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	200	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	+/- 0.03	190	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

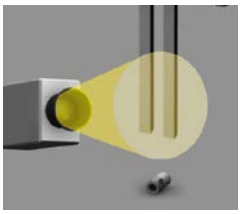
Gripping force can be set in 1 % steps from 30 % to 100 %.

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.

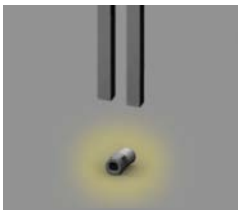
Air pressure type

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.

POINT 2

Gripper can be controlled with controller commands.

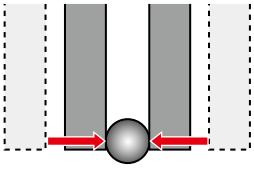
The gripper controls can be performed with one multi-axis controller RCX320, RCX340. Data exchanging with the host unit, such as PLC is not needed. The setup or startup can be made easily.

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.

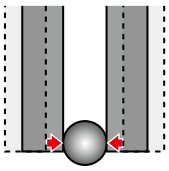
Air pressure type

Loss is generated in the stroke.



Electric type

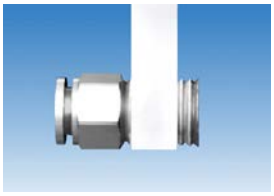
Loss is not generated in the stroke as optimal positioning accuracy is maintained.



Contributes to tact improvement.

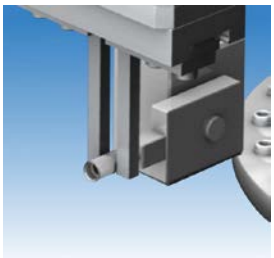
Measuring function

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.



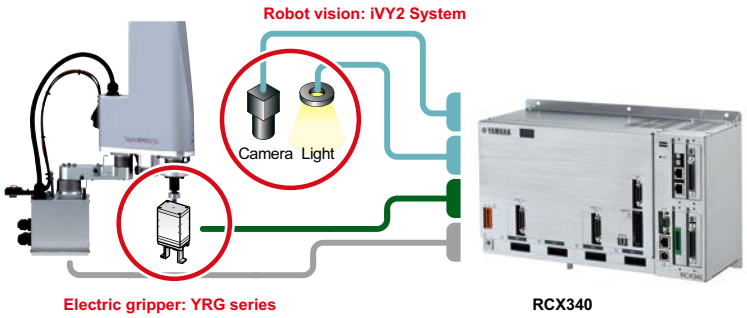
List of robot languages (example)

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 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.



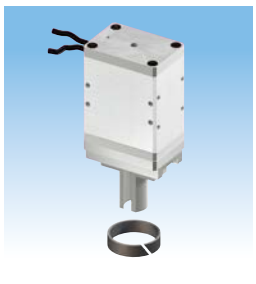
Gripping force comparison of electric gripper models

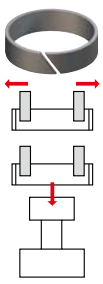
Type	Model	Open/close stroke (mm)	Gripping force (N)
Compact single cam	YRG-2005SS	3.2	1.5 – 5
Single cam	YRG-2010S	7.6	1.8 – 6
	YRG-2815S	14.3	6.6 – 22
	YRG-4225S	23.5	12 – 40
Double cam	YRG-2005W	5	15 – 50
	YRG-2810W	10	45 – 150
	YRG-4220W	19.3	75 – 250
Screw type Straight shape	YRG-2020FS	19	15 – 50
	YRG-2840FS	38	45 – 150
Screw type "T" shape	YRG-2020FT	19	15 – 50
	YRG-2840FT	38	45 – 150
Three fingers type	YRG-2004T	3.5	0.75 – 2.5
	YRG-2013T	13	0.6 – 2
	YRG-2820T	20	3 – 10
	YRG-4230T	30	6 – 20

Gripping force (N): 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 150, 300

Application examples

Deformation prevention transfer of resin rings, etc.

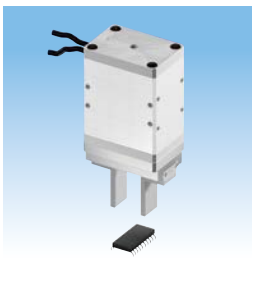


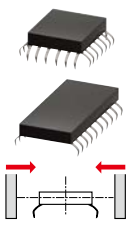


- Measuring function (Maintains workpiece shape.)
- Gripping force control (Maintains workpiece shape and prevents scratches.)
- Speed control (Maintains workpiece shape and prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)

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

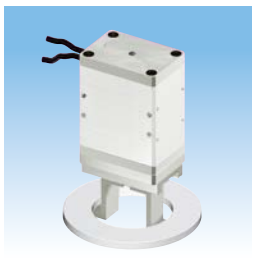
Chip assembly transfer Deformation prevention and lead protrusion dimension check

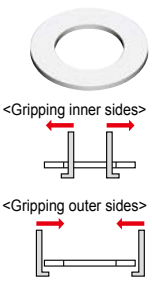




- Measuring function (Checks lead protrusion dimensions.)
- Gripping force control (Maintains workpiece shape and prevents scratches.)
- Speed control (Maintains workpiece shape and prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)

