

International Robot Exhibition 2017

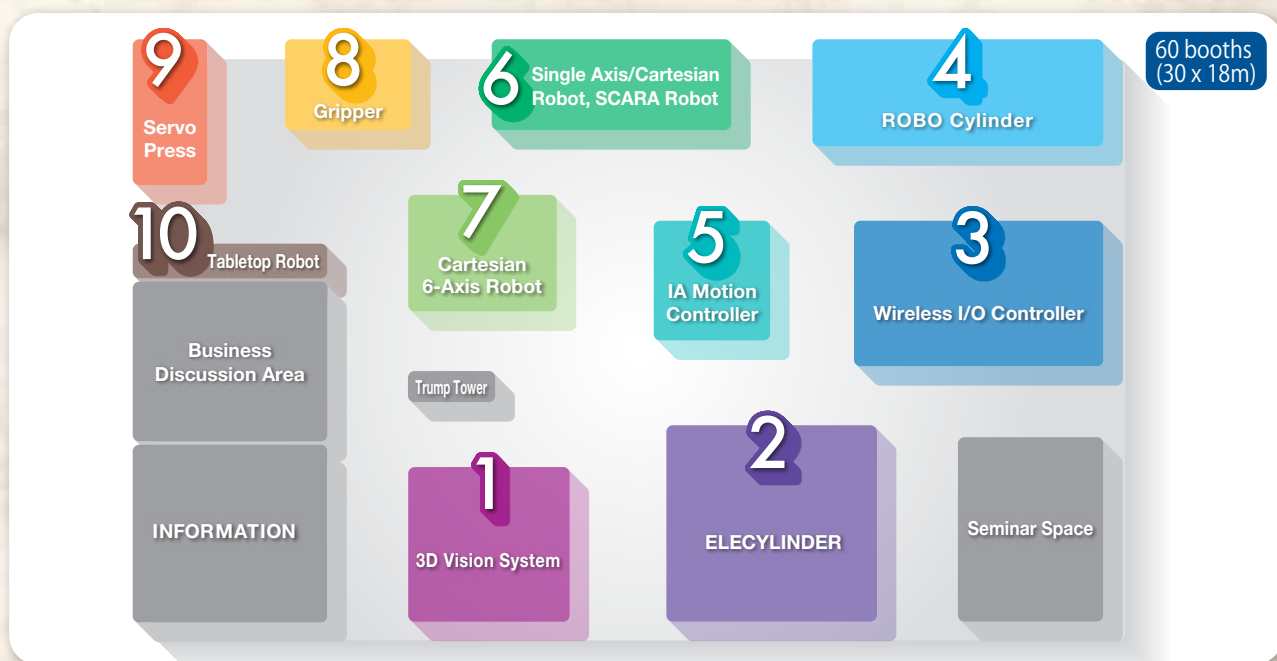
Dates

November 29^{Wed.} - December 2^{Sat.}
10:00 ~ 17:00

Venue

Tokyo Big Sight
East Hall 2 IR2-41

Bringing you new visions of production facilities



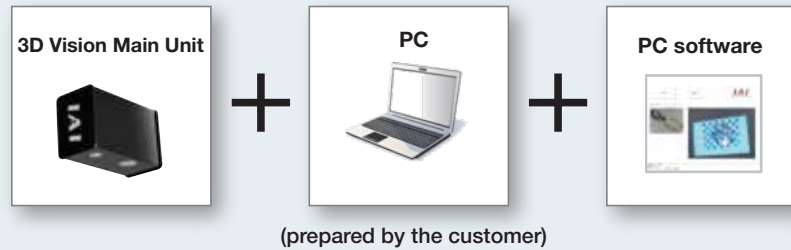
Contents	Featured Topics	p. 1	4 ROBO Cylinder [®]	p. 6	8 Gripper	p. 10
	1 3D Vision System	p. 2	5 IA Motion Controller	p. 7	9 Servo Press	p. 11
	2 ELECYLINDER [®]	p. 3,4	6 Single Axis/Cartesian Robot, SCARA Robot	p. 8,9	10 Tabletop Robot	p. 12
	3 Wireless I/O Controller	p. 5	7 Cartesian 6-Axis Robot	p. 9	Service/Support System	p. 13,14

No.	Topic	Features
1	3D Vision System Reference Exhibit	Developed at an affordable price (standard price: 700,000 yen). A Cartesian robot and the newly developed Wrist Unit can be used to pick up workpieces with complex shapes.
2	ELECYLINDER®	From selection to operation and maintenance, all its aspects are exquisitely simple. The exhibit will introduce a diversely varied lineup, including new products like the mini type, dust-proof/splash-proof specifications, and the Radial Cylinder with a built-in ball circulating linear guide.
3	Wireless I/O Controller Reference Exhibit	The exhibition will include a wireless control device for an actuator with a 1/6 control panel. View the applications in comparison with wired equipment.
4	ROBO Cylinder®	The exhibition features an exciting assembly of equipment, including a device for arranging lunchbox ingredients and a ROBO Cylinder lineup totaling 75 axes. As well, there will be live demonstrations of positioning repeatability and power consumption calculation software. The exhibition includes FCON (a compact flexible controller: maximum 16 axes connectable), which can reduce control panel installation space by 70%.
5	IA Motion Controller Reference Exhibit	Don't miss this chance to see the applications of 256-axis simultaneous actuator control, from ball movement to text and waves in 3-D.
6	SCARA Robot	The exhibit includes the all-new SCARA Robot IXA, with world-beating speed performance and sharply reduced price. Also introducing the PowerCON SCARA IXP which further reduces initial costs.
7	Cartesian 6-Axis Robot Reference Exhibit	We have developed the world's first Cartesian robot with wrist unit attached. Movement from various directions is possible, including ingress into tight spaces, swing motion, and orthogonal wrist bending. View the motion with the actual applications.
8	Gripper	The exhibition will feature multiple demo units making the most of the unique advantages of electric grippers. Applications introduced include functions like gripping/measurement/judgment, centering, and Battery-less Absolute Encoder mounted.
9	Servo Press	First in the industry! Introducing servo presses with loading repeatability of $\pm 0.5\%$, available in a extensive lineup supporting 20N to 50,000N. Experience the press-fit hands-on section, based on examples in actual use.
10	Tabletop Robot	The exhibition will include all Tabletop Robot models with Battery-less Absolute Encoder. Easy program creation will be demonstrated with a SEL generator, and models with special specifications will be on view.

