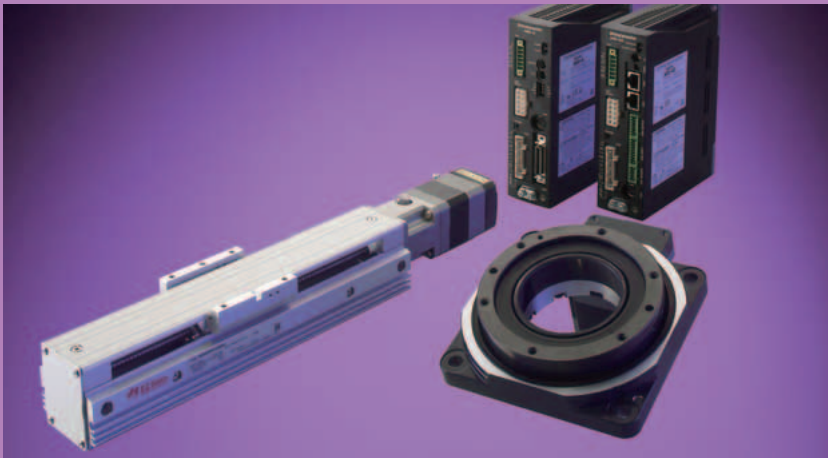




Linear & Rotary Actuators



Overview and Product Series of Linear & Rotary Actuators	E-2
Electric Linear Slide	E-15
EAS Series α_{STEP} AR Equipped	E-16
Electric Cylinders	E-53
EAC Series α_{STEP} AR Equipped	E-56
DRLII Series	E-108
Hollow Rotary Actuators	E-117
DGII Series α_{STEP} AR Equipped	E-118
Accessories	E-139

Overview,
Product
Series

Electric
Linear
Slides

α_{STEP} AR
EAS

Electric
Cylinders

α_{STEP} AR
EAC

DRLII

Hollow
Rotary
Actuators

α_{STEP} AR
DGII

Accessories

Overview of Linear & Rotary Actuators

Motors offer excellent controllability and are therefore used as the drive source of various automated equipment. In many cases, a motor is combined with various mechanical components, such as a ball screw, belt-and-pulley, and rack-and-pinion, to convert the motor rotation to a different type of motion needed to drive the equipment. Oriental Motor has various linear & rotary actuators consisting of a motor assembled with the necessary mechanical components, to meet the various needs of automated devices.

Features

Equipped with a motor that provides excellent controllability, the linear & rotary actuators offer the following advantages over hydraulic and pneumatic actuators.

- The actuator is very stable when operated, even at low speeds. It also offers smooth acceleration and deceleration operation.
- Operations can be programmed with multiple stopping points.
- With a linear & rotary actuator that uses a stepper motor and servo motor, position and speed regulation can be performed easily using data. Setup change is also simple, as all that needs to be done is changing the data.

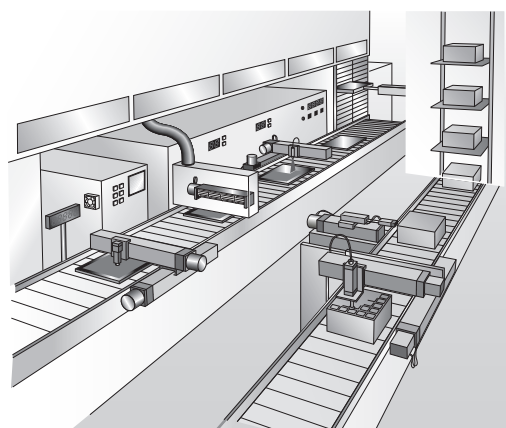
Advantages of Using Linear & Rotary Actuators

When automated equipment is designed, various factors must be taken into consideration including the production line layout, installation environment, ease of maintenance, configuration of electrical wiring and control system, and so on.

This means many man-hours are needed to select the motor and other mechanical components and to create a parts list, drawings, operating manuals, and so forth.

Oriental Motor offers various linear & rotary actuators to help improve the productivity of design work.

