

Oriental Motor answers diverse customer needs with field-proven technology and a wide range of products.

A *ORIENTAL MOTOR* Standard AC Motors

Standard AC motors operate by simply connecting a capacitor and supplying power from a commercial power source. Standard AC motors include the basic induction motor and reversible motor. In addition, Oriental Motor offers electromagnetic brake motors, synchronous motors, torque motors and watertight motors to meet specific application requirements.

■ Induction Motors
Reversible Motors



■ Synchronous Motors



■ Torque Motors



■ Watertight Motors



■ Electromagnetic Brake Motors
Clutch & Brake Motors
Brake Packs



■ Right-Angle Gearheads



■ Linear Heads



B *ORIENTAL MOTOR* Speed Control Systems

Speed control systems are ideal for applications that require the precise control of speed. Motors for speed control systems can be either highly efficient brushless DC motors or simple-to-use AC motors.

■ Brushless DC Motor Systems
AC Input



BX Series



AXU Series

DC Input



FBLII Series



AXH Series

■ AC Motor Systems



BHF Series



US Series



ES01/ES02

C *ORIENTAL MOTOR* Stepping Motors

Stepping motors are used to achieve precise positioning via digital control. The motor operates by accurately synchronizing with the pulse signals output from the controller to the driver. Stepping motors offer excellent acceleration and response, and are therefore ideal for applications requiring frequent starting and stopping.

■ Motor & Driver Packages

AC Input



DC Input



■ 2-Phase Stepping Motors



■ Driver with Indexer



■ Controllers



■ Gearing Options



Taper Hobbed (**TH**) Gears



Planetary (**PN**) Gears



Harmonic (**HG**) Gears

■ Low-Speed Synchronous Motors



Being the first motor manufacturer in Japan to offer standardized compact motors, Oriental Motor has continued its commitment to innovation and has expanded its fields of technical expertise. We have created industry-standard motors for power and control applications used in both individual units and systems. Moreover, we have actively developed products conforming to global safety standards, such as the UL, CSA and EN standards and the CE marking program. Oriental Motor is proud to offer nearly 10,000 different products, each perfected to meet the specific needs of customers throughout the industry.

D LIMO Linear Motion

Our linear motion products enable linear movements such as pushing, pulling, raising and lowering. Available types include the **DRL** compact linear actuators incorporating a linear motion mechanism, and the **LH** Series employing a rack-and-pinion mechanism that can be used along with a standard AC motor.

■ DRL Compact Linear Actuators



■ LH Linear Head



E ORIX FAN Cooling Fans

Oriental Motor offers a wide range of cooling fans, including centrifugal blowers, cross-flow fans, axial flow fans, fans with low-speed or stall alarms, and variable-flow fans.

■ Axial Flow Fans



■ Centrifugal Blowers



■ Cross Flow Fans



■ Thermostats



Accessories



Mounting Brackets



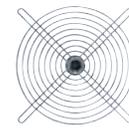
Flexible Couplings



Extension Cables



Clean Dampers



Finger Guards



Filters

ORIENTAL MOTOR GENERAL CATALOG 2003/2004

Contents

A *ORIENTAL MOTOR* Standard AC Motors

Oriental Motor offers a wide variety of standard AC motors in frame sizes ranging from 1.65 inch (42 mm) to 4.08 inch (104 mm) square with output power of 1 W to 200 W. This includes induction and reversible motors that supply the power needed to drive various loads, as well as electromagnetic brake motors suitable for vertical drive applications. These motors can be combined with parallel shaft and right-angle gearheads.



Introduction	A-2
Induction Motors	A-13
Reversible Motors	A-67
Synchronous Motors	A-103
Torque Motors	A-111
Watertight Motors	A-119
Electromagnetic Brake Motors	A-127
Clutch & Brake Motors	A-171
Brake Pack	A-179
Right-Angle Gearheads	A-189
Accessories	A-203
Before Using a Standard AC Motor	A-219

B *VEXTA ORIENTAL MOTOR* Speed Control Systems

Speed control systems are ideal for applications that require the precise control of speed. The motor for the speed control system can be either a highly efficient brushless DC motor or an AC motor.



