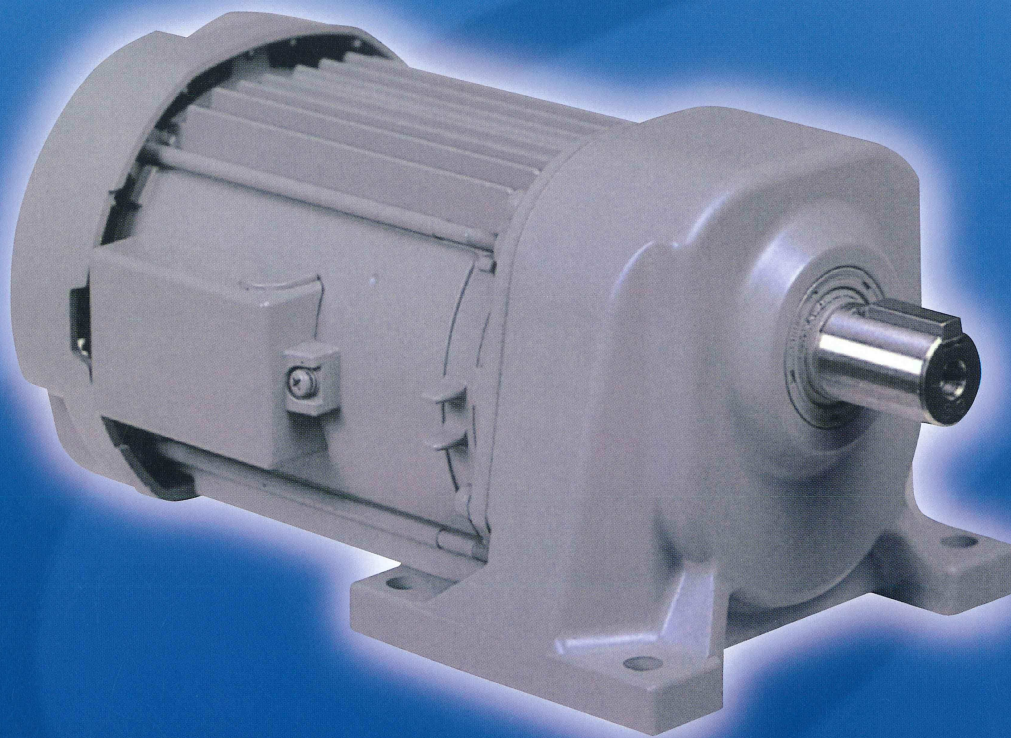




**HITACHI**  
Inspire the Next

# *Hitachi Gear Motors*

*Applicable for various purposes  
because of compactness and powerfulness*

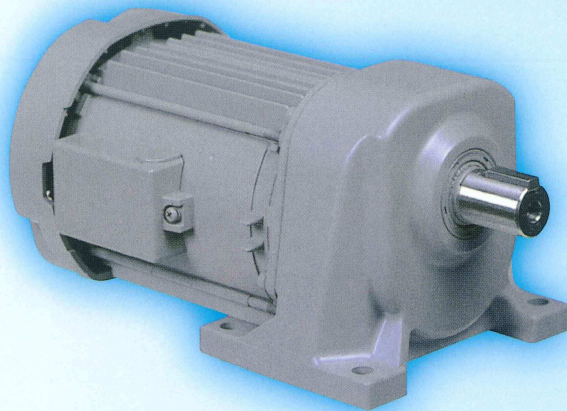




# Meet various needs as power sources Leave anything about gear motors to

## CA Series

*Compact type suitable to light impact loads*



**Small size and light weight**

**Low noise**

**Employment of double seal**

■ Output range: 0.1kW ~ 2.2kW

■ For light impact loads

Suitable to constant operation where less impact loads are applied.

### Examples of application

- Food conveyor
- Small package conveyor
- Seat shutter
- Workpiece feeder for plane
- Conveyor for metal detector
- Parking garage

## GA Series

*Basic model to meet*



**Low noise**

**Long life**

**Employment of double seal**

■ Output range: 0.4kW ~

■ For medium loads

Suitable to medium loads  
Can operate at least  
constant load or light

### Examples of application

- General-purpose conveyor
- Metal working machine
- Machine tool (General)
- Machine for feed plan

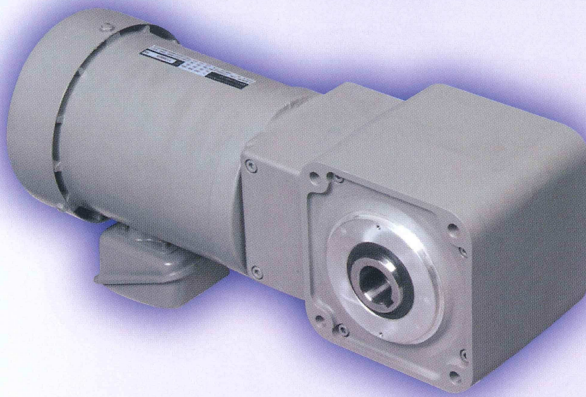


for FA.  
Hitachi.



