

Factory Automation Solutions Guide

The Backbone of Factory Automation



CKD Corporation



ROBODEX

Inheritance and Evolution New Options and Possibilities



Table type/2-Finger Gripper/Rotary FLCR / FLSH / FFLD / FGRC Series



SCARA Robot KHL/KHE Series



Orthogonal 4-axis actuator KBX Series



Motorless

Realizing mechanical motion control







Forward motion pick & place PPLX Series

Proposing new processes util

Supports various handling, positioning,





From assembly inspection equipment to ultra-precision stages

and precision processes.





Suction plate
PVP Series

For precision assembly, transport, floating, and suction







Space-saving and highly rigid stepping

motor drive

ROBODEX Pulse

Compact & highly rigid with an integrated outer rail guide

Catalog CC-1422A



Uses a wide guide integrated with the body Realizes both compact and high rigidity

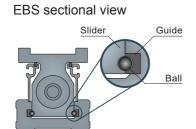
Controller

ECR Series

2-Finger Gripper

FLSH

Applicable models



		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

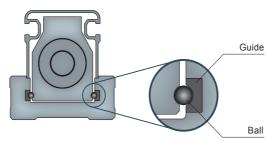
Rod with built-in guide EBR-M/G Series Ball screw drive, 3 sizes

absolute encoder Max. load capacity: 80kg (horizontal)

Equipped with a battery-less

Max. stroke: 700mm Max. speed: 900 mm/s

EBR sectional view



Common controller for convenience

Rod with built-in guide









Connects with multiple motor sizes to help reduce inventory

ECR compatible interface

♦ IO-Link Ether**CAT**

FLCR

FGRC

♦ IO-Link Fther**CAT**

Parallel IO

ECG-A/B compatible interface

CC-Link Parallel IO

CC-Link EtherNet/IP

Compatible & Equivalent capabilities with Air Components

Catalog CC-1444A



- Sliding screw drive
- 3 sizes
- Finger position manual adjustment
- Self-lock mechanism
- Connect with controller ECG with G option

Table FLCR Series

- Ball screw
- + belt drive
- 3 sizes
- Built-in motor saves space
- Connect with controller ECG with G option



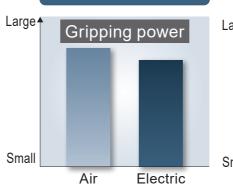
Rotary FGRC Series

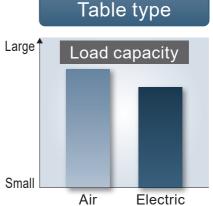
- Worm gear + belt drive
- 3 sizes
- Table position manual adjustment
- Self-lock mechanism
- Connect with controller ECG with G option

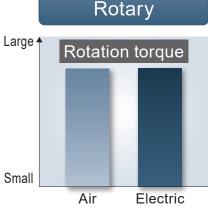


Equivalent capacity to air Component

2-Finger Gripper







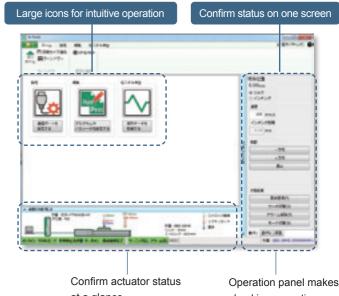
*At air pressure of 0.45 MPa. Comparison with the same size.

2-Finger Gripper FFLDSeries

- 3 sizes
- Controller integrated
- 1 cable
- Max. stroke length 80mm (one side)
- Max. gripping power 500N (one side)
- IO-Link interface

Setting software S-Tools

- ECG, ECR, FFLD compatible
- Easy settlings free of charge on HP



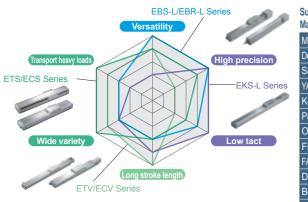
at a glance

checking operation easy

ROBODEX Servo

Servo motor drive for a wide range of applications

A wide variety of motorless products



Supported servo motors Manufacturer list	EBS-L FBR-I	ETS/ECS/ FTV/FCV	EKS-L
	EDK-L	EIV/EUV	
Mitsubishi Electric Corp			
Delta Electronics Co., Ltd.			
Sanyo Denki Co., Ltd.			
YASKAWA Electric Corp			
Keyence Corporation			
Panasonic Corporation			
OMRON Corporation			
Fuji Electric Co., Ltd.			
FANUC CORPORATION			
DENSO WAVE INC		• *1	
Bosch Rexroth AG			
Rockwell Automation, Inc.			
SIEMENS AG			