Introduction	B-2
Brushless DC Motor Systems (AC Input)	
BX Series	B-10
FBLII Series	B-34
AXU Series	B-46
Brushless DC Motor Systems (DC Input)	
AXH Series	B-58
AC Motor Systems	
BHF Series	B-70
ES01/02	B-86
US Series	B-116
Before Using a Speed Control System	B-131

F Technical Reference

Motor Sizing	F-2
Standard AC Motors	F-12
Speed Control Systems	F-22
Stepping Motors	F-29
Gearheads	F-39
Linear Motion	F-50
Cooling Fans	F-52

G General Information

Safety Standards	G-2
List of Safety Standard Approved Products	G-10
ISO9001 and ISO14001	G-26
Global Power Supply Voltages	G-27
Product Line Updates	G-28
Product Index	G-31
Oriental Motor Corporate Overview	G-59
Oriental Motor Global Sales Network	G-60
Product Recommendation Information Sheets	G-61
Conversion Charts	G-67

Using This Catalog	4
Warranty and Limitation of Liability	6

North American Sales and Customer Service	7
Selection by Motor Characteristics	10
Motor Selection by Application	12

C VEXTA Stepping Motors

Stepping motors are capable of performing high-precision, highly reliable operation without the use of a position sensor. The motor rotates by a given angle each time the current flow to the motor windings is switched through the input of a pulse signal. Oriental Motor offers the α STEP stepping motor, which features our innovative closed-loop control and a newly developed rotor position-detection sensor.



Introduction	C-2
αSTEP/Motor and Driver Packages (AC Input)	
AS Series	C-11
AS PLUS Series	C-11
αSTEP/Motor and Driver Packages (DC Input)	
ASC Series	C-55
NanoStep/5-Phase Microstepping Motor and Driver Packages (AC Input)	
RK Series	C-77
NanoStep/5-Phase Microstepping Motor and Driver Packages (DC Input)	
CFK II Series	C-105
5-Phase Stepping Motor and Driver Packages (DC Input)	
CSK Series	C-119
PMC Series	C-135
2-Phase Stepping Motor and Driver Packages (AC Input)	
UMK Series	C-149
2-Phase Stepping Motor and Driver Packages (DC Input)	
CSK Series	C-161
2-Phase Stepping Motors	C-183
2-Phase Stepping Motor Driver UI2120G	C-241
Controllers	C-251
EMP400 Series	C-254
SC8800 Series	C-266
SG8030 Series	C-270
Low-Speed Synchronous Motors	
SMK Series	C-273
Accessories	C-283
Before Using a Stepping Motor	C-299

D LIMO Linear Motion

Our linear motion products enable linear movements. The **DRL** Series stepping motor's rotating part and linear motion mechanism are housed within a compact body. **LH** Series models offer a rack-and-pinion mechanism that achieves linear motion when used in combination with standard AC motors.



Introduction	D-2
Precision Linear Actuators	
DRL Series	D-5
Rack & Pinion Linear Heads	
LH Series	D-17
Accessories	D-37
Before Using a Linear Motion System	D-43

E ORIX FAN Cooling Fans

Oriental Motor offers a wide range of cooling fans, including axial flow fans ideal for ventilation cooling, centrifugal blowers and cross-flow fans for local cooling, fans with alarms, and variable-flow fans.



Introduction	E-2
Axial Flow Fans (AC Input)	E-17
MRS Series	E-24
Variable Flow	E-34
Axial Flow Fans (DC Input)	
MDE Series	E-44
MDS • MD Series	E-46
Centrifugal Blowers	E-61
MB Series	E-66
MBD Series	E-78
Cross Flow Fans	E-84
MF Series	E-88
MFD Series	E-92
Thermostats	E-97
Accessories	E-101
Before Using a Fan	E-111

■ Delivery Times

Many Oriental Motor products are available for same day shipping in certain quantities. For more details on availability and delivery times for particular products, please contact your Oriental Motor representative.

Placing an Order

- Call Oriental Motor's Customer Service Center at 1-800-468-3982. They can take your order or refer you to your local Oriental Motor sales office or distributor. Oriental Motor accepts Mastercard, Visa and American Express. After placing your first order, you can apply to set up a terms account for future orders.

OR

- Visit www.orientalmotor.com to order quantities of nine pieces or less. www.orientalmotor.com accepts Mastercard, Visa and American Express. Please note that not all Oriental Motor products are available to order through the web site.

■ Return and Replacement After Delivery

- Oriental Motor USA Corp. is confident that you will be completely satisfied with your purchase. In the unlikely event that a delivered product has been damaged in shipment or you receive an incorrect order, Oriental Motor will correct the problem. Please contact your local sales office or distributor where the product was purchased.
- If you need to return a product because of a technical issue, please contact Oriental Motor Technical Support at 1-800-468-3982 to try to determine the cause of the problem. If your problem cannot be resolved, you will receive instructions on how to obtain an RMA number and how to return the product.

WARRANTY AND LIMITATION OF LIABILITY

WARRANTY

Oriental Motor U.S.A. Corporation (the "Company") warrants to the first end user Buyer that the Products and Parts thereof, when shipped, will be free from defects in materials comprising the same and in the Company's workmanship. If any such defects exist or later appear, the Company shall undertake, at its sole expense, prompt remedial action as stated herein to correct the same; provided however, that the Company shall have no obligation or liability under this Warranty unless it shall have received written notice specifying such defect no later than two (2) years from the date of shipment. Remedial action under this Warranty shall require only that the Company, at its option, repair or modify the Products or Parts thereof, replace the same F.O.B. Torrance, California, or accept the return of the Products or Parts thereof by Buyer and refund the purchase price.