## *RA Series*

### *Hollow shaft construction*



**Compact and various installation**  
**Double seal structure is employed as the same as CA and GA Series.**

- Output range: 0.1kW ~ 1.5kW
- For light impact loads  
Suitable to constant operation where less impact loads are applied.

#### **Examples of application**

- Conveyor
- Machine tool (General)  
Especially for the part in less space

*various needs*



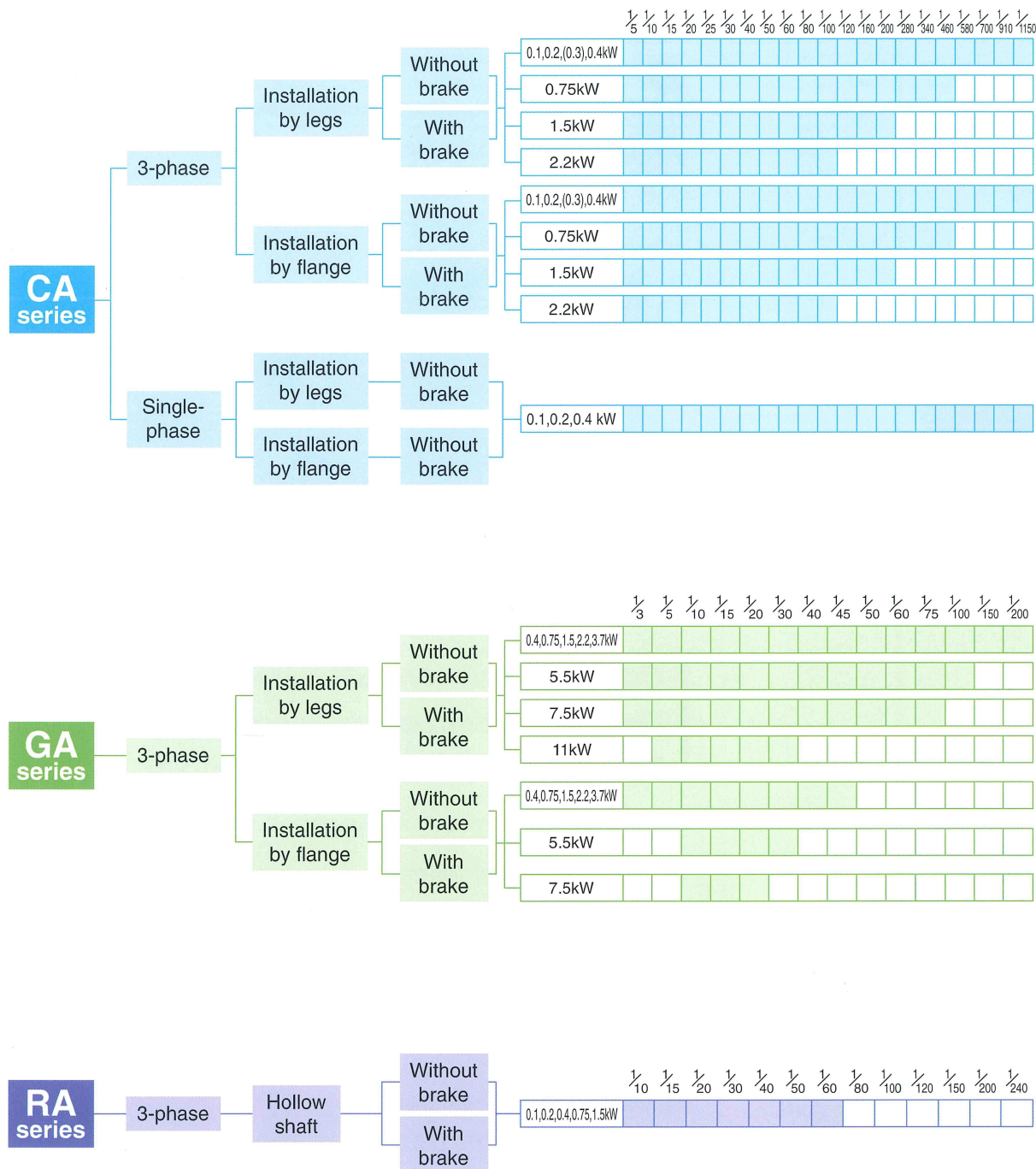
*al*

1kW

for general purposes)  
impact loads.  
hours/day when a  
impact loads are applied.

# List of models

※Reduction ratio — Colored parts in the frame are manufacture ranges.(White parts are out of manufacture range.)



(Note) A brake cannot be built in a motor of output enclosed in ( ).



