

# CKD Electric actuator and DD motor

**CKD**



# CKD Electric actuator and DD motor lineup

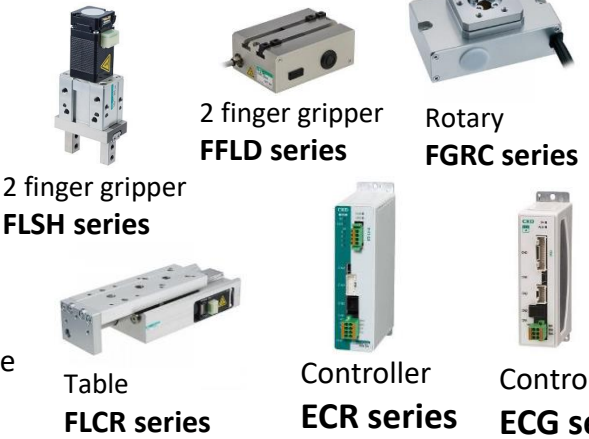


## Succession and evolution, new options and wider possibilities

### Stepper motor drive



Slider **EBS-M/G series** Rod with build-in guide **EBR-M/G series**



2 finger gripper **FFLD series** Rotary **FGRC series**  
2 finger gripper **FLSH series** Table **FLCR series** Controller **ECR series** Controller **ECG series**

### Servo motor drive



**KBX series**

### Motorless



**ETS/EBS/EBR/ETV/ECS/ECV/EKS-L series**



## From assembly inspection equipment To ultra-precision stage

### Direct motor drive



**ABSODEX (AX) series**



**DISC Servo Motor** \*High-end type

### Electric shuttle mover



**ESM series**

## Stepping motor drive, a new product that is compact and highly rigid

Catalog No. CC-1422A

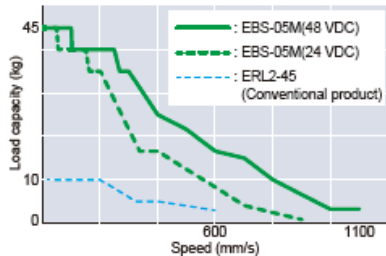
### Slider EBS-M Series

- Ball screw drive, 3 sizes
- Equipped as standard with a battery-less absolute encoder
- Replaceable motor unit
- Motor mounting: 4 directions
- Max. load capacity: 80 kg (horizontal)
- Max. stroke length: 1,100 mm
- Max. speed: 1,100 mm/s



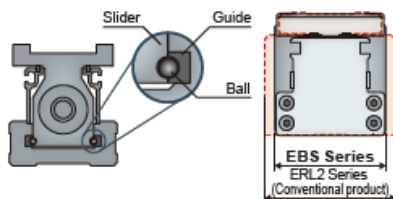
### All new controller Significantly improved basic performance

- Max. load capacity: 45 kg (compared with conventional models 4.5x)
- Max. speed: 1,100 mm/s (1.8x)



### Wide guide that is integrated with the body

Achieves both compactness and high rigidity simultaneously



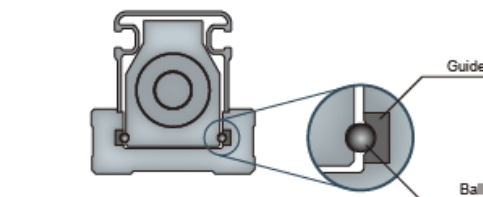
		ERL2-60 (Conventional product)	EBS-05
Body width		64 mm	54 mm
Static allowable moment	MP	25.7 N·m	103 N·m
	MY	25.7 N·m	103 N·m
	MR	58 N·m	144 N·m

### Rod with built-in guide EBR-M Series

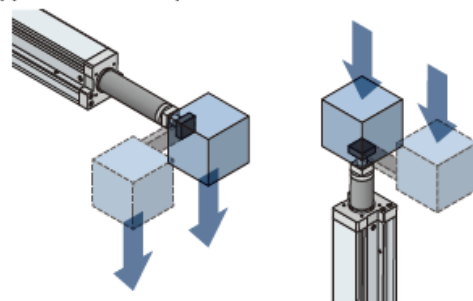
- Ball screw drive, 3 sizes
- Equipped as standard with a battery-less absolute encoder
- Replaceable motor unit
- Motor mounting: 4 directions
- Max. load capacity: 80 kg (horizontal)
- Max. stroke length: 700 mm
- Max. speed: 900 mm/s