Products, or Parts thereof, manufactured by others are warranted hereunder only to the extent of such manufacturer's warranty to the Company.

Since after shipment, the Products and Parts thereof are under the sole control of the Buyer, this Warranty is subject to, and shall be applicable only if, the following conditions are met:

- a. The Company's instructions as to installation, operation and maintenance have been followed;
- b. The Products and Parts thereof have been used under normal operating conditions or under such conditions as hereinbefore specified by the Company, or specified by the Buyer and agreed to in writing by the Company;
- c. The Products and Parts thereof have been properly erected, installed, operated and maintained and have not been affected by misuse, neglect or accident;
- d. The Buyer has not attempted or performed corrective work or change on the Products and/or Parts thereof without the Company's prior written consent as to the nature and expense thereof;
- e. The Company shall have received notice of any defect no later than thirty (30) days after the Buyer first had knowledge of the same; and
- f. Within the Warranty period and after prior authorization from the Company, the Products and/or Parts are shipped freight prepaid to the Company at 2580 West 237th Street, Torrance, California 90505-5217, in accordance with the Company's RMA process.

THE FOREGOING WARRANTY IS IN SUBSTITUTION FOR, AND IN LIEU OF, ANY AND ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

LIMITATION OF LIABILITY

THE COMPANY SHALL HAVE NO LIABILITY WHATSOEVER IN ANY EVENT FOR PAYMENT OF ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, WITHOUT LIMITATION, DAMAGES FOR INJURY TO ANY PERSON OR PROPERTY. BY ACCEPTING THE PRODUCTS AND/OR PARTS THEREOF, THE FIRST END USER BUYER OR SUBSEQUENT USER AGREES THAT THE COMPANY SHALL NOT BE LIABLE FOR INDEMNIFICATION OR CONTRIBUTION (IN WHOLE OR IN PART) EITHER EXPRESSLY OR BY IMPLICATION.

IF FOR ANY REASON ANY OF THE FOREGOING PROVISIONS SHALL BE INEFFECTIVE, THE COMPANY'S LIABILITY FOR DAMAGES ARISING OUT OF ITS MANUFACTURE OR SALE OF ITS PRODUCTS OR PARTS, OR USE THEREOF, WHETHER SUCH LIABILITY IS BASED ON WARRANTY, CONTRACT, NEGLIGENCE, STRICT LIABILITY IN TORT OR OTHERWISE, SHALL NOT IN ANY EVENT EXCEED THE FULL PURCHASE PRICE OF SUCH PRODUCTS AND PARTS THEREOF.

Any action against the Company based upon any liability or obligation arising here-under or under any law applicable to the sale or its Products or Parts thereof, or the use thereof, must be commenced within two (2) years after the cause of such action arises.

