

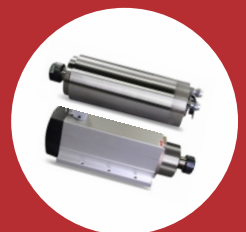
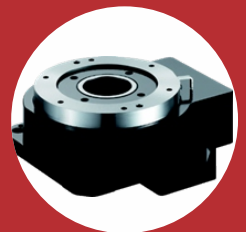
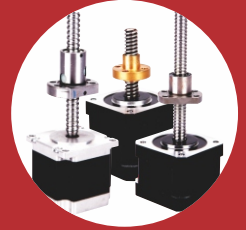
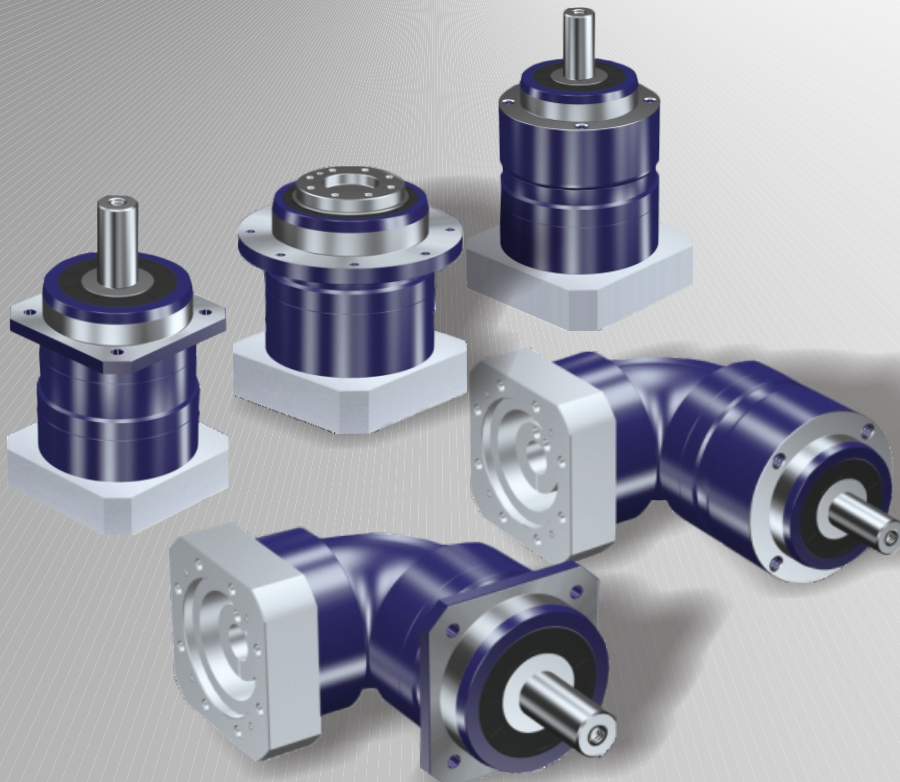
PRODUCT CATALOG

Helical Gear

Precision Planetary Gear Reducers

**Precise and Reliable
Motion Control Solutions**

**High Precision
Long Lifetime
Low Noise & Vibration
Matching all Shaft Types
Flexible Customization**



About Us

-Automate In A Better Way-

COMPANY
Reliable & Long-Term Partnership

Focused on Providing Comprehensive, Reliable and Precise Motion Control Solutions with High Quality & Competitive Pricing.

Rich Industrial Automation Experiences

Future Oriented Development Strategy

Open For Overseas Market Cooperation



RESEARCH & DEVELOPMENT
Deliver the Best

More than 15 Years Motion Control R&D Experiences of Key Experts

Wide International R&D Cooperation

Continuous Cutting-Edge & Practical Technology Implement

Flexible & Fast Customization



PRODUCTS
Beyond Your Expectation

Wide Range of Motion Control Solutions, Designed for Different Market Segments.

Top Level of Products Performance with High Reliability & Attractive Prices. .

100% Replacements of Top Brands with Extra Values and Benefits.

PRODUCTION
Deliver the Best

Strict Quality Control System

100% Functional Test

48 Hours Aging Test

ISO9001 Certificates of Factories

3C, UL, CE, RoHS, etc. Certificates.

Target Application Markets
Covering Majority of Automation Applications

Electronics and Semiconductors, CNC (Laser, Plasma, Water Jet, Cutting, Milling, Engraving, Polishing, Positioning, etc.), Machine Tools, Medical, Aerospace, Test Bed, Packaging(Marking, Labeling, Feeding, etc.), Sewing, Printing, Textile, Dying, Fabrication, Surveillance, Logistics, Factory Automation, Sorting, Farming, Robotics, Printing, Automotive, Telecom, SPM, etc.



SERVICES
Professional and In Time

7*24H Technical Support.

Remote and On-site Training

Local Market Co-marketing

≥18 Months Warranty (5Years for some products)

Quick Customization and Delivery



Products and Applications

—Precise and Reliable Motion Control Solutions—

2 & 3 Phase Stepper Drive

Step & Step Servo Drive
in One, 0.4-8.0A,
DC(12-75V) and AC(80-265VAC),
Pulse&DIR, CW&CCW,
EtherCAT, CanOpen, Profinet Mode-bus
Rich Special&Practical Functions,
Wide Applications in High-End Market,
Unique Design with Patents,
Fast Customization.



Auto Positioning Platform

Ultra Thin, Lightweight,
Hollow structure,
Hi Rigidity and Accuracy,
Size in Full Range.



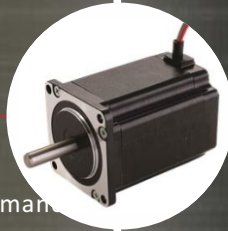
Rotar Actuators

Max. Torque 5-480N.m
Reduction Ratio 5 to 250
IP65
Direct Connection
Hollow Shaft
Flexible Installation
High Positioning Accuracy
Easy Equipped with Moto



2 & 3 Phase Stepper Motor

Nema11 to Nema52,
0.07 to 33.0N.m,
High Quality and Performance
Low heating and Vibration,
Hollow Shaft, Waterproof,
High Speed etc.
Fast Customization .



Planetary Gear Reducers

Round, Square,
Right-angle Types,
Size 28 to 120mm,
Standard Precision 12-18arcmin,
High Precision 3 and 5arcmin,
Rich Reduction Ratios,
High Input Speed, High Torque,
>20000 hours Lifetime,
Life-long Lubrication.



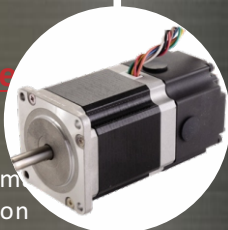
Electric Cylinders

Vertical, Horizontal,
Guideway
Reduction Ratio 5 to 250
IP65
Direct Connection
Hollow Shaft
Flexible Installation
High Positioning Accuracy
Easy Equipped with Moto



2 Phase Stepper Motor with Brake

Nema17 to Nema34
0.07 to 33.0N.m
High Quality and Performance
Low heating and Vibration
Extra Long Lifetime
Hollow Shaft, Waterproof,
High Speed etc.
Fast Customization



Brushless Products

30 to 750W
80 to 4000RPM
Low Noise
Low Vibration
Low Heating
Long Lifetime, Easy Maintenance
Customization Supported



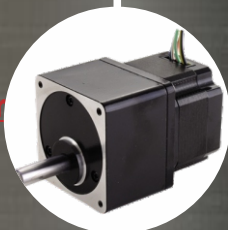
Electric Spindles

800W to above 30kW
Water and Air Cooling
Wood, Stone, Metal,
Glass etc.
High Precision and Performance
Flexible Customization



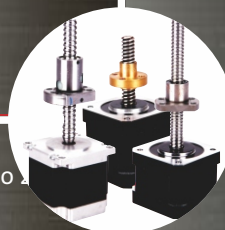
2 Phase Integrated Stepper Motor with Reducer

Nema17 to Nema34
0.2 to 12.0N.m
Compact Design,
High Reduction Ratios
1:3.6 to 1:100
High Smoothness
Extra Long Lifetime
Flexible Customization



2 Phase Linear Stepper Motor

Nema17 to Nema34
Rated Push Strength 5 to 10N
Lead 0.61 to 10mm
World-Class Lead Screw
High performance
Flexible Customization



Variable Frequency Drives

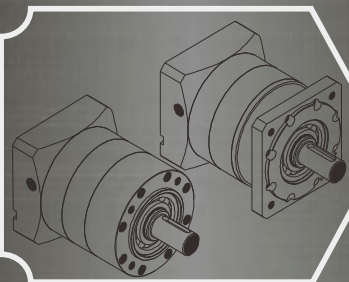
750W to above 30kW
Vector Control
Extra Long Life Time
Rich Functions and Interfaces
High Reliability



FACTORY AUTOMATION CUTTING MARKING ELECTRONIC
CABLING CNC LABELLING LASER MACHINE TOOL
METAL WORK PACKAGING MEDICAL SURVEILLANCE
TEXT BED SORTING WOOD WORK MARBLE WORK SEWING
GLASS WORK PLASMA ENGRAVING TEXTILE

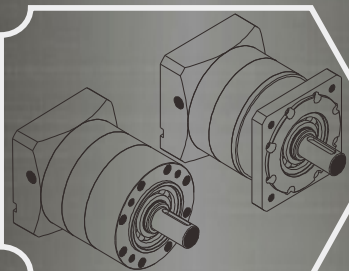
Cost-effective Planetary Gear Reducer

Matching Stepper Motors



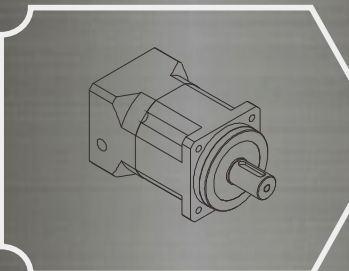
DLE42 & DLF42 Series

Frame Size(mm) : 42mm;
Reduction Ratios : 1:4/5/8/10/16/20/25/40/50/64/80/100/125/160/200
Backlash : 30 arcmin, 40 arcmin, 60 arcmin;
Input & Output Shaft Type: All Main Stream, Customizable;
Average Lifetime : >20000 Hours



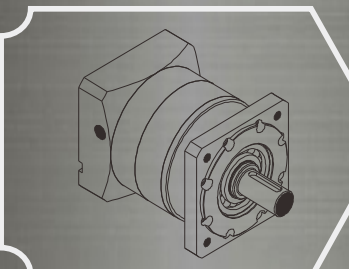
DLEP42 & DLFP42 Series

Frame Size(mm) : 42mm;
Reduction Ratios : 1:4/5/8/10/16/20/25/40/50/64/80/100/125/160/200
Backlash : 15 arcmin, 20 arcmin, 30 arcmin;
Input & Output Shaft Type: All Main Stream, Customizable;
Average Lifetime : >20000 Hours



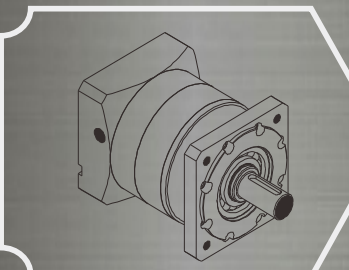
DLFS42 Series

Frame Size(mm) : 42mm;
Reduction Ratios : 1:4/5/7/10/16/20/25/28/35/40/50/70/100
Backlash : 5 arcmin, 7 arcmin;
Input & Output Shaft Type: All Main Stream, Customizable;
Average Lifetime : >20000 Hours



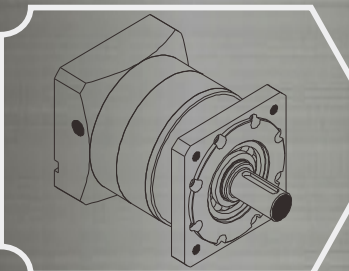
DLF57 Series

Frame Size(mm) : 57mm;
Reduction Ratios : 1:4/5/7/10/16/20/25/28/35/40/50/70/64/80/100/125/140/175/200
Backlash : 20 arcmin, 30 arcmin, 50 arcmin;
Input & Output Shaft Type: All Main Stream, Customizable;
Average Lifetime : >20000 Hours



DLFP57 Series

Frame Size(mm) : 57mm;
Reduction Ratios: 1:4/5/7/10/16/20/25/28/35/40/50/70/64/80/100/125/140/175/200
Backlash : 15 arcmin, 20 arcmin, 30 arcmin;
Input & Output Shaft Type: All Main Stream, Customizable;
Average Lifetime : >20000 Hours



DLF86 Series

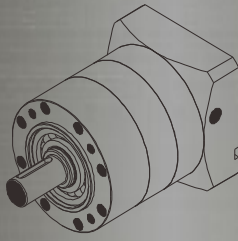
Frame Size(mm) : 86mm;
Reduction Ratios: 1:4/5/7/10/16/20/25/28/35/40/50/70/64/80/100/125/140/175/200
Backlash : 10 arcmin, 15 arcmin, 25 arcmin;
Input & Output Shaft Type: All Main Stream, Customizable;
Average Lifetime : >20000 Hours

Spur Gear Precision Planetary Gear Reducers

Matching All Motors

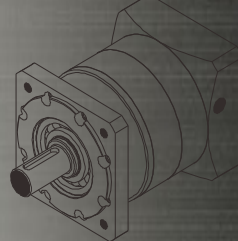
PLE series reducer (PLE060 PLE090 PLE120 PLE160)

4 optional size	60mm, 90mm, 120mm, 160mm	
Rated output torque	8.5Nm~680.0Nm	
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70, 100
	3-stage	80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
backlash	1-stage	Precision: <3 arc-min Standard: <8 arc-min
	2-stage	Precision: <5 arc-min Standard: <10 arc-min
	3-stage	Precision: <8 arc-min Standard: <12 arc-min



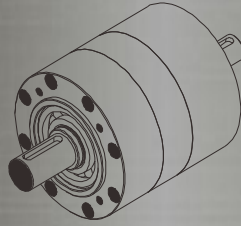
PLF series reducer (PLF060 PLF090 PLF120 PLF160)

4 optional size	60mm, 90mm, 120mm, 160mm	
Rated output torque	8.5Nm~680.0Nm	
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70, 100
	3-stage	80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
backlash	1-stage	Precision: <3 arc-min Standard: <8 arc-min
	2-stage	Precision: <5 arc-min Standard: <10 arc-min
	3-stage	Precision: <8 arc-min Standard: <12 arc-min



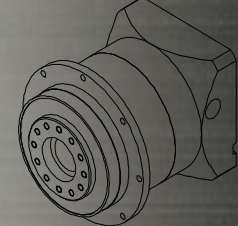
PLS series reducer (PLS060 PLS090 PLS120 PLS160)

4 optional size	60mm, 90mm, 120mm, 160mm	
Rated output torque	8.5Nm~680.0Nm	
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70, 100
	3-stage	80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
backlash	1-stage	Precision: <3 arc-min Standard: <8 arc-min
	2-stage	Precision: <5 arc-min Standard: <10 arc-min
	3-stage	Precision: <8 arc-min Standard: <12 arc-min



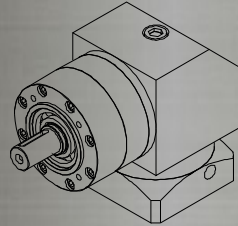
PLH series reducer (PLH064 PLH090 PLH120 PLH160)

4 optional size	64mm, 90mm, 120mm, 160mm	
Rated output torque	8.5Nm~680.0Nm	
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70, 100
	3-stage	80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
backlash	1-stage	Precision: <3 arc-min Standard: <8 arc-min
	2-stage	Precision: <5 arc-min Standard: <10 arc-min
	3-stage	Precision: <8 arc-min Standard: <12 arc-min



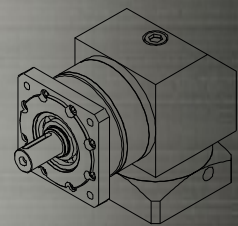
ZPLE series reducer (ZPLE060 ZPLE090 ZPLE120 ZPLE160)

4 optional size	60mm, 90mm, 120mm, 160mm	
Rated output torque	8.5Nm~680.0Nm	
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70, 100
	3-stage	80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
backlash	1-stage	Precision: <3 arc-min Standard: <8 arc-min
	2-stage	Precision: <5 arc-min Standard: <10 arc-min
	3-stage	Precision: <8 arc-min Standard: <12 arc-min



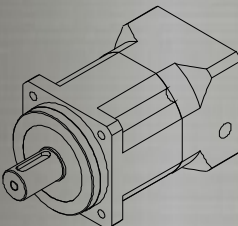
ZPLF series reducer (ZPLF060 ZPLF090 ZPLF120 ZPLF160)

4 optional size	60mm, 90mm, 120mm, 160mm	
Rated output torque	8.5Nm~680.0Nm	
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	12, 16, 20, 25, 28, 35, 40, 50, 70, 100
	3-stage	80, 100, 125, 140, 175, 200, 250, 350, 400, 500, 700, 1000
backlash	1-stage	Precision: <3 arc-min Standard: <8 arc-min
	2-stage	Precision: <5 arc-min Standard: <10 arc-min
	3-stage	Precision: <8 arc-min Standard: <12 arc-min



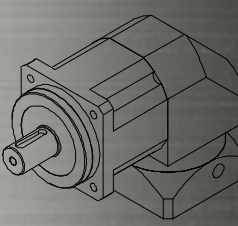
142 AB series reducer (AB060 AB090 AB120 AB160 AB200 AB250 AB300 AB350 AB400 AB450 AB500 AB550 AB600 AB650 AB700 AB750 AB800 AB850 AB900 AB950 AB1000 AB115 AB120 AB125 AB130 AB135 AB140 AB145 AB150 AB155 AB160 AB165 AB170 AB175 AB180 AB185 AB190 AB195 AB200 AB205 AB210 AB215 AB220 AB225 AB230 AB235 AB240 AB245 AB250 AB255 AB260 AB265 AB270 AB275 AB280 AB285 AB290 AB295 AB300 AB305 AB310 AB315 AB320 AB325 AB330 AB335 AB340 AB345 AB350 AB355 AB360 AB365 AB370 AB375 AB380 AB385 AB390 AB395 AB400 AB405 AB410 AB415 AB420 AB425 AB430 AB435 AB440 AB445 AB450 AB455 AB460 AB465 AB470 AB475 AB480 AB485 AB490 AB495 AB500 AB505 AB510 AB515 AB520 AB525 AB530 AB535 AB540 AB545 AB550 AB555 AB560 AB565 AB570 AB575 AB580 AB585 AB590 AB595 AB600 AB605 AB610 AB615 AB620 AB625 AB630 AB635 AB640 AB645 AB650 AB655 AB660 AB665 AB670 AB675 AB680 AB685 AB690 AB695 AB700 AB705 AB710 AB715 AB720 AB725 AB730 AB735 AB740 AB745 AB750 AB755 AB760 AB765 AB770 AB775 AB780 AB785 AB790 AB795 AB800 AB805 AB810 AB815 AB820 AB825 AB830 AB835 AB840 AB845 AB850 AB855 AB860 AB865 AB870 AB875 AB880 AB885 AB890 AB895 AB900 AB905 AB910 AB915 AB920 AB925 AB930 AB935 AB940 AB945 AB950 AB955 AB960 AB965 AB970 AB975 AB980 AB985 AB990 AB995 AB1000)

9 optional size	80mm, 90mm, 115mm, 142mm, 180mm, 220mm, 280mm, 335mm, 400mm	
Rated output torque	18.5Nm~9800.0Nm	
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	9, 15, 20, 25, 30, 35, 40, 50, 70, 1000
	3-stage	64, 80, 100, 150, 200, 250, 350, 400, 500, 700, 1000
backlash	1-stage	Precision: <4 arc-min Standard: <8 arc-min
	2-stage	Precision: <6 arc-min Standard: <10 arc-min
	3-stage	Precision: <7 arc-min Standard: <18 arc-min



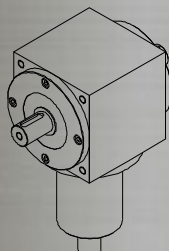
ABR series reducer (ABR060 ABR090 ABR115 ABR142 ABR180 ABR220 ABR280)

7 optional size	80mm, 90mm, 115mm, 142mm, 180mm, 220mm, 280mm	
Rated output torque	18.5Nm~5120.0Nm	
Ratio	1-stage	3, 4, 5, 7, 10
	2-stage	9, 15, 20, 25, 30, 35, 40, 50, 70, 1000
	3-stage	64, 80, 100, 150, 200, 250, 350, 400, 500, 700, 1000
backlash	1-stage	Precision: <5 arc-min Standard: <8 arc-min
	2-stage	Precision: <7 arc-min Standard: <10 arc-min
	3-stage	Precision: <9 arc-min Standard: <18 arc-min



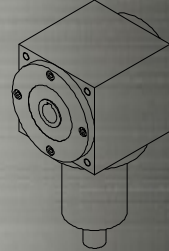
21 VS series reducer (VS09 VS11 VS14 VS17 VS21 VS25 VS30 VS35 VS40 VS45 VS50 VS55 VS60 VS65 VS70 VS75 VS80 VS85 VS90 VS95 VS100 VS105 VS110 VS115 VS120 VS125 VS130 VS135 VS140 VS145 VS150 VS155 VS160 VS165 VS170 VS175 VS180 VS185 VS190 VS195 VS200 VS205 VS210 VS215 VS220 VS225 VS230 VS235 VS240 VS245 VS250 VS255 VS260 VS265 VS270 VS275 VS280 VS285 VS290 VS295 VS300 VS305 VS310 VS315 VS320 VS325 VS330 VS335 VS340 VS345 VS350 VS355 VS360 VS365 VS370 VS375 VS380 VS385 VS390 VS395 VS400 VS405 VS410 VS415 VS420 VS425 VS430 VS435 VS440 VS445 VS450 VS455 VS460 VS465 VS470 VS475 VS480 VS485 VS490 VS495 VS500 VS505 VS510 VS515 VS520 VS525 VS530 VS535 VS540 VS545 VS550 VS555 VS560 VS565 VS570 VS575 VS580 VS585 VS590 VS595 VS600 VS605 VS610 VS615 VS620 VS625 VS630 VS635 VS640 VS645 VS650 VS655 VS660 VS665 VS670 VS675 VS680 VS685 VS690 VS695 VS700 VS705 VS710 VS715 VS720 VS725 VS730 VS735 VS740 VS745 VS750 VS755 VS760 VS765 VS770 VS775 VS780 VS785 VS790 VS795 VS800 VS805 VS810 VS815 VS820 VS825 VS830 VS835 VS840 VS845 VS850 VS855 VS860 VS865 VS870 VS875 VS880 VS885 VS890 VS895 VS900 VS905 VS910 VS915 VS920 VS925 VS930 VS935 VS940 VS945 VS950 VS955 VS960 VS965 VS970 VS975 VS980 VS985 VS990 VS995 VS1000)

7 optional size	90mm, 110mm, 140mm, 170mm, 210mm, 240mm, 280mm	
The allowable input power	1.1KW~138KW	
Ratio	1, 1.5, 2, 3, 4, 5	



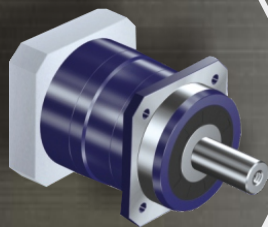
VA series reducer (VA09 VA11 VA14 VA17 VA21 VA24 VA28)

7 optional size	90mm, 110mm, 140mm, 170mm, 210mm, 240mm, 280mm	
The allowable input power	1.1KW~168KW	
Ratio	1, 1.5, 2, 3, 4, 5	



Helical Gear Precision Planetary Gear Reducers

Matching All Motors



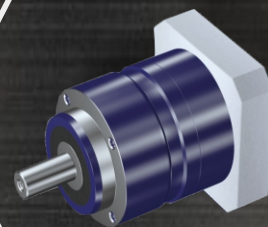
AF Series

Frame Size(mm) : 60, 90, 110, 145, 180;
Reduction Ratios : 3 to 10 (1 Stage), 15 to 100 (2 Stage);
Backlash : 3 arcmin, 5 arcmin, 7 arcmin;
Input & Output Shaft Type : All Main Stream, Customizable;
Average Lifetime : >20000 Hours

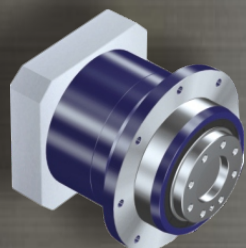
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01-22

AL Series

Frame Size(mm) : 70, 90, 120, 155, 205;
Reduction Ratios : 3 to 10 (1 Stage), 15 to 100 (2 Stage);
Backlash : 5 arcmin, 7 arcmin;
Input & Output Shaft Type : All Main Stream, Customizable;
Average Lifetime : >20000 Hours



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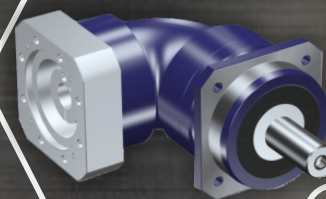
AH Series

Frame Size(mm) : 64, 90, 110;
Reduction Ratios : 4 to 10 (1 Stage), 16 to 100 (2 Stage);
Backlash : 3 arcmin, 5 arcmin;
Input & Output Shaft Type : All Main Stream, Customizable;
Average Lifetime : >20000 Hours

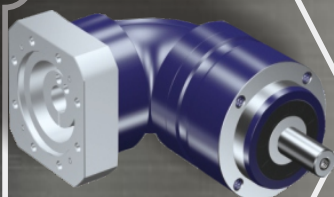
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ZAF Series

Frame Size(mm) : 60, 90, 115, 140;
Reduction Ratios : 3 to 10 (1 Stage), 16 to 100 (2 Stage);
Backlash : 6 arcmin, 9 arcmin;
Input & Output Shaft Type : All Main Stream, Customizable;
Average Lifetime : >20000 Hours



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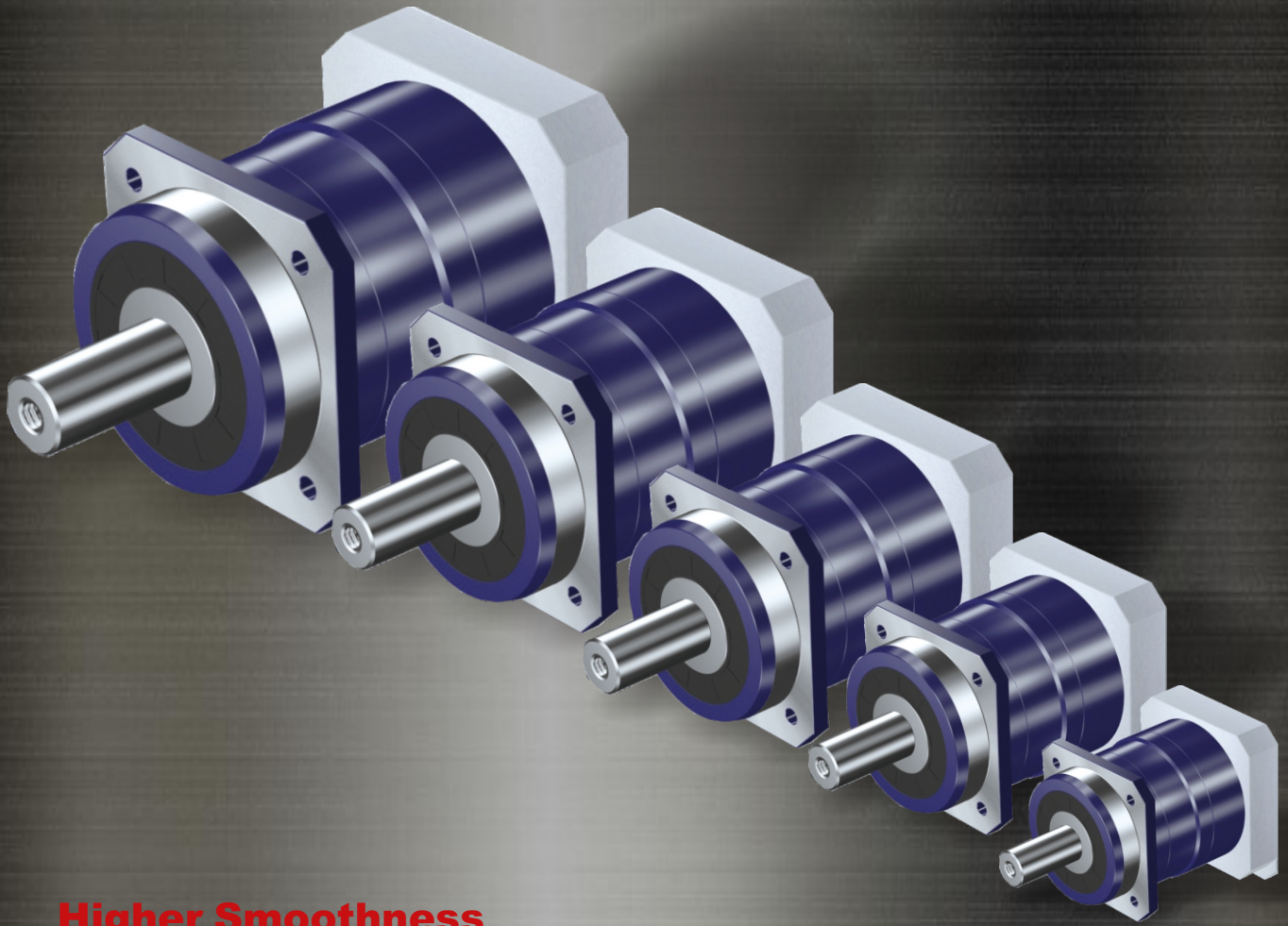


ZAL Series

Frame Size(mm) : 70, 90, 120, 155;
Reduction Ratios : 3 to 10 (1 Stage), 16 to 100 (2 Stage);
Backlash : 6 arcmin, 9 arcmin;
Input & Output Shaft Type : All Main Stream, Customizable;
Average Lifetime : >20000 Hours

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AF Series Highlights Overview



Higher Smoothness

Enhanced smoothness and lower noise due to adoption of Helical Gears.

Higher Precision

Fairly high precision enabled by backlash as 3arcmin.

Higher Rigidity and Torque

Due to adoption of uncaged needle roller bearings.

Flexible Motor Integration

Can be integrated with any motor in the world.

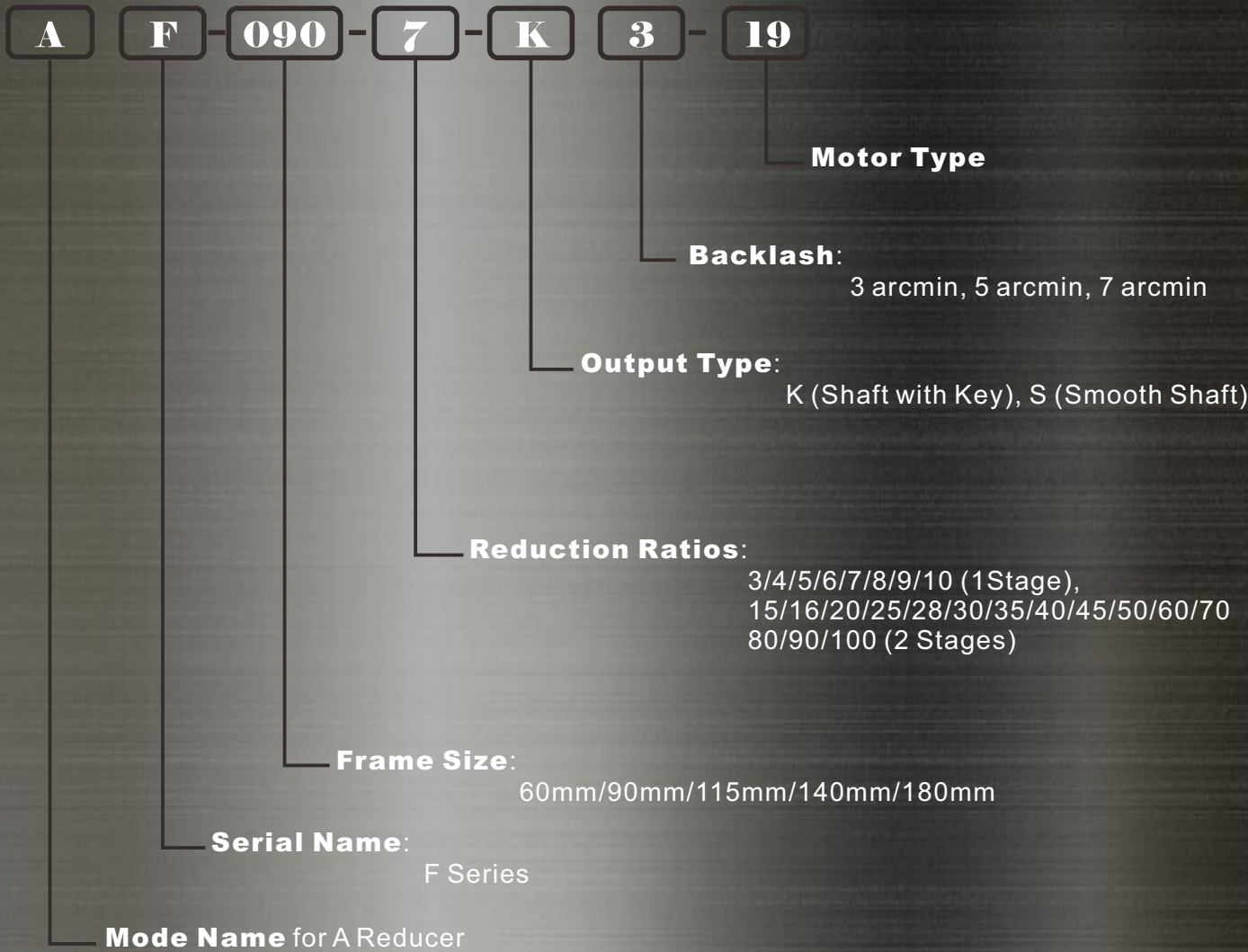
Free of Maintenance

No need to replace the grease for lifelong time and maintenance of any part.

No Grease Leakage

Usage of high viscosity and anti-separation lifetime grease.