### Rod with built-in guide



Supports offset workpieces



## "One controller" connects everything

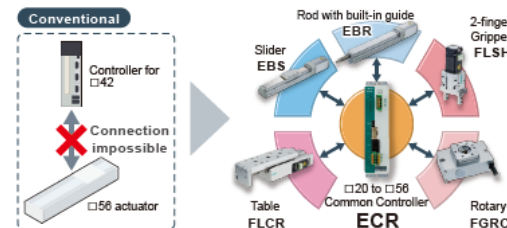
Catalog No. CC-1422A | Catalog No. CC-1444A



### Controller ECR Series

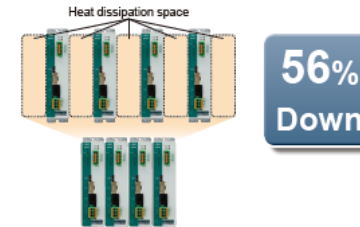
#### Reduced initial work hours and stock

- "One controller" that connects to any actuator
- Equipped with an automatic recognition function that reads actuator information
- With a common controller, work hours for selection and ordering can be reduced as well as inventory



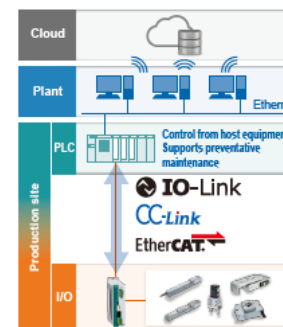
#### Reduced controller footprint

- Compact, allowing adjacent installation
- The optimized design eliminates the need for heat dissipation space at the sides
- This allows controllers to be installed next to one another



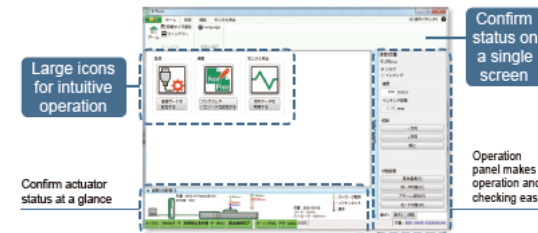
#### Supports IoT

- Our product is compatible with all types of industrial networks
- This allows control from host equipment over Ethernet, and also enables preventative maintenance



#### Reduces adjustment time

- Easy installation with "S-Tools" software (free)
- Actuators with different operations can be set with a single common software program



## Stepping motor drive A new product that is compatible with pneumatic equipment and has the same capacity

Catalog No. CC-1444A



## EBS-M series application



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### Reduce cost and space

Objective: **Reduce initial cost**

Industry: **General Industry**

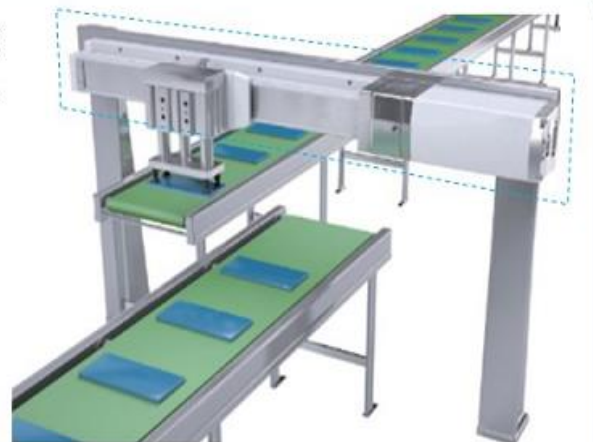
Application: **Conveyance between processes**



Here is an example of space saving & cost reduction solution for pick & place application.

Smooth Y-axis movement is required.

Due to space constraint, smaller electrical actuator is desired.



Product: **Electrical actuator, EBS-M series**

BEFORE

High rigidity is needed, so linear guides are installed



Necessary component :  
Actuator & Linear guide × 2 pcs  
Design/Assembly : Total 60 min

AFTER

With a compact high rigidity actuator, linear guides are not needed



Necessary component: Only actuator  
Design/Assembly: Total 30 min (▲ 50%)  
Others : **Space ▲40%**  
**Reduced procurement cost**

Result :

Applied EBS-M series that could do without the guides

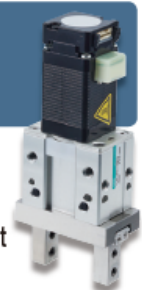
- ◆ Reduced procurement cost, design/assembly time
- ◆ Space saving for the machine



## Stepping motor drive A new product that is compatible with pneumatic equipment and has the same capacity

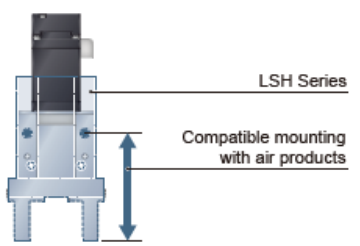
Catalog No. CC-1444A

### 2-finger Gripper FLSH Series

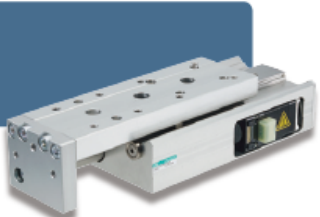


- Sliding screw drive
- 3 sizes
- Manual finger position adjustment
- Self-locking mechanism