North American Sales and Customer Service

Western Sales and Customer Service Center

Tel: (310) 784-8200
Fax: (310) 325-1076

Dallas
Tel: (214) 432-3386

Denver
Tel: (303) 202-5111

Los Angeles
Tel: (310) 784-8200

San Jose
Tel: (408) 392-9735

Midwest Sales and Customer Service Center

Tel: (847) 285-5100
Fax: (847) 843-4121

Chicago
Tel: (847) 285-5100

Toronto
Tel: (905) 502-5333

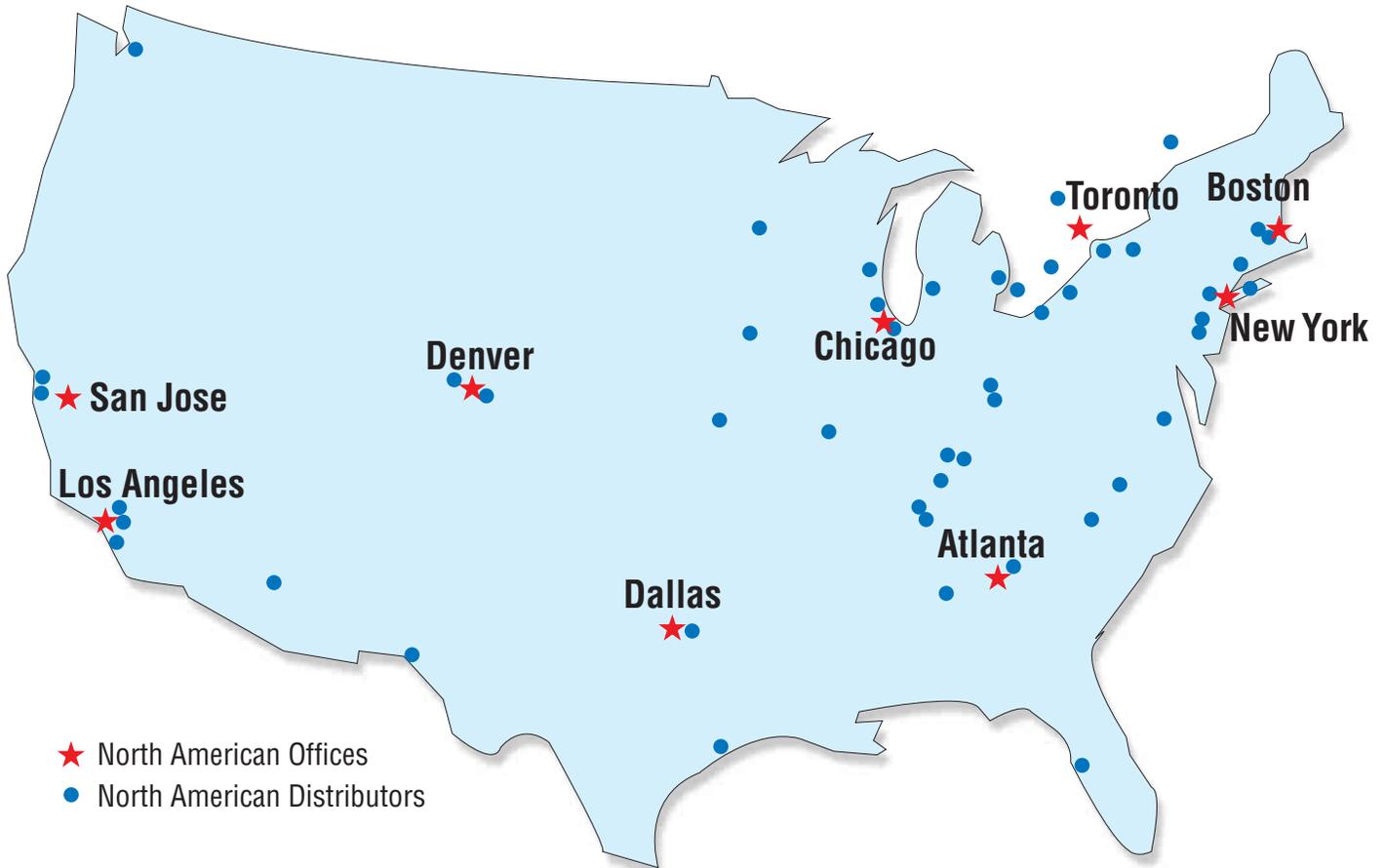
Eastern Sales and Customer Service Center

Tel: (781) 848-2426
Fax: (781) 848-2617

Atlanta
Tel: (770) 716-2800

Boston
Tel: (781) 848-2426

New York
Tel: (973) 359-1100



www.orientalmotor.com

Why Choose Oriental Motor?

Products and technology are only valuable when coupled with skilled people and services to support them. Oriental Motor USA Corporation has dedicated over 20 years to establishing a service and support system to better serve customers. It is our goal to provide the best product and service from the design phase, through the sale and after the sale. Please call on us to meet your motion control needs.



800 Technical Support

One phone call provides you direct access to Oriental Motor's motion control experts. Oriental Motor's technical support team is qualified to answer a wide

variety of questions. Call toll free 1-800-GO-VEXTA (468-3982) to speak with an Oriental Motor associate, or send an email to techsupport@orientalmotor.com.



Sizing & Selection

Oriental Motor's Application Engineering group can support you in finding the proper motion control product for your application. Call, email or fax an

Oriental Motor associate with your requirements for assistance in finding the proper solution.

Web Catalog & Shop



The Oriental Motor website is a valuable tool for design engineers to gather information. There

you can find specifications on over 3,000 products, download CAD and PDF files and purchase products. Visit www.orientalmotor.com for your complete motion solution.



Engineering & Application Engineering

Qualified technical associates are available to assist you with your technical problems or questions. Application

engineers are available to visit your site if needed. These engineers are also dedicated to continuous research and development of new products and technologies.



Motor Fair & Seminars

Oriental Motor provides a high quality, information sharing event to teach customers more about motion control. Product displays, new products or

technologies, a variety of seminars, and one-on-one discussions with engineers are available throughout the day. The event travels to a number of different cities throughout North America. Contact Oriental Motor for a show near you.



Technical Seminars

Oriental Motor offers free, personalized training at your location, our location, or through a distributor. These seminars can be tailored according to your needs.



Quality

Oriental Motor provides 100% quality control through a unique manufacturing process. This process incorporates quality checks on every item after every manufacturing process, from parts acceptance to the finished product.