AF Series Naming Rules



AF-060 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
060	1	3	18	35	80	3000	6000	430	310
		4	27	50	100	3000	6000	470	360
		5	27	50	100	3000	6000	510	390
		6	27	50	100	3000	6000	540	430
		7	27	50	100	3000	6000	570	460
		8	27	50	100	3000	6000	600	480
		9	18	35	80	3000	6000	620	510
	2	10	18	35	80	3000	6000	640	530
		15	18	35	80	3000	6000	740	630
		16	27	50	100	3000	6000	750	650
		20	27	50	100	3000	6000	810	720
		25	27	50	100	3000	6000	870	790
		28	27	50	100	3000	6000	910	830
		30	18	35	80	3000	6000	930	860
		35	27	50	100	3000	6000	980	920
		40	27	50	100	3000	6000	1000	970
		45	18	35	80	3000	6000	1100	1000
		50	27	50	100	3000	6000	1100	1100
		60	27	50	100	3000	6000	1200	1100
		70	27	50	100	3000	6000	1200	1100
80	27	50	100	3000	6000	1200	1100		
90	18	35	80	3000	6000	1200	1100		
100	18	35	80	3000	6000	1200	1100		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ8) [kgcm ²]	Moment of inertia (≤ Φ14) [kgcm ²]	Moment of inertia (≤ Φ19) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]			
060	1	3	1200	1100	1.4	0.14	0.22	0.43
		4	1200	1100		0.095	0.17	0.38
		5	1200	1100		0.077	0.16	0.36
		6	1200	1100		0.068	0.15	0.36
		7	1200	1100		0.062	0.14	0.35
		8	1200	1100		0.059	0.14	0.35
		9	1200	1100		0.057	0.14	0.34
	2	10	1200	1100	0.056	0.14	0.34	
		15	1200	1100	0.055	0.14	-	
		16	1200	1100	0.057	0.14	-	
		20	1200	1100	0.054	0.13	-	
		25	1200	1100	0.053	0.13	-	
		28	1200	1100	0.055	0.14	-	
		30	1200	1100	0.049	0.13	-	
		35	1200	1100	0.053	0.13	-	
		40	1200	1100	0.049	0.13	-	
		45	1200	1100	0.053	0.13	-	
		50	1200	1100	0.049	0.13	-	
		60	1200	1100	0.049	0.13	-	
		70	1200	1100	0.049	0.13	-	
80	1200	1100	0.049	0.13	-			
90	1200	1100	0.049	0.13	-			
100	1200	1100	0.049	0.13	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000 times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AF-090 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
090	1	3	50	80	200	3000	6000	810	930
		4	75	125	250	3000	6000	890	1100
		5	75	125	250	3000	6000	960	1200
		6	75	125	250	3000	6000	1000	1300
		7	75	125	250	3000	6000	1100	1300
		8	75	125	250	3000	6000	1100	1400
		9	50	80	200	3000	6000	1200	1500
	2	10	50	80	200	3000	6000	1200	1600
		15	50	80	200	3000	6000	1400	1900
		16	75	125	250	3000	6000	1400	1900
		20	75	125	250	3000	6000	1500	2100
		25	75	125	250	3000	6000	1600	2200
		28	75	125	250	3000	6000	1700	2200
		30	50	80	200	3000	6000	1700	2200
		35	75	125	250	3000	6000	1800	2200
		40	75	125	250	3000	6000	1900	2200
		45	50	80	200	3000	6000	2000	2200
		50	75	125	250	3000	6000	2100	2200
		60	75	125	250	3000	6000	2200	2200
		70	75	125	250	3000	6000	2300	2200
80	75	125	250	3000	6000	2400	2200		
90	50	80	200	3000	6000	2400	2200		
100	50	80	200	3000	6000	2400	2200		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ8) [kgcm ²]	Moment of inertia (≤ Φ14) [kgcm ²]	Moment of inertia (≤ Φ19) [kgcm ²]	Moment of inertia (≤ Φ28) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
090	1	3	2400	2200	3.7	-	0.72	1.2	3.2
		4	2400	2200		-	0.49	0.95	3.0
		5	2400	2200		-	0.40	0.86	2.9
		6	2400	2200		-	0.36	0.82	2.8
		7	2400	2200		-	0.32	0.79	2.8
		8	2400	2200		-	0.31	0.77	2.8
		9	2400	2200		-	0.29	0.76	2.8
	2	10	2400	2200	-	0.29	0.75	2.8	
		15	2400	2200	4.2	0.13	0.28	0.72	-
		16	2400	2200		0.15	0.30	0.74	-
		20	2400	2200		0.13	0.28	0.72	-
		25	2400	2200		0.12	0.28	0.71	-
		28	2400	2200		0.14	0.29	0.73	-
		30	2400	2200		0.10	0.25	0.70	-
		35	2400	2200		0.12	0.27	0.71	-
		40	2400	2200		0.099	0.25	0.70	-
		45	2400	2200		0.12	0.27	0.71	-
		50	2400	2200		0.098	0.25	0.69	-
		60	2400	2200		0.098	0.25	0.69	-
		70	2400	2200		0.097	0.25	0.69	-
80	2400	2200	0.097	0.25		0.69	-		
90	2400	2200	0.097	0.25	0.69	-			
100	2400	2200	0.097	0.25	0.69	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AF-115 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
115	1	3	120	225	500	3000	6000	1300	1500
		4	120	330	625	3000	6000	1500	1700
		5	180	330	625	3000	6000	1600	1900
		6	180	330	625	3000	6000	1700	2000
		7	180	330	625	3000	6000	1800	2100
		8	180	330	625	3000	6000	1900	2300
		9	120	225	500	3000	6000	1900	2400
	2	10	120	225	500	3000	6000	2000	2500
		15	120	225	500	3000	6000	2300	3000
		16	180	330	625	3000	6000	2300	3100
		20	180	330	625	3000	6000	2500	3400
		25	180	330	625	3000	6000	2700	3700
		28	180	330	625	3000	6000	2800	3900
		30	120	225	500	3000	6000	2900	3900
		35	180	330	625	3000	6000	3000	3900
		40	180	330	625	3000	6000	3200	3900
		45	120	225	500	3000	6000	3300	3900
		50	180	330	625	3000	6000	3400	3900
		60	180	330	625	3000	6000	3600	3900
		70	180	330	625	3000	6000	3800	3900
80	180	330	625	3000	6000	4000	3900		
90	120	225	500	3000	6000	4200	3900		
100	120	225	500	3000	6000	4300	3900		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ 14) [kgcm ²]	Moment of inertia (≤ Φ 19) [kgcm ²]	Moment of inertia (≤ Φ 28) [kgcm ²]	Moment of inertia (≤ Φ 38) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
115	1	3	4300	3900	8	-	3.3	5.3	13
		4	4300	3900		-	2.0	4.1	12
		5	4300	3900		-	1.6	3.6	11
		6	4300	3900		-	1.3	3.3	11
		7	4300	3900		-	1.1	3.2	11
		8	4300	3900		-	1.0	3.2	11
		9	4300	3900		-	0.98	3.0	11
	2	10	4300	3900	-	0.95	3.0	11	
		15	4300	3900	8.9	0.43	0.86	2.8	-
		16	4300	3900		0.48	0.92	2.9	-
		20	4300	3900		0.40	0.83	2.8	-
		25	4300	3900		0.38	0.82	2.8	-
		28	4300	3900		0.44	0.88	2.8	-
		30	4300	3900		0.29	0.74	2.7	-
		35	4300	3900		0.37	0.81	2.7	-
		40	4300	3900		0.28	0.73	2.7	-
		45	4300	3900		0.37	0.80	2.7	-
		50	4300	3900		0.28	0.73	2.7	-
		60	4300	3900		0.28	0.73	2.7	-
		70	4300	3900		0.28	0.73	2.7	-
80	4300	3900	0.28	0.73		2.7	-		
90	4300	3900	0.27	0.73	2.7	-			
100	4300	3900	0.27	0.73	2.7	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AF-140 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7	
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]	
140	1	3	240	470	1000	2000	4000	3200	2400	
		4	240	700	1250	2000	4000	3500	2700	
		5	360	700	1250	2000	4000	3800	3000	
		6	360	700	1250	2000	4000	4000	3300	
		7	360	700	1250	2000	4000	4200	3500	
		8	360	700	1250	2000	4000	4400	3700	
		9	240	470	1000	2000	4000	4600	3900	
		10	240	470	1000	2000	4000	4700	4100	
		2	15	240	470	1000	2000	4000	5400	4900
			16	360	700	1250	2000	4000	5500	5000
	20		360	700	1250	2000	4000	6000	5500	
	25		360	700	1250	2000	4000	6400	6100	
	28		360	700	1250	2000	4000	6700	6400	
	30		240	470	1000	2000	4000	6800	6600	
	35		360	700	1250	2000	4000	7200	7000	
	40		360	700	1250	2000	4000	7500	7500	
	45		240	470	1000	2000	4000	7800	7900	
	50		360	700	1250	2000	4000	8100	8200	
	60	360	700	1250	2000	4000	8600	8200		
	70	360	700	1250	2000	4000	9100	8200		
80	360	700	1250	2000	4000	9100	8200			
90	240	470	1000	2000	4000	9100	8200			
100	240	470	1000	2000	4000	9100	8200			

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ 19) [kgcm ²]	Moment of inertia (≤ Φ 28) [kgcm ²]	Moment of inertia (≤ Φ 38) [kgcm ²]	Moment of inertia (≤ Φ 48) [kgcm ²]		
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]						
140	1	3	9100	8200	16	-	12	20	42		
		4	9100	8200		-	7.5	15	37		
		5	9100	8200		-	5.8	14	36		
		6	9100	8200		-	4.9	13	35		
		7	9100	8200		-	4.1	12	34		
		8	9100	8200		-	3.8	12	34		
		9	9100	8200		-	3.6	11	34		
		10	9100	8200		-	3.5	11	34		
		2	15	9100		8200	17	1.3	3.2	11	-
			16	9100		8200		1.5	3.5	11	-
	20		9100	8200	1.2	3.1		11	-		
	25		9100	8200	1.1	3.1		11	-		
	28		9100	8200	1.4	3.3		11	-		
	30		9100	8200	0.85	2.8		10	-		
	35		9100	8200	1.1	3.1		11	-		
	40		9100	8200	0.83	2.8		10	-		
	45		9100	8200	1.1	3.0		11	-		
	50		9100	8200	0.81	2.8		10	-		
	60	9100	8200	0.81	2.8	10	-				
	70	9100	8200	0.80	2.8	10	-				
80	9100	8200	0.80	2.8	10	-					
90	9100	8200	0.80	2.8	10	-					
100	9100	8200	0.80	2.8	10	-					

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AF-180 Series Load Performance Table

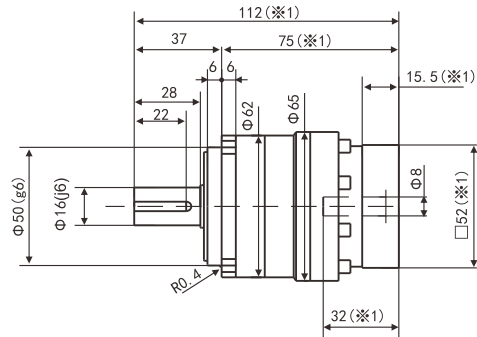
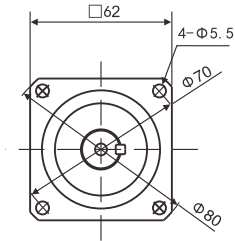
Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
180	1	3	500	970	2200	1500	3000	5600	4300
		4	750	1400	2750	1500	3000	6200	4900
		5	750	1400	2750	1500	3000	6700	5400
		6	750	1400	2750	1500	3000	7100	5800
		7	750	1400	2750	1500	3000	7400	6300
		8	750	1400	2750	1500	3000	7800	6600
		9	500	970	2200	1500	3000	8100	7000
	2	10	500	970	2200	1500	3000	8400	7300
		15	500	970	2200	1500	3000	9600	8700
		16	750	1400	2750	1500	3000	9800	8900
		20	750	1400	2750	1500	3000	11000	9900
		25	750	1400	2750	1500	3000	11000	11000
		28	750	1400	2750	1500	3000	12000	11000
		30	500	970	2200	1500	3000	12000	12000
		35	750	1400	2750	1500	3000	13000	13000
		40	750	1400	2750	1500	3000	13000	13000
		45	500	970	2200	1500	3000	14000	14000
		50	750	1400	2750	1500	3000	14000	14000
		60	750	1400	2750	1500	3000	15000	14000
		70	750	1400	2750	1500	3000	15000	14000
80	750	1400	2750	1500	3000	15000	14000		
90	500	970	2200	1500	3000	15000	14000		
100	500	970	2200	1500	3000	15000	14000		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ28) [kgcm ²]	Moment of inertia (≤ Φ38) [kgcm ²]	Moment of inertia (≤ Φ48) [kgcm ²]	Moment of inertia (≤ Φ65) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
180	1	3	15000	14000	36	-	44	20	130
		4	15000	14000		-	28	15	110
		5	15000	14000		-	22	14	100
		6	15000	14000		-	18	13	100
		7	15000	14000		-	16	12	99
		8	15000	14000		-	15	12	97
		9	15000	14000		-	14	11	97
	2	10	15000	14000	-	14	11	96	
		15	15000	14000	37	4.7	12	11	-
		16	15000	14000		5.4	13	11	-
		20	15000	14000		4.4	12	11	-
		25	15000	14000		4.2	12	11	-
		28	15000	14000		4.9	13	11	-
		30	15000	14000		3.2	11	10	-
		35	15000	14000		4.1	12	11	-
		40	15000	14000		3.2	11	10	-
		45	15000	14000		4.0	12	11	-
		50	15000	14000		3.1	11	10	-
		60	15000	14000		3.1	11	10	-
		70	15000	14000		3.1	11	10	-
80	15000	14000	3.1	11		10	-		
90	15000	14000	3.1	11	10	-			
100	15000	14000	3.1	11	10	-			

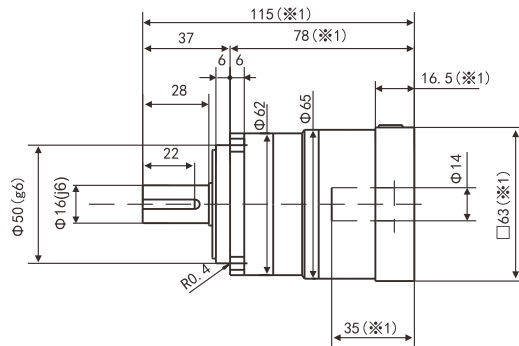
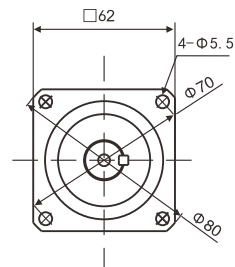
- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000 times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AF-060 1-Stage Series Mechanical Dimensions

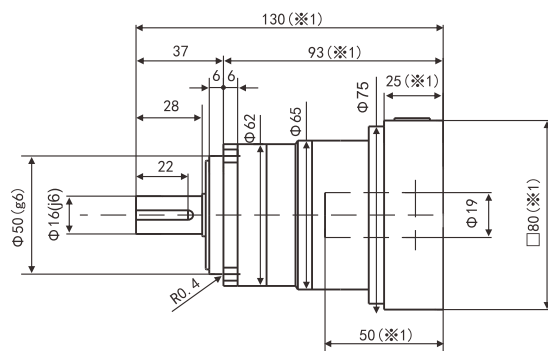
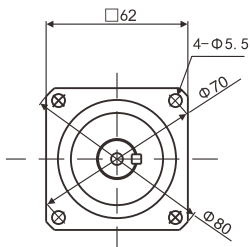
Input Shaft Diameter $\leq \phi 8$ (in mm)



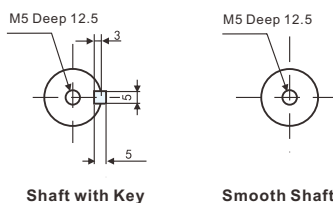
Input Shaft Diameter $\leq \phi 14$ (in mm)



Input Shaft Diameter $\leq \phi 19$ (in mm)



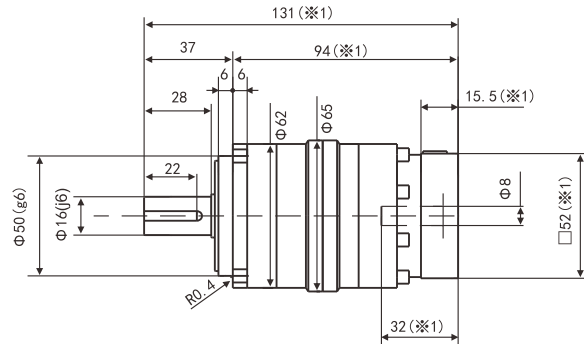
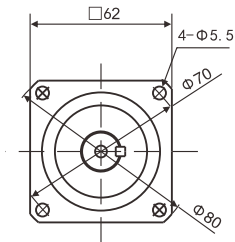
Output Shaft Type (in mm)



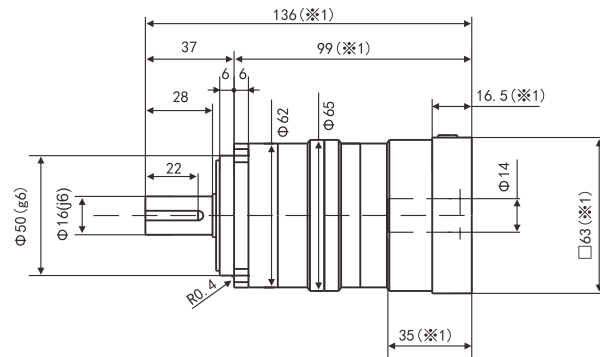
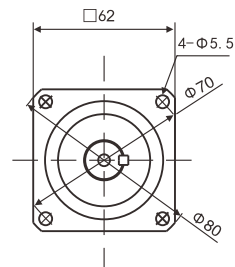
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-060 2-Stage Series Mechanical Dimensions

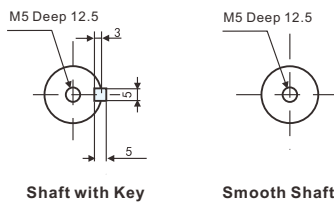
Input Shaft Diameter $\leq \phi 8$ (in mm)



Input Shaft Diameter $\leq \phi 14$ (in mm)



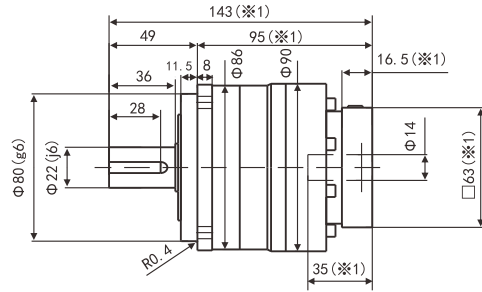
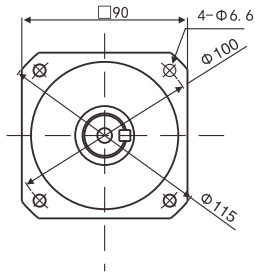
Output Shaft Type (in mm)



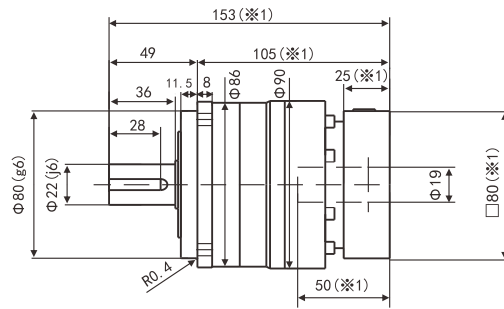
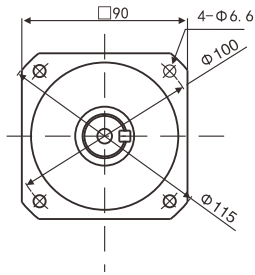
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-090 1-Stage Series Mechanical Dimensions

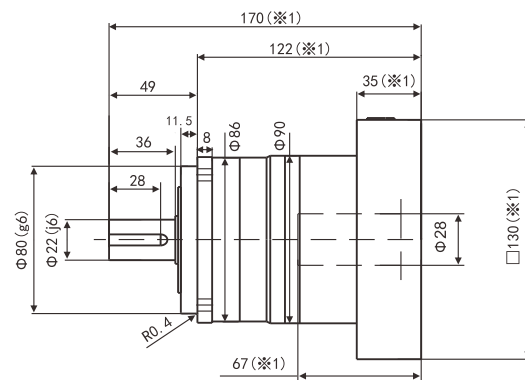
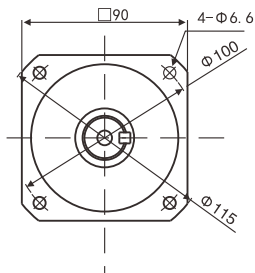
Input Shaft Diameter $\leq \phi 14$ (in mm)



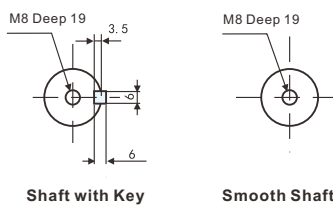
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



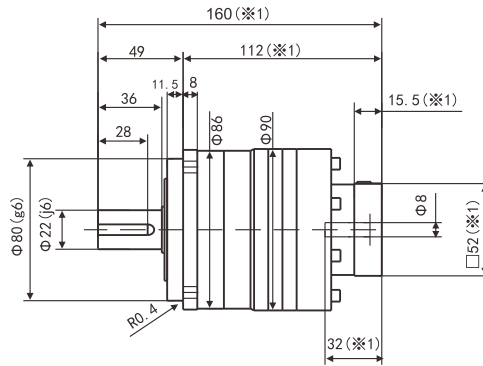
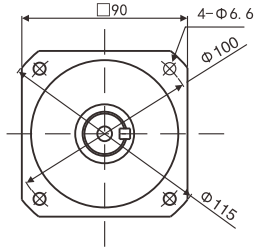
Output Shaft Type (in mm)



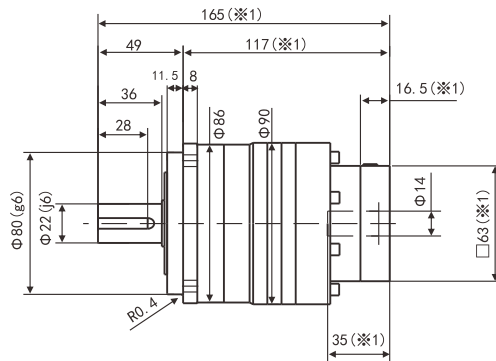
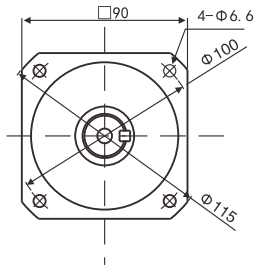
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-090 2-Stage Series Mechanical Dimensions

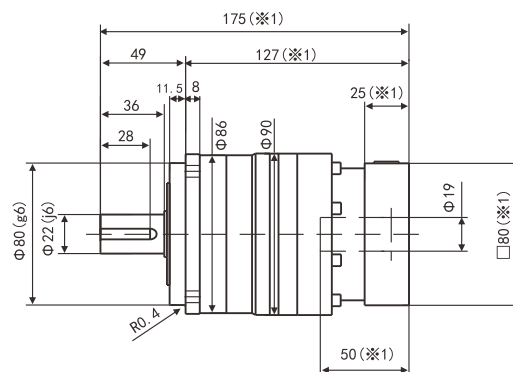
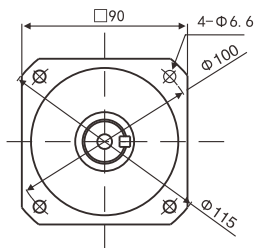
Input Shaft Diameter $\leq \phi 8$ (in mm)



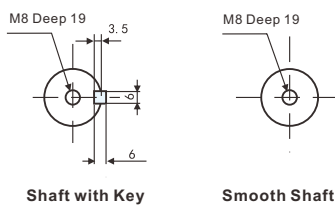
Input Shaft Diameter $\leq \phi 14$ (in mm)



Input Shaft Diameter $\leq \phi 19$ (in mm)



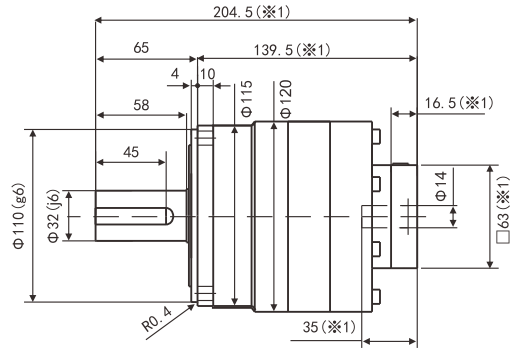
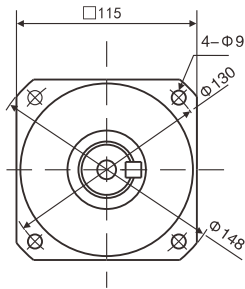
Output Shaft Type (in mm)



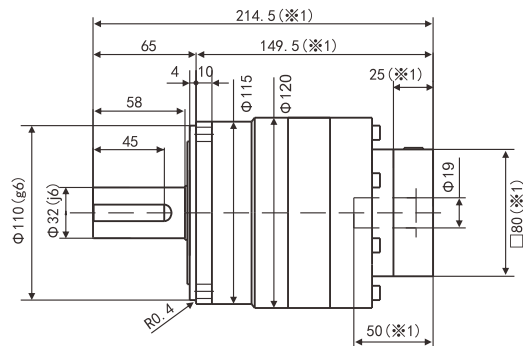
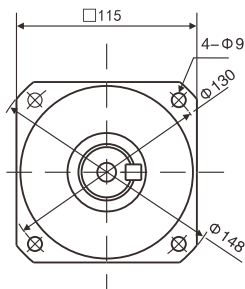
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-115 2-Stage Series Mechanical Dimensions

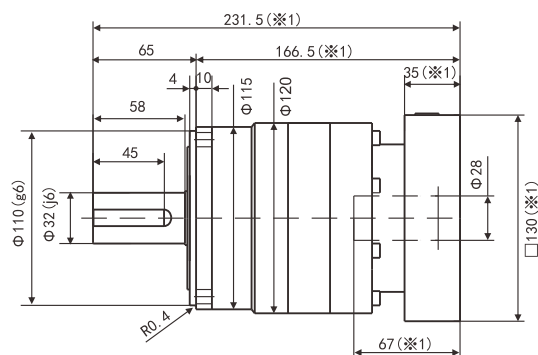
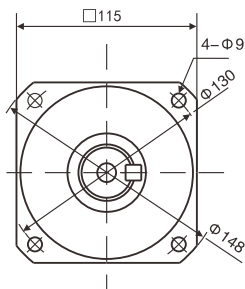
Input Shaft Diameter $\leq \phi 14$ (in mm)



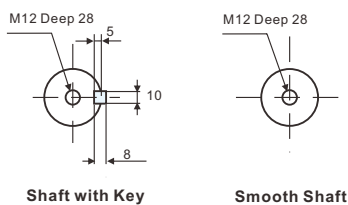
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



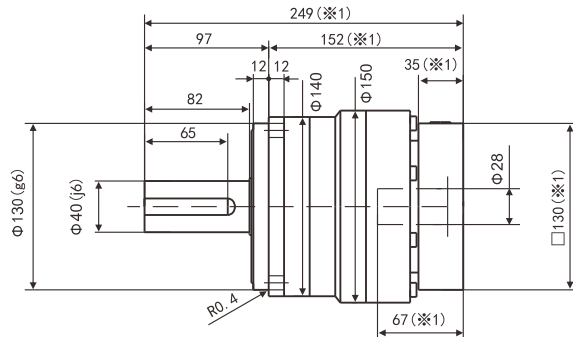
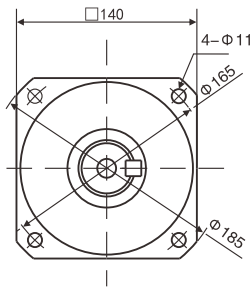
Output Shaft Type (in mm)



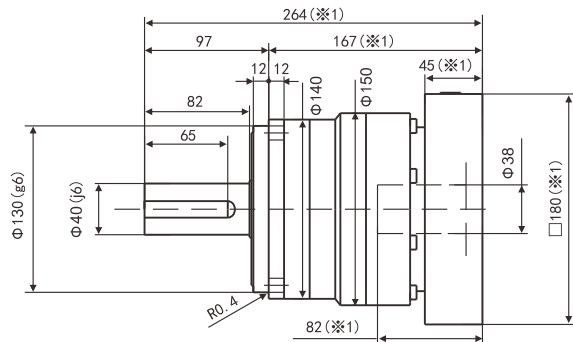
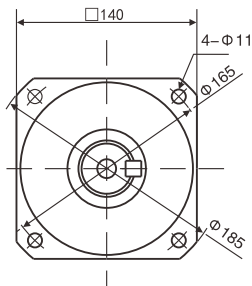
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-140 1-Stage Series Mechanical Dimensions

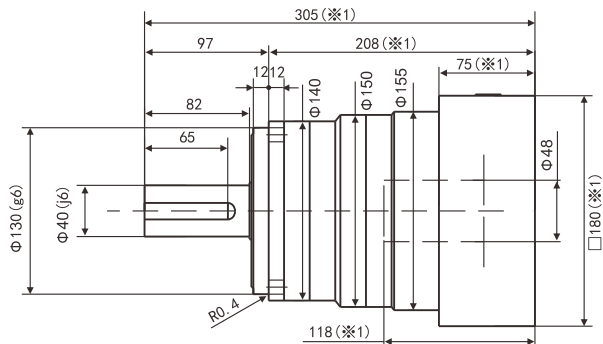
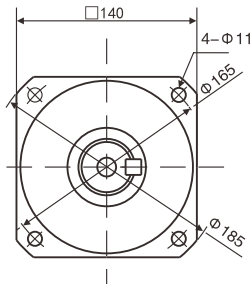
Input Shaft Diameter $\leq \phi 28$ (in mm)



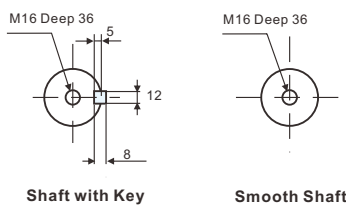
Input Shaft Diameter $\leq \phi 38$ (in mm)



Input Shaft Diameter $\leq \phi 48$ (in mm)



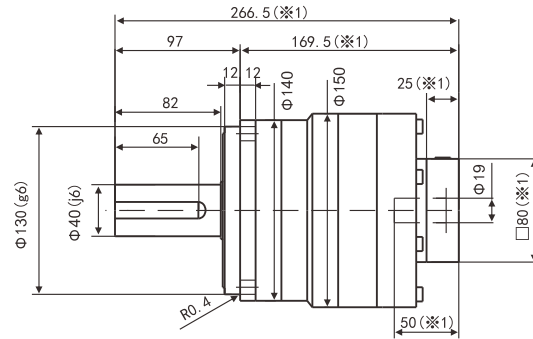
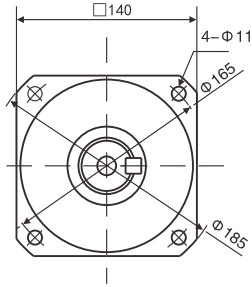
Output Shaft Type (in mm)



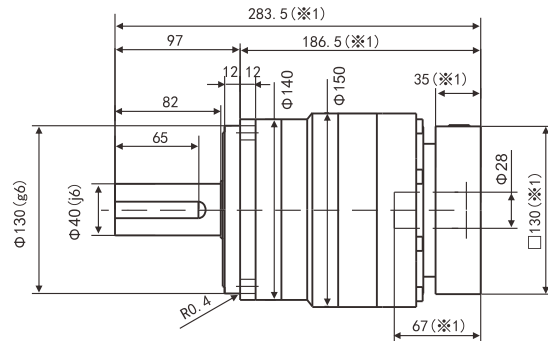
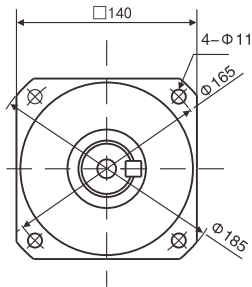
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-140 2-Stage Series Mechanical Dimensions

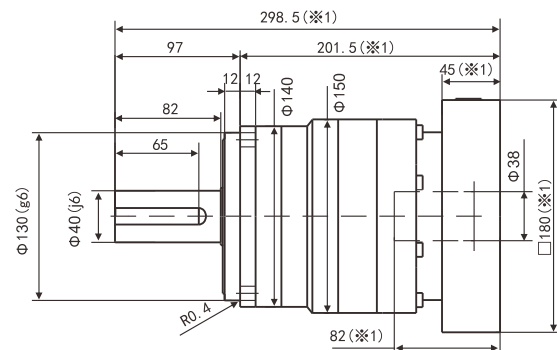
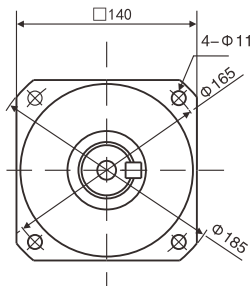
Input Shaft Diameter $\leq \phi 19$ (in mm)



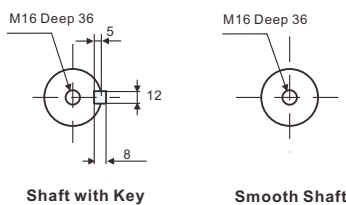
Input Shaft Diameter $\leq \phi 28$ (in mm)



Input Shaft Diameter $\leq \phi 38$ (in mm)



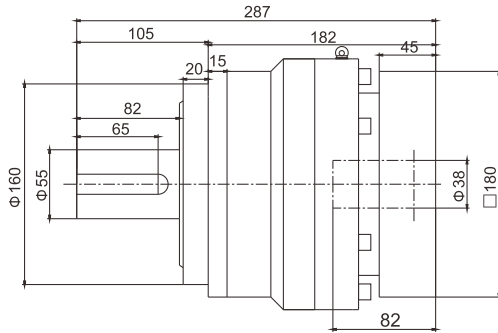
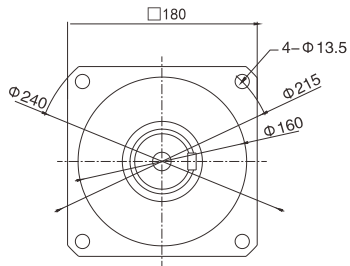
Output Shaft Type (in mm)



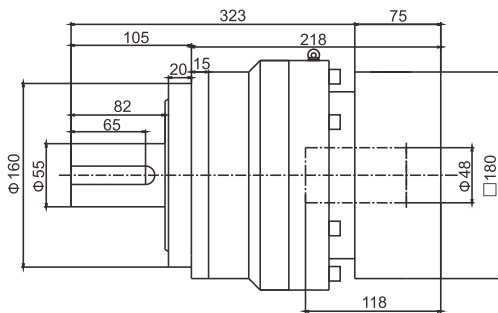
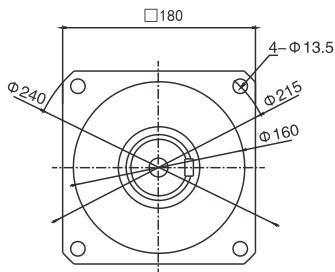
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-180 1-Stage Series Mechanical Dimensions

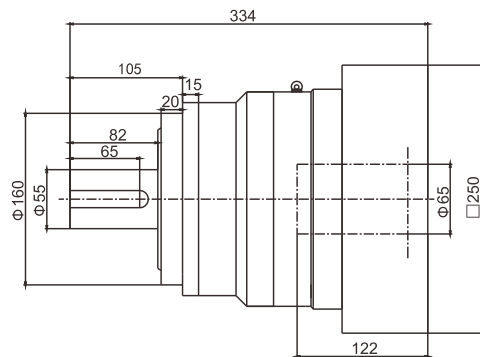
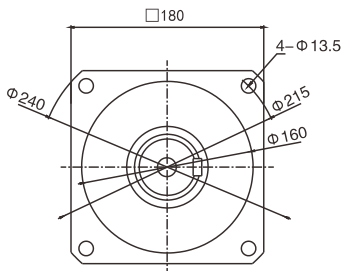
Input Shaft Diameter $\leq \phi 38$ (in mm)



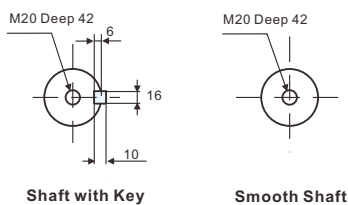
Input Shaft Diameter $\leq \phi 48$ (in mm)



Input Shaft Diameter $\leq \phi 65$ (in mm)



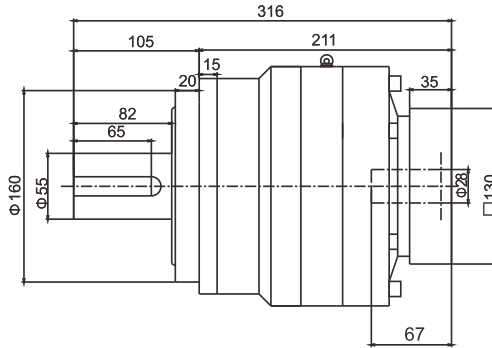
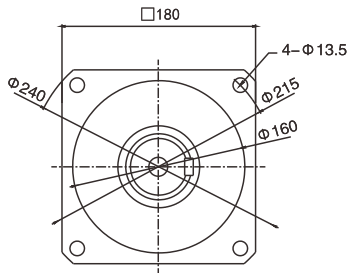
Output Shaft Type (in mm)



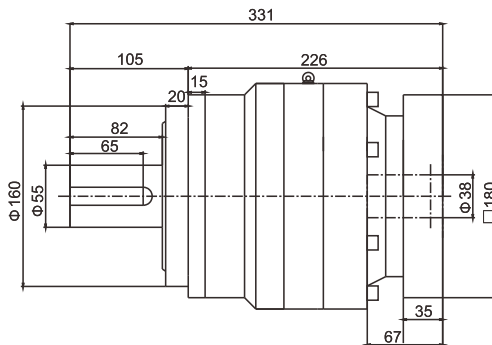
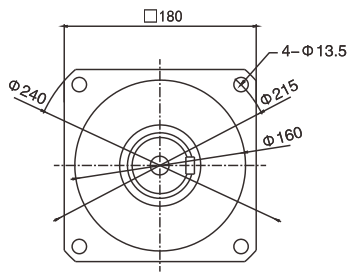
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-180 2-Stage Series Mechanical Dimensions

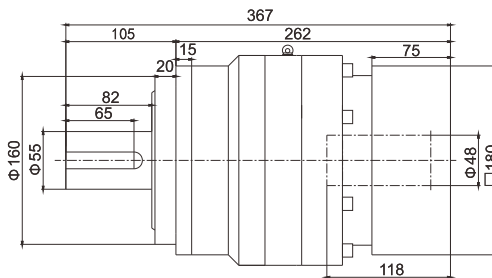
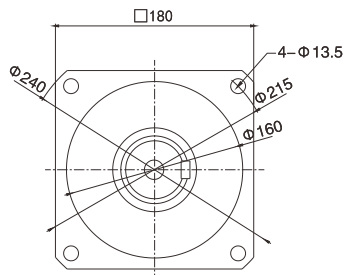
Input Shaft Diameter $\leq \phi 28$ (in mm)



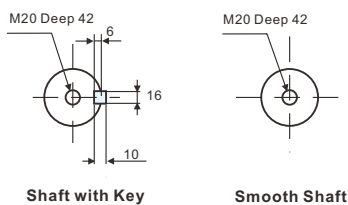
Input Shaft Diameter $\leq \phi 38$ (in mm)



Input Shaft Diameter $\leq \phi 48$ (in mm)

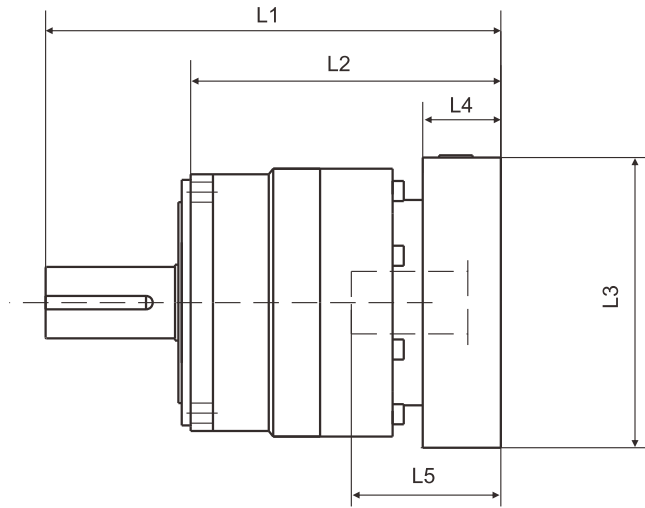


Output Shaft Type (in mm)



- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AF-060 Input Shaft Adaptors

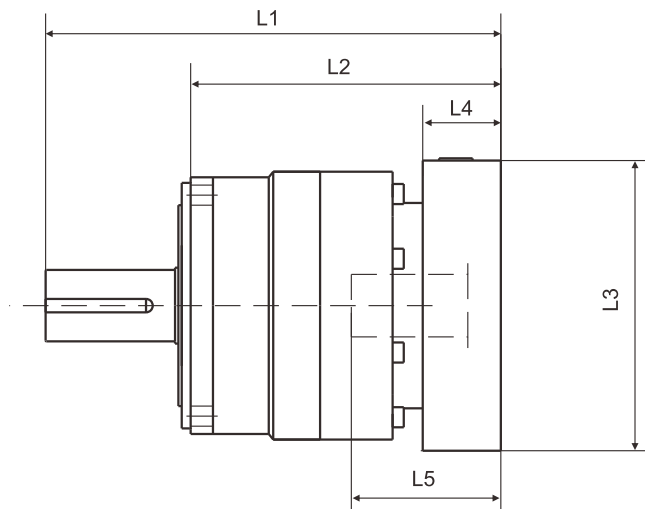


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AF-060-[]-[]-8** Input Shaft Dia. ≤ φ8	AA · AC · AD · AF · AG	112	75	□52	15.5	32	131	94	□52	15.5	32
	AB · AE · AH · AJ · AK	117	80	□52	20.5	37	136	99	□52	20.5	37
	BA · BB · BD · BE	112	75	□60	15.5	32	131	94	□60	15.5	32
	BC · BF	117	80	□60	20.5	37	136	99	□60	20.5	37
	CA	117	80	□70	20.5	37	136	99	□70	20.5	37
AF-060-[]-[]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	115	78	□65	16.5	35	136	99	□65	16.5	35
	BC · BH · BM	120	83	□65	21.5	40	141	104	□65	21.5	40
	BL	125	88	□65	26.5	45	146	109	□65	26.5	45
	CA	115	78	□70	16.5	35	136	99	□70	16.5	35
	CB	120	83	□70	21.5	40	141	104	□70	21.5	40
	DA · DB · DC · DD · DF · DH	115	78	□80	16.5	35	136	99	□80	16.5	35
	DE	120	83	□80	21.5	40	141	104	□80	21.5	40
	DG	125	88	□80	26.5	45	146	109	□80	26.5	45
	EA · EB · EC	115	78	□90	16.5	35	136	99	□90	16.5	35
	ED	125	88	□90	26.5	45	146	109	□90	26.5	45
	FA	115	78	□100	16.5	35	136	99	□100	16.5	35
	GA	115	78	□115	16.5	35	136	99	□115	16.5	35
	AF-060-[]-[]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	130	93	□80	25	50	-	-	-	-
DD		140	103	□80	35	60	-	-	-	-	-
DE		135	98	□80	30	55	-	-	-	-	-
EA		135	98	□90	30	55	-	-	-	-	-
EB		130	93	□90	25	50	-	-	-	-	-
EC		140	103	□90	35	60	-	-	-	-	-
FA		130	93	□100	25	50	-	-	-	-	-
FB		140	103	□100	35	60	-	-	-	-	-
GA · GC		135	98	□115	30	55	-	-	-	-	-
GB · GD		130	93	□115	25	50	-	-	-	-	-
HA		130	93	□130	25	50	-	-	-	-	-
HB		145	108	□130	40	65	-	-	-	-	-
HC · HD · HE		135	98	□130	30	55	-	-	-	-	-