Dimensions are compatible with the Air Hand LSH Series



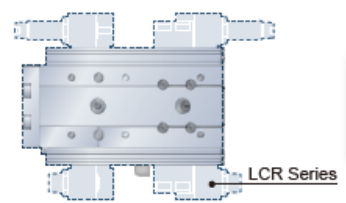
### Table FLCR Series



- Ball screw + belt drive
- 3 sizes
- Built-in motor saves space

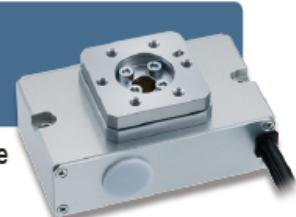
Dimensional compatibility with the Air type LCR Series

No shock absorber required, conserves space



Maintenance parts Reduced

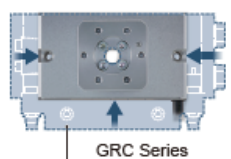
### Rotary FGRC Series



- Worm gear + belt drive
- 3 sizes
- Manual table position adjustment
- Self-locking mechanism

Conserves more space than the Air type GRC Series

No shock absorber required, compact body



Maintenance parts Reduced

Installation space Up to 35% less!

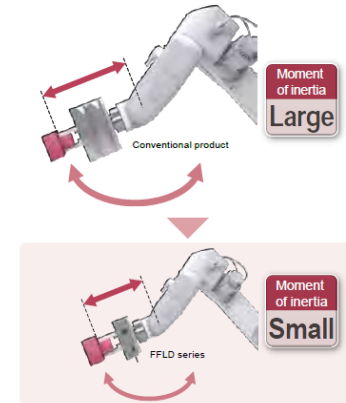
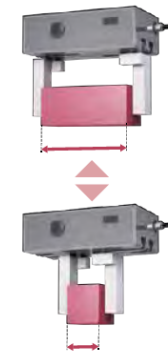
### 2-finger Gripper FFLD Series



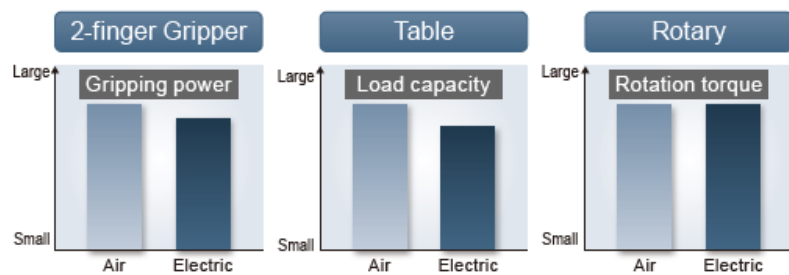
Smaller equipment footprint

High gripping power/Long stroke length  
Industry longest class stroke to support all kinds of workpieces.  
Tool changer is not required, reducing adjustment times and contributing to reduced tooling costs.

Thin and lightweight body  
This unit has one of the thinnest form factors in the industry, reducing the load on the spindle and the moment of inertia and contributing to the downsizing of robots.

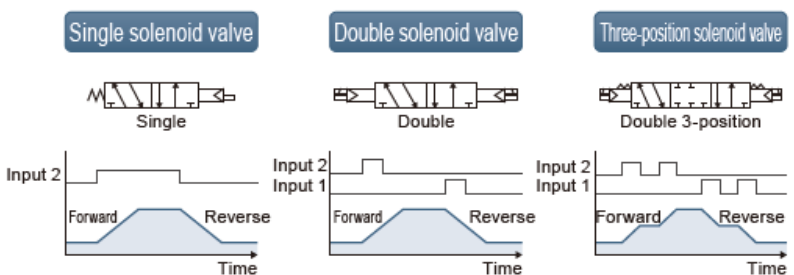


### Capacity equal to that of air components

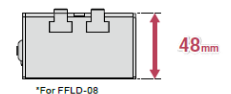


\*At air pressure of 0.45 MPa. Comparison with the same size.