POINT 1

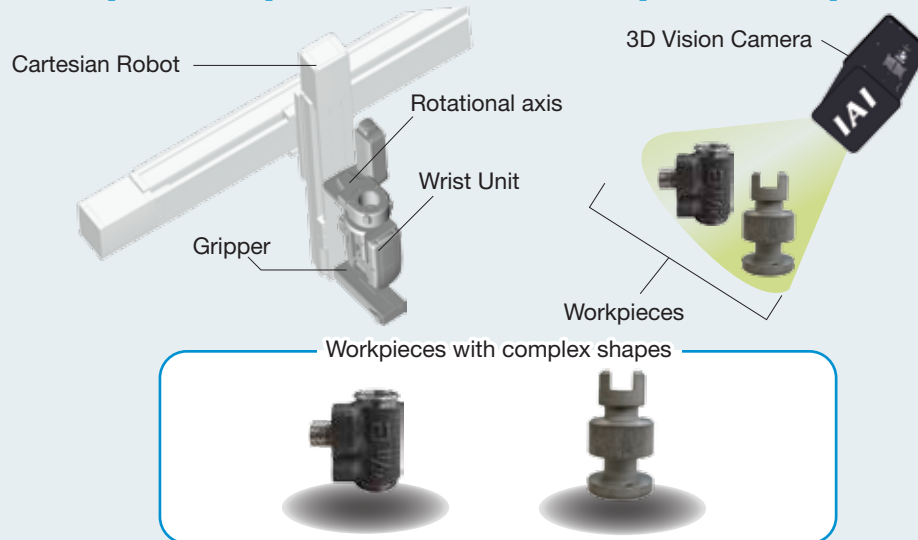
3D Vision System developed independently by IAI

Much more affordable than other 3D Vision Systems



POINT 2

Picks up workpieces with complex shapes

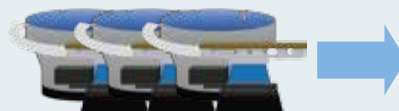


POINT 3

Advantages of 3D Vision System

- When handling multiple part models, there is no need to prepare part feeders for each part type. Parts supply equipment can also be eliminated, saving facility space.

Multiple parts supply equipment

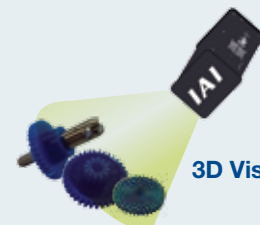
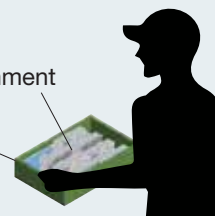


Multiple workpieces can be identified with one unit.

- Since there is no need to arrange the supplied parts on pallets or the like, dedicated equipment and labor costs can be reduced.

Parts alignment

Pallet



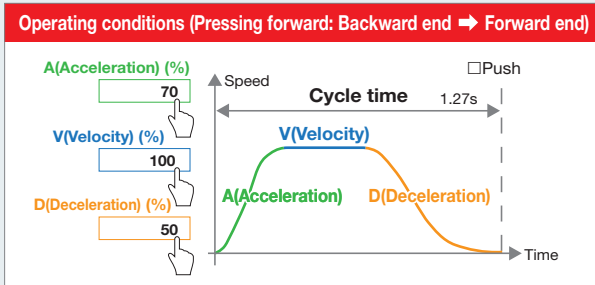
Labor costs and dedicated equipment for arranging parts on pallets

POINT 1

It's all so simple

AVD can be adjusted individually

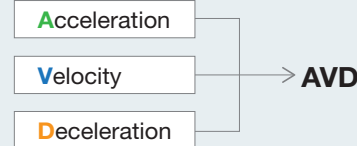
With the ELECYLINDER, acceleration (A), velocity (V) and deceleration (D) can be entered in percentages to apply adjustments.



Rod type (left)
(Built-in controller)

Slider type (right)
(Built-in controller)

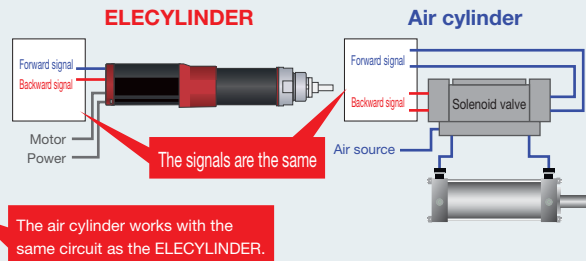
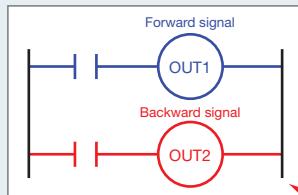
Operating conditions abbreviation: AVD



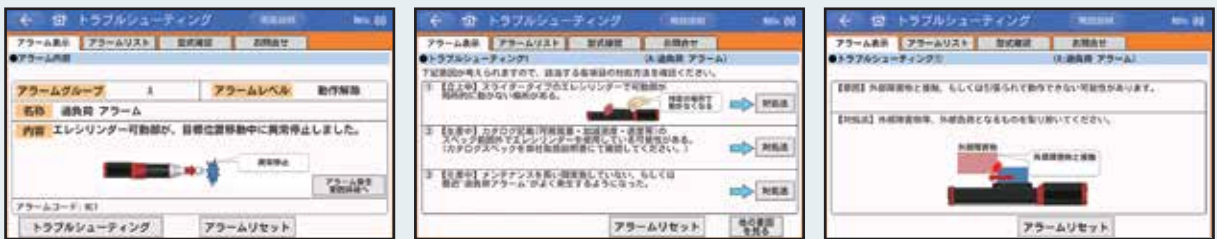
PLC control is the same as with air cylinders

ELECYLINDER control is the same as that of air cylinders. There is no need to create a complicated ladder program.

PLC ladder program



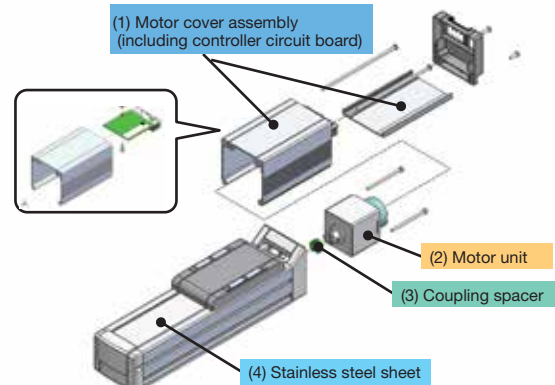
Even the rare malfunctions can be handled rapidly with interactive troubleshooting.



