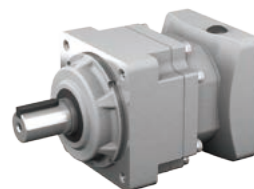
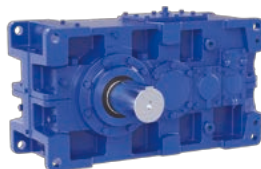


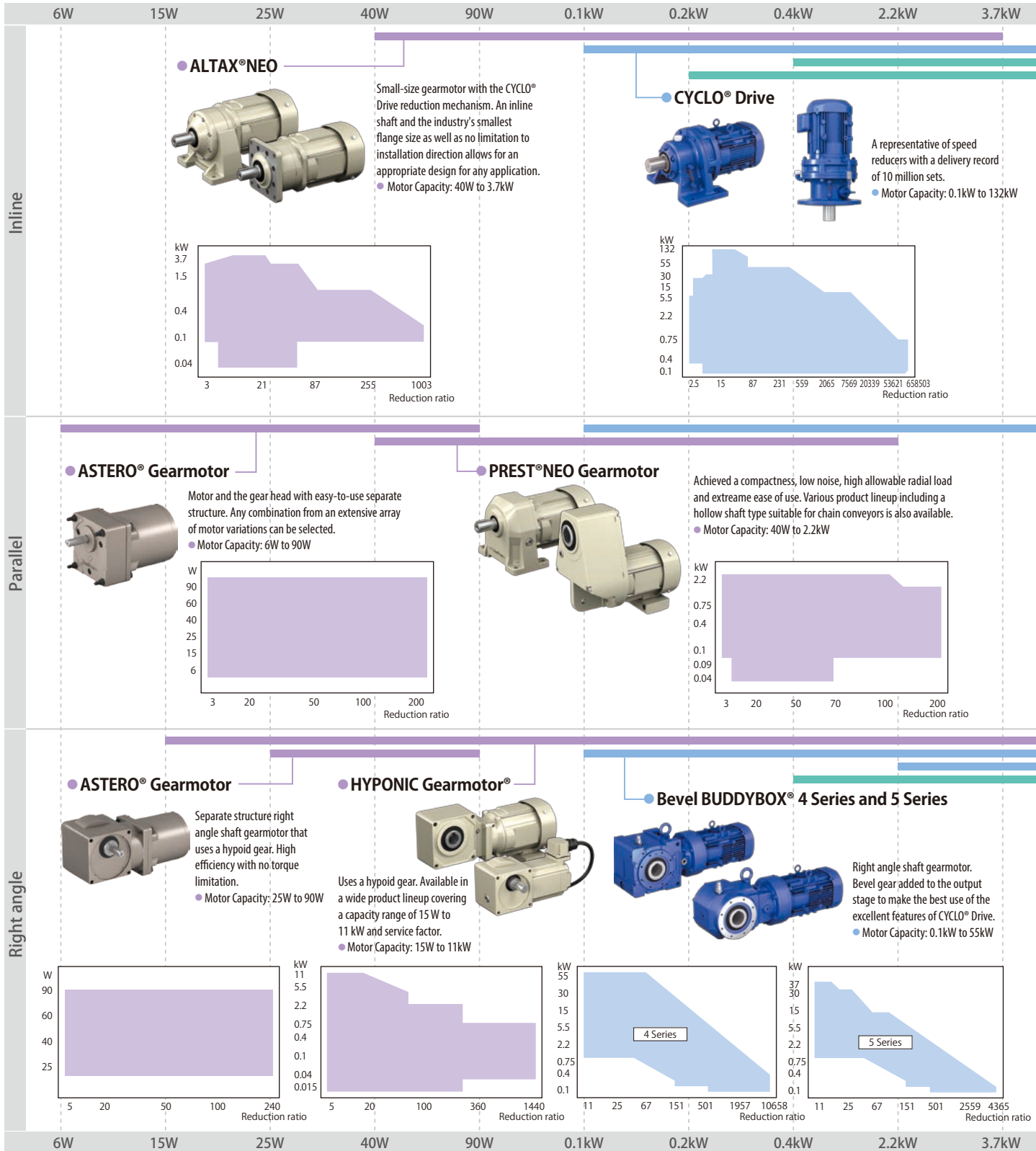
# Product Guide



- ◆ Sumitomo Heavy Industries, Ltd.
- ◆ Sumitomo Heavy Industries Gearmotors Co., Ltd.
- ◆ Sumitomo Heavy Industries Gearbox Co., Ltd.

# Product Lineup

## Gearmotor and Reducer



## Reducer for special applications

### ● High-speed gear increaser and reducer



Generator and compressor

### ● Reducer for industrial machinery



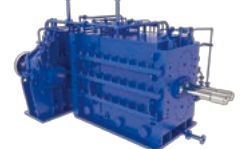
Cement mill



Sugar mill



River pump



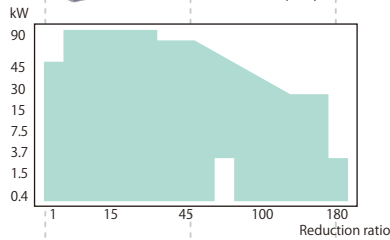
Kneading machine

5.5kW 11kW 30kW 55kW 90kW 132kW 430kW 1200kW 3200kW 3400kW

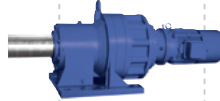
### SKK Gearmotor AF and SF Series



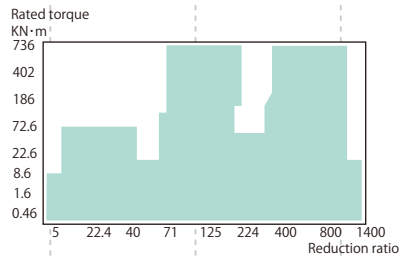
High strength and high functionality as standard specifications. Also covers low reduction ratio and special reduction ratio applications.  
(Some models have parallel shaft.)  
● Motor Capacity: 0.4kW to 90kW



### COMPOWER® Planetary Gear Drive



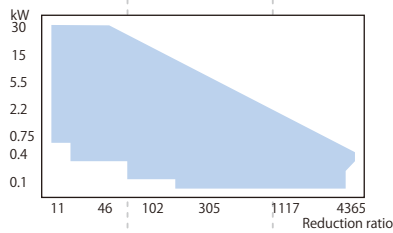
High torque and also compact in the radial direction. Significantly shorter total length achieved with creative ideas and mechanisms.  
● Rated torque: 0.46 to 736kN · m



### Helical BUDDYBOX®



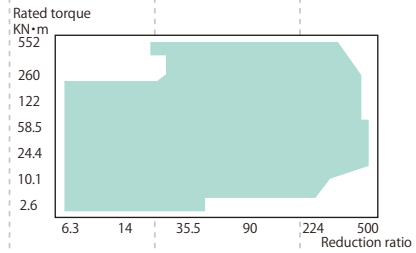
Parallel shaft gearmotor consisting of a combination of a CYCLO® Drive and a hollow shaft helical gearbox.  
● Motor Capacity: 0.1kW to 30kW



### PARAMAX® 9000 Series



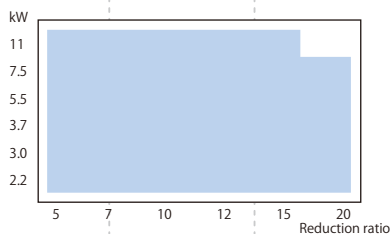
Compact with the use of high strength gear.  
High-functionality, high-performance parallel shaft type speed reducer.  
● Rated torque: 2.6 to 552kN · m



### Bevel BUDDYBOX® H Series



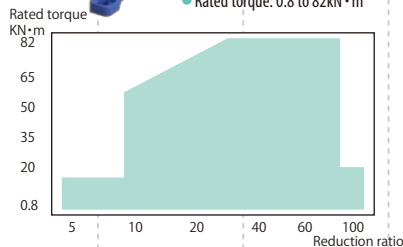
Compact gearmotor with low reduction ratio and hollow shaft.  
● Motor Capacity: 2.2kW to 11kW



### HEDCON® Worm Gear Reducer



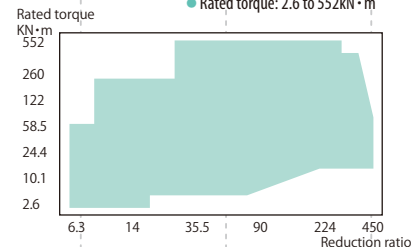
High-performance worm gear reducer for high efficiency and high strength by the use of the unique double contact theory.  
● Rated torque: 0.8 to 82kN · m



### PARAMAX® 9000 Series



High-strength gear for compact size and motor direct coupling structure.  
High-functionality and high-performance right angle shaft reducer.  
● Rated torque: 2.6 to 552kN · m



5.5kW 11kW 30kW 55kW 90kW 132kW 430kW 1200kW 3200kW 3400kW

## Manufacturers

Sumitomo Heavy Industries, Ltd.

Sumitomo Heavy Industries Gearmotors Co., Ltd.

Sumitomo Heavy Industries Gearbox Co., Ltd.

