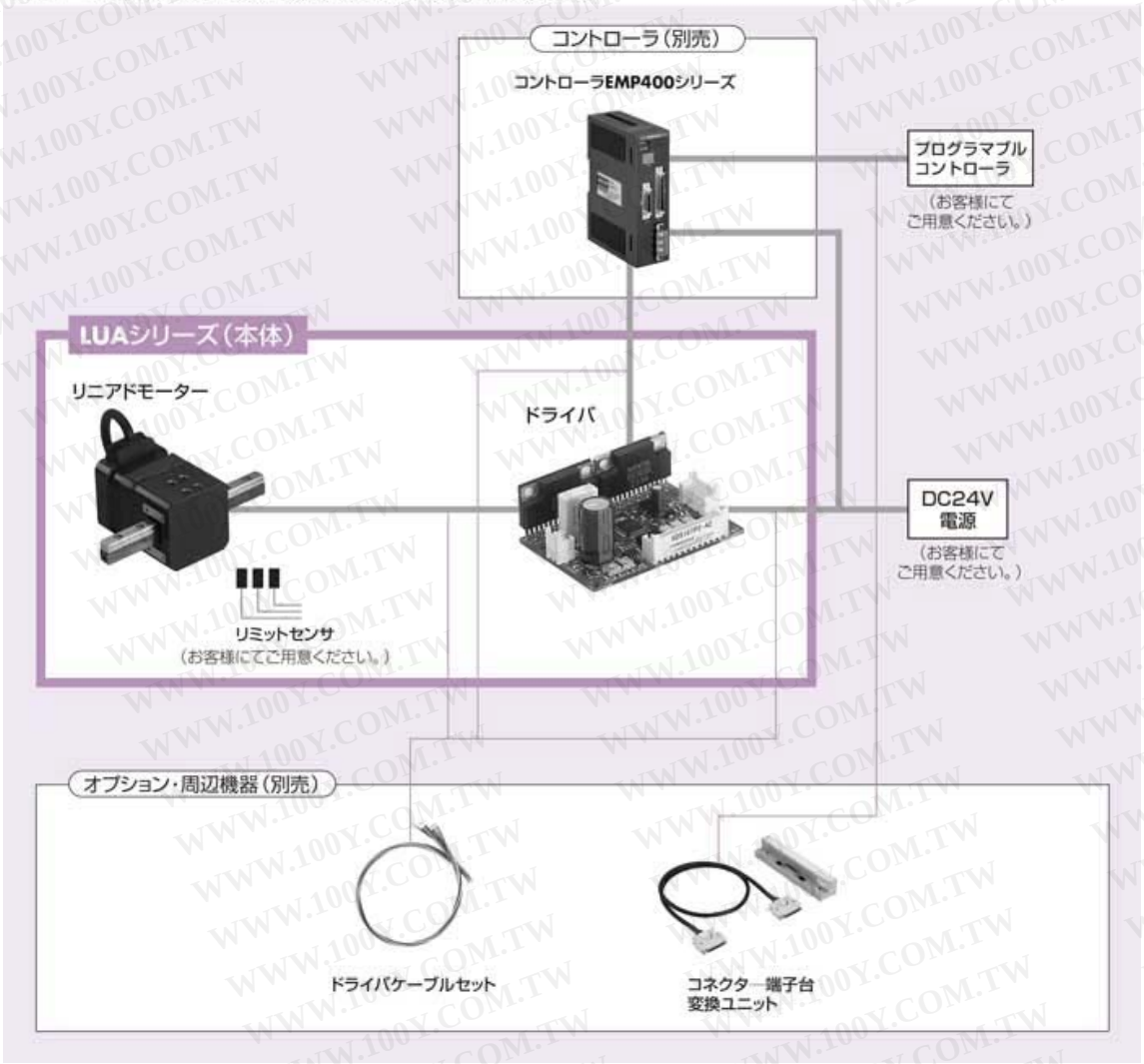
コントローラEMP400シリーズをご使用の場合の1軸システム構成例です。



東方五相步進馬達驅動器

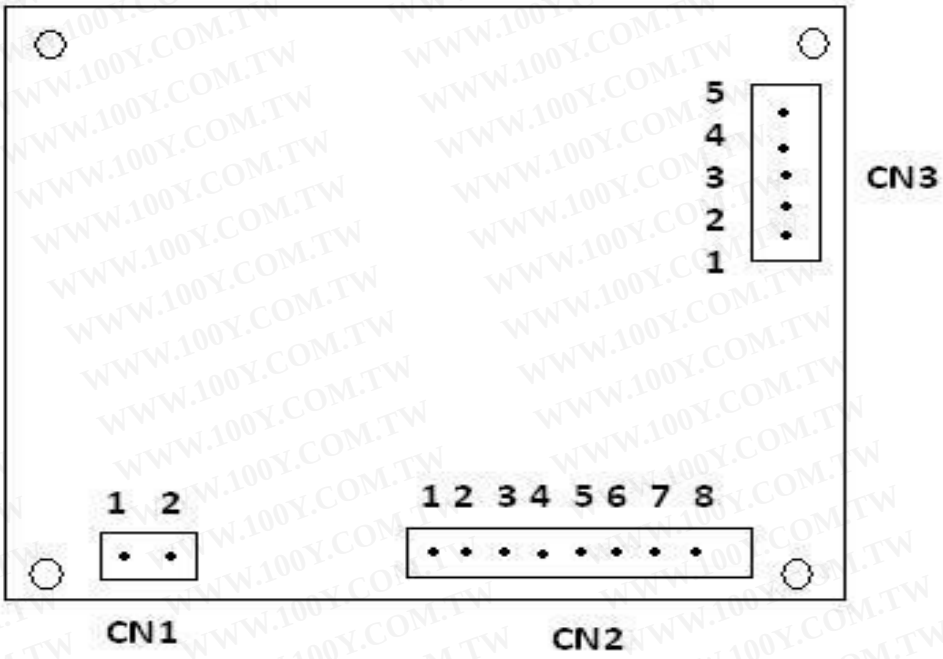
A.型號

SD5107P

B.規格

- 入力電源:DC24V+/-10%
- 1P/2P 脈波輸入方式
- 運轉電流=0.1A/相~0.75A/相
- 停止電流=0.1A/相~0.56A/相
- 全/半 步進角切換