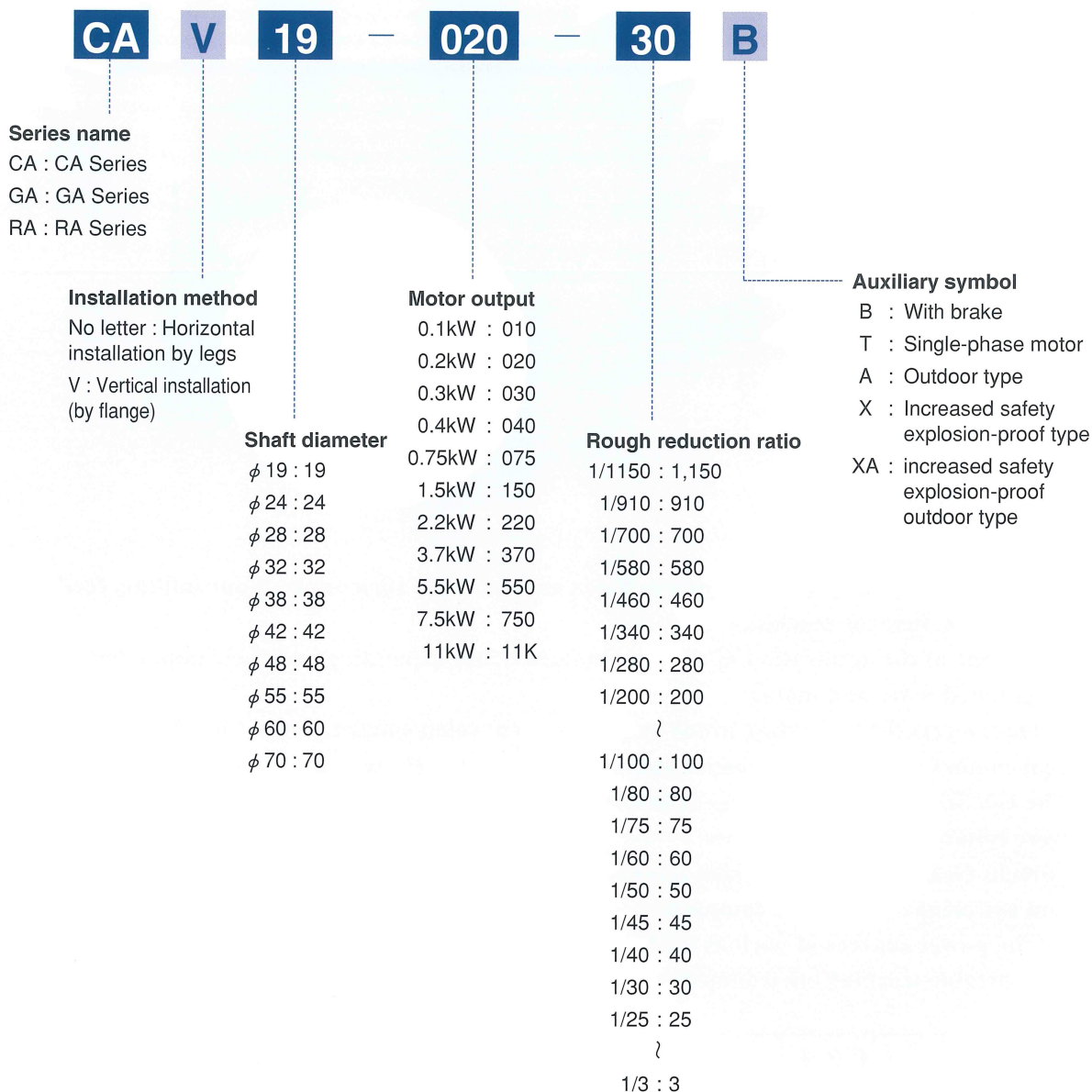
# How to read model symbols

## CA,GA and RA Series

【Example】

CA Series 0.2kW, 1/30, horizontal type, with brake

⇒CA19-020-30B

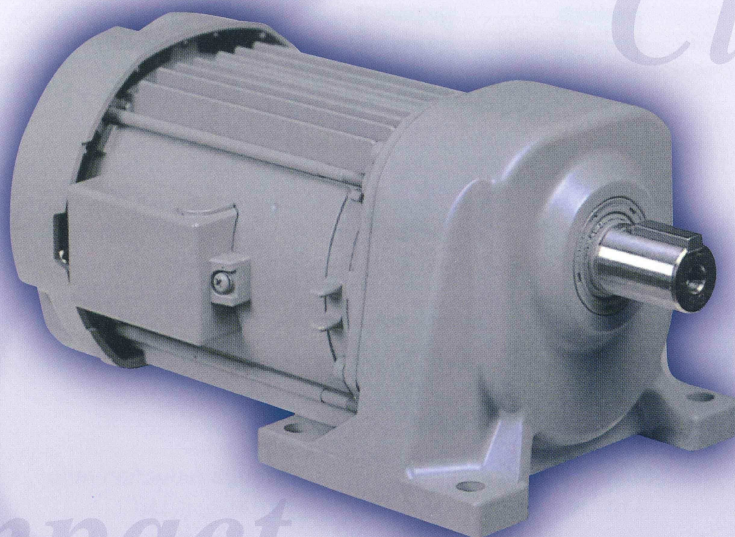


## Contents

■ Main Features .....	5 , 6
■ CA Series Technical data .....	7 , 8
■ GA Series Technical data .....	9 , 10
■ RA Series Technical data .....	11



# *The impact of compactness for expanding needs. The CA Series is born.*



Gear motors are employed in various fields such as food, agriculture, flour milling, feed, as well as Conveyor machinery.