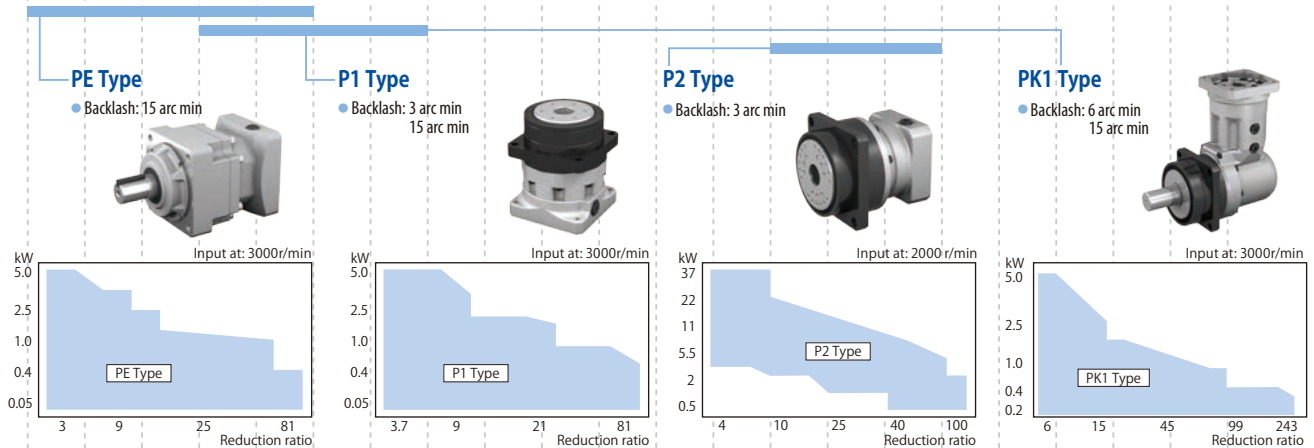
# Product Lineup

## Motion Control Drive (MCD)

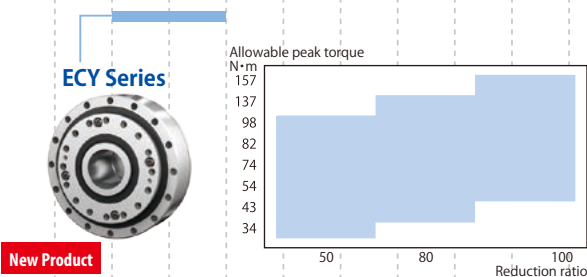
7.2N·m 29.7N·m 34N·m 35N·m 157N·m 270N·m 336N·m 380N·m 410N·m 540N·m 613N·m 625N·m 630N·m 650N·m 1250N·m 1370N·m 3000N·m 3180N·m 4000N·m 6278N·m 7613N·m 12500N·m

(Allowable peak torque)

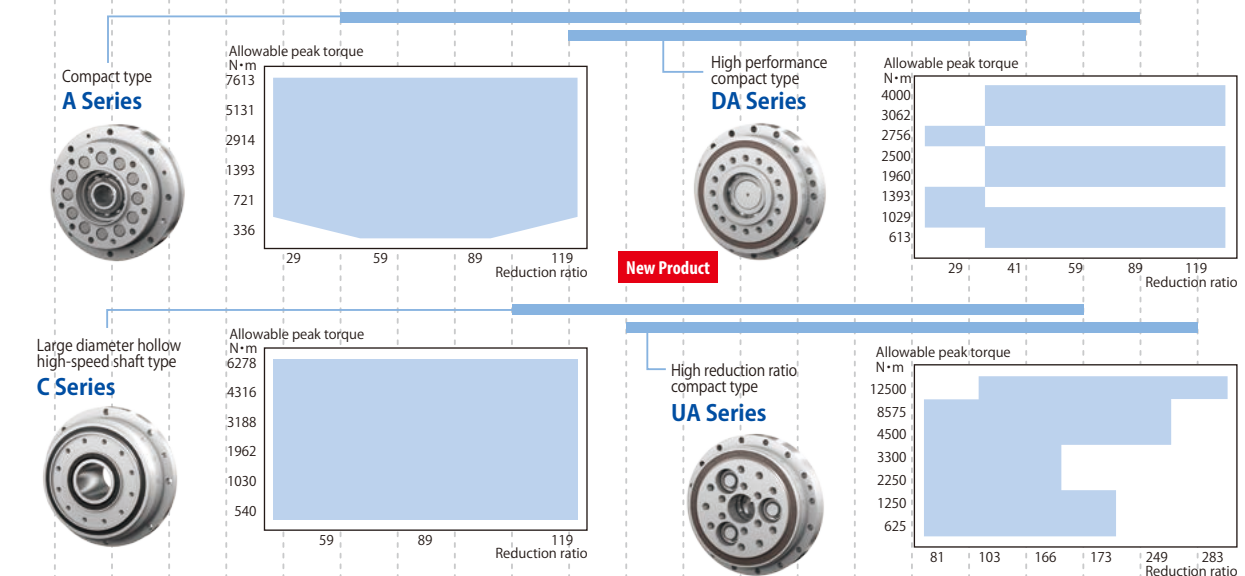
### ● IB series Planetary gear reducer for servo motors. The most suitable for indexing with low backlash. Compatible with servo motors manufactured by major servo motor manufacturers.



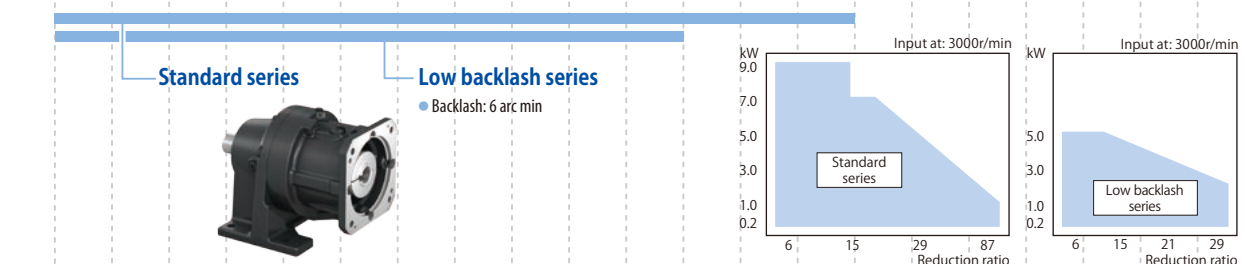
### ● E CYCLO High Precision Gearboxes Compact E CYCLO high precision gearbox integrated with wave-motion type harmonized gear mechanism with zero backlash, and CYCLO gearbox.



### ● FINE CYCLO® High Precision Gearboxes Featuring zero backlash, compact size, low vibrations, high rigidity, high efficiency and long life.



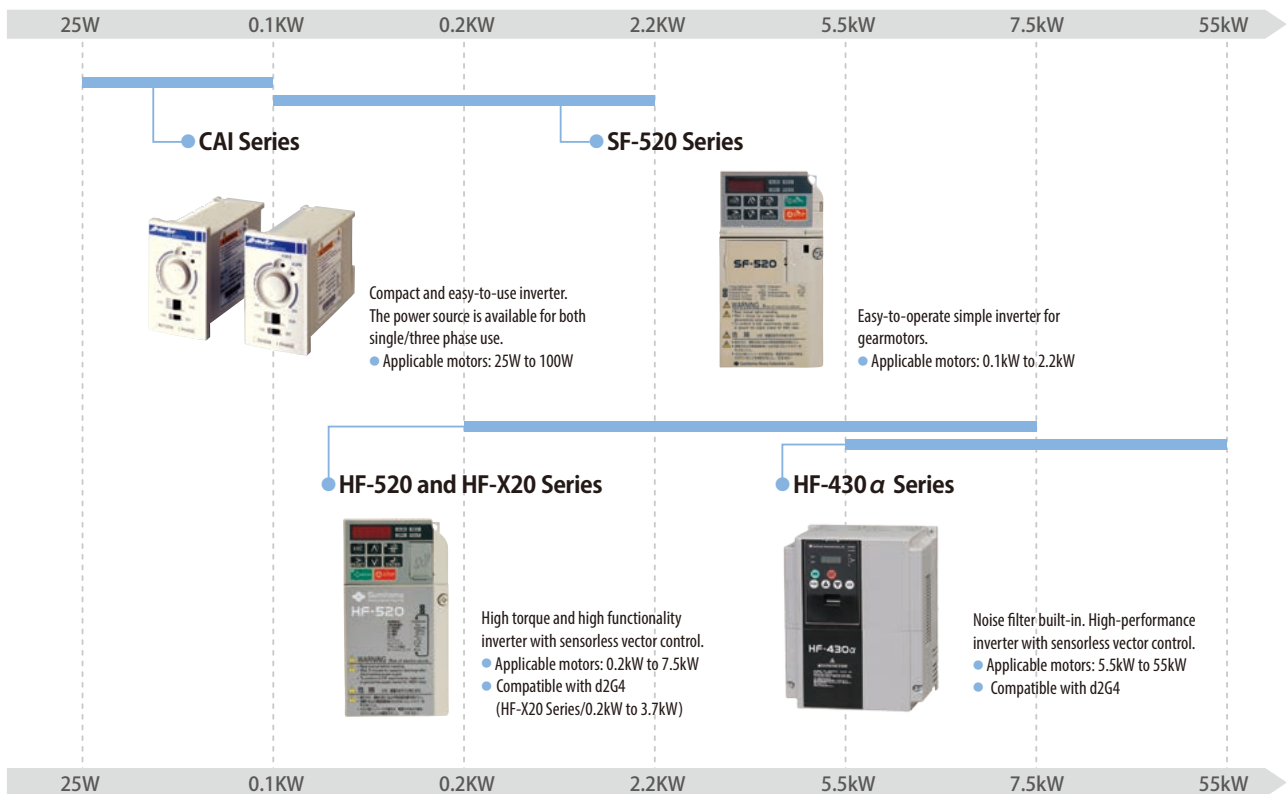
### ● CYCLO® Drive for servo motors CYCLO® Drive with a flange for servo motors.



7.2N·m 29.7N·m 34N·m 35N·m 157N·m 270N·m 336N·m 380N·m 410N·m 540N·m 613N·m 625N·m 630N·m 650N·m 1250N·m 1370N·m 3000N·m 3180N·m 4000N·m 6278N·m 7613N·m 12500N·m

(Allowable peak torque)

## Inverter



## Mechanical Speed Variator

- BEIER® Variator
- BEIER CYCLO® variable speed reducer



Large capacity and long life mechanical non-step speed variator with tradition and reliable performance over 50 years.

- Motor Capacity: 0.2kW to 150kW

## Coupling

### SEISA GC Coupling



Gear coupling

- Reference torque: 421 to 6,460,000N · m

### DC coupling



Disc coupling

- Reference torque: 35.3 to 255,950N · m

### SF coupling



Taper-grid coupling

- Reference torque: 52.0 to 932,100N · m

## Manufacturers

Sumitomo Heavy Industries, Ltd.

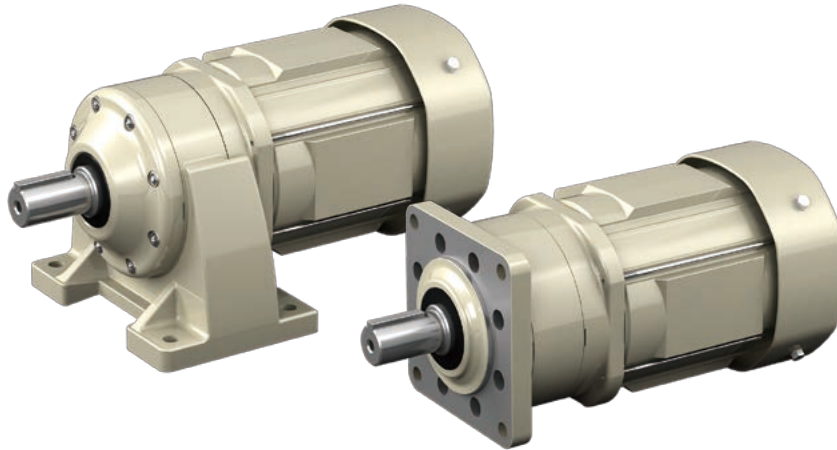
Sumitomo Heavy Industries Gearmotors Co., Ltd.