	(New)				
.L	Supported stepping motor Manufacturer list	EBS-L			
	motor Manufacturer list	EBK-L	EUS		
	Oriental Motor Co., Ltd.				
	MinebeaMitsumi Inc				
	Dyadic Systems Co.,Ltd.				
	* Refer to the pages of each model for details on compatible models and capacity.				

	101
Slider	Servo motor
EBS-L Series	Stepper motor

- Utilizes outer rail guide
- 4 sizes
- NEW Servo motor 50 to 400W supported NEW Supports □42 to □60 stepper motors
- Max. load capacity: 110kg (horizontal)
- Max. stroke: 1250mm



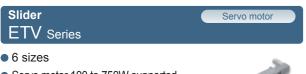
- 8 sizes
- Servo motor 50 to 750W supported NEW Supports □42 to □60 stepper motors
- Max. load capacity: 150kg (horizontal)
- Max. stroke: 1500mm





- Utilizes iron base outer rail guide
- 5 sizes
- Max.workload:118.5kg (horizontal)
- Max. stroke length: 1500mm
- * Max. load capacity at acceleration of 0.5 G.





- Servo motor 100 to 750W supported
- Max. load capacity: 85kg (horizontal)
- Max. stroke: 3500mm





- Utilizes outer rail guide
- 4 sizes
- NEW Servo motor 50 to 400W supported NEW Supports □42 to □60 stepper motors
- Max. load capacity: 110kg (horizontal)
- Max. stroke: 800mm

Slider (low dust) ECS Series

Full cover low dust specifications

- Servo motor 100 to 750W supported NEW Supports □42 to □60 stepper motors
- Max. load capacity: 150kg (horizontal)
- Max. stroke: 1500mm



Slider (low dust) ECV Series

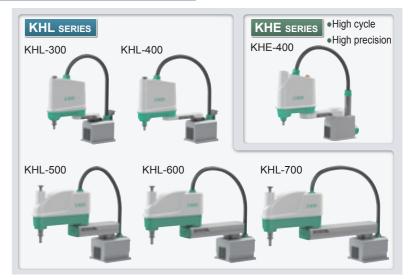
- Full cover low dust specifications
- Servo motor 100 to 750W supported
- Max. load capacity: 85kg (horizontal)
- Max. stroke: 3500mm

Enables high speed P&P in a free time space at high speeds

Horizontal articulated robot standard KHL / High precision KHE Series

- Compact and high operating performance
- Ideal for light press fitting and screw tightening
- Easy-to-use personal computer software
- Can be connected to image processing systems of various companies
- Compatible with all types of networks





Combination method from single axis to up to 4 axes

Electric actuator KBX Series

- All models are absolute types
- Servo motor: 50 to 750W
- Ball screw drive, 6 sizes, max. stroke: 1700mm, max. load capacity: 250kg
- Belt drive, 4 sizes, max. stroke: 4450mm, max. load capacity: 200kg
- Easy-to-use personal computer software
- I/O(NPN, PNP), CC_Link, DeviceNet, EtherNet/IP
- Ample variations can be constructed by combining standard modules



Iron body realizes fast tact & high rigidity

Max. stroke: 1500mm

Max.workload: 171.5 kg

Electric actuator EKS-M Series / Driver NXD Series

- Servo motor: 100 to 750W
- 5 sizes
- Max. speed: 2500 mm/s

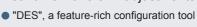
- Shortened tact time Acceleration/deceleration 2G supported

Smaller device footprint

Iron body structure resistant to load and moment

- Compatible with all types of networks
- 4 types of interface

Real-time waveform adjustments







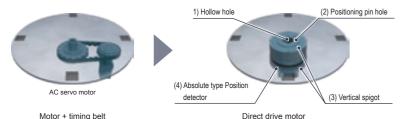


General purpose direct drive motor for easy use

Best-in-industry high performance direct drive motor

What is a direct drive motor?

