YRG
Series

Product Lineup

ELECTRIC GRIPPERS

Electric grippers dedicated to the RCX320 and RCX340 controller.
Easy operation is achieved as YAMAHA robot language gives unified control.

Gripping force control

Gripping force can be set in 1 % steps from 30 to 100 %.

Measuring

Workpiece can be measured using position detection function.

Speed control

Speed can be set in 1 % steps from 20 to 100 % and acceleration can be set in 1 % steps from 1 to 100 %.

Multi-point position control

Up to 10,000 positioning points can be set.

Workpiece check function

Workpiece gripping mistake or workpiece drop can be checked by the HOLD output signal without using sensor.

Plenty of lightweight and compact model variations

S type Single cam type

P.603

Lightweight, compact, high-speed

Small single cam

YRG-2005SS

YRG-2010S

YRG-2815S

YRG-4225S

Single cam structure

Use of an unique cam structure achieves the simple and compact design. As the self-lock is not activated, the fingers can be operated using an external force.

W type Double cam type

P.605

High gripping force

YRG-2005W

YRG-2810W

YRG-4220W

Double cam structure

Unique double cam structure with gear. Use of a simple structure achieves high gripping force with compact body.

Screw type Straight shape

P.606

Screw type "T" shape

P.607

High accuracy, long stroke

YRG-2020FS/YRG-2840FS

YRG-2020FT/YRG-2840FT

Ball screw structure

As the ground ball screw is driven by the belt, the long stroke with high efficiency and high accuracy is achieved.

Three fingers type

P.608

Compact, high rigidity, long stroke

YRG-2004T

YRG-2013T

YRG-2820T

YRG-4230T

Compact ball guide structure

Use of a special cam provides lightweight and compact electric grippers. These electric grippers are suitable for transfer of round workpieces made of glass or similar materials.

Type	Model	Gripping force(N)	Open/close stroke (mm)	Maximum speed (mm/sec.)	Repeated positioning accuracy (mm)	Main body weight (g)	Page
Compact single cam	YRG-2005SS	5	3.2	100	+/- 0.02	90	P.603
Single cam	YRG-2010S	6	7.6	100	+/- 0.02	160	P.604
	YRG-2815S	22	14.3	100	+/- 0.02	300	
	YRG-4225S	40	23.5	100	+/- 0.02	580	
Double cam	YRG-2005W	50	5	60	+/- 0.03	20	P.605
	YRG-2810W	150	10	60	+/- 0.03	350	
	YRG-4220W	250	19.3	45	+/- 0.03	800	
Screw type Straight shape	YRG-2020FS	50	19	50	+/- 0.01	420	P.606
	YRG-2840FS	150	38	50	+/- 0.01	880	
Screw type "T" shape	YRG-2020FT	50	19	50	+/- 0.01	420	P.607
	YRG-2840FT	150	38	50	+/- 0.01	890	
Three fingers type	YRG-2004T	2.5	3.5	100	+/- 0.03	90	P.608
	YRG-2013T	2	13	100	+/- 0		P.609
	YRG-2820T	10	20	100	+/- 0.03	340	
	YRG-4230T	20	30	100	+/- 0.03	640	

- Gripping force control: 30 to 100 % (1 % steps)
- Speed control: 20 to 100 % (1 % steps)
- Acceleration control: 1 to 100 % (1 % steps)
- Multi-point position control: Maximum 10,000 points
- Workpiece size judgment: 0.01 mm steps (by ZON signal)

POINT 1

Electric grippers achieve highly accurate gripping force, and position, and speed controls.

The YRG series provides the gripping force control, speed and acceleration controls, multi-point control, and workpiece measurement that were difficult by conventional air-driven devices. The YRG series flexibly supports various applications.

Gripping force control

The gripping force can be set in 1 % steps. Workpieces that are easy to break or deform, such as glass or spring can be gripped. The gripping force is constant even when the finger position changes.

Air pressure type

Fine adjustment of the regulator is difficult.

Electric type

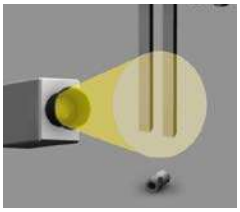
Gripping force can be set in 1 % steps from 30 % to 100 %.

Workpiece presence check function

The electric gripper outputs the HOLD signal. Workpiece gripping mistake or workpiece drop during transfer can be checked. No external sensors are needed.