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

AF-090 Input Shaft Adaptors

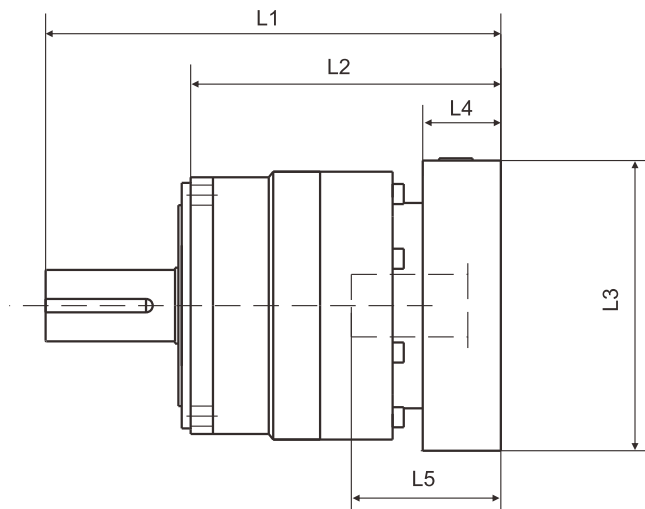


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AF-090-[-][-]-8** Input Shaft Dia. ≤ φ8	AA · AC · AD · AF · AG	-	-	-	-	-	160	112	□52	15.5	32
	AB · AE · AH · AJ · AK	-	-	-	-	-	165	117	□52	20.5	37
	BA · BB · BD · BE	-	-	-	-	-	160	112	□60	15.5	32
	BC · BF	-	-	-	-	-	165	117	□60	20.5	37
	CA	-	-	-	-	-	165	117	□70	20.5	37
AF-090-[-][-]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	143	95	□65	16.5	35	165	117	□65	16.5	35
	BC · BH · BM	148	100	□65	21.5	40	170	122	□65	21.5	40
	BL	153	105	□65	26.5	45	175	127	□65	26.5	45
	CA	143	95	□70	16.5	35	165	117	□70	16.5	35
	CB	148	100	□70	21.5	40	170	122	□70	21.5	40
	DA · DB · DC · DD · DF · DH	143	95	□80	16.5	35	165	117	□80	16.5	35
	DE	148	100	□80	21.5	40	170	122	□80	21.5	40
	DG	153	105	□80	26.5	45	175	127	□80	26.5	45
	EA · EB · EC	143	95	□90	16.5	35	165	117	□90	16.5	35
	ED	153	105	□90	26.5	45	175	127	□90	26.5	45
	FA	143	95	□100	16.5	35	165	117	□100	16.5	35
	GA	143	95	□115	16.5	35	165	117	□115	16.5	35
	AF-090-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	153	105	□80	25	50	175	127	□80	25
DD		163	115	□80	35	60	185	137	□80	35	60
DE		158	110	□80	30	55	180	132	□80	30	55
EA		158	110	□90	30	55	180	132	□90	30	55
EB		153	105	□90	25	50	175	127	□90	25	50
EC		163	115	□90	35	60	185	137	□90	35	60
FA		153	105	□100	25	50	175	127	□100	25	50
FB		163	115	□100	35	60	185	137	□100	35	60
GA · GC		158	110	□115	30	55	180	132	□115	30	55
GB · GD		153	105	□115	25	50	175	127	□115	25	50
HA		153	105	□130	25	50	175	127	□130	25	50
HB		168	120	□130	40	65	190	142	□130	40	65
HC · HD · HE		158	110	□130	30	55	180	132	□130	30	55
AF-090-[-][-]-28** Input Shaft Dia. ≤ φ28		FA · FB · FC	170	122	□100	35	67	-	-	-	-
	GA · GB · GC · GD · GE · GF · GG	170	122	□115	35	67	-	-	-	-	-
	HA · HC · HD	170	122	□130	35	67	-	-	-	-	-
	HB	180	132	□130	45	77	-	-	-	-	-
	JA · JB · JC	170	122	□150	35	67	-	-	-	-	-
	KA · KB	170	122	□180	35	67	-	-	-	-	-
	KD	180	132	□180	45	77	-	-	-	-	-
	LA	170	122	□200	35	67	-	-	-	-	-
	MA	170	122	□220	35	67	-	-	-	-	-

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

AF-115 Input Shaft Adaptors

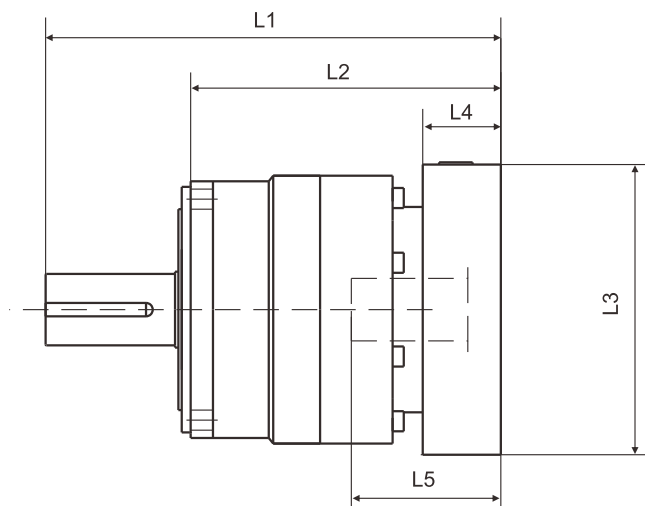


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AF-115-[-][-]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	-	-	-	-	-	204.5	139.5	□65	16.5	35
	BC · BH · BM	-	-	-	-	-	209.5	144.5	□65	21.5	40
	BL	-	-	-	-	-	214.5	149.5	□65	26.5	45
	CA	-	-	-	-	-	204.5	139.5	□70	16.5	35
	CB	-	-	-	-	-	209.5	144.5	□70	21.5	40
	DA · DB · DC · DD · DF · DH	-	-	-	-	-	204.5	139.5	□80	16.5	35
	DE	-	-	-	-	-	209.5	144.5	□80	21.5	40
	DG	-	-	-	-	-	214.5	149.5	□80	26.5	45
	EA · EB · EC	-	-	-	-	-	204.5	139.5	□90	16.5	35
	ED	-	-	-	-	-	214.5	149.5	□90	26.5	45
	FA	-	-	-	-	-	204.5	139.5	□100	16.5	35
	GA	-	-	-	-	-	204.5	139.5	□115	16.5	35
	AF-115-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	187	122	□80	25	50	214.5	149.5	□80	25
DD		197	132	□80	35	60	224.5	159.5	□80	35	60
DE		192	127	□80	30	55	219.5	154.5	□80	30	55
EA		192	127	□90	30	55	219.5	154.5	□90	30	55
EB		187	122	□90	25	50	214.5	149.5	□90	25	50
EC		197	132	□90	35	60	224.5	159.5	□90	35	60
FA		187	122	□100	25	50	214.5	149.5	□100	25	50
FB		197	132	□100	35	60	224.5	159.5	□100	35	60
GA · GC		192	127	□115	30	55	219.5	154.5	□115	30	55
GB · GD		187	122	□115	25	50	214.5	149.5	□115	25	50
HA		187	122	□130	25	50	214.5	149.5	□130	25	50
HB		202	137	□130	40	65	229.5	164.5	□130	40	65
HC · HD · HE		192	127	□130	30	55	219.5	154.5	□130	30	55
AF-115-[-][-]-28** Input Shaft Dia. ≤ φ28	FA · FB · FC	204	139	□100	35	67	231.5	166.5	□100	35	67
	GA · GB · GC · GD · GE · GF · GG	204	139	□115	35	67	231.5	166.5	□115	35	67
	HA · HC · HD	204	139	□130	35	67	231.5	166.5	□130	35	67
	HB	214	149	□130	45	77	241.5	175.5	□130	45	77
	JA · JB · JC	204	139	□150	35	67	231.5	166.5	□150	35	67
	KA · KB	204	139	□180	35	67	231.5	166.5	□180	35	67
	KD	214	149	□180	45	77	241.5	175.5	□180	45	77
	LA	204	139	□200	35	67	231.5	166.5	□200	35	67
	MA	204	139	□220	35	67	231.5	166.5	□220	35	67
	AF-115-[-][-]-38** Input Shaft Dia. ≤ φ38	HA	225	160	□130	45	82	-	-	-	-
HB		220	155	□130	40	77	-	-	-	-	-
JA		225	160	□150	45	82	-	-	-	-	-
KA · KB · KC		225	160	□180	45	82	-	-	-	-	-
LA		225	160	□200	45	82	-	-	-	-	-
LB		235	170	□200	55	92	-	-	-	-	-
MA · MB		225	160	□220	45	82	-	-	-	-	-
NA		225	160	□250	45	82	-	-	-	-	-

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

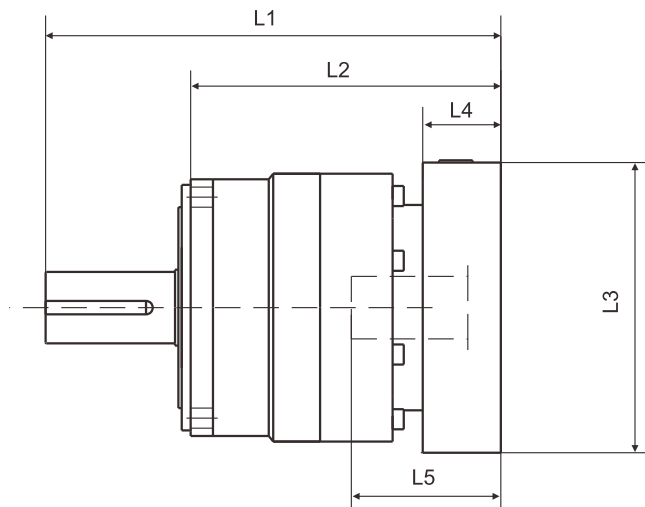
AF-140 Input Shaft Adaptors



Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AF-140-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	-	-	-	-	-	266.5	169.5	□80	25	50
	DD	-	-	-	-	-	276.5	179.5	□80	35	60
	DE	-	-	-	-	-	271.5	174.5	□80	30	55
	EA	-	-	-	-	-	271.5	174.5	□90	30	55
	EB	-	-	-	-	-	266.5	169.5	□90	25	50
	EC	-	-	-	-	-	276.5	179.5	□90	35	60
	FA	-	-	-	-	-	266.5	169.5	□100	25	50
	FB	-	-	-	-	-	276.5	179.5	□100	35	60
	GA · GC	-	-	-	-	-	271.5	174.5	□115	30	55
	GB · GD	-	-	-	-	-	266.5	169.5	□115	25	50
	HA	-	-	-	-	-	266.5	169.5	□130	25	50
	HB	-	-	-	-	-	281.5	184.5	□130	40	65
	HC · HD · HE	-	-	-	-	-	271.5	174.5	□130	30	55
	AF-140-[-][-]-28** Input Shaft Dia. ≤ φ28	FA · FB · FC	249	152	□100	35	67	283.5	186.5	□100	35
GA · GB · GC · GD · GE · GF · GG		249	152	□115	35	67	283.5	186.5	□115	35	67
HA · HC · HD		249	152	□130	35	67	283.5	186.5	□130	35	67
HB		259	162	□130	45	77	293.5	196.5	□130	45	77
JA · JB · JC		249	152	□150	35	67	283.5	186.5	□150	35	67
KA · KB		249	152	□180	35	67	283.5	186.5	□180	35	67
KD		259	162	□180	45	77	293.5	196.5	□180	45	77
LA		249	152	□200	35	67	283.5	186.5	□200	35	67
AF-140-[-][-]-38** Input Shaft Dia. ≤ φ38	MA	249	152	□220	35	67	283.5	186.5	□220	35	67
	HA	264	167	□130	45	82	298.5	201.5	□130	45	82
	HB	259	162	□130	40	77	293.5	196.5	□130	40	77
	JA	264	167	□150	45	82	298.5	201.5	□150	45	82
	KA · KB · KC	264	167	□180	45	82	298.5	201.5	□180	45	82
	LA	264	167	□200	45	82	298.5	201.5	□200	45	82
	LB	274	177	□200	55	92	308.5	211.5	□200	55	92
	MA · MB	264	167	□220	45	82	298.5	201.5	□220	45	82
AF-140-[-][-]-48** Input Shaft Dia. ≤ φ48	NA	264	167	□250	45	82	298.5	201.5	□250	45	82
	KB · KC	285	188	□180	55	98	-	-	-	-	-
	KA	305	208	□180	75	118	-	-	-	-	-
	LA	285	188	□200	55	98	-	-	-	-	-
	MA	285	188	□220	55	98	-	-	-	-	-
	MB	305	208	□220	75	118	-	-	-	-	-
	NA	305	208	□250	75	118	-	-	-	-	-
PA	305	208	□280	75	118	-	-	-	-	-	

- ※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100
- ※2 Adaptors available to match different input shaft diameters.

AF-180 Input Shaft Adaptors



Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AF-180-[-][-]-28** Input Shaft Dia. ≤ φ28	FA·FB·FC	-	-	-	-	-	316	211	□100	35	67
	GA·GB·GC·GD·GE·GF·GG	-	-	-	-	-	316	211	□115	35	67
	HA·HC·HD	-	-	-	-	-	316	211	□130	35	67
	HB	-	-	-	-	-	326	221	□130	45	77
	JA·JB·JC	-	-	-	-	-	316	211	□150	35	67
	KA·KB	-	-	-	-	-	316	211	□180	35	67
	KD	-	-	-	-	-	326	221	□180	45	77
	LA	-	-	-	-	-	316	211	□200	35	67
MA	-	-	-	-	-	316	211	□220	35	67	
AF-180-[-][-]-38** Input Shaft Dia. ≤ φ38	HA	286.5	181.5	□130	45	82	331	226	□130	45	82
	HB	281.5	176.5	□130	40	77	326	221	□130	40	77
	JA	286.5	181.5	□150	45	82	331	226	□150	45	82
	KA·KB·KC	286.5	181.5	□180	45	82	331	226	□180	45	82
	LA	286.5	181.5	□200	45	82	331	226	□200	45	82
	LB	296.5	191.5	□200	55	98	341	236	□200	55	92
	MA·MB	286.5	181.5	□220	45	82	331	226	□220	45	82
	NA	286.5	181.5	□250	45	82	331	226	□250	45	82
AF-180-[-][-]-48** Input Shaft Dia. ≤ φ48	KB·KC	302.5	197.5	□180	55	98	347	242	□180	55	98
	KA	322.5	217.5	□180	75	118	367	262	□180	75	118
	LA	302.5	197.5	□200	55	98	347	242	□200	55	98
	MA	302.5	197.5	□220	55	98	347	242	□220	55	98
	MB	322.5	217.5	□220	75	118	367	262	□220	75	118
	NA	322.5	217.5	□250	75	118	367	262	□250	75	118
	PA	322.5	217.5	□280	75	118	367	262	□280	75	118
AF-180-[-][-]-65** Input Shaft Dia. ≤ φ65	MA·MB·MC·MD	334	229	□220	80	122	-	-	-	-	-
	NA	334	229	□250	80	122	-	-	-	-	-
	PA	334	249	□280	100	142	-	-	-	-	-
	PB	334	259	□280	110	152	-	-	-	-	-
	QA	334	249	□320	100	142	-	-	-	-	-

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

AL Series Highlights Overview



Higher Smoothness

Enhanced smoothness and lower noise due to adoption of Helical Gears.

Higher Precision

Fairly high precision enabled by backlash as 3arcmin.

Higher Rigidity and Torque

Due to adoption of uncaged needle roller bearings.

Flexible Motor Integration

Can be integrated with any motor in the world.

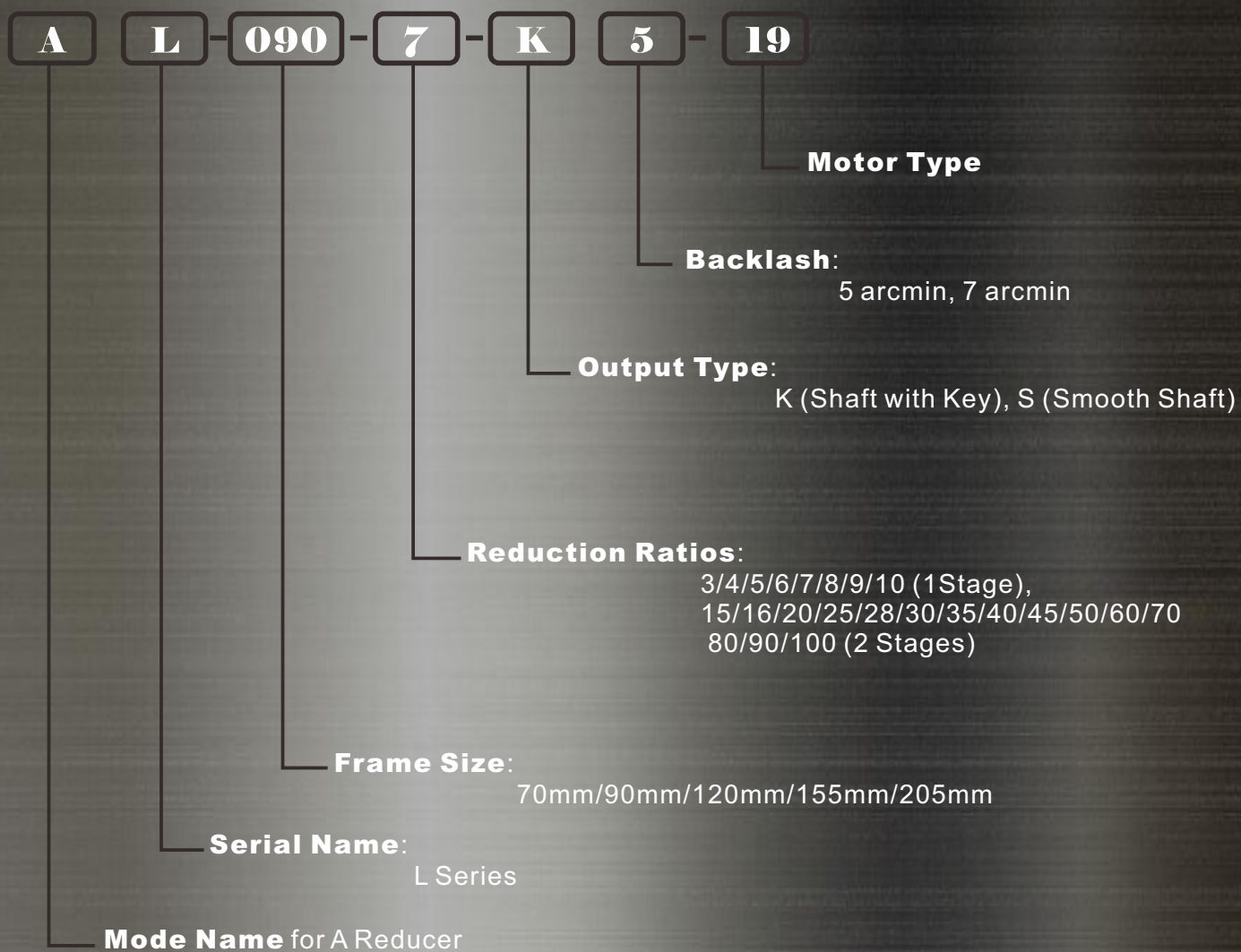
Free of Maintenance

No need to replace the grease for lifelong time and maintenance of any part.

No Grease Leakage

Usage of high viscosity and anti-separation lifetime grease.

AL Series Naming Rules



AL-070 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
070	1	3	18	35	80	3000	6000	430	310
		4	27	50	100	3000	6000	470	360
		5	27	50	100	3000	6000	510	390
		6	27	50	100	3000	6000	540	430
		7	27	50	100	3000	6000	570	460
		8	27	50	100	3000	6000	600	480
		9	18	35	80	3000	6000	620	510
	2	10	18	35	80	3000	6000	640	530
		15	18	35	80	3000	6000	740	630
		16	27	50	100	3000	6000	750	650
		20	27	50	100	3000	6000	810	720
		25	27	50	100	3000	6000	870	790
		28	27	50	100	3000	6000	910	830
		30	18	35	80	3000	6000	930	860
		35	27	50	100	3000	6000	980	920
		40	27	50	100	3000	6000	1000	970
		45	18	35	80	3000	6000	1100	1000
		50	27	50	100	3000	6000	1100	1100
		60	27	50	100	3000	6000	1200	1100
		70	27	50	100	3000	6000	1200	1100
80	27	50	100	3000	6000	1200	1100		
90	18	35	80	3000	6000	1200	1100		
100	18	35	80	3000	6000	1200	1100		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia ($\leq \Phi 8$) [kgcm ²]	Moment of inertia ($\leq \Phi 14$) [kgcm ²]	Moment of inertia ($\leq \Phi 19$) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]			
070	1	3	1200	1100	1.5	0.14	0.22	0.43
		4	1200	1100		0.095	0.17	0.38
		5	1200	1100		0.077	0.16	0.36
		6	1200	1100		0.068	0.15	0.36
		7	1200	1100		0.062	0.14	0.35
		8	1200	1100		0.059	0.14	0.35
		9	1200	1100		0.057	0.14	0.34
	2	10	1200	1100	0.056	0.14	0.34	
		15	1200	1100	0.055	0.14	-	
		16	1200	1100	0.057	0.14	-	
		20	1200	1100	0.054	0.13	-	
		25	1200	1100	0.053	0.13	-	
		28	1200	1100	0.055	0.14	-	
		30	1200	1100	0.049	0.13	-	
		35	1200	1100	0.053	0.13	-	
		40	1200	1100	0.049	0.13	-	
		45	1200	1100	0.053	0.13	-	
		50	1200	1100	0.049	0.13	-	
		60	1200	1100	0.049	0.13	-	
		70	1200	1100	0.049	0.13	-	
80	1200	1100	0.049	0.13	-			
90	1200	1100	0.049	0.13	-			
100	1200	1100	0.049	0.13	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AL-090 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
090	1	3	50	80	200	3000	6000	810	930
		4	75	125	250	3000	6000	890	1100
		5	75	125	250	3000	6000	960	1200
		6	75	125	250	3000	6000	100	1300
		7	75	125	250	3000	6000	1100	1300
		8	75	125	250	3000	6000	1100	1400
		9	50	80	200	3000	6000	1200	1500
	2	10	50	80	200	3000	6000	1200	1600
		15	50	80	200	3000	6000	1400	1900
		16	75	125	250	3000	6000	1400	1900
		20	75	125	250	3000	6000	1500	2100
		25	75	125	250	3000	6000	1600	2200
		28	75	125	250	3000	6000	1700	2200
		30	50	80	200	3000	6000	1700	2200
		35	75	125	250	3000	6000	1800	2200
		40	75	125	250	3000	6000	1900	2200
		45	50	80	200	3000	6000	2000	2200
		50	75	125	250	3000	6000	2100	2200
		60	75	125	250	3000	6000	2200	2200
		70	75	125	250	3000	6000	2300	2200
80	75	125	250	3000	6000	2400	2200		
90	50	80	200	3000	6000	2400	2200		
100	50	80	200	3000	6000	2400	2200		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ8) [kgcm ²]	Moment of inertia (≤ Φ14) [kgcm ²]	Moment of inertia (≤ Φ19) [kgcm ²]	Moment of inertia (≤ Φ28) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
090	1	3	2400	2200	3.5	-	0.72	1.2	3.2
		4	2400	2200		-	0.49	0.95	3.0
		5	2400	2200		-	0.40	0.86	2.9
		6	2400	2200		-	0.36	0.82	2.8
		7	2400	2200		-	0.32	0.79	2.8
		8	2400	2200		-	0.31	0.77	2.8
		9	2400	2200		-	0.29	0.76	2.8
	2	10	2400	2200	-	0.29	0.75	2.8	
		15	2400	2200	4.0	0.13	0.28	0.72	-
		16	2400	2200		0.15	0.30	0.74	-
		20	2400	2200		0.13	0.28	0.72	-
		25	2400	2200		0.12	0.28	0.71	-
		28	2400	2200		0.14	0.29	0.73	-
		30	2400	2200		0.10	0.25	0.70	-
		35	2400	2200		0.12	0.27	0.71	-
		40	2400	2200		0.099	0.25	0.70	-
		45	2400	2200		0.12	0.27	0.71	-
		50	2400	2200		0.098	0.25	0.69	-
		60	2400	2200		0.098	0.25	0.69	-
		70	2400	2200		0.097	0.25	0.69	-
80	2400	2200	0.097	0.25		0.69	-		
90	2400	2200	0.097	0.25	0.69	-			
100	2400	2200	0.097	0.25	0.69	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AL-120 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
120	1	3	120	225	500	3000	6000	1300	1500
		4	120	330	625	3000	6000	1500	1700
		5	180	330	625	3000	6000	1600	1900
		6	180	330	625	3000	6000	1700	2000
		7	180	330	625	3000	6000	1800	2100
		8	180	330	625	3000	6000	1900	2300
		9	120	225	500	3000	6000	1900	2400
	2	10	120	225	500	3000	6000	2000	2500
		15	120	225	500	3000	6000	2300	3000
		16	180	330	625	3000	6000	2300	3100
		20	180	330	625	3000	6000	2500	3400
		25	180	330	625	3000	6000	2700	3700
		28	180	330	625	3000	6000	2800	3900
		30	120	225	500	3000	6000	2900	3900
		35	180	330	625	3000	6000	3000	3900
		40	180	330	625	3000	6000	3200	3900
		45	120	225	500	3000	6000	3300	3900
		50	180	330	625	3000	6000	3400	3900
		60	180	330	625	3000	6000	3600	3900
		70	180	330	625	3000	6000	3800	3900
80	180	330	625	3000	6000	4000	3900		
90	120	225	500	3000	6000	4200	3900		
100	120	225	500	3000	6000	4300	3900		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ 14) [kgcm ²]	Moment of inertia (≤ Φ 19) [kgcm ²]	Moment of inertia (≤ Φ 28) [kgcm ²]	Moment of inertia (≤ Φ 38) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
120	1	3	4300	3900	7.8	-	3.3	5.3	13
		4	4300	3900		-	2.0	4.1	12
		5	4300	3900		-	1.6	3.6	11
		6	4300	3900		-	1.3	3.3	11
		7	4300	3900		-	1.1	3.2	11
		8	4300	3900		-	1.0	3.1	11
		9	4300	3900		-	0.98	3.0	11
	2	10	4300	3900	-	0.95	3.0	11	
		15	4300	3900	8.7	0.43	0.86	2.8	-
		16	4300	3900		0.48	0.92	2.9	-
		20	4300	3900		0.40	0.83	2.8	-
		25	4300	3900		0.38	0.82	2.8	-
		28	4300	3900		0.44	0.88	2.8	-
		30	4300	3900		0.29	0.74	2.7	-
		35	4300	3900		0.37	0.81	2.7	-
		40	4300	3900		0.28	0.73	2.7	-
		45	4300	3900		0.37	0.80	2.7	-
		50	4300	3900		0.28	0.73	2.7	-
		60	4300	3900		0.28	0.73	2.7	-
		70	4300	3900		0.28	0.73	2.7	-
80	4300	3900	0.28	0.73		2.7	-		
90	4300	3900	0.27	0.73	2.7	-			
100	4300	3900	0.27	0.73	2.7	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AL-155 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
155	1	3	240	470	1000	2000	4000	3200	2400
		4	240	700	1250	2000	4000	3500	2700
		5	360	700	1250	2000	4000	3800	3000
		6	360	700	1250	2000	4000	4000	3300
		7	360	700	1250	2000	4000	4200	3500
		8	360	700	1250	2000	4000	4400	3700
		9	240	470	1000	2000	4000	4600	3900
	2	10	240	470	1000	2000	4000	4700	4100
		15	240	470	1000	2000	4000	5400	4900
		16	360	700	1250	2000	4000	5500	5000
		20	360	700	1250	2000	4000	6000	5500
		25	360	700	1250	2000	4000	6400	6100
		28	360	700	1250	2000	4000	6700	6400
		30	240	470	1000	2000	4000	6800	6600
		35	360	700	1250	2000	4000	7200	7000
		40	360	700	1250	2000	4000	7500	7500
		45	240	470	1000	2000	4000	7800	7900
		50	360	700	1250	2000	4000	8100	8200
		60	360	700	1250	2000	4000	8600	8200
		70	360	700	1250	2000	4000	9100	8200
80	360	700	1250	2000	4000	9100	8200		
90	240	470	1000	2000	4000	9100	8200		
100	240	470	1000	2000	4000	9100	8200		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ19) [kgcm ²]	Moment of inertia (≤ Φ28) [kgcm ²]	Moment of inertia (≤ Φ38) [kgcm ²]	Moment of inertia (≤ Φ48) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
155	1	3	9100	8200	16	-	12	20	42
		4	9100	8200		-	7.5	15	37
		5	9100	8200		-	5.8	14	36
		6	9100	8200		-	4.9	13	35
		7	9100	8200		-	4.1	12	34
		8	9100	8200		-	3.8	12	34
		9	9100	8200		-	3.6	11	34
	2	10	9100	8200	-	3.5	11	34	
		15	9100	8200	18	1.3	3.2	11	-
		16	9100	8200		1.5	3.5	11	-
		20	9100	8200		1.2	3.1	11	-
		25	9100	8200		1.1	3.1	11	-
		28	9100	8200		1.4	3.3	11	-
		30	9100	8200		0.85	2.8	10	-
		35	9100	8200		1.1	3.1	11	-
		40	9100	8200		0.83	2.8	10	-
		45	9100	8200		1.1	3.0	11	-
		50	9100	8200		0.81	2.8	10	-
		60	9100	8200		0.81	2.8	10	-
		70	9100	8200		0.80	2.8	10	-
80	9100	8200	0.80	2.8		10	-		
90	9100	8200	0.80	2.8	10	-			
100	9100	8200	0.80	2.8	10	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000 times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AL-205 Series Load Performance Table

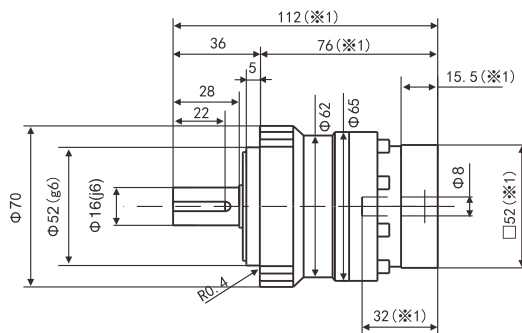
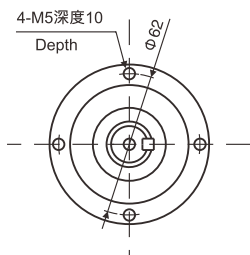
Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
205	1	3	500	970	2200	1500	3000	5600	4300
		4	750	1400	2750	1500	3000	6200	4900
		5	750	1400	2750	1500	3000	6700	5400
		6	750	1400	2750	1500	3000	7100	5800
		7	750	1400	2750	1500	3000	7400	6300
		8	750	1400	2750	1500	3000	7800	6600
		9	500	970	2200	1500	3000	8100	7000
	2	10	500	970	2200	1500	3000	8400	7300
		15	500	970	2200	1500	3000	9600	8700
		16	750	1400	2750	1500	3000	9800	8900
		20	750	1400	2750	1500	3000	11000	9900
		25	750	1400	2750	1500	3000	11000	11000
		28	750	1400	2750	1500	3000	12000	11000
		30	500	970	2200	1500	3000	12000	12000
		35	750	1400	2750	1500	3000	13000	13000
		40	750	1400	2750	1500	3000	13000	13000
		45	500	970	2200	1500	3000	14000	14000
		50	750	1400	2750	1500	3000	14000	14000
		60	750	1400	2750	1500	3000	15000	14000
		70	750	1400	2750	1500	3000	15000	14000
80	750	1400	2750	1500	3000	15000	14000		
90	500	970	2200	1500	3000	15000	14000		
100	500	970	2200	1500	3000	15000	14000		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ28) [kgcm ²]	Moment of inertia (≤ Φ38) [kgcm ²]	Moment of inertia (≤ Φ48) [kgcm ²]	Moment of inertia (≤ Φ65) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
205	1	3	15000	14000	39	-	44	66	130
		4	15000	14000		-	28	50	110
		5	15000	14000		-	22	44	100
		6	15000	14000		-	18	41	100
		7	15000	14000		-	16	38	99
		8	15000	14000		-	15	37	97
		9	15000	14000		-	14	36	97
	2	10	15000	14000	-	14	36	96	
		15	15000	14000	40	4.7	12	34	-
		16	15000	14000		5.4	13	35	-
		20	15000	14000		4.4	12	34	-
		25	15000	14000		4.2	12	34	-
		28	15000	14000		4.9	13	35	-
		30	15000	14000		3.2	11	33	-
		35	15000	14000		4.1	12	34	-
		40	15000	14000		3.2	11	33	-
		45	15000	14000		4.0	12	34	-
		50	15000	14000		3.1	11	33	-
		60	15000	14000		3.1	11	33	-
		70	15000	14000		3.1	11	33	-
80	15000	14000	3.1	11		33	-		
90	15000	14000	3.1	11	33	-			
100	15000	14000	3.1	11	33	-			

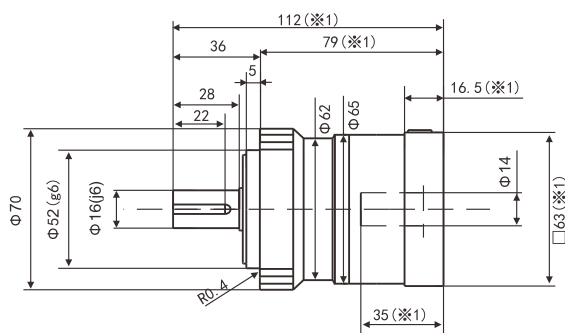
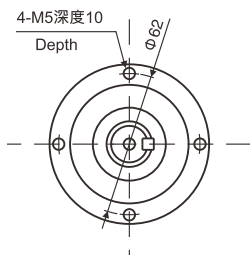
- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000 times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AL-070 1-Stage Series Mechanical Dimensions

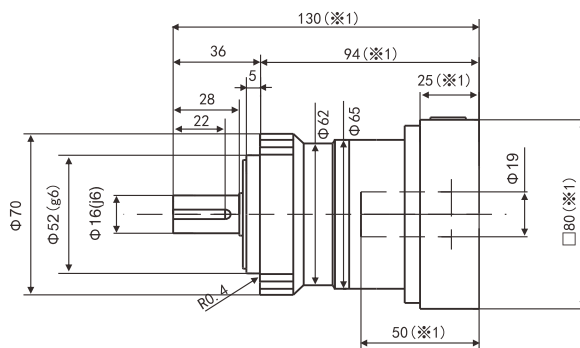
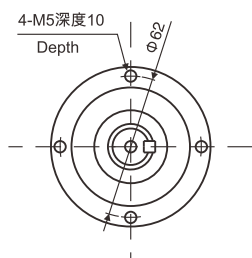
Input Shaft Diameter $\leq \phi 8$ (in mm)



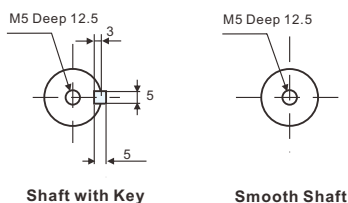
Input Shaft Diameter $\leq \phi 14$ (in mm)



Input Shaft Diameter $\leq \phi 19$ (in mm)



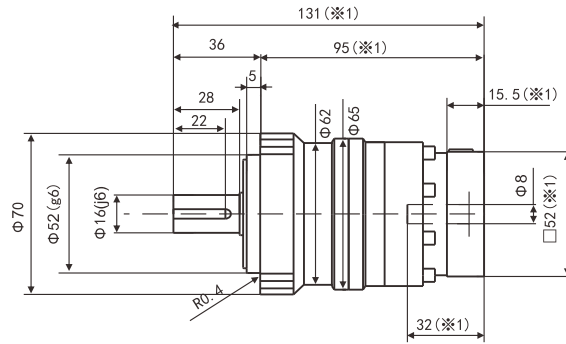
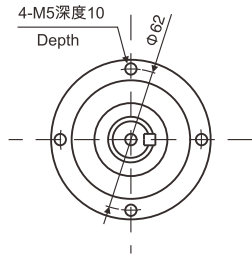
Output Shaft Type (in mm)



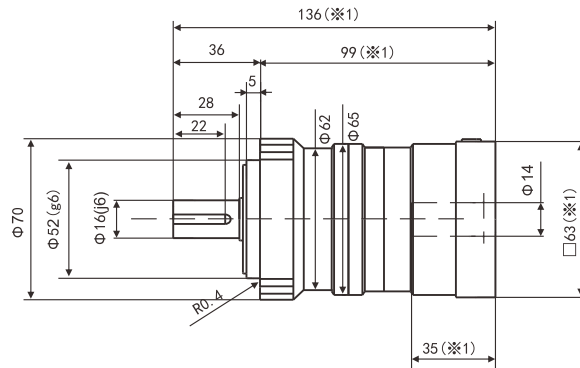
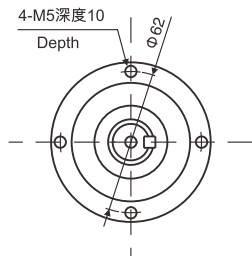
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-070 2-Stage Series Mechanical Dimensions

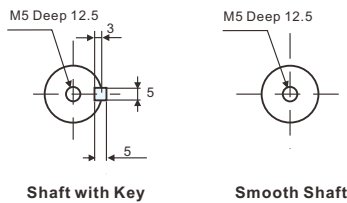
Input Shaft Diameter $\leq \phi 8$ (in mm)



Input Shaft Diameter $\leq \phi 14$ (in mm)



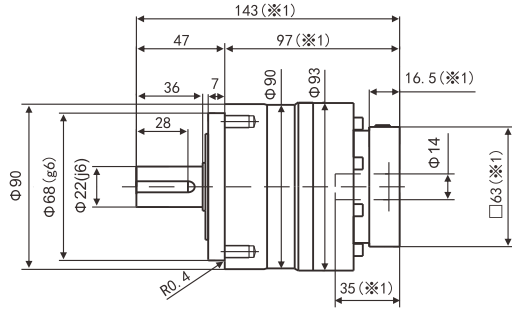
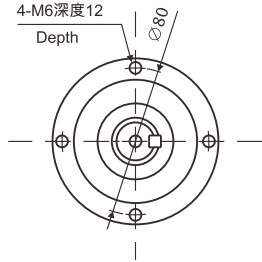
Output Shaft Type (in mm)



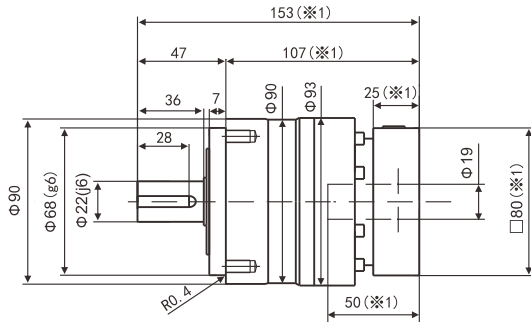
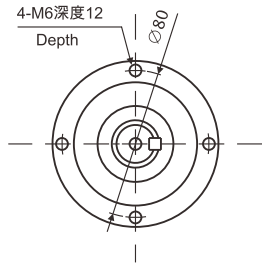
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-090 1-Stage Series Mechanical Dimensions

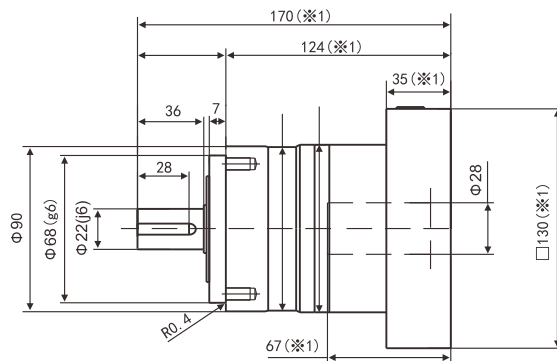
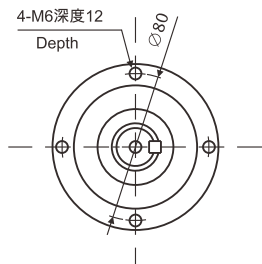
Input Shaft Diameter $\leq \phi 14$ (in mm)



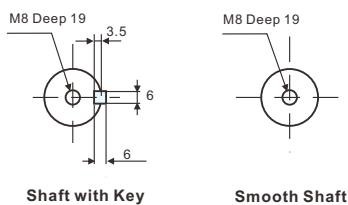
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