Few maintenance parts

Since the ball screw and guide hardly ever break down, the only maintenance parts are

- (1) Motor cover assembly (including controller circuit board)
- (2) Motor unit

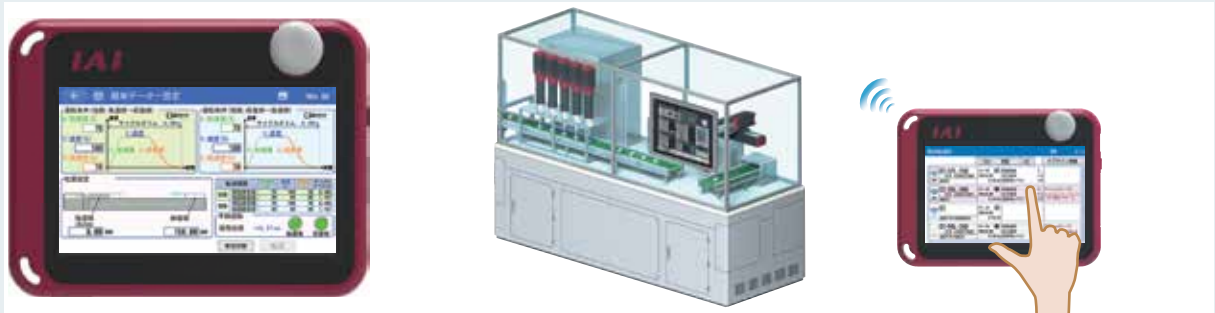


* Rear cover is not included in the motor cover assembly.
 * Bolts are not included in the motor cover assembly and motor unit.

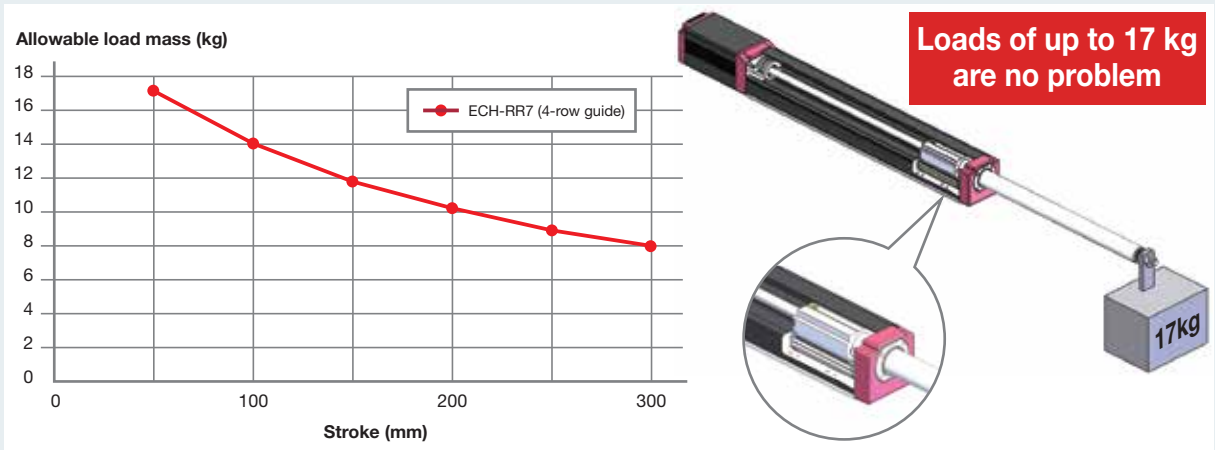
High performance

Data can be entered by wireless connection.

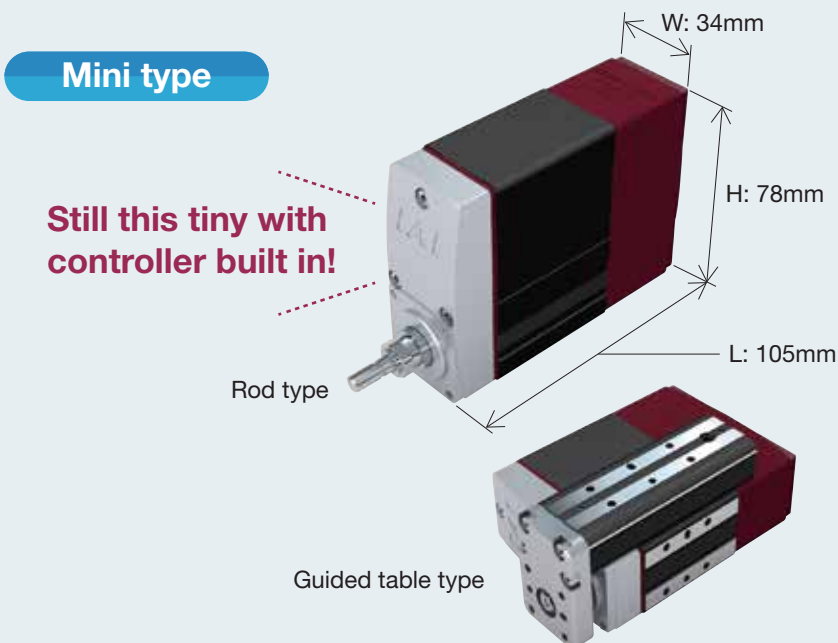
Wireless connection from outside the facility enables confirmation of the operating status as well as changing the position and operating status inputs. There is no need to reach into the unit or open the control panel door.



The radial cylinder is equipped with a built-in guide.



The built-in controller type is no bigger than this.



3

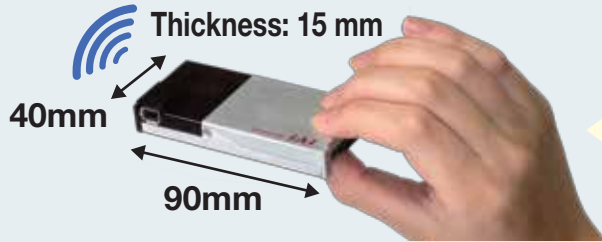
Wireless I/O Controller

Reference Exhibit

POINT 1

No more I/O wiring!