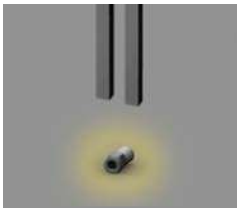
Air pressure type

Workpiece gripping mistake or drop is judged using the sensor or image processing unit.



Electric type

Workpiece drop can be judged. No external sensor is needed.



Speed control

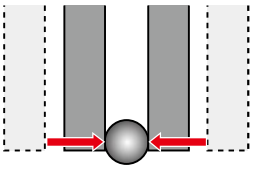
The speed and acceleration can be set in a range of 20 to 100 mm/sec. in 1 % steps (singe cam and three fingers type). The gripper can gently touch workpieces that are vulnerable to impact, such as lenses or electronic components.

Multi-point position control

The finger can be set to a desired position according to the workpiece size. This contributes to efficiency improvement of lines with different workpiece sizes and materials mixed and lines with many setup steps.

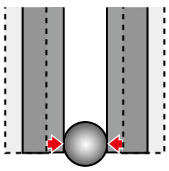
Air pressure type

Loss is generated in the stroke.



Electric type

Loss is not generated in the stroke as optimal positioning accuracy is maintained.



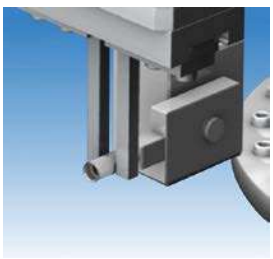
Contributes to tact improvement.

Measuring function

The gripped workpiece can be measured using the position detection. Use of this function makes it possible to correctly judge what portion of the workpiece is gripped.

Zone range function

Use of this zone range function makes it possible to judge the size OK/NG and check for slant insertion.



List of robot languages (example)

Language name	Function
GDRIVE	Absolute position movement
GDRIVEI	Relative position movement
GHOLD	Absolute position gripping movement
GHOLDI	Relative position gripping movement
GOPEN	Constant speed gripping movement (open)
GCLOSE	Constant speed gripping movement (close)
GORIGIN	Gripper axis return-to-origin
GSTATUS	Status acquisition
ORIGIN	Return-to-origin
WHERE	Main group current position acquisition (joint coordinate: pulse)
WHERE2	Sub group current position acquisition (joint coordinate: pulse)
WHRXY	Main group current position acquisition (Cartesian coordinate: mm, degree)
WHRXY2	Sub group current position acquisition (Cartesian coordinate: mm, degree)

POINT 2

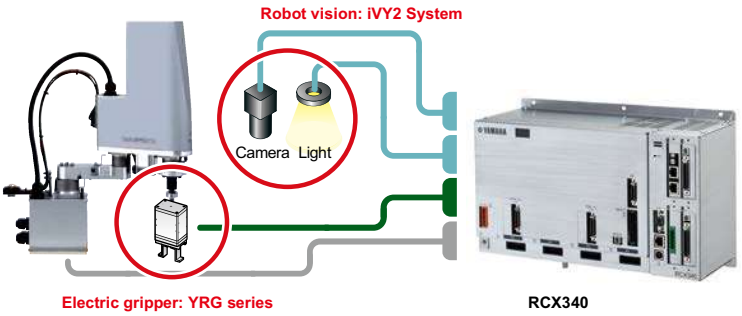
Gripper can be controlled with controller commands.

The gripper controls can be performed with one multi-axis controller RCX320, RCX340. Data exchanging with the host unit, such as PLC is not needed. The setup or startup can be made easily.