東方SD5107P接線圖

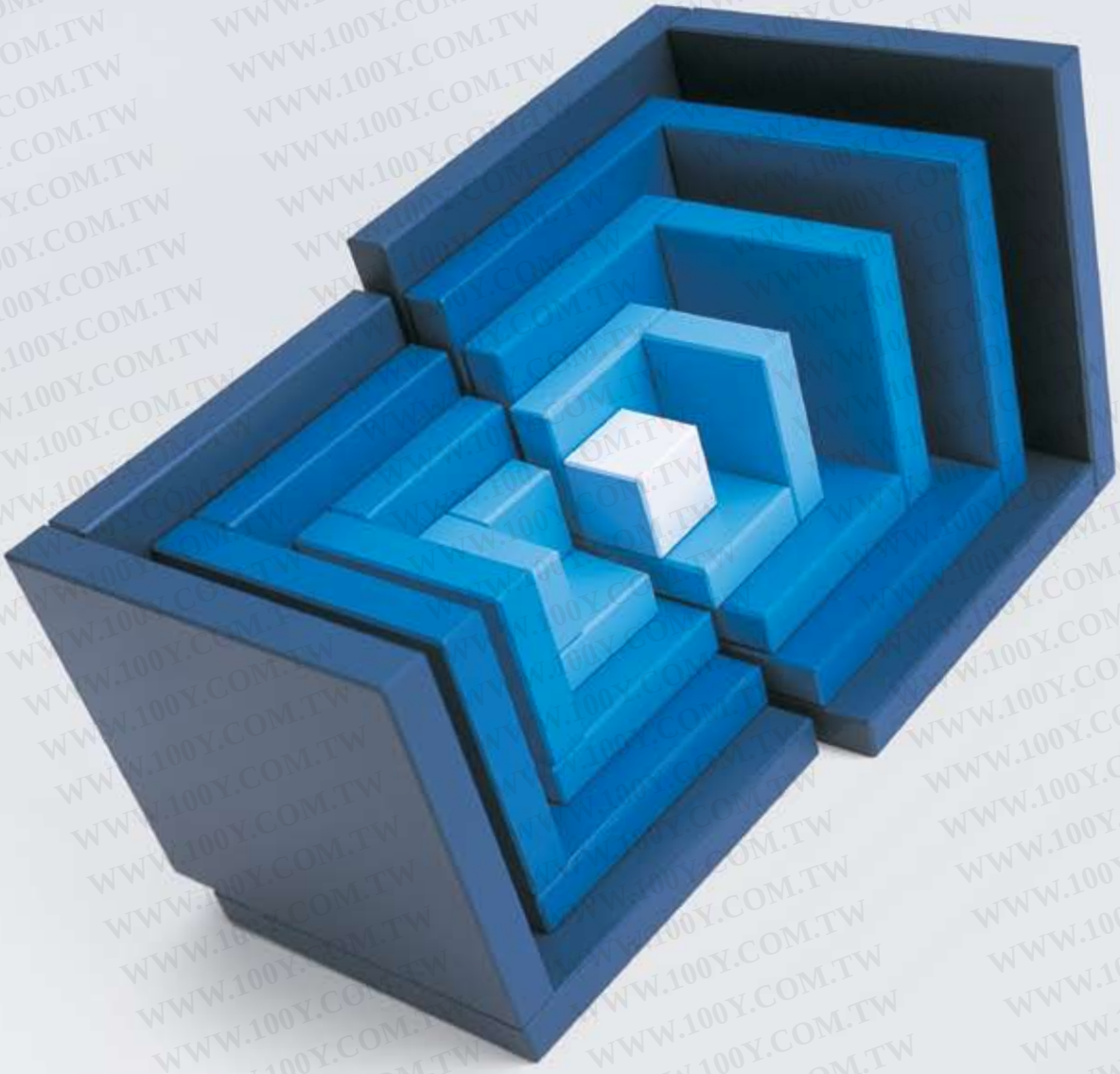


1. CN1(電源)：
   1->DV 24V ±10%
   2->GND

2. CN2(I/O)：
   1->CW+
   2->CW-
   3->CCW+
   4->CCW+
   5->出力電流 OFF+
   6->出力電流 OFF-
   7->自動電流下降 OFF+
   8->自動電流下降 OFF-

3. CN3(馬達電源線)：
   1->藍
   2.>紅
   3->橙
   4->綠
   5->黑

ORIENTAL MOTOR NEWS
NewMotion
2005 02



New Product

New Ground Ball Screw for 60mm frame size

DRL Series

New Product

EMP 400 Series

Special Feature

A wide range of linear actuator products

Teach Me Please! Ms. Ori

Does “overrun” differ by the types of motors?

Information

Field Service

Information

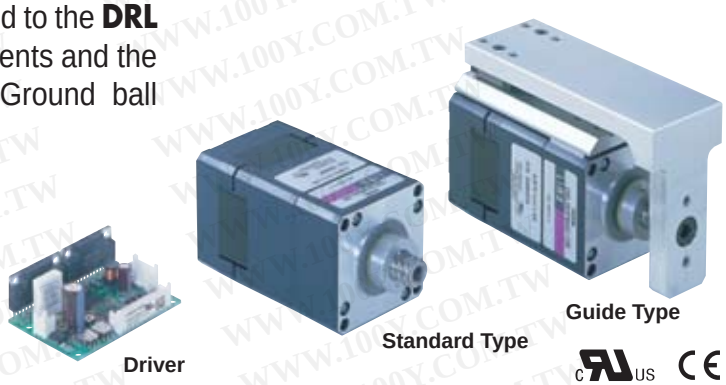
Oriental Motor celebrates 120 years of history

Compact Linear Actuators

DRL Series

New Ground Ball Screw For 60mm Frame Size