Transfer and dimension check of flexible workpieces with different sizes



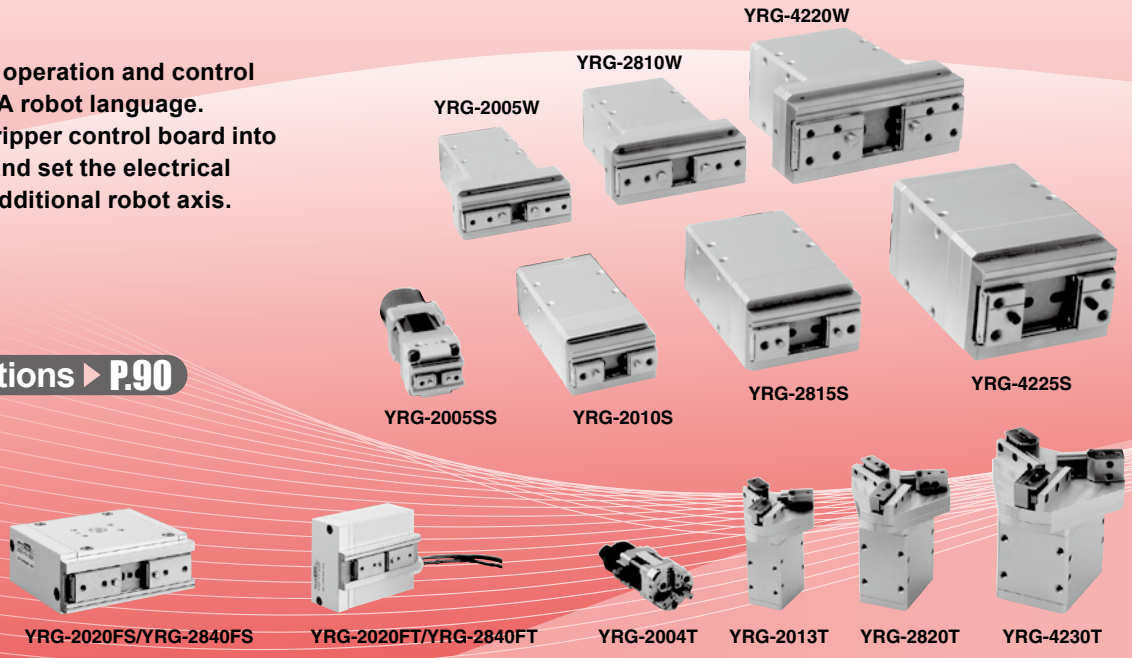


- Measuring function (Checks lead protrusion dimensions.)
- Gripping force control (Prevents workpiece deformation.)
- Speed control (Prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)
- Reduction of setup work (Improves productivity.)

YRG Series

Simple gripper operation and control via the YAMAHA robot language. Just install a gripper control board into the controller and set the electrical gripper as an additional robot axis.

Main functions ▶ P.90

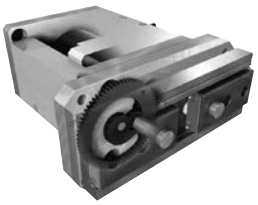


Structure

Single cam structure

Unique cam structure is simple and compact. The fingers work due to external force since no self-locking is used.

Double cam structure



Unique double cam structure with gear. Simple design gives high gripping power yet body is compact.

Ball screw structure

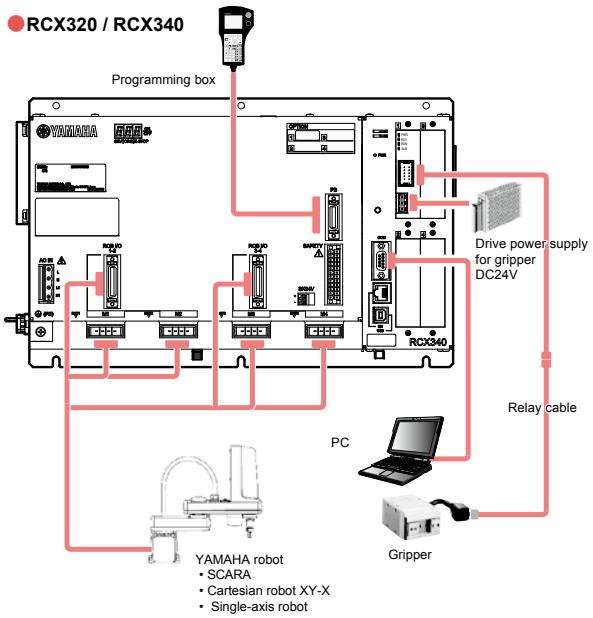
Belt-driven ground ball screw delivers a long stroke with high efficiency and high precision.

Compact ball guide structure

Use of special cams provides light weight and compactness. Ideal for grasping and moving a round workpiece made of glass or similar material.

System configuration illustration

RCX320 / RCX340



Compact single cam type

YRG-2005SS

Basic specifications

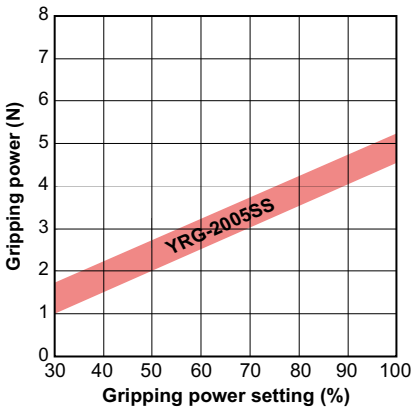
Model name		YRG-2005SS
Model number		KCF-M2010-A0
Holding power	Max. continuous rating (N)	5
	Min. setting (% (N))	30 (1.5)
	Resolution (% (N))	1 (0.05)
Open/close stroke (mm)		3.2
Speed	Max. rating (mm/sec)	100
	Min. setting (% (mm/sec))	20 (20)
	Resolution (% (mm/sec))	1 (1)
	Holding speed (Max.) (%)	50
Repetitive positioning accuracy (mm)		+/-0.02
Guide mechanism		Linear guide
Max. holding weight Note 1 (kg)		0.05
Weight (g)		90

• Hoding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
• Acceleration control : 1 to 100% (1% steps) • Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.
Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.
Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

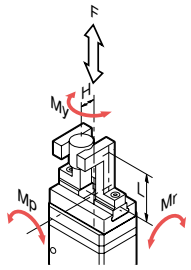
Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

