

MA series



MA series

The next-generation Worm

*Now for the debut of
the MA series*

Thank you very much for using MAKISHINKO's products.

Makishinko's worm gear speed reducers are based on many years of experience and precisely machined on the production lines of specialized departments while using the latest technology, machine tools and meticulous selection of materials. The Makiace MA series is a new line of products with high-end features that will satisfy both vendors and end users. Please consider our Makiace product line, in addition to our conventional worm gear speed reducers.

Gear Speed Reducer demanded by the times.

“Servo motor compatible product”

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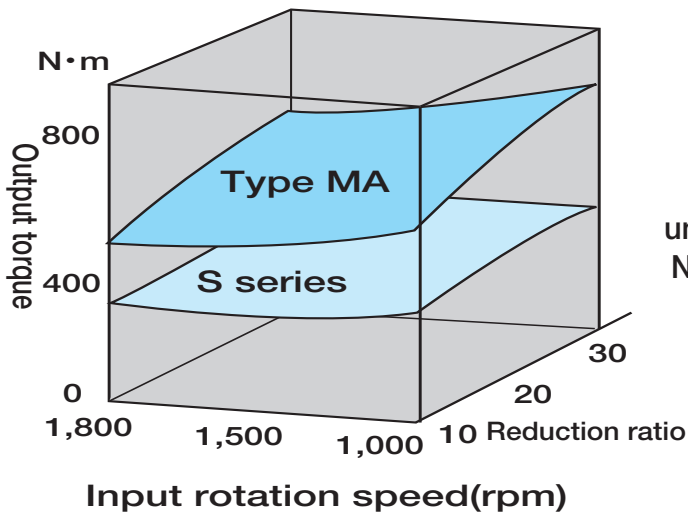
FEATURES

MA series worm speed reducer

MAKIACE

The high quality Makiace models (MA series) were created by combining Makishinko's years of experience in the development of worm gear speed reducers with the latest production technology. The Makiace MA series features high power, high efficiency, reduced size and weight, good design, easy operation and high quality. It is a top-of-the-line product for use in a variety of fields and for various purposes.

■ MA100 (compared to our company's standard products)



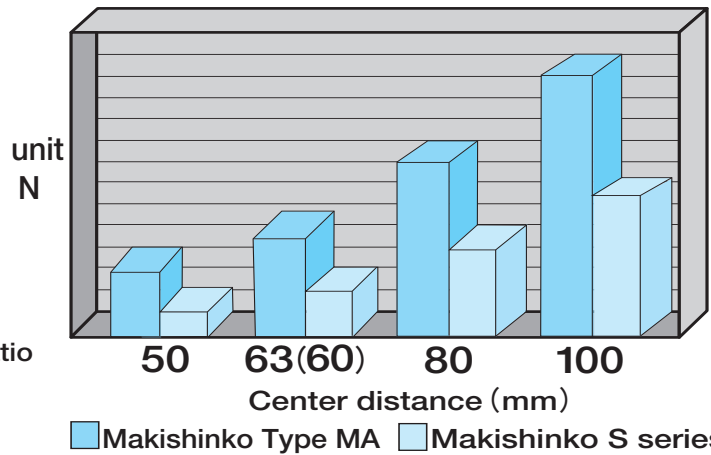
1. HIGH POWER!

HIGH POWER

- Torque has been increased by 60% or more.
- The overhang load has been increased by 80% or more.



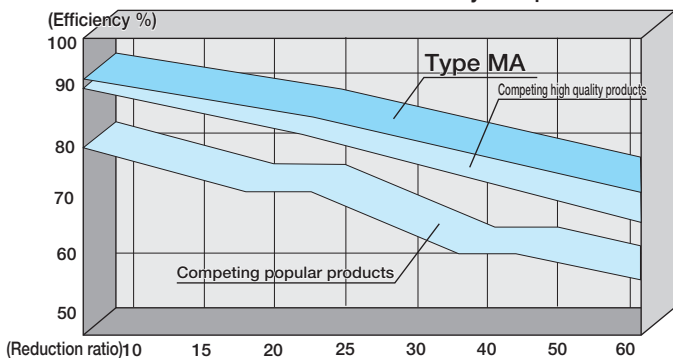
■ Overhang load comparison table



2. HIGH EFFICIENCY!

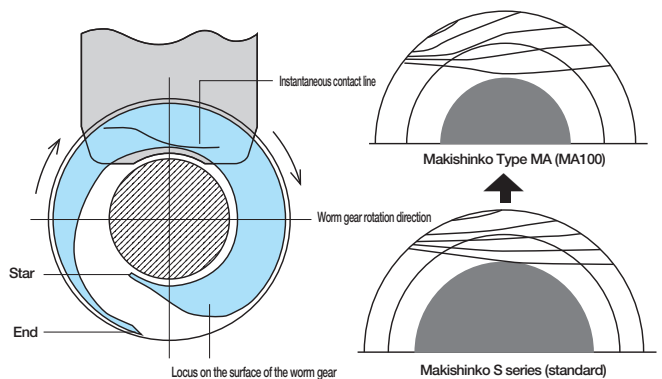
HIGH EFFICIENCY

- Efficiency is by 10% or more.
- Efficiency comparison table



Cylindrical worm gear designed for the ideal drive

- Larger module compared to the S series
- Improved simultaneous contact line, increased area and length of engagement, increased gear tooth area and tooth surface which are well lubricated



3. REDUCED SIZE AND WEIGHT !

COMPACT

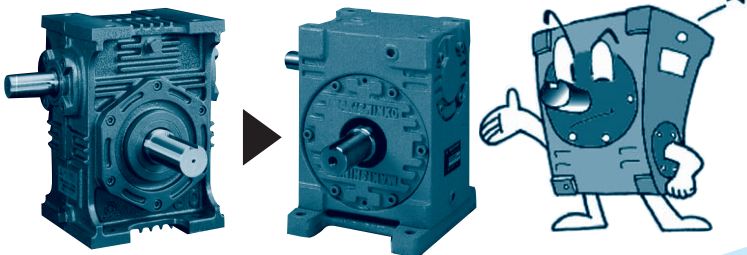


- Reduced capacity by 50% or more !
- 50% weight reduction, or more !
(Our comparison of capability with Type MA100)

4. GOOD DESIGN !

SIMPLE DESIGN

- Slim and simple design without any projections !



5. EASY OPERATION !

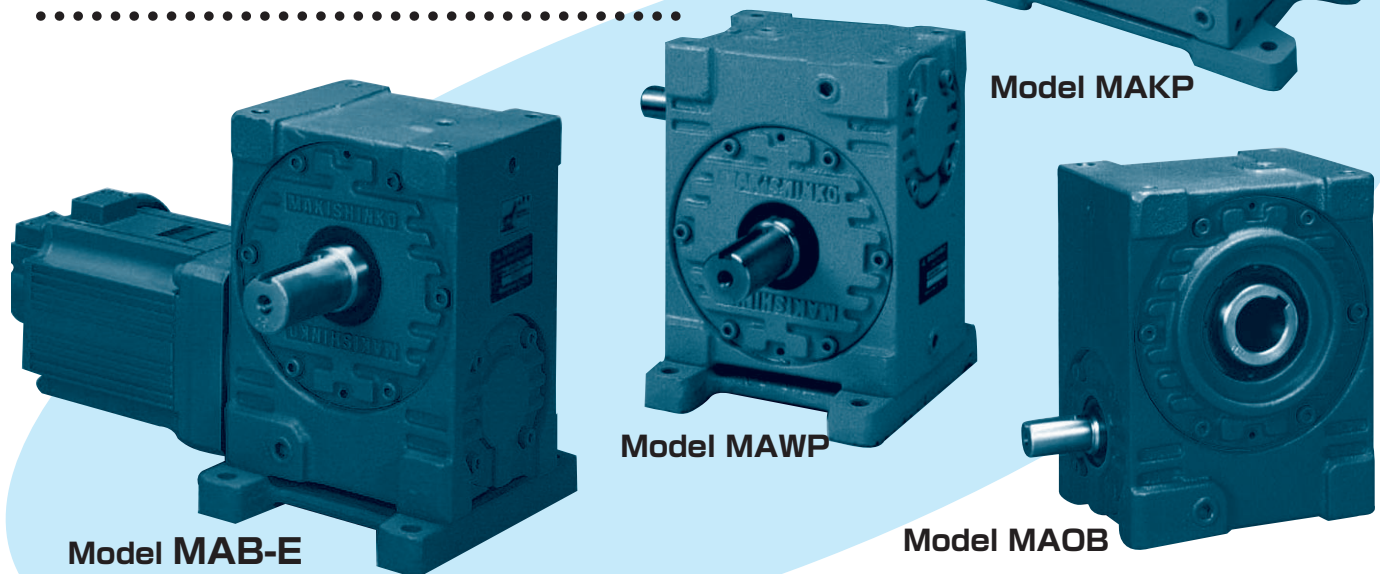
EASY OPERATION

- Does not require running-in. !
- High loads from the start of operation are OK, and costs of running-in were eliminated.

6. HIGH QUALITY !

MODERNIZED

- Backlash is also acceptable for grade BS721-1. ! (Option)
- The output shaft ends are tapped as standard. !
- A new JIS key is standard. !
- The adoption of high-grade lubricants reduces the maintenance time. !
- Additionally, we have created a truly low-noise and low-vibration worm. !



Model MAB-E

Model MAWP

Model MAKP

Model MAOB

Nominal type

S e r i e s ▶ **MA** —●—

MA

R e d u c t i o n ▶

Blank	Single reduction
-------	------------------

O u t p u t ▶ **O** —●—

Blank	S o l i d
O	H o l l o w

T y p e ▶ **B** —●—

B	Worm shaft below the output shaft
W	Worm shaft above the output shaft
K	Vertical output shaft type

B a s e ▶ **P** —●—

Blank	Without
P	With

S i z e ▶ **100** —●—

Shaft arrangement ▶ **R** —●—

See 8 page

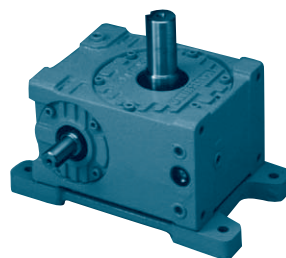
Reduction Ratio ▶ **60** —●—

10 15 20 25 30 40 50 60

Motor specification ▶ **E** —●—

Stan. / Spe. ▶ **T** —●—

Blank	Standard
T	Special



MAKP

B	Worm shaft below the output shaft
W	Worm shaft above the output shaft
K	Vertical output shaft type

Note: not for Size 32·40.

25	Center distance	25
32	Center distance	32
40	Center distance	40
50	Center distance	50
63	Center distance	63
80	Center distance	80
100	Center distance	100
125	Center distance	125
140	Center distance	140
160	Center distance	160

E	General motor	0.1kW 0.2kW 0.4kW 0.75kW
B	Brake-motor	1.5kW 2.2kW 3.7kW 5.5kW
S	Servo motor	
NT	Designated motor with adapter	

Specification

Standard type

No	I t e m	Specification
1	S i z e	25 32 40 50 63 80 100 125 140 160
2	Reduction ratio	10 (15) 20 (25) 30 40 50 60 Note: Ratio of () is for over size 50
3	Output shaft shape	Solid (type MA) Hollow (type MAO)
4	Position & direction of input & output shaft	Worm shaft below the output shaft type MAB, MAOB
		Worm shaft above the output shaft type MAW, MAOB
		Vertical output shaft type MAK, MAOK
5	Input shaft shape	Solid shaft
		With motor
		With brake-motor· for servo motor
6	^{note-1} P a i n t i n g	Munsell 5.5PB5.5/9 sky blue(Phthalic acid)
7	S h a f t k e y s	JIS B 1301-1996(parallel key)
8	W o r m s c r e w	Twisted right direction

Note: Size No. 25, 32 and 40 are not painted, but base plate of size 25 is painted with black.

●Types with other specifications than standard are also available.

Dedicated motor / Brake motor specifications

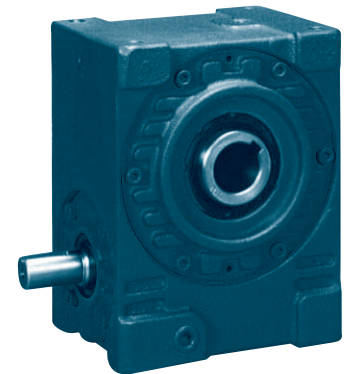
Protection type	Indoor type totally-enclosed fancooled type
Voltage · Frequency	200/200/220V 50/60/60Hz
P o l e s	4 P
R a t i n g s	Continuoussness
Heat-resistant class	Class E (0.4~3.7kW) Class B(5.5kW)
Brake type	DC operated spring brake, Equipped with a manual release handle
Braking torque	150% or more
Flange shape	Square
Shaft shape	Hollow

● This motor is only for use with the Makiace series, and no commercially available motor can be used.

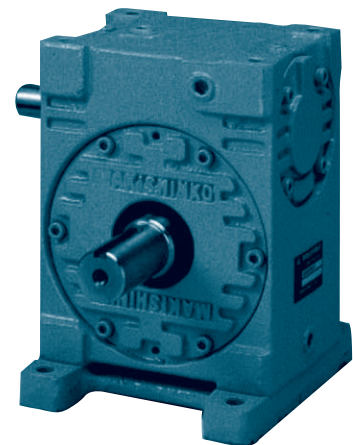
Major component materials

■ Only the most carefully selected materials are for the Makiace MA series.

Part name	Materials	Remarks
Worm shaft	Cr-Mo steel	For MA25, S45C is used
Worm gear	Special, abrasion-resistant alloy	
Main housing	Grey cast iron	Aluminum die-cast housing is used for size 25,32,40,50 and 63.
Output shaft	SC steel (solid shaft)	
	Spheroidal graphite cast iron (hollow shaft)	
Covers & mounting legs	Grey cast iron	Aluminum die-cast parts are used for size 25,32 and 40.



Model MAOB



Model MAWP

Genuine lubricants

To get full performance from worm gear speed reducers, it is important to use the proper lubricants. The Makiace MA series are shipped with the lubricants shown in the following table. Please double check the operating conditions and replace the lubricants according to the following table.

Ambient temperature Size	°C	0~50°C
MA25		Shin-Nippon Oil Corporation, Bong Knock M320
MA32~40		Mobil Glygoyle 150
MA50~125		Mobil Glygoyle 220
MA140~160		Mobil Glygoyle 320

Notes

1. Please note that the Makiace MA series worm gear speed reducers cannot perform as specified unless the lubricants mentioned above are used.
2. Please avoid combining these lubricants with general industrial gear lubricants.
3. If you are working at unusual ambient temperatures, please contact us.

Precaution for Handling

Operation

No special running-in is necessary. However, it is recommended that, when first starting to use the product, the operating load should not exceed 80% of the rated load. Then the load can be raised gradually.

●Rise in temperature

The working temperature of the product is due to the sliding transmission parts. The outside wall of the speed reducer may reach about 90°C within one or two hours after the starting an operation at the rated load. However, this is normal.

We have set the maximum permitted temperature on the outside wall of the speed reducer to 95.

⚠ Caution

- If any abnormality occurs, stop the operation immediately.

You may be injured, a fire may be started and the system may be damaged.

- Don't touch the product with your bare hands during operation or within about one hour after the operation has stopped. This product operates at an elevated temperature.

You may be burned.

- Do not use this product if the load exceeds the specified maximum load.

You may be injured, a fire may be started and the system may be damaged.

- Do not use this product at speeds higher than the specified maximum rotation speed.

You may be injured, a fire may be started and the system may be damaged.

●Operating tips

For handling procedure details, please see the separate instruction manual.

Maintenance check

Check the following items during a maintenance check.

●Lubricant changes

About 50 hours of operation after first starting, replace the lubricant. Then, check the lubricant every six months. If it is dirty, replace it.

Be especially sure to replace the lubricant after the first 50 hours to remove any abrasive powder that has been collected by the oil. Whenever you need to change the lubricant, the lubricant will be very hot right after stopping the operation. Therefore, wait one or two hours after stopping before replacing the oil.

Be sure to use only genuine lubricants.

When disposing of used lubricant, treat it as general industrial waste.

●Greasing

The upper bearing of the vertical output shaft (Type K) is lubricated with grease. Type 80 and larger have grease nipples on the output shaft covers. As a general guide, add the proper amount of grease every 1000 hours or every six months. Since the Type 63 and smaller are permanently lubricated, it is not necessary to add grease.

MA50~MA160 Servo Specification

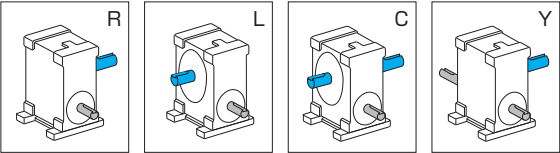
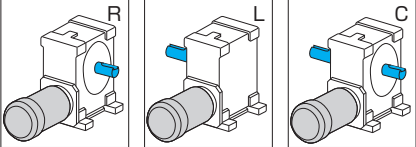
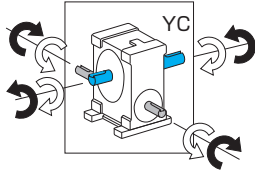
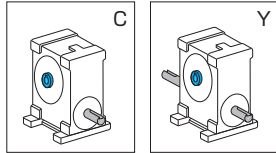
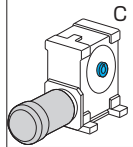
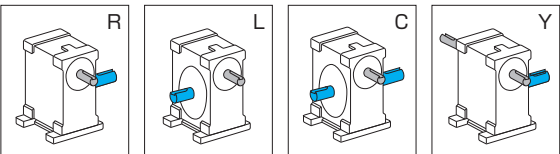
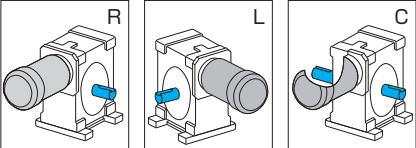
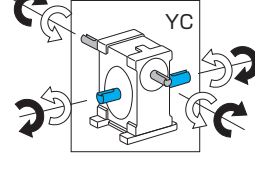
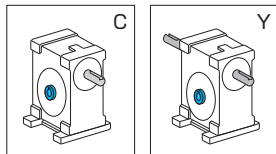
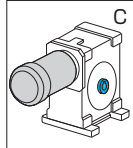
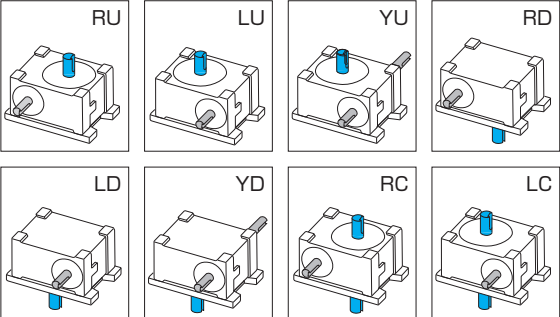
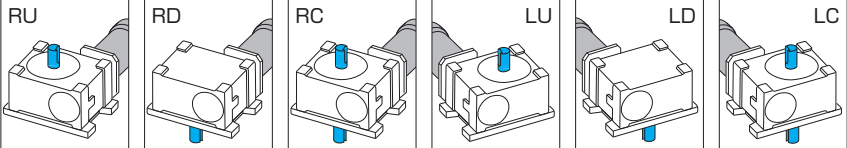
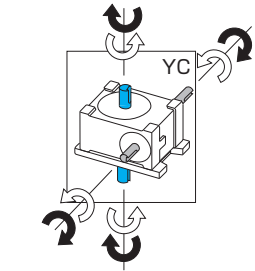
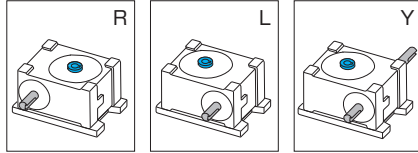
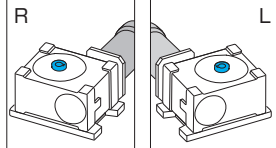
When the driving condition is hard, please pay attention to rising the temperature over 95 degree. Please think about our special specification for the condition of higher temperature. Please do not touch the hands on the reducer not to be burned.

MA series are lubricated by Mobil Glygoyle to demonstrate their abilities, so please make sure other lubricants cannot enable them to demonstrate the same.

Shaft Arrangement and Rotation Direction

- Please decide shaft position based on output position from input position or motor.
(In case of double input shaft with motor or adapter, shaft position is decided based on output position from motor or adapter, so shaft position in this case is R or L or U or D or C, not Y or YC)
- Shaft arrangement sign

Sign	Output shaft direction	Sign	Output shaft direction
R	Right	Y	Input double shaft
L	Left	C	Output shaft double
U	Up	YC	Input and output double shaft
D	Down		

<p>MAB(P), MA25·32·40</p>  <p>MAB(P), MA-E25·32·40</p> 		<p>MAOB(P), MAO25·32·40</p>  <p>MAOB(P)E, MAO-E25·32·40</p> 
<p>MAW(P)</p>  <p>MAW(P)E</p> 		<p>MAOW(P)</p>  <p>MAOW(P)E</p> 
<p>MAK(P)</p>  <p>MAK(P)E</p> 		<p>MAOK(P)</p>  <p>MAOK(P)E</p> 

- Rotation direction, normal rotation and reversal also being possible, ability is the same.
- An arrow display is the rotation direction for shaft.
- About special installation on side wall or upside-down, please contact us.

Type number selection

When selecting

1] Load coefficient

Select the load coefficient from the load coefficient table according to the operating conditions, such as the type of load, operating time, start-stop frequency and whether or not the load fluctuates dramatically. Find the equivalent input capacity or the equivalent output torque for your needs.

2] Thermal rating capacity

The performance table for Makiace worm gear speed reducers was prepared on the assumption that our standard coating was applied at an ambient temperature of 20°C

If any of the following conditions is encountered, check the thermal rating capacity.

- 2-1) When you apply a coating other than the MA series standard coating (When a top coat is applied after installing the product on a machine)
- 2-2) When the ambient working temperature near the speed reducer is higher than 20°C
- 2-3) If you want the upper temperature limit for the gear case lubricant to be 95°C or less

3] Servomotor compatibility

- 3-1) Pay attention not to exceed the specified input capacity.
- 3-2) When the input to a speed reducer is controlled by a program, a servomotor can be used if the input is not higher than the specified input capacity for the speed reducer.
- 3-3) Except in the case of item 3-1) above, select a speed reducer that has a specified input capacity more than twice the capacity of the servomotor.

3-4) When the product is used at an input rotation speed from 1800 rpm to 3000 rpm, Please pay attention to load efficiency and thermal rating capacity. Higher temperature by higher rotation speed and continuous driving sometimes damages oil seals and oil gauges, causing leaking oil. In this case, changing specification of oil seals and oil gauges will be necessary.

3-5) The control program should start and stop slowly, as much as is possible.

4] Overhang load

4-1) What is overhang load (OHL)?

The overhang load is the suspended load acting on the output shaft. It should always be considered when selecting speed reducers.

Normally, the value resulting from dividing the load torque by the radius of the rotating body (sprocket, pulley, and so on) is considered to be the overhang load (OHL).

4-2) Calculation of the equivalent allowable overhang load

The acceptable overhang load value shown in the catalog is calculated on the assumption that the load is acting on the center of the LS dimension shown for the output shaft. Therefore, when the point where the load is applied is not in the center of the LS dimension, the acceptable value in the catalog will not be correct. Find the equivalent allowable overhang load using the formula and the table given in the selection procedure.

4-3) Overhang load coefficient

When a speed reducer and a driven machine are driven indirectly, select the overhang load coefficient from the separate table according to the type of connection, and then find the overhang load.

Type number selection procedure

Select the type number as follows

Determination of the selection specifications

$$1. \text{ Reduction ratio } R = \frac{\text{input shaft rotation speed } n1}{\text{output shaft rotation speed } n2}$$

Load coefficient table

Operational conditions Load Conditions		2. Load coefficient selection of SF							
		Continuous operation			When starting and stopping occurs 10 times or more in one hour (Note1)			When the load fluctuates dramatically such as when using mixers and thickeners	
Operating time	Type of load Operating time	Uniform loading	Medium Shock loading	Heavy shock loading	Uniform loading	Medium Shock loading	Heavy Shock loading	Unidirectional rotation	Forward/Reverse rotation
		Up to 2 hours		0.90	1.00	1.25	1.00	1.25	1.50
Up to 10 hours		1.00	1.25	1.50	1.25	1.50	1.75	1.50	1.75
Up to 24 hours		1.25	1.50	1.75	1.50	1.75	2.00	1.75	2.00

3. Calculation of the equivalent capacity

a. Method found from the input capacity

Find the equivalent input capacity, Pe (kW) from the actual input torque, Pa(kW)
 $Pe = Sf \cdot Pa$

b. Method found from the output torque

Find the equivalent output torque, Te(N·m) from the actual output torque, Ta(N·m)
 $Te = Sf \cdot Ta$

4. Provisional selection of a type number

Temporarily select the type number that corresponds to Pe or Te from the performance table.

Note-1: Since it is also necessary to check strength of the unit depending on the frequency of use, please contact us.

5. Thermal rating capacity check

Thermal rating capacity	$P_w(\text{kW})$
Heat-transfer coefficient	$\alpha k(\text{W/m}^2 \cdot ^\circ\text{C})=29$
Upper limit lubricant temperature	$t_e(^{\circ}\text{C})=95$
Ambient temperature of the speed reducer	$t_r(^{\circ}\text{C})$ (20°C is used in the performance table.)
Speed reducer efficiency	η (%) (from the performance table)
Gear case surface area	$S_k(\text{m}^2)$

Surface-area table for gear case

Size	32	40	50	63	80	100	125	140	160
Surface area $S_k(\text{m}^2)$	0.0380	0.0570	0.0951	0.1133	0.1810	0.2658	0.4231	0.5124	0.6622

$$P_w = \frac{S_k \cdot \alpha k \cdot (t_e - t_r)}{10 \cdot (100 - \eta)}$$

a. When selected by input capacity

$P_w < P_e$,
OK if $P_w \geq P_e$.
If $P_w < P_e$, select a type number where $P_w \geq P_e$.

b. When selected by output torque

Thermal rating torque $T_w(\text{N} \cdot \text{m})$

$$T_w = \frac{974 \cdot P_w \cdot \eta}{100 \cdot n_2} \cdot 9.8$$

OK if $T_w \geq T_e$.
If $T_w < T_e$, select a type number where $T_w \geq T_e$.

6. Overhang load(OHL) check

OHL coefficient Selection of f_o

Overhang load coefficient table

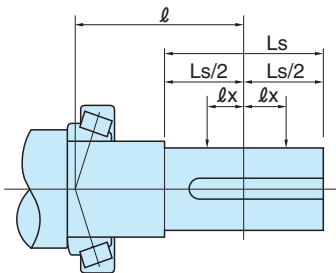
Sprocket	Gear	V-belt pulley	Flat belt
1.00	1.25	1.50	2.50

Actual overhang load calculation

$$L_r = \frac{T_e}{r} \cdot f_o$$

T_e : Equivalent output torque(N·m)
 r : Radius (m) of a rotating body like a sprocket
 f_o : OHL coefficient
 L_r : Actual overhang load(N)

Equivalent allowable overhang load (OHL) calculation



L_c : Allowable overhang load (N)
 L_e : Equivalent allowable overhang load(N)
 l : Distance from the center of the output shaft to the bearing fulcrum(mm)
 lx : Distance from the point where the load is applied to the center of the output shaft(mm)

Size l of the output shaft and allowable overhang load

Size	Dimension l (mm)	Allowable OHL $L_e(\text{N})$ $L_c(\text{N})$
25	25.00	423
32	33.00	1560
40	42.00	2050
50	52.00	2940
63	63.50	4410
80	75.20	7840
100	89.90	11760
125	106.25	17640
140	123.25	22540
160	127.25	24500

a) When OHL acts outward from the center of the output shaft

$$L_e = L_c \cdot \frac{l}{l + lx}$$

b) When OHL acts inward from the center of the output shaft

$$L_e = L_c \cdot \frac{l}{l - lx}$$

c) When OHL acts on the center of the output shaft

$$L_e = L_c$$

OK if $L_e \geq L_r$. If $L_e < L_r$, select a type number where $L_e \geq L_r$.

Type number selection

Type number selection calculation example 1 : When selected by input capacity.

1) Selection specification

Input shaft rotation speed $n_1 = 1500$ rpm
 Output shaft rotation speed $n_2 = 50$ rpm
 10 hours continuous operation
 Medium shock loading
 Actual input capacity $P_a = 2.2$ kW
 Ambient temperature of the speed reducer
 $t_r = 30$ °C

A 250mm diameter gear is installed to the output shaft, and the overhang load acts outward 10mm from the center of the output shaft.

2) Determination of the reduction ratio

$$R = \frac{n_1}{n_2} = \frac{1500}{50} = 30$$

3) Equivalent input capacity calculation

Based on the load coefficient table, $S_f = 1.25$ is found from 10-hour continuous operation and medium shock loading.

$$P_e = S_f \cdot P_a = 1.25 \times 2.2 = 2.75 \text{ kW}$$

4) Provisional type number selection

From the performance table, first we temporarily select the MA100-30, which is the type that allows 2.75 kW of input.

5) Thermal rating capacity check

- (1) Heat-transfer coefficient
 $\alpha_k = 29 \text{ W/m}^2 \cdot \text{°C}$
 - (2) Upper limit lubricant temperature
 $t_e = 95$ °C
 - (3) Ambient temperature of the speed reducer
 $t_r = 30$ °C (from the specification)
 - (4) Speed reducer efficiency
 $\eta = 84.3$ % (from the MA100-30 performance table)
 - (5) Surface area of the gear case
 $S_k = 0.2658 \text{ m}^2$ (from the surface-area table)
- $$P_w = \frac{S_k \cdot \alpha_k \cdot (t_e - t_r)}{10 \cdot (100 - \eta)} = \frac{0.2658 \times 29 \times (95 - 30)}{10 \times (100 - 84.3)} \approx 3.20 \text{ kW}$$

Since $P_e = 2.75 \text{ kW}$, $P_w \geq P_e$ This is OK.

6) Overhang load check

(1) The equivalent output torque is found

$$T_e = \frac{974 \cdot P_e \cdot \eta}{100 \cdot n_2} \cdot 9.8 = \frac{974 \times 2.75 \times 84.3}{100 \times 50} \times 9.8 = 442.6 \text{ N} \cdot \text{m}$$

(2) Actual overhang load calculation

$$L_r = \frac{T_e}{r} \cdot f_o$$

Here, the radius (r) of the gear = 0.125

$$= \frac{442.6}{0.125} \times 1.25 \text{ (} f_o = 1.25, \text{ from the OHL coefficient table)} = 4426 \text{ N}$$

(3) Then, the equivalent allowable overhang load is found
 From the specification where the overhang load acts outward from the center of the output shaft,

$$L_e = L_c \cdot \frac{l}{l + l_x}$$

From the allowable OHL table

$$L_c = 11760 \text{ N}$$

$$l = 89.9 \text{ mm}$$

$$l_x = 10 \text{ mm}$$

$$L_e = 11760 \times \frac{89.9}{89.9 + 10}$$

$$= 10583 \text{ N}$$

Since $L_r = 4426 \text{ N}$, $L_e \geq L_r$ is OK.

According to the calculation above, the MA100-30 can be used.

Type number selection calculation example 2: When selected by output torque

1) Selection specification

Input shaft rotation speed $n_1 = 1800$ rpm

Output shaft rotation speed $n_2 = 180$ rpm

24-hour continuous operation

Uniform loading

Actual output torque $T_a = 200$ N·m

Ambient temperature of the speed reducer

$t_r = 20$ °C

A 200mm diameter V-belt pulley is installed on the output shaft, and the overhang load acts inward 10mm from the center of the output shaft.

2) Determination of the reduction ratio

$$R = \frac{n_1}{n_2} = \frac{1800}{180} = 10$$

3) Equivalent output torque calculation

Based on the load coefficient table, $S_f = 1.25$ is found from 24-hour continuous operation and uniform loading

$$T_e = S_f \cdot T_a = 1.25 \times 200 = 250 \text{ N}\cdot\text{m}$$

4) Provisional type number selection

From the performance table, first we temporarily select the MA80-10, which is the type that allows 250 N·m of torque.

5) Thermal rating capacity check

(1) Heat-transfer coefficient $\alpha_k = 29$ W/m²·°C

(2) Upper limit lubricant temperature $t_e = 95$ °C

(3) Ambient temperature of the speed reducer $t_r = 20$ °C (from the specification)

(4) Speed reducer efficiency $\eta = 93.3$ % (from the MA80-10 performance table)

(5) Surface area of the gear case $S_k = 0.181$ m² (from the surface-area table)

From the factors mentioned above,

$$P_w = \frac{S_k \cdot \alpha_k \cdot (t_e - t_r)}{10 \cdot (100 - \eta)} = \frac{0.181 \times 29 \times (95 - 20)}{10 \times (100 - 93.3)} = 5.89 \text{ kW}$$

Thermal rating torque T_w

$$T_w = \frac{974 \cdot P_w \cdot \eta}{100 \cdot n_2} \cdot 9.8 = \frac{974 \times 5.89 \times 93.3}{100 \times 180} \times 9.8 = 291 \text{ N}\cdot\text{m}$$

Since $T_e = 250$ N·m, $T_w \geq T_e$. This is OK.

6) Overhang load check

(1) Actual overhang load calculation

$$L_r = \frac{T_e}{r} \cdot f_o$$

Here, the radius (r) of the pulley = 0.1 m

$$= \frac{250}{0.1} \times 1.5 \text{ (} f_o \text{ is 1.5, from OHL coefficient table)} = 3750 \text{ N}$$

(2) The equivalent allowable overhang load is found.

From the specification where the overhang load acts inward from the center of the output shaft,

$$L_e = L_c \frac{l}{l - l_x}$$

From the allowable OHL table

$L_c = 7840$ N

$l = 75.2$ mm

$l_x = 10$ mm

$$L_e = 7840 \times \frac{75.2}{75.2 - 10} = 9042 \text{ N}$$

Since $L_r = 3750$ N, $L_e \geq L_r$. This is OK.

According to the calculation above, the MA80-10 can be used.

Lightweight, small, heavy-duty, high-quality machines

MA0•MA25•32•40

MA series from Worm Gear Speed Reducer

Compact MAKIACE

● **Lots of variations**

Makiace has a large variety in of output hollow shafts, output solid shafts, double input shafts, and with or without a motor, to respond to your every need.

● **Free installation position**

Can be installed in any orientation.

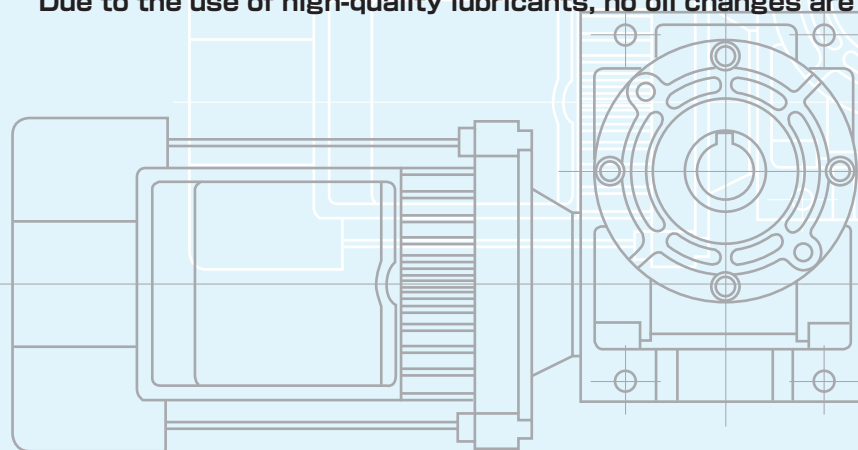
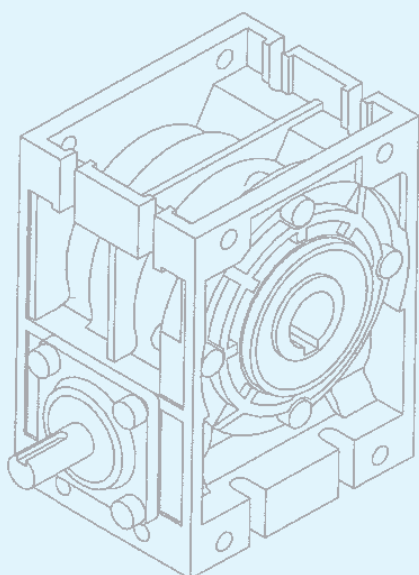
● **Lightweight and compac**

The use of die-cast aluminum cases allows the product to be very lightweight and compact.

● **Maintenance-free**

No running-in is needed.

Due to the use of high-quality lubricants, no oil changes are needed.



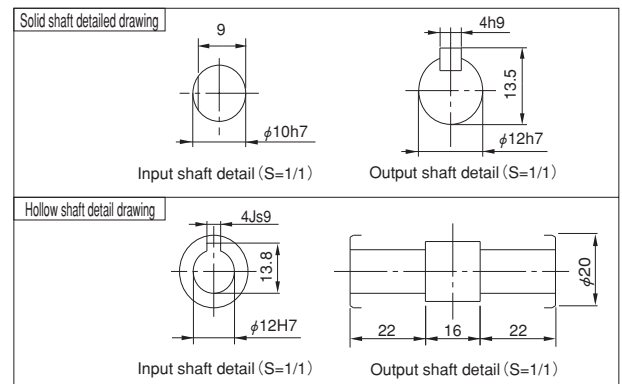
Rated transfer capability table (10-hour continuous rating)

MAO·MA25

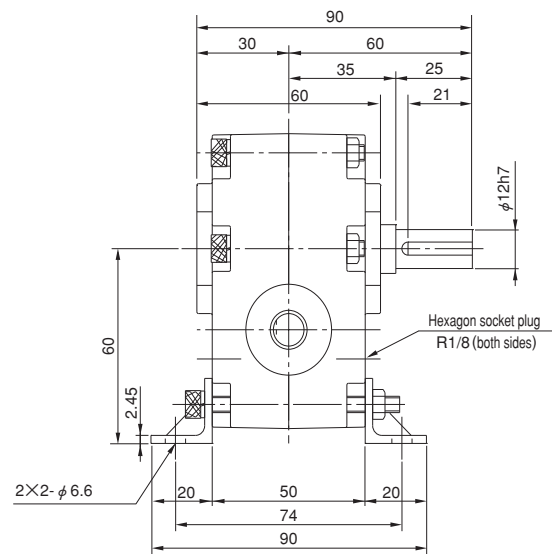
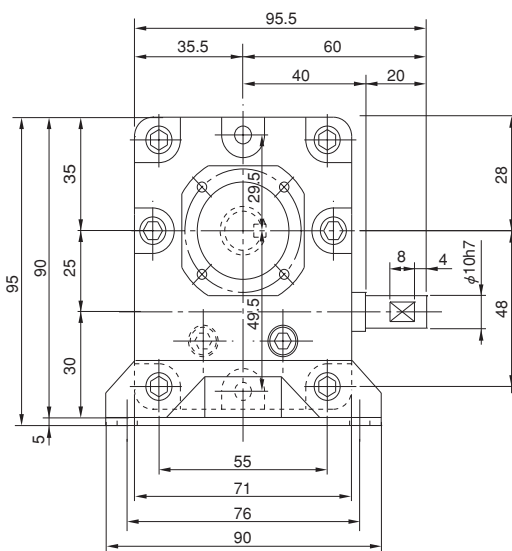
Reduction ratio	Capability	Input rotation speed (rpm)								
		1800	1500	1200	1000	900	750	500	250	100
10	Input capacity (kW)	0.29	0.26	0.23	0.20	0.19	0.17	0.13	0.08	0.04
	Output torque (N·m)	11.2	12.0	13.0	13.6	14.3	15.3	17.4	21.0	22.4
20	Input capacity (kW)	0.14	0.12	0.11	0.10	0.09	0.08	0.06	0.04	0.02
	Output torque (N·m)	9.0	9.5	10.1	11.1	11.4	11.9	13.5	15.8	16.8
30	Input capacity (kW)	0.13	0.12	0.10	0.10	0.09	0.08	0.06	0.04	0.02
	Output torque (N·m)	12.1	12.7	13.6	14.6	15.2	15.6	17.7	20.6	21.2
40	Input capacity (kW)	0.09	0.08	0.08	0.07	0.07	0.06	0.05	0.03	0.01
	Output torque (N·m)	9.9	10.4	11.2	12.0	12.3	12.9	14.1	16.5	17.2
50	Input capacity (kW)	0.08	0.07	0.06	0.05	0.05	0.05	0.04	0.02	0.01
	Output torque (N·m)	9.0	9.0	10.1	10.1	10.2	11.2	12.3	14.3	15.0
60	Input capacity (kW)	0.07	0.06	0.05	0.05	0.04	0.04	0.03	0.02	0.01
	Output torque (N·m)	8.9	8.9	9.0	10.2	10.2	11.3	12.4	13.4	13.8

Motor capacity · type numbers · output torque by reduction ratio

Capacity	60w		0.1kw	
	1200	1450	1500	1800
Rpm	50Hz	60Hz	50Hz	60Hz
Reduction ratio	Output torque (N·m)		Output torque (N·m)	
10	3.0	2.3	4.5	3.8
20	4.9	4.0	7.3	6.1
30	7.2	5.3	10.9	9.1
40	7.4	6.5		
50	8.9	6.4		
60	9.6	7.4		



※For 60w motor, output rpm is slightly different due to output load torque.



※The above drawing is MABP25. Please ask us about other models.

MAO·MA32

Reduction ratio	Input rotation speed (rpm)		1800	1500	1200	1000	900	750	500	250	100
	Capability										
10	Input capacity (kW)		0.59	0.53	0.48	0.43	0.40	0.34	0.23	0.12	0.05
	Output torque (N·m)		24.5	26.5	29.4	31.4	32.3	32.3	32.3	32.3	32.3
20	Input capacity (kW)		0.29	0.26	0.22	0.20	0.19	0.18	0.13	0.07	0.03
	Output torque (N·m)		21.6	23.5	24.5	26.5	27.4	29.4	32.3	32.3	32.3
30	Input capacity (kW)		0.26	0.23	0.20	0.19	0.17	0.15	0.10	0.06	0.02
	Output torque (N·m)		26.5	28.4	30.4	32.3	32.3	32.3	32.3	32.3	32.3
40	Input capacity (kW)		0.19	0.17	0.15	0.14	0.13	0.12	0.09	0.05	0.02
	Output torque (N·m)		23.5	25.5	26.5	28.4	29.4	31.4	32.3	32.3	32.3
50	Input capacity (kW)		0.15	0.13	0.12	0.11	0.10	0.09	0.07	0.04	0.02
	Output torque (N·m)		22.5	23.5	25.5	27.4	27.4	29.4	30.4	32.3	32.3
60	Input capacity (kW)		0.11	0.10	0.09	0.08	0.07	0.06	0.05	0.03	0.01
	Output torque (N·m)		19.6	20.6	21.6	21.6	22.5	22.5	23.5	24.5	25.5

MAO·MA40

Reduction ratio	Input rotation speed (rpm)		1800	1500	1200	1000	900	750	500	250	100
	Capability										
10	Input capacity (kW)		1.04	0.97	0.85	0.75	0.72	0.64	0.47	0.24	0.10
	Output torque (N·m)		44.1	49.0	52.9	55.9	58.8	61.7	66.6	66.6	66.6
20	Input capacity (kW)		0.51	0.45	0.40	0.36	0.34	0.31	0.24	0.14	0.06
	Output torque (N·m)		39.2	41.2	45.1	48.0	49.0	52.9	59.8	66.6	66.6
30	Input capacity (kW)		0.45	0.41	0.36	0.33	0.31	0.28	0.20	0.11	0.05
	Output torque (N·m)		48.0	51.0	54.9	58.8	60.8	64.7	66.6	66.6	66.6
40	Input capacity (kW)		0.32	0.30	0.27	0.24	0.22	0.20	0.16	0.09	0.04
	Output torque (N·m)		42.1	45.1	49.0	51.9	52.9	55.9	61.7	66.6	66.6
50	Input capacity (kW)		0.27	0.24	0.22	0.19	0.18	0.16	0.13	0.07	0.03
	Output torque (N·m)		42.1	44.1	48.0	50.0	51.9	53.9	58.8	61.7	65.7
60	Input capacity (kW)		0.22	0.19	0.17	0.15	0.14	0.12	0.09	0.05	0.02
	Output torque (N·m)		38.2	40.2	42.1	43.1	43.1	44.1	46.1	48.0	51.0

The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this type of situation, refer to the theoretical starting efficiency value (A-19).

Motor capacity · type numbers · output torque by reduction ratio

Type No.	Reduction ratio	0.1		0.2		0.4	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
		Output torque (N·m)		Output torque (N·m)		Output torque (N·m)	
32	10	4.98	4.19	9.97	8.38		
	20	8.95	7.56	17.9	15.1		
	30	12.1	10.3	24.3	20.6		
	40	14.8	12.6				
	50	17.5	15.0				
	60	20.2	17.2				
40	10					20.2	17.0
	20					36.4	30.9
	30					49.7	42.4
	40			30.4	26.1		
	50			36.7	31.4		
	60			40.2	35.6		

※For MAO·MA25, please contact us.

Rated Transfer Capability Table (10-hour continuous rating)

MAseries

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MA·MAO50

Reduction ratio	Capability	Input rotation speed (rpm)								
		1800	1500	1200	1000	900	750	500	250	100
10	Input capacity (kW)	1.77	1.62	1.41	1.26	1.19	1.06	0.82	0.52	0.26
	Output torque (N·m)	85.3	93.1	101	107	112	118	136	166	203
	Efficiency (%)	91.2	90.4	89.7	89.1	88.7	87.8	86.3	83.6	80.3
15	Input capacity (kW)	1.52	1.35	1.19	1.07	1.00	0.89	0.69	0.43	0.22
	Output torque (N·m)	107	113	123	131	135	144	164	196	238
	Efficiency (%)	88.2	87.3	86.3	85.7	85.0	83.9	82.2	78.9	75.1
20	Input capacity (kW)	1.08	0.97	0.85	0.75	0.71	0.63	0.49	0.30	0.15
	Output torque (N·m)	99.0	107	115	121	125	133	150	177	214
	Efficiency (%)	86.5	85.6	84.8	83.6	83.0	82.0	80.0	76.7	73.3
25	Input capacity (kW)	0.84	0.75	0.64	0.58	0.55	0.49	0.37	0.21	0.11
	Output torque (N·m)	94.1	101	107	114	118	132	140	165	186
	Efficiency (%)	84.5	83.6	82.7	81.3	80.6	79.7	77.4	73.8	70.5
30	Input capacity (kW)	0.97	0.88	0.76	0.68	0.65	0.59	0.44	0.28	0.14
	Output torque (N·m)	124	132	140	149	155	166	182	215	256
	Efficiency (%)	79.8	78.3	77.0	76.0	75.0	73.5	71.0	66.6	61.9
40	Input capacity (kW)	0.67	0.60	0.52	0.47	0.45	0.40	0.30	0.19	0.09
	Output torque (N·m)	110	117	125	133	137	144	159	186	219
	Efficiency (%)	77.0	75.8	74.6	72.8	71.9	70.6	67.8	63.4	59.4
50	Input capacity (kW)	0.50	0.45	0.39	0.36	0.33	0.30	0.22	0.14	0.07
	Output torque (N·m)	99.0	105	113	120	123	128	140	165	192
	Efficiency (%)	73.8	72.5	71.1	69.2	68.3	67.0	64.0	59.4	55.5
60	Input capacity (kW)	0.39	0.35	0.31	0.28	0.26	0.22	0.18	0.09	0.05
	Output torque (N·m)	89.2	95.1	101	106	109	113	125	145	151
	Efficiency (%)	70.8	69.5	67.8	65.9	65.0	63.7	60.5	55.9	52.0

MA·MAO63

Reduction ratio	Capability	Input rotation speed (rpm)								
		1800	1500	1200	1000	900	750	500	250	100
10	Input capacity (kW)	3.30	3.00	2.67	2.38	2.24	2.01	1.58	0.99	0.51
	Output torque (N·m)	163	174	192	203	213	227	261	319	393
	Efficiency (%)	92.5	91.4	90.3	89.6	89.3	88.8	86.9	84.0	80.6
15	Input capacity (kW)	2.70	2.44	2.14	1.94	1.82	1.59	1.27	0.79	0.41
	Output torque (N·m)	192	206	223	240	249	259	300	361	443
	Efficiency (%)	89.7	88.3	87.1	86.2	85.8	85.1	82.7	79.8	75.2
20	Input capacity (kW)	1.96	1.77	1.57	1.40	1.30	1.17	0.90	0.55	0.28
	Output torque (N·m)	182	195	214	225	231	250	281	330	402
	Efficiency (%)	87.7	86.6	85.4	84.7	84.3	83.1	81.0	77.5	73.4
25	Input capacity (kW)	1.51	1.37	1.20	1.06	0.99	0.90	0.68	0.41	0.21
	Output torque (N·m)	173	185	199	209	218	231	259	306	366
	Efficiency (%)	85.9	84.8	83.7	82.9	82.2	81.0	78.9	75.3	71.1
30	Input capacity (kW)	1.54	1.38	1.27	1.20	1.15	1.03	0.80	0.50	0.26
	Output torque (N·m)	200	211	235	264	279	295	331	390	467
	Efficiency (%)	81.8	79.9	78.0	76.7	76.1	75.0	71.7	67.1	61.9
40	Input capacity (kW)	1.20	1.08	0.95	0.85	0.80	0.72	0.55	0.35	0.17
	Output torque (N·m)	201	213	229	243	250	266	291	346	407
	Efficiency (%)	78.8	77.1	75.4	74.4	73.7	71.9	69.1	64.4	59.4
50	Input capacity (kW)	0.90	0.82	0.72	0.64	0.61	0.54	0.41	0.26	0.13
	Output torque (N·m)	182	194	209	219	228	238	260	307	360
	Efficiency (%)	75.9	74.2	72.6	71.6	70.5	68.8	66.1	61.3	56.2
60	Input capacity (kW)	0.70	0.63	0.56	0.50	0.47	0.41	0.32	0.18	0.10
	Output torque (N·m)	164	173	186	197	202	209	233	270	301
	Efficiency (%)	72.8	71.1	69.5	68.3	67.1	65.3	62.5	57.6	52.5

※Use an output torque lower than the value shown in the table.

※The conditions of use are set by uniform load and 10 hours per day (service factor=1).

※If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

※The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this situation, refer to the theoretical starting efficiency value (A-19)

MA·MAO80

Reduction ratio	Capability	Input rotation speed (rpm)								
		1800	1500	1200	1000	900	750	500	250	100
10	Input capacity (kW)	5.89	5.24	4.69	4.19	3.94	3.56	2.75	1.75	0.90
	Output torque (N·m)	292	310	342	364	377	407	463	571	710
	Efficiency (%)	93.3	92.9	91.6	90.8	90.4	89.7	88.2	85.4	81.8
15	Input capacity (kW)	4.94	4.56	3.94	3.64	3.44	3.06	2.38	1.49	0.77
	Output torque (N·m)	358	392	417	458	476	506	575	693	857
	Efficiency (%)	91.0	90.2	88.7	87.7	87.2	86.5	84.4	81.1	76.9
20	Input capacity (kW)	3.63	3.27	2.89	2.60	2.43	2.16	1.71	1.06	0.54
	Output torque (N·m)	344	367	397	424	438	463	533	630	770
	Efficiency (%)	89.3	88.0	86.5	85.4	84.9	84.2	81.8	78.1	73.7
25	Input capacity (kW)	2.77	2.51	2.20	1.96	1.84	1.63	1.28	0.79	0.40
	Output torque (N·m)	321	344	370	391	407	429	487	574	696
	Efficiency (%)	87.8	86.2	84.7	83.7	83.2	82.5	79.8	75.9	71.5
30	Input capacity (kW)	2.83	2.59	2.29	2.13	2.06	1.96	1.53	0.96	0.50
	Output torque (N·m)	379	410	439	481	513	579	652	777	927
	Efficiency (%)	84.3	82.8	80.5	79.0	78.3	77.3	74.2	69.6	64.1
40	Input capacity (kW)	2.17	1.97	1.74	1.57	1.48	1.31	1.02	0.64	0.33
	Output torque (N·m)	373	396	425	451	468	491	543	646	763
	Efficiency (%)	81.4	79.1	76.8	75.4	74.6	73.6	70.1	65.1	59.6
50	Input capacity (kW)	1.64	1.50	1.32	1.18	1.11	0.99	0.76	0.48	0.25
	Output torque (N·m)	342	363	389	411	422	447	487	579	678
	Efficiency (%)	78.6	76.3	74.1	72.7	72.0	70.8	67.1	62.1	56.6
60	Input capacity (kW)	1.27	1.15	1.01	0.91	0.85	0.76	0.59	0.37	0.19
	Output torque (N·m)	305	319	341	364	374	391	431	504	590
	Efficiency (%)	75.5	73.0	70.7	69.2	68.5	67.2	63.3	58.1	52.5

MA·MAO100

Reduction ratio	Capability	Input rotation speed (rpm)								
		1800	1500	1200	1000	900	750	500	250	100
10	Input capacity (kW)	9.80	8.79	7.71	6.97	6.52	5.86	4.58	2.94	1.49
	Output torque (N·m)	488	522	569	611	631	675	778	969	1170
	Efficiency (%)	93.9	93.3	92.8	91.8	91.2	90.4	89.1	86.3	82.6
15	Input capacity (kW)	7.86	7.28	6.42	5.85	5.49	4.94	3.80	2.41	1.06
	Output torque (N·m)	573	632	691	744	770	822	931	1130	1170
	Efficiency (%)	91.7	91.0	90.2	88.9	88.2	87.2	85.7	82.2	77.6
20	Input capacity (kW)	5.84	5.22	4.65	4.15	3.90	3.48	2.72	1.69	0.81
	Output torque (N·m)	560	597	653	690	715	760	867	1020	1170
	Efficiency (%)	90.5	89.9	88.3	87.1	86.5	85.6	83.7	80.1	75.6
25	Input capacity (kW)	4.40	4.05	3.60	3.20	3.00	2.68	2.08	1.29	0.67
	Output torque (N·m)	518	569	611	643	671	713	807	950	1160
	Efficiency (%)	89.0	88.2	86.3	85.1	84.5	83.6	81.3	77.4	72.7
30	Input capacity (kW)	4.44	4.15	3.78	3.39	3.23	3.01	2.44	1.45	0.76
	Output torque (N·m)	603	668	747	784	819	901	1062	1170	1170
	Efficiency (%)	85.3	84.3	82.7	80.7	79.8	78.3	76.0	71.0	65.0
40	Input capacity (kW)	3.52	3.18	2.83	2.57	2.39	2.15	1.66	1.05	0.49
	Output torque (N·m)	621	665	717	763	780	829	920	1080	1170
	Efficiency (%)	83.2	82.3	79.6	77.9	77.0	75.8	72.8	67.8	62.0
50	Input capacity (kW)	2.60	2.39	2.10	1.90	1.80	1.60	1.22	0.78	0.40
	Output torque (N·m)	556	602	640	675	703	738	808	956	1120
	Efficiency (%)	80.6	79.3	76.5	74.7	73.8	72.5	69.2	64.0	58.1
60	Input capacity (kW)	2.03	1.85	1.64	1.48	1.40	1.24	0.95	0.61	0.31
	Output torque (N·m)	506	541	575	607	627	656	722	848	997
	Efficiency (%)	78.2	76.4	73.5	71.7	70.8	69.5	65.9	60.5	54.5

※Use an output torque lower than the value shown in the table.