The scope of the application of the gear motors is still expanding and their importance is heightened more and more.

Hitachi meets the expanding needs and works to develop smaller, lighter, quieter, and cleaner gear motors with the technologies and know-how which Hitachi accumulated for long years. The GX Jr Series low-output gear motors and GX Series gear motors for even loads were reborn as a new CA Series.

Hitachi Gear Motors, CA Series, have the toughness and easy operation design of the CX Series and are cleaner and more compact.

As the power sources of various machines, they can contribute to the creation of more comfortable working environments.

## Structure and strong points

### ●Prevention of deterioration

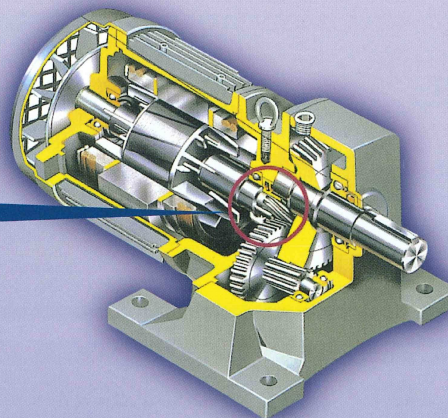
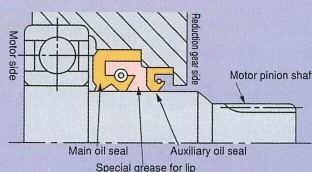
#### ●Double seal

Main oil seal:Holds special grease for lip.

Auxiliary oil seal:Shuts off grease containing metal particles and holds special grease.

#### ●Special grease for lip:

Clean special grease maintains the function of the oil seal for a long time.



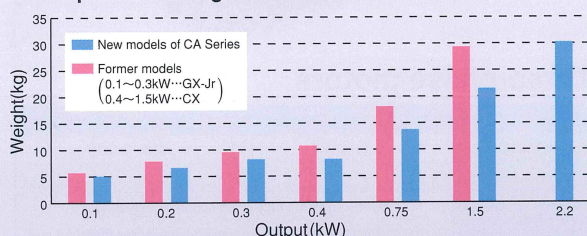


## Reduction of weight and volume by about 20% (compared with our former models)

The size of the gear reducer unit is reduced with the latest heat treatment technology for the gears. The aluminum alloy frames, "THE MOTORS" are employed for the models of 0.2kW and larger to reduce both weight and volume by about 20% without reducing the toughness of the former CX Series.

The weight and size of each model in this series are reduced largely.

■ Comparison of weight [Reduction ratio : 1/30]



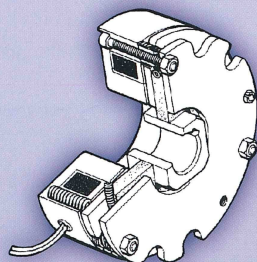
## Grease leakage preventive seal having a life 10-times as long as the former one ※ is applied to the all models. ※ Compared with our former seal

Grease is filled in the space between the lips of a unique double oil seal. The life of this oil seal has a life 10-times as long as our former grease seal for preservation of the environment, reduction of the maintenance work, and reliability improvement.

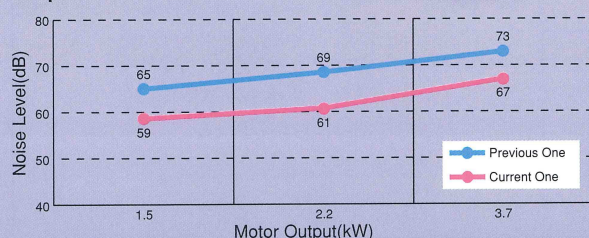
Patent No. 2124370

## Quiet operating noise

All noise from the brakes, gears and motor are minimized by the twisted angle of the gears, precision fabrication and the quiet brake system.

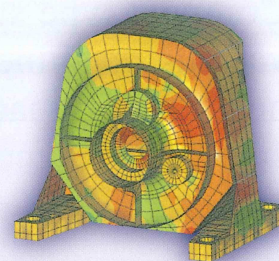


■ Operation noise of the brake



## Compact size despite its large power

High performance gear trains, high-class bearings, optimum design criteria, the short leg distance and the terminal box on the top of the motor all make it possible to minimize the installation space.



## Wide lineup of 588 models

The models having reduction ratios from 1/1,150 to 1/280 have been added. As a result, the wide lineup of 588 models having reduction ratios from 1/1,150 to 1/5 is prepared to meet various needs in wide fields.

## Noise reduced with the latest technologies

The working sound of the gears is reduced by improving the actual working ratio with the optimum gear design realized with the computer analysis technology and by employing the unique precision tooth surface finishing technology. The models of this series contribute to quiet environment.

## Employment of grease lubrication for all models

Grease lubrication is employed for the all models of CA Series, from 0.1kW model to 2.2kW model. Accordingly, these models can be installed in any direction.