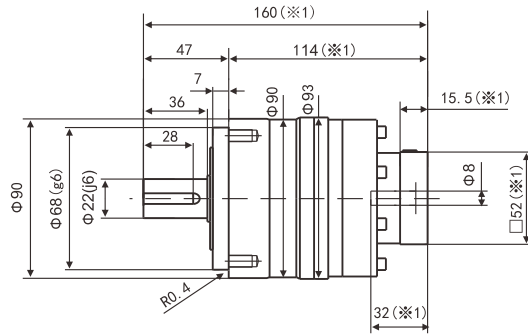
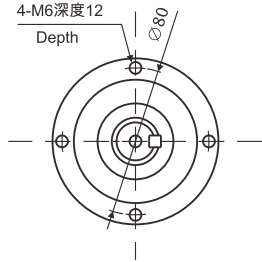
Output Shaft Type (in mm)



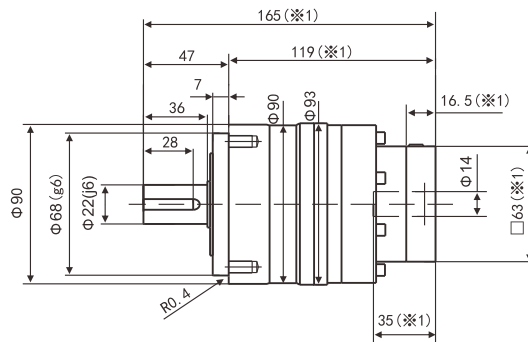
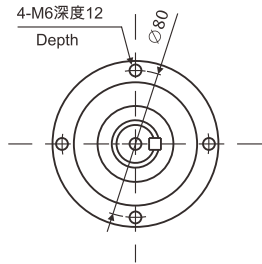
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-090 2-Stage Series Mechanical Dimensions

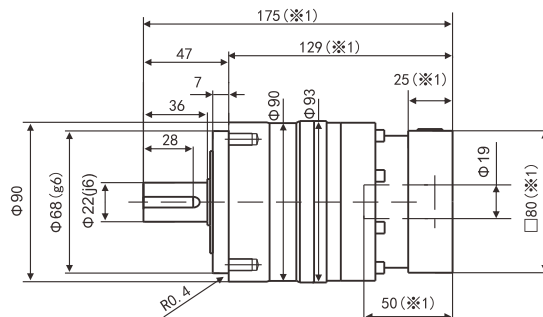
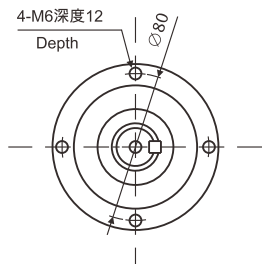
Input Shaft Diameter $\leq \phi 8$ (in mm)



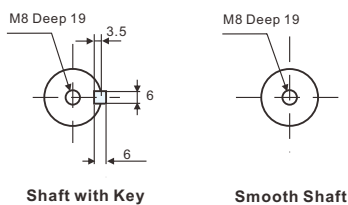
Input Shaft Diameter $\leq \phi 14$ (in mm)



Input Shaft Diameter $\leq \phi 19$ (in mm)



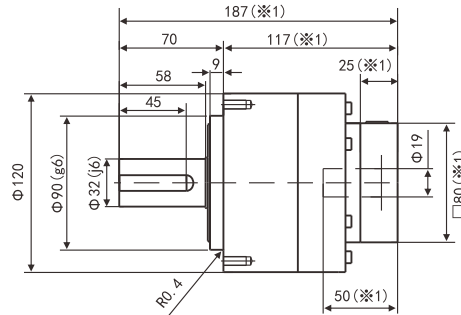
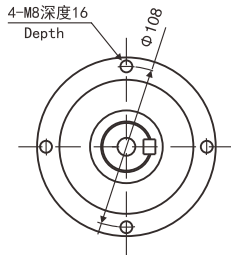
Output Shaft Type (in mm)



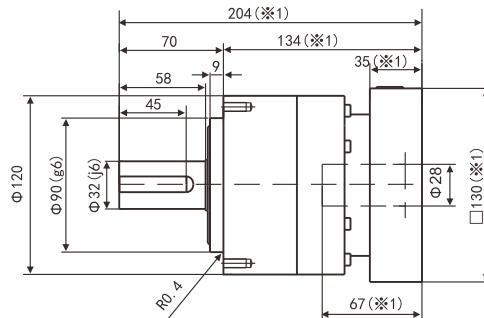
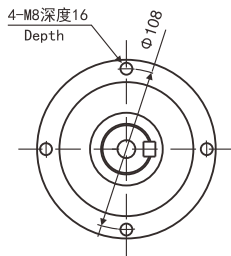
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-120 1-Stage Series Mechanical Dimensions

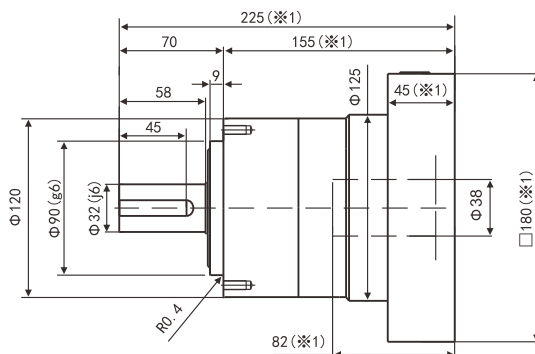
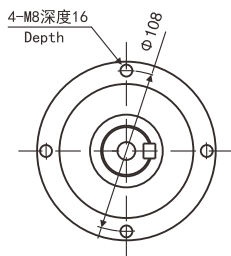
Input Shaft Diameter $\leq \phi 19$ (in mm)



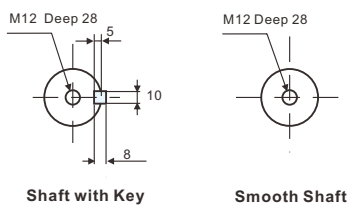
Input Shaft Diameter $\leq \phi 28$ (in mm)



Input Shaft Diameter $\leq \phi 38$ (in mm)



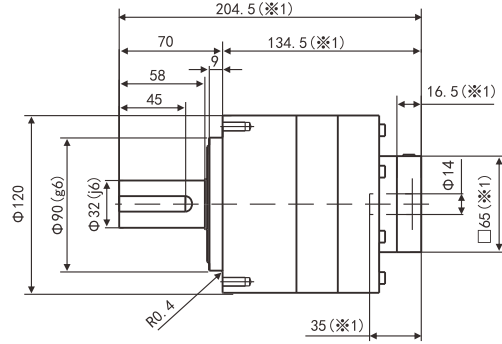
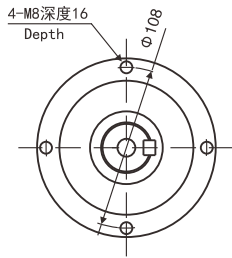
Output Shaft Type (in mm)



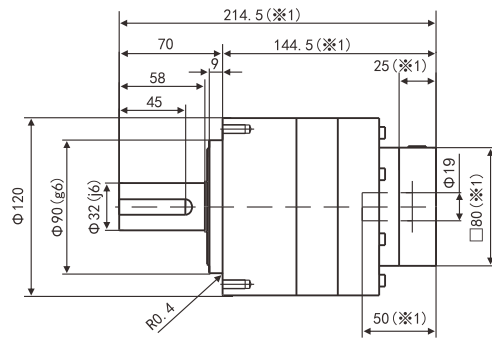
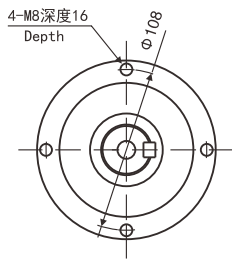
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-120 2-Stage Series Mechanical Dimensions

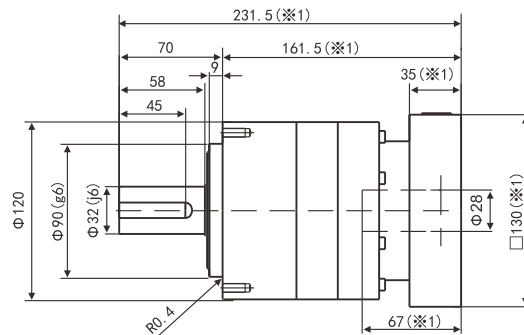
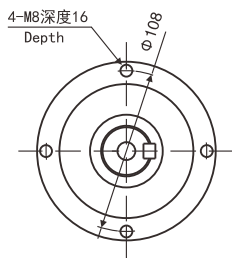
Input Shaft Diameter $\leq \phi 14$ (in mm)



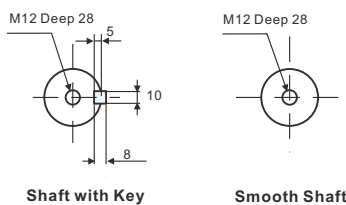
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



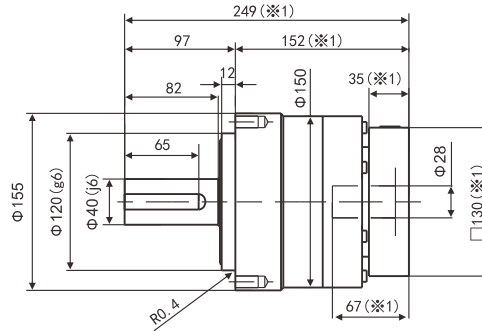
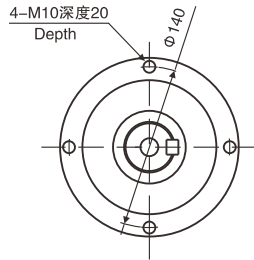
Output Shaft Type (in mm)



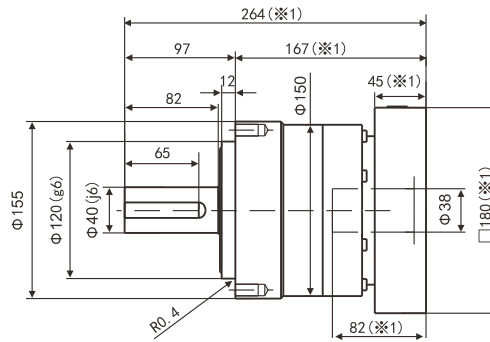
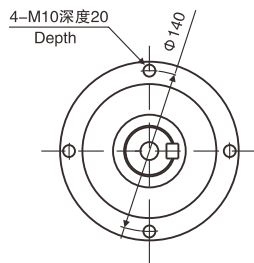
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-155 1-Stage Series Mechanical Dimensions

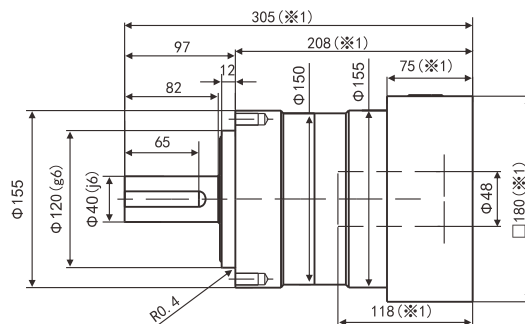
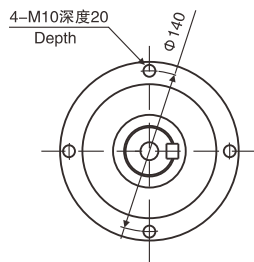
Input Shaft Diameter $\leq \phi 28$ (in mm)



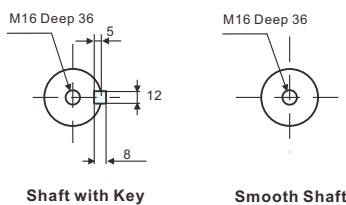
Input Shaft Diameter $\leq \phi 38$ (in mm)



Input Shaft Diameter $\leq \phi 48$ (in mm)



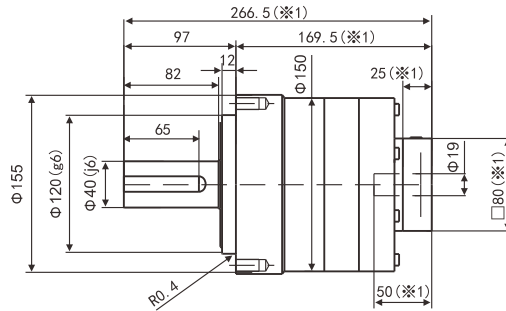
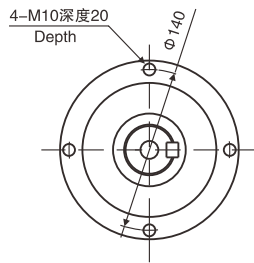
Output Shaft Type (in mm)



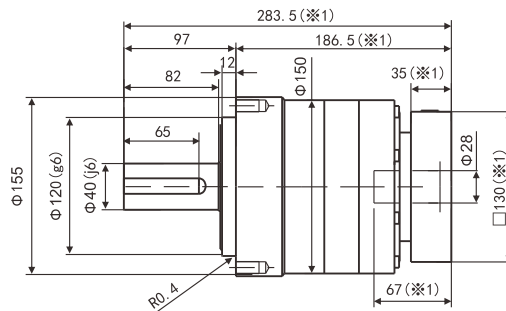
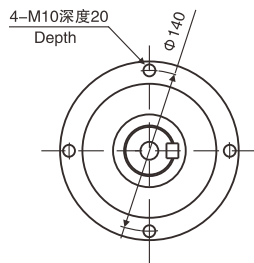
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-155 2-Stage Series Mechanical Dimensions

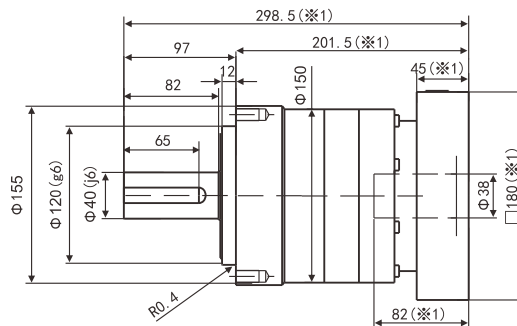
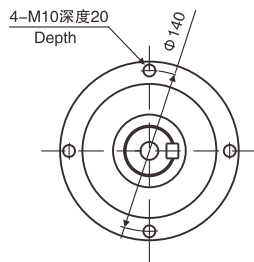
Input Shaft Diameter $\leq \phi 19$ (in mm)



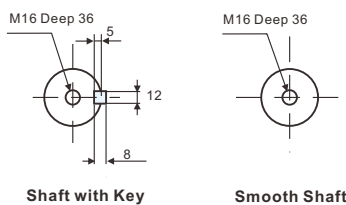
Input Shaft Diameter $\leq \phi 28$ (in mm)



Input Shaft Diameter $\leq \phi 38$ (in mm)



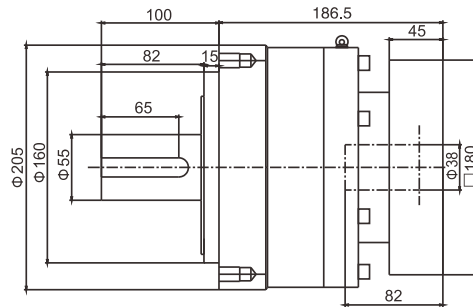
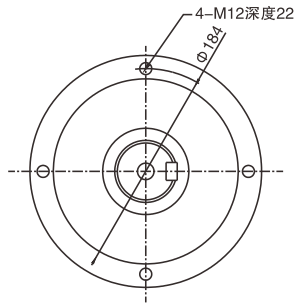
Output Shaft Type (in mm)



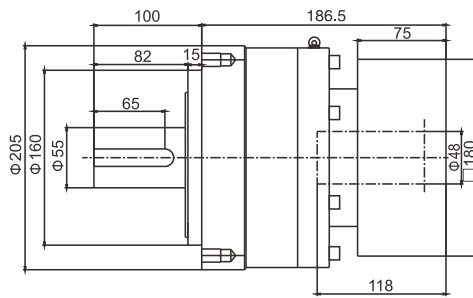
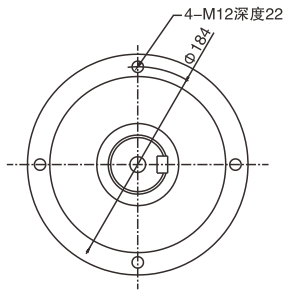
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-205 1-Stage Series Mechanical Dimensions

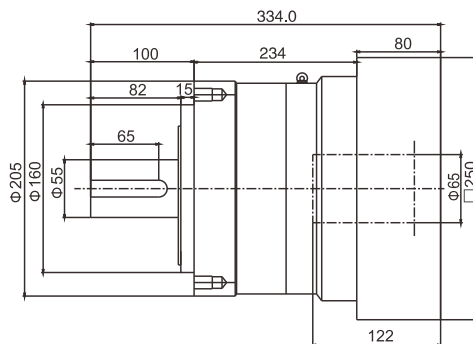
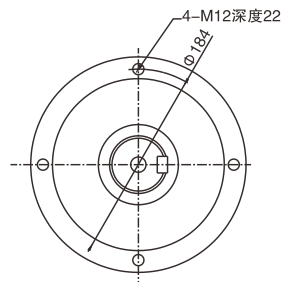
Input Shaft Diameter $\leq \phi 38$ (in mm)



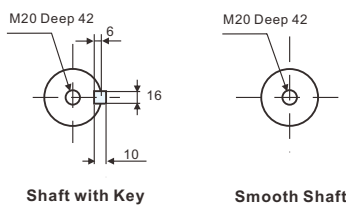
Input Shaft Diameter $\leq \phi 48$ (in mm)



Input Shaft Diameter $\leq \phi 65$ (in mm)



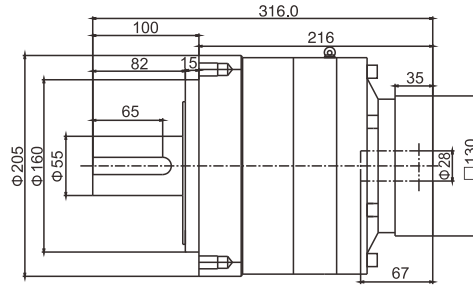
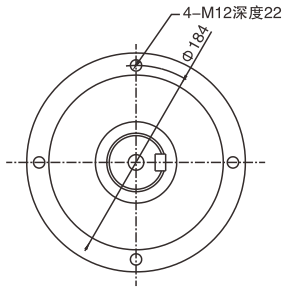
Output Shaft Type (in mm)



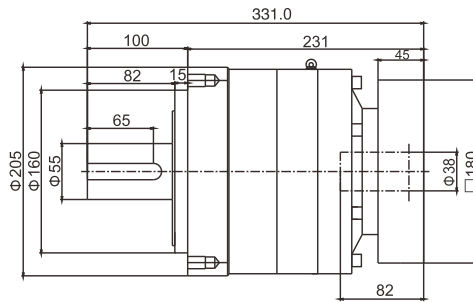
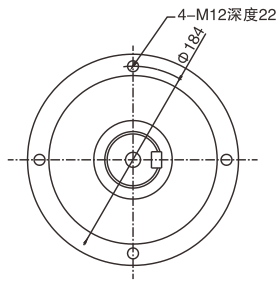
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-205 2-Stage Series Mechanical Dimensions

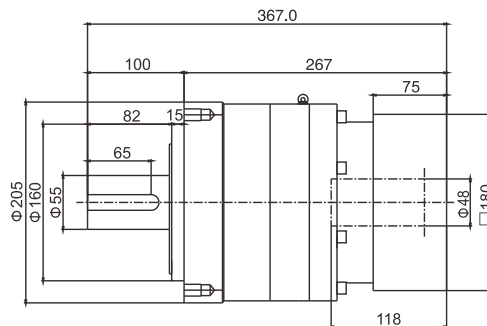
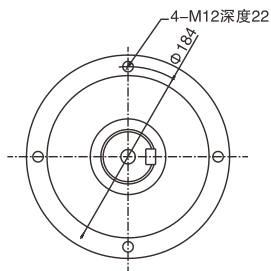
Input Shaft Diameter $\leq \phi 28$ (in mm)



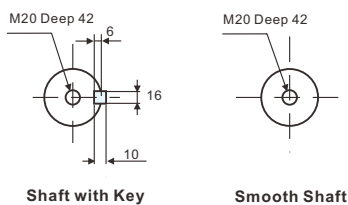
Input Shaft Diameter $\leq \phi 38$ (in mm)



Input Shaft Diameter $\leq \phi 48$ (in mm)

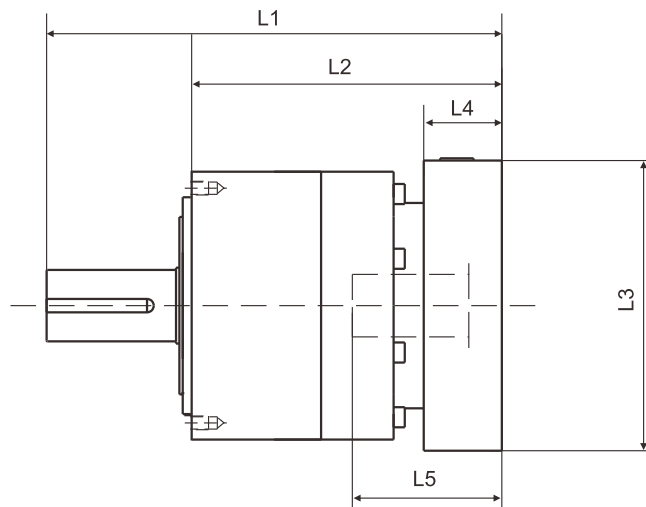


Output Shaft Type (in mm)



- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AL-070 Input Shaft Adaptors

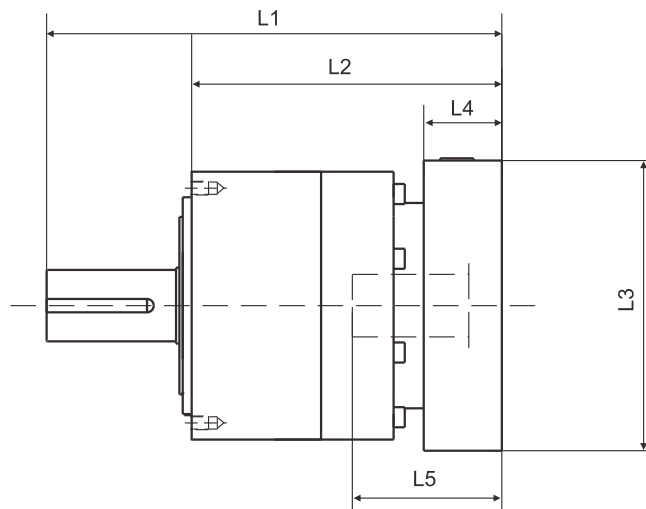


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AL-070-[-][-]-8** Input Shaft Dia. ≤ φ8	AA · AC · AD · AF · AG	112	76	□52	15.5	32	131	95	□52	15.5	32
	AB · AE · AH · AJ · AK	117	81	□52	20.5	37	136	100	□52	20.5	37
	BA · BB · BD · BE	112	76	□60	15.5	32	131	95	□60	15.5	32
	BC · BF	117	81	□60	20.5	37	136	100	□60	20.5	37
	CA	117	81	□70	20.5	37	136	100	□70	20.5	37
AL-070-[-][-]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	115	79	□65	16.5	35	136	100	□65	16.5	35
	BC · BH · BM	120	84	□65	21.5	40	141	105	□65	21.5	40
	BL	125	89	□65	26.5	45	146	110	□65	26.5	45
	CA	115	79	□70	16.5	35	136	100	□70	16.5	35
	CB	120	84	□70	21.5	40	141	105	□70	21.5	40
	DA · DB · DC · DD · DF · DH	115	79	□80	16.5	35	136	100	□80	16.5	35
	DE	120	84	□80	21.5	40	141	105	□80	21.5	40
	DG	125	89	□80	26.5	45	146	110	□80	26.5	45
	EA · EB · EC	115	79	□90	16.5	35	136	100	□90	16.5	35
	ED	125	89	□90	26.5	45	146	110	□90	26.5	45
	FA	115	79	□100	16.5	35	136	100	□100	16.5	35
	GA	115	79	□115	16.5	35	136	100	□115	16.5	35
	AL-070-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	130	94	□80	25	50	-	-	-	-
DD		140	104	□80	35	60	-	-	-	-	-
DE		135	99	□80	30	55	-	-	-	-	-
EA		135	98	□90	30	55	-	-	-	-	-
EB		130	94	□90	25	50	-	-	-	-	-
EC		140	104	□90	35	60	-	-	-	-	-
FA		130	94	□100	25	50	-	-	-	-	-
FB		140	104	□100	35	60	-	-	-	-	-
GA · GC		135	99	□115	30	55	-	-	-	-	-
GB · GD		130	94	□115	25	50	-	-	-	-	-
HA		130	94	□130	25	50	-	-	-	-	-
HB		145	109	□130	40	65	-	-	-	-	-
HC · HD · HE		135	99	□130	30	35	-	-	-	-	-

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

AL-090 Input Shaft Adaptors

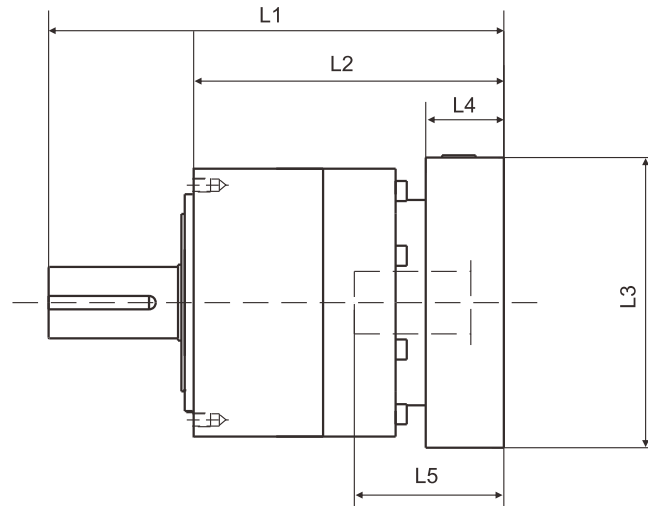


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AL-090-[-][-]-8** Input Shaft Dia. ≤ φ8	AA · AC · AD · AF · AG	-	-	-	-	-	160	114	□52	15.5	32
	AB · AE · AH · AJ · AK	-	-	-	-	-	165	119	□52	20.5	37
	BA · BB · BD · BE	-	-	-	-	-	160	114	□60	15.5	32
	BC · BF	-	-	-	-	-	165	119	□60	20.5	37
	CA	-	-	-	-	-	165	119	□70	20.5	37
AL-090-[-][-]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	143	97	□65	16.5	35	165	119	□65	16.5	35
	BC · BH · BM	148	102	□65	21.5	40	170	124	□65	21.5	40
	BL	153	107	□65	26.5	45	175	129	□65	26.5	45
	CA	143	97	□70	16.5	35	165	119	□70	16.5	35
	CB	148	102	□70	21.5	40	170	124	□70	21.5	40
	DA · DB · DC · DD · DF · DH	143	97	□80	16.5	35	165	119	□80	16.5	35
	DE	148	102	□80	21.5	40	170	124	□80	21.5	40
	DG	153	107	□80	26.5	45	175	129	□80	26.5	45
	EA · EB · EC	143	97	□90	16.5	35	165	119	□90	16.5	35
	ED	153	107	□90	26.5	45	175	129	□90	26.5	45
	FA	143	97	□100	16.5	35	165	119	□100	16.5	35
	GA	143	97	□115	16.5	35	165	119	□115	16.5	35
	AL-090-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	153	107	□80	25	50	175	129	□80	25
DD		163	117	□80	35	60	185	139	□80	35	60
DE		158	112	□80	30	55	180	134	□80	30	55
EA		158	112	□90	30	55	180	134	□90	30	55
EB		153	107	□90	25	50	175	129	□90	25	50
EC		163	117	□90	35	60	185	139	□90	35	60
FA		153	107	□100	25	50	175	129	□100	25	50
FB		163	117	□100	35	60	185	139	□100	35	60
GA · GC		158	112	□115	30	55	180	134	□115	30	55
GB · GD		153	107	□115	25	50	175	129	□115	25	50
HA		153	107	□130	25	50	175	129	□130	25	50
HB		168	122	□130	40	65	190	144	□130	40	65
HC · HD · HE		158	112	□130	30	55	180	134	□130	30	55
AL-090-[-][-]-28** Input Shaft Dia. ≤ φ28		FA · FB · FC	170	124	□100	35	67	-	-	-	-
	GA · GB · GC · GD · GE · GF · GG	170	124	□115	35	67	-	-	-	-	-
	HA · HC · HD	170	124	□130	35	67	-	-	-	-	-
	HB	180	124	□130	45	77	-	-	-	-	-
	JA · JB · JC	170	124	□150	35	67	-	-	-	-	-
	KA · KB	170	124	□180	35	67	-	-	-	-	-
	KD	180	134	□180	45	77	-	-	-	-	-
	LA	170	124	□200	35	67	-	-	-	-	-
MA	170	124	□220	35	67	-	-	-	-	-	

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

AL-120 Input Shaft Adaptors

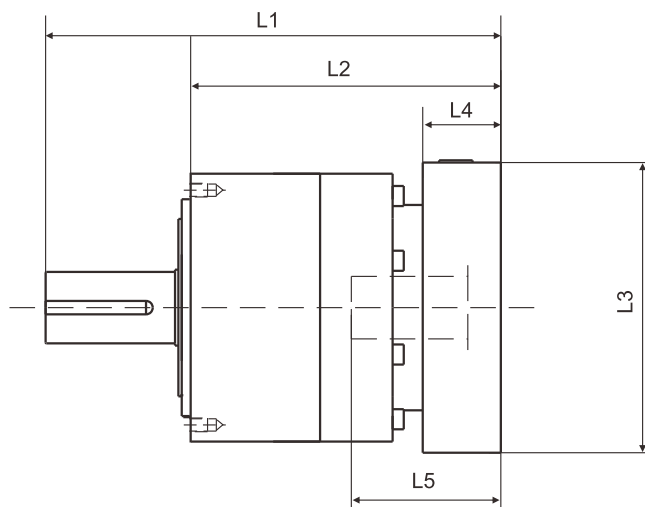


Model number	**: Adapter code	1 Stage					2 Stage					
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5	
AL-120-[-][-]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	-	-	-	-	-	204.5	134.5	□65	16.5	35	
	BC · BH	-	-	-	-	-	209.5	139.5	□65	21.5	40	
	BL	-	-	-	-	-	214.5	144.5	□65	26.5	45	
	CA	-	-	-	-	-	204.5	134.5	□70	16.5	35	
	CB	-	-	-	-	-	209.5	139.5	□70	21.5	40	
	DA · DB · DC · DD · DF · DH	-	-	-	-	-	204.5	134.5	□80	16.5	35	
	DE	-	-	-	-	-	209.5	139.5	□80	21.5	40	
	DG	-	-	-	-	-	214.5	144.5	□80	26.5	45	
	EA · EB · EC	-	-	-	-	-	204.5	134.5	□90	16.5	35	
	ED	-	-	-	-	-	214.5	144.5	□90	26.5	45	
	FA	-	-	-	-	-	204.5	134.5	□100	16.5	35	
	GA	-	-	-	-	-	204.5	134.5	□115	16.5	35	
	AL-120-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	187	117	□80	25	50	214.5	144.5	□80	25	50
		DD	197	127	□80	35	60	224.5	154.5	□80	35	60
DE		192	122	□80	30	55	219.5	149.5	□80	30	55	
EA		192	122	□90	30	55	219.5	149.5	□90	30	55	
EB		187	117	□90	25	50	214.5	144.5	□90	25	50	
EC		197	127	□90	35	60	224.5	154.5	□90	35	60	
FA		187	117	□100	25	50	214.5	144.5	□100	25	50	
FB		197	127	□100	35	60	224.5	154.5	□100	35	60	
GA · GC		192	122	□115	30	55	219.5	149.5	□115	30	55	
GB · GD		187	117	□115	25	50	214.5	144.5	□115	25	50	
HA		187	117	□130	25	50	214.5	144.5	□130	25	50	
HB		202	132	□130	40	65	229.5	159.5	□130	40	65	
HC · HD · HE		192	122	□130	30	55	219.5	149.5	□130	30	55	
AL-120-[-][-]-28** Input Shaft Dia. ≤ φ28		FA · FB · FC	204	134	□100	35	67	231.5	161.5	□100	35	67
	GA · GB · GC · GD · GE · GF · GG	204	134	□115	35	67	231.5	161.5	□115	35	67	
	HA · HC · HD	204	134	□130	35	67	231.5	161.5	□130	35	67	
	HB	214	144	□130	45	77	241.5	171.5	□130	45	77	
	JA · JB · JC	204	134	□150	35	67	231.5	161.5	□150	35	67	
	KA · KB	204	134	□180	35	67	231.5	161.5	□180	35	67	
	KD	214	144	□180	45	77	241.5	171.5	□180	45	77	
	LA	204	134	□200	35	67	231.5	161.5	□200	35	67	
	MA	204	134	□220	35	67	231.5	161.5	□220	35	67	
	AL-120-[-][-]-38** Input Shaft Dia. ≤ φ38	HA	225	155	□130	45	82	-	-	-	-	-
HB		220	150	□130	40	77	-	-	-	-	-	
JA		225	155	□150	45	82	-	-	-	-	-	
KA · KB · KC		225	155	□180	45	82	-	-	-	-	-	
LA		225	155	□200	45	82	-	-	-	-	-	
LB		235	165	□200	55	92	-	-	-	-	-	
MA · MB		225	155	□220	45	82	-	-	-	-	-	
NA		225	155	□250	45	82	-	-	-	-	-	

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

AL-155 Input Shaft Adaptors

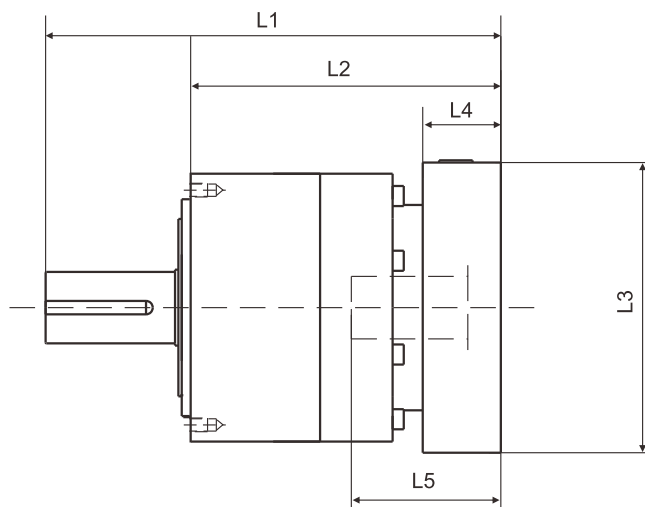


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AL-155-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	-	-	-	-	-	266.5	169.5	□80	25	50
	DD	-	-	-	-	-	276.5	179.5	□80	35	60
	DE	-	-	-	-	-	271.5	174.5	□80	30	55
	EA	-	-	-	-	-	271.5	174.5	□90	30	55
	EB	-	-	-	-	-	266.5	169.5	□90	25	50
	EC	-	-	-	-	-	276.5	179.5	□90	35	60
	FA	-	-	-	-	-	266.5	169.5	□100	25	50
	FB	-	-	-	-	-	276.5	179.5	□100	35	60
	GA · GC	-	-	-	-	-	271.5	174.5	□115	30	55
	GB · GD	-	-	-	-	-	266.5	169.5	□115	25	50
	HA	-	-	-	-	-	266.5	169.5	□130	25	50
	HB	-	-	-	-	-	281.5	184.5	□130	40	65
	HC · HD · HE	-	-	-	-	-	271.5	174.5	□130	30	55
AL-155-[-][-]-28** Input Shaft Dia. ≤ φ28	FA · FB · FC	249	152	□100	35	67	283.5	186.5	□100	35	67
	GA · GB · GC · GD · GE · GF · GG	249	152	□115	35	67	283.5	186.5	□115	35	67
	HA · HC · HD	249	152	□130	35	67	283.5	186.5	□130	35	67
	HB	259	162	□130	45	77	293.5	196.5	□130	45	77
	JA · JB · JC	249	152	□150	35	67	283.5	186.5	□150	35	67
	KA · KB	249	152	□180	35	67	283.5	186.5	□180	35	67
	KD	259	162	□180	45	77	293.5	196.5	□180	45	77
	LA	249	152	□200	35	67	283.5	186.5	□200	35	67
AL-155-[-][-]-38** Input Shaft Dia. ≤ φ38	MA	249	152	□220	35	67	283.5	186.5	□220	35	67
	HA	264	167	□130	45	82	298.5	201.5	□130	45	82
	HB	259	162	□130	40	77	293.5	196.5	□130	40	77
	JA	264	167	□150	45	82	298.5	201.5	□150	45	82
	KA · KB · KC	264	167	□180	45	82	298.5	201.5	□180	45	82
	LA	264	167	□200	45	82	298.5	201.5	□200	45	82
	LB	274	177	□200	55	92	308.5	211.5	□200	55	92
	MA · MB	264	167	□220	45	82	298.5	201.5	□220	45	82
AL-155-[-][-]-48** Input Shaft Dia. ≤ φ48	NA	264	167	□250	45	82	298.5	201.5	□250	45	82
	KB · KC	285	188	□180	55	98	-	-	-	-	-
	KA	305	208	□180	75	118	-	-	-	-	-
	LA	285	188	□200	55	98	-	-	-	-	-
	MA	285	188	□220	55	98	-	-	-	-	-
	MB	305	208	□220	75	118	-	-	-	-	-
	NA	305	208	□250	75	118	-	-	-	-	-
PA	305	208	□280	75	118	-	-	-	-	-	

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

AL-205 Input Shaft Adaptors

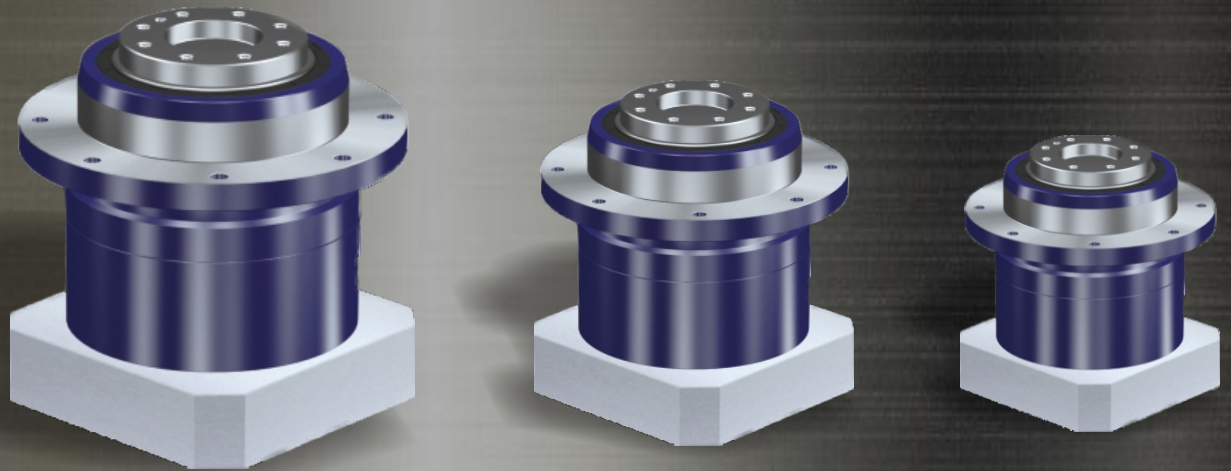


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AL205-[-][-]-28** Input Shaft Dia. ≤ φ28	FA·FB·FC	-	-	-	-	-	316	216	□100	35	67
	GA·GB·GC·GD·GE·GF·GG	-	-	-	-	-	316	216	□115	35	67
	HA·HC·HD	-	-	-	-	-	316	216	□130	35	67
	HB	-	-	-	-	-	326	226	□130	45	77
	JA·JB·JC	-	-	-	-	-	316	216	□150	35	67
	KA·KB	-	-	-	-	-	316	216	□180	35	67
	KD	-	-	-	-	-	326	226	□180	45	77
	LA	-	-	-	-	-	316	216	□200	35	67
AL-205-[-][-]-38** Input Shaft Dia. ≤ φ38	HA	286.5	186.5	□130	45	82	331	231	□130	45	82
	HB	281.5	181.6	□130	40	77	326	226	□130	40	77
	JA	286.5	186.5	□150	45	82	331	231	□150	45	82
	KA·KB·KC	286.5	186.5	□180	45	82	331	231	□180	45	82
	LA	286.5	186.5	□200	45	82	331	231	□200	45	82
	LB	296.5	196.5	□200	55	92	341	241	□200	55	92
	MA·MB	286.5	186.5	□220	45	82	331	231	□220	45	82
	NA	286.5	186.5	□250	45	82	331	231	□250	45	82
AL-205-[-][-]-48** Input Shaft Dia. ≤ φ48	KB·KC	302.5	202.5	□180	55	98	347	247	□180	55	98
	KA	322.5	222.5	□180	75	118	367	267	□180	75	118
	LA	302.5	202.5	□200	55	98	347	247	□200	55	98
	MA	302.5	202.5	□220	55	98	347	247	□220	55	98
	MB	322.5	222.5	□220	75	118	367	267	□220	75	118
	NA	322.5	222.5	□250	75	118	367	267	□250	75	118
	PA	322.5	222.5	□280	75	118	367	267	□280	75	118
AL-205-[-][-]-65** Input Shaft Dia. ≤ φ65	MA·MB·MC·MD	334	234	□220	80	122	-	-	-	-	-
	NA	334	234	□250	80	122	-	-	-	-	-
	PA	354	254	□280	100	142	-	-	-	-	-
	PB	364	264	□280	110	152	-	-	-	-	-
	QA	354	254	□320	100	142	-	-	-	-	-

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

AH Series Highlights Overview



Higher Smoothness

Enhanced smoothness and lower noise due to adoption of Helical Gears.