※The conditions of use are set by uniform load and 10 hours per day (service factor=1).

※If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

※The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this situation, refer to the theoretical starting efficiency value (A-19)

Rated Transfer Capability Table (10-hour continuous rating)

MAseries

MAKIJACE

MA·MAO125

Reduction ratio	Capability	Input rotation speed (rpm)								
		1800	1500	1200	1000	900	750	500	250	100
10	Input capacity (kW)	17.4	15.8	13.7	12.4	11.6	10.4	8.23	5.31	2.40
	Output torque (N·m)	871	942	1010	1090	1130	1210	1410	1760	1910
	Efficiency (%)	94.7	94.0	93.3	92.9	92.5	91.8	89.8	87.0	83.6
15	Input capacity (kW)	12.9	11.5	10.5	9.87	9.12	8.15	6.84	3.82	1.69
	Output torque (N·m)	949	1010	1130	1270	1300	1370	1690	1910	1910
	Efficiency (%)	92.8	91.8	91.0	90.5	89.7	88.9	86.5	83.0	78.9
20	Input capacity (kW)	10.3	9.39	8.20	7.40	6.91	6.18	4.81	3.01	1.31
	Output torque (N·m)	997	1080	1170	1250	1280	1360	1560	1860	1910
	Efficiency (%)	91.4	90.6	89.9	88.6	87.8	87.1	84.9	81.3	76.7
25	Input capacity (kW)	7.93	7.06	6.28	5.61	5.29	4.76	3.66	2.28	1.09
	Output torque (N·m)	945	1000	1100	1150	1200	1280	1440	1710	1910
	Efficiency (%)	89.8	89.0	88.2	86.6	85.8	85.0	82.7	78.6	73.6
30	Input capacity (kW)	7.17	6.51	5.97	5.61	5.21	4.73	4.12	2.13	1.00
	Output torque (N·m)	991	1060	1200	1330	1350	1440	1820	1910	1910
	Efficiency (%)	86.9	85.5	84.3	83.2	82.0	80.7	77.2	72.3	66.6
40	Input capacity (kW)	6.11	5.59	4.96	4.48	4.21	3.77	2.92	1.65	0.78
	Output torque (N·m)	1090	1180	1290	1370	1400	1480	1660	1910	1910
	Efficiency (%)	84.6	83.4	82.3	80.1	78.9	77.9	74.8	69.6	63.4
50	Input capacity (kW)	4.59	4.14	3.68	3.31	3.14	2.82	2.15	1.38	0.67
	Output torque (N·m)	997	1060	1150	1210	1250	1320	1460	1720	1910
	Efficiency (%)	82.0	80.7	79.2	76.8	75.6	74.5	71.2	65.6	59.1
60	Input capacity (kW)	3.56	3.23	2.86	2.59	2.45	2.17	1.62	1.08	0.57
	Output torque (N·m)	904	969	1040	1100	1130	1180	1300	1540	1840
	Efficiency (%)	79.9	78.6	76.5	74.1	72.9	71.8	68.4	62.7	56.1

MA·MAO140

Reduction ratio	Capability	Input rotation speed (rpm)								
		1800	1500	1200	1000	900	750	500	250	100
10	Input capacity (kW)	22.4	20.3	17.8	16.0	15.2	13.6	10.7	6.92	3.07
	Output torque (N·m)	1120	1220	1320	1420	1500	1590	1840	2300	2450
	Efficiency (%)	94.9	94.4	93.6	93.1	92.8	92.4	90.1	87.4	83.7
15	Input capacity (kW)	16.5	14.8	13.1	12.2	11.8	10.5	8.60	3.80	2.17
	Output torque (N·m)	1220	1300	1420	1580	1690	1780	2130	2450	2450
	Efficiency (%)	93.1	92.3	91.3	90.7	90.4	89.6	86.8	83.4	79.0
20	Input capacity (kW)	13.1	11.8	10.3	9.38	8.80	7.85	6.16	3.85	1.66
	Output torque (N·m)	1270	1370	1470	1600	1650	1740	2000	2390	2450
	Efficiency (%)	91.9	91.0	90.1	89.4	88.6	87.7	85.2	81.6	77.2
25	Input capacity (kW)	10.1	9.06	8.01	7.14	6.76	6.05	4.71	2.93	1.39
	Output torque (N·m)	1210	1280	1400	1490	1550	1640	1860	2200	2450
	Efficiency (%)	90.4	89.4	88.5	87.5	86.5	85.6	82.9	78.9	74.0
30	Input capacity (kW)	9.28	8.26	7.43	6.97	6.77	6.01	4.94	2.11	1.28
	Output torque (N·m)	1290	1350	1500	1670	1790	1850	2170	2450	2450
	Efficiency (%)	87.7	86.2	84.7	83.7	83.2	81.8	77.6	72.6	66.7
40	Input capacity (kW)	7.75	7.01	6.20	5.62	5.29	4.77	3.69	1.64	1.00
	Output torque (N·m)	1400	1490	1620	1740	1790	1890	2110	2450	2450
	Efficiency (%)	85.4	84.0	82.6	81.3	80.0	78.7	75.1	69.9	64.0
50	Input capacity (kW)	5.80	5.23	4.65	4.19	3.96	3.58	2.75	1.77	0.86
	Output torque (N·m)	1270	1350	1470	1560	1610	1700	1870	2230	2450
	Efficiency (%)	82.8	81.3	79.8	78.1	76.7	75.3	71.5	65.9	59.6
60	Input capacity (kW)	4.41	3.99	3.52	3.17	3.02	2.75	2.12	1.37	0.73
	Output torque (N·m)	1120	1190	1290	1360	1400	1490	1640	1930	2310
	Efficiency (%)	80.1	78.4	76.8	74.9	73.4	71.9	67.7	61.8	55.3

※Use an output torque lower than the value shown in the table.

※The conditions of use are set by uniform load and 10 hours per day (service factor=1).

※If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

※The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this situation, refer to the theoretical starting efficiency value (A-19)

Rated Transfer Capability Table (10-hour continuous rating)

MA·MAO160

Reduction ratio	Capability	Input rotation speed (rpm)								
		1800	1500	1200	1000	900	750	500	250	100
10	Input capacity (kW)	30.6	27.9	24.5	21.8	20.8	18.6	14.6	9.45	4.43
	Output torque (N·m)	1540	1680	1830	1950	2050	2190	2530	3180	3570
	Efficiency (%)	95.2	95.0	94.1	93.6	93.3	93.0	90.8	88.2	84.5
15	Input capacity (kW)	22.7	21.2	18.4	17.0	16.3	15.1	12.5	7.39	3.12
	Output torque (N·m)	1680	1880	2020	2220	2360	2590	3140	3570	3570
	Efficiency (%)	93.5	93.1	92.0	91.3	91.0	90.7	87.7	84.4	80.1
20	Input capacity (kW)	18.7	17.0	14.9	13.5	12.6	11.3	8.82	5.57	2.43
	Output torque (N·m)	1820	1980	2130	2300	2390	2530	2870	3470	3570
	Efficiency (%)	92.3	91.5	90.4	89.7	89.3	88.6	85.4	81.7	77.1
25	Input capacity (kW)	14.2	12.7	11.1	10.0	9.45	8.52	6.61	4.12	2.00
	Output torque (N·m)	1710	1820	1960	2100	2200	2330	2630	3130	3570
	Efficiency (%)	91.3	90.2	89.1	88.4	87.8	86.7	83.7	79.7	74.9
30	Input capacity (kW)	12.8	11.8	10.4	9.67	9.35	8.56	7.02	4.20	1.83
	Output torque (N·m)	1790	1960	2130	2340	2500	2700	3170	3570	3570
	Efficiency (%)	88.5	87.5	85.9	84.8	84.3	83.6	79.0	74.2	68.2
40	Input capacity (kW)	10.7	9.75	8.61	7.80	7.36	6.63	5.16	3.32	1.47
	Output torque (N·m)	1960	2100	2270	2430	2530	2670	2960	3550	3570
	Efficiency (%)	86.3	84.7	83.0	81.9	81.3	79.9	75.3	70.0	63.8
50	Input capacity (kW)	8.00	7.33	6.44	5.81	5.42	4.94	3.83	2.48	1.23
	Output torque (N·m)	1780	1920	2070	2200	2250	2390	2650	3170	3570
	Efficiency (%)	84.2	82.5	80.8	79.7	78.6	77.0	72.6	67.0	60.8
60	Input capacity (kW)	6.18	5.68	4.97	4.45	4.22	3.83	3.01	1.94	1.03
	Output torque (N·m)	1600	1730	1850	1950	2020	2130	2380	2810	3350
	Efficiency (%)	81.8	79.9	78.1	76.9	75.5	73.8	69.2	63.3	56.9

- ※Use an output torque lower than the value shown in the table.
- ※The condition of use are set by uniform load and 10 hours per day (service factor=1)
- ※If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

※ The capability described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this situation, refer to the theoretical starting efficiency value (A-19)

Theoretical starting efficiency

(%)

Reduction ratio	10	15	20	25	30	40	50	60
MA25	65.6	—	47.3	—	41.4	31.4	20.6	21.9
MA32	59.0	—	45.8	—	37.3	31.3	29.0	27.5
MA40	59.0	—	45.8	—	37.3	31.3	30.3	27.5
MA50	70.0	63.7	62.0	58.8	48.9	46.7	43.0	39.7
MA63	69.5	62.9	61.4	58.9	47.9	45.9	43.0	39.5
MA80	70.3	64.1	60.7	58.4	49.4	45.1	42.4	38.5
MA100	70.0	63.7	62.1	58.8	48.9	46.7	43.0	39.7
MA125	70.0	63.7	62.0	58.4	48.9	46.7	42.5	40.0
MA140	69.7	63.2	61.7	57.9	48.3	46.3	42.0	37.7
MA160	70.3	64.1	60.6	58.2	49.4	45.0	42.3	38.5

- ※The starting efficiency shown above is calculated from the gear friction coefficient when the input rotation speed is 0. Therefore, lubricant friction losses, bearing friction losses and oil seal friction losses are not included. Actually, the values shown above will vary, depending on bearing precompression, lubricant viscosity at ambient temperature, and the degree of fit on the oil seal.

Rated Transfer Capability Table, with Motors

MASeries

MAKIJACE

Motor capacity · size · output torque by reduction ratio

Size	kW Reduction ratio	0.4		0.75		1.5		2.2		3.7		5.5	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)	
50	10	23.8	19.9	44.4	37.2								
	15	34.4	28.8	64.4	54.0								
	20	45.0	37.7	85.0	71.1								
	25	54.9	46.0	104	86.9								
	30	61.7	52.0	116	96.9								
	40	80.1	67.2										
	50	96.1	80.8										
	60	95.1	89.2										
63	10			45.0	37.8	89.9	76.0						
	15			65.3	54.9	130	111						
	20			85.3	71.6	172	144						
	25			104	87.7	185	175						
	30			118	100	211	200						
	40			152	129								
	50			182	156								
	60			173	164								
80	10					91.5	76.3	134	112	226	188		
	15					133	112	196	164	329	275		
	20					173	146	255	214	367	344		
	25					212	179	312	264				
	30					244	206	361	303				
	40					312	265						
	50					363	320						
	60					319	305						
100	10							135	113	227	189	337	282
	15							197	165	332	277	494	414
	20							260	217	437	365	597	546
	25							318	267	536	449		
	30							365	306	613	515		
	40							475	399				
	50							572	486				
	60							541	506				
125	10									229	191	340	283
	15									335	280	498	416
	20									441	368	655	547
	25									541	453	804	673
	30									623	525	927	780
	40									811	681	1180	1000
	50									980	826		
	60									969	904		
140	10											341	284
	15											500	418
	20											657	550
	25											807	676
	30											933	788
	40											1210	1010
	50											1350	1270
	60											1190	1120

※ The numbers shown in gray are our standard combinations.

※ For size 32 and 40, see page A-15

※ The 50Hz and 60Hz with a reduction ratio of 60 for all size and for 50Hz with a reduction ratio of 50 for size 80, the torque output from the motor will exceed the allowable output torque. Therefore, only use the product at torques below these values.

※ Output torque calculation formula $T=(9550kW)/N \times R \times \eta_s$

kW: Motor capacity N: Motor speed R: Reduction ratio η_s : Theoretical starting efficiency

※ The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this situation, refer to the theoretical starting efficiency value (A-19)

Input shaft equivalent inertial moment

Input shaft equivalent inertial moment

(X10⁻⁴kg · m²)

Type No.	Reduction ratio series	10	15	20	25	30	40	50	60
		50	MA	0.753	0.688	0.633	0.615	0.650	0.613
MAEN	1.07		1.00	0.938	0.905	0.965	0.968	0.948	0.945
MAO	0.768		0.695	0.633	0.618	0.653	0.615	0.605	0.605
MAOEN	1.08		1.01	0.938	0.908	0.968	0.970	0.948	0.378
63	MA	1.21	1.06	0.933	0.885	0.978	0.888	0.858	0.850
	MAEN	1.96	1.81	1.66	1.56	1.73	1.70	1.62	1.63
	MAO	1.22	1.07	0.938	0.890	0.978	0.890	0.858	0.850
	MAOEN	1.97	1.82	1.67	1.57	1.73	1.71	1.62	1.63
80	MA	3.33	2.87	2.59	2.37	2.59	2.44	2.35	2.33
	MAEN	5.62	5.15	4.78	4.73	4.87	4.88	4.86	4.86
	MAO	3.40	2.90	2.60	2.44	2.59	2.44	2.35	2.33
	MAOEN	5.68	5.18	4.80	4.74	4.88	4.88	4.86	4.86
100	MA	8.44	7.14	6.05	5.70	6.36	5.62	8.05	5.36
	MAEN	14.3	13.0	11.8	12.7	13.3	12.5	12.5	12.6
	MAO	8.58	7.20	6.08	5.73	6.37	5.63	5.46	5.37
	MAOEN	14.5	13.1	11.9	12.7	13.3	12.5	12.5	12.6
125	MA	29.5	25.7	24.4	23.4	23.5	22.6	22.2	21.6
	MAO	29.9	25.9	24.5	23.4	23.5	22.6	22.2	21.6
140	MA	51.3	50.9	45.7	44.7	47.0	43.6	43.4	43.5
	MAO	58.1	51.2	45.9	44.8	47.1	43.7	43.4	43.5
160	MA	99.0	87.2	80.4	76.1	80.2	76.5	73.6	73.1
	MAO	101	88.0	80.9	76.4	80.4	76.6	73.6	73.2

Input shaft equivalent inertia moment of Type No. 25, 32 and 40.

(X10⁻⁴kg · m²)

Type	Type No.	Reduction ratio					
		10	20	30	40	50	60
MA	25	0.065	0.063	0.06	0.061	0.063	0.059
	32	0.11	0.10	0.10	0.09	0.09	0.09
	40	0.25	0.19	0.20	0.18	0.18	0.19
MAO	25	0.065	0.063	0.06	0.061	0.063	0.059
	32	0.11	0.10	0.10	0.09	0.09	0.09
	40	0.24	0.19	0.20	0.18	0.18	0.19

Motor inertia moment

(X10⁻⁴kg · m²)

Motor capacitykW	0.4	0.75	1.5	2.2	3.7	5.5
Without brake	8.25	16.8	32.5	52.5	163	300
With brake	15.0	37.5	67.5	60.0	170	315

※GD=4I

When you convert into GD, please quadruple value(I) of table.

■The motor might change by the convenience of production, and please ask us each time.

Backlash standard table (BS721 5 class)

Standard specification

Size	Reduction ratio	*Output shaft backlash	
		Radian display ($\times 10^{-3}$ rad.)	Angle display (deg.)
25	10 · 30	8.33~20.74	0.48~1.19
	20 · 40 · 60	7.19~17.65	0.41~1.01
	50	6.58~16.01	0.38~0.92
32	10 · 30	2.27~8.03	0.13~0.46
	20 · 40	2.27~7.68	0.13~0.44
	50	2.27~7.50	0.13~0.43
	60	2.27~7.33	0.13~0.42
40	10 · 30	2.09~6.81	0.12~0.39
	20 · 40	1.92~6.81	0.11~0.37
	50	1.92~6.11	0.11~0.35
	60	1.92~6.11	0.11~0.35
50	10 · 15 · 30	1.75~5.59	0.10~0.32
	20 · 40	1.57~5.06	0.09~0.29
	25 · 50	1.57~4.89	0.09~0.28
	60	1.57~4.71	0.09~0.27
63	10 · 15 · 30	1.57~4.89	0.09~0.28
	20 · 40	1.57~4.36	0.09~0.25
	25 · 50	1.40~4.19	0.08~0.24
	60	1.40~4.01	0.08~0.23
80	10 · 15 · 30	1.40~4.19	0.08~0.24
	20 · 40	1.22~3.84	0.07~0.22
	25 · 50	1.22~3.49	0.07~0.20
	60	1.22~3.49	0.07~0.20
100	10 · 15 · 30	1.22~3.67	0.07~0.21
	20 · 40	1.22~3.32	0.07~0.19
	25 · 50	1.05~3.14	0.06~0.18
	60	1.05~2.97	0.06~0.17
125	10 · 15 · 30	1.22~3.32	0.07~0.19
	20 · 40	1.05~2.96	0.06~0.17
	25 · 50	1.05~2.79	0.06~0.16
	60	1.05~2.62	0.06~0.15
140	10 · 15 · 30	1.05~3.14	0.06~0.18
	20 · 40	1.05~2.79	0.06~0.16
	25 · 50	1.05~2.62	0.06~0.15
	60	0.87~2.44	0.05~0.14
160	10 · 15 · 30	1.05~2.97	0.06~0.17
	20 · 40	1.05~2.62	0.06~0.15
	25 · 50	0.87~2.44	0.05~0.14
	60	0.87~2.27	0.05~0.13

※Output shaft backlash of each size becomes the maximum value of standard table except the thrust on the input shaft.

MA and MAO allowable thrust load on the output shaft

Size	25	32	40	50	63	80	100	125	140	160
Allowable thrust load (N)	725	784	980	3724	4116	5880	6860	9800	10780	12740

Commercial components • Socket machining size

Commercial components list

Size	Bearing					Oil seal			Oil plug	Oil drain plug	Grease nipple	Oil level gauge
	Input shaft	Output solid shaft		Output hollow shaft		Input shaft	Output solid shaft	Output hollow shaft				
		W.B.K	On K type shaft	W.B.K	On K type shaft							
50	32005	6206	6206UU	6009	6009UU	GMHS 24408-10J	HTC 295011	D 406211	G3/8	R3/8	—	207
		6009										
63	30205	6207	6207UU	6010	6010UU	GMHS 24408-10J	HTC 345511	D 456812	G3/8	R3/8	—	257
		6010										
80	32206	32209	32209	32013	32013	HRE 295011	HTC 446812	D 608212	G1/2	R1/2	R1/8	308
		32013										
100	32207	32210	32210	32015	32015	HTC 345511	HTC 497212	D 709513	G1/2	R1/2	R1/8	308
		32015										
125	32210	32214	32214	32019	32019	HTC 446812	D 658812	D 9011513	G1/2	R1/2	R1/8	308
		32019										
140	30310	32215	32215	32021	32021	HTC 446812	D 709513	D 10012513	G1/2	R1/2	R1/8	4010
		32021										
160	30311	32216	32216	32024	32024	D 507212	D 7510013	D 11514514	G1/2	R1/2	R1/8	4010
		32024										

※HTC of oil seal is for MA size dimensions.

※The up side is a bearing of the cover side and the down side is a bearing of the casing side at space of W.B.K output solid shaft of a bearing.

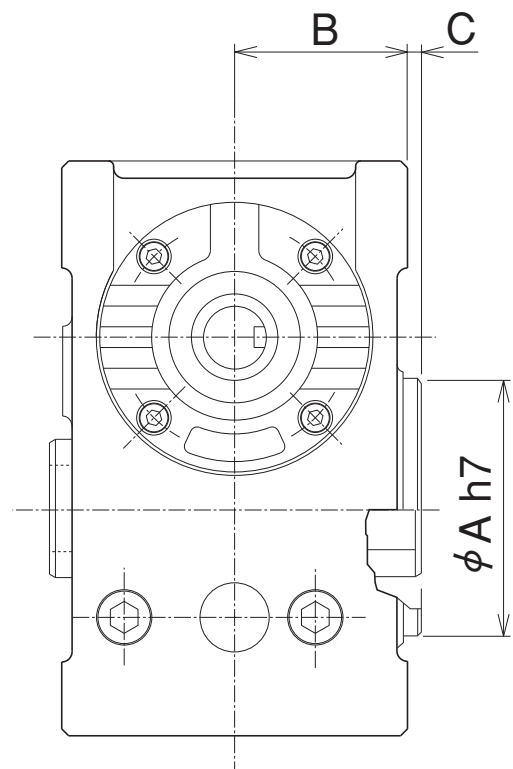
Commercial components list for size 25, 32 and 40

Type	Size	Bearing		Oil seal		Seal cap		Oil plug	C type stopper ring
		Input shaft	Output shaft	Input shaft	Output shaft	Input shaft	Output shaft		
MA	25	6001NR	6004	S12285	S15307	286	308	R1/8	
MAO					S20307				
	32	30202	6005	TC14287	HTC24408	355		R1/4	R35
	40	30203	6007	TC15307	TC335011	408		R1/4	R40

※Oil seal is for MA dimensions.

Socket machining size of MAO output shaft cover (option).

Size	A	B	C
50	75	50	4
63	95	55	4
80	135	65	5
100	150	75	5
125	200	95	5



Specifications

(1) Motor

Poles	Power (kW)	Full load currents (A)			Full load rotation speed (rpm)		
		50Hz	60Hz		50Hz	60Hz	
		200V		220V	200V		220V
4	0.4	2.3	2.0	2.0	1420	1700	1710
	0.75	3.5	3.2	3.1	1420	1700	1710
	1.5	6.5	6.0	5.8	1430	1720	1730
	2.2	9.0	8.5	8.0	1430	1720	1730
	3.7	15	14	13.5	1430	1720	1735
	5.5	22	21	19.5	1450	1735	1750

(2) Brake

Motor power (kW)	Rated control torque (N·m)	Braking delay time (sec)			Brake power-supply voltage (V)	Brake voltage DC (V)	Brake electric current DC (A)
		AC disconnect	DC disconnect	Individual AC disconnect			
0.4	4.0	0.15~0.6	0.03~0.09	0.1~0.3	200~220	90~99 (At the time of absorption)	0.28~0.31
0.75	7.7	0.15~0.6	0.03~0.09	0.1~0.3			0.33~0.37
1.5	15	0.15~0.6	0.03~0.09	0.1~0.3			0.34~0.38
2.2	23	0.15~0.6	0.03~0.09	0.1~0.3		0.35~0.4	
3.7	39	0.55	0.04	0.12		90~99 (At the time of absorption) 180~198	0.46~0.51
5.5	54	0.70	0.04	0.12			0.60~0.65

Specification of 32·40

(1) Motor

Poles	Power (kW)	Rated current value (A)			Rated rotation speed (rpm)		
		50Hz	60Hz		50Hz	60Hz	
		200V		220V	200V		220V
4	0.1	0.70	0.60	0.65	1400	1685	1700
	0.2	1.50	1.30	1.40	1415	1700	1720
	0.4	2.50	2.40	2.30	1380	1650	1680

(2) Brake

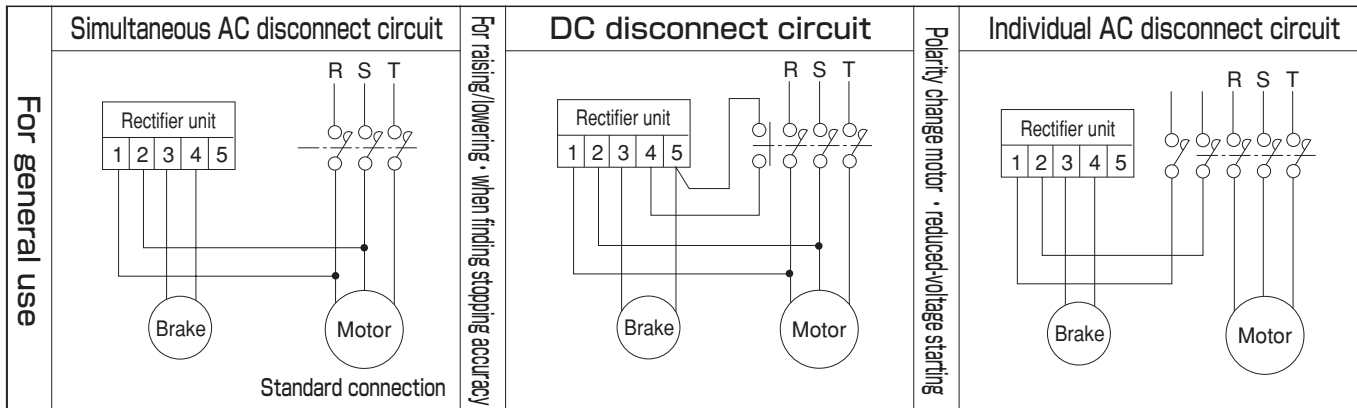
Motor power (kW)	Rated control torque (N·m)	Braking delay time (× 10 ⁻³ sec)			Brake		
		Operation	Simultaneous AC disconnect	Individual DC disconnect	Power supply voltage (V)	Voltage (V)	Voltage (A)
0.1	0.98	At the time of absorption	40	40	200~220	90	0.133
		At the time of opening	150	60			
0.2	1.96	At the time of absorption	40	40			
		At the time of opening	110	40			
0.4	3.92	At the time of absorption	40	40			0.201
		At the time of opening	80	20			

■ The motor might change by the convenience of production, and please ask us each time.

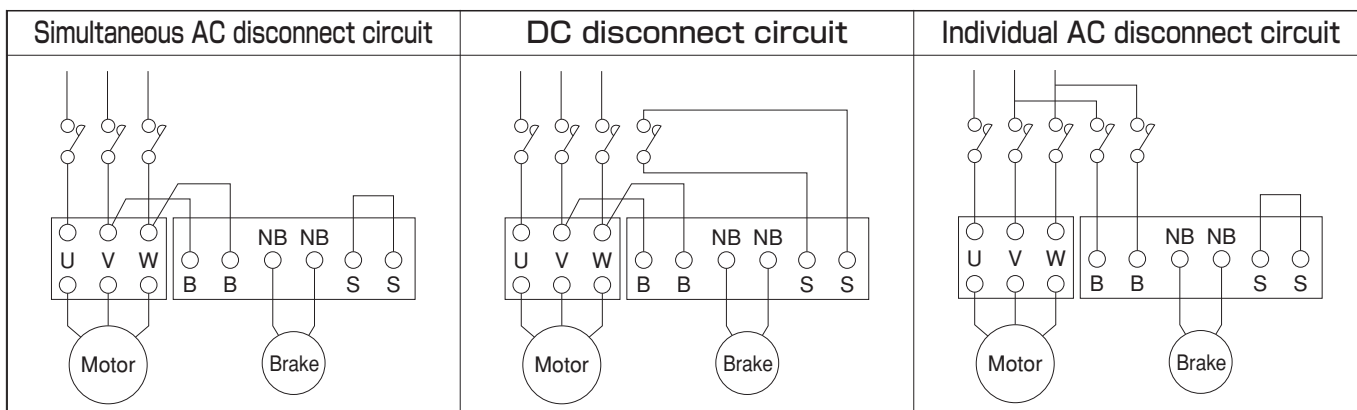
Wiring

(1) Connections

a. For 0.4-2.2kW



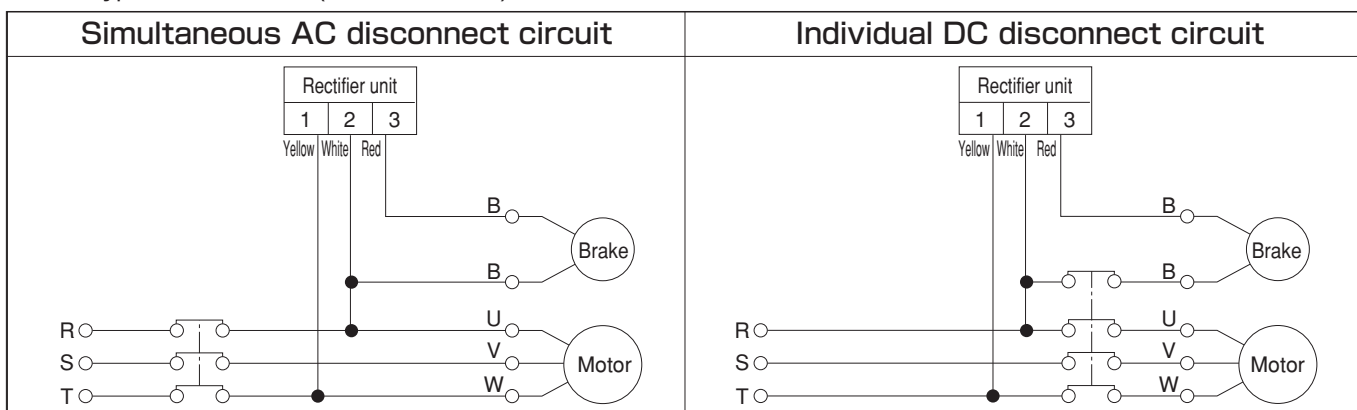
b. For 3.7 and 5.5kW



Note: When you use an inverter or a reducer-voltage starter, connect the primary side of the brake or rectifier unit (power module) to the power side of the inverter or reduced-voltage starter.

Note: When handling a 400V power supply with a 3.7 or 5.5 kW brake, use a transformer (auto transformer with a capacity of 200 VA or more) on the primary side of the rectifier unit (power module).

c. Types 32 and 40 (for 0.1-0.4kW)



(2) Connections (grounding)

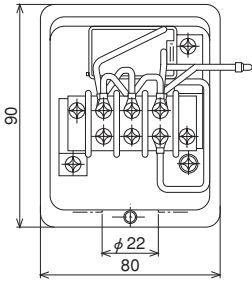
A grounding terminal is provided in the terminal box, on the side of the side box under the frame. Be sure to connect it to a qualified ground point. In particular, the ground connection for mobile or movable machines is required by the Ordinance for Industrial Safety and Hygiene. Be sure to connect to a ground point using a thick ground wire, to prevent electrical accidents and shocks.

※For details about handling the product, see the motor manufacturer's instruction manual.

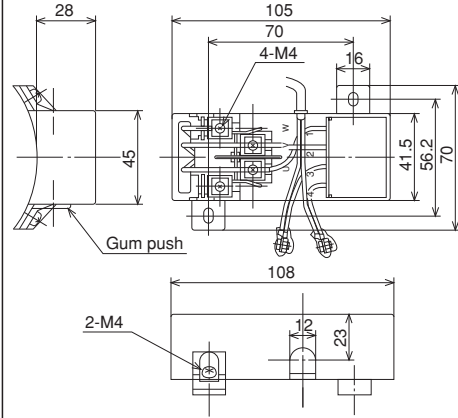
Motor terminal box

Terminal box

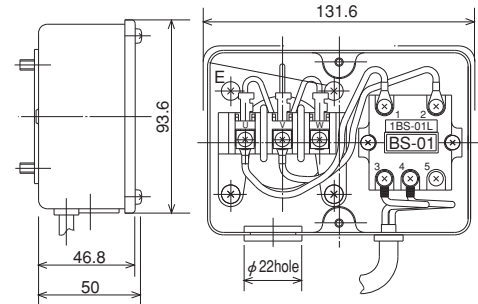
Size 32·40(0.1~0.4kW)



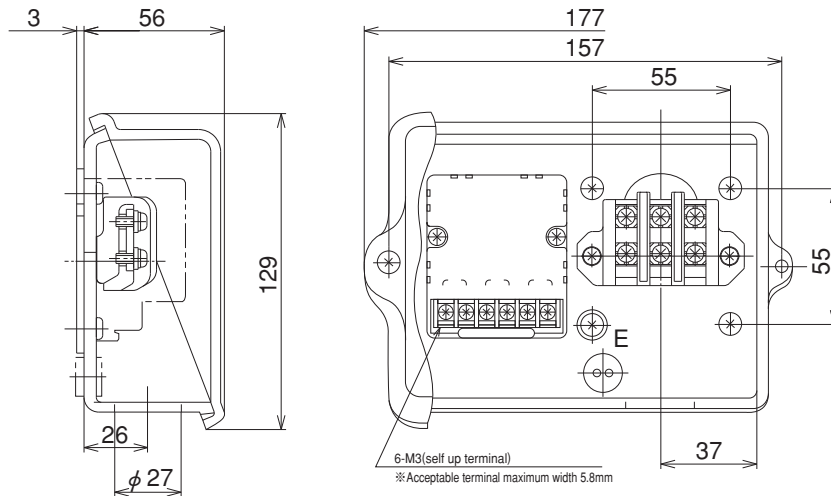
0.4kW



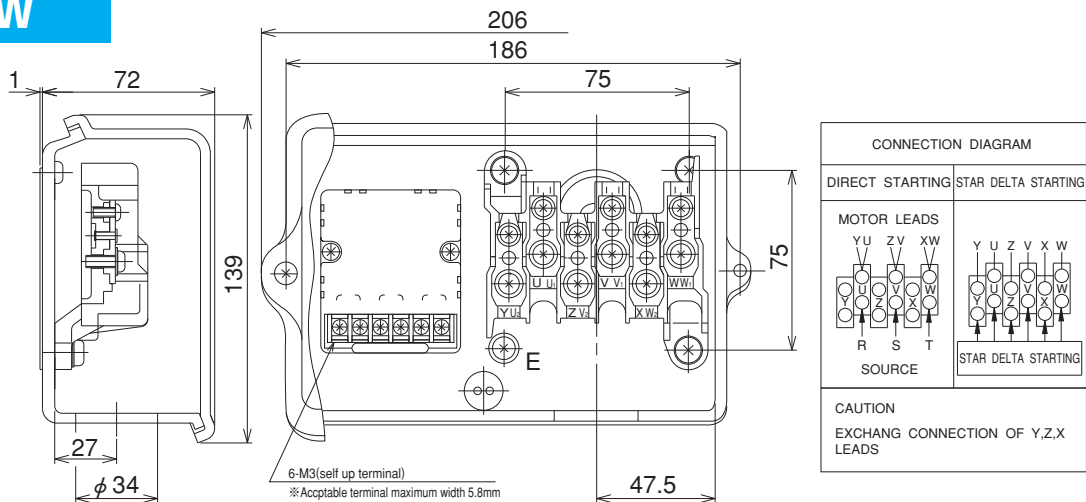
0.75~2.2kW



3.7kW



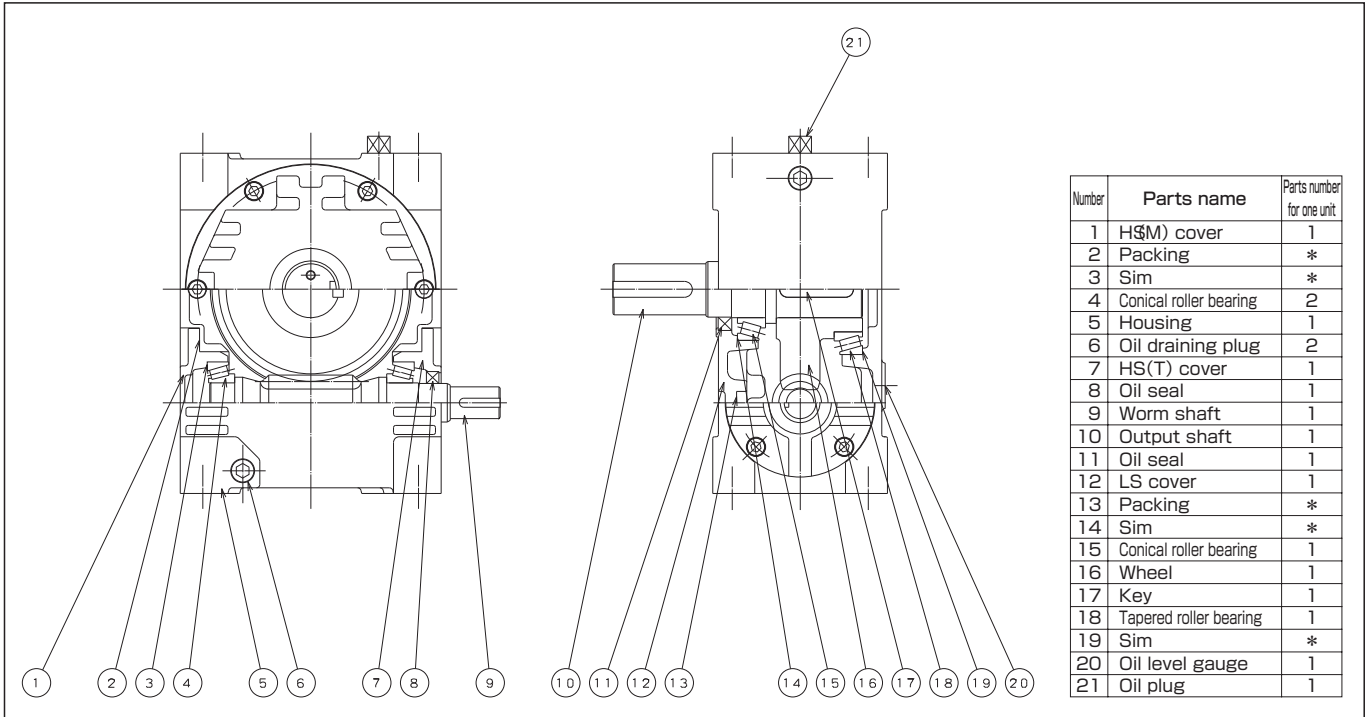
5.5kW



■The motor might change by the convenience of production, and inquire in every case, please.

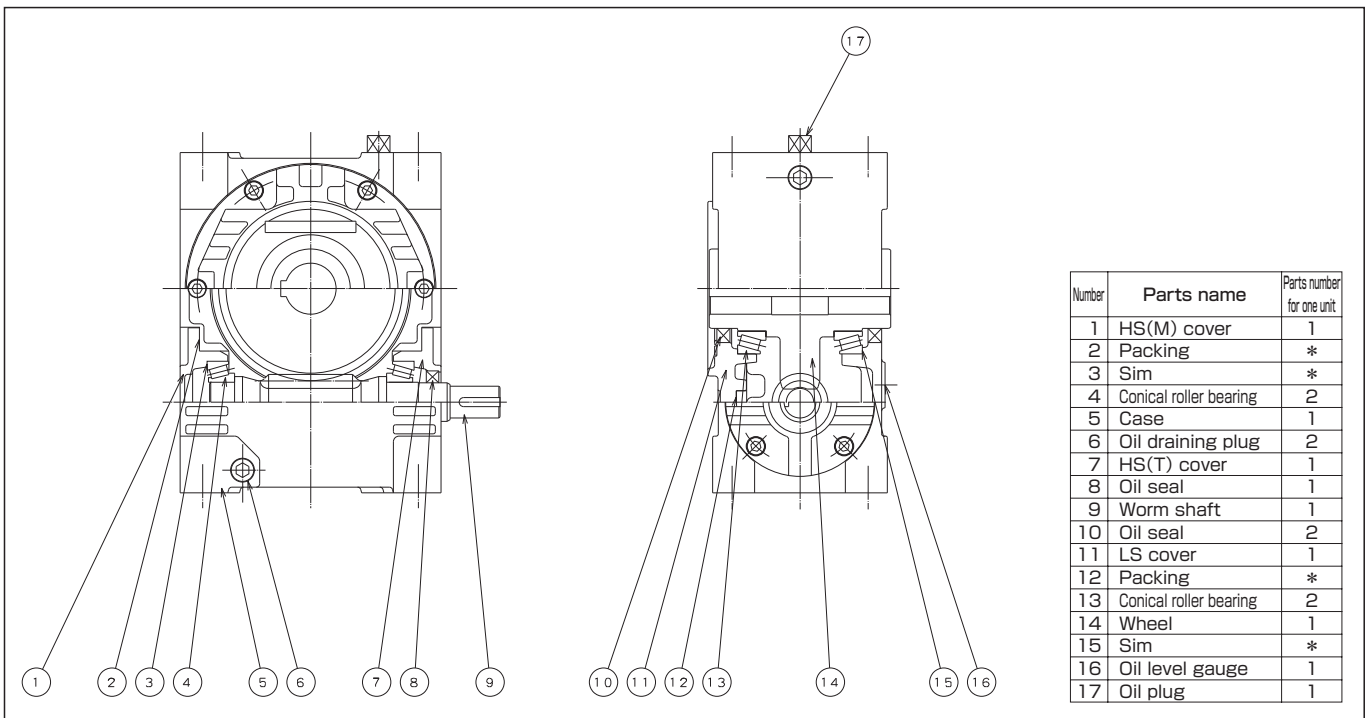
Construction drawings

MA

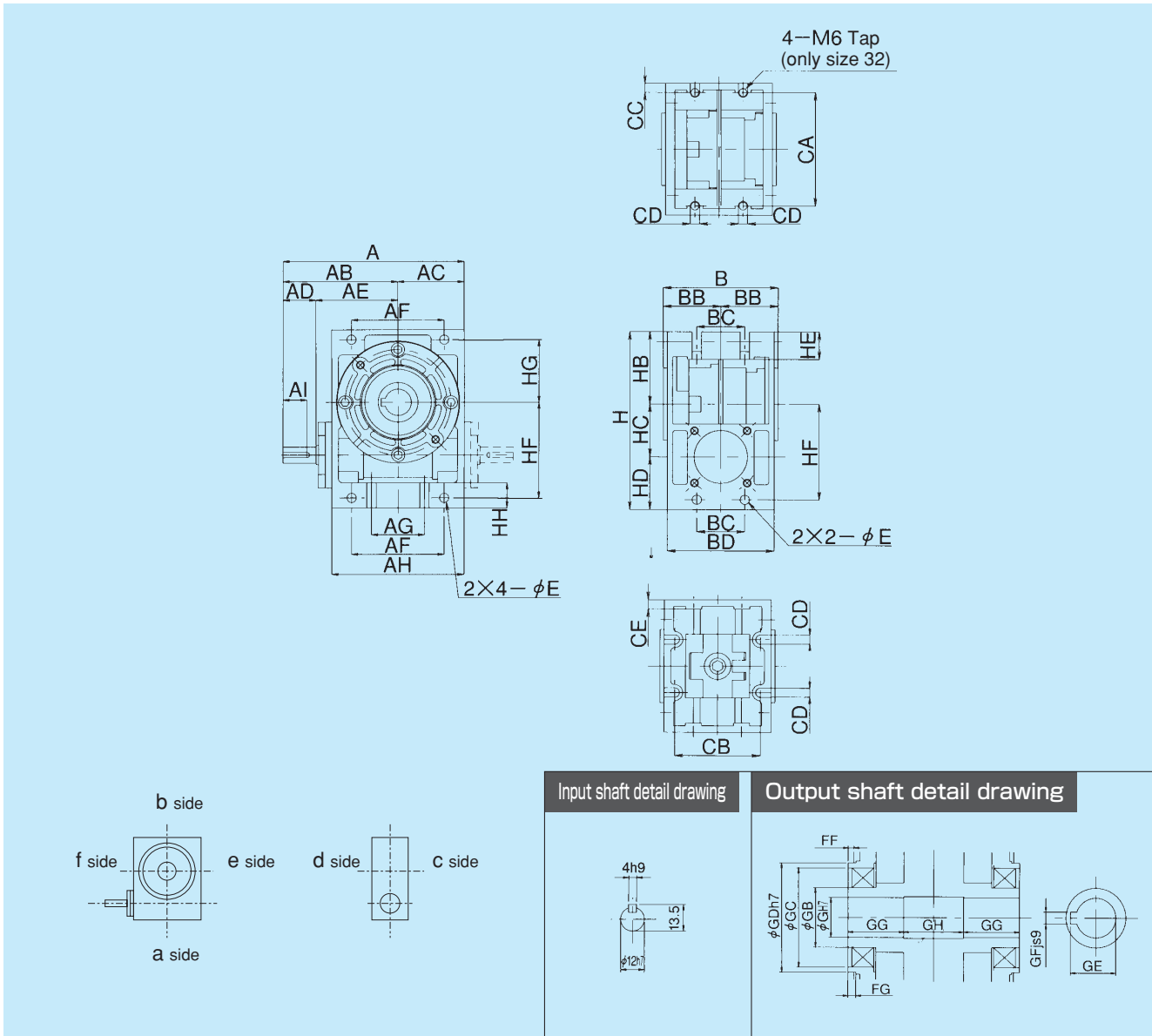


※Type No. 32 and 40 are different specifications, please contact us

MAO



※Type No. 32 and 40 are different specifications, please contact us.



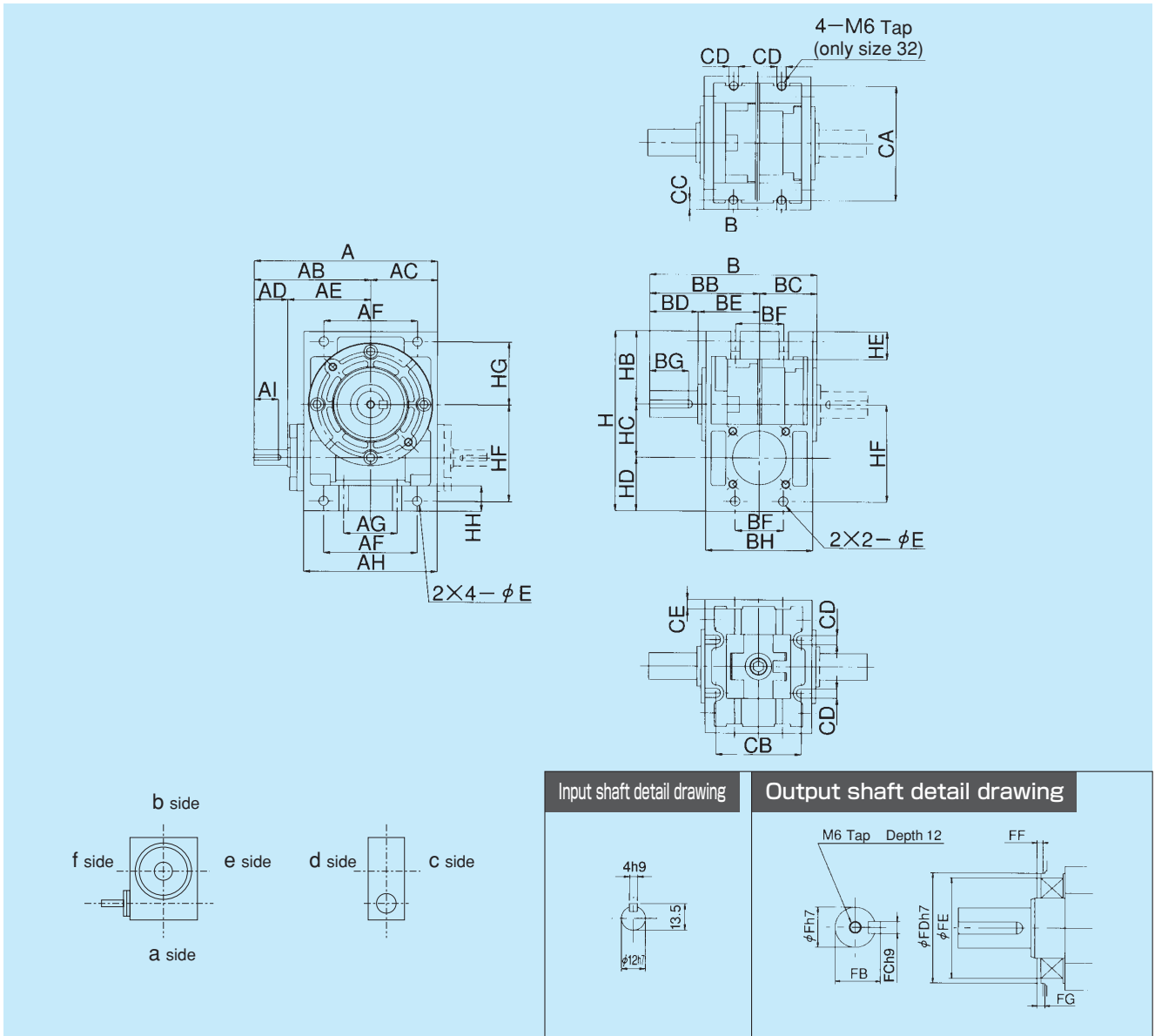
MA032·40

Size	A	AB	AC	AD	AE	AF	AG	AH	AI	B	BB	BC	BD	CA	CB	CC	CD	CE	Weight kg
32	122	79.5	42.5	25	54.5	60	30	85	18	70	35	24	64	75	50	6.0	7.0	6.0	1.4
40	137	87	50	25	62.0	70	40	100	18	86	43	36	80	90	64	7.0	7.0	7.0	2.4

Size	H	HB	HC	HD	HE	HF	HG	HH	E	FF	FG	G	GB	GC	GD	GE	GF	GG	GH
32	110	44	32	34	20	60	38	16	7.0	3.0	4.0	15	24	40	45	17.3	5.0	24	22
40	135	55	40	40	21	72.5	47.5	19	7.0	3.0	4.0	20	30	50	55	22.8	6.0	28	30

Installation dimensions table

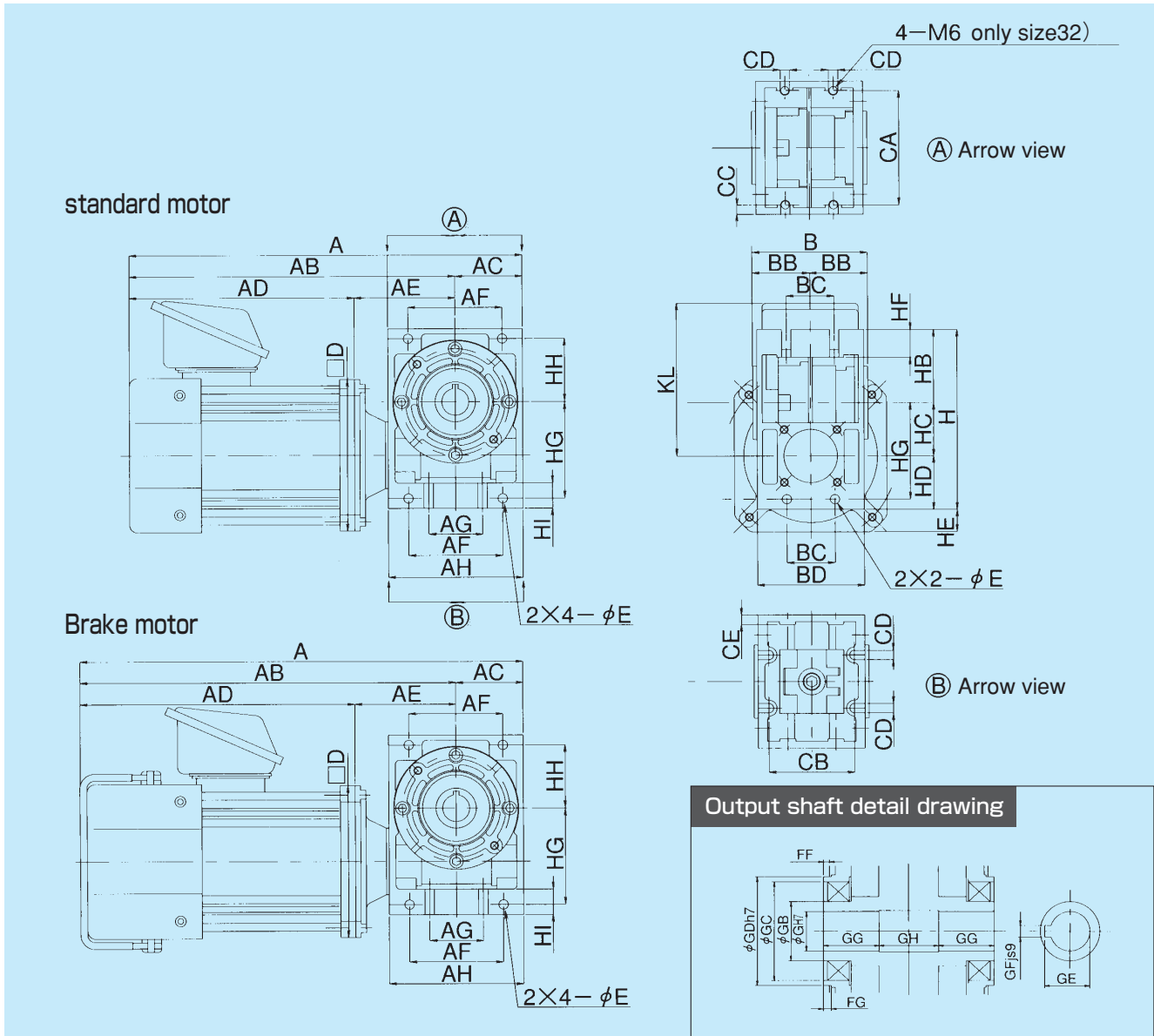
Size	a side			b side			c and d side			e and f side		
	Thickness HH	Installation pitch AG×CB	Application bolt Number-size	Thickness HE	Installation pitch BC×CA	Application bolt Number-size	Thickness CE	Installation pitch AF×(HF+HG)	Application bolt Number-size	Thickness CC	Installation pitch BC×(HF+HG)	Application bolt Number-size
32	16	30×50	4-M6	20	24×75	4-M6	6	60×98	4-M6	6	24×98	4-M6
40	19	40×60	4-M6	21	36×90	4-M6	7	70×120	4-M6	7	36×120	4-M6



MA32·40

Size	A	AB	AC	AD	AE	AF	AG	AH	AI	B	BB	BC	BD	BE	BF	BG	BH	Weight kg
32	122	79.5	42.5	25	54.5	60	30	85	18	100	65	35	28	37	24	22.5	64	1.4
40	137	87	50	25	62.0	70	40	100	18	125	82	43	36	46	36	29	80	2.4

Size	CA	CB	CC	CD	CE	H	HB	HC	HD	HE	HF	HG	HH	E	F	FB	FC	FD	FE	FF	FG
32	75	50	6.0	7.0	6.0	110	44	32	34	20	60	38	16	7.0	16	18	5.0	45	40	3.0	4.0
40	90	64	7.0	7.0	7.0	135	55	40	40	21	72.5	47.5	19	7.0	20	22.5	6.0	55.0	50	3.0	4.0



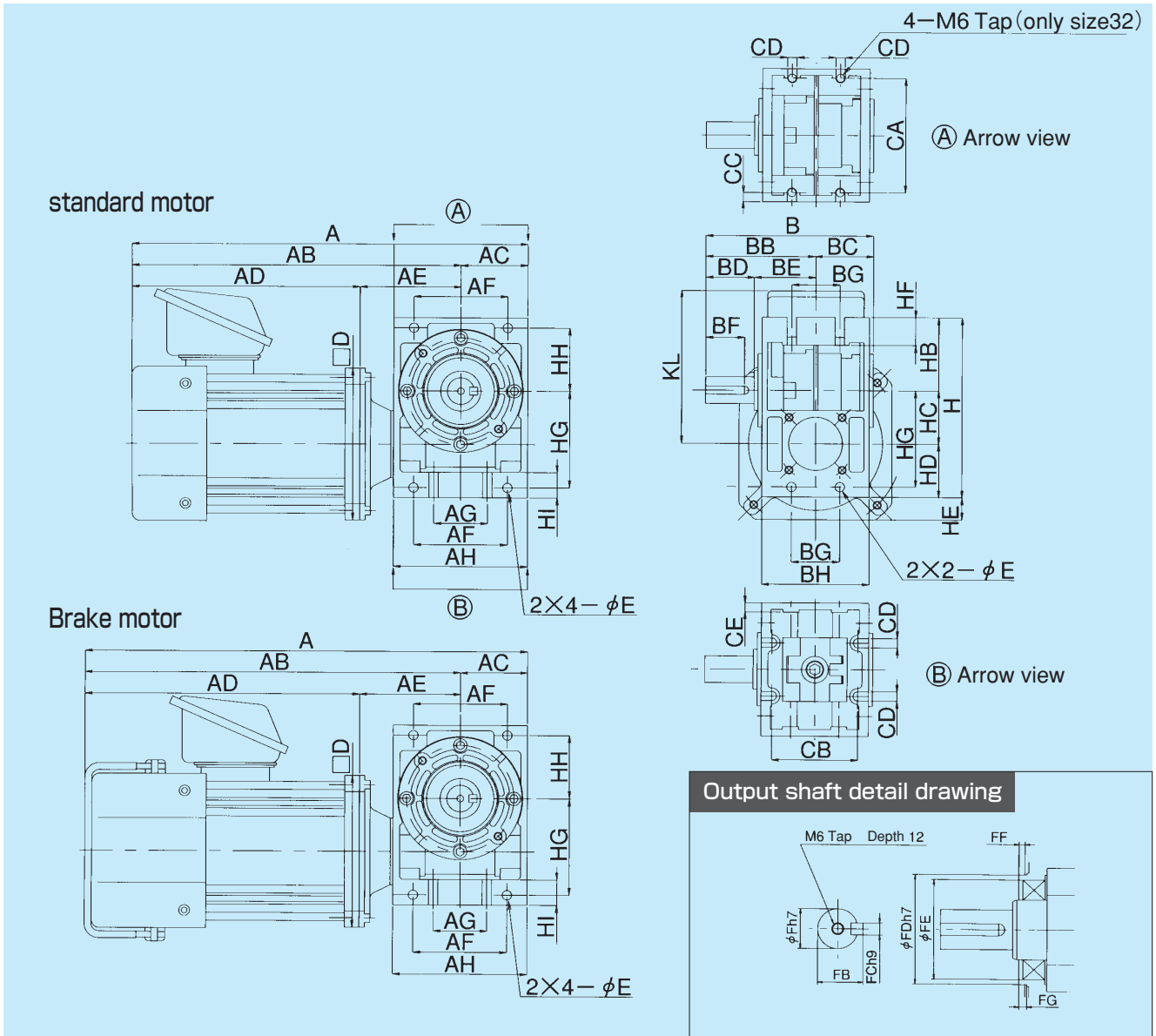
■ The motor might change by the convenience of production, and please ask us each time.