It is a drive motor that couples loads directly without interposing mechanisms such as reduction gears, belts or gears between them and transmits power and operation. The elimination of the intermediate mechanism provides a variety of benefits.



- Benefits of direct drive motors
- No backlash
- Space saving
- Maintenance-free
- Reduced design processes
- Quiet
- Improved environmental performance



Ideal for indexing table drive

AX1000T Series

- Max. torque: 22 to 210N·m
- 5 sizes

2 sizes

- High Accuracy
- Ideal for assembly and inspection



AX6000M Series

Max. torque: 1.2 to 3N·m

Industry's smallest class (As of April

2014, according to CKD research)

• Ideal for transport of fine workpieces



AX2000T Series

- Max. torque: 6 to 18N·m
- 3 sizes
- Small diameter/ High speed rotation
- Ideal for pick & place, turntable, and combinations (ϵ)





AX8000T Series (made to order)

- Max. torque: 45 to 70N·m
- 2 sizes
- Waterproof specification (IP65 or equivalent)
- Ideal for inspections and alignments









 (ϵ)

CAL IIS

■ Various interfaces







ABSODEX

AX4000T Series

8 sizes

■ Max. torque: 9 to 1000N·m

Large diameter hollow hole

and combinations

Various drivers

Compatible in each series

free of charge on our HP

The Startup Support Tool is available

Ideal for pick & place, turntable,



Supports high end processing stages

High rigidity/high precision DD-s Series

■ Rated torque: 10 to 2000N·m

High precision roll drive + gantry

high-performance servo driver VPH Series

Developed exclusively for direct

Maximizes motor performance

Output capacity 100W to 15kW

system support tool full of functions

synchronous drive

11 sizes

drives

Standard ND-s Series

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



High response type HD-\$ Series

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



■ Various interfaces Also compatible with motion networks





Parallel I/O (NPN)

High speed rotating type ND-s HS Series

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

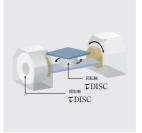


_arge hollow diameter FD-s Series

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



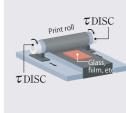
Examples of applications





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(UL)US LISTED

ABSODEX is even more powerful and easy to use

ABSODEXNX4Series / DriverNXDSeries

■ Max. torque: 22 to 300N·m
■ 5 sizes

Ideal for assembly and transport

Easy mounting and centering

Integrated absolute resolver

Convenient hollow hole

High rigidity bearing







Compatible with all types of networks

5 types of interfaces

Real-time adjustment while viewing waveforms

Full-featured configuration tool "NX Tools"





Cam unit that realizes mechanical

motion control (clockwork)

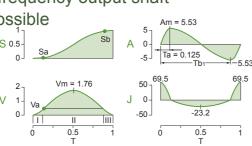
Three characteristics of the cam unit

Synchronized motion of multiple axes

- Synchronization characteristics
- Multiple cam units can be operated with one drive

High-speed and high frequency output shaft swivel and stop are possible

- Motion characteristic S 0.5-
- Realizes a smooth motion curve thanks to the cam



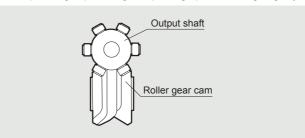
High-precision repeated motion is possible using uniform rotation speed

- Repetitive characteristics
- By applying uniform rotation speed to the input shaft, motion sequences can be repeated with superb accuracy

Wide variation

Ideal for indexing table drives

- Roller gear cam unit
- Compact, high speed, high output, high precision, high rigidity



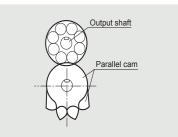




B 250

Ideal for conveyor drives

- Parallel cam unit
- Input shaft and output shaft are parallel



Parallel cam

PCIS 040 to 250



Three cam unit motions

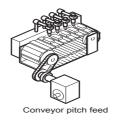
Continuous swivel and stop at the specified angle with the output shaft as center point

Index







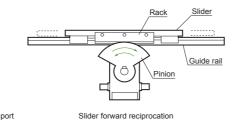


Repeated reciprocal swivel at the specified angle with the output shaft as center point

Oscillations







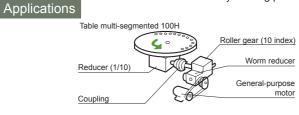
Speed reducing mechanism with a reduction ratio that corresponds to the indexing No.