Every Oriental Motor product undergoes reliability testing before they are released to the market. These tests subject the product to the harshest of operating conditions and intentional misuse to discover the limits of their durability. Oriental Motor factories have obtained ISO 9000 certification, demonstrating the high level of quality inherent to Oriental Motor's processes.



Global Support

Oriental Motor has sales offices, as well as manufacturing, assembly, and distribution facilities, worldwide to support your international needs.

Products are available with input voltages and safety standard certifications to meet international requirements. Research and development of new products is conducted at all product plants in Japan, as well as in the United States. With R&D on a global scale, Oriental Motor gains different perspectives into market expansion and customer requirements, resulting in the development of state-of-the-art technology to meet a wide range of needs.



Delivery

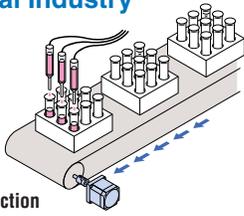
Oriental Motor's "Just-In-Time" production system allows the manufacturing of an order with little notice, in any quantity requested.

Additionally, Oriental Motor uses a "one-by-one" process where one item can be manufactured as simply as one thousand items.

Over 1,200 of Oriental Motor's most popular and innovative products are available for same day shipping. Another 3,000 products are available for shipping within seven days.

Where is Oriental Motor?

Medical Industry

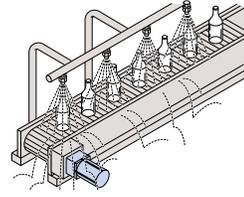


Fluid Injection

From compact AC gearmotors, to 2-phase and 5-phase stepping motor systems, to a full line of fans, Oriental Motor products are widely used in the medical market.

Applications such as raising and lowering a hospital bed or providing constant rotational speed in a centrifuge or ventilator require simple operation provided by AC gearmotors. Stepping motors are used for precise positioning control in applications such as IV pumps, X-ray machines, and blood analyzers. Applications such as an oxygen concentrator utilize fans for cooling. Compact size, high torque, low noise, and reliability are just a few of the qualities that make Oriental Motor a perfect match to meet the requirements of most medical applications.

Food & Packaging Industry

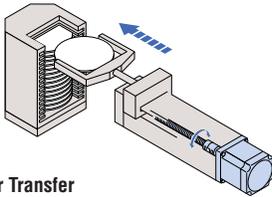


Washing Application

Oriental Motor's AC gearmotors and AC & DC brushless speed control systems are widely used to meet automation needs throughout the packaging market. Products such as AC gearmotors, including

right angle and hollow shaft gearing options, are used in simple conveyor applications. IP67-rated watertight motors can be used in areas that need to be showered periodically. Clutch and brake motors are optimal for applications where simple index moves, such as labeling and cutting are required. Lifting applications often employ electromagnetic brake motors to provide braking in a power-off situation. For heavier industrial applications, Oriental Motor provides conduit and terminal box type motors, and for simple speed control we offer compact AC & DC brushless speed control systems.

Semiconductor Industry

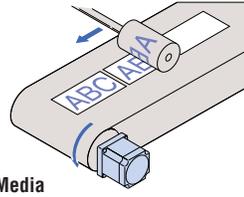


Wafer Transfer

Oriental Motor provides a wide variety of products to meet semiconductor equipment design needs. Our 5-phase and 2-phase stepping motor systems address the torque, accuracy,

resolution, smoothness, and positioning required by applications such as pattern transfer, etching, and dicing. AC gearmotors and AC & DC brushless speed control systems provide compact size, flexibility, simple control, reliability, and clean operation (no brushes). These products are perfect for applications requiring simple speed control and movement such as oxidation, photoresist coating, and wafer polishing.

Wide Variety of Industries

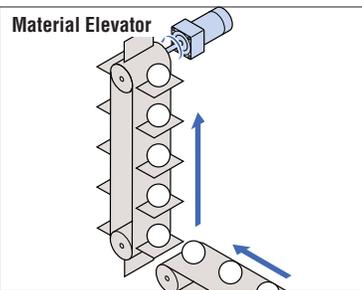


Printing Media

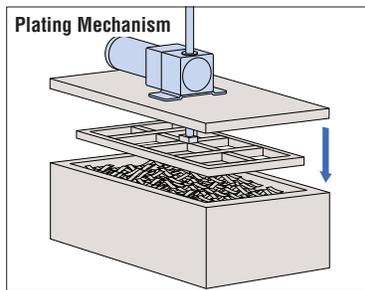
Oriental Motor products can also be found in a wide variety of other industries. With over 5,000 products to choose from, Oriental Motor can provide a product to meet the needs of most

applications. From AC gearmotors, to 2-phase and 5-phase stepping motors systems and controllers, to AC & DC brushless speed control systems, to a full line of fans, no other motor manufacturer can provide a larger product breadth. Oriental Motor provides high quality, quick delivery, and trained technical support.