New 60mm frame size ground ball screw type is added to the **DRL** series of actuator, which houses the rotating components and the linear motion mechanism of the stepping motor. Ground ball screw type is now available for all frame sizes.

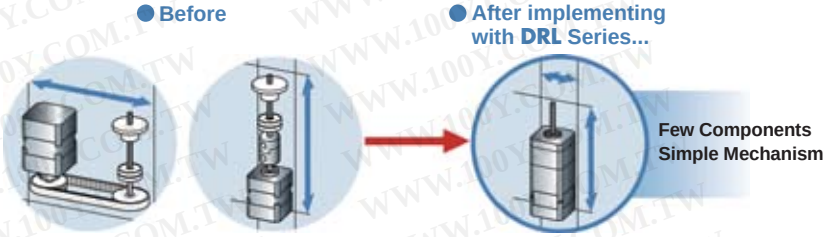


Improved Repetitive Positioning Accuracy

To meet the users' requirements for higher positioning accuracy, the repetitive positioning accuracy of all ground ball screw models has been improved from ±0.01mm to **±0.005mm**.

Few Components, Simple Mechanism

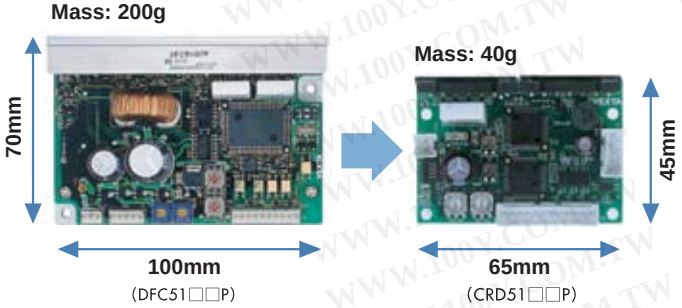
The compact design of the **DRL** actuator allows for the elimination of the need to design, acquire and assemble the parts necessary to convert rotary to linear motion. The **DRL** actuator is a self-contained package consisting of a stepping motor with a hollow shaft rotor connected to a ball screw nut. Rotation of the nut initiates movement of the actual ball screw.