Reducer



Continuously rotating precision speed reducer with no backlash

Oscillations





Ideal for driving index tables

- Pick and Place
- Realizes tact time down to 0.1 sec cycles (high speed)
- High precision/high rigidity
- Compact, thin and space saving

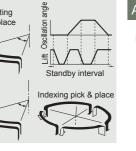
Swivel pick & place unit

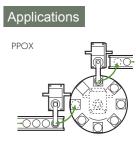








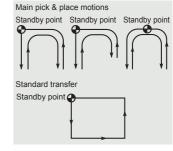


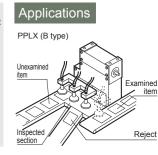


Forward motion pick & place unit









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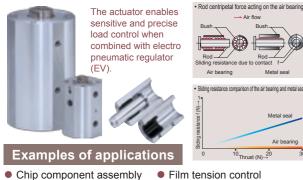
Precision component ideal for damage-free transport

Air bearing actuator

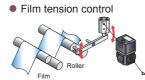
With zero sliding resistance, loads can be controlled with high precision

LBC Series

- Electro pneumatic regulator (EV-FL) for high-precision linear control
- Soft-touch control of loads from just 0.01 N up
- Supports workpieces with the optimal load to match the purpose and application

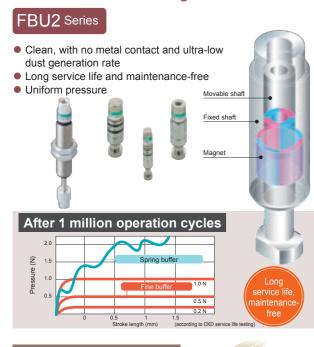






Fine buffer

Magnetic springs provide transport with a soft touch and no damage



Examples of applications

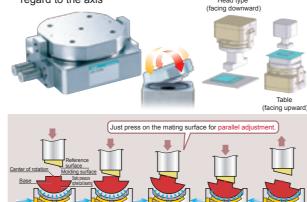
- Device transport
- DVD and HDD transport
- Flexible substrate suction transport
- Crystal device suction transport
- Component insertion
- Touch panel push pressure inspection

Air-Gyro

Realizes high precision paralleling, automated adjustment, and reduced processes

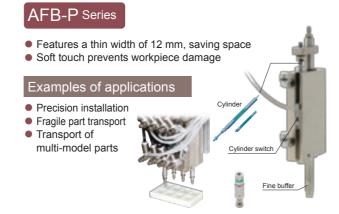
LBC-R Series

- Parallel adjustment can be made instantly with "tracking" function
- High precision "tracking" performed by floating the spherical surface base via air pressurization
- Realizes a high precision rotation-stop angle of θ=±0.1° with regard to the axis

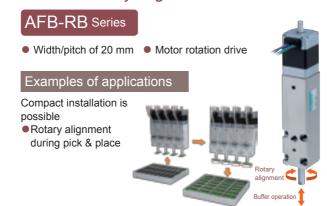


Actuator with magnetic spring shock absorption mechanism

Integrated pneumatic cylinder and cylinder switch



Buffer & rotary alignment

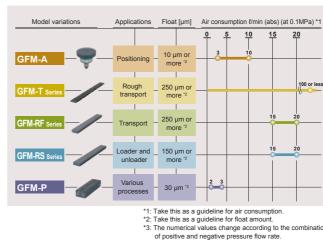


Floating system/Glass float module

Significantly reduces air consumption, and improves quality and yield thanks to our proprietary floating system

GFM Series

- Non-contact and stable high-precision floating
- Antistatic protection for workpieces using new materials
- Achieves class 10 level



Ideal for rough transport **GFM-T** Series Ideal for alignment process **GFM-A GFM-RS** Series deal for conveyance **GFM-RF** Series Ideal for various processe GFM-P

Precise suction plate

Does not damage delicate workpieces such as ultra-thin and soft materials, nor cause deflection or deformation due to suctioning

