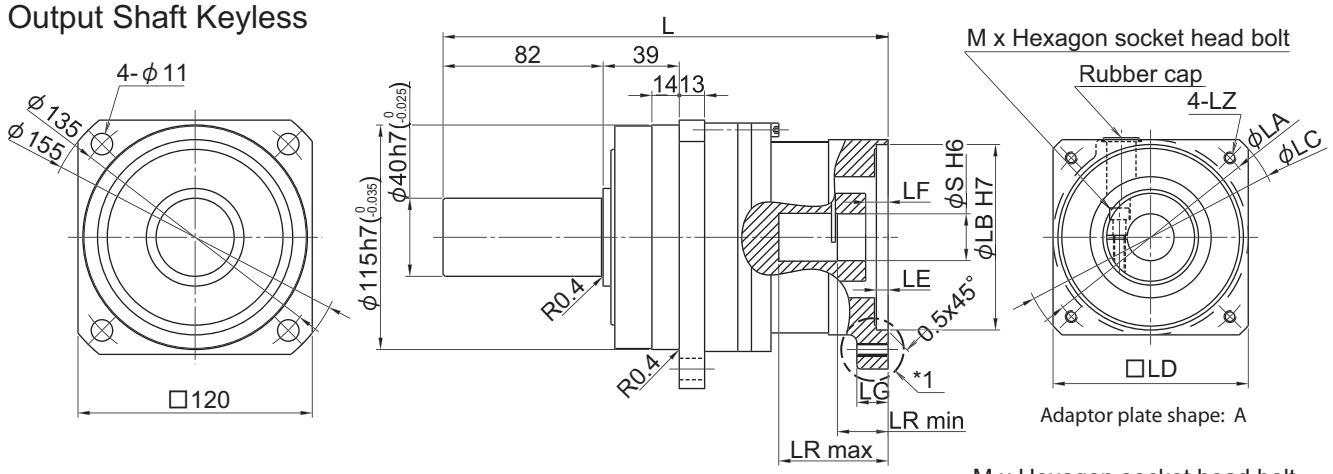


With motor flange plate shape

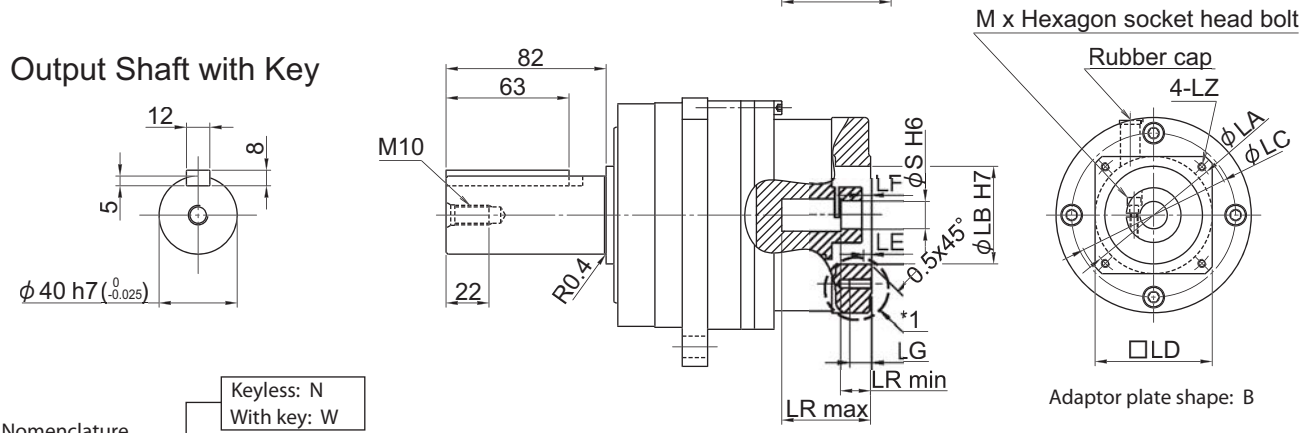
Dimension Drawings

Frame Size: P130
Reduction Ratio: 1/33
Flange Shaft

Output Shaft Keyless



Output Shaft with Key

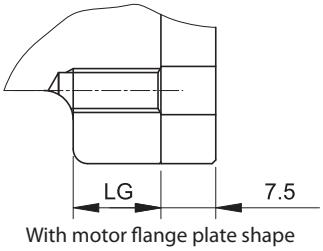


Nomenclature
ANFX-P130

- Output shaft type: Keyless: N / With key: W
- Motor flange code
- Backlash: 3 min: L3 / 15 min: LD
- Reduction ratio (33)

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2R	217.5	70	50	80	60	4	5	11	Useful thread length		M5	45.5	15.5	14	M4	7.3	2R
0U	220.5	90	70	120	90	6	6	11	Useful thread length		M5	48.5	18.5	16	M5	7.3	0U
7S		90	70	120	90	6	6	11	Useful thread length	B	M5	48.5	18.5	19	M5	7.3	7S
7P		90	70	120	90	6	6	13	Useful thread length		M6	48.5	18.5	16	M5	7.3	7P
1G		90	70	120	90	6	6	13	Useful thread length		M6	48.5	18.5	19	M5	7.3	1G
2J[Note3]	228	100	80	120	90	5	15.5	12	Through hole		M6	56	26	10	M4	7.4	2J[Note3]
0V[Note3,Note4]		100	80	120	90	5	15.5	12	Through hole		M6	56	26	14	M4	7.4	0V[Note3,Note4]
8E[Note3]		100	80	120	90	5	13.5	12	Through hole		M6	56	26	16	M5	7.4	8E[Note3]
7A		115	95	135	100	6	13.5	16	Through hole	A	M8	56	26	16	M5	7.4	7A
7R	236	145	110	165	120	7	21.5	16	Through hole		M8	64	34	16	M5	7.7	7R
7X		145	110	165	120	7	21.5	16	Through hole		M8	64	34	19	M5	7.7	7X
7Z		145	110	165	120	7	21.5	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: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
3: Shape of flange plate for motor
4: Dimensions and mass shown in the above figures are subject to change without prior notification.

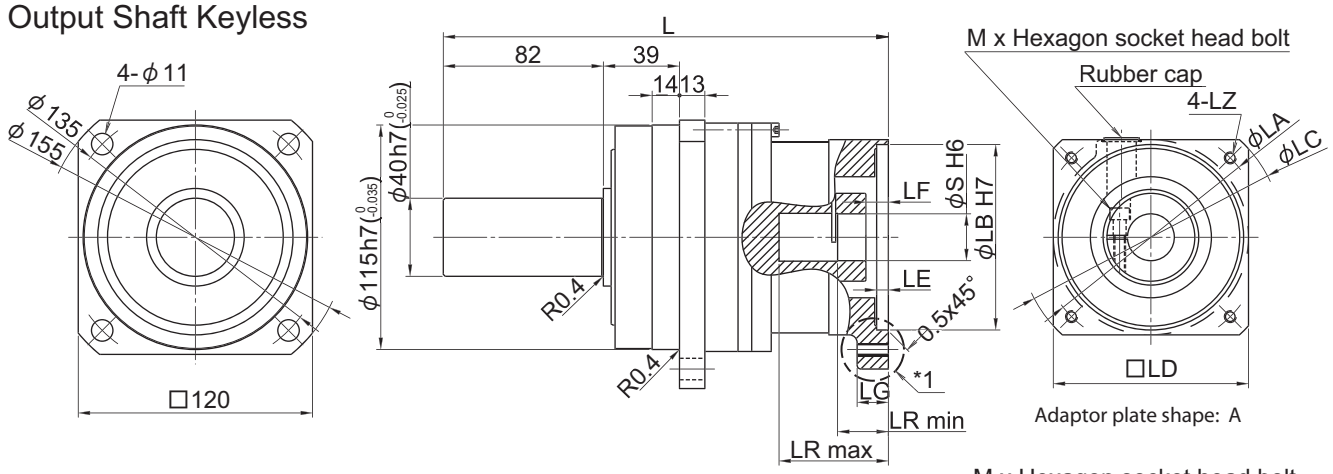


With motor flange plate shape

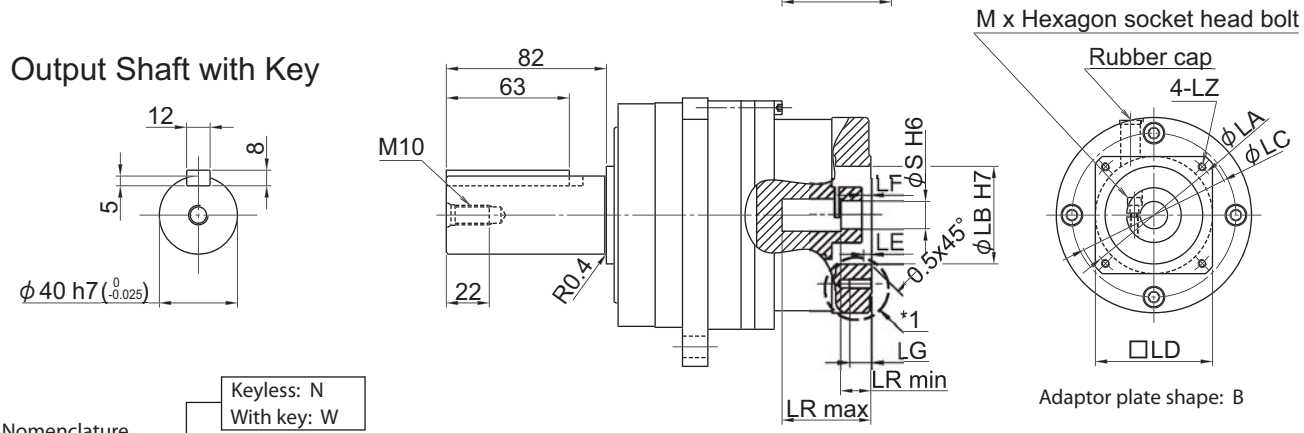
Dimension Drawings

Frame Size: P130
Reduction Ratio: 1/45
Flange Shaft

Output Shaft Keyless



Output Shaft with Key

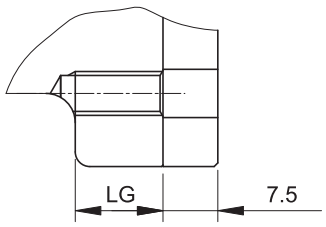


Nomenclature
ANFX-P130

- 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	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2R	217.5	70	50	80	60	4	5	11	Useful thread length		M5	45.5	15.5	14	M4	7.3	2R
0U		90	70	120	90	6	6	11	Useful thread length		M5	48.5	18.5	16	M5	7.3	0U
7S	220.5	90	70	120	90	6	6	11	Useful thread length	B	M5	48.5	18.5	19	M5	7.3	7S
7P		90	70	120	90	6	6	13	Useful thread length		M6	48.5	18.5	16	M5	7.3	7P
1G		90	70	120	90	6	6	13	Useful thread length		M6	48.5	18.5	19	M5	7.3	1G
2J Note3	228	100	80	120	90	5	15.5	12	Through hole		M6	56	26	10	M4	7.4	2J Note3
0V Note3 Note4		100	80	120	90	5	15.5	12	Through hole		M6	56	26	14	M4	7.4	0V Note3 Note4
8E Note3		100	80	120	90	5	13.5	12	Through hole		M6	56	26	16	M5	7.4	8E Note3
7A		115	95	135	100	6	13.5	16	Through hole	A	M8	56	26	16	M5	7.4	7A
7R	236	145	110	165	120	7	21.5	16	Through hole		M8	64	34	16	M5	7.7	7R
7X		145	110	165	120	7	21.5	16	Through hole		M8	64	34	19	M5	7.7	7X
7Z		145	110	165	120	7	21.5	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: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
3: Shape of flange plate for motor
4: Dimensions and mass shown in the above figures are subject to change without prior notification.

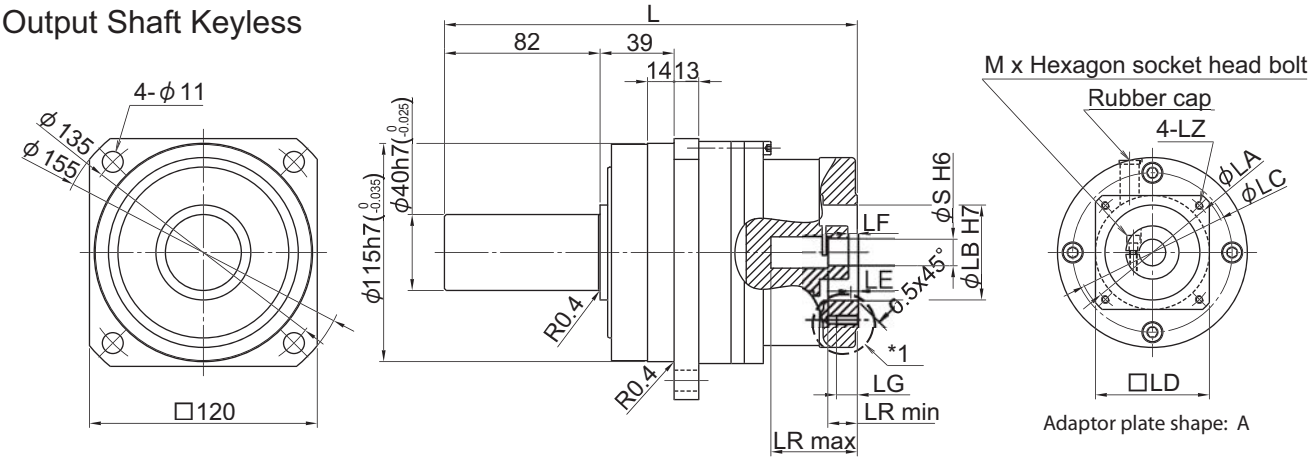


With motor flange plate shape

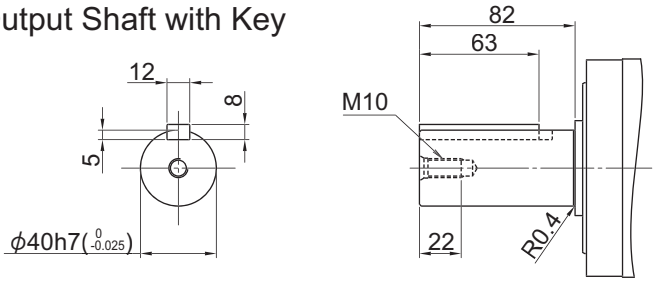
Dimension Drawings

Frame Size: P130
Reduction Ratio: 1/81
Flange Shaft

Output Shaft Keyless



Output Shaft with Key

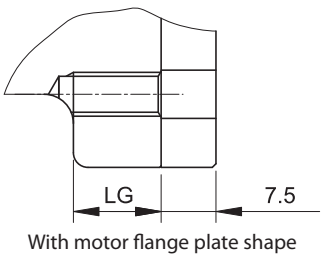


Nomenclature
ANFX-P130

- Output shaft type: Keyless: N; With key: W
- Motor flange code
- Backlash: 3 min: L3; 15 min: LD
- Reduction ratio (81)

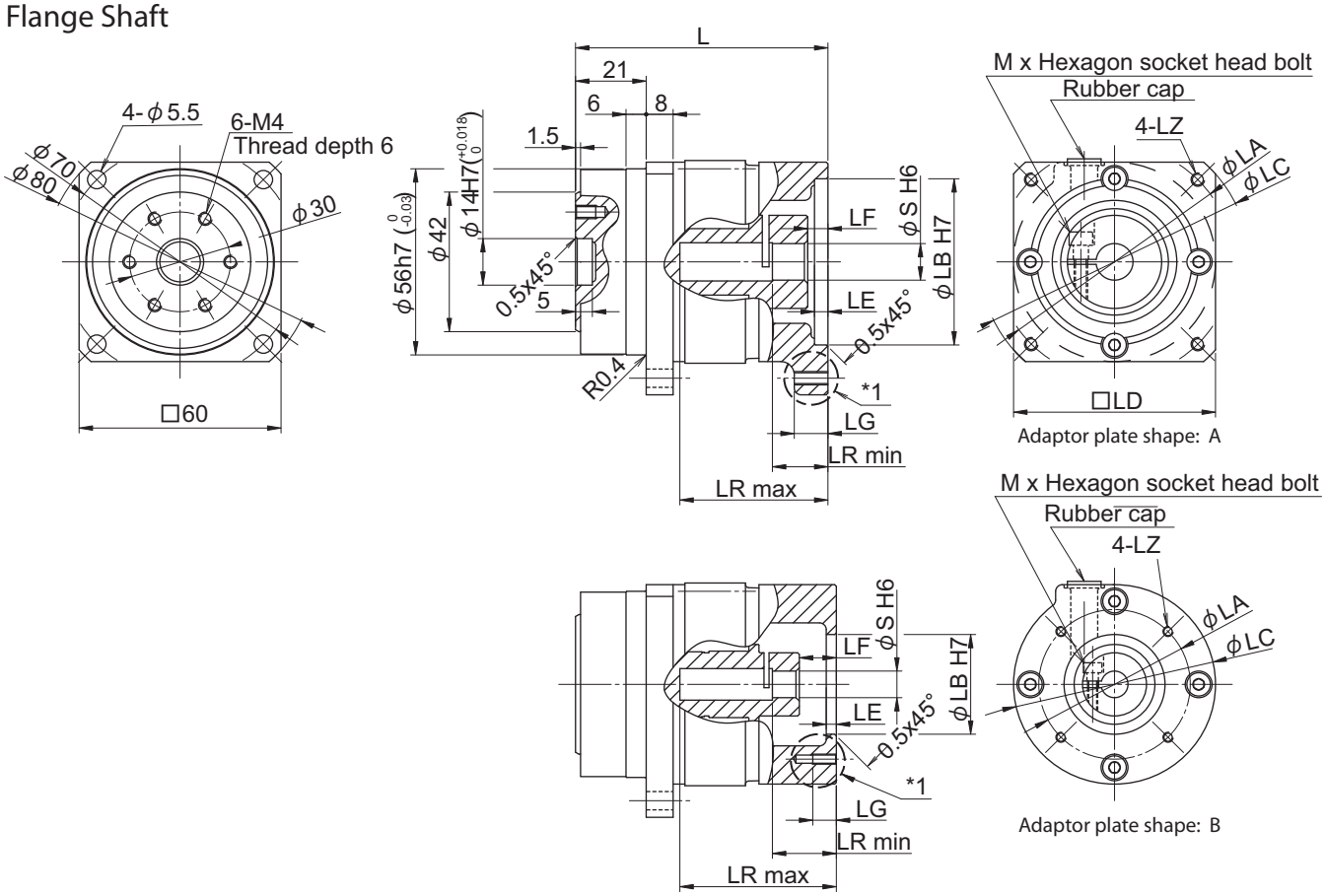
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2L	217.5	70	50	80	60	4	5	9	Useful thread length	A	M4	45.5	15.5	11	M4	7.3	2L
2P		70	50	80	60	4	5	9	Useful thread length		M4	45.5	15.5	14	M4	7.3	2P
2H		70	50	80	60	4	5	11	Useful thread length		M5	45.5	15.5	9	M4	7.3	2H
2R		70	50	80	60	4	5	11	Useful thread length		M5	45.5	15.5	14	M4	7.3	2R
8A	220.5	90	70	120	90	6	8	11	Useful thread length		M5	48.5	18.5	11	M4	7.4	8A
8B		90	70	120	90	6	8	11	Useful thread length		M5	48.5	18.5	14	M4	7.4	8B
2T		90	70	120	90	6	8	13	Useful thread length		M6	48.5	18.5	14	M4	7.4	2T
2J	228	100	80	120	90	5	15.5	12	Through hole		M6	56	26	10	M4	7.4	2J

Note 1: Dimension of shaft end key: Dimension tolerance conforms to JIS B 1301-1996 "Parallel Key."
2: Shape of flange plate for motor
3: Dimensions and mass shown in the above figures are subject to change without prior notification.