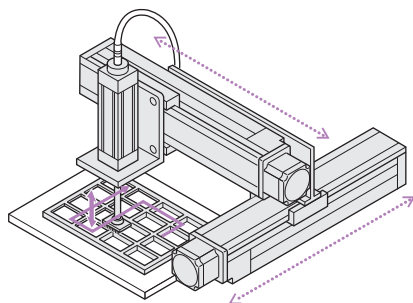
Use of linear & rotary actuators offers the benefits explained below.



Example of Production Line

◇ Higher Design Efficiency

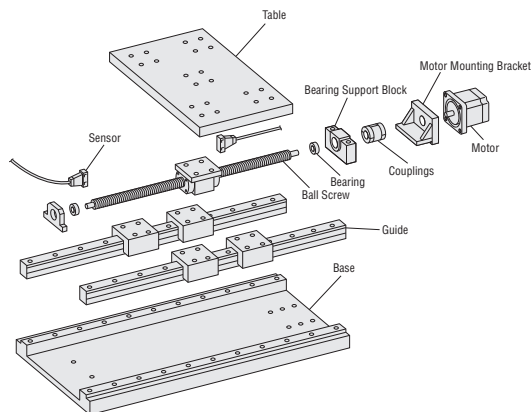
The primary feature of automated equipment is their ability to implement a series of basic operations such as "transfer", "push" and "rotate". In other words, automated equipment can be designed by selecting and combining linear & rotary actuators capable of performing these basic operations. The time and effort involved in designing automated equipment can be reduced.



Mechanism Example of Automated Equipment

◇ Shorter Production Time and Higher Quality

When building equipment in-house by assembling a motor and mechanical components, the quality of assembly affects the traveling resistance and position accuracy. Therefore, adjustments will be needed. In comparison, Oriental Motor linear & rotary actuators are guaranteed to provide the specified operating performance. Using them reduces adjustment work and ensures uniform quality.



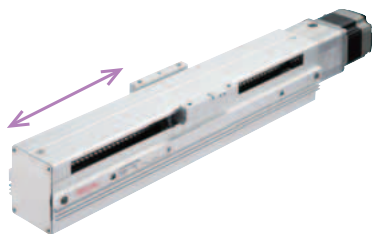
Example of Building Equipment In-House

Types of Linear & Rotary Actuators

Electric Linear Slides

◇ EAS Series

The motor is combined with a linear motion mechanism. This is an ideal actuator for transferring loads.



Electric Cylinders

◇ EAC Series

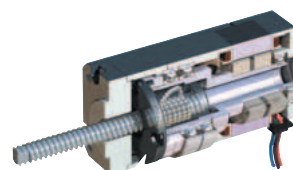
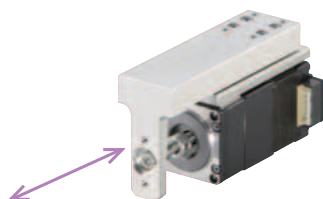
The motor is combined with a linear motion mechanism. This is an ideal actuator for pushing and pulling loads.



◇ Compact Linear Actuator

DRLII Series

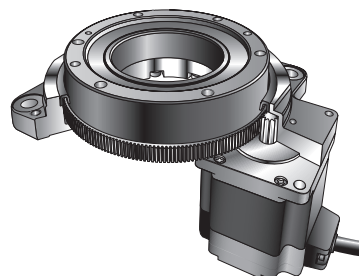
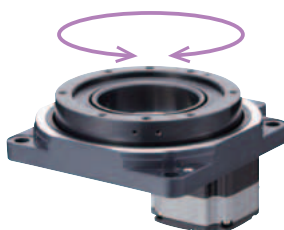
This product features a stepper motor integrated with a ball screw. This is an ideal actuator for pushing and pulling small loads or fine-tuning applications.



Hollow Rotary Actuators

◇ DGII Series

The motor is combined with a rotating table mechanism. This is an ideal actuator for index drive applications.



Overview,
Product
Series

Electric
Linear
Slides

alphaSTEP AR
EAS

Electric
Cylinders

alphaSTEP AR
EAC

DRLII

Hollow
Rotary
Actuators

alphaSTEP AR
DGII

Accessories

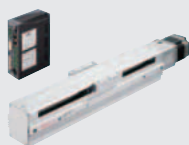
Types and Applications of Linear & Rotary Actuators

As components of automated equipment, linear & rotary actuators are used in many different ways. From the viewpoint of "motion," these uses are classified as follows.

