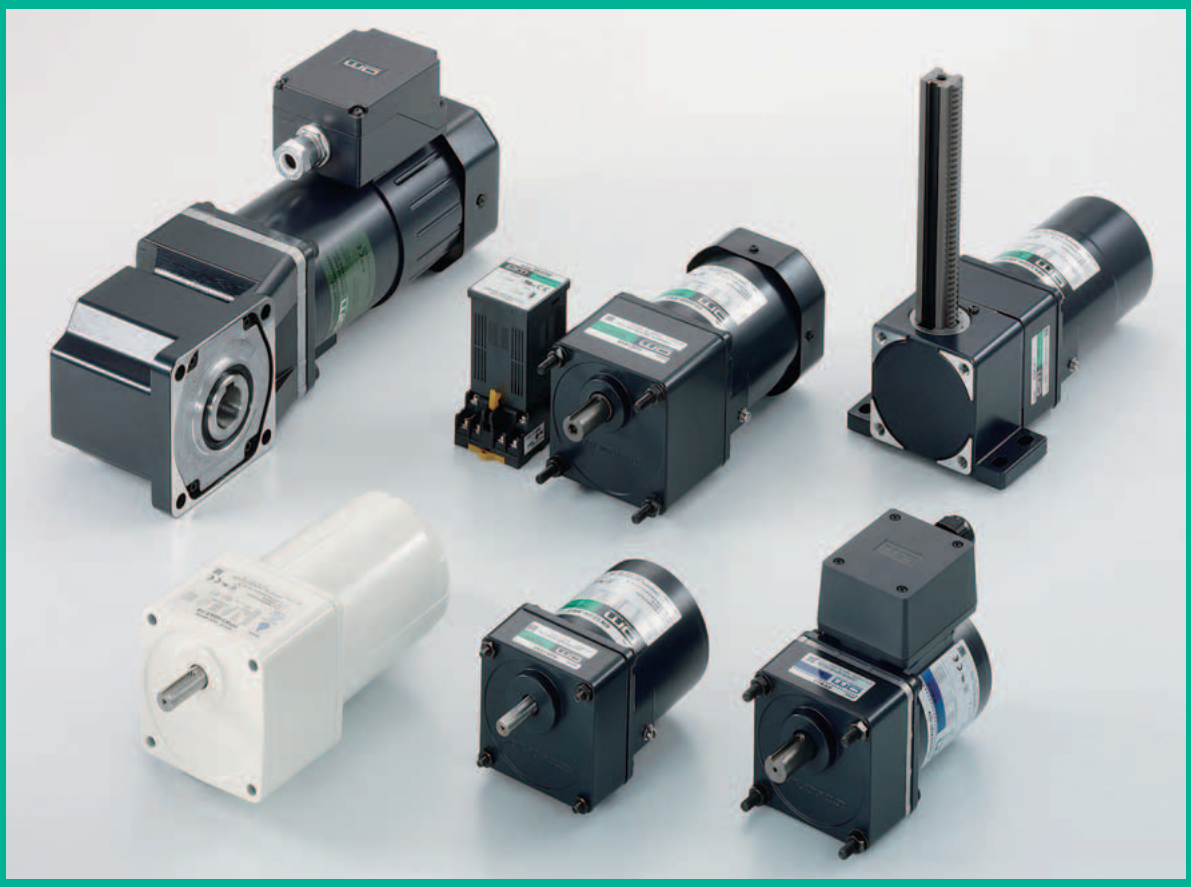
C Standard AC Motors



Standard AC Motors

This catalog contains information necessary for informed product selection. Additional product details and information not outlined in this catalog can be found in each product's individual operating manual. Operating manuals can be downloaded from our website or obtained by contacting technical support or your nearest Oriental Motor sales office.

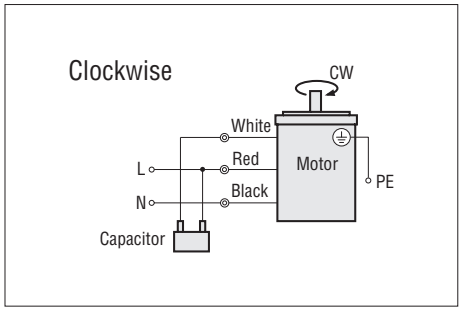
Overview of Standard AC Motors

Standard AC motors are used generally as a power source for automated equipment, because these motors can be operated easily by connecting the motors directly to an AC power supply.
Oriental Motor offers standard AC motors incorporating various operating functions. A standard AC motor supports various applications by using with a brake pack or speed control circuit product, and combining with other mechanical components such as a gearhead or linear head.