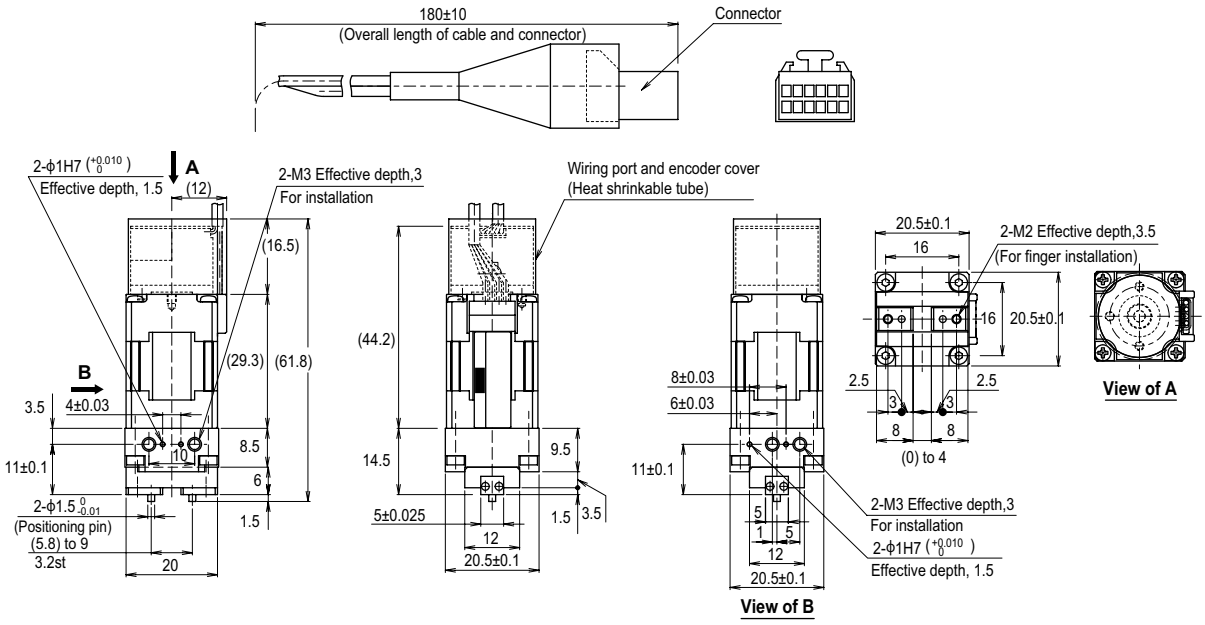
Allowable load and load moment

				YRG-2005SS
Guide	Allowable load	F	N	12
	Allowable pitching moment	Mp	N•m	0.04
	Allowable yawing moment	My	N•m	0.04
	Allowable rolling moment	Mr	N•m	0.08
Finger	Max. weight (1 pair)		g	10
	Max. holding position	L	mm	20
	Max. overhang	H	mm	20



• Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
• Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
• Please contact your YAMAHA sales dealer for further information on combination of L and H.

YRG-2005SS



Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move. Take appropriate measures so that any excessive force is not applied to the root of the cable.

YRG Series

Single cam type

YRG-2010S/2815S/4225S

Basic specifications

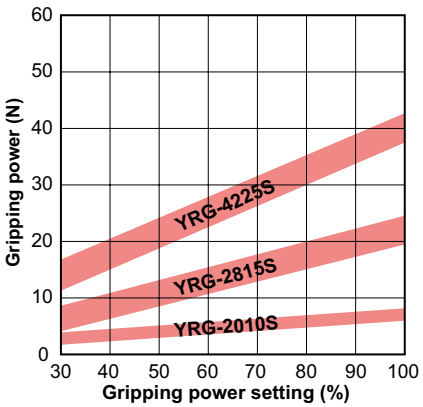
Model name		YRG-2010S	YRG-2815S	YRG-4225S
Model number		KCF-M2011-A0	KCF-M2011-B0	KCF-M2011-C0
Holding power	Max. continuous rating (N)	6	22	40
	Min. setting (% (N))	30 (1.8)	30 (6.6)	30 (12)
	Resolution (% (N))	1 (0.06)	1 (0.22)	1 (0.4)
Open/close stroke (mm)		7.6	14.3	23.5
Speed	Max. rating (mm/sec)	100		
	Min. setting (% (mm/sec))	20 (20)		
	Resolution (% (mm/sec))	1 (1)		
	Holding speed (Max.) (%)	50		
Repetitive positioning accuracy (mm)		+/-0.02		
Guide mechanism		Linear guide		
Max. holding weight Note 1 (kg)		0.06	0.22	0.4
Weight (g)		160	300	580

• Hoding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
• Acceleration control : 1 to 100% (1% steps) • Multipoint position control: 10,000 max.

Note. Design the finger as short and lightweight as possible.
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.
Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.
Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

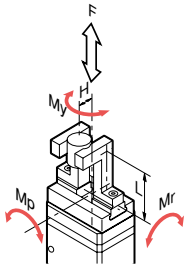
Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

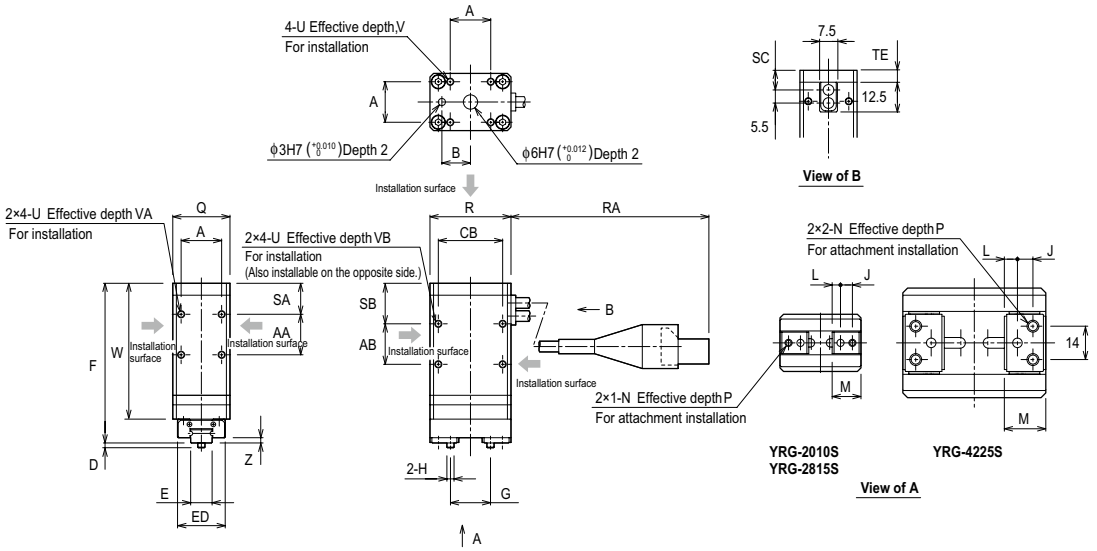
Allowable load and load moment

				YRG-2010S	YRG-2815S	YRG-4225S
Guide	Allowable load	F	N	450	350	600
	Allowable pitching moment	Mp	N•m	0.7	0.5	1.1
	Allowable yawing moment	My	N•m	0.8	0.6	1.3
	Allowable rolling moment	Mr	N•m	2.3	2.8	8.6
Finger	Max. weight (1 pair)		g	15	30	50
	Max. holding position	L	mm	20	20	25
	Max. overhang	H	mm	20	25	30



• Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
• Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
• Please contact your YAMAHA sales dealer for further information on combination of L and H.