With motor flange plate shape

Frame Size: P110
Reduction Ratio: 1/3.7
Flange Shaft



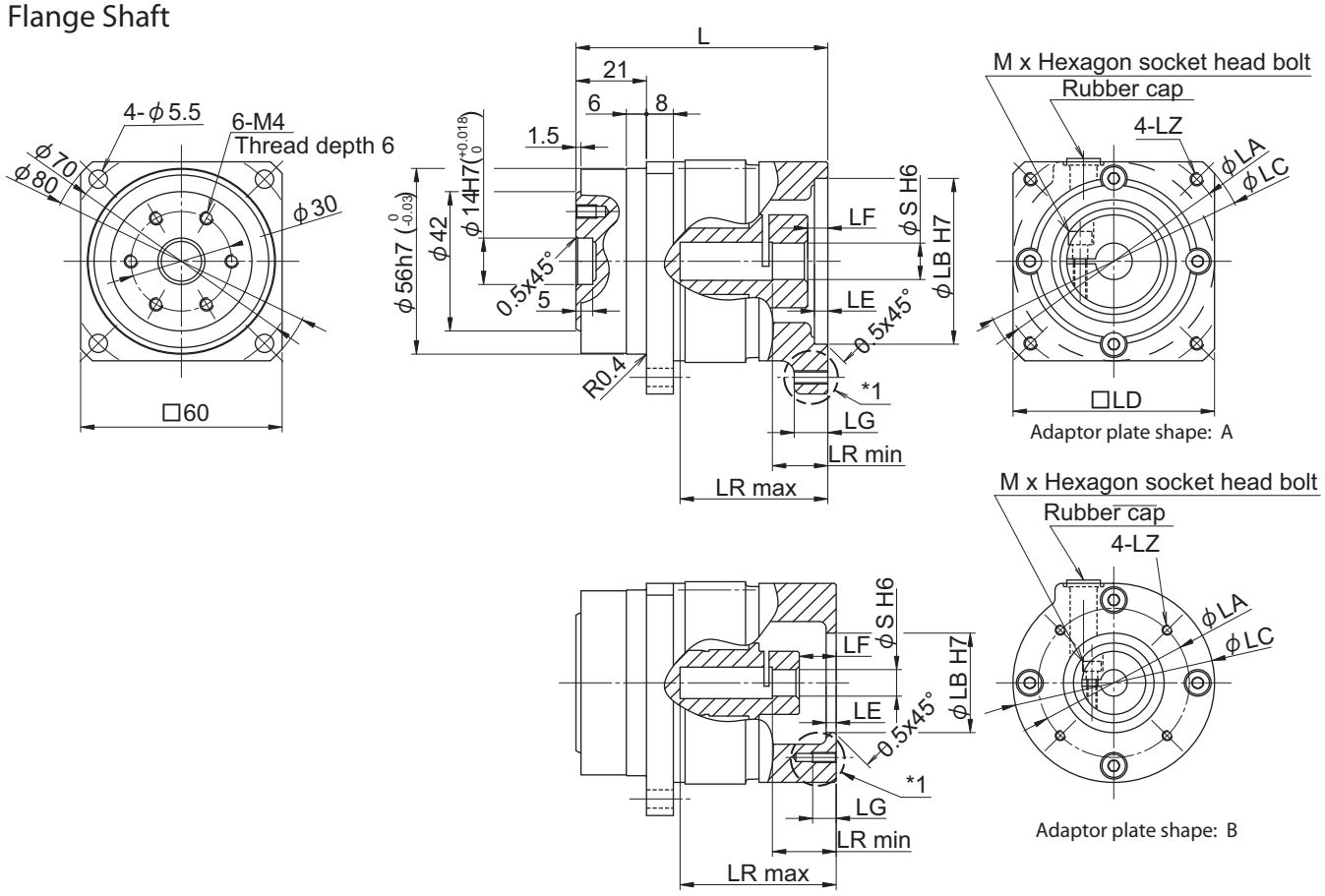
Nomenclature
ANFX-P110F [Motor flange code] [Backlash] — Reduction ratio (3.7)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	77.5	45	30	60	-	5	11	7	Useful thread length	B	M3	46.5	19	8	M3	0.86	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	6	M3	0.86	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	8	M3	0.86	2D
2E	75	60	50	80	60	4	8.5	8	Useful thread length	A	M4	44	16.5	8	M3	0.86	2E
2K		60	50	80	60	4	6	8	Useful thread length		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	76.5	90	70	105	80	6	7.5	12	Through hole		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	8B
2T		90	70	105	80	6	7.5	12	Through hole		M6	45.5	18	14	M4	0.96	2T
2J	82	100	80	120	90	5	13	12	Through hole		M6	51	23.5	10	M4	1.06	2J
8E	98.5	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: 1/5
Flange Shaft



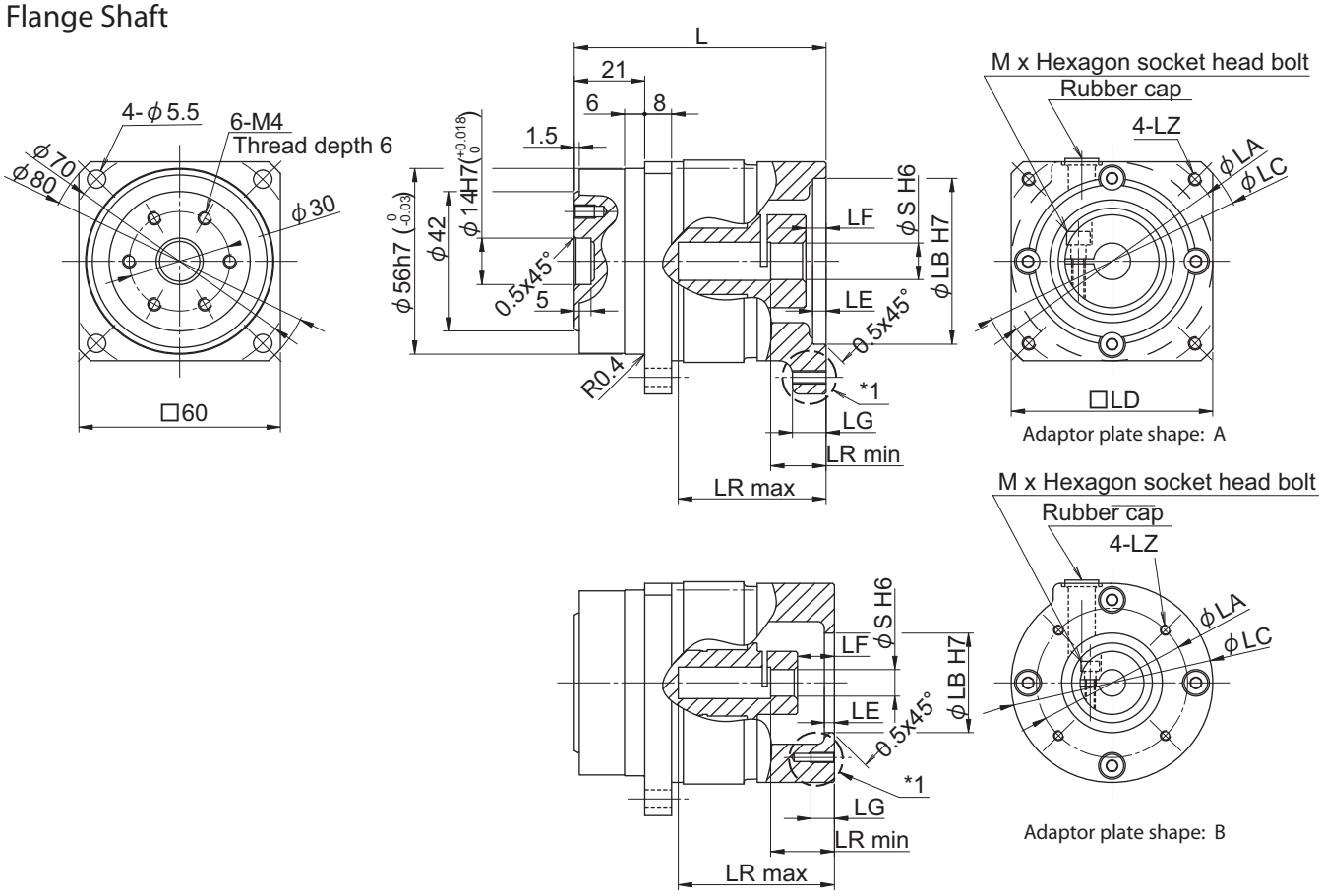
Nomenclature
ANFX-P110F [Motor flange code] [Backlash] — Reduction ratio (5)

3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG *1	Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	77.5	45	30	60	-	5	11	7	Useful thread length	B	M3	46.5	19	8	M3	0.86	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	6	M3	0.86	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	8	M3	0.86	2D
2E	75	60	50	80	60	4	8.5	8	Useful thread length	A	M4	44	16.5	8	M3	0.86	2E
2K		60	50	80	60	4	6	8	Useful thread length		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	76.5	90	70	105	80	6	7.5	12	Through hole		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	8B
2T		90	70	105	80	6	7.5	12	Through hole		M6	45.5	18	14	M4	0.96	2T
2J	82	100	80	120	90	5	13	12	Through hole		M6	51	23.5	10	M4	1.06	2J
8E	98.5	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.

Frame Size: P110
Reduction Ratio: 1/9
Flange Shaft



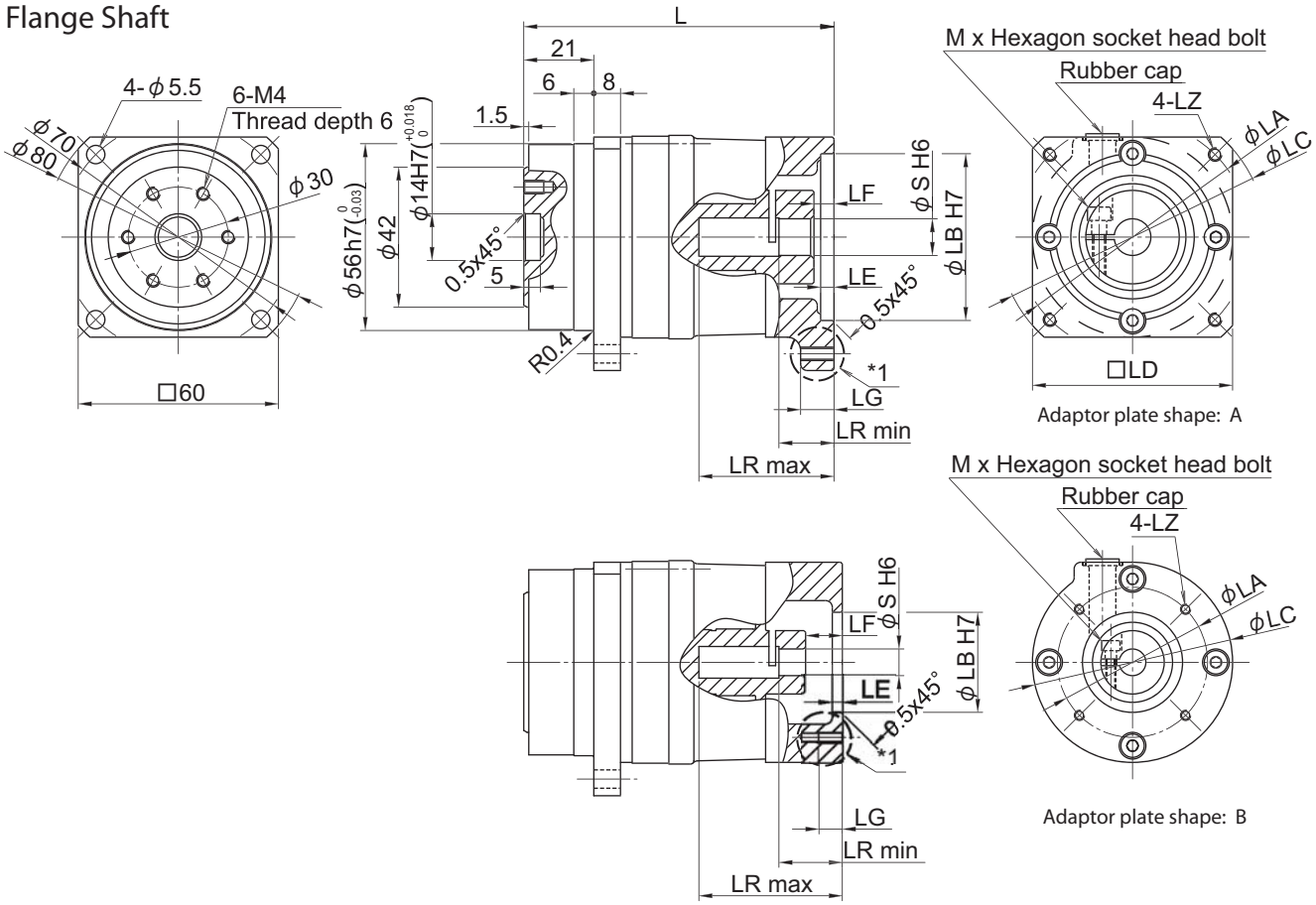
Nomenclature
ANFX-P110F — Motor flange code — Backlash — Reduction ratio (9)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	77.5	45	30	60	-	5	11	7	Useful thread length	B	M3	46.5	19	8	M3	0.86	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	6	M3	0.86	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	46.5	19	8	M3	0.86	2D
2E	75	60	50	80	60	4	8.5	8	Useful thread length	A	M4	44	16.5	8	M3	0.86	2E
2K		60	50	80	60	4	6	8	Useful thread length		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	76.5	90	70	105	80	6	7.5	12	Through hole		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	8B
2T		90	70	105	80	6	7.5	12	Through hole		M6	45.5	18	14	M4	0.96	2T
2J	82	100	80	120	90	5	13	12	Through hole		M6	51	23.5	10	M4	1.16	2J
8E	98.5	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: 1/11
Flange Shaft



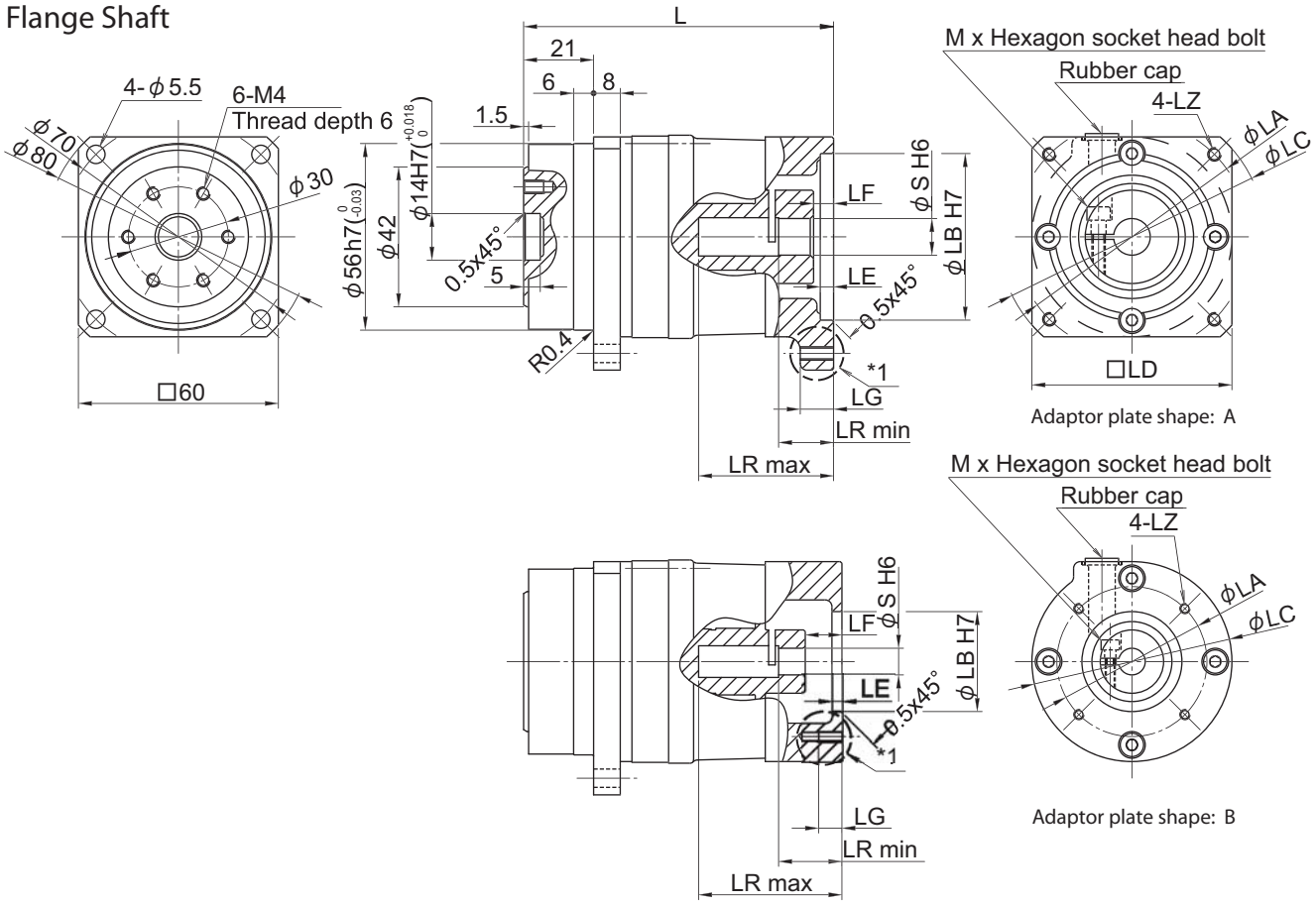
Nomenclature
ANFX-P110F [Motor flange code] [Backlash] — Reduction ratio (11)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	95.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.06	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.06	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.06	2D
2E	93	60	50	80	60	4	8.5	9	Useful thread length	A	M4	40.5	16.5	8	M3	1.06	2E
2K		60	50	80	60	4	6	9	Useful thread length		M4	40.5	16.5	11	M4	1.06	2K
2F		70	50	80	60	4	8.5	10	Through hole		M4	40.5	16.5	8	M3	1.06	2F
2L		70	50	80	60	4	6	10	Through hole		M4	40.5	16.5	11	M4	1.16	2L
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
2R		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	14	M4	1.16	2R
8A	94.5	90	70	105	80	6	7.5	12	Through hole		M5	42	18	11	M4	1.26	8A
8B		90	70	105	80	6	7.5	12	Through hole		M5	42	18	14	M4	1.26	8B
2T		90	70	105	80	6	7.5	12	Through hole		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: 1/15
Flange Shaft