Higher Precision

Fairly high precision enabled by backlash as 3arcmin.

Higher Rigidity and Torque

Due to adoption of uncaged needle roller bearings.

Flexible Motor Integration

Can be integrated with any motor in the world.

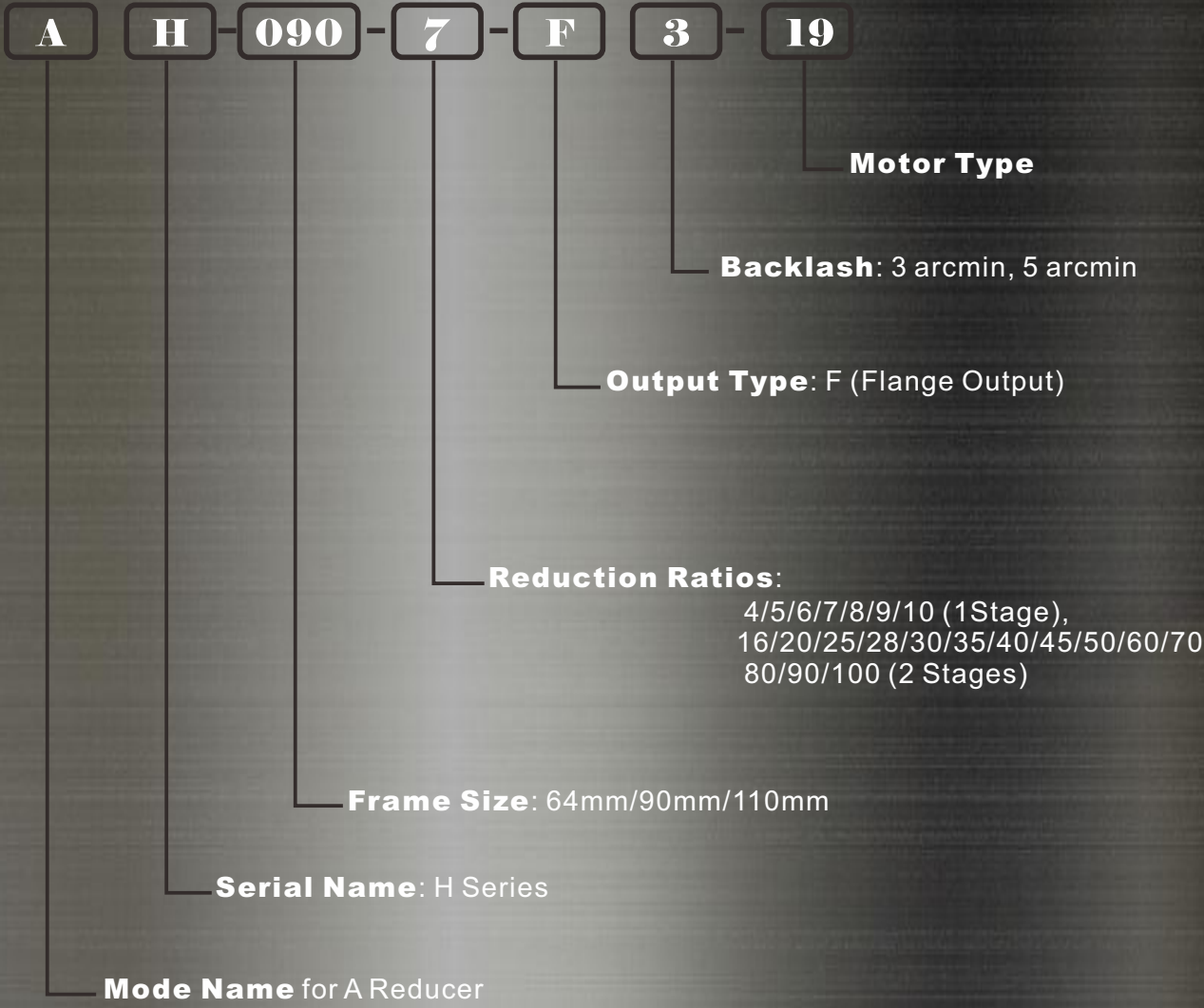
Free of Maintenance

No need to replace the grease for lifelong time and maintenance of any part.

No Grease Leakage

Usage of high viscosity and anti-separation lifetime grease.

AH Series Naming Rules



AH-064 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
064	1	4	27	50	100	3000	6000	370	360
		5	27	50	100	3000	6000	400	390
		6	27	50	100	3000	6000	420	430
		7	27	50	100	3000	6000	440	460
		8	27	50	100	3000	6000	460	480
		9	18	35	80	3000	6000	480	510
	2	10	18	35	80	3000	6000	500	530
		16	27	50	100	3000	6000	580	650
		20	27	50	100	3000	6000	630	720
		25	27	50	100	3000	6000	680	750
		28	27	50	100	3000	6000	700	750
		35	27	50	100	3000	6000	760	750
		40	27	50	100	3000	6000	790	750
		45	18	35	80	3000	6000	820	750
		50	27	50	100	3000	6000	850	750
		60	27	50	100	3000	6000	910	750
		70	27	50	100	3000	6000	950	750
		80	27	50	100	3000	6000	1000	750
90	18	35	80	3000	6000	1000	750		
100	18	35	80	3000	6000	1100	750		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ8) [kgcm ²]	Moment of inertia (≤ Φ14) [kgcm ²]	Moment of inertia (≤ Φ19) [kgcm ²]	
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
064	1	4	1500	750	1.4	0.13	0.21	0.4	
		5	1500	750		0.10	0.18	0.4	
		6	1500	750		0.085	0.17	0.4	
		7	1500	750		0.075	0.15	0.4	
		8	1500	750		0.068	0.15	0.4	
		9	1500	750		0.064	0.14	0.4	
	2	10	1500	750	0.062	0.14	0.4		
		16	1500	750	0.059	0.14	-		
		20	1500	750	0.055	0.14	-		
		25	1500	750	0.054	0.13	-		
		28	1500	750	0.056	0.14	-		
		35	1500	750	0.053	0.13	-		
		40	1500	750	0.049	0.13	-		
		45	1500	750	0.053	0.13	-		
		50	1500	750	0.049	0.13	-		
		60	1500	750	0.049	0.13	-		
		70	1500	750	0.049	0.13	-		
		80	1500	750	0.049	0.13	-		
90	1500	750	0.049	0.13	-				
100	1500	750	0.049	0.13	-				

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AH-090 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
090	1	4	75	125	250	3000	6000	720	620
		5	75	125	250	3000	6000	780	680
		6	75	125	250	3000	6000	830	740
		7	75	125	250	3000	6000	870	790
		8	75	125	250	3000	6000	910	830
		9	50	80	200	3000	6000	950	880
	2	10	50	80	200	3000	6000	980	920
		16	75	125	250	3000	6000	1200	1100
		20	75	125	250	3000	6000	1200	1200
		25	75	125	250	3000	6000	1300	1400
		28	75	125	250	3000	6000	1400	1400
		35	75	125	250	3000	6000	1500	1600
		40	75	125	250	3000	6000	1600	1700
		45	50	80	200	3000	6000	1600	1700
		50	75	125	250	3000	6000	1700	1700
		60	75	125	250	3000	6000	1800	1700
		70	75	125	250	3000	6000	1900	1700
		80	75	125	250	3000	6000	2000	1700
90	50	80	200	3000	6000	2000	1700		
100	50	80	200	3000	6000	2100	1700		

Frame size	Stage	Ratio	※8	※9	※10	Weight [kg]	Moment of inertia ($\leq \Phi 8$) [kgcm ²]	Moment of inertia ($\leq \Phi 14$) [kgcm ²]	Moment of inertia ($\leq \Phi 19$) [kgcm ²]	Moment of inertia ($\leq \Phi 28$) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]						
090	1	4	3300	1700	3.6	-	0.77	1.2	2.9	
		5	3300	1700		-	0.58	1.0	2.9	
		6	3300	1700		-	0.48	0.94	2.8	
		7	3300	1700		-	0.41	0.88	2.8	
		8	3300	1700		-	0.37	0.84	2.8	
		9	3300	1700		-	0.35	0.81	2.8	
	2	10	3300	1700	-	0.33	0.80	2.8		
		16	3300	1700	0.16	0.31	0.75	-		
		20	3300	1700	0.14	0.29	0.73	-		
		25	3300	1700	0.13	0.28	0.72	-		
		28	3300	1700	0.14	0.30	0.73	-		
		35	3300	1700	0.13	0.28	0.72	-		
		40	3300	1700	0.10	0.25	0.70	-		
		45	3300	1700	0.12	0.27	0.71	-		
		50	3300	1700	0.10	0.25	0.70	-		
		60	3300	1700	0.099	0.25	0.70	-		
		70	3300	1700	0.098	0.25	0.69	-		
		80	3300	1700	0.098	0.25	0.69	-		
90	3300	1700	0.098	0.25	0.69	-				
100	3300	1700	0.098	0.25	0.69	-				

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AH-110 Series Load Performance Table

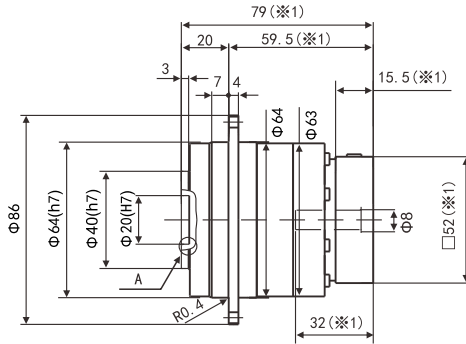
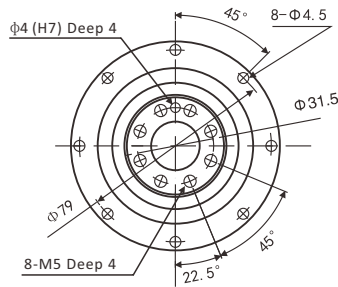
Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
110	1	4	120	330	625	3000	6000	4100	3500
		5	180	330	625	3000	6000	4400	3800
		6	180	330	625	3000	6000	4600	4000
		7	180	330	625	3000	6000	4800	4200
		8	180	330	625	3000	6000	5000	4300
		9	120	225	500	3000	6000	5200	4300
	2	10	120	225	500	3000	6000	5400	4300
		16	180	330	625	3000	6000	6200	4300
		20	180	330	625	3000	6000	6600	4300
		25	180	330	625	3000	6000	7100	4300
		28	180	330	625	3000	6000	7300	4300
		35	180	330	625	3000	6000	7800	4300
		40	180	330	625	3000	6000	8200	4300
		45	120	225	500	3000	6000	8400	4300
		50	180	330	625	3000	6000	8500	4300
		60	180	330	625	3000	6000	8500	4300
		70	180	330	625	3000	6000	8500	4300
		80	180	330	625	3000	6000	8500	4300
90	120	225	500	3000	6000	8500	4300		
100	120	225	500	3000	6000	8500	4300		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤ Φ8) [kgcm ²]	Moment of inertia (≤ Φ14) [kgcm ²]	Moment of inertia (≤ Φ19) [kgcm ²]	Moment of inertia (≤ Φ28) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
110	1	4	8500	4300	7.0	-	2.5	4.6	12
		5	8500	4300		-	1.9	3.9	12
		6	8500	4300		-	1.5	3.6	11
		7	8500	4300		-	1.3	3.3	11
		8	8500	4300		-	1.2	3.2	11
		9	8500	4300		-	1.1	3.1	11
	2	10	8500	4300	-	1.0	3.0	11	
		16	8500	4300	7.7	0.51	0.95	2.9	-
		20	8500	4300		0.42	0.85	2.8	-
		25	8500	4300		0.40	0.83	2.8	-
		28	8500	4300		0.45	0.89	2.8	-
		35	8500	4300		0.38	0.81	2.8	-
		40	8500	4300		0.29	0.74	2.7	-
		45	8500	4300		0.37	0.81	2.7	-
		50	8500	4300		0.28	0.73	2.7	-
		60	8500	4300		0.28	0.73	2.7	-
		70	8500	4300		0.28	0.73	2.7	-
		80	8500	4300		0.28	0.73	2.7	-
90	8500	4300	0.28	0.73		2.7	-		
100	8500	4300	0.28	0.73	2.7	-			

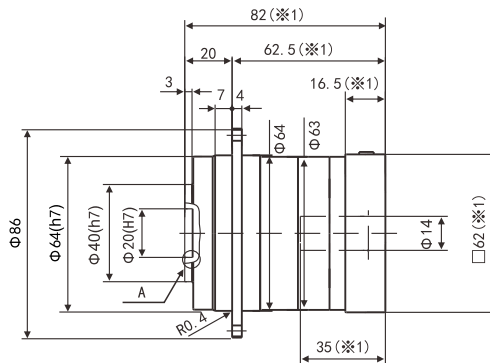
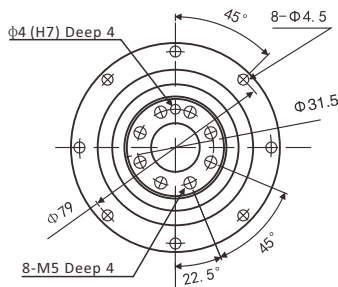
- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

AH-064 1-Stage Series Mechanical Dimensions

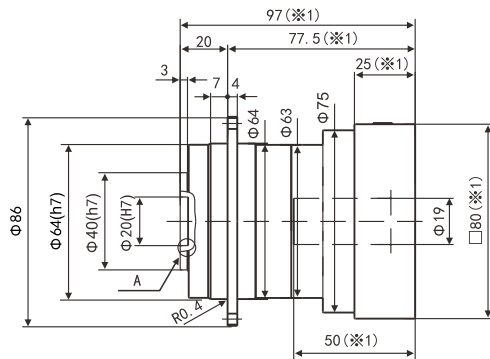
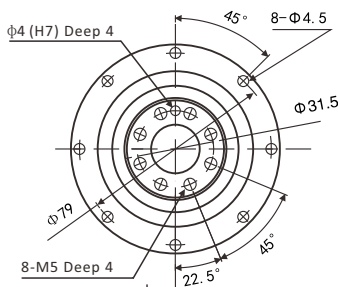
Input Shaft Diameter $\leq \phi 8$ (in mm)



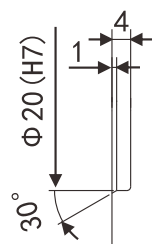
Input Shaft Diameter $\leq \phi 14$ (in mm)



Input Shaft Diameter $\leq \phi 19$ (in mm)



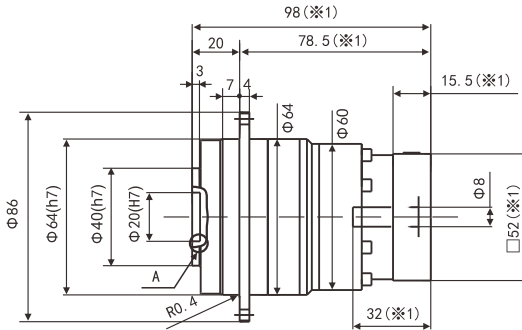
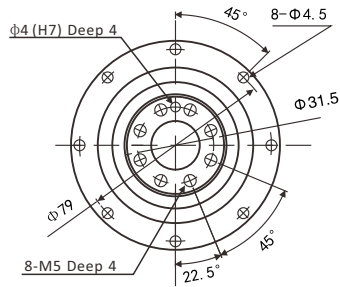
Enlarged Details A (in mm)



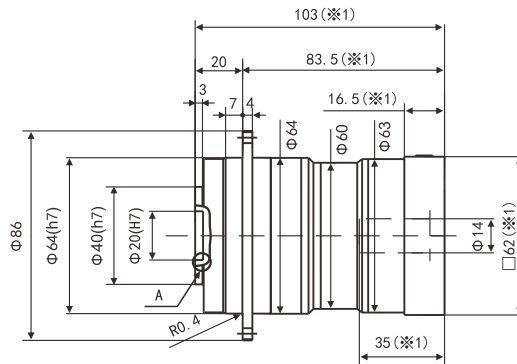
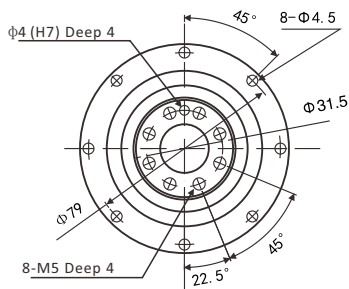
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AH-064 2-Stage Series Mechanical Dimensions

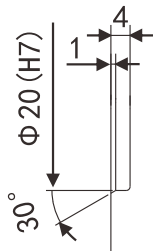
Input Shaft Diameter $\leq \phi 8$ (in mm)



Input Shaft Diameter $\leq \phi 14$ (in mm)



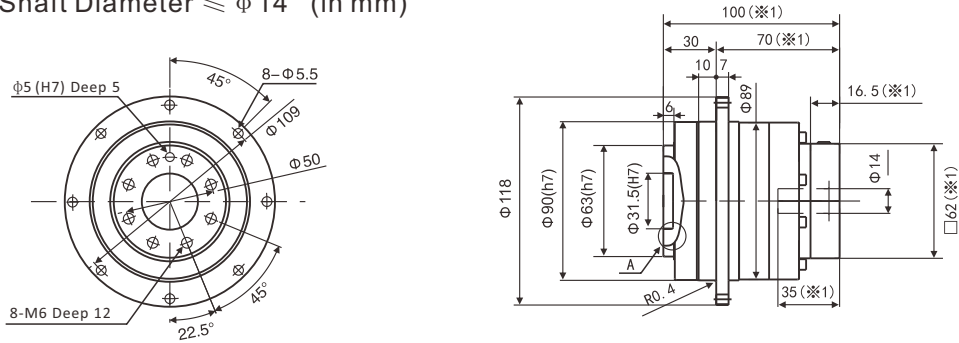
Enlarged Details A (in mm)



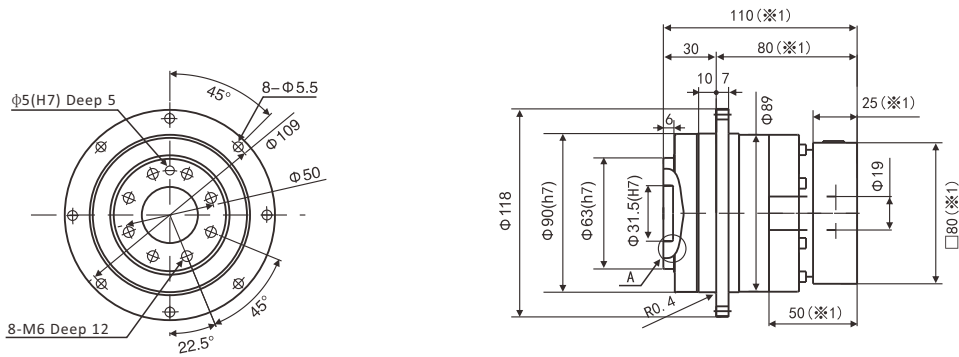
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AH-090 1-Stage Series Mechanical Dimensions

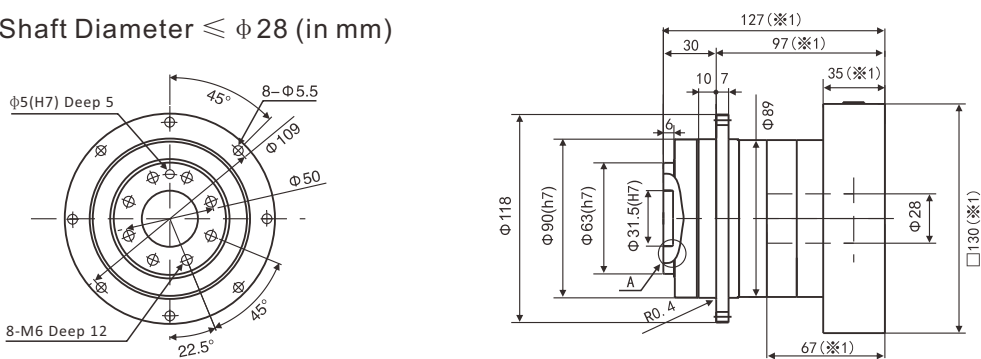
Input Shaft Diameter $\leq \phi 14$ (in mm)



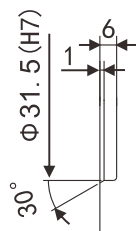
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



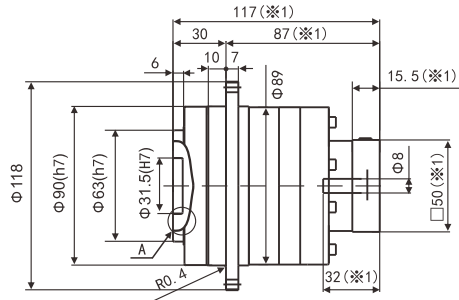
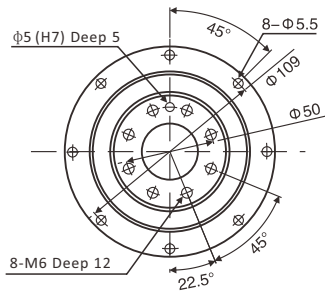
Enlarged Details A (in mm)



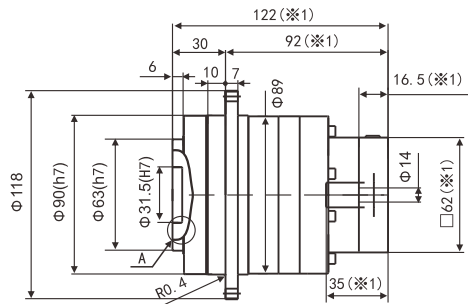
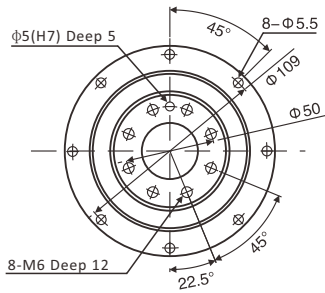
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AH-090 2-Stage Series Mechanical Dimensions

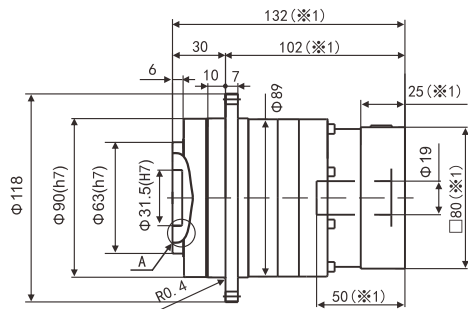
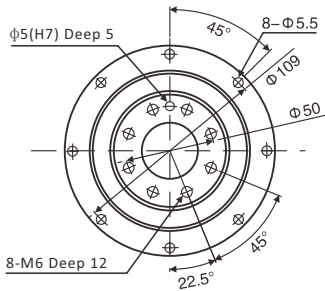
Input Shaft Diameter $\leq \phi 8$ (in mm)



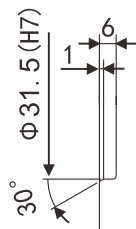
Input Shaft Diameter $\leq \phi 14$ (in mm)



Input Shaft Diameter $\leq \phi 19$ (in mm)



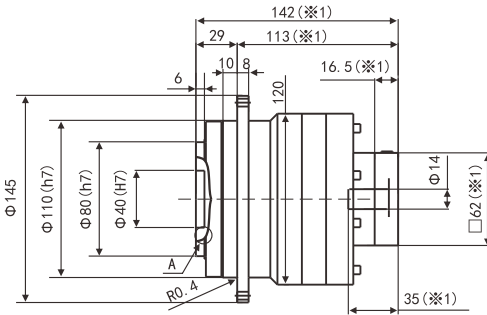
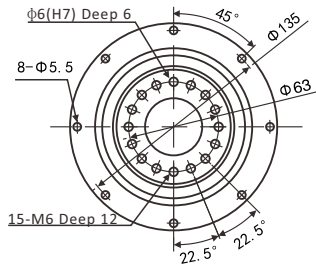
Enlarged Details A (in mm)



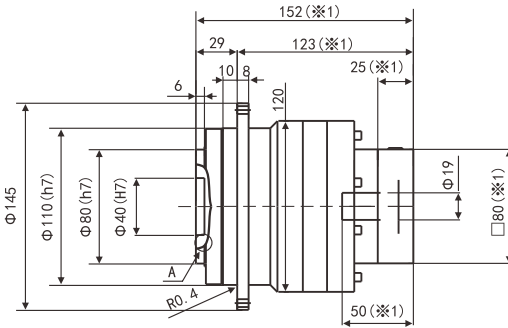
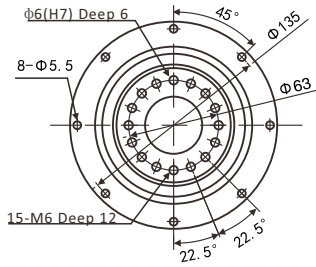
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AH-110 2-Stage Series Mechanical Dimensions

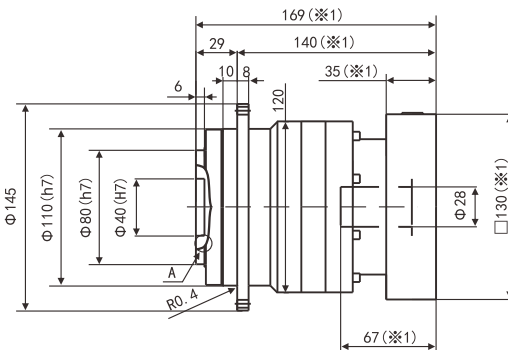
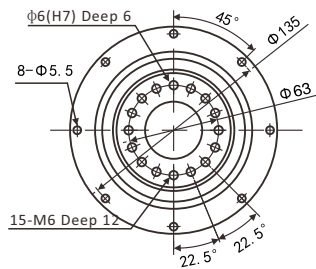
Input Shaft Diameter $\leq \phi 14$ (in mm)



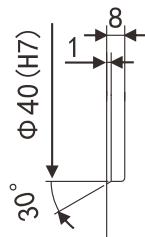
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)

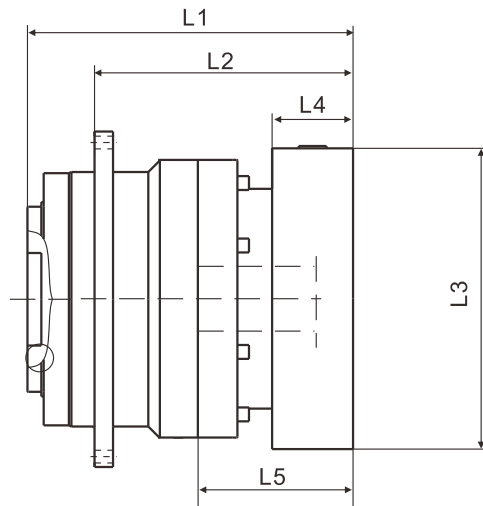


Enlarged Details A (in mm)



- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

AH-064 Input Shaft Adaptors

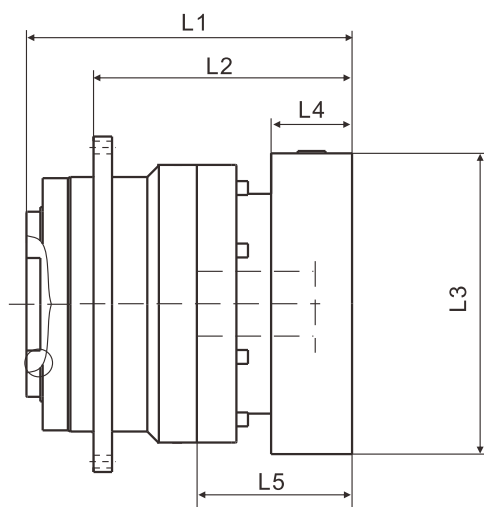


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AH-064-[-]-[-]-8** Input Shaft Dia. ≤ φ8	AA · AC · AD · AF · AG	79	59.5	□52	15.5	32	98	78.5	□52	15.5	32
	AB · AE · AH · AJ · AK	84	64.5	□52	20.5	37	103	83.5	□52	20.5	37
	BA · BB · BD · BE	79	59.5	□60	15.5	32	98	78.5	□60	15.5	32
	BC · BF	84	64.5	□60	20.5	37	103	83.5	□60	20.5	37
	CA	84	64.5	□70	20.5	37	103	83.5	□70	20.5	37
AH-064-[-]-[-]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	82	62.5	□65	16.5	35	103	83.5	□65	16.5	35
	BC · BH · BM	87	67.5	□65	21.5	40	108	88.5	□65	21.5	40
	BL	92	72.5	□65	26.5	45	113	93.5	□65	26.5	45
	CA	82	62.5	□70	16.5	35	103	83.5	□70	16.5	35
	CB	87	67.5	□70	21.5	40	108	88.5	□70	21.5	40
	DA · DB · DC · DD · DF · DH	82	62.5	□80	16.5	35	103	83.5	□80	16.5	35
	DE	87	67.5	□80	21.5	40	108	88.5	□80	21.5	40
	DG	92	72.5	□80	26.5	45	113	93.5	□80	26.5	45
	EA · EB · EC	82	62.5	□90	16.5	35	103	83.5	□90	16.5	35
	ED	92	72.5	□90	26.5	45	113	93.5	□90	26.5	45
	FA	82	62.5	□100	16.5	35	103	83.5	□100	16.5	35
	GA	82	62.5	□115	16.5	35	103	83.5	□115	16.5	35
	AH-064-[-]-[-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	97	77.5	□80	25	50	-	-	-	-
DD		107	87.5	□80	35	60	-	-	-	-	-
DE		102	82.5	□80	30	55	-	-	-	-	-
EA		102	82.5	□90	30	55	-	-	-	-	-
EB		97	77.5	□90	25	50	-	-	-	-	-
EC		107	87.5	□90	35	60	-	-	-	-	-
FA		97	77.5	□100	25	50	-	-	-	-	-
FB		107	87.5	□100	35	60	-	-	-	-	-
GA · GC		102	82.5	□115	30	55	-	-	-	-	-
GB · GD		97	77.5	□115	25	50	-	-	-	-	-
HA		97	77.5	□130	25	50	-	-	-	-	-
HB		112	92.5	□130	40	65	-	-	-	-	-
HC · HD · HE		102	82.5	□130	30	55	-	-	-	-	-

※1 1-stage reduction ratios 4 to 10, 2-stages reduction ratios 16 to 100

※2 Adaptors available to match different input shaft diameters.

AH-090 Series Input shaft Adaptors

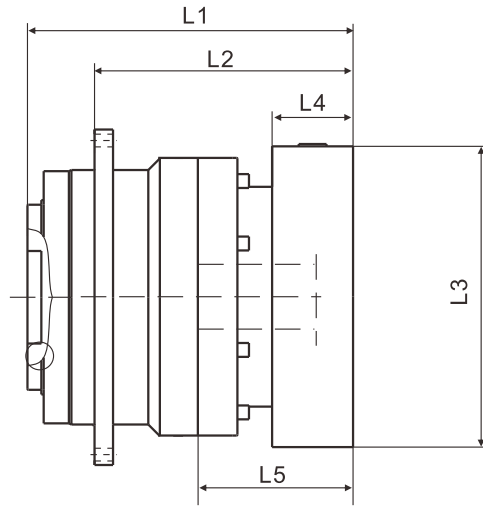


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AH-090-[-][-]-8** Input Shaft Dia. ≤ φ8	AA · AC · AD · AF · AG	-	-	-	-	-	117	87	□52	15.5	32
	AB · AE · AH · AJ · AK	-	-	-	-	-	122	92	□52	20.5	37
	BA · BB · BD · BE	-	-	-	-	-	117	87	□60	15.5	32
	BC · BF	-	-	-	-	-	122	92	□60	20.5	37
	CA	-	-	-	-	-	122	92	□70	20.5	37
AH-090-[-][-]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	100	70	□65	16.5	35	122	92	□65	16.5	35
	BC · BH · BM	105	75	□65	21.5	40	127	97	□65	21.5	40
	BL	110	80	□65	26.5	45	132	102	□65	26.5	45
	CA	100	70	□70	16.5	35	122	92	□70	16.5	35
	CB	105	75	□70	21.5	40	127	97	□70	21.5	40
	DA · DB · DC · DD · DF · DH	100	70	□80	16.5	35	122	92	□80	16.5	35
	DE	105	75	□80	21.5	40	127	97	□80	21.5	40
	DG	110	80	□80	26.5	45	132	102	□80	26.5	45
	EA · EB · EC	100	70	□90	16.5	35	122	92	□90	16.5	35
	ED	110	80	□90	26.5	45	132	102	□90	26.5	45
	FA	100	70	□100	16.5	35	122	92	□100	16.5	35
	GA	100	70	□115	16.5	35	122	92	□115	16.5	35
AH-090-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	110	80	□80	25	50	132	102	□80	25	50
	DD	120	90	□80	35	60	142	112	□80	35	60
	DE	115	85	□80	30	55	137	107	□80	30	55
	EA	115	85	□90	30	55	137	107	□90	30	55
	EB	110	80	□90	25	50	132	102	□90	25	50
	EC	120	90	□90	35	60	142	112	□90	35	60
	FA	110	80	□100	25	50	132	102	□100	25	50
	FB	120	90	□100	35	60	142	112	□100	35	60
	GA · GC	115	85	□115	30	55	137	107	□115	30	55
	GB · GD	110	80	□115	25	50	132	102	□115	25	50
	HA	110	80	□130	25	50	132	102	□130	25	50
	HB	125	95	□130	40	65	147	117	□130	40	65
	HC · HD · HE	115	85	□130	30	55	137	107	□130	30	55
	AH-090-[-][-]-28** Input Shaft Dia. ≤ φ28	FA · FB · FC	127	97	□100	35	67	-	-	-	-
GA · GB · GC · GD · GE · GF · GG		127	97	□115	35	67	-	-	-	-	-
HA · HC · HD		127	97	□130	35	67	-	-	-	-	-
HB		127	107	□130	45	77	-	-	-	-	-
JA · JB · JC		127	97	□150	35	67	-	-	-	-	-
KA · KB		127	97	□180	35	67	-	-	-	-	-
KD		137	107	□180	45	77	-	-	-	-	-
LA		127	97	□200	35	67	-	-	-	-	-
MA	127	97	□220	35	67	-	-	-	-	-	

※1 1-stage reduction ratios 4 to 10, 2-stages reduction ratios 16 to 100

※2 Adaptors available to match different input shaft diameters.