YRG-2010S/2815S/4225S



	A	AA	AB	B	CB	D	E	ED	F	G	H	J	L
YRG-2010S	17	17	17	12	27	2	9 0 -0.05	20	71	8.4 to 16	φ3 0 -0.01	5	3.5
YRG-2815S	24	24	14	15	38	2	14 0 -0.05	25	78	9.6 to 23.9	φ3 0 -0.01	6	4.3
YRG-4225S	36	25	13	20	50	3	24 0 -0.05	40	86	12 to 35.5	φ4 0 -0.012	6.5	5.5

	M	N	P	Q	R	RA	SA	SB	SC	TE	U	V	VA	VB	W	Z
YRG-2010S	12.1	M3	5	24	34	165+/-10	13	17	8.3	5	M3	5	6	6	61	2.2
YRG-2815S	15	M4	5	32	46	140+/-10	16	21	9.3	6	M4	6	8	8	69	2
YRG-4225S	17.4	M5	8	46	60	235+/-10	18	24	10.8	7.5	M5	7.5	8	10	72	3

Double cam type

YRG-2005W/2810W/4220W

Basic specifications

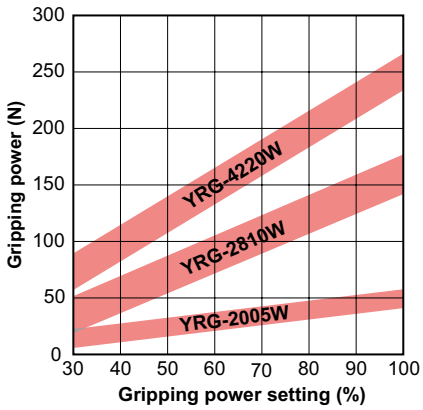
Model name		YRG-2005W	YRG-2810W	YRG-4220W
Model number		KCF-M2012-A0	KCF-M2012-B0	KCF-M2012-C0
Holding power	Max. continuous rating (N)	50	150	250
	Min. setting (% (N))	30 (15)	30 (45)	30 (75)
	Resolution (% (N))	1 (0.5)	1 (1.5)	1 (2.5)
Open/close stroke (mm)		5	10	19.3
Speed	Max. rating (mm/sec)	60	60	45
	Min. setting (% (mm/sec))	20 (12)	20 (12)	20 (9)
	Resolution (% (mm/sec))	1 (0.6)	1 (0.7)	1 (0.45)
	Holding speed (Max.) (%)	50		
Repetitive positioning accuracy (mm)		+/-0.03		
Guide mechanism		Linear guide		
Max. holding weight Note 1 (kg)		0.5	1.5	2.5
Weight (g)		200	350	800

• Hoding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
• Acceleration control : 1 to 100% (1% steps) • Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.
Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.
Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

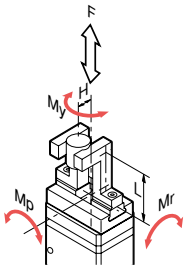
Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

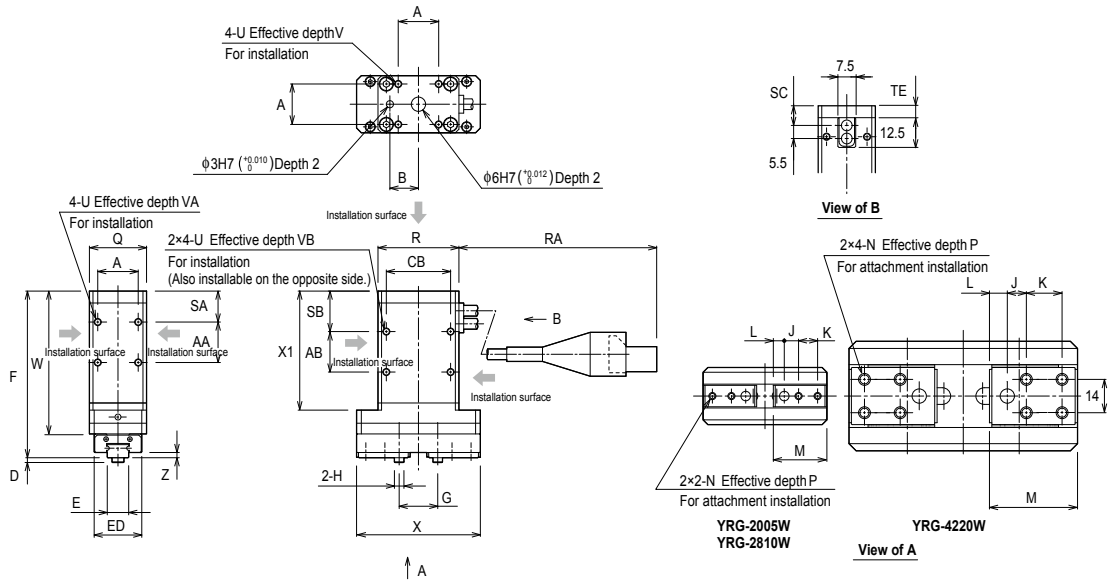
Allowable load and load moment

				YRG-2005W	YRG-2810W	YRG-4220W
Guide	Allowable load	F	N	1000	1000	2000
	Allowable pitching moment	Mp	N•m	6.7	8.1	20.1
	Allowable yawing moment	My	N•m	4	4.8	12
	Allowable rolling moment	Mr	N•m	5.1	7.8	25.9
Finger	Max. weight (1 pair)		g	40	80	200
	Max. holding position	L	mm	30	30	50
	Max. overhang	H	mm	20	30	30



• Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
• Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
• Please contact your YAMAHA sales dealer for further information on combination of L and H.

YRG-2005W/2810W/4220W



	A	AA	AB	B	CB	D	E	ED	F	G	H	J	K	L
YRG-2005W	17	17	17	12	27	2	9 $^{0}_{-0.05}$	20	74	10.6 to 15.6	ϕ4 $^{0}_{-0.012}$	6	8	4.6
YRG-2810W	24	24	14	15	38	2	14 $^{0}_{-0.05}$	25	80	12.6 to 22.6	ϕ5 $^{0}_{-0.012}$	7	10	5.65
YRG-4220W	36	25	13	20	50	3	24 $^{0}_{-0.05}$	40	90	17.0 to 36.3	ϕ6 $^{0}_{-0.012}$	8	15	7.5

	M	N	P	Q	R	RA	SA	SB	SC	TE	U	V	VA	VB	W	X	X1	Z
YRG-2005W	22.5	M3	5	24	34	165+/-10	13	17	8.3	5	M3	5	6	6	64	52	54	2.2
YRG-2810W	27.5	M4	5	32	46	140+/-10	16	21	9.3	6	M4	6	8	8	71	67	61	2
YRG-4220W	37	M5	8	46	60	235+/-10	18	24	10.8	7.5	M5	7.5	8	10	76	96	63	3