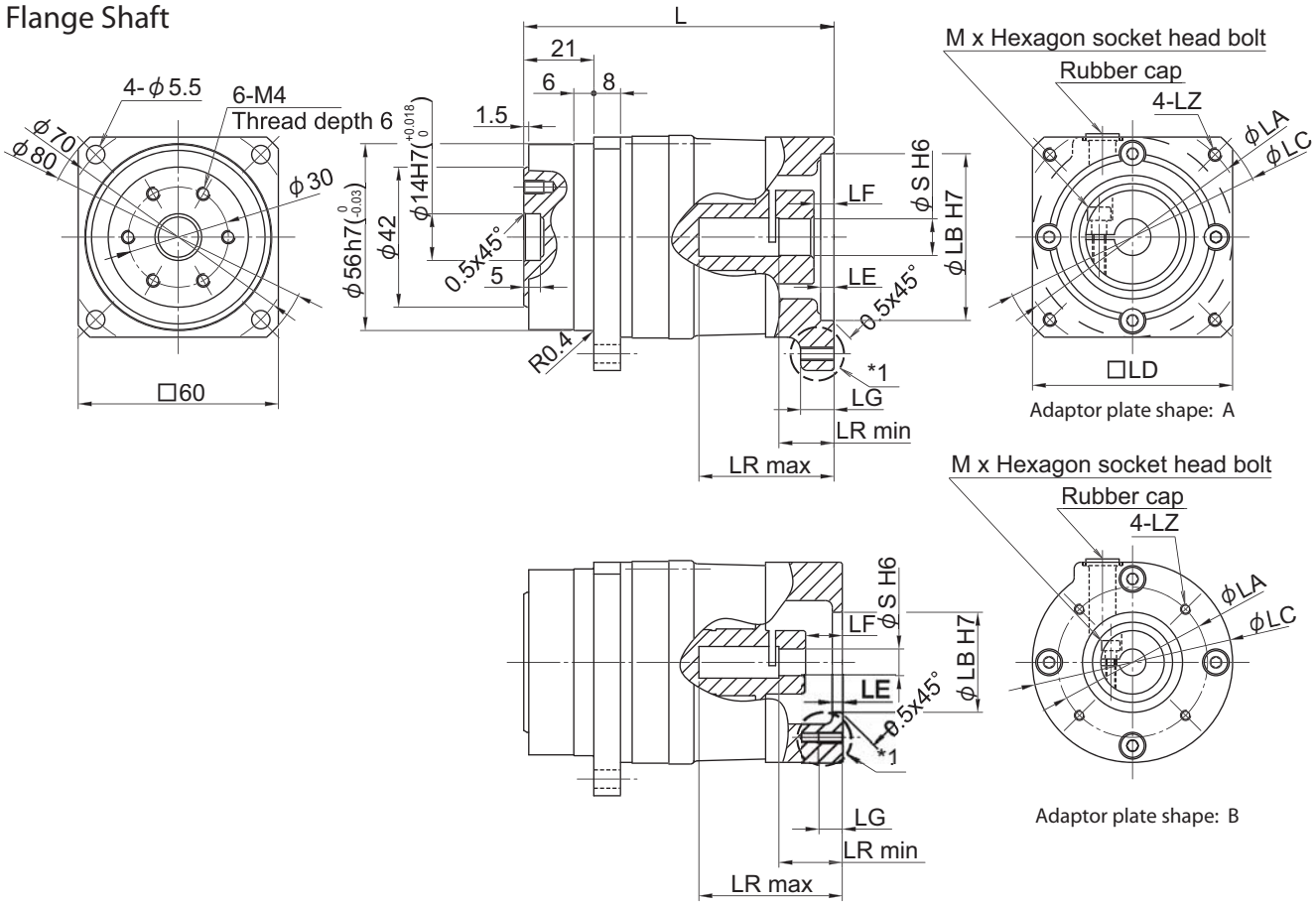
Nomenclature
ANFX-P110F [Motor flange code] [Backlash] — Reduction ratio (15)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	95.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.06	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.06	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.06	2D
2E	93	60	50	80	60	4	8.5	9	Useful thread length	A	M4	40.5	16.5	8	M3	1.06	2E
2K		60	50	80	60	4	6	9	Useful thread length		M4	40.5	16.5	11	M4	1.06	2K
2F		70	50	80	60	4	8.5	10	Through hole		M4	40.5	16.5	8	M3	1.06	2F
2L		70	50	80	60	4	6	10	Through hole		M4	40.5	16.5	11	M4	1.16	2L
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
2R		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	14	M4	1.16	2R
8A	94.5	90	70	105	80	6	7.5	12	Through hole		M5	42	18	11	M4	1.26	8A
8B		90	70	105	80	6	7.5	12	Through hole		M5	42	18	14	M4	1.26	8B
2T		90	70	105	80	6	7.5	12	Through hole		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: 1/21
Flange Shaft



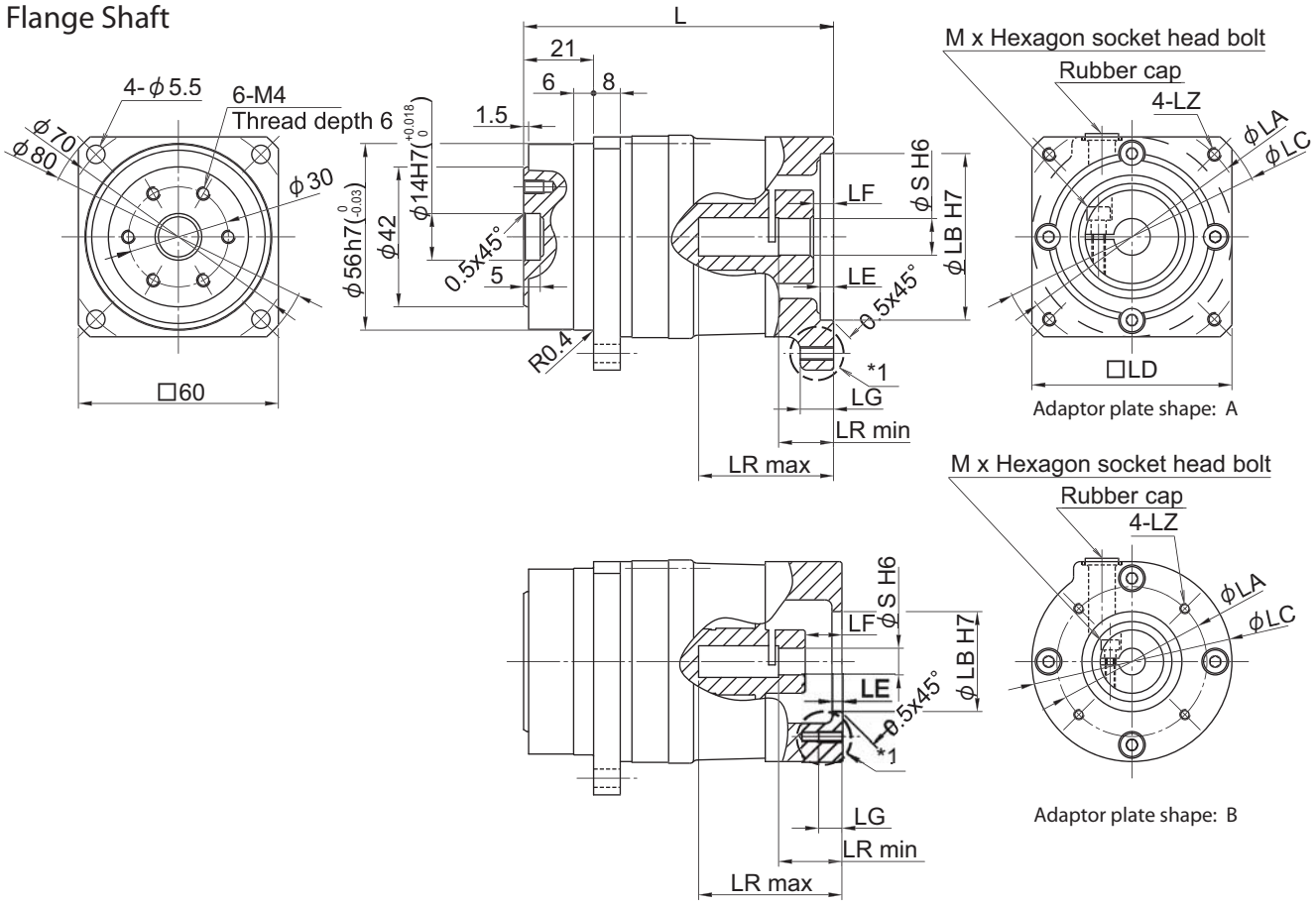
Nomenclature
ANFX-P110F [Motor flange code] [Backlash] — Reduction ratio (21)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	95.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.06	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.06	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.06	2D
2E	93	60	50	80	60	4	8.5	9	Useful thread length	A	M4	40.5	16.5	8	M3	1.06	2E
2K		60	50	80	60	4	6	9	Useful thread length		M4	40.5	16.5	11	M4	1.16	2K
2F		70	50	80	60	4	8.5	10	Through hole		M4	40.5	16.5	8	M3	1.06	2F
2L		70	50	80	60	4	6	10	Through hole		M4	40.5	16.5	11	M4	1.06	2L
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
2R		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	14	M4	1.06	2R
8A	94.5	90	70	105	80	6	7.5	12	Through hole		M5	42	18	11	M4	1.26	8A
8B		90	70	105	80	6	7.5	12	Through hole		M5	42	18	14	M4	1.16	8B
2T		90	70	105	80	6	7.5	12	Through hole		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: 1/33
Flange Shaft



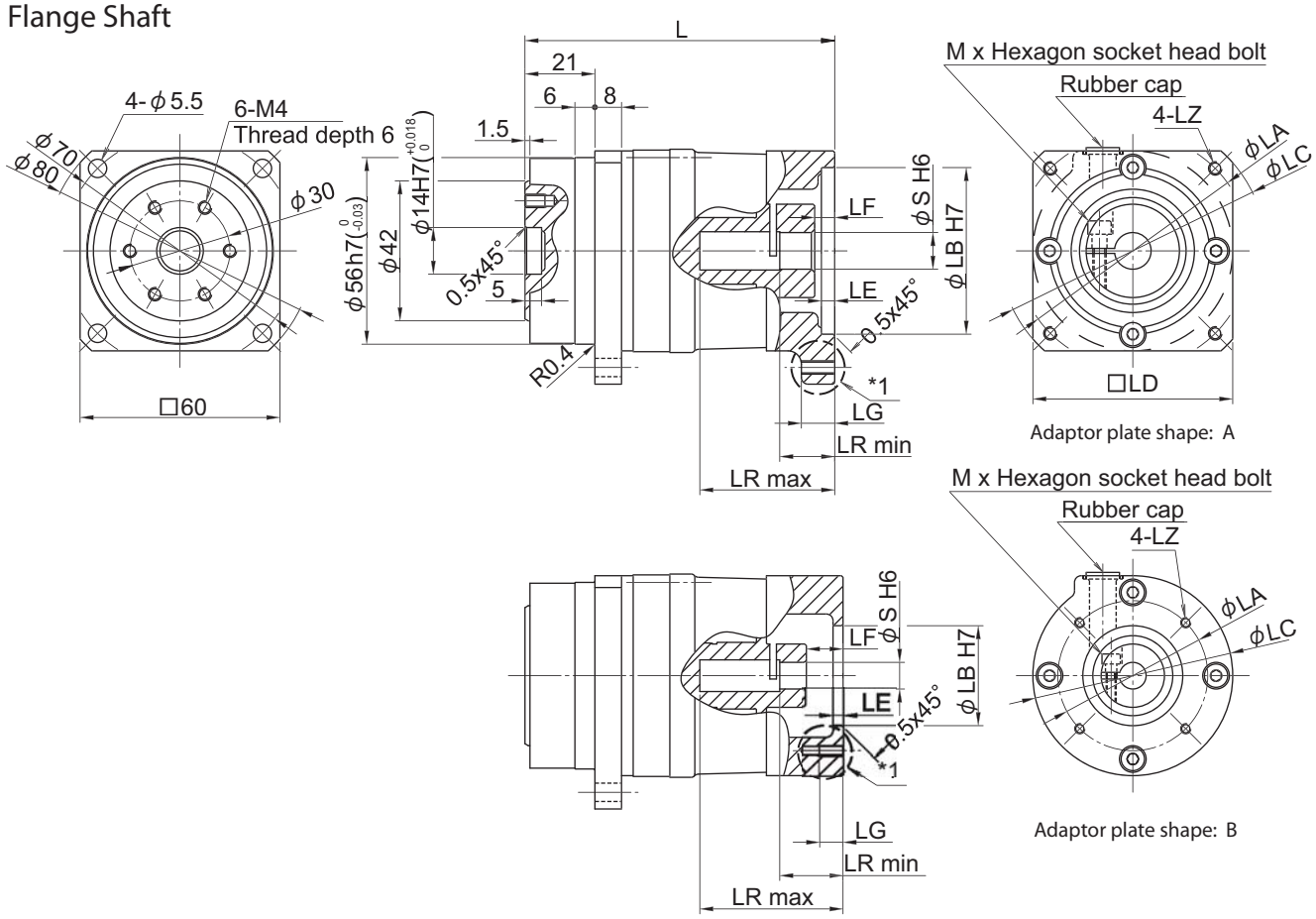
Nomenclature
ANFX-P110F [Motor flange code] [Backlash] — Reduction ratio (33)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	min	S	M	Mass [kg]	Motor flange code
2C	95.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.16	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.16	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.16	2D
2E	93	60	50	80	60	4	8.5	9	Useful thread length	A	M4	40.5	16.5	8	M3	1.06	2E
2K		60	50	80	60	4	6	9	Useful thread length		M4	40.5	16.5	11	M4	1.26	2K
2F		70	50	80	60	4	8.5	10	Through hole		M4	40.5	16.5	8	M3	1.06	2F
2L		70	50	80	60	4	6	10	Through hole		M4	40.5	16.5	11	M4	1.16	2L
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
2R		70	50	80	60	4	6	10	Through hole		M5	40.5	16.5	14	M4	1.06	2R
8A	124.5	90	70	105	80	6	7.5	12	Through hole		M5	42	18	11	M4	1.36	8A
2T	94.5	90	70	105	80	6	7.5	12	Through hole		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: 1/45
Flange Shaft

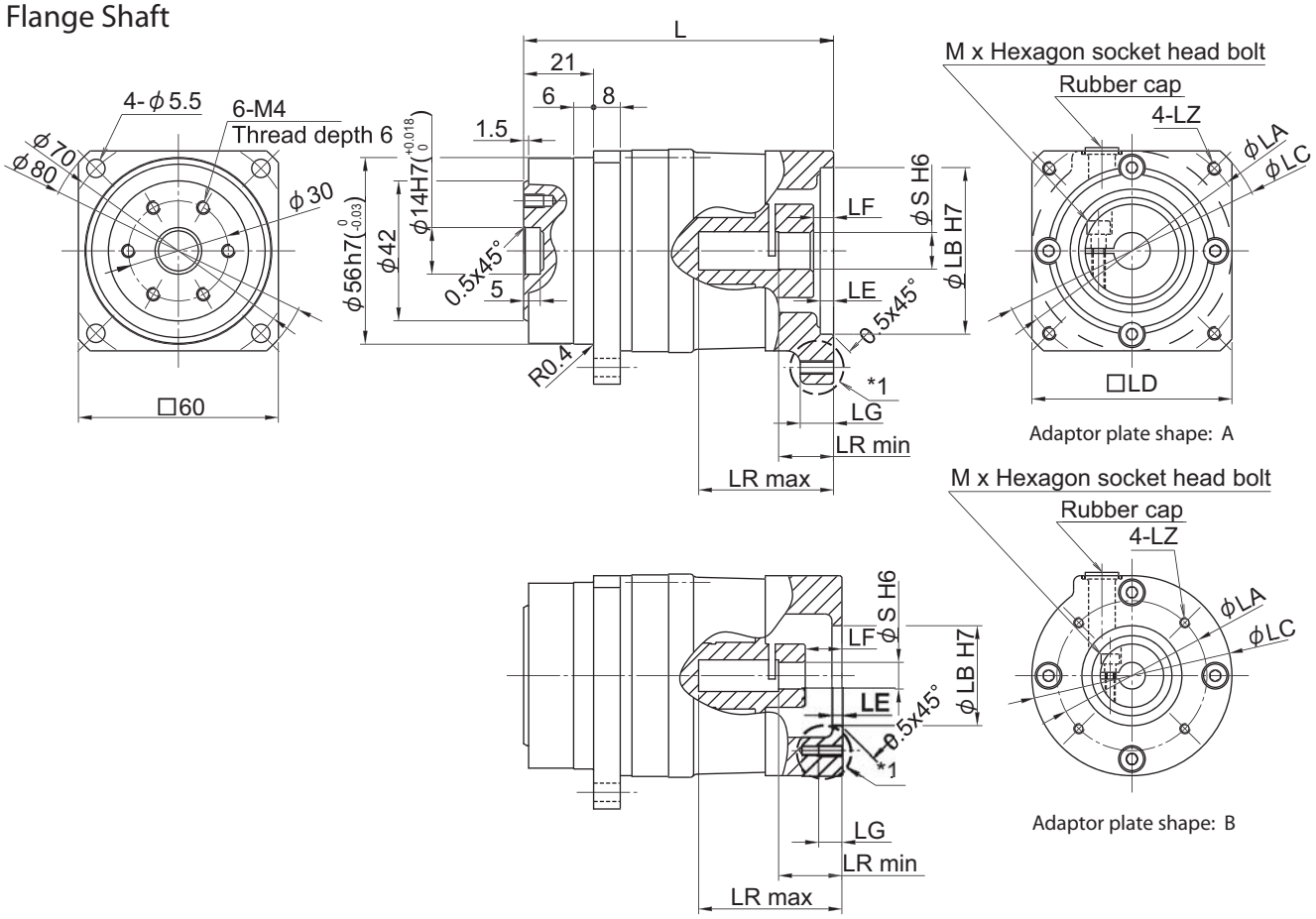


Nomenclature
ANFX-P110F [Motor flange code] [Backlash] — Reduction ratio (45)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	95.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.16	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.16	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.16	2D
2E	93	60	50	80	60	4	8.5	9	Useful thread length	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.