Sumitomo Heavy Industries Gearbox Co., Ltd.



# ALTAX<sup>®</sup> NEO

Adoption of reduction mechanism of the CYCLO<sup>®</sup> Drive. Compact gearmotor with high impact resistance.

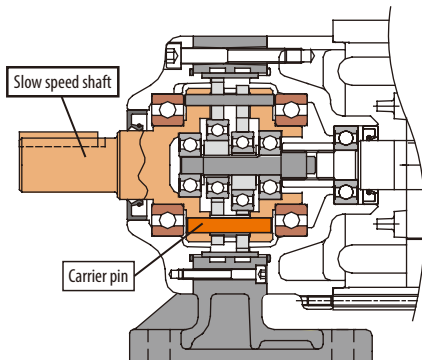


## Reduction mechanism of the CYCLO<sup>®</sup> has evolved into application for the small-type gearmotor.

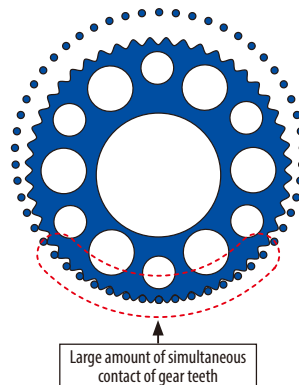
Noise reduction has been achieved with adoption of "double support structure" that supports securely the reducing part from both sides and unique "gear tooth profile with a big difference in the number of teeth between two gears".

Gearmotor with reduction ratio of 3 to 5, 105, and 125 to 435 adopts the planetary mechanism traction drive. This reduces noise level further.

Double support structure



Gear tooth profile with a big difference in the number of teeth between two gears

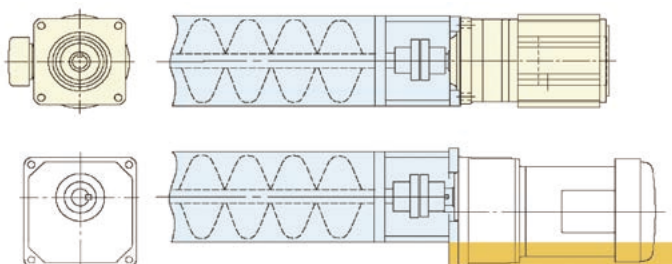


Planetary mechanism traction drive



## Smallest flange dimension in the industry (with flange mounting type)

Inline shaft structure (the motor shaft and the output shaft are in line), which is different in the structure from the typical gearmotor, can make the flange size small. In addition, no misalignment between centers of the flange and the motor can make compact design possible.



### ALTAX NEO

Inline shaft and moreover the smallest flange dimension in the industry make possible simple design without protrusions.

### Typical Gearmotor

Flange size is large due to misalignment between the motor shaft and the output shaft.

Yellow arrow: Larger part in size compared with ALTAX NEO

- ◆ **Motor Capacity:** 40W to 3.7kW
- ◆ **Reduction ratio:** 3 to 1003
- ◆ **Motor type:** Three phase, Premium efficiency, High efficiency, For inverter, Single phase, Outdoor, Waterproof, Increased safety explosion proof, Overseas standard

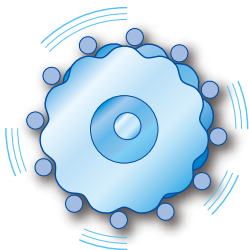
# CYCLO<sup>®</sup> Drive

Excellent performance and high reliability with unique mechanism since production started in 1939.

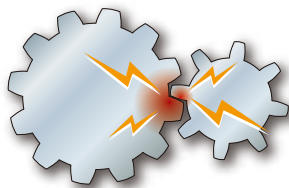


## Unbreakable gear tooth profile

"Cycloid disc", the gear of the CYCLO<sup>®</sup> Drive, has a unique smooth curvature (epitrochoid parallel curve) which is different from the curvature of the typical involute gear. In addition, the unique circular tooth profile has also been adopted for the internal gear. Smooth rolling contact with no breakage of the tooth has achieved a tough and long life reducer. (Some of the reducers with the specifications of a low reduction ratio have adopted the helical gear or the planetary gear.)



CYCLO<sup>®</sup> Drive has smooth rolling contact.



Involute gears have sliding contact with smaller contact ratio.

## Abundant variations

Abundant variations with capacity of 0.1 kW to 132kW and reduction ratio of 2.5 to 658503 are in the lineup.

## Use of SF (Service Factor)

SF for CYCLO<sup>®</sup> Drive can be freely selected unlike SF for the typical gearmotor. Only the frame size of the reducer can be sized up without increasing the motor capacity range.

## Various Applied Products

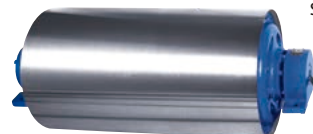
Various applied products are available. The most suitable one according to the applications can be selected.



CYCLO<sup>®</sup> Drive with torque limiter



CYCLO<sup>®</sup> Drive for servo motor



CYCLO motor pulley<sup>®</sup>

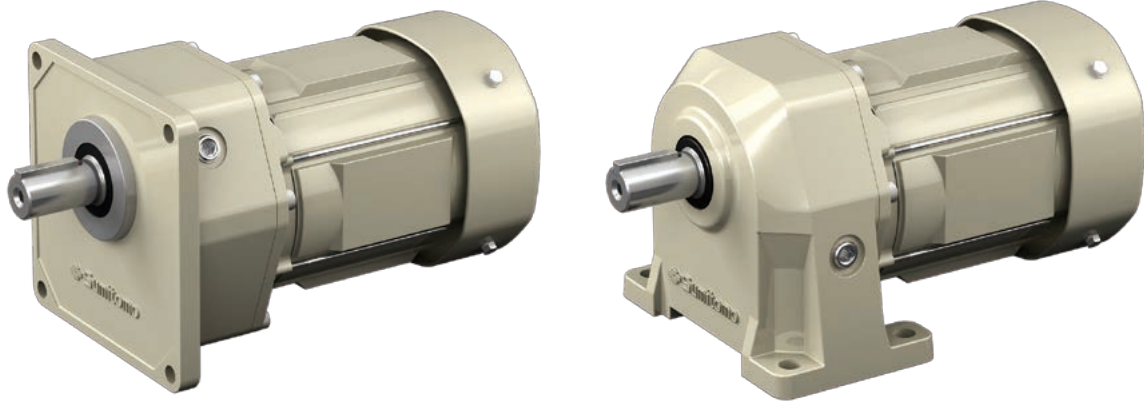


Vertical mounted CYCLO<sup>®</sup> Drive for stirring, mixing, and the reaction tank

- ◆ **Motor Capacity:** 0.1kW to 132kW
- ◆ **Reduction ratio:** 2.5 to 658503
- ◆ **Motor type:** Three phase, Premium efficiency, High efficiency, For inverter, Outdoor, Increased safety explosion proof, Flameproof, Overseas standard, High speed hollow shaft

# PREST® NEO Gearmotor

Parallel shaft gearmotor with extreme ease of use.



## Low noise level design suitable for use in quiet environment

High engagement rate of gears and design with high rigidity have achieved quiet operating noise level.

Low noise level brake has been adopted as a standard feature, and the brake operating noise level has been reduced at most by 20dB (compared to our company's other products). (0.1kW to 2.2kW)

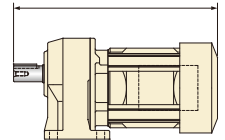
## Built-in terminal block makes wiring easy.

A terminal block with easy wiring is provided in a compact terminal box as a standard feature. (0.1kW to 2.2kW)

In the case that the brake is mounted, the rectifier is built-in in the terminal box. (The rectifier for 40W to 90W is built-in in the brake part.)

## Compactness helpful during design stage

Detailed consideration was given to the "overall length", which is the most important aspect for the parallel shaft gearmotor, and compactness has been achieved with the adoption of a highly rigid casing and a newly developed motor.



## Large allowable radial load which can expand degree of freedom of design.

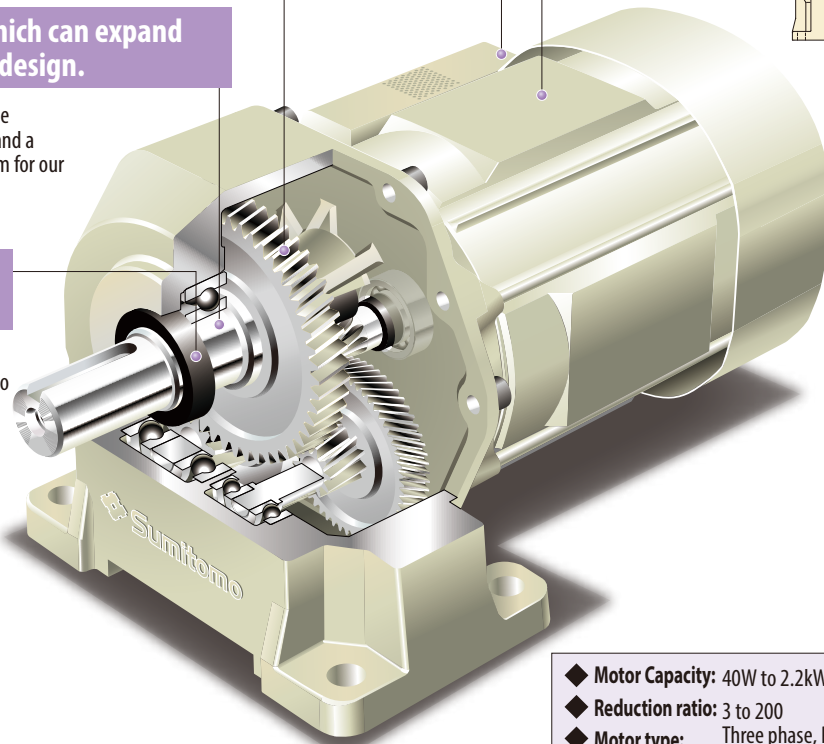
Large allowable radial load has been achieved with the adoption of a high load capacity range shaft bearing and a highly rigid casing. This expands the degree of freedom for our customers during design.