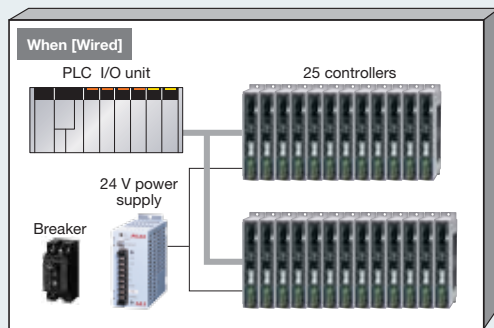
New technology! Actuator can be wirelessly controlled!
 PLC, controller and wireless communication unit are mounted on a single circuit board!



With the circuit board above...
 There is no need for I/O wiring as the communication between actuators and control devices is wireless.
 Since the controller function is mounted on the actuator too, there is no need to install a controller in the control panel.

POINT 2

The control panel can be miniaturized



Compared to the wired type, the control panel size is

1/6

Only 24 V power supply and breaker are stored in the control panel



View the actual control panel sizes (wireless and wired) at the venue.

POINT 3

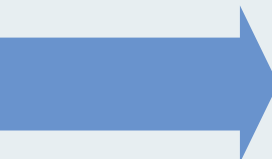
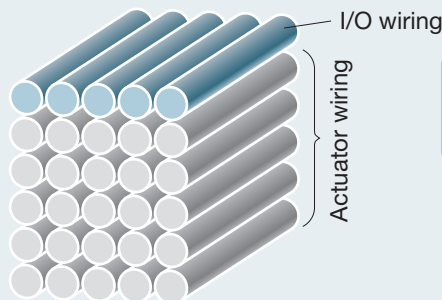
Wiring (1) and wiring process (2) can be reduced

When [Wired]

When [Wireless]

- (1) **Wiring** I/O wiring (sensors)
 Actuator cable (including power supply)

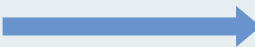
Power supply cable



Reduced to
1/30

- (2) **Wiring process** I/O wiring, terminal crimping & connection
 Actuator cable management and processing

Power cable management, terminal crimping & connection





POINT 1

A byword for electric cylinders: ROBO Cylinder® 75 axes all on exhibit

Exhibited actuators (among others)

- ROBO Cylinder with AC servo motor (RCS4 Series) **New**
- Low-priced ROBO Cylinder equipped with high-output stepper motor (RCP6 Series)
- Mini Cylinder / Mini ROBO Cylinder
- Solenoid gripper / Hollow rotary **New**

18 years of service. Thanks to you, we have shipped a total of 1.6 million axes.
A wide variety of diverse industries are putting them to use.



New

RCS4 Series



Mini ROBO Cylinder



New

Solenoid gripper



New

Hollow rotary

POINT 2

Supporting radial loads without a guide: Radial Cylinder®

External guide is not required!

A high-rigidity rod type actuator that has a built-in ball circulation type guide. The built-in guide supports radial loads.

Max. stroke 800 mm

The 800 mm rod can be extended and also stored in the main unit. Use as a vertical axis simplifies the device configuration.

POINT 3

Coming next spring: Compact Controller RCON

● **Features of RCON**

Controller unit (2 axes connectable)	
Thickness: 22.6 mm	
Max. number of controlled axes	All ROBO Cylinders can be controlled.
16-axis control	
Communication cycle time	(Controller internal communication speed: 3 Mbps)
1-3 ms	
Field network	CC-Link CC-Link IE MEGA/CONTROL
Motion network	ROBOT RCON SCONET/II
Supports 9 types	DeviceNet EtherNet/IP EtherCAT

High-output stepper motor 16 axes

1,010 mm (dimension when installed inside control panel)

178.5mm

223.4mm

118.5mm

Approx. 15% more compact!
(Installation surface area comparison)

- 1 Ethernet port (Option)
- 2 miniUSB port USB driver installation not required (for Windows 10)
- 3 Switch for JOG operation (per axis x 2 places)
- 4 Brake release switch (per axis x 2 places)
- 5 Drive source shutoff connector (per axis x 2 places)

POINT 1

One controller provides collective control of all IAI actuators

Advantage 1: Ultra-multi-axis synchronous control

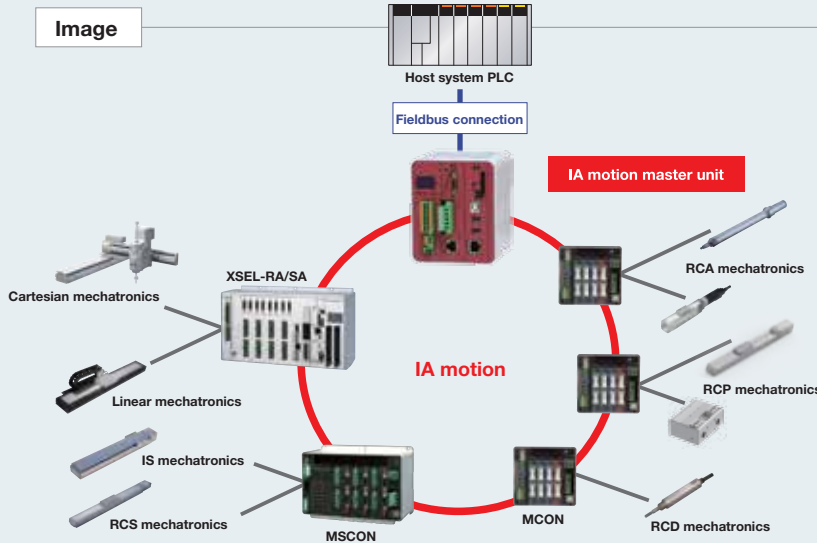
Capable of synchronous control of 1,000 axes with 1ms position command.

Advantage 2: Expanded freedom of selection

Capable of collective control of systems mixing 200 V AC servo and 24 V stepper motor.

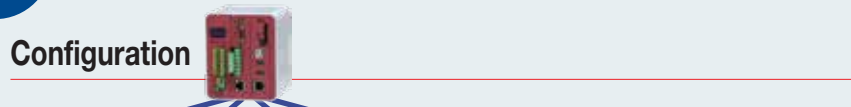
Advantage 3: Programmable with simple language

Capable of programming with a simple language (SEL language) unique to IAI.



POINT 2

Synchronous control of 256 axes with IA motion



32 units x 8 axes = 256 axes

Capable of synchronous control!