YRG Series

Screw type strait style

YRG-2020FS/2840FS

Basic specifications

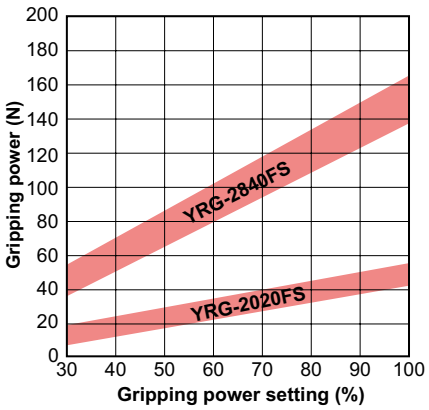
Model name		YRG-2020FS	YRG-2840FS
Model number		KCF-M2013-A0	KCF-M2013-B0
Holding power	Max. continuous rating (N)	50	150
	Min. setting (% (N))	30 (15)	30 (45)
	Resolution (% (N))	1 (0.5)	1 (1.5)
Open/close stroke (mm)		19	38
Speed	Max. rating (mm/sec)	50	50
	Min. setting (% (mm/sec))	20 (10)	20 (10)
	Resolution (% (mm/sec))	1 (0.5)	1 (0.5)
	Holding speed (Max.) (%)	50	50
Repetitive positioning accuracy (mm)		+/-0.01	+/-0.01
Guide mechanism		Linear guide	
Max. holding weight Note 1 (kg)		0.5	1.5
Weight (g)		420	880

• Hoding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
• Acceleration control : 1 to 100% (1% steps) • Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.
Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.
Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

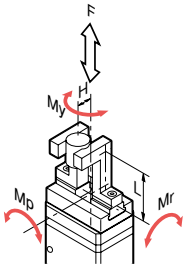
Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

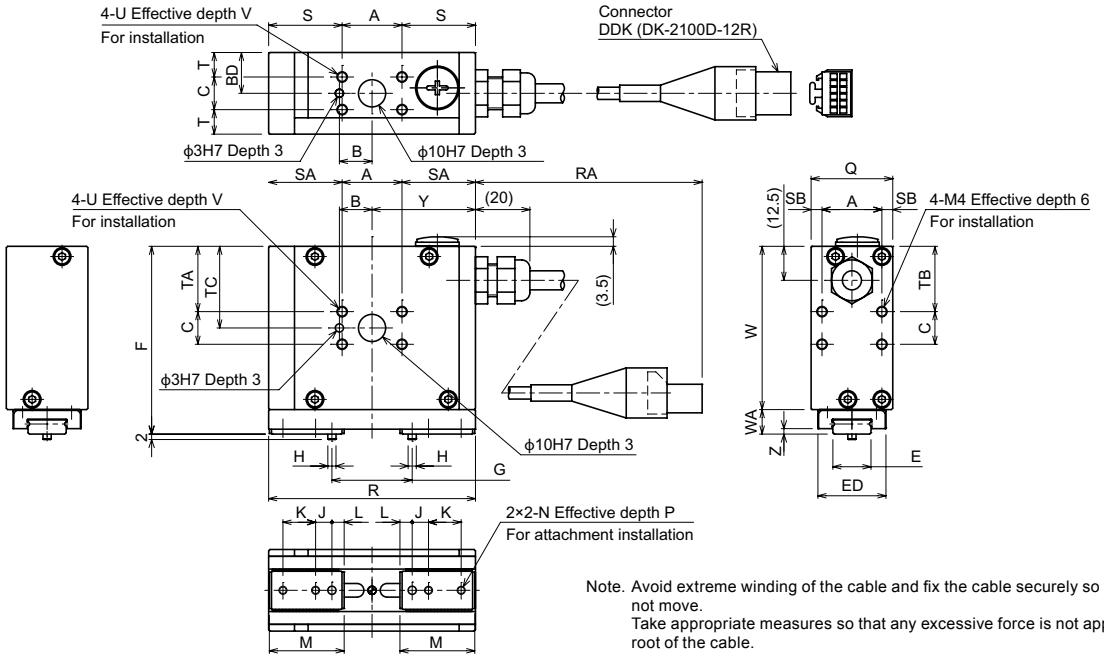
Allowable load and load moment

				YRG-2020FS	YRG-2840FS
Guide	Allowable load	F	N	1000	1300
	Allowable pitching moment	Mp	N•m	3.5	5
	Allowable yawing moment	My	N•m	4.2	6
	Allowable rolling moment	Mr	N•m	7.3	12.7
Finger	Max. weight (1 pair)		g	40	80
	Max. holding position	L	mm	30	30
	Max. overhang	H	mm	20	20



• Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
• Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
• Please contact your YAMAHA sales dealer for further information on combination of L and H.

YRG-2020FS/2840FS



Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move.
Take appropriate measures so that any excessive force is not applied to the root of the cable.

	A	B	BD	C	D	E	ED	F	G	H	J	K	L	M	N
YRG-2020FS	22	12	15	12	2	14 $^{0}_{-0.05}$	25	69	10.5 to 29.5	ϕ3 $^{0}_{-0.01}$	6	12	4.5	27.5	M3
YRG-2840FS	30	15	20	16	2	18 $^{0}_{-0.05}$	30	84	13 to 51	ϕ4 $^{0}_{-0.012}$	8	14	5.5	34.5	M4

	P	Q	R	RA	S	SA	SB	T	TA	TB	TC	TD	U	V	W	WA	Y	Z
YRG-2020FS	5	30	76	175+/-10	27	27	4	9	24	24	30	12.5	M4	6	60	9	38	2
YRG-2840FS	7.5	40	110	135+/-10	40	40	5	12	28	28	36	14	M5	7.5	72	12	55	3

Screw type “T” style

YRG-2020FT/2840FT

Basic specifications

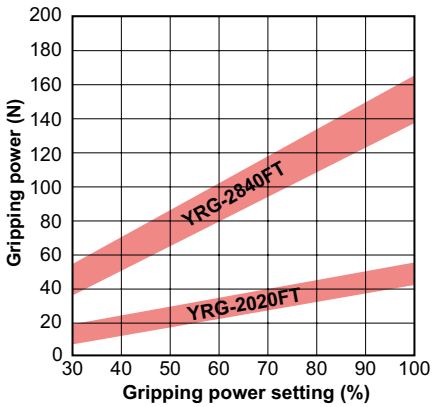
Model name		YRG-2020FT	YRG-2840FT
Model number		KCF-M2014-A0	KCF-M2014-B0
Holding power	Max. continuous rating (N)	50	150
	Min. setting (% (N))	30 (15)	30 (45)
	Resolution (% (N))	1 (0.5)	1 (1.5)
Open/close stroke (mm)		19	38
Speed	Max. rating (mm/sec)	50	50
	Min. setting (% (mm/sec))	20 (10)	20 (10)
	Resolution (% (mm/sec))	1 (0.5)	1 (0.5)
	Holding speed (Max.) (%)	50	50
Repetitive positioning accuracy (mm)		+/-0.01	+/-0.01
Guide mechanism		Linear guide	
Max. holding weight Note 1 (kg)		0.5	1.5
Weight (g)		420	890

• Hoding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
• Acceleration control : 1 to 100% (1% steps) • Multipoint position control: 10,000 max.