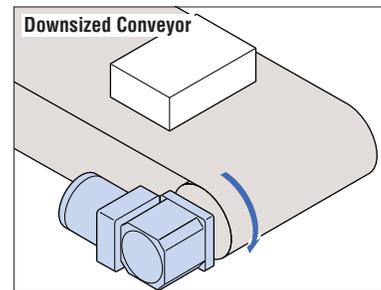
Application Examples



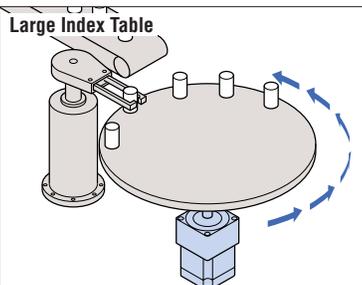
Material Elevator



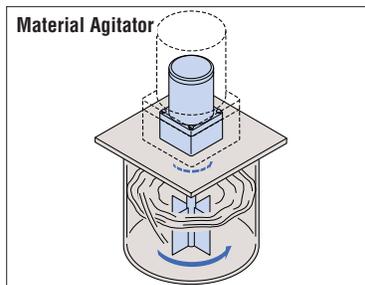
Plating Mechanism



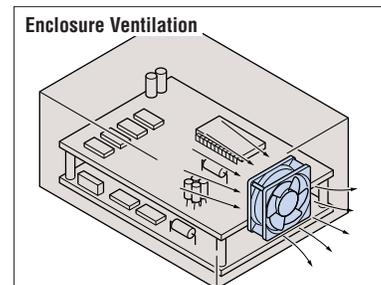
Downsized Conveyor



Large Index Table



Material Agitator



Enclosure Ventilation

Selection by Motor Characteristics

Motors are classified according to their differences in basic principles of operation and their structures. When using a motor, it is critical to first thoroughly understand the basic characteristics of that motor.

Basic Motor Characteristics

The induction motor is considered a typical small AC motor. Induction motors have rotation rates near 1600 r/min (at 60 Hz), so they are normally used with a gearhead for speed reduction.

The reversible motor (30 minute rating) has improved starting characteristics compared to an induction motor (continuous rating) and makes instantaneous forward/reverse operation possible. Reversible motors with electromagnetic brakes are available.

For induction, reversible and electromagnetic brake motors, a brake pack is available to control instantaneous stopping, rotation direction and the electromagnetic brake with the use of electronic signals. Speed control motor systems with instantaneous stop ability are also available.

Brushless DC motors and stepping motors are controlled by a driver. Their small size, high torque, wide speed range and superior control capability make them suitable for a wide variety of applications. Brushless DC motor systems maintain constant torque over a wide speed range, with the speed easily controlled by a potentiometer.

Stepping motors are rotated at a specified angle and speed. They have high stopping accuracy, dictated by specifying the pulse speed and pulse count with a controller. Stepping motors have particularly high torque at low speed, retain their position and offer high repeatability. Motors coupled with high-precision, high-strength gearheads and electromagnetic brakes are also available.

Basic Motors

These are normally used with a capacitor. AC power is used for input to the motor or the control pack.

Speed can be controlled by a potentiometer or DC voltage. AC or DC power is used for input to the driver.

The movement distance and speed are controlled with pulse signals. AC or DC power is used for input to the driver.

Continuous Operation in Fixed Direction

Induction Motors

1/750 HP~1/4 HP (1 W~200 W) Page A-13

Forward/Reverse Operation

Reversible Motors

1/750 HP~1/8 HP (1 W~90 W) Page A-67

Synchronous Motors

1/190 HP~1/30 HP (4 W~25 W) Page A-103

Torque Motors

1/93 HP~1/32 HP (8 W~23 W) Page A-111

Watertight Motors

1/30 HP~1/8 HP (25 W~90 W) Page A-119

Brushless DC Motors

Page B-9

Stepping Motors

Page C-1

2 Phase Stepping Motors

Page C-183

Low-Speed Synchronous Motors

Page C-273

Linear Motion

Page D-1

Cooling Fans

Page E-1

With Brake Function

Speed Control Function

Complex Load Starting and Stopping Clutch and Brake Motors

1/19 HP~1/8 HP (40 W~90 W) Page A-171

Brake Pack SB50

1/750 HP~1/8 HP (1 W~90 W) Page A-179

Position Retention, Drop Prevention

Electromagnetic Brake Motors

1/125 HP~1/4 HP (6 W~200 W) Page A-127

Brake Pack SB50

1/750 HP~1/8 HP (1 W~90 W) Page A-179

* Electromagnetic brake type is available

* Electromagnetic brake types are available

AC Motor Systems

BHF Series Page B-70

1/4 HP (200 W)

ES01/ES02 Page B-86

1/125 HP~1/8 HP (6 W~90 W)