Compact, Lightweight Microstep Driver (CRD51□□P)

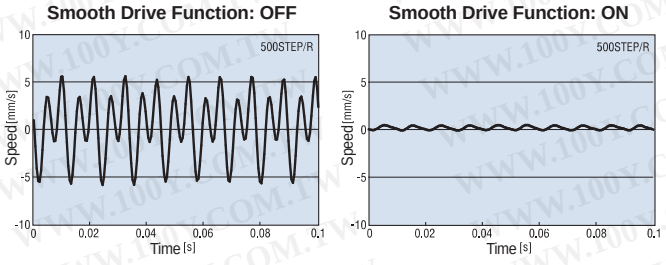
Feature 1 The compact, lightweight driver implements microstep drive

＜Comparison of Driver Size and Weight＞



Feature 2 Smooth Drive Function
Effective in meeting low vibration/low-noise operation needs at low speeds

＜Comparison of Speed Fluctuation＞



※Smooth Drive Function automatically controls the motor's microstep drive operation at the same travel and speed in the full-step mode, without the operator having to change the pulse input settings.

A Wide Variety of Products

		DRL20						DRL28						DRL42						DRL60					
Frame Size		□20mm						□28mm						□42mm						□60mm					
Maximum Thrust Force		15N						30N						100N						300N					
Actuator Type		Standard Type			Guide Type			Standard Type			Guide Type			Standard Type			Guide Type			Standard Type			Guide Type		
Additional Function		None	With Electro-magnetic Brake	With Adjusting Knob	None	With Electro-magnetic Brake	With Adjusting Knob	None	With Electro-magnetic Brake	With Adjusting Knob	None	With Electro-magnetic Brake	With Adjusting Knob	None	With Electro-magnetic Brake	With Adjusting Knob	None	With Electro-magnetic Brake	With Adjusting Knob	None	With Electro-magnetic Brake	With Adjusting Knob	None	With Electro-magnetic Brake	With Adjusting Knob
Screw Type	Ground Ball Screw	●	—	●	●	—	●	●	—	●	●	—	●	●	●	●	●	●	●	NEW	NEW	NEW	NEW	NEW	NEW
	Rolled Ball Screw	—	—	—	—	—	—	●	—	●	●	—	●	●	●	●	●	●	●	●	●	●	●	●	●

Programmable Motion Controller

EMP 400 Series

Single Axis

Dual Axis

Combining innovations from Oriental Motor's expertise as a motor manufacturer to offer a full-scale oscillation function, a sequence function for programming a series of operations, and an I/O control function.

Pulse Oscillation + **Sequence Function** + **I/O Control**

Various operation patterns are provided standard from positioning and origin return to two-axis linear interpolation. All you need is to set the necessary parameters.

A series of operation patterns can be programmed using dedicated commands. An ideal function for distributed system control.

General-purpose I/O signals are provided in addition to dedicated I/Os such as pulse output and limit-sensor input. Synchronization with peripherals is also possible.

Allowing the Input of 32 Sequence Programs

The **EMP 400** Series can store 32 different operation programs. You can select and execute a desired program or programs using an external input signal. For example, you can create a dedicated sequence program for each work for selection/execution as necessary.

In addition to the 32 programs, you can input one sequence program that runs automatically when the power is turned on.
A maximum of 1,000 steps can be stored when all sequence programs are combined together.

Teaching Function

You can adjust the travel amount or monitor the current position via teaching, using an optional **OP300** operational unit.

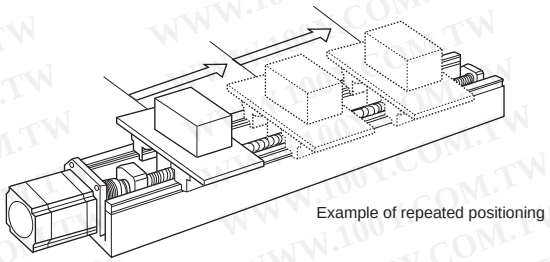
No Need for Dedicated Software

Sequence programs are input from HyperTerminal, a standard Windows application, so no dedicated software is necessary.

Various Operation Patterns

Repeated positioning

Simple movements like "repeating positioning operation for a specified number of times and then return to the home at the end" can be implemented effortlessly.



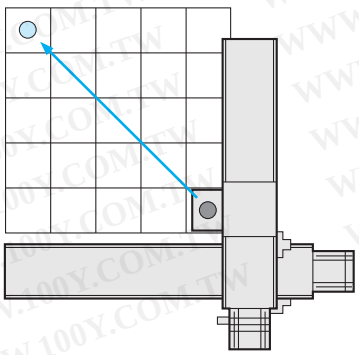
Example of repeated positioning

Stopping via sensor input

You can start an operation from a desired position using a general purpose input and cause the motor to decelerate to a stop upon sensor detection.