Note. Design the finger as short and lightweight as possible.
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.
Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.
Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

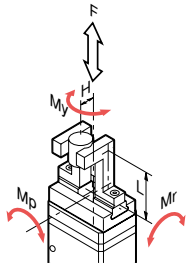
Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

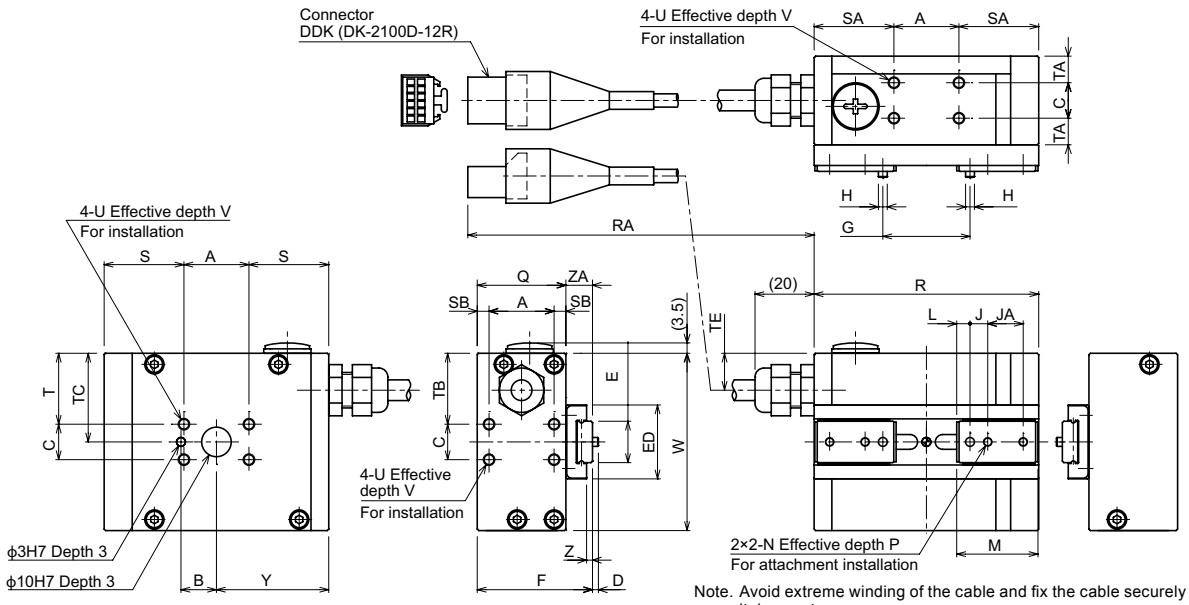
Allowable load and load moment

				YRG-2020FT	YRG-2840FT
Guide	Allowable load	F	N	1000	1300
	Allowable pitching moment	Mp	N•m	3.5	5
	Allowable yawing moment	My	N•m	4.2	6
	Allowable rolling moment	Mr	N•m	7.3	12.7
Finger	Max. weight (1 pair)		g	40	80
	Max. holding position	L	mm	30	30
	Max. overhang	H	mm	20	20



• Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
• Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
• Please contact your YAMAHA sales dealer for further information on combination of L and H.

YRG-2020FT/2840FT



Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move.
Take appropriate measures so that any excessive force is not applied to the root of the cable.

	A	B	C	D	E	ED	F	G	H	J	JA	K	L	M	N	P
YRG-2020FT	22	12	12	2	14 $^{0}_{-0.05}$	25	39	10.5 to 29.5	ϕ3 $^{0}_{-0.01}$	6	12	12	4.5	27.5	M3	5
YRG-2840FT	30	15	16	2	18 $^{0}_{-0.05}$	30	52	13 to 51	ϕ4 $^{0}_{-0.012}$	8	14	14	5.5	34.5	M4	7.5

	Q	R	RA	S	SA	SB	T	TA	TB	TC	TD	TE	U	V	W	Y	Z	ZA
YRG-2020FT	30	76	175+/-10	27	27	4	24	9	24	30	12.5	12.5	M4	6	60	38	2	9
YRG-2840FT	40	110	135+/-10	40	40	5	28	12	28	36	14	14	M5	7.5	72	55	3	12

YRG Series

Three fingers type

YRG-2004T

Basic specifications

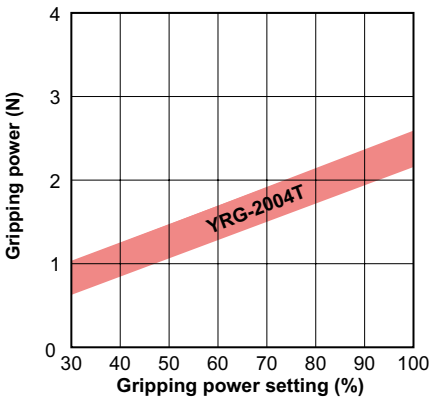
		YRG-2004T
Model name		YRG-2004T
Model number		KCF-M2015-A0
Holding power	Max. continuous rating (N)	2.5
	Min. setting (% (N))	30 (0.75)
	Resolution (% (N))	1 (0.025)
Open/close stroke (mm)		3.5
Speed	Max. rating (mm/sec)	100
	Min. setting (% (mm/sec))	20 (20)
	Resolution (% (mm/sec))	1 (1)
	Holding speed (Max.) (%)	50
Repetitive positioning accuracy (mm)		+/-0.03
Guide mechanism		Linear guide
Max. holding weight Note 1 (kg)		0.02
Weight (g)		90

• Hoding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
• Acceleration control : 1 to 100% (1% steps) • Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.
Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.
Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

Allowable load and load moment

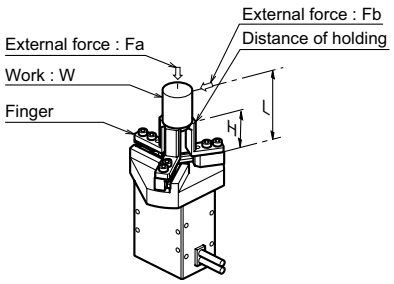
				YRG-2004T
Finger	Allowable load		N	6
	Allowable pitching moment		N•m	0.02
	Max. weight (1 pair)		g	10
	Max. holding position	L	mm	15

•When the external forces Fa and Fb are applied to a potion the distance (L) apart from the finger installation surface, the load (F) and moment (M) are calculated from the formulas shown below.