8 axes of actuators can be connected to a single MCON

32 MCON units can be connected to the master unit

Master unit	1
MCON-C-8-20WAI-20WAI-20WAI-20WAI-20WAI-0-0	32
RCA-RA4C-1-20-12-300-A3	256-axis



This demonstration is using IA Motion Controller's synchronous control of 256 axes. Four soccer balls are being manipulated in a mesmerizing display of graceful synchronous control.

POINT 1

IXA Series providing world-beating speed and cost performance is now available!



Model (Arm length)	IXA-NSN30 (300mm)	IXA-NSN45 (450mm)	IXA-NSN60 (600mm)
Standard cycle time		0.26s	
Continuous cycle time		0.45s	
Max. payload	8kg	10kg	12kg
Positioning repeatability	1st/2nd arm	±0.010mm	
	Vertical axis	±0.010mm	
	Rotational axis	±0.005°	

POINT 2

Further reduce initial costs with IXP Series!

● Achieves lower prices using a stepper motor



IXP-4N3515

* 4-axis standard specification, arm length of 350 mm, controller included, Battery-less Absolute Encoder equipped.

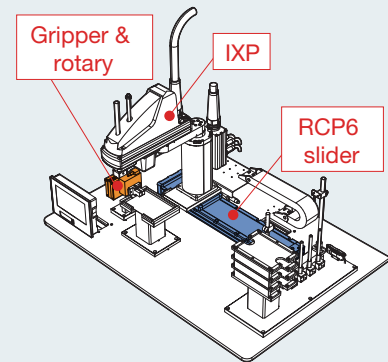
● The industry's lightest model

Unit weight reduced to about **1/2 to 2/3** that of conventional models

It can also be easily combined with the ROBO Cylinder series

Arm length	Unit weight	
	IX Series (conventional model)	IXP Series
250mm	17.1kg	1/2 or less 8kg
350mm	18kg	2/3 12kg

● Can be combined with ROBO Cylinder to further extend the functions

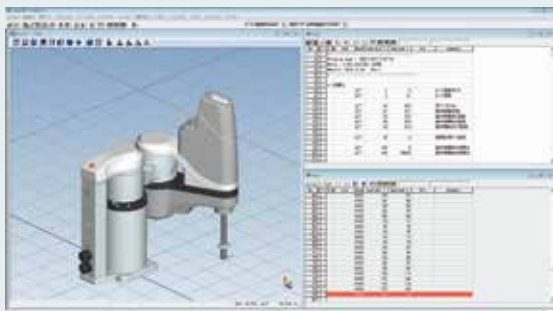


POINT 3

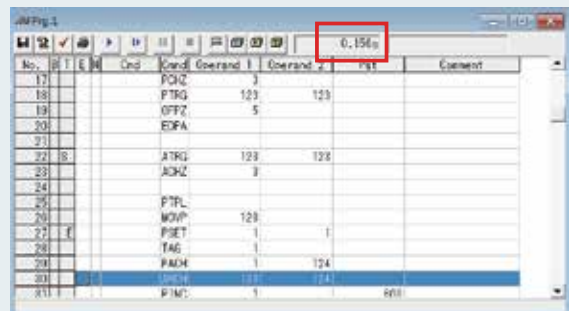
Simulation software for IXA series

Easy confirmation with simulation software!

Display via 3D animation even if there is no SCARA robot at hand.



The cycle time can also be checked with the software.



6

Single Axis/Cartesian Robot



POINT 1

Single axis robot, high precision / high rigidity / high payload / high speed

High-precision positioning repeatability (ISPB/ISPDB)
 High rigidity and long service life thanks to the guide integrated with base (ISB-LXL)
 High payload thanks to off-board tuning (ISB-LXM/LXL)
 Ball screws and guides are now manufactured in-house, supporting a wide stroke range (ISB-SXM to LXUWX)
 High lead ball screw achieves high speed and high acceleration/deceleration (ISB-MXM/MXL)

Positioning repeatability **±0.003 mm**



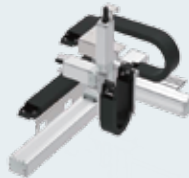
POINT 2

Compact Cartesian 3-axis/2-axis robot - Simple and low-cost

Assembled Cartesian robot, with cable management and controller built in, available with the remarkable price and service life below.



Robot: Cartesian 2-axis (XY) type
 Controller: PCON-CYB
 Calculated life: **20 years plus**



Robot: Cartesian 3-axis (XYZ) type
 Controller: PCON-CYB
 Calculated life: **20 years plus**



Robot: Cartesian 2-axis (YZ) type
 Controller: PCON-CYB
 Calculated life: **20 years plus**

* The calculated life is the calculated value for the demo unit operated 24 hours/day 365 days/year.

7

Cartesian 6-Axis Robot

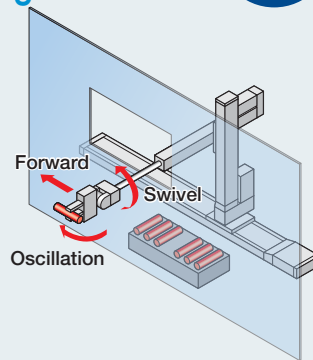


Reference Exhibit

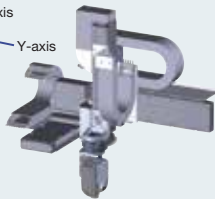
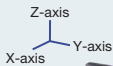
POINT 1

Capable of ingress into tight spaces and swing motion possible

The 6-axis Cartesian type can move with great freedom even in tight spaces, thanks to orthogonal + swivel/oscillation motion.



The Cartesian axis allows flexible operation range and model selection



Stroke

XYZ: **200mm** × 300mm × 190mm

In this example, only the X axis stroke is changed from 200mm to 800mm.

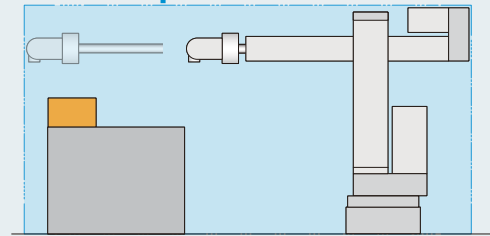


Stroke

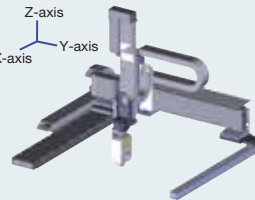
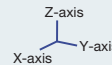
XYZ: **800mm** × 300mm × 190mm

POINT 2

Capable of operation in linear direction + diagonal direction within a square area



The Cartesian 6-axis type has a square operation range and can be operated throughout the area, helping save space. As it can operate from a horizontal posture, equipment height can be reduced.