Linear interpolation between two axes

Positioning operations involving two axes can be performed simultaneously via linear interpolation.



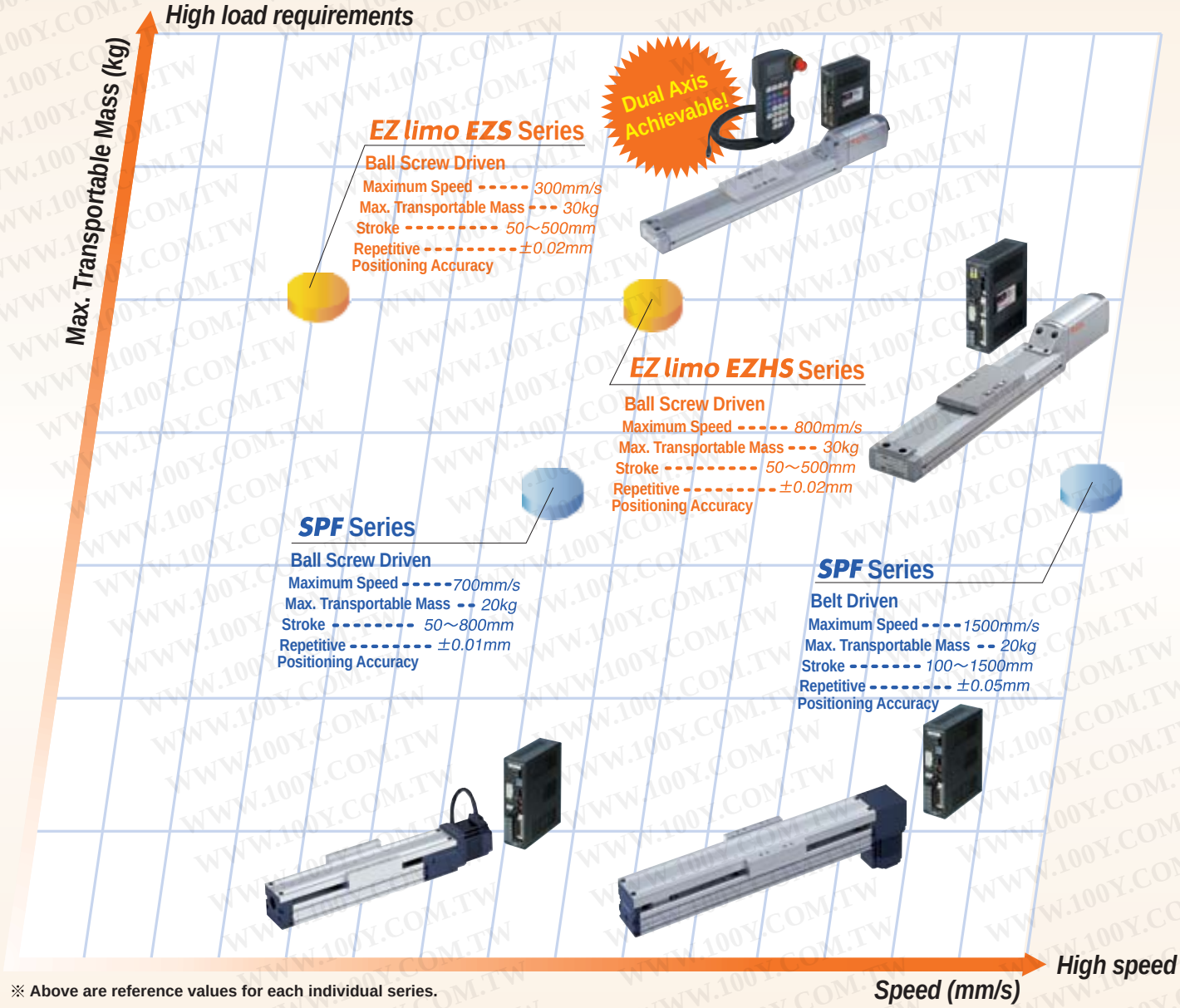
Continuous operation at variable speeds

You can change the speed to desired levels during continuous operation.

Wide range of products To satisfy customers' various requirements

Customers can based on application requirements to select the most suitable products from Oriental Motor's wide variety of linear and rotary actuators