Frame Size: P110
Reduction Ratio: 1/81
Flange Shaft



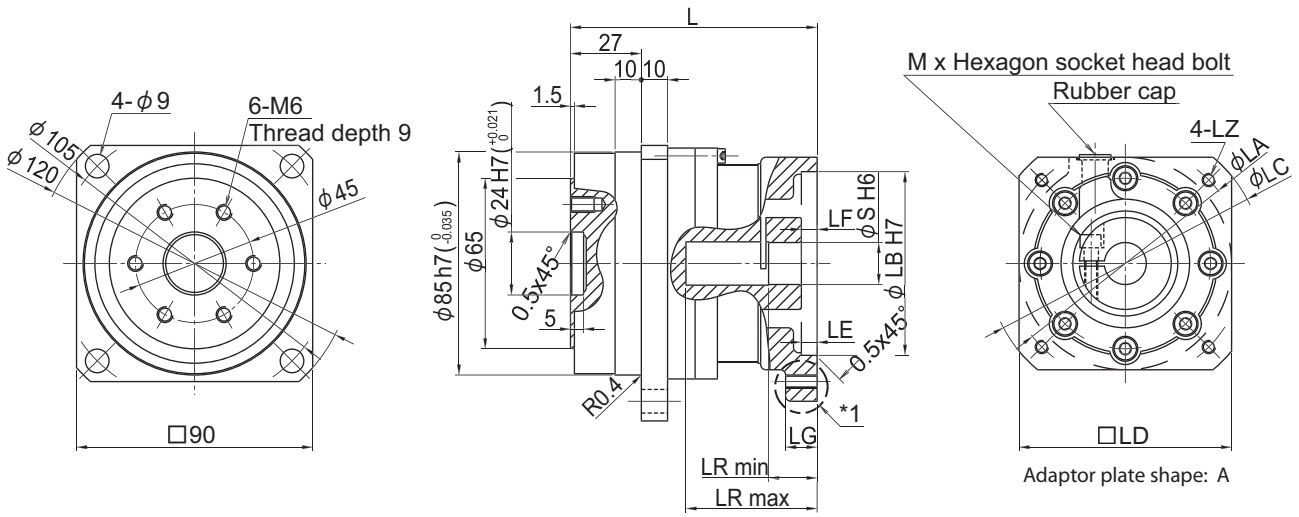
Nomenclature
ANFX-P110F [Motor flange code] [Backlash] — Reduction ratio (81)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	95.5	45	30	60	-	5	11	7	Useful thread length	B	M3	43	19	8	M3	1.16	2C
7J		46	30	60	-	5	11	9	Useful thread length		M4	43	19	6	M3	1.16	7J
2D		46	30	60	-	5	11	9	Useful thread length		M4	43	19	8	M3	1.16	2D
2E	93	60	50	80	60	4	8.5	9	Useful thread length	A	M4	40.5	16.5	8	M3	1.16	2E
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: P120
Reduction Ratio: 1/3.7
Flange Shaft

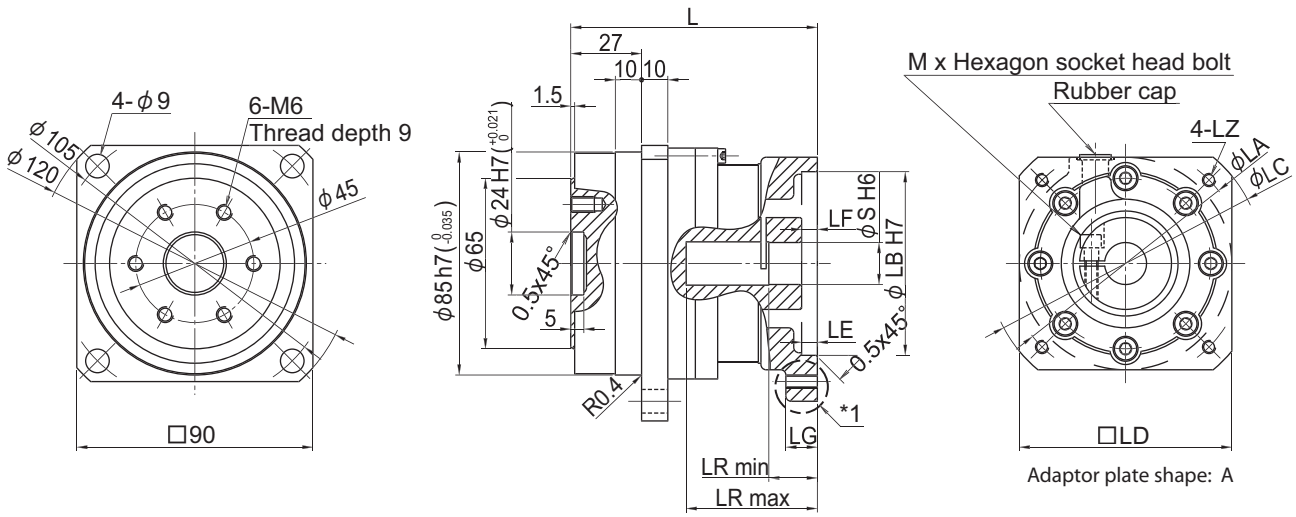


Nomenclature
ANFX-P120F — Motor flange code — Backlash — Reduction ratio (3.7)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
0U	94	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 Note2	107.5	100	80	120	90	5	19.5	12	Through hole		M6	63.5	30	14	M4	2.4	0V Note2
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	120.5	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	2.7	1L
7A	107.5	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	120.5	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	110.5	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	2.5	7X
1S	145.5	145	110	165	120	7	42	16	Through hole		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: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
2: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P120
Reduction Ratio: 1/5
Flange Shaft



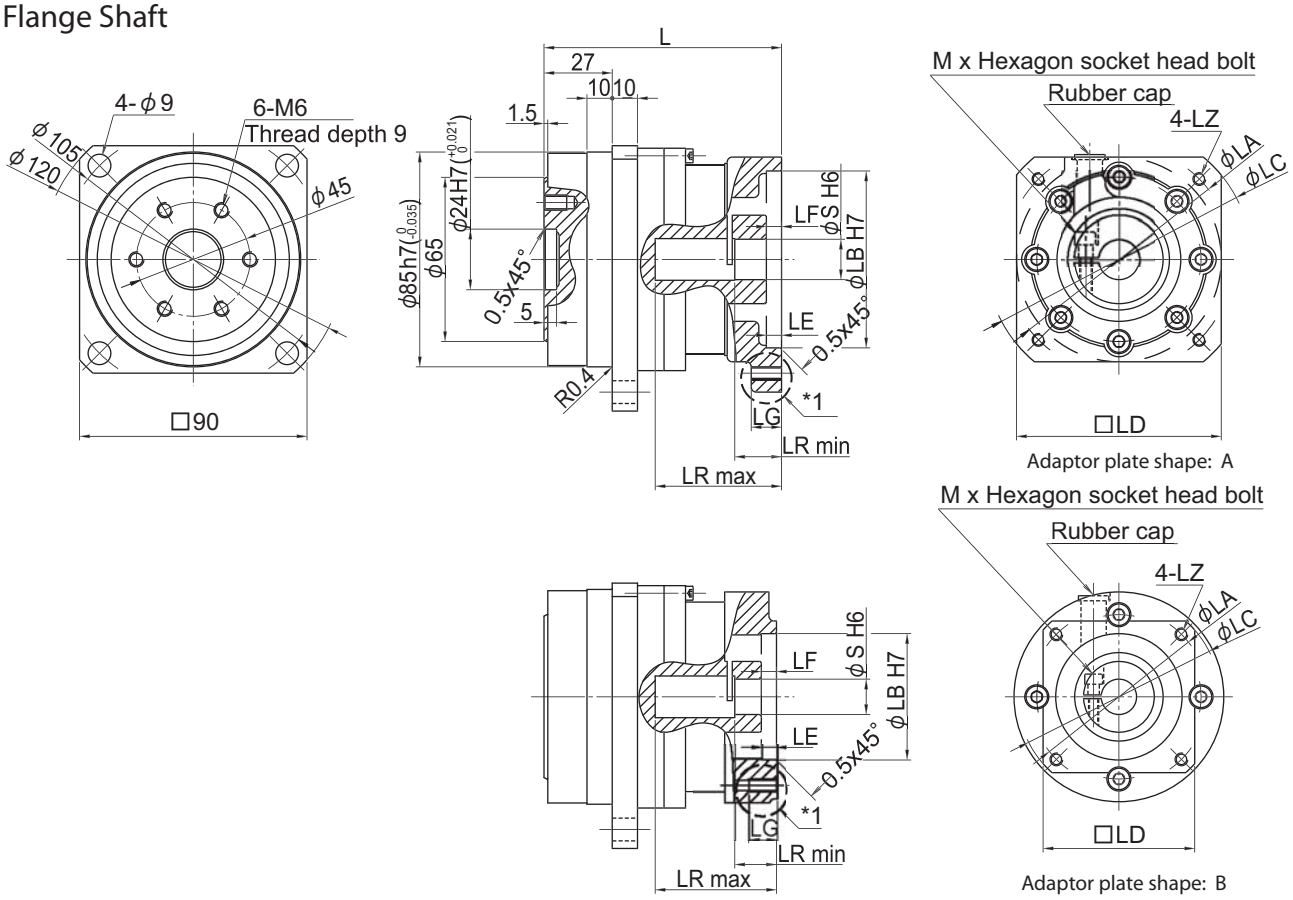
Nomenclature
ANFX-P120F — Motor flange code — Backlash — Reduction ratio (5)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
0U	94	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 Note2	107.5	100	80	120	90	5	19.5	12	Through hole		M6	63.5	30	14	M4	2.4	0V Note2
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	120.5	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	2.7	1L
7A	107.5	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	120.5	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	110.5	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	2.5	7X
1S	145.5	145	110	165	120	7	42	16	Through hole		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: Dimension of coupling of motor flange code (0V) includes 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: 1/9
Flange Shaft



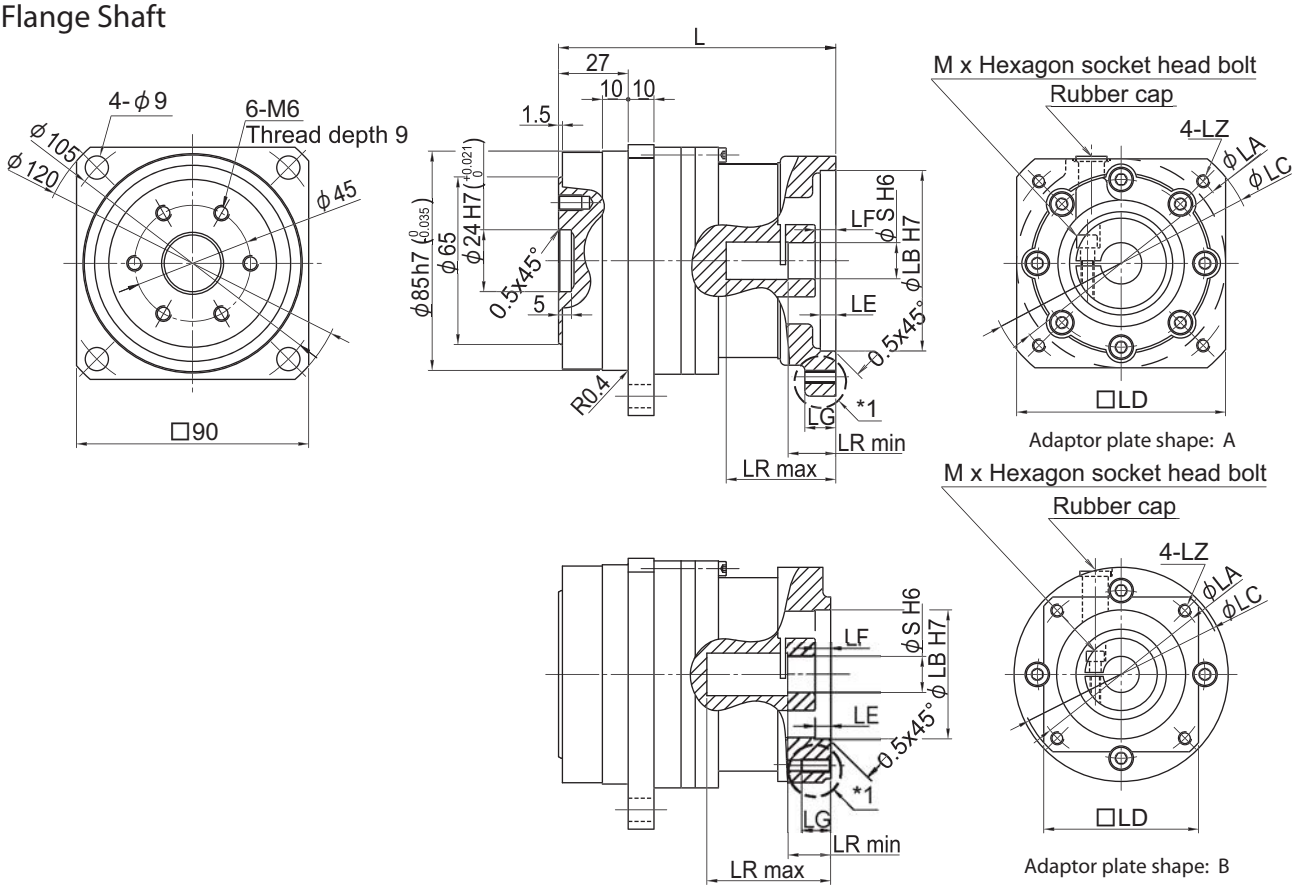
Nomenclature
ANFX-P120F [Motor flange code] [Backlash] — Reduction ratio (9)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2R	92	70	50	80	60	6	6	11	Useful thread length	B	M5	48	16.5	14	M4	2.3	2R
0U	94	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	2.2	1G
2J	107.5	100	80	120	90	5	21.5	12	Through hole		M6	63.5	32	10	M4	2.4	2J
0V Note2		100	80	120	90	5	19.5	12	Through hole		M6	63.5	30	14	M4	2.2	0V Note2
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	120.5	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	2.7	1L
7A	107.5	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	120.5	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	110.5	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	145.5	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: Dimension of coupling of motor flange code (0V) includes 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: 1/11
Flange Shaft



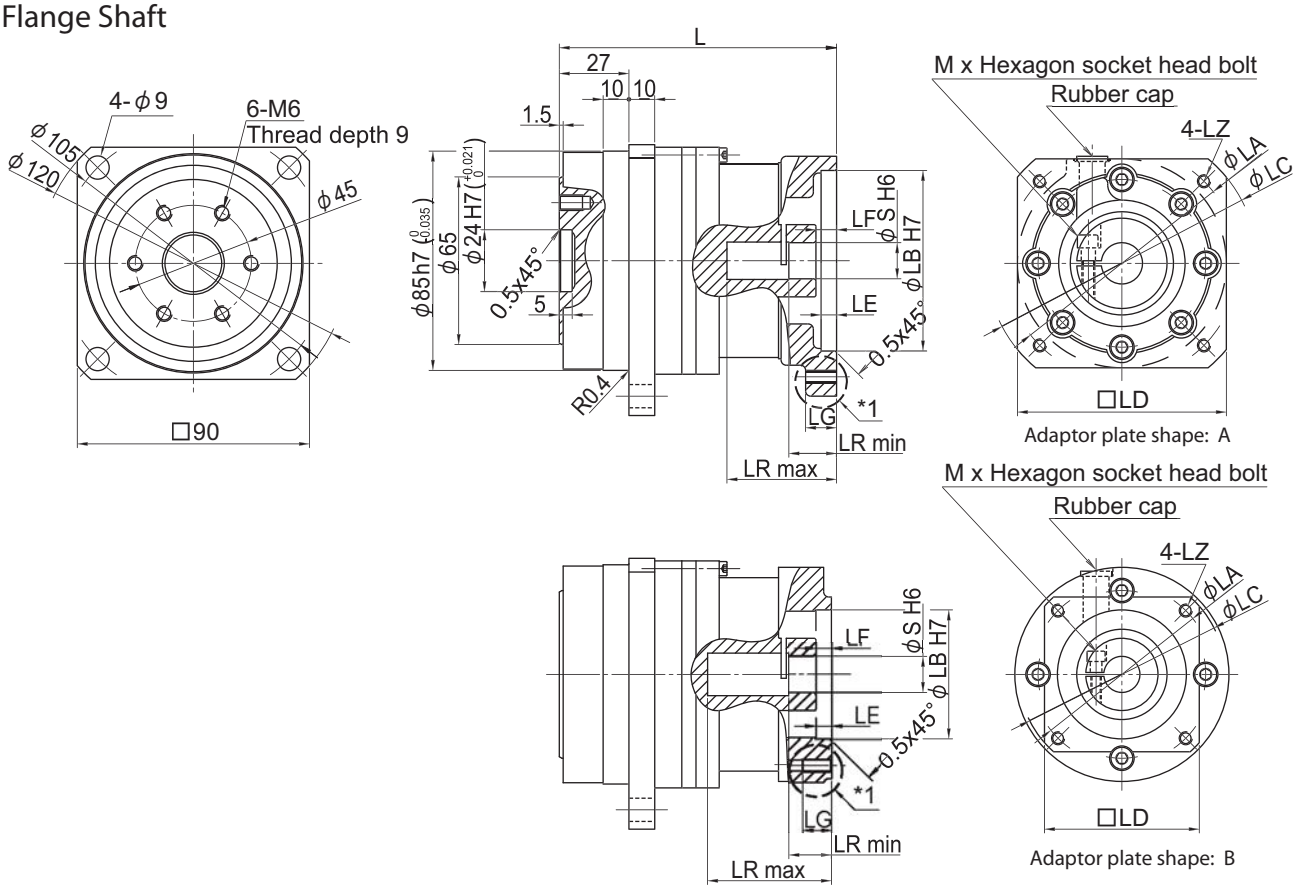
Nomenclature
ANFX-P120F — Motor flange code — Backlash — Reduction ratio (11)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2P	105.5	70	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	14	M4	2.6	2P
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.6	2R
8B	107.5	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	121	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	2.8	2J
0V[Note2]		100	80	120	90	5	19.5	12	Through hole		M6	56	30	14	M4	2.7	0V[Note2]
8E		100	80	120	90	5	19.5	12	Through hole		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	134	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	3.2	1L
7A	121	115	95	135	100	6	19.5	16	Through hole		M8	56	32	16	M5	2.9	7A
0W	134	115	95	135	100	6	17	16	Through hole		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		M8	46	31.5	22	M6	3.4	0Y
7R	124	145	110	165	120	7	22.5	16	Through hole		M8	59	35	16	M5	3.0	7R
7X		145	110	165	120	7	22.5	16	Through hole		M8	59	35	19	M5	3.0	7X
7Z	159	145	110	165	120	7	42	16	Through hole		M8	71	56.5	24	M6	3.5	7Z

Note 1: Dimension of coupling of motor flange code (0V) includes 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: 1/15
Flange Shaft

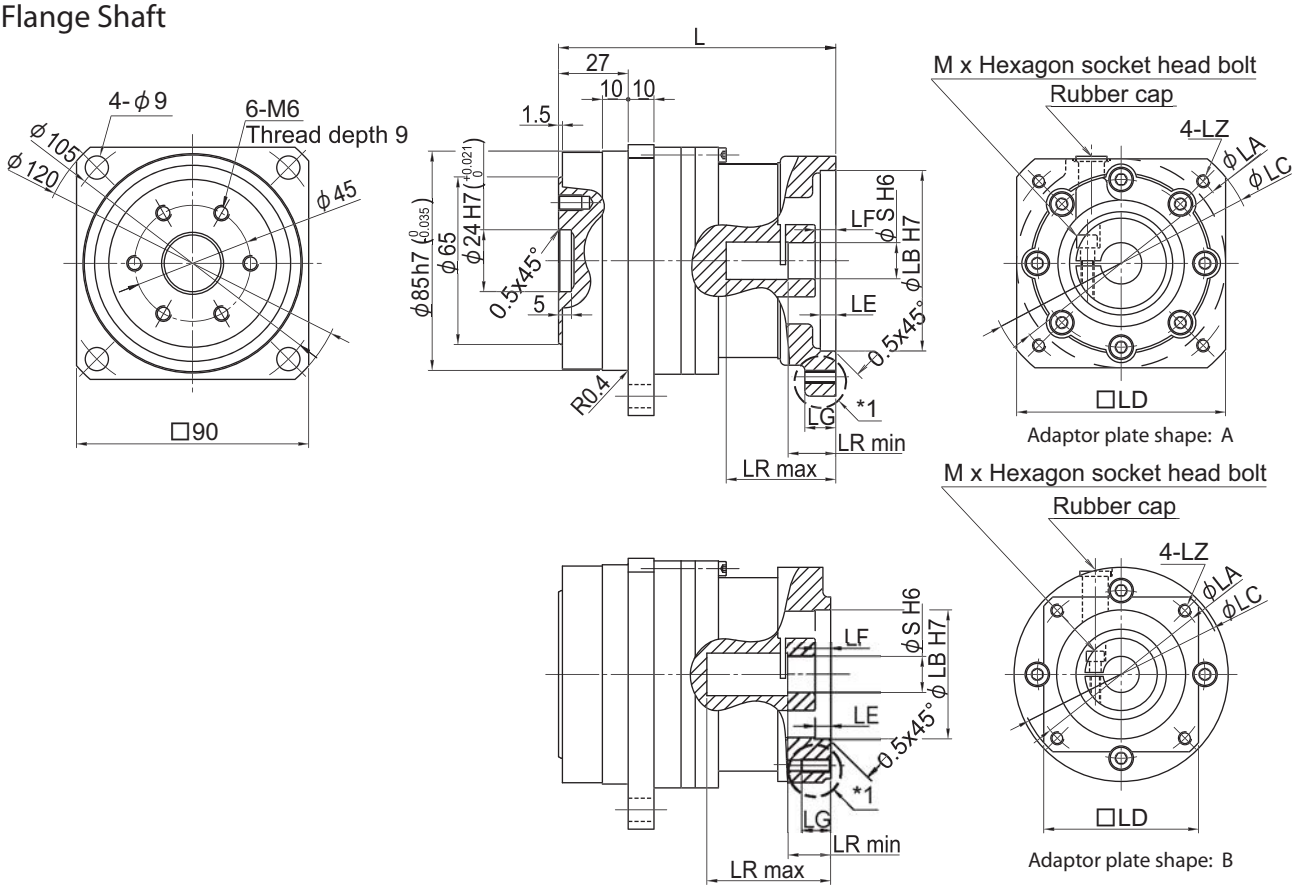


Nomenclature
ANFX-P120F [Motor flange code] [Backlash] — Reduction ratio (15)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2P	105.5	70	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	14	M4	2.6	2P
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.6	2R
8B	107.5	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	4v2.5	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	121	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	2.8	2J
0V Note2		100	80	120	90	5	19.5	12	Through hole		M6	56	30	14	M4	2.7	0V Note2
8E		100	80	120	90	5	19.5	12	Through hole		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	134	115	95	135	100	6	17	16	Through hole		M6	46	31.5	24	M6	3.2	1L
7A	121	115	95	135	100	6	19.5	16	Through hole		M8	56	32	16	M5	2.9	7A
0W	134	115	95	135	100	6	17	16	Through hole		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		M8	46	31.5	22	M6	3.4	0Y
7R	124	145	110	165	120	7	22.5	16	Through hole		M8	59	35	16	M5	3.0	7R
7X		145	110	165	120	7	22.5	16	Through hole		M8	59	35	19	M5	3.0	7X
7Z	159	145	110	165	120	7	42	16	Through hole		M8	71	56.5	24	M6	3.5	7Z