MA032·40 Dimensions with motor

Size	Motor capacity (kW)	AC	AE	AF	AG	AH	B	BB	BC	BD	CA	CB	CC	CD	CE	D	E	FF	FG
32	0.1	42.5	67.5	60	30	85	70	35	24	64	75	50	6.0	7.0	6.0	114	7.0	3.0	4.0
	0.2																		
40	0.2	50	75.0	70	40	100	86	43	36	80	90	64	7.0	7.0	7.0	114	7.0	3.0	4.0
	0.4																		

Size	Motor capacity (kW)	H	HB	HC	HD	HF	HG	HH	HI	G	GB	GC	GD	GE	GF	GG	GH
32	0.1	110	44	32	34	20	60	38	16	15	24	40	45	17.3	5.0	24	22
	0.2																
40	0.2	135	55	40	40	21	72.5	47.5	19	20	30	50	55	22.8	6.0	28	30
	0.4																

Size	Motor capacity (kW)	With motor					With brake motor						
		A	AB	AD	HE	KL	Weight kg	A	AB	AD	HE	KL	Weight kg
32	0.1	261	218.5	151			5.4	298	255.5	188			7.4
	0.2	279	236.5	169	24	116	6.4	316	273.5	206	35	116	8.4
40	0.2	294	244	169			7.4	321	279	206			9.4
	0.4	314	264	189	18	116	8.4	351	301	226	29	116	10.4



■The motor might change by the convenience of production, and please ask us each time.

MA032·40 Dimensions with motor

Size	Motor capacity (kW)	AC	AE	AF	AG	AH	B	BB	BC	BD	BE	BF	BG	BH	CA	CB	CC	CD	CE
32	0.1	42.5	67.5	60	30	85	100	65	35	28	37	22.5	24	64	75	50	6.0	7.0	6.0
	0.2																		
40	0.2	50	75.0	70	40	100	125	82	43	36	46	36	29	80	90	64	7.0	7.0	7.0
	0.4																		

Size	Motor capacity (kW)	H	HB	HC	HD	HF	HG	HH	HI	D	E	F	FB	FC	FD	FE	FF	FG
32	0.1	110	44	32	34	20	60	38	16	114	7.0	16	18	5	45	40	3.0	4.0
	0.2																	
40	0.2	135	55	40	40	21	72.5	47.5	19	114	7.0	20	22.5	6.0	55.0	50	3.0	4.0
	0.4																	

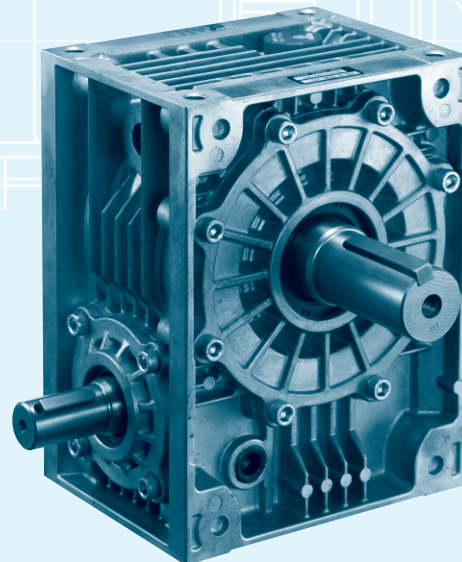
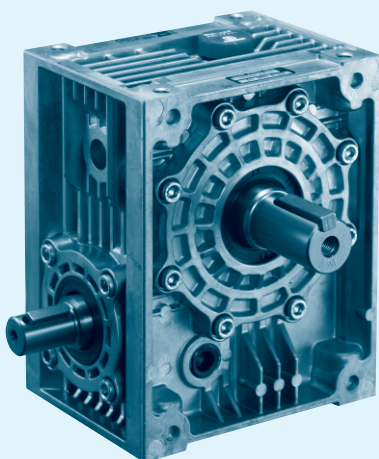
Size	Motor capacity (kW)	With motor						With brake motor					
		A	AB	AD	HE	KL	Weight kg	A	AB	AD	HE	KL	Weight kg
32	0.1	261	218.5	151			5.4	298	255.5	188			7.4
	0.2	279	236.5	169	24	116	6.4	316	273.5	206	35	116	8.4
40	0.2	294	244	169			7.4	321	279	206			9.4
	0.4	314	264	189	18	116	8.4	351	301	226	29	116	10.4

Aluminum dycast series MAL50/MAL63 are now available

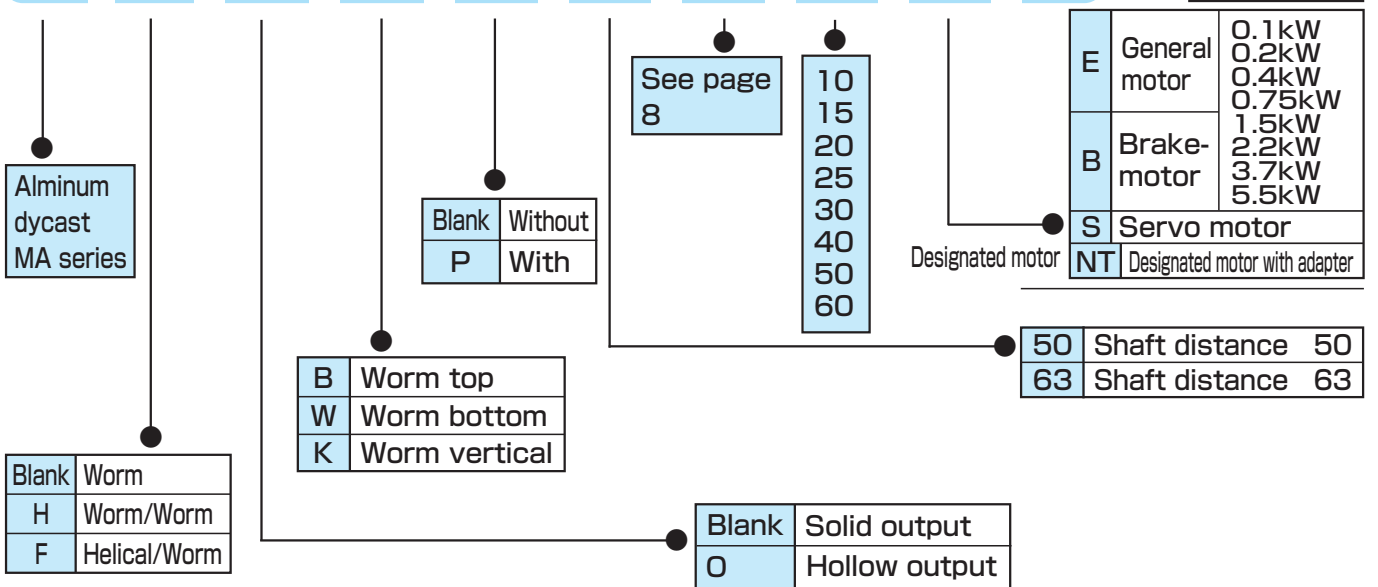
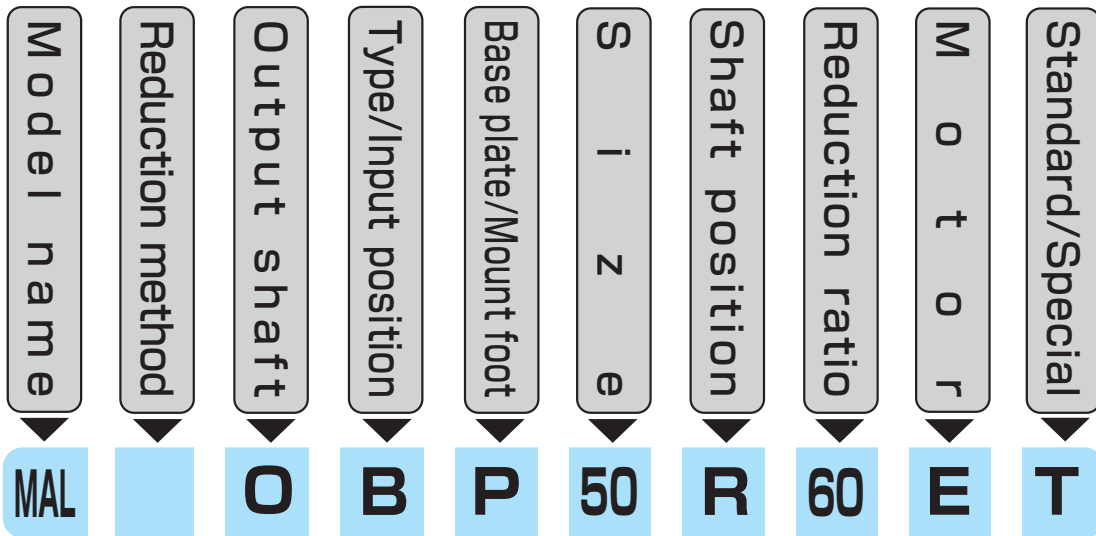
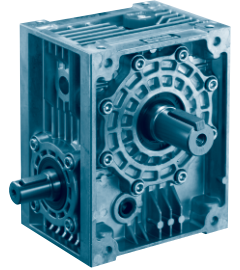
MAL series High Efficiency Worm Speed Reducer

Features

- **Weight reduced**
Aluminum dycast housing has reduced the weight by 45%.
- **Compact design with high thermal rating**
Thermal rating highly improved. (Compare with current model, 200% up)
- **Wide rang models**
Wide rang models solid/hollow output flange for your solution.



Nominal type



Specification

Standard type

No	Item	Specification
1	Size	50 63
2	Ratio	10 (15) 20 (25) 30 40 50 60
3	Output shaft	Solid (MAL) Hollow (MALO)
4	Input position	MALB (W, Bottom) MALW (W, Top) MALK (W, Vertical)
5	Input type	Solid shaft
		With motor
		Brake motor, servo
6	Key way	JIS B 1301-1996 (parallel key)
7	Worm	Right hand twist

Shaft position, rotation direction – see page A-8

Data sheet. Power and torque ratings – see page A-16

Theoretical start up efficiency – see page A-19

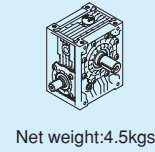
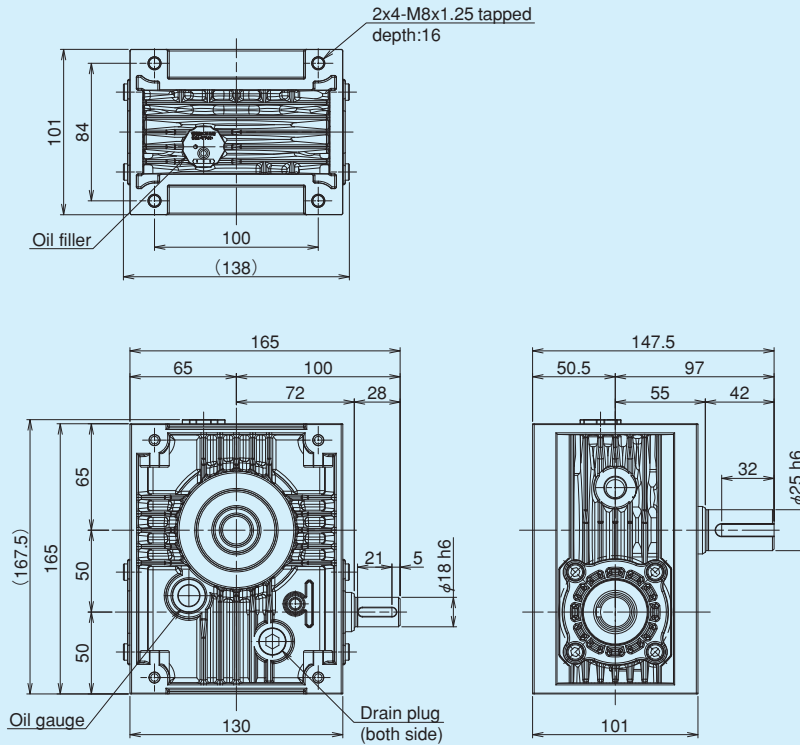
Data sheet. Inertial moment – see page A-21

Backlash – see page A-22

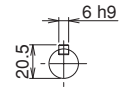
MALB50/MALOB50 Dimensions

MAKIAACE

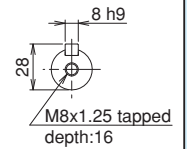
MALB50



Shaft details

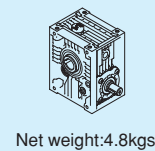
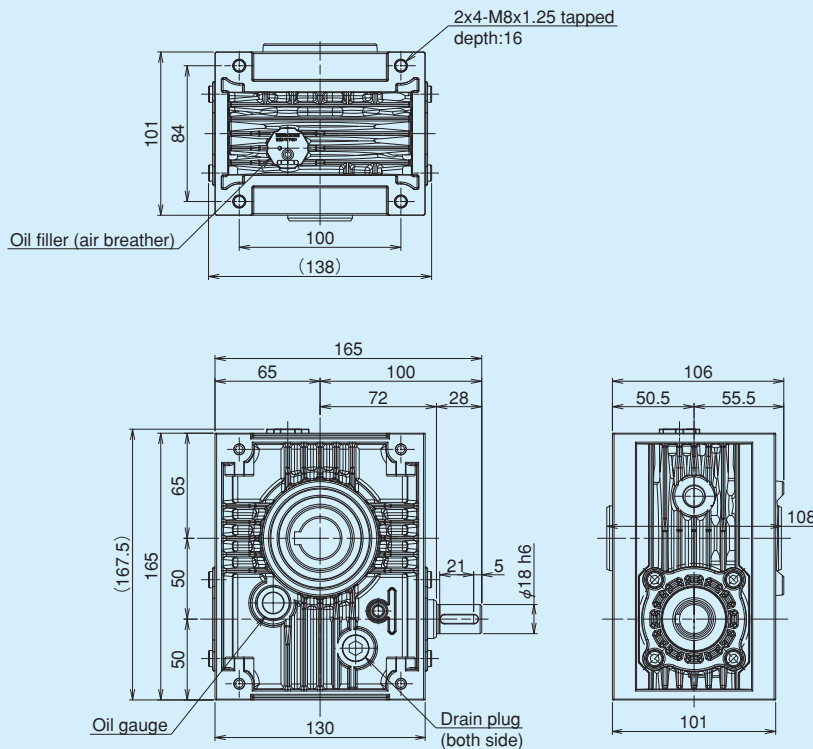


Input shaft

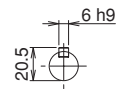


Output shaft

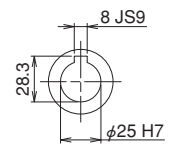
MALOB50



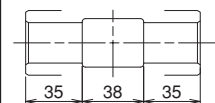
Shaft details



Input shaft



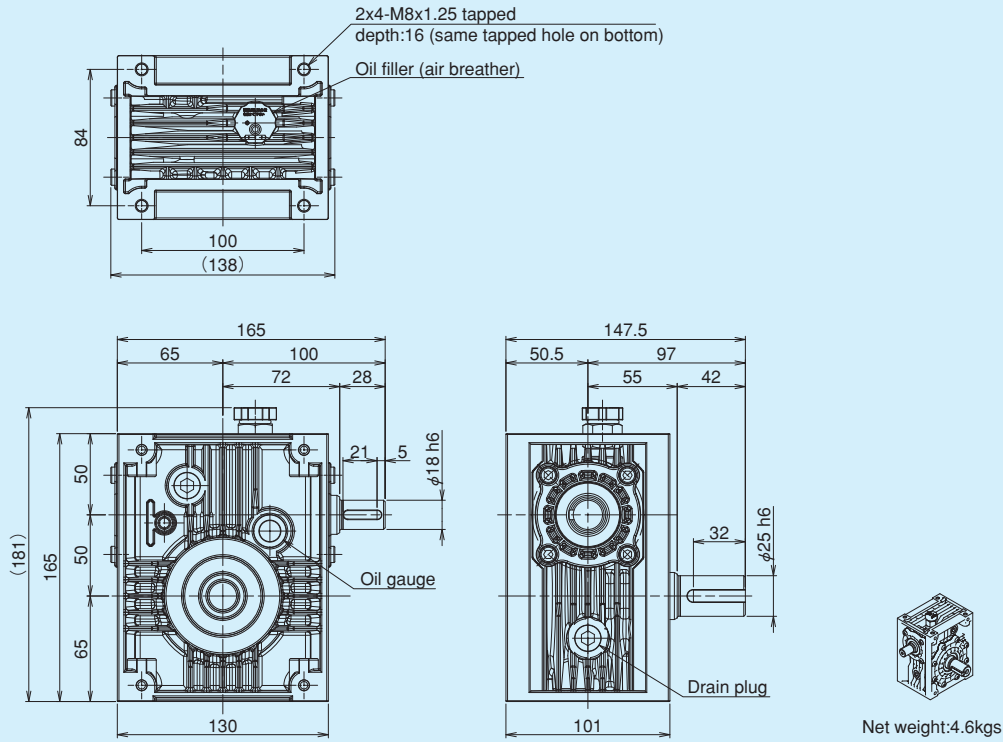
Output shaft



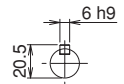
Dimensions of output shaft

MALW50/MALOW50 Dimensions

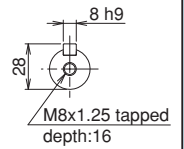
MALW50



Shaft details

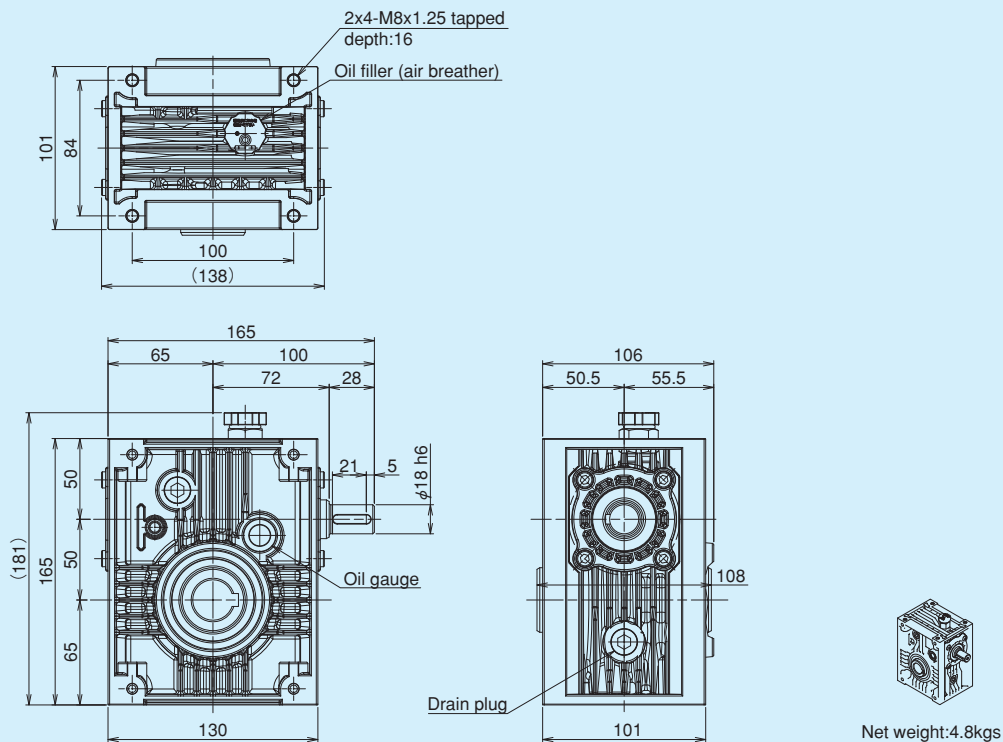


Input shaft

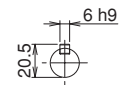


Output shaft

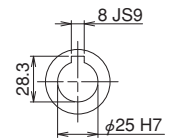
MALOW50



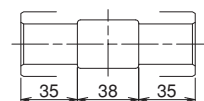
Shaft details



Input shaft



Output shaft

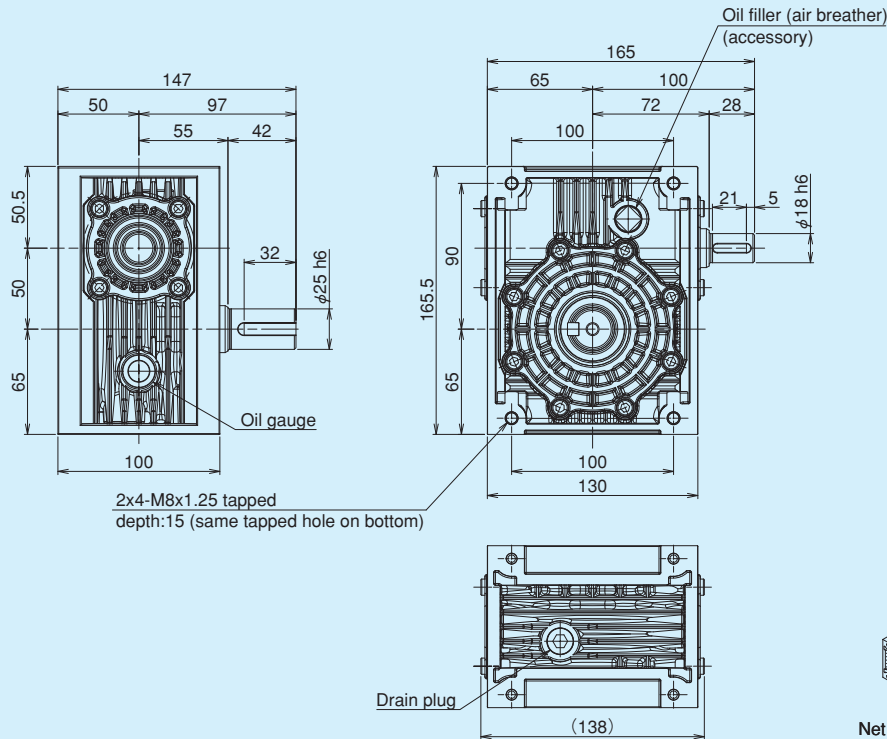


Dimension of output shaft

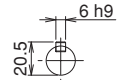
MALK50/MALOK50 Dimensions

MAKIAACE

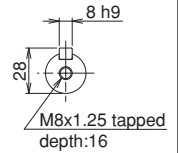
MALK50



Shaft details

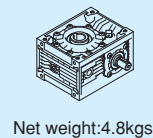
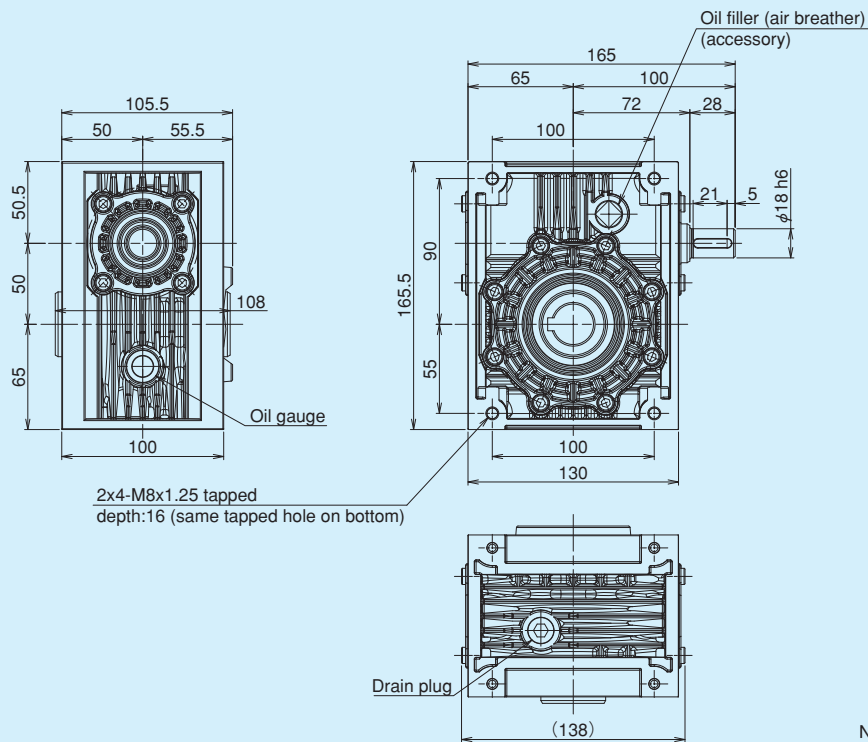


Input shaft

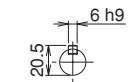


Output shaft

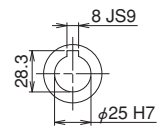
MALOK50



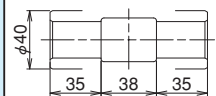
Shaft details



Input shaft



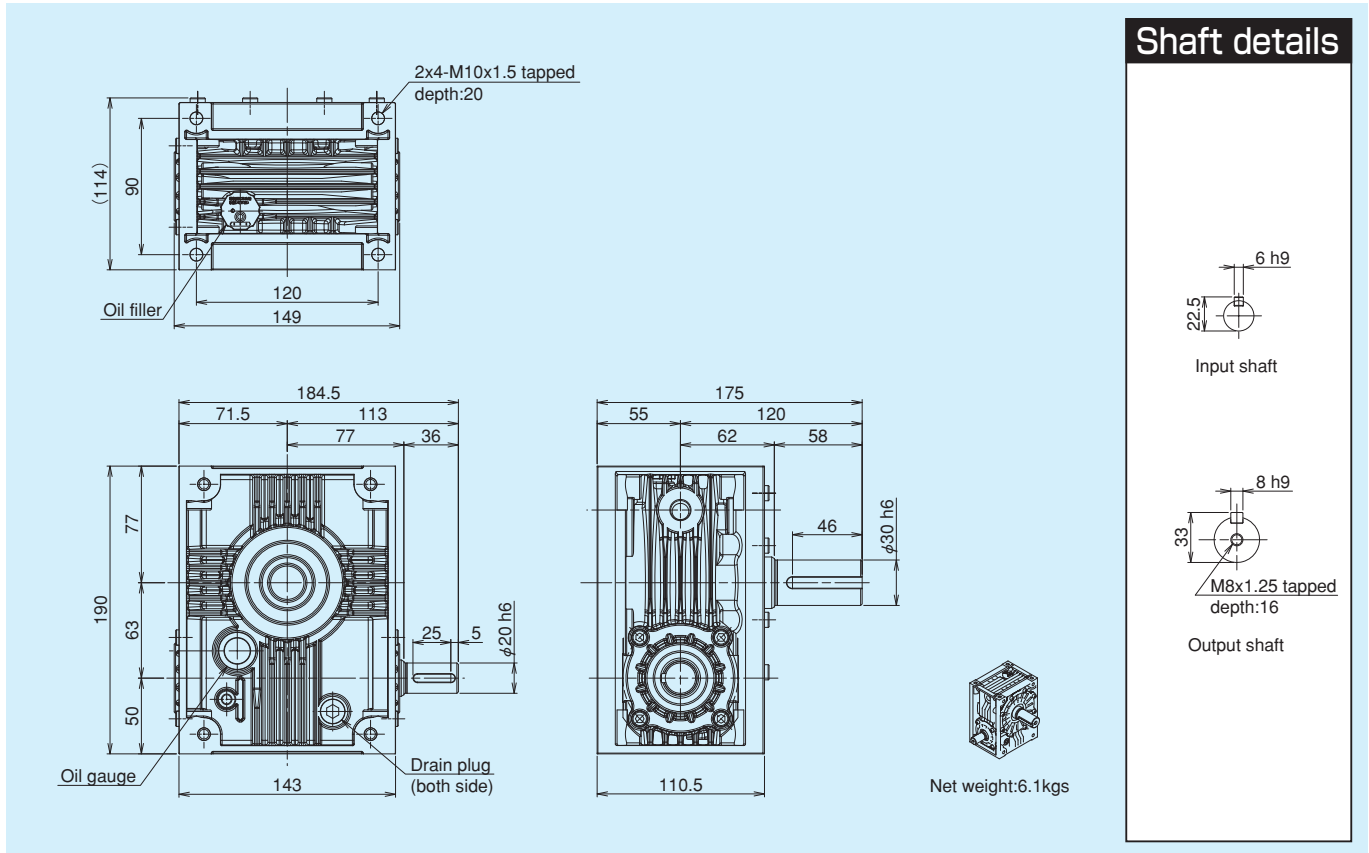
Output shaft



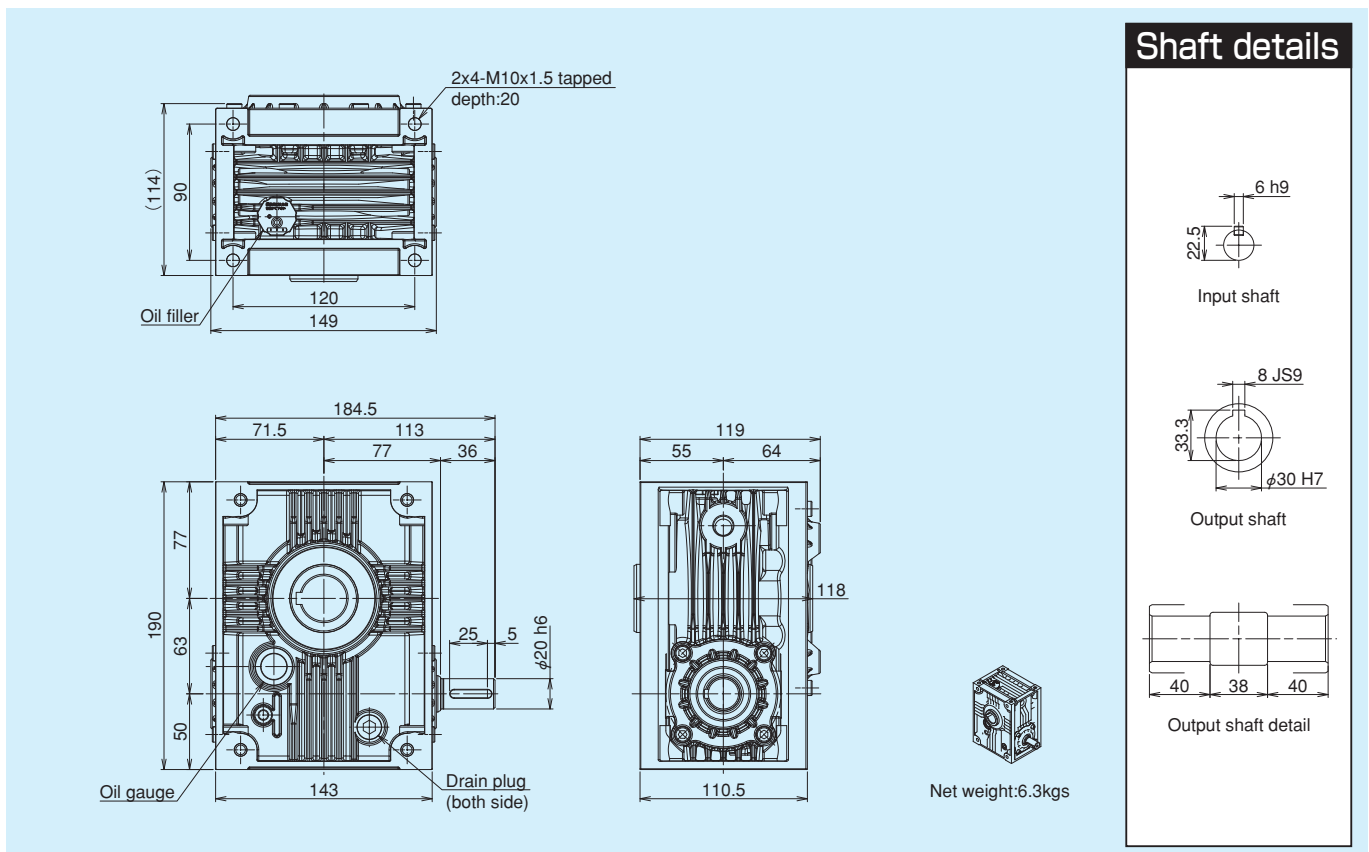
Dimension of output shaft

MALB63/MALOB63 Dimensions

MALB63



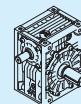
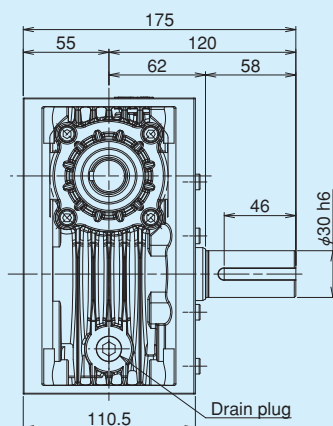
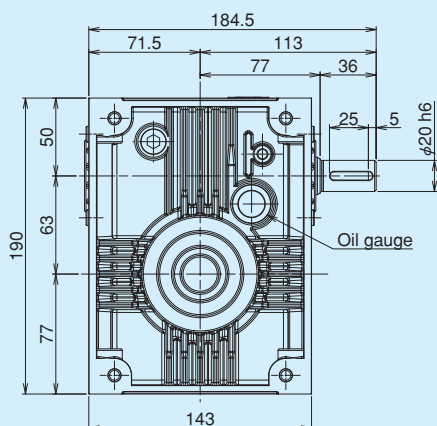
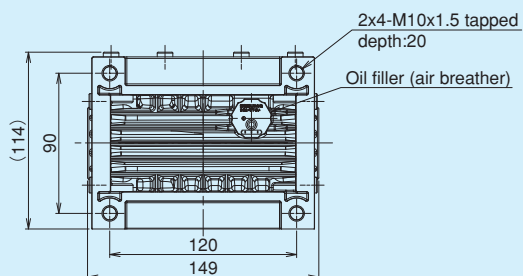
MALOB63



MALW63/MALOW63 Dimensions

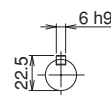
MAKIJACE

MALW63

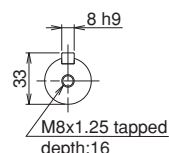


Net weight:6.1kgs

Shaft details

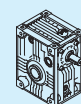
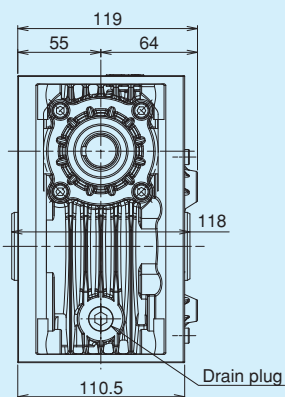
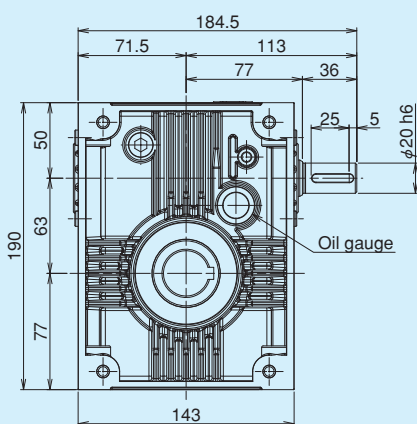
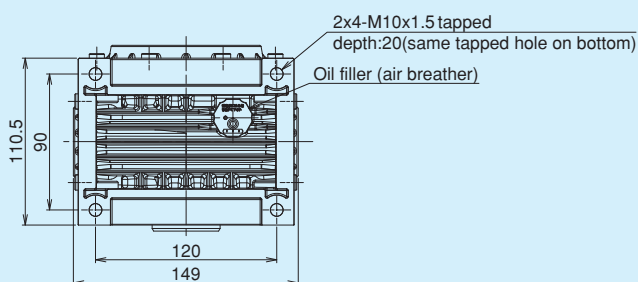


Input shaft



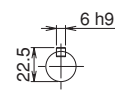
Output shaft

MALOW63

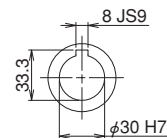


Net weight:6.3kgs

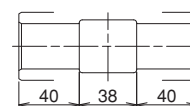
Shaft details



Input shaft



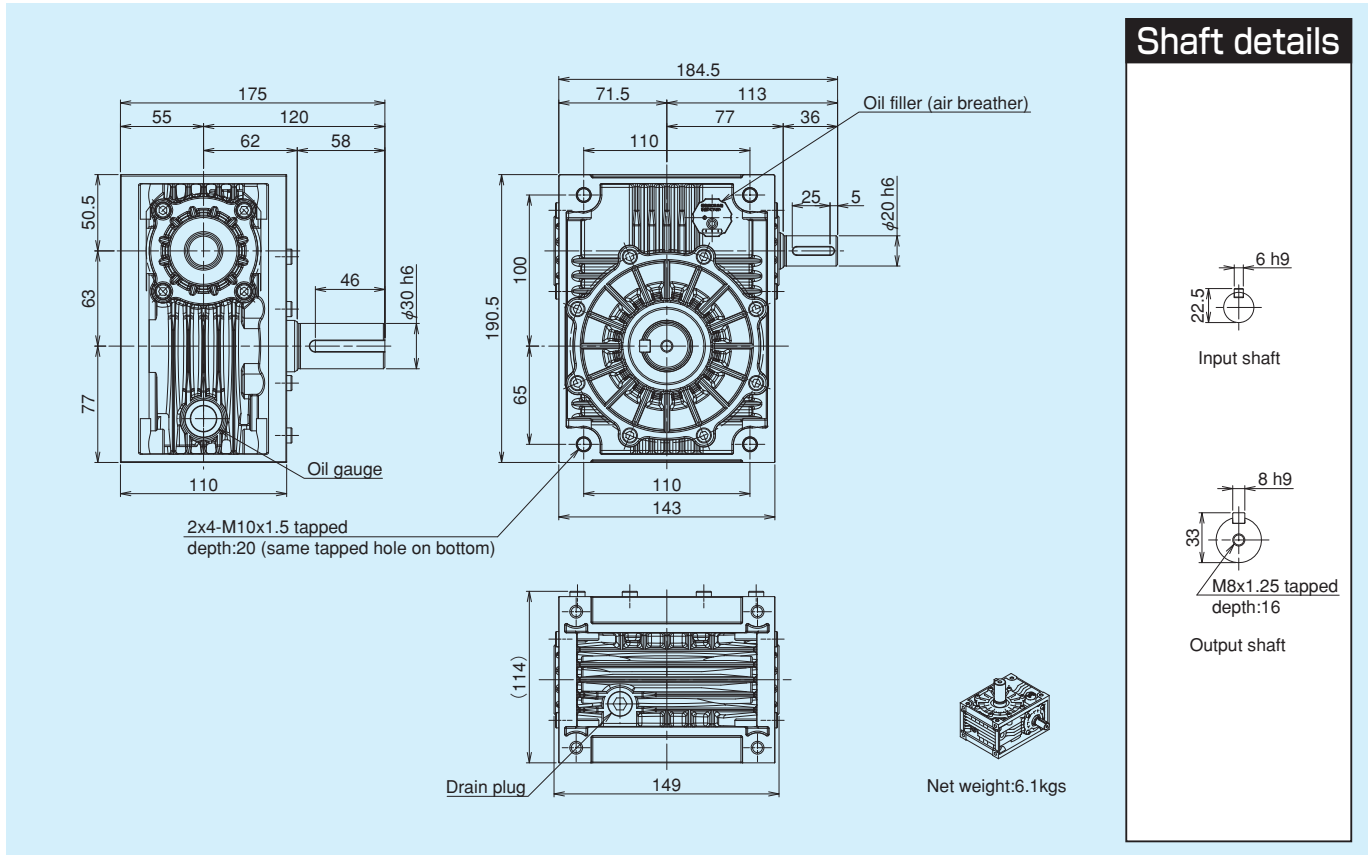
Output shaft



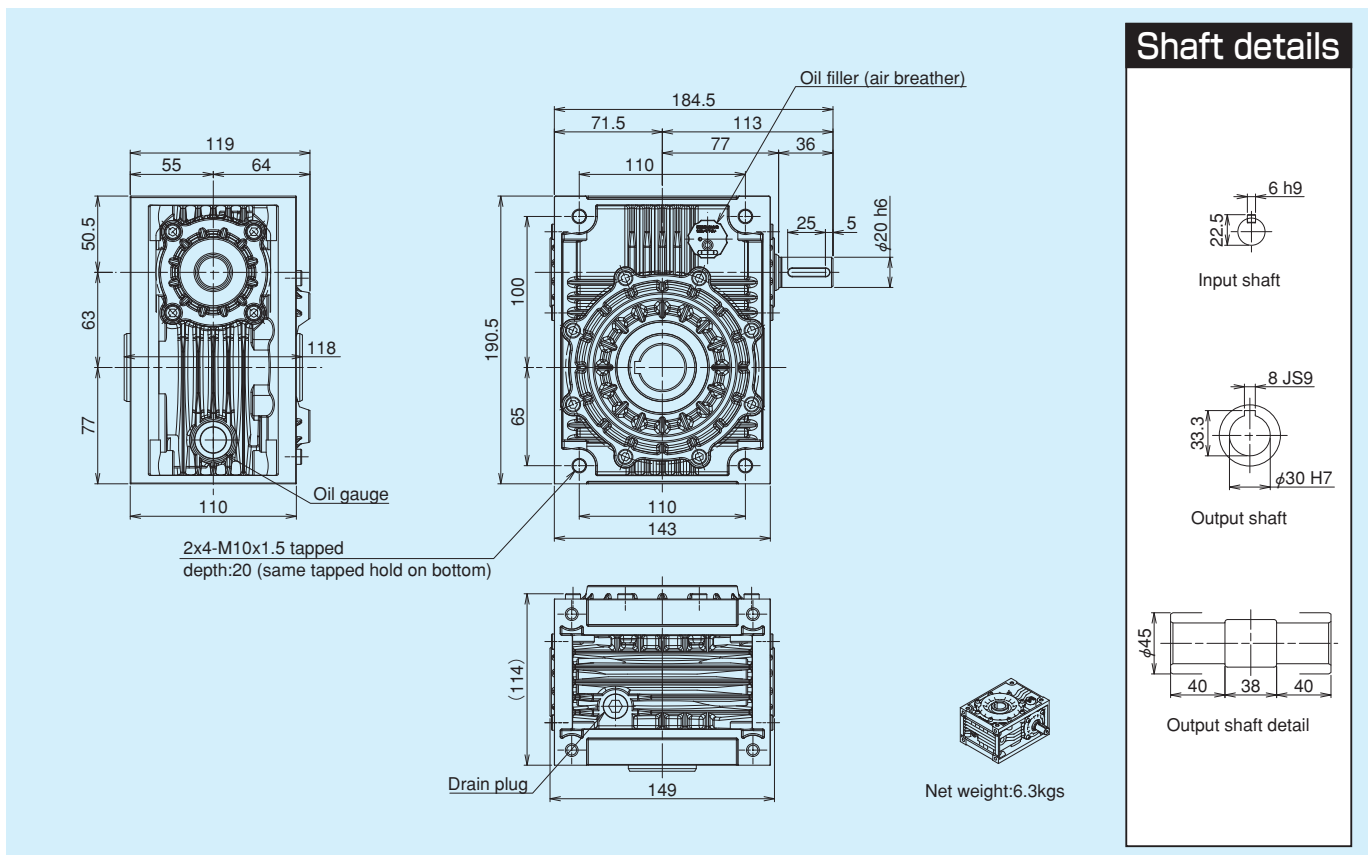
Output shaft detail

MALK63/MALOK63 Dimensions

MALK63



MALOK63



MAB/MABP

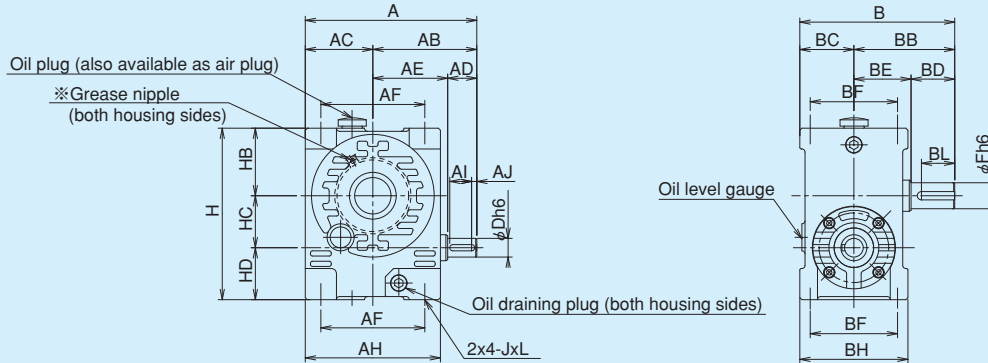
Single worm speed reducer

Outline dimensional drawings

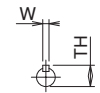
Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

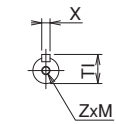
MAB



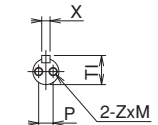
Shaft detail drawings



Input shaft

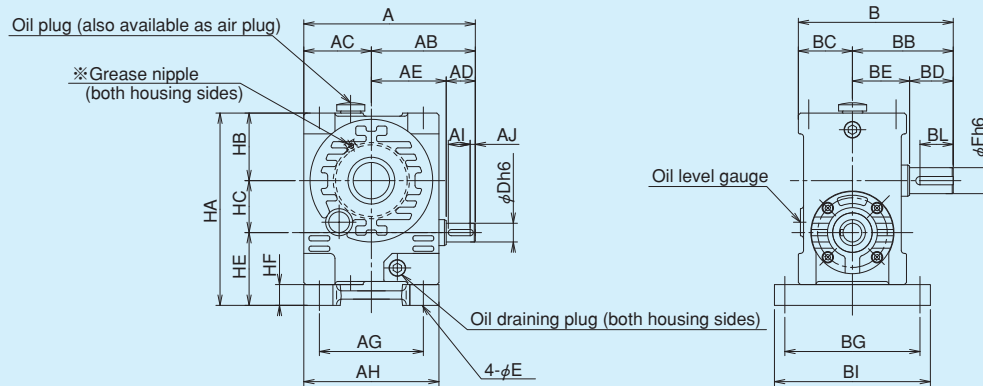


Output shaft
50,63



Output shaft
For size 80 or more

MABP



- (※1) Grease nipple is attached to both housing sides for size 140 and 160.
- (※2) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAB/MABP Dimension

Size	A	AB	AC	AD	AE	AF	AG	AH	B	BB	BC	BD	BE	BF	BG	BH	BI	E	H	HA	HB	HC	HD	HE	HF	J	L
50	165	100	65	28	72	100	100	130	149	97	52	42	55	84	130	104	150	9	165	185	65	50	50	70	20	M8	16
63	186	113	73	36	77	120	120	146	177	120	57	58	62	90	140	114	164	11	190	210	77	63	50	70	20	M10	20
80	240	145	95	42	103	150	150	190	197	130	67	58	72	96	160	134	190	13	240	265	96	80	64	89	25	M12	24
100	280	165	115	42	123	190	190	230	242	165	77	82	83	120	180	154	210	13	300	325	120	100	80	105	25	M12	24
125	353	208	145	58	150	240	240	290	302	205	97	105	100	150	230	194	265	18	375	407	150	125	100	132	32	M16	32
140	390	230	160	58	172	250	250	320	328	220	108	105	115	160	255	216	295	18	420	455	170	140	110	145	35	M16	32
160	460	275	185	82	193	300	300	370	358	235	123	105	130	180	295	246	340	22	470	510	190	160	120	160	40	M20	40

Size	Input shaft					Output shaft							Weight kg		Lubricant quantity
	AI	AJ	Dh6	Wh9	TH	BL	Fh6	Xh9	TI	P	Z	M	With base	Without base	L
50	21	5	18	6	20.5	32	25	8	28	-	M8	16	9	10.2	0.3
63	25	5	20	6	22.5	46	30	8	33	-	M8	16	13	14.5	0.4
80	30	6	25	8	28	45	38	10	41	20	M8	16	26	28.5	1.0
100	30	6	28	8	31	63	45	14	48.5	25	M8	16	40	43	1.5
125	43	7	35	10	38	81	60	18	64	30	M10	20	82	88	3.0
140	43	7	38	10	41	81	65	18	69	35	M12	24	113	123	5.0
160	61	9	45	14	48.5	80	70	20	74.5	35	M12	24	156	168	9.0

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAOB/MAOBP

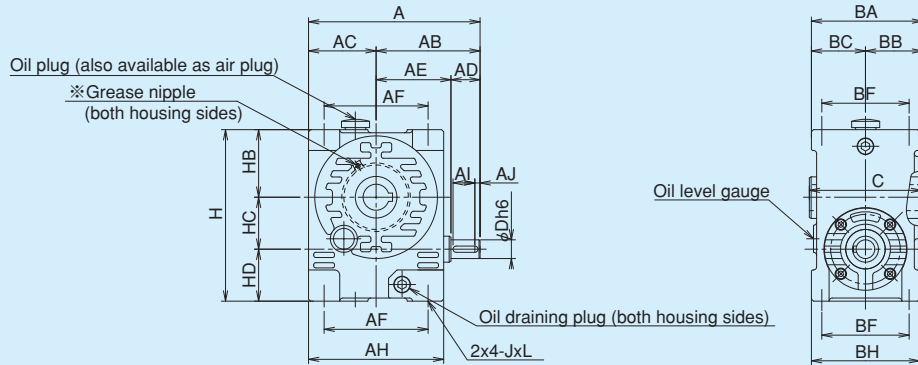
Single worm speed reducer

Outline dimensional drawings

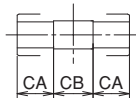
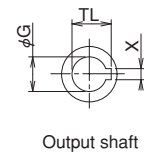
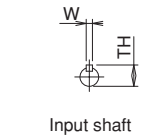
Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

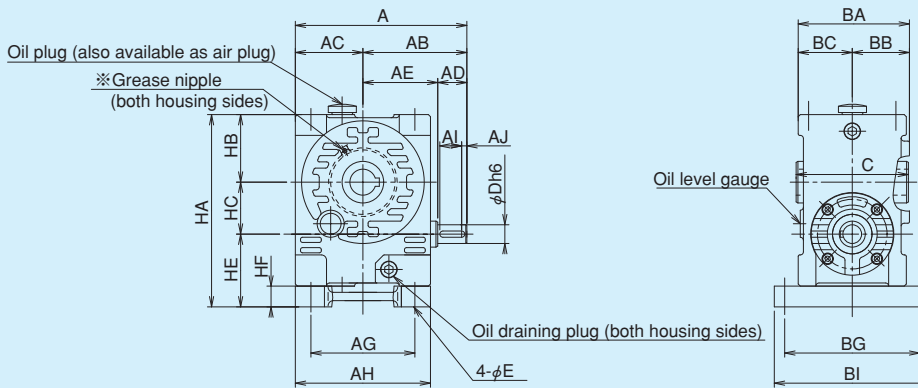
MAOB



Shaft detail drawings



MAOBP



- (※1) Grease nipple is attached to both housing sides for size 140 and 160.
- (※2) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAOB/MAOBP Dimension