## Improvement of reliability with outstanding sealing performance.

The triple lip oil seal made of a long-life material has been adopted at the output shaft side. In addition, two oil seals made of a long-life material have been adopted at the motor side to significantly improve reliability. (0.1kW to 2.2kW)



Triple lip oil seal



- ◆ **Motor Capacity:** 40W to 2.2kW
- ◆ **Reduction ratio:** 3 to 200
- ◆ **Motor type:** Three phase, Premium efficiency, High efficiency, For inverter, Single phase, Outdoor, Waterproof, Increased safety explosion proof, Overseas standard



# PREST® NEO Gearmotor Hollow Shaft GHYM Type

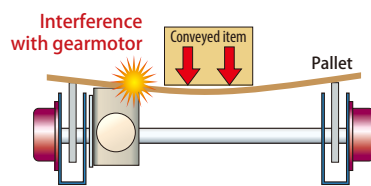
Hollow shaft gearmotor neatly mounted in chain conveyors.



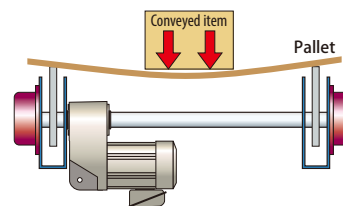
## Less chance of interference with pallets

When a common hollow shaft type gearmotor is mounted inside a chain conveyor, the pallet may bend due to the weight of the item being conveyed, and may interfere with the gearmotor.

PRESTO NEO gearmotor hollow shaft GHYM type avoids interference with pallets by reducing the distance between the output shaft (hollow shaft) and the end of the gear case to the utmost.



Common gearmotor

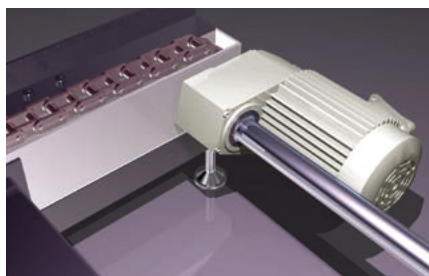
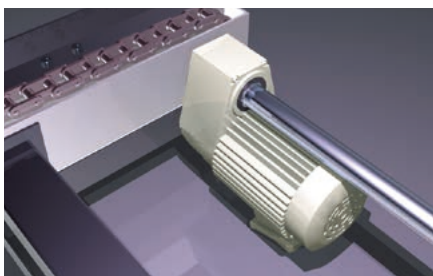


PRESTO NEO gearmotor hollow shaft GHYM type

## High degree of freedom of layout

The right-angle shaft method is commonly used for the hollow shaft type gearmotor. Since the parallel shaft method is adopted for the PRESTO NEO gearmotor hollow shaft GHYM type, it does not take up space in the longitudinal direction of the conveyor.

The gearmotor can also be mounted in any position (horizontal in the output shaft direction) on the right, left or below the drive shaft (conveyor drive shaft).



## Same mounting dimensions for all models

Various lineup of motor capacities from 0.2kW to 0.75kW, and reduction ratios from 15 to 50. Since all models adopt the same frame size of the gear and hollow shaft hole diameter (same mounting dimensions even with different motor capacities and reduction ratios), the design specification of the conveyor unit can be used commonly.

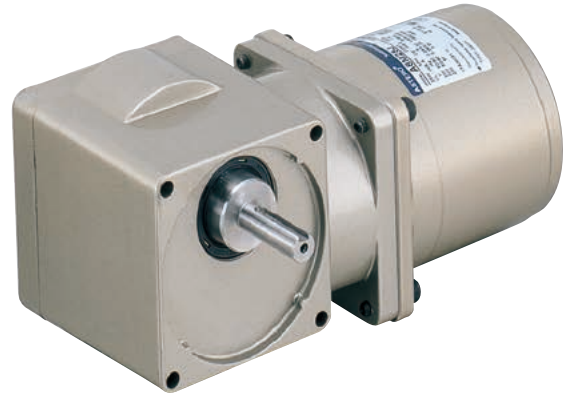
## Terminal box with terminal block

The terminal box is standardly equipped with an easy to wire terminal box.

- ◆ **Motor Capacity:** 0.2kW to 0.75kW
- ◆ **Reduction ratio:** 15 to 50
- ◆ **Motor type:** Three phase, Premium efficiency

# ASTERO® Gearmotor

The separate-type small-size gearmotor with selection of parallel shaft or right angle shaft.



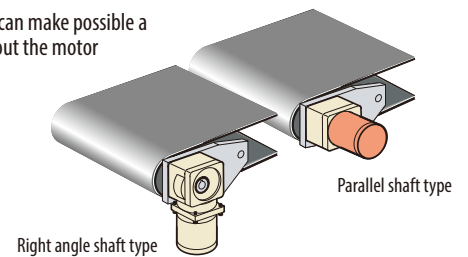
## Selectable separate-type gear head.

Parallel shaft or right angle shaft (solid shaft or hollow shaft) can be selected. The motor and the gear head are an easy-to-use separate structure. The gear head can be mounted freely according to applications.



## Space-saving

Right angle shaft ASTERO can make possible a space-saving design without the motor protruding.



## Abundant product group and option

### Speed Controller



CAU Series



CAH Series



CAL Series

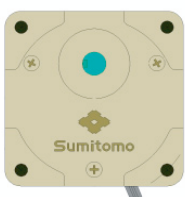
### Brake Pack



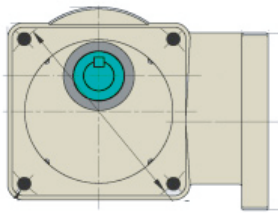
## Connection compatibility

Major connection dimensions of the gear head (frame size, output shaft position and dimension, and mounting hole) are the same for the parallel shaft gear head and the right angle shaft gear head.

Both parallel shaft and right angle shaft can be freely selected.



Parallel shaft gear head



Right angle shaft gear head

## For Gear Head



Flange mounting-type gear head  
(60W and 90W)



Gear head mounting plate  
(for parallel shaft)

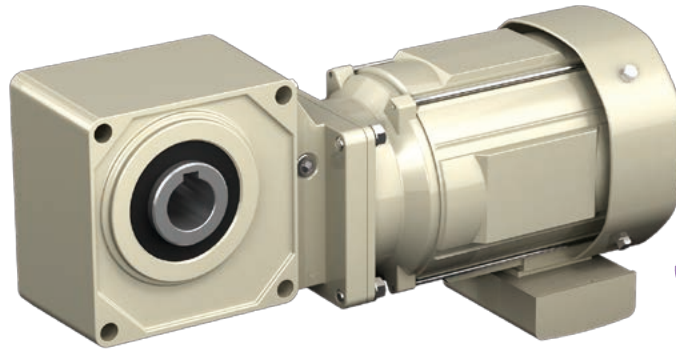


Torque arm  
(for right angle shaft)

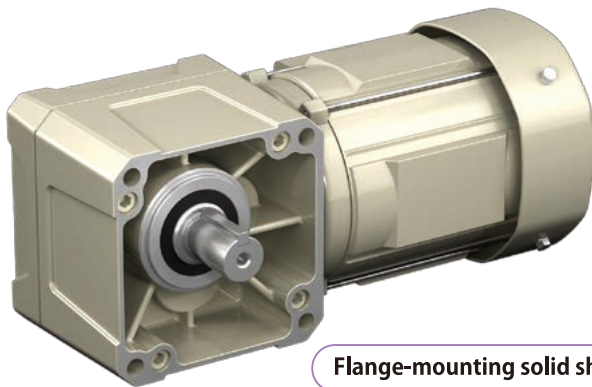
- ◆ **Motor Capacity:** 6W to 90W for parallel shaft and 25W to 90W for right angle shaft
- ◆ **Reduction ratio:** 3 to 200 for parallel shaft and 5 to 240 for right angle shaft (Intermediate gear head with reduction ratio of 10 can be added.)
- ◆ **Motor type:** Three phase, Single phase, Single phase speed control, Overseas standard

# HYPONIC Gearmotor®

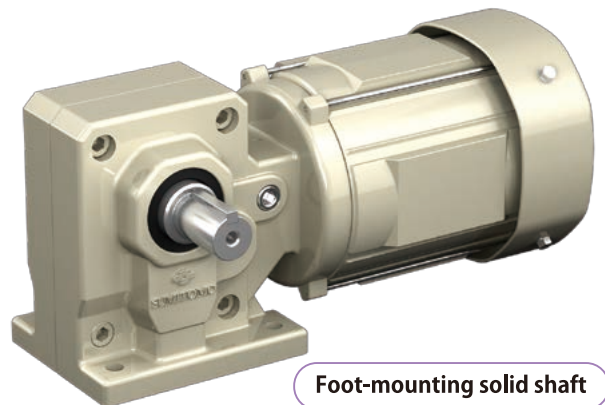
HYPONIC is a right angle shaft gearmotor with wide power variations of 15W to 11kW.



Hollow shaft



Flange-mounting solid shaft



Foot-mounting solid shaft

## High efficiency

The hypoid gear adopted in HYPONIC Gearmotor can provide far higher efficiency than the worm gear due to less slippage.

## Robust and long life

The gear is made of chromium-molybdenum steel with carburizing and quenching.

## Low noise level

The hypoid gear can transmit rotation quietly and smoothly since it has a larger contact ratio compared to that of the bevel gear.

## Lightweight and Compact

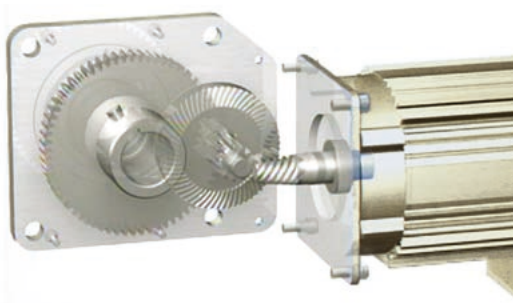
The motor shaft and the hypoid pinion were integrated and the aluminum alloy casing was adopted. (Except some of the models)

## Use of SF (Service Factor)

When applying a large service factor (SF), increase only the frame size of the reducer by one (1) size without increasing the motor capacity range. (Hollow shaft type)

## Wide variations

Capacity of 15W to 11kW is in the lineup. Intermediate capacity of 0.25kW, 0.55kW, 1.1kW, and 3.0kW are available as a standard feature. The most suitable motor capacity can be selected.



- ◆ **Motor Capacity:** 15W to 11kW
- ◆ **Reduction ratio:** 5 to 1440
- ◆ **Motor type:** Three phase, Premium efficiency, High efficiency, For inverter, Single phase, Outdoor, Waterproof, Increased safety explosion proof, Overseas standard, High speed hollow shaft

# Bevel BUDDYBOX® 4 Series 5 Series

Right angle shaft gearmotor with uniqueness and abundant options from CYCLO® Drive .



4 Series

Hollow shaft (Mounting on the shaft or the flange)  
Solid shaft (Mounting on the case, the flange, or the foot)

Adoption of the FCD gear case achieved a higher allowable radial load.