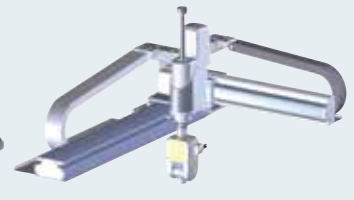


Stroke

XYZ: **800mm** × 600mm × 190mm

Speed

XYZ: 1200mm/s × 960mm/s × 600mm/s



Stroke

XYZ: **800mm** × 600mm × 200mm

Speed

XYZ: 1200mm/s × 1200mm/s × 1256mm/s

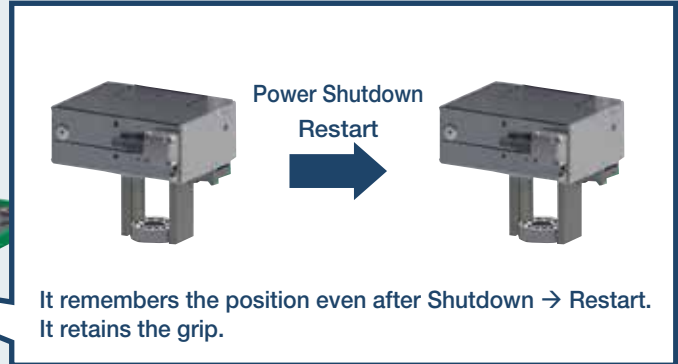
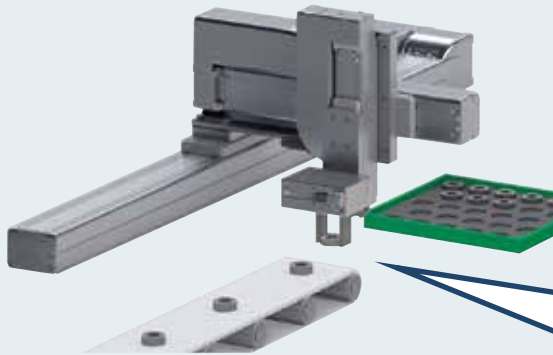
In this example, the stepper motor actuator is changed to the AC servo motor actuator for faster speed.



POINT 1

Supports Battery-less Absolute Encoder

The slim gripper RCP6-GRT series is the first gripper to be equipped with a Battery-less Absolute Encoder. Home return is no longer required when restarting the equipment; you can move to the next operation while gripping the workpiece.

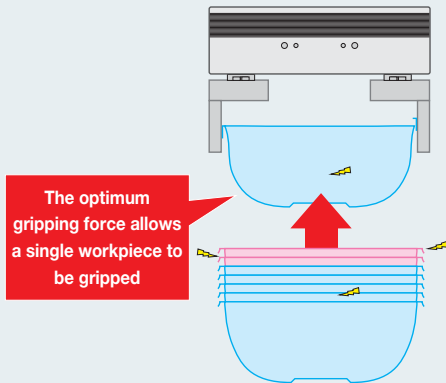


* For push holding, the push status is not retained.

POINT 2

Adjustment of gripping force

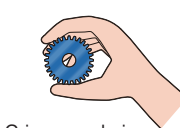
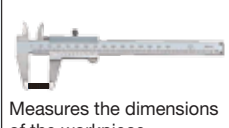

Since it can be adjusted to the optimum gripping force using numerical values, it will not scratch the workpiece.



POINT 3

Grip, measure, and judge

Capable of "measuring" and "judging" the length of the workpiece as it "grips" it.

Grips	Measures length	Judges
 Grips a workpiece	 Measures the dimensions of the workpiece	 Judges the workpiece pass/fail

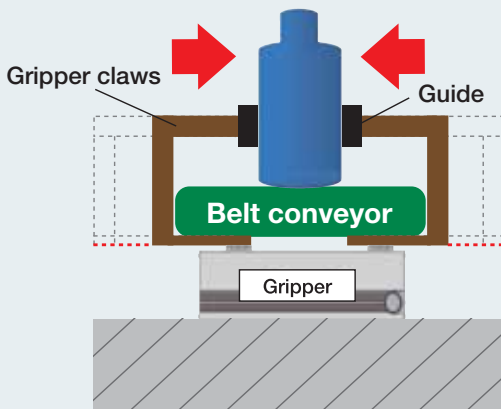


Electric gripper with 3 roles

POINT 4

Centering mechanism

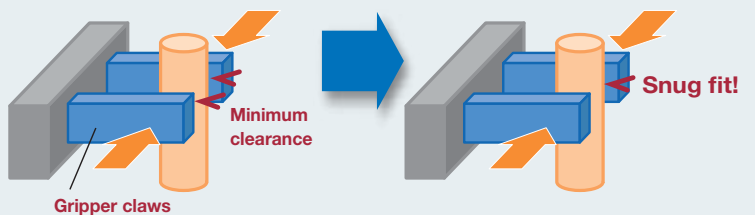
Capable of space saving centering without extra steps.



POINT 5

Faster cycle time

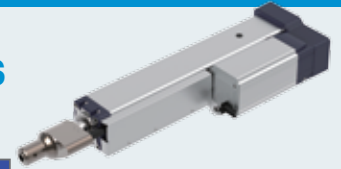
Since the gripping operation distance can be minimized, cycle time is quicker.





Battery-less Absolute Encoder

No Battery, No Maintenance, No Homing,
and No Price Increase.
No Going Back to Incremental.