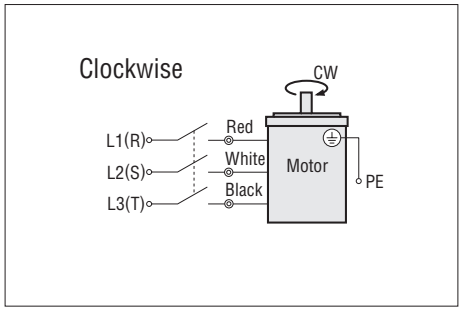
Features

Easy Operation

Standard AC motors include single-phase motors used with a single-phase power supply and three-phase motors used with a three-phase power supply.
A single-phase motor can be operated simply by connecting it to a single-phase power supply via the supplied capacitor.
A three-phase motor does not require a capacitor. All you need is to connect the motor directly to a three-phase power supply.



Induction Motors: Connection example for single-phase power supply input type



Induction Motors: Connection example for three-phase power supply input type

The Power Supply Frequency Determines the Speed

The basic speed (synchronous speed*) of a standard AC motor is determined by the power supply frequency and the number of poles. Many of our standard AC motors have four poles, so their synchronous speed is as follows:

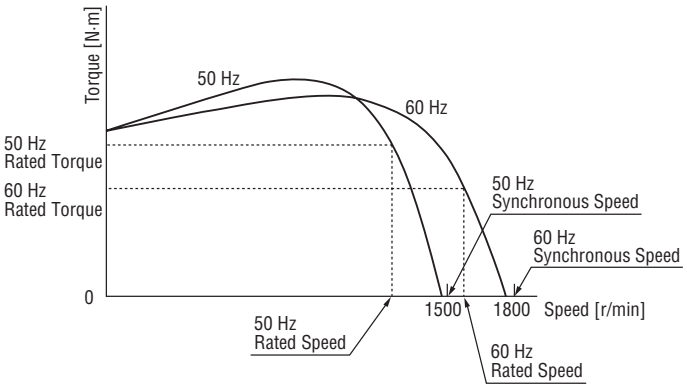
50 Hz: 1500 r/min
60 Hz: 1800 r/min

The actual speed varies according to the load torque.
With our motors, the speed roughly falls within the following ranges at a load torque equivalent to the rated torque:

50 Hz: 1200 to 1300 r/min
60 Hz: 1450 to 1600 r/min

The rated speed of our standard AC motors are set within the above ranges and showed on each motor's specification page.
To calculate a more accurate machine speed, use the rated speed as a reference.

The power supply frequency varies from region to region. In the case of automated equipment used in different regions, change the gear ratio of the gearhead or take other appropriate measure to obtain the desired speed.



Speed – Torque Characteristics

*The synchronous speed is calculated by the formula below.

$$Ns = \frac{120 \times f}{P}$$

Ns : Synchronous Speed [r/min]
f : Power Supply Frequency [Hz]
P : Number of Poles (Many of our motors have four poles.)

An Optimal Motor can be Selected According to the Load Torque

The torque generated by each standard AC motor is different depending on the motor frame size and length.
Oriental Motor offers standard AC motors with a frame size of 42 mm to 104 mm (1.65 in. to 4.09 in.) and output of 1 W to 200 W (1/750 HP to 1/4 HP). Select the optimal motor from the wide-ranging variations according to the load torque.

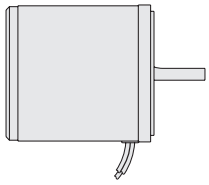
Product Line

Motors

We offer a wide range of standard AC motors with different features to meet the demand for many applications.

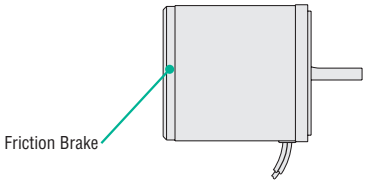
Induction Motors

These motors can easily be operated from an AC power supply. Single-phase and three-phase motors are available.