POINT 3

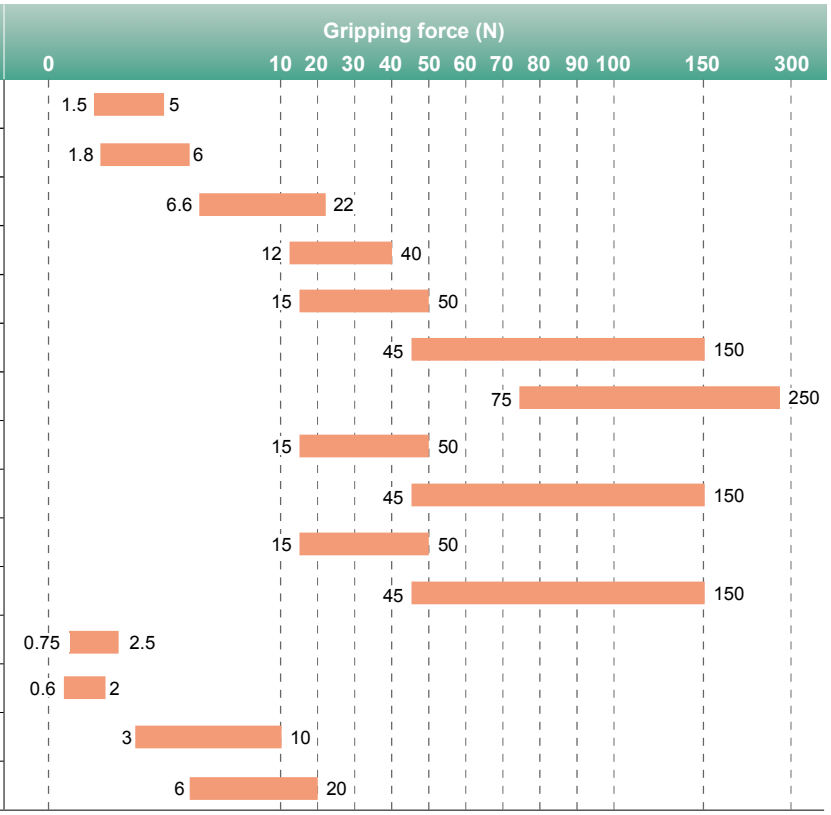
Combination with a vision system supports a wide variety of applications.

As the YRG series is combined with controller integrated robot vision "iVY2 System", the operations from the positioning using the camera to workpiece handling can be controlled in the batch mode using the RCX320, RCX340 controller. Sophisticated systems can be easily configured.



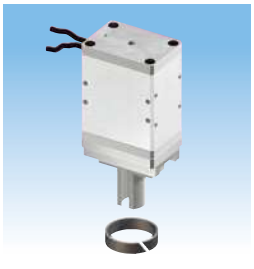
Gripping force comparison of electric gripper models

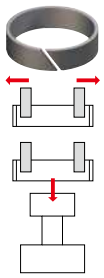
Type	Model	Open/close stroke (mm)
Compact single cam	YRG-2005SS	3.2
Single cam	YRG-2010S	7.6
	YRG-2815S	14.3
	YRG-4225S	23.5
Double cam	YRG-2005W	5
	YRG-2810W	10
	YRG-4220W	19.3
Screw type Straight shape	YRG-2020FS	19
	YRG-2840FS	38
Screw type "T" shape	YRG-2020FT	19
	YRG-2840FT	38
Three fingers type	YRG-2004T	3.5
	YRG-2013T	13
	YRG-2820T	20
	YRG-4230T	30



Application examples

Deformation prevention transfer of resin rings, etc.

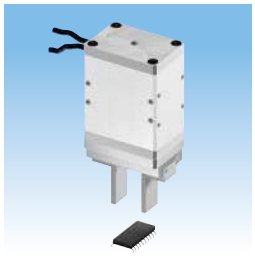




- Measuring function (Maintains workpiece shape.)
- Gripping force control (Maintains workpiece shape and prevents scratches.)
- Speed control (Maintains workpiece shape and prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)

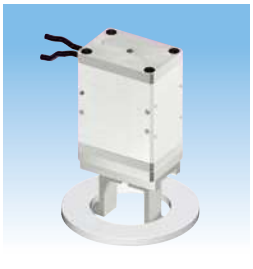
Note. Air unit cannot control the gripping force and speed, causing workpiece to be scratched or tact time not to be shortened.

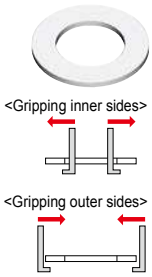
Chip assembly transfer Deformation prevention and lead protrusion dimension check



- Measuring function (Checks lead protrusion dimensions.)
- Gripping force control (Maintains workpiece shape and prevents scratches.)
- Speed control (Maintains workpiece shape and prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)

Transfer and dimension check of flexible workpieces with different sizes





- Measuring function (Checks lead protrusion dimensions.)
- Gripping force control (Prevents workpiece deformation.)
- Speed control (Prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)
- Reduction of setup work (Improves productivity.)