## New simple and compact designs of gear reducers

As the sizes of the gears, etc. are reduced, simple and novel designs are applied to the gear reducers.

## Employment of new installation dimensions

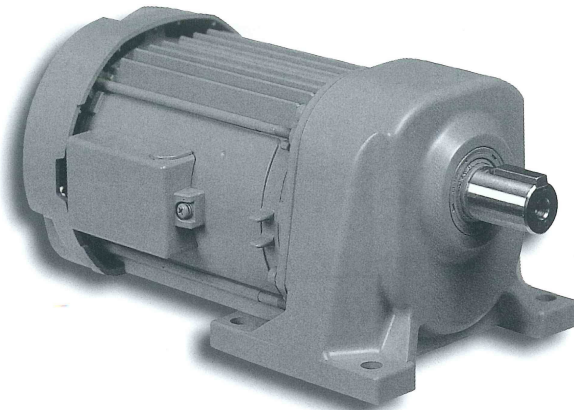
The installation dimensions of the legs and the shaft diameters are different from those of the former models.



## CA Series(0.1kW~2.2kW)

Compact type suitable to various machines which need light impact loads and small size of motors.

# CA Series



### Standard specifications table

#### Single-phase motors

Item	Contents
Output	0.1~0.4kW
Number of pole	4
Motor	Open drip-proof type
Installation method	Horizontal model(Installation by legs) , Vertical model(Installation by flange)
Rating	Continuous
Starting method	0.1~0.2kW:Split-phase starting(KT), 0.4kW:Capacitor-starting and capacitor-operation(KQ)
Class of insulation	Class B
Protective structure	IP20
Deceleration method	4-stage deceleration from external 2nd meshing
Lubrication method of gears	Lubrication with grease
Reduction ratio	1/5~1/1,150
Revolving speed of output shaft	300/360~1.3/1.6 min-1
Place for installation	Indoor (At altitude below 1,000m)
Ambient temperature	-20~40°C
Atmosphere	Must have humidity below 90% and must be free from corrosive or explosive gas or vapor.
Paint color	Gray (Munsell 3.2GY 6/0.3)

#### Three-phase motors

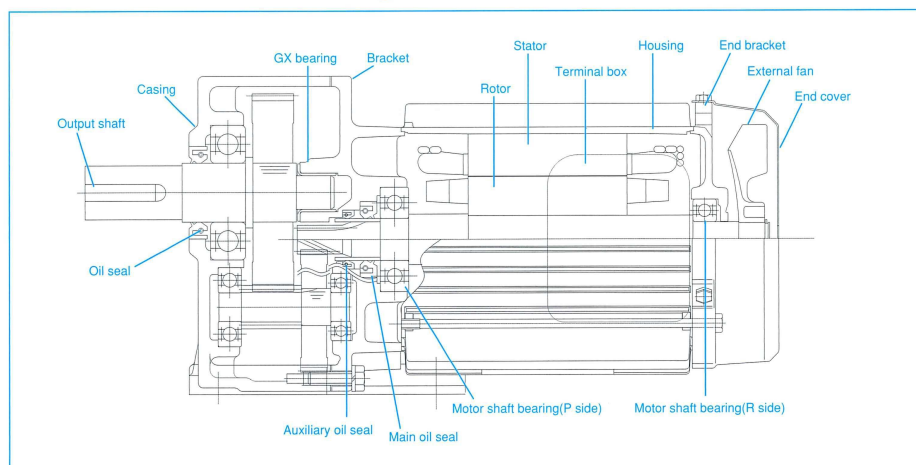
Item	Contents	
Output	0.1~0.2kW	0.3~2.2kW
Number of pole	4	
Motor	0.1~0.2kW Totally-enclosed self-cooled type 0.3~2.2kW Totally-enclosed fan-cooled type	
Installation method	Horizontal model(Installation by legs) , Vertical model(Installation by flange)	
Rating	Continuous	
Starting method	Full-voltage starting	
Class of insulation	Class B	
Protective structure	IP44	
Deceleration method	4-stage deceleration from external 2nd meshing	
Lubrication method of gears	Lubrication with grease	
Reduction ratio	1/5~1/1,150	
Revolving speed of output shaft	300/360~1.3/1.6 min-1	
Place for installation	Indoor (At altitude below 1,000m)	
Ambient temperature	-20~40°C	
Atmosphere	Must have humidity below 95% and must be free from corrosive or explosive gas or vapor.	
Paint color	Gray (Munsell 3.2GY 6/0.3)	