Note 1: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
2: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P120
Reduction Ratio: 1/21
Flange Shaft



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

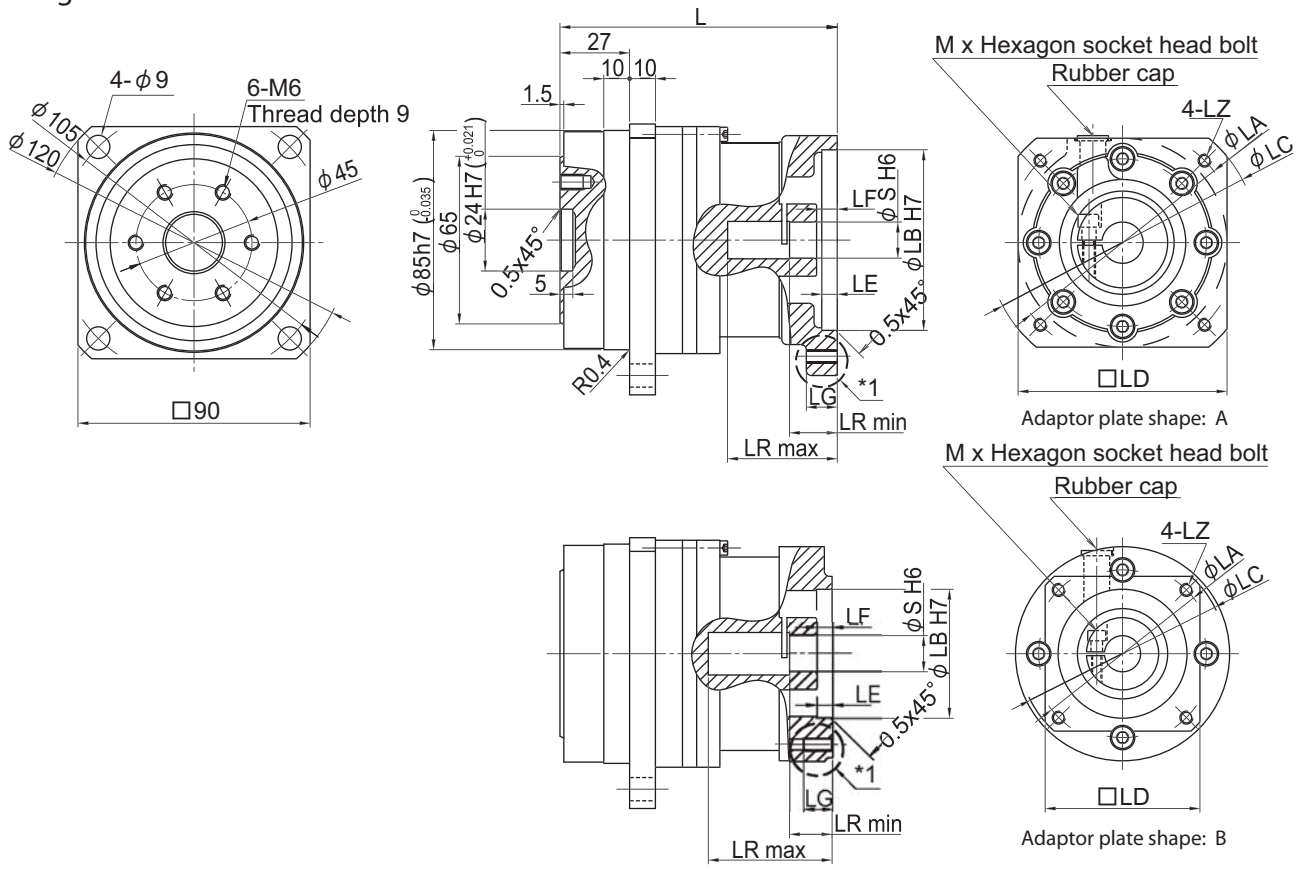
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG *1	Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2P	105.5	70	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	14	M4	2.6	2P
2H		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	9	M4	2.6	2H
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.6	2R
8B	107.5	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	121	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	2.8	2J
0V Note2		100	80	120	90	5	19.5	12	Through hole		M6	56	30	14	M4	2.8	0V Note2
8E		100	80	120	90	5	19.5	12	Through hole		M6	56	32	16	M5	2.8	8E
7A		115	95	135	100	6	19.5	16	Through hole		M8	56	32	16	M5	2.9	7A
7R	124	145	110	165	120	7	22.5	16	Through hole		M8	59	35	16	M5	3.0	7R
7X		145	110	165	120	7	22.5	16	Through hole		M8	59	35	19	M5	3.0	7X
7Z	159	145	110	165	120	7	42	16	Through hole		M8	71	56.5	24	M6	3.5	7Z

Note 1: Dimension of coupling of motor flange code (0V) includes 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: 1/33
Flange Shaft



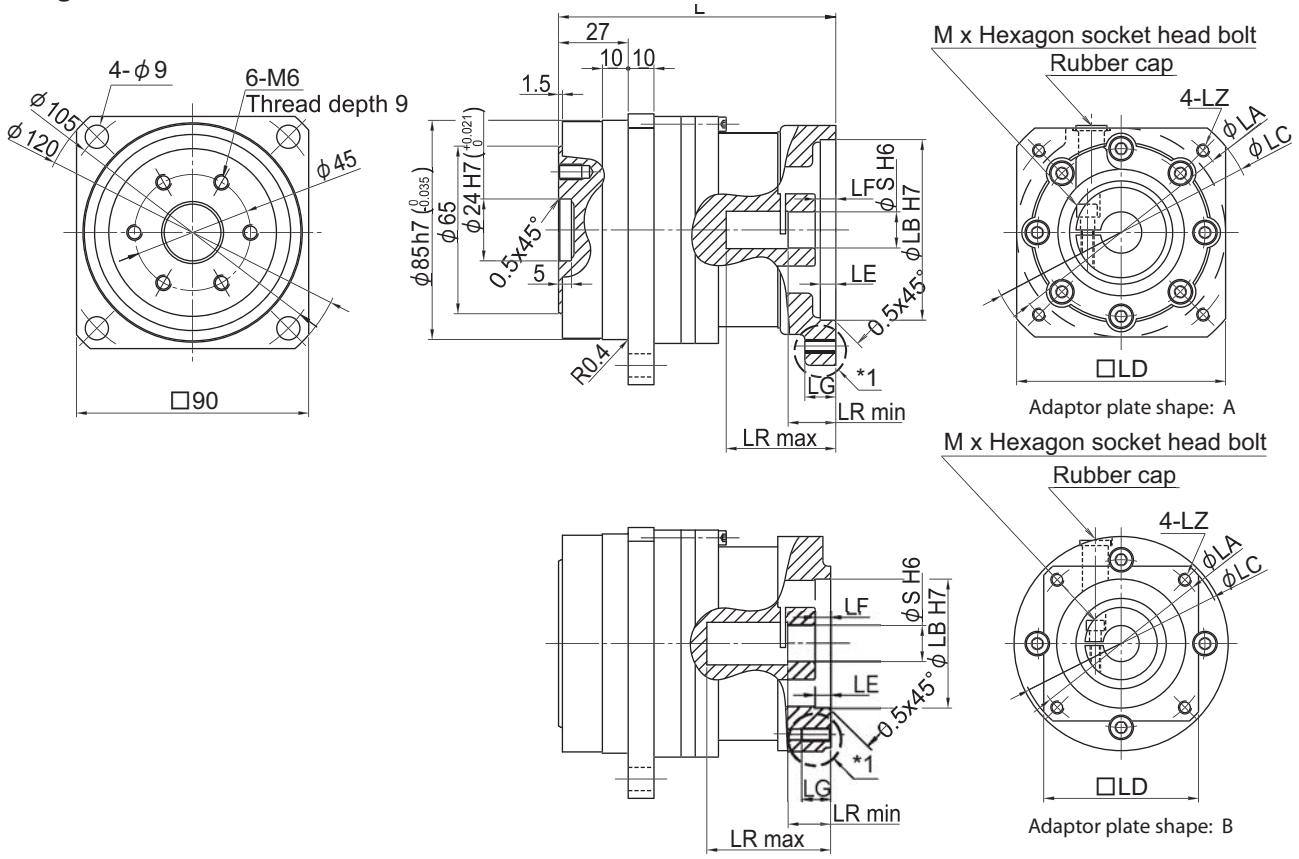
Nomenclature
ANFX-P120F — Motor flange code — Backlash — Reduction ratio (33)

3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG *1	Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2P	105.5	70	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	14	M4	2.7	2P
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.7	2R
8B	107.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	14	M4	2.7	8B
2T		90	70	105	81	6	8	12	Through hole		M6	42.5	18.5	14	M4	2.7	2T
2J	165	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	3.0	2J

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

Frame Size: P120
Reduction Ratio: 1/45
Flange Shaft



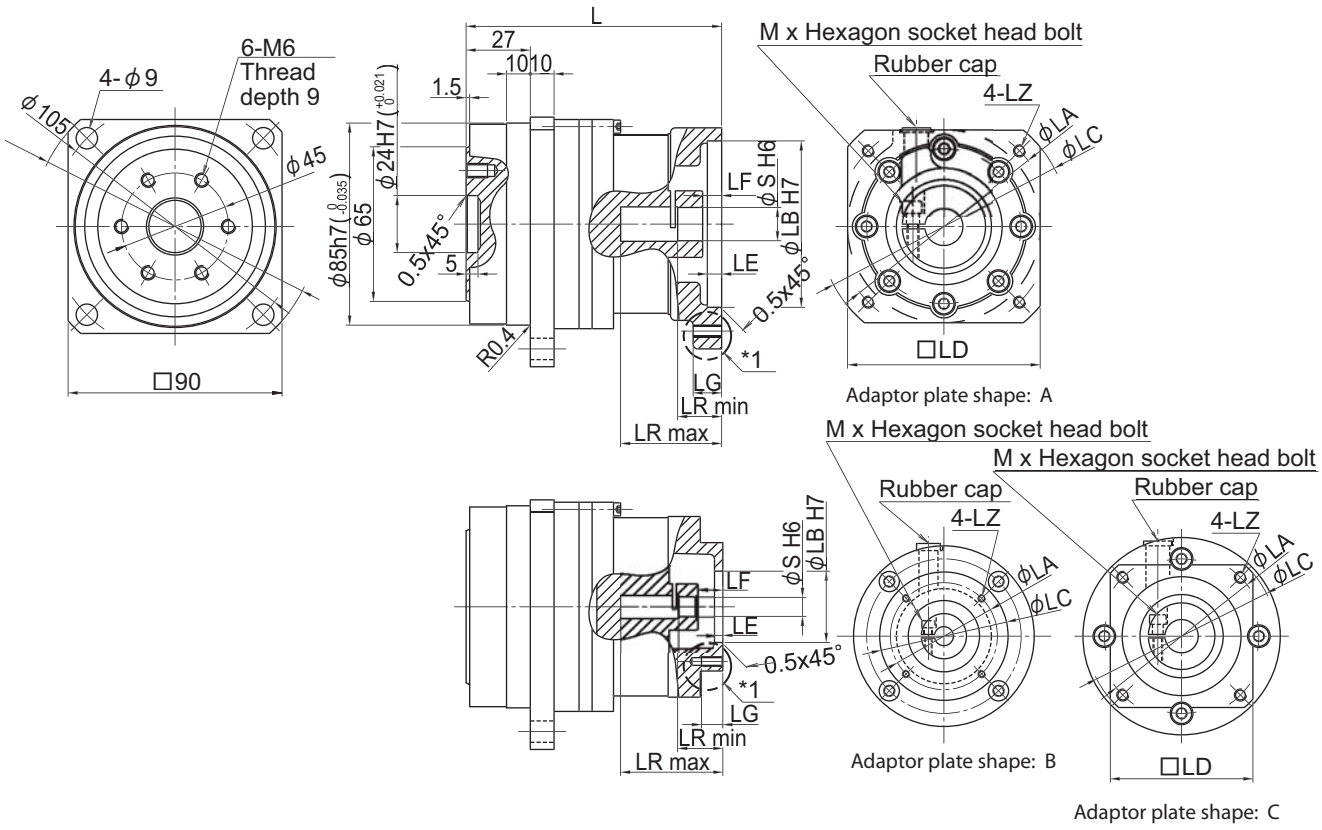
Nomenclature
ANFX-P120F [Motor flange code] [Backlash] — Reduction ratio (45)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2K	105.5	60	50	80	60	6	6	9	Useful thread length	B	M4	40.5	16.5	11	M4	2.7	2K
2L		70	50	80	60	6	6	9	Useful thread length		M4	40.5	16.5	11	M4	2.7	2L
2P		70	50	80	60	6	6	9	Useful thread length		M4	40.5	16.5	14	M4	2.7	2P
2H		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	9	M4	2.7	2H
2R		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	14	M4	2.7	2R
8A	107.5	90	70	105	81	6	8	12	Through hole	A	M5	42.5	18.5	11	M4	2.7	8A
8B		90	70	105	81	6	8	12	Through hole		M5	42.5	18.5	14	M4	2.7	8B
2T		90	70	105	81	6	8	12	Through hole		M6	42.5	18.5	14	M4	2.7	2T
2J	165	100	80	120	90	5	21.5	12	Through hole		M6	56	32	10	M4	3.0	2J

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

Dimension Drawings

Frame Size: P120
Reduction Ratio: 1/81
Flange Shaft



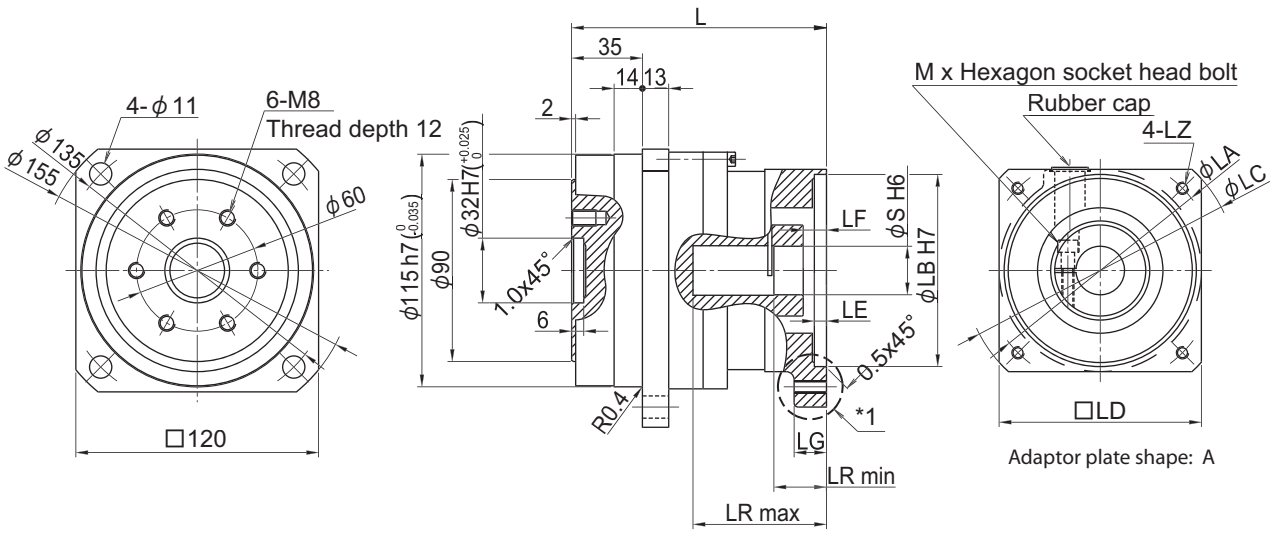
Nomenclature
ANFX-P120F — Motor flange code — Backlash — Reduction ratio (81)

3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2C	108	45	30	54	-	4	11	7	Useful thread length	B	M3	43	19	8	M3	2.6	2C
2D		46	30	54	-	4	11	9	Useful thread length		M4	43	19	8	M3	2.6	2D
2E	105.5	60	50	80	60	6	8.5	9	Useful thread length	C	M4	40.5	16.5	8	M3	2.7	2E
2K		60	50	80	60	6	6	9	Useful thread length		M4	40.5	16.5	11	M4	2.7	2K
2F		70	50	80	60	6	8.5	9	Useful thread length		M4	40.5	16.5	8	M3	2.7	2F
2G		70	50	80	60	6	8.5	11	Useful thread length		M5	40.5	16.5	8	M3	2.7	2G
2H		70	50	80	60	6	6	11	Useful thread length		M5	40.5	16.5	9	M4	2.7	2H
2R		70	50	80	60	6	6	11	Useful thread length	A	M5	40.5	16.5	14	M4	2.7	2R
2T	107.5	90	70	105	81	6	8	12	Through hole		M6	42.5	18.5	14	M4	2.7	2T