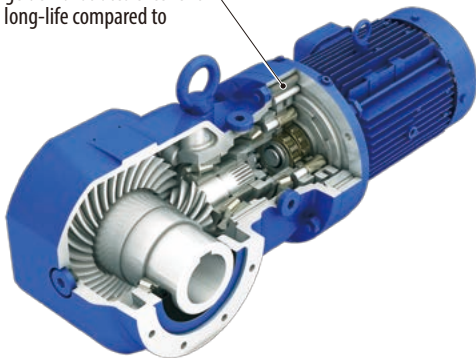
5 Series

Hollow shaft (Mounting on the shaft or the flange)

Achieved lightweight and compact size by designing only for the hollow shaft method.

## Long-life and excellent shock resistance

Adoption of the CYCLO® gearmotor or a planetary gear for the input stage demonstrates excellent shock resistance and long-life compared to parallel shaft gears.



Large number of gear teeth share the load to prevent its concentration in one location

CYCLO

Planetary gear

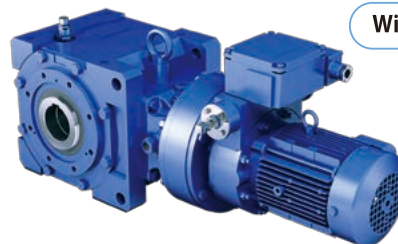
Parallel shaft gears

Load concentrated in one location

## Abundant options and applied products

Since the options and applied products of the CYCLO® gearmotor can be used, it covers various applications.

(Applied products can also be manufactured for both the 4 Series and 5 Series)



With torque limiter



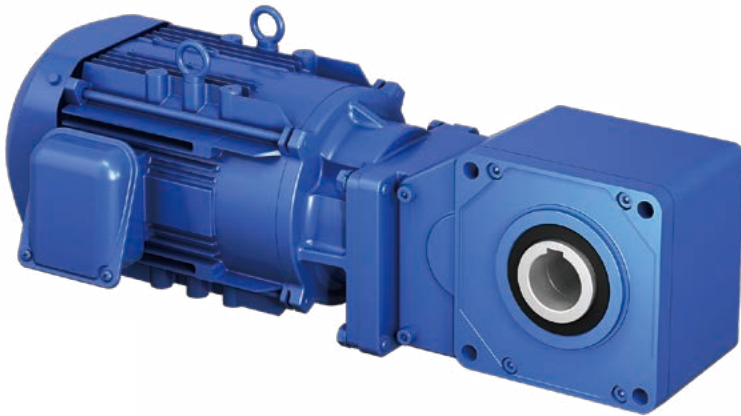
Input hollow for servo motors

- ◆ **Motor Capacity:** 0.1kW to 55kW (4 Series)  
0.1kW to 37kW (5 Series)
- ◆ **Reduction ratio:** 11 to 10658 (4 Series)  
11 to 4365 (5 Series)
- ◆ **Motor type:** Three phase, Premium efficiency, High efficiency, For inverter, Outdoor, Increased safety explosion proof, Flameproof, Overseas standard, High speed hollow shaft



# Bevel BUDDYBOX® H Series

Compact right angle shaft gearmotor with low reduction ratio and hollow shaft



## Highly efficient reduction mechanism of a bevel gear & helical gear

High efficiency has been achieved with specialized speed reduction mechanism for low reduction ratio.

## Compact case only for hollow shaft

The gearmotor is more compact than general-purpose gearmotor due to the casing designed for hollow shaft type.

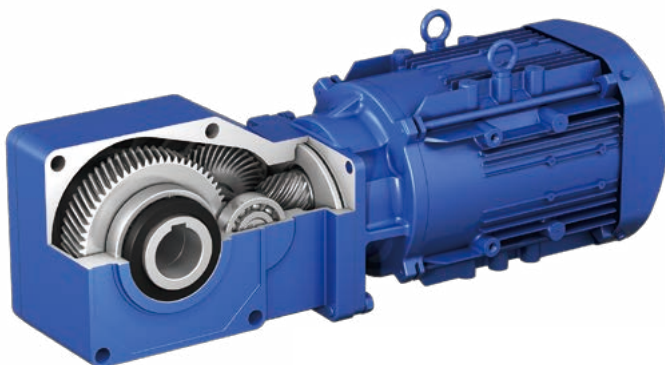


## High speed operation at motor 3600r/min is available.

The gearmotor can be driven at double speed (120Hz).

## Long life grease lubrication

The gearmotor can be installed in any direction.  
It makes maintenance easier than oil lubrication.

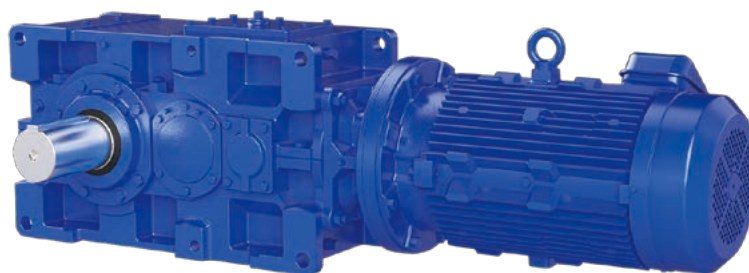
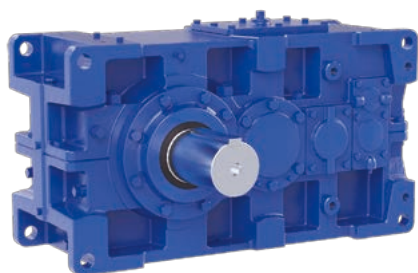


- ◆ **Motor Capacity:** 2.2kW to 11kW
- ◆ **Reduction ratio:** 5 to 20
- ◆ **Motor type:** Premium efficiency, For inverter, Outdoor, Overseas standard



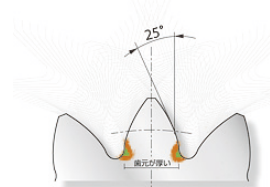
# PARAMAX® 9000 Series

Achievement of short lead time and high quality at the same time by combining components systematically.

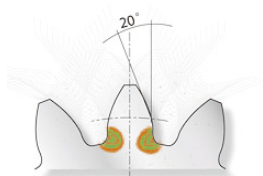


## High gear tooth strength

Although the general gear has a pressure angle of 20 degrees, the gear for PARAMAX has 25 degrees. Larger pressure angle can secure thicker dedendum resulting in stronger gear tooth. This makes possible the design of a gear box with larger load capacity and higher impact load resistance.



Tooth profile of 9000 series  
(pressure angle of 25 degrees)



Tooth profile of general gear  
(pressure angle of 20 degrees)

## Improvement in thermal capacity

Cooling effect is significantly improved with the adoption of a newly designed cooling fan and a cooling air duct cover. Improved thermal capacity can prevent deterioration of lubrication oil due to overheating of the reducer main unit, and the reducer can be used even under severe operation conditions including continuous operation with sufficient margin.



9000 Series

Conventional product

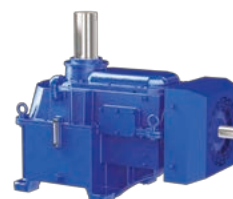


## Application

Various product lineups including the products with abundant options, various specially designed products, and applied products are available.



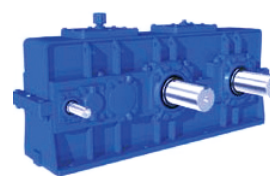
SEB Series for extruders



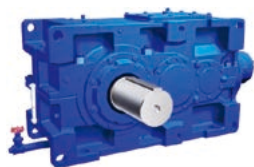
SFC Series for cooling fans



SCC Series for cranes



SHC Series for garbage cranes  
with double shafts



SGD Series for opening  
and closing sluice gates

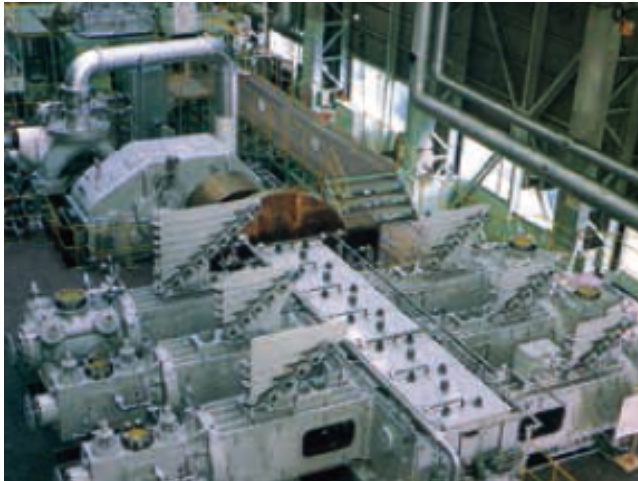


SPA Series for paper machines

- ◆ **Rated torque:** 2.6 to 552kN · m
- ◆ **Reduction ratio:** 6.3 to 500
- ◆ **Motor type:** Three phase, Premium efficiency, High efficiency, For inverter, Outdoor, Increased safety explosion proof, Flameproof, Overseas standard

# Specialized Gearboxes

Dedicated design according to the customer's machine. Large-sized gearbox which enables optimal customization.

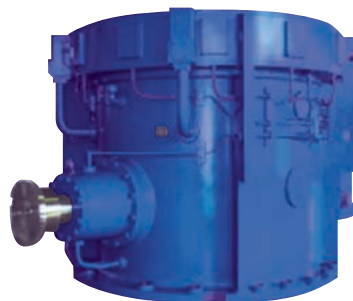


Supports lifelines



Generator and compressor

Crushing of materials



Cement mill

Extraction of materials



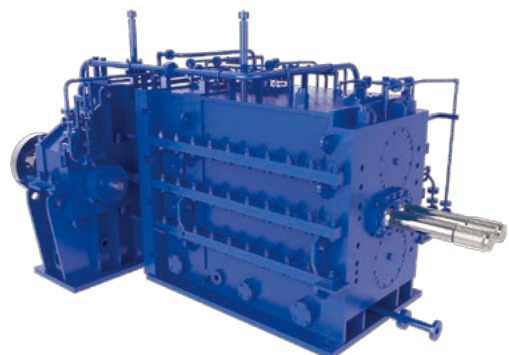
Sugar mill

Manipulation of water



River pump

Kneading of materials



Kneading machine

# FINE CYCLO® High Precision Gearboxes

## Component type CYCLO® Drive for indexing with high precision

### Lineup of types without major bearing

#### A Series

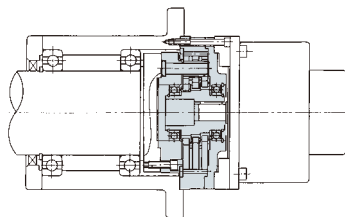


- **Compact and easy mounting**

Since the compact FC type was designed without a major bearing, it can be assembled directly into the drive units of machinery and equipment. Supporting high-speed shafts with a bearing makes it easy to mount. The overall length can be reduced because the motor shaft can be inserted into the gearbox.