### Ease of use equivalent to air components



	FFLD-08	FFLD-30
Max. stroke length mm	100 (50 per side)	140 (70 per side)
Max. gripping power N	80 (per side)	300 (per side)



\*For FFLD-08



# FLSH series application



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## Multi-positions gentle grip

Objective: **Up Productivity**

**Reduce down time**

Industry: **AI, Electronics**

Application: **Grip and transfer works**



Here is an example of gripping and transfer application by using 2 finger gripper

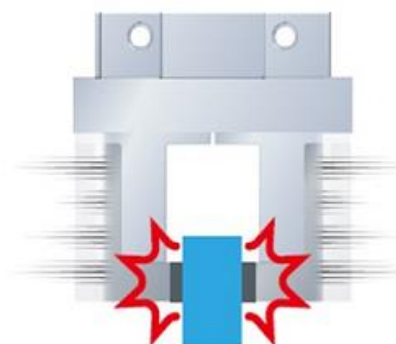
- Impact from pneumatic gripper sometimes caused work damage which needs to be avoided

- Multi-positioning with one gripper is required



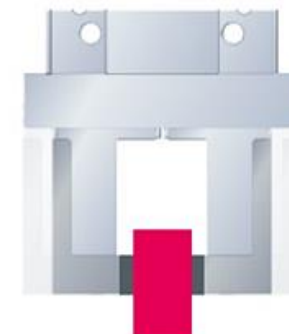
Product: **Two fingers electrical gripper, FLSH series**

BEFORE



- Travel & grip speed could not be set differently
- Gripper force could not be controlled, sometimes causing work damaged
- 1 gripper could not be used to hold different size work

AFTER



- Different **speed control is easily set**
- Gripper force could be controlled **preventing work damaged**
- 1 gripper can be set at different position to **suit different work**

Result :

- **Achieved damageless works**
- **Due to multi-positions, it can be used for different products**
- **Reduced set up time**



## FGRC series application



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Reducing tact time by 0.5 second

Objective: **Productivity up**

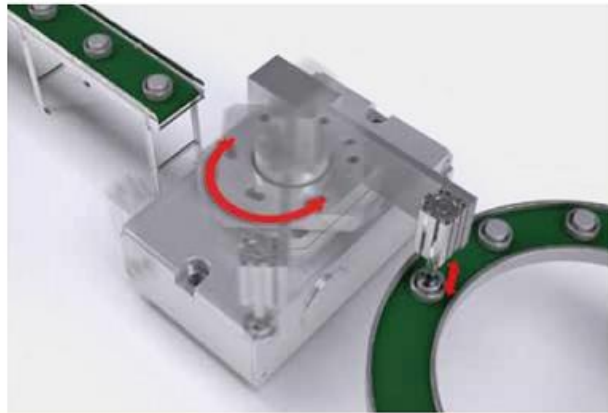
Industry: **Common industry**

Application: Rotary pick & place operation



### Application example of rotary pick & place when tact time is fast

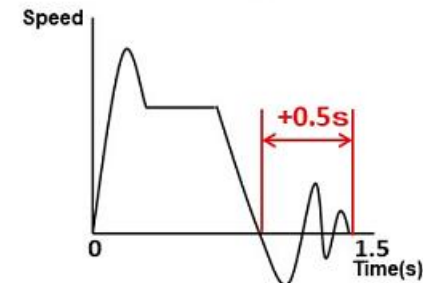
- Using pneumatic rotary actuator, vibration at the end position occurs if speed is fast.
- Vibration causes unintended work drop
- Yet tact time improvement is desired



Product: **Rotary Electrical actuator FGRC Series**

BEFORE

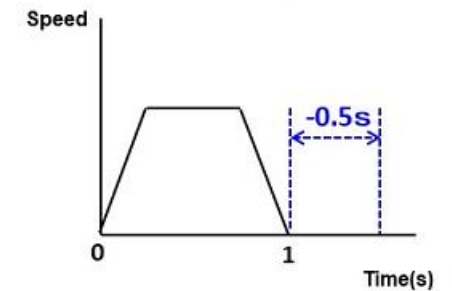
Pneumatic rotary actuator



- 180 degree rotation  
Tact time **1.5 sec**
- Vibration occurs at end position
- Settling time **0.5 sec**

AFTER

Electrical rotary actuator



- 180 degree rotation  
Tact time **1 sec**
- No vibration occurs
- Settling time **0**

**Result :**

- Control acceleration/deceleration for smooth transfer  
⇒ Reducing tact time around 35% in 180° rotation  
⇒ No more unintended Work drop