AH-110 Input Shaft Adaptors

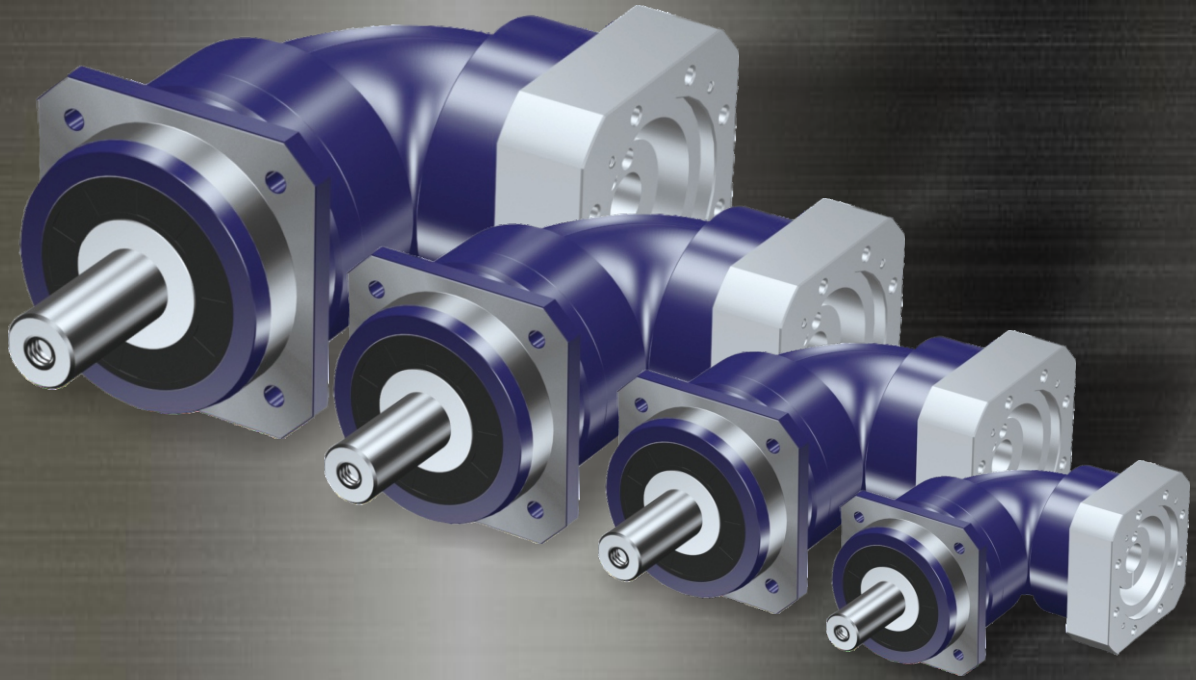


Model number	**: Adapter code	1 Stage					2 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
AH-110-[-][-]-14** Input Shaft Dia. ≤ φ14	BA · BB · BD · BE · BF · BG · BJ · BK	-	-	-	-	-	142	113	□65	16.5	35
	BC · BH · BM	-	-	-	-	-	147	118	□65	21.5	40
	BL	-	-	-	-	-	152	123	□65	26.5	45
	CA	-	-	-	-	-	142	113	□70	16.5	35
	CB	-	-	-	-	-	147	118	□70	21.5	40
	DA · DB · DC · DD · DF · DH	-	-	-	-	-	142	113	□80	16.5	35
	DE	-	-	-	-	-	147	118	□80	21.5	40
	DG	-	-	-	-	-	152	123	□80	26.5	45
	EA · EB · EC	-	-	-	-	-	142	113	□90	16.5	35
	ED	-	-	-	-	-	152	123	□90	26.5	45
	FA	-	-	-	-	-	142	113	□100	16.5	35
	GA	-	-	-	-	-	142	113	□115	16.5	35
AH-110-[-][-]-19** Input Shaft Dia. ≤ φ19	DA · DB · DC	124.5	95.5	□80	25	50	152	123	□80	25	50
	DD	134.5	105.5	□80	35	60	162	133	□80	35	60
	DE	129.5	100.5	□80	30	55	157	128	□80	30	55
	EA	129.5	100.5	□90	30	55	157	128	□90	30	55
	EB	124.5	95.5	□90	25	50	152	123	□90	25	50
	EC	134.5	105.5	□90	35	60	162	133	□90	35	60
	FA	124.5	95.5	□100	25	50	152	123	□100	25	50
	FB	134.5	105.5	□100	35	60	162	133	□100	35	60
	GA · GC	129.5	100.5	□115	30	55	157	128	□115	30	55
	GB · GD	124.5	95.5	□115	25	50	152	123	□115	25	50
	HA	124.5	95.5	□130	25	50	152	123	□130	25	50
	HB	139.5	110.5	□130	40	65	167	138	□130	40	65
	HC · HD · HE	129.5	100.5	□130	30	55	157	128	□130	30	55
	FA · FB · FC	141.5	112.5	□100	35	67	169	140	□100	35	67
AH-110-[-][-]-28** Input Shaft Dia. ≤ φ28	GA · GB · GC · GD · GE · GF · GG	141.5	112.5	□115	35	67	169	140	□115	35	67
	HA · HC · HD	141.5	112.5	□130	35	67	169	140	□130	35	67
	HB	151.5	122.5	□130	45	77	179	150	□130	45	77
	JA · JB · JC	141.5	112.5	□150	35	67	169	140	□130	35	67
	KA · KB	141.5	112.5	□180	35	67	169	140	□150	35	67
	KD	151.5	122.5	□180	45	77	179	150	□180	45	77
	LA	141.5	112.5	□200	35	67	169	140	□200	35	67
	MA	141.5	112.5	□220	35	67	169	140	□220	35	67
AH-110-[-][-]-38** Input Shaft Dia. ≤ φ38	HA	162.5	133.5	□130	45	82	-	-	-	-	-
	HB	157.5	128.5	□130	40	77	-	-	-	-	-
	JA	162.5	133.5	□150	45	82	-	-	-	-	-
	KA · KB · KC	162.5	133.5	□180	45	82	-	-	-	-	-
	LA	162.5	133.5	□200	45	82	-	-	-	-	-
	LB	172.5	143.5	□200	55	92	-	-	-	-	-
	MA · MB	162.5	133.5	□220	45	82	-	-	-	-	-
	NA	162.5	133.5	□250	45	82	-	-	-	-	-

※1 1-stage reduction ratios 4 to 10, 2-stages reduction ratios 16 to 100

※2 Adaptors available to match different input shaft diameters.

ZAF Series Highlights Overview



Space Saving

Spiral Bevel Gear adopted to realize 90 degrees motion transform and save spaces.

Higher Smoothness

Enhanced smoothness and lower noise due to adoption of Helical Gears.

Higher Precision

Fairly high precision enabled by backlash as 3arcmin.

Higher Rigidity and Torque

Due to adoption of uncaged needle roller bearings.

Flexible Motor Integration

Can be integrated with any motor in the world.

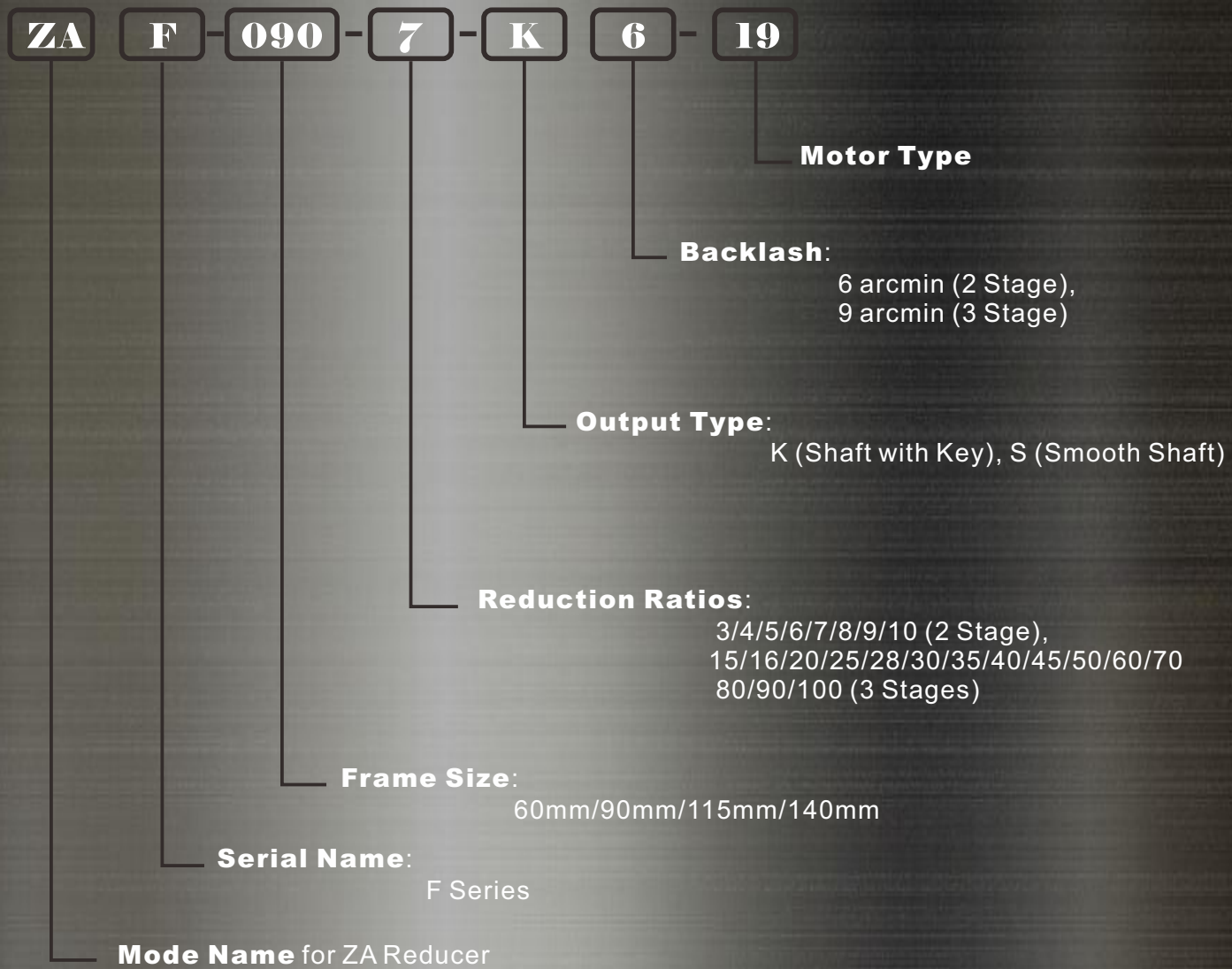
Free of Maintenance

No need to replace the grease for lifelong time and maintenance of any part.

No Grease Leakage

Usage of high viscosity and anti-separation lifetime grease.

ZAF Series Naming Rules



ZAF-060 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
060	2	3	12	24	50	3000	6000	430	310
		4	16	32	65	3000	6000	470	360
		5	22	40	80	3000	6000	510	390
		6	24	45	90	3000	6000	540	430
		7	24	45	90	3000	6000	570	460
		8	24	45	90	3000	6000	600	480
		9	16	32	65	3000	6000	620	510
	3	10	16	32	65	3000	6000	640	530
		15	16	32	65	3000	6000	740	630
		16	24	45	90	3000	6000	750	650
		20	24	45	90	3000	6000	810	720
		25	24	45	90	3000	6000	870	790
		28	24	45	90	3000	6000	910	830
		30	16	32	65	3000	6000	930	860
		35	24	45	90	3000	6000	980	920
		40	24	45	90	3000	6000	1000	970
		45	16	32	65	3000	6000	1100	1000
		50	24	45	90	3000	6000	1100	1100
		60	24	45	90	3000	6000	1200	1100
		70	24	45	90	3000	6000	1200	1100
80	24	45	90	3000	6000	1200	1100		
90	16	32	65	3000	6000	1200	1100		
100	16	32	65	3000	6000	1200	1100		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia ($\leq \Phi 8$) [kgcm ²]	Moment of inertia ($\leq \Phi 14$) [kgcm ²]	Moment of inertia ($\leq \Phi 19$) [kgcm ²]	
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
060	2	3	1200	1100	1.8	0.31	0.39	0.58	
		4	1200	1100		0.27	0.34	0.53	
		5	1200	1100		0.25	0.32	0.51	
		6	1200	1100		0.24	0.31	0.50	
		7	1200	1100		0.23	0.31	0.50	
		8	1200	1100		0.23	0.31	0.50	
		9	1200	1100		0.23	0.30	0.49	
	3	10	1200	1100	0.23	0.30	0.49		
		15	1200	1100	1.6	0.073	0.118	-	
		16	1200	1100		0.079	0.124	-	
		20	1200	1100		0.071	0.116	-	
		25	1200	1100		0.071	0.115	-	
		28	1200	1100		0.077	0.122	-	
		30	1200	1100		0.062	0.106	-	
		35	1200	1100		0.070	0.115	-	
		40	1200	1100		0.061	0.106	-	
		45	1200	1100		0.070	0.115	-	
		50	1200	1100		0.061	0.106	-	
		60	1200	1100		0.061	0.106	-	
		70	1200	1100		0.061	0.105	-	
80	1200	1100	0.061	0.105		-			
90	1200	1100	0.061	0.105	-				
100	1200	1100	0.061	0.105	-				

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

ZAF-090 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
090	2	3	45	65	130	3000	6000	810	930
		4	60	90	170	3000	6000	890	1100
		5	65	90	220	3000	6000	960	1200
		6	65	90	220	3000	6000	1000	1300
		7	65	90	220	3000	6000	1100	1300
		8	65	90	220	3000	6000	1100	1400
		9	45	65	170	3000	6000	1200	1500
	3	10	45	65	170	3000	6000	1200	1600
		15	45	65	170	3000	6000	1400	1900
		16	65	110	220	3000	6000	1400	1900
		20	65	110	220	3000	6000	1500	2100
		25	65	110	220	3000	6000	1600	2200
		28	65	110	220	3000	6000	1700	2200
		30	45	65	170	3000	6000	1700	2200
		35	65	110	220	3000	6000	1800	2200
		40	65	110	220	3000	6000	1900	2200
		45	45	65	170	3000	6000	2000	2200
		50	65	110	220	3000	6000	2100	2200
		60	65	110	220	3000	6000	2200	2200
		70	65	110	220	3000	6000	2300	2200
80	65	110	220	3000	6000	2400	2200		
90	45	65	170	3000	6000	2400	2200		
100	45	65	170	3000	6000	2400	2200		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤Φ8) [kgcm ²]	Moment of inertia (≤Φ14) [kgcm ²]	Moment of inertia (≤Φ19) [kgcm ²]	Moment of inertia (≤Φ19) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
090	2	3	2400	2200	5.1	-	2.12	2.45	4.57
		4	2400	2200		-	1.89	2.22	4.35
		5	2400	2200		-	1.80	2.13	4.26
		6	2400	2200		-	1.76	2.09	4.21
		7	2400	2200		-	1.73	2.06	4.18
		8	2400	2200		-	1.71	2.04	4.17
		9	2400	2200		-	1.70	2.03	4.16
	3	10	2400	2200	-	1.69	2.02	4.15	
		15	2400	2200	4.4	0.34	0.41	0.60	-
		16	2400	2200		0.38	0.46	0.65	-
		20	2400	2200		0.33	0.40	0.59	-
		25	2400	2200		0.32	0.40	0.59	-
		28	2400	2200		0.37	0.45	0.64	-
		30	2400	2200		0.25	0.33	0.51	-
		35	2400	2200		0.25	0.40	0.59	-
		40	2400	2200		0.32	0.32	0.51	-
		45	2400	2200		0.25	0.39	0.58	-
		50	2400	2200		0.25	0.32	0.51	-
		60	2400	2200		0.25	0.32	0.51	-
		70	2400	2200		0.25	0.32	0.51	-
80	2400	2200	0.25	0.32		0.51	-		
90	2400	2200	0.25	0.32	0.51	-			
100	2400	2200	0.25	0.32	0.51	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

ZAF-115 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
115	2	3	75	150	320	3000	6000	1300	1500
		4	100	200	430	3000	6000	1500	1700
		5	120	240	500	3000	6000	1600	1900
		6	150	300	550	3000	6000	1700	2000
		7	150	300	550	3000	6000	1800	2100
		8	150	300	550	3000	6000	1900	2300
		9	110	200	450	3000	6000	1900	2400
	3	10	110	200	450	3000	6000	2000	2500
		15	110	200	450	3000	6000	2300	3000
		16	130	260	550	3000	6000	2300	3100
		20	150	300	550	3000	6000	2500	3400
		25	150	300	550	3000	6000	2700	3700
		28	150	300	550	3000	6000	2800	3900
		30	110	200	450	3000	6000	2900	3900
		35	150	300	550	3000	6000	3000	3900
		40	150	300	550	3000	6000	3200	3900
		45	110	200	450	3000	6000	3300	3900
		50	150	300	550	3000	6000	3400	3900
		60	150	300	550	3000	6000	3600	3900
		70	150	300	550	3000	6000	3800	3900
80	150	300	550	3000	6000	4000	3900		
90	110	200	450	3000	6000	4200	3900		
100	110	200	450	3000	6000	4300	3900		

Frame size	Stage	Ratio	※8	※9	Weight	Moment of inertia	Moment of inertia	Moment of inertia	Moment of inertia
			Maximum radial load [N]	Maximum axial load [N]	[kg]	($\leq \Phi 14$) [kgcm ²]	($\leq \Phi 19$) [kgcm ²]	($\leq \Phi 28$) [kgcm ²]	($\leq \Phi 38$) [kgcm ²]
115	2	3	4300	3900	10.4	-	6.74	8.34	15.41
		4	4300	3900		-	5.49	7.08	14.15
		5	4300	3900		-	5.02	6.61	13.69
		6	4300	3900		-	4.77	6.36	13.43
		7	4300	3900		-	4.65	6.24	13.31
		8	4300	3900		-	4.55	6.14	13.22
		9	4300	3900		-	4.49	6.08	13.16
	3	10	4300	3900	-	4.46	6.05	13.12	
		15	4300	3900	10.1	2.25	2.58	4.70	-
		16	4300	3900		2.46	2.79	4.91	-
		20	4300	3900		2.20	2.53	4.65	-
		25	4300	3900		2.18	2.51	4.64	-
		28	4300	3900		2.40	2.73	4.86	-
		30	4300	3900		1.87	2.20	4.33	-
		35	4300	3900		2.16	2.49	4.62	-
		40	4300	3900		1.86	2.19	4.32	-
		45	4300	3900		2.15	2.48	4.61	-
		50	4300	3900		1.86	2.19	4.31	-
		60	4300	3900		1.85	2.18	4.31	-
		70	4300	3900		1.85	2.18	4.31	-
80	4300	3900	1.85	2.18		4.31	-		
90	4300	3900	1.85	2.18	4.31	-			
100	4300	3900	1.85	2.18	4.31	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

ZAF-140 Series Load Performance Table

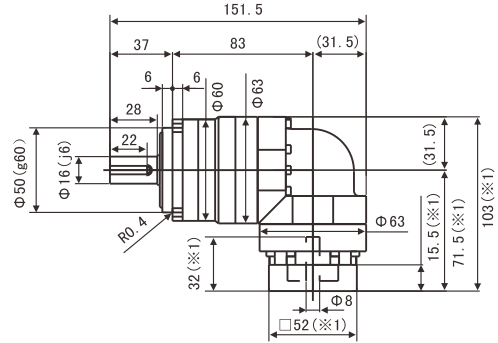
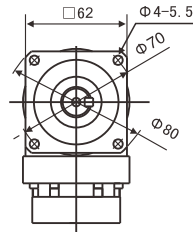
Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
140	2	3	130	260	700	2000	4000	3200	2400
		4	170	340	950	2000	4000	3500	2700
		5	200	400	1100	2000	4000	3800	3000
		6	260	520	1100	2000	4000	4000	3300
		7	300	600	1100	2000	4000	4200	3500
		8	300	600	1100	2000	4000	4400	3700
		9	200	400	750	2000	4000	4600	3900
	3	10	200	400	750	2000	4000	4700	4100
		15	200	400	750	2000	4000	5400	4900
		16	300	600	1100	2000	4000	5500	5000
		20	300	600	1100	2000	4000	6000	5500
		25	300	600	1100	2000	4000	6400	6100
		28	300	600	1100	2000	4000	6700	6400
		30	200	400	750	2000	4000	6800	6600
		35	300	600	1100	2000	4000	7200	7000
		40	300	600	1100	2000	4000	7500	7500
		45	200	400	750	2000	4000	7800	7900
		50	300	600	1100	2000	4000	8100	8200
		60	300	600	1100	2000	4000	8600	8200
		70	300	600	1100	2000	4000	9100	8200
80	300	600	1100	2000	4000	9100	8200		
90	200	400	750	2000	4000	9100	8200		
100	200	400	750	2000	4000	9100	8200		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤Φ19) [kgcm ²]	Moment of inertia (≤Φ28) [kgcm ²]	Moment of inertia (≤Φ38) [kgcm ²]	Moment of inertia (≤Φ48) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
140	2	3	9100	8200	19.1	-	23.13	27.50	40.73
		4	9100	8200		-	18.57	22.94	36.17
		5	9100	8200		-	16.91	21.28	34.51
		6	9100	8200		-	16.01	20.38	33.61
		7	9100	8200		-	15.58	19.95	33.18
		8	9100	8200		-	15.23	19.61	32.84
		9	9100	8200		-	14.77	19.41	32.37
	3	10	9100	8200	-	14.66	19.03	32.26	
		15	9100	8200	19.6	6.40	8.00	15.07	-
		16	9100	8200		7.29	8.88	15.96	-
		20	9100	8200		6.22	7.81	14.89	-
		25	9100	8200		6.15	7.75	14.82	-
		28	9100	8200		7.09	8.68	15.76	-
		30	9100	8200		4.99	6.58	13.66	-
		35	9100	8200		6.09	7.69	14.76	-
		40	9100	8200		4.95	6.54	13.61	-
		45	9100	8200		6.07	7.66	14.74	-
		50	9100	8200		4.93	6.52	13.59	-
		60	9100	8200		4.92	6.51	13.59	-
		70	9100	8200		4.91	6.51	13.58	-
80	9100	8200	4.91	6.50		13.58	-		
90	9100	8200	4.91	6.50	13.57	-			
100	9100	8200	4.91	6.50	13.57	-			

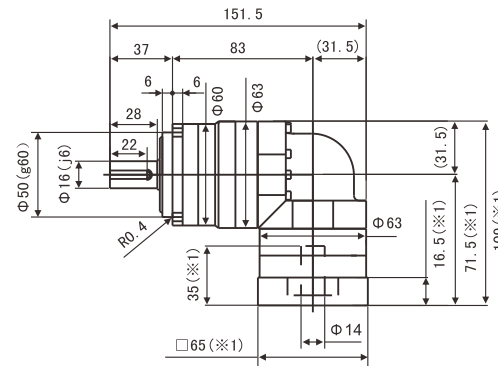
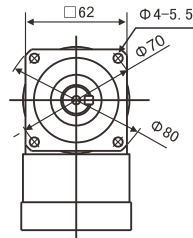
- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

ZAF-060 2-Stage Series Mechanical Dimensions

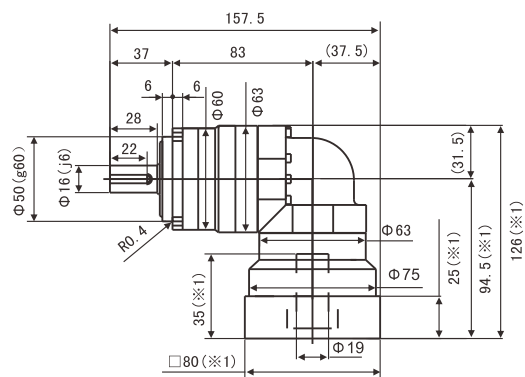
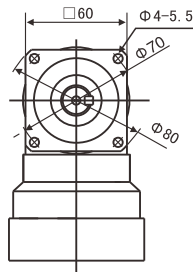
Input Shaft Diameter $\leq \phi 8$ (in mm)



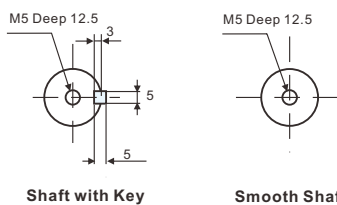
Input Shaft Diameter $\leq \phi 14$ (in mm)



Input Shaft Diameter $\leq \phi 19$ (in mm)



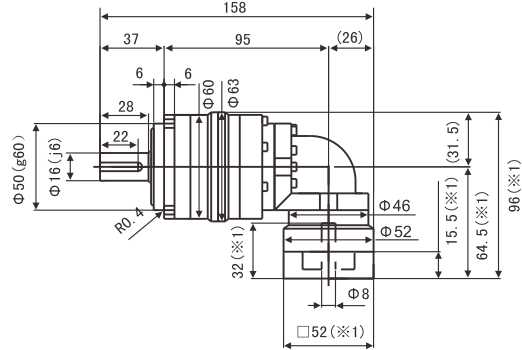
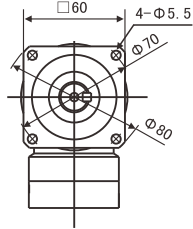
Output Shaft Type (in mm)



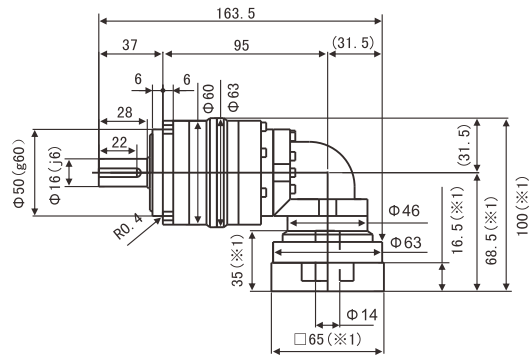
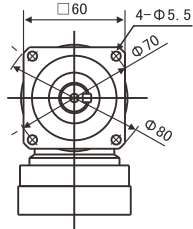
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAF-060 3-Stage Series Mechanical Dimensions

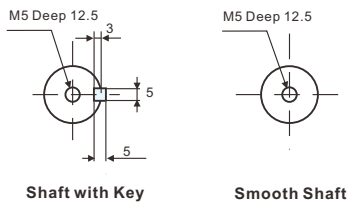
Input Shaft Diameter $\leq \phi 8$ (in mm)



Input Shaft Diameter $\leq \phi 14$ (in mm)



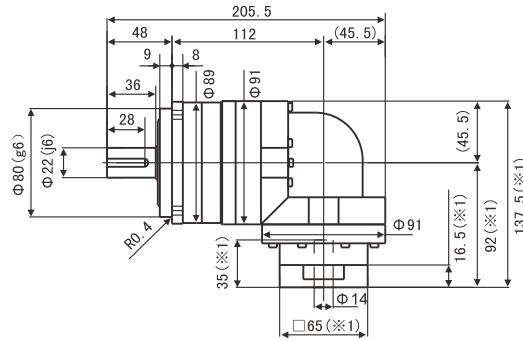
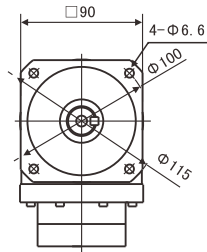
Output Shaft Type (in mm)



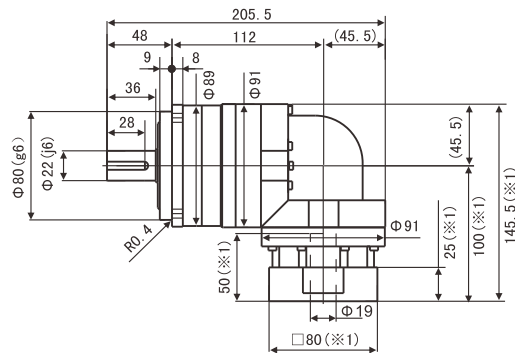
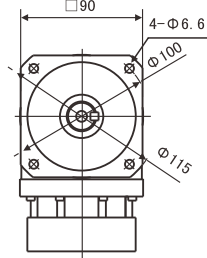
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAF-090 2-Stage Series Mechanical Dimensions

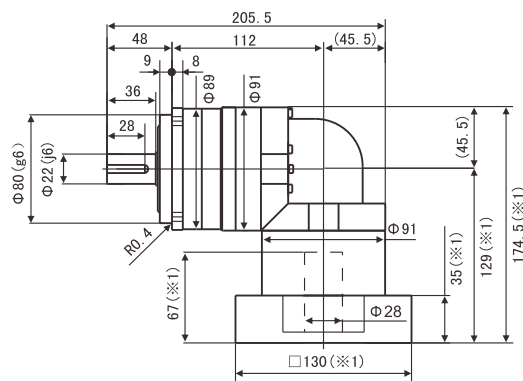
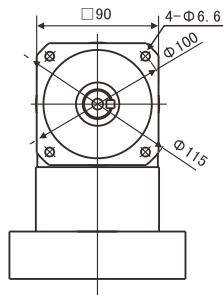
Input Shaft Diameter $\leq \phi 14$ (in mm)



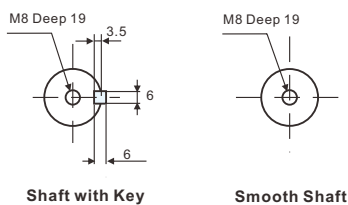
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



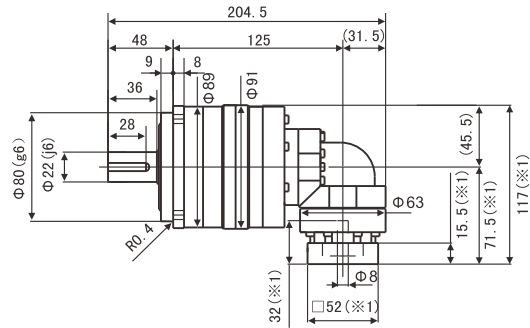
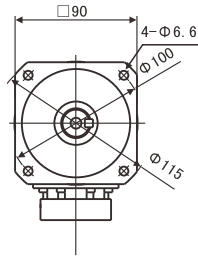
Output Shaft Type (in mm)



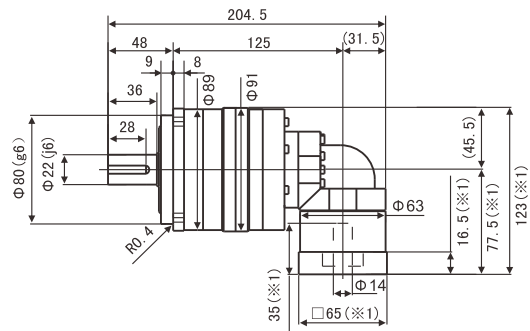
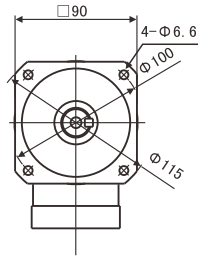
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAF-090 3-Stage Series Mechanical Dimensions

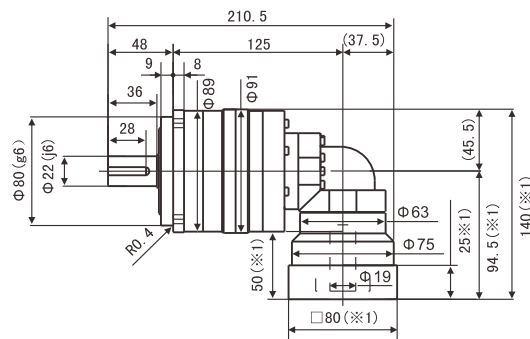
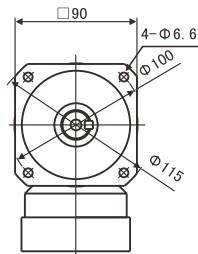
Input Shaft Diameter $\leq \phi 8$ (in mm)



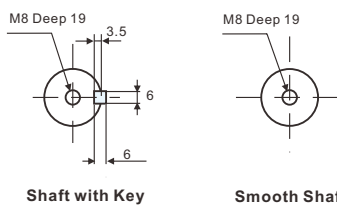
Input Shaft Diameter $\leq \phi 14$ (in mm)



Input Shaft Diameter $\leq \phi 19$ (in mm)



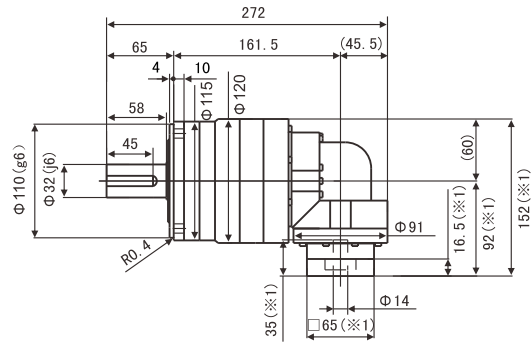
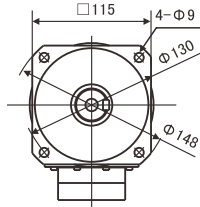
Output Shaft Type (in mm)



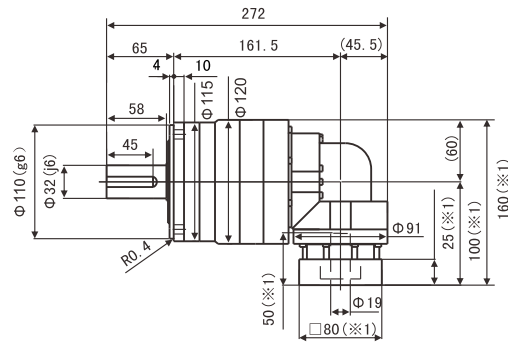
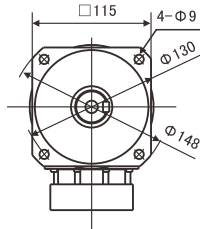
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAF-115 3-Stage Series Mechanical Dimensions

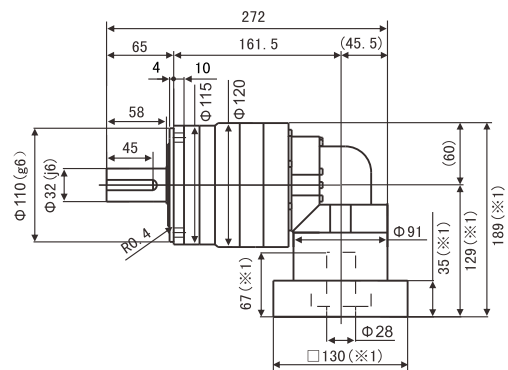
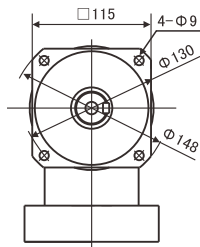
Input Shaft Diameter $\leq \phi 14$ (in mm)



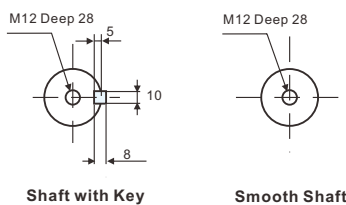
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



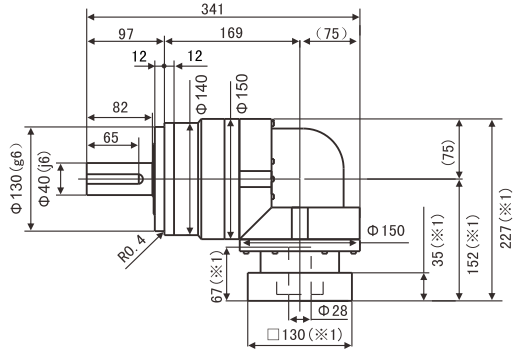
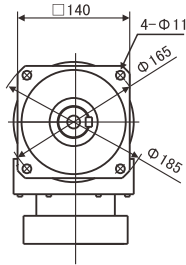
Output Shaft Type (in mm)



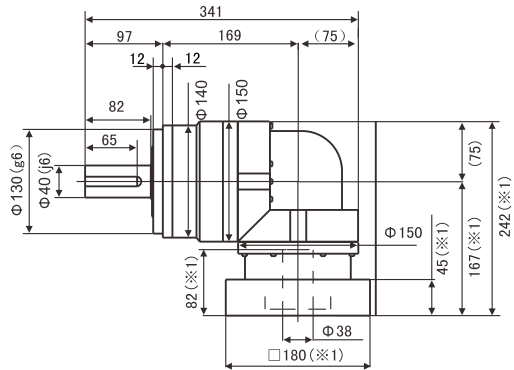
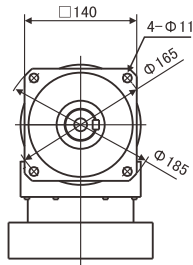
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAF-140 2-Stage Series Mechanical Dimensions

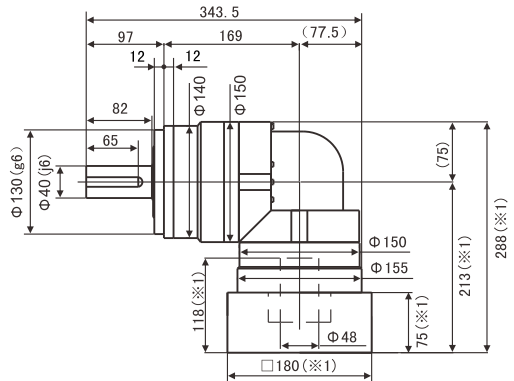
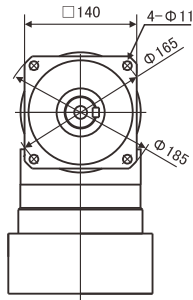
Input Shaft Diameter $\leq \phi 28$ (in mm)



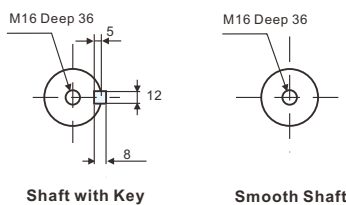
Input Shaft Diameter $\leq \phi 38$ (in mm)



Input Shaft Diameter $\leq \phi 48$ (in mm)



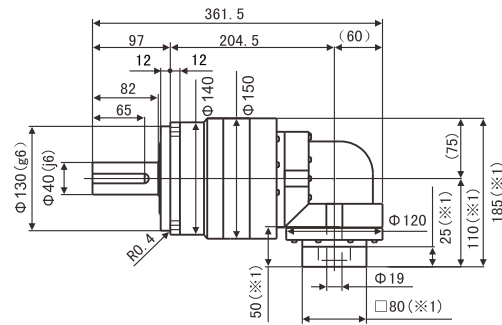
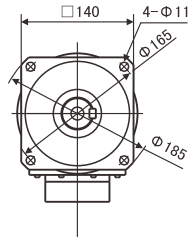
Output Shaft Type (in mm)



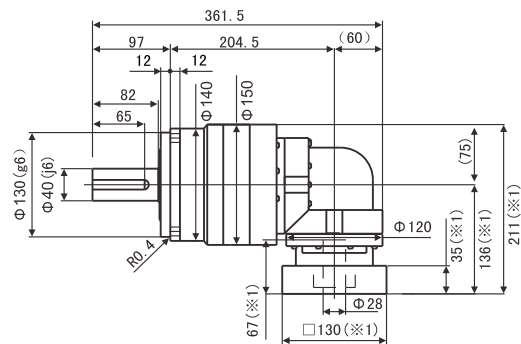
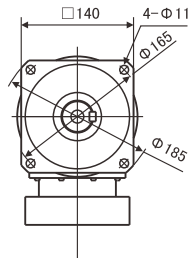
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAF-140 3-Stage Series Mechanical Dimensions

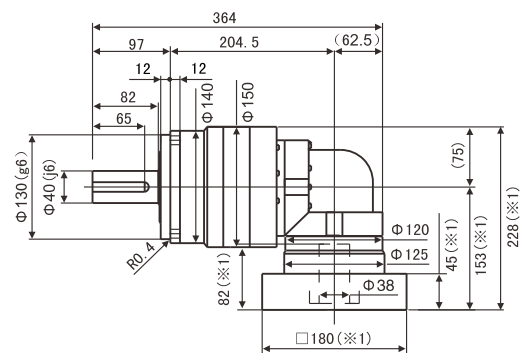
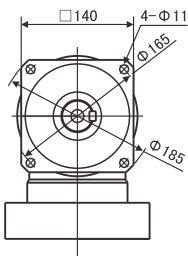
Input Shaft Diameter $\leq \phi 19$ (in mm)



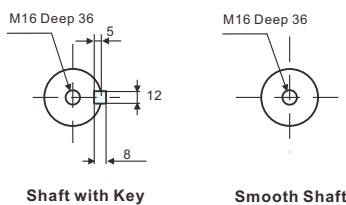
Input Shaft Diameter $\leq \phi 28$ (in mm)



Input Shaft Diameter $\leq \phi 38$ (in mm)

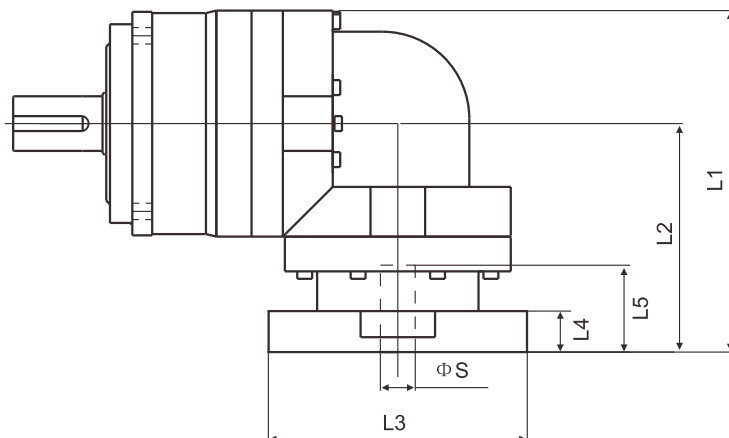


Output Shaft Type (in mm)



- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAF-060 Input Shaft Adaptors