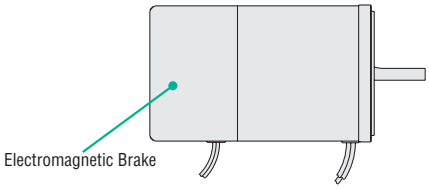
Reversible Motors

These motors generate a greater starting torque and have a built-in friction brake. These single-phase motors also allow for instantaneous switching of rotation direction.



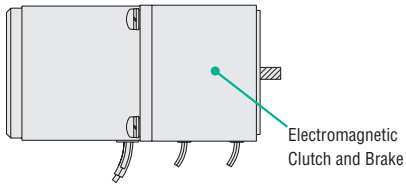
Electromagnetic Brake Motors

These motors have a “power off” activated type electromagnetic brake to hold the load in position when the power is cut off.



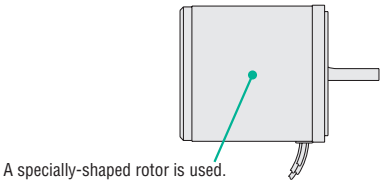
Clutch and Brake (C·B) Motors

These motors are equipped with an electromagnetic clutch and brake at the motor output shaft. High frequency starting and stopping is possible while the motor is operating.



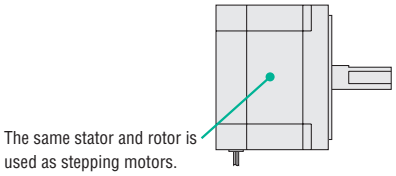
Synchronous Motors

These motors use a special rotor to provide rotation at a fixed speed in synchronization with the power supply frequency.



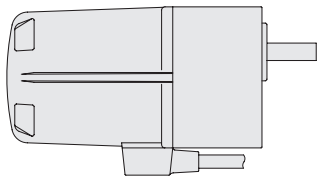
Low-Speed Synchronous Motors

These motors use the same stator and rotor as stepping motors. These motors offer superb starting, stopping and reversing characteristics as well as synchronous operation.



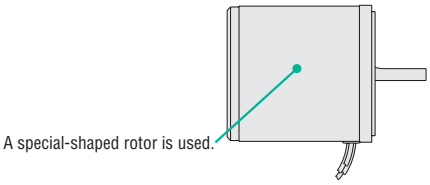
Watertight, Dust-Resistant Motors

These motors are watertight, dust-resistant and conform to the IEC Standard IP67.



Torque Motors

A special rotor is used to provide large starting torque and sloping characteristics (torque is highest at zero speed and decreases steadily with increasing speed). The torque can be changed by changing the applied voltage.



●Various Control Circuits are Available for Use with Standard AC Motors

Using a standard AC motor with a control circuit suppresses overrun and enables variable speed operation.

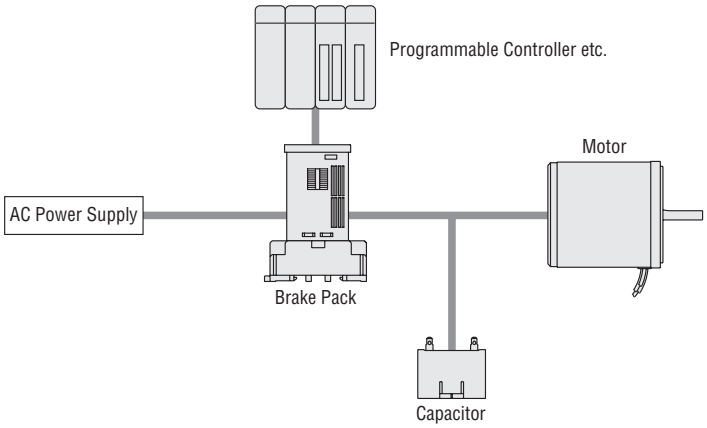
Note

● Not all control circuits are compatible depending on the motor type, applicable voltage, etc.
We also have many package models combining a control circuit with a motor.
For details, check the pages where each product is listed.

Brake Pack

Upon receipt of a command from a programmable controller etc., a large braking current from the brake pack stops the motor instantaneously.