MOTORIZED LINEAR SLIDES

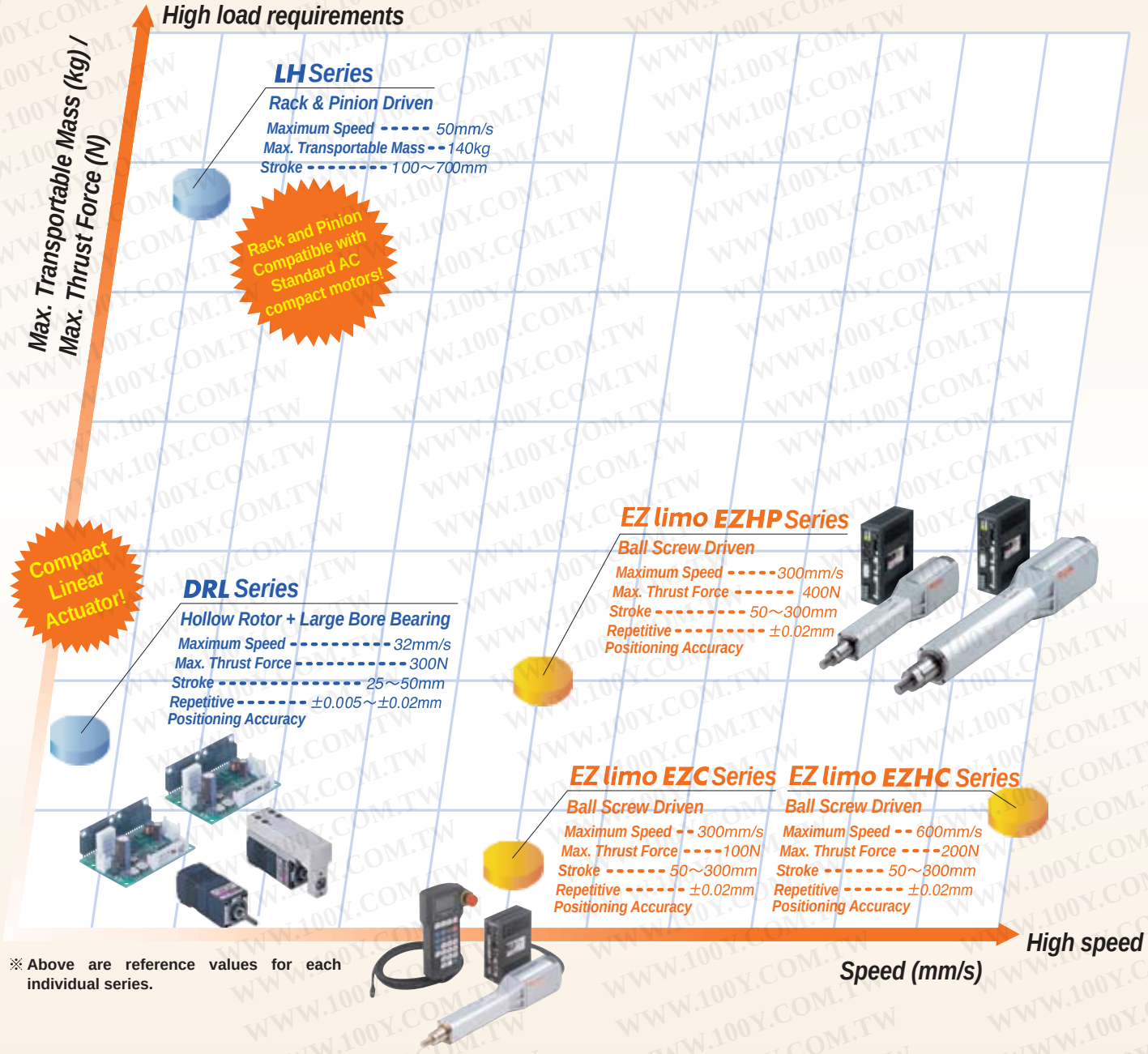


※ Above are reference values for each individual series.

Other types of actuators are also available

※ Below are reference values for each individual series.

MOTORIZED CYLINDERS



※ Above are reference values for each individual series.

Ms.Ori (Manager)

Does "overrun" differ by the types of motors?

Mr.Vex (2nd Year in OM)

Ms. Ori! I know this is very fundamental but I need to ask you about the "overrun" of motors.

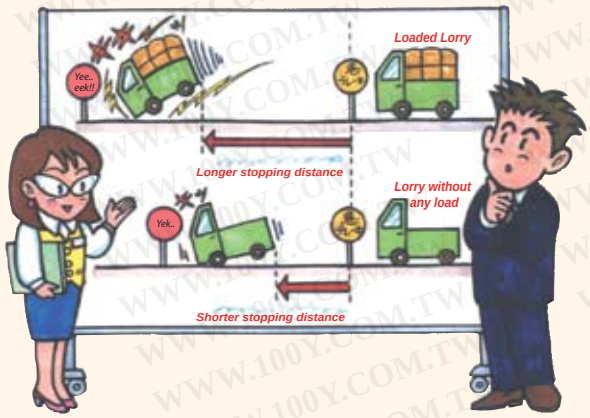
What is it, Vex?

Well, "overrun" refers to number of excess rotations the motor makes from the instant the power is cut off to the time that it actually stops. It is normally indicated either by an angle or by revolutions, am I correct?