### Terminal box

kW	Without brake	With brake
0.1~0.4		
0.75~1.5		
2.2		



## Structureal drawing of CA Series



## Gear motors with brakes

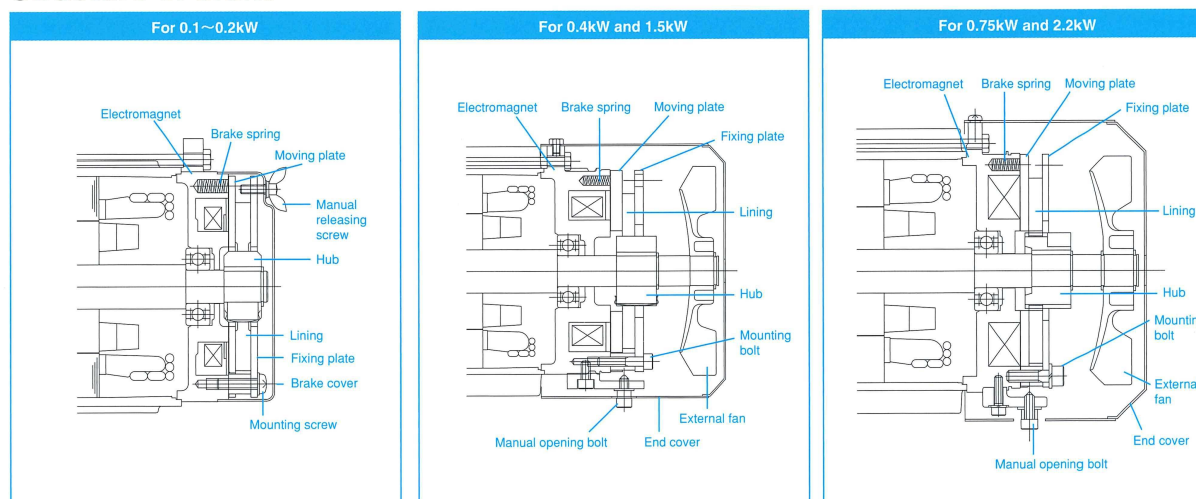
### Standard specifications of brake unit (Non-excitation brake type)

Item	Contents
Outer case	0.1~0.2kW : Totally enclosed type, 0.4~2.2kW : Open type
Braking method	Non-excitation Brake type (OFF brake)
Class of insulation	Class B
Rectifier unit	Built in terminal box
Ambient temperature	-20~40°C
Atmosphere	Must have humidity below 95% and must be free from corrosive or explosive gas or vapor.
Place for installation	Indoor(At altitude below 1,000m)
Paint color	Gray (Munsell 3.2GY 6/0.3)

### Brake specifications table

Motor output (kW)	Type of brake	Rated braking torque N·m (kgf·m)	Allowable braking power W (kgf·m/min)	Life of lining J (kgf·m)	Lag time in braking (S)		Electromagnetic stroke (mm)		Rectification unit (Built in terminal box)	
					AC cut-off circuit	AC/DC cut-off circuit	Set	Limit	200V class	400V class
0.1	MS1A-HBC	1.1(0.11)	57.2(350)	4.9×10 <sup>4</sup> (5×10 <sup>4</sup> )	0.15~0.2	0.01~0.02	0.2~0.35	0.5	BS-01A	BS-01A
0.2	MS1B-HBC	2.1(0.21)	57.2(350)	4.9×10 <sup>4</sup> (5×10 <sup>4</sup> )	0.15~0.2	0.01~0.02	0.2~0.35	0.5	BS-01A	BS-01A
0.4	MS1S-HBC	4.0(0.4)	57.2(350)	4.9×10 <sup>4</sup> (5×10 <sup>4</sup> )	0.1~0.15	0.01~0.02	0.2~0.35	0.5	BS-01A	BS-01A
0.75	MS1L-HBC	7.7(0.77)	98.1(600)	9.8×10 <sup>4</sup> (1×10 <sup>5</sup> )	0.2~0.25	0.01~0.02	0.3~0.4	0.5	BS-01	BS-01
1.5	MS2S-HBC	15(1.5)	106(650)	19.6×10 <sup>4</sup> (2×10 <sup>5</sup> )	0.2~0.25	0.01~0.02	0.3~0.4	0.5	BS-01	BS-01
2.2	MS2L-HBC	23(2.3)	114.4(700)	31.4×10 <sup>4</sup> (3.2×10 <sup>5</sup> )	0.3~0.4	0.01~0.02	0.3~0.4	0.7	BS-01	BS-01

### Structure of brake





## GA Series(0.4kW ~ 11kW)

A new concept in lightness, introducing the GA Series that employs the aluminum alloy frame "The Motor."

### Features

#### Large reduction in size and weight

Aluminum alloy frame "THE MOTOR" is employed for the all model of GA Series. Furthermore, the size and weight of the reduction gear unit are reduced with the latest heat treatment technology for the gears.

#### Employment of double seal (0.4kW~7.5kW)

To meet the request for easy maintenance, a double seal is employed for the motors. The life of the oil seal is lengthened and oil leakage is prevented for clean operation.

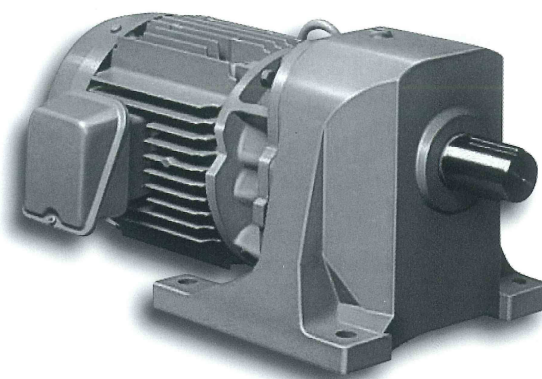
#### Prevention of oil leakage by oil slinger(11kW)

An oil slinger is used to seal the motor. Accordingly, the sealing parts are not worn at all and oil leakage is prevented. (See the structure drawing of models lubricated with oil.)