POINT 1

An extensive product line is available at low prices

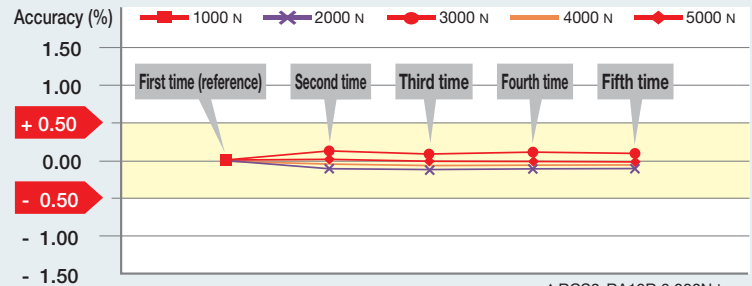
Push force **Min. 20 N to max. 50,000 N**

	Push force
RCS3-RA20R	5,000 ~ 50,000N
RCS3-RA15R	5,000 ~ 30,000N
RCS2-RA13R	2,000 ~ 19,600N
RCS3-RA10R	600 ~ 6,000N
RCS3-RA8R	200 ~ 2,000N
RCS3-RA7R	200 ~ 1,200N
RCS3-RA6R	60 ~ 600N
RCS3-RA4R	20 ~ 200N

POINT 2

High precision load control

Industry first Loading repeatability is
± 0.5 %



POINT 3

Easy setup

Press program setting in **4 easy steps**



POINT 4

Battery replacement not required

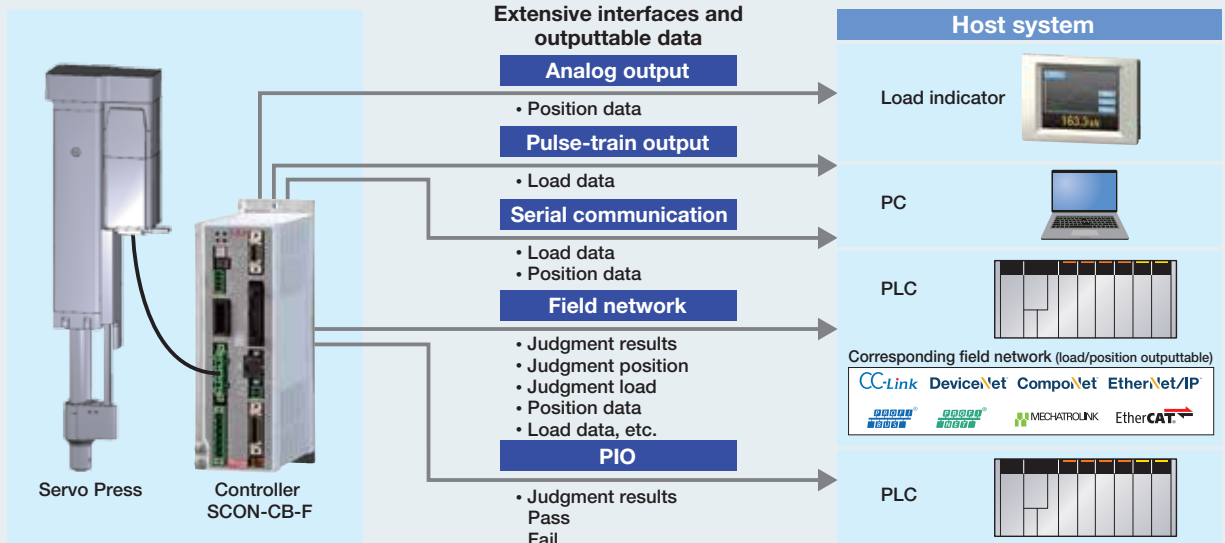
Equipped with a Battery-less Absolute Encoder as standard

Equipped as standard

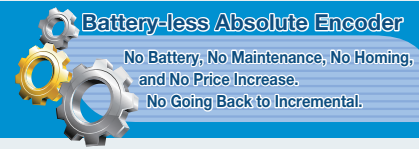
POINT 5

Supports traceability

Sends the data necessary for traceability to the host system through the extensive output interfaces.



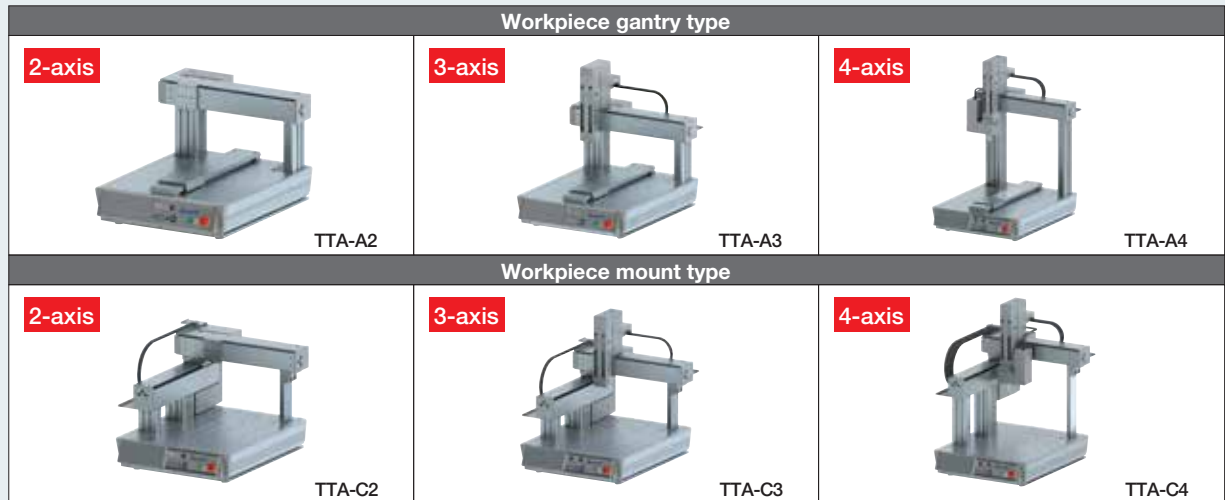
10 Tabletop Robot



POINT 1

The optimum model can be selected according to the customer's convenience (168 types in total)

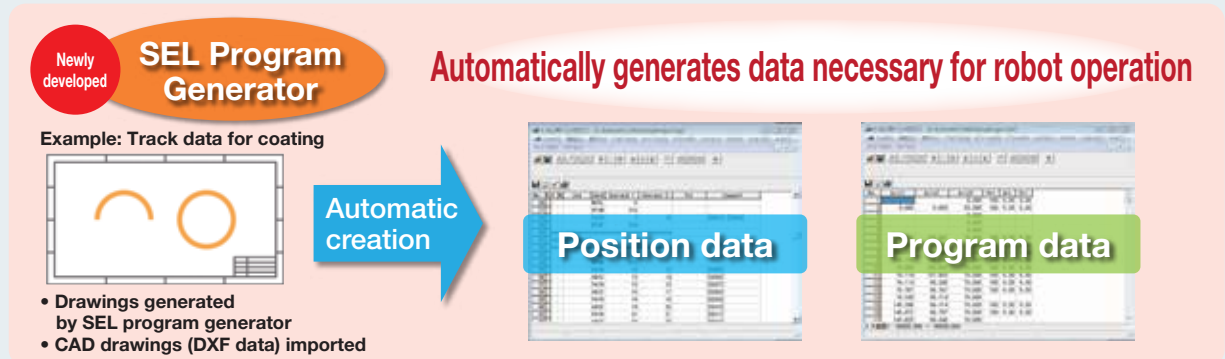
- Number of axes** ⇒ 4 types: 2-axis/3-axis/4-axis (ZR axis)
- Stroke** ⇒ 4 types: 200mm/300mm/400mm/500mm
- Configuration direction** ⇒ 2 types: Gate type/cantilever
- Equipped motor** ⇒ 2 types: Stepper motor/AC servo motor