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

Frame Size: P130
Reduction Ratio: 1/3.7
Flange Shaft



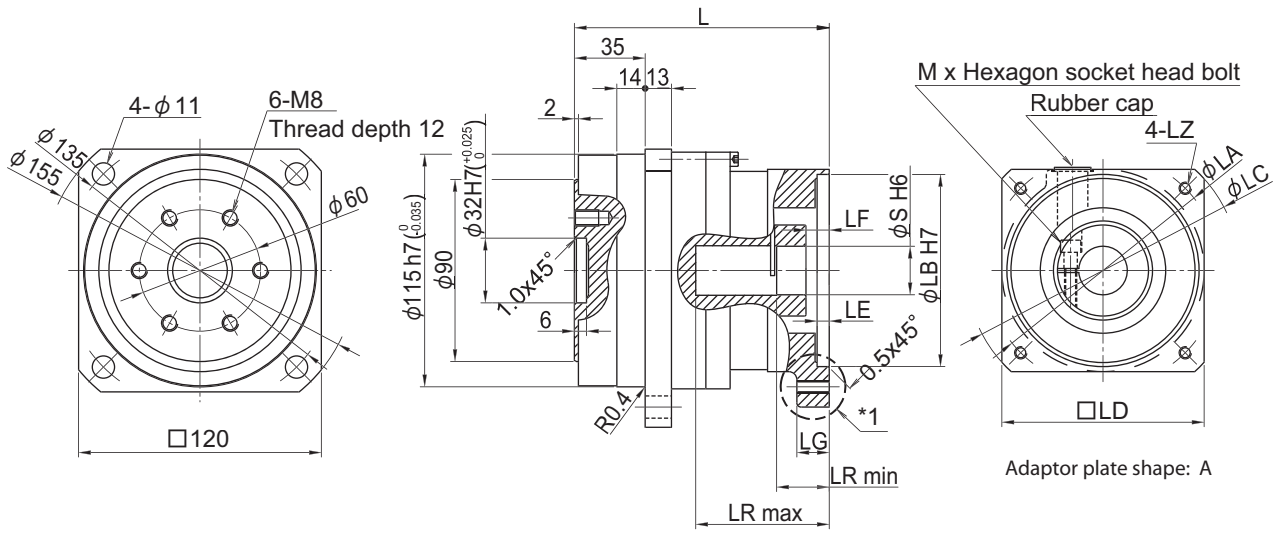
Nomenclature
ANFX-P130F — Motor flange code — Backlash — Reduction ratio (3.7)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
1S	134	145	110	165	120	7	19.5	16	Through hole	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
0X Note2	179.5	200	114.3	230	180	6	41.5	24	Through hole		M12	81	60	35	M8	7.6	0X Note2

Note 1: Dimension of coupling of motor flange code (0X) includes 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: 1/5
Flange Shaft

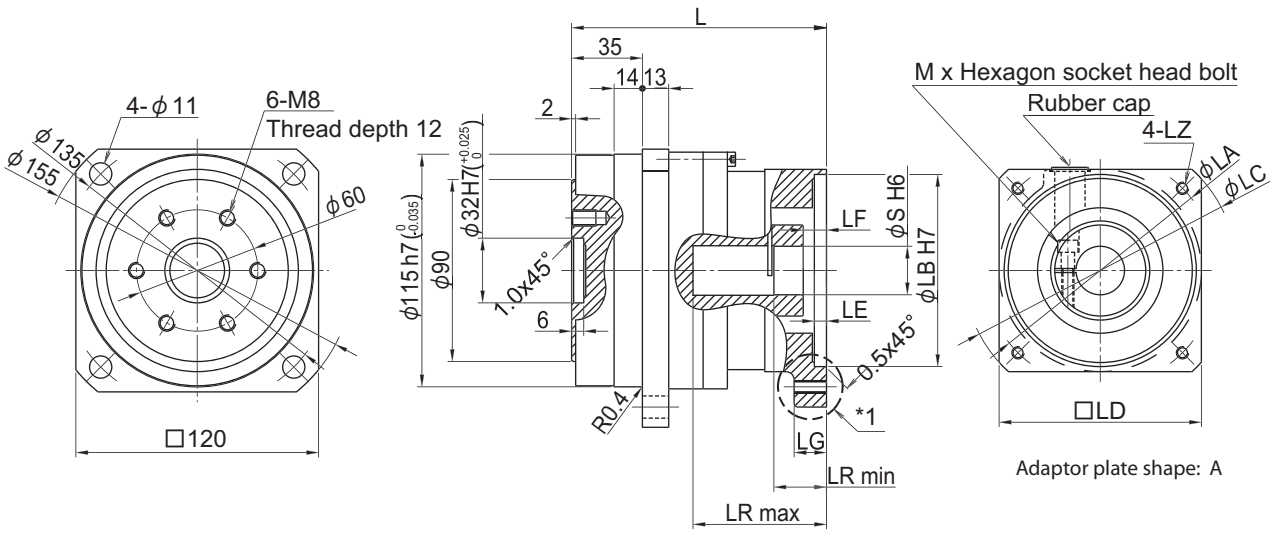


Nomenclature
ANFX-P130F [Motor flange code] [Backlash] — Reduction ratio (5)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
1S	134	145	110	165	120	7	19.5	16	Through hole	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
0X Note2	179.5	200	114.3	230	180	6	41.5	24	Through hole		M12	81	60	35	M8	7.6	0X Note2

Note 1: Dimension of coupling of motor flange code (0V) includes tolerance (+0.010 ~ +0.026)
2: Dimensions and mass shown in the above figures are subject to change without prior notification.

Frame Size: P130
Reduction Ratio: 1/9
Flange Shaft



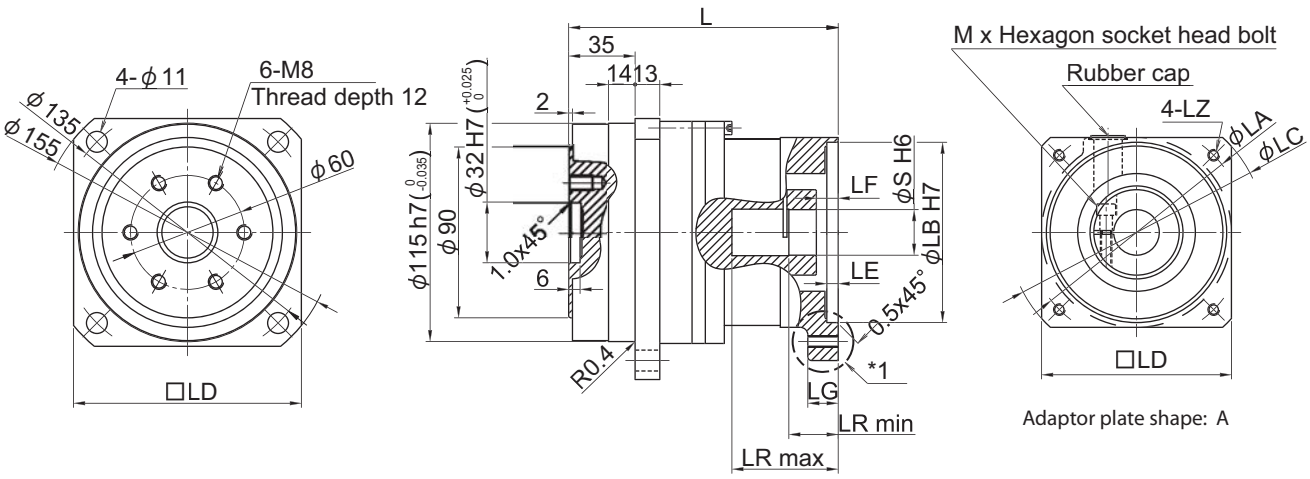
Nomenclature
ANFX-P130F [Motor flange code] [Backlash] — Reduction ratio (9)
3 min: L3
15 min: LD

Motor flange code	L	Dimension															Mass [kg]	Motor flange code
		LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M		
1L	126	115	95	135	100	6	11.5	16	Through hole	A	M6	66	26	24	M6	5.7	1L
7B		115	95	135	100	6	13.5	16	Through hole		M8	66	26	19	M5	6.3	7B
0W		115	95	135	100	6	11.5	16	Through hole		M8	66	26	22	M6	6.3	0W
7Y		115	95	135	100	6	11.5	16	Through hole		M8	66	26	24	M6	5.7	7Y
0Y	134	135	110	165	120	7	19.5	16	Through hole		M8	74	34	22	M6	6.2	0Y
7X		145	110	165	120	7	21.5	16	Through hole		M8	74	34	19	M5	6.8	7X
1S		145	110	165	120	7	19.5	16	Through hole		M8	74	34	22	M6	6.2	1S
7Z		145	110	165	120	7	19.5	16	Through hole		M8	74	34	24	M6	6.1	7Z
1T		145	110	165	120	7	19.5	16	Through hole		M8	74	34	28	M6	6.0	1T
0X Note2	179.5	200	114.3	230	180	6	41.5	24	Through hole		M12	81	60	35	M8	7.7	0X Note2

Note 1: Dimension of coupling of motor flange code (0V) includes 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: 1/11
Flange Shaft

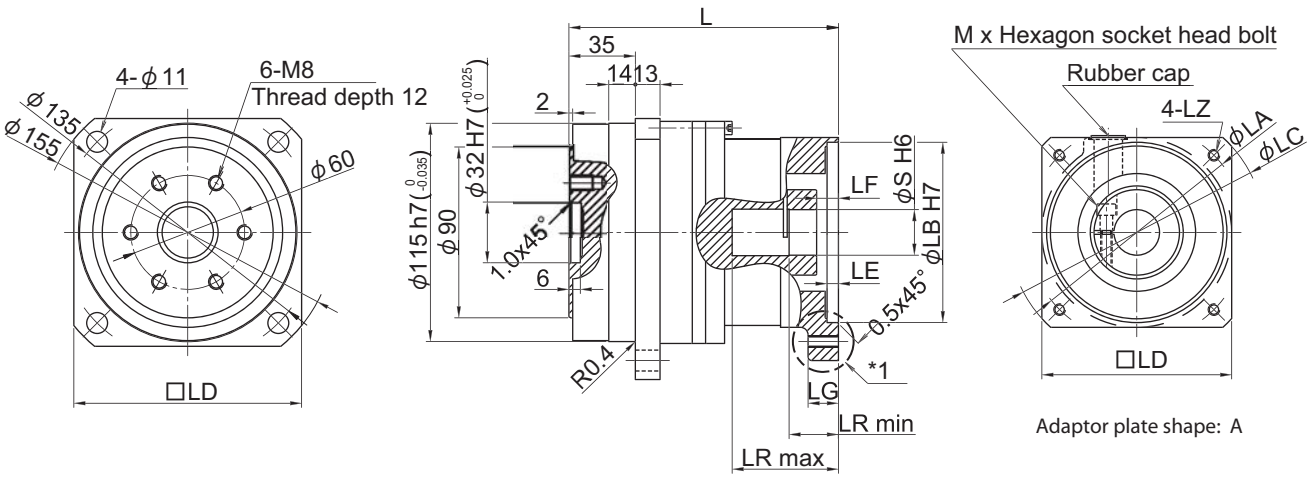


Nomenclature
ANFX-P130F [Motor flange code] [Backlash] — Reduction ratio (11)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
1L	142	115	95	135	100	6	11.5	16	Through hole	A	M6	56	26	24	M6	6.6	1L
7B		115	95	135	100	6	13.5	16	Through hole		M8	56	26	19	M5	6.4	7B
0W		115	95	135	100	6	11.5	16	Through hole		M8	56	26	22	M6	6.5	0W
7Y		115	95	135	100	6	11.5	16	Through hole		M8	56	26	24	M6	6.6	7Y
0Y	150	135	110	165	120	7	19.5	16	Through hole		M8	74	34	22	M6	7.1	0Y
7X		145	110	165	120	7	21.5	16	Through hole		M8	64	34	19	M5	6.7	7X
1S		145	110	165	120	7	19.5	16	Through hole		M8	64	34	22	M6	6.2	1S
7Z		145	110	165	120	7	19.5	16	Through hole		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.

Frame Size: P130
Reduction Ratio: 1/15
Flange Shaft



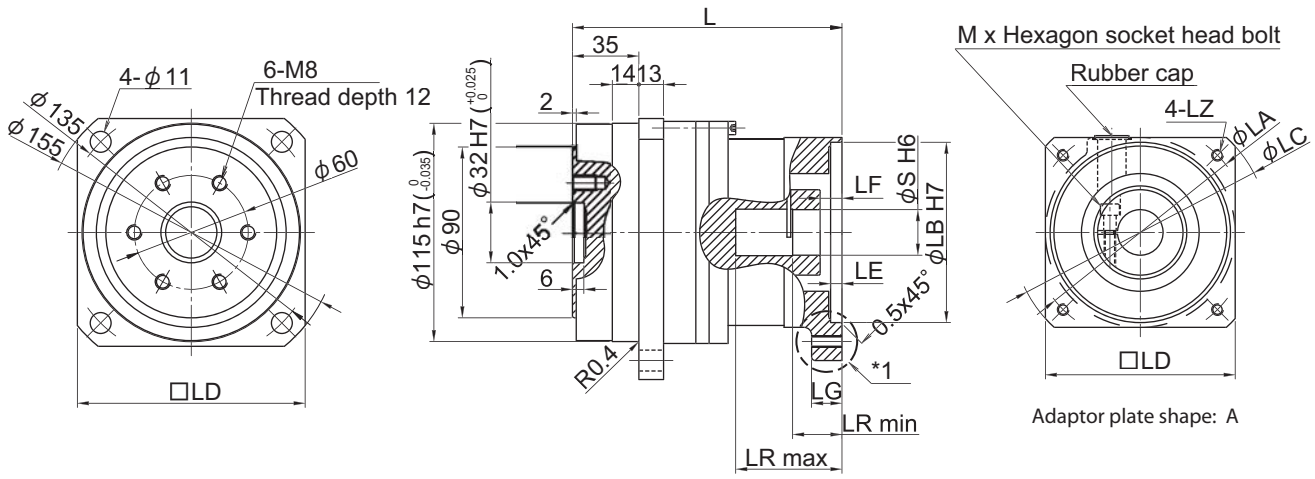
Nomenclature
ANFX-P130F [Motor flange code] [Backlash] — Reduction ratio (15)
3 min: L3
15 min: LD

Motor flange code	L	Dimension														Mass [kg]	Motor flange code
		LA	LB	LC	LD	LE	LF	LG	Shape *1	Adaptor plate shape	LZ	LR max	LR min	S	M		
1L	142	115	95	135	100	6	11.5	16	Through hole	A	M6	56	26	24	M6	6.6	1L
7B		115	95	135	100	6	13.5	16	Through hole		M8	56	26	19	M5	6.4	7B
0W		115	95	135	100	6	11.5	16	Through hole		M8	56	26	22	M6	6.5	0W
7Y		115	95	135	100	6	11.5	16	Through hole		M8	56	26	24	M6	6.6	7Y
0Y	150	135	110	165	120	7	19.5	16	Through hole		M8	74	34	22	M6	7.1	0Y
7X		145	110	165	120	7	21.5	16	Through hole		M8	64	34	19	M5	6.7	7X
1S		145	110	165	120	7	19.5	16	Through hole		M8	64	34	22	M6	6.2	1S
7Z		145	110	165	120	7	19.5	16	Through hole		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

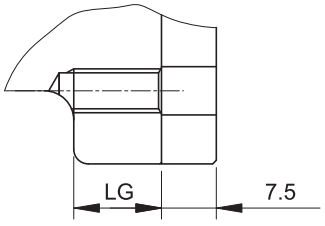
Frame Size: P130
Reduction Ratio: 1/21
Flange Shaft



Nomenclature
ANFX-P130F [Motor flange code] [Backlash] — Reduction ratio (21)
3 min: L3
15 min: LD

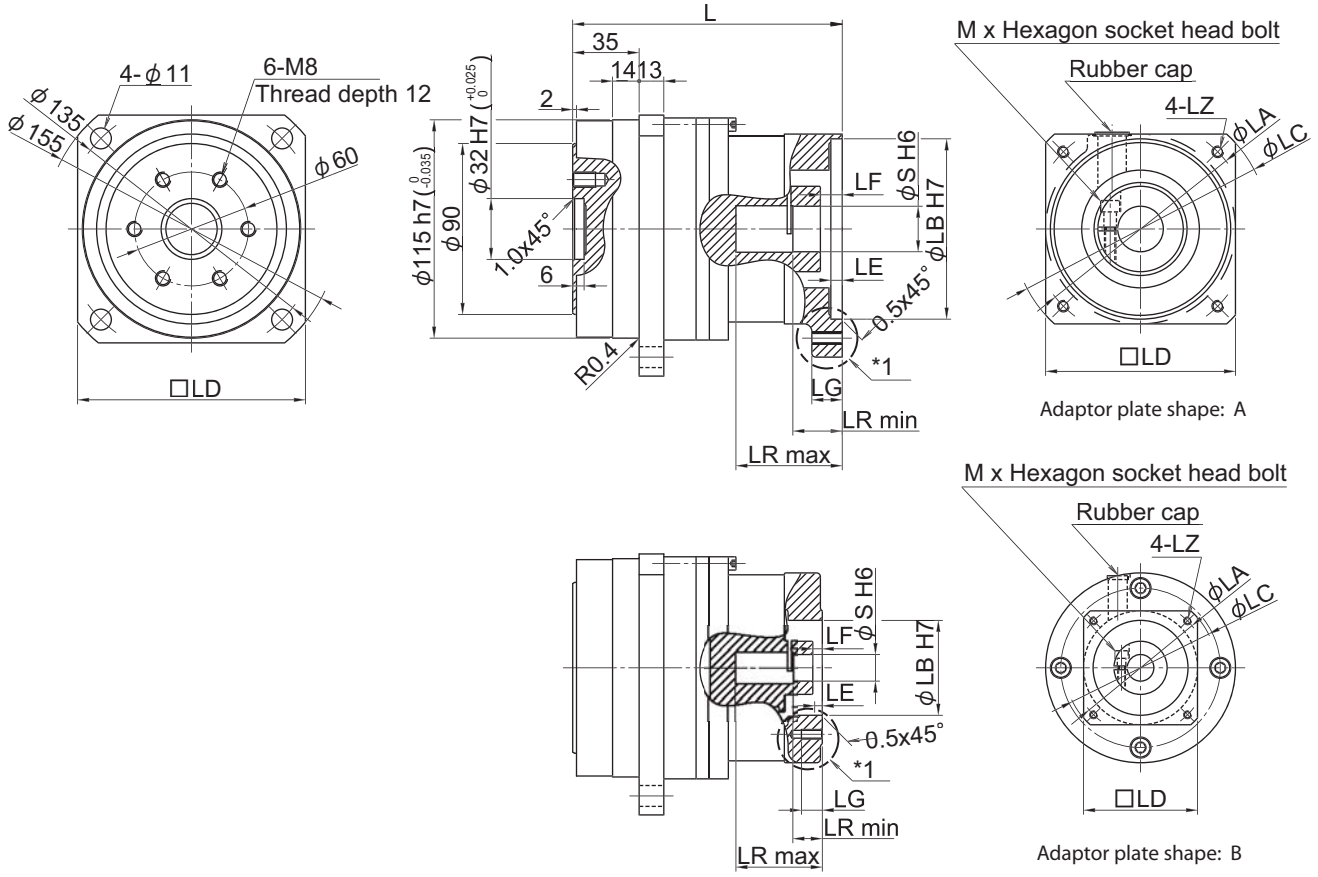
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	Shape	*1 Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
8E[Note2]	142	100	80	120	90	5	13.5	12	Through hole	A	M6	56	26	16	M5	6.6	8E[Note2]
7V[Note2]		100	80	120	90	5	13.5	12	Through hole		M6	56	26	19	M5	6.5	7V[Note2]
1L		115	95	135	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	150	135	110	165	120	7	19.5	16	Through hole		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: Shape of flange plate for motor
2: Dimensions and mass shown in the above figures are subject to change without prior notification. .