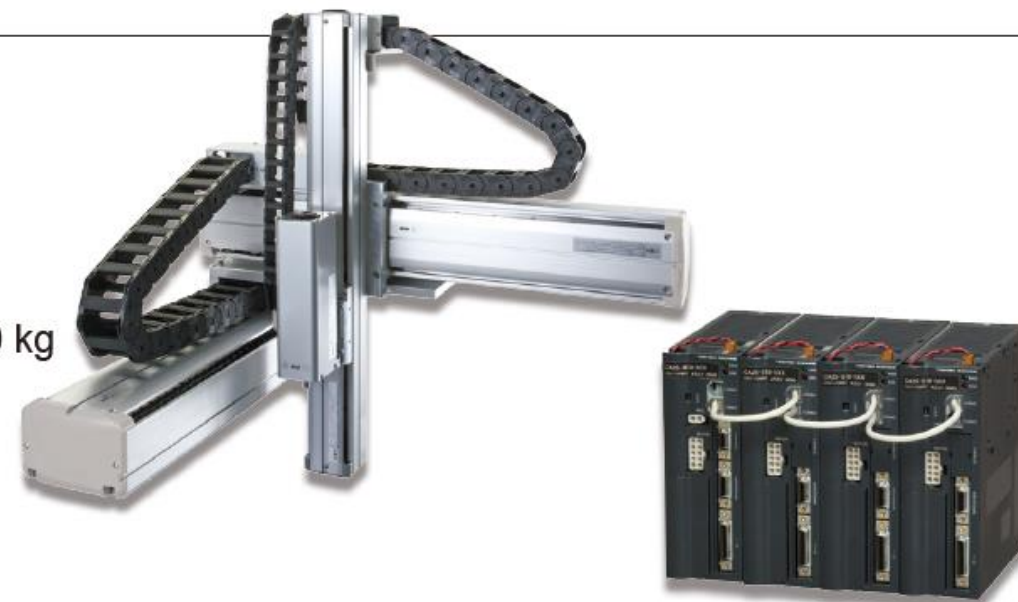




## From single axis to a combination of up to 4 axes

### Electric actuator **KBX Series**

- All models feature absolute system
- Servo motor: 50 to 750 W
- Ball screw drive, 6 sizes, Max. stroke: 1,700 mm, Max. load capacity: 250 kg
- Belt drive, 4 sizes, Max. stroke: 4,450 mm, Max. load capacity: 200 kg
- Easy-to-use PC software
- I/O (NPN, PNP), [CC-Link](#), [DeviceNet](#)
- Abundant variations can be constructed by combining standard modules



2 axes **XY type**



2 axes **XZ type**



2 axes **YZ type**

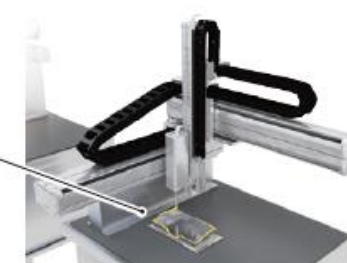
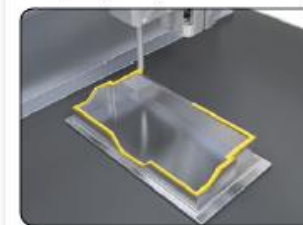


3 axes **XYZ type**

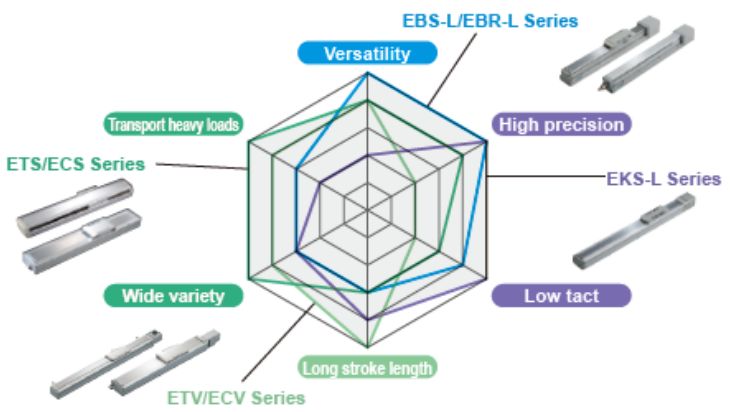


4 axes **XYZR type**

It can even trace complex 3D shapes quickly and accurately







List of supported motor manufacturers

	EBS-L EBR-L	ETS/ECS ETV/ECV	EKS-L
Mitsubishi Electric Corporation	●	●	●
Delta Electronics Co., Ltd.	●	●	●
Sanyo Denki Co., Ltd.	●	●	●
YASKAWA Electric Corporation	●	●	●
Keyence Corporation	●	●	●
Panasonic Corporation	●	●	●
OMRON Corporation	●	●	●
Fuji Electric Co., Ltd.	●	●	●
FANUC CORPORATION	●	●	●
Bosch Rexroth Corporation	●	●	●

\*Refer to the catalog of each model for details about supported models and capacity.