Max. payload 30 kg (horizontal)	Max speed 1200 mm/s	Field networks supported
Positioning repeatability ±0.005 mm <small>(Stepper motor: ±0.01mm excluding R axis)</small>	Stroke variation 4 types 200×200 300×300 400×400 500×500 (mm)	

Program automatic generation software **SEL Program Generator**

The SEL Program Generator is a PC tool that generates a SEL program and positioning data simply by drawing the motion path on the screen or importing CAD data.



Operation program creation time is **reduced to just 1/3** or so!

Three types are available for different purposes.

- (1) For coating
- (2) For screw tightening
- (3) For soldering

IAI offers a variety of industrial robots according to the customer's applications

Extensive lineup

You are sure to find a product that meets your specifications among over 700,000 product types.



ELECYLINDER®



ROBO Cylinder®



Single Axis Actuator



Wrist Unit



Servo Press



Cartesian Robot/Tabletop



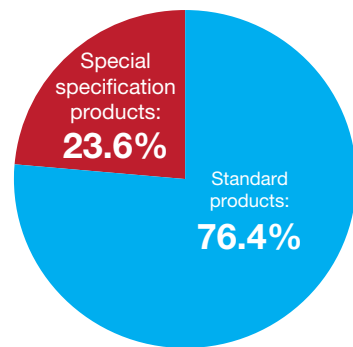
SCARA Robot



Dustproof/cleanroom supported

Custom specifications supported

We also offer custom specifications tailored to your requests.



Annual special specification ratio

Major custom specification examples

Double slider

- ◆ When the overhang load length is large and the allowable moment exceeds the specification



Surface treatment

- ◆ When the operating environment requires a change in actuator surface treatment or parts used



Special stroke

- ◆ When the stroke is insufficient with the model of choice



Grease

- ◆ When there is a change in the customer's specified grease



Free trial of product demo units

Please contact your nearest IAI group office listed on the back for more information.



IAI offers a complete national and international support network

National Network

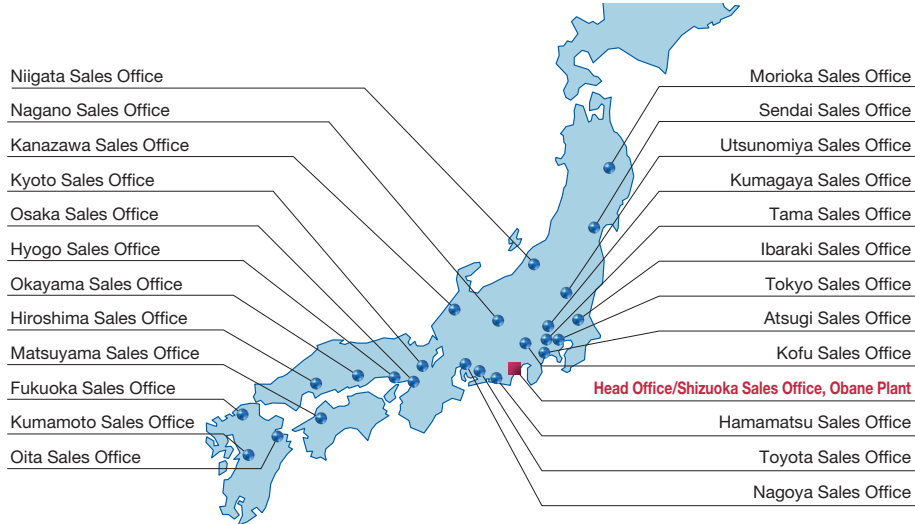
25 domestic sales bases

Technicians at each site provide thorough service and support. Various seminars are also held free of charge. Please feel free to join us.

Startup support at the customer's site

After-sales service after purchasing the product

Support for SEL program creation



International Network

7 overseas sales bases and support

We provide support overseas equivalent to the domestic support.



<p>Europe</p> <p>IAI Industrieroboter GmbH</p> <p>1 Group Location / 22 Sales Offices</p> <p>日本語 OK, TEC, Product Support, Global Support, Simple Repair</p>	<p>Thailand</p> <p>IAI Robot (Thailand) Co., Ltd.</p> <p>1 Group Location / 8 Sales Offices</p> <p>日本語 OK, TEC, Product Support, Simple Repair</p>	<p>China</p> <p>IAI (Shanghai) Co., Ltd.</p> <p>3 Group Locations / 34 Sales Offices</p> <p>日本語 OK, TEC, Product Support, Simple Repair</p>	<p>USA</p> <p>IAI America, Inc.</p> <p>3 Group Locations / 48 Sales Offices</p> <p>日本語 OK, TEC, Product Support, Global Support, Simple Repair</p>
<p>Singapore</p> <p>One Distributor</p> <p>TEC, Product Support, Simple Repair</p>	<p>Korea</p> <p>One Distributor in 2 Locations</p> <p>日本語 OK, TEC, Product Support, Simple Repair</p>	<p>Brazil</p> <p>One Distributor</p> <p>日本語 OK, TEC, Product Support, Simple Repair</p>	<p>Vietnam</p> <p>One Distributor</p> <p>日本語 OK</p>
<p>Philippines</p> <p>One Distributor</p> <p>日本語 OK</p>	<p>Indonesia</p> <p>1 Sales Office</p> <p>Global Support, Simple Repair</p>	<p>Taiwan</p> <p>3 Sales Offices</p> <p>日本語 OK, TEC, Product Support, Simple Repair</p>	<p>India</p> <p>One Distributor</p> <p>TEC, Simple Repair</p>



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