PVP Series

- Suction surface flatness: 2 μm, parallelism: 5 μm
- No vacuum deformation of ultra-thin workpieces thanks to the wide suction surface
- Features Shore D60 hardness with a soft touch that does not damage workpieces
- Inspections that were not previously possible can now be performed thanks to the non-reflective black porous plate
- Wide range of plate shapes

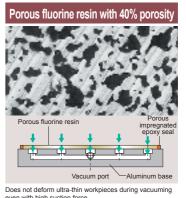


Plate shape

■ Standard PVP-S PVP-R PVP-C

■ Examples of made to order shapes

For robot hands

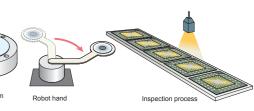
Three standard shapes are available. Furthermore, any other shape of plate can be manufactured as needed

Examples of applications

Perfect for suctioning and conveying fragile workpieces such as thin wafer and film.

- Suctioning to fix workpieces in the semiconductor manufacturing process (for bonding, etc.)
- Inspection equipment
- Conveying workpieces
- Part assembly processes





Contact us regarding any FA needs

FA Customer Service

We solve your FA problems!

Consideration of device specifications

Model selection/Technical calculations

Device start-up adjustment

Troubleshooting

Get information more easily and faster.

YouTube video

The dedicated software S-Tools, operation manual, maintenance method, etc., have been published.

CKD YouTube channel

Check with iPad or your smart phone. *Depending on your smartphone environment it may not be displayed correctly.





CKD Technical Seminars

"See" "Learn" "Experience" Meticulous support for electric actuators to ABSODEX maintenance to troubleshooting

Electric Actuator course

Course overview

Overview and selection guide for electric actuators

Course targets

Designers and production facilities personnel

Main content of course

- (1) Functions, characteristics, models, internal structures, appropriate usage
- (2) Handling precautions and model selection
- (3) Electric actuator program creation, actual devices



ABSODEX Course

Course overview

This is the basic course for automated equipment.

Course targets

Designers and production facilities personnel

Main content of course

- (1) Functions, characteristics, models, internal structures, appropriate usage
- (2) Handling precautions and model selection
- (3) Usage examples
- (4) Troubleshooting
- (5) ABSODEX program creation, practice with actual devices



Contact CKD for details

MODEL SELECTION SYSTEM

Available on your website

This system is used to select products according to your application and working conditions.



^{*}Downloading Software may not be possible due to your security settings. If that is the case, contact CKD.

Caravan

Various demonstration machines are available

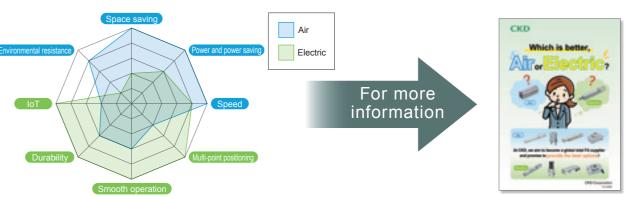






Pneumatic and Electric Motion Benefits Comparison Catalog CC-1446A

Air in this case? Electric motion?



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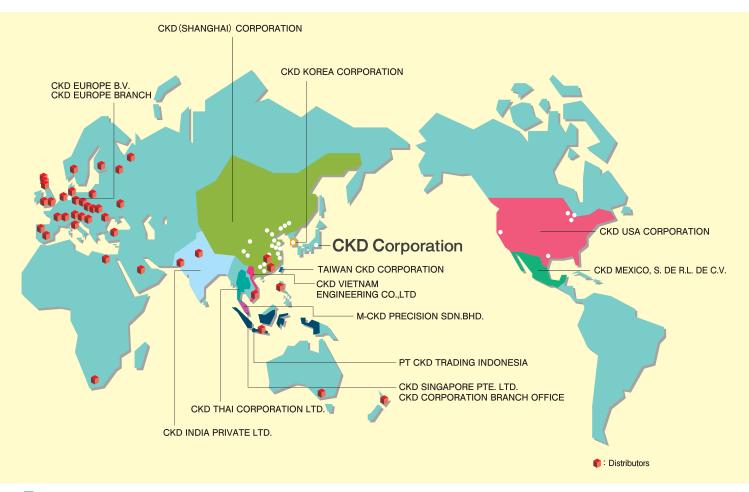
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WORLD-NETWORK



CKD Corporation

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