US Series Page B-116

1/125 HP~1/8 HP (6 W~90 W)

AC Motor Systems

ES01/ES02 Page B-86

1/125 HP~1/8 HP (6 W~90 W)

AC Input

BX Series * Page B-10

1/25 HP~1/2 HP (30 W~400 W)

FBLII Series Page B-34

1/10 HP, 1/6 HP (75 W, 120 W)

AXU Series Page B-46

1/75 HP~1/8 HP (10 W~90 W)

DC Input

AXH Series Page B-58

1/50 HP~1/8 HP (15 W~100 W)

αSTEP

AS Series * Page C-11

ASC Series * Page C-55

AC Input

5-Phase RK Series Page C-77

2-Phase UMK Series Page C-149

DC Input

CFKII Series Page C-105

5-Phase CSK Series Page C-119

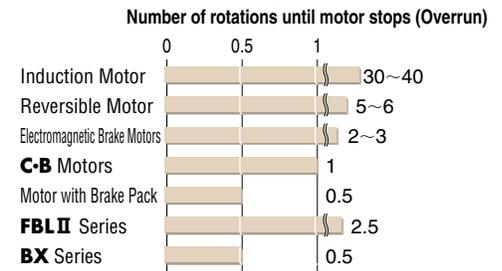
5-Phase PMC Series Page C-135

2-Phase CSK Series Page C-161

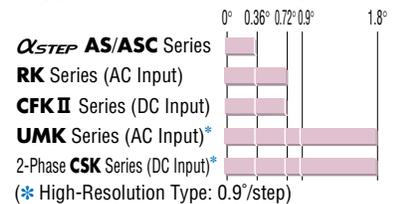
Motor Selection

When selecting a motor, application specifications such as speed, operation pattern and stopping accuracy are key in determining the best motor for the application. However, balancing motor performance with cost is also an important element in selecting a motor. The characteristics shown below will assist in determining the best motor for the application.

Brake Characteristic Comparison (Motor alone)

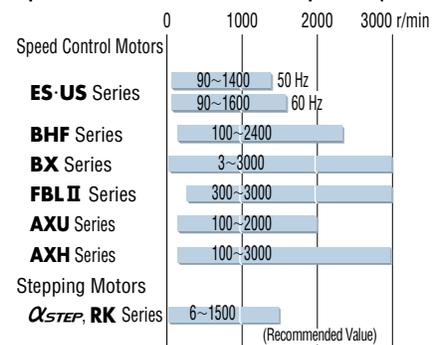


Stepping Motors/Resolution Comparison (Motor alone)



The distance a stepping motor moves per pulse is fixed, so the stepping motor moves only that distance then stops.

Speed Control Characteristic Comparison (Motor alone)

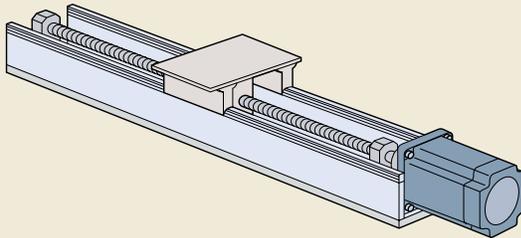


Motor Selection by Application

Applications using motors can be divided into those with linear operation and those with rotational operation. Typical examples of linear operation are lead screws and conveyors, while typical examples of rotational operation include index tables and roller feed. Select the necessary motor from the speed range and positioning precision required for the device.

■ Linear Operation

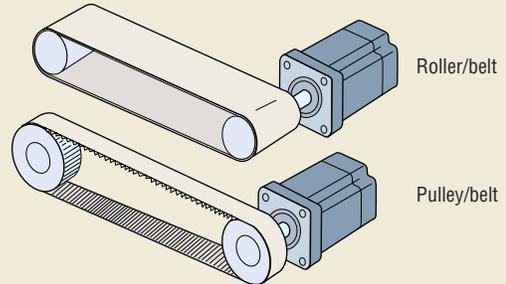
● High Accuracy Positioning with a Lead Screw



The movement distance per rotation of the thread is determined by the thread pitch, so the significant points are the resolution and stepping precision.

When you need more than 200 stopping points per rotation of the lead screw, consider a stepping motor first. We recommend the **RK** Series, which is one of our standard stepping motor products. We suggest a reversible or electromagnetic brake motor with an electronic brake pack for lower resolution applications. If variable speed is required, we recommend the **ES** Series speed control system. The **DRL** Series of compact actuators might also be applicable.