Size	A	AB	AC	AD	AE	AF	AG	AH	BA	BB	BC	BF	BG	BH	BI	C	E	H	HA	HB	HC	HD	HE	HF	J	L
50	165	100	65	28	72	100	100	130	107	55	52	84	130	104	150	108	9	165	185	65	50	50	70	20	M8	16
63	186	113	73	36	77	120	120	146	117	60	57	90	140	114	164	118	11	190	210	77	63	50	70	20	M10	20
80	240	145	95	42	103	150	150	190	138	71	67	96	160	134	190	140	13	240	265	96	80	64	89	25	M12	24
100	280	165	115	42	123	190	190	230	158	81	77	120	180	154	210	160	13	300	325	120	100	80	105	25	M12	24
125	353	208	145	58	150	240	240	290	198	101	97	150	230	194	265	200	18	375	407	150	125	100	132	32	M16	32
140	390	230	160	58	172	250	250	320	216	108	108	160	255	216	295	220	18	420	455	170	140	110	145	35	M16	32
160	460	275	185	82	193	300	300	370	246	123	123	180	295	246	340	250	22	470	510	190	160	120	160	40	M20	40

Size	Input shaft				Output shaft				Weight kg		Lubricant quantity		
	Al	AJ	Dh6	Wh9	TH	GH7	XJs9	TL	CA	CB	With base	Without base	L
50	21	5	18	6	20.5	25	8	28.3	35	38	9	10.2	0.3
63	25	5	20	6	22.5	30	8	33.3	40	38	13	14.5	0.4
80	30	6	25	8	28	38	10	41.3	45	50	26	28.5	1.0
100	30	6	28	8	31	45	14	48.8	55	50	40	43	1.5
125	43	7	35	10	38	60	18	64.4	70	60	82	88	3.0
140	43	7	38	10	41	65	18	69.4	75	70	113	123	5.0
160	61	9	45	14	48.5	70	20	74.9	85	80	156	168	9.0

MAW/MAWP

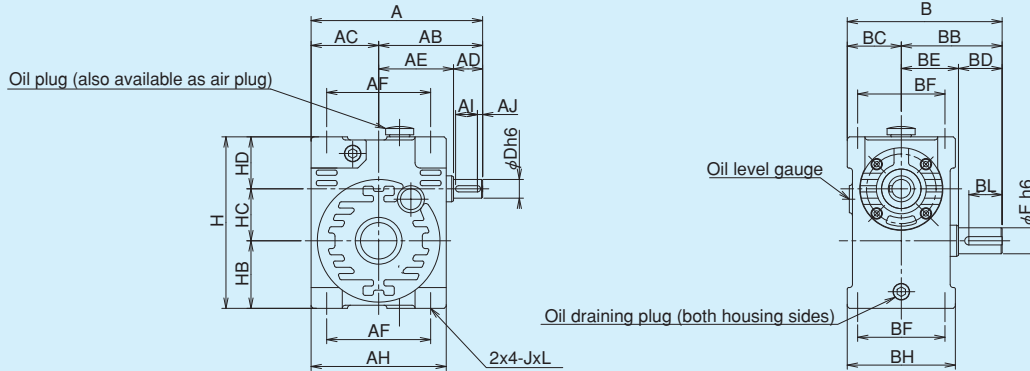
Single worm speed reducer

Outline dimensional drawings

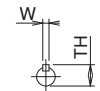
Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

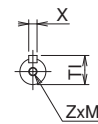
MAW



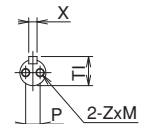
Shaft detail drawings



Input shaft

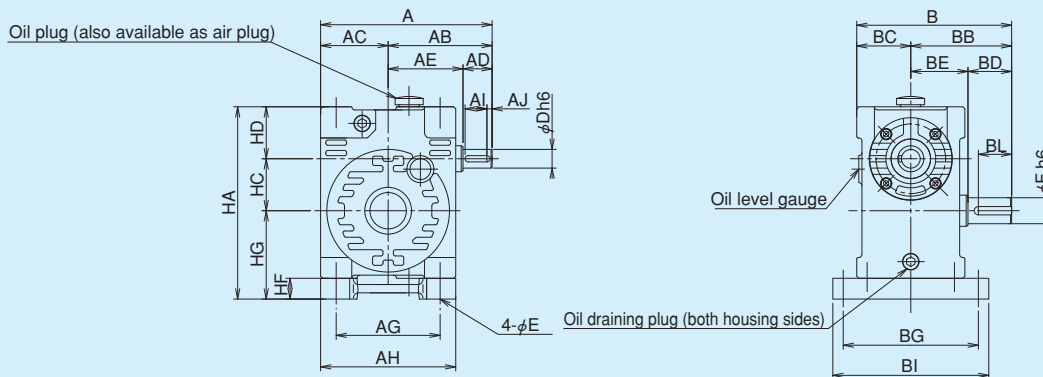


Output shaft
50,63



Output shaft
For size 80 or more

MAWP



(※) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAW/MAWP Dimension

Size	A	AB	AC	AD	AE	AF	AG	AH	B	BB	BC	BD	BE	BF	BG	BH	BI	E	H	HA	HB	HC	HD	HG	HF	J	L
50	165	100	65	28	72	100	100	130	149.5	97	52.5	42	55	84	130	105	150	9	165	185	65	50	50	85	20	M8	16
63	186	113	73	36	77	120	120	146	177	120	57	58	62	90	140	114	164	11	190	210	77	63	50	97	20	M10	20
80	240	145	95	42	103	150	150	190	197	130	67	58	72	96	160	134	190	13	240	265	96	80	64	121	25	M12	24
100	280	165	115	42	123	190	190	230	242	165	77	82	83	120	180	154	210	13	300	325	120	100	80	145	25	M12	24
125	353	208	145	58	150	240	240	290	302	205	97	105	100	150	230	194	265	18	375	407	150	125	100	182	32	M16	32
140	390	230	160	58	172	250	250	320	328	220	108	105	115	160	255	216	295	18	420	455	170	140	110	205	35	M16	32
160	460	275	185	82	193	300	300	370	358	235	123	105	130	180	295	246	340	22	470	510	190	160	120	230	40	M20	40

Size	Input shaft					Output shaft							Weight kg		Lubricant quantity
	Al	AJ	Dh6	Wh9	TH	BL	Fh6	Xh9	Tl	P	Z	M	With base	Without base	L
50	21	5	18	6	20.5	32	25	8	28	-	M8	16	9	10.2	0.5
63	25	5	20	6	22.5	46	30	8	33	-	M8	16	13	14.5	0.7
80	30	6	25	8	28	45	38	10	41	20	M8	16	26	28.5	1.3
100	30	6	28	8	31	63	45	14	48.5	25	M8	16	40	43	2.5
125	43	7	35	10	38	81	60	18	64	30	M10	20	82	88	5.0
140	43	7	38	10	41	81	65	18	69	35	M12	24	113	123	8.0
160	61	9	45	14	48.5	80	70	20	74.5	35	M12	24	156	168	12.0

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAOW/MAOWP

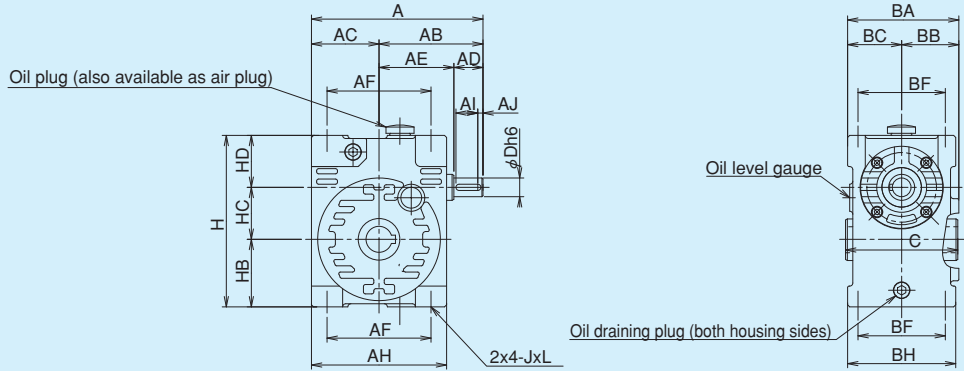
Single worm speed reducer

Outline dimensional drawings

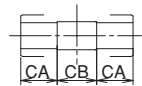
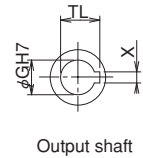
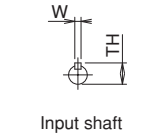
Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

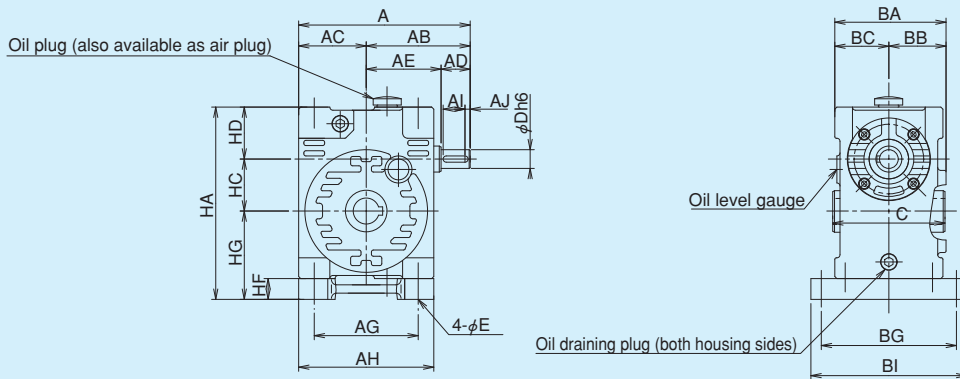
MAOW



Shaft detail drawings



MAOWP



(※) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

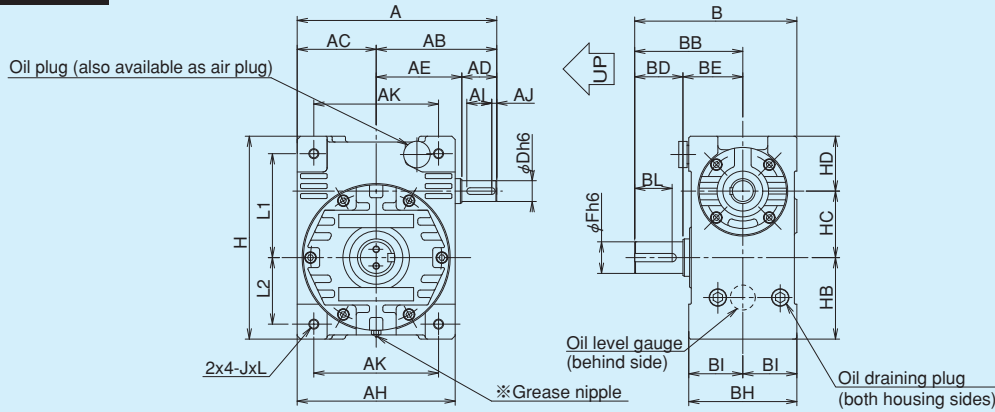
MAOW/MAOWP Dimension

Size	A	AB	AC	AD	AE	AF	AG	AH	BA	BB	BC	BF	BG	BH	BI	C	E	H	HA	HB	HC	HD	HG	HF	J	L
50	165	100	65	28	72	100	100	130	108.5	55	52.5	84	130	104	150	108	9	165	185	65	50	50	85	20	M8	16
63	186	113	73	36	77	120	120	146	117	60	57	90	140	114	164	118	11	190	210	77	63	50	97	20	M10	20
80	240	145	95	42	103	150	150	190	138	71	67	96	160	134	190	140	13	240	265	96	80	64	121	25	M12	24
100	280	165	115	42	123	190	190	230	158	81	77	120	180	154	210	160	13	300	325	120	100	80	145	25	M12	24
125	353	208	145	58	150	240	240	290	198	101	97	150	230	194	265	200	18	375	407	150	125	100	182	32	M16	32
140	390	230	160	58	172	250	250	320	216	108	108	160	255	216	295	220	18	420	455	170	140	110	205	35	M16	32
160	460	275	185	82	193	300	300	370	246	123	123	180	295	246	340	250	22	470	510	190	160	120	230	40	M20	40

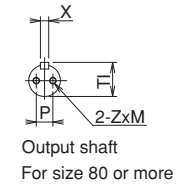
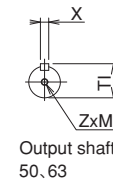
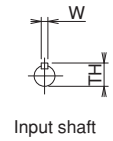
Size	Input shaft				Output shaft				Weight kg		Lubricant quantity		
	Al	AJ	Dh6	Wh9	TH	GH7	XJs9	TL	CA	CB	With base	Without base	L
50	21	5	18	6	20.5	25	8	28.3	35	38	9	10.2	0.5
63	25	5	20	6	22.5	30	8	33.3	40	38	13	14.5	0.7
80	30	6	25	8	28	38	10	41.3	45	50	26	28.5	1.3
100	30	6	28	8	31	45	14	48.8	55	50	40	43	2.5
125	43	7	35	10	38	60	18	64.4	70	60	82	88	5.0
140	43	7	38	10	41	65	18	69.4	75	70	113	123	8.0
160	61	9	45	14	48.5	70	20	74.9	85	80	156	168	12.0

Please see rated transfer capability table A-16~A-19 page for drawings

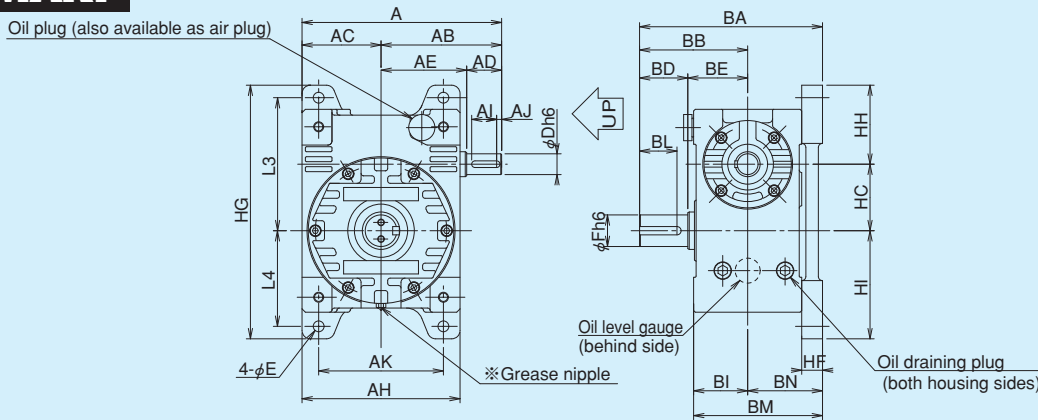
MAK



Shaft detail drawings



MAKP



- (※1) Grease nipple is not attached to both housing sides for size 50 and 63.
- (※2) Oil level gauge is 1 mm outer than AC at front view basis for size 100, 125, 140 and 160.

MAK/MAKP Dimension

Size	A	AB	AC	AD	AE	AH	AK	B	BA	BB	BD	BE	BI	BH	BM	BN	HF	E	H	HG	L1	L2	L3	L4	HB	HC	HD
50	165	100	65	28	72	130	100	147	162	97	42	55	50	100	115	65	15	9	171	215	90	55	115	80	68	50	53
63	186	113	73	36	77	146	110	175	195	120	58	62	55	110	130	75	20	11	196	255	100	65	130	95	80	63	53
80	240	145	95	42	103	190	150	195	220	130	58	72	65	130	155	90	25	13	246	305	125	80	160	115	99	80	67
100	280	165	115	42	123	230	190	240	265	165	82	83	75	150	175	100	25	13	306	360	160	100	195	135	123	100	83
125	353	208	145	58	150	290	240	300	332	205	105	100	95	190	222	127	32	18	375	450	200	125	245	170	150	125	100
140	390	230	160	58	172	320	250	325	360	220	105	115	105	210	245	140	35	18	426	510	225	145	275	195	170	140	113
160	460	275	185	82	193	370	300	355	395	235	105	130	120	240	280	160	40	22	476	580	250	160	310	220	190	160	120

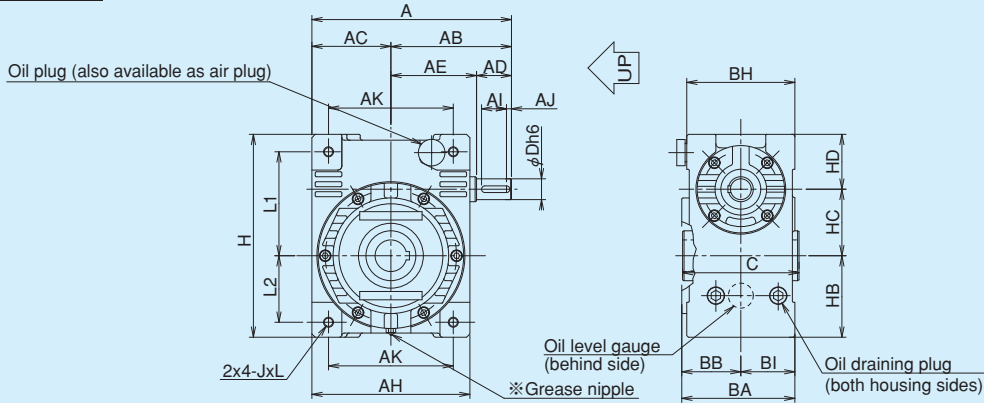
Size	Input shaft					Output shaft										Weight kg		Lubricant quantity L	
	HH	HI	J	L	AI	AJ	Dh6	Wh9	TH	BL	Fh6	Xh9	T1	P	Z	M	With base		Without base
50	75	90	M8	16	21	5	18	6	20.5	32	25	8	28	-	Ni8	16	9	10	0.4
63	82	110	M10	20	25	5	20	6	22.5	46	30	8	33	-	M8	16	13	15	0.6
80	95	130	M12	24	30	6	25	8	28	45	38	10	41	20	M8	16	26	29.5	1
100	110	150	M12	24	30	6	28	8	31	63	45	14	48.5	25	M8	16	40	44	1.9
125	37.5	87.5	M16	32	43	7	35	10	38	81	60	18	64	30	M10	20	82	89	4
140	155	215	M16	32	43	7	38	10	41	81	65	18	69	35	M12	24	113	123	7
160	175	245	M20	※	61	9	45	14	48.5	80	70	20	74.5	35	M12	24	156	168	10

※Cover side 35, Opposite side 40

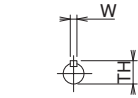
Please see the A-08 page about the shaft arrangement and the rotation direction.

■ Please see rated transfer capability table A-16~A-19 page for drawings

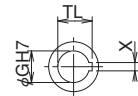
MAOK



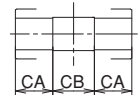
Shaft detail drawings



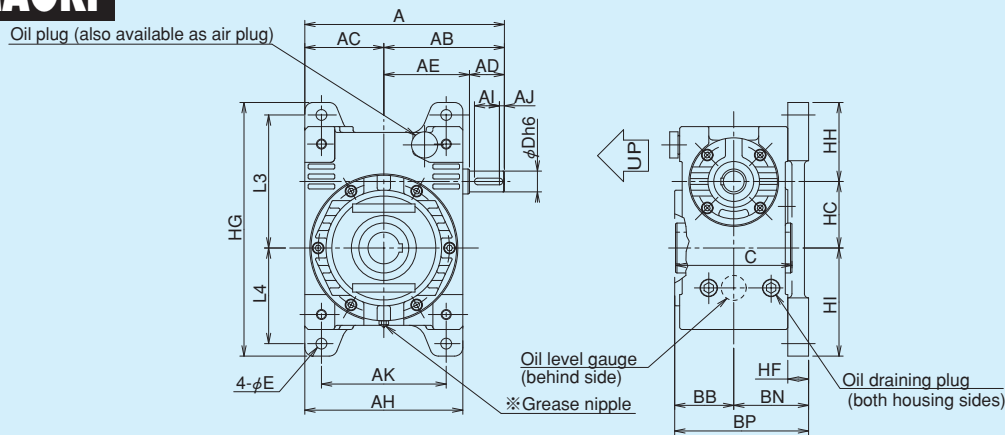
Input shaft



Output shaft



MAOKP



- (※1) Grease nipple is not attached to both housing sides for size 50 and 63.
- (※2) Oil level gauge is 11 mm outer than AC at front view basis for size 100, 125, 140 and 160.

MAOK/MAOKP Dimension

Size	A	AB	AC	AD	AE	AH	AK	BA	BB	BH	BI	BN	BP	C	HF	E	H	HG	L1	L2	L3	L4	HB	HC	HD	HH	HI	J	L
50	165	100	65	26	72	130	100	105	55	100	50	65	121	108	15	9	171	215	90	55	115	80	68	50	53	75	90	M8	16
63	186	113	73	36	77	146	110	115	60	110	55	75	130	118	20	11	196	255	100	65	130	95	80	63	52	82	110	M10	20
80	240	145	95	42	103	190	150	136	71	130	65	90	155	140	25	13	246	305	125	80	160	115	99	80	66	95	130	M12	24
100	280	165	115	42	123	230	190	156	81	150	75	100	175	160	25	13	306	360	160	100	195	135	123	100	82	110	150	M12	24
125	353	208	145	58	150	290	240	196	101	190	95	127	222	200	32	18	375	450	200	125	245	170	150	125	102	137.5	187.5	M16	32
140	390	230	160	58	172	320	250	210	105	210	105	140	245	220	35	18	426	510	225	145	275	195	170	140	113	155	215	M16	32
160	460	275	185	82	193	370	300	240	120	240	120	160	280	250	40	22	476	580	250	160	310	220	190	160	123	175	245	M20	※

※Cover side 35, Opposite side 40

Size	Input shaft				Output shaft				Weight kg		Lubricant quantity		
	AI	AJ	Dh6	Wh9	TH	GH7	XJs9	TL	CA	CB	With base	Without base	L
50	21	5	18	6	20.5	25	8	28.3	35	38	9	10	0.4
63	25	5	20	6	22.5	30	8	33.3	40	38	13	15	0.6
80	30	6	25	8	28	38	10	41.3	45	50	26	29.5	1.0
100	30	6	28	8	31	45	14	48.8	55	50	40	44	1.9
125	43	7	35	10	38	60	18	64.4	70	60	82	89	4.0
140	43	7	38	10	41	65	18	69.4	75	70	113	123	7.0
160	61	9	45	14	48.5	70	20	74.9	85	80	156	168	10.0

MAB-E,B

Single worm speed reducer

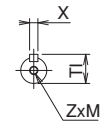
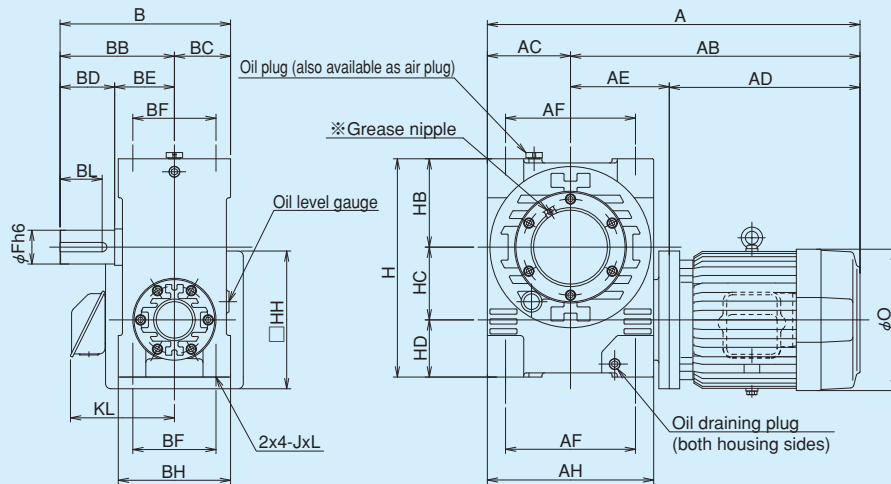
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

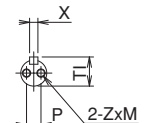
MAKIAACE

MAB-E,B

Shaft detail drawings



Output shaft
50,63



Output shaft
For size 80 or more

- (※1) Grease nipple is attached to both housing sides for size 140 and 160.
- (※2) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAB-E,B Dimension

Size	Motor kw	AC	AF	AH	B	BB	BC	BD	BE	BF	BH	H	HB	HC	HD	J	L	AE	HH
50	0.4	65	100	130	149.5	97	52.5	42	55	84	105	165	65	50	50	M8	16	81	130
	0.75																		145
63	0.75	73	120	146	177	120	57	58	62	90	114	190	77	63	50	M10	20	89	145
	1.5																		200
80	1.5	95	150	190	197	130	67	58	72	96	134	240	96	80	64	M12	24	116	200
	2.2																		225
	3.7																		225
	5.5																		265
100	2.2	115	190	230	242	165	77	82	83	120	154	300	120	100	80	M12	24	141	225
	3.7																		225
	5.5																		265
125	3.7	145	240	290	302	205	97	105	100	150	194	375	150	125	100	M16	32	170	225
	5.5																		265
140	5.5	160	250	320	328	220	108	105	115	160	216	420	170	140	110	M16	32	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft						Lubricant quantity	
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	BL	Fh6	Xh9	Tl	P	Z		M
50	353.5	288.5	207.5	75	144	19	359.5	294.5	213.5	86.5	144	20.5	32	25	8	28	-	M8	16	0.3
	386	321	240	131	163	25.5	461	396	315	128	163	31								
63	402	329	240	131	163	30	477	404	315	128	163	35	46	30	8	33	-	M8	16	0.4
	426	353	261	149	176x182	37.5	495	422	330	142.3	176x182	44.5								
80	472	377	261	149	176x182	51	541	446	330	142.3	176x182	58	45	38	10	41	20	M8	16	1.0
	506.5	411.5	290.5	156	195x198	64.5	583	488	367	160	194	65.2								
100	542	447	326	179	235	83.5	607	512	391	178	237	86.5	63	45	14	48.5	25	M8	16	1.5
	546.5	431.5	290.5	156	195x198	79.5	623	508	367	160	194	80.5								
	582	467	326	179	235	98.5	647	532	391	178	237	101.5								
	598.5	483.5	342.5	200	272	121	667.5	552.5	411.5	201	275	127								
125	641	496	326	179	235	141	706	561	391	178	237	144	81	60	18	64	30	M10	20	3.0
	657.5	512.5	342.5	200	272	163.5	726.5	581.5	411.5	201	275	169.5								
140	692.5	532.5	342.5	200	272	195	761.5	601.5	411.5	201	275	201	81	65	18	69	35	M12	24	5.0

Please see the A-08 page about the shaft arrangement and the rotation direction.

MABP-E,B

Single worm speed reducer

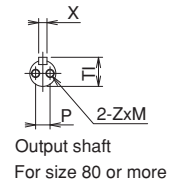
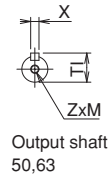
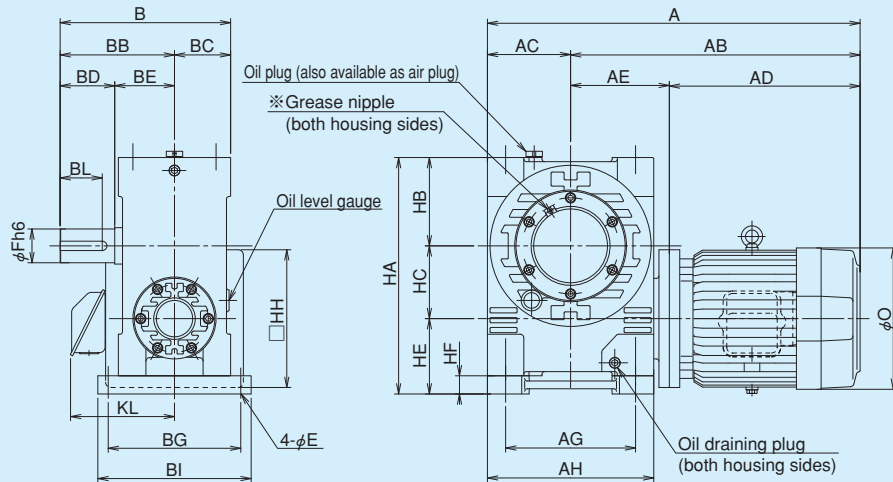
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

MABP-E,B

Shaft detail drawings



- (※1) Grease nipple is attached to both housing sides for size 140 and 160.
- (※2) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MABP-E,B Dimension

Size	With Motor Kw	AC	AG	AH	B	BB	BC	BD	BE	BG	BI	HA	HB	HC	HE	HF	E	AE	HH
50	0.4	65	100	130	149.5	97	52.5	42	55	130	150	185	65	50	70	20	9	81	130
	0.75																		145
63	0.75	73	120	146	177	120	57	58	62	140	164	210	77	63	70	20	11	89	145
	1.5																		200
80	1.5	95	150	190	197	130	67	58	72	160	190	265	96	80	89	25	13	116	200
	2.2																		225
	3.7																		225
100	2.2	115	190	230	242	165	77	82	83	180	210	325	120	100	105	25	13	141	225
	3.7																		225
	5.5																		265
125	3.7	145	240	290	302	205	97	105	100	230	265	407	150	125	132	32	18	170	225
	5.5																		265
140	5.5	160	250	320	328	220	108	105	115	255	295	455	170	140	145	35	18	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft						Lubricant quantity	
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	BL	Fh6	Xh9	Tl	P	Z	M	L
50	353.5	288.5	207.5	75	144	20	359.5	294.5	213.5	86.5	144	21.5	32	25	8	28	-	M8	16	0.3
	386	321	240	131	163	27	461	396	315	128	163	32								
63	402	329	240	131	163	31	477	404	315	128	163	36.5	46	30	8	33	-	M8	16	0.4
	426	353	261	149	176x182	39	495	422	330	142.3	176x182	46								
80	472	377	261	149	176x182	53.5	541	446	330	142.3	176x182	61	45	38	10	41	20	M8	16	1.0
	506.5	411.5	290.5	156	195x198	67	583	488	367	160	194	68								
	542	447	326	179	235	86	607	512	391	178	237	89								
100	546.5	431.5	290.5	156	195x198	82.5	623	508	367	160	194	83.5	63	45	14	48.5	25	M8	16	1.5
	582	467	326	179	235	101.5	647	532	391	178	237	104.5								
125	598.5	483.5	342.5	200	272	124	667.5	552.5	411.5	201	275	130								
	641	496	326	179	235	147	706	561	391	178	237	150	81	60	18	64	30	M10	20	3.0
140	657.5	512.5	342.5	200	272	169.5	726.5	581.5	411.5	201	275	175.5	81	65	18	69	35	M12	24	5.0

MAOB-E,B

Single worm speed reducer

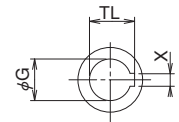
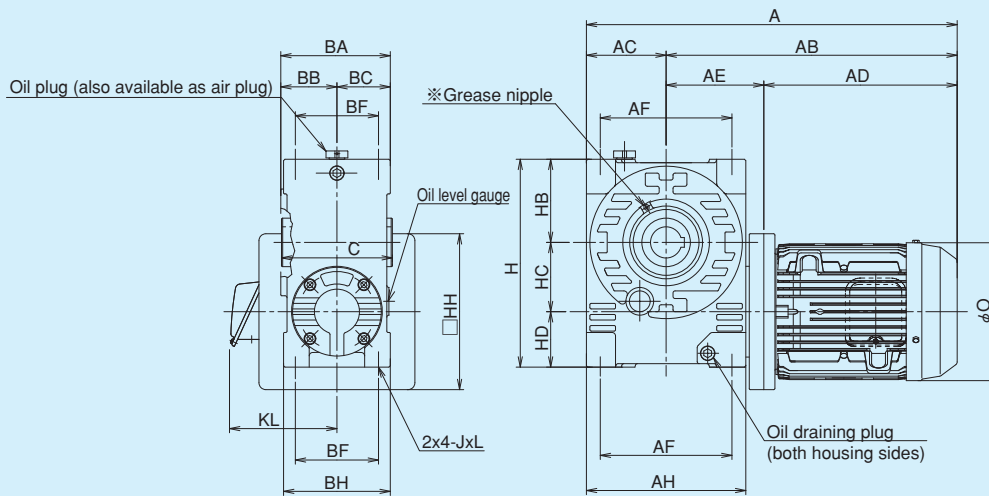
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

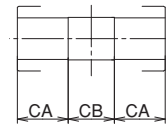
MAKIJACE

MAOB-E,B

Shaft detail drawings



Output shaft



- (※1) Grease nipple is attached to both housing sides for size 140 and 160.
- (※2) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAOB-E,B Dimension

Size	Motor Kw	AC	AF	AH	BA	BB	BC	BF	BH	C	H	HB	HC	HD	J	L	AE	HH
50	0.4	65	100	130	108.5	56	52.5	84	105	108	165	65	50	50	M8	16	81	130
	0.75																	145
63	0.75	73	120	146	117	60	57	90	114	118	190	77	63	50	M10	20	89	145
	1.5																	200
80	1.5	95	150	190	138	71	67	96	134	140	240	96	80	64	M12	24	116	200
	2.2																	225
	3.7																	225
100	2.2	115	190	230	158	81	77	120	154	160	300	120	100	80	M12	24	141	225
	3.7																	225
	5.5																	265
125	3.7	145	240	290	198	101	97	150	194	200	375	150	125	100	M16	32	170	225
	5.5																	265
140	5.5	160	250	320	216	108	108	160	216	220	420	170	140	110	M16	32	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft					Lubricant quantity
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	GH7	XJs9	TL	CA	CB	
50	353.5	288.5	207.5	75	144	19	359.5	294.5	213.5	86.5	144	20.5	25	8	28.3	35	38	0.3
	386	321	240	131	163	25.5	461	396	315	128	163	31						
63	402	329	240	131	163	30	477	404	315	128	163	35	30	8	33.3	40	38	0.4
	426	353	261	149	176x182	37.5	495	422	330	142.3	176x182	44.5						
80	472	377	261	149	176x182	51	541	446	330	142.3	176x182	58	38	10	41.3	45	50	1.0
	506.5	411.5	290.5	156	195x198	64.5	583	488	367	160	194	65.2						
100	542	447	326	179	235	83.5	607	512	391	178	237	86.5	45	14	48.8	55	50	1.5
	546.5	431.5	290.5	156	195x198	79.5	623	508	367	160	194	80.5						
	582	467	326	179	235	98.5	647	532	391	178	237	101.5						
125	598.5	483.5	342.5	200	272	121	667.5	552.5	411.5	201	275	127	60	18	64.4	70	60	3.0
	641	496	326	179	235	141	706	561	391	178	237	144						
140	657.5	512.5	342.5	200	272	163.5	726.5	581.5	411.5	201	275	169.5	65	18	69.4	75	70	5.0
	692.5	532.5	342.5	200	272	195	761.5	601.5	411.5	201	275	201						

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAOBP-E,B

Single worm
speed reducer

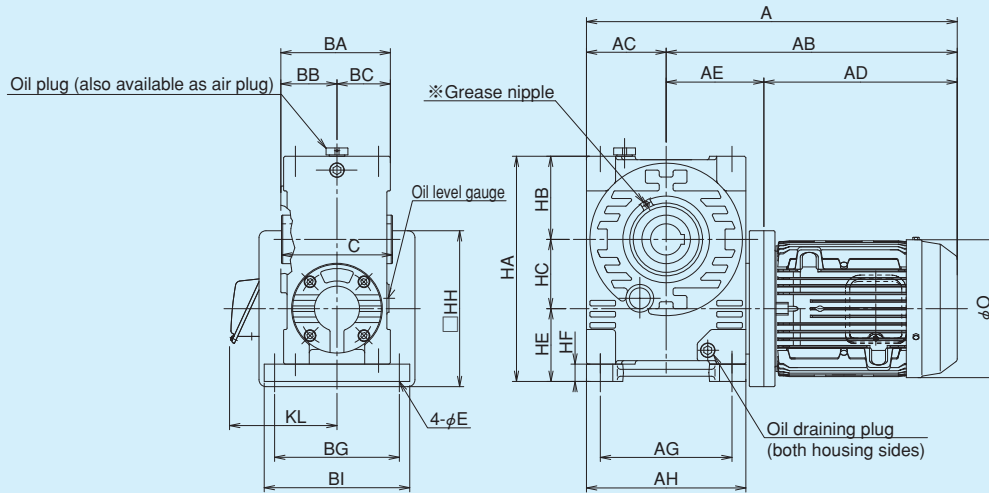
Outline dimensional drawings

■ Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

MAOBP-E,B

Shaft detail drawings



- (※1) Grease nipple is attached to both housing sides for size 140 and 160.
- (※2) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAOBP-E,B Dimension

Size	Motor Kw	AC	AG	AH	BA	BB	BC	BG	BI	C	E	HA	HB	HC	HE	HF	AE	HH
50	0.4	65	100	130	108.5	56	52.5	130	150	108	9	185	65	50	70	20	81	130
	0.75																	145
63	0.75	73	120	146	117	60	57	140	164	118	11	210	77	63	70	20	89	145
	1.5																	200
80	1.5	95	150	190	138	71	67	160	190	140	13	265	96	80	89	25	121	200
	2.2																	225
	3.7																	225
100	2.2	115	190	230	158	81	77	180	210	160	13	325	120	100	105	25	141	225
	3.7																	225
	5.5																	265
125	3.7	145	240	290	198	101	97	230	265	200	18	407	150	125	132	32	170	225
	5.5																	265
140	5.5	160	250	320	216	108	108	255	295	220	18	455	170	140	145	35	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft					Lubricant quantity L
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	GH7	XJs9	TL	CA	CB	
50	353.5	288.5	207.5	75	144	20	359.5	294.5	213.5	86.5	144	21.5	25	8	28.3	35	38	0.3
	386	321	240	131	163	27	461	396	315	128	163	32						
63	402	329	240	131	163	31	477	404	315	128	163	36.5	30	8	33.3	40	38	0.4
	426	353	261	149	176x182	39	495	422	330	142.3	176x182	46						
80	472	377	261	149	176x182	53.5	541	446	330	142.3	176x182	61	38	10	41.3	45	50	1.0
	506.5	411.5	290.5	156	195x198	67	583	488	367	160	194	68						
	542	447	326	179	235	86	607	512	391	178	237	89						
100	546.5	431.5	290.5	156	195x198	82.5	623	508	367	160	194	83.5	45	14	48.8	55	50	1.5
	582	467	326	179	235	101.5	647	532	391	178	237	104.5						
125	598.5	483.5	342.5	200	272	124	667.5	552.5	411.5	201	275	130	60	18	64.4	70	60	3.0
	641	496	326	179	235	147	706	561	391	178	237	150						
140	657.5	512.5	342.5	200	272	169.5	726.5	581.5	411.5	201	275	175.5	65	18	69.4	75	70	5.0
	692.5	532.5	342.5	200	272	205	761.5	601.5	411.5	201	275	211						

MAW-E,B

Single worm speed reducer

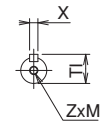
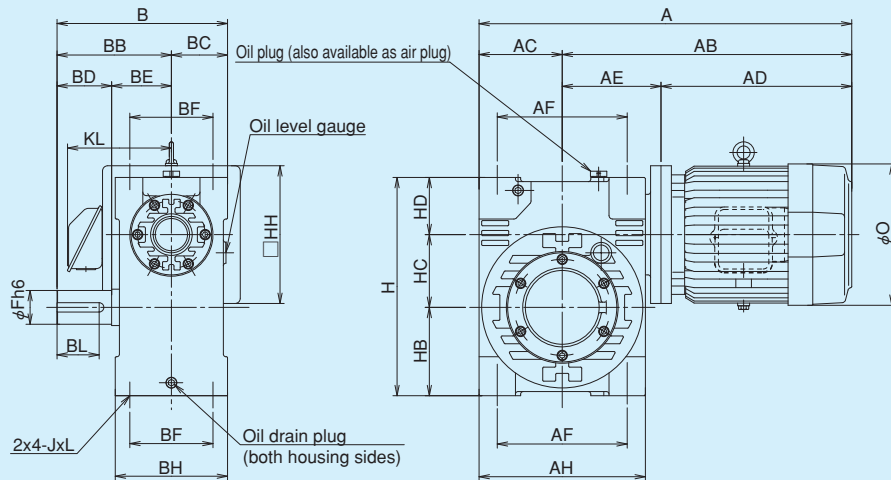
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

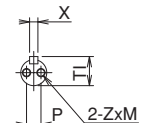
MAKIAACE

MAW-E,B

Shaft detail drawings



Output shaft
50,63



Output shaft
For size 80 or more

(※) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAW-E,B Dimension

Size	Motor Kw	AC	AF	AH	B	BB	BC	BD	BE	BF	BH	H	HB	HC	HD	J	L	AE	HH
50	0.4	65	100	130	149.5	97	52.5	42	55	84	105	165	65	50	50	M8	16	81	130
	0.75																		145
63	0.75	73	120	146	177	120	57	58	62	90	114	190	77	63	50	M10	20	89	145
	1.5																		200
80	1.5	95	150	190	197	130	67	58	72	96	134	240	96	80	64	M12	24	116	200
	2.2																		225
	3.7																		225
	2.2																		225
100	3.7	115	190	230	242	165	77	82	83	120	154	300	120	100	80	M12	24	141	225
	5.5																		265
	3.7																		225
125	3.7	145	240	290	302	205	97	105	100	150	194	375	150	125	100	M16	32	170	225
	5.5																		265
140	5.5	160	250	320	328	220	108	105	115	160	216	420	170	140	110	M16	32	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft						Lubricant quantity	
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	BL	Fh6	Xh9	Tl	P	Z		M
50	353.5	288.5	207.5	75	144	19	359.5	294.5	213.5	86.5	144	20.5	32	25	8	28	-	M8	16	0.5
	386	321	240	131	163	25.5	461	396	315	128	163	31								
63	402	329	240	131	163	30	477	404	315	128	163	35	46	30	8	33	-	M8	16	0.75
	426	353	261	149	176x182	37.5	495	422	330	142.3	176x182	44.5								
80	472	377	261	149	176x182	51	541	446	330	142.3	176x182	58	45	38	10	41	20	M8	16	1.3
	506.5	411.5	290.5	156	195x198	64.5	583	488	367	160	194	65.2								
100	542	447	326	179	235	83.5	607	512	391	178	237	86.5	63	45	14	48.5	25	M8	16	2.5
	546.5	431.5	290.5	156	195x198	79.5	623	508	367	160	194	80.5								
	582	467	326	179	235	98.5	647	532	391	178	237	101.5								
	598.5	483.5	342.5	200	272	121	667.5	552.5	411.5	201	275	127								
125	641	496	326	179	235	141	706	561	391	178	237	144	81	60	18	64	30	M10	20	5.0
	657.5	512.5	342.5	200	272	163.5	726.5	581.5	411.5	201	275	169.5								
140	692.5	532.5	342.5	200	272	195	761.5	601.5	411.5	201	275	201	81	65	18	69	35	M12	24	8.0

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAWP-E,B

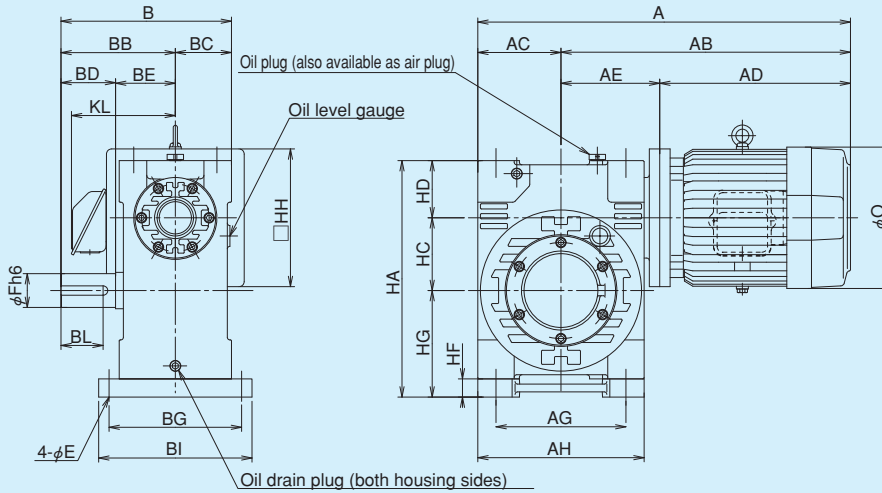
Single worm speed reducer

Outline dimensional drawings

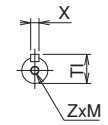
Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

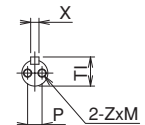
MAWP-E,B



Shaft detail drawings



Output shaft
50,63



Output shaft
For size 80 or more

(※) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAWP-E,B Dimension

Size	Motor Kw	AC	AG	AH	B	BB	BC	BD	BE	BG	BI	HA	HD	HC	HG	HF	E	AE	HH
50	0.4	65	100	130	149.5	97	52.5	42	55	130	150	185	50	50	85	20	9	81	130
	0.75																		145
63	0.75	73	120	146	177	120	57	58	62	140	164	210	50	63	97	20	11	89	145
	1.5																		200
80	1.5	95	150	190	197	130	67	58	72	160	190	265	64	80	121	25	13	116	200
	2.2																		225
	3.7																		221
	2.2																		225
100	3.7	115	190	230	242	165	77	82	83	180	210	325	80	100	145	25	13	141	225
	5.5																		265
	3.7																		225
125	5.5	145	240	290	302	205	97	105	100	230	265	407	100	125	182	32	18	170	225
	5.5																		265
140	5.5	160	250	320	328	220	108	105	115	255	295	455	110	140	205	35	18	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft						Lubricant quantity	
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	BL	Fh6	Xh9	T1	P	Z	M	L
50	353.5	288.5	207.5	75	144	20	359.5	294.5	213.5	86.5	144	21.5	32	25	8	28	-	M8	16	0.5
	386	309.5	240	131	163	27	461	396	315	128	163	32								
63	402	317.5	240	131	163	31	477	404	315	128	163	36.5	46	30	8	33	-	M8	16	0.75
	426	334	261	149	176x182	39	495	422	330	142.3	176x182	46								
80	472	358	261	149	176x182	53.5	541	446	330	142.3	176x182	61	45	38	10	41	20	M8	16	1.3
	506.5	400	290.5	156	195x198	67	583	488	367	160	194	68								
	542	451	326	179	235	86	607	512	391	178	237	89								
	546.5	420	290.5	156	195x198	82.5	623	508	367	160	194	83.5								
100	582	471	326	179	235	101.5	647	532	391	178	237	104.5	63	45	14	48.5	25	M8	16	2.5
	598.5	508	342.5	200	272	124	667.5	552.5	411.5	201	275	130								
125	641	500	326	179	235	147	706	561	391	178	237	150	81	60	18	64	30	M10	20	5.0
	657.5	537	342.5	200	272	169.5	726.5	581.5	411.5	201	275	175.5								
140	692.5	557	342.5	200	272	205	761.5	601.5	411.5	201	275	211	81	65	18	69	35	M12	24	8.0

MAOW-E,B

Single worm speed reducer

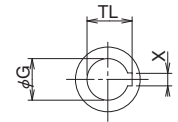
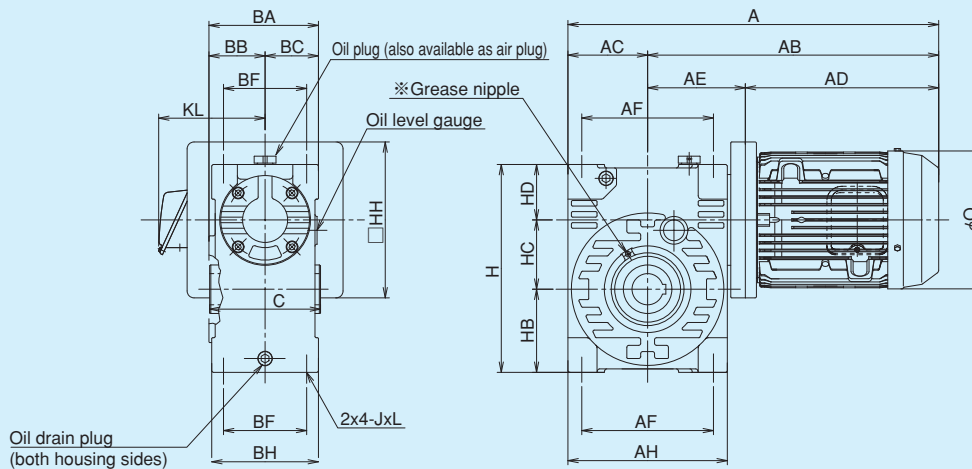
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

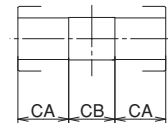
MAKIACE

MAOW-E,B

Shaft detail drawings



Output shaft



(※) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAOW-E,B Dimension

Size	Motor Kw	AC	AF	AH	BA	BB	BC	BF	BH	C	H	HB	HC	HD	J	L	AE	HH
50	0.4	65	100	130	108.5	56	52.5	84	105	108	165	65	50	50	M8	16	81	130
	0.75																	145
63	0.75	73	120	146	117	60	57	90	114	118	190	77	63	50	M10	20	89	145
	1.5																	200
80	1.5	95	150	190	138	71	67	96	134	140	240	96	80	64	M12	24	116	200
	2.2																	225
	3.7																	225
100	2.2	115	190	230	158	81	77	120	154	160	300	120	100	80	M12	24	141	225
	3.7																	225
	5.5																	265
125	3.7	145	240	290	198	101	97	150	194	200	375	150	125	100	M16	32	170	225
	5.5																	265
140	5.5	160	250	320	216	108	108	160	216	220	420	170	140	110	M16	32	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft					Lubricant quantity
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	GH7	XJs9	TL	CA	CB	
50	353.5	288.5	207.5	75	144	19	359.5	294.5	213.5	86.5	144	20.5	25	8	28.3	35	38	0.5
	386	321	240	131	163	25.5	461	396	315	128	163	31						
63	402	329	240	131	163	30	477	404	315	128	163	35	30	8	33.3	40	38	0.75
	426	353	261	149	176x182	37.5	495	422	330	142.3	176x182	44.5						
80	472	377	261	149	176x182	51	541	446	330	142.3	176x182	58	38	10	41.3	45	50	1.3
	506.5	411.5	290.5	156	195x198	64.5	583	488	367	160	194	65.2						
100	542	447	326	179	235	83.5	607	512	391	178	237	86.5	45	14	48.8	55	50	2.5
	546.5	431.5	290.5	156	195x198	79.5	623	508	367	160	194	80.5						
	582	467	326	179	235	98.5	647	532	391	178	237	101.5						
125	598.5	483.5	342.5	200	272	121	667.5	552.5	411.5	201	275	127	60	18	64.4	70	60	5.0
	641	496	326	179	235	141	706	561	391	178	237	144						
140	657.5	512.5	342.5	200	272	163.5	726.5	581.5	411.5	201	275	169.5	65	18	69.4	75	70	8.0

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAOWP-E,B

Single worm speed reducer

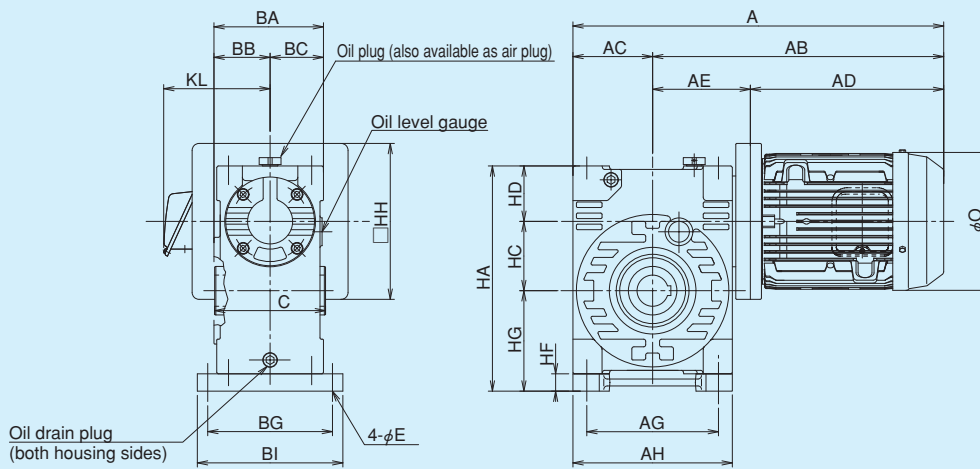
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

MAOWP-E,B

Shaft detail drawings



(※) Oil level gauge is 9mm outer than BC at side view basis for size 100, 125, 140 and 160.