#### Employment of high-performance gear and reinforced frame

The gears are cut with a carbide-tipped hobbing machine. Their teeth are corrected accurately and crowned, then treated with heat carefully. The "high-performance" gears are finished one by one with the latest gear honing machine. Since the casings are designed by analyzing the stresses thoroughly, they have high reliability and reliability.

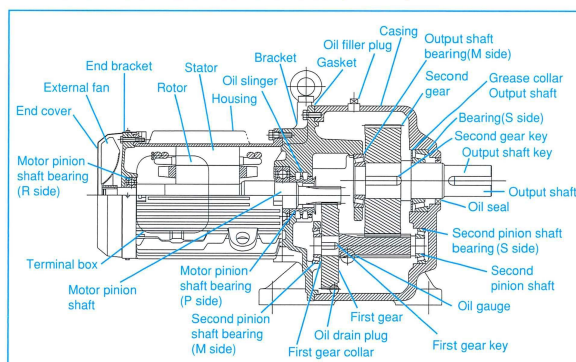
# GA Series



#### Enriched series with new models

The new models having reduction ratios of 1/3, 1/40, and 1/50 are added to GA Series. You can select the best one for each purpose.

#### Structural drawing of models lubricated with oil (Example:GA70-11K-30)



### Standard specifications table

Item		Contents	
Characteristics	Output	0.4kW~11kW	
	Number of phase	Three-phase	
	Number of poles	4	
	Revolving speed of output shaft	7.5/9min <sup>-1</sup> ~500/600min <sup>-1</sup>	
	Rough reduction ratio	1/200~1/3	
	Class of insulation	Class E for 3.7kW or less	Class B for 5.5~11kW
	Temperature rise limit	75°C	80°C
	Rating	Continuous	
Structure	Starting method	3.7kW or less: Full-voltage starting, 5.5kW and larger: Star-Delta starting	
	Outer case	Totally-enclosed fan-cooled type	
	Installation method	Horizontal type: By legs, Vertical type: By flange	
	Terminal box	Installed(on left side when seen from output shaft)	
Ambient condition	Temperature	-20~40°C	
	Humidity	Max. 95%RH(With brake: MAX. 90%RH)	
	Altitude	Below 1,000m	
	Place for installation	Indoor	
Atmosphere		Must be free from corrosive or explosive gas or vapor and water condensation. Must not contain much dust.	
Paint color		Regal gray (Mansell 8.9GY5.1/0.3)	



# GA Series gear motors with brakes (0.4kW~11kW)

## Features

### Small size

Since FA brake in which the cooling fan and brake unit are assembled together is employed, the overall length is shortened. The size is almost the same as that of the standard gear motors (0.4kW~1.5kW).

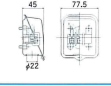
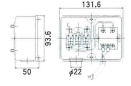
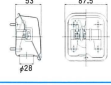
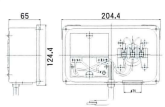
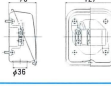
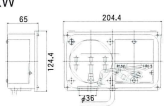
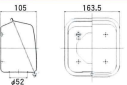
### Easy releasing of brake

Equipped with the manual releasing function which is convenient for positioning, etc. (0.4~1.5kW with MS-FA brake)

### Easy wiring method

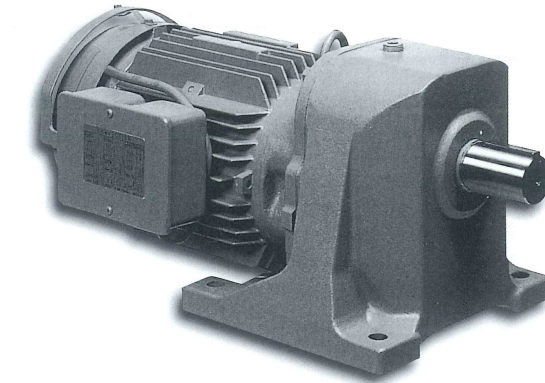
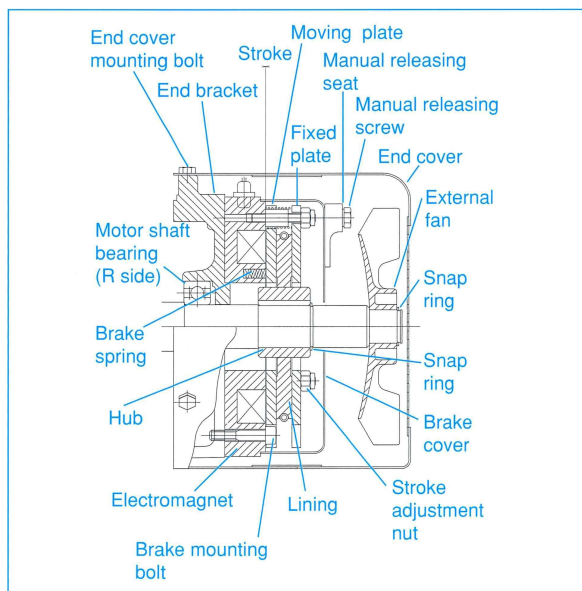
The rectification unit is installed in the terminal box. The motor unit and rectification unit are of terminal block type for the ease of wiring.