With motor flange plate shape

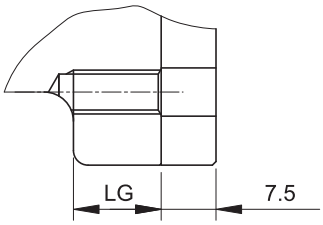
Frame Size: P130
Reduction Ratio: 1/33
Flange Shaft



Nomenclature
ANFX-P130F [Motor flange code] [Backlash] — Reduction ratio (33)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2R	131.5	70	50	80	60	4	5	11	Useful thread length		M5	45.5	15.5	14	M4	6.5	2R
0U	134.5	90	70	120	90	6	6	11	Useful thread length		M5	48.5	18.5	16	M5	6.5	0U
7S		90	70	120	90	6	6	11	Useful thread length	B	M5	48.5	18.5	19	M5	6.5	7S
7P		90	70	120	90	6	6	13	Useful thread length		M6	48.5	18.5	16	M5	6.5	7P
1G		90	70	120	90	6	6	13	Useful thread length		M6	48.5	18.5	19	M5	6.5	1G
2J Note2	142	100	80	120	90	5	15.5	12	Through hole		M6	56	26	10	M4	6.6	2J Note2
0V Note2 3		100	80	120	90	5	15.5	12	Through hole		M6	56	26	14	M4	6.6	0V Note2 3
8E Note2		100	80	120	90	5	13.5	12	Through hole		M6	56	26	16	M5	6.6	8E Note2
7A		115	95	135	100	6	13.5	16	Through hole	A	M8	56	26	16	M5	6.6	7A
7R	150	145	110	165	120	7	21.5	16	Through hole		M8	64	34	16	M5	6.9	7R
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	21.5	16	Through hole		M8	64	36	24	M6	6.9	7Z

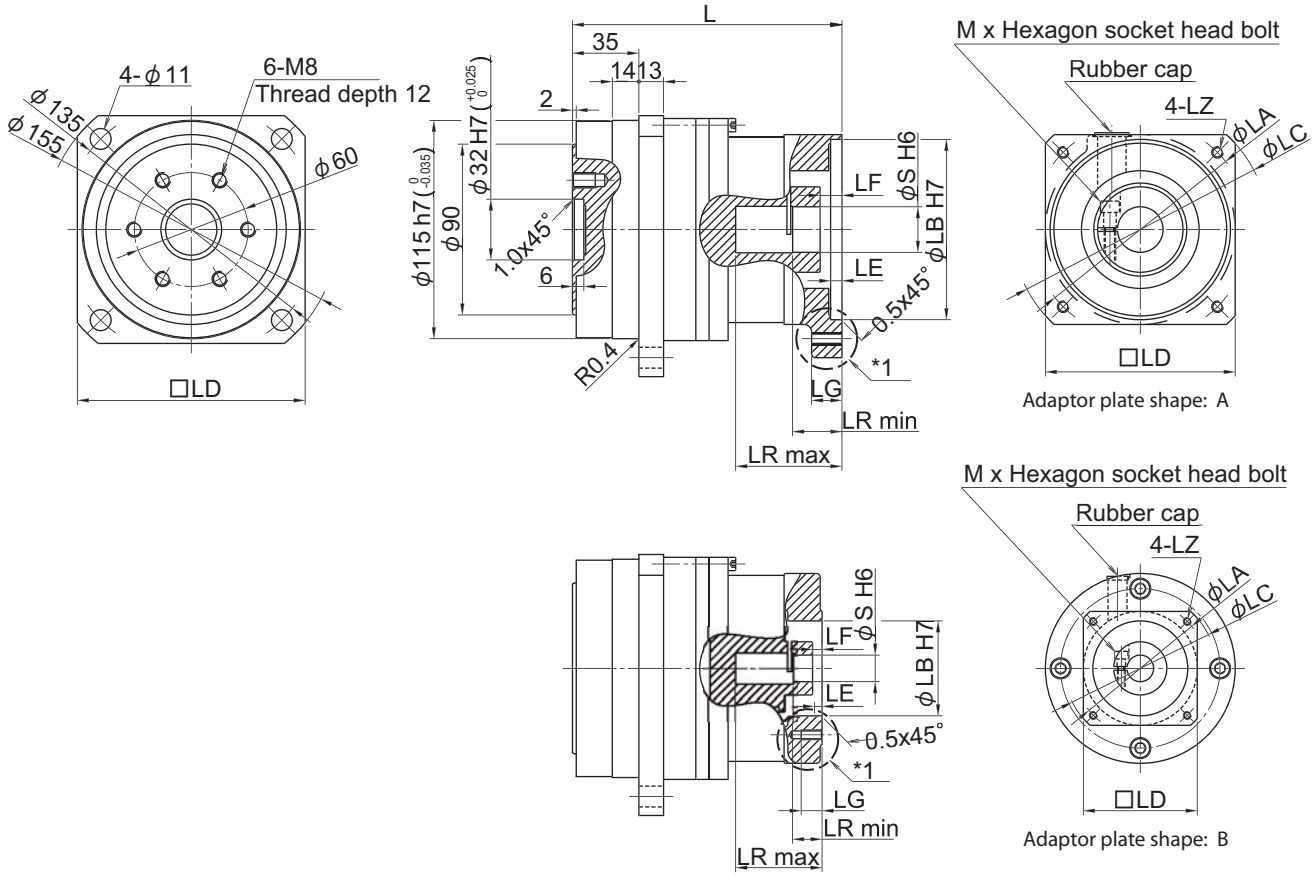
Note 1: Dimension of coupling of motor flange code (0V) includes tolerance (+0.010 ~ +0.026)
2: Shape of flange plate for motor
3: Dimensions and mass shown in the above figures are subject to change without prior notification.



With motor flange plate shape

Dimension Drawings

Frame Size: P130
Reduction Ratio: 1/45
Flange Shaft

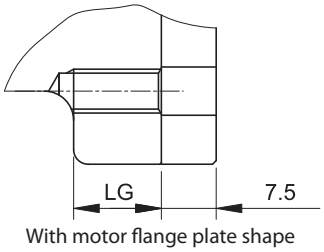


Nomenclature
ANFX-P130F [Motor flange code] [Backlash] — Reduction ratio (45)

3 min: L3
15 min: LD

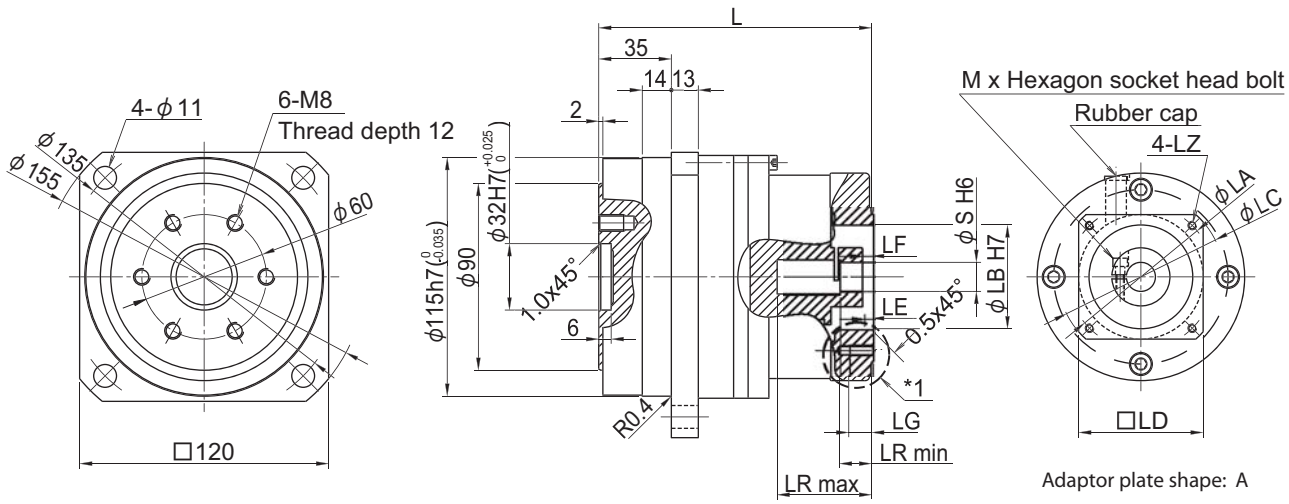
Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG *1	Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2R	131.5	70	50	80	60	4	5	11	Useful thread length		M5	45.5	15.5	14	M4	6.5	2R
0U	134.5	90	70	120	90	6	6	11	Useful thread length		M5	48.5	18.5	16	M5	6.5	0U
7S		90	70	120	90	6	6	11	Useful thread length	B	M5	48.5	18.5	19	M5	6.5	7S
7P		90	70	120	90	6	6	13	Useful thread length		M6	48.5	18.5	16	M5	6.5	7P
1G		90	70	120	90	6	6	13	Useful thread length		M6	48.5	18.5	19	M5	6.5	1G
2J Note2	142	100	80	120	90	5	15.5	12	Through hole		M6	56	26	10	M4	6.6	2J Note2
0V Note2 3		100	80	120	90	5	15.5	12	Through hole		M6	56	26	14	M4	6.6	0V Note2 3
8E Note2		100	80	120	90	5	13.5	12	Through hole		M6	56	26	16	M5	6.6	8E Note2
7A		115	95	135	100	6	13.5	16	Through hole	A	M8	56	26	16	M5	6.6	7A
7R	150	145	110	165	120	7	21.5	16	Through hole		M8	64	34	16	M5	6.9	7R
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	21.5	16	Through hole		M8	64	36	24	M6	6.9	7Z

Note 1: Dimension of coupling of motor flange code (0V) includes tolerance (+0.012 ~ +0.023)
2: Shape of flange plate for motor
3: Dimensions and mass shown in the above figures are subject to change without prior notification.



With motor flange plate shape

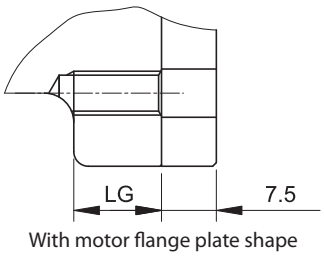
Frame Size: P130
Reduction Ratio: 1/81
Flange Shaft



Nomenclature
ANFX-P130F — Motor flange code — Backlash — Reduction ratio (81)
3 min: L3
15 min: LD

Motor flange code	L	Dimension LA	LB	LC	LD	LE	LF	LG	*1 Shape	Adaptor plate shape	LZ	LR max	LR min	S	M	Mass [kg]	Motor flange code
2L	131.5	70	50	80	60	4	5	9	Useful thread length	B	M4	45.5	15.5	11	M4	6.5	2L
2P		70	50	80	60	4	5	9	Useful thread length		M4	45.5	15.5	14	M4	6.5	2P
2H		70	50	80	60	4	5	11	Useful thread length		M5	45.5	15.5	9	M4	6.5	2H
2R		70	50	80	60	4	5	11	Useful thread length		M5	45.5	15.5	14	M4	6.5	2R
8A	134.5	90	70	120	90	6	8	11	Useful thread length		M5	48.5	18.5	11	M4	6.6	8A
8B		90	70	120	90	6	8	11	Useful thread length		M5	48.5	18.5	14	M4	6.6	8B
2T		90	70	120	90	6	8	13	Useful thread length		M6	48.5	18.5	14	M4	6.6	2T
2J Note2	142	100	80	120	90	5	15.5	12	Through hole	A	M6	56	26	10	M4	7.4	2J Note2

Note 1: Shape of flange plate for motor
2: Dimensions and mass shown in the above figures are subject to change without prior notification.



With motor flange plate shape

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 do not exceed the allowable value through the following calculation.

1. Check Maximum Load Moment

$$Mmax = \frac{Frmax \cdot (Lc + Lr) + Famax \cdot La}{10^3} \quad \cdots (1)$$

Make sure that: Mmax ≦ Mc

Table 4 Symbol in Formula (1)

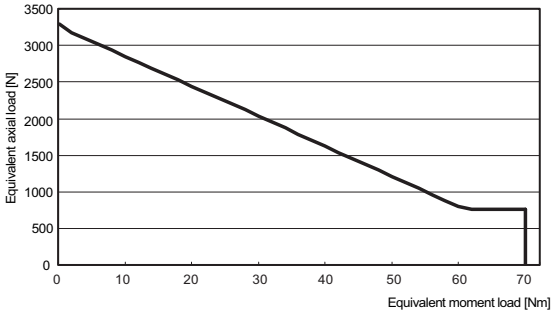
Frmax	Maximum radial load during the operation pattern	N [kgf]	Refer to Fig. 6.
Famax	Maximum axial load during the operation pattern	N [kgf]	
Lr, Lc, La	Load application location	mm	

Table 5 Allowable Moment for P1 Type

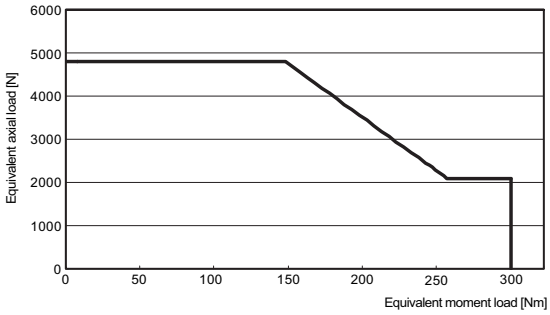
Frame size	Allowable moment Mc	
	Nm	kgfm
P110	70	7.13
P120	300	30.6
P130	620	63.2

Table 6 Dimensions

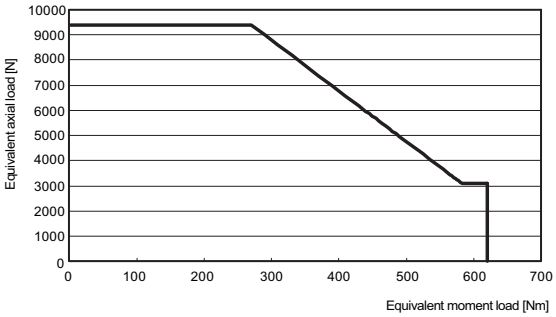
Frame size	Dimension [mm]				
	LB	LC	S	L	Z
P110	52.76	42.38	2	28	19.62
P120	82.56	64.53	2	42	25.97
P130	109.02	86.26	4	82	63.24



P110 Allowable Load Diagram for Moment and Axial Load



P120 Allowable Load Diagram for Moment and Axial Load



P130 Allowable Load Diagram for Moment and Axial Load

- Consult us when the radial load is exerted on the location exceeding the range of "L + S."
- 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.

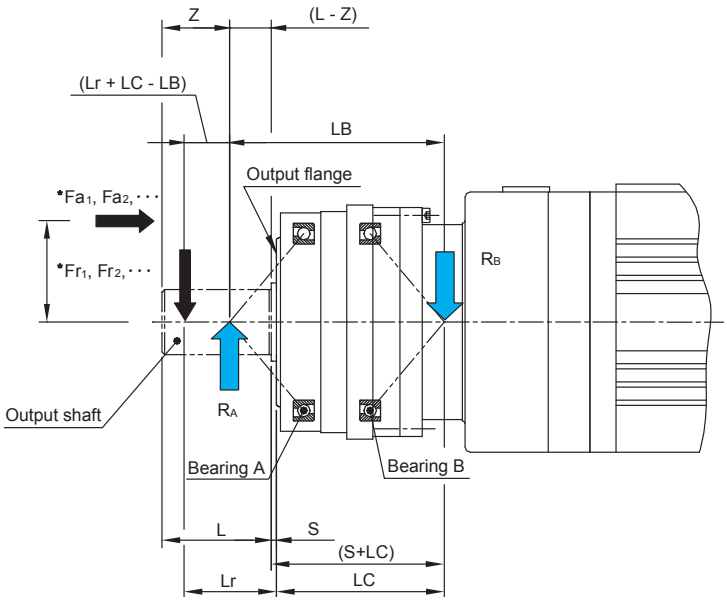


Fig. 5 External Load Effect diagram

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

2. Check Equivalent Load Bearing Lifetime

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

Equivalent radial load: Fre

$$Fre = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot (|Fr_1|)^3 + n_2 \cdot t_2 \cdot (|Fr_2|)^3 + \cdots n_n \cdot t_n \cdot (|Fr_n|)^3}{n_1 \cdot t_1 + n_2 \cdot t_2 + \cdots + n_n \cdot t_n}} \quad \cdots (2)$$

Equivalent axial load: Fae

$$Fae = \sqrt[3]{\frac{n_1 \cdot t_1 \cdot (|Fa_1|)^3 + n_2 \cdot t_2 \cdot (|Fa_2|)^3 + \cdots n_n \cdot t_n \cdot (|Fa_n|)^3}{n_1 \cdot t_1 + n_2 \cdot t_2 + \cdots + n_n \cdot t_n}} \quad \cdots (3)$$

Equivalent autput speed: Neo

$$Neo = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + \cdots + n_n \cdot t_n}{t_1 + t_2 + \cdots t_n} \quad \cdots (4)$$

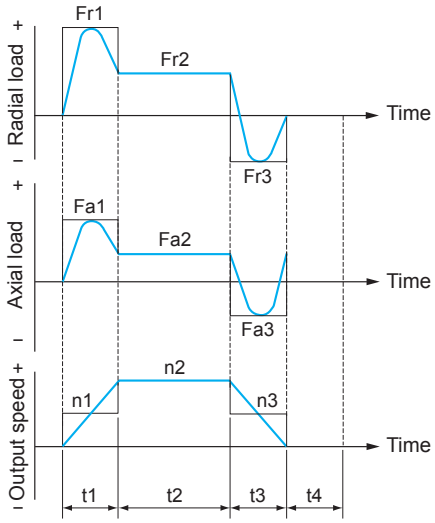


Fig. 6 Example of Load Fluctuation

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)	$\frac{R_B}{2Y_2} + Fae \geqq \frac{R_A}{2Y_2}$	Bearing A	$F_{aA} = \frac{R_B}{2Y_2} + Fae$	$P_A = X \cdot R_A + Y \cdot F_{aA}$ Note: When $P_A < R_A$, use $P_A = R_A$.
		Bearing B	–	$P_B = R_B$
	$\frac{R_B}{2Y_2} + Fae < \frac{R_A}{2Y_2}$	Bearing A	–	$P_A = R_A$
		Bearing B	$F_{aB} = \frac{R_A}{2Y_2} - Fae$	$P_B = X \cdot R_B + Y \cdot F_{aB}$ Note: When $P_B < R_B$, use $P_B = R_B$.
(Applied to output side)	$\frac{R_B}{2Y_2} \leqq \frac{R_A}{2Y_2} + Fae$	Bearing A	–	$P_A = R_A$
		Bearing B	$F_{aB} = \frac{R_A}{2Y_2} + Fae$	$P_B = X \cdot R_B + Y \cdot F_{aB}$ Note: When $P_B < R_A$, use $P_B = R_A$.
	$\frac{R_B}{2Y_2} > \frac{R_A}{2Y_2} + Fae$	Bearing A	$F_{aA} = \frac{R_B}{2Y_2} - Fae$	$P_A = X \cdot R_A + Y \cdot F_{aA}$ Note: When $P_A < R_A$, use $P_A = R_A$.
		Bearing B	–	$P_B = R_B$

Durability Check of Output Shaft Part

Table 8 Main Bearing Specification

Frame size	Dynamic rated load C	Load Factor				e
		X		Y		
	N (kgf)	$F_{aA}/R_A \leqq e$ $F_{aB}/R_B \leqq e$	$F_{aA}/R_A > e$ $F_{aB}/R_B > e$	$F_{aA}/R_A \leqq e$ $F_{aB}/R_B \leqq e$	$F_{aA}/R_A > e$ $F_{aB}/R_B > e$	
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 Fre and Fae	N (kgf)	–
X	Radial load factor	–	Refer to Table 8 below.
Y	Axial load factor		
Y_2	Axial load factor Y_2 = 0.57 when Fa* / R* > e		
Fa_A, Fa_B	Axial load exerted on each of bearing A and B	N (kgf)	–

Lifetime L_{10h}

$$L_{10h} = \frac{10^6}{60 \cdot Ne\,o} \left(\frac{C}{Cf \cdot Fs \cdot P} \right)^3 \quad \cdots (5)$$

Table 10 Coupling Factor Cf

Coupling Method	Cf
Chain	1.00
Gears	1.25
V-Belt	1.50

Table 11 Shock Factor Fs

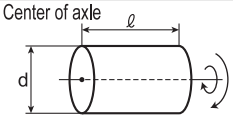
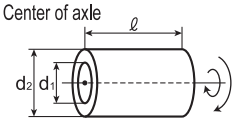
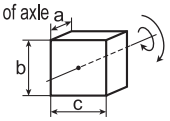
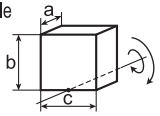
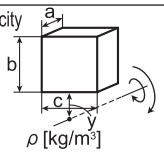
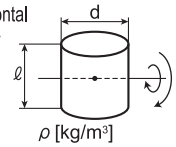
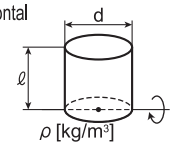
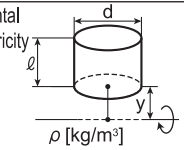
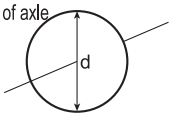
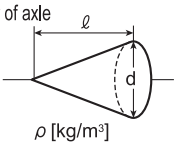
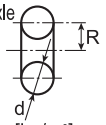
Degree of shock	Fs
Practically no shock	1.0
Light shock	1.0-1.2
Severe shock	1.4-1.6

Table 12 Symbols 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.
Cf	Connected load	–	Refer to Table 7.
Fs	Shock factor	–	Refer to Table 8.