- **Filled with lubrication grease**

Since the product is shipped filled with lubrication grease, preparation of grease is not required.



Assembled example in machine

◆ Lost motion:	1.0 arc min
◆ Allowable peak torque:	336 to 7613N·m
◆ Reduction ratio:	29 to 119

### Low noise and simple basic type

#### DA Series



- **Easy mounting**

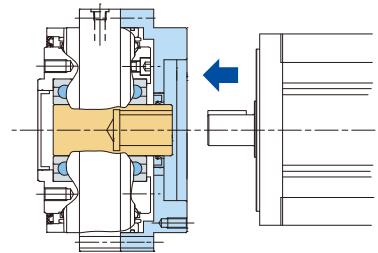
Supporting high-speed shafts with a bearing makes it easy to mount.

- **Compact in shaft direction**

The overall length can be reduced because the motor shaft can be inserted into the gearbox.

- **Gearboxes with adapters for servo motors are also available**

Gearboxes with adapters for the main motors (shafts with or without keys) of each servo motor manufacturer can also be manufactured.



◆ Lost motion:	1.0 arc min
◆ Allowable peak torque:	613 to 4000N·m
◆ Reduction ratio:	29 to 119

# E CYCLO High Precision Gearboxes

## Compact high precision gearbox integrated with a strain wave gearing mechanism and the tooth profile of the CYCLO gearbox

#### ECY Series



- **Compact and high torque**

Equipment can be downsized because the allowable peak torque is about 1.5 times (typical value) that of common strain wave gearing (equivalent size).

- **High rigidity**

Increasing the strength of equipment and reducing vibration is possible because the spring constant is about double (typical value) of the common strain wave gearing (equivalent size).



## Large hollow shaft type with cable passage

### C Series



- **Large hollow high-speed shaft**  
The large hole diameter allows cables and shafts to pass through.

- **Easy mounting**

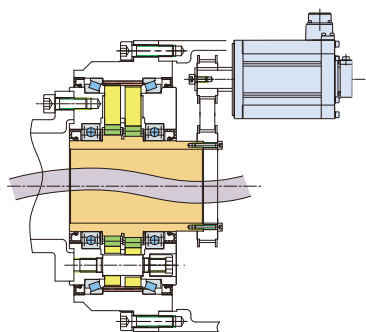
The oil seal structure for both the input and output sides and a bearing supporting high-speed shafts enable easy mounting.

- **Filled with lubrication grease**

Since the product is shipped filled with lubrication grease, preparation of grease is not required.

- **Simple mechanism**

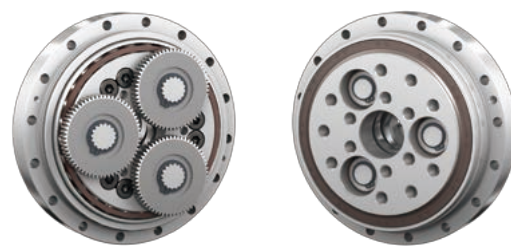
Simple and easy-to-use structure by a sealed type single stage gear reducer mechanism.



◆ <b>Lost motion:</b>	1.0 arc min
◆ <b>Allowable peak torque:</b>	540 to 6278N·m
◆ <b>Reduction ratio:</b>	59 to 119

## Highly performance type with excellent rotational accuracy

### UA Series



- **High accuracy and high performance**

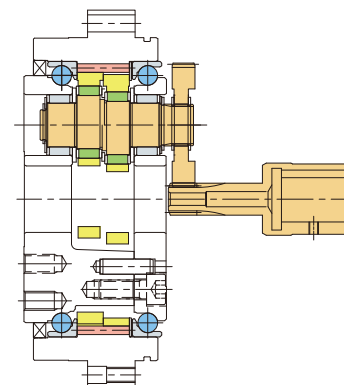
Our unique new double circular-arc tooth profile demonstrates excellent rigidity, level of vibration and efficiency during low-speed rotation. This is suitable for applications which require geometric accuracy.

- **Low lost motion**

Achieved industry top-class lost motion of 0.5 arc min.

- **Lightweight, compact and high reduction ratio**

Double stage gear reducer mechanism achieved a compact size and high reduction ratio.



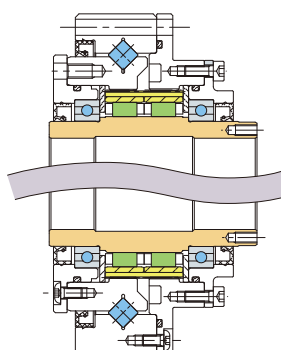
◆ <b>Lost motion:</b>	0.5 arc min (UA25 to UA80) 0.75 arc min (UA15)
◆ <b>Allowable peak torque:</b>	625 to 12500N·m
◆ <b>Reduction ratio:</b>	81 to 283

- **Simple mounting large hollow high-speed shaft**

The oil seal structure, filled with lubrication grease and high-speed shaft bearing support makes it easy to mount. The large hole diameter of the high-speed shaft allows cables and shafts to pass through.

- **Prevents ratcheting**

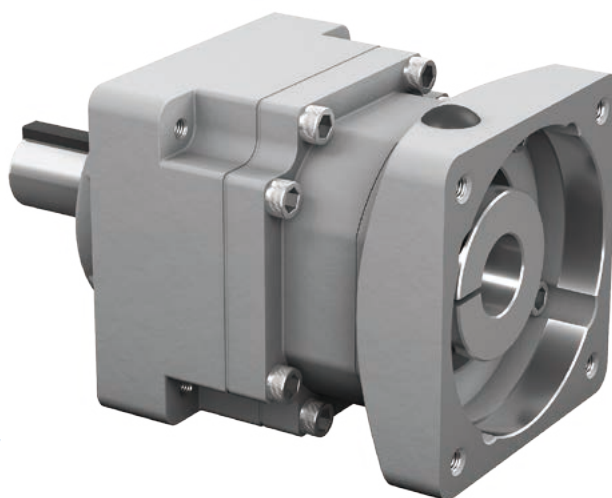
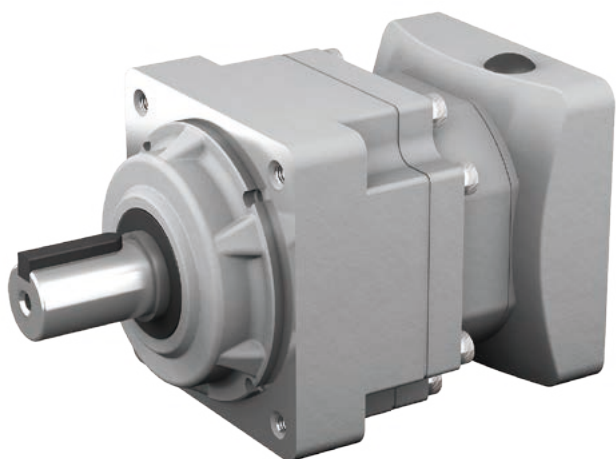
Since ratcheting does not occur so easily, this is a very safe gearbox against overloads.



◆ <b>Lost motion:</b>	1.0 arc min
◆ <b>Allowable peak torque:</b>	34 to 157N·m
◆ <b>Reduction ratio:</b>	50 to 100

# Planetary Gear Reducer for Servo Motors IB Series PE Type

Planetary gear reducer for servo motors excellent in cost performance.



Low price, quick delivery

PE Type

## Economical type

Economical type with excellent cost performance (compared with our previous products).

## Quick delivery

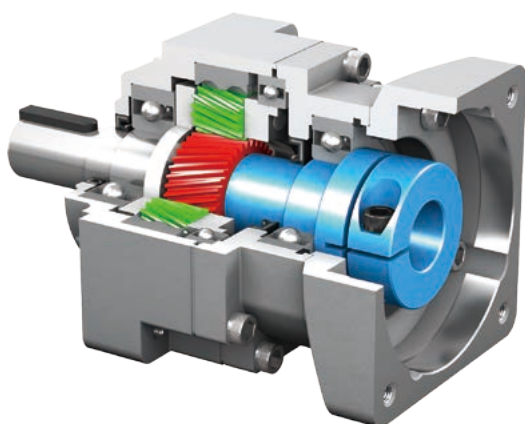
Shipment in min. 3 days after receiving order, responding to customer's request for quick delivery. We respond to customer's requests for quick delivery.

## Expansion of reduction ratio

Reduction ratio 3 is added (compared with our previous products).

## High speed input

Input speed of 6000r/min is possible.



## Compatible with servo motors manufactured by major servo motor manufacturers.

Motor adapter can accommodate the major motors manufactured by major servo motor manufacturers.