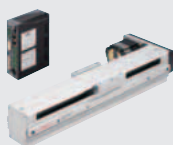
A broad selection of linear & rotary actuators designed for different "motions" is available. Select the actuator that best suits the required specifications (transportable speed, transportable mass, resolution, accuracy), functions, system configurations and other applicable conditions.

Transport

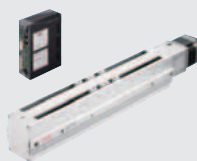
Electric Linear Slides



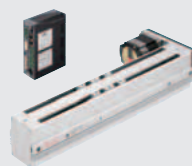
EAS Series
Straight Type
X-Table



EAS Series
Reversed Motor Type
X-Table



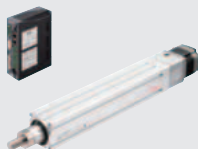
EAS Series
Straight Type
Y-Table



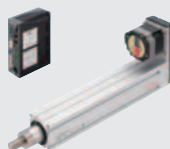
EAS Series
Reversed Motor Type
Y-Table

Push

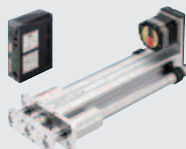
Electric Cylinders



EAC Series
Straight Type



EAC Series
Reversed Motor Type



EAC Series
Reversed Motor Type
with Shaft Guide Cover

Compact Linear Actuators



DRLII Series
Type with a Guide



DRLII Series
Type without a Guide

Rotate

Hollow Rotary Actuators



DGII Series
Single Shaft



DGII Series
with Electromagnetic Brake



Overview,
Product
Series

Electric
Linear
Slides

α STEP AR
EAS

Electric
Cylinders

α STEP AR
EAC

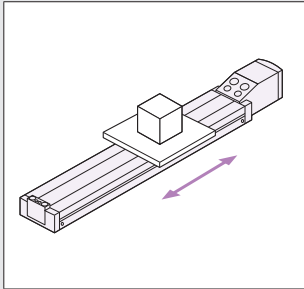
DRLII

Hollow
Rotary
Actuators

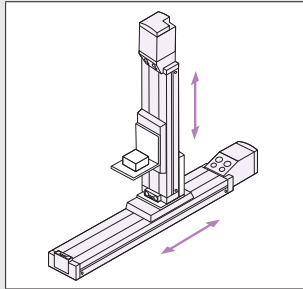
α STEP AR
DGII

Accessories

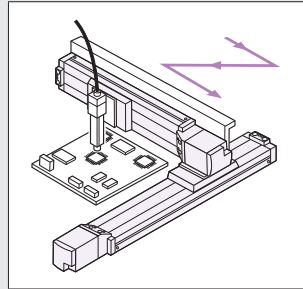
Transferring loads



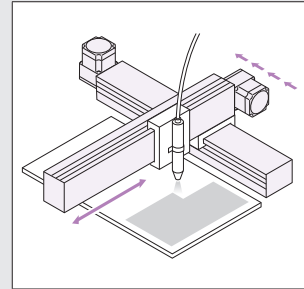
Transferring loads (vertical)



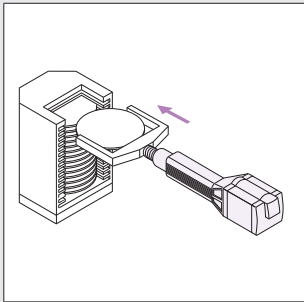
Moving a CCD camera



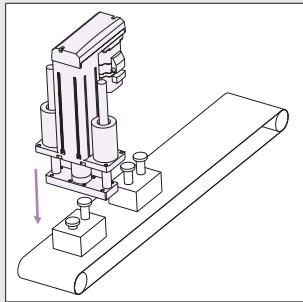
Transferring a spray gun



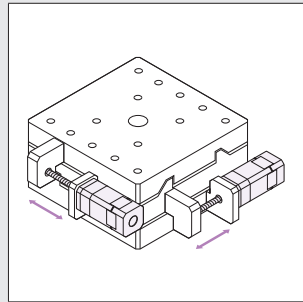
Storing loads



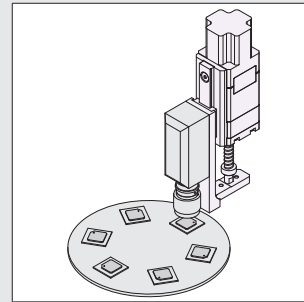
Press fitting of parts



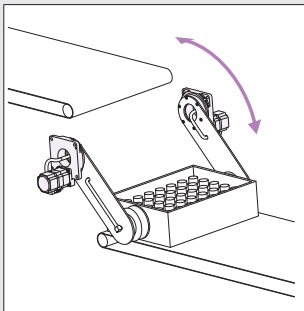
Driving mechanism for
micrometer head X-Y stage