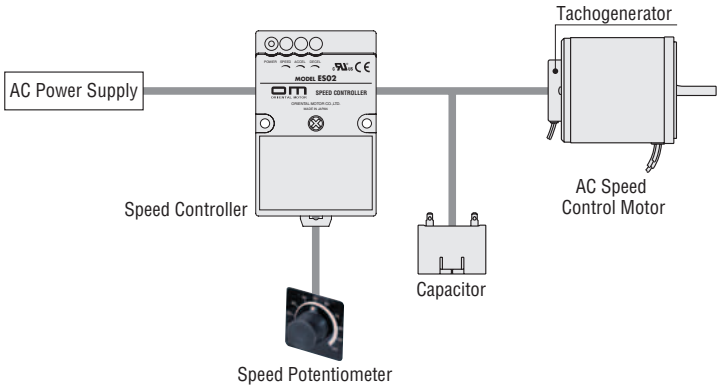
Applicable Products
Single-Phase Induction Motors
Reversible Motors
Single-Phase Electromagnetic Brake Motors



AC Speed Control Motors

● When combined with a tachogenerator

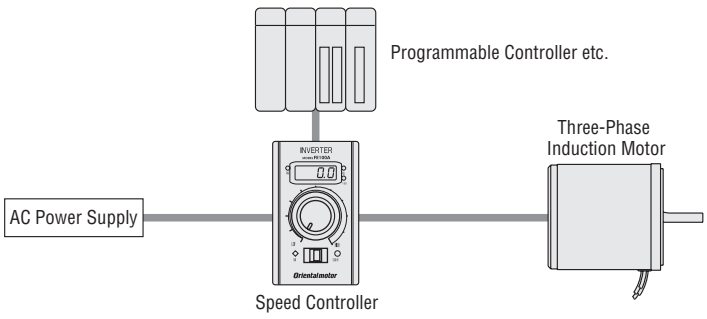
A dedicated AC motor systems assembled with a tachogenerator is driven with a speed controller. Speed can be set with the speed controller's internal speed potentiometer or by using an external speed potentiometer.



● When combined with a three-phase motor

Combined use of a speed controller with a three-phase induction motor enables motor operation at variable speed. Speed is set with the speed controller's internal speed potentiometer or by using an external DC voltage.

Applicable Products
Three-Phase Induction Motors
Three-Phase Electromagnetic Brake Motors



●Various Gearheads are Available for Assembly with Motors

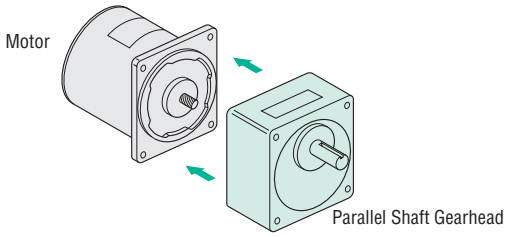
We have various gearheads that convert the speed and torque of a standard AC motor to the speed or torque required by automated equipment, as well as linear heads that convert motor rotation to linear motion.
Since standard AC motors are designed with a standard flange mounting surface, the desired gearhead can be assembled according to your specific application.

Note

● Available gearheads vary depending on the motor type.
Not all gearheads are compatible. For details, check the pages where each product is listed.

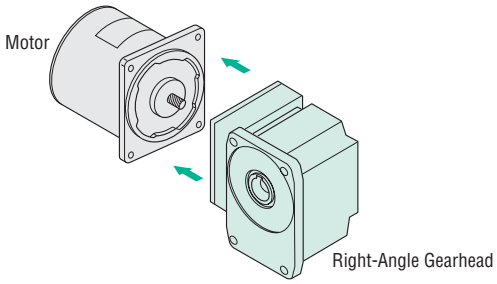
Parallel Shaft Gearheads

The gear shaft is positioned in the same direction as (in parallel with) the motor shaft.
Decimal gearheads are also available.



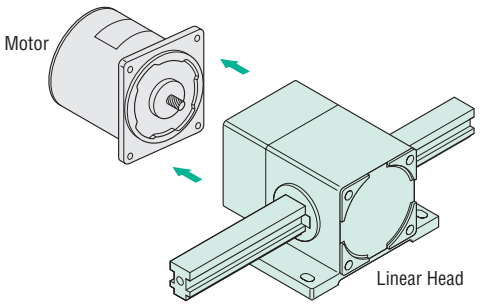
Right-Angle Gearheads

The gear shaft is positioned at right angles (90˚) with the motor shaft.
Solid shaft and hollow shaft types are available.