## Terminal box

kW	Without brake	With brake
0.4~0.75		0.4~2.2kW 
1.5~3.7		3.7kW 
5.5~7.5		5.5~11kW 
11		

## Structural drawing

### MS-HBA brake



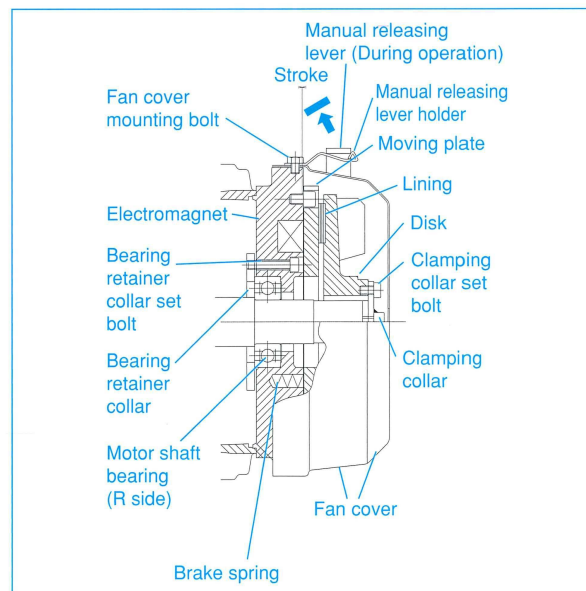
## Standard specifications table of brake unit (Non-excitation operation type)

Specification item		Contents
Number of phase		Three-phase
Brake	Applied standards	JEM 1029 Temperature rise limit of control devices, JEM 1021 Insulation resistance and withstand voltage of control devices, etc.
	Protective structure of case	1.5kW and smaller: * Open structure(IP20) 2.2kW and larger: Totally-enclosed type(IP44)
	Braking method	Non-excitation brake type (OFF brake)
	Class of insulation	Class B
	Rectifier unit	Mounted
Ambient condition	Temperature	-20~40°C
	Humidity	Max. 90%RH
	Altitude	Below 1,000m
	Place for installation	Indoor(Must be free from corrosive or explosive gas or vapor and water condensation.)
Installation direction		Free
Paint color		Regal gray (Mansell 8.9Y5.1/0.3)

Note) The brake unit is of open type.

When using in a place where there is significant mist, oil mist, dust, etc., consult us.

### MS-FA brake





## Standard specifications

Item	Basic Specifications	
Output	0.1, 0.2kW	0.4~1.5kW
Phase	Three phase	
Number of poles	4 Pole	
Output speed	25/30~150/180min <sup>-1</sup>	
Gear Ratio	1/60~1/10	
Insulation Class	B	E (with brake : B)
Rating	Continuous	
Stating Method	Direct	
Standard	IEC-2137-2000	
Lubrication	Grease Lubrication	
Deceleration	Hypoid Gear & Involute Gear	
Load	Light Impact Load	
Protection	IP42 (with Brake : IP20)	IP44 (with Brake : IP20)
Terminal Box	Available (Resin made)	Available (Steel made)
Ambient Temp	-20~40°C	
Humidity	Less than 95%RH (With Brake	Less than 90%RH)
Altitude	Less than 1,000m	
Place of installation	Indoor Use	

# RA Series

## Hollow shaft construction



## ⚠ Precautions for safety

### (General)

- Observe the safety rules necessary to the place where a motor is used and the device for which the motor is used. (Labor Safety and Sanitation Rules, Technical Standards for Electrical Equipment, Building Standards Act, etc.)
- Before using a motor, read its instruction manual carefully and use it correct.  
If the instruction manual is not at your hand, ask the shop at which you bought the motor or our sales department for it.

### (Selection)

- Select a gear motor suitable to the using environment and purpose.
- When using a gear motor for a people carrying equipment or an elevator, install a protective equipment to the equipment for safety.
- In an explosive atmosphere, use an explosion-proof gear motor. In this case, the selected explosion-proof gear motor must have specifications suitable to a dangerous place.
- When an explosion-proof gear motor is driven with an inverter, only one-to-one combine is approved. Be sure to use the special inverter indicated for the motor. Since the inverter is not explosion-proof, be sure to install it in a place free from explosive gas.

### (Installation of oil receiver)

- When using a gear motor for a food machine, etc. which is very sensitive to oil, install an oil receiver under the motor so that the lubricating oil will not enter the food, etc. even if it leaks.

 **Hitachi Industrial Equipment Systems Co., Ltd.**

For future information, please contact your nearest sales representative.