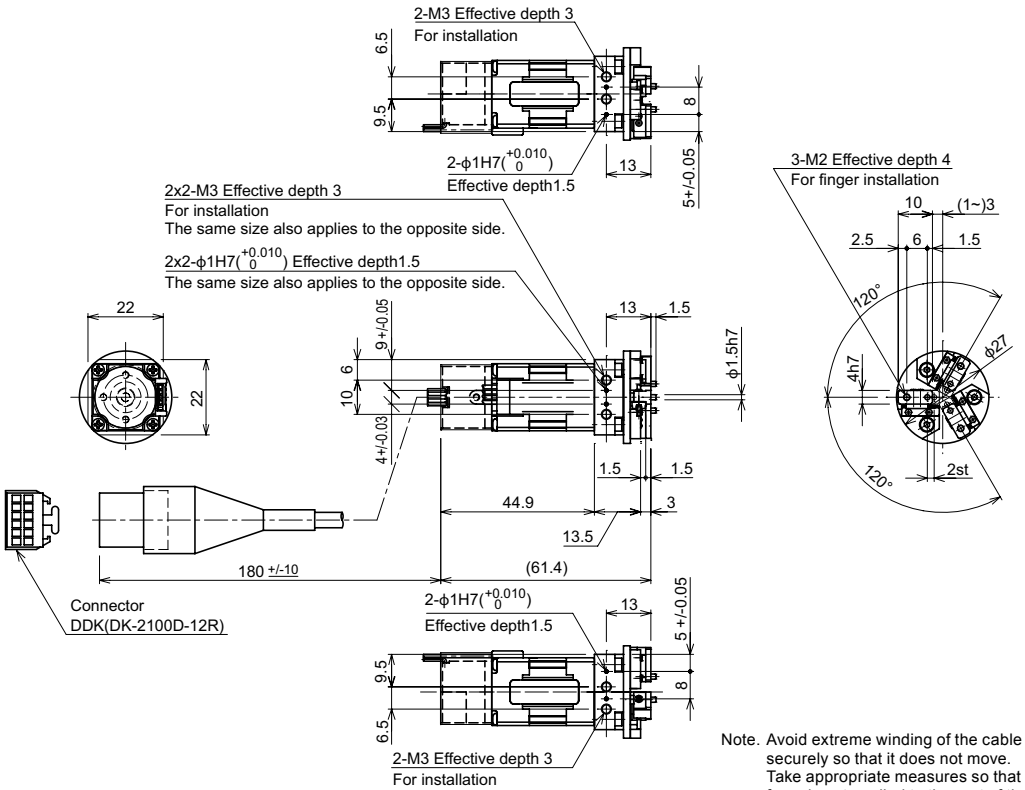
F = Fa + W × g
M = Fb × L

F : Load [N]
M : Moment [N•m]
L : Distance of point of external force application [m]

Fa :External force [N]
Fb :External force [N]
W : Workpiece weight [Kg]
g : Gravity acceleration [m/s^2]
H : Distance of holding point [m]



YRG-2004T



Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move.
Take appropriate measures so that any excessive force is not applied to the root of the cable.

Three fingers type

YRG-2013T/2820T/4230T

Basic specifications

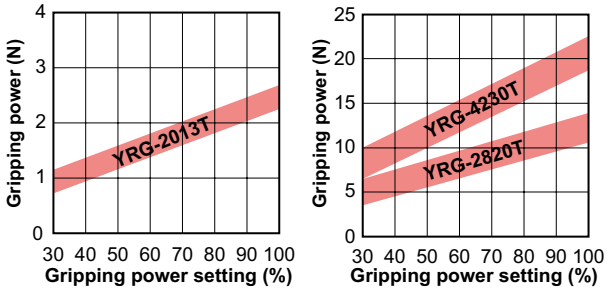
Model name		YRG-2013T	YRG-2820T	YRG-4230T
Model number		KCF-M2015-B0	KCF-M2015-C0	KCF-M2015-D0
Holding power	Max. continuous rating (N)	2	10	20
	Min. setting (% (N))	30 (0.6)	30 (3)	30 (6)
	Resolution (% (N))	1 (0.02)	1 (0.1)	1 (0.2)
Open/close stroke (mm)		13	20	30
Speed	Max. rating (mm/sec)	100		
	Min. setting (% (mm/sec))	20 (20)		
	Resolution (% (mm/sec))	1 (1)	1 (1)	1 (1)
	Holding speed (Max.) (%)	50	50	50
Repetitive positioning accuracy (mm)		+/-0.03		
Guide mechanism		Linear guide		
Max. holding weight Note 1 (kg)		0.02	0.1	0.2
Weight (g)		190	340	640

• Hoding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
• Acceleration control : 1 to 100% (1% steps) • Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.
Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.
Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

Allowable load and load moment

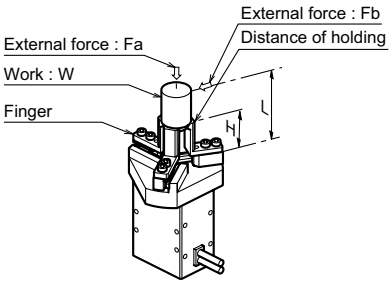
				YRG-2013T	YRG-2820T	YRG-4230T
Finger	Allowable load		N	20	30	50
	Allowable pitching moment		N•m	0.1	0.2	0.4
	Max. weight (1 pair)		g	20	30	50
	Max. holding position	L	mm	20	30	40

• When the external forces Fa and Fb are applied to a potion the distance (L) apart from the finger installation surface, the load (F) and moment (M) are calculated from the formulas shown below.