Linear Heads

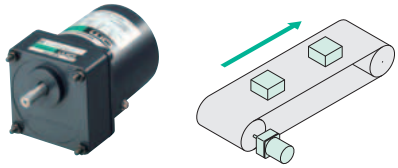
The motor rotation is converted to linear motion using a rack-and-pinion mechanism.
Both horizontal and vertical types are available.



Applications and Classifications

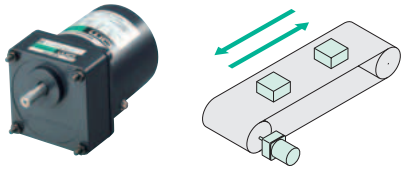
Constant Speed Motors
➜ Page C-9

For Continuous Operation
Induction Motors
➜ Page C-19



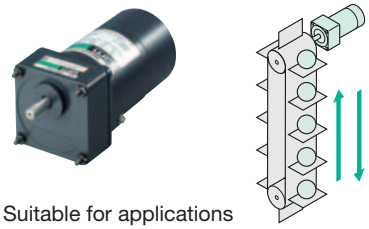
Suitable for applications where the motor is operated continuously in one direction.

For Bi-Directional Operation
Reversible Motors
➜ Page C-75



Suitable for applications where the motor reverses its direction repeatedly.

For Load Holding
Electromagnetic Brake Motors
➜ Page C-107



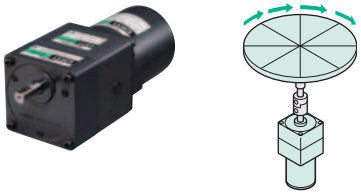
Suitable for applications where the load must always be held in place.

High-Strength, Long Life, Low Noise
V Series
➜ Page C-149

Induction Motors
Reversible Motors
Electromagnetic Brake Motors

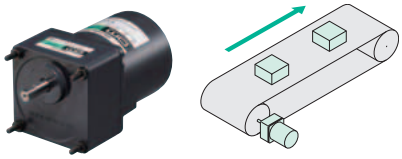
Suitable for applications where noise reduction, high strength and long life is required.

For High-Frequency Start and Stop Operation
Clutch and Brake Motors
➜ Page C-179



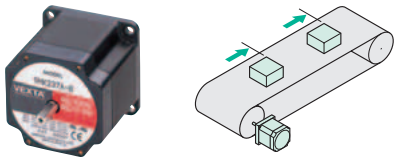
Ideal for high-frequency starting and stopping.

For Synchronous Rotation
Synchronous Motors
➜ Page C-189



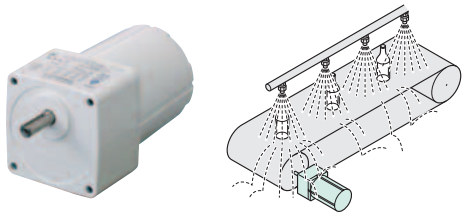
Suitable for applications where the motor is operated continuously in one direction at synchronous speed regardless of load torque.

For Synchronous Rotation
Low-Speed Synchronous Motors
➜ Page C-191



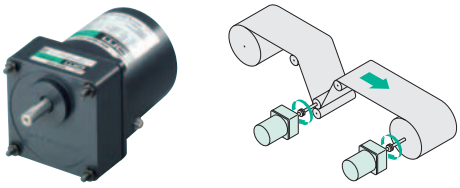
Suitable for applications where the motor is operated starting, stopping and reversing repeatedly and the motor is operated at synchronous speed regardless of load torque.

Watertight, Dust-Resistant Motors
➜ Page C-203



Suitable for applications where the equipment comes in contact with water or needs to be washed with water.

Torque Motors
➜ Page C-213

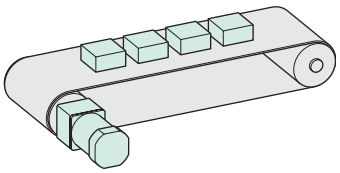


Suitable for winding and other operations involving tension control, as well as pushing operations.

Gearheads

Parallel Shaft Gearheads

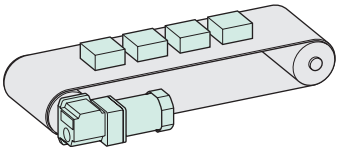
→ Refer to the page of each motor.