Formula for Calculation of Moment of Inertia and GD²

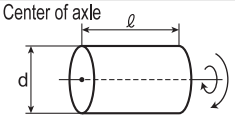
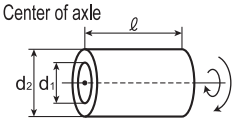
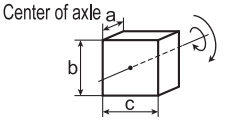
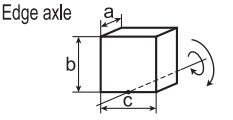
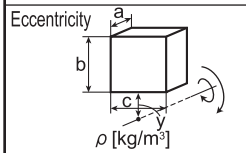
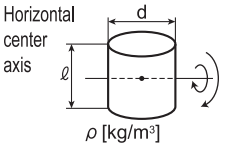
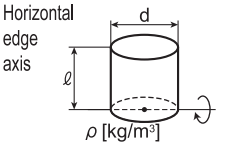
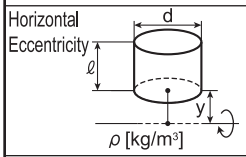
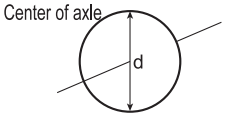
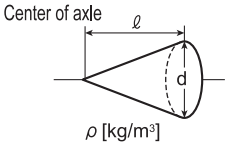
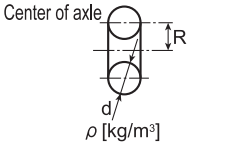
●Formula to Calculate Moment of Inertia and GD²

Location of rotation	Shape	Mass M [kg]	Moment of Inertia J [kgm²]	GD² GD² [kgf·m²]
Center of axle  ρ [kg/m³]	Cylinder	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{1}{32}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$	$\frac{1}{8}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$
Center of axle  ρ [kg/m³]	Cylinder hollow	$\frac{1}{4}\cdot\pi\cdot(d_1^2-d_2^2)\cdot\ell\cdot\rho$	$\frac{1}{32}\cdot\pi\cdot(d_1^4-d_2^4)\cdot\ell\cdot\rho$	$\frac{1}{8}\cdot\pi\cdot(d_1^4-d_2^4)\cdot\ell\cdot\rho$
Center of axle  ρ [kg/m³]	Rectangular solid	$a\cdot b\cdot c\cdot\rho$	$\frac{a\cdot b\cdot c}{12}\cdot(b^2+c^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(b^2+c^2)\cdot\rho$
Edge axle  ρ [kg/m³]	Rectangular solid	$a\cdot b\cdot c\cdot\rho$	$\frac{a\cdot b\cdot c}{12}\cdot(4b^2+c^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(4b^2+c^2)\cdot\rho$
Eccentricity  ρ [kg/m³]	Rectangular solid	$a\cdot b\cdot c\cdot\rho$	$\frac{a\cdot b\cdot c}{12}\cdot(4b^2+c^2+12b\cdot y+12y^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(4b^2+c^2+12b\cdot y+12y^2)\cdot\rho$
Horizontal center axis  ρ [kg/m³]	Cylinder	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(4\ell+3d^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(4\ell+3d^2)\cdot\rho$
Horizontal edge axis  ρ [kg/m³]	Cylinder	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(16\ell+3d^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(16\ell+3d^2)\cdot\rho$
Horizontal Eccentricity  ρ [kg/m³]	Cylinder	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(16\ell^2+3d^2+48y\cdot\ell+48y^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(16\ell^2+3d^2+48y\cdot\ell+48y^2)\cdot\rho$
Center of axle  ρ [kg/m³]	Sphere	$\frac{1}{6}\cdot\pi\cdot d^2\cdot\rho$	$\frac{1}{60}\cdot\pi\cdot d^5\cdot\rho$	$\frac{1}{15}\cdot\pi\cdot d^5\cdot\rho$
Center of axle  ρ [kg/m³]	Cone	$\frac{1}{12}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{1}{160}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$	$\frac{1}{40}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$
Center of axle  ρ [kg/m³]	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: ρ [kg/m³]

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

●Formula to Calculate Moment of Inertia and GD^2

Location of rotation	Shape	Mass M [kg]	Moment of Inertia J [kgm²]	GD^2 GD^2 [kgf·m²]
Center of axle  ρ [kg/m³]	Cylinder	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{1}{32}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$	$\frac{1}{8}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$
Center of axle  ρ [kg/m³]	Cylinder hollow	$\frac{1}{4}\cdot\pi\cdot(d_1^2-d_2^2)\cdot\ell\cdot\rho$	$\frac{1}{32}\cdot\pi\cdot(d_1^4-d_2^4)\cdot\ell\cdot\rho$	$\frac{1}{8}\cdot\pi\cdot(d_1^4-d_2^4)\cdot\ell\cdot\rho$
Center of axle  ρ [kg/m³]	Rectangular solid	$a\cdot b\cdot c\cdot\rho$	$\frac{a\cdot b\cdot c}{12}\cdot(b^2+c^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(b^2+c^2)\cdot\rho$
Edge axle  ρ [kg/m³]	Rectangular solid	$a\cdot b\cdot c\cdot\rho$	$\frac{a\cdot b\cdot c}{12}\cdot(4b^2+c^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(4b^2+c^2)\cdot\rho$
Eccentricity  ρ [kg/m³]	Rectangular solid	$a\cdot b\cdot c\cdot\rho$	$\frac{a\cdot b\cdot c}{12}\cdot(4b^2+c^2+12b\cdot y+12y^2)\cdot\rho$	$\frac{a\cdot b\cdot c}{3}\cdot(4b^2+c^2+12b\cdot y+12y^2)\cdot\rho$
Horizontal center axis  ρ [kg/m³]	Cylinder	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(4\ell+3d^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(4\ell+3d^2)\cdot\rho$
Horizontal edge axis  ρ [kg/m³]	Cylinder	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(16\ell+3d^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(16\ell+3d^2)\cdot\rho$
Horizontal Eccentricity  ρ [kg/m³]	Cylinder	$\frac{1}{4}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{192}\cdot(16\ell^2+3d^2+48y\cdot\ell+48y^2)\cdot\rho$	$\frac{\pi\cdot d^2\cdot\ell}{48}\cdot(16\ell^2+3d^2+48y\cdot\ell+48y^2)\cdot\rho$
Center of axle  ρ [kg/m³]	Sphere	$\frac{1}{6}\cdot\pi\cdot d^2\cdot\rho$	$\frac{1}{60}\cdot\pi\cdot d^5\cdot\rho$	$\frac{1}{15}\cdot\pi\cdot d^5\cdot\rho$
Center of axle  ρ [kg/m³]	Cone	$\frac{1}{12}\cdot\pi\cdot d^2\cdot\ell\cdot\rho$	$\frac{1}{160}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$	$\frac{1}{40}\cdot\pi\cdot d^4\cdot\ell\cdot\rho$
Center of axle  ρ [kg/m³]	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: ρ [kg/m³]

Moment of Inertia (at Motor Shaft)

Table 13

Unit: $x10^{-4}kg{\cdot}m^2$

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						
	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						
	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		
	16	7A, 7P, 8E, 7R, 0U	0.546	0.546						
	19	7S, 1G, 7X, 7B, 7V	0.527	0.526						
	22	1S, 0Y, 0W								
	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		
	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								

GD^2 (at Motor Shaft)

Table 14

Unit: x10^{-4}kg·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	0.568	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						
	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						
	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		
	16	7A, 7P, 8E, 7R, 0U	2.184	2.184						
	19	7S, 1G, 7X, 7B, 7V	2.108	2.104						
	22	1S, 0Y, 0W								
	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		
	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.

Output Shaft: Solid Shaft（with and without key）

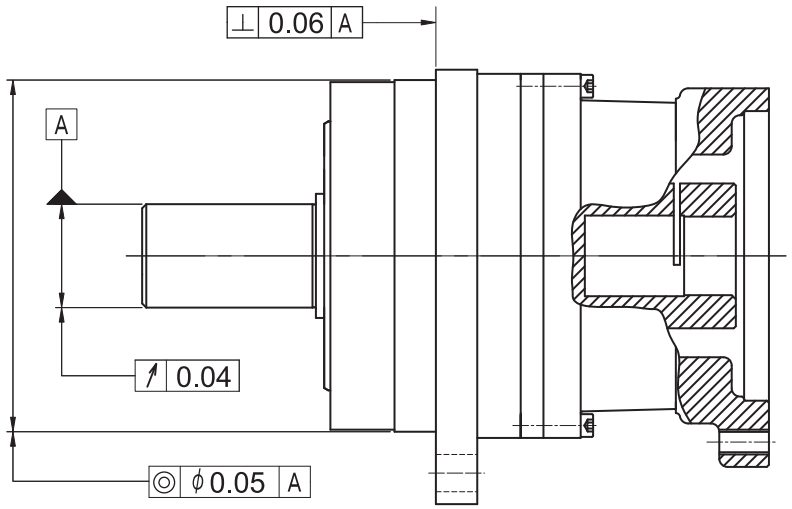


Fig. 7

Output Shaft: Flange Shaft

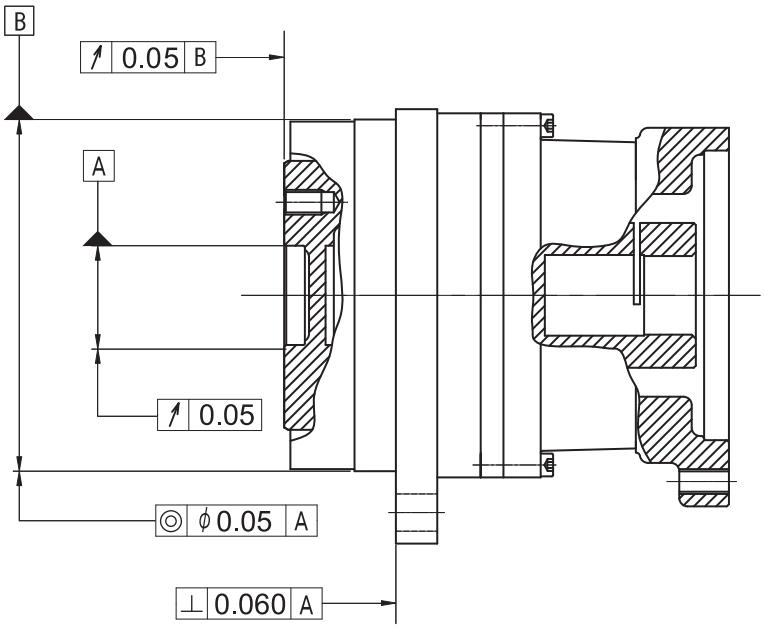


Fig. 8

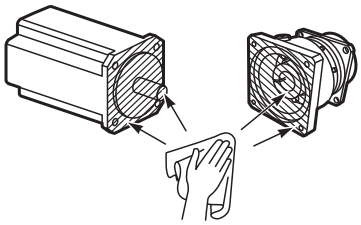
Motor Attachment Procedure

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 (7) for assembly. (Remove key while assembly for shaft with keyway.)

(1) Place reducer on an appropriate worktable with output shaft on the bottom side.
(2) Remove fitting of the setting hole (1 place) of the reducer unit (①in figure below).
(3) Match the location by turning by hand to tighten tightening bolt of the coupling into setting hole of the reducer unit (②in figure below).
(4) Insert motor shaft into the center hole of the coupling, press in vertically and fit the pilot part of the reducer unit and motor.
(5) Tighten motor and reducer unit with motor attachment bolt (④in figure below).
(6) Tighten coupling tightening bolt through the setting hole of the side of the reducer unit using a torque wrench bolt (④in figure below). Refer to Table 12 for necessary tightening torque.

Table 15

Coupling hole diameter	Tightening bolt	Tightening torque	Allowable transmission torque
mm		N·m	N·m
ϕ6	M3	1.67	9.18
ϕ8			7.93
ϕ9	M4	3.92	22.0
ϕ10			22.7
ϕ11			24.9
ϕ14			26.4
ϕ16	M5	7.35	49.6
ϕ19			52.9
ϕ22	M6	8.83	61.8
ϕ24			66.2
ϕ28			78.3
ϕ35	M8	21.6	99.2



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

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

(7) Insert fitting (1 place) in the setting hole of the joint cover.

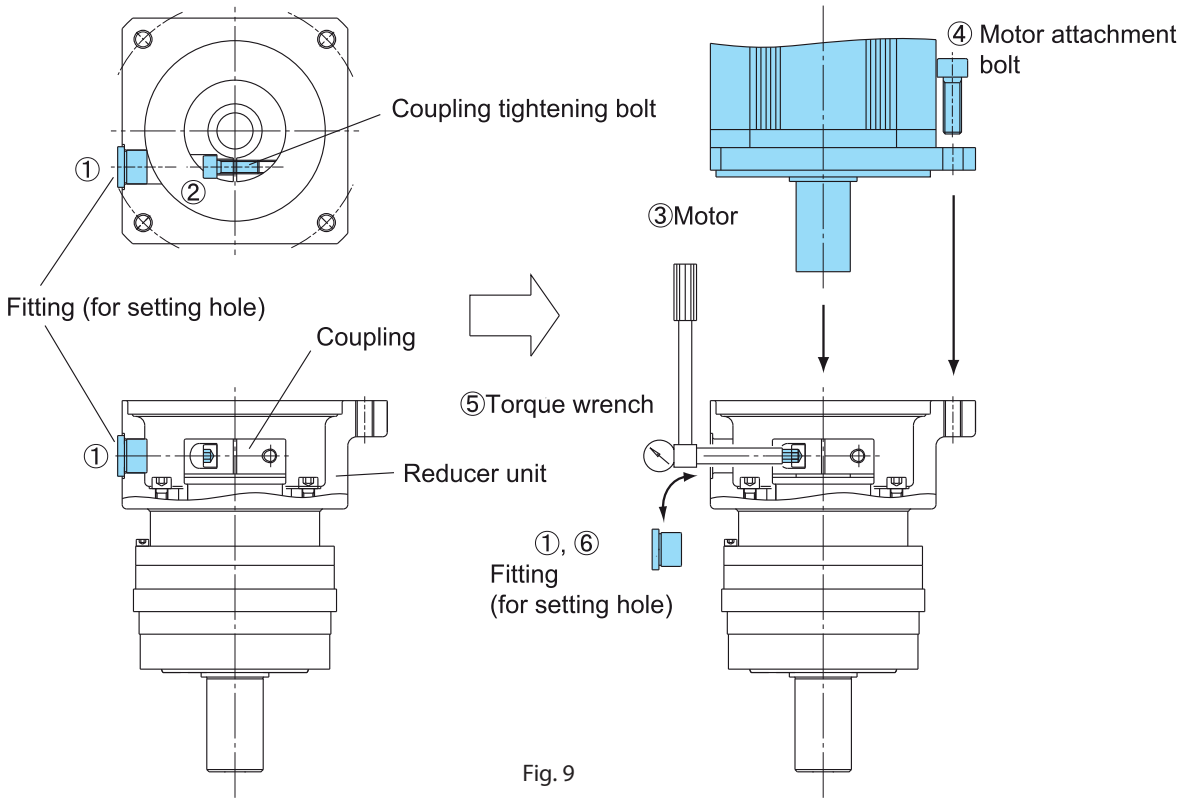
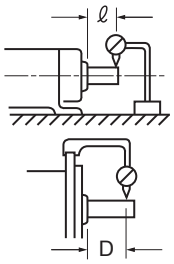
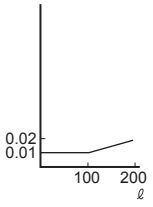
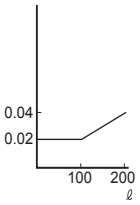
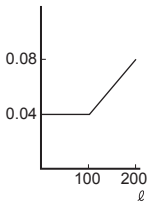
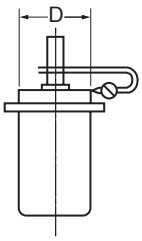
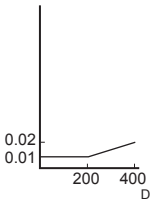
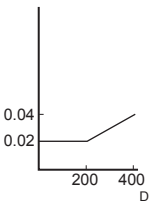
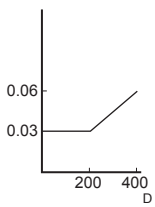
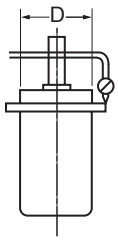
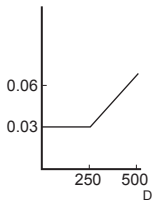
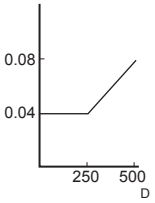
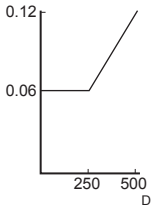


Fig. 9

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	Work accuracy = 0.01 when ℓ≦ 100 As below when ℓ > 100 	Work accuracy = 0.02 when ℓ≦ 100 As below when ℓ > 100 	Work accuracy = 0.04 when ℓ≦ 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	Work accuracy = 0.01 when D ≦ 200 As below when D > 200 	Work accuracy = 0.02 when D ≦ 200 As below when D > 200 	Work accuracy = 0.03 when D ≦ 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	Work accuracy = 0.03 when D ≦ 250 As below when D > 250 	Work accuracy = 0.04 when D ≦ 250 As below when D > 250 	Work accuracy = 0.06 when D ≦ 250 As below when D > 250 

Warranty

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 designted 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: 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.

MEMO

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