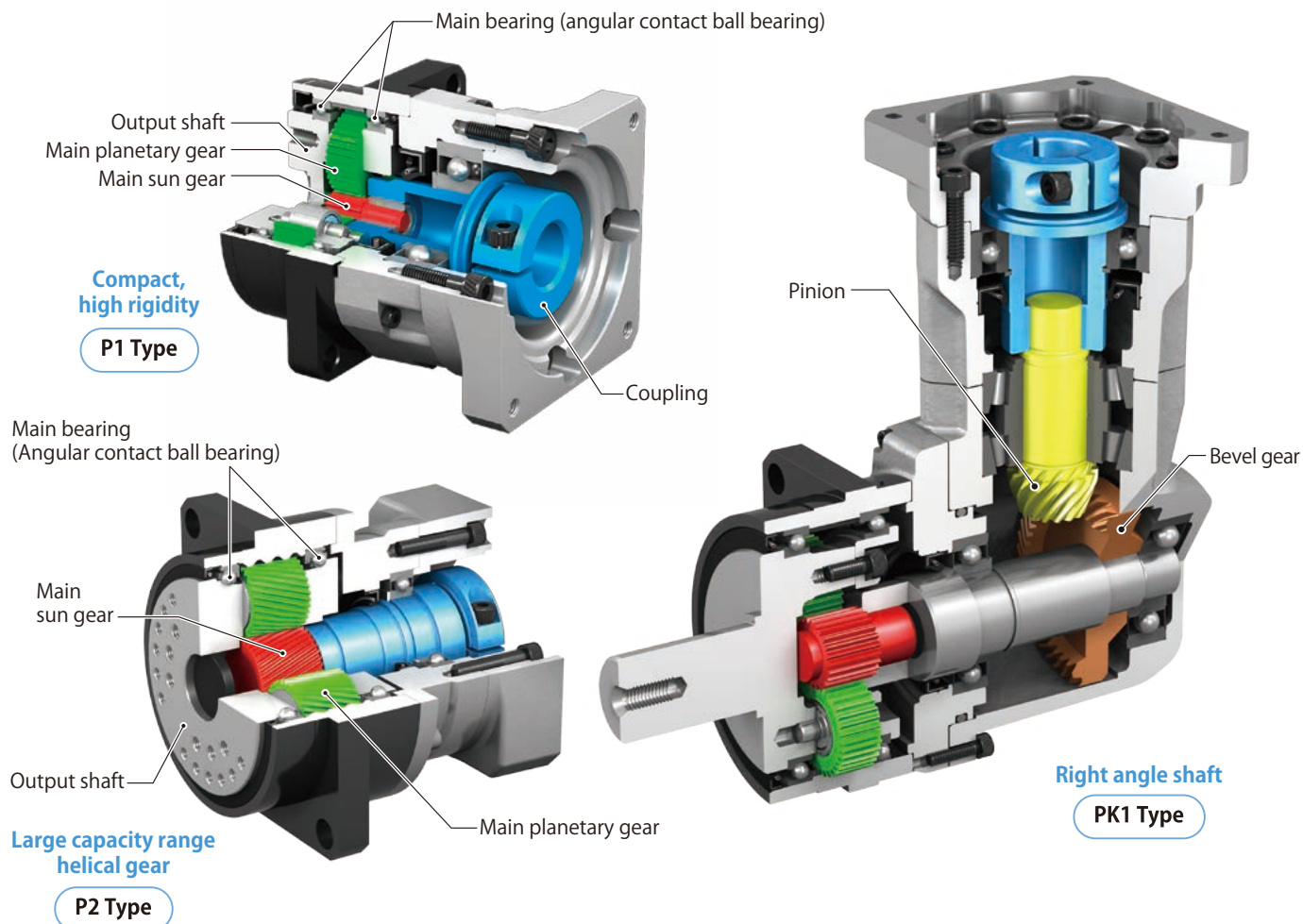
- ◆ Backlash: 15 arc min
- ◆ Allowable peak torque: 7.2 to 270N·m
- ◆ Motor capacity range: 50W to 5.0kW
- ◆ Reduction ratio: 3 to 81



# Planetary Gear Reducer for Servo Motors IB Series

P1 Type  
P2 Type  
PK1 Type

Compact / high rigidity / the most suitable for indexing with low backlash



## Industry top-class compactness

Compactness and high rigidity due to the case with internal gear. Adopted spiral bevel gears for the input side of the PK1 type for right angle shafts. The dimensions in the output shaft direction have been reduced.

## High accuracy and high rigidity

Large radial load can be supported even with the compact casing, since large diameter precision angular contact bearing supporting the output shaft is adopted.

## Compatible with servo motors manufactured by major servo motor manufacturers.

Motor adapter can accommodate the major motors manufactured by major servo motor manufacturers.

## Selection type

P1 and P2 types for inline shaft type and PK1 type for right angle shaft type. Both types can accommodate the solid shaft (without key and with key) and flange shaft.



Solid shaft  
(without key)



Solid shaft  
(with key)



Flange shaft

	P1 Type	P2 Type	PK1 Type
◆ Backlash:	3 arc min/15 arc min	3 arc min	6 arc min/15 arc min
◆ Allowable peak torque:	35 to 380N·m	650 to 3000N·m	35 to 380N·m
◆ Motor capacity range:	50W to 5.0kW	0.5 to 37kW	0.2 to 5.0kW
◆ Reduction ratio:	3.7 to 81	4 to 100	6 to 243

# Inverter

## Inverter most suitable for the gearmotor

### Series

#### CAI Series



### Features

#### Compact and easy-to-use inverter

- **High function even with compact size**  
External control function and communication function are mounted on the palm-sized compact body. The power source is available for both single phase 100V/200V use.
- **Easy operation**  
On the front panel the following operations can be performed: start and stop operation, normal and reverse rotation, and speed adjustment with analogue volume.

◆ **Applicable motors:** 25W to 0.1kW

#### SF-520 Series



#### Easy-to-operate simple inverter

- **Easy operation and setting**  
Easy operation has been achieved with eight (8) panel keys. The parameter can be easily set in the setup mode. The parameter modified from the default values can easily be confirmed with the verification function.
- **Large braking torque**  
Regenerative braking circuit is built-in. Large braking torque can be obtained only by connection of the regenerative resistance.

◆ **Applicable motors:** 0.1kW to 2.2kW

#### HF-520 and HF-X20 Series



#### High torque and high functioning inverter with sensorless vector control

- **Powerful inverter suitable for the gearmotor**  
Sensorless vector control has been achieved starting torque of 200% or over of the rated torque. Over excitation brake function can reduce the deceleration time of the gearmotor.
- **Parameter setting by applications is available.**  
Trial operation time can be reduced, since the most suitable parameters can be automatically set only by selection of one of the applications including conveyors, lifting units, etc.
- **The product specified by being flameproof (d2G4) is in the lineup (HF-X20 Series).**

◆ **Applicable motors:** HF-520/0.2kW to 7.5kW  
HF-X20/0.2kW to 3.7kW

#### HF-430α Series



#### Noise filter built-in and high performance inverter with sensorless vector control

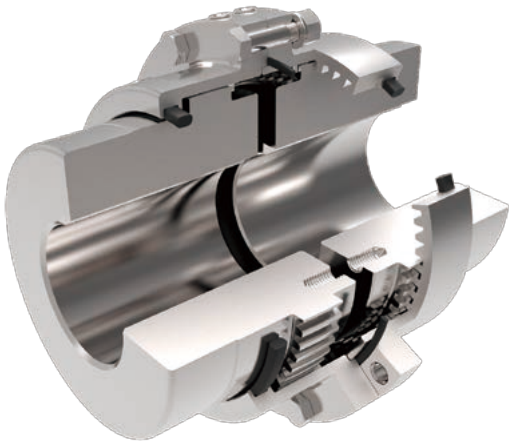
- **Powerful inverter suitable for the gearmotor**  
Sensorless vector control has achieved starting torque of 200% or over of the rated torque.
- **Reduced noise level due to built-in noise filter**  
EMC noise filter is installed as a standard feature and the noise generated from the inverter is reduced.
- **Easy-to-use and easy operating function**  
Only parameters whose setting was changed can be indicated.
- **The product specified by being flameproof (d2G4) is in the lineup.**

◆ **Applicable motors:** 5.5kW to 55kW

# Coupling

Sumitomo Couplings series are suitable for various terms of use. Immediate delivery is available.

Compact sized coupling with high torque transmitting capability.  
High wear resistance and toughness.



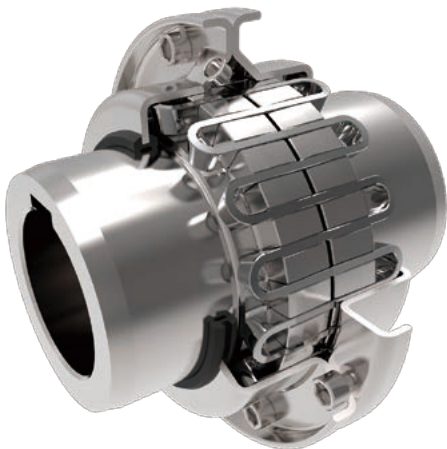
**Gear Coupling**  
Seisa GC Coupling

No need for lubrication, Zero-Backlash, Maintenance-free.  
High-allowable rotation frequency.



**Disc Coupling**  
DC Coupling

SF-Coupling absorbs shock road by the grillwork spring.  
In addition, its assembling is simple with single-layered taper grid structure.















**Taper-grid Coupling**  
SF Coupling

Features			
	Oil supply and greasing type	Non-oil supply type	Greasing type
Easiness of maintenance	●	●	●
Easiness of assembly	●	●	●
Easiness of centering	●	●	●
Zero backlash		●	
Performance of Standard model at high speed	●	●	●
Absorption of shock energy			●
Allowable torque transmitting capability	●	●	●
	Seisa GC Coupling	DC Coupling	SF Coupling

◆ **Reference torque:** 421–6,460,000N•m (Seisa GC Coupling)  
35.3–255,950N•m (DC Coupling)  
52.0–932,100N•m (SF Coupling)

# Motor standard (outside of Japan)

Details of efficiency regulations in each country and region, and Sumitomo's responding status (As of January 2020)