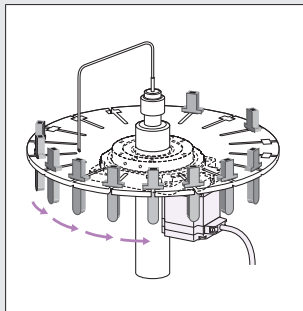
Camera focus drive



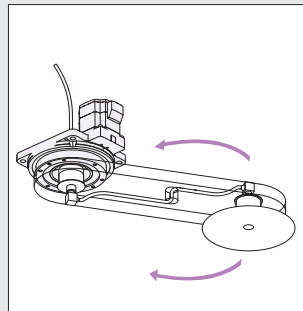
Packet transportation



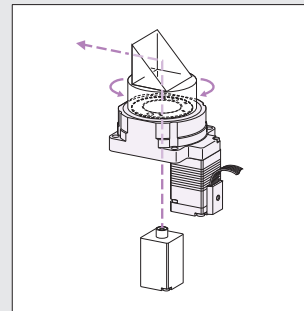
Positioning a table





Transferring by arm



Adjusting an optical axis



Selection of Electric Linear Slides

Series Name Type Name	Product Width × Height Mass	Power Supply Voltage	Lead Screw Pitch [mm]	Stroke [mm]						Maximum Speed [mm/s]			
				100	200	300	400	500	600	200	400	600	800
EAS Series Straight Type 	EAS4 58.4 × 60 mm 1.8~4.0 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~500						800			
			6	50~500						400			
		24 VDC	12	50~500						600			
			6	50~500						300			
	EAS6 75.4 × 83 mm 4.0~8.7 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~500						800			
			6	50~500						400			
		24 VDC	12	50~500						600			
			6	50~500						300			
EAS Series Reversed Motor Type 	EAS4R EAS4L 58.4 × 60 mm 1.8~4.0 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~500						800			
			6	50~500						400			
		24 VDC	12	50~500						600			
			6	50~500						300			
	EAS6R EAS6L 75.4 × 83 mm 4.0~8.7 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~500						800			
			6	50~500						400			
		24 VDC	12	50~500						600			
			6	50~500						300			

*1 Pulse input type is single-phase 100-115 VAC *2 Pulse input type is single-phase 200-230 VAC *3 Pulse input type only

	Upper: Dynamic Permissible Moment [N·m] Lower: Static Permissible Moment [N·m]			Horizontal Transportable Mass [kg]						Vertical Transportable Mass [kg]			Repetitive Positioning Accuracy [mm]	List Price	Reference Page
	M _p	M _v	M _R	10	20	30	40	50	60	10	20	30			
				[Bar chart showing mass capacity]						[Bar chart showing mass capacity]					
	16.3 58.3	4.8 16.0	15.0 53.3	15 [Bar chart]						7 [Bar chart]			±0.02	\$1,313.00~	E-30
				30 [Bar chart]						14 [Bar chart]					
	15 [Bar chart]						7 [Bar chart]			\$1,039.00~	E-32				
	30 [Bar chart]						14 [Bar chart]								
	31.8 86.0	10.3 34.0	40.6 110.0	30 [Bar chart]						15 [Bar chart]			±0.02	\$1,596.00~	E-34
				60 [Bar chart]						30 [Bar chart]					
				30 [Bar chart]						15 [Bar chart]				\$1,322.00~	E-35
				60 [Bar chart]						30 [Bar chart]					
	16.3 58.3	4.8 16.0	15.0 53.3	15 [Bar chart]						7 [Bar chart]			±0.02	\$1,313.00~	E-31
				30 [Bar chart]						12.5 [Bar chart]					
				15 [Bar chart]						7 [Bar chart]				\$1,039.00~	E-33
				30 [Bar chart]						12.5 [Bar chart]					
	31.8 86.0	10.3 34.0	40.6 110.0	30 [Bar chart]						15 [Bar chart]			±0.02	\$1,596.00~	E-34
				60 [Bar chart]						30 [Bar chart]					
				30 [Bar chart]						15 [Bar chart]				\$1,322.00~	E-35
				60 [Bar chart]						30 [Bar chart]					