MAOWP-E,B Dimension

Size	Motor Kw	AC	AG	AH	BA	BB	BC	BG	BI	C	E	H	HC	HD	HF	HG	AE	HH
50	0.4	65	100	130	108.5	56	52.5	130	150	108	9	152	50	50	20	85	81	130
	0.75																	145
63	0.75	73	120	146	117	60	57	140	164	118	11	210	63	50	20	97	89	145
	1.5																	200
80	1.5	95	150	190	138	71	67	160	190	140	13	265	80	64	25	121	121	200
	2.2																	225
	3.7																	225
100	2.2	115	190	230	158	81	77	180	210	160	13	325	100	80	25	145	141	225
	3.7																	225
	5.5																	265
125	3.7	145	240	290	198	101	97	230	265	200	18	407	125	100	32	182	170	225
	5.5																	265
140	5.5	160	250	320	216	108	108	255	295	220	18	455	140	110	35	205	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft					Lubricant quantity L
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	GH7	XJs9	TL	CA	CB	
50	353.5	288.5	207.5	75	144	20	359.5	294.5	213.5	86.5	144	21.5	25	8	28.3	35	38	0.5
	386	321	240	131	163	27	461	396	315	128	163	32						
63	402	329	240	131	163	31	477	404	315	128	163	36.5	30	8	33.3	40	38	0.75
	426	353	261	149	176x182	39	495	422	330	142.3	176x182	46						
80	472	377	261	149	176x182	53.5	541	446	330	142.3	176x182	61	38	10	41.3	45	50	1.3
	506.5	411.5	290.5	156	195x198	67	583	488	367	160	194	68						
100	542	447	326	179	235	86	607	512	391	178	237	89	45	14	48.8	55	50	2.5
	546.5	431.5	290.5	156	195x198	82.5	623	508	367	160	194	83.5						
	582	467	326	179	235	101.5	647	532	391	178	237	104.5						
125	598.5	483.5	342.5	200	272	124	667.5	552.5	411.5	201	275	130	60	18	64.4	70	60	5.0
	641	496	326	179	235	147	706	561	391	178	237	150						
140	657.5	512.5	342.5	200	272	169.5	726.5	581.5	411.5	201	275	175.5	65	18	69.4	75	70	8.0

MAK-E,B

Single worm speed reducer

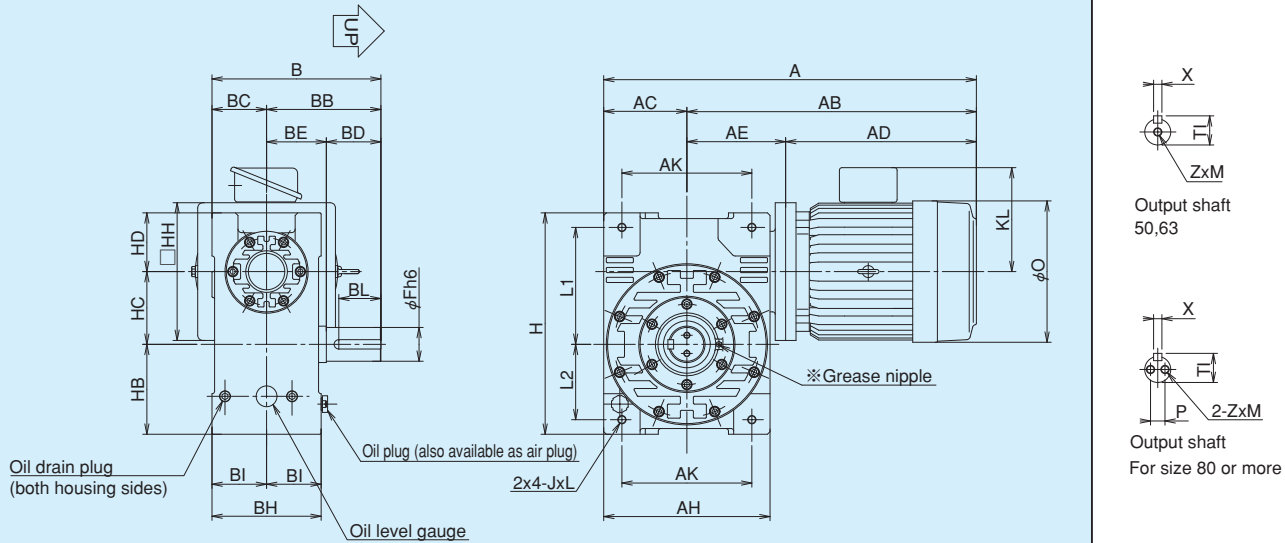
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

MAKIIACE

MAK-E,B

Shaft detail drawings



- (※1) Grease nipple is not attached to both housing sides for size 50 and 63.
- (※2) Oil level gauge is 1 mm outer than AC at front view basis for size 100, 125, 140 and 160.

MAK-E,B Dimension

Size	Motor Kw	AC	AK	AH	B	BB	BC	BD	BE	BH	BI	H	HB	HC	HD	L1	L2	J	L	AE	HH
50	0.4	65	100	130	147	97	50	42	55	100	50	171	68	50	53	90	55	M8	16	81	130
	0.75																				145
63	0.75	73	110	146	175	120	55	58	62	110	55	196	80	63	53	100	65	M10	20	89	145
	1.5																				200
80	1.5	95	150	190	195	130	65	58	72	130	65	246	99	80	67	125	80	M12	24	116	200
	2.2																				225
	3.7																				225
100	2.2	115	190	230	240	165	75	82	83	150	75	306	123	100	83	160	100	M12	24	141	225
	3.7																				225
	5.5																				265
125	3.7	145	240	290	300	205	95	105	100	190	95	375	150	125	100	200	125	M16	32	170	225
	5.5																				265
140	5.5	160	250	320	325	220	105	105	115	210	105	426	170	140	113	225	145	M16	32	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft						Lubricant amount	
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	BL	Fh6	Xh9	Tl	P	Z		M
50	353.5	288.5	207.5	75	144	19	359.5	294.5	213.5	86.5	144	20.5	32	25	8	28	-	M8	16	0.4
	386	321	240	131	163	25.5	461	396	315	128	163	31								
63	402	329	240	131	163	30	477	404	315	128	163	35	46	30	8	33	-	M8	16	0.7
	426	353	261	149	176x182	37.5	495	422	330	142.3	176x182	44.5								
80	472	377	261	149	176x182	51	541	446	330	142.3	176x182	58	45	38	10	41	20	M8	16	1.0
	506.5	411.5	290.5	156	195x198	64.5	583	488	367	160	194	65.2								
100	542	447	326	179	235	83.5	607	512	391	178	237	86.5	63	45	14	48.5	25	M8	16	1.9
	546.5	431.5	290.5	156	195x198	79.5	623	508	367	160	194	80.5								
	582	467	326	179	235	98.5	647	532	391	178	237	101.5								
125	598.5	483.5	342.5	200	272	121	667.5	552.5	411.5	201	275	127	81	60	18	64	30	M10	20	4.0
	641	496	326	179	235	141	706	561	391	178	237	144								
140	657.5	512.5	342.5	200	272	163.5	726.5	581.5	411.5	201	275	169.5	81	65	18	69	35	M12	24	7.0

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAKP-E,B

Single worm speed reducer

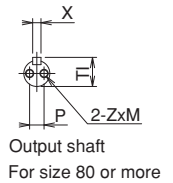
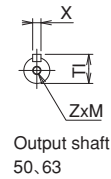
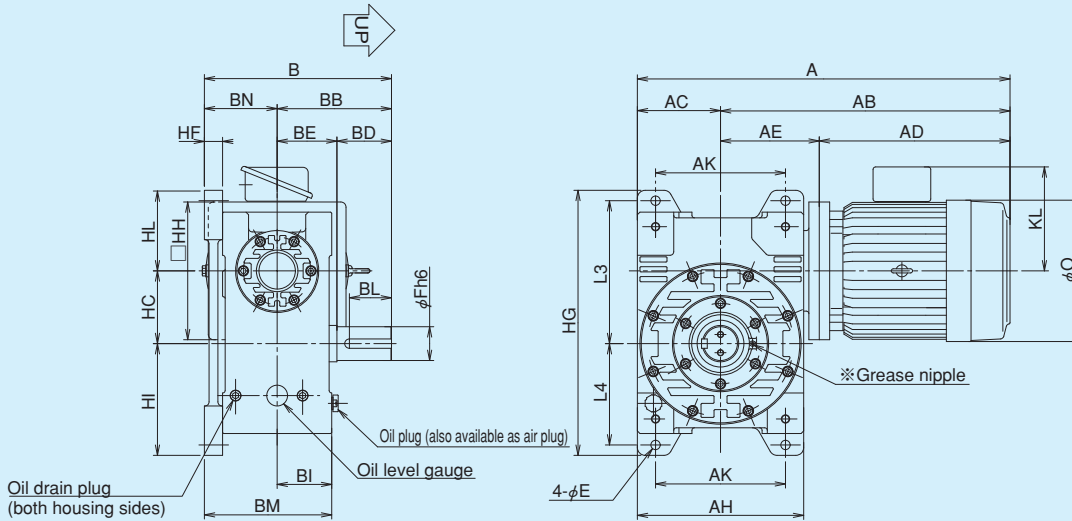
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

MAKIJACE

MAKP-E,B

Shaft detail drawings



- (※1) Grease nipple is not attached to both housing sides for size 50 and 63.
- (※2) Oil level gauge is 1 mm outer than AC at front view basis for size 100, 125, 140 and 160.

MAKP-E,B Dimension

Size	Motor Kw	AC	AK	AH	B	BB	BD	BE	BI	BM	BN	HG	HC	HI	HL	L3	L4	HF	E	AE	HH
50	0.4	65	100	130	162	97	42	55	50	115	65	215	50	90	75	115	80	15	9	81	130
	0.75																				145
63	0.75	73	110	146	195	120	58	62	55	130	75	255	63	110	82	130	95	20	11	89	145
	1.5																				200
80	1.5	95	150	190	220	130	58	72	65	155	90	305	80	130	95	160	115	25	13	116	200
	2.2																				121
	3.7																				225
100	2.2	115	190	230	265	165	82	83	75	175	100	360	100	150	110	195	135	25	13	141	225
	3.7																				225
	5.5																				265
125	3.7	145	240	290	332	205	105	100	95	222	127	450	125	187.5	137.5	245	170	32	18	170	225
	5.5																				265
140	5.5	160	250	320	360	220	105	115	105	245	140	510	140	215	155	275	195	35	18	190	265

Size	Motor (without brake)					Motor (with brake)					Output shaft							Lubricant quantity		
	A	AB	AD	KL	O	A	AB	AD	KL	O	Weight kg	BL	Fh6	Xh9	Ti	P	Z		M	L
50	353.5	288.5	207.5	75	144	20	359.5	294.5	213.5	86.5	144	21.5	32	25	8	28	-	M8	16	0.4
	386	321	240	131	163	26.5	461	396	315	128	163	32								
63	402	329	240	131	163	32	477	404	315	128	163	37	46	30	8	33	-	M8	16	0.7
	426	353	261	149	176x182	39.5	495	422	330	142.3	176x182	46.5								
80	472	377	261	149	176x182	54.5	541	446	330	142.3	176x182	62								
	506.5	411.5	290.5	156	195x198	68	583	488	367	160	194	69	45	38	10	41	20	M8	16	1.0
	542	447	326	179	235	87	607	512	391	178	237	90								
100	546.5	431.5	290.5	156	195x198	83.5	623	508	367	160	194	84.5	63	45	14	48.5	25	M8	16	1.9
	582	467	326	179	235	102.5	647	532	391	178	237	105.5								
125	598.5	483.5	342.5	200	272	125	667.5	552.5	411.5	201	275	131								
	641	496	326	179	235	148	706	561	391	178	237	151	81	60	18	64	30	M10	20	4.0
140	657.5	512.5	342.5	200	272	170.5	726.5	581.5	411.5	201	275	176.5								
140	692.5	532.5	342.5	200	272	205	761.5	601.5	411.5	201	275	211	81	65	18	69	35	M12	24	7.0

MAOK-E,B

Single worm speed reducer

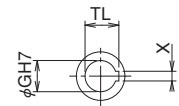
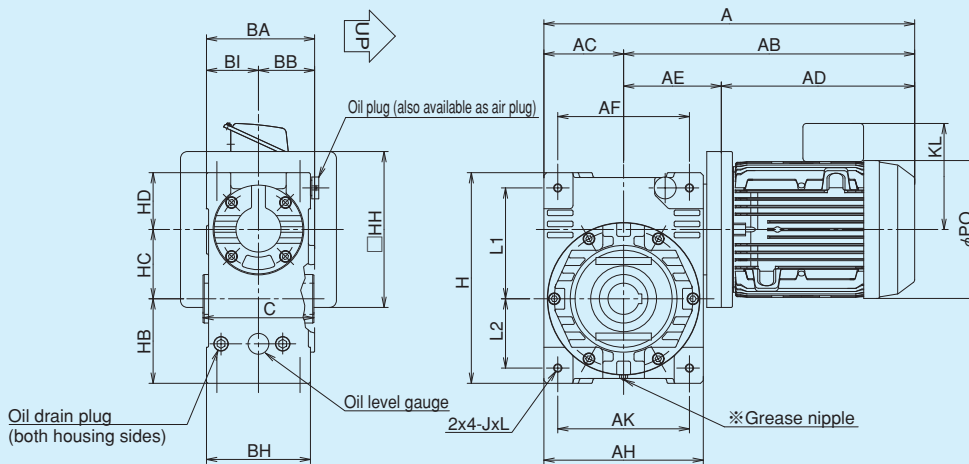
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

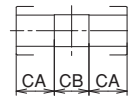
MAKIAACE

MAOK-E,B

Shaft detail drawings



Output shaft



- (※1) Grease nipple is not attached to both housing sides for size 50 and 63.
- (※2) Oil level gauge is 1 mm outer than AC at front view basis for size 100, 125, 140 and 160.

MAOK-E,B Dimension

Size	Motor Kw	AC	AK	AH	BA	BB	BH	BI	C	H	HB	HC	HD	L1	L2	J	L	AE	HH
50	0.4	65	100	130	105	55	100	50	108	171	68	50	53	90	55	M8	16	81	130
	0.75																		145
63	0.75	73	110	146	115	60	110	55	118	196	80	63	53	100	65	M10	20	89	145
	1.5																		200
80	1.5	95	150	190	136	71	130	65	140	246	99	80	67	125	80	M12	24	116	200
	2.2																		225
	3.7																		225
100	2.2	115	190	230	156	81	150	75	160	306	123	100	83	160	100	M12	24	141	225
	3.7																		225
	5.5																		265
125	3.7	145	240	290	196	101	190	95	200	375	150	125	100	200	125	M16	32	170	225
	5.5																		265
140	5.5	160	250	320	210	105	210	105	220	426	170	140	113	225	145	M16	32	190	265

Size	Motor (without brake)						Motor (with brake)						Output shaft						Lubricant quantity
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	GH7	XJs9	TL	CA	CB	L	
50	353.5	288.5	207.5	75	144	19	359.5	294.5	213.5	86.5	144	20.5	25	8	28.3	35	38	0.4	
	386	321	240	131	163	25.5	461	396	315	128	163	31							
63	402	329	240	131	163	30	477	404	315	128	163	35	30	8	33.3	40	38	0.7	
	426	353	261	149	176x182	37.5	495	422	330	142.3	176x182	44.5							
80	472	377	261	149	176x182	51	541	446	330	142.3	176x182	58	38	10	41.3	45	50	1.0	
	506.5	411.5	290.5	156	195x198	64.5	583	488	367	160	194	65.2							
100	542	447	326	179	235	83.5	607	512	391	178	237	86.5	45	14	48.8	55	50	1.9	
	546.5	431.5	290.5	156	195x198	79.5	623	508	367	160	194	80.5							
	582	467	326	179	235	98.5	647	532	391	178	237	101.5							
125	598.5	483.5	342.5	200	272	121	667.5	552.5	411.5	201	275	127	60	18	64.4	70	60	4.0	
	641	496	326	179	235	141	706	561	391	178	237	144							
140	657.5	512.5	342.5	200	272	163.5	726.5	581.5	411.5	201	275	169.5	65	18	69.4	75	70	7.0	

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAOKP-E,B

Single worm speed reducer

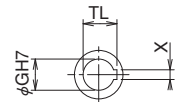
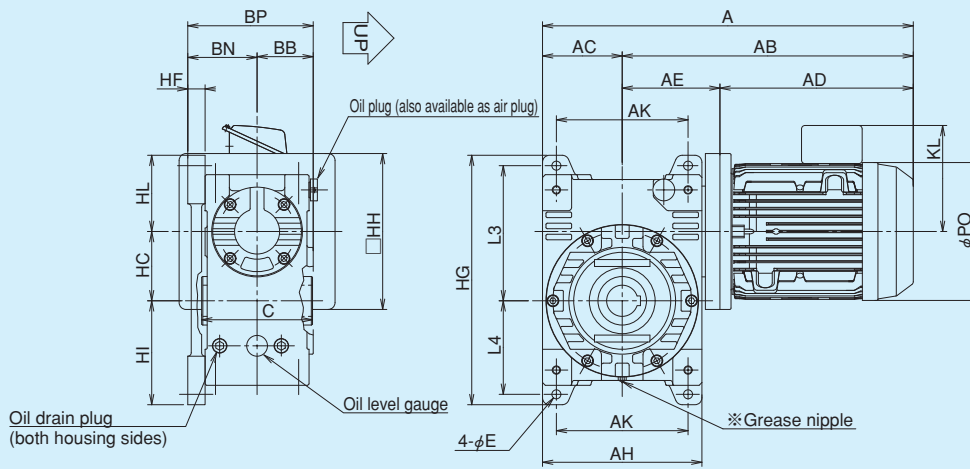
Outline dimensional drawings

Please see rated transfer capability table A-16~A-19 page for drawings

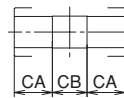
MAKIJACE

MAOKP-E,B

Shaft detail drawings



Output shaft



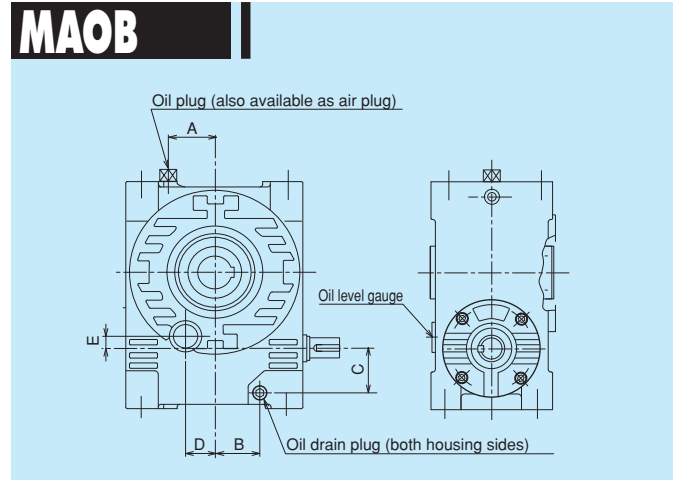
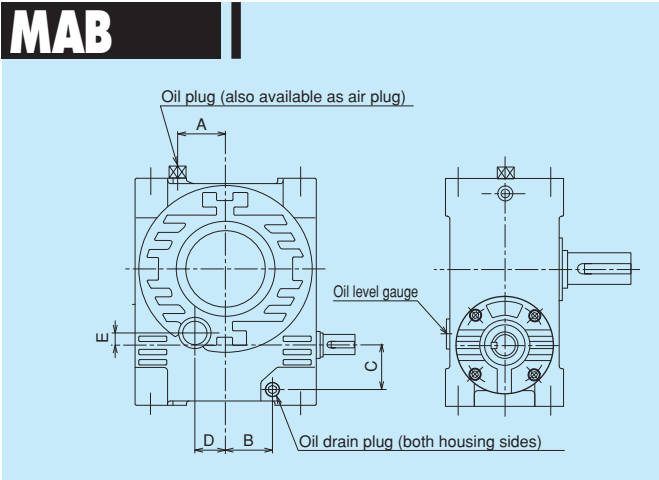
- (※1) Grease nipple is not attached to both housing sides for size 50 and 63.
- (※2) Oil level gauge is 11 mm outer than AC at front view basis for size 100, 125, 140 and 160.

MAOKP-E,B Dimension

Size	Motor Kw	AC	AK	AH	BB	BN	BP	HF	C	HC	HG	HI	HL	L3	L4	E	AE	HH
50	0.4	65	100	130	55	65	121	15	108	50	215	90	75	115	80	9	81	130
	0.75																	145
63	0.75	73	110	146	60	75	130	20	118	63	255	110	82	130	95	11	89	145
	1.5																	200
80	1.5	95	150	190	71	90	155	25	140	80	305	130	95	160	115	13	116	200
	2.2																	225
	3.7																	225
100	2.2	115	190	230	81	100	175	25	160	100	360	150	110	195	135	13	141	225
	3.7																	225
	5.5																	265
125	3.7	145	240	290	101	127	222	32	200	125	450	187.5	137.5	245	170	18	170	225
	5.5																	265
140	5.5	160	250	320	105	140	245	35	220	140	510	215	155	275	195	18	190	265

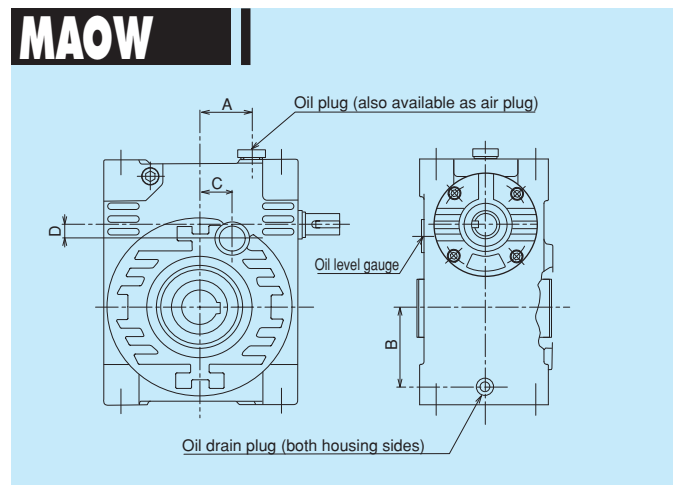
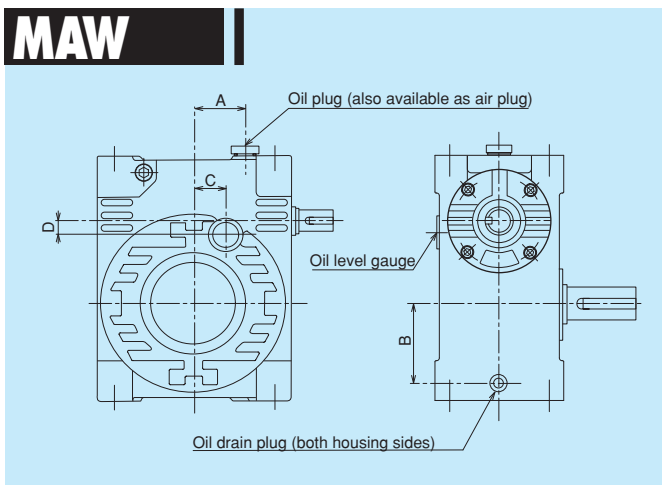
Size	Motor (without brake)						Motor (with brake)						Output shaft					Lubricant quantity
	A	AB	AD	KL	O	Weight kg	A	AB	AD	KL	O	Weight kg	GH7	XJs9	TL	CA	CB	
50	353.5	288.5	207.5	75	144	20	359.5	294.5	213.5	86.5	144	21.5	25	8	28.3	35	38	0.4
	386	321	240	131	163	26.5	461	396	315	128	163	32						
63	402	329	240	131	163	32	477	404	315	128	163	37	30	8	33.3	40	38	0.7
	426	353	261	149	176x182	39.5	495	422	330	142.3	176x182	46.5						
80	472	377	261	149	176x182	54.5	541	446	330	142.3	176x182	62	38	10	41.3	45	50	1.0
	506.5	411.5	290.5	156	195x198	68	583	488	367	160	194	69						
	542	447	326	179	235	87	607	512	391	178	237	90						
100	546.5	431.5	290.5	156	195x198	83.5	623	508	367	160	194	84.5	45	14	48.8	55	50	1.9
	582	467	326	179	235	102.5	647	532	391	178	237	105.5						
	598.5	483.5	342.5	200	272	125	667.5	552.5	411.5	201	275	131						
125	641	496	326	179	235	148	706	561	391	178	237	151	60	18	64.4	70	60	4.0
	657.5	512.5	342.5	200	272	170.5	726.5	581.5	411.5	201	275	176.5						
140	692.5	532.5	342.5	200	272	205	761.5	601.5	411.5	201	275	211	65	18	69.4	75	70	7.0

Position of Oil plug, Drain plug and Oil Level Gauge



MAB,MAOB

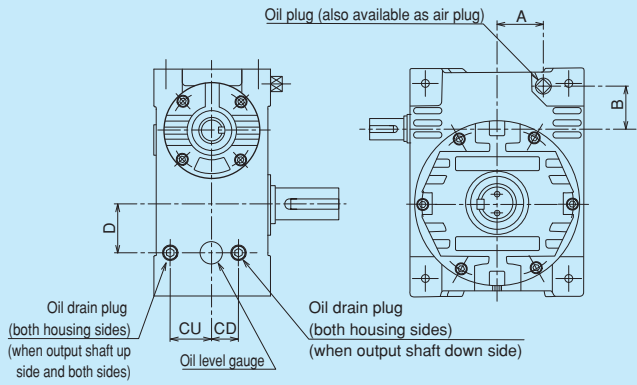
	Oil plug		Oil drain plug			Oil level gauge	
	A	Size	B	C	Size	D	E
50	20	G3/8	22	31	R3/8	31	10
63	31	G3/8	30	31	R3/8	33	18
80	50	G1/2	49	44	R1/2	48	22
100	60	G1/2	60	60	R1/2	38	15
125	72	G1/2	75	75	R1/2	75	35
140	70	G1/2	85	85	R1/2	73	25
160	90	G1/2	93	93	R1/2	95	45



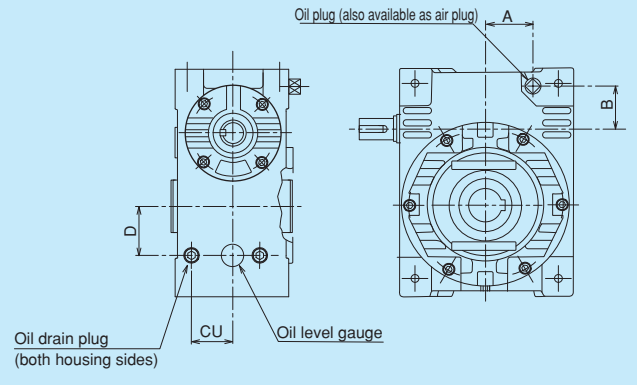
MAW,MAOW

	Oil plug		Oil drain plug		Oil level gauge	
	A	Size	B	Size	C	D
50	20	G3/8	49	R3/8	31	10
63	31	G3/8	61	R3/8	33	18
80	50	G1/2	77	R1/2	48	22
100	60	G1/2	100	R1/2	38	15
125	72	G1/2	129	R1/2	75	35
140	70	G1/2	145	R1/2	73	25
160	90	G1/2	160	R1/2	95	45

MAK



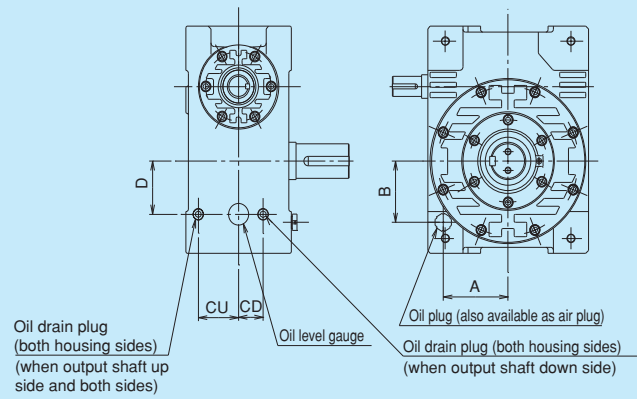
MAOK



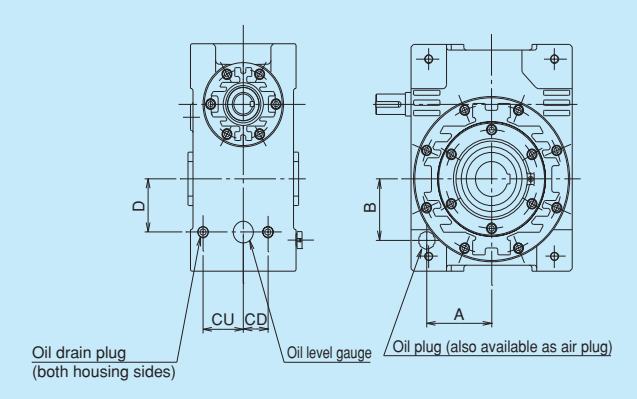
MAK,MAOK #50~#125

	Oil plug			Oil drain plug and Oil level gauge			
	A	B	Size	CU	CD	D	Size
50	22	31	G3/8	32	23	32	R3/8
63	30	31	G3/8	37	26	47	R3/8
80	49	44	G1/2	45	30	48	R1/2
100	60	60	G1/2	54	35	65	R1/2
125	75	75	G1/2	71	48	85	R1/2

MAK



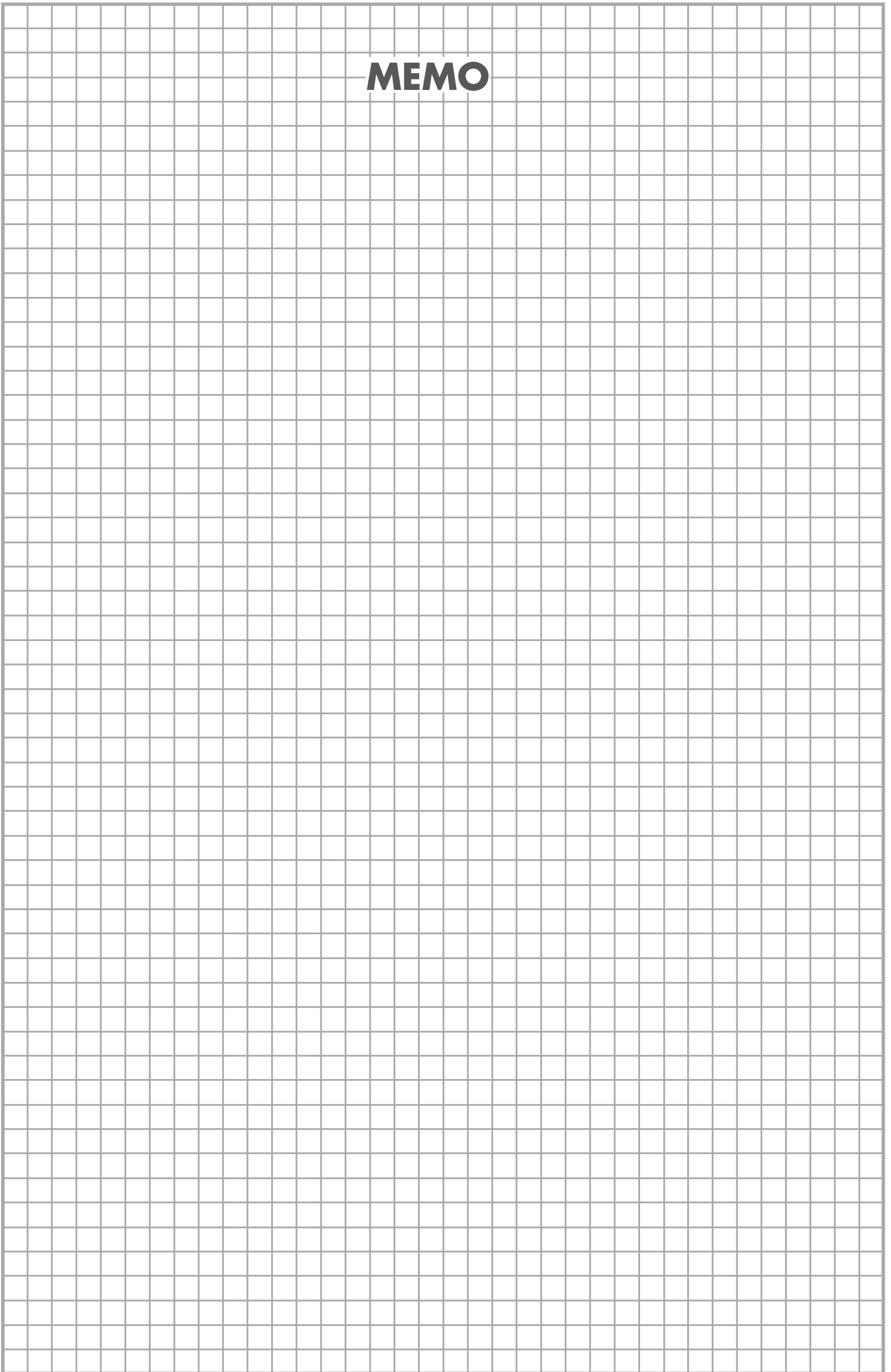
MAOK



MAK,MAOK #140~#160

	Oil plug			Oil drain plug and Oil level gauge			
	A	B	Size	CU	CD	D	Size
140	129	115	G1/2	80	49	100	R1/2
160	150	130	G1/2	62	94	110	R1/2

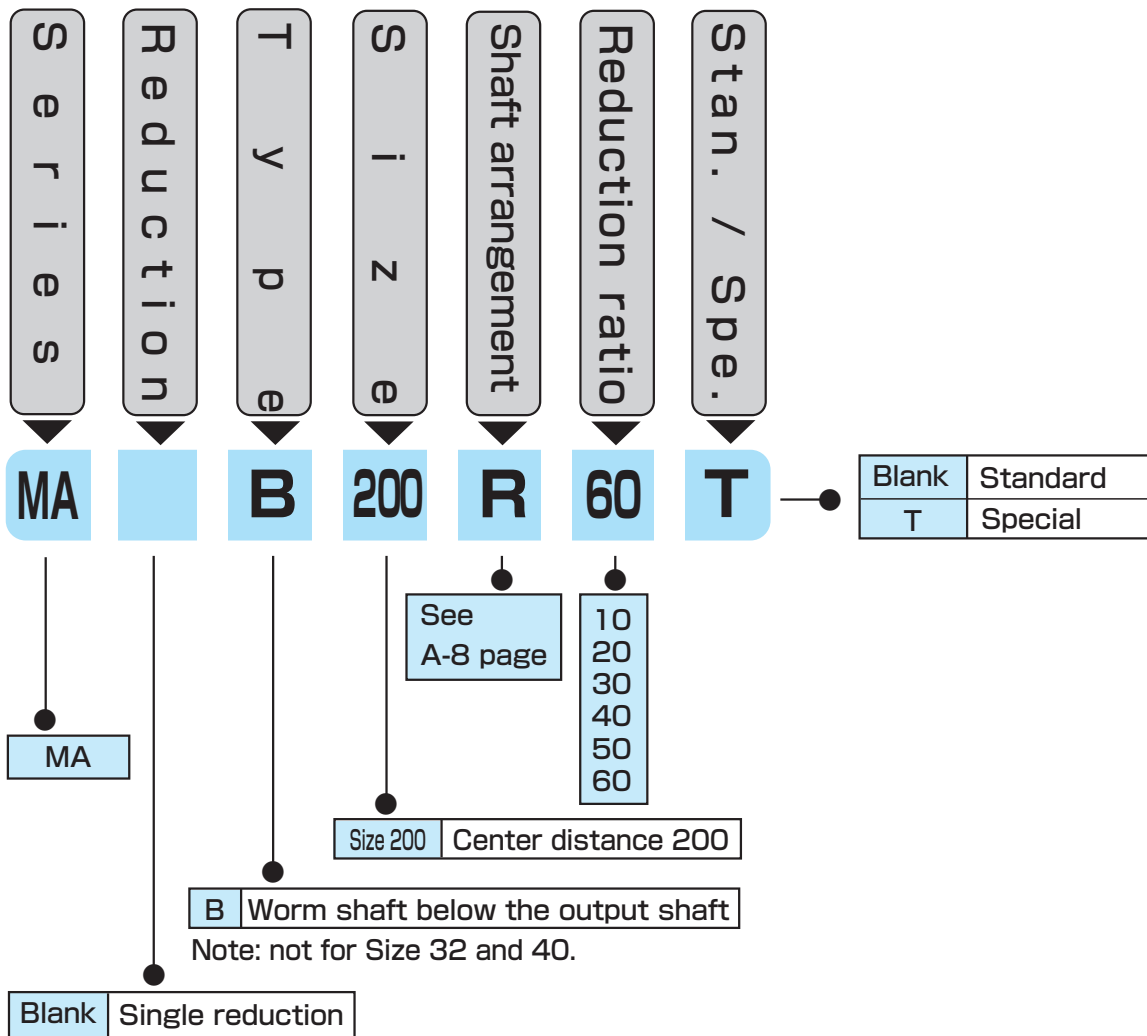
MEMO



MA big size series I N D E X

Nominal type	A-63
Main specification	
Standard items	A-63
Rated transfer capability table	
MAB200	A-64
Theoretical starting efficiency · Backlash	A-65
Inertial moment · Commercial components · Outline dimensional drawings	A-65

Nominal type



Main specification

Standard items

No	Item	Specification
1	S i z e	200
2	Reduction ratio	10 20 30 40 50 60
3	Output shaft shape	Solid (type MA)
4	Position & direction of input & output shaft	Worm shaft below the output shaft type MAB, MAOB
5	Input shaft shape	Solid shaft
6	P a i n t	Munsell 5.5PB5.5/9 sky blue(lacquer type)
7	Shaft keys	JIS B 1301-1996(parallel key)
8	Worm screw	Twisted right direction

MAB200

Reduction ratio	Input rotation speed (rpm)									
	Capability	1800	1500	1200	1000	900	750	500	250	100
10 (10.67)	Input capacity (kW)	59.11	53.55	47.04	42.15	39.96	36.15	28.30	18.28	9.68
	Output torque(N·m)	2860.0	3102.7	3392.5	3628.4	3802.1	4101.3	4738.1	5920.9	7481.5
	Efficiency (%)	85.5	85.3	85.0	84.5	84.1	83.5	82.2	79.5	75.9
20 (21)	Input capacity (kW)	27.97	25.27	22.15	19.76	18.66	16.79	13.25	8.32	4.40
	Output torque(N·m)	2599.7	2809.3	3039.1	3223.4	3367.9	3611.3	4138.1	4978.2	6190.4
	Efficiency (%)	83.4	83.2	82.1	81.4	81.0	80.5	77.9	74.6	70.2
30 (32)	Input capacity (kW)	23.96	21.99	18.98	17.31	16.38	14.70	11.66	7.46	4.09
	Output torque(N·m)	3210.7	3507.6	3753.8	4033.1	4194.0	4451.9	5073.2	6047.7	7487.5
	Efficiency (%)	78.9	78.3	77.7	76.2	75.4	74.3	71.2	66.3	59.9
40 (42)	Input capacity (kW)	18.02	15.94	14.29	12.79	12.02	10.74	8.56	5.45	2.92
	Output torque(N·m)	3141.2	3311.3	3624.5	3830.9	3966.8	4208.2	4746.0	5636.5	6860.8
	Efficiency (%)	78.2	77.7	75.9	74.7	74.1	73.3	69.1	64.4	58.5
50 (52)	Input capacity (kW)	14.83	13.27	11.94	10.68	10.13	9.03	7.02	4.60	2.45
	Output torque(N·m)	3129.4	3320.3	3636.6	3842.3	4014.5	4213.9	4623.6	5594.7	6728.0
	Efficiency (%)	76.5	75.6	73.6	72.5	71.8	70.5	66.3	61.3	55.3
60	Input capacity (kW)	11.83	10.62	9.53	8.56	7.93	7.17	5.69	3.74	2.02
	Output torque(N·m)	2802.6	2985.4	3246.7	3435.0	3500.0	3732.7	4131.3	4962.8	5959.1
	Efficiency (%)	74.4	73.6	71.4	70.0	69.3	68.1	63.4	58.0	51.6

※Reduction ratio is actual reduction ratio.

※Use an output torque lower than the value shown in the table.

※The conditions of use are set by uniform load and 10 hours per day (service factor=1)

※The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this type of situation, refer to the theoretical starting efficiency value (A-57).

MAB200 Theoretical starting efficiency

(%)

Reduction ratio	10 (10.67)	20 (21)	30 (32)	40 (42)	50 (52)	60
Efficiency	68.2	61.0	45.4	45.4	41.9	37.7

MAB200 Backlash (BS721 5 class)

Reduction ratio	Radian display ($\times 10^{-3}$ rad.)		Angle display (deg.)	
10 (10.67)	0.98	2.70	0.06	0.15
30 (32)				
20 (21)	0.91	2.35	0.05	0.13
40 (42)				
50 (52)	0.87	2.15	0.05	0.12
60	0.85	2.05	0.05	0.12

AB Input shaft equivalent inertial moment

($\times 10^{-4}$ kg · m²)

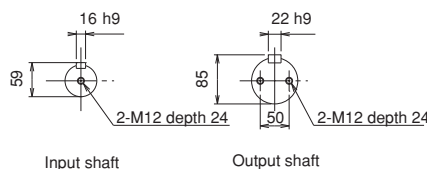
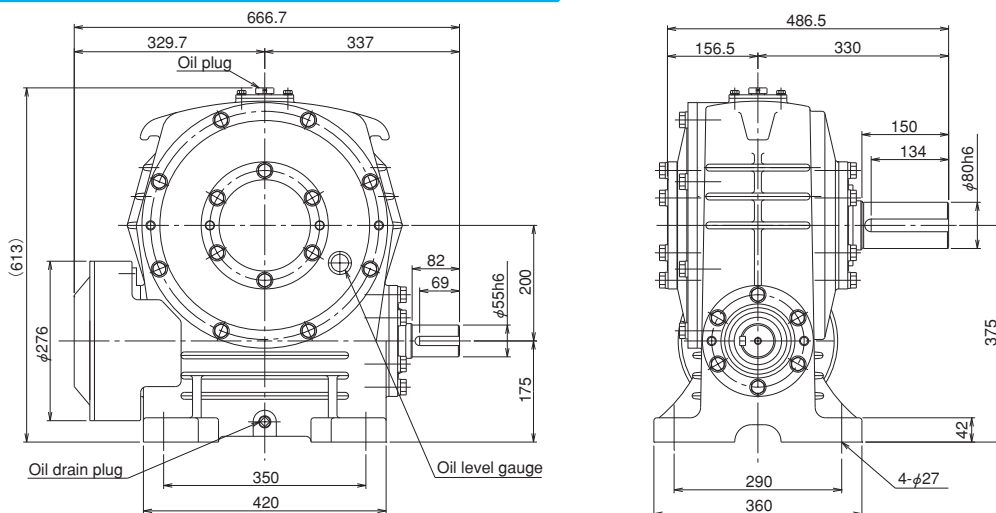
Reduction ratio	10	20	30	40	50	60
Input shaft equivalent inertial moment	192.9	104.9	133.6	92.8	87.3	86.6

MAB Commercial components list

Bearing		Oil seal		Oil plug	Oil drain plug	Oil level gauge
Input shaft	Output shaft	Input shaft	Output shaft			
30312D	32218J	D557812	D608212	G1/2	R1/2	308

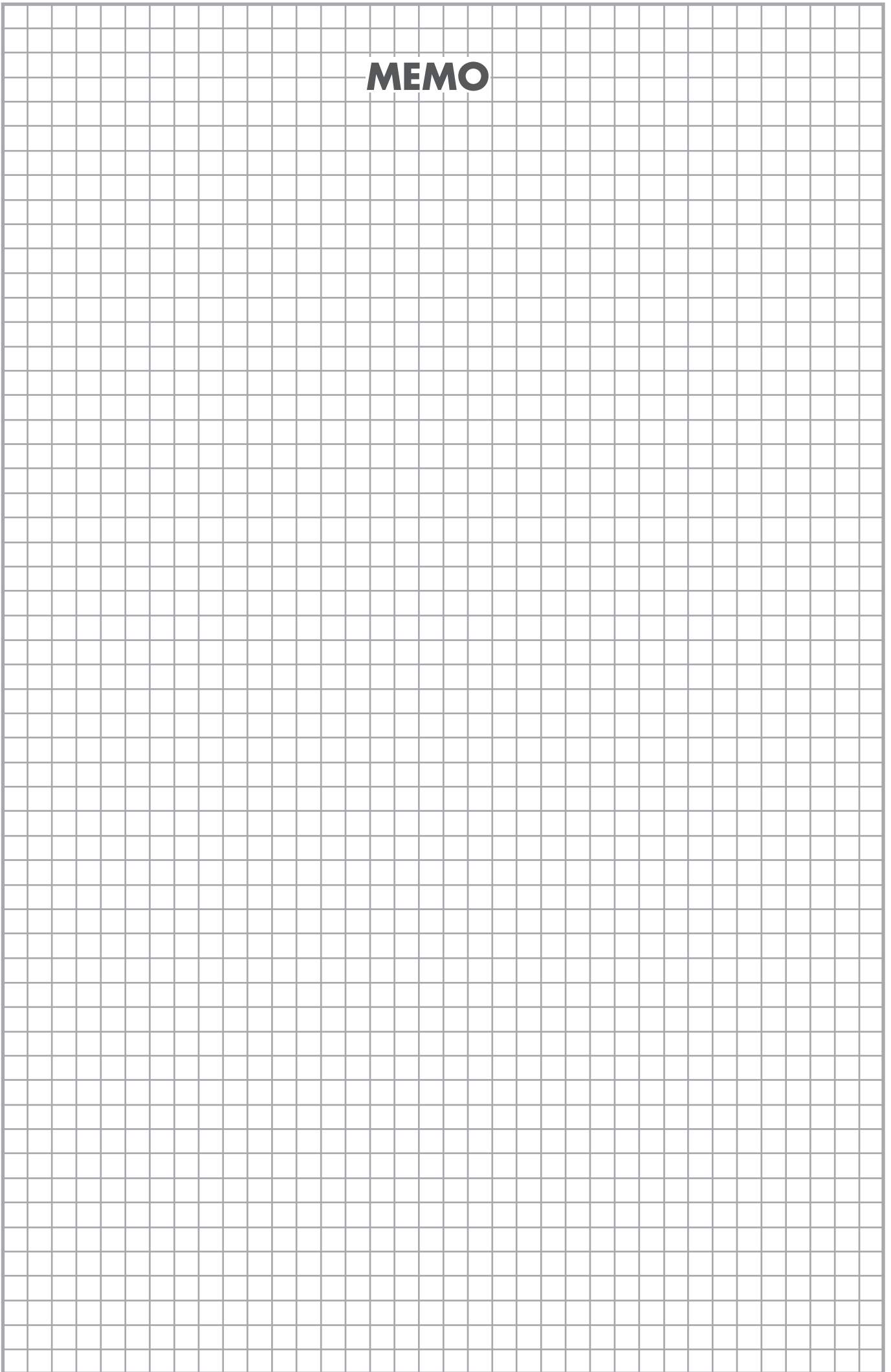
※Oil seal is for MA size dimensions.

Outline dimensional drawing



Accessories
 Input shaft key; 16h9x10h11x69L
 Output shaft key; 22h9x14h11x134L

MEMO



The background of the advertisement features a close-up, blue-tinted image of interlocking gears. The gears are metallic and show signs of use, with some teeth appearing slightly worn. The lighting creates highlights and shadows, emphasizing the three-dimensional texture of the gear teeth. The overall color palette is a range of blues, from deep navy to a lighter, almost white blue.

MAF

Speed reducer

series

***Now for the debut of a wide
product lineup MAF series***

demand **demand** *by the times*

MAF series INDEX

Features	A-69
Nominal type	A-70
Main specification	
Standard items	A-70
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MAF·MAFO	A-75
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Positioning oil plug, oil drain plug and oil level gauge	A-99
Commercial components · baseplate detail dimensions	A-101

Features

MAF series worm helical speed reducer

MAKIACE

Request from the times MAKIACE, getting a more power. Now for the debut of a wide product lineup MAF series.

1. High reduction ratio!

HIGH REDUCTION RATIO

- Wide selection 13 different type!

2. High efficiency!

HIGH EFFICIENCY

- Efficiency is by 80% or more with reduction ratio 50.!
- Primary worm gear has great ability..!

3. REDUCED SIZE AND WEIGHT!

COMPACT

- Reduced capacity by 50% or more!
- 50% weight reduction, or more! (Our comparison of capacity with Type MA100)

4. High Torque!

HIGH TORQUE

- Torque has been increased by 70% or more! (Our comparison of capacity with Type MA100)

5. Easy operation!

EASY OPERATION

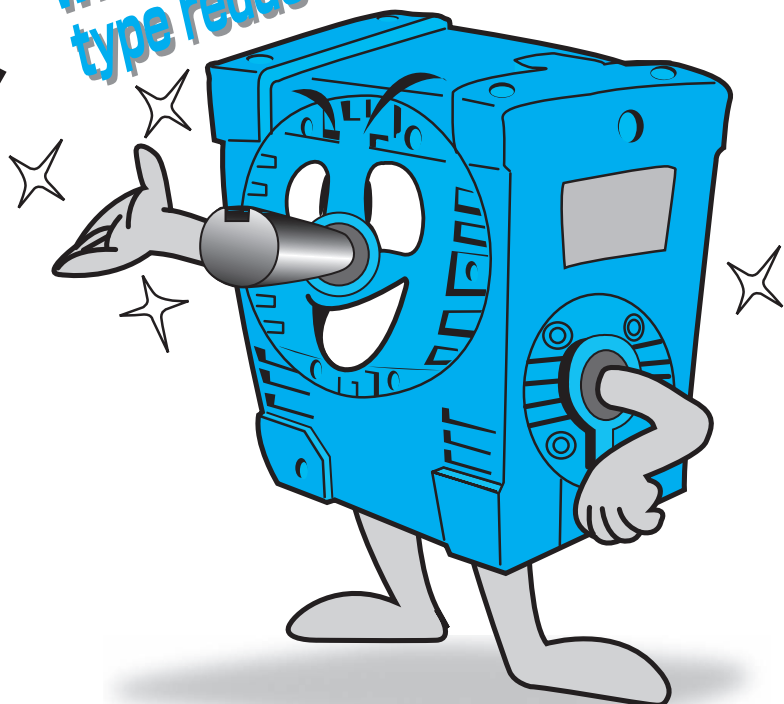
- Wide selection 13 different type reduction ratio 50-360!
- Output shaft is standard.!
- Does not require running-in.!
- Slim and simple design without any projections.!
- The output shaft ends are tapped as standard.

6. HIGH QUALITY!

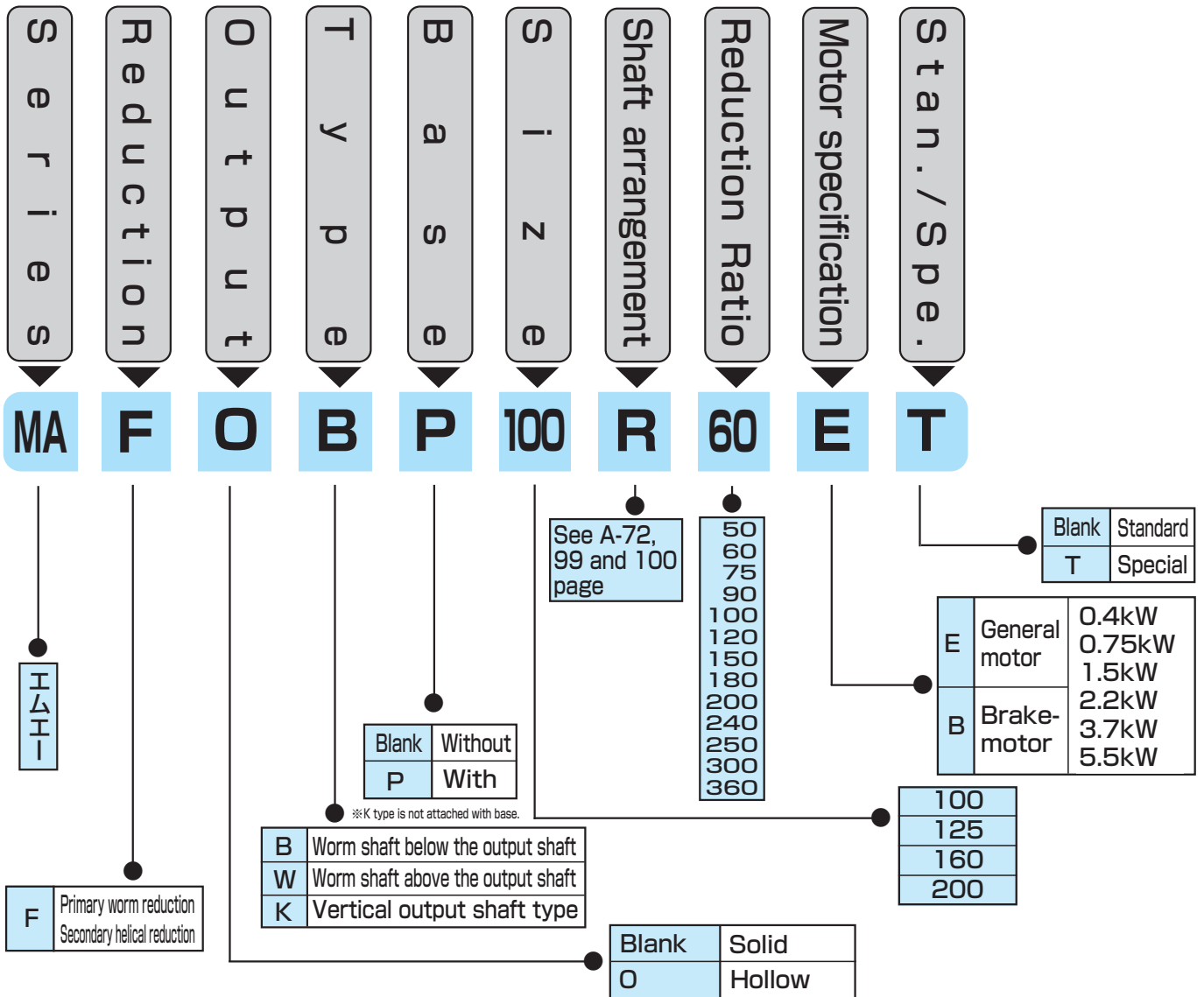
MODERNIZED

- The adoption of high-grade lubricants reduces the maintenance time.!
- Additionally, we have created a truly low-noise and low-vibration worm.!

Wide selection 13 different type reduction ratio



Nominal type



Specification

Standard type

No	Item	Specification
1	Size	100 125 160 200
2	Reduction ratio	50 60 75 90 100 120 150 180 200 240 250 300 360
3	Output shaft shape	Solid (type MAF) Hollow (type MAFO)
4	Position & direction of input & output shaft	Worm shaft below the output shaft type MAFB
		Worm shaft above the output shaft type MAFW
		Vertical output shaft type MAFK
5	Input shaft shape	Solid shaft
		With motor · With brake-motor
6	Paint	Munsell 5.5PB5.5/9 sky blue (lacquer type)
7	Shaft keys	JIS B 1301-1996 (parallel key)
8	Worm screw	Twisted right direction

● Special order products are acceptable.

Specification

Dedicated motor/Brake motor specifications

Protection type	Indoor type totally-enclosed fancooled type
Voltage · Frequency	200/200/220V 50/60/60Hz
P o l e s	4 P
R a t i n g	Continuousness
Heat-resistant class	Class E (0.4~3.7kW) Class B(5.5kW)
B r a k e t y p e	DC operated spring brake, Equipped with a manual release handle
Braking torque	150% or more
Flange shape	Square
Shaft shape	Hollow

●This motor is only for use with the Makiace series, and no commercially available motor can be used.

Genuine lubricants

To get full performance from worm gear speed reducers, it is important to use the proper lubricants. The Makiace MA series are shipped with the lubricants shown in the following table. Please double check the operating conditions and replace the lubricants according to the following table.

●Lubricant

Ambient temperature Size	°C	0~50
MAF100~200		Mobil Glygoyle 220

●Notes

- 1.Please note that the Makiace MA series worm gear speed reducers cannot perform as specified unless the lubricants mentioned above are used.
- 2.Please avoid combining these lubricants with general industrial gear lubricants.
- 3.If you are working at unusual ambient temperatures, please contact us.