Country and region		Europe (EU) 	China 	Korea 	Taiwan 	U.S.A. 	Canada 	Brazil 
Details of efficiency regulations (gearmotor and motor alone)	Standard	ErP, IEC IEC60034-30-1 (2014)	GB GB18613-2012	KS KS IEC60034-2-1	CNS CNS 14400	EISA, NEMA NEMA MG1-12-12	EEAct, CSA CSA C390	NBR ABNT NBR 17094-1
	Efficiency class	Premium efficiency IE3	Premium efficiency GB2(IE3)	Premium efficiency IE3	Premium efficiency IE3	Premium efficiency IE3	Premium efficiency IE3	Premium efficiency IE3
	Effective date of regulations	January 01, 2017 (Revision)	September 01, 2017 (Revision)	October 01, 2018 (Revision)	July 01, 2016	June 01, 2016 (Revision)	June 28, 2017 (Revision)	August 30, 2019 (Revision)
	Capacity range	0.75~375kW	0.75~375kW	0.75~375kW	0.75~200kW	1~500HP	1~500HP	0.12~370kW
	Number of poles (P)	2, 4, 6	2, 4, 6	2, 4, 6, 8	2, 4, 6	2, 4, 6, 8	2, 4, 6, 8	2, 4, 6, 8
	Power source voltage	1000 V or lower	380V	600 V or lower	600 V or lower	600 V or lower	600 V or lower	600 V or lower
	Frequency	50Hz, 50/60Hz	50Hz	60Hz	60Hz, 50/60Hz	60Hz	50Hz, 60Hz, 50/60Hz	60Hz
	Time rating	S1 and 80%ED (Einschalt Dauer) or higher at S3	S1 and 80%ED (Einschalt Dauer) or higher at S3	S1, S3~S10	S1	S1	S1	S1
	Subjected products	Gearmotor Motor	Gearmotor Motor	Gearmotor Motor	Gearmotor Motor	Gearmotor Motor	Gearmotor Motor	Gearmotor Motor
	Excluded products	Without brake, for inverter	Without brake, with brake For inverter	Without brake, with brake For inverter	- Without brake with brake For inverter, etc.	Without brake, with brake For inverter	Without brake, with brake For inverter	Without brake, with brake For inverter
Details of Sumitomo's status (gearmotor and motor alone)	Regulations schedule	With brake Pump mono-block type, etc.	Exclusively for inverter, (Note) 8 Explosion-proof type, pump mono-block type, etc.	Pump mono-block type, etc.	All	Exclusively for inverter, (Note) 8 Submersible motor, etc.	Exclusively for inverter, (Note) 8 Submersible motor, etc.	For inverter Explosion-proof type (except Exn), etc.
	2015	7.5~375kW Jan. IE2	7.5~375kW Sep. GB3 (IE2)	37~185kW Oct. IE2	Jan. IE2	June Exempt from regulations	June IE2	IE2
	2016	0.75~5.5kW Jan.	7.5~375kW Sep. 0.75~5.5kW Sep.	200~375kW Oct. IE2	July IE2	June Exempt from regulations	June IE2	IE2
	2017	IE3	IE3	IE3	IE3	IE3	IE3	IE3
	2018	IE3	IE3	IE3	IE3	IE3	IE3	IE3
	2019	IE3	IE3	IE3	IE3	IE3	IE3	IE3
	2020	IE3	IE3	IE3	IE3	IE3	IE3	IE3
	2021	IE3	IE3	IE3	IE3	IE3	IE3	IE3
	Others	No certification and label system Efficiency value and efficiency class are marked on the name plate.	CEL label is attached.  Although JEMA reports its schedule mentioned above, the official announcement from the Chinese authorities have not been confirmed yet.	KEL label is attached. 	Integrated gearmotor is exempt from efficiency regulations.	Certification mark is stamped on the nameplate. 	Certification mark is stamped on the nameplate. 	ABNT label is attached. 
	Capacity range	Standard With brake	0.75~55kW 0.75~45kW	0.75~55kW 0.75~30kW	0.1~55kW 0.1~45kW	1~75HP 1~40HP	1~75HP 1~40HP	0.12~11kW (Note) 3
	Number of poles (P)	4	4	4	4	4	4	4
	Representative power source voltage	230/400V, 400V	220/380V, 380/400/415V	220/380V, 440V	220/380V	230/460V	230/460V, 575V	200V, 380V, 440V
	Frequency	50Hz	50Hz	60Hz	60Hz	60Hz	60Hz	60Hz
	Efficiency class	Without brake With brake	IE3 IE1 (Note) 2 (IE3)	IE3 IE3	IE1 IE1	IE3 IE3	IE3 IE3	IE3 IE3

Note) 1. The details of Sumitomo's status contain details on the efficiency regulations for gearmotors, and, therefore, they are different from the efficiency regulations for motors alone.

2. Although gearmotors with brakes manufactured in the EU, Russia and India are exempt from efficiency regulations, they can also be manufactured for the IE3 class.

3. Motors will be backordered from Brazil.

4. Although the efficiency regulations of Australia and New Zealand are equivalent to the IE2 class, they can be manufactured as a standard specification based on the IE3 class (gearmotors equivalent to IE2 class can also be manufactured).

5. Although gearmotors without brakes manufactured in India are exempt from efficiency regulations, they can be manufactured as a standard specification based on the IE3 class.


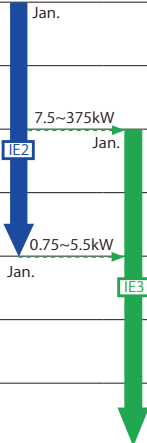




6. Although gearmotors with brakes manufactured in Singapore are exempt from efficiency regulations, they can be manufactured as a standard specification based on the IE3 class (gearmotors based on IE1 class can also be manufactured).

## Motor standard differs in countries and regions.

Motors need to be applied to the standards of each country when being used outside of Japan.

## Efficiency regulations are enforced

Efficiency regulations are enforced in each country and region in order to promote motors with high energy efficiency.

Australia New Zealand	Russia (EAEU)	India	Singapore	Mexico	Vietnam	Country and region			
AS/NZS	TR CU	IS	IEC	NOM	TCVN	Standard			
AS/NZS 1359.5:2004	Unknown	IS12615	IEC60034-30-1 (2014)	NOM-016-ENER-2010	TCVN 7540-1 (2013)				
Equivalent to high efficiency IE2	Premium efficiency IE3	Equivalent to high efficiency IE2	Premium efficiency IE3	Premium efficiency IE3	Standard efficiency IE1	Efficiency class			
Australia April 01, 2006 New Zealand June 16, 2011	January 01, 2019 (Revision)	January 01, 2018	October 01, 2018	January 14, 2017 (Revision)	January 01, 2015 (Revision)	Effective date of regulations			
0.73~185kW	0.75~375kW	0.37~375kW	0.75~375kW	1~500HP	0.75~150kW	Capacity range			
2, 4, 6, 8	2, 4, 6	2, 4, 6	2, 4, 6	2, 4, 6	2, 4, 6	Number of poles (P)			
1100 V or lower 50Hz	1000 V or lower 50Hz, 60Hz	1000 V or lower 50Hz	1000 V or lower 50Hz	600 V or lower 60Hz	1000 V or lower 50Hz, 60Hz	Power source voltage			
S1	S1	S1 and 80%ED (Einschalt Dauer) or higher at S3	S1	S1	S1	Frequency			
S1	S1	S1 and 80%ED (Einschalt Dauer) or higher at S3	S1	S1	S1	Time rating			
Gearmotor Motor	Gearmotor Motor	Gearmotor Motor	Gearmotor Motor	Gearmotor Motor	Gearmotor Motor	Subjected products			
Without brake, with brake For inverter	Without brake, for inverter	Unknown	Without brake	Unknown	Unknown				
Explosion-proof type, etc.	With brake Pump mono-block type, etc.	Gearmotor inverter only <sup>Note) 8</sup> , etc.	With brake Pump mono-block type, etc.	Gearmotor, etc.	Gearmotor inverter only <sup>Note) 8</sup> , explosion-proof-type	Excluded products			
						2015	Regulations schedule  Details of efficiency regulations (gearmotor and motor alone)  Details of Sumitomo's status (gearmotor) <sup>Note) 1</sup>		
						2016			
						2017			
						2018			
						2019			
						2020			
2021									
There is a certification system, but no label system.  Efficiency value is marked on the name plate.	No certification and label system  Efficiency value and efficiency class are marked on the name plate.  Although JEMA reports its schedule mentioned above, the official announcement from the Russian authorities have not been confirmed yet.	Certification and label system.  Integrated gearmotor is exempt from efficiency regulations.	Certification system  No label system	Certification and label system.  Integrated gearmotor is exempt from efficiency regulations.	Certification and label system.  Integrated gearmotor is exempt from efficiency regulations.	Others			
IE3 : 0.75~55kW IE2 : 0.75~30kW	0.75~55kW	0.75~55kW	0.75~55kW	1~75HP	0.75~55kW	Standard	Capacity range	Efficiency class	
IE3 : 0.75~45kW IE2 : 0.75~30kW	0.75~45kW	0.75~45kW	0.75~45kW	1~40HP	0.75~45kW	With brake			
4	4	4	4	4	4	Number of poles (P)			
240/415V, 415V 50Hz	220/380V, 380V 50Hz	240/415V 50Hz	220/230/240V, 380/400/415V 50Hz	230/460V 60Hz	220/380V, 380V 50Hz	Representative power source voltage			
IE3 <sup>Note) 4</sup> (IE2)	IE3	IE3 <sup>Note) 5</sup>	IE3	IE1	IE1	Without brake			
	IE1 <sup>Note) 2</sup> (IE3)	IE1 <sup>Note) 2</sup> (IE3)	IE3 <sup>Note) 2</sup> (IE1)			With brake			

Note) 7. Motors for an inverter based on IE3 class are manufactured according to the specifications, whereas the line-start motor shall be driven by an inverter (contact us for torque characteristics). Specify inverter drive when ordering.

8. Flameproof type and increased safety explosion proof type substantially low performance without an inverter.

9. Pressure-resistant and explosion-proof type, and increased safety and explosion-proof type gearmotors cannot be manufactured for the overseas market.

10. Motors that are exempt from efficiency regulations are manufactured based on standard efficiency.


11. The information contained in this table is subject to change without prior notice.



# Worldwide Locations

<b>U.S.A</b> <b>Sumitomo Machinery Corporation of America (SMA)</b> 1453 Cornwall Road, Oakville, Canada ON L6J 7T5 TEL (1)757-485-3355 FAX (1)757-485-7490	<b>Austria</b> <b>Sumitomo (SHI) Cyclo Drive Germany GmbH (SCG)</b> <b>SCG Branch Austria Office</b> Gruentalerstraße 30A, 4020 Linz, Austria TEL (43)732-330958 FAX (43)732-331978	<b>Korea</b> <b>Sumitomo (SHI) Cyclo Drive Korea, Ltd. (SCK)</b> Royal Bldg. 19 Rm. 913, 5 Saemunan-ro 5-Gil Jongro-Gu Seoul, Korea 03173 TEL (82)2-730-0151 FAX (82)2-730-0156
<b>Canada</b> <b>SM Cyclo of Canada, Ltd. (SMC)</b> 1453 Cornwall Road, Oakville, Canada ON L6J 7T5 TEL (1)905-469-1050 FAX (1)905-469-1055	<b>Belgium</b> <b>Hansen Industrial Transmissions NV (HIT)</b> Leonardo da Vincilaan 1, Edegem, Belgium TEL (32)34-50-12-11 FAX (32)34-50-12-20	<b>Taiwan</b> <b>Tatung SM-Cyclo Co., Ltd. (TSC)</b> 22 Chungshan N. Road 3rd., Sec. Taipei, Taiwan 104, R.O.C. TEL (886)2-2595-7275 FAX (886)2-2595-5594
<b>Mexico</b> <b>SM Cyclo de Mexico, S.A. de C.V. (SMME)</b> Av. Desarrollo 541, Col. Finsa, Guadalupe, Nuevo León, México, CP67132 TEL (52)81-8144-5130 FAX (52)81-8144-5130	<b>France</b> <b>SM-Cyclo France SAS (SMFR)</b> 8 Avenue Christian Doppler, 77700 Serris, France TEL (33)164171717 FAX (33)164171718	<b>Singapore</b> <b>Sumitomo (SHI) Cyclo Drive Asia Pacific Pte. Ltd. (SCA)</b> 15 Kwong Min Road, Singapore 628718 TEL (65)6591-7800 FAX (65)6863-4238
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Specifications, dimensions, and other items are subject to change without prior notice.

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