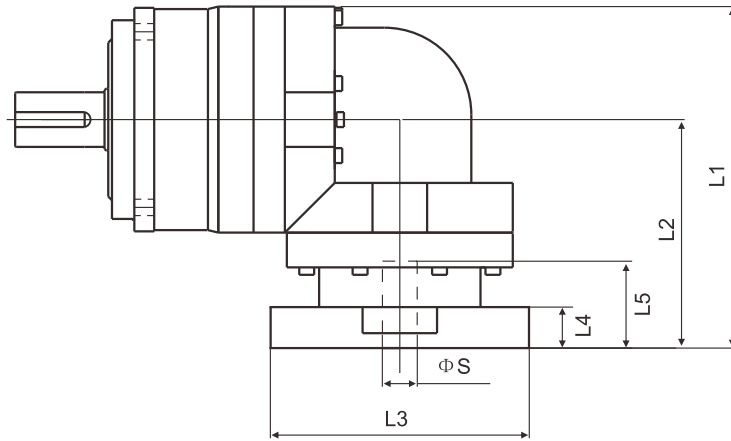


Model number	**: Adapter code	2 Stage					3 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
ZAF-060-[-][-]-8** Input Shaft Dia. ≤ φ8	AA • AC • AD • AF • AG	103	71.5	□52	15.5	32	96	64.5	□52	15.5	32
	AB • AE • AH • AJ • AK	108	76.5	□52	20.5	37	101	69.5	□52	20.5	37
	BA • BB • BD • BE	103	71.5	□60	15.5	32	96	64.5	□60	15.5	32
	BC • BF	108	76.5	□60	20.5	37	101	69.5	□60	20.5	37
	CA	108	76.5	□70	20.5	37	101	69.5	□70	20.5	37
ZAF-060-[-][-]-14** Input Shaft Dia. ≤ φ14	BA • BB • BD • BE • BF • BG • BJ • BK	109	77.5	□65	16.5	35	100	68.5	□65	16.5	35
	BC • BH	114	82.5	□65	21.5	40	105	73.5	□65	21.5	40
	BL	119	87.5	□65	26.5	45	110	78.5	□65	26.5	45
	CA	109	77.5	□70	16.5	35	100	68.5	□70	16.5	35
	CB	114	82.5	□70	21.5	40	105	73.5	□70	21.5	40
	DA • DB • DC • DD • DF • DH	109	77.5	□80	16.5	35	100	68.5	□80	16.5	35
	DE	114	82.5	□80	21.5	40	105	73.5	□80	21.5	40
	DG	119	87.5	□80	26.5	45	110	78.5	□80	26.5	45
	EA • EB • EC	109	77.5	□90	16.5	35	100	68.5	□90	16.5	35
	ED	119	87.5	□90	26.5	45	110	78.5	□90	26.5	45
	FA	109	77.5	□100	16.5	35	100	68.5	□100	16.5	35
	GA	109	77.5	□115	16.5	35	100	68.5	□115	16.5	35
	ZAF-060-[-][-]-19** Input Shaft Dia. ≤ φ19	DA • DB • DC	126	94.5	□80	25	50	-	-	-	-
DD		136	104.5	□80	35	60	-	-	-	-	-
DE		131	99.5	□80	30	55	-	-	-	-	-
EA		131	99.5	□90	30	55	-	-	-	-	-
EB		126	94.5	□90	25	50	-	-	-	-	-
EC		136	104.5	□90	35	60	-	-	-	-	-
FA		126	94.5	□100	25	50	-	-	-	-	-
FB		136	104.5	□100	35	60	-	-	-	-	-
GA • GC		131	99.5	□115	30	55	-	-	-	-	-
GB • GD		126	94.5	□115	25	50	-	-	-	-	-
HA		126	94.5	□130	25	50	-	-	-	-	-
HB		141	109.5	□130	40	65	-	-	-	-	-
HC • HD • HE		131	99.5	□130	30	55	-	-	-	-	-

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

ZAF-090 Input Shaft Adaptors

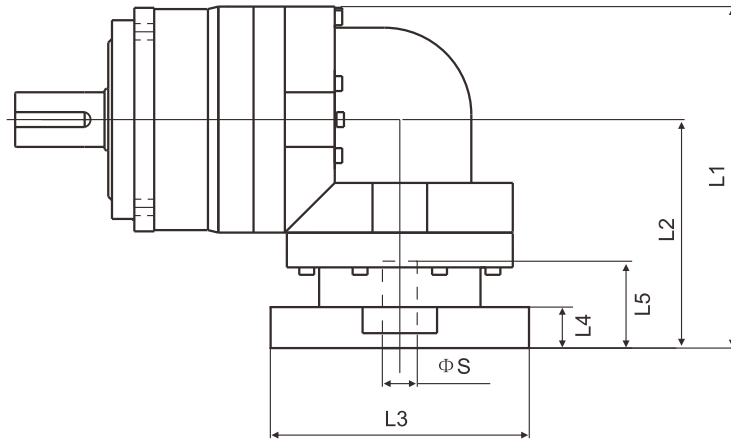


Model number	**: Adapter code	2 Stage					3 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
ZAF-090-[-][-]-8** Input Shaft Dia. $\leq \phi 8$	AA • AC • AD • AF • AG	-	-	-	-	-	117	71.5	□52	15.5	32
	AB • AE • AH • AJ • AK	-	-	-	-	-	122	76.5	□52	20.5	37
	BA • BB • BD • BE	-	-	-	-	-	117	71.5	□60	15.5	32
	BC • BF	-	-	-	-	-	122	76.5	□60	20.5	37
	CA	-	-	-	-	-	122	76.5	□70	20.5	37
ZAF-090-[-][-]-14** Input Shaft Dia. $\leq \phi 14$	BA • BB • BD • BE • BF • BG • BJ • BK	137.5	92	□65	16.5	35	123	77.5	□65	16.5	35
	BC • BH	142.5	97	□65	21.5	40	128	82.5	□65	21.5	40
	BL	147.5	102	□65	26.5	45	133	87.5	□65	26.5	45
	CA	137.5	92	□70	16.5	35	123	77.5	□70	16.5	35
	CB	142.5	97	□70	21.5	40	128	82.5	□70	21.5	40
	DA • DB • DC • DD • DF • DH	137.5	92	□80	16.5	35	123	77.5	□80	16.5	35
	DE	142.5	97	□80	21.5	40	128	82.5	□80	21.5	40
	DG	147.5	102	□80	26.5	45	133	87.5	□80	26.5	45
	EA • EB • EC	137.5	92	□90	16.5	35	123	77.5	□90	16.5	35
	ED	147.5	102	□90	26.5	45	133	87.5	□90	26.5	45
	FA	137.5	92	□100	16.5	35	123	77.5	□100	16.5	35
	GA	137.5	92	□115	16.5	35	123	77.5	□115	16.5	35
	ZAF-090-[-][-]-19** Input Shaft Dia. $\leq \phi 19$	DA • DB • DC	145.5	100	□80	25	50	140	94.5	□80	25
DD		155.5	110	□80	35	60	150	104.5	□80	35	60
DE		150.5	105	□80	30	55	145	99.5	□80	30	55
EA		150.5	105	□90	30	55	145	99.5	□90	30	55
EB		145.5	100	□90	25	50	140	94.5	□90	25	50
EC		155.5	110	□90	35	60	150	104.5	□90	35	60
FA		145.5	100	□100	25	50	140	94.5	□100	25	50
FB		155.5	110	□100	35	60	150	104.5	□100	35	60
GA • GC		150.5	105	□115	30	55	145	99.5	□115	30	55
GB • GD		145.5	100	□115	25	50	140	94.5	□115	25	50
HA		145.5	100	□130	25	50	140	94.5	□130	25	50
HB		160.5	115	□130	40	65	155	109.5	□130	40	65
HC • HD • HE		150.5	105	□130	30	55	145	99.5	□130	30	55
ZAF-090-[-][-]-28** Input Shaft Dia. $\leq \phi 28$ 8]	FA • FB • FC	174.5	129	□100	35	67	-	-	-	-	-
	GA • GB • GC • GD • GE • GF • GG	174.5	129	□115	35	67	-	-	-	-	-
	HA • HC • HD	174.5	129	□130	35	67	-	-	-	-	-
	HB	184.5	139	□130	45	77	-	-	-	-	-
	JA • JB • JC	174.5	129	□150	35	67	-	-	-	-	-
	KA • KB	174.5	129	□180	35	67	-	-	-	-	-
	LA	174.5	129	□200	35	67	-	-	-	-	-
MA	174.5	129	□220	35	67	-	-	-	-	-	

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

ZAF-115 Input Shaft Adaptors

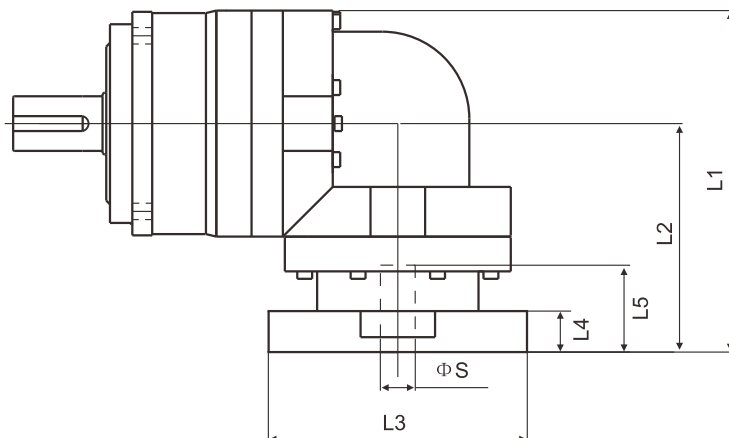


Model number	**: Adapter code	2 Stage					3 Stage					
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5	
ZAF-115-[-][-]-14** Input Shaft Dia. $\leq \phi 14$	BA • BB • BD • BE • BF • BG • BJ • BK	-	-	-	-	-	152	92	□65	16.5	35	
	BC • BH	-	-	-	-	-	157	97	□65	21.5	40	
	BL	-	-	-	-	-	162	102	□65	26.5	45	
	CA	-	-	-	-	-	152	92	□70	16.5	35	
	CB	-	-	-	-	-	157	97	□70	21.5	40	
	DA • DB • DC • DD • DF • DH	-	-	-	-	-	152	92	□80	16.5	35	
	DE	-	-	-	-	-	157	97	□80	21.5	40	
	DG	-	-	-	-	-	162	102	□80	26.5	45	
	EA • EB • EC	-	-	-	-	-	152	92	□90	16.5	35	
	ED	-	-	-	-	-	162	102	□90	26.5	45	
	FA	-	-	-	-	-	152	92	□100	16.5	35	
	GA	-	-	-	-	-	152	92	□115	16.5	35	
	ZAF-115-[-][-]-19** Input Shaft Dia. $\leq \phi 19$	DA • DB • DC	170	110	□80	25	50	160	100	□80	25	50
		DD	180	120	□80	35	60	170	110	□80	35	60
DE		175	115	□80	30	55	165	105	□80	30	55	
EA		175	115	□90	30	55	165	105	□90	30	55	
EB		170	110	□90	25	50	160	100	□90	25	50	
EC		180	120	□90	35	60	170	110	□90	35	60	
FA		170	110	□100	25	50	160	100	□100	25	50	
FB		180	120	□100	35	60	170	110	□100	35	60	
GA • GC		175	115	□115	30	55	165	105	□115	30	55	
GB • GD		170	110	□115	25	50	160	100	□115	25	50	
HA		170	110	□130	25	50	160	100	□130	25	50	
HB		185	125	□130	40	65	175	115	□130	40	65	
HC • HD • HE		175	115	□130	30	55	165	105	□130	30	55	
ZAF-115-[-][-]-28** Input Shaft Dia. $\leq \phi 28$		FA • FB • FC	196	136	□100	35	67	189	129	□100	35	67
	GA • GB • GC • GD • GE • GF • GG	196	136	□115	35	67	189	129	□115	35	67	
	HA • HC • HD	196	136	□130	35	67	189	129	□130	35	67	
	HB	206	146	□130	45	77	199	139	□130	45	77	
	JA • JB • JC	196	136	□150	35	67	189	129	□150	35	67	
	KA • KB	196	136	□180	35	67	189	129	□180	35	67	
	LA	196	136	□200	35	67	189	129	□200	35	67	
	MA	196	136	□220	35	67	189	129	□220	35	67	
ZAF-115-[-][-]-38** Input Shaft Dia. $\leq \phi 38$	HA	213	153	□130	45	82	-	-	-	-	-	
	HB	208	148	□130	40	77	-	-	-	-	-	
	JA	213	153	□150	45	82	-	-	-	-	-	
	KA • KB • KC	213	153	□180	45	82	-	-	-	-	-	
	LA	213	153	□200	45	82	-	-	-	-	-	
	LB	213	163	□200	55	92	-	-	-	-	-	
	MA • MB	213	153	□220	45	82	-	-	-	-	-	
	NA	213	153	□250	45	82	-	-	-	-	-	

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

ZAF-140 Input Shaft Adaptors

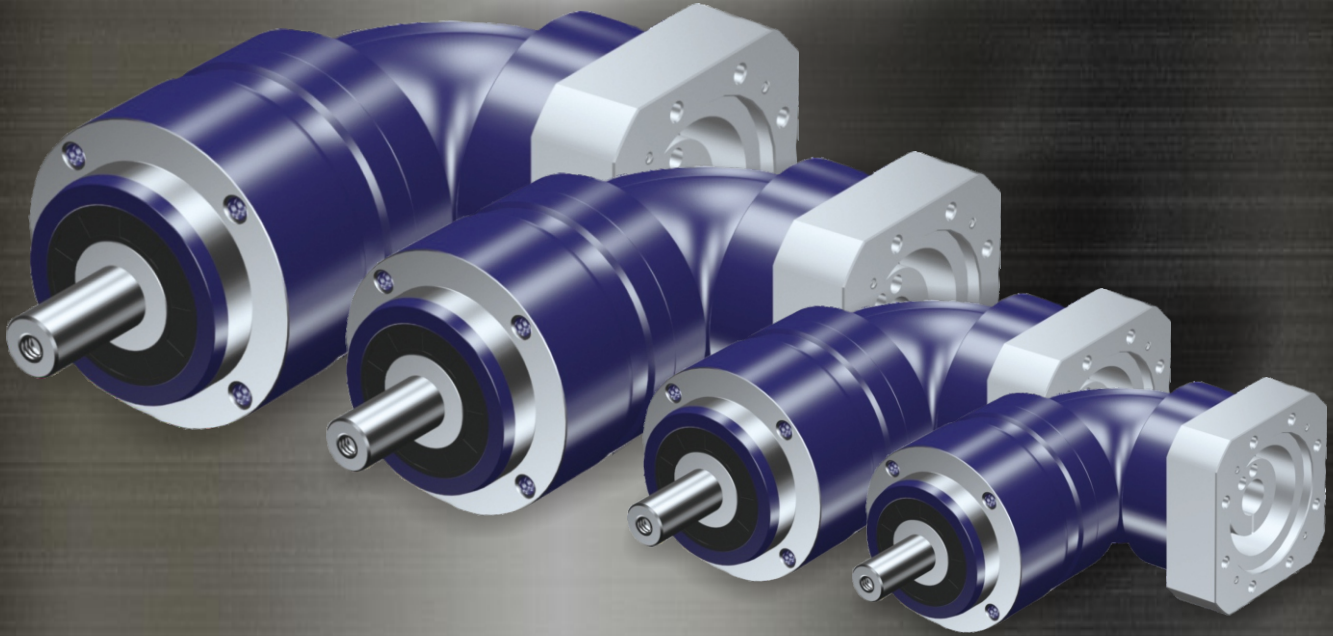


Model number	**: Adapter code	2 Stage					3 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
ZAF-140-[-][-]-19** Input Shaft Dia. ≤ φ 19	DA • DB • DC	-	-	-	-	-	185	110	□ 80	25	50
	DD	-	-	-	-	-	195	120	□ 80	35	60
	DE	-	-	-	-	-	190	115	□ 80	30	55
	EA	-	-	-	-	-	190	115	□ 90	30	55
	EB	-	-	-	-	-	185	110	□ 90	25	50
	EC	-	-	-	-	-	195	120	□ 90	35	60
	FA	-	-	-	-	-	185	110	□ 100	25	50
	FB	-	-	-	-	-	195	120	□ 100	35	60
	GA • GC	-	-	-	-	-	190	115	□ 115	30	55
	GB • GD	-	-	-	-	-	185	110	□ 115	25	50
	HA	-	-	-	-	-	185	110	□ 130	25	50
	HB	-	-	-	-	-	200	125	□ 130	40	65
HC • HD • HE	-	-	-	-	-	190	115	□ 130	30	55	
ZAF-140-[-][-]-28** Input Shaft Dia. ≤ φ 28	FA • FB • FC	227	152	□ 100	35	67	211	136	□ 100	35	67
	GA • GB • GC • GD • GE • GF • GG	227	152	□ 115	35	67	211	136	□ 115	35	67
	HA • HC • HD	227	152	□ 130	35	67	211	136	□ 130	35	67
	HB	227	162	□ 130	45	77	221	146	□ 130	45	77
	JA • JB • JC	227	152	□ 150	35	67	211	136	□ 150	35	67
	KA • KB	227	152	□ 180	35	67	211	136	□ 180	35	67
	LA	227	152	□ 200	35	67	211	136	□ 200	35	67
ZAF-140-[-][-]-38** Input Shaft Dia. ≤ φ 38	MA	227	152	□ 220	35	67	211	136	□ 220	35	67
	HA	242	167	□ 130	45	82	228	153	□ 130	45	82
	HB	237	162	□ 130	40	77	223	148	□ 130	40	77
	JA	242	167	□ 150	45	82	228	153	□ 150	45	82
	KA • KB • KC	242	167	□ 180	45	82	228	153	□ 180	45	82
	LA	242	167	□ 200	45	82	228	153	□ 200	45	82
	LB	252	177	□ 200	55	92	238	163	□ 200	55	92
	MA • MB	242	167	□ 220	45	82	228	153	□ 220	45	82
NA	242	167	□ 250	45	82	228	153	□ 250	45	82	
ZAF-140-[-][-]-48** Input Shaft Dia. ≤ φ 48	KB • KC	268	193	□ 180	55	98	-	-	-	-	-
	KA	268	213	□ 180	75	118	-	-	-	-	-
	LA	268	193	□ 200	55	98	-	-	-	-	-
	MA	268	193	□ 220	55	98	-	-	-	-	-
	MB	288	213	□ 220	75	118	-	-	-	-	-
	NA	268	213	□ 250	75	118	-	-	-	-	-
	PA	268	213	□ 280	75	118	-	-	-	-	-

※1 1-stage reduction ratios 3 to 10, 2-stages reduction ratios 15 to 100

※2 Adaptors available to match different input shaft diameters.

ZAL Series Highlights Overview



Higher Smoothness

Enhanced smoothness and lower noise due to adoption of Helical Gears.

Higher Precision

Fairly high precision enabled by backlash as 3arcmin.

Higher Rigidity and Torque

Due to adoption of uncaged needle roller bearings.

Flexible Motor Integration

Can be integrated with any motor in the world.

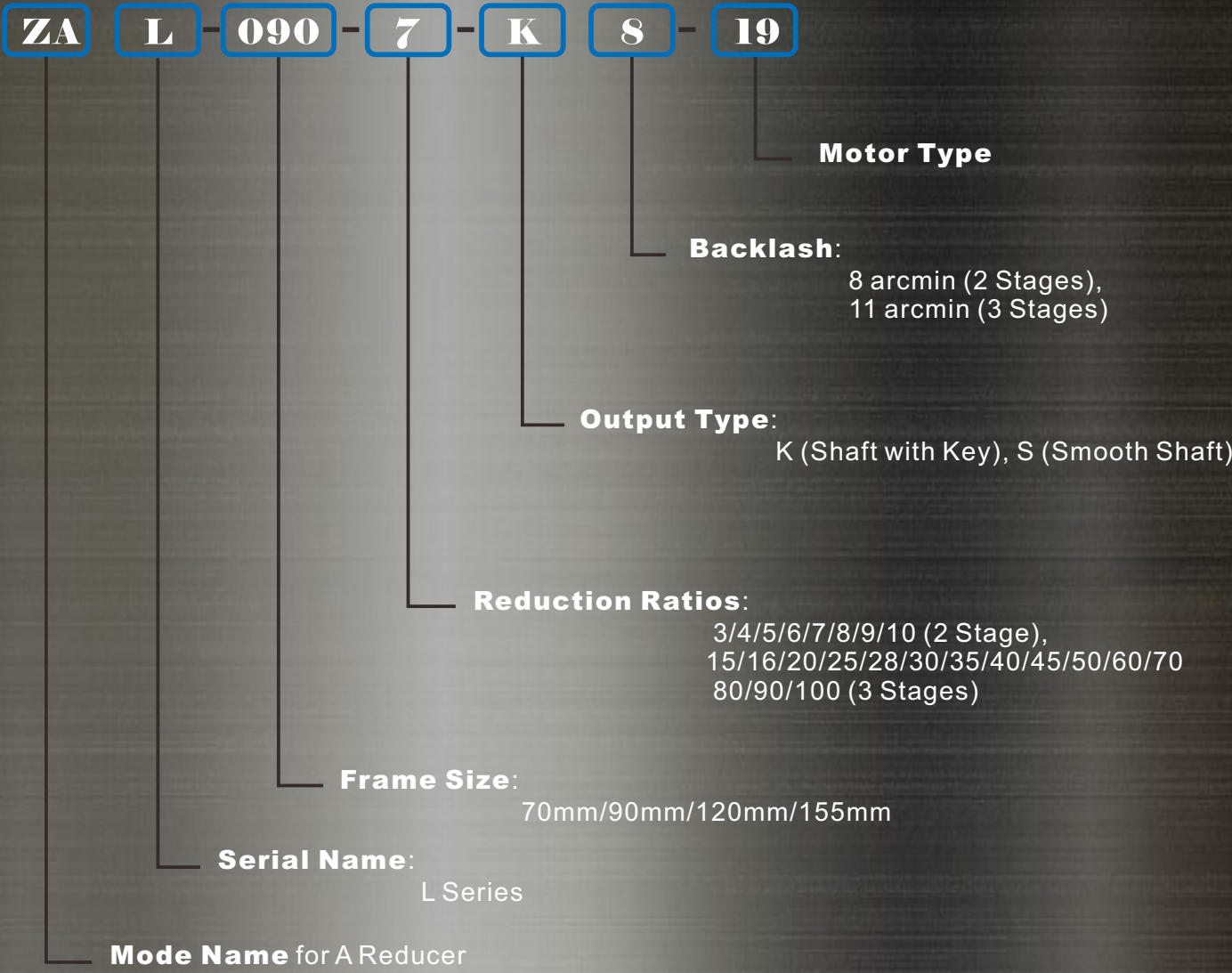
Free of Maintenance

No need to replace the grease for lifelong time and maintenance of any part.

No Grease Leakage

Usage of high viscosity and anti-separation lifetime grease.

ZAL Series Naming Rules



ZAL-070 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
070	2	3	12	24	50	3000	6000	430	310
		4	16	32	65	3000	6000	470	360
		5	22	40	80	3000	6000	510	390
		6	24	45	90	3000	6000	540	430
		7	24	45	90	3000	6000	570	460
		8	24	45	90	3000	6000	600	480
		9	16	32	65	3000	6000	620	510
	3	10	16	32	65	3000	6000	640	530
		15	16	32	65	3000	6000	740	630
		16	24	45	90	3000	6000	750	650
		20	24	45	90	3000	6000	810	720
		25	24	45	90	3000	6000	870	790
		28	24	45	90	3000	6000	910	830
		30	16	32	65	3000	6000	930	860
		35	24	45	90	3000	6000	980	920
		40	24	45	90	3000	6000	1000	970
		45	16	32	65	3000	6000	1100	1000
		50	24	45	90	3000	6000	1100	1100
		60	24	45	90	3000	6000	1200	1100
		70	24	45	90	3000	6000	1200	1100
80	24	45	90	3000	6000	1200	1100		
90	16	32	65	3000	6000	1200	1100		
100	16	32	65	3000	6000	1200	1100		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia ($\leq \Phi 8$) [kgcm ²]	Moment of inertia ($\leq \Phi 14$) [kgcm ²]	Moment of inertia ($\leq \Phi 19$) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]			
070	2	3	1200	1100	1.9	0.31	0.39	0.58
		4	1200	1100		0.27	0.34	0.53
		5	1200	1100		0.25	0.32	0.51
		6	1200	1100		0.24	0.31	0.50
		7	1200	1100		0.23	0.31	0.50
		8	1200	1100		0.23	0.31	0.50
		9	1200	1100		0.23	0.30	0.49
	3	10	1200	1100	0.23	0.30	0.49	
		15	1200	1100	1.7	0.073	0.118	-
		16	1200	1100		0.079	0.124	-
		20	1200	1100		0.071	0.116	-
		25	1200	1100		0.071	0.115	-
		28	1200	1100		0.077	0.122	-
		30	1200	1100		0.062	0.106	-
		35	1200	1100		0.070	0.115	-
		40	1200	1100		0.061	0.106	-
		45	1200	1100		0.070	0.115	-
		50	1200	1100		0.061	0.106	-
		60	1200	1100		0.061	0.106	-
		70	1200	1100		0.061	0.105	-
80	1200	1100	0.061	0.105		-		
90	1200	1100	0.061	0.105	-			
100	1200	1100	0.061	0.105	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

ZAL-090 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
090	2	3	45	65	130	3000	6000	810	930
		4	60	90	170	3000	6000	890	1100
		5	65	90	220	3000	6000	960	1200
		6	65	90	220	3000	6000	1000	1300
		7	65	90	220	3000	6000	1100	1300
		8	65	90	220	3000	6000	1100	1400
		9	45	65	170	3000	6000	1200	1500
	3	10	45	65	170	3000	6000	1200	1600
		15	45	65	170	3000	6000	1400	1900
		16	65	110	220	3000	6000	1400	1900
		20	65	110	220	3000	6000	1500	2100
		25	65	110	220	3000	6000	1600	2200
		28	65	110	220	3000	6000	1700	2200
		30	45	65	170	3000	6000	1700	2200
		35	65	110	220	3000	6000	1800	2200
		40	65	110	220	3000	6000	1900	2200
		45	45	65	170	3000	6000	2000	2200
		50	65	110	220	3000	6000	2100	2200
		60	65	110	220	3000	6000	2200	2200
		70	65	110	220	3000	6000	2300	2200
80	65	110	220	3000	6000	2400	2200		
90	45	65	170	3000	6000	2400	2200		
100	45	65	170	3000	6000	2400	2200		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤Φ8) [kgcm ²]	Moment of inertia (≤Φ14) [kgcm ²]	Moment of inertia (≤Φ19) [kgcm ²]	Moment of inertia (≤Φ19) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
090	2	3	2400	2200	4.9	-	2.12	2.45	4.57
		4	2400	2200		-	1.89	2.22	4.35
		5	2400	2200		-	1.80	2.13	4.26
		6	2400	2200		-	1.76	2.09	4.21
		7	2400	2200		-	1.73	2.06	4.18
		8	2400	2200		-	1.71	2.04	4.17
		9	2400	2200		-	1.70	2.03	4.16
	3	10	2400	2200	-	1.69	2.02	4.15	
		15	2400	2200	4.3	0.34	0.41	0.60	-
		16	2400	2200		0.38	0.46	0.65	-
		20	2400	2200		0.33	0.40	0.59	-
		25	2400	2200		0.32	0.40	0.59	-
		28	2400	2200		0.37	0.45	0.64	-
		30	2400	2200		0.25	0.33	0.51	-
		35	2400	2200		0.32	0.40	0.59	-
		40	2400	2200		0.25	0.32	0.51	-
		45	2400	2200		0.32	0.39	0.58	-
		50	2400	2200		0.25	0.32	0.51	-
		60	2400	2200		0.25	0.32	0.51	-
		70	2400	2200		0.25	0.32	0.51	-
80	2400	2200	0.25	0.32		0.51	-		
90	2400	2200	0.25	0.32	0.51	-			
100	2400	2200	0.25	0.32	0.51	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

ZAL-120 Series Load Performance Table

Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
120	2	3	75	150	320	3000	6000	1300	1500
		4	100	200	430	3000	6000	1500	1700
		5	120	240	500	3000	6000	1600	1900
		6	150	300	550	3000	6000	1700	2000
		7	150	300	550	3000	6000	1800	2100
		8	150	300	550	3000	6000	1900	2300
		9	110	200	450	3000	6000	1900	2400
	3	10	110	200	450	3000	6000	2000	2500
		15	110	200	450	3000	6000	2300	3000
		16	130	260	550	3000	6000	2300	3100
		20	150	300	550	3000	6000	2500	3400
		25	150	300	550	3000	6000	2700	3700
		28	150	300	550	3000	6000	2800	3900
		30	110	200	450	3000	6000	2900	3900
		35	150	300	550	3000	6000	3000	3900
		40	150	300	550	3000	6000	3200	3900
		45	110	200	450	3000	6000	3300	3900
		50	150	300	550	3000	6000	3400	3900
		60	150	300	550	3000	6000	3600	3900
		70	150	300	550	3000	6000	3800	3900
80	150	300	550	3000	6000	4000	3900		
90	110	200	450	3000	6000	4200	3900		
100	110	200	450	3000	6000	4300	3900		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤Φ14) [kgcm ²]	Moment of inertia (≤Φ19) [kgcm ²]	Moment of inertia (≤Φ28) [kgcm ²]	Moment of inertia (≤Φ38) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
120	2	3	4300	3900	10.2	-	6.74	8.34	15.41
		4	4300	3900		-	5.49	7.08	14.15
		5	4300	3900		-	5.02	6.61	13.69
		6	4300	3900		-	4.77	6.36	13.43
		7	4300	3900		-	4.65	6.24	13.31
		8	4300	3900		-	4.55	6.14	13.22
		9	4300	3900		-	4.49	6.08	13.16
	3	10	4300	3900	-	4.46	6.05	13.12	
		15	4300	3900	10.0	2.25	2.58	4.70	-
		16	4300	3900		2.46	2.79	4.91	-
		20	4300	3900		2.20	2.53	4.65	-
		25	4300	3900		2.18	2.51	4.64	-
		28	4300	3900		2.40	2.73	4.86	-
		30	4300	3900		1.87	2.20	4.33	-
		35	4300	3900		2.16	2.49	4.62	-
		40	4300	3900		1.86	2.19	4.32	-
		45	4300	3900		2.15	2.48	4.61	-
		50	4300	3900		1.86	2.19	4.31	-
		60	4300	3900		1.85	2.18	4.31	-
		70	4300	3900		1.85	2.18	4.31	-
80	4300	3900	1.85	2.18		4.31	-		
90	4300	3900	1.85	2.18	4.31	-			
100	4300	3900	1.85	2.18	4.31	-			

- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

ZAL-155 Series Load Performance Table

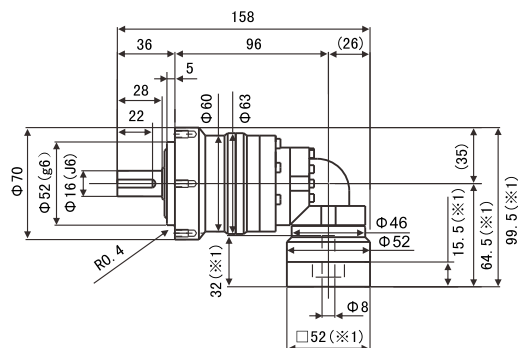
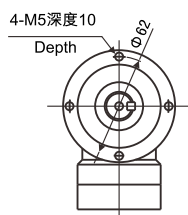
Frame size	Stage	Ratio	※1	※2	※3	※4	※5	※6	※7
			Normal output torque [Nm]	Maximum output torque [Nm]	Emergency stop torque [Nm]	Normal input speed [rpm]	Maximum input speed [rpm]	Permitted radial load [N]	Permitted axial load [N]
155	2	3	130	260	700	2000	4000	3200	2400
		4	170	340	950	2000	4000	3500	2700
		5	200	400	1100	2000	4000	3800	3000
		6	260	520	1100	2000	4000	4000	3300
		7	300	600	1100	2000	4000	4200	3500
		8	300	600	1100	2000	4000	4400	3700
		9	200	400	750	2000	4000	4600	3900
	3	10	200	400	750	2000	4000	4700	4100
		15	200	400	750	2000	4000	5400	4900
		16	300	600	1100	2000	4000	5500	5000
		20	300	600	1100	2000	4000	6000	5500
		25	300	600	1100	2000	4000	6400	6100
		28	300	600	1100	2000	4000	6700	6400
		30	200	400	750	2000	4000	6800	6600
		35	300	600	1100	2000	4000	7200	7000
		40	300	600	1100	2000	4000	7500	7500
		45	200	400	750	2000	4000	7800	7900
		50	300	600	1100	2000	4000	8100	8200
		60	300	600	1100	2000	4000	8600	8200
		70	300	600	1100	2000	4000	9100	8200
80	300	600	1100	2000	4000	9100	8200		
90	200	400	750	2000	4000	9100	8200		
100	200	400	750	2000	4000	9100	8200		

Frame size	Stage	Ratio	※8	※9	※10	Moment of inertia (≤Φ19) [kgcm ²]	Moment of inertia (≤Φ28) [kgcm ²]	Moment of inertia (≤Φ38) [kgcm ²]	Moment of inertia (≤Φ48) [kgcm ²]
			Maximum radial load [N]	Maximum axial load [N]	Weight [kg]				
155	2	3	9100	8200	19.8	-	23.13	27.50	40.73
		4	9100	8200		-	18.57	22.94	36.17
		5	9100	8200		-	16.91	21.28	34.51
		6	9100	8200		-	16.01	20.38	33.61
		7	9100	8200		-	15.58	19.95	33.18
		8	9100	8200		-	15.23	19.61	32.84
		9	9100	8200		-	14.77	19.41	32.37
	3	10	9100	8200	-	14.66	19.03	32.26	
		15	9100	8200	20.4	6.40	8.00	15.07	-
		16	9100	8200		7.29	8.88	15.96	-
		20	9100	8200		6.22	7.81	14.89	-
		25	9100	8200		6.15	7.75	14.82	-
		28	9100	8200		7.09	8.68	15.76	-
		30	9100	8200		4.99	6.58	13.66	-
		35	9100	8200		6.09	7.69	14.76	-
		40	9100	8200		4.95	6.54	13.61	-
		45	9100	8200		6.07	7.66	14.74	-
		50	9100	8200		4.93	6.52	13.59	-
		60	9100	8200		4.92	6.51	13.59	-
		70	9100	8200		4.91	6.51	13.58	-
80	9100	8200	4.91	6.50		13.58	-		
90	9100	8200	4.91	6.50	13.57	-			
100	9100	8200	4.91	6.50	13.57	-			

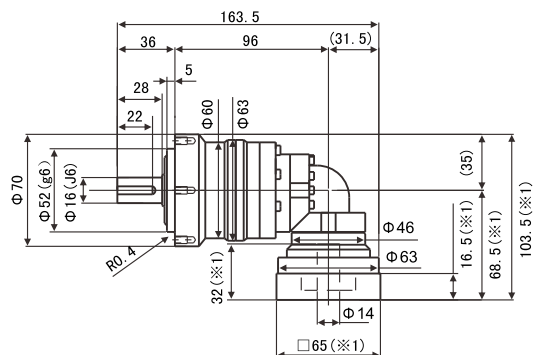
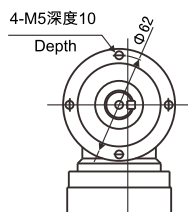
- ※ 1 With nominal input speed, service life is 20,000 hours
- ※ 2 The maximum torque when starting and stopping
- ※ 3 The maximum torque when it receives shock (up to 1000times)
- ※ 4 The maximum average input speed.
- ※ 5 The maximum momentary input speed.
- ※ 6 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output shaft center, at axial load 0)
- ※ 7 With this load and nominal input speed, service life will be 20,000 hours (Applied to the output side bearing, at radial load 0)
- ※ 8 The maximum radial load the reducer can accept
- ※ 9 The maximum axial load the reducer can accept
- ※ 10 The weight may vary slightly model to model.