Precaution for Handling

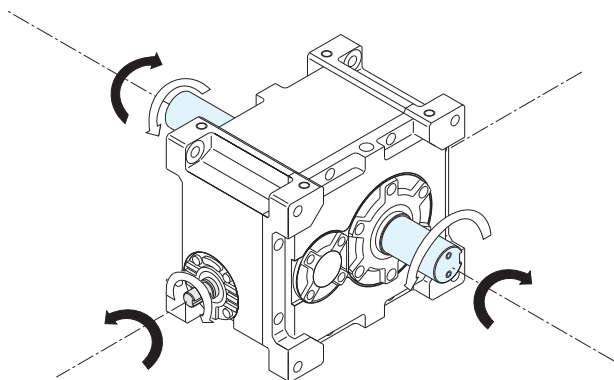
Please see the A-07 page.

Shaft Arrangement and Rotation Direction

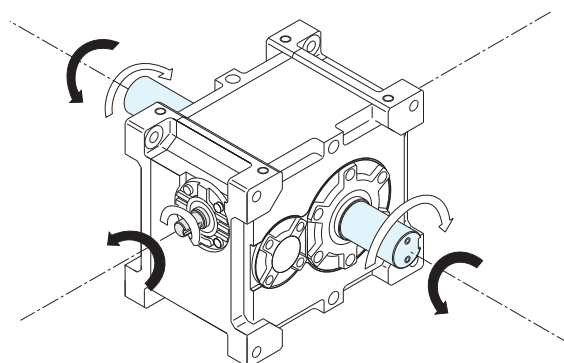
- Please put input shaft or motor front and decide shaft arrangement by output
- Shaft arrangement sign

Sign	Output shaft direction	Sign	Output shaft direction
R	Right	C	Output shaft double
L	Left		
U	Up		
D	Down		

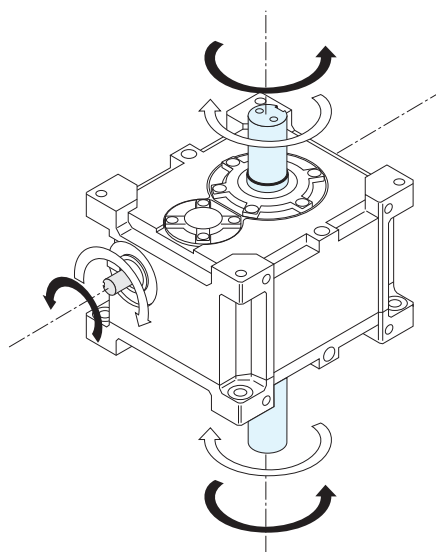
MAFB-C



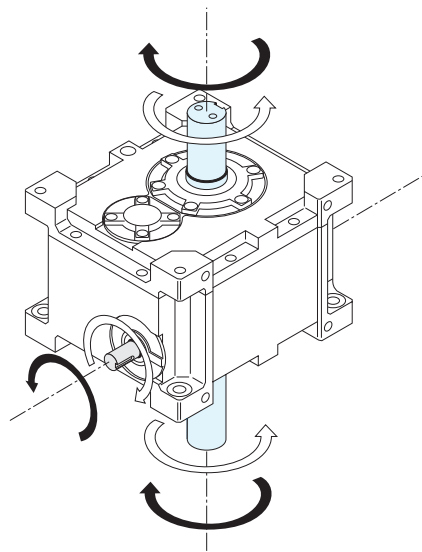
MAFW-C



MAFK-RC



MAFK-LC



- Please see the A-99, 100 page about shaft arrangement detail.
- About special installation on side wall or upside-down, please contact us.

Type Number Selection

When selecting

1] Load coefficient

Select the load coefficient from the load coefficient table according to the operating conditions, such as the type of load, operating time, start-stop frequency and whether or not the load fluctuates dramatically. Find the equivalent input capacity or the equivalent output torque for your needs.

2] Thermal rated capacity

If you are working at over 40 degrees, please contact us.

3] Overhang load

3-1) What is overhang load (OHL)?

The overhang load is the suspended load acting on the output shaft. It should always be considered when selecting speed reducers.

Normally, the value resulting from dividing the load torque by the radius of the rotating body (sprocket, pulley, and so on) is considered to be the overhang load (OHL).

3-2) Calculation of the equivalent allowable overhang load

The acceptable overhang load value shown in the catalog is calculated on the assumption the load is acting on the center of the LS dimension shown for the output shaft. Therefore, when the point where the load is applied is not in the center of the LS dimension, the acceptable value in the catalog will not be correct. Find the equivalent allowable overhang load using the formula and the table given in the selection procedure.

3-3) Overhang load coefficient

When a speed reducer and a driven machine are driven indirectly, select the overhang load coefficient from the separate table according to the type of connection, and then find the overhang load.

Type number selection procedure

With the following procedure, please select type turn.

Determination of the selection specifications

$$1. \text{ Reduction ratio } R = \frac{\text{input shaft rotation speed } n1}{\text{output shaft rotation speed } n2}$$

Load coefficient table

Operational conditions Load Conditions		2. Load coefficient selection of SF							
		Continuous operation			When starting and stopping occurs 10 times or more in one hour (Note1)			When the load fluctuates dramatically such as when using mixers and thickeners	
Operating time		Uniform loading	Medium Shock loading	Heavy shock loading	Uniform loading	Medium Shock loading	Heavy Shock loading	Unidirectional rotation	Forward/Reverse rotation
		Up to 2 hours		0.90	1.00	1.25	1.00	1.25	1.50
Up to 10 hours		1.00	1.25	1.50	1.25	1.50	1.75	1.50	1.75
Up to 24 hours		1.25	1.50	1.75	1.50	1.75	2.00	1.75	2.00

Note-1: Since it is also necessary to check strength of the unit depending on the frequency of use, please contact us.

3. Calculation of the equivalent capacity

a. Method found from the input capacity

Find the equivalent input capacity, Pe (kW) from the actual output torque, Pa(kW)
 $Pe = Sf \cdot Pa$

b. Method found from the output torque

Find the equivalent output torque, Te(N·m) from the actual output torque, Ta(N·m)
 $Te = Sf \cdot Ta$

4. Provisional selection of a type number

Temporarily select the type number that corresponds to Pe or Te from the performance table.

5. Overhang load(OHL) check

OHL coefficient Selection of fo
Overhang load coefficient table

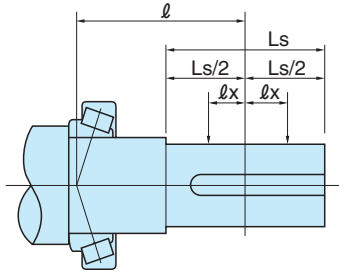
Sprocket	Gear	V-belt pulley	Flat belt
1.00	1.25	1.50	2.50

Actual overhang load calculation

$$L_r = \frac{T_e}{r} \cdot f_o$$

T_e : Equivalent output torque(N·m)
 r : The radius (m) of a rotating body like a sprocket
 f_o : OHL coefficient
 L_r : Actual overhang load(N)

Equivalent allowable overhang load (OHL) calculation



L_c : Allowable overhang load (N)
 L_e : Equivalent allowable overhang load(N)
 l : Distance from the center of the output shaft to the bearing fulcrum(mm)
 l_x : Distance from the point where the load is applied to the center of the output shaft(mm)

a) When OHL acts outward from the center of the output shaft

$$L_e = L_c \cdot \frac{l}{l + l_x}$$

b) When OHL acts inward from the center of the output shaft

$$L_e = L_c \cdot \frac{l}{l - l_x}$$

c) When OHL acts on the center of the output shaft

$$L_e = L_c$$

Dimension l of the output shaft and allowable overhang load

Size	Dimensions l (mm)	Allowable OHL L_c (N)
100	80.25	11560
125	98.75	16800
160	104.00	25480
200	131.00	39200

OK if $L_e \geq L_r$. If $L_e < L_r$, select a type number where $L_e \geq L_r$.

Backlash standard table

Reduction ratio	MAF100		MAF125		MAF160		MAF200	
	Radian display ($\times 10^{-3}$ rad.)	Angle display (deg.)	Radian display ($\times 10^{-3}$ rad.)	Angle display (deg.)	Radian display ($\times 10^{-3}$ rad.)	Angle display (deg.)	Radian display ($\times 10^{-3}$ rad.)	Angle display (deg.)
50	1.75~6.46	0.10~0.37	1.57~6.11	0.09~0.35	1.40~5.41	0.08~0.31	1.22~4.54	0.07~0.26
60	1.75~6.11	0.10~0.35	1.40~5.76	0.08~0.33	1.22~4.89	0.07~0.28	1.22~4.36	0.07~0.25
75	1.75~6.46	0.10~0.37	1.57~6.11	0.09~0.35	1.40~5.41	0.08~0.31	1.22~4.54	0.07~0.26
90	1.75~6.11	0.10~0.35	1.40~5.76	0.08~0.33	1.22~4.89	0.07~0.28	1.22~4.36	0.07~0.25
100	1.75~6.46	0.10~0.37	1.57~5.93	0.09~0.34	1.22~5.41	0.07~0.31	1.22~4.54	0.07~0.26
120	1.75~6.11	0.10~0.35	1.40~5.76	0.08~0.33	1.22~4.89	0.07~0.28	1.22~4.36	0.07~0.25
150	1.75~6.46	0.10~0.37	1.57~6.11	0.09~0.35	1.40~5.41	0.08~0.31	1.22~4.54	0.07~0.26
180	1.75~6.11	0.10~0.35	1.40~5.76	0.08~0.33	1.22~4.89	0.07~0.28	1.22~4.36	0.07~0.25
200	1.75~6.46	0.10~0.37	1.57~5.93	0.09~0.34	1.22~5.41	0.07~0.31	1.22~4.54	0.07~0.26
240	1.75~6.11	0.10~0.35	1.40~5.76	0.08~0.33	1.22~4.89	0.07~0.28	1.22~4.36	0.07~0.25
250	1.75~6.46	0.10~0.37	1.57~5.93	0.09~0.34	1.22~5.24	0.07~0.30	1.22~4.54	0.07~0.26
300	1.75~6.11	0.10~0.35	1.40~5.59	0.08~0.32	1.22~4.71	0.07~0.27	1.05~4.19	0.06~0.24
360	1.75~6.11	0.10~0.35	1.40~5.59	0.08~0.32	1.22~4.71	0.07~0.27	1.05~4.19	0.06~0.24

Rated transfer capability table (10-hour continuous rating)

MAF·MAFO100

Reduction ratio	Input rotation speed(rpm)									
	Capability	1800	1500	1200	1000	900	750	500	250	100
50	Input capacity (kW)	1.77	1.62	1.41	1.26	1.19	1.06	0.82	0.52	0.26
	Output torque (N·m)	405	443	480	508	531	559	647	787	964
	Efficiency (%)	86.7	85.9	85.2	84.7	84.3	83.4	82.0	79.4	76.3
60	Input capacity (kW)	1.77	1.62	1.41	1.26	1.19	1.06	0.82	0.52	0.26
	Output torque (N·m)	486	531	576	609	637	671	777	945	1150
	Efficiency (%)	86.7	85.9	85.2	84.7	84.3	83.4	82.0	79.4	76.3
75	Input capacity (kW)	1.52	1.35	1.19	1.07	1.00	0.89	0.69	0.43	0.22
	Output torque (N·m)	508	536	582	624	643	685	778	932	1130
	Efficiency (%)	83.8	82.9	82.0	81.4	80.8	79.7	78.1	75.0	71.4
90	Input capacity (kW)	1.52	1.35	1.19	1.07	1.00	0.89	0.69	0.43	0.22
	Output torque (N·m)	609	643	699	749	771	822	933	1110	1350
	Efficiency (%)	83.8	82.9	82.0	81.4	80.8	79.7	78.1	75.0	71.4
100	Input capacity (kW)	1.08	0.97	0.85	0.75	0.71	0.63	0.49	0.30	0.15
	Output torque (N·m)	470	508	545	573	596	634	713	843	1010
	Efficiency (%)	82.2	81.3	80.6	79.5	78.8	77.9	76.0	72.9	69.7
120	Input capacity (kW)	1.08	0.97	0.85	0.75	0.71	0.63	0.49	0.30	0.15
	Output torque (N·m)	565	609	654	688	715	760	855	1010	1210
	Efficiency (%)	82.2	81.3	80.6	79.5	78.8	77.9	76.0	72.9	69.7
150	Input capacity (kW)	0.97	0.88	0.76	0.68	0.65	0.59	0.44	0.28	0.14
	Output torque (N·m)	587	629	666	708	736	787	866	1020	1210
	Efficiency (%)	75.8	74.4	73.1	72.2	71.2	69.8	67.5	63.3	58.8
180	Input capacity (kW)	0.97	0.88	0.76	0.68	0.65	0.59	0.44	0.28	0.14
	Output torque (N·m)	704	755	799	850	883	945	1040	1220	1450
	Efficiency (%)	75.8	74.4	73.1	72.2	71.2	69.8	67.5	63.3	58.8
200	Input capacity (kW)	0.67	0.60	0.52	0.47	0.45	0.40	0.30	0.19	0.09
	Output torque (N·m)	522	554	592	634	652	685	755	885	1030
	Efficiency (%)	73.1	72.0	70.8	69.1	68.3	67.1	64.4	60.2	56.4
240	Input capacity (kW)	0.67	0.60	0.52	0.47	0.45	0.40	0.30	0.19	0.09
	Output torque (N·m)	626	665	710	760	783	822	906	1060	1240
	Efficiency (%)	73.1	72.0	70.8	69.1	68.3	67.1	64.4	60.2	56.4
250	Input capacity (kW)	0.50	0.45	0.39	0.36	0.33	0.30	0.22	0.14	0.07
	Output torque (N·m)	470	498	536	568	582	610	666	782	913
	Efficiency (%)	70.1	68.9	67.5	65.8	64.9	63.7	60.8	56.4	52.7
300	Input capacity (kW)	0.50	0.45	0.39	0.36	0.33	0.30	0.22	0.14	0.07
	Output torque (N·m)	565	598	643	682	699	732	799	939	1090
	Efficiency (%)	70.1	68.9	67.5	65.8	64.9	63.7	60.8	56.4	52.7
360	Input capacity (kW)	0.39	0.35	0.31	0.28	0.26	0.22	0.18	0.09	0.05
	Output torque (N·m)	509	542	576	604	620	642	715	827	861
	Efficiency (%)	67.2	66.0	64.4	62.6	61.8	60.5	57.5	53.1	49.4

※Reduction ratio is actual reduction ratio.

※Use an output torque lower than the value shown in the table.

※The conditions of use are set by uniform load and 10 hours per day (service factor=1)

※The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this type of situation, refer to the theoretical starting efficiency value (A-80).

If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

MAF·MAFO125

Reduction ratio	Input rotation speed(rpm)									
	Capability	1800	1500	1200	1000	900	750	500	250	100
50	Input capacity (kW)	3.31	3.00	2.67	2.38	2.24	2.01	1.58	0.99	0.51
	Output torque (N·m)	773	829	913	964	1010	1080	1230	1510	1860
	Efficiency (%)	87.9	86.8	85.8	85.2	84.8	84.4	82.5	79.8	76.6
60	Input capacity (kW)	3.31	3.00	2.67	2.38	2.24	2.01	1.58	0.99	0.51
	Output torque (N·m)	928	995	1090	1150	1210	1290	1480	1820	2240
	Efficiency (%)	87.9	86.8	85.8	85.2	84.8	84.4	82.5	79.8	76.6
75	Input capacity (kW)	2.70	2.44	2.14	1.94	1.82	1.59	1.27	0.79	0.41
	Output torque (N·m)	913	978	1050	1140	1180	1230	1420	1710	2100
	Efficiency (%)	85.2	83.9	82.7	81.9	81.5	80.8	78.6	75.2	71.5
90	Input capacity (kW)	2.7	2.44	2.14	1.94	1.82	1.59	1.27	0.79	0.41
	Output torque (N·m)	1090	1170	1260	1360	1420	1470	1710	2050	2520
	Efficiency (%)	85.2	83.9	82.7	81.9	81.5	80.8	78.6	75.2	71.5
100	Input capacity (kW)	1.96	1.77	1.57	1.40	1.30	1.17	0.90	0.55	0.28
	Output torque (N·m)	866	927	1010	1070	1090	1170	1330	1570	1910
	Efficiency (%)	83.4	82.3	81.2	80.5	80.1	78.9	76.9	73.6	69.8
120	Input capacity (kW)	1.96	1.77	1.57	1.40	1.30	1.17	0.90	0.55	0.28
	Output torque (N·m)	1040	1110	1210	1280	1310	1400	1600	1880	2290
	Efficiency (%)	83.4	82.3	81.2	80.5	80.1	78.9	76.9	73.6	69.8
150	Input capacity (kW)	1.54	1.38	1.27	1.20	1.15	1.03	0.80	0.50	0.26
	Output torque (N·m)	950	1000	1110	1250	1320	1400	1570	1850	2210
	Efficiency (%)	77.7	75.9	74.1	72.9	72.3	71.3	68.1	63.7	58.8
180	Input capacity (kW)	1.54	1.38	1.27	1.20	1.15	1.03	0.80	0.50	0.26
	Output torque (N·m)	1140	1200	1340	1500	1590	1680	1880	2220	2660
	Efficiency (%)	77.7	75.9	74.1	72.9	72.3	71.3	68.1	63.7	58.8
200	Input capacity (kW)	1.20	1.08	0.95	0.85	0.80	0.72	0.55	0.35	0.17
	Output torque (N·m)	955	1010	1090	1150	1180	1260	1380	1640	1930
	Efficiency (%)	74.8	73.2	71.6	70.6	70.0	68.3	65.6	61.2	56.4
240	Input capacity (kW)	1.20	1.08	0.95	0.85	0.80	0.72	0.55	0.35	0.17
	Output torque (N·m)	1140	1210	1300	1380	1420	1510	1660	1970	2320
	Efficiency (%)	74.8	73.2	71.6	70.6	70.0	68.3	65.6	61.2	56.4
250	Input capacity (kW)	0.90	0.82	0.72	0.64	0.61	0.54	0.41	0.26	0.13
	Output torque (N·m)	866	922	992	1030	1080	1130	1230	1450	1710
	Efficiency (%)	72.1	70.5	69.0	68.0	67.0	65.4	62.8	58.2	53.4
300	Input capacity (kW)	0.90	0.82	0.72	0.64	0.61	0.54	0.41	0.26	0.13
	Output torque (N·m)	1040	1100	1190	1240	1300	1350	1480	1750	2050
	Efficiency (%)	72.1	70.5	69.0	68.0	67.0	65.4	62.8	58.2	53.4
360	Input capacity (kW)	0.70	0.63	0.56	0.50	0.47	0.41	0.32	0.18	0.10
	Output torque (N·m)	933	984	1060	1120	1150	1190	1330	1530	1710
	Efficiency (%)	69.2	67.5	66.0	64.9	63.7	62.0	59.4	54.7	49.9

※Reduction ratio is actual reduction ratio.

※Use an output torque lower than the value shown in the table.

※The conditions of use are set by uniform load and 10 hours per day (service factor=1)

※The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this type of situation, refer to the theoretical starting efficiency value (A-80).

If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

Rated transfer capability table (10-hour continuous rating)

MAF·MAFO160

Reduction ratio	Input rotation speed(rpm)									
	Capability	1800	1500	1200	1000	900	750	500	250	100
50	Input capacity (kW)	5.89	5.24	4.69	4.19	3.94	3.56	2.75	1.75	0.90
	Output torque (N·m)	1380	1470	1620	1720	1790	1930	2190	2710	3370
	Efficiency (%)	88.6	88.2	87.0	86.2	85.8	85.2	83.8	81.1	77.7
60	Input capacity (kW)	5.89	5.24	4.69	4.19	3.94	3.56	2.75	1.75	0.90
	Output torque (N·m)	1660	1760	1950	2070	2150	2320	2630	3250	4040
	Efficiency (%)	88.6	88.2	87.0	86.2	85.8	85.2	83.8	81.1	77.7
75	Input capacity (kW)	4.94	4.56	3.94	3.64	3.44	3.06	2.38	1.49	0.77
	Output torque (N·m)	1700	1860	1980	2170	2260	2400	2730	3290	4070
	Efficiency (%)	86.4	85.7	84.3	83.3	82.8	82.2	80.2	77.0	73.1
90	Input capacity (kW)	4.94	4.56	3.94	3.64	3.44	3.06	2.38	1.49	0.77
	Output torque (N·m)	2040	2230	2370	2610	2710	2880	3280	3950	4880
	Efficiency (%)	86.4	85.7	84.3	83.3	82.8	82.2	80.2	77.0	73.1
100	Input capacity (kW)	3.63	3.27	2.89	2.60	2.43	2.16	1.71	1.06	0.54
	Output torque (N·m)	1630	1740	1880	2010	2080	2190	2530	2990	3660
	Efficiency (%)	84.9	83.6	82.1	81.2	80.7	80.0	77.7	74.2	70.0
120	Input capacity (kW)	3.63	3.27	2.89	2.60	2.43	2.16	1.71	1.06	0.54
	Output torque (N·m)	1960	2090	2260	2420	2490	2630	3040	3590	4390
	Efficiency (%)	84.9	83.6	82.1	81.2	80.7	80.0	77.7	74.2	70.0
150	Input capacity (kW)	2.83	2.59	2.29	2.16	2.06	1.96	1.53	0.96	0.51
	Output torque (N·m)	1800	1940	2080	2280	2430	2750	3090	3640	4400
	Efficiency (%)	80.0	78.7	76.5	75.1	74.4	73.4	70.5	66.1	60.9
180	Input capacity (kW)	2.83	2.59	2.29	2.16	2.06	1.96	1.53	0.96	0.51
	Output torque (N·m)	2160	2330	2500	2740	2920	3300	3710	4370	5280
	Efficiency (%)	80.0	78.7	76.5	75.1	74.4	73.4	70.5	66.1	60.9
200	Input capacity (kW)	2.17	1.97	1.74	1.57	1.48	1.31	1.02	0.64	0.33
	Output torque (N·m)	1770	1880	2020	2140	2220	2330	2580	3070	3620
	Efficiency (%)	77.3	75.2	73.0	71.6	70.9	69.9	66.6	61.8	56.6
240	Input capacity (kW)	2.17	1.97	1.74	1.57	1.48	1.31	1.02	0.64	0.33
	Output torque (N·m)	2130	2250	2420	2570	2670	2800	3090	3680	4350
	Efficiency (%)	77.3	75.2	73.0	71.6	70.9	69.9	66.6	61.8	56.6
250	Input capacity (kW)	1.64	1.50	1.32	1.18	1.11	0.99	0.76	0.48	0.25
	Output torque (N·m)	1620	1720	1840	1950	2000	2120	2310	2750	3220
	Efficiency (%)	74.7	72.5	70.4	69.0	68.4	67.3	63.8	59.0	53.8
300	Input capacity (kW)	1.64	1.50	1.32	1.18	1.11	0.99	0.76	0.48	0.25
	Output torque (N·m)	1950	2060	2210	2340	2400	2540	2770	3300	3860
	Efficiency (%)	74.7	72.5	70.4	69.0	68.4	67.3	63.8	59.0	53.8
360	Input capacity (kW)	1.27	1.15	1.01	0.91	0.85	0.76	0.59	0.37	0.19
	Output torque (N·m)	1730	1820	1940	2070	2130	2230	2460	2870	3360
	Efficiency (%)	71.8	69.4	67.1	65.7	65.0	63.8	60.1	55.2	49.9

※Reduction ratio is actual reduction ratio.

※Use an output torque lower than the value shown in the table.

※The conditions of use are set by uniform load and 10 hours per day (service factor=1)

※The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this type of situation, refer to the theoretical starting efficiency value (A-80).

If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

MAF·MAFO200

Reduction ratio	Input rotation speed(rpm)									
	Capability	1800	1500	1200	1000	900	750	500	250	100
50	Input capacity (kW)	9.80	8.79	7.71	6.97	6.52	5.86	4.58	2.94	1.49
	Output torque (N·m)	2320	2480	2700	2900	3000	3200	3690	4600	5590
	Efficiency (%)	89.2	88.7	88.2	87.2	86.7	85.9	84.7	82.0	78.5
60	Input capacity (kW)	9.80	8.79	7.71	6.97	6.52	5.86	4.58	2.94	1.49
	Output torque (N·m)	2780	2970	3240	3480	3600	3850	4430	5520	6700
	Efficiency (%)	89.2	88.7	88.2	87.2	86.7	85.9	84.7	82.0	78.5
75	Input capacity (kW)	7.86	7.28	6.42	5.85	5.49	4.94	3.80	2.41	1.06
	Output torque (N·m)	2720	3000	3280	3530	3660	3900	4420	5390	5590
	Efficiency (%)	87.1	86.5	85.7	84.4	83.8	82.8	81.4	78.1	73.8
90	Input capacity (kW)	7.86	7.28	6.42	5.85	5.49	4.94	3.80	2.41	1.06
	Output torque (N·m)	3270	3600	3940	4240	4390	4690	5310	6470	6700
	Efficiency (%)	87.1	86.5	85.7	84.4	83.8	82.8	81.4	78.1	73.8
100	Input capacity (kW)	5.84	5.22	4.65	4.15	3.90	3.48	2.72	1.69	0.81
	Output torque (N·m)	2660	2830	3100	3270	3400	3610	4120	4910	5590
	Efficiency (%)	85.9	85.4	83.8	82.7	82.2	81.3	79.5	76.1	71.8
120	Input capacity (kW)	5.84	5.22	4.65	4.15	3.90	3.48	2.72	1.69	0.81
	Output torque (N·m)	3190	3400	3720	3930	4080	4330	4940	5890	6700
	Efficiency (%)	85.9	85.4	83.8	82.7	82.2	81.3	79.5	76.1	71.8
150	Input capacity (kW)	4.44	4.15	3.78	3.39	3.23	3.01	2.44	1.45	0.63
	Output torque (N·m)	2860	3170	3550	3720	3890	4280	5040	5590	5590
	Efficiency (%)	81.0	80.0	78.6	76.7	75.8	74.4	72.2	67.5	61.7
180	Input capacity (kW)	4.44	4.15	3.78	3.39	3.23	3.01	2.44	1.45	0.63
	Output torque (N·m)	3430	3810	4250	4470	4670	5130	6050	6700	6700
	Efficiency (%)	81.0	80.0	78.6	76.7	75.8	74.4	72.2	67.5	61.7
200	Input capacity (kW)	3.52	3.18	2.83	2.57	2.39	2.15	1.66	1.05	0.49
	Output torque (N·m)	2950	3160	3410	3620	3700	3940	4370	5140	5590
	Efficiency (%)	79.0	78.2	75.6	74.0	73.2	72.0	69.2	64.4	58.9
240	Input capacity (kW)	3.52	3.18	2.83	2.57	2.39	2.15	1.66	1.05	0.49
	Output torque (N·m)	3540	3790	4090	4350	4440	4720	5240	6170	6700
	Efficiency (%)	79.0	78.2	75.6	74.0	73.2	72.0	69.2	64.4	58.9
250	Input capacity (kW)	2.6	2.39	2.10	1.90	1.80	1.60	1.22	0.78	0.40
	Output torque (N·m)	2640	2860	3040	3200	3340	3500	3830	4540	5360
	Efficiency (%)	76.6	75.3	72.6	70.9	70.1	68.9	65.8	60.8	55.2
300	Input capacity (kW)	2.60	2.39	2.10	1.90	1.80	1.60	1.22	0.78	0.40
	Output torque (N·m)	3160	3430	3650	3850	4000	4200	4600	5450	6430
	Efficiency (%)	76.6	75.3	72.6	70.9	70.1	68.9	65.8	60.8	55.2
360	Input capacity (kW)	2.03	1.85	1.64	1.48	1.40	1.24	0.95	0.61	0.31
	Output torque (N·m)	2880	3080	3280	3460	3570	3740	4120	4830	5680
	Efficiency (%)	74.3	72.6	69.8	68.1	67.2	66.0	62.6	57.5	51.8

※Reduction ratio is actual reduction ratio.

※Use an output torque lower than the value shown in the table.

※The conditions of use are set by uniform load and 10 hours per day (service factor=1)

※The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this type of situation, refer to the theoretical starting efficiency value (A-80).

If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

Rated transfer capability table, with motors

Motor capacity · size · output torque by reduction ratio

Size	kW Reduction ratio	0.4		0.75		1.5		2.2		3.7		5.5	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)	
100	50	113	94.5	211	177								
	60	136	113	253	212								
	75	163	137	306	257								
	90	196	164	367	308								
	100	214	179	404	338								
	120	256	215	485	405								
	150	293	247	551	460								
	180	352	296	661	552								
	200	380	319										
	240	457	383										
	250	456	384										
	300	548	461										
360	542	509											
125	50			214	180	427	361						
	60			256	215	512	433						
	75			310	261	618	527						
	90			372	313	741	633						
	100			405	340	817	684						
	120			486	408	980	821						
	150			561	475	1000	955						
	180			673	570	1200	1140						
	200			722	613								
	240			866	735								
	250			865	741								
	300			1040	889								
360			984	933									
160	50					435	362	637	532	1070	893		
	60					522	435	746	638	1290	1070		
	75					632	532	931	779	1560	1310		
	90					758	638	1120	935	1870	1570		
	100					822	694	1210	1020	1740	1630		
	120					986	832	1450	1220	2090	1960		
	150					1160	978	1710	1440				
	180					1390	1170	2060	1730				
	200					1480	1260						
	240					1780	1510						
	250					1720	1520						
	300					2060	1820						
360					1820	1730							
200	50							641	537	1080	898	1600	1340
	60							770	644	1290	1080	1920	1610
	75							936	784	1580	1310	2350	1970
	90							1120	941	1890	1580	2810	2360
	100							1230	1030	2070	1730	2830	2590
	120							1480	1240	2490	2080	3400	3110
	150							1730	1450	2910	2450		
	180							2080	1740	3490	2930		
	200							2260	1890				
	240							2710	2270				
	250							2720	2310				
	300							3260	2770				
360							3080	2880					

※ The numbers shown in gray are our standard combinations.

※ The 50Hz and 60Hz with a reduction ratio of 360 for all size, the torque output from the motor will exceed the allowable output torque. Therefore, only use the product at torques below these values.

※ Calculating formula of output torque $T = (9550 \times kW) / N \times R \times \eta_s$
 kW: Motor capacity N: Motor speed R: Reduction ratio η_s : Theoretical starting efficiency

※ The capabilities described above show the values in continuous operation (stable conditions after the temperature rises). In a situation where the oil temperature does not rise because of brief or intermittent operation, the lubricant friction resistance will be higher and the efficiency will be lower. To find the efficiency in this type of situation, refer to the theoretical starting efficiency value (A-80). If there is no room in motor capacity, there are cases where the rated current value may be exceeded.

Theoretical starting efficiency

(%)

Reduction ratio \ Size	100	125	160	200
50	66.5	66.0	66.8	66.5
60	66.5	66.0	66.8	66.5
75	60.5	59.8	60.9	60.5
90	60.5	59.8	60.9	60.5
100	58.9	58.3	57.7	59.0
120	58.9	58.3	57.7	59.0
150	46.5	45.5	46.9	46.5
180	46.5	45.5	46.9	46.5
200	44.4	43.6	42.8	44.4
240	44.4	43.6	42.8	44.4
250	40.9	40.9	40.3	40.9
300	40.9	40.9	40.3	40.9
360	37.7	37.5	36.6	37.7

※The starting efficiency shown above is calculated from the gear friction coefficient when the input rotation speed is 0. Therefore, lubricant friction losses, bearing friction losses and oil seal friction losses are not included. Actually, the values shown above will vary, depending on bearing precompression, lubricant viscosity at ambient temperature, and the degree of fit on the oil seal.

Input shaft equivalent inertial moment

(X10⁻⁴kg · m²)

Type	Size	Reduction ratio												
		50	60	75	90	100	120	150	180	200	240	250	300	360
MAF	100	0.85	0.82	0.73	0.72	0.65	0.65	0.66	0.66	0.62	0.62	0.61	0.61	0.61
	125	1.52	1.44	1.20	1.17	1.01	0.99	1.01	1.00	0.91	0.90	0.87	0.87	0.86
	160	4.41	4.13	3.34	3.22	2.85	2.79	2.70	2.68	2.51	2.49	2.39	2.38	2.35
	200	11.7	10.9	8.58	8.25	6.86	6.67	6.71	6.63	5.83	5.78	5.58	5.55	5.43
MAFO	100	0.85	0.82	0.73	0.72	0.65	0.65	0.66	0.66	0.62	0.62	0.61	0.61	0.61
	125	1.53	1.45	1.21	1.17	1.01	0.99	1.01	1.00	0.91	0.90	0.87	0.87	0.86
	160	4.42	4.14	3.35	3.23	2.86	2.79	2.70	2.68	2.51	2.49	2.39	2.38	2.35
	200	11.8	11.0	8.61	8.27	6.87	6.68	6.72	6.64	5.83	5.78	5.59	5.55	5.43

※When you convert into GD², please quadruple value (I) of table.
GD²=4I

Motor inertia moment

(X10⁻⁴kg · m²)

Motor capacity kW	0.4	0.75	1.5	2.2	3.7	5.5
Without brake	8.25	16.8	32.5	52.5	163	300
With brake	15.0	37.5	67.5	60.0	170	315

※When you convert into GD², please quadruple value (I) of table.
GD²=4I

Motor specification

Please see the A-24 page.

MAFB/MAFBP

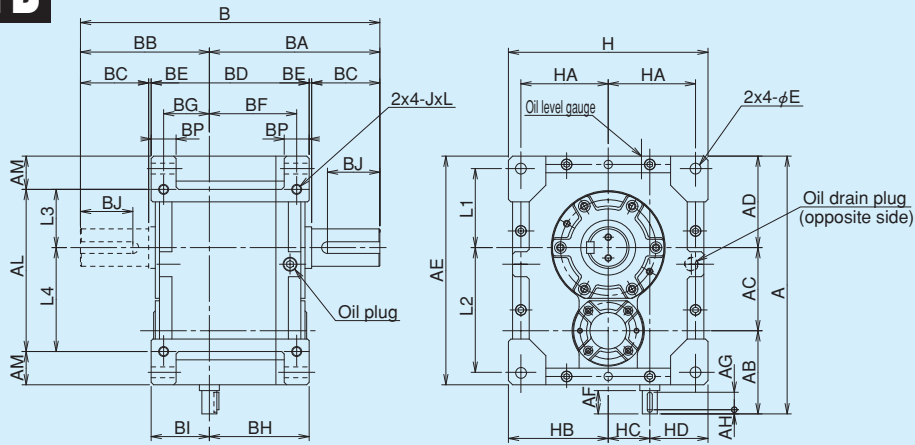
Single worm speed reducer

Outline dimensional drawings

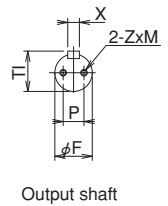
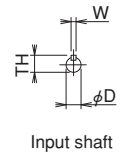
Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

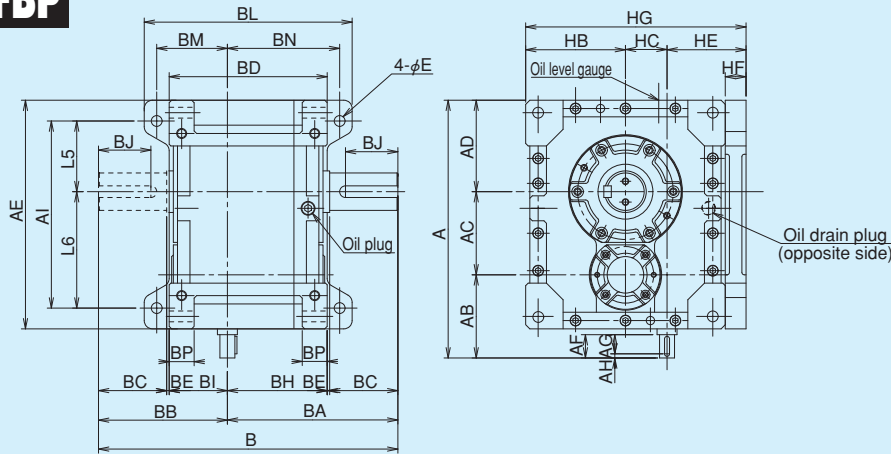
MAFB



Shaft detail drawing



MAFBP



MAFB/MAFBP Dimension

Size	A	AB	AC	AD	AE	AI	AL	AM	B	BA	BB	BD	BE	BF	BG	BH	BI	BL	BM	BN	BP	E	H	HA	HB	HC	HD	HE	HF	HG	L1	L2	L3	L4	L5	L6	J	L
100	310	100	100	110	275	225	195	40	360	205	155	190	3	105	55	120	70	250	85	135	30	13	240	105	120	50	70	95	25	285	95	150	70	125	85	140	M12	24
125	373	113	125	135	335	285	245	45	440	250	190	220	5	125	65	140	80	300	100	160	30	13	280	125	140	63	77	107	30	310	115	180	90	155	110	175	M12	24
160	475	145	160	170	425	365	315	55	485	280	205	265	5	150	75	170	95	365	120	195	40	18	350	155	175	80	95	135	40	390	145	230	115	200	140	225	M16	32
200	575	165	200	210	525	445	385	70	600	350	250	330	5	190	90	215	115	430	140	240	50	22	430	190	215	100	115	160	45	475	180	285	140	245	170	275	M20	40

Size	Input shaft						Output shaft								Weight kg		Lubricant quantity
	AF	AG	AH	Dh6	Wh9	TH	BC	BJ	Fh6	Xh9	T1	P	Z	M	Without base	With base	L
100	28	21	5	18	6	20.5	82	63	45	14	48.5	25	M8	16	44	49	2.5
125	36	25	5	20	6	22.5	105	81	60	18	64	30	M10	20	62	70	3.6
160	42	30	6	25	8	28	105	80	70	20	74.5	35	M12	24	110	127	6.5
200	42	30	6	28	8	31	130	97	90	25	95	45	M16	32	220	247	11.0

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFOB/MAFOBP

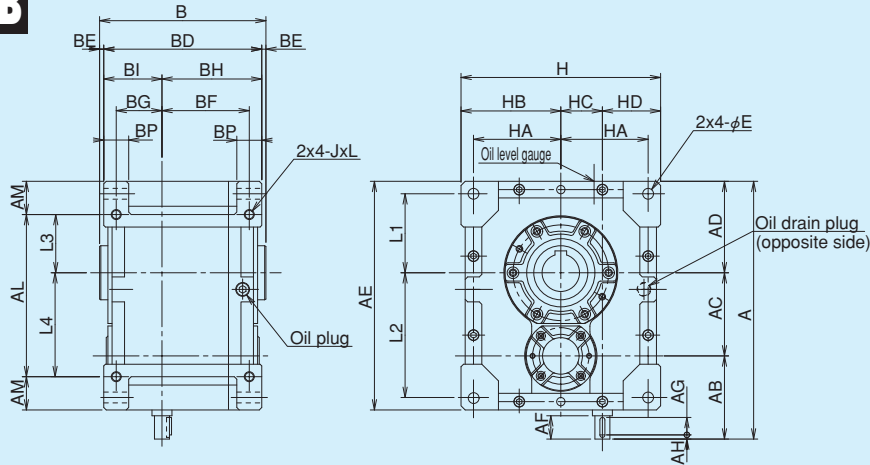
Single worm speed reducer

Outline dimensional drawings

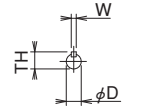
Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

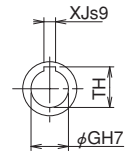
MAFOB



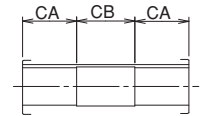
Shaft detail drawing



Input shaft

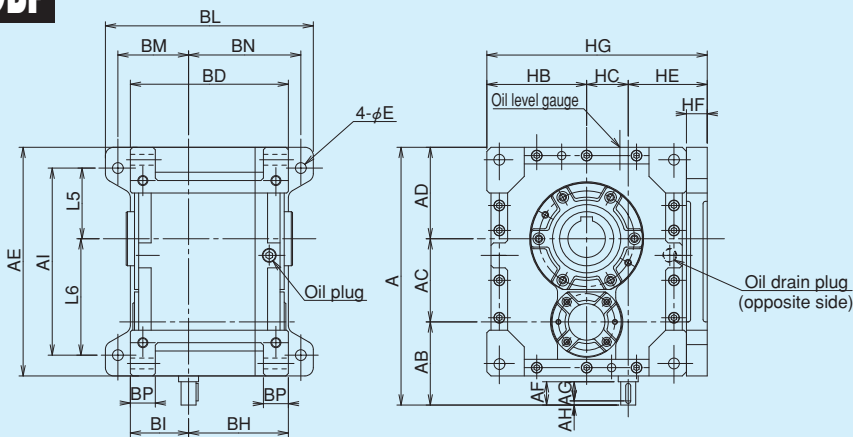


Output shaft



Output shaft inside detail

MAFOBP



MAFOB/MAFOBP Dimension

Size	A	AB	AC	AD	AE	AI	AL	AM	B	BD	BE	BF	BG	BH	BI	BL	BM	BN	BP	E	H	HA	HB	HC	HD	HE	HF	HG	L1	L2	L3	L4	L5	L6	J	L
100	310	100	100	110	275	225	195	40	200	190	5	105	55	120	70	250	85	135	30	13	240	105	120	50	70	95	25	285	95	150	70	125	85	140	M12	24
125	373	113	125	135	335	285	245	45	230	200	5	125	65	140	80	300	100	160	30	13	280	125	140	63	77	107	30	310	115	180	90	155	110	175	M12	24
160	475	145	160	170	425	365	315	55	275	265	5	150	75	170	95	365	120	195	40	18	350	155	175	80	95	135	40	390	145	230	115	200	140	225	M16	32
200	575	165	200	210	525	445	385	70	340	330	5	190	90	215	115	430	140	240	50	22	430	190	215	100	115	160	45	475	180	285	140	245	170	275	M20	40

Size	Input shaft						Output shaft				Weight kg		Lubricant quantity L	
	AF	AG	AH	Dh6	Wh9	TH	CA	CB	GH7	XJs9	TH	Without base		With base
100	28	21	5	18	6	20.5	65	70	45	14	48.8	44	49	2.5
125	36	25	5	20	6	22.5	75	80	60	18	64.4	62	70	3.6
160	42	30	6	25	8	28	92	91	70	20	74.9	110	127	6.5
200	42	30	6	28	8	31	110	120	90	25	95.4	220	247	11.0

MAFW/MAFWP

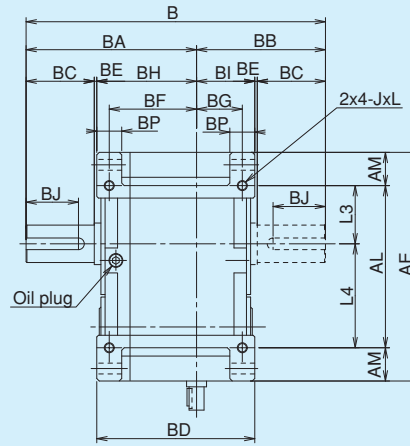
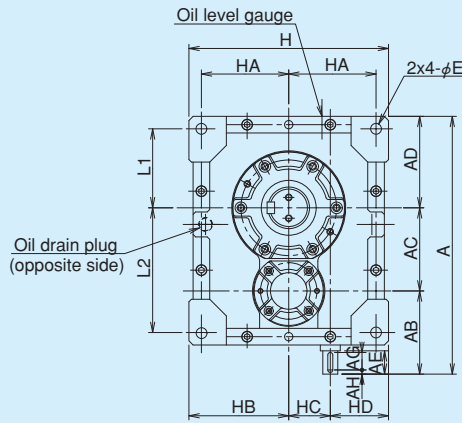
Single worm speed reducer

Outline dimensional drawings

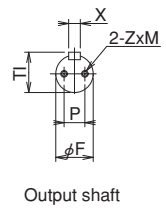
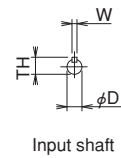
Please see rated transfer capability table A-75~A-78 page for drawings

MAKIAACE

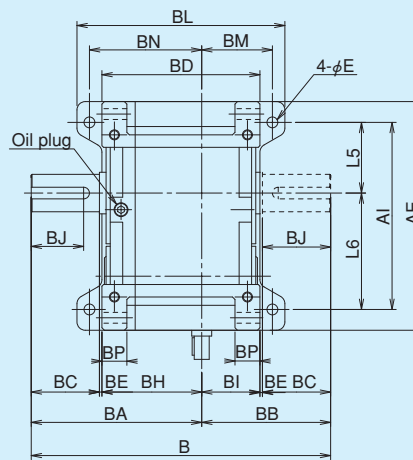
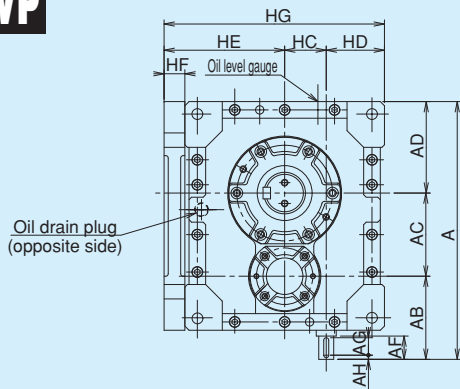
MAFW



Shaft detail drawing



MAFWP



MAFW/MAFWP Dimension

Size	A	AB	AC	AD	AE	AI	AL	AM	B	BA	BB	BD	BE	BF	BG	BH	BI	BL	BM	BN	BP	E	H	HA	HB	HC	HD	HE	HF	HG	L1	L2	L3	L4	L5	L6	J	L
100	310	100	100	110	275	225	195	40	360	205	155	190	3	105	55	120	70	250	85	135	30	13	240	105	120	50	70	145	25	285	95	150	70	125	85	140	M12	24
125	373	113	125	135	335	285	245	45	440	250	190	220	5	125	65	140	80	300	100	160	30	13	280	125	140	63	77	170	30	310	115	180	90	155	110	175	M12	24
160	475	145	160	170	425	365	315	55	485	280	205	265	5	150	75	170	95	365	120	195	40	18	350	155	175	80	95	215	40	390	145	230	115	200	140	225	M16	32
200	575	165	200	210	525	445	385	70	600	350	250	330	5	190	90	215	115	430	140	240	50	22	430	190	215	100	115	260	45	475	180	285	140	245	170	275	M20	40

Size	Input shaft						Output shaft								Weight kg		Lubricant quantity
	AF	AG	AH	Dh6	Wh9	TH	BC	BJ	Fh6	Xh9	T1	P	Z	M	Without base	With base	L
100	28	21	5	18	6	20.5	82	63	45	14	48.5	25	M8	16	44	49	4.0
125	36	25	5	20	6	22.5	105	81	60	18	64	30	M10	20	62	70	7.0
160	42	30	6	25	8	28	105	80	70	20	74.5	35	M12	24	110	127	12.5
200	42	30	6	28	8	31	130	97	90	25	95	45	M16	32	220	247	25.5

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFOW/MAFOWP

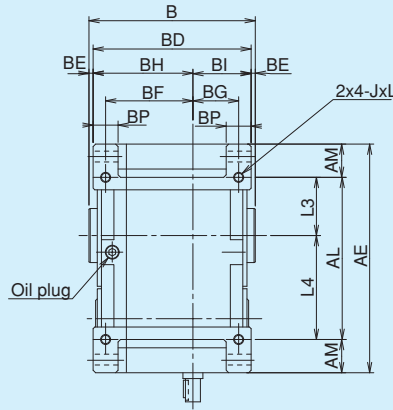
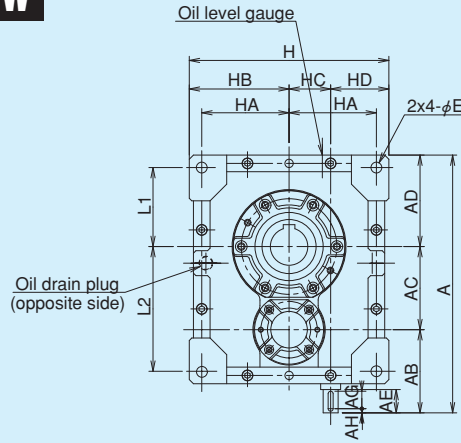
Single worm speed reducer

Outline dimensional drawings

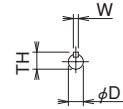
Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

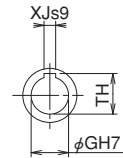
MAFOW



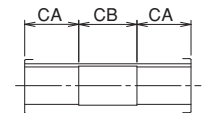
Shaft detail drawing



Input shaft

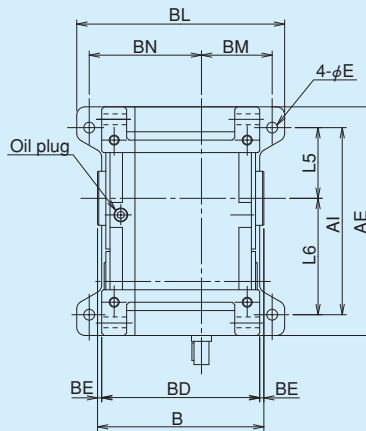
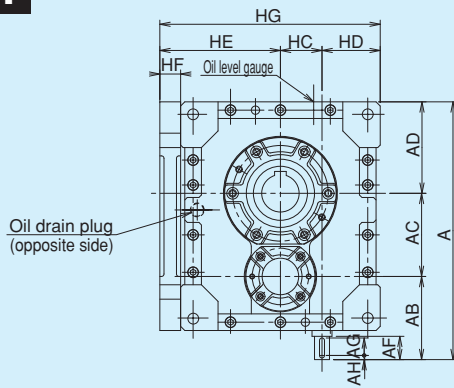


Output shaft



Output shaft inside detail

MAFOWP



MAFOW/MAFOWP Dimension

Size	A	AB	AC	AD	AE	AI	AL	AM	B	BD	BE	BF	BG	BH	BI	BL	BM	BN	BP	E	H	HA	HB	HC	HD	HE	HF	HG	L1	L2	L3	L4	L5	L6	J	L
100	310	100	100	110	275	225	195	40	200	190	5	105	55	120	70	250	85	135	30	13	240	105	120	50	70	145	25	285	95	150	70	125	85	140	M12	24
125	373	113	125	135	335	285	245	45	230	220	5	125	65	140	80	300	100	160	30	13	280	125	140	63	77	170	30	310	115	180	90	155	110	175	M12	24
160	475	145	160	170	425	365	315	55	275	265	5	150	75	170	95	365	120	195	40	18	350	155	175	80	95	215	40	390	145	230	115	200	140	225	M16	32
200	575	165	200	210	525	445	385	70	340	330	5	190	90	215	115	430	140	240	50	22	430	190	215	100	115	260	45	475	180	285	140	245	170	275	M20	40

Size	Input shaft						Output shaft						Weight kg		Lubricant quantity L
	AF	AG	AH	Dh6	Wh9	TH	CA	CB	GH7	XJs9	TH	Without base	With base		
100	28	21	5	18	6	20.5	65	70	45	14	48.8	44	49	4.0	
125	36	25	5	20	6	22.5	75	80	60	18	64.4	62	70	7.0	
160	42	30	6	25	8	28	92	91	70	20	74.9	110	127	12.5	
200	42	30	6	28	8	31	110	120	90	25	95.4	220	247	25.0	

MAFK L/MAFK R

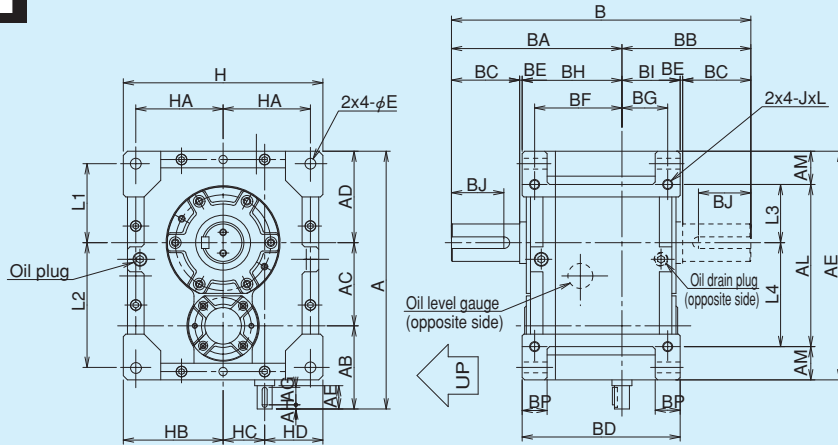
Single worm speed reducer

Outline dimensional drawings

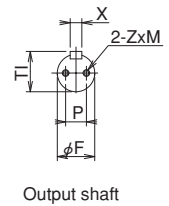
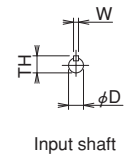
Please see rated transfer capability table A-75~A-78 page for drawings

MAKIAACE

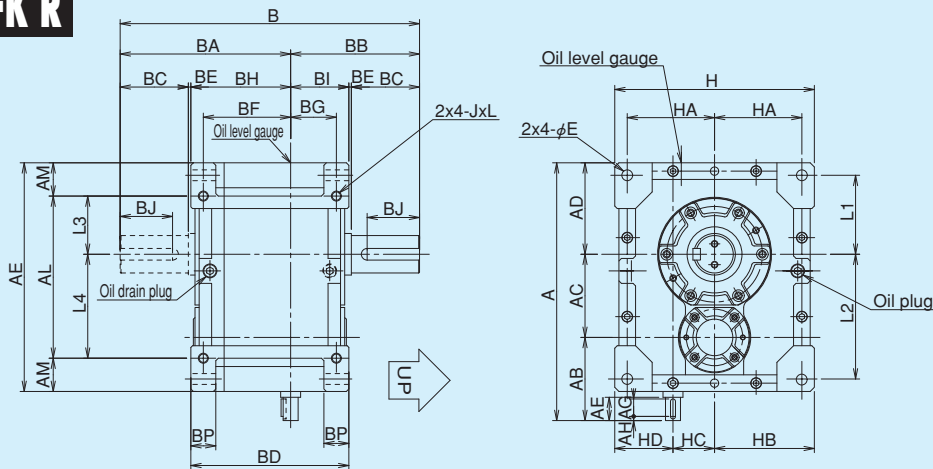
MAFK L



Shaft detail drawing



MAFK R



MAFK L/MAFK R Dimension

Size	A	AB	AC	AD	AE	AL	AM	B	BA	BB	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	310	100	100	110	275	195	40	360	205	155	190	3	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
125	373	113	125	135	335	245	45	440	250	190	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
160	475	145	160	170	425	315	55	485	280	205	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
200	575	165	200	210	525	385	70	600	350	250	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40