## Wide motorless variations

### ETS/ECS Series

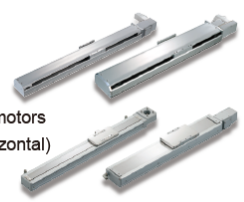
- Ball screw drive, 8 sizes
- Supports 50 to 750 W servo motors
- Max. load capacity: 150 kg (horizontal)
- Max. stroke length: 1,500 mm
- Max. speed: 2,000 mm/s
- ECS: Full cover low dust specification



## Motorless with long stroke length

### ETV/ECV Series

- Belt drive, 6 sizes
- Supports 100 to 750 W servo motors
- Max. load capacity: 85 kg (horizontal)
- Max. stroke length: 3,500 mm
- Max. speed: 2,000 mm/s
- ECV: Full cover low dust specification



## EBS-M/EBR-M Series Motorless

You can also use Rockwell motor

### Slider EBS-L Series

- Ball screw drive, 3 sizes
- Supports 50 to 200 W servo motors
- Max. load capacity: 50 kg (horizontal)
- Max. stroke length: 1,100 mm
- Max. speed: 1,000 mm/s



### Rod with built-in guide EBR-L Series

- Ball screw drive, 3 sizes
- Supports 50 to 200 W servo motors
- Max. load capacity: 50 kg (horizontal)
- Max. stroke length: 700 mm
- Max. speed: 1,000 mm/s

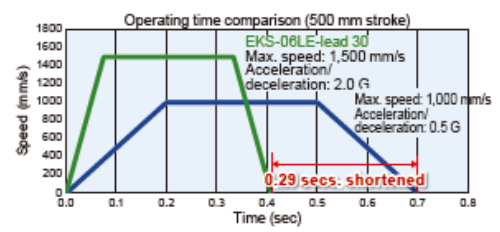


## High-precision and high-tact motorless

### EKS-L Series

- Ball screw drive, 5 sizes
- Outer rail with iron base used
- Supports 50 to 750 W servo motors
- Max. load capacity: 171.5 kg (horizontal)
- Max. stroke length: 1,500 mm
- Max. speed: 2,500 mm/s

- Supports further increased equipment speeds
- Maximum acceleration/deceleration: 2 G



## Electric shuttle mover

### ESM Series

- Three-dimensional transport P&P system
- Belt drive
- Motors from various manufacturers can be mounted (motorless)



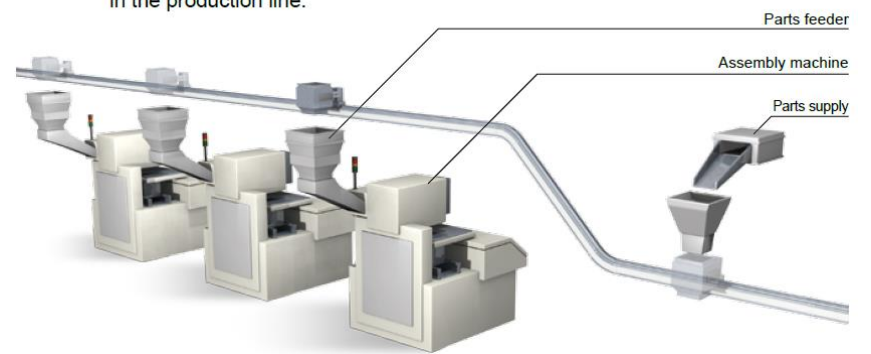
Transport between three-dimensional devices



Long stroke with a max. length of 20 m



A single actuator can now deliver the same assembly parts to different machines in the production line.



## EKS-L series application

Reduce takt time by 40%



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Objective: Up Productivity

Industry: Mobility

AI, Electronics



Application: High speed conveyance of the work

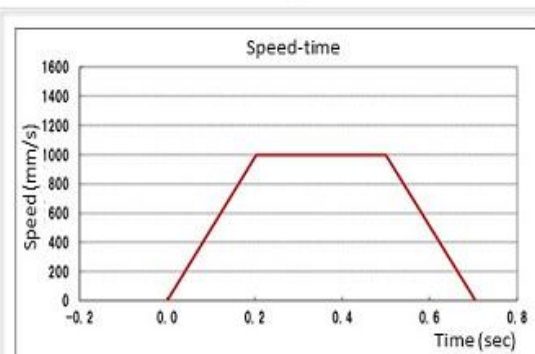
Here is an example of reducing takt time for conveyance of small work

- Electrical actuator is considered, but required takt time is not met
- Due to high usage, longer life cycle model is desired



Product: Electrical Actuator (Motorless)  
Slide type (Short takt time/High rigidity type) **EKS-L series**