ZAL-070 3-Stage Series Mechanical Dimensions

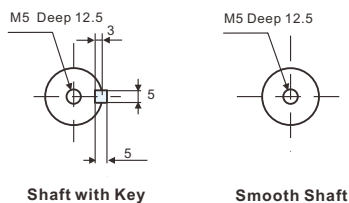
Input Shaft Diameter $\leq \phi 8$ (in mm)



Input Shaft Diameter $\leq \phi 14$ (in mm)



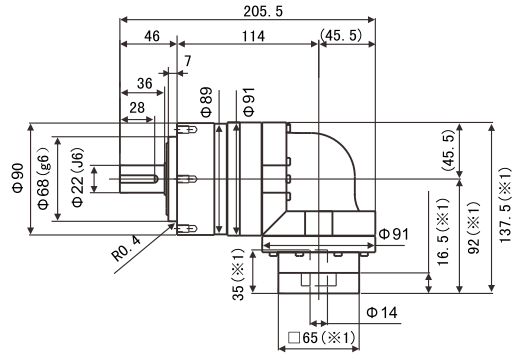
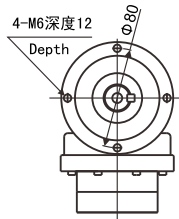
Output Shaft Type (in mm)



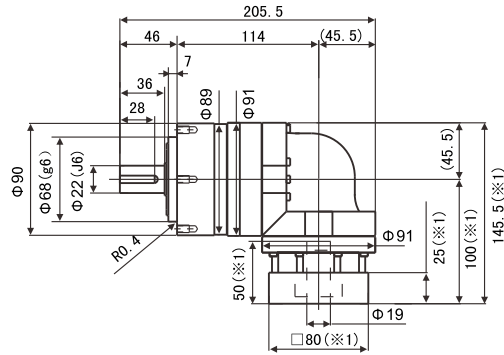
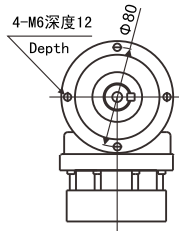
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAL-090 2-Stage Series Mechanical Dimensions

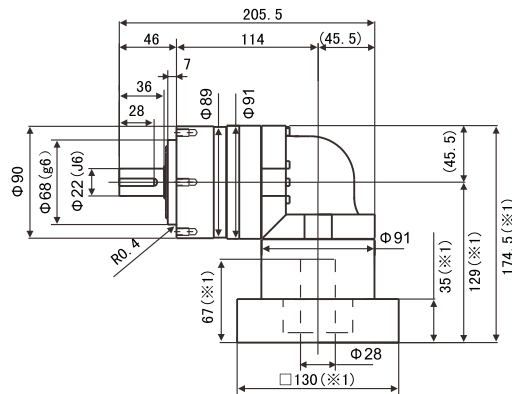
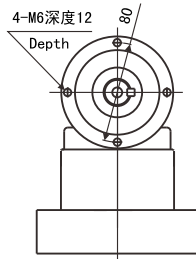
Input Shaft Diameter $\leq \phi 14$ (in mm)



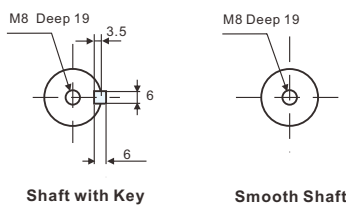
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



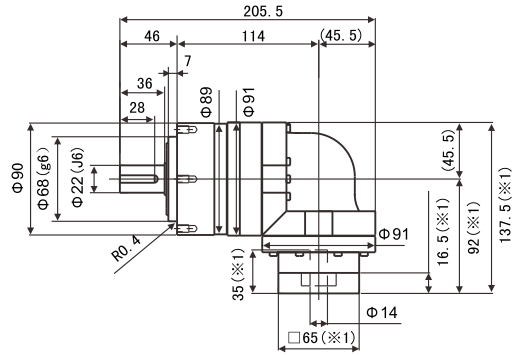
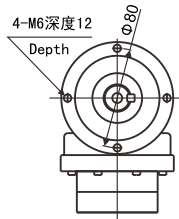
Output Shaft Type (in mm)



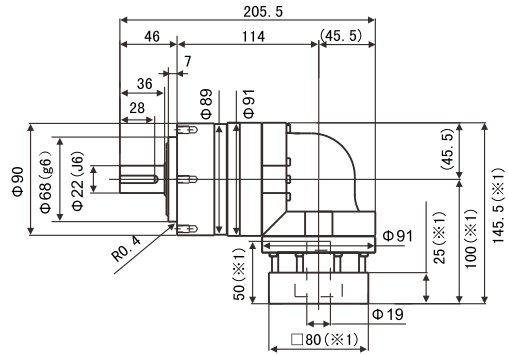
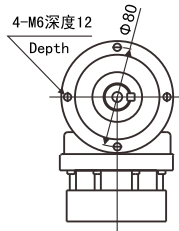
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAL-090 2-Stage Series Mechanical Dimensions

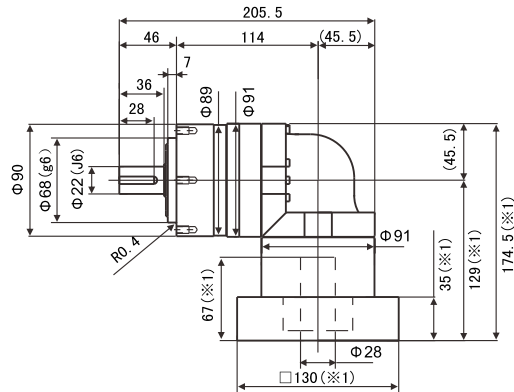
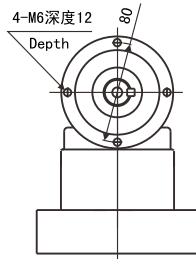
Input Shaft Diameter $\leq \phi 14$ (in mm)



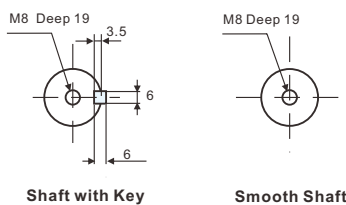
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



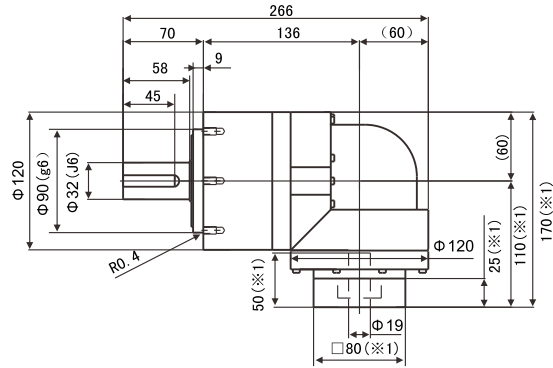
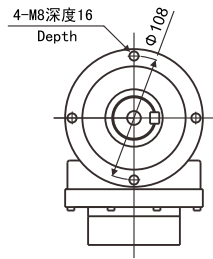
Output Shaft Type (in mm)



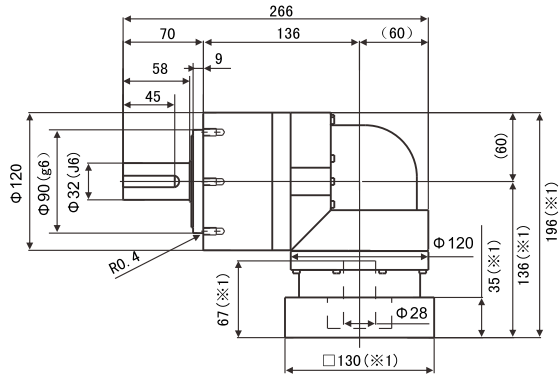
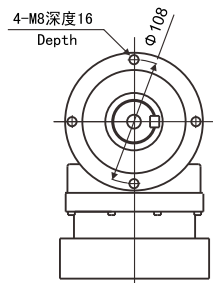
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAL-120 2-Stage Series Mechanical Dimensions

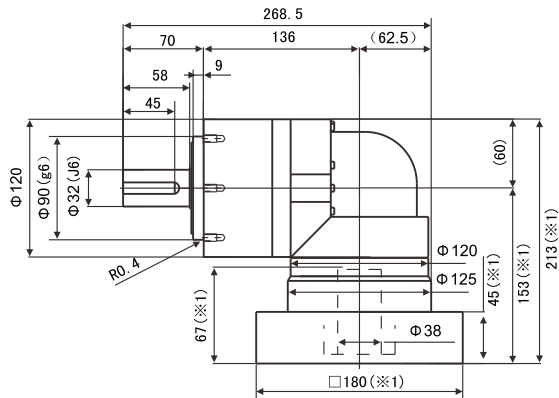
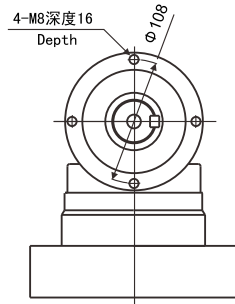
Input Shaft Diameter $\leq \phi 19$ (in mm)



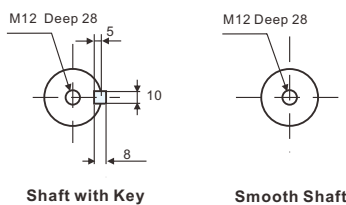
Input Shaft Diameter $\leq \phi 28$ (in mm)



Input Shaft Diameter $\leq \phi 38$ (in mm)



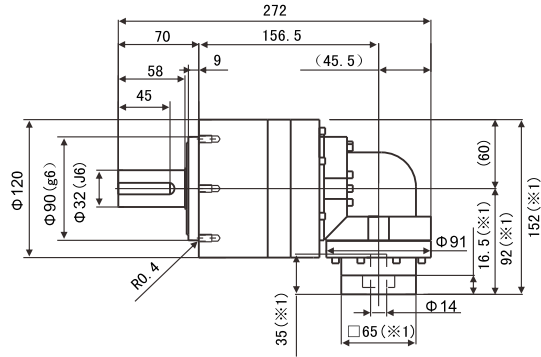
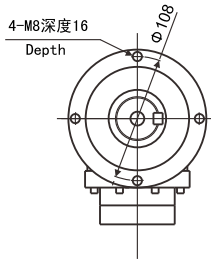
Output Shaft Type (in mm)



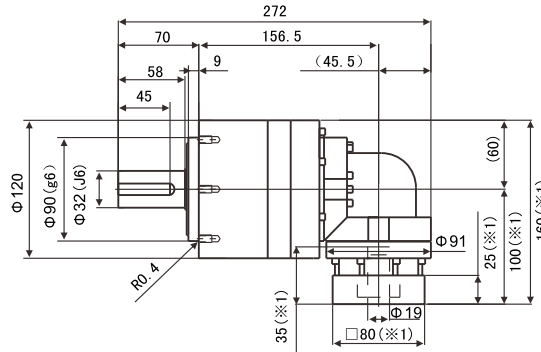
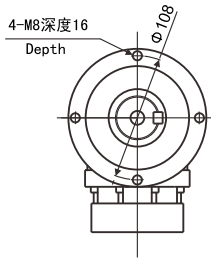
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAL-120 3-Stage Series Mechanical Dimensions

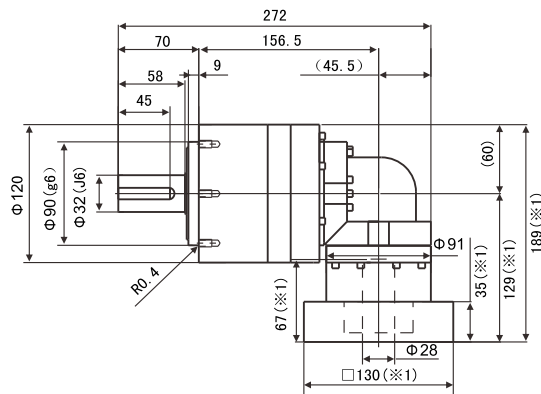
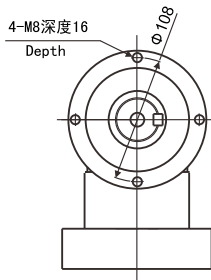
Input Shaft Diameter $\leq \phi 14$ (in mm)



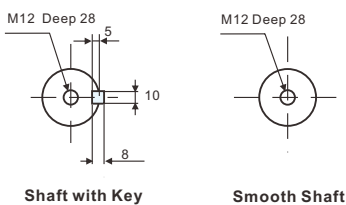
Input Shaft Diameter $\leq \phi 19$ (in mm)



Input Shaft Diameter $\leq \phi 28$ (in mm)



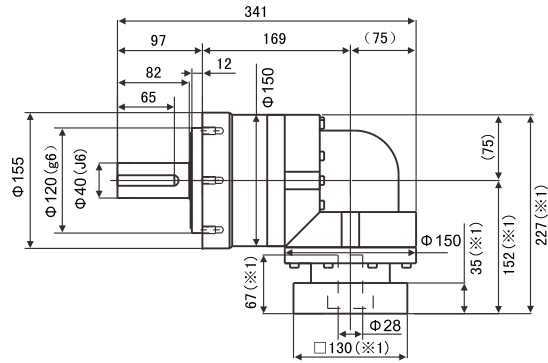
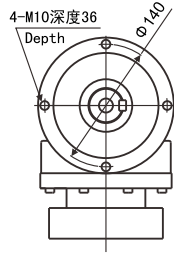
Output Shaft Type (in mm)



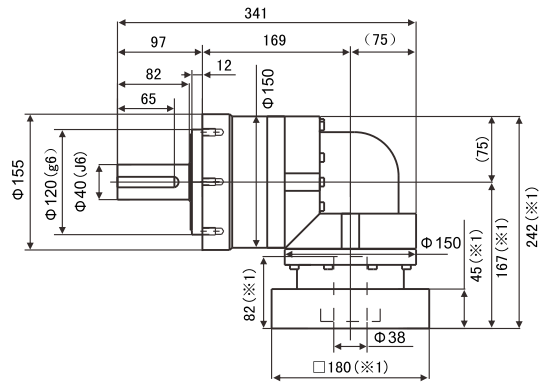
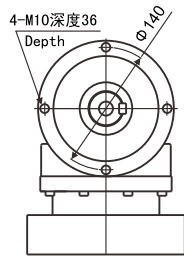
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAL-155 2-Stage Series Mechanical Dimensions

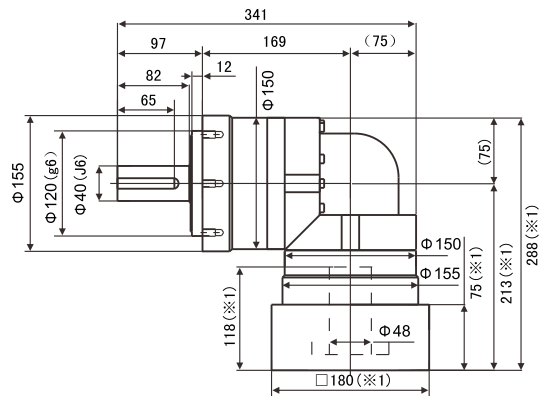
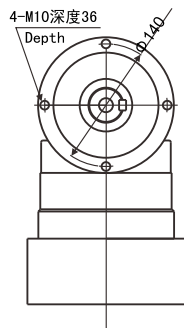
Input Shaft Diameter $\leq \phi 28$ (in mm)



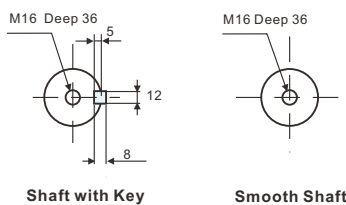
Input Shaft Diameter $\leq \phi 38$ (in mm)



Input Shaft Diameter $\leq \phi 48$ (in mm)



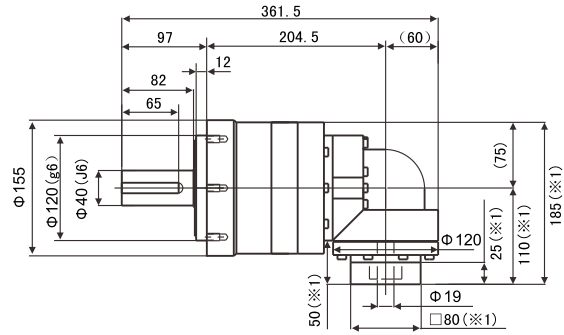
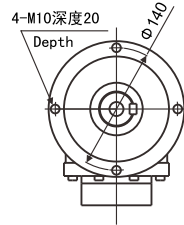
Output Shaft Type (in mm)



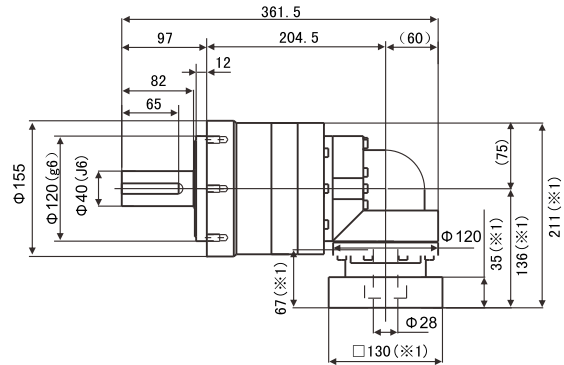
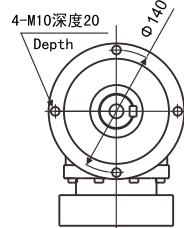
- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAL-155 3-Stage Series Mechanical Dimensions

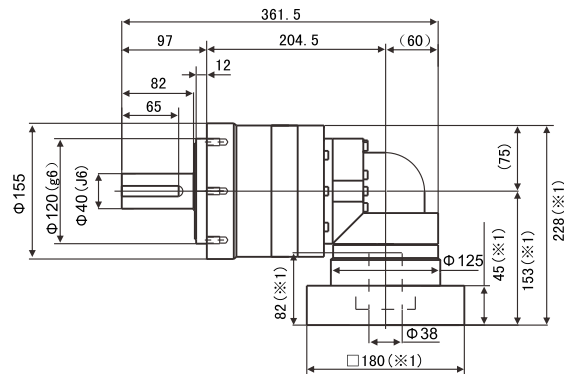
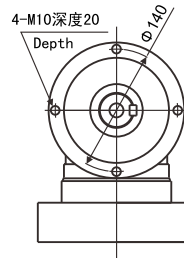
Input Shaft Diameter $\leq \phi 19$ (in mm)



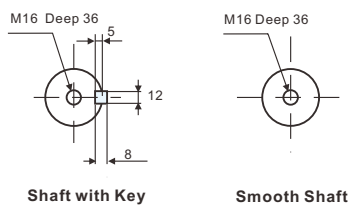
Input Shaft Diameter $\leq \phi 28$ (in mm)



Input Shaft Diameter $\leq \phi 38$ (in mm)

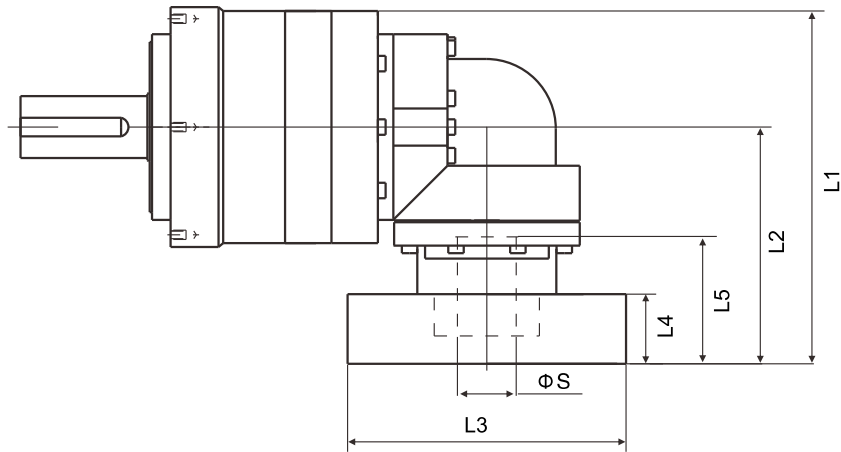


Output Shaft Type (in mm)



- ※1 Length may change for different motors.
- ※1 Adaptors available to match different input shaft diameters.

ZAL-070 Input Shaft Adaptors

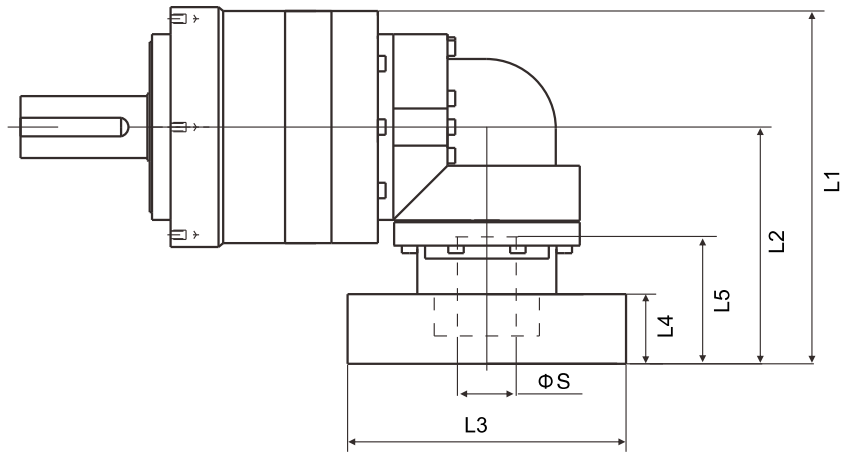


Model number	**: Adapter code	2 Stage					3 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
ZAL-070-[]-[]-8** Input Shaft Dia. $\leq \phi 8$	AA • AC • AD • AF • AG	106.5	71.5	□52	15.5	32	99.5	64.5	□52	15.5	32
	AB • AE • AH • AJ • AK	111.5	76.5	□52	20.5	37	104.5	69.5	□52	20.5	37
	BA • BB • BD • BE	106.5	71.5	□60	15.5	32	99.5	64.5	□60	15.5	32
	BC • BF	111.5	76.5	□60	20.5	37	104.5	69.5	□60	20.5	37
	CA	111.5	76.5	□70	20.5	37	104.5	69.5	□70	20.5	37
ZAL-070-[]-[]-14** Input Shaft Dia. $\leq \phi 14$	BA • BB • BD • BE • BF • BG • BJ • BK	112.5	77.5	□65	16.5	35	103.5	68.5	□65	16.5	35
	BC • BH	117.5	82.5	□65	21.5	40	108.5	73.5	□65	21.5	40
	BL	122.5	87.5	□65	26.5	45	113.5	78.5	□65	26.5	45
	CA	112.5	77.5	□70	16.5	35	103.5	68.5	□70	16.5	35
	CB	117.5	82.5	□70	21.5	40	108.5	73.5	□70	21.5	40
	DA • DB • DC • DD • DF • DH	112.5	77.5	□80	16.5	35	103.5	68.5	□80	16.5	35
	DE	117.5	82.5	□80	21.5	40	108.5	73.5	□80	21.5	40
	DG	122.5	87.5	□80	26.5	45	113.5	78.5	□80	26.5	45
	EA • EB • EC	112.5	77.5	□90	16.5	35	103.5	68.5	□90	16.5	35
	ED	122.5	87.5	□90	26.5	45	113.5	78.5	□90	26.5	45
	FA	112.5	77.5	□100	16.5	35	103.5	68.5	□100	16.5	35
	GA	112.5	77.5	□115	16.5	35	103.5	68.5	□115	16.5	35
	ZAL-070-[]-[]-19** Input Shaft Dia. $\leq \phi 19$	DA • DB • DC	129.5	94.5	□80	25	50	-	-	-	-
DD		139.5	104.5	□80	35	60	-	-	-	-	-
DE		134.5	99.5	□80	30	55	-	-	-	-	-
EA		134.5	99.5	□90	30	55	-	-	-	-	-
EB		129.5	94.5	□90	25	50	-	-	-	-	-
EC		139.5	104.5	□90	35	60	-	-	-	-	-
FA		129.5	94.5	□100	25	50	-	-	-	-	-
FB		139.5	104.5	□100	35	60	-	-	-	-	-
GA • GC		134.5	99.5	□115	30	55	-	-	-	-	-
GB • GD		129.5	94.5	□115	25	50	-	-	-	-	-
HA		129.5	94.5	□130	25	50	-	-	-	-	-
HB		144.5	109.5	□130	40	65	-	-	-	-	-
HC • HD • HE		134.5	99.5	□130	30	35	-	-	-	-	-

※1 2-stage reduction ratios 3 to 10, 3-stages reduction ratios 15 to 100

※2 2 Adaptors available to match different input shaft diameters.

ZAL-090 Input Shaft Adaptors

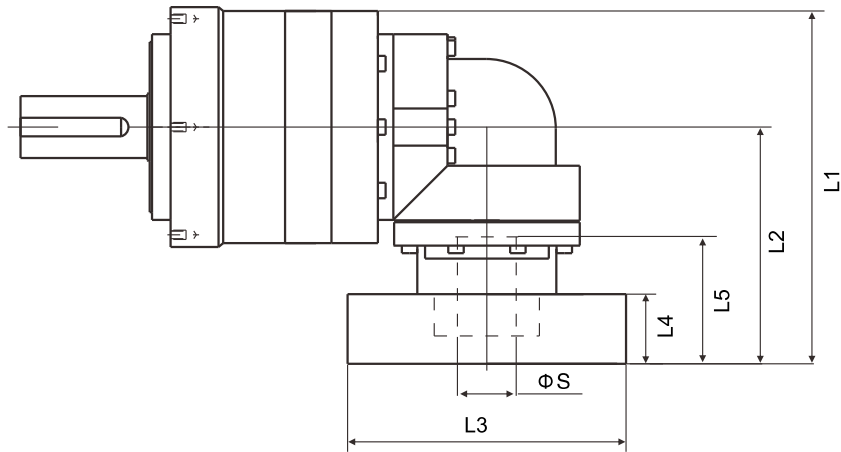


Model number	**: Adapter code	2 Stage					3 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
ZAL-090-[-][-]-8** Input Shaft Dia. $\leq \phi 8$	AA • AC • AD • AF • AG	-	-	-	-	-	117	71.5	□52	15.5	32
	AB • AE • AH • AJ • AK	-	-	-	-	-	122	76.5	□52	20.5	37
	BA • BB • BD • BE	-	-	-	-	-	117	71.5	□60	15.5	32
	BC • BF	-	-	-	-	-	122	76.5	□60	20.5	37
	CA	-	-	-	-	-	122	76.5	□70	20.5	37
ZAL-090-[-][-]-14** Input Shaft Dia. $\leq \phi 14$	BA • BB • BD • BE • BF • BG • BJ • BK	137.5	92	□65	16.5	35	123	77.5	□65	16.5	35
	BC • BH	142.5	97	□65	21.5	40	128	82.5	□65	21.5	40
	BL	147.5	102	□65	26.5	45	133	87.5	□65	26.5	45
	CA	137.5	92	□70	16.5	35	123	77.5	□70	16.5	35
	CB	142.5	97	□70	21.5	40	128	82.5	□70	21.5	40
	DA • DB • DC • DD • DF • DH	137.5	92	□80	16.5	35	123	77.5	□80	16.5	35
	DE	142.5	97	□80	21.5	40	128	82.5	□80	21.5	40
	DG	147.5	102	□80	26.5	45	133	87.5	□80	26.5	45
	EA • EB • EC	137.5	92	□90	16.5	35	123	77.5	□90	16.5	35
	ED	147.5	102	□90	26.5	45	133	87.5	□90	26.5	45
	FA	137.5	92	□100	16.5	35	123	77.5	□100	16.5	35
	GA	137.5	92	□115	16.5	35	123	77.5	□115	16.5	35
	ZAL-090-[-][-]-19** Input Shaft Dia. $\leq \phi 19$	DA • DB • DC	145.5	100	□80	25	50	140	94.5	□80	25
DD		155.5	110	□80	35	60	150	104.5	□80	35	60
DE		150.5	105	□80	30	55	145	99.5	□80	30	55
EA		150.5	105	□90	30	55	145	99.5	□90	30	55
EB		145.5	100	□90	25	50	140	94.5	□90	25	50
EC		155.5	110	□90	35	60	150	104.5	□90	35	60
FA		145.5	100	□100	25	50	140	94.5	□100	25	50
FB		155.5	110	□100	35	60	150	104.5	□100	35	60
GA • GC		150.5	105	□115	30	55	145	99.5	□115	30	55
GB • GD		145.5	100	□115	25	50	140	94.5	□115	25	50
HA		145.5	100	□130	25	50	140	94.5	□130	25	50
HB		160.5	115	□130	40	65	155	109.5	□130	40	65
HC • HD • HE		150.5	105	□130	30	55	145	99.5	□130	30	55
ZAL-090-[-][-]-28** Input Shaft Dia. $\leq \phi 28$	FA • FB • FC	174.5	129	□100	35	67	-	-	-	-	-
	GA • GB • GC • GD • GE • GF • GG	174.5	129	□115	35	67	-	-	-	-	-
	HA • HC • HD	174.5	129	□130	35	67	-	-	-	-	-
	HB	184.5	139	□130	45	77	-	-	-	-	-
	JA • JB • JC	174.5	129	□150	35	67	-	-	-	-	-
	KA • KB	174.5	129	□180	35	67	-	-	-	-	-
	LA	174.5	129	□200	35	67	-	-	-	-	-
MA	174.5	129	□220	35	67	-	-	-	-	-	

※1 2-stage reduction ratios 3 to 10, 3-stages reduction ratios 15 to 100

※2 2 Adaptors available to match different input shaft diameters.

ZAL-120 Input Shaft Adaptors

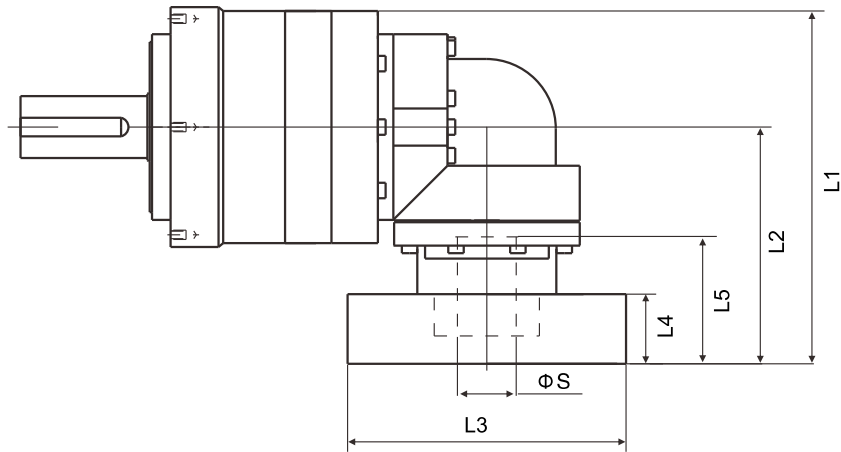


Model number	**: Adapter code	2 Stage					3 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
ZAL-120-[-]-[-]-14** Input Shaft Dia. $\leq \phi 14$	BA • BB • BD • BE • BF • BG • BJ • BK	-	-	-	-	-	152	92	□65	16.5	35
	BC • BH	-	-	-	-	-	157	97	□65	21.5	40
	BL	-	-	-	-	-	162	102	□65	26.5	45
	CA	-	-	-	-	-	152	92	□70	16.5	35
	CB	-	-	-	-	-	157	97	□70	21.5	40
	DA • DB • DC • DD • DF • DH	-	-	-	-	-	152	92	□80	16.5	35
	DE	-	-	-	-	-	157	97	□80	21.5	40
	DG	-	-	-	-	-	162	102	□80	26.5	45
	EA • EB • EC	-	-	-	-	-	152	92	□90	16.5	35
	ED	-	-	-	-	-	162	102	□90	26.5	45
	FA	-	-	-	-	-	152	92	□100	16.5	35
	GA	-	-	-	-	-	152	92	□115	16.5	35
	ZAL-120-[-]-[-]-19** Input Shaft Dia. $\leq \phi 19$	DA • DB • DC	170	110	□80	25	50	160	100	□80	25
DD		180	120	□80	35	60	170	110	□80	35	60
DE		175	115	□80	30	55	165	105	□80	30	55
EA		175	115	□90	30	55	165	105	□90	30	55
EB		170	110	□90	25	50	160	100	□90	25	50
EC		180	120	□90	35	60	170	110	□90	35	60
FA		170	110	□100	25	50	160	100	□100	25	50
FB		180	120	□100	35	60	170	110	□100	35	60
GA • GC		175	115	□115	30	55	165	105	□115	30	55
GB • GD		170	110	□115	25	50	160	100	□115	25	50
HA		170	110	□130	25	50	160	100	□130	25	50
HB		185	125	□130	40	65	175	115	□130	40	65
HC • HD • HE		175	115	□130	30	55	165	105	□130	30	55
ZAL-120-[-]-[-]-28** Input Shaft Dia. $\leq \phi 28$	FA • FB • FC	196	136	□100	35	67	189	129	□100	35	67
	GA • GB • GC • GD • GE • GF • GG	196	136	□115	35	67	189	129	□115	35	67
	HA • HC • HD	196	136	□130	35	67	189	129	□130	35	67
	HB	206	146	□130	45	77	199	139	□130	45	77
	JA • JB • JC	196	136	□150	35	67	189	129	□150	35	67
	KA • KB	196	136	□180	35	67	189	129	□180	35	67
	LA	196	136	□200	35	67	189	129	□200	35	67
	MA	196	136	□220	35	67	189	129	□220	35	67
ZAL-120-[-]-[-]-38** Input Shaft Dia. $\leq \phi 38$	HA	213	153	□130	45	82	-	-	-	-	-
	HB	208	148	□130	40	77	-	-	-	-	-
	JA	213	153	□150	45	82	-	-	-	-	-
	KA • KB • KC	213	153	□180	45	82	-	-	-	-	-
	LA	213	153	□200	45	82	-	-	-	-	-
	LB	223	163	□200	55	92	-	-	-	-	-
	MA • MB	213	153	□220	45	82	-	-	-	-	-
	NA	213	153	□250	45	82	-	-	-	-	-

※1 2-stage reduction ratios 3 to 10, 3-stages reduction ratios 15 to 100

※2 2 Adaptors available to match different input shaft diameters.

ZAL-155 Input Shaft Adaptors



Model number	**: Adapter code	2 Stage					3 Stage				
		L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
ZAL-155-[-][-]-19** Input Shaft Dia. $\leq \phi 19$	DA • DB • DC	-	-	-	-	-	187.5	110	□80	25	50
	DD	-	-	-	-	-	197.5	120	□80	35	60
	DE	-	-	-	-	-	192.5	115	□80	30	55
	EA	-	-	-	-	-	192.5	115	□90	30	55
	EB	-	-	-	-	-	187.5	110	□90	25	50
	EC	-	-	-	-	-	197.5	120	□90	35	60
	FA	-	-	-	-	-	187.5	110	□100	25	50
	FB	-	-	-	-	-	197.5	120	□100	35	60
	GA • GC	-	-	-	-	-	192.5	115	□115	30	55
	GB • GD	-	-	-	-	-	187.5	110	□115	25	50
	HA	-	-	-	-	-	187.5	110	□130	25	50
	HB	-	-	-	-	-	202.5	125	□130	40	65
	HC • HD • HE	-	-	-	-	-	192.5	115	□130	30	55
ZAL-155-[-][-]-28** Input Shaft Dia. $\leq \phi 28$	FA • FB • FC	229.5	152	□100	35	67	213.5	136	□100	35	67
	GA • GB • GC • GD • GE • GF • GG	229.5	152	□115	35	67	213.5	136	□115	35	67
	HA • HC • HD	229.5	152	□130	35	67	213.5	136	□130	35	67
	HB	239.5	162	□130	45	77	223.5	146	□130	45	77
	JA • JB • JC	229.5	152	□150	35	67	213.5	136	□150	35	67
	KA • KB	229.5	152	□180	35	67	213.5	136	□180	35	67
	LA	229.5	152	□200	35	67	213.5	136	□200	35	67
ZAL-155-[-][-]-38** Input Shaft Dia. $\leq \phi 38$	MA	229.5	152	□220	35	67	213.5	136	□220	35	67
	HA	244.5	167	□130	45	82	230.5	153	□130	45	82
	HB	239.5	162	□130	40	77	225.5	148	□130	40	77
	JA	244.5	167	□150	45	82	230.5	153	□150	45	82
	KA • KB • KC	244.5	167	□180	45	82	230.5	153	□180	45	82
	LA	244.5	167	□200	45	82	230.5	153	□200	45	82
	LB	244.5	177	□200	55	92	240.5	163	□200	55	92
	MA • MB	244.5	167	□220	45	82	230.5	153	□220	45	82
ZAL-155-[-][-]-48** Input Shaft Dia. $\leq \phi 48$	NA	244.5	167	□250	45	82	230.5	153	□250	45	82
	KB • KC	270.5	193	□180	55	98	-	-	-	-	-
	KA	290.5	213	□180	75	118	-	-	-	-	-
	LA	270.5	193	□200	55	98	-	-	-	-	-
	MA	270.5	193	□220	55	98	-	-	-	-	-
	MB	290.5	213	□220	75	118	-	-	-	-	-
	NA	290.5	213	□250	75	118	-	-	-	-	-
PA	290.5	213	□280	75	118	-	-	-	-	-	

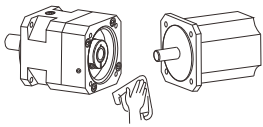
※1 2-stage reduction ratios 3 to 10, 3-stages reduction ratios 15 to 100

※2 2 Adaptors available to match different input shaft diameters.

Installation Guide

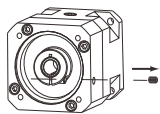
Mounting procedure to the motor

Step 1



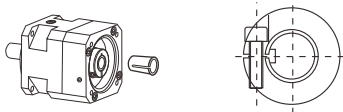
wipe off anti-rust agent and oil on the motor shaft

Step 2



Remove the plug

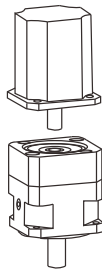
Step 3



Turn the input shaft until the cap screw is seen. Make sure the cap screw is loosened.

In case the bushing has been attached, please fix it to the reducer as the drawing below.

Step 4

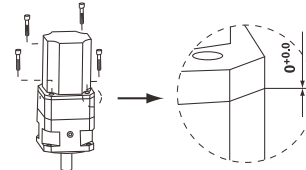


Please place reducer vertically on the flat surface so the motor mounting part faces up. Carefully insert the motor shaft into the input shaft. (It should be inserted smoothly) Make sure the motor flange is perfectly fit to the reducers flange. Tighten the motor installing bolts to the proper torque. (See table 1)

Reducer installation

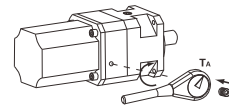
After confirming the installation surface is flat and clean, tighten the bolt using a torque wrench to the proper torque. (See table 2)

Step 5



Tighten the clamping bolt of the input shaft with torque wrench to the proper torque. (See table 1)

Step 6



Reinstall the plug. The procedure is done.

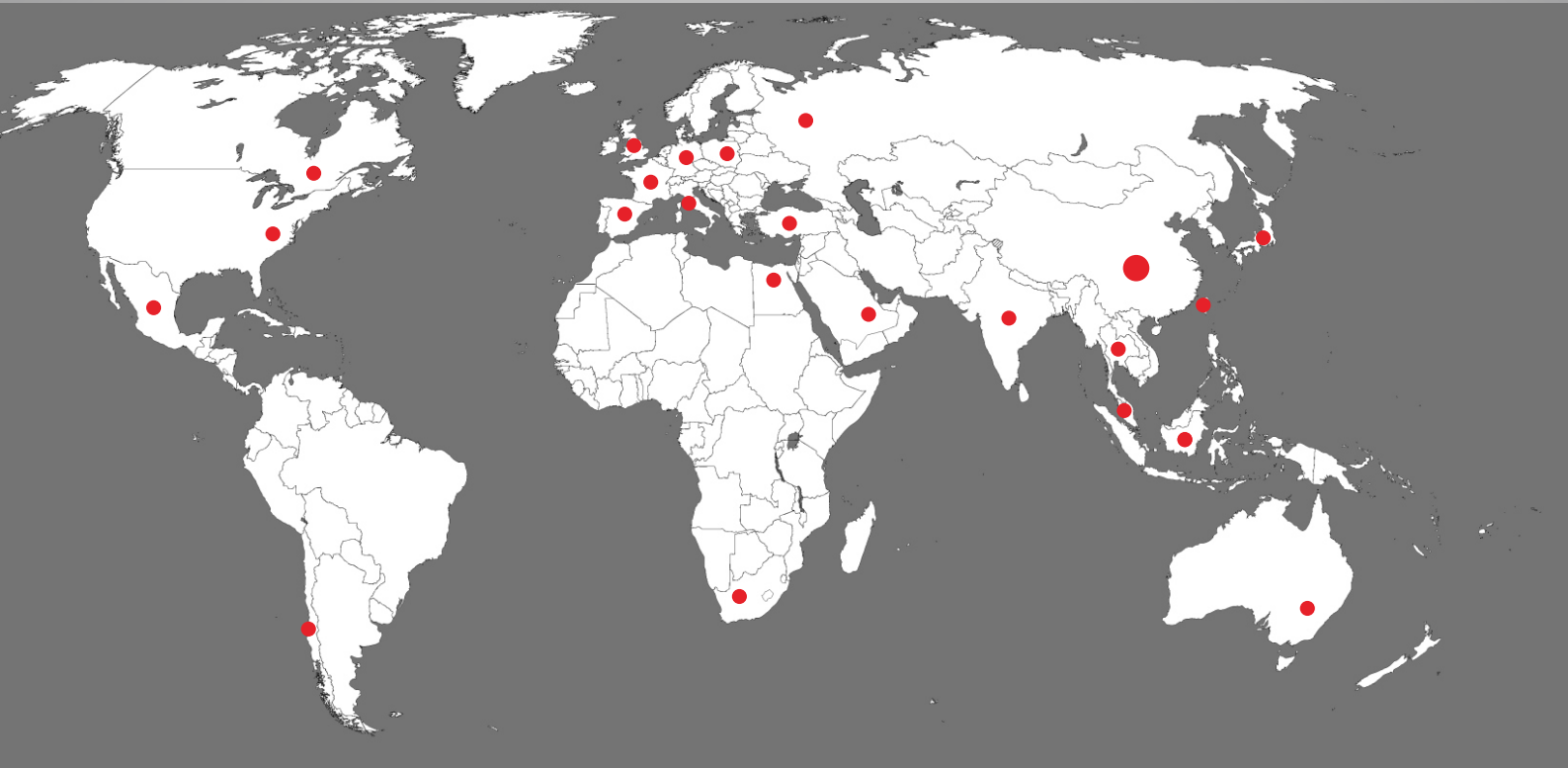
Table 1

Bolt size	Motor installing bolts		Clamping bolt	
	Nm	kgfm	Nm	kgfm
M3	1.1	0.11	1.9	0.18
M4	2.5	0.26	4.3	0.44
M5	5.1	0.52	8.7	0.89
M6	8.7	0.89	15	1.5
M8	21	2.1	36	3.7
M10	42	4.3	71	7.2
M12	72	7.3	125	13
M16	134	14	-	-

Table 2

Bolt size	Tightening torque	
	Nm	kgfm
M3	1.9	0.18
M4	4.3	0.44
M5	8.7	0.89
M6	15	1.5
M8	36	3.7
M10	71	7.2
M12	125	13
M16	310	32
M20	603	62

※ Recommended bolt: strength 12.9



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