Overview, Product Series

Electric Linear Slides

αSTEP AR EAS

Electric Cylinders

αSTEP AR EAC





DRLII

Hollow Rotary Actuators

αSTEP AR DGII

Accessories

Selection of Electric Cylinders

Series Name Type Name	Product Frame Size Mass	Power Supply Voltage	Lead Screw Pitch [mm]	Stroke [mm]			Maximum Speed [mm/s]						Thrust [N]	
				100	200	300	100	200	300	400	500	600		
EAC Series Straight Type 	EAC4 42 × 42 mm 1.1~2.1 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~300	600								~70	
			6	50~300	300							~140		
		24 VDC		12	50~300	600							~70	
		24 VDC		6	50~300	300							~140	
		EAC6 60 × 60 mm 2.6~4.8 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~300	600							~200	
				6	50~300	300							~400	
	24 VDC		12	50~300	600						~200			
	24 VDC		6	50~300	300						~400			
	EAC Series Straight Type with Shaft Guide Cover 		EAC4W 42 × 114 mm 1.8~3.5 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~300	600							~70
					6	50~300	300							~140
		24 VDC		12	50~300	600						~70		
		24 VDC		6	50~300	300						~140		
EAC6W 60 × 156 mm 4.1~7.5 kg		Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3		12	50~300	600							~200	
				6	50~300	300							~400	
		24 VDC		12	50~300	600						~200		
		24 VDC		6	50~300	300						~400		
		EAC Series Reversed Motor Type 	EAC4R 42 × 42 mm 1.1~2.1 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~300	600							~70
					6	50~300	300							~125
24 VDC				12	50~300	600						~70		
24 VDC				6	50~300	300						~125		
EAC6R 60 × 60 mm 2.6~4.8 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3			12	50~300	600							~200	
				6	50~300	300							~360	
	24 VDC		12	50~300	600						~200			
	24 VDC		6	50~300	300						~360			
	EAC Series Reversed Motor Type with Shaft Guide Cover 		EAC4RW 42 × 114 mm 1.8~3.5 kg	Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3	12	50~300	600							~70
					6	50~300	300							~125
24 VDC				12	50~300	600						~70		
24 VDC				6	50~300	300						~125		
EAC6RW 60 × 156 mm 4.1~7.5 kg		Single-Phase 100-120 VAC*1 Single-Phase 200-240 VAC*2 Three-Phase 200-230 VAC*3		12	50~300	600							~200	
				6	50~300	300							~360	
		24 VDC		12	50~300	600						~200		
		24 VDC		6	50~300	300						~360		

*1 Pulse input type is single-phase 100-115 VAC *2 Pulse input type is single-phase 200-230 VAC *3 Pulse input type only

	Push Force [N]	Horizontal Transportable Mass [kg]							Vertical Transportable Mass [kg]			Repetitive Positioning Accuracy [mm]	List Price	Reference Page
		10	20	30	40	50	60	70	10	20	30			
	100	15							7			±0.02	\$1,141.00~	E-68
	200	30							14					
	100	15							7			±0.02	\$864.00~	E-70
	200	30							14					
	400	30							15			±0.02	\$1,246.00~	E-72
	500	60							30					
	400	30							15			±0.02	\$969.00~	E-74
	500	60							30					
	100	15							6			±0.02	\$1,474.00~	E-76
	200	30							13					
	100	15							6			±0.02	\$1,197.00~	E-78
	200	30							13					
	400	30							13			±0.02	\$1,631.00~	E-80
	500	60							28					
	400	30							13			±0.02	\$1,354.00~	E-82
	500	60							28					
	100	15							7			±0.02	\$1,141.00~	E-69
	200	30							12.5					
	100	15							7			±0.02	\$864.00~	E-71
	200	30							12.5					
	400	30							15			±0.02	\$1,246.00~	E-73
	500	60							30					
	400	30							15			±0.02	\$969.00~	E-75
	500	60							30					
	100	15							6			±0.02	\$1,474.00~	E-77
	200	30							11.5					
	100	15							6			±0.02	\$1,197.00~	E-79
	200	30							11.5					
	400	30							13			±0.02	\$1,631.00~	E-81
	500	60							28					
	400	30							13			±0.02	\$1,354.00~	E-83
	500	60							28					