That's right. The larger the load inertia moment, the larger the overrun.

Oh? The load moment of inertia is related?

Yes. For instance, when 2 lorries running at the same speed were to stop suddenly, the loaded lorry would need longer distance to come to a complete stop incomparison to the other lorry without any load. For the same theory, overrun of the motor with larger load inertia moment becomes larger.



I see! So generally, what is the motor's overrun?

It differs by motor types too. The overrun of the induction motor without load moment of inertia would be about 30~40 revolutions.

Overrun varies by the motor type?

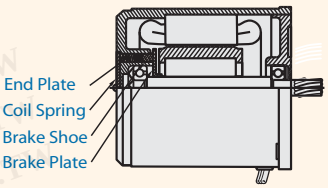
Yes. Reversible motor has approximately 5~6 revolutions of the overrun.

Why does the reversible motor has smaller overrun than the induction motor?

Because the reversible motor has a built-in simple brake system, which enhances instant switching of rotating direction. That's why it has smaller overrun compared to the induction motor.

OK. By the way, what kind of brake is the simple brake system?

It has brake shoe that will pressed onto a brake plate, which is fixed on the rotor.



Hmm...so the overrun is reduced to the simple brake system! Then what happens to overrun when gearhead is used?

That's a good question! The actual overrun is reflected from the number of motor shaft rotations. Therefore the overrun of output shaft when gearhead is used is "1/ratio of gearhead".

So if gearhead with reduction ratio of 1:3 is used in the induction motor, its gearhead output shaft overrun will be about 10~13 revolutions?

Exactly. The larger gearhead reduction ratio, the smaller the overrun. But since its rotation speed would be reduced to "1/ratio of gearhead", operation speed would be slower too. In other words, production volume would be reduced. This is the important fact, which customer needs to consider very carefully. If the speed is preferred to be the same and to achieve smaller overrun, the electromagnetic brake motor or brake pack should be used.

Oh, yes! You've taught me that before! The electromagnetic brake motor that can achieve holding torque or brake-pack to instantly stop the rotation by inducing braking current.

That's it. Overrun of the motor with electromagnetic brake is about 2~3 revolutions, and the brake-pack is about 1~1.5 revolutions.

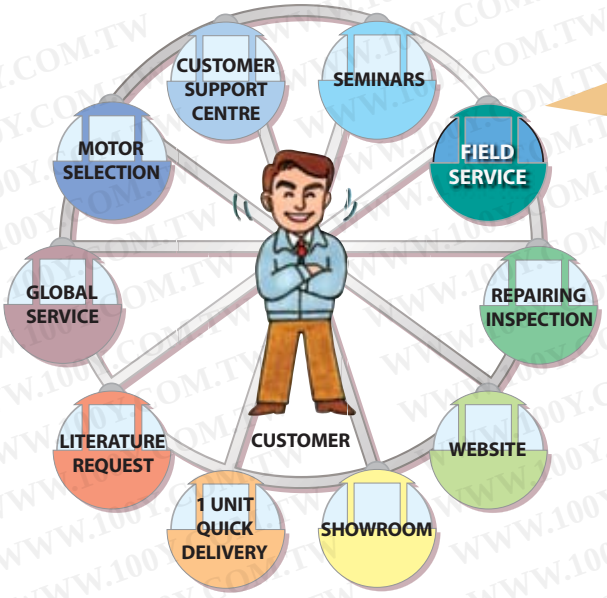
Yes, now I remember. I didn't know overrun varies so much by motor types.

That's why motor should be chosen considering the usage purpose. Remember, it is very important to find out the usage conditions to recommend suitable motors for our customers.

Definitely! Thank you, Ms. Ori!

List of Overrun by Motor Type (Reference Value)

	Induction Motor	Reversible Motor	Motor with Electromagnetic Brake	Combined with Brake Pack
Motor at no load condition	Approx. 30~40 rev.	Approx. 5~6 rev.	Approx. 2~3 rev.	Approx. 1~1.5rev.
With gear head with reduction ratio of 1:3	Approx. 10~13 rev.	Approx. 1.7~2 rev.	Approx. 0.7~1 rev.	Approx. 0.3~0.5 rev.



FIELD SERVICE

When using an Oriental Motor product, if any problem or technical enquiry should arise, such as connection method, operation check, product selection, etc. that cannot be solved over the telephone, we will dispatch service personnel to assist you on-site.