Installing a parallel shaft gearhead on a pinion shaft type motor allows the motor to reduce the speed and generate greater torque.

Right-Angle Gearheads

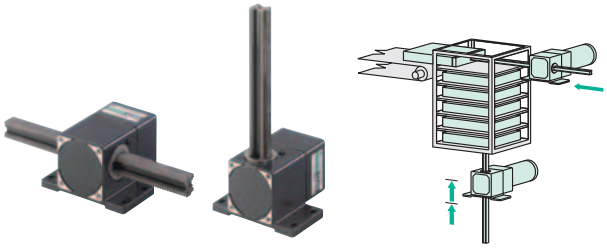
→ Page C-227



Suitable for applications where space saving is required.

Linear Motion
Linear Heads

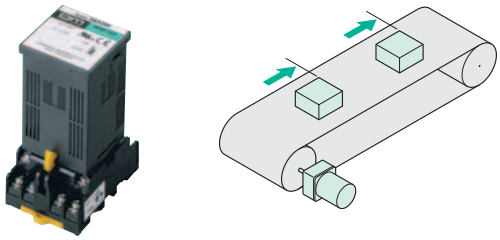
→ Page C-247



Linear motion can be achieved easily by installing a linear head on a pinion shaft type motor.

Instantaneous Stop
Brake Pack

→ Page C-253



Suitable for applications where the overrun of an induction motor, reversible motor or electromagnetic brake motor should be suppressed.

Accessories

→ Page C-263

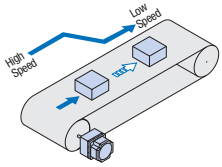
Various accessories are available that can be combined effectively with motors and gearheads. Selection is easy once you know which motor product you will be using.

Brushless Motors/AC Speed Control Motors

→ Page D-1

Brushless Motors

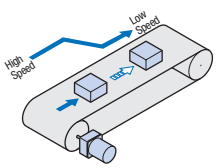
→ Page D-17



Suitable for applications where a wide speed control range is required.