Overview, Product Series

Electric Linear Slides

αSTEP AR EAS

Electric Cylinders

αSTEP AR EAC



DRLII

Hollow Rotary Actuators

αSTEP AR DGI

Accessories

Selection of Electric Cylinders

Series Name Type Name	Frame Size [mm (in.)]	Ball Screw Type	Accuracy		Lead Screw Pitch [mm (in.)]	Stroke [mm (in.)]		
			Repetitive Positioning Accuracy [mm (in.)]	Lost motion [mm (in.)]				
DRLII Series Type with a Guide 	□20 (0.79)	Ground	± 0.003 (0.00012) [± 0.01 (0.039)]*	0.02 (0.00079)	1 (0.039)	25 (0.98)		
	□28 (1.10)	Rolled	± 0.01 (0.039)	0.05 (0.002)	1 (0.039)	30 (1.18)		
		Ground	± 0.003 (0.00012) [± 0.01 (0.039)]*	0.02 (0.00079)				
	□42 (1.65)	Rolled	± 0.01 (0.039)	0.05 (0.002)	2 (0.079)	40 (1.57)		
		Ground	± 0.003 (0.00012) [± 0.01 (0.039)]*	0.02 (0.00079)				
		Rolled	± 0.01 (0.039)	0.05 (0.002)	8 (0.31)	40 (1.57)		
	□60 (2.36)	Rolled	± 0.01 (0.039)	0.05 (0.002)	4 (0.157)	50 (1.97)		
		Ground	± 0.003 (0.00012) [± 0.01 (0.039)]*	0.02 (0.00079)				
	DRLII Series Type without a Guide 	□20 (0.79)	Ground	± 0.003 (0.00012)	0.02 (0.00079)	1 (0.039)	25 (0.98)	
		□28 (1.10)	Rolled	± 0.01 (0.039)	0.05 (0.002)	1 (0.039)	30 (1.18)	
Ground			± 0.003 (0.00012)	0.02 (0.00079)				
□42 (1.65)		Rolled	± 0.01 (0.039)	0.05 (0.002)	2 (0.079)	40 (1.57)		
		Ground	± 0.003 (0.00012)	0.02 (0.00079)				
		Rolled	± 0.01 (0.039)	0.05 (0.002)	8 (0.31)	40 (1.57)		
□60 (2.36)		Rolled	± 0.01 (0.039)	0.05 (0.002)	4 (0.157)	50 (1.97)		
		Ground	± 0.003 (0.00012)	0.02 (0.00079)				

*Specifications will vary according to conditions. For details, check the specifications for each product.

	Speed [mm/s (in./s)]					Thrust [N (lb.)]			Transportable Mass [Kg (lb.)]		Dynamic Permissible Moment [N·m (oz-in)]			List Price	Reference Page
	10	20	30	40	120	50	100	300	Horizontal	Vertical	M _p	M _r	M _R		
	20 (0.79)					15 (3.35)			0.5 (1.1)	1 (2.2)	0.1 (14.2)	0.05 (7.0)	0.15 (21.2)	\$1,442.00~	E-108
	40 (1.57)*					30 (6.7)			1 (2.2)	1.5 (3.3)	0.13 (18.4)	0.07 (9.91)	0.3 (42)	\$927.00~ \$1,335.00~	E-108
	30 (1.18)*					100 (22)			2 (4.4)	5 (11)	0.5 (70)	0.25 (35)	0.8 (113)	\$830.00~ \$1,274.00~	E-108
	120 (4.72)					30 (6.7)			2 (4.4)	3 (6.6)					
	40 (1.57)*					300 (67)			3 (6.6)	15 (33)	0.6 (85)	0.35 (49)	2.2 (311)	\$988.00~ \$1,408.00~	E-108
	20 (0.79)					15 (3.35)			—	1.5 (3.3)	—	—	—	\$1,247.00~	E-108
	40 (1.57)*					30 (6.7)			—	3 (6.6)	—	—	—	\$757.00~ \$1,164.00~	E-108
	30 (1.18)*					100 (22)			—	10 (22)	—	—	—	\$647.00~ \$1,091.00~	E-108
	120 (4.72)					30 (6.7)			—	3 (6.6)					
	40 (1.57)*					300 (67)			—	30 (66)	—	—	—	\$793.00~ \$1,237.00~	E-108