CUSTOMER SUPPORT CENTRE

Please feel free to call for assistance on any technical inquires

Toll-Free Hotline

1800 842-0280 (Singapore)

1800 80-6161 (Malaysia)

ORIENTAL MOTOR CELEBRATES 120 YEARS OF HISTORY

INFORMATION

1885 The Founder Yasutaro Kuraishi started to manufacture and sell electrical appliances in Nihonbashi, Tokyo.

1909 Success in prototyping 1/8 horsepower single-phase commutator motors.

1922 Development of A2 type 1/6 horsepower commutator motors.

1940 Development of single-phase 1/30 horsepower synchronous motors.

1950 Establishment of "Toyo-Dendoki Co., Ltd. in Kojima-cho, Taito-ku.

1951 Development of synchronous motors with 5W output.

1953 Company name changed to "Oriental Motor Co., Ltd."

1962 Toyoshiki Plant (current R&D Center: Kashiwa-City. Chiba.) started its operation.

1966 Development of "**K** series", our long-selling compact AC standard motors.

1967 Headquarter moved to Kashiwa-City in Chiba.

1969 Takamatsu plant started its operation.

1971 Development of brake packages as the first motor controlling circuits.

1974 Development of speed control motors/speed control circuit. Tsuruoka plant and Tsuchiura plant started their operation.

1976 Development of stepping motors.

1978 Establishment of an overseas office in U.S.A.

1981 Establishment of an overseas office in Taiwan. Development of 5-phase stepping motors/control circuit.

1982 Establishment of an overseas office in Germany. Establishment of overseas production in Singapore.

1983 Development of brushless DC fans.

1984 Development of AC servo motors/control circuit.

1985 Development of **UPD** series that combines a 5-phase stepping motor and control circuit. Tsuruoka-Higasi plant started its operation.

1986 Oriental Motor Co.,Ltd, and Oriental Motor Sales Co.,Ltd. merged to establish the integrated system of manufacturing and sales.

1987 Release of new **K** series that made overall improvement on the **K** series.

1988 Headquarters moved to Ueno in Tokyo. Establishment of R&D center in Kashiwa-City, Chiba and Kashiwa plant started its operation.

1989 Establishment of an amalgamated company (INA OM) in Korea.

1990 Development of anti-dust/water-proof motors.

1991 Development of motorized cylinders, motorized sliders, and dedicated controllers.

1992 Release of **UPK** series that combines a high-torque 5-phase stepping motor and control circuit.

1995 Tsuruoka-Nishi plant started its operation. Establishment of an overseas office in Singapore.

1996 Soma plant started its operation. Establishment of an overseas office in U.K. Establishment of an overseas office in Italy. Establishment of an overseas office in Korea.

1997 Establishment of an overseas office in France.

1998 Development of αSTEP new generation stepping motor units. Release of **WK** series, small AC standard motors compliant with safety standards and compatible with global voltage.

1999 Development of **AXU** series products, compact high power DC brushless motors. Release of cooling modules.

2000 Release of **RK** series, stepping motors with the latest motor drive technologies. Establishment of an overseas office in KL, Malaysia.

2001 Release of V series that adopts 'BOS' noise-reducing technology. Development of EZ limo, new motorized sliders and cylinders.

2002 Release of **PK** series standard **P** type, stepping motors that achieve higher torque.

2003 Release of AC motors that have China Compulsory Certification(CCC system). Establishment of Hong Kong branch office.

2004 Establishment of Takamatsu Oriental Motor Co.,Ltd. Establishment of an overseas office in Shanghai.

2005 Release of **CRK** series, 5-phase stepping motor and driver package. Establishment of an overseas office in Thailand. Establishment of an overseas office in Penang, Malaysia.

ORIENTAL MOTOR

SALES NETWORK

Oriental Motor Provides You With Full Support

SINGAPORE ORIENTAL MOTOR PTE. LTD.
2 Kaki Bukit Avenue 1, #01-04/07
Singapore 417938

TEL: +65-6745-7344
FAX: +65-6745-9405

Customer Support Centre
Hotline: 1800 8420280

Email
sales@orientalmotor.com.sg

Website
http://www.orientalmotor.com.sg

ORIENTAL MOTOR (MALAYSIA) SDN. BHD.
Kuala Lumpur Headquarter Office
Suite 8.01A, Level 8, Menara Amcorp,
AMCORP Trade Centre, No.18 Jalan Persiaran Barat,
46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia

TEL: +60-3-7954 5778
FAX: +60-3-7954 1528

Penang Office
1-4-14 Lebuh Bukit Kecil 6
Bayan Lepas, 11900 Penang, Malaysia

TEL: +60-4-642 3788
FAX: +60-4-642 5788

Customer Support Centre
Hotline: 1800 806161

Email
sales@orientalmotor.com.my

Website
http://www.orientalmotor.com.my

ORIENTAL MOTOR (THAILAND) CO., LTD.
#1003 NBC, 10th Floor Nantawan Building
161 Ratchadamri Road
Bangkok 10330 Thailand

TEL: +66-2-254-6113
FAX: +66-2-254-6114

Email
sales@orientalmotor.co.th

Website
http://www.orientalmotor.com.sg/th/