BEFORE



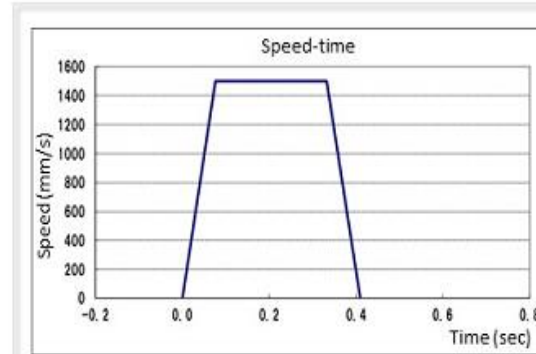
【Existing Model】

- Stroke : 500mm
- Max speed : 1,000 mm/s
- Acceleration/Deceleration : 0.5G

Takt time : 0.7s

Life cycle : 5,000 km

AFTER



【EKS-06L- lead 30mm】

- Stroke : 500mm
- Max speed : 1,500 mm/s
- Acceleration/Deceleration : 2.0G

Takt time : 0.41s (▲ 0.29s)

Life cycle : 20,000 km

Result :

- Applied shorter takt time, high rigidity model, EKS series
- ➔ Reduced takt time by 40%, 4 times longer life cycle
- ※ Max speed of EKS series : 2,500 mm/s
- Max acceleration/deceleration : 4G





## Three points for ease of selection

Selection is possible from the industry minimum size to high torque models to suit the application

### Diverse lineup



## Support for various types of FA fieldbuses

### Various interfaces



## Compatible with global standards

### International standard compliance<sup>\*2</sup>



\*1. Only AX1000T, AX2000T, AX4000T, AX8000T, AX7000X are compatible

\*2. Only AX1000T, AX2000T, AX4000T are compliant

## TH type / TS type / XS type

- A common controller can be used for output torque (75 N-m or less / 150 N-m or more)
- Equipped with LED that displays alarm details<sup>\*1</sup>
- Separate main power and control power
- Monitoring of position information, etc., using serial communication



## MU type

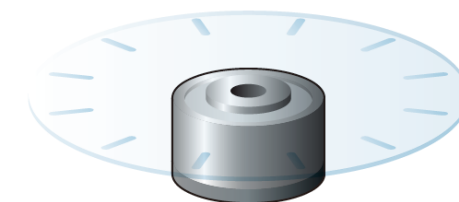
- For AX6000M
- Compact



## Examples of applications

### Flexible indexing table

Indexing numbers can be changed!



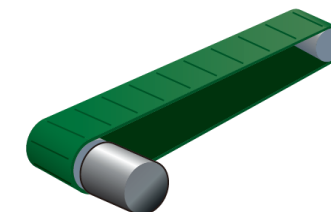
### Arm pick & place

Oscillation angle can be changed!



### Intelligent conveyor

Feed pitch can be changed!





# AX series application



Reduce maintenance man hour **CKD**

Objective: Reduce running cost

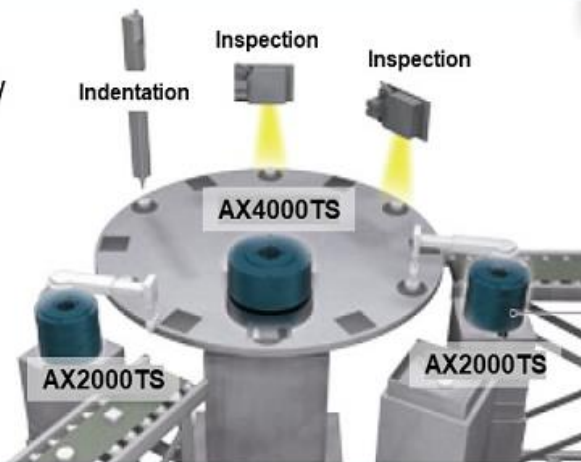
Industry: General industry

Application: Assembly, inspection machines



Here is an example of reducing maintenance man hour for assembly/inspection process.

- Due to gear friction/damage, maintenance is necessary
- Maintenance cost reduction is desired



Product: Direct drive motor AX series

BEFORE

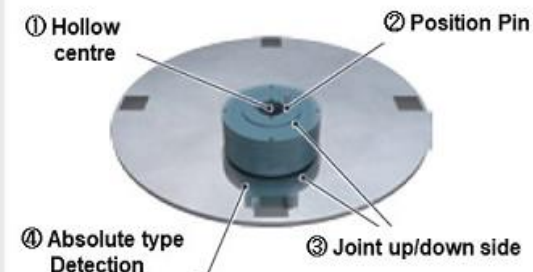


AC servo motor

【Existing type】

- Necessary component
  - AC servo motor
  - Pulley → Needed regular replacement
  - Belt → Needed regular replacement
- There was more components under the table resulted in obstructed space
  - Replacement time **2.0 hours**

AFTER



【AX】

- Necessary component
  - AX4000 series  
(Maintenance free for long time)
- Due to less component, there was better work space & reduced maintenance time
  - Replacement time **0.1 hour**

Result :

Due to reduced maintenance component & replacement time, maintenance man hours reduction was achieved.