Overview, Product Series

Electric Linear Slides

αSTEP AR EAS

Electric Cylinders

αSTEP AR EAC


DRLII

Hollow Rotary Actuators

αSTEP AR DGII

Accessories

Selection of Hollow Rotary Actuators

Series Name	Product Frame Size	Output Table Supporting Bearing	Electromagnetic Brake	Driver Type	Power Supply Voltage	Diameter of Hollow Section [mm (in.)]	Permissible Torque [N·m (lb·in)]
DGII Series 	DG60 60 mm (2.36 in.)	Deep-Groove Ball Bearing	—	Built-in Controller	24 VDC	φ28 (φ1.10)	0.9 (7.9)
				Pulse Input			
	DG85R 85 mm (3.35 in.)	Cross-Roller Bearing	—	Built-in Controller	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	φ33 (φ1.30)	2.8 (24)
				Pulse Input	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC		
	DG130R 130 mm (5.12 in.)	Cross-Roller Bearing	●	Built-in Controller	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	φ62 (φ2.44)	12 (106)
				Pulse Input	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC		
	DG200R 200 mm (7.87 in.)	Cross-Roller Bearing	●	Built-in Controller	Single-Phase 100-120 VAC Single-Phase 200-240 VAC	φ100 (φ3.94)	50 (440)
				Pulse Input	Single-Phase 100-115 VAC Single-Phase 200-230 VAC Three-Phase 200-230 VAC		

Permissible Moment [N·m (lb-in)]	Permissible Axial Load [N (lb.)]				Lost Motion [arcmin]	Angular Transmission Accuracy [arcmin]	Repetitive Positioning Accuracy [arcsec]	List Price	Reference Page
	20	40	60	80					
2 (17.7)					2	4	±15	\$1,265.00~	E-130
10 (88)					2	4	±15	\$2,183.00~	E-130
50 (440)					2	3	±15	\$2,410.00~	E-130
100 (800)					2	2	±15	\$2,841.00~	E-130

Overview, Product Series

Electric Linear Slides

αSTEP AR EAS

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DRLII





Hollow Rotary Actuators

αSTEP AR DGII

Accessories

Drivers for Linear & Rotary Actuators

EAS Series, EAC Series, DGII Series α STEP AR Equipped

Driver Type	Built-in Controller Type		Pulse Input Type	
Power Supply Input	AC Input	DC Input	AC Input	DC Input
Driver Product Name				
	ARD-AD, ARD-CD	ARD-KD	ARD-A, ARD-C, ARD-S	ARD-K
Reference Page	A-44	A-165	A-44	A-165
Function	Resolution Setting Method	Electronic Gear		Electronic Gear and Function Switch
	Max. Input Pulse Frequency	—		Line Driver Output: Max. 500 kHz Open-Collector Output: Max. 250 kHz
	Number of Positioning Operation Data Sets	64 Points		—
	Push-Motion Return to Home*1	<input type="radio"/>		—
	Sensor-Based Return-to-Home	<input type="radio"/>		—
	Round Function	<input type="radio"/>		—
	Push-Motion Operation*1	<input type="radio"/>		<input type="radio"/>
Absolute Backup System	Dedicated Battery BAT01B (Sold separately)		—	
Setting	Control Module	OPX-2A (Sold separately)		
	Data Setting Software	MEXE02 *2		

*1 Do not use push motion return-to-home or push-motion operation on the **DGII** Series. Doing so may damage the motor or gear unit.

*2 Download the **MEXE02** data setting software (free) from the website and install it on a computer. Connect to the driver using the **CC05IF-USB** dedicated communication cable (sold separately) and perform the settings.