AC Speed Control Motors

→ Page D-153

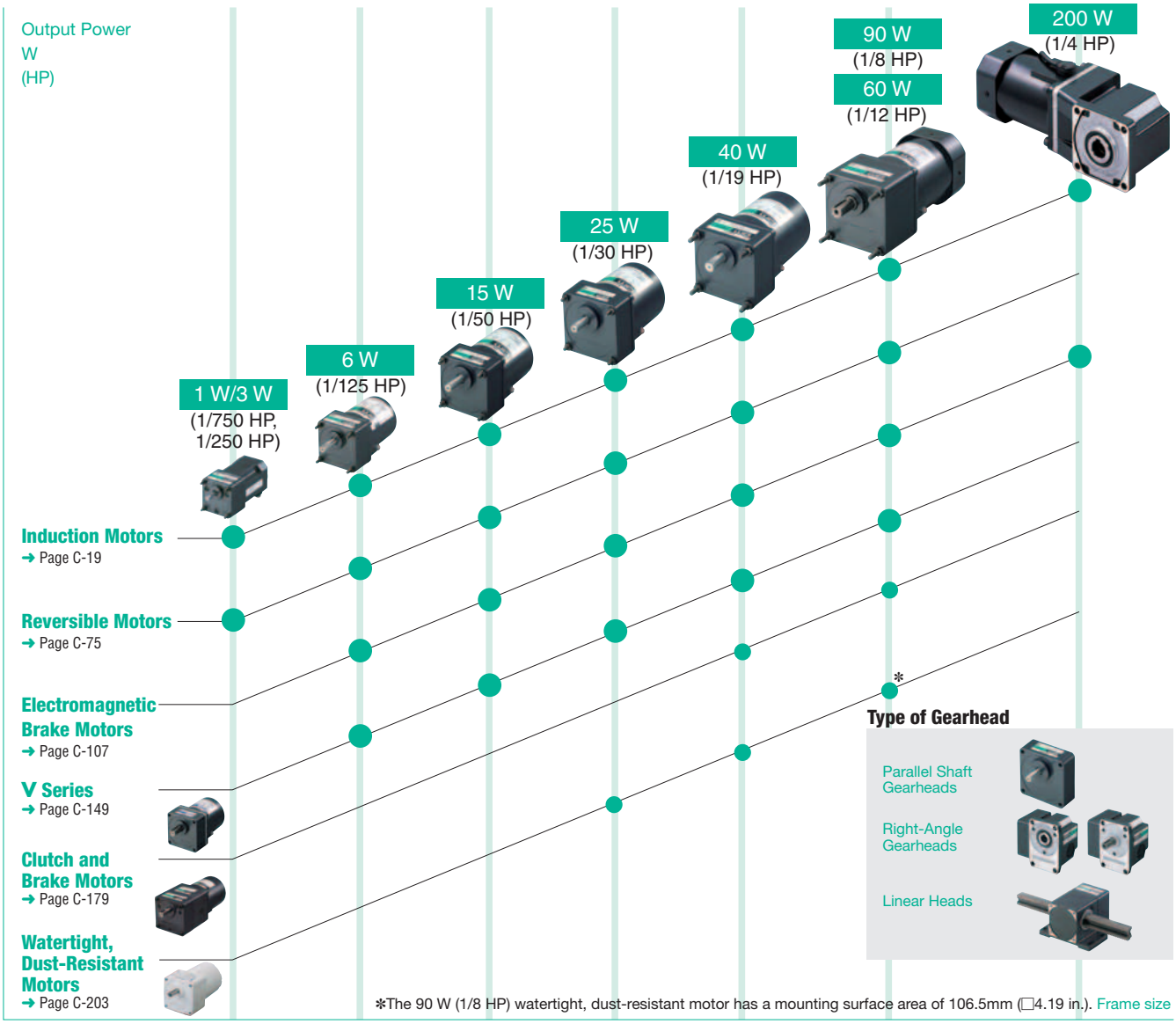


Suitable for applications where the motor speed needs to be varied.

Product Line-up of Standard AC Motors

We offer a wide range of standard AC motors with different features to meet the demand for many applications.

Induction Motors, Reversible Motors, Electromagnetic Brake Motors, V Series, Clutch and Brake Motors, Watertight, Dust-Resistant Motors

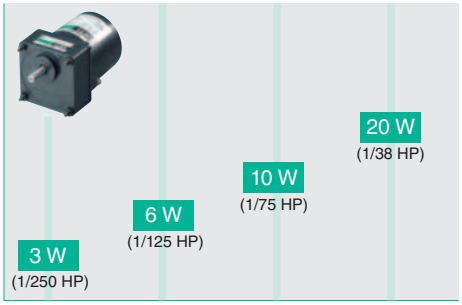


*The 90 W (1/8 HP) watertight, dust-resistant motor has a mounting surface area of 106.5mm (□4.19 in.). Frame size

□42 mm (□1.65 in.) | □60 mm (□2.36 in.) | □70 mm (□2.76 in.) | □80 mm (□3.15 in.) | □90 mm (□3.54 in.) | □90 mm (□3.54 in.) | □104 mm (□4.09 in.)

Torque Motors

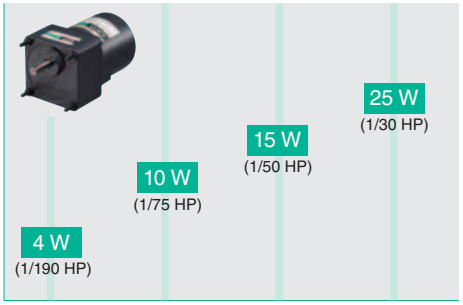
→ Page C-213



□60 mm (□2.36 in.) | □70 mm (□2.76 in.) | □80 mm (□3.15 in.) | □90 mm (□3.54 in.)

Synchronous Motors

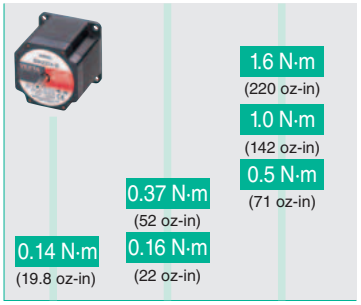
→ Page C-189



□60 mm (□2.36 in.) | □70 mm (□2.76 in.) | □80 mm (□3.15 in.) | □90 mm (□3.54 in.)

Low-Speed Synchronous Motors

→ Page C-191



□42 mm (□1.65 in.) | □56.4 mm (□2.22 in.) | □85 mm (□3.35 in.)