# Compatible with various high-end processing stages

## Standard ND-s Series

- Rated torque: 3.4 to 500 N·m
- 15 sizes
- Table drive, rotary drive



· Detection Pulse 2M to 6.8M ppr

## High speed rotating type ND-s HS Series

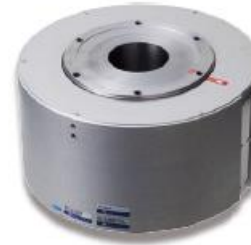
- Rated torque: 8 to 24 N·m
- 4 sizes
- High-speed pick & place drive



· Detection Pulse 1.2M to 1.6M ppr

## High rigidity/high precision type DD-s Series

- Rated torque: 10 to 2000 N·m
- 11 sizes
- High precision roll drive + gantry synchronous drive



· Detection Pulse 2M to 12.5M ppr

## High response type HD-s Series

- Rated torque: 27 to 68 N·m
- 3 sizes
- High-speed index drive



· Detection Pulse 3.3M ppr

## Large hollow diameter type FD-s Series

- Rated torque: 17 to 600 N·m
- 8 sizes
- Large inertia load rotation drive



· Detection Pulse 4.1M to 8.3M ppr

## High performance Servo driver VPH Series

- Developed exclusively for direct drive
- Maximizes motor performance
- Output capacity: 100 W to 7 kW
- System support tool full of functions



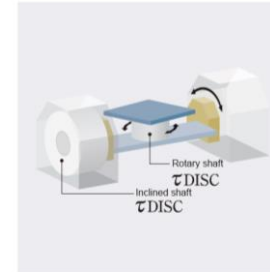
## Various interfaces

Also compatible with motion networks

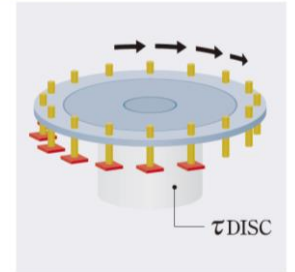


Parallel I/O (NPN)

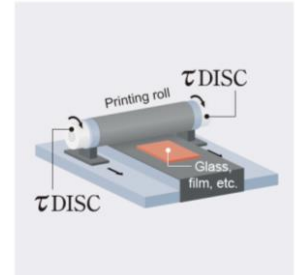
## Examples of applications



Laser finishing machine



High-speed indexing device



Roll coater device



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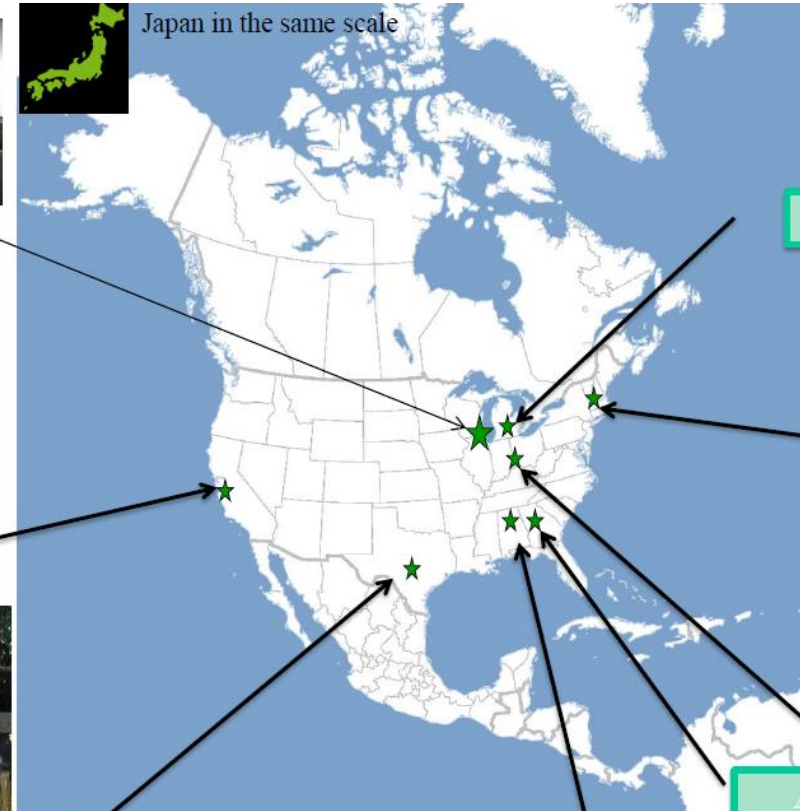
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