Size	Input shaft						Output shaft								Weight kg	Lubricant quantity L	
	AF	AG	AH	Dh6	Wh9	TH	BC	BJ	Fh6	Xh9	T1	P	Z	M		Set arrangement 1	Set arrangement 2
100	28	21	5	18	6	20.5	82	63	45	14	48.5	25	M8	16	44	4.5	4.0
125	36	25	5	20	6	22.5	105	81	60	18	64	30	M10	20	62	8.0	7.0
160	42	30	6	25	8	28	105	80	70	20	74.5	35	M12	24	110	13.5	12.0
200	42	30	6	28	8	31	130	97	90	25	95	45	M16	32	220	26.0	25.0

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFOK L/MAFOK R

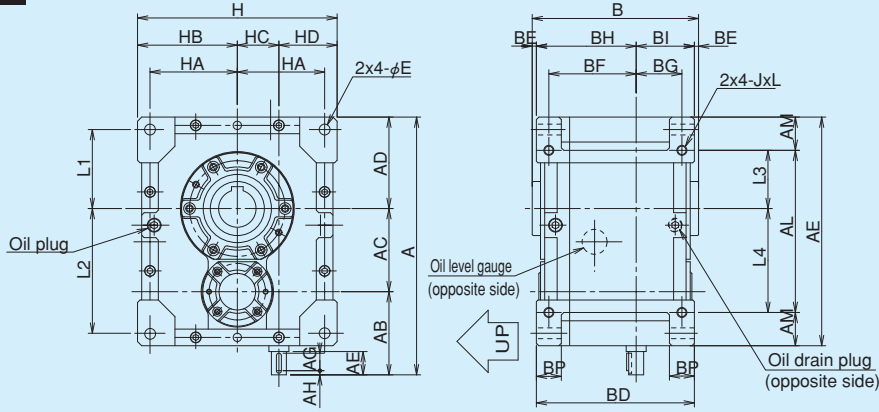
Single worm speed reducer

Outline dimensional drawings

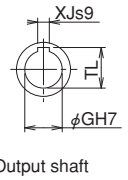
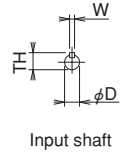
Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

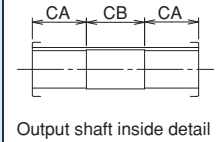
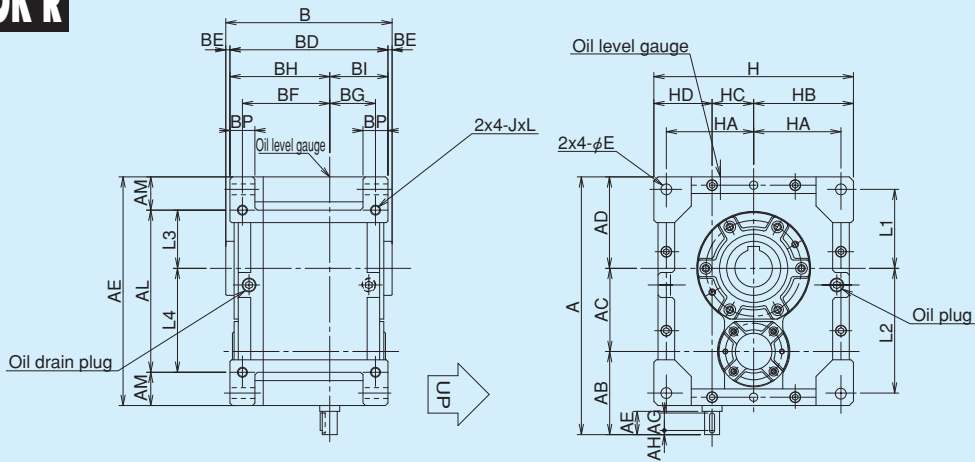
MAFOK L



Shaft detail drawing



MAFOK R



MAFOK L/MAFOK R Dimension

Size	A	AB	AC	AD	AE	AL	AM	B	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	310	100	100	110	275	195	40	200	190	5	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
125	373	113	125	135	335	245	45	230	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
160	475	145	160	170	425	315	55	275	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
200	575	165	200	210	525	385	70	340	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40

Size	Input shaft						Output shaft					Weight kg	Lubricant quantity L	
	AF	AG	AH	Dh6	Wh9	TH	CA	CB	GH7	XJs9	TL		Shaft arrangement L	Shaft arrangement R
100	28	21	5	18	6	20.5	65	70	45	14	48.8	44	4.5	4.0
125	36	25	5	20	6	22.5	75	80	60	18	64.4	62	8.0	7.0
160	42	30	6	25	8	28	92	91	70	20	74.9	110	13.5	12.0
200	42	30	6	28	8	31	110	120	90	25	95.4	220	26	25.0

MAFB E,B

Single worm speed reducer

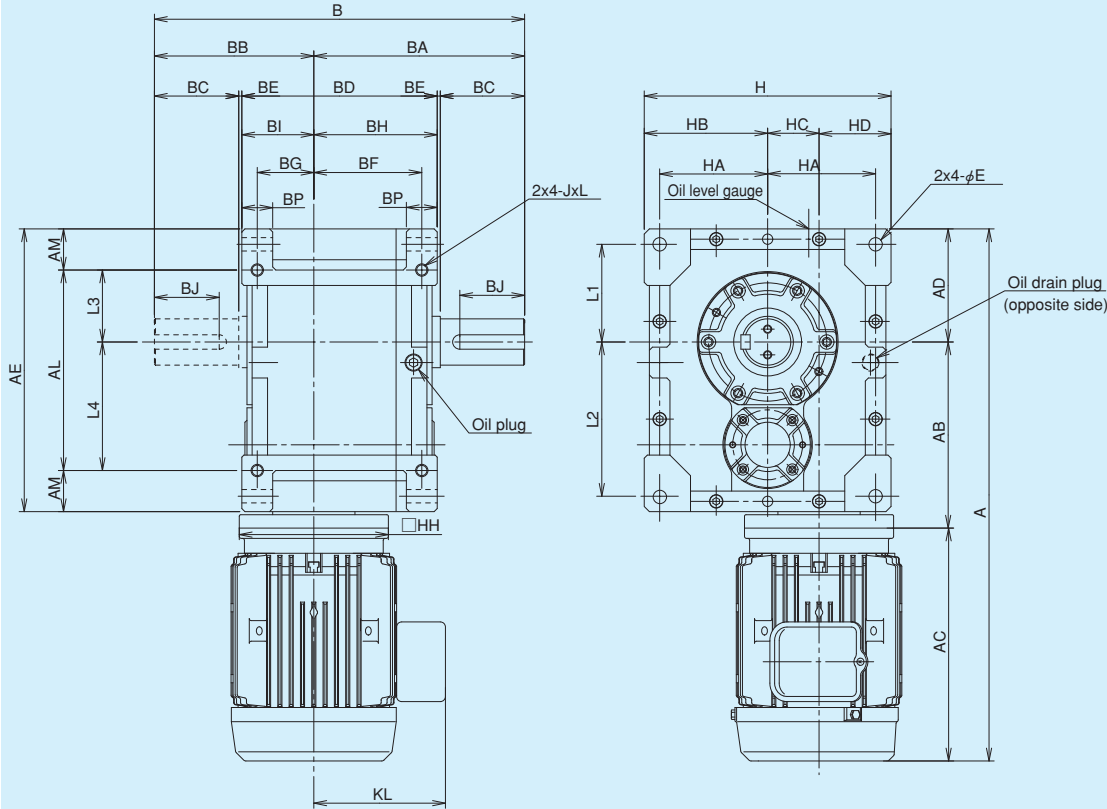
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

MAKIAICE

MAFB E,B

Shaft detail drawing



MAFB E,B Dimension

Size	Motor capacity	AD	AE	AL	AM	B	BA	BB	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	0.4 kW	110	275	195	40	360	205	155	190	3	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
	0.75kW																										
125	0.75kW	135	335	245	45	440	250	190	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
	1.5 kW																										
160	1.5 kW	170	425	315	55	485	280	205	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
	2.2 kW																										
200	3.7 kW	210	525	385	70	600	350	250	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40
	2.2 kW																										
	5.5 kW																										

Size	Motor (without brake)					Weight	Motor (with brake)					Weight	Output shaft								Lubricant quantity
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		kg	BC	BJ	Fh6	Xh9	TI	P	Z	
100	498.5	181	207.5	75	130	54	504.5	181	213.5	86.5	130	55.5	82	63	45	14	48.5	25	M8	16	2.5
	531		240	131	145	60.5	606		315	128	145	66									
125	589	214	240	131	145	79	664	214	315	128	145	84	105	81	60	18	64.0	30	M10	20	3.6
	613		261	149	200	86.5	682		217	330	142.3	200									
160	707	276	261	149	200	135	776	276	330	142.3	200	142	105	80	70	20	74.5	35	M12	24	6.5
	741.5		290.5	156	225	149	818		281	367	160	225									
200	841.5	341	290.5	156	225	260	918	341	367	160	225	261	130	97	90	25	95.0	45	M16	32	11.0
	877		326	179	225	279	942		391	178	225	282									
	893.5		342.5	200	265	301	962.5		411.5	201	265	307									

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFBP E,B

Single worm speed reducer

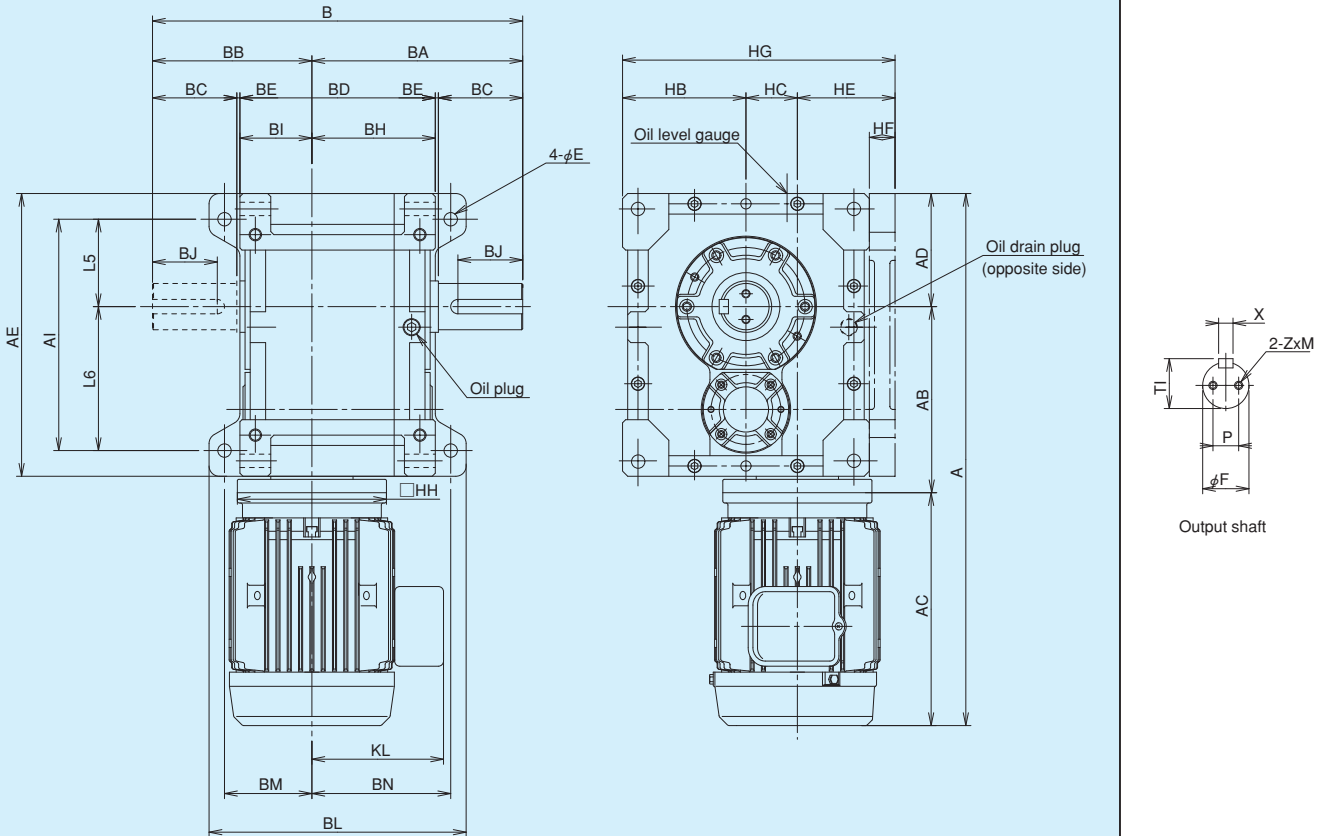
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

MAFBP E,B

Shaft detail drawing



MAFBP E,B Dimension

Size	Motor capacity	AD	AE	AI	B	BA	BB	BD	BE	BF	BG	BH	BI	BL	BM	BN	E	HA	HB	HC	HE	HF	HG	L5	L6	J	L
100	0.4 kW	110	275	225	360	205	155	190	3	105	55	120	70	250	85	135	13	105	120	50	95	25	285	85	140	M12	24
	0.75kW																										
125	0.75kW	135	335	285	440	250	190	220	5	125	65	140	80	300	100	160	13	125	140	63	107	30	310	110	175	M12	24
	1.5 kW																										
160	1.5 kW	170	425	365	485	280	205	265	5	150	75	170	95	365	120	195	18	155	175	80	135	40	390	140	225	M16	32
	2.2 kW																										
200	3.7 kW	210	525	445	600	350	250	330	5	190	90	215	115	430	140	240	22	190	215	100	160	45	475	170	275	M20	40
	2.2 kW																										
	5.5 kW																										

Size	Motor (without brake)					Weight	Motor (with brake)					Weight	Output shaft								Lubricant quantity
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		kg	BC	BJ	Fh6	Xh9	TI	P	Z	
100	498.5	181	207.5	75	130	59	504.5	181	213.5	86.5	130	60.5	82	63	45	14	48.5	25	M8	16	2.5
	531		240	131	145	65.5	606		315	128	145	71									
125	589	214	240	131	145	87	664	214	315	128	145	92	105	81	60	18	64.0	30	M10	20	3.6
	613		217	261	149	200	94.5		682	217	330	142.3									
160	707	276	261	149	200	152	776	276	330	142.3	200	160	105	80	70	20	74.5	35	M12	24	6.5
	741.5		290.5	156	225	166	818		281	367	160	225									
200	841.5	341	290.5	156	225	287	918	341	367	160	225	188	130	97	90	25	95.0	45	M16	32	11.0
	877		326	179	225	306	942		391	178	225	309									
	893.5		342.5	200	265	328	962.5		411.5	201	265	334									

MAFOB E,B

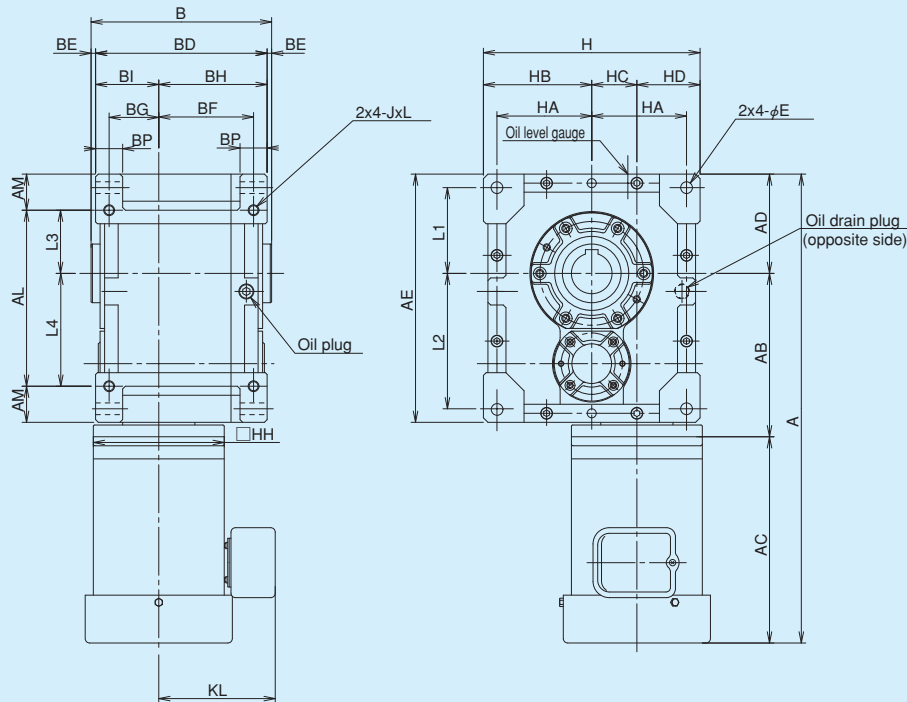
Single worm speed reducer

Outline dimensional drawings

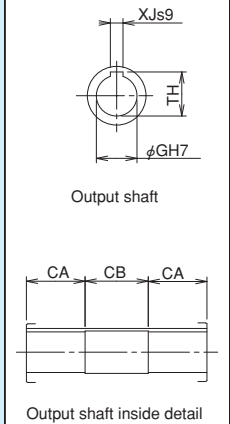
Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

MAFOB E,B



Shaft detail drawing



MAFOB E,B Dimension

Size	Motor capacity	AD	AE	AL	AM	B	BD	BE	BF	BG	BH	BI	BP	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	0.4 kW	110	275	195	40	200	190	5	105	55	120	70	30	240	105	120	50	70	95	150	70	125	M12	24
	0.75kW																							
125	0.75kW	135	335	245	45	230	220	5	125	65	140	80	30	280	125	140	63	77	115	180	90	155	M12	24
	1.5 kW																							
160	1.5 kW	170	425	315	55	275	265	5	150	75	170	95	40	350	155	175	80	95	145	230	115	200	M16	32
	2.2 kW																							
200	3.7 kW	210	525	385	70	340	330	5	190	90	215	115	50	430	190	215	100	115	180	285	140	245	M20	40
	2.2 kW																							
	5.5 kW																							

Size	Motor (without brake)					Weight	Motor (with brake)					Weight	Output shaft					Lubricant quantity
	A	AB	AC	KL	HH	kg	A	AB	AC	KL	HH	kg	CA	CB	GH7	XJs9	TH	L
100	498.5	181	207.5	75	130	54	504.5	181	213.5	86.5	130	55.5	65	70	45	14	48.8	2.5
	531		240	131	145	60.5	606		315	128	145	66						
125	589	214	240	131	145	79	664	214	315	128	145	84	75	80	60	18	64.4	3.6
	613		217	261	149	200	86.5		682	217	330	142.3						
160	707	276	261	149	200	135	776	276	330	142.3	200	142	92	91	70	20	74.9	6.5
	741.5		290.5	156	225	149	818		281	367	160	225						
200	777	341	326	179	225	168	842	341	391	178	225	170	110	120	90	25	95.4	11.0
	841.5		290.5	156	225	260	918		367	160	225	261						
	877		326	179	225	279	942		391	178	225	282						
	893.5		342.5	200	265	301	962.5		411.5	201	265	307						

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFOBP E,B

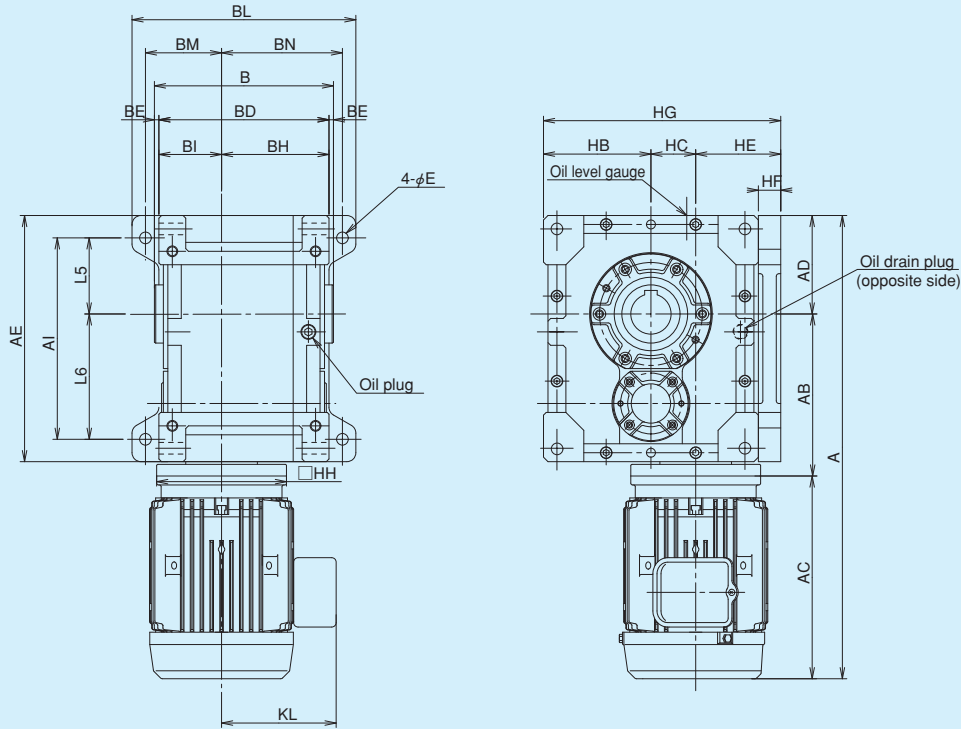
Single worm speed reducer

Outline dimensional drawings

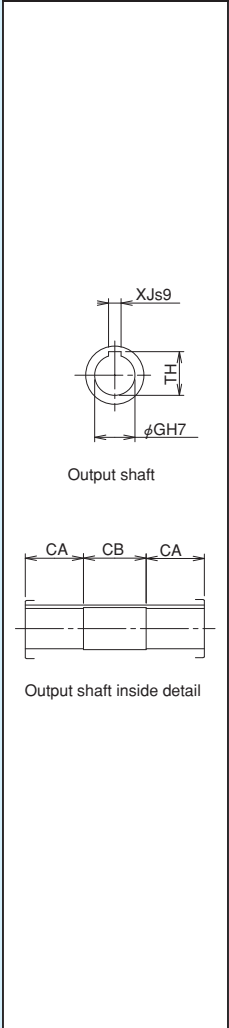
Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

MAFOBP E,B



Shaft detail drawing



MAFOBP E,B Dimension

Size	Motor capacity	AD	AE	AI	B	BD	BE	BH	BI	BL	BM	BN	E	HB	HC	HE	HF	HG	L5	L6	J	L
100	0.4 kW	110	275	225	200	190	5	120	70	250	135	85	13	120	50	95	25	285	85	140	M12	24
	0.75kW																					
125	0.75kW	135	335	285	230	220	5	140	80	300	160	100	13	140	63	107	30	310	110	175	M12	24
	1.5 kW																					
160	1.5 kW	170	425	365	275	265	5	170	95	365	120	195	18	175	80	135	40	390	140	225	M16	32
	2.2 kW																					
200	3.7 kW	210	525	445	340	330	5	215	115	430	140	240	22	215	100	160	45	475	170	275	M20	40
	2.2 kW																					
	5.5 kW																					

Size	Motor (without brake)					Weight kg	Motor (with brake)					Weight kg	Output shaft					Lubricant quantity L
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		CA	CB	GH7	XJs9	TH	
100	498.5	181	207.5	75	130	59	504.5	181	213.5	86.5	130	60.5	65	70	45	14	48.8	2.5
	531		240	131	145	65.5	606		315	128	145	71						
125	589	214	240	131	145	87	664	214	315	128	145	92	75	80	60	18	64.4	3.6
	613		217	261	149	200	94.5		682	217	330	142.3						
160	707	276	261	149	200	152	776	276	330	142.3	200	160	92	91	70	20	74.9	6.5
	741.5		290.5	156	225	166	818		367	160	225	167						
200	877	341	326	179	225	306	942	341	391	178	225	309	110	120	90	25	95.4	11.0
	841.5		290.5	156	225	287	918		367	160	225	188						
	893.5		342.5	200	265	328	962.5		411.5	201	265	334						

MAFW-E,B

Single worm speed reducer

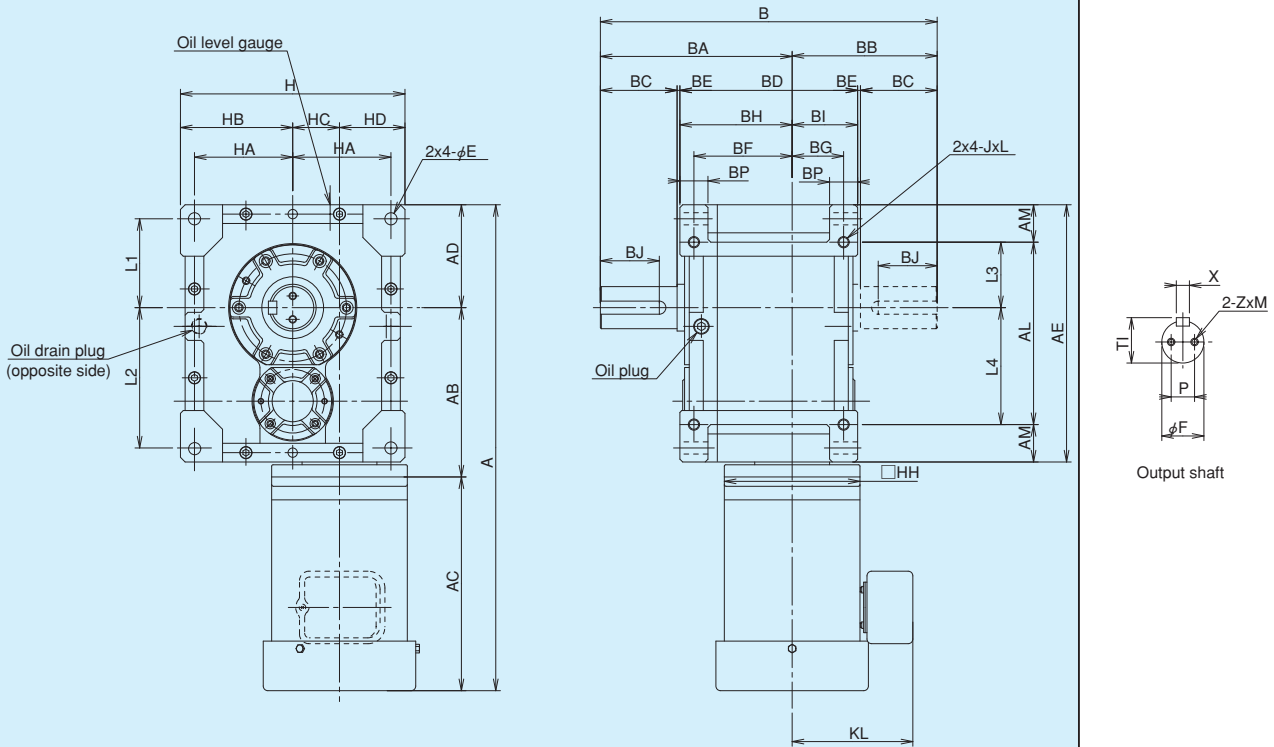
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

MAKIAACE

MAFW-E,B

Shaft detail drawing



MAFW-E,B Dimension

Size	Motor capacity	AD	AE	AL	AM	B	BA	BB	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	0.4 kW	110	275	195	40	360	205	155	190	3	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
	0.75kW																										
125	0.75kW	135	335	245	45	440	250	190	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
	1.5 kW																										
160	2.2 kW	170	425	315	55	485	280	205	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
	3.7 kW																										
200	2.2 kW	210	525	385	70	600	350	250	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40
	3.7 kW																										
	5.5 kW																										

Size	Motor (without brake)					Weight	Motor (with brake)					Weight	Output shaft								Lubricant quantity
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		BC	BJ	Fh6	Xh9	TI	P	Z	M	
100	498.5	181	207.5	75	130	54	504.5	181	213.5	86.5	130	55.5	82	63	45	14	48.5	25	M8	16	4.0
	531		240	131	145	60.5	606		315	128	145	66									
125	589	214	240	131	145	79	664	214	315	128	145	84	105	81	60	18	64.0	30	M10	20	7.0
	613		261	149	200	86.5	682		217	330	142.3	200									
160	707	276	261	149	200	135	776	276	330	142.3	200	142	105	80	70	20	74.5	35	M12	24	12.5
	741.5		290.5	156	225	149	818		281	367	160	225									
200	841.5	341	290.5	156	225	260	918	341	367	160	225	261	130	97	90	25	95.0	45	M16	32	25.5
	877		326	179	225	279	942		391	178	225	282									
	893.5		342.5	200	265	301	962.5		411.5	201	265	307									

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFWP-E,B

Single worm speed reducer

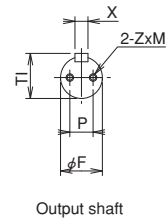
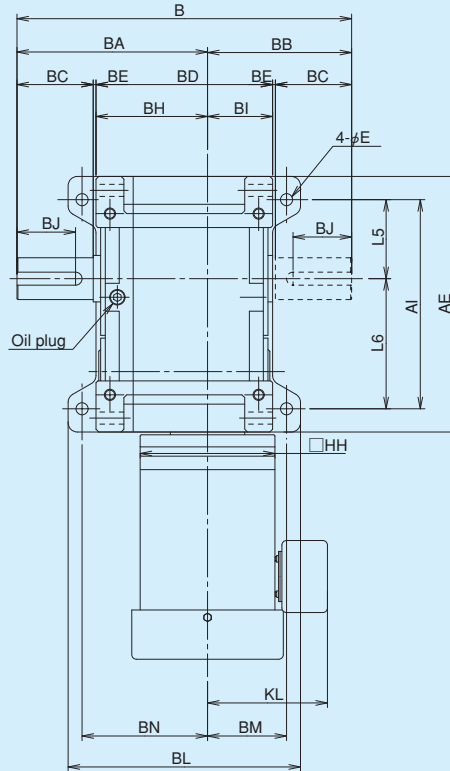
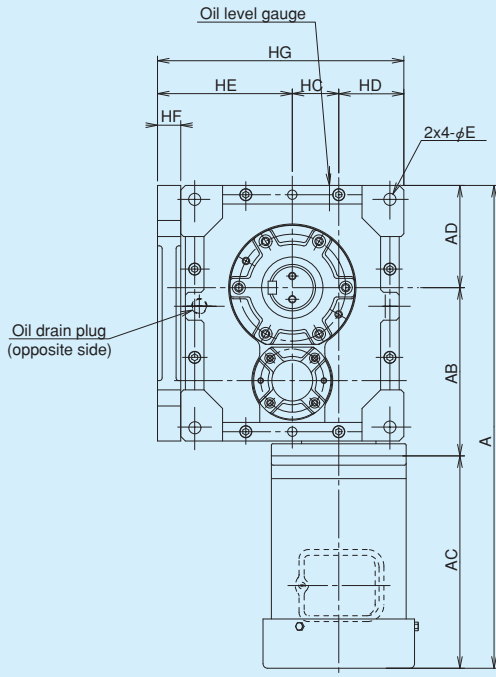
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

MAFWP-E,B

Shaft detail drawing



MAFWP-E,B Dimension

Size	Motor capacity	AD	AE	AI	B	BA	BB	BD	BE	BH	BI	BL	BM	BN	E	HC	HD	HE	HF	HG	L5	L6
100	0.4 kW	110	275	225	360	205	155	190	3	120	70	250	85	135	13	50	70	145	25	285	70	125
	0.75kW																					
125	0.75kW	135	335	285	440	250	190	220	5	140	80	300	100	160	13	63	77	170	30	310	90	155
	1.5 kW																					
160	1.5 kW	170	425	365	485	280	205	265	5	170	95	365	120	195	18	80	95	215	40	390	115	200
	2.2 kW																					
200	3.7 kW	210	525	445	600	350	250	330	5	215	115	430	140	240	22	100	115	260	45	475	140	245
	2.2 kW																					
	5.5 kW																					

Size	Motor (without brake)					Weight kg	Motor (with brake)					Weight kg	Output shaft								Lubricant quantity L		
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		BC	BJ	Fh6	Xh9	TI	P	Z	M			
100	498.5	181	207.5	75	130	59	504.5	181	213.5	86.5	130	60.5	82	63	45	14	48.5	25	M8	16	4.0		
	531		240	131	145	65.5	606		315	128	145	71											
125	589	214	240	131	145	87	664	214	315	128	145	92	105	81	60	18	64.0	30	M10	20	7.0		
	613		217	261	149	200	94.5		682	217	330	142.3										200	102
160	707	276	261	149	200	152	776	276	330	142.3	200	160	105	80	70	20	74.5	35	M12	24	12.5		
	741.5		281	290.5	156	225	166		818	281	367	160										225	167
	777			326	179	225	185		842		391	178										225	188
200	841.5	341	290.5	156	225	287	918	341	367	160	225	188	130	97	90	25	95.0	45	M16	32	25.5		
	877		326	179	225	306	942		341	391	178	225										309	
	893.5		342.5	200	265	328	962.5			411.5	201	265										334	

MAFOW-E,B

Single worm speed reducer

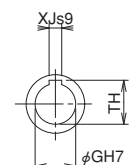
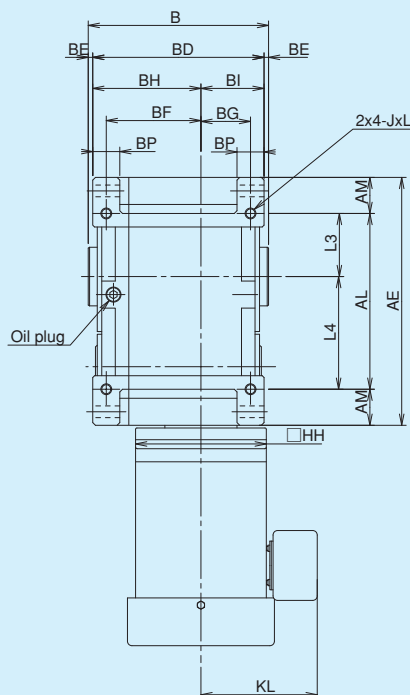
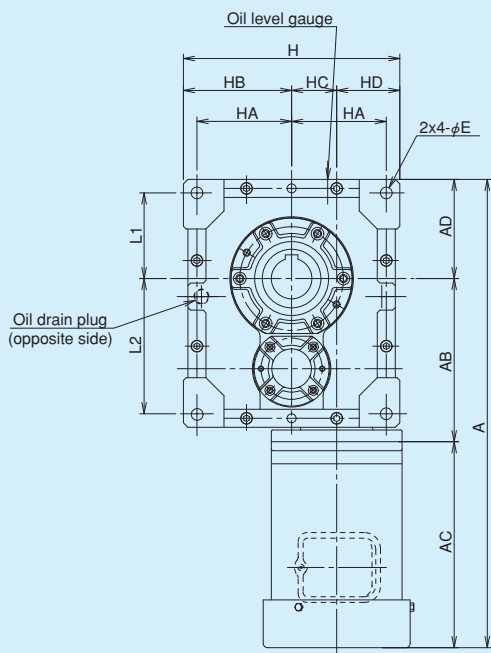
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

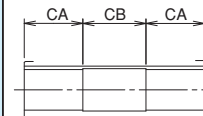
MAKIACE

MAFOW-E,B

Shaft detail drawing



Output shaft



Output shaft inside detail

MAFOW-E,B Dimension

Size	Motor capacity	AD	AE	AL	AM	B	BA	BB	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	0.4 kW	110	275	195	40	200	205	155	190	3	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
	0.75kW																										
125	0.75kW	135	335	245	45	230	250	190	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
	1.5 kW																										
160	2.2 kW	170	425	315	55	275	280	205	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
	3.7 kW																										
200	2.2 kW	210	525	385	70	340	350	250	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40
	3.7 kW																										
	5.5 kW																										

Size	Motor (without brake)					Weight	Motor (with brake)					Weight	Output shaft					Lubricant quantity
	A	AB	AC	KL	HH		kg	A	AB	AC	KL		HH	kg	CA	CB	GH7	
100	498.5	181	207.5	75	130	54	504.5	181	213.5	86.5	130	55.5	65	70	45	14	48.8	4.0
	531		240	131	145	60.5	606	315	128	145	66							
125	589	214	240	131	145	79	664	214	315	128	145	84	75	80	60	18	64.4	7.0
	613		217	261	149	200	86.5	682	217	330	142.3	200	93.5					
160	707	276	261	149	200	135	776	276	330	142.3	200	142	92	91	70	20	74.9	12.5
	741.5		290.5	156	225	149	818	367	160	225	150							
200	777	281	326	179	225	168	842	281	391	178	225	170	110	120	90	25	95.4	25.5
	841.5		290.5	156	225	260	918	367	160	225	261							
	877	341	326	179	225	279	942	341	391	178	225	282						
	893.5		342.5	200	265	301	962.5	411.5	201	265	307							

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFOWP-E,B

Single worm speed reducer

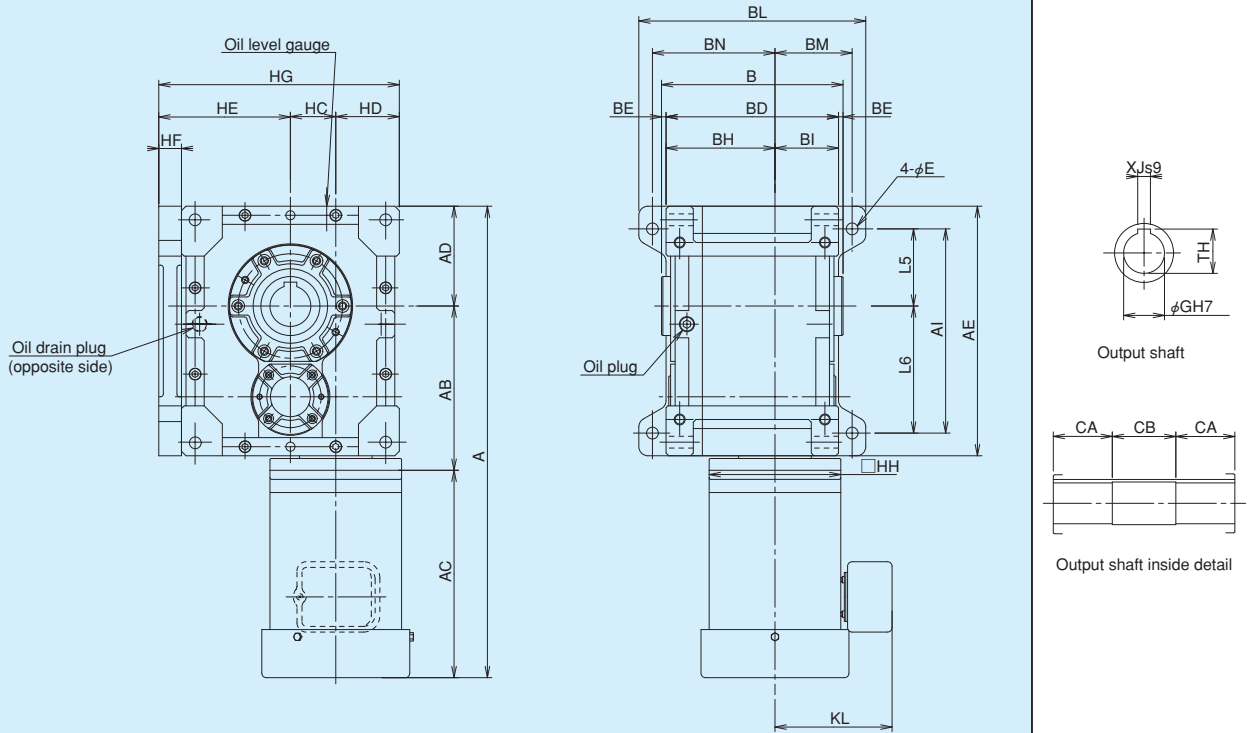
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

MAFOWP-E,B

Shaft detail drawing



MAFOWP-E,B Dimension

Size	Motor capacity	AD	AE	AI	B	BD	BE	BH	BI	BL	BM	BN	E	HC	HD	HE	HF	HG	L5	L6
100	0.4 kW	110	275	225	200	190	5	120	70	250	85	135	13	50	70	145	25	285	85	140
	0.75kW																			
125	0.75kW	135	335	285	230	220	5	140	80	300	100	160	13	63	77	170	30	310	110	175
	1.5 kW																			
160	1.5 kW	170	425	365	275	265	5	170	95	365	120	195	18	80	95	215	40	390	140	225
	2.2 kW																			
200	3.7 kW	210	525	445	340	330	5	215	115	430	140	240	22	100	115	260	45	475	170	275
	2.2 kW																			
	5.5 kW																			

Size	Motor (without brake)						Weight kg	Motor (with brake)					Weight kg	Output shaft				Lubricant quantity L
	A	AB	AC	KL	HH	A		AB	AC	KL	HH	CA		CB	GH7	XJs9	TH	
100	498.5	181	207.5	75	130	59	504.5	181	213.5	86.5	130	60.5	65	70	45	14	48.8	4.0
	531		240	131	145	65.5	606	315	128	145	71	75	80	60	18	64.4	7.0	
125	589	214	240	131	145	87	664	214	315	128	145	92	75	80	60	18	64.4	7.0
	613		261	149	200	94.5	682	217	330	142.3	200	102	92	91	70	20	74.9	12.5
160	707	276	261	149	200	152	776	276	330	142.3	200	160	92	91	70	20	74.9	12.5
	741.5		290.5	156	225	166	818	281	367	160	225	167	92	91	70	20	74.9	12.5
200	777	341	326	179	225	185	842	341	391	178	225	188	110	120	90	25	95.4	25.5
	841.5		290.5	156	225	287	918	341	367	160	225	188	110	120	90	25	95.4	25.5
	877		326	179	225	306	942	341	391	178	225	309	110	120	90	25	95.4	25.5
	893.5		342.5	200	265	328	962.5		411.5	201	265	334						

MAFK LE, LB

Single worm speed reducer

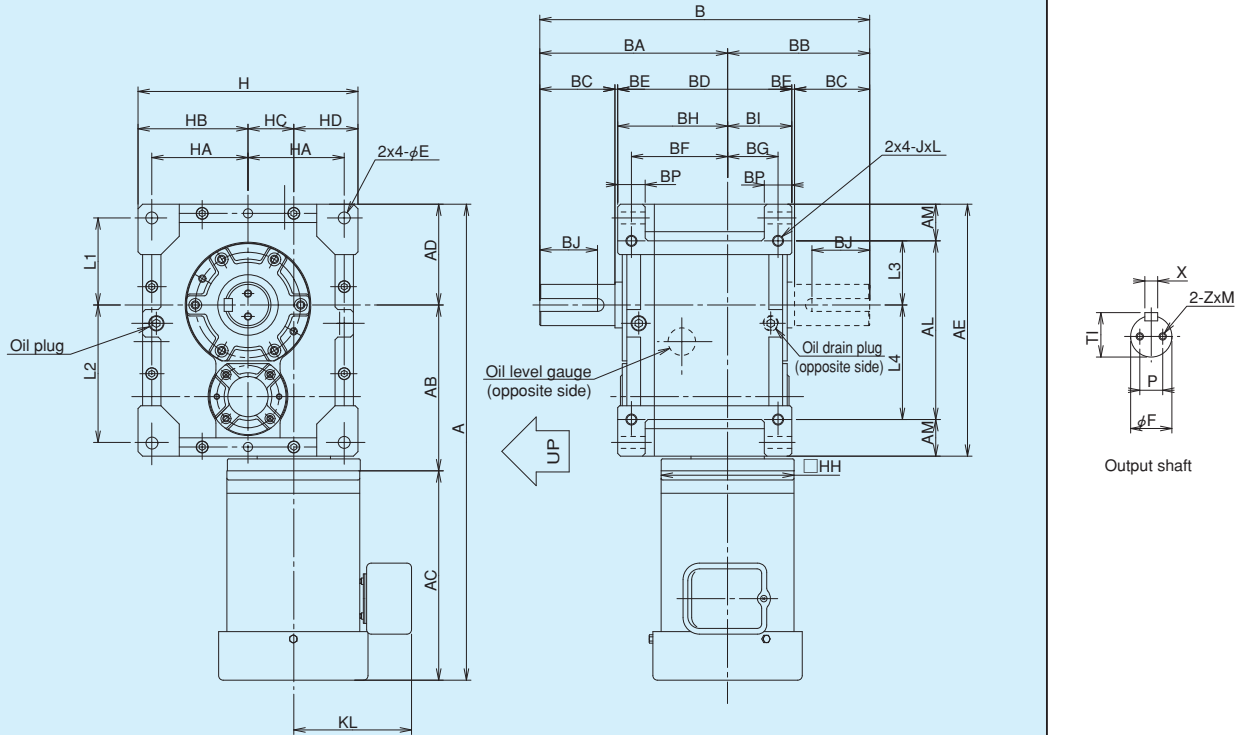
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

MAKIAACE

MAFK LE, LB

Shaft detail drawing



MAFK LE, LB Dimension

Size	Motor capacity	AD	AE	AL	AM	B	BA	BB	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	0.4 kW	110	275	195	40	360	205	155	190	3	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
	0.75kW																										
125	0.75kW	135	335	245	45	440	250	190	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
	1.5 kW																										
160	1.5 kW	170	425	315	55	485	280	205	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
	2.2 kW																										
200	3.7 kW	210	525	385	70	600	350	250	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40
	2.2 kW																										
	5.5 kW																										

Size	Motor (without brake)					Weight	Motor (with brake)					Weight	Output shaft								Lubricant quantity
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		BC	BJ	Fh6	Xh9	TI	P	Z	M	
100	498.5	181	207.5	75	130	54	504.5	181	213.5	86.5	130	55.5	82	63	45	14	48.5	25	M8	16	4.5
	531		240	131	145	60.5	606		315	128	145	66									
125	589	214	240	131	145	79	664	214	315	128	145	84	105	81	60	18	64.0	30	M10	20	8.0
	613		261	149	200	86.5	682		217	330	142.3	200									
160	707	276	261	149	200	135	776	276	330	142.3	200	142	105	80	70	20	74.5	35	M12	24	13.5
	741.5		290.5	156	225	149	818		367	160	225	150									
200	841.5	341	290.5	156	225	260	918	341	367	160	225	261	130	97	90	25	95.0	45	M16	32	26.0
	877		326	179	225	279	942		391	178	225	282									
	893.5		342.5	200	265	301	962.5		411.5	201	265	307									

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFK RE, RB

Single worm speed reducer

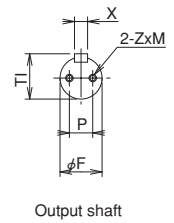
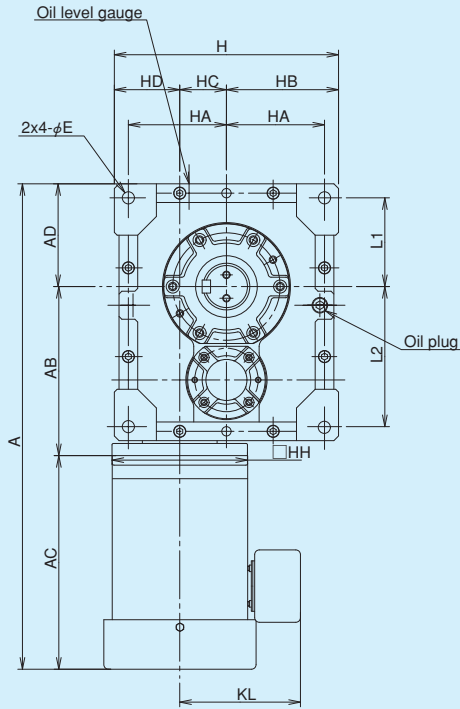
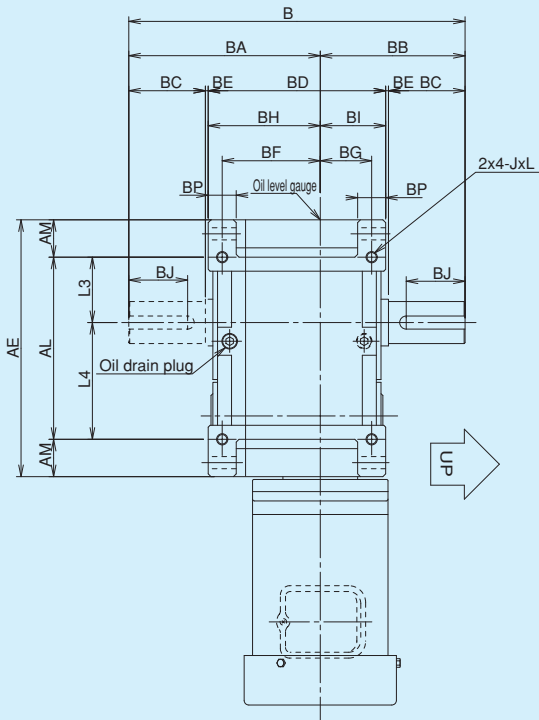
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

MAFK RE, RB

Shaft detail drawing



MAFK RE, RB Dimension

Size	Motor capacity	AD	AE	AL	AM	B	BA	BB	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	0.4 kW	110	275	195	40	360	205	155	190	3	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
	0.75kW																										
125	0.75kW	135	335	245	45	440	250	190	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
	1.5 kW																										
160	1.5 kW	170	425	315	55	485	280	205	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
	2.2 kW																										
200	3.7 kW	210	525	385	70	600	350	250	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40
	2.2 kW																										
	5.5 kW																										

Size	Motor (without brake)					Weight	Motor (with brake)					Weight	Output shaft								Lubricant quantity		
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		kg	BC	BJ	Fh6	Xh9	T1	P	Z		M	L
100	498.5	181	207.5	75	130	54	504.5	181	213.5	86.5	130	55.5	82	63	45	14	48.5	25	M8	16	4.0		
	531		240	131	145	60.5	606		315	128	145	66											
125	589	214	240	131	145	79	664	214	315	128	145	84	105	81	60	18	64.0	30	M10	20	7.0		
	613		217	261	149	200	86.5		682	217	330	142.3										200	93.5
160	707	276	261	149	200	135	776	276	330	142.3	200	142	105	80	70	20	74.5	35	M12	24	12.0		
	741.5		281	290.5	156	225	149		818	281	367	160										225	150
	777			326	179	225	168		842		391	178										225	170
200	841.5	341	290.5	156	225	260	918	341	367	160	225	261	130	97	90	25	95.0	45	M16	32	25.0		
	877		326	179	225	279	942		341	391	178	225										282	
	893.5		342.5	200	265	301	962.5			411.5	201	265										307	

MAFOK LE, LB

Single worm speed reducer

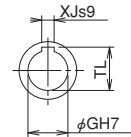
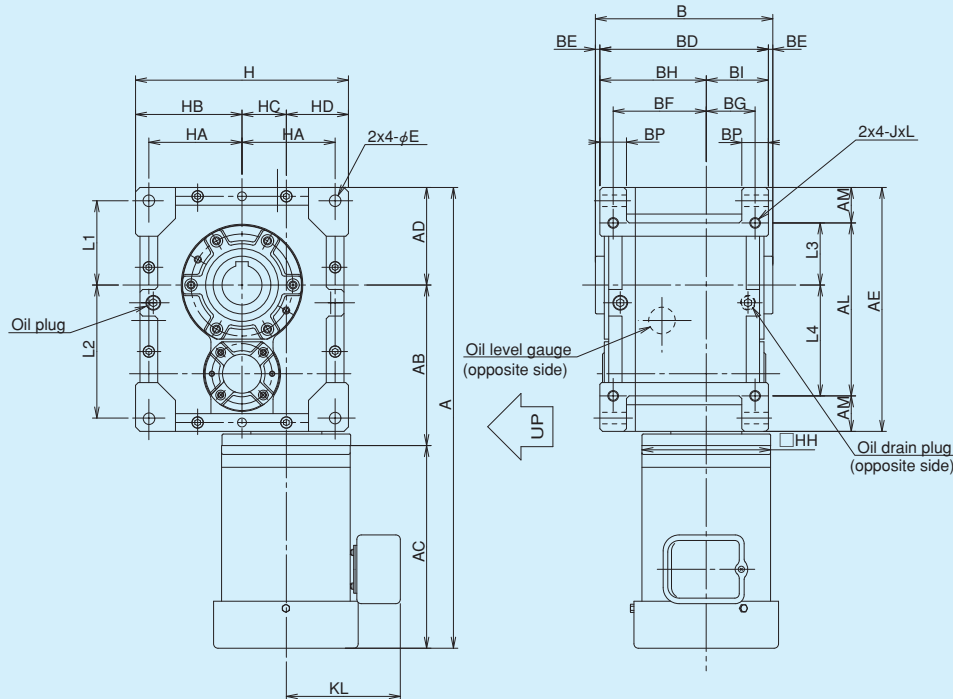
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

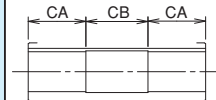
MAKIAACE

MAFOK LE, LB

Shaft detail drawing



Output shaft



Output shaft inside detail

MAFOK LE, LB Dimension

Size	Motor capacity	AD	AE	AL	AM	B	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	0.4 kW	110	275	195	40	200	190	5	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
	0.75kW																								
125	0.75kW	135	335	245	45	230	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
	1.5 kW																								
160	1.5 kW	170	425	315	55	275	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
	2.2 kW																								
200	3.7 kW	210	525	385	70	340	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40
	2.2 kW																								
	5.5 kW																								

Size	Motor (without brake)					Weight kg	Motor (with brake)					Weight kg	Output shaft					Lubricant quantity L
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		CA	CB	Gh6	XJs9	TL	
100	498.5	181	207.5	75	130	54	498.5	181	207.5	75	130	55.5	65	70	45	14	48.5	4.5
	531		240	131	145	60.5	606		315	128	145	66						
125	589	214	240	131	145	79	664	214	315	128	145	84	75	80	60	18	64.0	8.0
	613		261	149	200	86.5	682		217	330	142.3	200						
160	707	276	261	149	200	135	776	276	330	142.3	200	142	92	91	70	20	74.5	13.5
	741.5		290.5	156	225	149	818		367	160	225	150						
200	777	281	326	179	225	168	842	281	391	179	225	170	110	120	90	25	95.0	26.0
	841.5		290.5	156	225	260	918		367	160	225	261						
	877		326	179	225	279	942		341	391	179	225						
	893.5	341	342.5	200	265	301	962.5		411.5	200	265	307						

Please see the A-08 page about the shaft arrangement and the rotation direction.