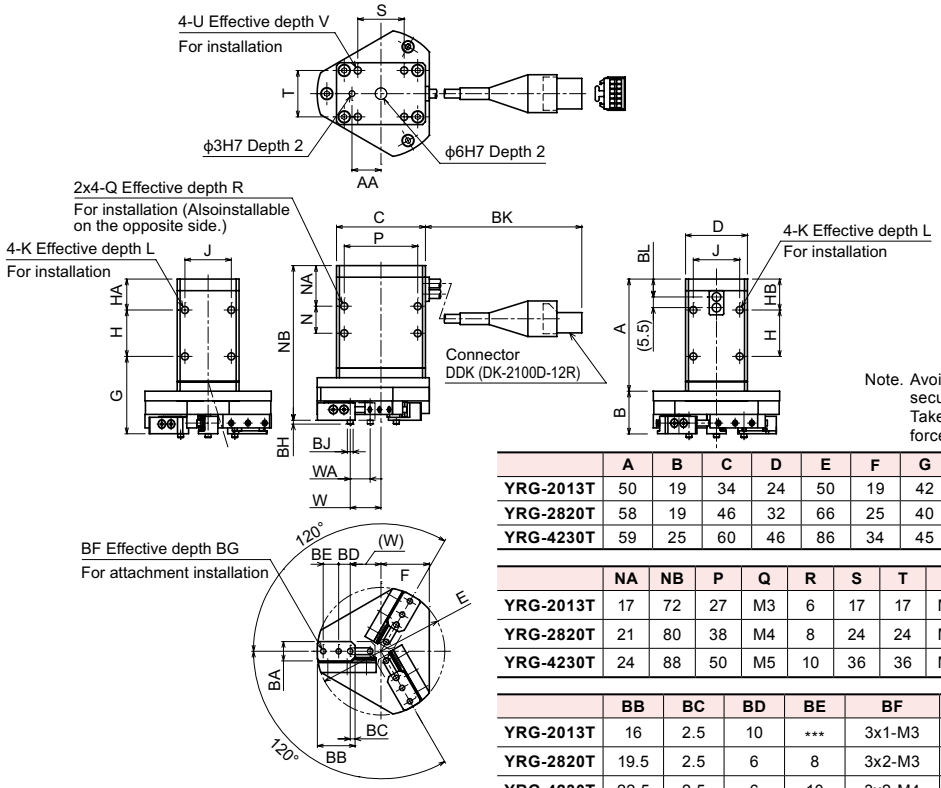
F = Fa + W × g
M = Fb × L

F : Load [N]
M : Moment [N•m]
L : Distance of point of external force application [m]

Fa :External force [N]
Fb :External force [N]
W : Workpiece weight [Kg]
g : Gravity acceleration [m/s²]
H : Distance of holding point [m]



YRG-2013T/2820T/4230T



Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move.
Take appropriate measures so that any excessive force is not applied to the root of the cable.

	A	B	C	D	E	F	G	H	HA	HB	J	K	L	N
YRG-2013T	50	19	34	24	50	19	42	17	13	13	17	M3	6	17
YRG-2820T	58	19	46	32	66	25	40	24	16	16	24	M4	8	14
YRG-4230T	59	25	60	46	86	34	45	25	18	18	36	M5	8	13

	NA	NB	P	Q	R	S	T	U	V	W	WA	AA	BA
YRG-2013T	17	72	27	M3	6	17	17	M3	5	11.4 to 4.6	6.8st	12	10 $^{0}_{-0.02}$
YRG-2820T	21	80	38	M4	8	24	24	M4	6	15.9 to 5.6	10.3st	15	10 $^{0}_{-0.02}$
YRG-4230T	24	88	50	M5	10	36	36	M5	7.5	21.9 to 6.6	15.3st	20	14 $^{0}_{-0.02}$

	BB	BC	BD	BE	BF	BG	BH	BJ	BK	BL
YRG-2013T	16	2.5	10	***	3x1-M3	8	2	ϕ3 $^{0}_{-0.01}$	165+/-10	8.3
YRG-2820T	19.5	2.5	6	8	3x2-M3	6	2	ϕ3 $^{0}_{-0.01}$	140+/-10	9.3
YRG-4230T	22.5	2.5	6	10	3x2-M4	8	3	ϕ4 $^{0}_{-0.012}$	235+/-10	10.8

Electric gripper basic specifications

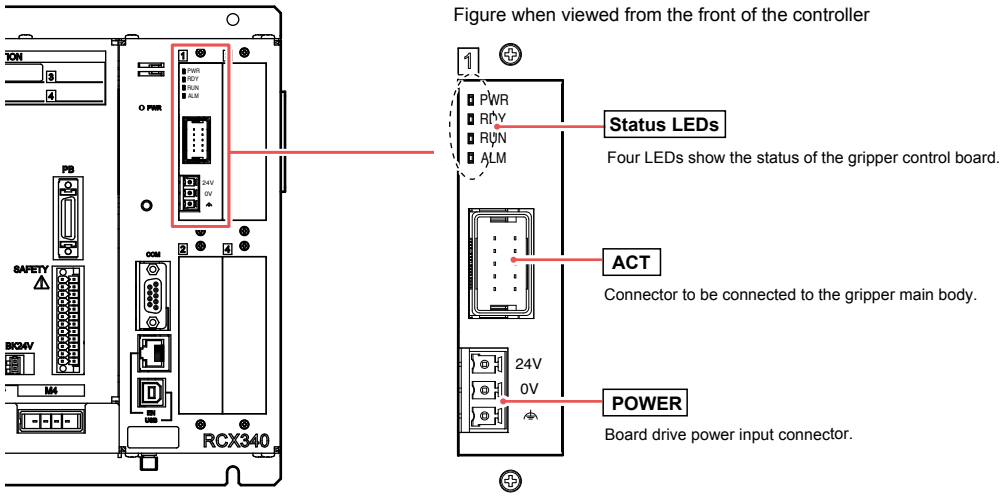
Item		Specifications
Basic specifications	Applicable controller	RCX320 / RCX340
	Number of connection grippers	Max. 4 units
Axis control	Control method	PTP motion
	Min. setting unit	0.01mm
	Position indication unit	Pulses, mm (millimeters)
	Speed setting	20 to 100% (in 1% steps, Changeable by the program.)
	Acceleration setting	1 to 100% (in 1% steps, Setting by the acceleration parameter)
Programming	Teaching	MDI (coordinate data input), direct teaching, teaching playback,offline teaching (data input from external unit)

Gripper control board specifications

Item		Specifications
Axis control	No. of axes	1 axis
	Position detection method	Optical rotary encoder
	Min. setting distance	0.01mm
	Speed setting	Set in the range of 20 to 100% to the max. parameter speed.
Protective alarm		Overcurrent, overload, voltage failure, system failure, position deviation over, feedback error, etc.
LED status indication		POWER (Green), RUN (Green), READY (Yellow), ALARM (Red)
Power supply	Drive power	DC 24V +/-10% 1.0A Max.

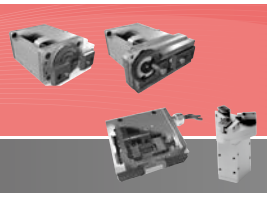
Part names and functions

RCX320 / RCX340



Accessories and part options

YRG Series



Standard accessories

Gripper control board

Model	KCX-M4400-G0

Note. This board includes a 24V supply connector.

RCX320 RCX340

Robot (for gripper) cable

Model	3.5m	KCF-M4751-31
	5m	KCF-M4751-51
	10m	KCF-M4751-A1

Note. Be sure to adjust the total length of the robot (for gripper) cable and relay cable to 14m or less.

RCX320 RCX340

Relay cable

Model	0.5m	KCF-M4811-11
	1m	KCF-M4811-21
	1.5m	KCF-M4811-31
	2m	KCF-M4811-41
	2.5m	KCF-M4811-51
	3m	KCF-M4811-61
	3.5m	KCF-M4811-71
	4m	KCF-M4811-81

RCX320 RCX340

Connector for 24V power supply

Model	KCF-M5382-00

RCX320 RCX340