● Common Conveyor Structure

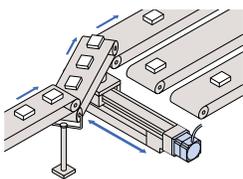


Common motor requirements for conveyors include:

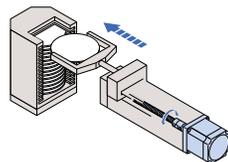
- Low vibration
- Stopping precision
- Ability to withstand harsh environments
- Acceleration, deceleration capability
- Position retention

Stepping motors, standard AC motors and speed control motors are commonly used for high-precision feed and digital control. The **FPW** Series of dust-resistant, watertight AC motors are available when environmental elements are a factor.

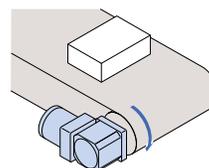
■ Conveyor Belt Movement



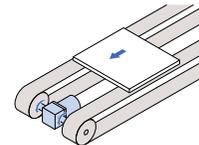
■ Wafer Transfer



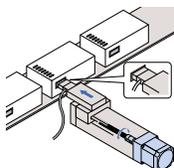
■ Downsized Conveyor



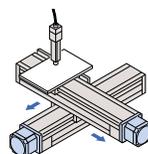
■ Conveyor Belt



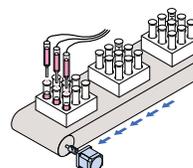
■ Pulling out Connectors



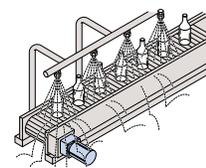
■ X-Y Table



■ Fluid Injection

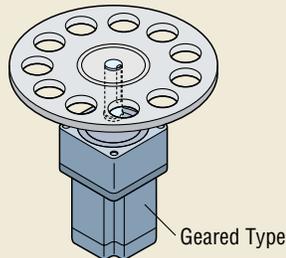


■ Showering Application



■ Rotational Operation

● Index Table



For this application, resolution and stopping precision are the most important points.

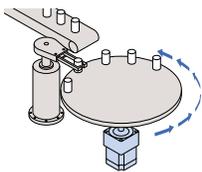
The **CFK II** Series with compact dimensions of 0.79 in. sq. (20 mm sq.) is recommended for applications requiring a lightweight and compact motor. The **RK** Series of 5-phase stepping motor systems may also be suitable for your needs.

If an overrun of less than 1 rotation (motor alone) is required, try an induction, reversible or electromagnetic brake motor with an electronic brake pack.

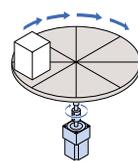
If speed control is a primary requirement, the **AXU** Series offers AC input and easy operation, while the **AXH** Series offers DC input and a compact size. Both the **AXU** and **AXH** use brushless DC motors for long life and low maintenance. The **ES** speed controller combined with an AC compact motor is simple to use.

If high frequency starting and stopping are required, clutch and brake motors may be the best fit. With a clutch and brake motor, the motor runs continuously and the load is started and stopped by switching the clutch and brake on and off, enabling continual operation of 100 cycles per minute.

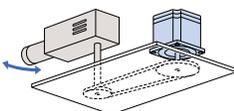
■ Positioning on Index Table



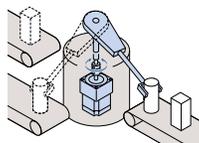
■ Operation of Large Index Table



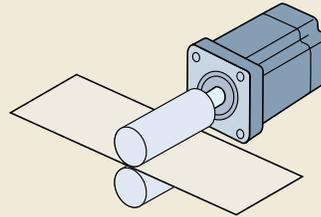
■ Swing Operation of Cameras



■ Arm Operation



■ Other Mechanisms



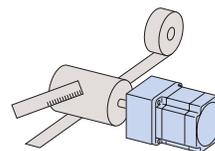
When high speed operation and high resolution are required, a stepping motor is the best solution. The **αSTEP** offers short, accurate moves and closed loop feedback. The **RK** Series offers the precision of a 5-phase microstepping system. For speed stability, brushless DC speed control systems offer a range of solutions, such as the **AXH** Series, **AXU** Series, **BX** Series or **FBL II** Series.

Easy-to-use **ES** speed controllers and **SB50** brake packs can be combined with an AC compact motor to meet a wide variety of application requirements.

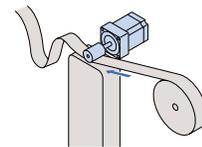
If high frequency starting and stopping are required, clutch and brake motors may be the best fit. With a clutch and brake motor, the motor runs continuously and the load is started and stopped by switching the clutch and brake on and off, enabling continual operation of 100 cycles per minute.

For low speed, high torque applications, we recommend the **SMK** Series of low speed synchronous motors. If the application incorporates a rack & pinion mechanism, the **LH** Series of linear heads connected to AC motors is recommended.

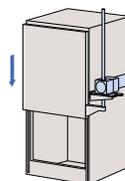
■ Feeding at Regular Intervals



■ Feeding Materials



■ Open-Close of Gate



■ Up and Down Operation