MAFOK RE, RB

Single worm speed reducer

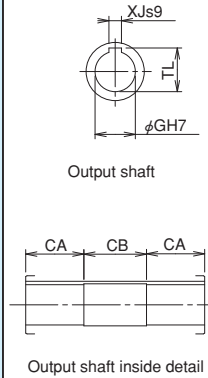
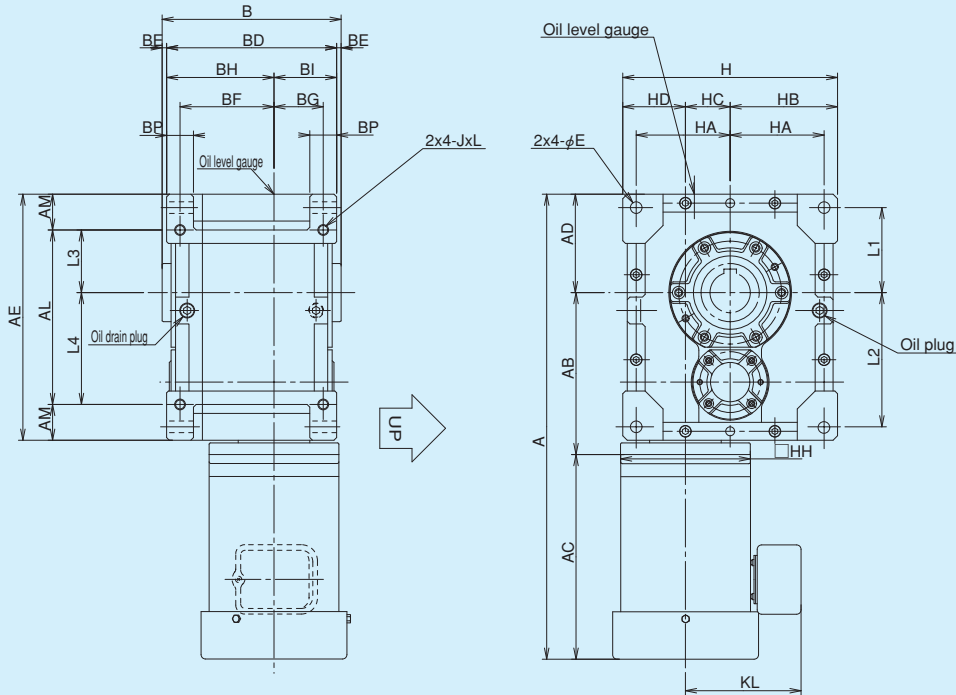
Outline dimensional drawings

Please see rated transfer capability table A-75~A-78 page for drawings

MAKIJACE

MAFOK RE, RB

Shaft detail drawing



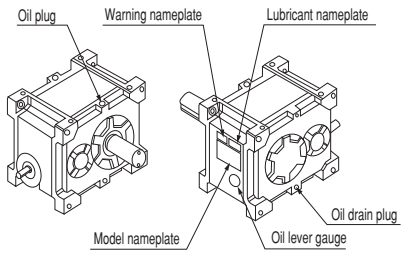
MAFOK RE, RB Dimension

Size	Motor capacity	AD	AE	AL	AM	B	BD	BE	BF	BG	BH	BI	BP	E	H	HA	HB	HC	HD	L1	L2	L3	L4	J	L
100	0.4 kW	110	275	195	40	200	190	5	105	55	120	70	30	13	240	105	120	50	70	95	150	70	125	M12	24
	0.75kW																								
125	0.75kW	135	335	245	45	230	220	5	125	65	140	80	30	13	280	125	140	63	77	115	180	90	155	M12	24
	1.5 kW																								
160	1.5 kW	170	425	315	55	275	265	5	150	75	170	95	40	18	350	155	175	80	95	145	230	115	200	M16	32
	2.2 kW																								
200	3.7 kW	210	525	385	70	340	330	5	190	90	215	115	50	22	430	190	215	100	115	180	285	140	245	M20	40
	2.2 kW																								
	5.5 kW																								

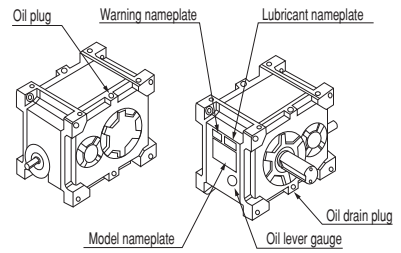
Size	Motor (without brake)					Weight kg	Motor (with brake)					Weight kg	Output shaft				Lubricant quantity	
	A	AB	AC	KL	HH		A	AB	AC	KL	HH		CA	CB	Gh6	XJs9	TL	L
100	498.5	181	207.5	75	130	54	498.5	181	207.5	75	130	55.5	65	70	45	14	48.5	4.0
	531		240	131	145	60.5	606		315	128	145	66						
125	589	214	240	131	145	79	664	214	315	128	145	84	75	80	60	18	64.0	7.0
	613		261	149	200	86.5	682		217	330	142.3	200						
160	707	276	261	149	200	135	776	276	330	142.3	200	142	92	91	70	20	74.5	12.0
	741.5		290.5	156	225	149	818		281	367	160	225						
200	841.5	341	290.5	156	225	260	918	341	367	160	225	261	110	120	90	25	95.0	25.0
	877		326	179	225	279	942		391	179	225	282						
	893.5		342.5	200	265	301	962.5		411.5	200	265	307						

Positioning oil plug, oil drain plug and oil level gauge

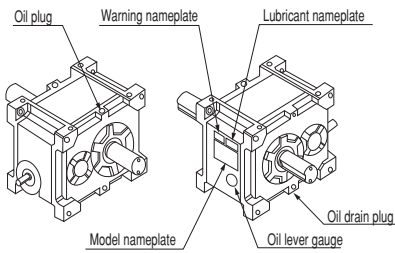
MAFB-R



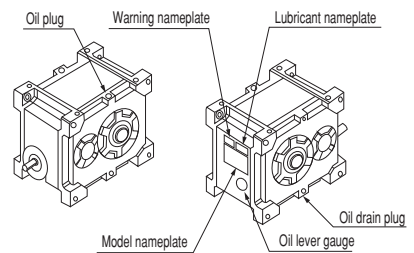
MAFB-L



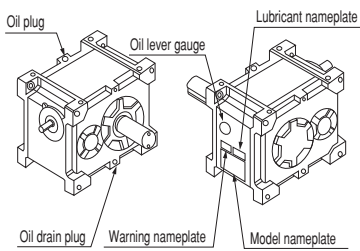
MAFB-C



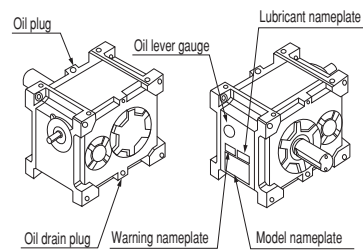
MAFOB



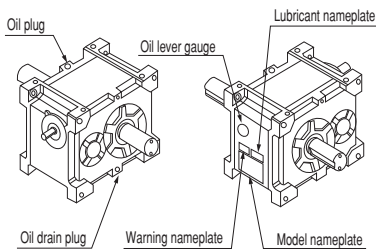
MAFW-R



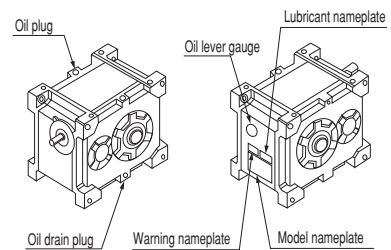
MAFW-L



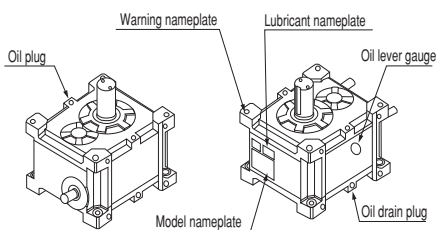
MAFW-C



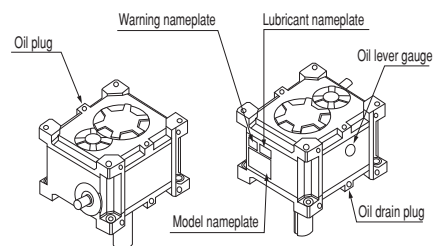
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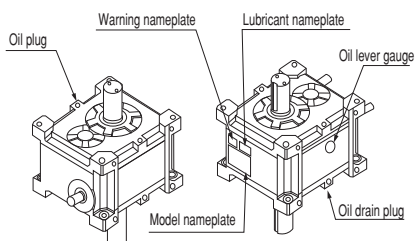
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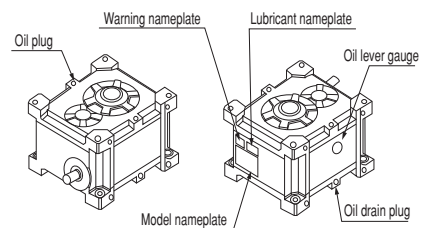
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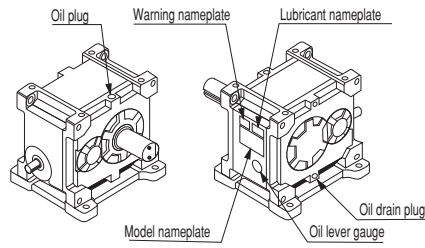
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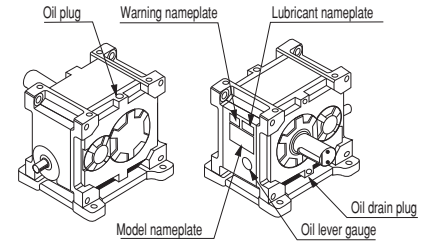
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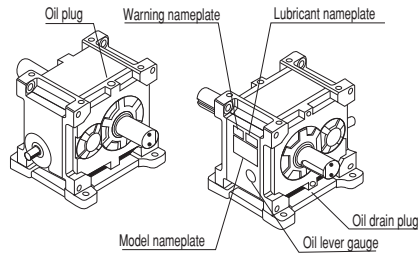
MAFBP-R



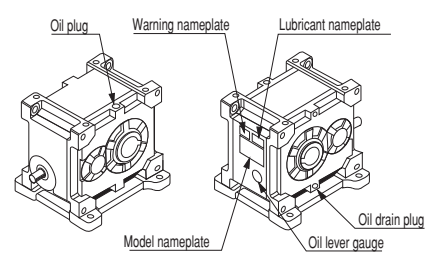
MAFBP-L



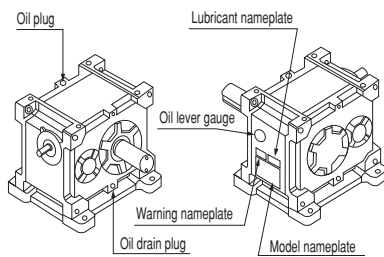
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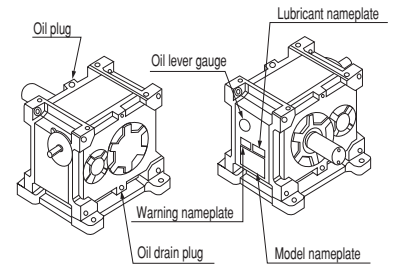
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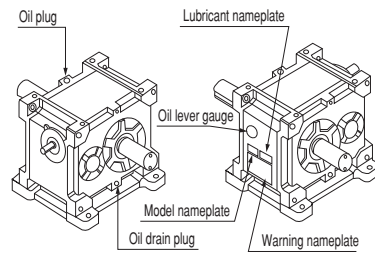
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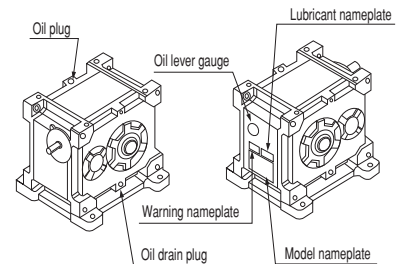
MAFWP-L



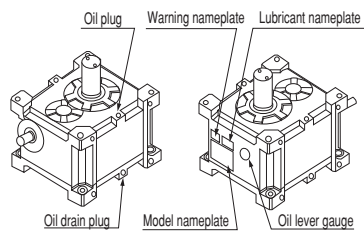
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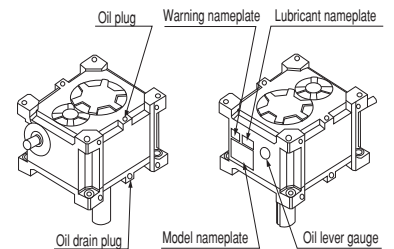
MAFOWP



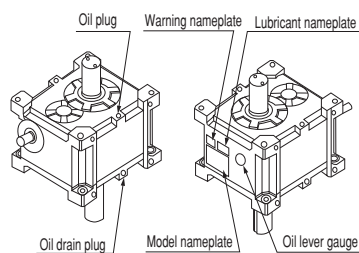
MAFK-RU



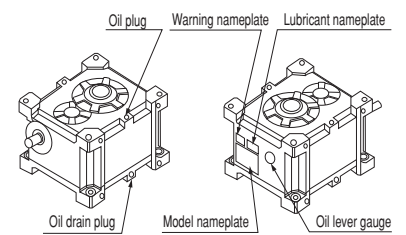
MAFK-RD



MAFK-RC



MAFOK-R



Commercial components • baseplate detail dimensions

Size	Bearing							Oil seal			Oil plug Oil drain plug Air plug	Seal cap	Oil leve lgaue
	Input shaft	Middle shaft		Output solid shaft		Output hollow shaft		Input shaft	Output solid shaft	Output hollow shaft			
		W.K	B.K(up)	W.K	B.K(up)	W.K	B.K(up)						
100	32005	6205	6205UU	6211	6211UU	6013	6013UU	GMHS 24408-10J	D 507212	D 658812	R3/8	508	308
125	30205	6206	6206UU	6215	6215UU	6017	6017UU	GMHS 24408-10J	D 709513	D 8511013	R3/8	508	308
160	32206	6308	6308UU	6217	6217UU	6020	6020UU	HRE 595011	D 8010513	D 10012513	R1/2	609	4010
200	32207	6309	6309UU	6222	6222UU	6026	6026UU	HTC 345511	D 10513514	D 13016014	R1/2	609	4010

※Oil seal is for MAF dimensions.

■CAD data of Outline dimensional drawings are available. Please ask our distributor.

CHECK LIST FOR WORM SPEED REDUCER

1 The kind of prime mover : *Motor *Hydraulic motor

*with brake / without brake

2 The capacity of prime mover(KW)

3 The revolution of prime mover(rpm)

4 The kind of driven motor

5 The revolution of Input & output shaft(rpm)

6 Working conditions

1) Operating hour per day

2) Continuous drive of intermittent drive, normal rotation or reverse rotation

3) Shock or no shock

4) Frequency of start(times per hour)

5) Ambient temperature

7 Required output torque of reducer(N.m) or input power(KW)

8 Connection way of input & output shaft for prime mover and driven motor

9 Model/ratio/shaft position

10 Layout drawing

MAH

series

Speed reducer demanded by the times

High efficiency and reduction worm speed reducer
Now for the debut of MAH series

Features

MAH series Worm speed reducer

MAKIACE

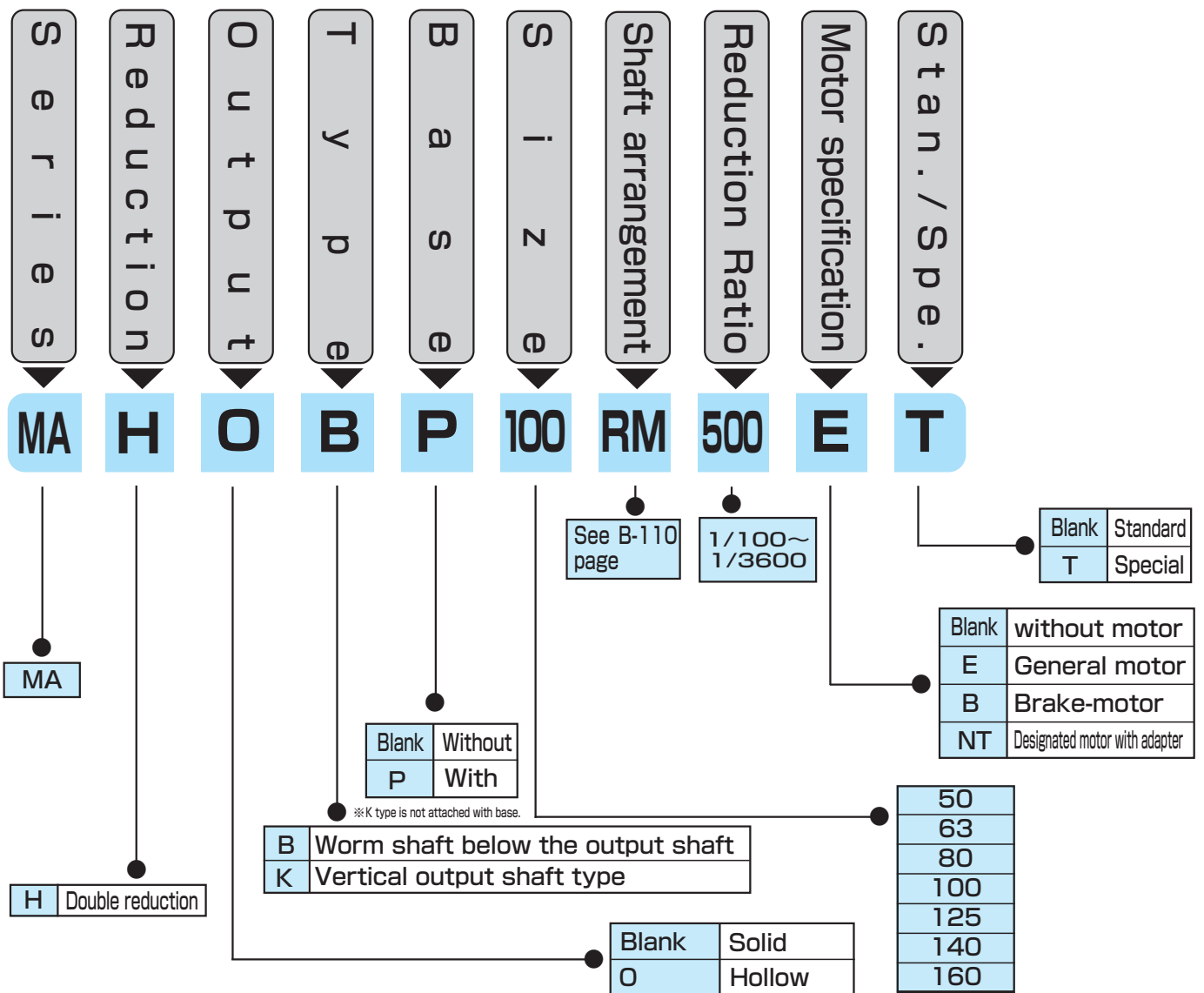
Speed reducer MAKIACE demanded by the times, combined with high efficiency MA series. Now for the debut of a wide product lineup MAF series.

Size	7 types lined up size 50~160
Reduction ratio	1/100~1/3600
Features	MAKIACE compare with spiral bevel gear and helical gear, it is low noise and smooth operation.

MAH series INDEX

Nominal type	A-105
Main specification	
Standard items	A-105
Commercial components · Drain plug · Grease nipple	A-106
Rated transfer capability table	
MAH·MAHO	A-107
Rated transfer capability table, with motors	A-109
Outline dimensional drawings	A-110

Nominal type



Specification

Standard type

No	I t e m	Specification
1	S i z e	50 63 80 100 125 140 160
2	R e d u c t i o n r a t i o	1/100~1/3600
3	O u t p u t s h a f t s h a p e	Solid (type MAH) Hollow (type MAHO)
4	P o s i t i o n & d i r e c t i o n o f i n p u t & o u t p u t s h a f t	Worm shaft below the output shaft type MAFB
		Vertical output shaft type MAFK
5	I n p u t s h a f t s h a p e	Solid shaft
		With motor · With brake-motor
6	P a i n t	Munsell 5.5PB5.5/9 sky blue(lacquer type)
7	S h a f t k e y s	JIS B 1301-1996(parallel key)
8	W o r m s c r e w	Twisted right direction

Commercial components

Size	Primary side				Secondary side								
	Bearing		Oil seal		Input shaft	Bearing				オイルシール			
	Input shaft	Output hollow shaft	Input shaft	Output hollow shaft		Output hollow shaft		Output hollow shaft		Input shaft	Output hollow shaft	Output hollow shaft	
		B,K				B	K	B	K				
50	30203	6007	TC15307	TC335011	32005	6206UU	Upper 6206UU	Upper 6009UU	6009UU	Upper 6009UU	GMHS24408	HTC295011	D406211
						6009UU	Lower 6009	Lower 6206		Lower 6009			
63	30203	6007	TC15307	TC335011	30205	6207UU	Upper 6206UU	Upper 6010UU	6010UU	Upper 6010UU	GMHS24408	HTC345511	D456812
						6010UU	Lower 6010	Lower 6206		Lower 6010			
80	32005	6009	HTC24408	D406211	32206	32209	32209	32209	32013	32013	HRE295011	HTC446812	D608212
						32013							
100	30205	6010	HTC24408	D456812	32207	32210	32210	32210	32015	32015	HTC345511	HTC497212	D709513
						32015							
125	32206	32013	HRE295011	D608212	32210	32214	32214	32214	32019	32019	HTC446812	HTC658812	D9011513
						32019							
140	32206	32013	HRE295011	D608212	30310	32215	32215	32215	32021	32021	HTC446812	HTC709513	D10012513
						32021							
160	32207	32015	HTC345511	D709513	30311	32216	32216	32216	32024	32024	D507212	D7510013	D11514514
						32024							

Oil drain plug, drain plug, grease nipple and oil level gauge

Size	Primary side				Secondary side			
	Oil drain plug	Drain plug	Grease nipple	Oil level gauge	Oil drain plug	Drain plug	Grease nipple	Oil level gauge
50	—	—	—	—	G3/8	R3/8	—	207
63	—	—	—	—	G3/8	R3/8	—	257
80	G3/8	R1/8	—	207	G1/2	R1/2	R1/8	KCM30
100	G3/8	R1/8	—	257	G1/2	R1/2	R1/8	308
125	G1/2	R1/2	—	308	G1/2	R1/2	R1/8	308
140	G1/2	R1/2	—	308	G1/2	R1/2	R1/8	4010
160	G1/2	R1/2	—	308	G1/2	R1/2	R1/8	4010

Rated transfer capability table (10-hour continuous rating)

MAKIJACE

Reduction ratio	Input rotation speed (rpm)	MAH50			MAH63			MAH80		
		Input (kW)	Output torque (Nm)	Total efficiency (%)	Input (kW)	Output torque (Nm)	Total efficiency (%)	Input (kW)	Output torque (Nm)	Total efficiency (%)
200	1800	0.30	190	59.9	0.55	355	60.5	0.92	681	70.0
	1500	0.26	199	59.0	0.49	370	59.3	0.81	705	68.3
	1200	0.22	206	57.6	0.42	389	57.9	0.70	742	66.7
	1000	0.20	213	57.2	0.37	401	57.3	0.61	769	65.7
	900	0.18	216	56.3	0.34	408	56.3	0.57	783	65.0
	750	0.16	222	55.1	0.30	420	55.0	0.49	804	63.8
	500	0.12	240	53.1	0.22	450	53.4	0.36	859	62.0
	250	0.07	279	50.2	0.13	516	50.3	0.22	980	58.2
300	1800	0.28	242	54.2	0.52	450	54.3	0.71	742	65.6
	1500	0.24	250	53.6	0.45	464	53.5	0.63	769	64.3
	1200	0.21	258	52.5	0.38	480	52.3	0.53	793	62.9
	1000	0.18	272	51.6	0.34	495	51.4	0.46	822	62.0
	900	0.17	272	49.8	0.32	505	49.8	0.43	837	61.4
	750	0.15	283	48.6	0.28	518	49.0	0.37	859	60.2
	500	0.11	300	46.4	0.20	530	46.5	0.28	921	58.4
	250	0.06	300	43.5	0.11	530	43.3	0.16	980	53.9
400	1800	0.19	216	52.9	0.36	408	53.0	0.58	783	63.4
	1500	0.17	222	52.3	0.32	420	52.3	0.51	804	62.2
	1200	0.14	232	51.3	0.27	436	51.2	0.43	837	61.2
	1000	0.13	240	50.0	0.23	450	50.7	0.37	859	60.0
	900	0.12	245	48.3	0.22	456	48.8	0.35	875	59.4
	750	0.11	254	47.2	0.20	474	47.5	0.30	903	58.5
	500	0.08	279	45.1	0.15	516	45.2	0.23	980	55.7
	250	0.05	295	42.4	0.08	530	42.2	0.12	980	51.8
500	1800	0.14	188	50.8	0.27	373	51.3	0.50	811	61.3
	1500	0.12	190	50.3	0.24	381	50.6	0.44	837	60.4
	1200	0.10	192	49.2	0.20	385	49.6	0.37	866	59.3
	1000	0.08	194	47.8	0.17	289	48.7	0.32	891	58.1
	900	0.08	195	46.2	0.16	392	47.0	0.30	910	57.5
	750	0.07	198	45.1	0.14	396	45.8	0.26	947	56.2
	500	0.05	202	43.1	0.10	404	43.6	0.19	980	53.3
	250	0.03	217	40.5	0.06	435	40.7	0.10	980	49.6
600	1800	0.15	232	48.6	0.28	436	48.5	0.46	837	57.6
	1500	0.13	240	46.6	0.25	450	47.3	0.40	859	56.2
	1200	0.12	250	45.2	0.21	465	45.5	0.34	891	55.1
	1000	0.10	257	43.5	0.19	488	43.8	0.30	921	54.0
	900	0.10	266	42.9	0.18	500	43.1	0.28	947	52.9
	750	0.09	279	41.9	0.16	516	41.9	0.25	980	51.2
	500	0.06	291	39.8	0.12	530	39.7	0.18	980	48.5
	250	0.04	298	35.8	0.07	530	35.6	0.10	980	44.6
800	1800	0.17	254	35.1	0.24	456	44.6	0.37	875	55.1
	1500	0.16	263	31.8	0.22	474	41.9	0.33	903	54.1
	1200	0.14	275	31.4	0.20	500	39.9	0.28	947	52.6
	1000	0.12	280	30.8	0.17	516	39.2	0.25	980	50.7
	900	0.11	282	30.7	0.16	530	39.1	0.23	980	49.8
	750	0.10	286	29.5	0.14	530	37.6	0.20	980	48.4
	500	0.07	289	26.9	0.10	530	34.2	0.14	980	45.8
	250	0.04	297	25.5	0.05	530	32.5	0.08	980	42.2
1000	1800	0.13	213	30.4	0.22	479	41.1	0.33	910	52.7
	1500	0.12	217	29.5	0.19	500	40.7	0.29	947	51.1
	1200	0.10	223	27.7	0.17	522	37.9	0.25	980	49.4
	1000	0.09	232	27.6	0.15	530	37.9	0.22	980	47.6
	900	0.08	236	27.1	0.13	530	37.2	0.20	980	46.9
	750	0.07	242	26.2	0.12	530	36.0	0.17	980	45.6
	500	0.06	252	23.3	0.09	530	32.0	0.12	980	43.0
	250	0.03	262	22.0	0.04	530	30.9	0.07	980	39.4
100	0.01	278	20.8	0.02	530	29.4	0.03	980	35.6	

MAH100			MAH125			MAH140			MAH160		
Input (kW)	Output torque (Nm)	Total efficiency (%)	Input (kW)	Output torque (Nm)	Total efficiency (%)	Input (kW)	Output torque (Nm)	Total efficiency (%)	Input (kW)	Output torque (Nm)	Total efficiency (%)
1.52	1170	72.5	2.43	1910	74.1	3.10	2450	74.5	4.47	3570	75.3
1.29	1170	71.0	2.06	1910	72.9	2.63	2450	73.3	3.80	3570	73.8
1.07	1170	69.0	1.69	1910	71.2	2.16	2450	71.4	3.11	3570	72.2
0.91	1170	67.6	1.44	1910	69.6	1.83	2450	70.0	2.64	3570	70.7
0.82	1170	67.1	1.31	1910	68.8	1.67	2450	69.2	2.41	3570	69.9
0.70	1170	66.1	1.11	1910	67.5	1.42	2450	67.7	2.05	3570	68.3
0.48	1170	63.7	0.77	1910	65.2	0.98	2450	65.2	1.43	3570	65.6
0.25	1170	60.2	0.40	1910	61.9	0.52	2450	61.8	0.75	3570	62.0
0.11	1170	55.5	0.18	1910	56.6	0.23	2450	56.6	0.33	3570	56.8
1.07	1170	68.5	1.70	1910	70.7	2.17	2450	70.9	3.14	3570	71.3
0.92	1170	66.7	1.45	1910	69.1	1.84	2450	69.5	2.67	3570	70.1
0.75	1170	65.0	1.19	1910	670.0	1.53	2450	67.2	2.18	3570	68.6
0.64	1170	63.8	1.02	1910	65.6	1.30	2450	65.8	1.87	3570	66.6
0.58	1170	63.3	0.92	1910	64.9	1.18	2450	65.0	1.71	3570	65.6
0.49	1170	62.4	0.78	1910	63.9	1.00	2450	63.9	1.46	3570	64.2
0.34	1170	60.0	0.54	1910	61.6	0.68	2450	63.0	1.00	3570	62.0
0.18	1170	55.9	0.29	1910	57.4	0.37	2450	57.7	0.53	3570	58.4
0.08	1170	51.3	0.13	1910	52.7	0.16	2450	52.5	0.24	3570	52.5
0.84	1170	65.9	1.32	1910	68.0	1.69	2450	68.3	2.43	3570	69.3
0.71	1170	64.4	1.13	1910	66.2	1.45	2450	66.4	2.06	3570	68.0
0.58	1170	63.0	0.93	1910	64.4	1.19	2450	64.4	1.71	3570	65.7
0.49	1170	62.1	0.79	1910	63.1	1.02	2450	63.1	1.46	3570	64.1
0.45	1170	61.6	0.72	1910	62.5	0.92	2450	62.5	1.33	3570	63.3
0.38	1170	60.5	0.61	1910	61.6	0.78	2450	61.6	1.13	3570	62.2
0.26	1170	58.1	0.42	1910	59.3	0.48	2450	67.4	0.78	3570	60.1
0.14	1170	53.6	0.23	1910	54.5	0.29	2450	54.6	0.42	3570	55.7
0.06	1170	49.8	0.10	1910	50.2	0.13	2450	50.0	0.18	3570	50.7
0.69	1170	63.8	1.09	1910	65.9	1.40	2450	66.1	2.01	3570	67.1
0.59	1170	62.6	0.94	1910	64.1	1.20	2450	64.2	1.71	3570	65.6
0.48	1170	61.3	0.77	1910	62.5	0.98	2450	62.5	1.41	3570	63.4
0.41	1170	60.4	0.65	1910	61.4	0.84	2450	61.4	1.21	3570	62.0
0.37	1170	59.8	0.59	1910	60.8	0.76	2450	60.7	1.10	3570	61.3
0.31	1170	58.7	0.50	1910	60.1	0.64	2450	60.0	0.93	3570	60.3
0.22	1170	55.8	0.35	1910	57.1	0.45	2450	57.5	0.64	3570	58.0
0.12	1170	51.8	0.19	1910	52.5	0.24	2450	52.5	0.35	3570	53.3
0.05	1170	48.1	0.08	1910	48.5	0.11	2450	48.3	0.15	3570	48.6
0.61	1170	60.4	0.96	1910	62.7	1.23	2450	62.8	1.77	3570	63.5
0.52	1170	58.6	0.82	1910	61.2	1.05	2450	61.2	1.51	3570	62.0
0.43	1170	56.9	0.68	1910	59.0	0.87	2450	59.0	1.24	3570	60.3
0.37	1170	55.7	0.58	1910	57.7	0.74	2450	57.6	1.07	3570	58.4
0.33	1170	55.2	0.53	1910	57.0	0.68	2450	56.9	0.97	3570	57.5
0.28	1170	53.8	0.45	1910	56.0	0.57	2450	56.0	0.83	3570	56.2
0.20	1170	50.2	0.32	1910	52.5	0.41	2450	52.8	0.58	3570	54.0
0.11	1170	46.0	0.17	1910	47.9	0.22	2450	47.9	0.32	3570	48.4
0.05	1170	41.8	0.08	1910	43.4	0.10	2450	43.2	0.14	3570	43.3
0.48	1170	57.6	0.75	1910	59.9	0.96	2450	59.9	1.38	3570	60.9
0.41	1170	56.1	0.65	1910	57.9	0.83	2450	57.8	1.17	3570	59.8
0.34	1170	54.7	0.54	1910	55.9	0.69	2450	55.8	0.98	3570	57.4
0.29	1170	53.3	0.46	1910	54.7	0.59	2450	54.6	0.84	3570	55.9
0.26	1170	52.5	0.42	1910	53.9	0.54	2450	53.9	0.76	3570	55.1
0.23	1170	50.6	0.36	1910	52.3	0.46	2450	52.7	0.65	3570	54.0
0.16	1170	47.8	0.26	1910	48.9	0.33	2450	49.0	0.46	3570	50.7
0.09	1170	43.8	0.14	1910	44.5	0.18	2450	44.4	0.26	3570	45.8
0.04	1170	39.7	0.06	1910	40.2	0.08	2450	40.6	0.11	3570	41.2
0.40	1170	55.2	0.63	1910	57.5	0.80	2450	57.4	1.15	3570	58.5
0.34	1170	53.8	0.54	1910	55.5	0.69	2450	55.5	0.98	3570	57.2
0.28	1170	51.9	0.45	1910	53.7	0.57	2450	53.6	0.82	3570	54.9
0.24	1170	50.6	0.38	1910	52.1	0.49	2450	52.3	0.70	3570	53.3
0.22	1170	49.6	0.35	1910	51.2	0.45	2450	51.4	0.64	3570	52.5
0.19	1170	48.0	0.30	1910	49.8	0.38	2450	50.0	0.55	3570	51.0
0.13	1170	45.5	0.22	1910	46.4	0.28	2450	46.4	0.39	3570	47.6
0.07	1170	41.6	0.12	1910	42.3	0.15	2450	42.2	0.22	3570	42.9
0.03	1170	37.1	0.05	1910	37.6	0.07	2450	37.9	0.10	3570	38.5

Rated transfer capability table, with motors

Motor capacity, size and output torque (MAHE · MAKHE · MAOHE · MAOKHE)

Seize	kW Reduction ratio	0.2		0.4		0.75		1.5		2.2		3.7	
		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)		Output torque(N·m)	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
50	200	150	127										
	300	205	173										
	400	222	216										
	500	190	188										
	600	286	259										
	800	263	254										
	1000	217	213										
63	200	☆		302	257								
	300	☆		408	345								
	400	266	225										
	500	322	272										
	600	361	309										
	800	427	379										
	1000	500	436										
80	200					652	557						
	300			491	418								
	400			634	538								
	500			769	650								
	600			859	733								
	800			903	875								
	1000			947	910								
100	200					678	577	1170	1154				
	300					955	818	1170	1170				
	400			656	559	1170	1170						
	500			797	677	1170	1170						
	600			895	769	1170	1170						
	800			1143	978	1170	1170						
	1000			1170	1170	1170	1170						
125	200							1392	1179				
	300					990	844	1910	1688				
	400					1264	1082	1910	1910				
	500					1530	1311	1910	1910				
	600					1753	1497	1910	1910				
	800												
	1000												
140	200									2053	1739		
	300							1991	1693	2450	2450		
	400					1268	1087	2450	2174				
	500					1533	1315	2450	2450				
	600					1753	1499	2450	2450				
	800					2208	1907	2450	2450				
	1000												
160	200											3477	2956
	300									2946	2497		
	400							2598	2206	3570	3236		
	500							3132	2670	3570	3570		
	600							3553	3032	3570	3570		
	800							3570	3570	3570	3570		
	1000												

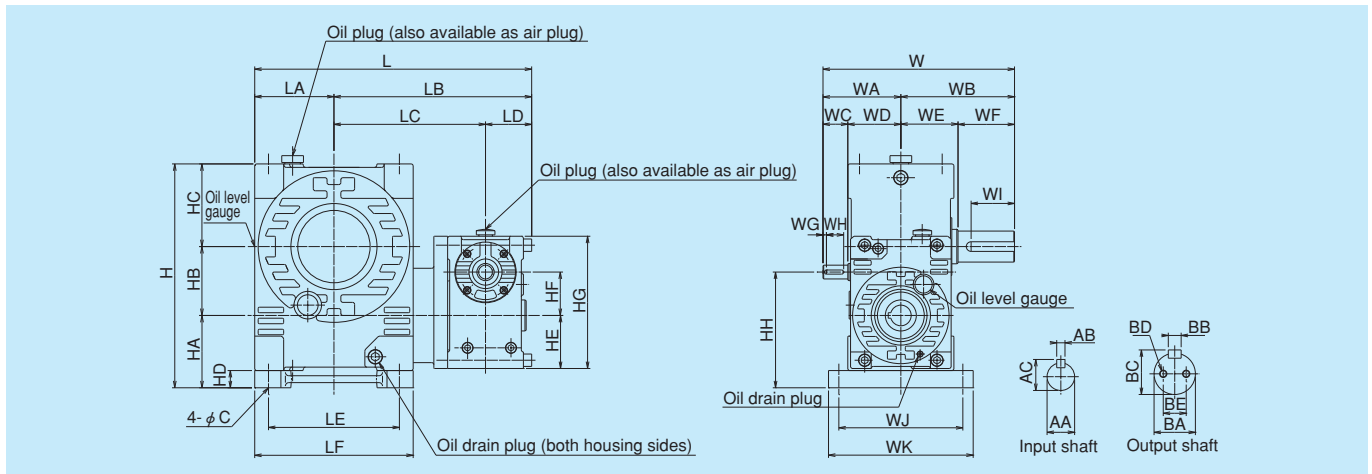
※ In the numbers shown in gray, the motor capacity will exceed the speed reducer ability. Therefore, only use the product at torques below these values.

※ ☆ In the star sign shown in above table, motor is not standard, but it is attachment is available.

Outline dimensional drawings

MAHseries

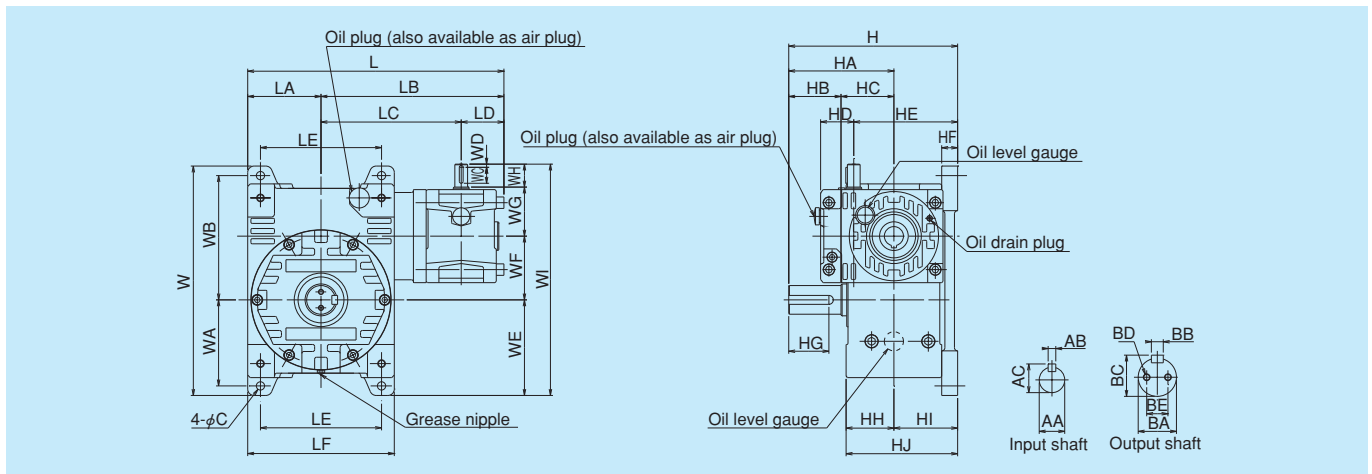
MAHBP



MAHBP

Size	L	LA	LB	LC	LD	LE	LF	W	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	H	HA	HB	HC	HD	HE	HF	HG	HH	AA	AB	AC	BA	BB	BC	BD	BE	C	Weight kg
50	228	65	163	120	43	100	130	184	87	97	25	62	55	42	-	18	32	130	150	185	70	50	65	20	55	40	135	110	φ12	4	13.5	φ25	8	28	1-M8x16	-	φ9	14.5
63	246	73	173	130	43	120	146	207	87	120	25	62	62	58	-	18	46	140	164	210	70	63	77	20	55	40	135	110	φ12	4	13.5	φ30	8	33	1-M8x16	-	φ11	19
80	335	100	235	175	60	150	190	230	100	130	28	72	72	58	5	21	45	160	190	265	89	80	96	25	65	50	167	139	φ18	6	20.5	φ38	10	41	2-M8x16	20	φ13	42
100	402	115	287	220	67	190	230	278	113	165	36	77	83	82	5	25	63	180	210	325	105	100	120	25	77	63	192	168	φ20	6	22.5	φ45	14	48.5	2-M8x16	25	φ13	65.5
125	487	145	342	265	77	240	290	350	145	205	42	103	100	105	6	30	81	230	265	407	132	125	150	32	99	80	246	212	φ25	8	28	φ60	18	64	2-M10x20	30	φ18	129
140	517	160	357	280	77	250	320	365	145	220	42	103	115	105	6	30	81	255	295	455	145	140	170	35	99	80	246	225	φ25	8	28	φ65	18	69	2-M12x24	35	φ18	164
160	590	185	405	325	80	300	370	400	165	235	42	123	130	105	6	30	80	295	340	510	160	160	190	40	123	100	306	260	φ28	8	31	φ70	20	74.5	2-M12x24	35	φ22	229

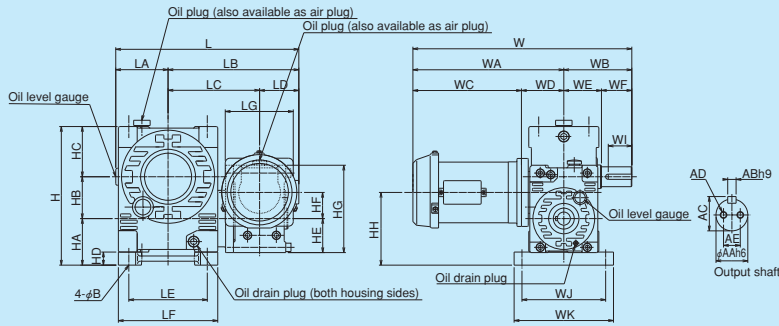
MAHKP



MAHKP

Size	L	LA	LB	LC	LD	LE	LF	W	WA	WB	WC	WD	WE	WF	WG	WH	WI	H	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	AA	AB	AC	BA	BB	BC	BD	BE	C	Weight kg
50	228	65	163	120	43	100	130	215	80	115	18	-	90	50	62	25	227	162	97	42	55	40	105	15	32	50	65	115	φ12	4	13.5	φ25	8	28	1-M8x16	-	φ9	14
63	246	73	173	130	43	110	146	255	95	130	18	-	110	63	62	25	260	195	120	58	62	40	115	20	46	55	75	130	φ12	4	13.5	φ30	8	33	1-M8x16	-	φ11	19.5
80	330	95	235	175	60	150	190	305	115	160	21	5	130	80	72	28	310	220	130	58	72	52	140	25	45	65	90	155	φ18	6	20.5	φ38	10	41	2-M8x16	20	φ13	43
100	402	115	287	220	67	190	230	360	135	195	25	5	150	100	77	36	363	265	165	82	83	52	163	25	63	75	100	175	φ20	6	22.5	φ45	14	48.5	2-M8x16	25	φ13	66.5
125	487	145	342	265	77	240	290	450	170	245	30	6	187.5	125	103	42	457.5	332	205	105	100	67	207	32	81	95	127	222	φ25	8	28	φ60	18	64	2-M10x20	30	φ18	130
140	517	160	357	280	77	250	320	510	195	275	30	6	215	140	103	42	500	360	220	105	115	67	220	35	81	105	140	245	φ25	8	28	φ65	18	69	2-M12x24	35	φ18	164
160	590	185	405	325	80	300	370	580	220	310	30	6	245	160	123	42	570	395	235	105	130	82	260	40	80	120	160	280	φ28	8	31	φ70	20	74.5	2-M12x24	35	φ22	229

MAHBP



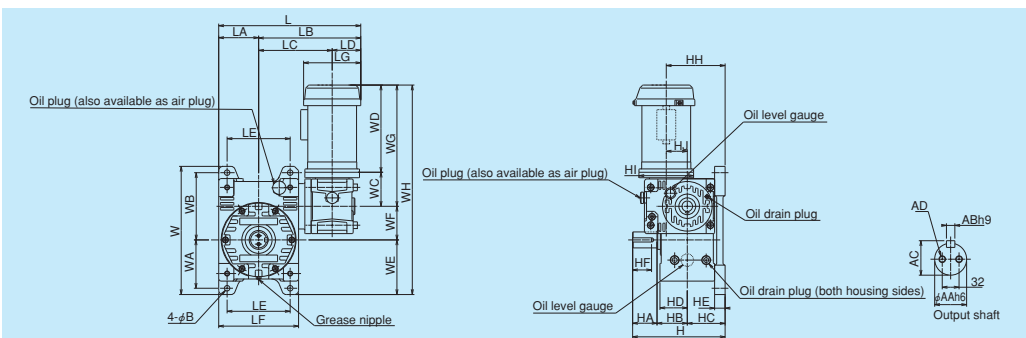
Size	Motor capacity(kW)	Approximate weight(kg)	
		Motor(without brake)	Motor(with brake)
50	0.2	19.5	21.5
	0.4	24	26
63	0.4	25	27
	0.75	51	52.5
80	0.4	58	62.5
	0.75	74	75.5
100	0.75	80.5	85.5
	1.5	87	94
125	0.75	144	150
	1.5	151	158
140	0.75	180	184
	1.5	156	193
160	2.2	198	199
	3.7	251	258
		263	264
		282	285

MAHBP

Size	Motor capacity	LA	LC	LE	LF	LG	WB	WD	WE	WF	WI	WJ	WK	H	HA	HB	HC	HD	HE	HF	HG	HH	HI	AA	AB	AC	AD	AE	B	Weight kg
50	0.2kW	71	120	100	130	114	97	75	55	42	32	130	150	185	70	50	65	20	55	40	153	110	φ116	25	8	28	1-M8×16	-	9	19.5
	0.4kW	79	130	120	146	114	120	75	62	58	46	140	164	210	70	63	77	20	55	40	153	110	φ116	30	8	33	1-M8×16	-	11	24
63	0.4kW	79	130	120	146	114	120	75	62	58	46	140	164	210	70	63	77	20	55	40	153	110	φ116	30	8	33	1-M8×16	-	11	25
	0.75kW	106	175	150	190	130	130	81	72	58	45	160	190	265	89	80	96	25	65	50	167	139	φ144	38	10	41	2-M8×16	20	13	51
80	0.75kW	106	175	150	190	145	130	81	72	58	45	160	190	265	89	80	96	25	65	50	167	139	φ163	38	10	41	2-M8×16	20	13	58
	1.5kW	121	220	190	230	165	165	92	83	82	63	180	210	325	105	100	120	25	77	63	192	168	φ144	45	14	48.5	2-M8×16	25	13	74
100	0.75kW	121	220	190	230	145	165	92	83	82	63	180	210	325	105	100	120	25	77	63	192	168	φ163	45	14	48.5	2-M8×16	25	13	80.5
	1.5kW	121	220	190	230	145	165	92	83	82	63	180	210	325	105	100	120	25	77	63	192	168	φ163	45	14	48.5	2-M8×16	25	13	87
125	0.75kW	151	265	240	290	145	205	116	100	105	81	230	265	407	132	125	150	32	99	80	246	212	φ163	60	18	64	2-M10×20	30	18	144
	1.5kW	151	265	240	290	200	205	116	100	105	81	230	265	407	132	125	150	32	99	80	246	212	φ180	60	18	64	2-M10×20	30	18	151
140	0.75kW	166	280	250	320	145	220	120	115	105	81	255	295	455	145	140	170	35	99	80	246	225	φ163	65	18	69	2-M12×24	35	18	180
	1.5kW	166	280	250	320	200	220	120	115	105	81	255	295	455	145	140	170	35	99	80	246	225	φ180	65	18	69	2-M12×24	35	18	156
160	2.2kW	166	280	250	320	200	220	120	115	105	81	255	295	455	145	140	170	35	99	80	246	225	φ180	65	18	69	2-M12×24	35	18	198
	3.7kW	191	325	300	370	225	235	141	130	105	88	295	340	510	160	160	190	40	123	100	306	260	φ180	70	20	74.5	2-M12×24	35	22	251
160	2.2kW	191	325	300	370	225	235	141	130	105	88	295	340	510	160	160	190	40	123	100	306	260	φ199	70	20	74.5	2-M12×24	35	22	263
	3.7kW	191	325	300	370	225	235	141	130	105	88	295	340	510	160	160	190	40	123	100	306	260	φ235	70	20	74.5	2-M12×24	35	22	282

Size	Motor(without brake)						Motor(with brake)					
	W	WA	WC	L	LB	LD	W	WA	WC	L	LB	LD
50	341	244	169	307	236	116	378	281	206	307	236	116
	364	244	169	325	246	116	401	281	206	325	246	116
63	384	264	189	325	246	116	421	301	226	325	246	116
	418.5	288.5	207.5	356	250	75	424.5	294.5	213.5	367.5	261.5	86.5
80	451	321	240	412	306	131	526	396	315	409	303	128
	464.5	299.5	207.5	416	295	75	470.5	305.5	213.5	427.5	306.5	86.5
100	497	332	240	472	351	131	572	407	315	469	348	128
	518	353	261	490	369	149	587	422	330	483.3	362.3	142.3
125	561	356	240	547	396	131	636	431	315	544	393	128
	582	377	261	565	414	149	651	446	330	558.3	407.3	142.3
140	580	360	240	577	411	131	655	435	315	574	408	128
	601	381	261	595	429	149	670	450	330	588.3	422.3	142.3
160	630.5	410.5	290.5	602	436	156	707	487	367	606	440	160
	637	402	261	665	474	149	706	471	330	658.3	467.3	142.3
160	666.5	431.5	290.5	672	481	156	743	508	367	676	485	160
	702	467	326	695	504	179	767	532	391	694	503	178

MAHKP



Size	Motor capacity(W)	Approximate weight(kg)	
		Motor(without brake)	Motor(with brake)
50	0.2	19.1	21.1
	0.4	24.6	26.6
63	0.4	25.6	27.6
	0.75	51.7	53.2
80	0.4	74.8	76.3
	0.75	81.3	86.6
100	1.5	88	95.1
	0.75	145.1	150.4
125	1.5	151.8	158.9
	0.75	178.9	184.2
140	1.5	185.6	192.7
	2.2	197.9	198.9
160	1.5	250.9	258
	2.2	263.2	264.2
	3.7	282.2	285.2

MAHKP

Size	Motor capacity	LA	LC	LE	LF	W	WA	WB	WC	WE	WF	H	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	AA	AB	AC	AD	AE	B
50	0.2kW	71	120	100	130	215	90	115	75	90	50	162	42	55	65	50	15	32	58	105	114	40	25	8	28	1-M8×16	-	9
	0.4kW	79	130	110	146	255	95	130	75	110	63	195	58	62	75	55	20	46	58	115	114	40	30	8	33	1-M8×16	-	11
63	0.4kW	79	130	110	146	255	95	130	75	110	63	195	58	62	75	55	20	46	58	115	114	40	30	8	33	1-M8×16	-	11
	0.75kW	106	175	150	190	305	115	160	81	130	80	220	58	72	90	65	25	45	80	140	130	50	38	10	41	2-M8×16	20	13
80	0.4kW	106	175	150	190	305	115	160	81	130	80	220	58	72	90	65	25	45	88.5	140	145	50	38	10	41	2-M8×16	20	13
	0.75kW	121	220	190	230	360	135	195	89	150	100	265	82	83	100	75	25	63	80	163	130	63	45	14	48.5	2-M8×16	25	13
100	0.75kW	121	220	190	230	360	135	195	92	150	100	265	82	83	100	75	25	63	81.5	163	200	63	45	14	48.5	2-M8×16	25	13
	1.5kW	121	220	190	230	360	135	195	92	150	100	265	82	83	100	75	25	63	81.5	163	200	63	45	14	48.5	2-M8×16	25	13
125	0.75kW	151	265	240	290	450	170	245	116	187.5	125	332	105	100	127	95	32	81	100	207	200	80	60	18	64	2-M10×20	30	18
	1.5kW	151	265	240	290	450	170	245	116	187.5	125	332	105	100	127	95	32	81	100	207	200	80	60	18	64	2-M10×20	30	18
140	0.75kW	166	280	250	320	510	195	275	116	215	140	360	105	115	140	105	35	81	100	220	200	80	65	18	69	2-M12×24	35	18
	1.5kW	166	280	250	320	510	195	275	121	215	140	360	105	115	140	105	35	81	112.5	220	225	80	65	18	69	2-M12×24	35	18
	2.2kW	166	280	250	320	510	195	275	121	215	140	360	105	115	140	105	35	81	112.5	220	80	225	65	18	69	2-M12×24	35	18
160	1.5kW	191	325	300	370	580	220	310	141	245	160	395	105	130	160	120	40	80	112.5	260	225	100	70	20	74.5	2-M12×24	35	22
	2.2kW	191	325	300	370	580	220	310	141	245	160	395	105	130	160	120	40	80	112.5	260	225	100	70	20	74.5	2-M12×24	35	22
	3.7kW	191	325	300	370	580	220	310	141	245	160	395	105	130	160	120	40	80	159.5	306	225	100	70	20	74.5	2-M12×24	35	22

Size	Motor(without brake)							Motor(with brake)						
	WH	WG	WD	L	LB	LD	LG	WH	WG	WD	L	LB	LD	LG
50	391	244	169	249	178	58	116	428	281	206	249	178	58	116
	427	244	169	267	188	58	116	464	281	206	267	188	58	116
63	447	264	189	267	188	58	116	484	301	226	267	188	58	116
	498.5	288.5	207.5	353	247	72	144	504.5	294.5	213.5	353	247	72	144
80	531	321	240	362.5	256.5	81.5	163	606	396	315	362.5	256.5	81.5	163
	564.5	299.5	207.5	413	292	72	144	570.5	305.5	213.5	413	292	72	144
100	597	332	240	422.5	301.5	81.5	163	672	407	315	422.5	301.5	81.5	163
	618	353	261	432	311	91	176×182	687	422	330	432	311	91	176×182
125	686	356	240	497.5	346.5	81.5	163	761	431	315	497.5	346.5	81.5	163
	707	377	261	507	356	91	176×182	776	446	330	507	356	91	176×182
140	720	360	240	527.5	361.5	81.5	163	795	435	315	527.5	361.5	81.5	163
	741	381	261	537	371	91	176×182	810	450	330	537	371	91	176×182
160	770.5	410.5	290.5	545	379	99	195×198	847	487	367	543	377	97	194
	797	402	261	607	416	91	176×182	866	471	330	607	416	91	176×182
160	826.5	431.5	290.5	615	424	99	195×198	903	508	367	613	422	97	194
	862	467	326	633.5	442.5	117.5	235	927	532	391	634.5	443.5	118.5	237